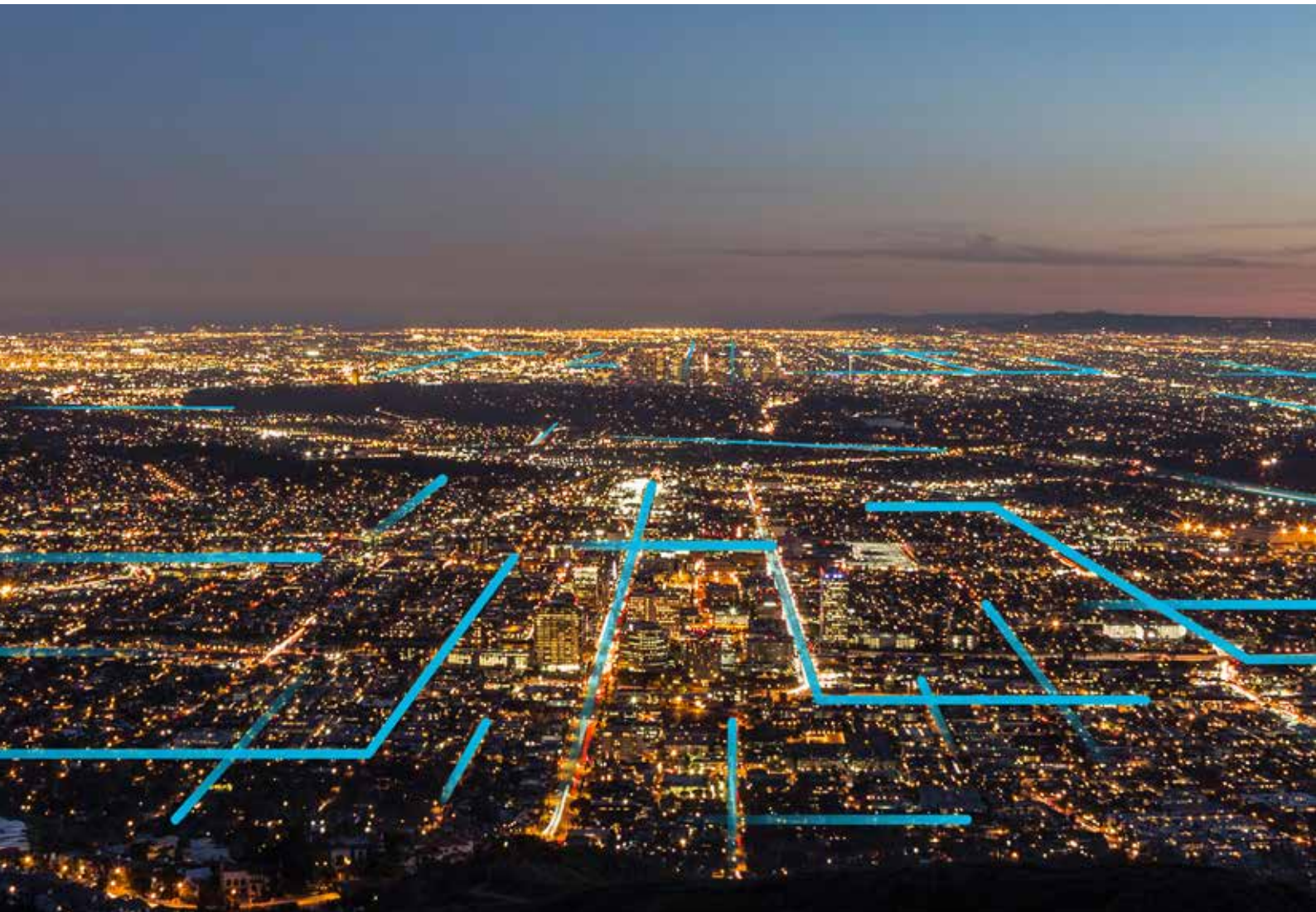


GE Energy Connections

# Redline Modular DIN-rail devices and residential enclosures

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## Modular DIN-rail devices and residential enclosures

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Page	Series	Applications	Poles	Add-on devices	Tripping characteristic	Rating current (A)	Short-circuit capacity (kA)		
A.20	G30		1, 2, 3, 4	yes	B	6 - 40	3	5	10
				yes	C	2 - 40	3	5	10
A.22	G45		1, 2, 3, 4	yes	B	6 - 40	4.5	6	14
				yes	C	2 - 40	4.5	6	14
A.24	G60	  	1, 1+N, 2, 3, 4	yes	B	6 - 63	6	10 <sup>(1)</sup>	20
				yes	C	0.5 - 63	6	10 <sup>(1)</sup>	20
				yes	D	0.5 - 63	6	10 <sup>(1)</sup>	20
A.26	EP60	 	1, 2, 3, 4	yes	K	0.5 - 63	6	10 <sup>(1)</sup>	20
A.28	G100	 	1, 1+N, 2, 3, 4	yes	B	6 - 63	10 <sup>(1)</sup>	15 <sup>(2)</sup>	30
				yes	C	0.5 - 63	10 <sup>(1)</sup>	15 <sup>(2)</sup>	30
				yes	D	0.5 - 63	10 <sup>(1)</sup>	15 <sup>(2)</sup>	30
A.30	EP100	 	1, 2, 3, 4	yes	K, Z	0.5 - 63	10 <sup>(1)</sup>	15 <sup>(2)</sup>	30
A.32	GT10	 	1, 2, 3, 4	yes	B	6 - 63	10 <sup>(1)</sup>	30	
A.34	GT25		1, 2, 3, 4	yes	B	6 - 63	15 <sup>(2)</sup>	20 <sup>(2)</sup>	25 <sup>(2)</sup>
				yes	C	0.5 - 63	15 <sup>(2)</sup>	20 <sup>(2)</sup>	25 <sup>(2)</sup>
				yes	D	0.5 - 63	15 <sup>(2)</sup>	20 <sup>(2)</sup>	25 <sup>(2)</sup>
A.36	EP100 UC		1, 2	yes	B	6 - 63	6	10	
				yes	C	0.5 - 63	6	10	
				yes	Z	0.5 - 63	6	10	

- domestic
- commercial
- industrial
- motors
- railways
- B: 3-5 I<sub>n</sub>
- C: 5-10 I<sub>n</sub>
- D: 10-20 I<sub>n</sub>
- K: 8-12 I<sub>n</sub>
- Z: 2-3 I<sub>n</sub>
- EN/IEC 60898-1
- EN/IEC 60947-2
- NEMA AB1
- UL 489
- UL 1077
- (1) I<sub>cs</sub> = 75% I<sub>cu</sub>
- (2) I<sub>cs</sub> = 50% I<sub>cu</sub>
- (3) I<sub>cn1</sub> = 6kA

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**Selection table of MCBs**

Page	Series	Applications	Poles	Add-on devices	Tripping characteristic	Rating current (A)	Short-circuit capacity (kA)
A.38	<b>Hti</b>		1, 2, 3, 4	yes	B	80 -125	10
				yes	C	80 -125	10
				yes	D	80 -125	7.5 > 10
A.44	<b>Hti+16</b>		1, 2, 3, 4	yes	B	80 -125	10 > 16
				yes	C	80 -125	10 > 16
				yes	D	80 -125	10 > 16
A.46	<b>Hti+25</b>		1, 2, 3, 4	yes	B	80 -125	15 > 25
				yes	C	80 -125	15 > 25
				yes	D	80 -125	15 > 25
A.48	<b>Hti+36</b>		1, 2, 3, 4	yes	B	80-125 <sup>(4)</sup>	20 > 36
				yes	C	80-125 <sup>(4)</sup>	20 > 36
				yes	D	80-125 <sup>(4)</sup>	20 > 36
A.50	<b>Hti+50</b>		1, 2, 3, 4	yes	B	80-125 <sup>(4)</sup>	25 > 50
				yes	C	80-125 <sup>(4)</sup>	25 > 50
				yes	D	80-125 <sup>(4)</sup>	25 > 50

- domestic
- commercial
- industrial
- motors
- railways

- B: 3-5 In
- C: 5-10 In
- D: 10-20 In
- K: 8-12 In
- Z: 2-3 In

- EN/IEC 60898-1
- EN/IEC 60947-2
- NEMA AB1
- UL 489
- UL 1077

- (1) Ics = 75% Icu
- (2) Ics = 50% Icu
- (3) Icn1 = 6kA
- (4) 60898-1 only for 80A

MCBs

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**Selection table of MCBs - Global range**

Circuit protection

**A**

Page	Series	Applications	Poles	Add-on devices	Tripping characteristic	Rating current (A)	Short-circuit capacity (kA)		
A.62	EP100 ULH 277Y/480V		1, 2, 3	yes	B	5 - 40	10	15 <sup>(2)</sup>	
					C	0.5 - 40	10	15 <sup>(2)</sup>	
					D	0.5 - 40	10	15 <sup>(2)</sup>	
A.64	EP100 ULH 120/240V		1, 2, 3	yes	B	5 - 63	10	15 <sup>(2)</sup>	
					C	0.5 - 63	10	15 <sup>(2)</sup>	
					D	0.5 - 63	10	15 <sup>(2)</sup>	
A.66	EP100 UL 277Y/480V		1, 2, 3, 4	yes	B	6 - 63	10	10	15 <sup>(1)</sup>
					C	0.5 - 63	10	10	15 <sup>(1)</sup>
					D	0.5 - 63	10	10	15 <sup>(1)</sup>
A.68	EP60 UL 277Y/480V		1, 2, 3, 4	yes	B	6 - 63	6	6	10 <sup>(1)</sup>
					C	0.5 - 63	6	6	10 <sup>(1)</sup>
					D	0.5 - 63	6	6	10 <sup>(1)</sup>

- domestic
- commercial
- industrial
- motors
- railways
- B: 3-5 In
- C: 5-10 In
- D: 10-20 In
- K: 8-12 In
- Z: 2-3 In
- EN/IEC 60898-1
- EN/IEC 60947-2
- NEMA AB1
- UL 489
- UL 1077
- (1) Ics = 75% Icu
- (2) Ics = 50% Icu
- (3) Icn1 = 6kA

B

C

D

E

F

G

X



**Selection table of MCBs - Transportation**

Page	Series	Applications	Poles	Add-on devices	Tripping characteristic	Rating current (A)	Short-circuit capacity (kA)
A.70	EP100R		3	yes	B	0.5 - 63	10 → 15
				yes	C	0.5 - 63	10 → 15
A.72	EP100 UCR		1, 2	yes	B	2 - 63	6 → 10
				yes	C	0.5 - 63	6 → 10
				yes	K	0.5 - 63	6 → 10
A.74	EP100T		1, 2, 3, 4	yes	Z	0.5 - 63	10 → 15
				yes	B	6 - 63	10 → 15
				yes	C	0.5 - 63	10 → 15
				yes	K	0.5 - 63	10 → 15
A.76	EP100 UCT		1, 2	yes	Z	0.5 - 63	6 → 10
				yes	B	6 - 63	6 → 10
				yes	C	0.5 - 63	6 → 10
				yes	K	0.5 - 63	6 → 10

**Selection table of compact MCBs - Unibis\***

Page	Series	Applications	Poles	Add-on devices	Tripping characteristic	Rating current (A)	Short-circuit capacity (kA)
A.88	EPC 451N		1+N (1 mod)	yes	B-C	2 - 40	4.5 → 6
A.89	EPC 61N		1+N (1 mod)	yes	B-C	2 - 40	6 → 10 <sup>(3)</sup>
A.91	EPC 611		1P+1P (1 mod)	yes	B-C	2 - 20	6 → 6
A.92	EPC 30		2	yes	C	2 - 40	3 → 6
			3, 4	yes	C	2 - 32	3 → 6
A.94	EPC 45		2	yes	B-C	2 - 40	4.5 → 6
			3, 4	yes	B-C	2 - 32	4.5 → 6
A.96	EPC 60/62R		2	yes	B-C	2 - 40	6 → 10
A.98			3, 4	yes	B-C	2 - 32	6 → 6

**Selection table of screwless MCBs - Fixwell\***

Page	Series	Applications	Poles	Add-on devices	Tripping characteristic	Rating current (A)	Short-circuit capacity (kA)
A.108	EPP60		1, 1+N, 2, 3, 3+N, 4	yes	C	2 - 40	6 <sup>(1)</sup> → 10
A.110	EPP100		1, 2, 3, 3+N, 4	yes	B-C	2 - 40	10 <sup>(1)</sup> → 15 <sup>(2)</sup>

- domestic
- commercial
- industrial
- motors
- railways

- B: 3-5 In
- C: 5-10 In
- D: 10-20 In
- K: 8-12 In
- Z: 2-3 In

- EN/IEC 60898-1
- EN/IEC 60947-2
- NEMA AB1
- UL 489
- UL 1077

- (1) Ics = 75% Icu
- (2) Ics = 50% Icu
- (3) Icn1 = 6kA



**Technical data of compact MCBs**

Circuit protection

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Series		G30 / G45	G60 / EP60 char. K
Standards		EN/IEC 60898-1	EN/IEC 60898-1
Tripping characteristics		B, C	B, C, D, K <sup>(2)</sup>
Nominal current	(In)	2-40	B(6-63), C/D/K(0.5-63)
Calibration temperature	(°C)	30	30
Number of poles (# mod.)		1/2/3/4	1/1+N/2/3/4 <sup>(2)</sup>
Neutral pole protected		-	yes
Nominal voltage Un AC	1P (V)	240/415	240/415
	1P+N (V)	240	-
	2P (V)	415	415
	3P/3P+N/4P (V)	415	415
Nominal voltage Un DC	1P (1) (V)	-	48
	2P (in series) <sup>(1)</sup> (V=)	-	110
Frequency	(Hz)	50/60	50/60
	in DC for 400Hz	DC: magn.trip +40% 400: magn.trip +50%	DC: magn.trip +40% 400: magn.trip +50%
Maximum service voltage UBmax between two wires	(V)	250/440; 53/120 =	250/440; 53/120 =
Minimum service voltage UBmin	(V)	12; 12 =	12; 12 =
Energy limiting class (EN 60898-1)		3	3
Isolator application		yes	yes
Rated insulation voltage	Pollution degree 2 (V)	500	500
	Pollution degree 3 (V)	440	440
Impulse withstand test voltage	(kV)	6	6
Insulation resistance	(MΩ)	10000	10000
Dielectric rigidity	(kV)	2.5	2.5
Vibration resistance (in x, y, z direction) (IEC 77/16.3)	(g)	3g	3g
Endurance	Electrical at Un,In	10000	10000
	Mechanical	20000	20000
Utilisation category (EN 60947-2)		A	A
Mounting position (for all devices): any except upside down		any	any
Incoming top or bottom		yes	yes
Protection degree (outside/inside enclosure with door)		IP20/IP40	IP20/IP40
Selfextinguish degree (according to UL94)		V2	V2
Tropicalisation (acc. EN 60068-2/DIN 40046)	(°C/RH)	+55°C/95% RH	+55°C/95% RH
Operating temperature	(°C)	-25/+70	-25/+70
Storage temperature	(°C)	-55/+70	-55/+70
Terminal capacity	Rigid cable min/max (top) (mm²)	1/35	1/35
	Flexible cable min <sup>(*)</sup> /max (top) (mm²)	0.75/25	0.75/25
	Rigid cable min/max (bottom) (mm²)	1/35	1/35
	Flexible cable min <sup>(*)</sup> /max (bottom) (mm²)	0.75/25	0.75/25
(* Flexible cable 0.75/1/1.5mm² with cable lug)			
Torque	(Nm)	4.5	4.5
Add-on devices	Contacts CA/CB	yes	yes
	Tele U	yes	yes
	Tele L	yes	yes
	Tele MP	yes	yes
	PBS	yes	yes
Busbar systems	Pin (top/bottom)	yes/yes	yes/yes
	Fork (top/bottom)	-/yes	-/yes
Accessories		yes	yes
Dimensions	(HxDxW) 86 x 68 x W (mm) /mod	18	18
Weight per mod.	(g)	120	120
Package		12	12
Approvals		KEMA	KEMA
CE-marking		yes	yes
Page		A.20/A.22	A.24/A.26 <sup>(2)</sup>

(1) Preferred values of rated control supply voltage (EN/IEC 60947-2): 24V, 48V, 110V, 125V, 220V, 250V



G100 / EP100 char. K, Z	GT10 / GT25	EP100 UC	EP100R / EP100T	EP100UCR / EP100UCT
EN/IEC 60947-2	EN/IEC 60947-2	(3)	EN/IEC 60898-1	EN/IEC 60947-2(3)
Z, B, C, K, D	3-5In/5-10In/10-20In	B, C, Z	Z, B, C, D, K(5)	Z, B, C, K(4)
0.5-63	0.5-63	B(6-63), C(0.5-63)	B(6-63), C/D/K(0.5-63)	0.5 - 63
40	40	30	30	30
1/2/3/4	1/2/3/4	1/2/4	1/2/3/4(6)	1/2
-	-	-	yes	-
240/415	240/415	240/415	240/415	240/415
-	-	-	-	-
415	415	415	415	415
415	415	415	415	415
48	48	250	48	250
110	110	500	110	500
50/60	50/60	50/60	50/60	50/60
DC: magn.trip +40%	DC: magn.trip +40%	DC: magn.trip +40%	DC: magn.trip +40%	DC: magn.trip +40%
400: magn.trip +50%	400: magn.trip +50%	400: magn.trip +50%	400: magn.trip +50%	400: magn.trip +50%
250/440; 53/120 ==	250/440; 53/120 ==	250/440; 250/500 ==	250/440; 53/120 ==	250/440; 250/500 ==
12; 12 ==	12; 12 ==	12; 12 ==	12; 12 ==	12; 12 ==
-	-	3	3	3
yes	yes	yes	yes	yes
500	500	500	500	500
440	440	440	440	440
6	6	6	6	6
10000	10000	10000	10000	10000
2.5	2.5	2.5	2.5	2.5
3g	3g	5g	5g	5g
4000	4000	1000	10000	1000
20000	20000	20000	20000	20000
A	A	A	A	A
any	any	any	any	any
yes	yes	follow polarity	yes	follow polarity
IP20/IP40	IP20/IP40	IP20/IP40	IP20/IP40	IP20/IP40
V2	V2	V2	V2	V2
+55°C/95% RH	+55°C/95% RH	+55°C/95% RH	+55°C/95% RH	+55°C/95% RH
-25/+70	-25/+70	-25/+70	-40/+70	-40/+70
-55/+70	-55/+70	-55/+70	-40/+70	-40/+70
1/35	1/35	1/35	1/35	1/35
0.75/25	0.75/25	0.75/25	0.75/25	0.75/25
1/35	1/35	1/35	1/35	1/35
0.75/25	0.75/25	0.75/25	0.75/25	0.75/25
4.5	4.5	4.5	4.5	4.5
yes	yes	yes	yes	yes
yes	yes	yes	yes	yes
yes	yes	yes	yes	yes
yes	yes	yes	yes	yes
yes	yes	yes	yes	yes
yes/yes	yes/yes	yes/yes	yes/yes	yes/yes
-/yes	-/yes	yes/yes	-/yes	yes/yes
yes	yes	yes	yes	yes
18	18	18	18	18
120	120	125	120	125
12	12	12	12	12
-	-	-	KEMA	-
yes	yes	yes	yes	yes
A.28/A.30	A.32/A.34	A.36	A.70/A.74	A.72/A.76

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(2) Motor lines application no 1+N execution in K curve EP60K in page A.26 EP100K in page A.30

(3) EN/IEC 60898-2 and VDE 0641-2/3  
 (4) For EP100 UCR no K curve  
 (5) For EP100 R only B-C curves  
 (6) For EP100 R only 3



**Technical data of compact MCBs**

Circuit protection

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Series			Hti
Standards			EN/IEC 60947-2
Tripping characteristics			3-5In/5-10In/10-20In
Nominal current	(In)		80 up to 125
Calibration temperature	(°C)		40
Number of poles (# mod.)			1/2/3/4
Neutral pole protected			-
Nominal voltage Un AC	1P	(V)	230/400
	2P	(V)	415
	3P/3P+N/4P	(V)	415
Nominal voltage Un DC	1P (1)	(V)	48
	2P (in series) <sup>(1)</sup>	(V=)	110
Frequency		(Hz)	50/60
		in DC	DC: magn.trip +40%
	for 400Hz		400: magn.trip +50%
Maximum service voltage UBmax	between two wires	(V)	250/440; 53/120 =
Minimum service voltage UBmin		(V)	12; 12 =
Energy limiting class (EN 60898-1)			-
Isolator application			yes
Rated insulation voltage	Pollution degree 2	(V)	500
	Pollution degree 3	(V)	440
Impulse withstand test voltage			(kV) 6
Insulation resistance			(MΩ) 10000
Dielectric rigidity			(kV) 2.5
Vibration resistance (in x, y, z direction) (IEC 77/16.3)			(g) 3g
Endurance	Electrical at Un,In		4000
	Mechanical		10000
Utilisation category (EN 60947-2)			A
Mounting position (for all devices): any except upside down			any
Incoming top or bottom			yes
Protection degree (outside/inside enclosure with door)			IP20/IP40
Selfextinguish degree (according to UL94)			V2
Tropicalisation (acc. EN 60068-2/DIN 40046)		(°C/RH)	+55°C/95% RH
Operating temperature			(°C) -25/+55
Storage temperature			(°C) -55/+55
Terminal capacity	Rigid cable min/max (top)	(mm²)	70
	Flexible cable min*/max (top)	(mm²)	-
	Rigid cable min/max (bottom)	(mm²)	70
	Flexible cable min*/max (bottom)	(mm²)	-
	Torque	(Nm)	5
Add-on devices	Contacts CA/CB		HTI+ H H/S
	Tele U		-
	Tele L		TELE L 110/24
	Tele MP		-
	PBS		no
Busbar systems	Pin (top/bottom)		-
	Fork (top/bottom)		-
Accessories			-
Dimensions	(HxDxW) 86 x 68 x W	(mm) /mod	27
Weight per mod.		(g)	210
Package			1/4/8
Approvals			-
CE-marking			yes
Page			A.38

(1) Preferred values of rated control supply voltage (EN/IEC 60947-2): 24V, 48V, 110V, 125V, 220V, 250V



Hti+16	Hti+25	Hti+36	Hti+50
EN/IEC 60898-1 EN/IEC 60898-1	EN/IEC 60898-1 EN/IEC 60898-2	EN/IEC 60898-1 EN/IEC 60898-2	EN/IEC 60898-1 EN/IEC 60898-3
B,C,D	B,C,D	B,C,D	B,C,D
80-125A	80-125A	80-125A	80-125A
30	30	30	30
1/2/3/4	1/2/3/4	1/2/3/4	1/2/3/4
-	-	-	-
230/400	240/415	240/415	240/415
400	415	415	415
400	415	415	415
-	125	125	125
-	250	250	250
50/60	50/60	50/60	50/60
-	-	-	-
-	-	-	-
244/424	254/440Vac	400/690Vac	400/690Vac
12Vac	12Vdc	12Vdc	12Vdc
-	-	-	-
yes	yes	yes	yes
500	500	690	690
440	440	440	440
6	8	8	8
10000	10000	10000	10000
2.5	2.5	2.5	2.5
3g	3g	3g	3g
1500/1000	6000/4000	6000/4000	6000/4000
10000/8000	10000	10000	10000
A	A	A	A
any	any	any	any
yes	yes	yes	yes
IP20/IP40	IP20/IP40	IP20/IP40	IP20/IP40
V2	V2	V2	V2
+55°C/95% RH	+55°C/95% RH	+55°C/95% RH	+55°C/95% RH
-25 ... +60	-25 ... +60	-25 ... +60	-25 ... +60
-40...+70	-40...+70	-40...+70	-40...+70
1...50	1...50	1...50	1...50
1...70	1...70	1...70	1...70
1...50	1...50	1...50	1...50
1...70	1...70	1...70	1...70
3.5	3.5	3.5	3.5
HTI+ H H/S	HTI+ H H/S	HTI+ H H/S	HTI+ H H/S
HTI+TELE U	HTI+TELE U	HTI+TELE U	HTI+TELE U
HTI+TELE L	HTI+TELE L	HTI+TELE L	HTI+TELE L
no	no	no	no
no	no	no	no
-	-	-	-
-	-	-	-
yes	yes	yes	yes
82.5 x 95 x 26.5	82.5 x 95 x 26.5	82.5 x 95 x 26.5	82.5 x 95 x 26.5
240	240	240	240
-	-	-	-
-	-	-	-
yes	yes	yes	yes
A.44	A.46	A.48	A.50

Circuit protection

A

B

C

D

E

F

G

X



**Short-circuit capacity of MCBs**

Series		G30	G45	G60 / EP60 char. K		
<b>Short-circuit capacity AC</b>		<b>kA</b>				
EN/IEC 60898-1	<b>I<sub>cn</sub></b>	1P	230/400V	3	4.5	6
		1P+N	230V	3	4.5	6
		2P	230/400V	3	4.5	6
		3P/3P+N/4P	230/400V	3	4.5	6
	<b>I<sub>cs</sub> (service)</b>		100% I <sub>cn</sub>	100% I <sub>cn</sub>	100% I <sub>cn</sub>	100% I <sub>cn</sub>
EN/IEC 60947-2	<b>I<sub>cu</sub> (ultimate)</b>	1 P	127V	-	-	20
			240V	5	6	10
		415V	3	3	3	
	1+N /2P	127V	-	15	30	
		240V	10	10	20	
	2 P	415V	5	6	10	
	3/3+N/4P	240V	10	10	20	
		415V	5	6	10	
		440V	-	-	6	
	<b>I<sub>cs</sub> (service)</b>		75% I <sub>cu</sub>	75% I <sub>cu</sub>	75% I <sub>cu</sub>	
<b>Short-circuit capacity DC</b>		<b>kA</b>				
EN/IEC 60947-2	<b>I<sub>cu</sub> (ultimate)</b>	1P	≤ 60V ≡	20	-	20
			≤ 220V ≡	-	-	-
		≤ 220V ≡	25	-	25	
	2P	≤ 125V ≡	-	-	-	
	<b>I<sub>cs</sub> (service)</b>		≤ 440V ≡	100% I <sub>cu</sub>	-	100% I <sub>cu</sub>
			A.20	A.22	A.24/A.26	

Circuit protection

A

B

C

D

E

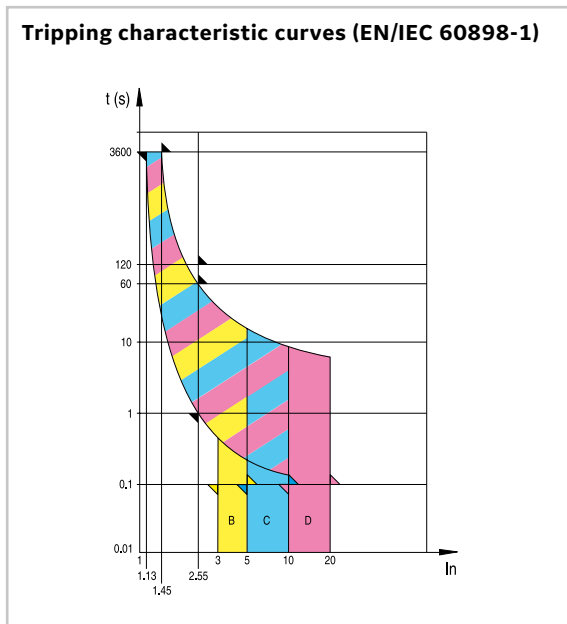
F

G

X

**Characteristics according to EN/IEC 60898-1**

Miniature Circuit Breakers (MCB) are intended for the protection of wiring installations against both overloads and short-circuits in domestic or commercial wiring installations where operation is possible by uninstructed people.



**Magnetic release**

An electromagnet with plunger ensures instantaneous tripping in the event of short-circuit. The standard distinguishes three different types, following the current for instantaneous release: type B,C,D.

I <sub>cn</sub> (A)	Test current	Tripping time	Applications
B	3 x I <sub>n</sub>	0.1 < t < 45s (I <sub>n</sub> ≤ 32A) 0.1 < t < 90s (I <sub>n</sub> > 32A)	Only for resistive loads such as: - electrical heating - water heater - stoves
	5 x I <sub>n</sub>	t < 0.1s	
C	5 x I <sub>n</sub>	0.1 < t < 15s (I <sub>n</sub> ≤ 32A) 0.1 < t < 30s (I <sub>n</sub> > 32A)	Usual loads such as: - lighting - socket-outlets - small motors
	10 x I <sub>n</sub>	t < 0.1s	
D	10 x I <sub>n</sub>	0.1 < t < 4s <sup>(1)</sup> (I <sub>n</sub> ≤ 32A) 0.1 < t < 8s (I <sub>n</sub> > 32A)	Control and protection of circuits having important transient inrush currents
	20 x I <sub>n</sub>	t < 0.1s	

(1) If I<sub>n</sub> ≤ 10A, t < 8s

**Thermal release**

The release is initiated by a bimetal strip in case of overload. The standard defines the range of releases for specific overload values. Reference ambient temperature is 30°C.

Test current	Tripping time
1.13 x I <sub>n</sub>	t ≥ 1h (I <sub>n</sub> ≤ 63A) t ≥ 2h (I <sub>n</sub> > 63A)
1.45 x I <sub>n</sub>	t < 1h (I <sub>n</sub> ≤ 63A) t < 2h (I <sub>n</sub> > 63A)
2.55 x I <sub>n</sub>	1s < t < 60s (I <sub>n</sub> ≤ 32A) 1s < t < 120s (I <sub>n</sub> > 32A)

G100 / EP100 char. K, Z EP100R / EP100T	GT10	GT25	EP100 UC / EP100 UCR	Hti
10	-	-	6 (220V DC) <sup>(2)</sup>	-
10	-	-	-	-
10	-	-	6 (440V DC) <sup>(3)</sup>	-
10	-	-	-	-
75% I <sub>cn</sub>	-	-	100% I <sub>cn</sub>	-
30	25	50	-	-
15	10	50/25/20/15 <sup>(1)</sup>	6 <sup>(5)</sup>	B/C 10; D 7.5
4	-	-	-	4.5
40	30	-	-	-
30	20	50/50/40/30 <sup>(1)</sup>	-	B/C 15
15	10	50/25/20/15 <sup>(1)</sup>	6 <sup>(5)</sup>	B/C 10; D 7.5
30	20	50/50/40/30 <sup>(1)</sup>	-	B/C 15
15	10	50/25/20/15 <sup>(1)</sup>	-	B/C 10; D 7.5
10	-	50/20/15/10 <sup>(1)</sup>	-	-
50% I <sub>cu</sub>	75% I <sub>cu</sub>	50% I <sub>cu</sub>	-	100% I <sub>cu</sub>
25	20	25	-	10
-	-	-	10 <sup>(4)</sup>	-
30	25	30	20 <sup>(4)</sup>	15
-	-	-	10 <sup>(4)</sup>	-
100% I <sub>cu</sub>	100% I <sub>cu</sub>	100% I <sub>cu</sub>	-	100% I <sub>cu</sub>
A.28/A.30/A.70/A.74	A.32	A.34	A.36/A.72	A.38

(1) 0.5-4A/6-25A/32-40A/50-63A, (2) 10 (125V DC), (3) 10 (250V DC), (4) T = 4ms, (5) 4.5kA for 50A and 63A

## Characteristics according to EN/IEC 60947-2

### Magnetic release

An electromagnet with plunger ensures instantaneous tripping in the event of short-circuit. The standard leaves the calibration of magnetic release to the manufacturer's discretion.

GE offers instantaneous tripping ranges:

- B: 4 I<sub>n</sub>
- C: 8.5 I<sub>n</sub> (7.5 I<sub>n</sub> for 63A)
- D and M: 14 I<sub>n</sub>
- K: 10 I<sub>n</sub> (6 I<sub>n</sub> ≥ 2s.)

### Thermal release

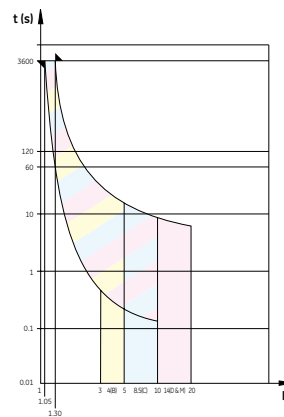
The release is initiated by a bimetal strip in case of overload. The standard defines the range of releases for two special overload values.

Reference ambient temperature is:

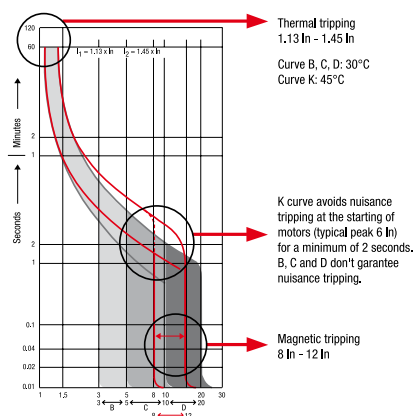
- 40°C for GT10 and GT25
- 50°C for G60 and G100, except for K: 45°C

Test current		Tripping time
B - C - D	K	
1.05 x I <sub>n</sub>	1.13 x I <sub>n</sub>	t ≥ 1h (I <sub>n</sub> ≤ 63A) t ≥ 2h (I <sub>n</sub> > 63A)
1.30 x I <sub>n</sub>	1.45 x I <sub>n</sub>	t < 1h (I <sub>n</sub> ≤ 63A) t < 2h (I <sub>n</sub> > 63A)

Tripping characteristic curves (EN/IEC 60947-2)



Curve K (EN/IEC 60947-2) versus B, C, D (EN/IEC 60898-1)





Short-circuit capacity of MCBs

Circuit protection

A

B

C

D

E

F

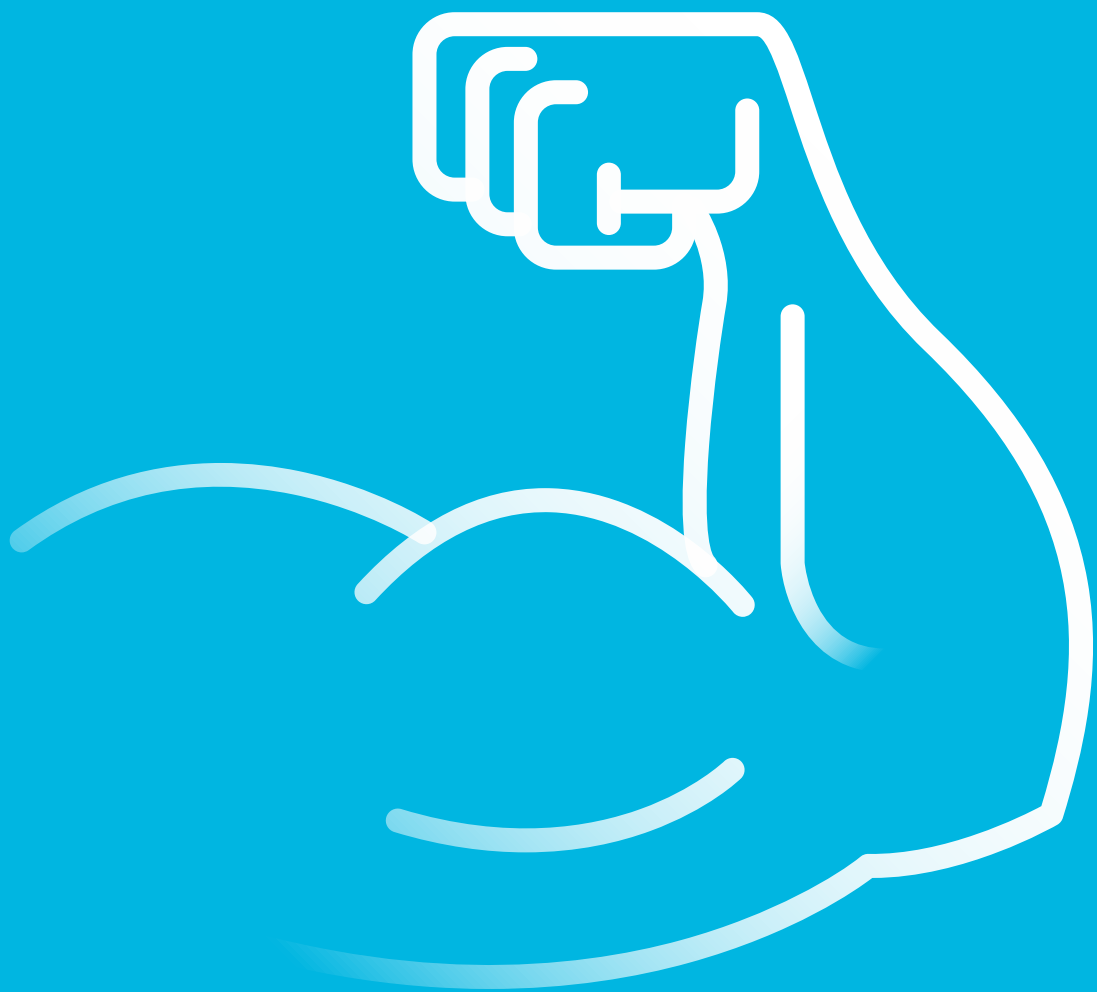
G

X

Series	Hti+16	Hti+25	Hti+36	Hti+50	
<b>Short-circuit capacity AC</b>					
EN/IEC 60898-1	<b>Icn</b>	230/400 V= 10 kA	230/400 V= 15 kA	230/400 V= 20 kA <sup>(1)</sup>	230/400 V = 25 kA <sup>(1)</sup>
	<b>Ics (service)</b>	230/400 V= 7.5 kA	230/400 V= 7.5 kA	230/400 V = 10 kA	230/400 V = 12.5 kA
<b>Short-circuit capacity AC</b>					
EN/IEC 60947-2	<b>Icu (ultimate)</b>	230/400 V=16kA	240/415 V = 25 kA	240/415 V = 36 kA	240/415 V = 50 kA
			254/440 V = 15kA	254/440 V = 20 kA	254/440 V = 30 kA
			400/690 V = 4.5 kA	400/690 V (80 A) = 6 kA	400/690 V (100 ... 125 A) = 4.5 kA
	<b>Short-circuit capacity DC</b>		125 V (1-pole) = 10 kA	125 V (1-pole) = 20 kA	125 V (1-pole) = 30 kA
		250 V (2-pole) = 10 kA	250 V (2-pole) = 20 kA	250 V (2-pole) = 30 kA	
		375 V (3-pole) = 10 kA	375 V (3-pole) = 20 kA	375 V (3-pole) = 30 kA	
		500 V (4-pole) = 10 kA	500 V (4-pole) = 20 kA	500 V (4-pole) = 30 kA	
<b>Short-circuit capacity AC</b>					
EN/IEC 60947-2	<b>Icu (ultimate)</b>	230/400 V=10kA	240/415 V = 18 kA	240/415 V = 30 kA	240/415 V = 40 kA
			254/440 V = 10 kA	289/500 V = 5 kA	254/440 V (80 A) = 22.5 kA
			400/690 V = 3 kA	400/690 V (up to 80 A) = 4 kA	254/440 V (100 ... 125 A) = 15 kA
				400/690 V (100 ... 125 A) = 3 kA	400/690 V (100 ... 125 A) = 3 kA
<b>Short-circuit capacity DC</b>					
		125 V (1-pole) = 10 kA	125 V (1-pole) = 20 kA	125 V (1-pole) = 30 kA	
		250 V (2-pole) = 10 kA	250 V (2-pole) = 20 kA	250 V (2-pole) = 30 kA	
		375 V (3-pole) = 10 kA	375 V (3-pole) = 20 kA	375 V (3-pole) = 30 kA	
		500 V (4-pole) = 10 kA	500 V (4-pole) = 20 kA	500 V (4-pole) = 30 kA	
	A.44	A.46	A.48	A.50	

(1) Only for 80A







Line protection devices: technical data

Circuit protection

A

B

C

D

E

F

G

X

Series		EP100ULH34	EP100ULH12	EP100UL	EP60UL
Standards UL489 (listed) & CSA c22.2 No.5-02		yes	yes	-	-
Standards UL1077 (recognized) & CSA C22.2 No.235		-	-	yes	yes
Certifications UL489 (listed) & CSA c22.2 No.5-02		E256870	E256870	-	-
Certifications UL1077 (recognized) & CSA c22.2 No.235		-	-	E151139/235-04	E151139/235-04
Nominal voltage acc. UL & CSA AC/DC	1P	277AC/60DC	120AC/60DC	277AC/50DC	277AC/50DC
	2P	480AC/125DC	240AC/125DC	480AC/110DC	480AC/110DC
	3P	480AC	240AC	480AC	480AC
	4P	-	-	480AC	480AC
Rated current at 77°F (25°C)		B: 5-40, C,D: 0.5-40	B: 5-40, C,D: 0.5-63	B: 5-40, C,D: 0.5-63	B: 5-40, C,D: 0.5-63
Number of poles		1,2,3	1,2,3	1,2,3,4	1,2,3,4
Reference temperature °F/°C		77/25	77/25	77/25	77/25
UL486 Standard compliance-connection terminals		UL486A and B	UL486A and B	UL486E	UL486E
Terminal capacity 60/75°C		14-2 AWG	14-2 AWG	14-2 AWG	14-2 AWG
Torque N.m/lbs.in		4/30	4/30	4.5/39.9	4.5/39.9
Handle end position selectable		yes	yes	yes	yes
Mounting		35 mm DIN-rail	35 mm DIN-rail	35 mm DIN-rail	35 mm DIN-rail
Nomenclature		Circuit breaker	Circuit breaker	Supplementary protectors	Supplementary protectors
Frequency Hz		50/60	50/60	50/60	50/60
<b>Standards EN/IEC 60947-2</b>		yes	yes	yes	yes
Calibration temperature °C 60947-2		50	50	50	50
Number of modules		1, 2, 3	1, 2, 3	1, 2, 3, 4	1, 2, 3, 4
Nominal voltage Un 60947-2					
	AC	1P V	240/415	240/415	240/415
		2P V	415	415	415
		3P V	415	415	415
		4P V	-	-	415
	DC 1P <sup>(1)</sup> VDC		60	60	50
	2P (in series) <sup>(1)</sup> VDC		125	125	110
Minimum service voltage U <sub>min</sub>	V	12	12	12	12
Selectivity class (IEC 60898-1)		-	-	3	3
Isolator application IEC 60947-2		yes	yes	yes	yes
Rated insulation voltage	Pollution degree 2	V	500	500	500
	Pollution degree 3	V	440	440	440
Impulse withstand test voltage	kV	6	6	6	6
Insulation resistance	MOhm	10000	10000	10000	10000
Dielectric rigidity	kV	2.5	2.5	2.5	2.5
Mounting position		Any	Any	Any	Any
Incoming top or bottom		Any	Any	Any	Any
Vibrations resistance (in x, y, z direction) (IEC 77/16.3)		3g	3g	3g	3g
Endurance	electrical at Un, In	10000	10000	10000	10000
	mechanical	20000	20000	20000	20000
Utilisation category (IEC 60947-2)		A	A	A	A
Protection distance (IEC 60947-2)	mm	12	12	12	12
Protection degree (outside / inside enclosure with door)		IP20/IP40	IP20/IP40	IP20/IP40	IP20/IP40
Self-extinguish degree (according to UL94)		V0	V0	V0	V0
Tropicalisation (according to IEC 60068-2 / DIN 40046)	°C/RH	+55°C(131°F)/95%RH	+55°C(131°F)/95%RH	+55°C(131°F)/95%RH	+55°C(131°F)/95%RH
Operating temperature	°C(°F)	-40(-40)/+55(131)	-40(-40)/+55(131)	-25(-13)/+55(131)	-25(-13)/+55(131)
Storage temperature	°C(°F)	-55(-67)/+55(131)	-55(-67)/+55(131)	-55(-67)/+55(131)	-55(-67)/+55(131)
Terminal capacity (combined at both ends)					
Rigid cable min/max (top)	mm <sup>2</sup>	1/35	1/35	1/35	1/35
Flexible cable min*/max (top)	mm <sup>2</sup>	0.75/25	0.75/25	0.75/25	0.75/25
Rigid cable min/max (bottom)	mm <sup>2</sup>	1/35	1/35	1/35	1/35
Flexible cable min*/max (bottom)	mm <sup>2</sup>	0.75/25	0.75/25	0.75/25	0.75/25
(* Flexible cable 0.75/1/1.5 mm <sup>2</sup> with cable lug)					
Torque	Nm/lbs.in	max 4.5/39.9	max 4.5/39.9	max 4.5/39.9	max 4.5/39.9
Add-on devices auxiliary contacts		yes	yes	yes	yes
(side add-on) Tele L		yes	yes	yes	yes
Tele MP		yes	yes	yes	yes
Dimensions, weights, packaging (HxDxW)					
86(3,4)x68(2,7)xW <sup>(2)</sup>	in/mm/mod.	0.71/18	0.71/18	0.71/18	0.71/18
Weight/mod.	oz./g.	4.2/130	4.2/130	4.2/130	4.2/130
Approvals		UL Listed, CEBC, CSA, EAC	UL Listed, CEBC, CSA, EAC	UL, VDE, CSA, EAC	UL, VDE, CSA, EAC
CE-marking		yes	yes	yes	yes
ROHS		yes	yes	yes	yes
Page		A.62	A.64	A.66	A.68

(1) Preferred values of rated control supply voltage (IEC 60947-2): 24V DC, 48V DC, 110V DC, 125V DC, 220V DC, 250V DC

(2) EP100ULH executions 1P, 2P & 3P: H = 116mm (4,6 in.)

## MCBs Short-circuit capacity

Series	EP100ULH34	EP100ULH12	EP100UL	EP60UL
<b>Interrupting capacity acc. to kA</b>				
	UL489	UL489	UL1077	UL1077
UL	1P/2P 277V AC	10	-	6
	3P 480V AC	10	-	6
	1P 120V AC	10	10	6
	2P/3P 240V AC	10	10	6
	1P 60V DC (50V DC: EP.UL34)	10	10	6
	2P 125V DC (110V DC: EP.UL34)	10	10	6
	<b>Interrupting capacity acc. to kA</b>			
EN/IEC 60947-2	Icu (ultimate) kA			
	1 P 127V	30	30	20
	240V	15	15	10
	415V	4	4	3
	2P 127V	40	40	30
	240V	30	30	20
	2 P 415V	15	15	10
	3/4P 240V	30	30	20
	415V	15	15	10
	440V	10	10	6
	Ics (service)	50% Icu	50% Icu	50% Icu
<b>Short-circuit capacity DC</b>				
EN/IEC 60947-2	Icu (ultimate) kA			
	1 P ≤ 60V	25	25	20
	≤ 220V	-	-	-
	2 P ≤ 125V	30	30	25
	≤ 440V	-	-	-
	Ics (service)	10% Icu	10% Icu	100% Icu

MCBs

A

B

C

D

E

F

G

X

## Characteristics according to EN/IEC 60947-2

### Magnetic release

An electromagnet with plunger ensures instantaneous tripping in the event of short-circuit. The standard leaves the calibration of magnetic release to the manufacturer's discretion.

GE offers instantaneous tripping ranges:

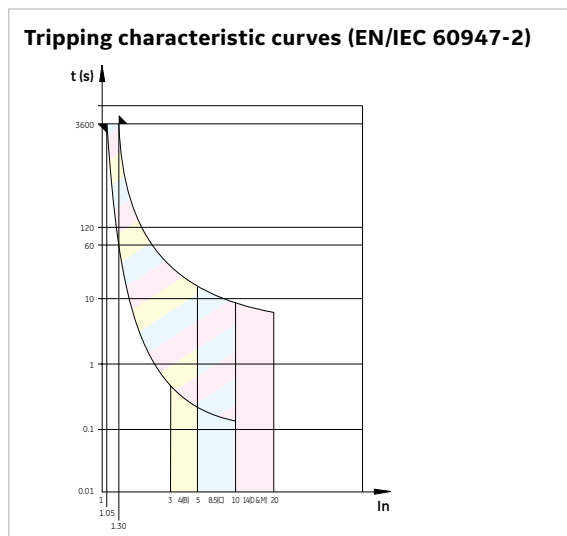
- B: 4 I<sub>n</sub>
- C: 8.5 I<sub>n</sub> (7.5 I<sub>n</sub> for 63A)
- D: 14 I<sub>n</sub>

### Thermal release

The release is initiated by a bimetal strip in case of overload. The standard defines the range of releases for two special overload values.

Reference ambient temperature is 50°C

Test current B - C - D	Tripping time
1.05 x I <sub>n</sub>	t ≥ 1h (I <sub>n</sub> ≤ 63A) t ≥ 2h (I <sub>n</sub> > 63A)
1.30 x I <sub>n</sub>	t < 1h (I <sub>n</sub> ≤ 63A) t < 2h (I <sub>n</sub> > 63A)





## Back-up protection (association)

### Downstream: MCBs - Upstream: MCBs

Redline		U 230V					
Downstream MCB	Types	Upstream MCB (kA)					
	In (A)	G60 and EPP60	G100 and EPP100	GT25	GT25	GT25	Hti
		0.5-63	0.5-63	< 32	32-40	50-63	80-125
EPC 451N - EPC45	2-40	22	25	25	25	25	-
EPC 61N - EPC60	2-10	25	30	30	30	30	-
	16-20	25	30	30	30	30	-
	25-40	25	30	30	30	30	-
DM60	4-10	15	15	15	15	15	-
	16-20	15	15	15	15	15	-
	25-40	15	15	15	15	15	-
DM100	4-10	15	15	15	15	15	-
	16-20	15	20	20	20	20	-
	25-40	15	20	22	22	22	-
G45	6-40	15	20	22	22	22	16
G60	0.5-63	-	20	22	22	22	-
G100	0.5-63	-	-	50	35	30	-

### Record Plus\* MCCBs at 220/240V AC

Upstream		MCCBs Record Plus*																											
Downstream	Icu In (kA)	FD160/160C	FD160/160E	FD160/160S	FD160/160N	FD160/160H	FD160/160L	FE160N	FE160H	FE160L	FE150V	FE250N	FE250H	FE250L	FG400N	FG400H	FG400L	FG630N	FG630H	FG630L	FK800N	FK800H	FK800L	FK1250N	FK1250H	FK1250L	FK1600N	FK1600H	
		25	40	50	85	100	200	85	100	200	65	85	100	200	85	100	200	85	100	200	80	100	170	80	100	170	80	100	100
		Icu of the combination (kA)																											
<b>Redline</b>																													
EPC 451N / EPC 45	6	15	18	18	18	18	18	15	15	15	12	12	12	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DP45	6	15	18	22	22	22	22	18	18	18	15	15	15	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EPC 61N / EPC 60	10	16	20	23	23	23	23	20	20	20	16	16	16	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DP(A) 60	10	22	25	30	36	85	85	36	85	85	30	36	65	65	16	16	16	14	14	14	-	-	-	-	-	-	-	-	-
DPE100 / EPC 101N	10	18	22	25	25	25	25	22	22	22	18	18	18	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DP(A)100 & DPT 100	15	25	36	42	50	100	100	42	100	100	30	36	65	65	18	18	18	16	16	16	-	-	-	-	-	-	-	-	-
G60 and EPP60	20	25	36	42	50	100	100	50	100	100	36	42	85	85	22	22	22	18	18	18	-	-	-	-	-	-	-	-	-
G100 and EPP100	30	-	42	50	65	100	100	65	100	100	42	50	85	85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GT25 <25A	50	-	-	-	65	100	100	65	100	100	-	65	100	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GT25, 32 and 40A	40	-	-	-	65	100	100	65	100	100	42	50	85	85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GT25, 50 and 63A	30	-	42	50	65	100	100	65	100	100	42	50	85	85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Series Hti	15	22	36	42	50	100	100	50	100	100	36	42	80	80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Series S90	25	-	36	42	85	100	100	85	100	100	36	50	85	85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Surion</b>																													
GPS1BS <16A	100	-	-	-	-	-	-	150	-	-	150	-	-	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GPS1BS >16A	50	-	-	-	85	100	150	-	100	150	-	-	100	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GPS1BH all	100	-	-	-	-	-	-	150	-	150	-	-	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GPS2BS <16A	100	-	-	-	-	-	-	150	-	150	-	-	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GPS2BS >16A	50	-	-	-	85	100	150	-	100	150	-	-	100	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GPS2BH all	100	-	-	-	-	-	-	150	-	150	-	-	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Record Plus*</b>																													
FD160/160C	18	-	30	36	42	50	65	42	50	65	36	42	50	65	42	50	65	42	50	65	-	-	-	-	-	-	-	-	-
FD160/160E	36	-	-	50	65	85	100	65	85	100	50	65	85	100	65	85	100	65	85	100	-	-	-	-	-	-	-	-	-
FD160/160S	50	-	-	-	85	100	-	85	100	-	-	85	100	-	85	100	-	85	100	-	-	-	-	-	-	-	-	-	-
FD160/160N	85	-	-	-	-	100	200	-	100	200	-	-	100	200	-	100	200	-	100	200	80	100	150	80	100	150	80	100	100
FD160/160H	100	-	-	-	-	-	200	-	200	-	-	200	-	200	-	200	-	200	-	200	80	100	150	80	100	150	80	100	100
FE160N	85	-	-	-	-	-	-	-	100	200	-	-	100	200	-	100	200	-	100	200	80	100	150	80	100	150	80	100	100
FE160H	100	-	-	-	-	-	-	-	200	-	-	200	-	200	-	200	-	200	-	200	80	100	150	80	100	150	80	100	100
FE250N	85	-	-	-	-	-	-	-	-	-	-	100	200	-	100	200	-	100	200	80	100	150	80	100	150	80	100	100	100
FE250H	100	-	-	-	-	-	-	-	-	-	-	-	200	-	200	-	200	-	200	-	80	100	150	80	100	150	80	100	100
FG400N	85	-	-	-	-	-	-	-	-	-	-	-	-	-	100	200	-	100	200	80	100	150	80	100	150	80	100	100	100
FG400H	100	-	-	-	-	-	-	-	-	-	-	-	-	-	200	-	200	-	200	-	80	100	150	80	100	150	80	100	100
FG630N	85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	200	80	100	150	80	100	150	80	100	100	100
FG630H	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200	-	80	100	150	80	100	150	80	100	100
FK800N	80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200	80	100	150	80	100	150	80	100	100
FK800H	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	100	170	80	100	170	80	100	100
FK1250N	80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	100	170	80	100	170	80	100	100
FK1250H	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	170	80	100	170	80	100	100	100

Circuit protection

A

B

C

D

E

F

G

X



**Record Plus\* MCCBs at 400/415V AC**

Upstream Downstream		MCCBs Record Plus*																														
		Icu ln (kA)	FD160/160C	FD160/160E	FD160/160S	FD160/160N	FD160/160H	FD160/160L	FE160N	FE160H	FE160L	FE250V	FE250N	FE250H	FE250L	FG400N	FG400H	FG400L	FG630N	FG630H	FG630L	FK800N	FK800H	FK800L	FK1250N	FK1250H	FK1250L	FK1600N	FK1600H			
			18	25	36	50	80	150	50	80	150	36	50	80	150	50	80	150	50	80	150	50	80	100	50	80	100	50	80			
			Icu of the combination (kA)																													
<b>Redline</b>																																
EPC 452, 453 and 454		6	15	18	22	25	30	36	25	30	36	18	22	25	30	12	12	12	10	10	10	-	-	-	-	-	-	-	-	-		
EPC60		10	16	20	23	25	34	40	28	34	40	20	25	30	32	15	15	15	10	10	10	-	-	-	-	-	-	-	-	-		
G60		10	18	22	25	30	36	42	30	36	42	22	30	36	36	16	16	16	16	12	12	12	-	-	-	-	-	-	-	-		
G100		15	18	25	30	36	42	50	36	42	50	25	30	36	36	22	22	22	16	16	16	-	-	-	-	-	-	-	-	-		
GT25 <25A		25	-	-	36	42	50	65	42	50	65	-	36	42	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
GT25, 32 and 40A		20	-	-	30	36	42	50	36	42	50	-	36	42	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
GT25, 50 and 63A		15	18	25	30	36	42	50	36	42	50	25	30	36	36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Series Hti		10	15	18	25	30	36	42	30	36	42	18	30	36	36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Series S90		15	18	25	30	36	42	50	36	42	50	25	36	42	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
<b>Surion</b>																																
GPS1B/MS ≤10A		100	-	-	-	-	150	-	-	150	-	-	-	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
GPS1B/MS 12.5A		50	-	-	-	-	80	150	-	80	150	-	-	80	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GPS1B/MS ≥16A		25	-	-	-	42	50	65	42	50	65	-	42	50	65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GPS1B/MH ≤12.5A		100	-	-	-	-	150	-	-	150	-	-	-	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GPS1B/MH >12.5A		50	-	-	-	-	80	150	-	80	150	-	-	80	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GPS2B/MS 10A		100	-	-	-	-	150	-	-	150	-	-	-	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GPS2B/MS >10A		25	-	-	-	42	50	65	42	50	65	-	42	50	65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GPS2B/MH 10A		100	-	-	-	-	150	-	-	150	-	-	-	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GPS2B/MH >10A		50	-	-	-	-	80	150	-	80	150	-	-	80	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<b>Record Plus*</b>																																
FD160/160C		18	-	22	25	30	36	42	30	36	42	22	30	36	42	30	36	42	30	36	42	-	-	-	-	-	-	-	-	-	-	
FD160/160E		25	-	-	30	36	42	50	36	42	50	-	36	42	50	36	42	50	36	42	50	-	-	-	-	-	-	-	-	-	-	
FD160/160S		36	-	-	-	42	50	65	42	50	65	-	42	50	65	42	50	65	42	50	65	-	-	-	-	-	-	-	-	-	-	
FD160/160N		50	-	-	-	-	80	150	-	80	150	-	-	80	150	-	80	150	-	80	150	-	80	100	-	80	100	-	80	100	-	80
FD160/160H		80	-	-	-	-	-	150	-	150	-	-	-	150	-	-	150	-	-	150	-	150	-	100	-	100	-	100	-	100	-	
FE160N		50	-	-	-	-	-	-	-	80	150	-	-	80	150	-	80	150	-	80	150	-	80	100	-	80	100	-	80	100	-	80
FE160H		80	-	-	-	-	-	-	-	-	150	-	-	-	150	-	-	150	-	-	150	-	100	-	100	-	100	-	100	-	100	
FE250N		50	-	-	-	-	-	-	-	-	-	-	-	80	150	-	80	150	-	80	150	-	80	100	-	80	100	-	80	100	-	80
FE250H		80	-	-	-	-	-	-	-	-	-	-	-	-	150	-	-	150	-	-	150	-	100	-	100	-	100	-	100	-	100	
FG400N		50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	150	-	80	150	-	80	100	-	80	100	-	80	100	-	80
FG400H		80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150	-	-	150	-	100	-	100	-	100	-	100	-	100	
FG630N		50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	150	-	80	100	-	80	100	-	80	100	-	80
FG630H		80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150	-	100	-	100	-	100	-	100	-	100	
FK800N		50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	100	-	80	100	-	80	100	-	80	
FK800H		80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	-	100	-	100	-	100	-	100	
FK1250N		50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	100	-	80	100	-	80	100	-	80	
FK1250H		80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	-	100	-	100	-	100	-	100	

MCCBs / MCCBs

A

B

C

D

E

F

G

X



# Selectivity

## Record Plus\* MCCBs

Circuit protection

A

B

C

D

E

F

G

X

Upstream	Downstream	In (A)	MCCBs Record Plus*																	
			FDC and FDE 160 LTM					FDS 160 LTMD					FDN, H and L 160 LTMD							
			40	50	63	80	100	125	40	50	63	80	100	125	40	50	63	80	100	125
			Selectivity limit (kA) <sup>(1)</sup>																	
Redline EPC45 B/C curve	≤16	0.6	2.5	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	20	0.6	2.5	3	T	T	T	T	3.5	T	T	T	T	T	3.5	T	T	T	T	T
	25	-	0.8	1.2	T	T	T	T	1.6	3.5	T	T	T	T	1.6	3.5	T	T	T	T
	32	-	-	1.2	3	T	T	T	-	-	T	T	T	T	-	-	T	T	T	T
	40	-	-	-	3	4	T	T	-	-	T	T	T	T	-	-	T	T	T	T
Redline EPC60 and DME60 B/C curve	≥16	0.6	2.5	6	6	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	20	0.6	2.5	3	6	T	T	T	3.5	T	T	T	T	T	3.5	T	T	T	T	T
	25	-	0.8	1.2	6	6	T	T	1.6	3.5	T	T	T	T	1.6	3.5	T	T	T	T
	32	-	-	1.2	3	6	T	T	-	-	T	T	T	T	-	-	T	T	T	T
	40	-	-	-	3	4	6	T	-	-	T	T	T	T	-	-	T	T	T	T
Redline DM60 DME100 B/C curve	≤16	0.6	2.5	6	6	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	20	0.6	2.5	3	6	8	T	T	3.5	T	T	T	T	T	3.5	T	T	T	T	T
	25	-	0.8	1.2	6	6	T	T	1.6	3.5	T	T	T	T	1.6	3.5	T	T	T	T
	32	-	-	1.2	3	6	8	T	-	-	T	T	T	T	-	-	T	T	T	T
	40	-	-	-	3	4	6	T	-	-	T	T	T	T	-	-	T	T	T	T
Redline G60 EPC 101N DM100 B/C curve	≤16	0.6	2.5	6	6	10	T	10	10	T	T	T	T	10	10	T	T	T	T	T
	20	0.6	2.5	3	6	8	T	3.5	10	T	T	T	T	3.5	10	T	T	T	T	T
	25	-	0.8	1.2	6	6	T	1.6	3.5	10	T	T	T	1.6	3.5	10	T	T	T	T
	32	-	-	1.2	3	6	8	T	-	-	10	T	T	-	-	10	T	T	T	T
	40	-	-	-	3	4	6	T	-	-	10	T	T	-	-	10	T	T	T	T
Redline G100 GT25 B/C curve	≤16	0.6	2.5	6	6	10	T	10	10	T	T	T	T	10	10	T	T	T	T	T
	20	0.6	2.5	3	6	8	T	3.5	10	T	T	T	T	3.5	10	T	T	T	T	T
	25	-	0.8	1.2	6	6	T	1.6	3.5	15	T	T	T	1.6	3.5	15	T	T	T	T
	32	-	-	1.2	3	6	8	T	-	6	10	T	T	-	-	6	10	T	T	T
	40	-	-	-	3	4	6	T	-	-	10	15	T	-	-	10	15	T	T	T
Hti C curve S90 C curve	≤25	-	0.8	0.9	1.2	1.5	1.9	-	1	1.2	1.5	1.5	1.5	-	1	1.2	1.5	1.5	1.5	1.5
	32	-	-	0.9	1.2	1.5	1.9	-	-	1.2	1.5	1.5	1.5	-	-	1.2	1.5	1.5	1.5	1.5
	40	-	-	-	1.2	1.5	1.9	-	-	-	1.5	1.5	1.5	-	-	-	1.5	1.5	1.5	1.5
	50	-	-	-	1.2	1.5	1.9	-	-	-	1.5	1.5	1.5	-	-	-	1.5	1.5	1.5	1.5
	63	-	-	-	-	1.5	1.9	-	-	-	-	1.5	1.5	-	-	-	-	1.5	1.5	1.5
Surion GPS1BS and GPS1MS GPS2BS and GPS2MS	≤20	0.6	2.5	6	6	10	T	10	10	T	T	T	T	10	10	T	T	T	T	T
	25	-	1	1.2	6	6	T	-	3.5	15	15	T	T	-	3.5	15	15	T	T	T
	32	-	-	1.2	3	6	10	T	-	6	6	T	T	-	-	6	6	T	T	T
	40	-	-	-	3	4	6	T	-	-	6	T	T	-	-	6	6	T	T	T
	50	-	-	-	1.2	1.6	6	T	-	-	3.5	T	T	-	-	3.5	T	T	T	T
Surion GPS1BH and GPS1MH GPS2BH and GPS2MH	≤20	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	25	-	2.5	15	15	T	T	-	3.5	T	T	T	T	-	3.5	T	T	T	T	T
	32	-	-	6	6	8	T	-	-	T	T	T	T	-	-	T	T	T	T	T
	40	-	-	-	6	8	T	-	-	T	T	T	T	-	-	T	T	T	T	T
	50	-	-	-	-	6	T	-	-	-	3.5	T	T	-	-	-	3.5	T	T	T
Record Plus* FD160/160E LTM	≤25	0.4	0.5	0.6	0.8	1	1.3	0.6	0.8	0.9	1.2	1.5	3.5	0.6	0.8	0.9	1.2	1.5	3.5	3.5
	32	-	0.5	0.6	0.8	1	1.3	-	0.8	0.9	1.2	1.5	3.5	-	0.8	0.9	1.2	1.5	3.5	3.5
	40	-	-	-	0.8	1	1.3	-	-	-	1.2	1.5	3.5	-	-	-	1.2	1.5	3.5	3.5
	50	-	-	-	0.8	1	1.3	-	-	-	1.2	1.5	3.5	-	-	-	1.2	1.5	3.5	3.5
	63	-	-	-	-	1	1.3	-	-	-	-	1.5	3.5	-	-	-	-	1.5	3.5	3.5
80	-	-	-	-	-	1.3	-	-	-	-	-	3.5	-	-	-	-	-	-	-	3.5

(1) T = Full selectivity until the Icu of the downstream device.  
 Remark: for MCCBs with D curve assume a C curve type with a one step higher rating.  
 Example: selectivity FD160 80Amp LTM with downstream C curve 40A MCB = 3kA, for D curve 40A, take the value mentioned for 50A C curve, here 1.2kA.





Series G30

EN/IEC 60898-1 **3000**  
**3**  
 EN/IEC 60947-2 **5kA**



Circuit protection

A

Application



B

Approval / Marking

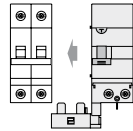


C

Add-on devices

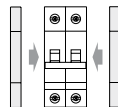
D

Add-on RCD



E

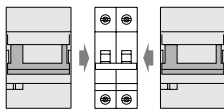
Auxiliaries



F

G

Motor operator



X

Performance


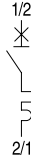



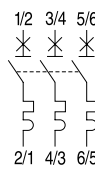

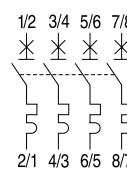
<b>Thermal setting In</b>	(A) 2-40
<b>Rated voltage AC Un</b>	(V) 240/415
<b>Minimum operating voltage UB min</b>	(V) 12
<b>Tripping characteristics</b>	B-C
<b>Energy limiting class</b>	3
<b>Mechanical/electrical endurance</b>	20000/10000
<b>Tropicalisation acc.to EN/IEC 60068-2</b>	95% RH at 55°C
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> ) 25-35
<b>Poles</b>	1, 2, 3, 4
<b>Weight</b>	(g/pole) 120

Short-circuit capacity

AC acc. to EN/IEC 60898-1		
Poles	V	Icn/Ics (kA)
1-4	230/400	3
AC acc. to EN/IEC 60898-1		
Poles	V	Icu (kA)
1	240	5
2	127	-
	240	10
	415	5
3, 4	240	10
	415	5



Series G30 - 3kA - characteristics B-C

	In (A)	B		C		Pack.
		Cat. No.	Ref. No.	Cat. No.	Ref. No.	
 1P 1 mod.  	2	-	-	G31C02	674381	12
	4	-	-	G31C04	674383	12
	6	G31B06	674443	G31C06	674384	12
	10	G31B10	674445	G31C10	674386	12
	16	G31B16	674447	G31C16	674388	12
	20	G31B20	674448	G31C20	674389	12
	25	G31B25	674449	G31C25	674390	12
	32	G31B32	674450	G31C32	674391	12
	40	G31B40	674451	G31C40	674392	12
	 2P 2 mod.  	2	-	-	G32C02	674397
4		-	-	G32C04	674399	6
6		G32B06	674454	G32C06	674400	6
10		G32B10	674456	G32C10	674402	6
16		G32B16	674458	G32C16	674404	6
20		G32B20	674459	G32C20	674405	6
25		G32B25	674460	G32C25	674406	6
32		G32B32	674461	G32C32	674407	6
40		G32B40	674462	G32C40	674408	6
 3P 3 mod.  		2	-	-	G33C02	674413
	4	-	-	G33C04	674415	4
	6	G33B06	674466	G33C06	674416	4
	10	G33B10	674468	G33C10	674418	4
	16	G33B16	674470	G33C16	674420	4
	20	G33B20	674471	G33C20	674421	4
	25	G33B25	674472	G33C25	674422	4
	32	G33B32	674473	G33C32	674423	4
	40	G33B40	674474	G33C40	674424	4
	 4P 4 mod.  	2	-	-	G34C02	674429
4		-	-	G34C04	674431	3
6		G34B06	674477	G34C06	674432	3
10		G34B10	674479	G34C10	674434	3
16		G34B16	674481	G34C16	674436	3
20		G34B20	674482	G34C20	674437	3
25		G34B25	674483	G34C25	674438	3
32		G34B32	674484	G34C32	674439	3
40		G34B40	674485	G34C40	674440	3

Series G30

A

B

C

D

E

F

G

X



Series G45

EN/IEC 60898-1 **4500**  
**3**  
 EN/IEC 60947-2 **6kA**

Circuit protection



Application

A



Approval / Marking

B

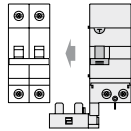


C

Add-on devices

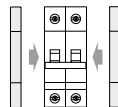
D

Add-on RCD



E

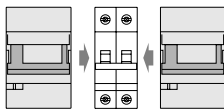
Auxiliaries



F

G

Motor operator



X


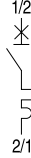



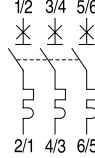

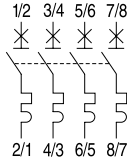
Performance

<b>Thermal setting In</b>	(A) 2-40
<b>Rated voltage AC Un</b>	(V) 240/415
<b>Minimum operating voltage UB min</b>	(V) 12
<b>Tripping characteristics</b>	B-C
<b>Energy limiting class</b>	3
<b>Mechanical/electrical endurance</b>	20000/10000
<b>Tropicalisation acc.to EN/IEC 60068-2</b>	95% RH at 55°C
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> ) 25-35
<b>Poles</b>	1, 2, 3, 4
<b>Weight</b>	(g/pole) 120

Short-circuit capacity

AC acc. to EN/IEC 60898-1		
Poles	V	Icn/Ics (kA)
1-4	230/400	4.5
AC acc. to EN/IEC 60898-1		
Poles	V	Icu (kA)
1	240	6
2	127	15
	240	10
	415	6
3, 4	240	10
	415	6

**Series G45 - 4.5kA - characteristics B-C**

	In (A)	B		C		Pack.
		Cat. No.	Ref. No.	Cat. No.	Ref. No.	
 <p><b>1P</b> 1 mod.</p> <p>1/2</p>  <p>2/1</p>	2	-	-	G41C02	674490	12
	4	-	-	G41C04	674492	12
	6	G41B06	674552	G41C06	674493	12
	10	G41B10	674554	G41C10	674495	12
	16	G41B16	674556	G41C16	674497	12
	20	G41B20	674557	G41C20	674498	12
	25	G41B25	674558	G41C25	674499	12
	32	G41B32	674559	G41C32	674500	12
	40	G41B40	674560	G41C40	674501	12
	 <p><b>1P+N</b> 2 mod.</p> <p>1/2 3/4</p>  <p>2/1 4/3</p>	2	-	-	G42C02	674506
4		-	-	G42C04	674508	6
6		G42B06	674563	G42C06	674509	6
10		G42B10	674565	G42C10	674511	6
16		G42B16	674567	G42C16	674513	6
20		G42B20	674568	G42C20	674514	6
25		G42B25	674569	G42C25	674515	6
32		G42B32	674570	G42C32	674516	6
40		G42B40	674571	G42C40	674517	6
 <p><b>2P</b> 2 mod.</p> <p>1/2 3/4 5/6</p>  <p>2/1 4/3 6/5</p>		2	-	-	G43C02	674522
	4	-	-	G43C04	674524	6
	6	G43B06	674574	G43C06	674525	6
	10	G43B10	674576	G43C10	674527	6
	16	G43B16	674578	G43C16	674529	6
	20	G43B20	674579	G43C20	674530	6
	25	G43B25	674580	G43C25	674531	6
	32	G43B32	674581	G43C32	674532	6
	40	G43B40	674582	G43C40	674533	6
	 <p><b>3P</b> 3 mod.</p> <p>1/2 3/4 5/6 7/8</p>  <p>2/1 4/3 6/5 8/7</p>	2	-	-	G44C02	674538
4		-	-	G44C04	674540	4
6		G44B06	674585	G44C06	674541	4
10		G44B10	674587	G44C10	674543	4
16		G44B16	674589	G44C16	674545	4
20		G44B20	674590	G44C20	674546	4
25		G44B25	674591	G44C25	674547	4
32		G44B32	674592	G44C32	674548	4
40		G44B40	674593	G44C40	674549	4

Series G45

A

B

C

D

E

F

G

X



Miniature Circuit Breakers

Series G60

EN/IEC 60898-1

6000  
3

EN/IEC 60947-2

10kA



Special executions G60S for Shipping application in separate document with BV, RINA, LR and GL approval.

Circuit protection

A

Applications



B

Approvals / Marking

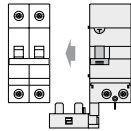


C

Add-on devices

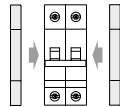
D

Add-on RCD



E

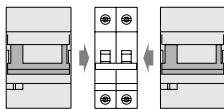
Auxiliaries



F

G

Motor operator



X

Performance






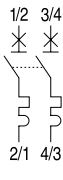

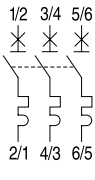

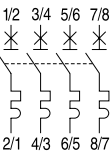
Thermal setting In	(A)	2-63
Rated voltage AC Un	(V)	240/415
Minimum operating voltage UB min	(V)	12
Tripping characteristics		B-C-D
Energy limiting class		3
Mechanical/electrical endurance		20000/10000
Tropicalisation acc.to EN/IEC 60068-2		95% RH at 55°C
Terminal capacity flexible/rigid cable	(mm <sup>2</sup> )	25-35
Poles		1, 1+N, 2, 3, 4
Weight	(g/pole)	120

Short-circuit capacity

AC acc. to EN/IEC 60898-1		
Poles	V	Icn/Ics (kA)
1-4	230/400	6
AC acc. to EN/IEC 60947-2		
Poles	V	Icu (kA) <sup>(1)</sup>
1	240	20
1+N, 2	127	30
	240	20
2	415	10
3, 4	240	20
	415	10
DC acc. to EN/IEC 60947-2		
Poles	V <sub>DC</sub> <sup>(2)</sup>	Icu (kA)
1	60	20
2 (in series)	125	25

(1) Ics = 75% Icu  
(2) Nominal and Maximum V DC on page A.4-A.5

**Series G60 - 6kA - characteristics B-C-D**

	In (A)	B		C		D		Pack.	
		Cat. No.	Ref. No.	Cat. No.	Ref. No.				
 <p><b>1P</b> 1 mod.</p> <p>1/2</p>  <p>2/1</p>	2	-	-	G61C02	<b>674598</b>	G61D02	<b>674760</b>	12	
	4	-	-	G61C04	<b>674600</b>	G61D04	<b>674762</b>	12	
	6	G61B06	<b>674692</b>	G61C06	<b>674601</b>	G61D06	<b>674763</b>	12	
	10	G61B10	<b>674694</b>	G61C10	<b>674603</b>	G61D10	<b>674765</b>	12	
	16	G61B16	<b>674696</b>	G61C16	<b>674605</b>	G61D16	<b>674767</b>	12	
	20	G61B20	<b>674697</b>	G61C20	<b>674606</b>	G61D20	<b>674768</b>	12	
	25	G61B25	<b>674698</b>	G61C25	<b>674607</b>	G61D25	<b>674769</b>	12	
	32	G61B32	<b>674699</b>	G61C32	<b>674608</b>	G61D32	<b>674770</b>	12	
	40	G61B40	<b>674700</b>	G61C40	<b>674609</b>	G61D40	<b>674771</b>	12	
	50	G61B50	<b>674701</b>	G61C50	<b>674610</b>	G61D50	<b>674772</b>	12	
	63	G61B63	<b>674702</b>	G61C63	<b>674611</b>	G61D63	<b>674773</b>	12	
	 <p><b>1P+N</b> 2 mod.</p> <p>1/2 N</p>  <p>2/1 N</p>	2	-	-	G61NC02	<b>674614</b>	G61ND02	<b>674776</b>	6
		4	-	-	G61NC04	<b>674616</b>	G61ND04	<b>674778</b>	6
6		G61NB06	<b>674703</b>	G61NC06	<b>674617</b>	G61ND06	<b>674779</b>	6	
10		G61NB10	<b>674705</b>	G61NC10	<b>674619</b>	G61ND10	<b>674781</b>	6	
16		G61NB16	<b>674707</b>	G61NC16	<b>674621</b>	G61ND16	<b>674783</b>	6	
20		G61NB20	<b>674708</b>	G61NC20	<b>674622</b>	G61ND20	<b>674784</b>	6	
25		G61NB25	<b>674709</b>	G61NC25	<b>674623</b>	G61ND25	<b>674785</b>	6	
32		G61NB32	<b>674710</b>	G61NC32	<b>674624</b>	G61ND32	<b>674786</b>	6	
40		G61NB40	<b>674711</b>	G61NC40	<b>674625</b>	G61ND40	<b>674787</b>	6	
50		G61NB50	<b>674712</b>	G61NC50	<b>674626</b>	G61ND50	<b>674788</b>	6	
63		G61NB63	<b>674713</b>	G61NC63	<b>674627</b>	G61ND63	<b>674789</b>	6	
 <p><b>2P</b> 2 mod.</p> <p>1/2 3/4</p>  <p>2/1 4/3</p>		2	-	-	G62C02	<b>674630</b>	G62D02	<b>674792</b>	6
		4	-	-	G62C04	<b>674632</b>	G62D04	<b>674794</b>	6
	6	G62B06	<b>674714</b>	G62C06	<b>674633</b>	G62D06	<b>674795</b>	6	
	10	G62B10	<b>674716</b>	G62C10	<b>674635</b>	G62D10	<b>674797</b>	6	
	16	G62B16	<b>674718</b>	G62C16	<b>674637</b>	G62D16	<b>674799</b>	6	
	20	G62B20	<b>674719</b>	G62C20	<b>674638</b>	G62D20	<b>674800</b>	6	
	25	G62B25	<b>674720</b>	G62C25	<b>674639</b>	G62D25	<b>674801</b>	6	
	32	G62B32	<b>674721</b>	G62C32	<b>674640</b>	G62D32	<b>674802</b>	6	
	40	G62B40	<b>674722</b>	G62C40	<b>674641</b>	G62D40	<b>674803</b>	6	
	50	G62B50	<b>674723</b>	G62C50	<b>674642</b>	G62D50	<b>674804</b>	6	
	63	G62B63	<b>674724</b>	G62C63	<b>674643</b>	G62D63	<b>674805</b>	6	
	 <p><b>3P</b> 3 mod.</p> <p>1/2 3/4 5/6</p>  <p>2/1 4/3 6/5</p>	2	-	-	G63C02	<b>674646</b>	G63D02	<b>674808</b>	4
		4	-	-	G63C04	<b>674648</b>	G63D04	<b>674810</b>	4
6		G63B06	<b>674725</b>	G63C06	<b>674649</b>	G63D06	<b>674811</b>	4	
10		G63B10	<b>674727</b>	G63C10	<b>674651</b>	G63D10	<b>674813</b>	4	
16		G63B16	<b>674729</b>	G63C16	<b>674653</b>	G63D16	<b>674815</b>	4	
20		G63B20	<b>674730</b>	G63C20	<b>674654</b>	G63D20	<b>674816</b>	4	
25		G63B25	<b>674731</b>	G63C25	<b>674655</b>	G63D25	<b>674817</b>	4	
32		G63B32	<b>674732</b>	G63C32	<b>674656</b>	G63D32	<b>674818</b>	4	
40		G63B40	<b>674733</b>	G63C40	<b>674657</b>	G63D40	<b>674819</b>	4	
50		G63B50	<b>674734</b>	G63C50	<b>674658</b>	G63D50	<b>674820</b>	4	
63		G63B63	<b>674735</b>	G63C63	<b>674659</b>	G63D63	<b>674821</b>	4	
 <p><b>4P</b> 4 mod.</p> <p>1/2 3/4 5/6 7/8</p>  <p>2/1 4/3 6/5 8/7</p>		0.5	-	-	G64C0.5	<b>674660</b>	-	-	3
		2	-	-	G64C02	<b>674662</b>	G64D02	<b>674824</b>	3
	4	-	-	G64C04	<b>674664</b>	G64D04	<b>674826</b>	3	
	6	G64B06	<b>674736</b>	G64C06	<b>674665</b>	G64D06	<b>674827</b>	3	
	10	G64B10	<b>674738</b>	G64C10	<b>674667</b>	G64D10	<b>674829</b>	3	
	16	G64B16	<b>674740</b>	G64C16	<b>674669</b>	G64D16	<b>674831</b>	3	
	20	G64B20	<b>674741</b>	G64C20	<b>674670</b>	G64D20	<b>674832</b>	3	
	25	G64B25	<b>674742</b>	G64C25	<b>674671</b>	G64D25	<b>674833</b>	3	
	32	G64B32	<b>674743</b>	G64C32	<b>674672</b>	G64D32	<b>674834</b>	3	
	40	G64B40	<b>674744</b>	G64C40	<b>674673</b>	G64D40	<b>674835</b>	3	
	50	G64B50	<b>674745</b>	G64C50	<b>674674</b>	G64D50	<b>674836</b>	3	
	63	G64B63	<b>674746</b>	G64C63	<b>674675</b>	G64D63	<b>674837</b>	3	

Series G60

A

B

C

D

E

F

G

X



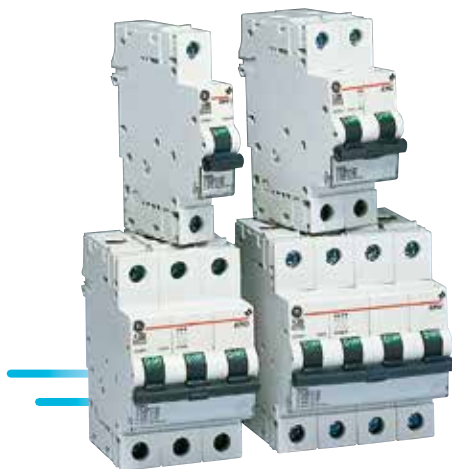
## Miniature Circuit Breakers

### Series EP60

EN/IEC 60898-1 **6000**

EN/IEC 60947-2 **10kA**

Circuit protection



A

### Applications



B

### Marking

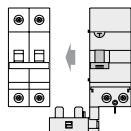


C

### Add-on devices

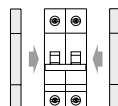
D

Add-on RCD



E

Auxiliaries



F

G

Motor operator



X

### Performance

<b>Thermal setting In</b>	(A) 2-63
<b>Rated voltage AC Un</b>	(V) 240/415
<b>Minimum operating voltage UB min</b>	(V) 12
<b>Tripping characteristics</b>	8-12 In (K) and 6 in non tripping ≤ 2 sec
<b>Mechanical/electrical endurance</b>	20000/10000
<b>Tropicalisation acc.to EN/IEC 60068-2</b>	95% RH at 55°C
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> ) 25-35
<b>Poles</b>	1, 2, 3, 4
<b>Weight</b>	(g/pole) 120


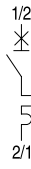



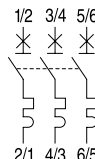

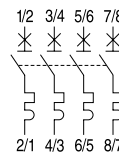
### Short-circuit capacity

AC acc. to EN/IEC 60947-2		
Poles	V	Icu (kA) <sup>(1)</sup>
1	240	10
1+N, 2	127	30
	240	20
2	415	10
3, 4	240	20
	415	10
DC acc. to EN/IEC 60947-2		
Poles	V <sub>DC</sub> <sup>(2)</sup>	Icu/Ics (kA)
1	60	20
2 (in series)	125	25

(1) Ics = 75% Icu

(2) Nominal and Maximum VDC on page A.4-A.5

**Series EP60 - 6kA - characteristic K**

		K			
	In (A)	Cat. No.	Ref. No.		Pack.
	<b>1P</b> <b>1 mod.</b>  	0.5	EP61K0.5	<b>681600</b>	12
		1	EP61K01	<b>681601</b>	12
		1.6	EP61K1.6	<b>681602</b>	12
		2	EP61K02	<b>681603</b>	12
		3	EP61K03	<b>681604</b>	12
		4	EP61K04	<b>681605</b>	12
		6	EP61K06	<b>681606</b>	12
		8	EP61K08	<b>681607</b>	12
		10	EP61K10	<b>681608</b>	12
		16	EP61K16	<b>681609</b>	12
		20	EP61K20	<b>681610</b>	12
		25	EP61K25	<b>681611</b>	12
		32	EP61K32	<b>681612</b>	12
		40	EP61K40	<b>681613</b>	12
		50	EP61K50	<b>681614</b>	12
		63	EP61K63	<b>681615</b>	12
	<b>2P</b> <b>2 mod.</b>  	0.5	EP62K0.5	<b>681616</b>	6
		1	EP62K01	<b>681617</b>	6
		1.6	EP62K1.6	<b>681618</b>	6
		2	EP62K02	<b>681619</b>	6
		3	EP62K03	<b>681620</b>	6
		4	EP62K04	<b>681621</b>	6
		6	EP62K06	<b>681622</b>	6
		8	EP62K08	<b>681623</b>	6
		10	EP62K10	<b>681624</b>	6
		16	EP62K16	<b>681625</b>	6
		20	EP62K20	<b>681626</b>	6
		25	EP62K25	<b>681627</b>	6
		32	EP62K32	<b>681628</b>	6
		40	EP62K40	<b>681629</b>	6
		50	EP62K50	<b>681630</b>	6
		63	EP62K63	<b>681631</b>	6
	<b>3P</b> <b>3 mod.</b>  	0.5	EP63K0.5	<b>681632</b>	6
		1	EP63K01	<b>681633</b>	6
		1.6	EP63K1.6	<b>681634</b>	6
		2	EP63K02	<b>681635</b>	6
		3	EP63K03	<b>681636</b>	6
		4	EP63K04	<b>681637</b>	6
		6	EP63K06	<b>681638</b>	6
		8	EP63K08	<b>681639</b>	6
		10	EP63K10	<b>681640</b>	6
		16	EP63K16	<b>681641</b>	6
		20	EP63K20	<b>681642</b>	6
		25	EP63K25	<b>681643</b>	6
		32	EP63K32	<b>681644</b>	6
		40	EP63K40	<b>681645</b>	6
		50	EP63K50	<b>681646</b>	6
		63	EP63K63	<b>681647</b>	6
	<b>3P</b> <b>3 mod.</b>  	0.5	EP64K0.5	<b>681648</b>	3
		1	EP64K01	<b>681649</b>	3
		1.6	EP64K1.6	<b>681650</b>	3
		2	EP64K02	<b>681651</b>	3
		3	EP64K03	<b>681652</b>	3
		4	EP64K04	<b>681653</b>	3
		6	EP64K06	<b>681654</b>	3
		8	EP64K08	<b>681655</b>	3
		10	EP64K10	<b>681656</b>	3
		16	EP64K16	<b>681657</b>	3
		20	EP64K20	<b>681658</b>	3
		25	EP64K25	<b>681659</b>	3
		32	EP64K32	<b>681660</b>	3
		40	EP64K40	<b>681661</b>	3
		50	EP64K50	<b>681662</b>	3
		63	EP64K63	<b>681663</b>	3

Series EP60

A

B

C

D

E

F

G

X



## Miniature Circuit Breakers

### Series G100

**EN/IEC 60898-1** 10000  
3

**EN/IEC 60947-2** **15kA**



Special executions G100S for Shipping application with BV, LR GL approval.

Circuit protection

A

### Applications



B

### Approvals / Marking

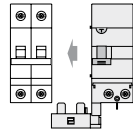


C

### Add-on devices

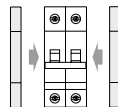
D

Add-on RCD



E

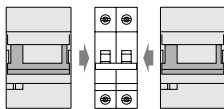
Auxiliaries



F

G

Motor operator



X

### Performance

<b>Thermal setting I<sub>n</sub></b>	(A)	0.5-63
<b>Rated voltage AC U<sub>n</sub></b>	(V)	240/415
<b>Minimum operating voltage U<sub>B</sub> min</b>	(V)	12
<b>Tripping characteristics</b>		B-C-D
<b>Energy limiting class</b>		3
<b>Mechanical/electrical endurance</b>		20000/10000
<b>Tropicalisation acc.to EN/IEC 60068-2</b>		95% RH at 55°C
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> )	25-35
<b>Poles</b>		1, 1+N, 2, 3, 4
<b>Weight</b>	(g/pole)	120

### Short-circuit capacity

AC acc. to EN/IEC 60898-1		
Poles	V	I <sub>cn</sub> (kA) <sup>(1)</sup>
1-4	230/400	10
AC acc. to EN/IEC 60947-2		
Poles	V	I <sub>cu</sub> (kA) <sup>(2)</sup>
1	240	15
1+N, 2	127	40
	240	30
2	415	15
3, 4	240	30
	415	10
DC acc. to EN/IEC 60947-2		
Poles	V <sub>DC</sub> <sup>(3)</sup>	I <sub>cu</sub> (kA)
1	60	25
2 (in series)	125	30


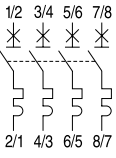
(1) I<sub>cs</sub> = 75% I<sub>cu</sub>

(2) I<sub>cs</sub> = 50% I<sub>cu</sub>

(3) Nominal and Maximum V DC on page A.4-A.5



Series G100 - 10kA - characteristics B-C-D

	In (A)	B		C		D		Pack.
		Cat. No.	Ref. No.	Cat. No.	Ref. No.			
 <p><b>1P</b> <b>1 mod.</b></p> <p>1/2</p>  <p>2/1</p>	0.5	-	-	G101C0.5	674854	G101D0.5	675016	12
	1	-	-	G101C01	674855	G101D01	675017	12
	2	-	-	G101C02	674856	G101D02	675018	12
	3	-	-	G101C03	674857	G101D03	675019	12
	4	-	-	G101C04	674858	G101D04	675020	12
	6	G101B06	674950	G101C06	674859	G101D06	675021	12
	10	G101B10	674952	G101C10	674861	G101D10	675023	12
	13	G101B13	674953	G101C13	674862	G101D13	675024	12
	16	G101B16	674954	G101C16	674863	G101D16	675025	12
	20	G101B20	674955	G101C20	674864	G101D20	675026	12
	25	G101B25	674956	G101C25	674865	G101D25	675027	12
	32	G101B32	674957	G101C32	674866	G101D32	675028	12
	40	G101B40	674958	G101C40	674867	G101D40	675029	12
	50	G101B50	674959	G101C50	674868	G101D50	675030	12
63	G101B63	674960	G101C63	674869	G101D63	675031	12	
 <p><b>1P+N</b> <b>2 mod.</b></p> <p>1/2 N</p>  <p>2/1 N</p>	0.5	-	-	-	-	G101ND0.5	675032	6
	1	-	-	-	-	G101ND01	675033	6
	2	-	-	G101NC02	674872	G101ND02	675034	6
	3	-	-	G101NC03	674873	G101ND03	675035	6
	4	-	-	G101NC04	674874	G101ND04	675036	6
	6	G101NB06	674961	G101NC06	674875	G101ND06	675037	6
	10	G101NB10	674963	G101NC10	674877	G101ND10	675039	6
	13	G101NB13	674964	G101NC13	674878	G101ND13	675040	6
	16	G101NB16	674965	G101NC16	674879	G101ND16	675041	6
	20	G101NB20	674966	G101NC20	674880	G101ND20	675042	6
	25	G101NB25	674967	G101NC25	674881	G101ND25	675043	6
	32	G101NB32	674968	G101NC32	674882	G101ND32	675044	6
	40	G101NB40	674969	G101NC40	674883	G101ND40	675045	6
	50	G101NB50	674970	G101NC50	674884	G101ND50	675046	6
63	G101NB63	674971	G101NC63	674885	G101ND63	675047	6	
 <p><b>2P</b> <b>2 mod.</b></p> <p>1/2 3/4</p>  <p>2/1 4/3</p>	0.5	-	-	G102C0.5	674886	G102D0.5	675048	6
	1	-	-	G102C01	674887	G102D01	675049	6
	2	-	-	G102C02	674888	G102D02	675050	6
	3	-	-	G102C03	674889	G102D03	675051	6
	4	-	-	G102C04	674890	G102D04	675052	6
	6	G102B06	674972	G102C06	674891	G102D06	675053	6
	10	G102B10	674974	G102C10	674893	G102D10	675055	6
	13	G102B13	674975	G102C13	674894	G102D13	675056	6
	16	G102B16	674976	G102C16	674895	G102D16	675057	6
	20	G102B20	674977	G102C20	674896	G102D20	675058	6
	25	G102B25	674978	G102C25	674897	G102D25	675059	6
	32	G102B32	674979	G102C32	674898	G102D32	675060	6
	40	G102B40	674980	G102C40	674899	G102D40	675061	6
	50	G102B50	674981	G102C50	674900	G102D50	675062	6
63	G102B63	674982	G102C63	674901	G102D63	675063	6	
 <p><b>3P</b> <b>3 mod.</b></p> <p>1/2 3/4 5/6</p>  <p>2/1 4/3 6/5</p>	0.5	-	-	G103C0.5	674902	G103D0.5	675064	4
	1	-	-	G103C01	674903	G103D01	675065	4
	2	-	-	G103C02	674904	G103D02	675066	4
	3	-	-	G103C03	674905	G103D03	675067	4
	4	-	-	G103C04	674906	G103D04	675068	4
	6	G103B06	674983	G103C06	674907	G103D06	675069	4
	10	G103B10	674985	G103C10	674909	G103D10	675071	4
	13	G103B13	674986	G103C13	674910	G103D13	675072	4
	16	G103B16	674987	G103C16	674911	G103D16	675073	4
	20	G103B20	674988	G103C20	674912	G103D20	675074	4
	25	G103B25	674989	G103C25	674913	G103D25	675075	4
	32	G103B32	674990	G103C32	674914	G103D32	675076	4
	40	G103B40	674991	G103C40	674915	G103D40	675077	4
	50	G103B50	674992	G103C50	674916	G103D50	675078	4
63	G103B63	674993	G103C63	674917	G103D63	675079	4	
 <p><b>4P</b> <b>4 mod.</b></p> <p>1/2 3/4 5/6 7/8</p>  <p>2/1 4/3 6/5 8/7</p>	0.5	-	-	G104C0.5	674918	G104D0.5	675080	3
	1	-	-	G104C01	674919	G104D01	675081	3
	2	-	-	G104C02	674920	G104D02	675082	3
	3	-	-	G104C03	674921	G104D03	675083	3
	4	-	-	G104C04	674922	G104D04	675084	3
	6	G104B06	674994	G104C06	674923	G104D06	675085	3
	10	G104B10	674996	G104C10	674925	G104D10	675087	3
	13	G104B13	674997	G104C13	674926	G104D13	675088	3
	16	G104B16	674998	G104C16	674927	G104D16	675089	3
	20	G104B20	674999	G104C20	674928	G104D20	675090	3
	25	G104B25	675000	G104C25	674929	G104D25	675091	3
	32	G104B32	675001	G104C32	674930	G104D32	675092	3
	40	G104B40	675002	G104C40	674931	G104D40	675093	3
	50	G104B50	675003	G104C50	674932	G104D50	675094	3
63	G104B63	675004	G104C63	674933	G104D63	675095	3	

Series G100

A

B

C

D

E

F

G

X

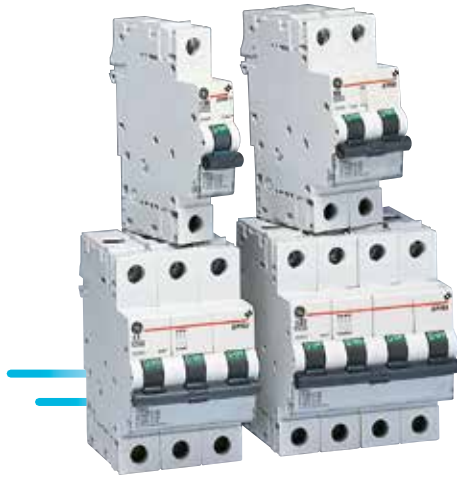


Miniature Circuit Breakers

Series EP100

EN/IEC 60898-1 **10000**

EN/IEC 60947-2 **15kA**



Circuit protection

A

Applications



B

Marking

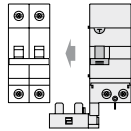


C

Add-on devices

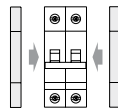
D

Add-on RCD



E

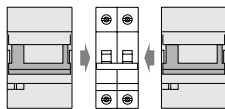
Auxiliaries



F

G

Motor operator



X

Performance

<b>Thermal setting In</b>	(A) 0.5-63
<b>Rated voltage AC Un</b>	(V) 240/415
<b>Minimum operating voltage UB min</b>	(V) 12
<b>Tripping characteristics</b>	8-12 In (K) and 6 In non tripping ≤ 2 sec., Z
<b>Mechanical/electrical endurance</b>	20000/10000
<b>Tropicalisation acc.to EN/IEC 60068-2</b>	95% RH at 55°C
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> ) 25-35
<b>Poles</b>	1, 2, 3, 4
<b>Weight</b>	(g/pole) 120

Short-circuit capacity

AC acc. to EN/IEC 60947-2		
Poles	V	Icu (kA) <sup>(1)</sup>
1	240	15
1+N, 2	127	40
	240	30
2	415	15
3, 4	240	30
	415	15



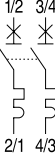

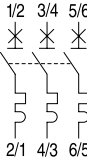

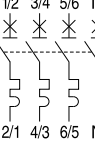
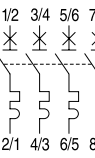
DC acc. to EN/IEC 60947-2		
Poles	V <sub>DC</sub> <sup>(2)</sup>	Icu/Ics (kA)
1	60	25
2 (in series)	125	30

(1) Ics = 75% Icu

(2) Nominal and Maximum V DC on page A.4-A.5



**Series EP100 - 10kA - characteristics K-Z**

	In (A)	K		Z		Pack.
		Cat. No.	Ref. No.	Cat. No.	Ref. No.	
 <p><b>1P</b> 1 mod.</p> 	0.5	EP101K0.5	<b>672402</b>	EP101Z0.5	<b>682775</b>	12
	1	EP101K01	<b>672403</b>	EP101Z01	<b>682776</b>	12
	1.6	EP101K1.6	<b>681588</b>	EP101Z1.6	<b>682777</b>	12
	2	EP101K02	<b>672404</b>	EP101Z02	<b>682778</b>	12
	3	EP101K03	<b>672405</b>	EP101Z03	<b>682779</b>	12
	4	EP101K04	<b>672406</b>	EP101Z04	<b>682780</b>	12
	6	EP101K06	<b>672407</b>	EP101Z06	<b>682781</b>	12
	8	EP101K08	<b>672408</b>	EP101Z08	<b>682782</b>	12
	10	EP101K10	<b>672409</b>	EP101Z10	<b>682783</b>	12
	16	EP101K16	<b>672411</b>	EP101Z16	<b>682784</b>	12
	20	EP101K20	<b>672412</b>	EP101Z20	<b>682785</b>	12
	25	EP101K25	<b>672413</b>	EP101Z25	<b>682786</b>	12
	32	EP101K32	<b>672414</b>	EP101Z32	<b>682787</b>	12
	40	EP101K40	<b>672415</b>	EP101Z40	<b>682788</b>	12
	50	EP101K50	<b>672416</b>	EP101Z50	<b>682789</b>	12
63	EP101K63	<b>672417</b>	EP101Z63	<b>682790</b>	12	
 <p><b>2P</b> 2 mod.</p> 	0.5	EP102K0.5	<b>672434</b>	EP102Z0.5	<b>682791</b>	6
	1	EP102K01	<b>672435</b>	EP102Z01	<b>682792</b>	6
	1.6	EP102K1.6	<b>681591</b>	EP102Z1.6	<b>682793</b>	6
	2	EP102K02	<b>672436</b>	EP102Z02	<b>682794</b>	6
	3	EP102K03	<b>672437</b>	EP102Z03	<b>682795</b>	6
	4	EP102K04	<b>672438</b>	EP102Z04	<b>682796</b>	6
	6	EP102K06	<b>672439</b>	EP102Z06	<b>682797</b>	6
	8	EP102K08	<b>672440</b>	EP102Z08	<b>682798</b>	6
	10	EP102K10	<b>672441</b>	EP102Z10	<b>682799</b>	6
	16	EP102K16	<b>672443</b>	EP102Z16	<b>682800</b>	6
	20	EP102K20	<b>672444</b>	EP102Z20	<b>682801</b>	6
	25	EP102K25	<b>672445</b>	EP102Z25	<b>682802</b>	6
	32	EP102K32	<b>672446</b>	EP102Z32	<b>682803</b>	6
	40	EP102K40	<b>672447</b>	EP102Z40	<b>682804</b>	6
	50	EP102K50	<b>672448</b>	EP102Z50	<b>682805</b>	6
63	EP102K63	<b>672449</b>	EP102Z63	<b>682806</b>	6	
 <p><b>3P</b> 3 mod.</p> 	0.5	EP103K0.5	<b>672450</b>	EP103Z0.5	<b>682807</b>	4
	1	EP103K01	<b>672451</b>	EP103Z01	<b>682808</b>	4
	1.6	EP103K1.6	<b>681594</b>	EP103Z1.6	<b>682809</b>	4
	2	EP103K02	<b>672452</b>	EP103Z02	<b>682810</b>	4
	3	EP103K03	<b>672453</b>	EP103Z03	<b>682811</b>	4
	4	EP103K04	<b>672454</b>	EP103Z04	<b>682812</b>	4
	6	EP103K06	<b>672455</b>	EP103Z06	<b>682813</b>	4
	8	EP103K08	<b>672456</b>	EP103Z08	<b>682814</b>	4
	10	EP103K10	<b>672457</b>	EP103Z10	<b>682815</b>	4
	16	EP103K16	<b>672459</b>	EP103Z16	<b>682816</b>	4
	20	EP103K20	<b>672460</b>	EP103Z20	<b>682817</b>	4
	25	EP103K25	<b>672461</b>	EP103Z25	<b>682818</b>	4
	32	EP103K32	<b>672462</b>	EP103Z32	<b>682819</b>	4
	40	EP103K40	<b>672463</b>	EP103Z40	<b>682820</b>	4
	50	EP103K50	<b>672464</b>	EP103Z50	<b>682821</b>	4
63	EP103K63	<b>672465</b>	EP103Z63	<b>682822</b>	4	
 <p><b>3P+N</b> 4 mod.</p> 	0.5	-	-	EP103Z0.5N	<b>682823</b>	4
	1	-	-	EP103Z01N	<b>682824</b>	4
	1.6	-	-	EP103Z1.6N	<b>682825</b>	4
	2	-	-	EP103Z02N	<b>682826</b>	4
	3	-	-	EP103Z03N	<b>682827</b>	4
	4	-	-	EP103Z04N	<b>682828</b>	4
	6	-	-	EP103Z06N	<b>682829</b>	4
	8	-	-	EP103Z08N	<b>682830</b>	4
	10	-	-	EP103Z10N	<b>682831</b>	4
	16	-	-	EP103Z16N	<b>682832</b>	4
	20	-	-	EP103Z20N	<b>682833</b>	4
	25	-	-	EP103Z25N	<b>682834</b>	4
	32	-	-	EP103Z32N	<b>682835</b>	4
	40	-	-	EP103Z40N	<b>682836</b>	4
	50	-	-	EP103Z50N	<b>682837</b>	4
63	-	-	EP103Z63N	<b>682838</b>	4	
 <p><b>4P</b> 4 mod.</p> 	0.5	EP104K0.5	<b>672466</b>	EP104Z0.5	<b>682839</b>	3
	1	EP104K01	<b>672467</b>	EP104Z01	<b>682840</b>	3
	1.6	EP104K1.6	<b>681597</b>	EP104Z1.6	<b>682841</b>	3
	2	EP104K02	<b>672468</b>	EP104Z02	<b>682842</b>	3
	3	EP104K03	<b>672469</b>	EP104Z03	<b>682843</b>	3
	4	EP104K04	<b>672470</b>	EP104Z04	<b>682844</b>	3
	6	EP104K06	<b>672471</b>	EP104Z06	<b>682845</b>	3
	8	EP104K08	<b>672472</b>	EP104Z08	<b>682846</b>	3
	10	EP104K10	<b>672473</b>	EP104Z10	<b>682847</b>	3
	16	EP104K16	<b>672475</b>	EP104Z16	<b>682848</b>	3
	20	EP104K20	<b>672476</b>	EP104Z20	<b>682849</b>	3
	25	EP104K25	<b>672477</b>	EP104Z25	<b>682850</b>	3
	32	EP104K32	<b>672478</b>	EP104Z32	<b>682851</b>	3
	40	EP104K40	<b>672479</b>	EP104Z40	<b>682852</b>	3
	50	EP104K50	<b>672480</b>	EP104Z50	<b>682853</b>	3
63	EP104K63	<b>672481</b>	EP104Z63	<b>682854</b>	3	

Series EP100

A

B

C

D

E

F

G

X

New



Series GT10

EN/IEC 60947-2 10kA



Circuit protection

A

Applications



B

Marking

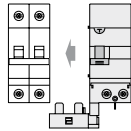


C

Add-on devices

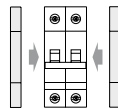
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Add-on RCD



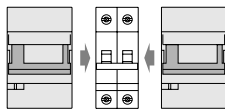
E

Auxiliaries



F

Motor operator



G

X

Performance

<b>Thermal setting In</b>	(A) 0.5-63
<b>Rated voltage AC Un</b>	(V) 240/415
<b>Minimum operating voltage UB min</b>	(V) 12
<b>Tripping characteristics</b>	3-5In (B) 5-10In (C) 10-20In (D)
<b>Mechanical/electrical endurance</b>	20000/10000
<b>Tropicalisation acc.to EN/IEC 60068-2</b>	95% RH at 55°C
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> ) 25-35
<b>Poles</b>	1, 2, 3, 4
<b>Weight</b>	(g/pole) 120





Short-circuit capacity

AC acc. to EN/IEC 60947-2		
Poles	V	Icu (kA) <sup>(1)</sup>
1	240	10
2	127	30
	240	20
3, 4	415	10
	240	20
	415	10
DC acc. to EN/IEC 60947-2		
Poles	V $\overline{=}$ <sup>(2)</sup>	Icu (kA)
1	60	20
2 (in series)	125	25

(1) Ics = 75% Icu

(2) Nominal and Maximum V DC on page A.4-A.5

**Series GT10 - 10kA - 3-5In (B), 5-10In (C), 10-20In (D)**

	In (A)	3-5In (B)		5-10In (C)		10-20In (D)		Pack.
		Cat. No.	Ref. No.	Cat. No.	Ref. No.			
 1P 1 mod.	0.5	-	-	GT101C0.5	<b>675112</b>	GT101D0.5	<b>675220</b>	12
	1	-	-	GT101C01	<b>675113</b>	GT101D01	<b>675221</b>	12
	2	-	-	GT101C02	<b>675114</b>	GT101D02	<b>675222</b>	12
	3	-	-	GT101C03	<b>675115</b>	GT101D03	<b>675223</b>	12
	4	-	-	GT101C04	<b>675116</b>	GT101D04	<b>675224</b>	12
	6	GT101B06	<b>675176</b>	GT101C06	<b>675117</b>	GT101D06	<b>675225</b>	12
	10	GT101B10	<b>675178</b>	GT101C10	<b>675119</b>	GT101D10	<b>675227</b>	12
	13	GT101B13	<b>675179</b>	GT101C13	<b>675120</b>	GT101D13	<b>675228</b>	12
	16	GT101B16	<b>675180</b>	GT101C16	<b>675121</b>	GT101D16	<b>675229</b>	12
	20	GT101B20	<b>675181</b>	GT101C20	<b>675122</b>	GT101D20	<b>675230</b>	12
	25	GT101B25	<b>675182</b>	GT101C25	<b>675123</b>	GT101D25	<b>675231</b>	12
	32	GT101B32	<b>675183</b>	GT101C32	<b>675124</b>	GT101D32	<b>675232</b>	12
	40	GT101B40	<b>675184</b>	GT101C40	<b>675125</b>	GT101D40	<b>675233</b>	12
	50	GT101B50	<b>675185</b>	GT101C50	<b>675126</b>	GT101D50	<b>675234</b>	12
	63	GT101B63	<b>675186</b>	GT101C63	<b>675127</b>	GT101D63	<b>675235</b>	12
 2P 2 mod.	0.5	-	-	GT102C0.5	<b>675128</b>	GT102D0.5	<b>675236</b>	6
	1	-	-	GT102C01	<b>675129</b>	GT102D01	<b>675237</b>	6
	2	-	-	GT102C02	<b>675130</b>	GT102D02	<b>675238</b>	6
	3	-	-	GT102C03	<b>675131</b>	GT102D03	<b>675239</b>	6
	4	-	-	GT102C04	<b>675132</b>	GT102D04	<b>675240</b>	6
	6	GT102B06	<b>675187</b>	GT102C06	<b>675133</b>	GT102D06	<b>675241</b>	6
	10	GT102B10	<b>675189</b>	GT102C10	<b>675135</b>	GT102D10	<b>675243</b>	6
	13	GT102B13	<b>675190</b>	GT102C13	<b>675136</b>	GT102D13	<b>675244</b>	6
	16	GT102B16	<b>675191</b>	GT102C16	<b>675137</b>	GT102D16	<b>675245</b>	6
	20	GT102B20	<b>675192</b>	GT102C20	<b>675138</b>	GT102D20	<b>675246</b>	6
	25	GT102B25	<b>675193</b>	GT102C25	<b>675139</b>	GT102D25	<b>675247</b>	6
	32	GT102B32	<b>675194</b>	GT102C32	<b>675140</b>	GT102D32	<b>675248</b>	6
	40	GT102B40	<b>675195</b>	GT102C40	<b>675141</b>	GT102D40	<b>675249</b>	6
	50	GT102B50	<b>675196</b>	GT102C50	<b>675142</b>	GT102D50	<b>675250</b>	6
	63	GT102B63	<b>675197</b>	GT102C63	<b>675143</b>	GT102D63	<b>675251</b>	6
 3P 3 mod.	0.5	-	-	GT103C0.5	<b>675144</b>	GT103D0.5	<b>675252</b>	4
	1	-	-	GT103C01	<b>675145</b>	GT103D01	<b>675253</b>	4
	2	-	-	GT103C02	<b>675146</b>	GT103D02	<b>675254</b>	4
	3	-	-	GT103C03	<b>675147</b>	GT103D03	<b>675255</b>	4
	4	-	-	GT103C04	<b>675148</b>	GT103D04	<b>675256</b>	4
	6	GT103B06	<b>675198</b>	GT103C06	<b>675149</b>	GT103D06	<b>675257</b>	4
	10	GT103B10	<b>675200</b>	GT103C10	<b>675151</b>	GT103D10	<b>675259</b>	4
	13	GT103B13	<b>675201</b>	GT103C13	<b>675152</b>	GT103D13	<b>675260</b>	4
	16	GT103B16	<b>675202</b>	GT103C16	<b>675153</b>	GT103D16	<b>675261</b>	4
	20	GT103B20	<b>675203</b>	GT103C20	<b>675154</b>	GT103D20	<b>675262</b>	4
	25	GT103B25	<b>675204</b>	GT103C25	<b>675155</b>	GT103D25	<b>675263</b>	4
	32	GT103B32	<b>675205</b>	GT103C32	<b>675156</b>	GT103D32	<b>675264</b>	4
	40	GT103B40	<b>675206</b>	GT103C40	<b>675157</b>	GT103D40	<b>675265</b>	4
	50	GT103B50	<b>675207</b>	GT103C50	<b>675158</b>	GT103D50	<b>675266</b>	4
	63	GT103B63	<b>675208</b>	GT103C63	<b>675159</b>	GT103D63	<b>675267</b>	4
 4P 4 mod.	0.5	-	-	GT104C0.5	<b>675160</b>	GT104D0.5	<b>675268</b>	3
	1	-	-	GT104C01	<b>675161</b>	GT104D01	<b>675269</b>	3
	2	-	-	GT104C02	<b>675162</b>	GT104D02	<b>675270</b>	3
	3	-	-	GT104C03	<b>675163</b>	GT104D03	<b>675271</b>	3
	4	-	-	GT104C04	<b>675164</b>	GT104D04	<b>675272</b>	3
	6	GT104B06	<b>675209</b>	GT104C06	<b>675165</b>	GT104D06	<b>675273</b>	3
	10	GT104B10	<b>675211</b>	GT104C10	<b>675167</b>	GT104D10	<b>675275</b>	3
	13	GT104B13	<b>675212</b>	GT104C13	<b>675168</b>	GT104D13	<b>675276</b>	3
	16	GT104B16	<b>675213</b>	GT104C16	<b>675169</b>	GT104D16	<b>675277</b>	3
	20	GT104B20	<b>675214</b>	GT104C20	<b>675170</b>	GT104D20	<b>675278</b>	3
	25	GT104B25	<b>675215</b>	GT104C25	<b>675171</b>	GT104D25	<b>675279</b>	3
	32	GT104B32	<b>675216</b>	GT104C32	<b>675172</b>	GT104D32	<b>675280</b>	3
	40	GT104B40	<b>675217</b>	GT104C40	<b>675173</b>	GT104D40	<b>675281</b>	3
	50	GT104B50	<b>675218</b>	GT104C50	<b>675174</b>	GT104D50	<b>675282</b>	3
	63	GT104B63	<b>675219</b>	GT104C63	<b>675175</b>	GT104D63	<b>675283</b>	3

Series GT10

A

B

C

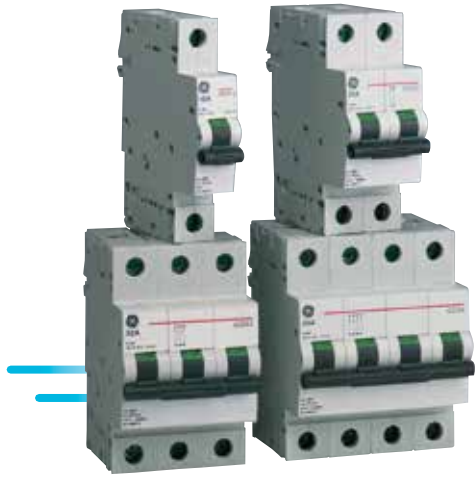
D

E

F

G

X



Series GT25

<b>EN/IEC 60947-2</b>	<b>100kA</b>
	<b>25kA</b>
	<b>20kA</b>
	<b>15kA</b>

A

Application



B

Marking

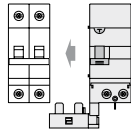


C

Add-on devices

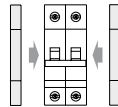
D

Add-on RCD



E

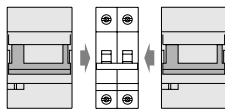
Auxiliaries



F

G

Motor operator



X

Performance

<b>Thermal setting In</b>	(A) 0.5-63
<b>Rated voltage AC Un</b>	(V) 240/415
<b>Minimum operating voltage UB min</b>	(V) 12
<b>Tripping characteristics</b>	3-5In (B) 5-10In (C) 10-20In (D)
<b>Mechanical/electrical endurance</b>	20000/10000
<b>Tropicalisation acc.to EN/IEC 60068-2</b>	95% RH at 55°C
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> ) 25-35
<b>Poles</b>	1, 2, 3, 4
<b>Weight</b>	(g/pole) 120





Short-circuit capacity

AC acc. to EN/IEC 60947-2			
In (A)	Poles	V	Icu (kA) <sup>(1)</sup>
0.5-4	0.5-4	240	100
	2-4	415	100
6-25	1	240	25
	2-4	240	50
32-40	2-4	415	25
		240	20
		240	40
50-63	2-4	415	20
		240	15
		240	30
		415	15
DC acc. to EN/IEC 60947-2			
Poles		V <sub>DC</sub> <sup>(2)</sup>	Icu (kA)
1		60	25
2 (in series)		125	30

(1) Ics = 75% Icu

(2) Nominal and Maximum VDC on page A.4-A.5

Series GT25 - 25kA - 3-5In (B), 5-10In (C), 10-20In (D)

	In (A)	3-5In (B)		5-10In (C)		10-20In (D)		Pack.
		Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
 <p>1P 1 mod.</p>	0.5	-	-	GT251C0.5	675284	GT251D0.5	675392	12
	1	-	-	GT251C01	675285	GT251D01	675393	12
	2	-	-	GT251C02	675286	GT251D02	675394	12
	4	-	-	GT251C04	675288	GT251D04	675396	12
	6	GT251B06	675348	GT251C06	675289	GT251D06	675397	12
	10	GT251B10	675350	GT251C10	675291	GT251D10	675399	12
	16	GT251B16	675352	GT251C16	675293	GT251D16	675401	12
	20	GT251B20	675353	GT251C20	675294	GT251D20	675402	12
	25	GT251B25	675354	GT251C25	675295	GT251D25	675403	12
	32	GT251B32	675355	GT251C32	675296	GT251D32	675404	12
	40	GT251B40	675356	GT251C40	675297	GT251D40	675405	12
	50	GT251B50	675357	GT251C50	675298	GT251D50	675406	12
	63	GT251B63	675358	GT251C63	675299	GT251D63	675407	12
 <p>2P 2 mod.</p>	0.5	-	-	GT252C0.5	675300	GT252D0.5	675408	6
	1	-	-	GT252C01	675301	GT252D01	675409	6
	2	-	-	GT252C02	675302	GT252D02	675410	6
	4	-	-	GT252C04	675304	GT252D04	675412	6
	6	GT252B06	675359	GT252C06	675305	GT252D06	675413	6
	10	GT252B10	675361	GT252C10	675307	GT252D10	675415	6
	16	GT252B16	675363	GT252C16	675309	GT252D16	675417	6
	20	GT252B20	675364	GT252C20	675310	GT252D20	675418	6
	25	GT252B25	675365	GT252C25	675311	GT252D25	675419	6
	32	GT252B32	675366	GT252C32	675312	GT252D32	675420	6
	40	GT252B40	675367	GT252C40	675313	GT252D40	675421	6
	50	GT252B50	675368	GT252C50	675314	GT252D50	675422	6
	63	GT252B63	675369	GT252C63	675315	GT252D63	675423	6
 <p>3P 3 mod.</p>	0.5	-	-	GT253C0.5	675316	GT253D0.5	675424	4
	1	-	-	GT253C01	675317	GT253D01	675425	4
	2	-	-	GT253C02	675318	GT253D02	675426	4
	4	-	-	GT253C04	675320	GT253D04	675428	4
	6	GT253B06	675370	GT253C06	675321	GT253D06	675429	4
	10	GT253B10	675372	GT253C10	675323	GT253D10	675431	4
	16	GT253B16	675374	GT253C16	675325	GT253D16	675433	4
	20	GT253B20	675375	GT253C20	675326	GT253D20	675434	4
	25	GT253B25	675376	GT253C25	675327	GT253D25	675435	4
	32	GT253B32	675377	GT253C32	675328	GT253D32	675436	4
	40	GT253B40	675378	GT253C40	675329	GT253D40	675437	4
	50	GT253B50	675379	GT253C50	675330	GT253D50	675438	4
	63	GT253B63	675380	GT253C63	675331	GT253D63	675439	4
 <p>4P 4 mod.</p>	0.5	-	-	GT254C0.5	675332	GT254D0.5	675440	3
	1	-	-	GT254C01	675333	GT254D01	675441	3
	2	-	-	GT254C02	675334	GT254D02	675442	3
	4	-	-	GT254C04	675336	GT254D04	675444	3
	6	GT254B06	675381	GT254C06	675337	GT254D06	675445	3
	10	GT254B10	675383	GT254C10	675339	GT254D10	675447	3
	16	GT254B16	675385	GT254C16	675341	GT254D16	675449	3
	20	GT254B20	675386	GT254C20	675342	GT254D20	675450	3
	25	GT254B25	675387	GT254C25	675343	GT254D25	675451	3
	32	GT254B32	675388	GT254C32	675344	GT254D32	675452	3
	40	GT254B40	675389	GT254C40	675345	GT254D40	675453	3
	50	GT254B50	675390	GT254C50	675346	GT254D50	675454	3
	63	GT254B63	675391	GT254C63	675347	GT254D63	675455	3

Series GT25

A

B

C

D

E

F

G

X



### Series EP100 UC

Circuit protection



**EN/IEC 60898-2**  
**DIN VDE 0641**

**6000 | T15**

**EN/IEC 60947-2**     **10kA**

### Applications



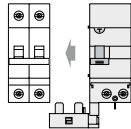
### Standards / Marking

EN/IEC 60898-2, DIN VDE 0641

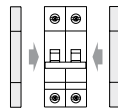


### Add-on devices

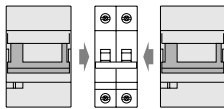
Add-on RCD



Auxiliaries



Motor operator



### Performance

<b>Thermal setting In</b>	(A) 0.5-63
<b>Rated voltage AC Un</b>	(V) 230/400 250/500/880 $\equiv$
<b>Minimum operating voltage UB min</b>	(V) 12 12 $\equiv$
<b>Tripping characteristics</b>	B-C-Z
<b>Mechanical/electrical endurance</b>	20000/10000
<b>Tropicalisation acc.to EN/IEC 60068-2</b>	95% RH at 55°C
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> ) 25-35
<b>Poles</b>	1, 2, 4 <sup>(2)</sup>
<b>Weight</b>	(g/pole) 120

### Short-circuit capacity

#### AC/DC acc. to EN/IEC 60898-2<sup>(5)</sup>

Poles	V	Icn=Ics (kA)
1	125 DC	10
	250 DC	6
	230/400 AC	6
2	250 DC	10
	500 DC	6
	400 AC	6
4	800 DC	6

#### AC/DC acc. to EN/IEC 60947-2




Poles	V	Icu (kA)
1	220 DC	10 <sup>(3)</sup>
2	440 DC	10 <sup>(3)</sup>
2	125 DC	25 <sup>(3)</sup>
1	230 AC	6 <sup>(4)</sup>
2	400 AC	6 <sup>(4)</sup>

(1) Polarity labeling to be respected due to the permanent magnet in the MCB  
(2) For 4P execution open circuit voltage Uco = 1000  $\equiv$   
(3) T = 4ms  
(4) 4.5kA for 50A and 63A  
(5) After a switching of the net with more than 6kA in AC it should not be used in DC



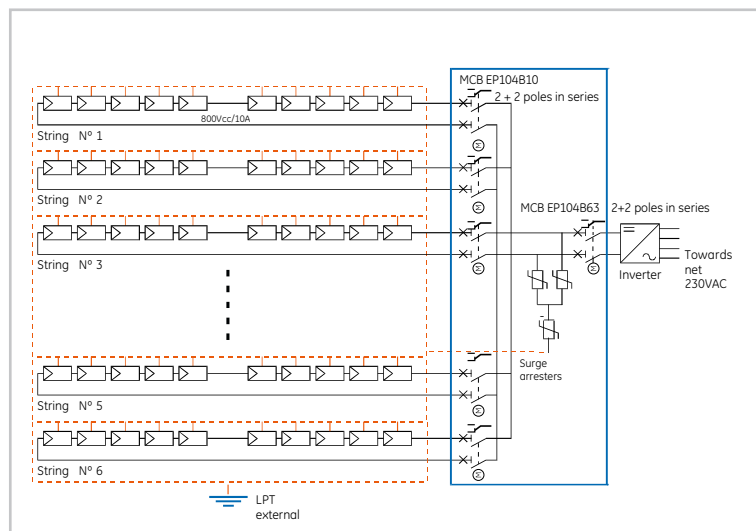
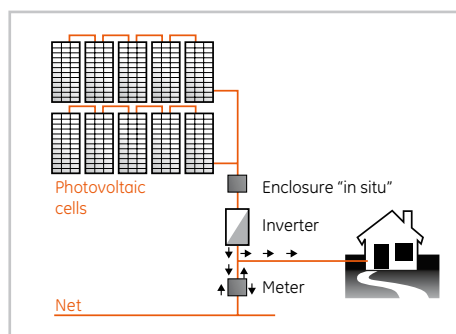


**Series EP100 UC - 10kA - characteristics B-C-Z**

	In (A)	B		C		Z		Pack.
		Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
 <p><b>1P</b> 1 mod.</p> <p>2</p> <p>1</p> <p>+</p>	0.5	-	-	EP101UCC0.5	<b>673301</b>	EP101UCZ0.5	<b>682935</b>	12
	1	-	-	EP101UCC01	<b>673302</b>	EP101UCZ01	<b>682936</b>	12
	1.6	-	-	-	-	EP101UCZ1.6	<b>682937</b>	12
	2	-	-	EP101UCC02	<b>673303</b>	EP101UCZ02	<b>682938</b>	12
	3	-	-	-	-	EP101UCZ03	<b>682939</b>	12
	4	-	-	EP101UCC04	<b>673305</b>	EP101UCZ04	<b>682940</b>	12
	6	EP101UCB06	<b>673333</b>	EP101UCC06	<b>673306</b>	EP101UCZ06	<b>682941</b>	12
	8	-	-	-	-	EP101UCZ08	<b>682942</b>	12
	10	EP101UCB10	<b>673334</b>	EP101UCC10	<b>673308</b>	EP101UCZ10	<b>682943</b>	12
	16	EP101UCB16	<b>673335</b>	EP101UCC16	<b>673310</b>	EP101UCZ16	<b>682944</b>	12
	20	EP101UCB20	<b>673336</b>	EP101UCC20	<b>673311</b>	EP101UCZ20	<b>682945</b>	12
	25	EP101UCB25	<b>673337</b>	EP101UCC25	<b>673312</b>	EP101UCZ25	<b>682946</b>	12
	32	EP101UCB32	<b>673338</b>	EP101UCC32	<b>673313</b>	EP101UCZ32	<b>682947</b>	12
	40	EP101UCB40	<b>673339</b>	EP101UCC40	<b>673314</b>	EP101UCZ40	<b>682948</b>	12
50	EP101UCB50	<b>673340</b>	EP101UCC50	<b>673315</b>	EP101UCZ50	<b>682949</b>	12	
63	EP101UCB63	<b>673341</b>	EP101UCC63	<b>673316</b>	EP101UCZ63	<b>682950</b>	12	
 <p><b>2P</b> 2 mod.</p> <p>2 4</p> <p>1 3</p> <p>+</p> <p>-</p>	0.5	-	-	EP102UCC0.5	<b>673317</b>	EP102UCZ0.5	<b>682951</b>	6
	1	-	-	EP102UCC01	<b>673318</b>	EP102UCZ01	<b>682952</b>	6
	1.6	-	-	-	-	EP102UCZ1.6	<b>682953</b>	6
	2	-	-	EP102UCC02	<b>673319</b>	EP102UCZ02	<b>682954</b>	6
	3	-	-	-	-	EP102UCZ03	<b>682955</b>	6
	4	-	-	EP102UCC04	<b>673321</b>	EP102UCZ04	<b>682956</b>	6
	6	EP102UCB06	<b>673342</b>	EP102UCC06	<b>673322</b>	EP102UCZ06	<b>682957</b>	6
	8	-	-	-	-	EP102UCZ08	<b>682958</b>	6
	10	EP102UCB10	<b>673343</b>	EP102UCC10	<b>673324</b>	EP102UCZ10	<b>682959</b>	6
	16	EP102UCB16	<b>673344</b>	EP102UCC16	<b>673326</b>	EP102UCZ16	<b>682960</b>	6
	20	EP102UCB20	<b>673345</b>	EP121UCC20	<b>673327</b>	EP102UCZ20	<b>682961</b>	6
	25	EP102UCB25	<b>673346</b>	EP102UCC25	<b>673328</b>	EP102UCZ25	<b>682962</b>	6
	32	EP102UCB32	<b>673347</b>	EP102UCC32	<b>673329</b>	EP102UCZ32	<b>682963</b>	6
	40	EP102UCB40	<b>673348</b>	EP102UCC40	<b>673330</b>	EP102UCZ40	<b>682964</b>	6
50	EP102UCB50	<b>673349</b>	EP102UCC50	<b>673331</b>	EP102UCZ50	<b>682965</b>	6	
63	EP102UCB63	<b>673350</b>	EP102UCC63	<b>673332</b>	EP102UCZ63	<b>682966</b>	6	
 <p><b>4P</b> 4.5 mod.<sup>(1)</sup></p> <p>2 4 6 8</p> <p>1 3 5 7</p> <p>+</p> <p>-</p>	10	EP104UCB10	<b>690200</b>					3
	16	EP104UCB16	<b>688029</b>					3
	20	EP104UCB20	<b>688026</b>					3
	25	EP104UCB25	<b>691580</b>					3
	32	EP104UCB32	<b>691581</b>					3
	40	EP104UCB40	<b>688027</b>					3
	63	EP104UCB63	<b>688028</b>					3

(1) Including auxiliary contact CAH (central half module)  
Line to be connected to bottom terminals 1, 7 load to 3, 5.

**Example of the wiring in a Photovoltaic application**



Example of installation in enclosure "in situ"

Series EP100 UC

A

B

C

D

E

F

G

X

**New**



Series Hti

EN/IEC 60947-2 10kA



Circuit protection

A

Applications



B

Standards / Marking

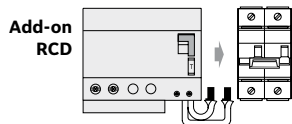
EN/IEC 60947-2



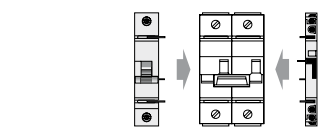
C

Add-on devices

D



E



F

G

X

Performance

<b>Thermal setting In</b>	(A) 80-100-125
<b>Rated voltage AC Un</b>	(V) 230/400
<b>Tripping characteristics</b>	3-5 In (B) 5-10 In (C) 10-20 In (D)
<b>Mechanical/electrical endurance</b>	10000/4000
<b>Operating temperature</b>	-25°C up to 55°C
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> ) 70
<b>Poles</b>	1, 2, 3, 4
<b>Weight</b>	(g/pole) 210

Short-circuit capacity


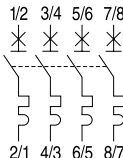
AC acc. to EN/IEC 60947-2 (B, C)		
Poles	V	Icu (kA) <sup>(1)</sup>
1	230/400	10 <sup>(2)</sup>
2	230	15 <sup>(3)</sup>
3, 4	230	15 <sup>(3)</sup>
3, 4	400	10 <sup>(2)</sup>

Add-on RCD - technical performances

<b>Standard</b>	EN/IEC 60947-2
<b>Nominal current In</b>	(A) 80-125
<b>Residual current IΔn</b>	(mA) 30, 300
<b>Rated voltage AC Un</b>	(V) 2P: 230/400 3P-4P: 400
<b>Resistance against unwanted tripping</b>	Type A, AC: 250A 8/20 μs Type S: 3000A 8/20 μs
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> ) 70
<b>Poles</b>	2, 3, 4

(1) Only for 3-5 In (B) and 5-10 In (C)  
 (2) 7.5kA for 10-20 In (D)  
 (3) 10kA for 10-20 In (D)

**Series Hti - 10kA - characteristics B-C-D**

	In (A)	3-5In (B)		5-10In (C)		10-20In (D)		Pack.	
		Cat. No.	Ref. No.	Cat. No.	Ref. No.				
 1/2 	<b>1P</b>	80	Hti 101 B080	<b>671504</b>	Hti 101 C080	<b>671528</b>	Hti 101 D080	<b>671552</b>	8
	<b>1.5 mod.</b>	100	Hti 101 B100	<b>671505</b>	Hti 101 C100	<b>671529</b>	Hti 101 D100	<b>671553</b>	1
		125	Hti 101 B125	<b>671506</b>	Hti 101 C125	<b>671530</b>	Hti 101 D125	<b>671554</b>	1
 1/2 3/4 	<b>2P</b>	80	Hti 102 B080	<b>671510</b>	Hti 102 C080	<b>671534</b>	Hti 102 D080	<b>671558</b>	4
	<b>3 mod.</b>	100	Hti 102 B100	<b>671511</b>	Hti 102 C100	<b>671535</b>	Hti 102 D100	<b>671559</b>	1
		125	Hti 102 B125	<b>671512</b>	Hti 102 C125	<b>671536</b>	Hti 102 D125	<b>671560</b>	1
 1/2 3/4 5/6 	<b>3P</b>	80	Hti 103 B080	<b>671516</b>	Hti 103 C080	<b>671540</b>	Hti 103 D080	<b>671564</b>	1
	<b>4.5 mod.</b>	100	Hti 103 B100	<b>671517</b>	Hti 103 C100	<b>671541</b>	Hti 103 D100	<b>671565</b>	1
		125	Hti 103 B125	<b>671518</b>	Hti 103 C125	<b>671542</b>	Hti 103 D125	<b>671566</b>	1
 1/2 3/4 5/6 7/8 	<b>4P</b>	80	Hti 104 B80	<b>671522</b>	Hti 104 C080	<b>671546</b>	Hti 104 D080	<b>671570</b>	1
	<b>6 mod.</b>	100	Hti 104 B100	<b>671523</b>	Hti 104 C100	<b>671547</b>	Hti 104 D100	<b>671571</b>	1
		125	Hti 104 B125	<b>671524</b>	Hti 104 C125	<b>671548</b>	Hti 104 D125	<b>671572</b>	1

Series Hti

A

B

C

D

E

F

G

X




Only for 3-5 In (B) and 5-10 In (C)  
For D see page A.38



Series Hti - Add-on RCD - Type AC

Circuit protection

A

	In (A)	30 mA		300 mA		Pack.
		Cat. No.	Ref. No.			
 2P 6 mod.	80-125	DOC 2125/030	671574	DOC 2125/300	671576	1
 3P 6 mod.	80-125	DOC 3125/030	671582	DOC 3125/300	671584	1
 4P 6 mod.	80-125	DOC 4125/030	671590	DOC 4125/300	671592	1

Series Hti - Add-on RCD - Type A

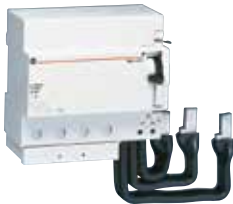

B

C

D

E

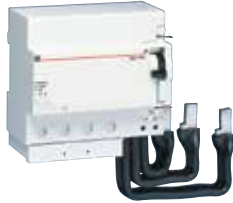

F

	In (A)	30 mA		300 mA		Pack.
		Cat. No.	Ref. No.			
 3P 6 mod.	80-125	DOCA 3125/030	671581	DOCA 3125/300	671583	1
 4P 6 mod.	80-125	DOCA 4125/030	671589	DOCA 4125/300	671591	1

Series Hti - Add-on RCD - Type S

G

X

	In (A)	30 mA		300 mA		Pack.
		Cat. No.	Ref. No.			
 3P 6 mod.	80-125	-	-	DOCS 3125/300	671585	1
 4P 6 mod.	80-125	-	-	DOCS 4125/300	671585	1

On demand: 2P type A and S

**Series Hti - Auxiliary contacts (right side)**

	Description	Functions	Mod.	Cat. No.	Ref. No.	Pack.
	Auxiliary contact	H	1/2	Hti H	671597	1
	Signal contact S + test + reset	S	1/2	Hti S	671598	12
	Changeable auxiliary/signal contact	H/S	1/2	Hti H/S	671599	1
	Auxiliary contact and changeable auxiliary/signal contact	H+H/S	1/2	Hti HH/HS	671600	1
	Auxiliary contact and signal contact H + S + test + reset	H+S	1/2	Hti HSR	671602	1

**Series Hti - Shunt trip (left or right side)**

	Rated voltage	Closing current	Operating time	Coil impedance at 50Hz	Cat. No.	Ref. No.	Pack.
	110 to 415V	0.5A at 110V	10 ms	ca. 29 Ohm	TELE L 110	624945	8
	110 to 125V DC	0.6A at 230V	4ms	ca. 29 Ohm			
		1A at 400V	2ms	ca. 29 Ohm			
	24 to 48V DC	1A at 24V DC	10ms	ca. 24 Ohm	TELE L 24	624946	8
	24 to 60V	2A at 48V DC	4ms	ca. 24 Ohm			

Series Hti

A

B

C

D

E

F

G

X



Redline

# Hti+ For space saving. For more power.



The Hti+ range offers the right High Performance MCB with high-rated breaking capacities and various tripping characteristics. The Hti+ 36 is the ideal solution for applications of up to 36kA; of course, also for current ratings of between 80 and 125A. The high-rated breaking capacities of Hti+50 up to 50kA allow electrical distribution systems to be configured and operated safely in an uncomplicated manner.

Compact dimensions ensure that energy distribution systems can be set up in a space-saving way.

## The Hti+



Circuit protection

A

B

C

D

E

F

G

X

- Space saving. Reduce the side of the distribution board to the minimum.
- More power. The highest breaking capacity in modular MCB format: 50kA.
- High nominal current range of up to 125A.
- More safety. Convincing selectivity and back-up properties up to 50kA.
- More comfort. Compact and modular with plastic tongue in IP20 terminals.
- More flexibility. Thanks to the large product portfolio for a multitude of applications.
- More accessories. Add on RCDs, RCBOs, Auxiliaries, Shunt trip, under voltage and rotary handle.

# Applications

## Public buildings

Schools, hospitals, office buildings: Wherever there are large numbers of people coming and going, reliable power supplies are of importance. High Performance MCBs, such as the Hti+ ensure that personal injury and damage to property are avoided in the event of short-circuits.

## Airports

Millions of people take off here. Day in, day out. High Performance MCBs, such as the Hti+ ensure that personal injury and damage to property are avoided in the event of short-circuits.

## Alternative energies

Simply inexhaustible: more and more power stations operating on the based on renewable energy, such as solar power, are being built around the world. High Performance MCBs, such as the Hti+ ensure safer operations.

## Power stations

Virtually nothing runs without electricity. With a total of more than 3 400 000 megawatts of power, power stations around the globe ensure that the world keeps moving. High Performance MCBs, such as the Hti+, will protect your infrastructure and therefore all your staff and machines involved in the production of electricity.

## The petrochemical industry

The chemical and petrochemical industry contributes significantly to everyday modern life. Whether you are talking about health, nutrition, clothing or mobility – their products ensure quality of life and jobs. Over 2 million in the European Union alone. High Performance MCBs, such as the Hti+, safeguard production on oil platforms in the sea as well as in production sites on land.

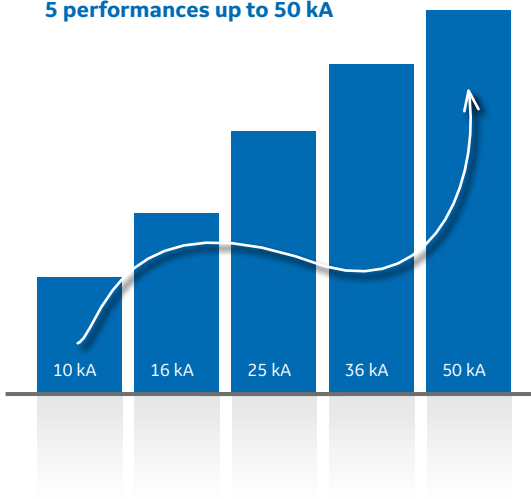
## The steel industry

From kilometre-long bridges, through power station turbines subject to extreme loads to elegant high-rise buildings and stainless steel salad bowls: steel plays a major role in modern industry; its possible uses are boundless. High Performance MCBs, such as the Hti+ , play an important role here.

## Full functionality

Add on RCDs, auxiliary contact, Shunt trip and under voltage add on devices to the complete functionality of the Hti+.

5 performances up to 50 kA





Circuit protection



### Series Hti+ 16

**EN/IEC 60898-1 10.000**

**EN/IEC 60947-2 16kA**

A

#### Application



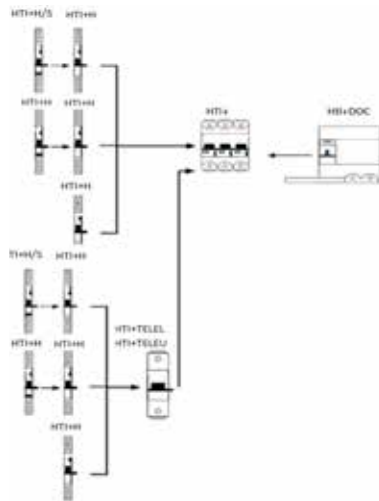
B

#### Marking



C

#### Add-on devices



D

E

F

G

X

#### Performance

<b>Thermal setting In</b>	(A) 80-125A
<b>Rated voltage AC Un</b>	(V) AC 230/400
<b>Tripping characteristics</b>	B-C-D
<b>Mechanical/electrical endurance</b>	80-100A: 10.000/1.500 125A: 8.000/1.000
<b>Operating temperature</b>	(°C) -25°C up to 60°C
<b>Terminal capacity flexible/stranded cable</b>	(mm²) 70-50
<b>Minimum operating voltage U<sub>bmin</sub></b>	12 AC
<b>Rated Frequency</b>	(Hz) 50/60
<b>Poles</b>	1, 2, 3, 4
<b>Weight/pole</b>	(g) 240

#### Short-circuit capacity

##### According to EN/IEC 60898

Poles	I <sub>cn</sub> /I <sub>cs</sub> (kA)
1P	10
2P	10
3P	10
4P	10

I<sub>cs</sub> = 7.5kA

##### According to EN/IEC 60947-2 - AC 230/400

Poles	I <sub>cu</sub> (kA)
1P	16
2P	16
3P	16
4P	16





**Series Hti+ 16 - 16kA - characteristics B-C-D**



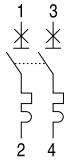
**1P  
1.5 mod.**

In (A)	B		C		D		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
80	HTI+161B80	<b>671143</b>	HTI+161C80	<b>671107</b>	HTI+161D80	<b>671179</b>	1
100	HTI+161B100	<b>671142</b>	HTI+161C100	<b>671106</b>	HTI+161D100	<b>671178</b>	1
125	HTI+161B125	<b>671141</b>	HTI+161C125	<b>671105</b>	HTI+161D125	<b>671177</b>	1



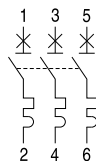
**2P  
3 mod.**

80	HTI+162B80	<b>671140</b>	HTI+162C80	<b>671104</b>	HTI+162D80	<b>671176</b>	1
100	HTI+162B100	<b>671139</b>	HTI+162C100	<b>671103</b>	HTI+162D100	<b>671175</b>	1
125	HTI+162B125	<b>671138</b>	HTI+162C125	<b>671102</b>	HTI+162D125	<b>671174</b>	1



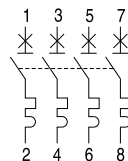
**3P  
4.5 mod.**

80	HTI+163B80	<b>671137</b>	HTI+163C80	<b>671101</b>	HTI+163D80	<b>671173</b>	1
100	HTI+163B100	<b>671136</b>	HTI+163C100	<b>671100</b>	HTI+163D100	<b>671172</b>	1
125	HTI+163B125	<b>671135</b>	HTI+163C125	<b>671099</b>	HTI+163D125	<b>671171</b>	1



**4P  
6 mod.**

80	HTI+164B80	<b>671134</b>	HTI+164C80	<b>671098</b>	HTI+164D80	<b>671170</b>	1
100	HTI+164B100	<b>671133</b>	HTI+164C100	<b>671097</b>	HTI+164D100	<b>671169</b>	1
125	HTI+164B125	<b>671132</b>	HTI+164C125	<b>671096</b>	HTI+164D125	<b>671168</b>	1



Series Hti+ 16

A

B

C

D

E

F

G

X





Miniature Circuit Breakers

Series Hti+ 25

EN/IEC 60898-1 15.000

EN/IEC 60947-2 25kA



Circuit protection

A

Application



B

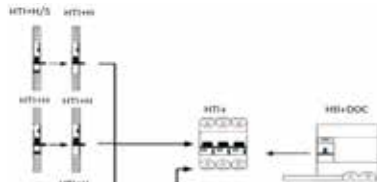
Marking



C

Add-on devices

D

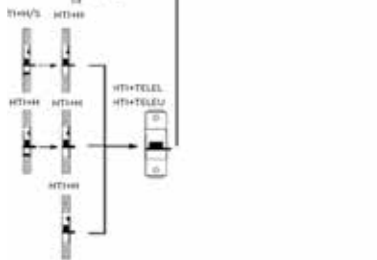


E

F

G

X



Performance

<b>Thermal setting In</b>	(A)	80-125A
<b>Rated voltage AC Un</b>	(V)	AC 240/415
<b>Tripping characteristics</b>		B-C-D
<b>Mechanical/electrical endurance</b>		80-100A: 10.000/6.000 125A: 10.000/4.000
<b>Operating temperature</b>	(°C)	-25°C up to 60°C
<b>Terminal capacity flexible/stranded cable</b>	(mm²)	70-50
<b>Minimum operating voltage U<sub>bin</sub></b>		12 AC/DC
<b>Rated Frequency</b>	(Hz)	50/60
<b>Poles</b>		1, 2, 3, 4
<b>Weight/pole</b>	(g)	240

Short-circuit capacity

According to EN/IEC 60898 - AC 230/400

Poles	I <sub>cn</sub> /I <sub>cs</sub> (kA)
1P, 2P, 3P, 4P	15
I <sub>cs</sub> = 7.5kA	

According to EN/IEC 60947-2 - AC 240/415

Poles	I <sub>cu</sub> (kA)
1P, 2P, 3P, 4P	25
I <sub>cs</sub> = 18kA	

According to EN/IEC 60947-2 - AC 254/440

Poles	I <sub>cu</sub> (kA)
1P, 2P, 3P, 4P	15
I <sub>cs</sub> = 10kA	

According to EN/IEC 60947-2 - DC

Poles	V <sub>dc</sub>	I <sub>cu</sub> (kA)
1P	125	10
2P	250	10
3P	375	10
4P	500	10
I <sub>cs</sub> = 10kA		



**Series Hti+ 25 - 25kA - characteristics B-C-D**



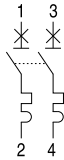
**1P  
1.5 mod.**

In (A)	B		C		D		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
80	HTI+251B80	<b>671131</b>	HTI+251C80	<b>671095</b>	HTI+251D80	<b>671167</b>	1
100	HTI+251B100	<b>671130</b>	HTI+251C100	<b>671094</b>	HTI+251D100	<b>671166</b>	1
125	HTI+251B125	<b>671129</b>	HTI+251C125	<b>671093</b>	HTI+251D125	<b>671165</b>	1



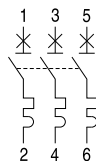
**2P  
3 mod.**

80	HTI+252B80	<b>671128</b>	HTI+252C80	<b>671092</b>	HTI+252D80	<b>671164</b>	1
100	HTI+252B100	<b>671127</b>	HTI+252C100	<b>671091</b>	HTI+252D100	<b>671163</b>	1
125	HTI+252B125	<b>671126</b>	HTI+252C125	<b>671090</b>	HTI+252D125	<b>671162</b>	1



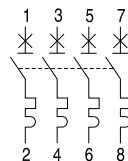
**3P  
4.5 mod.**

80	HTI+253B80	<b>671125</b>	HTI+253C80	<b>671089</b>	HTI+253D80	<b>671161</b>	1
100	HTI+253B100	<b>671124</b>	HTI+253C100	<b>671088</b>	HTI+253D100	<b>671160</b>	1
125	HTI+253B125	<b>671123</b>	HTI+253C125	<b>671087</b>	HTI+253D125	<b>671159</b>	1



**4P  
6 mod.**

80	HTI+254B80	<b>671122</b>	HTI+254C80	<b>671086</b>	HTI+254D80	<b>671158</b>	1
100	HTI+254B100	<b>671121</b>	HTI+254C100	<b>671085</b>	HTI+254D100	<b>671157</b>	1
125	HTI+254B125	<b>671120</b>	HTI+254C125	<b>671084</b>	HTI+254D125	<b>671156</b>	1



Series Hti+ 25

A

B

C

D

E

F

G

X





Miniature Circuit Breakers

Series Hti+ 36

EN/IEC 60898-1<sup>(1)</sup> 20.000

EN/IEC 60947-2 36kA

(1) Only for 80A

Circuit protection



A

Application



B

Marking



C

Add-on devices

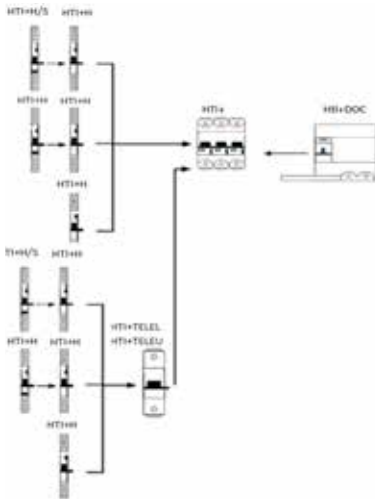
D

E

F

G

X



Performance

<b>Thermal setting In</b>	(A) 80-125A
<b>Rated voltage AC Un</b>	(V) AC 240/415
<b>Tripping characteristics</b>	B-C-D
<b>Mechanical/electrical endurance</b>	80-100A: 10.000/6.000 125A: 10.000/4.000
<b>Operating temperature</b>	(°C) -25°C up to 60°C
<b>Terminal capacity flexible/stranded cable</b>	(mm <sup>2</sup> ) 70-50
<b>Minimum operating voltage U<sub>bin</sub></b>	12 AC/DC
<b>Rated Frequency</b>	(Hz) 50/60
<b>Poles</b>	1, 2, 3, 4
<b>Weight/pole</b>	(g) 240

Short-circuit capacity

According to EN/IEC 60898 - AC 230/400

Poles	I <sub>cn</sub> /I <sub>cs</sub> (kA)
1P, 2P, 3P, 4P - 80A	20
I <sub>cs</sub> = 10kA	

According to EN/IEC 60947-2 - AC 240/415

Poles	I <sub>cu</sub> (kA)
1P, 2P, 3P, 4P	36
I <sub>cs</sub> = 30kA	

According to EN/IEC 60947-2 - AC 254/440

Poles	I <sub>cu</sub> (kA)
1P, 2P, 3P, 4P	20
I <sub>cs</sub> = 10kA	

According to EN/IEC 60947-2 - DC

Poles	V <sub>dc</sub>	I <sub>cu</sub> (kA)
1P	125	20
2P	250	20
3P	375	20
4P	500	20
I <sub>cs</sub> = 20kA		



**Series Hti+ 36 - 36kA - characteristics B-C-D**



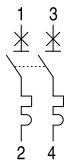
**1P  
1.5 mod.**

In (A)	B		C		D		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
80	HTI+361B80	<b>671047</b>	HTI+361C80	<b>671035</b>	HTI+361D80	<b>671059</b>	1
100	HTI+361B100	<b>671046</b>	HTI+361C100	<b>671034</b>	HTI+361D100	<b>671058</b>	1
125	HTI+361B125	<b>671045</b>	HTI+361C125	<b>671033</b>	HTI+361D125	<b>671057</b>	1



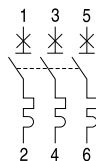
**2P  
3 mod.**

80	HTI+362B80	<b>671044</b>	HTI+362C80	<b>671032</b>	HTI+362D80	<b>671056</b>	1
100	HTI+362B100	<b>671043</b>	HTI+362C100	<b>671031</b>	HTI+362D100	<b>671055</b>	1
125	HTI+362B125	<b>671042</b>	HTI+362C125	<b>671030</b>	HTI+362D125	<b>671054</b>	1



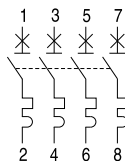
**3P  
4.5 mod.**

80	HTI+363B80	<b>671041</b>	HTI+363C80	<b>671029</b>	HTI+363D80	<b>671053</b>	1
100	HTI+363B100	<b>671040</b>	HTI+363C100	<b>671028</b>	HTI+363D100	<b>671052</b>	1
125	HTI+363B125	<b>671039</b>	HTI+363C125	<b>671027</b>	HTI+363D125	<b>671051</b>	1



**4P  
6 mod.**

80	HTI+364B80	<b>671038</b>	HTI+364C80	<b>671026</b>	HTI+364D80	<b>671050</b>	1
100	HTI+364B100	<b>671037</b>	HTI+364C100	<b>671025</b>	HTI+364D100	<b>671049</b>	1
125	HTI+364B125	<b>671036</b>	HTI+364C125	<b>671024</b>	HTI+364D125	<b>671048</b>	1



Series Hti+ 36

A

B

C

D

E

F

G

X





**Series Hti+ 50 - 50kA - characteristics B-C-D**



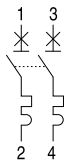
**1P  
1.5 mod.**

In (A)	B		C		D		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
80	HTI+501B80	<b>671119</b>	HTI+501C80	<b>671083</b>	HTI+501D80	<b>671155</b>	1
100	HTI+501B100	<b>671118</b>	HTI+501C100	<b>671082</b>	HTI+501D100	<b>671154</b>	1
125	HTI+501B125	<b>671117</b>	HTI+501C125	<b>671081</b>	HTI+501D125	<b>671153</b>	1



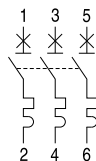
**2P  
3 mod.**

80	HTI+502B80	<b>671116</b>	HTI+502C80	<b>671080</b>	HTI+502D125	<b>671150</b>	1
100	HTI+502B100	<b>671115</b>	HTI+502C100	<b>671079</b>	HTI+502D100	<b>671151</b>	1
125	HTI+502B125	<b>671114</b>	HTI+502C125	<b>671078</b>	HTI+502D80	<b>671152</b>	1



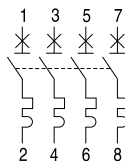
**3P  
4.5 mod.**

80	HTI+503B80	<b>671113</b>	HTI+503C80	<b>671077</b>	HTI+503D80	<b>671149</b>	1
100	HTI+503B100	<b>671112</b>	HTI+503C100	<b>671076</b>	HTI+503D100	<b>671148</b>	1
125	HTI+503B125	<b>671111</b>	HTI+503C125	<b>671075</b>	HTI+503D125	<b>671147</b>	1



**4P  
6 mod.**

80	HTI+504B80	<b>671110</b>	HTI+504C80	<b>671074</b>	HTI+504D80	<b>671146</b>	1
100	HTI+504B100	<b>671109</b>	HTI+504C100	<b>671073</b>	HTI+504D100	<b>671145</b>	1
125	HTI+504B125	<b>671108</b>	HTI+504C125	<b>671072</b>	HTI+504D125	<b>671144</b>	1



Series Hti+ 50

A

B

C

D

E

F

G

X

**New**



Series DOCHti+ - Add-on RCD

Circuit protection



EN/IEC 60947-2

Type A, Ai



Type S



A

Applications



B

Marking



C

D

E

F

G

X

Performance

<b>Thermal setting I<sub>n</sub></b>	(A)	80A, 100A
<b>Residual current I<sub>Δn</sub></b>	(mA)	30, 300, 500, 1000
<b>Rated maximum voltage AC U<sub>n</sub></b>	(V)	230/400; 240/415; 400/690
<b>Maximum operating voltage U<sub>Bmax</sub></b>	(V)	690
<b>Minimum operating voltage U<sub>Bmin</sub></b>	(V)	195
<b>Mechanical/electrical endurance</b>		Depends on associat. MCBs
<b>Rated impulse withstand voltage U<sub>imp</sub> Impulse (1.2/50)</b>	(kV)	6
<b>Max Torque</b>	(Nm)	3.5
<b>Terminal capacity flexible/stranded cable</b>	(mm <sup>2</sup> )	70-50
<b>Poles</b>		2, 3, 4
<b>Nuisance tripping resistance</b>		A: 250A 8/20μs S: 5000 8/20μs
<b>Ambient temperature</b>	(°C)	-25°C up to 60°C
<b>Weight</b>	(g)	2P: 420, 3P: 640, 4P: 770

Short-circuit capacity


Depends on the associated MCB				
	Hti+ 16	Hti+ 25	Hti+ 36	Hti+ 50
Rated ultimate short-circuit breaking capacity I <sub>cu</sub> compliant to IEC 60947-2	16	25	36	50
Short-circuit capacity according to IEC 60898	10	15	20	25





**Series DOCHti+ - Add-on RCD - Type A**

In (A)	30mA		300mA		500mA		1000mA		Pack.	
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.		
2P, 2 mod.	≤100	DOCAHTi+2100/030	<b>671543</b>	DOCAHTi+2100/300	<b>671544</b>	DOCAHTi+2100/500	<b>671545</b>	-	-	1




3P, 3 mod.	≤100	DOCAHTi+3100/030	<b>671551</b>	DOCAHTi+3100/300	<b>671555</b>	DOCAHTi+3100/500	<b>671556</b>	-	-	1
4P, 4 mod.	≤100	DOCAHTi+4100/030	<b>671563</b>	DOCAHTi+4100/300	<b>671567</b>	DOCAHTi+4100/500	<b>671568</b>	-	-	1




**Series DOCHti+ - Add-on RCD - Type S**

In (A)	30mA		300mA		500mA		1000mA		Pack.	
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.		
2P, 2 mod.	≤100	-	-	DOCSHTi+2100/300	<b>671549</b>	-	-	DOCSHTi+2100/1000	<b>671550</b>	1



3P, 3 mod.	≤100	-	-	DOCSHTi+3100/300	<b>671557</b>	DOCSHTi+3100/500	<b>671561</b>	DOCSHTi+3100/1000	<b>671562</b>	1
4P, 4 mod.	≤100	-	-	DOCSHTi+4100/300	<b>671569</b>	DOCSHTi+4100/500	<b>671579</b>	DOCSHTi+4100/1000	<b>671580</b>	1




Series DOCHti+

A

B

C

D

E

F

G

X

New



Residual Current Circuit Breakers  
Overcurrent Protection RCBOs

**Series Hti+ 5ODOC**

**EN/IEC 60947-2**

**Type A, Ai**



Circuit protection



A

Application



B

Marking



C

D

E

F

G

X

Performance

<b>Thermal setting I<sub>n</sub></b>	(A)	125A
<b>Residual current I<sub>Δn</sub></b>	(mA)	30, 300
<b>Rated maximum voltage AC U<sub>n</sub></b>	(V)	230/400; 240/415; 400/690
<b>Maximum operating voltage U<sub>Bmax</sub></b>	(V)	690
<b>Minimum operating voltage U<sub>Bmin</sub></b>	(V)	195
<b>Mechanical/electrical endurance</b>		6000/4000
<b>Rated impulse withstand voltage</b>		
<b>U<sub>imp</sub> Impulse (1.2/50)</b>	(kV)	6
<b>Max Torque</b>	(Nm)	3.5
<b>Terminal capacity flexible/stranded cable</b>	(mm <sup>2</sup> )	70-50
<b>Poles</b>		2, 3, 4
<b>Nuisance tripping resistance</b>		A: 250A 8/20μs Ai: 3000 8/20μs
<b>Ambient temperature</b>	(°C)	-25°C up to 60°C
<b>Weight</b>	(g)	2P: 790, 3P: 1140, 4P: 1440

Short-circuit capacity

**Rated ultimate short-circuit breaking capacity I<sub>cu</sub> compliant to IEC 60947-2**

	<b>I<sub>cu</sub>(kA)</b>
(AC) 50/60 Hz 240/450V	50
(AC) 50/60 Hz 254/440V	30
(AC) 50/60 Hz 400/690V	4.5

**Rated ultimate short-circuit breaking capacity I<sub>cs</sub> compliant to IEC 60947-2**

	<b>I<sub>cs</sub>(kA)</b>
(AC) 50/60 Hz 240/450V	40
(AC) 50/60 Hz 254/440V	15
(AC) 50/60 Hz 400/690V	3





**Series Hti+ 50DOC- Type Ai**

	In (A)	30mA						Pack.
		B		C		D		
		Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
2P, 8 mod.	125	HTI+502B125Ai/030	671507	HTI+502C125Ai/030	671508	HTI+502D125Ai/030	671509	1
3P, 11 mod.	125	HTI+503B125Ai/030	671519	HTI+503C125Ai/030	671520	HTI+503D125Ai/030	671521	1
4P, 12.5 mod.	125	HTI+504B125Ai/030	671531	HTI+504C125Ai/030	671532	HTI+504D125Ai/030	671533	1

**Series Hti+ 50DOC- Type A**

	In (A)	300mA						Pack.
		B		C		D		
		Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
2P, 8 mod.	125	HTI+502B125A/300	671513	HTI+502C125A/300	671514	HTI+502D125A/300	671515	1
3P, 11 mod.	125	HTI+503B125A/300	671525	HTI+503C125A/300	671526	HTI+503D125A/300	671527	1
4P, 12.5 mod.	125	HTI+504B125A/300	671537	HTI+504C125A/300	671538	HTI+504D125A/300	671539	1

Series Hti+ 50DOC

A

B

C

D

E

F

G

X





## Auxiliary switches

### Series Hti+ H

#### IEC 60947-5-1

#### Features

##### Auxiliary contact for external display.

The HTI+H auxiliary contact is for electrical display of the operating state of the high performance Hti+. Both changeover contacts always switch simultaneously with the live conductor contact and detect the following operating states:

- Manual tripping
- Tripping due to thermal overload
- Tripping due to magnetic overload (short-circuit)

##### Mode of function of the test button

Mode of function of the two changeover contacts

- Off position of the high performance MCB contacts 11-12 and 21-22 closed
- On position of the high performance MCB contacts 11-14 and 21-24 closed

##### Mounting ability of the auxiliary contact

- Two Hti+H aux. contacts can be mounted by the user at the left on the Hti+ MCB.



Circuit protection

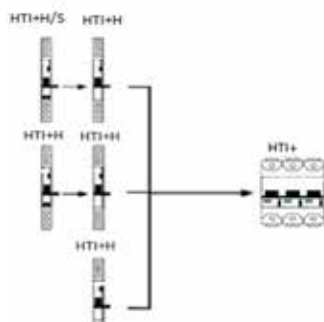
#### Application



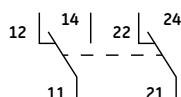
#### Marking



#### Add-on devices



#### Wiring scheme



#### Performance

##### Utilisation categories

compliant to IEC 60947-5-1

AC15 400/2A - AC15 240/6A

DC13 250/0.55A - DC13 125 V/1.1A

DC13 60 V/2A - DC13 24 V/4A

Conventional free air therm. current Ith

A 6

Minimum operational current Imin

mA 3

Minimum operational voltage Umin

V 24

Rated insulation voltage Ui

A 690

Number of contacts

2

Rated impulse withstand voltage Uimp

kV 6

Pollution degree

3

Standard

IEC 60947-5-1

Contact function

Changeover contact

Connection Cu

mm<sup>2</sup> 1 x 2.5

2 x 1.5

Tightening torque

Nm 1

AC/DC feed

any

Mounting on DIN top hat rail

EN 60715

Protection category

IP20

Permissible operating ambient temp.

°C -25 ... +60

Storage temperature

°C -40 ... +70

Mech. lifetime of device

6000 switching cycles

Icu

A 1000

Vibration resistance

IEC 60068-2-6; EN 61373 Cat.1/Class B

5 g, 20 frequency cycle 5 ... 150 ...

5 Hz at 24 V AC/DC,

5 mA short-term interruption <10 ms

#### Series Hti+ H

	Function	Contacts	Cat. No.	Ref. No.	Pack.
1/2 mod.	H	2 COM	HTI+H	678082	1



## Auxiliary switches

### Series Hti+ H/S

#### IEC 60947-5-1

#### Features

##### Combined auxiliary and signal contact for the external display

The HTI+H/S combined auxiliary and signal contact is used for electrical signaling of the operating state of the high performance Hti+.

The **H auxiliary contact** always switches simultaneously with the live conductor contact and detect the following forms of tripping:

- Manual switch on/off
- Tripping due to thermal overload
- Tripping due to magnetic overload (short-circuit)
- Tripping by Shunt trip or Undervoltage

The **S signal contact** detects the following forms of tripping of the high performance MCB:

- Tripping due to thermal overload
- Tripping due to magnetic overload (short-circuit)
- Tripping by Shunt trip or Undervoltage

##### Mode of function of the S reset button

The reset button, which can be used at will, resets the S signal contact after a tripping. The high performance MCB is switched on independent of the state of the S signal contact.

##### Mode of function of the H changeover contact

- Off position of the high performance MCB Contact 11-12 closed
- On position of the high performance MCB Contact 11-14 closed

##### Mode of function of the S changeover contact

- No S tripping Contact 95-96 closed
- S tripping Contact 95-98 closed

#### Performance

##### Utilisation categories compliant to IEC 60947-5-1

AC15 400/2A - AC15 240/6A  
DC13 250/0.55A - DC13 125 V/1.1A  
DC13 60 V/2A - DC13 24 V/4A

##### Conventional free air therm. current I<sub>th</sub>

A 6

##### Minimum operational current I<sub>min</sub>

mA 3

##### Minimum operational voltage U<sub>min</sub>

V 24

##### Rated insulation voltage U<sub>i</sub>

A 690

##### Number of contacts

2 (1x AUX, 1x AUX/ALT)

##### Rated impulse withstand voltage U<sub>imp</sub>

kV 6

##### Pollution degree

3

##### Standard

IEC 60947-5-1

##### Contact function

Changeover contact

##### Connection Cu

mm<sup>2</sup> 1 x 2.5  
2 x 1.5

##### Tightening torque

Nm 1

##### AC/DC feed

any

##### Mounting on DIN top hat rail

EN 60715

##### Protection category

IP20

##### Permissible operating ambient temp.

°C -25 ... +60

##### Storage temperature

°C -40 ... +70

##### Mech. lifetime of device

6000 switching cycles

##### I<sub>cu</sub>

A 1000

##### Vibration resistance

IEC 60068-2-6; EN 61373 Cat.1/Class B  
5 g, 20 frequency cycle 5 ... 150 ...  
5 Hz at 24 V AC/DC,  
5 mA short-term interruption <10 ms



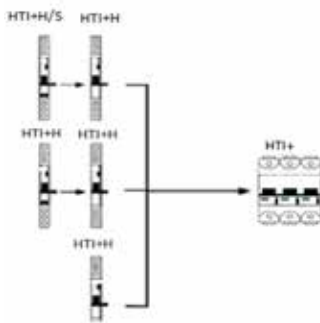
#### Application



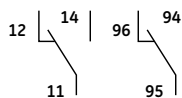
#### Marking



#### Add-on devices



#### Wiring scheme



#### Series Hti+ H/S

	Function	Contacts	Cat. No.	Ref. No.	Pack.
1/2 mod.	S/H	2 COM	HTI+H/S	678083	1



## Shunt Trip Release

### Series Hti+ Tele L

### IEC 60947-2

Circuit protection



### Features

#### Shunt opening release

The Hti+ Tele L shunt opening release is for remote release of the Hti+- high performance MCB using an electrical impulse. Operation of the trigger is guaranteed at a voltage between 70 % and 110 % of the rated mains voltage Un both for AC and DC.

Mounting ability of the Hti+ Tele L operating current release

- The Hti+ Tele L can be mounted by the user at the left side of the high performance MCB Hti+.

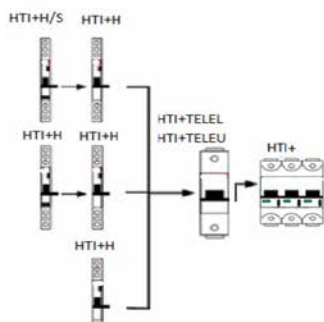
### Application



### Marking



### Coupling



### Wiring scheme



### Performances

**Rated operational voltage Ue**

**Operating range**

**Rated insulation voltage Ui**

**Coil pull in consumption**

**Rated frequency**

**Pollution degree**

**Standard**

**Connection Cu**

**Max. torque**

**AC/DC supply**

**Mounting on DIN top hat rail**

**Protection category**

**Ambient Temperature**

**Storage temperature**

**Vibration resistance**

**Weight**

	HTI+ Tele L 48	HTI+ Tele L 110	HTI+ Tele L 220
VAC/DC	48 ... 130	110...250	220 ... 400
% Ue	70 ... 110	70 ... 110	70 ... 110
V	690	690	690
W/VA	41.9 ... 307.3	23 ... 119	45 ... 148.1
	42 ... 310*	20 ... 105*	
Hz		DC; 50/60	
		3	
		IEC 60947-2	
mm <sup>2</sup>		1 ... 25 strand	
mm <sup>2</sup>		1 ... 35 cable	
Nm		3.5	
		any	
		EN 60715	
		IP20	
		IP40 (actuating end only)	
°C		-25 ... +60	
°C		-40 ... +70	
		IEC 60068-2-6;	
		EN 61373 Cat.1/Class B	
g		150	

### Series Hti+ Tele L

	Function	Cat. No.	Ref. No.	Pack.
1 mod.	Shunt operat. release			
	220...400 VAC/DC	HTI+TELEL220	678085	1
	110...250 VAC/DC	HTI+TELEL110	678089	1
	48...130 VAC/DC	HTI+TELEL48	678090	1



## Under Voltage Release

### Series Hti+ Tele U

**IEC 60947-2**

#### Features

The Hti+ Tele U undervoltage release can be used as an emergency-stop cut-as by use of suitable emergency stop buttons. The undervoltage release switches the power supply to the high performance MCB off in case of a failure or if the value falls below  $0.7 \times U_n$ . After tripping, the high performance MCB can be switched back on as soon as the voltage is over  $0.85 \times U_n$ .  
 Mounting ability of the Hti+Tele U undervoltage release  
 – The Hti+ Tele U can be mounted by the user at the left side of the high performance MCB Hti+.



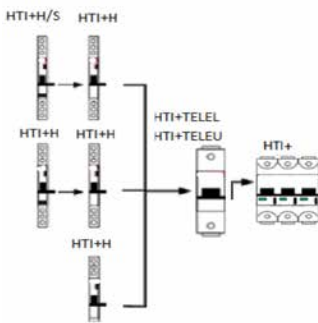
#### Application



#### Marking



#### Coupling



#### Wiring scheme



#### Performances

	HTI+ Tele U 24	HTI+ Tele U 48	HTI+ Tele U 220
<b>Rated operational voltage Ue</b>	24 ... 36	48 ... 60	220 ... 250
<b>open</b>	35 ... 70	35 ... 70	35 ... 70
<b>closed</b>	85	85	85
<b>Rated insulation voltage Ui</b>	690	690	690
<b>Power loss of coil when attracted</b>	1.11 ... 1.14/1.2	1.3 ... 1.41/1.4	1.71 ... 1.91/1.9
<b>Rated frequency</b>	Hz	DC; 50/60	
<b>Pollution degree</b>		3	
<b>Standard</b>		IEC 60947-2	
<b>Connection Cu</b>	mm <sup>2</sup>	1 ... 25 strand 1 ... 35 cable	
<b>Maximum Torque</b>	Nm	3.5	
<b>AC/DC supply</b>		any	
<b>Mounting on DIN top hat rail</b>		EN 60715	
<b>Protection category</b>		IP20 IP40 (actuating end only)	
<b>Ambient Temperature</b>	°C	-25 ... +60	
<b>Storage temperature</b>	°C	-40 ... +70	
<b>Vibration resistance</b>		IEC 60068-2-6; EN 61373 Cat.1/Class B	

#### Serie Hti+ Tele U

	Function	Cat. No.	Ref. No.	Pack.
1 mod.	<b>Undervoltage release</b>			
	220...250 VAC/DC	HTI+TELEU220	<b>678086</b>	1
	48...60 VAC/DC	HTI+TELEU48	<b>678091</b>	1
	24...36 VAC/DC	HTI+TELEU24	<b>678092</b>	1

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## Rotary Handle

### Series Hti+ RH

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#### Features

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The Hti+ can be installed in different ways:

- Together with other breakers in the same DIN rail horizontally or vertically
- As an individual breaker in a single fixed compartment where the breaker is switched on/off with a **rotary handle from the door**, and the breaker is mounted on the wall of the panel

The rotary drive for 2-4 pole devices HTI+RH-DRIVE can be delivered for assembly on the switching field door. Switching is effortless due to the ergonomic design of the swivel lever. It is equipped with a lock for the OFF position that prevents switching on of the Hti+ high performance MCB.

The slot hole of the lock can accept up to 3 padlocks with lug diameters of 7 mm (not included in delivery). Operation of the trigger and a view of the characteristics are not prevented. Additionally, a rotary drive can also be supplied to switch machines; it has a red grip on a yellow background. The rotary drive on the switching field door is comprised of the following three components:

- Rotary handle Hti+ RH-RED, Hti+ RH-BLACK
- Axle (500 mm) Hti+ RH-A500

#### Padlocking

### Serie Hti+ KS

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#### Features

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The Hti+ KS padlock device safely prevents unintentional switching on and off. Simply insert the lug of the padlock device through the borehole on the high performance MCB Hti+ and lock with a padlock with lug diameter Ø 4 mm (not included in delivery). Even when the high performance Hti+ MCB is secured with an padlock device against unintentional switching off, tripping remains possible in case of overload or short-circuit by the Hti+ Tele L, Hti+Tele U and Hti+ DOC.

#### Application

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#### Marking

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#### Application

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#### Marking




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**Series Hti+ Accessories**

	Function	Cat. No.	Ref. No.	Pack
	Axial extension 500 mm for rotary handle	HTI+RH-A500	<b>678093</b>	1
	Drive from 2P to 4P for rotary handle	HTI+RH-DRIVE	<b>678094</b>	1
	IP54 Kit for rotary handle for door mounting	HTI+RH-IP54	<b>678095</b>	1
	Rotary handle Hti+RH-RED	HTI+RH-RED	<b>678087</b>	1
	Rotary handle Hti+RH-BLACK	HTI+RH-BLACK	<b>678088</b>	1
	Padlock device	HTI+KS	<b>678084</b>	10

Accessories

**A**

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**UL Listed 489**      **10kA**  
**CSA c22.2 No.5-02**  
**EN/IEC 60947-2**      **10kA**

**UL Listed 489 performances**

<b>UL FILE</b>	E256870
<b>Ampere rating In (A) 0.5-63</b>	0.5-40A
<b>Reference temperature</b>	°C/F 25/77
<b>Terminal capacity flexible/rigid cable</b>	14-2 AWG
<b>Max. Torque N.m/lbs.in</b>	4.5/39.9

**Rated voltage Un (V)**

Poles	V AC	V DC
1	277	60
2, 3	480	125

**Short-circuit capacity**

Poles	V	Icc (kA)
1	277	10
2, 3	480	10

**DC short-circuit capacity**

Poles	V DC	Icc
1	60	10
2	125	10

**IEC performances**

<b>Thermal setting In</b>	0.5-40A
<b>Rated voltage AC Un</b>	(V) 240/415V
<b>Weight/pole</b>	(g) 130
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> ) 0.75/1- 25/35

**Short-circuit capacity according to IEC 60947-2**

Poles	V AC	Icu (kA)
1	127	30
	240	15
	415	4
2	127	40
	240	30
	415	15
3	240	30
	415	15
	440	10

**DC short-circuit capacity according to IEC 60497-2**

Poles	V	Icc(kA)
1	60	25
2	125	30

**General performance**

<b>Minimum operating voltage U<sub>Bmin</sub></b>	12
<b>Tripping characteristics</b>	B-C-D
<b>Rated frequency</b>	(Hz) 50/60
<b>Mechanical/electrical endurance</b>	20000/10000
<b>Tropicalisation acc. to IEC 60068-2-28/2-30</b>	95% RH at 55°C
<b>Poles</b>	1, 2, 3
<b>Instantaneous tripping ranges acc. to IEC 60898-1</b>	
	B characteristic 3 to 5 times Ampere rating
	C characteristic 5 to 10 times Ampere rating
	D characteristic 10 to 20 times Ampere rating

**Application**

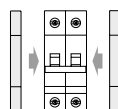


**Approvals / Marking**



**Add-on devices**

**Auxiliaries contacts**



**Motor operator**



(1) Ask for availability. Under homologation.

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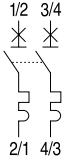

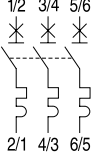
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**UL489 - Series EP100 ULH - 10kA - characteristics B-C-D**

	In (A)	B curve		C curve		D curve		Pack.	
		Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.		
 	1P	0.5	-	-	EP101ULH3C0.5	<b>682298</b>	EP101ULH3D0.5	<b>682352</b>	6
	1	-	-	-	EP101ULH3C01	<b>682299</b>	EP101ULH3D01	<b>682353</b>	6
	2	-	-	-	EP101ULH3C02	<b>682300</b>	EP101ULH3D02	<b>682354</b>	6
	3	-	-	-	EP101ULH3C03	<b>682301</b>	EP101ULH3D03	<b>682355</b>	6
	4	-	-	-	EP101ULH3C04	<b>682302</b>	EP101ULH3D04	<b>682356</b>	6
	5	EP101ULH3B05	<b>682259</b>	-	EP101ULH3C05	<b>682303</b>	EP101ULH3D05	<b>682357</b>	6
	6	EP101ULH3B06	<b>682260</b>	-	EP101ULH3C06	<b>682304</b>	EP101ULH3D06	<b>682358</b>	6
	8	EP101ULH3B08	<b>682261</b>	-	EP101ULH3C08	<b>682305</b>	EP101ULH3D08	<b>682359</b>	6
	10	EP101ULH3B10	<b>682262</b>	-	EP101ULH3C10	<b>682306</b>	EP101ULH3D10	<b>682360</b>	6
	13	EP101ULH3B13	<b>682263</b>	-	EP101ULH3C13	<b>682307</b>	EP101ULH3D13	<b>682361</b>	6
	15	EP101ULH3B15	<b>682264</b>	-	EP101ULH3C15	<b>682308</b>	EP101ULH3D15	<b>682362</b>	6
	16	EP101ULH3B16	<b>682265</b>	-	EP101ULH3C16	<b>682309</b>	EP101ULH3D16	<b>682363</b>	6
	20	EP101ULH3B20	<b>682266</b>	-	EP101ULH3C20	<b>682310</b>	EP101ULH3D20	<b>682364</b>	6
	25	EP101ULH3B25	<b>682267</b>	-	EP101ULH3C25	<b>682311</b>	EP101ULH3D25	<b>682365</b>	6
	30	EP101ULH3B30	<b>682268</b>	-	EP101ULH3C30	<b>682312</b>	EP101ULH3D30	<b>682366</b>	6
	32	EP101ULH3B32	<b>682269</b>	-	EP101ULH3C32	<b>682313</b>	EP101ULH3D32	<b>682367</b>	6
35	EP101ULH3B35	<b>682270</b>	-	EP101ULH3C35	<b>682314</b>	EP101ULH3D35	<b>682368</b>	6	
40	EP101ULH3B40	<b>682271</b>	-	EP101ULH3C40	<b>682315</b>	EP101ULH3D40	<b>682369</b>	6	
 	2P	0.5	-	-	EP102ULH4C0.5	<b>682316</b>	EP102ULH4D0.5	<b>682370</b>	3
	1	-	-	-	EP102ULH4C01	<b>682317</b>	EP102ULH4D01	<b>682371</b>	3
	2	-	-	-	EP102ULH4C02	<b>682318</b>	EP102ULH4D02	<b>682372</b>	3
	3	-	-	-	EP102ULH4C03	<b>682319</b>	EP102ULH4D03	<b>682373</b>	3
	4	-	-	-	EP102ULH4C04	<b>682320</b>	EP102ULH4D04	<b>682374</b>	3
	5	EP102ULH4B05	<b>682272</b>	-	EP102ULH4C05	<b>682321</b>	EP102ULH4D05	<b>682375</b>	3
	6	EP102ULH4B06	<b>682273</b>	-	EP102ULH4C06	<b>682322</b>	EP102ULH4D06	<b>682376</b>	3
	8	EP102ULH4B08	<b>682274</b>	-	EP102ULH4C08	<b>682323</b>	EP102ULH4D08	<b>682377</b>	3
	10	EP102ULH4B10	<b>682275</b>	-	EP102ULH4C10	<b>682324</b>	EP102ULH4D10	<b>682378</b>	3
	13	EP102ULH4B13	<b>682276</b>	-	EP102ULH4C13	<b>682325</b>	EP102ULH4D13	<b>682379</b>	3
	15	EP102ULH4B15	<b>682277</b>	-	EP102ULH4C15	<b>682326</b>	EP102ULH4D15	<b>682380</b>	3
	16	EP102ULH4B16	<b>682278</b>	-	EP102ULH4C16	<b>682327</b>	EP102ULH4D16	<b>682381</b>	3
	20	EP102ULH4B20	<b>682279</b>	-	EP102ULH4C20	<b>682328</b>	EP102ULH4D20	<b>682382</b>	3
	25	EP102ULH4B25	<b>682280</b>	-	EP102ULH4C25	<b>682329</b>	EP102ULH4D25	<b>682383</b>	3
	30	EP102ULH4B30	<b>682281</b>	-	EP102ULH4C30	<b>682330</b>	EP102ULH4D30	<b>682384</b>	3
	32	EP102ULH4B32	<b>682282</b>	-	EP102ULH4C32	<b>682331</b>	EP102ULH4D32	<b>682385</b>	3
35	EP102ULH4B35	<b>682283</b>	-	EP102ULH4C35	<b>682332</b>	EP102ULH4D35	<b>682386</b>	3	
40	EP102ULH4B40	<b>682284</b>	-	EP102ULH4C40	<b>682333</b>	EP102ULH4D40	<b>682387</b>	3	
 	3P	0.5	-	-	EP103ULH4C0.5	<b>682334</b>	EP103ULH4D0.5	<b>682388</b>	2
	1	-	-	-	EP103ULH4C01	<b>682335</b>	EP103ULH4D01	<b>682389</b>	2
	2	-	-	-	EP103ULH4C02	<b>682336</b>	EP103ULH4D02	<b>682390</b>	2
	3	-	-	-	EP103ULH4C03	<b>682337</b>	EP103ULH4D03	<b>682391</b>	2
	4	-	-	-	EP103ULH4C04	<b>682338</b>	EP103ULH4D04	<b>682392</b>	2
	5	EP103ULH4B05	<b>682285</b>	-	EP103ULH4C05	<b>682339</b>	EP103ULH4D05	<b>682393</b>	2
	6	EP103ULH4B06	<b>682286</b>	-	EP103ULH4C06	<b>682340</b>	EP103ULH4D06	<b>682394</b>	2
	8	EP103ULH4B08	<b>682287</b>	-	EP103ULH4C08	<b>682341</b>	EP103ULH4D08	<b>682395</b>	2
	10	EP103ULH4B10	<b>682288</b>	-	EP103ULH4C10	<b>682342</b>	EP103ULH4D10	<b>682396</b>	2
	13	EP103ULH4B13	<b>682289</b>	-	EP103ULH4C13	<b>682343</b>	EP103ULH4D13	<b>682397</b>	2
	15	EP103ULH4B15	<b>682290</b>	-	EP103ULH4C15	<b>682344</b>	EP103ULH4D15	<b>682398</b>	2
	16	EP103ULH4B16	<b>682291</b>	-	EP103ULH4C16	<b>682345</b>	EP103ULH4D16	<b>682399</b>	2
	20	EP103ULH4B20	<b>682292</b>	-	EP103ULH4C20	<b>682346</b>	EP103ULH4D20	<b>682400</b>	2
	25	EP103ULH4B25	<b>682293</b>	-	EP103ULH4C25	<b>682347</b>	EP103ULH4D25	<b>682401</b>	2
	30	EP103ULH4B30	<b>682294</b>	-	EP103ULH4C30	<b>682348</b>	EP103ULH4D30	<b>682402</b>	2
	32	EP103ULH4B32	<b>682295</b>	-	EP103ULH4C32	<b>682349</b>	EP103ULH4D32	<b>682403</b>	2
35	EP103ULH4B35	<b>682296</b>	-	EP103ULH4C35	<b>682350</b>	EP103ULH4D35	<b>682404</b>	2	
40	EP103ULH4B40	<b>682297</b>	-	EP103ULH4C40	<b>682351</b>	EP103ULH4D40	<b>682405</b>	2	

Series EP100 ULH

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**EP100 ULH**

**UL Listed 489      10kA**  
**CSA c22.2 No.5-02**  
**EN/IEC 60947-2      15kA**



Circuit protection

*UL Listed 489 performances*

<b>UL FILE</b>	E256870
<b>Ampere rating In (A) 0.5-63</b>	0.5-63A
<b>Reference temperature</b>	°C/F 25/77
<b>Terminal capacity flexible/rigid cable</b>	14-2 AWG
<b>Max. Torque N.m/lbs.in</b>	4.5/39.9

**Rated voltage Un (V)**

Poles	VAC	VDC
1	120	60
2, 3	240	125

**Short-circuit capacity**

Poles	V	Icc (kA)
1	120	10
2, 3	240	10

**DC short-circuit capacity**

Poles	VDC	Icc
1	60	10
2	125	10

*IEC performances*

<b>Thermal setting In</b>	0.5-63A
<b>Rated voltage AC Un</b>	(V) 240/415V
<b>Weight/pole</b>	(g) 130
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> ) 0.75/1 - 25/35

**Short-circuit capacity according to IEC 60947-2**

Poles	VAC	Icu (kA)
1	127	30
	240	15
	415	4
2	127	40
	240	30
	415	15
3	240	30
	415	15
	440	10

**DC short-circuit capacity according to IEC 60497-2**

Poles	V	Icu (kA)
1	60	25
2	125	30

*General performance*

<b>Minimum operating voltage U<sub>Bmin</sub></b>	12
<b>Tripping characteristics</b>	B-C-D
<b>Rated frequency</b>	(Hz) 50/60
<b>Mechanical/electrical endurance</b>	20000/10000
<b>Tropicalisation acc. to IEC 60068-2-28/2-30</b>	95% RH at 55°C
<b>Poles</b>	1, 2, 3
<b>Instantaneous tripping ranges acc. to IEC 60898-1</b>	
	B characteristic 3 to 5 times Ampere rating
	C characteristic 5 to 10 times Ampere rating
	D characteristic 10 to 20 times Ampere rating

A

**Application**



B

**Standards**

UL489, CSA c22.2 No.5-02  
 IEC 60947-2, IEC 60898-1

C

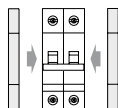
**Approvals / Marking**



D

**Add-on devices**

**Auxiliaries contacts**



**Motor operator**



(1) Ask for availability. Under homologation.










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### UL489 - Series EP100 ULH - 10kA - characteristics B-C-D

	In (A)	B curve		C curve		D curve		Pack.
		Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
 1/2  2/1 	0.5	-	-	EP101ULH1C0.5	<b>690265</b>	EP101ULH1D0.5	<b>690313</b>	6
	1	-	-	EP101ULH1C01	<b>690266</b>	EP101ULH1D01	<b>690314</b>	6
	2	-	-	EP101ULH1C02	<b>690267</b>	EP101ULH1D02	<b>690315</b>	6
	3	-	-	EP101ULH1C03	<b>690268</b>	EP101ULH1D03	<b>690316</b>	6
	4	-	-	EP101ULH1C04	<b>690269</b>	EP101ULH1D04	<b>690317</b>	6
	5	EP101ULH1B05	<b>690214</b>	EP101ULH1C05	<b>690270</b>	EP101ULH1D05	<b>690318</b>	6
	6	EP101ULH1B06	<b>690215</b>	EP101ULH1C06	<b>690271</b>	EP101ULH1D06	<b>690319</b>	6
	8	EP101ULH1B08	<b>682211</b>	EP101ULH1C08	<b>690272</b>	EP101ULH1D08	<b>690320</b>	6
	10	EP101ULH1B10	<b>690216</b>	EP101ULH1C10	<b>690273</b>	EP101ULH1D10	<b>690321</b>	6
	13	EP101ULH1B13	<b>690217</b>	EP101ULH1C13	<b>690274</b>	EP101ULH1D13	<b>690322</b>	6
	15	EP101ULH1B15	<b>690218</b>	EP101ULH1C15	<b>690275</b>	EP101ULH1D15	<b>690323</b>	6
	16	EP101ULH1B16	<b>690219</b>	EP101ULH1C16	<b>690276</b>	EP101ULH1D16	<b>690324</b>	6
	20	EP101ULH1B20	<b>690220</b>	EP101ULH1C20	<b>690277</b>	EP101ULH1D20	<b>690325</b>	6
	25	EP101ULH1B25	<b>690221</b>	EP101ULH1C25	<b>690278</b>	EP101ULH1D25	<b>690326</b>	6
	30	EP101ULH1B30	<b>690222</b>	EP101ULH1C30	<b>690279</b>	EP101ULH1D30	<b>690327</b>	6
	32	EP101ULH1B32	<b>690223</b>	EP101ULH1C32	<b>690280</b>	EP101ULH1D32	<b>690328</b>	6
	35	EP101ULH1B35	<b>682214</b>	EP101ULH1C35	<b>682229</b>	EP101ULH1D35	<b>682244</b>	6
	40	EP101ULH1B40	<b>682215</b>	EP101ULH1C40	<b>682230</b>	EP101ULH1D40	<b>682245</b>	6
50	EP101ULH1B50	<b>682216</b>	EP101ULH1C50	<b>682231</b>	EP101ULH1D50	<b>682246</b>	6	
60	EP101ULH1B60	<b>682217</b>	EP101ULH1C60	<b>682232</b>	EP101ULH1D60	<b>682247</b>	6	
63	EP101ULH1B63	<b>682218</b>	EP101ULH1C63	<b>682233</b>	EP101ULH1D63	<b>682248</b>	6	
 1/2 3/4  2/1 4/3 	0.5	-	-	EP102ULH2C0.5	<b>690281</b>	EP102ULH2D0.5	<b>690329</b>	3
	1	-	-	EP102ULH2C01	<b>690282</b>	EP102ULH2D01	<b>690330</b>	3
	2	-	-	EP102ULH2C02	<b>690283</b>	EP102ULH2D02	<b>690331</b>	3
	3	-	-	EP102ULH2C03	<b>690284</b>	EP102ULH2D03	<b>690332</b>	3
	4	-	-	EP102ULH2C04	<b>690285</b>	EP102ULH2D04	<b>690333</b>	3
	5	EP102ULH2B05	<b>690224</b>	EP102ULH2C05	<b>690286</b>	EP102ULH2D05	<b>690334</b>	3
	6	EP102ULH2B06	<b>690225</b>	EP102ULH2C06	<b>690287</b>	EP102ULH2D06	<b>690335</b>	3
	8	EP102ULH2B08	<b>682212</b>	EP102ULH2C08	<b>690288</b>	EP102ULH2D08	<b>690336</b>	3
	10	EP102ULH2B10	<b>690226</b>	EP102ULH2C10	<b>690289</b>	EP102ULH2D10	<b>690337</b>	3
	13	EP102ULH2B13	<b>690227</b>	EP102ULH2C13	<b>690290</b>	EP102ULH2D13	<b>690338</b>	3
	15	EP102ULH2B15	<b>690228</b>	EP102ULH2C15	<b>690291</b>	EP102ULH2D15	<b>690339</b>	3
	16	EP102ULH2B16	<b>690229</b>	EP102ULH2C16	<b>690292</b>	EP102ULH2D16	<b>690340</b>	3
	20	EP102ULH2B20	<b>690230</b>	EP102ULH2C20	<b>690293</b>	EP102ULH2D20	<b>690341</b>	3
	25	EP102ULH2B25	<b>690231</b>	EP102ULH2C25	<b>690294</b>	EP102ULH2D25	<b>690342</b>	3
	30	EP102ULH2B30	<b>690232</b>	EP102ULH2C30	<b>690295</b>	EP102ULH2D30	<b>690343</b>	3
	32	EP102ULH2B32	<b>690233</b>	EP102ULH2C32	<b>690296</b>	EP102ULH2D32	<b>690344</b>	3
	35	EP102ULH2B35	<b>682219</b>	EP102ULH2C35	<b>682234</b>	EP102ULH2D35	<b>682249</b>	3
	40	EP102ULH2B40	<b>682220</b>	EP102ULH2C40	<b>682235</b>	EP102ULH2D40	<b>682250</b>	3
50	EP102ULH2B50	<b>682221</b>	EP102ULH2C50	<b>682236</b>	EP102ULH2D50	<b>682251</b>	3	
60	EP102ULH2B60	<b>682222</b>	EP102ULH2C60	<b>682237</b>	EP102ULH2D60	<b>682252</b>	3	
63	EP102ULH2B63	<b>682223</b>	EP102ULH2C63	<b>682238</b>	EP102ULH2D63	<b>682253</b>	3	
 1/2 3/4 5/6  2/1 4/3 6/5 	0.5	-	-	EP103ULH2C0.5	<b>690297</b>	EP103ULH2D0.5	<b>690345</b>	2
	1	-	-	EP103ULH2C01	<b>690298</b>	EP103ULH2D01	<b>690346</b>	2
	2	-	-	EP103ULH2C02	<b>690299</b>	EP103ULH2D02	<b>690347</b>	2
	3	-	-	EP103ULH2C03	<b>690300</b>	EP103ULH2D03	<b>690348</b>	2
	4	-	-	EP103ULH2C04	<b>690301</b>	EP103ULH2D04	<b>690349</b>	2
	5	EP103ULH2B05	<b>690234</b>	EP103ULH2C05	<b>690302</b>	EP103ULH2D05	<b>690350</b>	2
	6	EP103ULH2B06	<b>690235</b>	EP103ULH2C06	<b>690303</b>	EP103ULH2D06	<b>690351</b>	2
	8	EP103ULH2B08	<b>682213</b>	EP103ULH2C08	<b>690304</b>	EP103ULH2D08	<b>690352</b>	2
	10	EP103ULH2B10	<b>690236</b>	EP103ULH2C10	<b>690305</b>	EP103ULH2D10	<b>690353</b>	2
	13	EP103ULH2B13	<b>290237</b>	EP103ULH2C13	<b>690306</b>	EP103ULH2D13	<b>690354</b>	2
	15	EP103ULH2B15	<b>290238</b>	EP103ULH2C15	<b>690307</b>	EP103ULH2D15	<b>690355</b>	2
	16	EP103ULH2B16	<b>690239</b>	EP103ULH2C16	<b>690308</b>	EP103ULH2D16	<b>690356</b>	2
	20	EP103ULH2B20	<b>690240</b>	EP103ULH2C20	<b>690309</b>	EP103ULH2D20	<b>690357</b>	2
	25	EP103ULH2B25	<b>690241</b>	EP103ULH2C25	<b>690310</b>	EP103ULH2D25	<b>690358</b>	2
	30	EP103ULH2B30	<b>690242</b>	EP103ULH2C30	<b>690311</b>	EP103ULH2D30	<b>690359</b>	2
	32	EP103ULH2B32	<b>690243</b>	EP103ULH2C32	<b>690312</b>	EP103ULH2D32	<b>690360</b>	2
	35	EP103ULH2B35	<b>682224</b>	EP103ULH2C35	<b>682239</b>	EP103ULH2D35	<b>682254</b>	2
	40	EP103ULH2B40	<b>682225</b>	EP103ULH2C40	<b>682240</b>	EP103ULH2D40	<b>682255</b>	2
50	EP103ULH2B50	<b>682226</b>	EP103ULH2C50	<b>682241</b>	EP103ULH2D50	<b>682256</b>	2	
60	EP103ULH2B60	<b>682227</b>	EP103ULH2C60	<b>682242</b>	EP103ULH2D60	<b>682257</b>	2	
63	EP103ULH2B63	<b>682228</b>	EP103ULH2C63	<b>682243</b>	EP103ULH2D63	<b>682258</b>	2	

Series EP100 ULH

A

B

C

D

E

F

G

X





Supplementary protection

EP100 UL

Circuit protection



Recognized UL1077 10kA

CSA c22.2 No. 23

EN/IEC 60898-1

EN/IEC 60947-2

10000  
3

15kA

UL1077 performances

UL FILE	E151139
Ampere rating $I_n$ (A) 0.5-63	0.5-63A
Reference temperature	°C/F 25/77
Terminal capacity flexible/rigid cable	14-2 AWG
Max. Torque N.m/lbs.in	4.5/39.9

Rated voltage  $U_n$  (V)

Poles	V AC	V DC
1	277	50
2, 3, 4	480	110

Short-circuit capacity

Poles	V	$I_{cc}$ (kA)
1, 2	277	10
3, 4	277/480	10
1	120	10
2, 3	240	10

DC short-circuit capacity

Poles	V DC	$I_{cc}$
1	50	10
2	110	10

IEC performances

Thermal setting $I_n$	0.5-63A
Rated voltage AC $U_n$	(V) 240/415V
Weight/pole	(g) 125
Terminal capacity flexible/rigid cable	(mm <sup>2</sup> ) 0.75/1 - 25/35

Short-circuit capacity according to IEC 60898-1

Poles	V AC	$I_{cn}$ (kA)
1	230/400	10
2, 3, 4	400	10

Short-circuit capacity according to IEC 60497-2

Poles	V AC	$I_{cu}$ (kA)
1	127	30
	240	15
	415	4
2	127	40
	240	30
	415	15
2, 3, 4	240	30
	440	10

DC short-circuit capacity according to IEC 60497-2

Poles	V	$I_{cu}$ (kA)
1	60	25
2	125	30

General performance

Minimum operating voltage $U_{Bmin}$	12
Tripping characteristics	B-C-D <sup>(1)</sup>
Rated frequency	(Hz) 50/60
Energy limiting class	3
Mechanical/electrical endurance	20000/10000
Tropicalisation acc. to IEC 60068-2-28/2-30	95% RH at 55°C
Poles	1, 2, 3, 4
Instantaneous tripping ranges acc. to IEC 60898-1	

Application



Standards

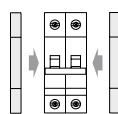
UL1077  
IEC 898-1  
IEC 947-2

Approvals / Marking



Add-on devices

Auxiliary contacts
















Motor operator



(1) B characteristic 3 to 5 times Ampere rating  
C characteristic 5 to 10 times Ampere rating  
D characteristic 10 to 20 times Ampere rating

**UL1077 - Series EP100 UL - 10kA - characteristics B-C-D**

	In (A)	B curve		C curve		D curve		Pack.
		Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
	0.5	-	-	EP101ULC0.5	686864	EP101ULD0.5	686940	12
	1	-	-	EP101ULC01	686865	EP101ULD01	686941	12
	2	-	-	EP101ULC02	686866	EP101ULD02	686942	12
	3	-	-	EP101ULC03	686867	EP101ULD03	686943	12
	4	-	-	EP101ULC04	686868	EP101ULD04	686944	12
	5	EP101ULB05	686808	EP101ULC05	686869	EP101ULD05	686945	12
	6	EP101ULB06	686809	EP101ULC06	686870	EP101ULD06	686946	12
	8	-	-	-	-	-	-	-
	10	EP101ULB10	686810	EP101ULC10	686871	EP101ULD10	686947	12
	13	EP101ULB13	686811	EP101ULC13	686872	EP101ULD13	686948	12
	15	EP101ULB15	686812	EP101ULC15	686873	EP101ULD15	686949	12
	16	EP101ULB16	686813	EP101ULC16	686874	EP101ULD16	686950	12
	20	EP101ULB20	686814	EP101ULC20	686875	EP101ULD20	686951	12
	25	EP101ULB25	686815	EP101ULC25	686876	EP101ULD25	686952	12
	30	EP101ULB30	686816	EP101ULC30	686877	EP101ULD30	686953	12
	32	EP101ULB32	686817	EP101ULC32	686878	EP101ULD32	686954	12
	40	EP101ULB40	686818	EP101ULC40	686879	EP101ULD40	686955	12
	50	EP101ULB50	686819	EP101ULC50	686880	EP101ULD50	686956	12
	60	EP101ULB60	686820	EP101ULC60	686881	EP101ULD60	686957	12
63	EP101ULB63	686821	EP101ULC63	686882	EP101ULD63	686958	12	
1/2 								
2/1 								
	0.5	-	-	EP102ULC0.5	686883	EP102ULD0.5	686959	6
	1	-	-	EP102ULC01	686884	EP102ULD01	686960	6
	2	-	-	EP102ULC02	686885	EP102ULD02	686961	6
	3	-	-	EP102ULC03	686886	EP102ULD03	686962	6
	4	-	-	EP102ULC04	686887	EP102ULD04	686963	6
	5	EP102ULB05	686822	EP102ULC05	686888	EP102ULD05	686964	6
	6	EP102ULB06	686823	EP102ULC06	686889	EP102ULD06	686965	6
	8	-	-	-	-	-	-	-
	10	EP102ULB10	686824	EP102ULC10	686890	EP102ULD10	686966	6
	13	EP102ULB13	686825	EP102ULC13	686891	EP102ULD13	686967	6
	15	EP102ULB15	686826	EP102ULC15	686892	EP102ULD15	686968	6
	16	EP102ULB16	686827	EP102ULC16	686893	EP102ULD16	686969	6
	20	EP102ULB20	686828	EP102ULC20	686894	EP102ULD20	686970	6
	25	EP102ULB25	686829	EP102ULC25	686895	EP102ULD25	686971	6
	30	EP102ULB30	686830	EP102ULC30	686896	EP102ULD30	686972	6
	32	EP102ULB32	686831	EP102ULC32	686897	EP102ULD32	686973	6
	40	EP102ULB40	686832	EP102ULC40	686898	EP102ULD40	686974	6
	50	EP102ULB50	686833	EP102ULC50	686899	EP102ULD50	686975	6
	60	EP102ULB60	686834	EP102ULC60	686900	EP102ULD60	686976	6
63	EP102ULB63	686835	EP102ULC63	686901	EP102ULD63	686977	6	
2/2 								
2/3 								
2/1 4/3 								
	0.5	-	-	EP103ULC0.5	686902	EP103ULD0.5	686978	4
	1	-	-	EP103ULC01	686903	EP103ULD01	686979	4
	2	-	-	EP103ULC02	686904	EP103ULD02	686980	4
	3	-	-	EP103ULC03	686905	EP103ULD03	686981	4
	4	-	-	EP103ULC04	686906	EP103ULD04	686982	4
	5	EP103ULB05	686836	EP103ULC05	686907	EP103ULD05	686983	4
	6	EP103ULB06	686837	EP103ULC06	686908	EP103ULD06	686984	4
	8	-	-	-	-	-	-	-
	10	EP103ULB10	686838	EP103ULC10	686909	EP103ULD10	686985	4
	13	EP103ULB13	686839	EP103ULC13	686910	EP103ULD13	686986	4
	15	EP103ULB15	686840	EP103ULC15	686911	EP103ULD15	686987	4
	16	EP103ULB16	686841	EP103ULC16	686912	EP103ULD16	686988	4
	20	EP103ULB20	686842	EP103ULC20	686913	EP103ULD20	686989	4
	25	EP103ULB25	686843	EP103ULC25	686914	EP103ULD25	686990	4
	30	EP103ULB30	686844	EP103ULC30	686915	EP103ULD30	686991	4
	32	EP103ULB32	686845	EP103ULC32	686916	EP103ULD32	686992	4
	40	EP103ULB40	686846	EP103ULC40	686917	EP103ULD40	686993	4
	50	EP103ULB50	686847	EP103ULC50	686918	EP103ULD50	686994	4
	60	EP103ULB60	686848	EP103ULC60	686919	EP103ULD60	686995	4
63	EP103ULB63	686849	EP103ULC63	686920	EP103ULD63	686996	4	
1/2 3/4 5/6 								
2/1 4/3 6/5 								
	0.5	-	-	EP104ULC0.5	686921	EP104ULD0.5	686997	3
	1	-	-	EP104ULC01	686922	EP104ULD01	686998	3
	2	-	-	EP104ULC02	686923	EP104ULD02	686999	3
	3	-	-	EP104ULC03	686924	EP104ULD03	687000	3
	4	-	-	EP104ULC04	686925	EP104ULD04	687001	3
	5	EP104ULB05	686850	EP104ULC05	686926	EP104ULD05	687002	3
	6	EP104ULB06	686851	EP104ULC06	686927	EP104ULD06	687003	3
	8	-	-	-	-	-	-	-
	10	EP104ULB10	686852	EP104ULC10	686928	EP104ULD10	687004	3
	13	EP104ULB13	686853	EP104ULC13	686929	EP104ULD13	687005	3
	15	EP104ULB15	686854	EP104ULC15	686930	EP104ULD15	687006	3
	16	EP104ULB16	686855	EP104ULC16	686931	EP104ULD16	687007	3
	20	EP104ULB20	686856	EP104ULC20	686932	EP104ULD20	687008	3
	25	EP104ULB25	686857	EP104ULC25	686933	EP104ULD25	687009	3
	30	EP104ULB30	686858	EP104ULC30	686934	EP104ULD30	687010	3
	32	EP104ULB32	686859	EP104ULC32	686935	EP104ULD32	687011	3
	40	EP104ULB40	686860	EP104ULC40	686936	EP104ULD40	687012	3
	50	EP104ULB50	686861	EP104ULC50	686937	EP104ULD50	687013	3
	60	EP104ULB60	686862	EP104ULC60	686938	EP104ULD60	687014	3
63	EP104ULB63	686863	EP104ULC63	686939	EP104ULD63	687015	3	
1/2 3/4 5/6 7/8 								
2/1 4/3 6/5 8/7 								

Series EP100 UL

A

B

C

D

E

F

G

X



Supplementary protection

EP60 UL

Circuit protection



Recognized UL1077 6kA

CSA c22.2 No.235

EN/IEC 60898

EN/IEC 60947-2

6000  
3

10kA

UL1077 performances

UL FILE	E151139
Ampere rating In (A) 0.5-63	0.5-63A
Reference temperature	°C/F 25/77
Terminal capacity flexible/rigid cable	14-2 AWG
Max. Torque N.m/lbs.in	4.5/39.9

Rated voltage Un (V)

Poles	V AC	V DC
1	277	50
2, 3, 4	480	110

Short-circuit capacity

Poles	V	Icc (kA)
1, 2	277	6
3, 4	277/480	6
1	120	6
2, 3	240	6

DC short-circuit capacity

Poles	V DC	Icc
1	50	6
2	110	6

IEC performances

Thermal setting In	0.5-63A
Rated voltage AC Un	(V) 240/415V
Weight/pole	(g) 125
Terminal capacity flexible/rigid cable	(mm <sup>2</sup> ) 0.75/1 - 25/35

Short-circuit capacity according to IEC 60898-1

Poles	V AC	Icn (kA)
1	230/400	6
2, 3, 4	400	6

Short-circuit capacity according to IEC 60497-2

Poles	V AC	Icn (kA)
1	127	20
	240	10
	415	3
2	127	30
	240	20
	415	10
2, 3, 4	440	6

DC short-circuit capacity according to IEC 60497-2

Poles	V	Icn (kA)
1	60	20
2	125	25

General performance

Minimum operating voltage U <sub>Bmin</sub>	12
Tripping characteristics	B-C-D <sup>(1)</sup>
Rated frequency (Hz)	50/60
Energy limiting class	3
Mechanical/electrical endurance	20000/10000
Tropicalisation acc. to IEC 60068-2-28/2-30	95% RH at 55°C
Poles	1, 2, 3, 4
Instantaneous tripping ranges acc. to IEC 60898-1	

Applications



Standards

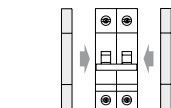
UL1077  
IEC 898-1  
IEC 947-2

Approvals / Marking



Add-on devices

Auxiliary contacts



Motor operator



(1) B characteristic 3 to 5 times Ampere rating  
C characteristic 5 to 10 times Ampere rating  
D characteristic 10 to 20 times Ampere rating



**UL1077-Series EP60 UL - 6kA - characteristics B-C-D**

Series EP60 UL

A

B

C

D

E

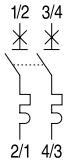
F

G

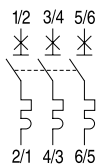
X



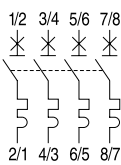
In (A)	B curve		C curve		D curve		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
0.5	-	-	EP61ULC0.5	<b>686656</b>	EP61ULD0.5	<b>686732</b>	12
1	-	-	EP61ULC01	<b>686657</b>	EP61ULD01	<b>686733</b>	12
2	-	-	EP61ULC02	<b>686658</b>	EP61ULD02	<b>686734</b>	12
3	-	-	EP61ULC03	<b>686659</b>	EP61ULD03	<b>686735</b>	12
4	-	-	EP61ULC04	<b>686660</b>	EP61ULD04	<b>686736</b>	12
5	EP61ULB05	<b>686600</b>	EP61ULC05	<b>686661</b>	EP61ULD05	<b>686737</b>	12
6	EP61ULB06	<b>686601</b>	EP61ULC06	<b>686662</b>	EP61ULD06	<b>686738</b>	12
8	-	-	-	-	-	-	-
10	EP61ULB10	<b>686602</b>	EP61ULC10	<b>686663</b>	EP61ULD10	<b>686739</b>	12
13	EP61ULB13	<b>686603</b>	EP61ULC13	<b>686664</b>	EP61ULD13	<b>686740</b>	12
15	EP61ULB15	<b>686604</b>	EP61ULC15	<b>686665</b>	EP61ULD15	<b>686741</b>	12
16	EP61ULB16	<b>686605</b>	EP61ULC16	<b>686666</b>	EP61ULD16	<b>686742</b>	12
20	EP61ULB20	<b>686606</b>	EP61ULC20	<b>686667</b>	EP61ULD20	<b>686743</b>	12
25	EP61ULB25	<b>686607</b>	EP61ULC25	<b>686668</b>	EP61ULD25	<b>686744</b>	12
30	EP61ULB30	<b>686608</b>	EP61ULC30	<b>686669</b>	EP61ULD30	<b>686745</b>	12
32	EP61ULB32	<b>686609</b>	EP61ULC32	<b>686670</b>	EP61ULD32	<b>686746</b>	12
40	EP61ULB40	<b>686610</b>	EP61ULC40	<b>686671</b>	EP61ULD40	<b>686747</b>	12
50	EP61ULB50	<b>686611</b>	EP61ULC50	<b>686672</b>	EP61ULD50	<b>686748</b>	12
60	EP61ULB60	<b>686612</b>	EP61ULC60	<b>686673</b>	EP61ULD60	<b>686749</b>	12
63	EP61ULB63	<b>686613</b>	EP61ULC63	<b>686674</b>	EP61ULD63	<b>686750</b>	12



0.5	-	-	EP62ULC0.5	<b>686675</b>	EP62ULD0.5	<b>686751</b>	6
1	-	-	EP62ULC01	<b>686676</b>	EP62ULD01	<b>686752</b>	6
2	-	-	EP62ULC02	<b>686677</b>	EP62ULD02	<b>686753</b>	6
3	-	-	EP62ULC03	<b>686678</b>	EP62ULD03	<b>686754</b>	6
4	-	-	EP62ULC04	<b>686679</b>	EP62ULD04	<b>686755</b>	6
5	EP62ULB05	<b>686614</b>	EP62ULC05	<b>686680</b>	EP62ULD05	<b>686756</b>	6
6	EP62ULB06	<b>686615</b>	EP62ULC06	<b>686681</b>	EP62ULD06	<b>686757</b>	6
8	-	-	-	-	-	-	-
10	EP62ULB10	<b>686616</b>	EP62ULC10	<b>686682</b>	EP62ULD10	<b>686758</b>	6
13	EP62ULB13	<b>686617</b>	EP62ULC13	<b>686683</b>	EP62ULD13	<b>686759</b>	6
15	EP62ULB15	<b>686618</b>	EP62ULC15	<b>686684</b>	EP62ULD15	<b>686760</b>	6
16	EP62ULB16	<b>686619</b>	EP62ULC16	<b>686685</b>	EP62ULD16	<b>686761</b>	6
20	EP62ULB20	<b>686620</b>	EP62ULC20	<b>686686</b>	EP62ULD20	<b>686762</b>	6
25	EP62ULB25	<b>686621</b>	EP62ULC25	<b>686687</b>	EP62ULD25	<b>686763</b>	6
30	EP62ULB30	<b>686622</b>	EP62ULC30	<b>686688</b>	EP62ULD30	<b>686764</b>	6
32	EP62ULB32	<b>686623</b>	EP62ULC32	<b>686689</b>	EP62ULD32	<b>686765</b>	6
40	EP62ULB40	<b>686624</b>	EP62ULC40	<b>686690</b>	EP62ULD40	<b>686766</b>	6
50	EP62ULB50	<b>686625</b>	EP62ULC50	<b>686691</b>	EP62ULD50	<b>686767</b>	6
60	EP62ULB60	<b>686626</b>	EP62ULC60	<b>686692</b>	EP62ULD60	<b>686768</b>	6
63	EP62ULB63	<b>686627</b>	EP62ULC63	<b>686693</b>	EP62ULD63	<b>686769</b>	6



0.5	-	-	EP63ULC0.5	<b>686694</b>	EP63ULD0.5	<b>686770</b>	4
1	-	-	EP63ULC01	<b>686695</b>	EP63ULD01	<b>686771</b>	4
2	-	-	EP63ULC02	<b>686696</b>	EP63ULD02	<b>686772</b>	4
3	-	-	EP63ULC03	<b>686697</b>	EP63ULD03	<b>686773</b>	4
4	-	-	EP63ULC04	<b>686698</b>	EP63ULD04	<b>686774</b>	4
5	EP63ULB05	<b>686628</b>	EP63ULC05	<b>686699</b>	EP63ULD05	<b>686775</b>	4
6	EP63ULB06	<b>686629</b>	EP63ULC06	<b>686700</b>	EP63ULD06	<b>686776</b>	4
8	-	-	-	-	-	-	-
10	EP63ULB10	<b>686630</b>	EP63ULC10	<b>686701</b>	EP63ULD10	<b>686777</b>	4
13	EP63ULB13	<b>686631</b>	EP63ULC13	<b>686702</b>	EP63ULD13	<b>686778</b>	4
15	EP63ULB15	<b>686632</b>	EP63ULC15	<b>686703</b>	EP63ULD15	<b>686779</b>	4
16	EP63ULB16	<b>686633</b>	EP63ULC16	<b>686704</b>	EP63ULD16	<b>686780</b>	4
20	EP63ULB20	<b>686634</b>	EP63ULC20	<b>686705</b>	EP63ULD20	<b>686781</b>	4
25	EP63ULB25	<b>686635</b>	EP63ULC25	<b>686706</b>	EP63ULD25	<b>686782</b>	4
30	EP63ULB30	<b>686636</b>	EP63ULC30	<b>686707</b>	EP63ULD30	<b>686783</b>	4
32	EP63ULB32	<b>686637</b>	EP63ULC32	<b>686708</b>	EP63ULD32	<b>686784</b>	4
40	EP63ULB40	<b>686638</b>	EP63ULC40	<b>686709</b>	EP63ULD40	<b>686785</b>	4
50	EP63ULB50	<b>686639</b>	EP63ULC50	<b>686710</b>	EP63ULD50	<b>686786</b>	4
60	EP63ULB60	<b>686640</b>	EP63ULC60	<b>686711</b>	EP63ULD60	<b>686787</b>	4
63	EP63ULB63	<b>686641</b>	EP63ULC63	<b>686712</b>	EP63ULD63	<b>686788</b>	4



0.5	-	-	EP64ULC0.5	<b>686713</b>	EP64ULD0.5	<b>686789</b>	3
1	-	-	EP64ULC01	<b>686714</b>	EP64ULD01	<b>686790</b>	3
2	-	-	EP64ULC02	<b>686715</b>	EP64ULD02	<b>686791</b>	3
3	-	-	EP64ULC03	<b>686716</b>	EP64ULD03	<b>686792</b>	3
4	-	-	EP64ULC04	<b>686717</b>	EP64ULD04	<b>686793</b>	3
5	EP64ULB05	<b>686642</b>	EP64ULC05	<b>686718</b>	EP64ULD05	<b>686794</b>	3
6	EP64ULB06	<b>686643</b>	EP64ULC06	<b>686719</b>	EP64ULD06	<b>686795</b>	3
8	-	-	-	-	-	-	-
10	EP64ULB10	<b>686644</b>	EP64ULC10	<b>686720</b>	EP64ULD10	<b>686796</b>	3
13	EP64ULB13	<b>686645</b>	EP64ULC13	<b>686721</b>	EP64ULD13	<b>686797</b>	3
15	EP64ULB15	<b>686646</b>	EP64ULC15	<b>686722</b>	EP64ULD15	<b>686798</b>	3
16	EP64ULB16	<b>686647</b>	EP64ULC16	<b>686723</b>	EP64ULD16	<b>686799</b>	3
20	EP64ULB20	<b>686648</b>	EP64ULC20	<b>686724</b>	EP64ULD20	<b>686800</b>	3
25	EP64ULB25	<b>686649</b>	EP64ULC25	<b>686725</b>	EP64ULD25	<b>686801</b>	3
30	EP64ULB30	<b>686650</b>	EP64ULC30	<b>686726</b>	EP64ULD30	<b>686802</b>	3
32	EP64ULB32	<b>686651</b>	EP64ULC32	<b>686727</b>	EP64ULD32	<b>686803</b>	3
40	EP64ULB40	<b>686652</b>	EP64ULC40	<b>686728</b>	EP64ULD40	<b>686804</b>	3
50	EP64ULB50	<b>686653</b>	EP64ULC50	<b>686729</b>	EP64ULD50	<b>686805</b>	3
60	EP64ULB60	<b>686654</b>	EP64ULC60	<b>686730</b>	EP64ULD60	<b>686806</b>	3
63	EP64ULB63	<b>686655</b>	EP64ULC63	<b>686731</b>	EP64ULD63	<b>686807</b>	3



### Series EP100 R

Circuit protection



**EN/IEC 60898-1** 10000  
3

**EN/IEC 60947-2** **15kA**



### Applications

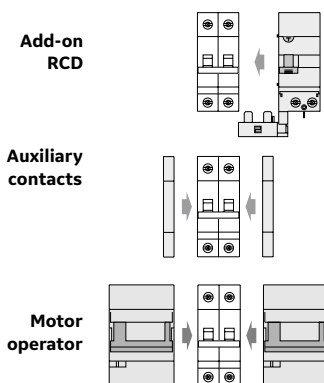


### Approval / Marking

Bombardier Transportation Approval  
acc. to EN50155



### Add-on devices



### Performance

<b>Thermal setting In</b>	(A) 0.5 -63
<b>Rated voltage AC Un</b>	(V) 230/400
<b>Minimum operating voltage UBmin</b>	(V) 12
<b>Tripping characteristics</b>	B-C
<b>Energy limiting class</b>	3
<b>Mechanical/electrical endurance</b>	20000/10000
<b>Tropicalisation acc. to EN/IEC 60068-2</b>	95% RH at 55°C
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> ) 25-35
<b>Poles</b>	3
<b>Weight/pole</b>	(g) 125

### Short-circuit capacity

#### AC/DC acc. to EN/IEC 60947-2

Poles	V	Icu (kA) <sup>(1)</sup>
3	240 DC	30
2	415 DC	15
1	440 AC	10

#### AC/DC acc. to EN/IEC 60898-2

Poles	V	Icn=Ics (kA)
3	400 DC	10 <sup>(2)</sup>

(1) Ics = 50% Icu

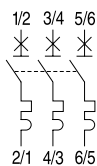
(2) Grid distance of 60mm for B-C and D; Ics = 75% Icu



**Series EP100 R - 10kA - characteristics B-C**



**3P  
3 mod.**



In (A)	B		C		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
0.5	-	-	EP103C0.5RAIL	<b>681461</b>	4
1	-	-	EP103C01RAIL	<b>681462</b>	4
2	-	-	EP103C02RAIL	<b>681463</b>	4
3	-	-	EP103C03RAIL	<b>681464</b>	4
4	-	-	EP103C04RAIL	<b>681465</b>	4
6	EP103B06RAIL	<b>681452</b>	EP103C06RAIL	<b>681466</b>	4
10	EP103B10RAIL	<b>681453</b>	EP103C10RAIL	<b>681467</b>	4
16	EP103B16RAIL	<b>681454</b>	EP103C16RAIL	<b>681468</b>	4
20	EP103B20RAIL	<b>681455</b>	EP103C20RAIL	<b>681469</b>	4
25	EP103B25RAIL	<b>681456</b>	EP103C25RAIL	<b>681470</b>	4
32	EP103B32RAIL	<b>681457</b>	EP103C32RAIL	<b>681471</b>	4
40	EP103B40RAIL	<b>681458</b>	EP103C40RAIL	<b>681472</b>	4
50	EP103B50RAIL	<b>681459</b>	EP103C50RAIL	<b>681473</b>	4
63	EP103B63RAIL	<b>681460</b>	EP103C63RAIL	<b>681474</b>	4

Series EP100 R

**A**

B

C

D

E

F

G

X



Miniature Circuit Breakers for railway applications  
Universal currents

Series EP100 UCR

EN/IEC 60898-2 **6000 | T15**

DIN VDE 0641

EN/IEC 60947-2 **10kA**



Circuit protection

Applications

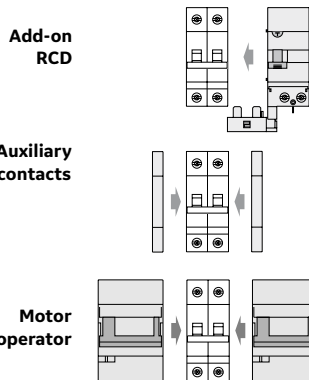


Approval / Marking

Bombardier Transportation Approval  
acc. to EN50155



Add-on devices



Performance

<b>Thermal setting In</b>	(A) 0.5 -63
<b>Rated voltage AC Un</b>	(V) 230/400 250/500 $\equiv$
<b>Minimum operating voltage UBmin</b>	(V) 12 12 $\equiv$
<b>Tripping characteristics</b>	B-C-K
<b>Mechanical/electrical endurance</b>	20000/10000
<b>Tropicalisation acc. to EN/IEC 60068-2</b>	95% RH at 55°C
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> ) 25-35
<b>Poles<sup>(1)</sup></b>	1, 2
<b>Weight</b>	(g/pole) 125



Short-circuit capacity

AC/DC acc. to EN/IEC 60947-2		
Poles	V	Icu (kA)
1	230 DC	10 <sup>(2)</sup>
2	440 DC	10 <sup>(2)</sup>
1	230 AC	6 <sup>(3)</sup>
2	400 AC	6 <sup>(3)</sup>

AC/DC acc. to EN/IEC 60898-2 <sup>(4)</sup>		
Poles	V	Icn=Ics (kA)
1	125 DC	10
	220 DC	6
	230/400 AC	6
2	250 DC	10
	440 DC	6
	400 AC	6

(1) Polarity labeling to be respected due to the permanent magnet in the MCB  
(2) T = 4ms  
(3) 4.5kA for 50A and 63A  
(4) After a switching of the net with more than 6kA in AC it should not be used in DC

**Series EP100 UCR - 10kA - characteristics B-C-K**

	In (A)	B		C		K		Pack.
		Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
 <p>2P 1 mod. (1) (2)</p> <p>2 1 +</p>	0.5	-	-	EP101RucC0.5	<b>681493</b>	EP101UCRK0.5	<b>673267</b>	12
	1	-	-	EP101RucC01	<b>681494</b>	EP101UCRK01	<b>673268</b>	12
	1.6	-	-	-	-	EP101UCRK1.6	<b>673269</b>	12
	2	-	-	EP101RucC02	<b>681495</b>	EP101UCRK02	<b>673270</b>	12
	3	-	-	-	-	EP101UCRK03	<b>673271</b>	12
	4	-	-	EP101RucC04	<b>681496</b>	EP101UCRK04	<b>673272</b>	12
	6	EP101RucB06	<b>681475</b>	EP101RucC06	<b>681497</b>	EP101UCRK06	<b>673273</b>	12
	8	-	-	-	-	EP101UCRK08	<b>673274</b>	12
	10	EP101RucB10	<b>681476</b>	EP101RucC10	<b>681498</b>	EP101UCRK10	<b>673275</b>	12
	13	-	-	-	-	EP101UCRK13	<b>673276</b>	12
	16	EP101RucB16	<b>681477</b>	EP101RucC16	<b>681499</b>	EP101UCRK16	<b>673277</b>	12
	20	EP101RucB20	<b>681478</b>	EP101RucC20	<b>681500</b>	EP101UCRK20	<b>673278</b>	12
	25	EP101RucB25	<b>681479</b>	EP101RucC25	<b>681501</b>	EP101UCRK25	<b>673279</b>	12
	32	EP101RucB32	<b>681480</b>	EP101RucC32	<b>681502</b>	EP101UCRK32	<b>673280</b>	12
	40	EP101RucB40	<b>681481</b>	EP101RucC40	<b>681503</b>	EP101UCRK40	<b>673281</b>	12
	50	EP101RucB50	<b>681482</b>	EP101RucC50	<b>681504</b>	EP101UCRK50	<b>673282</b>	12
63	EP101RucB63	<b>681483</b>	EP101RucC63	<b>681505</b>	EP101UCRK63	<b>673283</b>	12	
 <p>2P 2 mod. (1) (2)</p> <p>2 4 1 3 + -</p>	0.5	-	-	EP102RucC0.5	<b>681506</b>	-	-	6
	1	-	-	EP102RucC01	<b>681507</b>	-	-	6
	1.6	-	-	-	-	-	-	6
	2	-	-	EP102RucC02	<b>681508</b>	-	-	6
	3	-	-	-	-	-	-	6
	4	-	-	EP102RucC04	<b>681509</b>	-	-	6
	6	EP102RucB06	<b>681484</b>	EP102RucC06	<b>681510</b>	-	-	6
	8	-	-	-	-	-	-	6
	10	EP102RucB10	<b>681485</b>	EP102RucC10	<b>681511</b>	-	-	6
	13	-	-	-	-	-	-	6
	16	EP102RucB16	<b>681486</b>	EP102RucC16	<b>681512</b>	-	-	6
	20	EP102RucB20	<b>681487</b>	EP102RucC20	<b>681513</b>	-	-	6
	25	EP102RucB25	<b>681488</b>	EP102RucC25	<b>681514</b>	-	-	6
	32	EP102RucB32	<b>681489</b>	EP102RucC32	<b>681515</b>	-	-	6
	40	EP102RucB40	<b>681490</b>	EP102RucC40	<b>681516</b>	-	-	6
	50	EP102RucB50	<b>681491</b>	EP102RucC50	<b>681517</b>	-	-	6
63	EP102RucB63	<b>681492</b>	EP102RucC63	<b>681518</b>	-	-	6	
 <p>2P 2 mod. (1) (2)</p> <p>1 3 2+ 4-</p>	0.5	-	-	EP102UCRC0.5	<b>680565</b>	EP102UCRK0.5	<b>673284</b>	6
	1	-	-	EP102UCRC01	<b>680566</b>	EP102UCRK01	<b>673285</b>	6
	1.6	-	-	-	-	EP102UCRK1.6	<b>673286</b>	6
	2	-	-	EP102UCRC02	<b>680567</b>	EP102UCRK02	<b>673287</b>	6
	3	-	-	-	-	EP102UCRK03	<b>673288</b>	6
	4	-	-	EP102UCRC04	<b>680568</b>	EP102UCRK04	<b>673289</b>	6
	6	-	-	EP102UCRC06	<b>680569</b>	EP102UCRK06	<b>673290</b>	6
	8	-	-	-	-	EP102UCRK08	<b>673291</b>	6
	10	-	-	EP102UCRC10	<b>680570</b>	EP102UCRK10	<b>673292</b>	6
	13	-	-	-	-	EP102UCRK13	<b>673293</b>	6
	16	-	-	EP102UCRC16	<b>680571</b>	EP102UCRK16	<b>673294</b>	6
	20	-	-	EP102UCRC20	<b>680572</b>	EP102UCRK20	<b>673295</b>	6
	25	-	-	EP102UCRC25	<b>680573</b>	EP102UCRK25	<b>673296</b>	6
	32	-	-	EP102UCRC32	<b>680574</b>	EP102UCRK32	<b>673297</b>	6
	40	-	-	EP102UCRC40	<b>680575</b>	EP102UCRK40	<b>673298</b>	6
	50	-	-	EP102UCRC50	<b>680576</b>	EP102UCRK50	<b>673299</b>	6
63	-	-	EP102UCRC63	<b>680577</b>	EP102UCRK63	<b>673300</b>	6	

(1) Always respect the polarities  
 (2) Characteristics are in DC:  
 B (DC) 3 up to 7.5 In  
 C (DC) 5 up to 15 In  
 K (DC) 8 up to 12 In  
 (3) Marking EP101UCRK:

Series EP100 UCR

A

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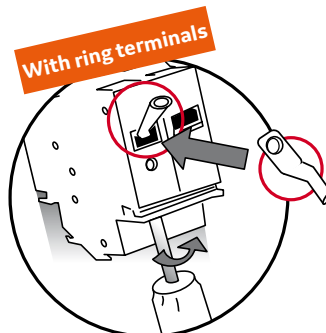
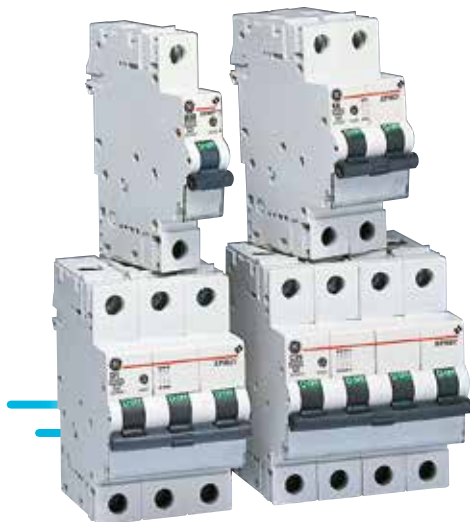
X



## Miniature Circuit Breakers with ring terminals

### Series EP100T

Circuit protection



The miniature circuit breakers in RAIL-design have been developed with regard to shakes, shocks and vibrations

### Applications



### Standards

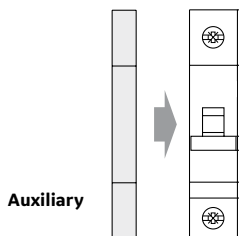
- Certified acc. new CEI UNI 11170 (higher protection against fires)
- Certified acc. to NF 16-101, smoke index F
- Shock and vibrations tests acc. to IEC 61373

### Approval / Marking



Trenitalia n° 371441.01

### Add-on devices



Auxiliary

Auxiliary contacts series CBT  
Shunt trip Tele LT

### Performance

<b>Thermal setting In</b>	(A)	0.5 to 63 at 45°C
<b>Rated voltage AC Un</b>	(V)	240/440
<b>Operating temperature</b>	(°C)	-40/+70
<b>Tripping characteristics</b>		Z-B-C-K
<b>Energy limiting class</b>		3
<b>Mechanical/electrical endurance</b>		20000/10000
<b>Tropicalisation acc. IEC 60068-2-28/2-30</b>		95% RH at 55°C
<b>Capacity of ring terminal</b>	(mm <sup>2</sup> )	16 (x2 connections)
<b>Torque</b>	(Nm)	2
<b>Poles</b>		1, 2, 3, 4
<b>Self-extinguish degree</b>		according UNI CEI 11170
<b>Smoke index acc. UNI CEI 11170, NF 16-102</b>		F1
<b>Maximum working altitude</b>	(m)	2000

### Short-circuit capacity

AC acc. to EN 60947-2 (minimum value)		
Poles	V <sub>~</sub>	I <sub>cu</sub> (kA)
1	230	15
	133	20
2	440/380	15
	230/133	20
3, 4	440	10
	380	15
	230	20

DC acc. to EN 60947-2		
Poles	V <sub>---</sub>	I <sub>cu</sub> (kA)/I <sub>cs</sub> (kA)
1	60	25/15 ms
2	110	30/15 ms

AC acc. to EN/IEC 60898		
Poles	V <sub>~</sub>	I <sub>cn</sub> (kA)
1-4	230/400	10

A

B

C

D

E

F





G

X





**Series EP100T - 10kA - characteristics Z-B-C-K**

In (A)	2-3 In (Z)		3-5 In (B)		8-12 In (C)		8-12 In (K)		Pack.	
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.		
1P 1 mod. 	0.5	EP101TZ0.5	<b>691277</b>	-	-	EP101TC0.5	<b>691245</b>	EP101TK0.5	<b>691261</b>	12
	1	EP101TZ01	<b>691278</b>	-	-	EP101TC01	<b>691246</b>	EP101TK1	<b>691267</b>	12
	1.6	EP101TZ1.6	<b>691284</b>	-	-	EP101TC1.6	<b>691252</b>	EP101TK1.6	<b>691268</b>	12
	2	EP101TZ02	<b>691279</b>	-	-	EP101TC02	<b>691247</b>	EP101TK02	<b>691262</b>	12
	3	EP101TZ03	<b>691280</b>	-	-	EP101TC03	<b>691248</b>	EP101TK03	<b>691263</b>	12
	4	EP101TZ04	<b>691281</b>	-	-	EP101TC04	<b>691249</b>	EP101TK04	<b>691264</b>	12
	6	EP101TZ06	<b>691282</b>	EP101TB6	<b>691234</b>	EP101TC06	<b>691250</b>	EP101TK06	<b>691265</b>	12
	8	EP101TZ08	<b>691283</b>	EP101TB8	<b>691235</b>	EP101TC08	<b>691251</b>	EP101TK08	<b>691266</b>	12
	10	EP101TZ10	<b>691285</b>	EP101TB10	<b>691236</b>	EP101TC10	<b>691253</b>	EP101TK10	<b>691269</b>	12
	13	-	-	EP101TB13	<b>691237</b>	EP101TC13	<b>691254</b>	-	-	12
	16	EP101TZ16	<b>691286</b>	EP101TB16	<b>691238</b>	EP101TC16	<b>691255</b>	EP101TK16	<b>691270</b>	12
	20	EP101TZ20	<b>691287</b>	EP101TB20	<b>691239</b>	EP101TC20	<b>691256</b>	EP101TK20	<b>691271</b>	12
	25	EP101TZ25	<b>691288</b>	EP101TB25	<b>691240</b>	EP101TC25	<b>667248</b>	EP101TK25	<b>691272</b>	12
	32	EP101TZ32	<b>691289</b>	EP101TB32	<b>691241</b>	EP101TC32	<b>691257</b>	EP101TK32	<b>691273</b>	12
40	EP101TZ40	<b>691290</b>	EP101TB40	<b>691242</b>	EP101TC40	<b>691258</b>	EP101TK40	<b>691274</b>	12	
50	EP101TZ50	<b>691291</b>	EP101TB50	<b>691243</b>	EP101TC50	<b>691259</b>	EP101TK50	<b>691275</b>	12	
63	EP101TZ63	<b>691292</b>	EP101TB63	<b>691244</b>	EP101TC63	<b>691260</b>	EP101TK63	<b>691276</b>	12	
2P 2 mod. 	0.5	EP102TZ0.5	<b>691337</b>	-	-	EP102TC0.5	<b>691304</b>	EP102TK0.5	<b>691321</b>	6
	1	EP102TZ01	<b>691338</b>	-	-	EP102TC01	<b>691305</b>	EP102TK01	<b>691322</b>	6
	1.6	EP102TZ1.6	<b>691344</b>	-	-	EP102TC1.6	<b>691311</b>	EP102TK1.6	<b>691328</b>	6
	2	EP102TZ02	<b>691339</b>	-	-	EP102TC02	<b>691306</b>	EP102TK02	<b>691323</b>	6
	3	EP102TZ03	<b>691340</b>	-	-	EP102TC03	<b>691307</b>	EP102TK03	<b>691324</b>	6
	4	EP102TZ04	<b>691341</b>	-	-	EP102TC04	<b>691308</b>	EP102TK04	<b>691325</b>	6
	6	EP102TZ06	<b>691342</b>	EP102TB06	<b>691293</b>	EP102TC06	<b>691309</b>	EP102TK06	<b>691326</b>	6
	8	EP102TZ08	<b>691343</b>	EP102TB08	<b>691294</b>	EP102TC08	<b>691310</b>	EP102TK08	<b>691327</b>	6
	10	EP102TZ10	<b>691345</b>	EP102TB10	<b>691295</b>	EP102TC10	<b>691312</b>	EP102TK10	<b>691329</b>	6
	13	-	-	EP102TB13	<b>691296</b>	EP102TC13	<b>691313</b>	-	-	6
	16	EP102TZ16	<b>691346</b>	EP102TB16	<b>691297</b>	EP102TC16	<b>691314</b>	EP102TK16	<b>691330</b>	6
	20	EP102TZ20	<b>691347</b>	EP102TB20	<b>691298</b>	EP102TC20	<b>691315</b>	EP102TK20	<b>691331</b>	6
	25	EP102TZ25	<b>691348</b>	EP102TB25	<b>691299</b>	EP102TC25	<b>691316</b>	EP102TK25	<b>691332</b>	6
	32	EP102TZ32	<b>691349</b>	EP102TB32	<b>691300</b>	EP102TC32	<b>691317</b>	EP102TK32	<b>691333</b>	6
40	EP102TZ40	<b>691350</b>	EP102TB40	<b>691301</b>	EP102TC40	<b>691318</b>	EP102TK40	<b>691334</b>	6	
50	EP102TZ50	<b>691351</b>	EP102TB50	<b>691302</b>	EP102TC50	<b>691319</b>	EP102TK50	<b>691335</b>	6	
63	EP102TZ63	<b>691352</b>	EP102TB63	<b>691303</b>	EP102TC63	<b>691320</b>	EP102TK63	<b>691336</b>	6	
3P 3 mod. 	0.5	-	-	-	-	EP103TC0.5	<b>691364</b>	EP103TK0.5	<b>691381</b>	4
	1	-	-	-	-	EP103TC01	<b>691365</b>	EP103TK01	<b>691382</b>	4
	1.6	-	-	-	-	EP103TC1.6	<b>691371</b>	EP103TK1.6	<b>691388</b>	4
	2	-	-	-	-	EP103TC02	<b>691366</b>	EP103TK02	<b>691383</b>	4
	3	-	-	-	-	EP103TC03	<b>691367</b>	EP103TK03	<b>691384</b>	4
	4	-	-	-	-	EP103TC04	<b>691368</b>	EP103TK04	<b>691385</b>	4
	6	-	-	EP103TB06	<b>691353</b>	EP103TC06	<b>691369</b>	EP103TK06	<b>691386</b>	4
	8	-	-	EP103TB08	<b>691354</b>	EP103TC08	<b>691370</b>	EP103TK08	<b>691387</b>	4
	10	-	-	EP103TB10	<b>691355</b>	EP103TC10	<b>691372</b>	EP103TK10	<b>691389</b>	4
	13	-	-	EP103TB13	<b>691356</b>	EP103TC13	<b>691373</b>	-	-	4
	16	-	-	EP103TB16	<b>691357</b>	EP103TC16	<b>691374</b>	EP103TK16	<b>691390</b>	4
	20	-	-	EP103TB20	<b>691358</b>	EP103TC20	<b>691375</b>	EP103TK20	<b>691391</b>	4
	25	-	-	EP103TB25	<b>691359</b>	EP103TC25	<b>691376</b>	EP103TK25	<b>691392</b>	4
	32	-	-	EP103TB32	<b>691360</b>	EP103TC32	<b>691377</b>	EP103TK32	<b>691393</b>	4
40	-	-	EP103TB40	<b>691361</b>	EP103TC40	<b>691378</b>	EP103TK40	<b>691394</b>	4	
50	-	-	EP103TB50	<b>691362</b>	EP103TC50	<b>691379</b>	EP103TK50	<b>691395</b>	4	
63	-	-	EP103TB63	<b>691363</b>	EP103TC63	<b>691380</b>	EP103TK63	<b>691396</b>	4	
4P 4 mod. 	0.5	-	-	-	-	EP104TC0.5	<b>691407</b>	EP104TK0.5	<b>691424</b>	3
	1	-	-	-	-	EP104TC01	<b>691408</b>	EP104TK01	<b>691425</b>	3
	1.6	-	-	-	-	EP104TC1.6	<b>691414</b>	EP104TK1.6	<b>691431</b>	3
	2	-	-	-	-	EP104TC02	<b>691409</b>	EP104TK02	<b>691426</b>	3
	3	-	-	-	-	EP104TC03	<b>691410</b>	EP104TK03	<b>691427</b>	3
	4	-	-	-	-	EP104TC04	<b>691411</b>	EP104TK04	<b>691428</b>	3
	6	-	-	EP104TB06	<b>691397</b>	EP104TC06	<b>691412</b>	EP104TK06	<b>691429</b>	3
	8	-	-	EP104TB08	<b>691398</b>	EP104TC08	<b>691413</b>	EP104TK08	<b>691430</b>	3
	10	-	-	EP104TB10	<b>691399</b>	EP104TC10	<b>691415</b>	EP104TK10	<b>691432</b>	3
	13	-	-	EP104TB13	<b>691400</b>	EP104TC13	<b>691416</b>	-	-	3
	16	-	-	EP104TB16	<b>667247</b>	EP104TC16	<b>691417</b>	EP104TK16	<b>691433</b>	3
	20	-	-	EP104TB20	<b>691401</b>	EP104TC20	<b>691418</b>	EP104TK20	<b>691434</b>	3
	25	-	-	EP104TB25	<b>691402</b>	EP104TC25	<b>691419</b>	EP104TK25	<b>691435</b>	3
	32	-	-	EP104TB32	<b>691403</b>	EP104TC32	<b>691420</b>	EP104TK32	<b>691436</b>	3
40	-	-	EP104TB40	<b>691404</b>	EP104TC40	<b>691421</b>	EP104TK40	<b>691437</b>	3	
50	-	-	EP104TB50	<b>691405</b>	EP104TC50	<b>691422</b>	EP104TK50	<b>691438</b>	3	
63	-	-	EP104TB63	<b>691406</b>	EP104TC63	<b>691423</b>	EP104TK63	<b>691439</b>	3	

Series EP100T

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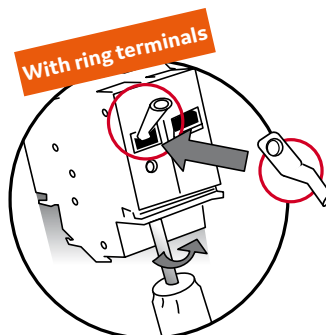




## Miniature Circuit Breakers for railway applications Universal currents

### Series EP100 UCT

Circuit protection



The miniature circuit breakers in RAIL-design have been developed with regard to shakes, shocks and vibrations

### Applications



### Standards

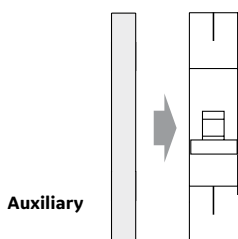
- Certified acc. new CEI UNI 11170 (higher protection against fires)
- Certified acc. to NF 16-101, smoke index F
- Shock and vibrations tests acc. to IEC 61373

### Approval / Marking



Trenitalia n° 371441.01

### Add-on devices



### Performance

<b>Thermal setting In</b>	(A)	0.5 to 63 at 45°C
<b>Rated voltage AC Un</b>	(V)	250/440
<b>Operating temperature</b>	(°C)	-40/+70
<b>Tripping characteristics</b>		Z-B-C-K
<b>Energy limiting class</b>		3
<b>Mechanical/electrical endurance</b>		20000/10000
<b>Tropicalisation acc. IEC 60068-2-28/2-30</b>		95% RH at 55°C
<b>Capacity of ring terminal</b>	(mm <sup>2</sup> )	16 (x2 connections)
<b>Torque</b>	(Nm)	2
<b>Poles</b>		1, 2
<b>Self-extinguish degree</b>		according to UNI CEI 11170
<b>Smoke index acc. UNI CEI 11170, NF 16-102</b>		F1
<b>Maximum working altitude</b>	(m)	2000



### Short-circuit capacity

DC acc. to EN/IEC 60947-2		
Poles	V <sub>DC</sub>	I <sub>cu</sub> (kA)/I <sub>cs</sub> (kA)
1	24	25/15 ms
	60	25/15 ms
	110	20/10 ms
	250	10/5 ms
2	24	30/15 ms
	60	30/15 ms
	110	25/15 ms
	250	10/5 ms





**Series EP100 UCT - 10kA - characteristics Z-B-C-K**

	In (A)	2-3 In (Z)		3-5 In (B)		8-12 In (C)		8-12 In (K)		Pack.
		Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
<b>1P</b> <b>1 mod.</b> 	0.5	EP101UCTZ0.5	<b>691484</b>	-	-	EP101UCTC0.5	<b>691451</b>	EP101UCTK0.5	<b>691468</b>	12
	1	EP101UCTZ01	<b>691485</b>	-	-	EP101UCTC01	<b>691452</b>	EP101UCTK01	<b>691469</b>	12
	1.6	EP101UCTZ1.6	<b>691491</b>	-	-	EP101UCTC1.6	<b>691458</b>	EP101UCTK1.6	<b>691475</b>	12
	2	EP101UCTZ02	<b>691486</b>	-	-	EP101UCTC02	<b>691453</b>	EP101UCTK02	<b>691470</b>	12
	3	EP101UCTZ03	<b>691487</b>	-	-	EP101UCTC03	<b>691454</b>	EP101UCTK03	<b>691471</b>	12
	4	EP101UCTZ04	<b>691488</b>	-	-	EP101UCTC04	<b>691455</b>	EP101UCTK04	<b>691472</b>	12
	6	EP101UCTZ06	<b>691489</b>	EP101UCTB06	<b>691440</b>	EP101UCTC06	<b>691456</b>	EP101UCTK06	<b>691473</b>	12
	8	EP101UCTZ08	<b>691490</b>	EP101UCTB08	<b>691441</b>	EP101UCTC08	<b>691457</b>	EP101UCTK08	<b>691474</b>	12
	10	EP101UCTZ10	<b>691492</b>	EP101UCTB10	<b>691442</b>	EP101UCTC10	<b>691459</b>	EP101UCTK10	<b>691476</b>	12
	13	-	-	EP101UCTB13	<b>691443</b>	EP101UCTC13	<b>691460</b>	-	-	12
	16	EP101UCTZ16	<b>691493</b>	EP101UCTB16	<b>691444</b>	EP101UCTC16	<b>691461</b>	EP101UCTK16	<b>691477</b>	12
	20	EP101UCTZ20	<b>691494</b>	EP101UCTB20	<b>691445</b>	EP101UCTC20	<b>691462</b>	EP101UCTK20	<b>691478</b>	12
	25	EP101UCTZ25	<b>691495</b>	EP101UCTB25	<b>691446</b>	EP101UCTC25	<b>691463</b>	EP101UCTK25	<b>691479</b>	12
	32	EP101UCTZ32	<b>691496</b>	EP101UCTB32	<b>691447</b>	EP101UCTC32	<b>691464</b>	EP101UCTK32	<b>691480</b>	12
	40	EP101UCTZ40	<b>691497</b>	EP101UCTB40	<b>691448</b>	EP101UCTC40	<b>691465</b>	EP101UCTK40	<b>691481</b>	12
	50	EP101UCTZ50	<b>691498</b>	EP101UCTB50	<b>691449</b>	EP101UCTC50	<b>691466</b>	EP101UCTK50	<b>691482</b>	12
63	EP101UCTZ63	<b>691499</b>	EP101UCTB63	<b>691450</b>	EP101UCTC63	<b>691467</b>	EP101UCTK63	<b>691483</b>	12	
<b>2P</b> <b>2 mod.</b> 	0.5	EP102UCTZ0.5	<b>691544</b>	-	-	EP102UCTC0.5	<b>691511</b>	EP102UCTK0.5	<b>691528</b>	6
	1	EP102UCTZ01	<b>691545</b>	-	-	EP102UCTC01	<b>691512</b>	EP102UCTK01	<b>691529</b>	6
	1.6	EP102UCTZ1.6	<b>691546</b>	-	-	EP102UCTC1.6	<b>691518</b>	EP102UCTK1.6	<b>691535</b>	6
	2	EP102UCTZ02	<b>691551</b>	-	-	EP102UCTC02	<b>691513</b>	EP102UCTK02	<b>691530</b>	6
	3	EP102UCTZ03	<b>691547</b>	-	-	EP102UCTC03	<b>691514</b>	EP102UCTK03	<b>691531</b>	6
	4	EP102UCTZ04	<b>691548</b>	-	-	EP102UCTC04	<b>691515</b>	EP102UCTK04	<b>691532</b>	6
	6	EP102UCTZ06	<b>691549</b>	EP102UCTB06	<b>691500</b>	EP102UCTC06	<b>691516</b>	EP102UCTK06	<b>691533</b>	6
	8	EP102UCTZ08	<b>691550</b>	EP102UCTB08	<b>691501</b>	EP102UCTC08	<b>691517</b>	EP102UCTK08	<b>691534</b>	6
	10	EP102UCTZ10	<b>691552</b>	EP102UCTB10	<b>691502</b>	EP102UCTC10	<b>691519</b>	EP102UCTK10	<b>691536</b>	6
	13	-	-	EP102UCTB13	<b>691503</b>	EP102UCTC13	<b>691520</b>	-	-	6
	16	EP102UCTZ16	<b>691553</b>	EP102UCTB16	<b>691504</b>	EP102UCTC16	<b>691521</b>	EP102UCTK16	<b>691537</b>	6
	20	EP102UCTZ20	<b>691554</b>	EP102UCTB20	<b>691505</b>	EP102UCTC20	<b>691522</b>	EP102UCTK20	<b>691538</b>	6
	25	EP102UCTZ25	<b>691555</b>	EP102UCTB25	<b>691506</b>	EP102UCTC25	<b>691523</b>	EP102UCTK25	<b>691539</b>	6
	32	EP102UCTZ32	<b>691556</b>	EP102UCTB32	<b>691507</b>	EP102UCTC32	<b>691524</b>	EP102UCTK32	<b>691540</b>	6
	40	EP102UCTZ40	<b>691557</b>	EP102UCTB40	<b>691508</b>	EP102UCTC40	<b>691525</b>	EP102UCTK40	<b>691541</b>	6
	50	EP102UCTZ50	<b>691558</b>	EP102UCTB50	<b>691509</b>	EP102UCTC50	<b>691526</b>	EP102UCTK50	<b>691542</b>	6
63	EP102UCTZ63	<b>691559</b>	EP102UCTB63	<b>691510</b>	EP102UCTC63	<b>691527</b>	EP102UCTK63	<b>691543</b>	6	

Series EP100 UCT

A

B

C

D

E




F

G

X



Accessories for MCBs Series G, GT and EP

		Function	Cat. No	Ref. No.	Pack.
Circuit protection <b>A</b> B C D E F G X	 <b>Sealing plate for 4P</b>	Cut off the number of poles needed for Series G, GT	EPP	<b>669486</b>	100
	 <b>Padlocking bracket</b>	Allows padlocking in ON and OFF position Ø padlock 5mm	KS	<b>624929</b>	2
	 <b>Spacer</b>	1/2 module	PLS / CTX SP	<b>686069</b>	50

PROTECT



Redline

# 2 circuits in 1 m

## Redline Unibis\*: the solution for

Circuit protection

A

B

C

D

E

F

G

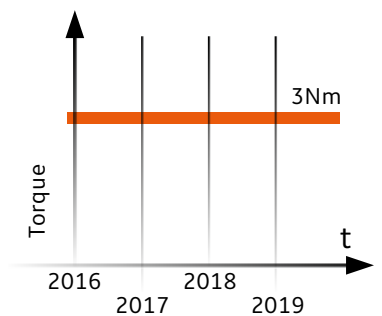
X

Unibis\* compact MCBs are one of the latest introductions in the Redline range and are developed to **reduce the size of the distribution board to the minimum**. The performances are upgraded to **10kA**.



Safety terminals

Up to 6mm<sup>2</sup> + 4mm<sup>2</sup> wires combined.



# odule

## space problems



**1P+1P  
in  
1 module**

**1P+N  
in  
1 module**

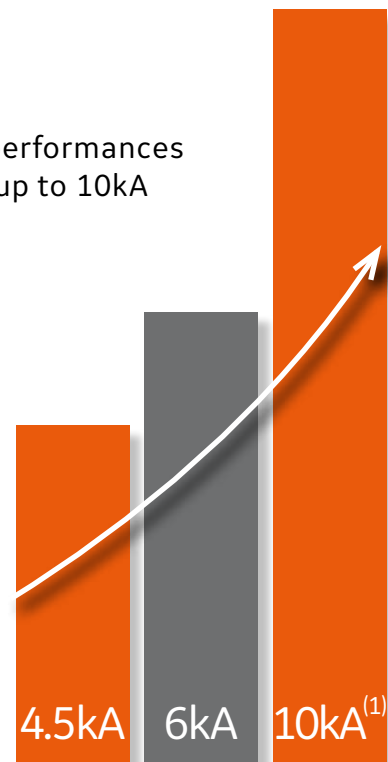
**2P  
in  
1 module**

**3P  
in  
2 modules**

**4P  
in  
2 modules**

- ✓ Brandnew design:
  - 2P in 1 module,
- ✓ 3 and 4P in 2 modules
- ✓ Complete range: from 4.5–6–**10kA**<sup>(1)</sup>,  
2–**40** Amps, B and C curves
- ✓ 100% compatible with all Redline  
auxiliaries and accessories
- ✓ 100% quality and reliability  
acc. to EN 60898
- ✓ CEBC, NF, VDE, KEMA, IMQ certified

3 performances  
up to 10kA

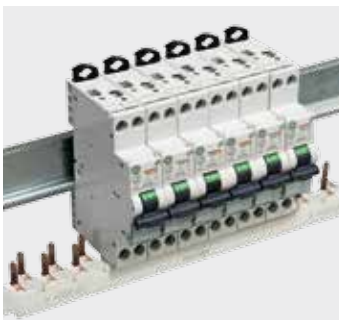


(1) 10kA acc. to IEC 60947-2

# The solution for

## Unibis\* compact MCBs

quality and reliability guaranteed



### High performance clips

To fix the MCB to the DIN-rail.



### High performance torque

Up to 3Nm.

### Easy to replace

Double clips make it easy to replace the MCBs, especially when a busbar is installed.



### Userfriendly

All screws are on the same level to work fast and easy.



### Green or red flag on toggle with isolation applications

Correct information about the real position. Minimum 5mm distance between open contacts is ensured.



### Part of the family

Unibis\* MCBs fit perfectly in the Redline range.

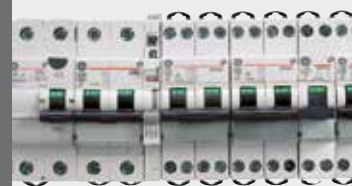
### Safety terminals IP20

The capacity of Unibis\* terminals has been doubled. Connection possibilities: (2 x 4mm<sup>2</sup>) or (1 x 4mm<sup>2</sup>) + (1 x 6mm<sup>2</sup>).



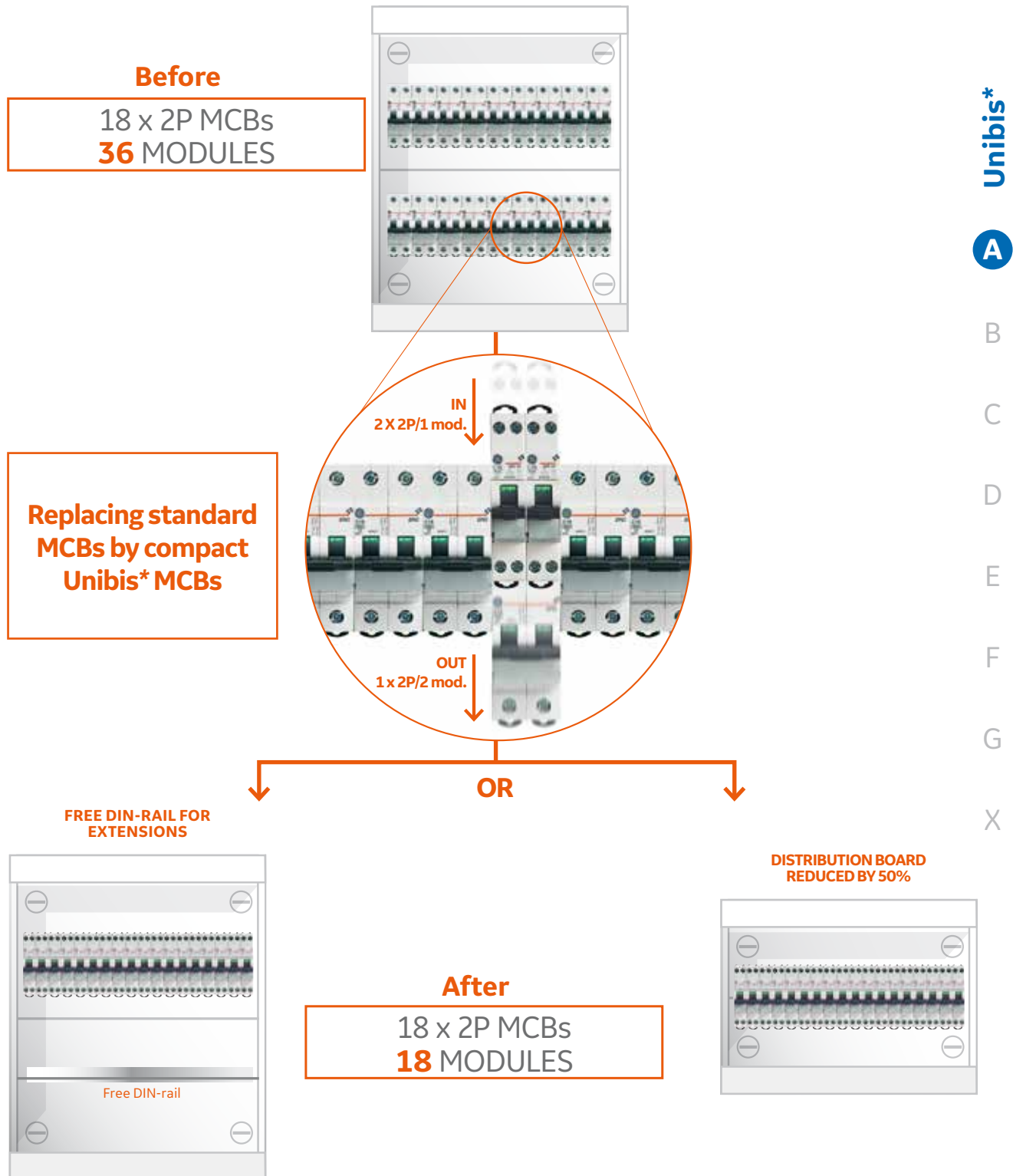
### Full functionality

A small auxiliary contact is the interface to the complete functionality of the Redline auxiliaries and accessories.



# renovations

Saving up to 50% space in distribution boards!





**Technical data of compact MCBs**

Circuit protection

A

B

C

D

E

F

G

X

Series		EPC 451N	EPC 61N
Standards		EN 60898-1	EN 60898-1
Tripping characteristics		B,C	B,C
Nominal current (In)		2-40	2-40
Calibration temperature (°C)		30	30
Number of poles (# mod.)		1+N (1 mod.)	1+N (1 mod.)
Neutral pole protected		-	-
Nominal voltage Un AC	1P+N (V)	240	240
	1P+1P (V)	-	-
	2P (V)	-	-
	3P (V)	-	-
	4P (V)	-	-
Nominal voltage Un DC (V <sub>≡</sub> )	2P	-	-
Frequency (Hz)		50/60	50/60
	in DC for 400Hz	Thresh. magn. + 40% Thresh. magn. + 50%	Thresh. magn. + 40% Thresh. magn. + 50%
Maximum service voltage U <sub>Bmax</sub> (V)		250	250
Minimum service voltage U <sub>Bmin</sub> (V)		12	12
Energy limiting class (EN 60898-1)		3	3
Rated insulation voltage	Pollution degree 2 (V)	500	500
	Pollution degree 3 (V)	400	400
Impulse withstand test voltage (kV)		6	6
Insulation resistance (MΩ)		1000	1000
Dielectric rigidity (kV)		2.5	2.5
Vibration resistance (in x, y, z direction) (IEC 77/16.3) (g)		3	3
Endurance	Electrical at Un, In	10000 <sup>(1)</sup>	10000 <sup>(1)</sup>
	Mechanical	20000	20000
Utilisation category (EN 60947-2)		A	A
Mounting position: vertical/horizontal		any	any
Incoming top or bottom		yes	yes
Protection degree (outside/inside enclosure with door)		IP20/IP40	IP20/IP40
Selfextinguish degree (acc. UL 94)		V2	V2
Tropicalisation (acc. EN 60068-2/DIN 40046)		+55°C/95%RH	+55°C/95%RH
Operating temperature (°C)		-25/+55	-25/+55
Storage temperature (°C)		-55/+55	-55/+55
Terminal capacity	Rigid cable min/max (top) (mm <sup>2</sup> )	1/16 <sup>(2)</sup>	1/16 <sup>(2)</sup>
	Flexible cable min/max (top) (mm <sup>2</sup> )	1/10 <sup>(2)</sup>	1/10 <sup>(2)</sup>
	Rigid cable min/max (bottom) (mm <sup>2</sup> )	1/16 <sup>(2)</sup>	1/16 <sup>(2)</sup>
	Flexible cable min/max (bottom) (mm <sup>2</sup> )	1/10 <sup>(2)</sup>	1/10 <sup>(2)</sup>
	Torque (Nm)	3	3
Add-on devices	Auxiliary contacts CA UN	yes	yes
	Tele U	yes <sup>(3)</sup>	yes <sup>(3)</sup>
	Tele L	yes <sup>(3)</sup>	yes <sup>(3)</sup>
	Tele MP	yes <sup>(3)</sup>	yes <sup>(3)</sup>
	PBS	yes <sup>(3)</sup>	yes <sup>(3)</sup>
Busbar systems	Pin (top/bottom)	yes/yes	yes/yes
	Fork (top/bottom)	no/no	no/no
Accessories		yes	yes
Width per mod. (mm)		18	18
Weight per mod. (g)		125	125
Package		12	12
Approvals		KEMA, IMQ, NF	VDE, KEMA, IMQ, NF
CE-marking		yes	yes
Page		A.88	A.89

**Short-circuit capacity of compact MCBs**

Series		EPC 451N	EPC 61N
<b>Short-circuit capacity AC</b>		(kA)	(kA)
EN/IEC 60898-1 I <sub>cn</sub>	1P+N 240 V	4.5	6
	1P+1P 240 V	-	-
	2P 400 V	-	-
	2P 415 V	-	-
	3P 415 V	-	-
	4P 415 V	-	-
	4P 415 V	-	-
EN 60947-2 I <sub>cu</sub>	1P+N 230 V	6	10
	1P+1P 230 V	-	-
	2P 230 V	-	-
	2P 415 V	-	-
	3P 415 V	-	-
	4P 415 V	-	-
<b>Short-circuit capacity DC</b>			
EN 60947-2 I <sub>cu</sub>	2P 96 V <sub>≡</sub>	-	-
	2P 125 V <sub>≡</sub>	-	-





EPC 611	EPC 30	EPC 45	EPC 60	EPC 62R
EN 60898-1	EN 60898-1	EN 60898-1	EN 60898-1	EN 60898-1, EN 50155, EN 45545-2
B,C	C	B,C	B,C	B,C
2-20	2-40	2-40	2-40	2-40
30	30	30	30	30
1P+1P (1 mod.)	2 (1 mod.), 3&4 (2mod.)	2 (1 mod.), 3 and 4 (2 mod.)	2 (1 mod.), 3 and 4 (2 mod.)	2 (1 mod.)
-	-	-	-	-
230 <sup>(4)</sup>	-	-	-	-
-	230/400	415	415	415
-	230/400	415	415	-
-	230/400	415	415	-
-	-	96	96	125
50/60	50/60	50/60	50/60	50/60
Thresh. magn. + 40%	Thresh. magn. + 40%	Thresh. magn. + 40%	Thresh. magn. + 40%	Thresh. magn. + 40%
Thresh. magn. + 50%	Thresh. magn. + 50%	Thresh. magn. + 50%	Thresh. magn. + 50%	Thresh. magn. + 50%
250/440	250/440	250/440	250/440	250/440
12	12	12	12	12
3	3	3	3	3
500	500	500	500	500
400	400	400	400	400
6	6	6	6	6
1000	10000	10000	10000	10000
2.5	2.5	2.5	2.5	2.5
3	3	3	3	3
10000 <sup>(1)</sup>	10000 <sup>(1)</sup>	10000 <sup>(1)</sup>	10000 <sup>(1)</sup>	10000 <sup>(1)</sup>
20000	20000	20000	20000	20000
A	A	A	A	A
any	any	any	any	any
yes	yes	yes	yes	yes
IP20/IP40	IP20/IP40	IP20/IP40	IP20/IP40	IP20/IP40
V2	V2	V2	V2	V2
+55°C/95%RH	+55°C/95%RH	+55°C/95%RH	+55°C/95%RH	+55°C/95%RH
-25/+55	-25/+55	-25/+55	-25/+55	-25/+55
-55/+55	-55/+55	-55/+55	-55/+55	-55/+55
1/16 <sup>(2)</sup>	1/16 <sup>(2)</sup>	1/16 <sup>(2)</sup>	1/16 <sup>(2)</sup>	1/16
1/10 <sup>(2)</sup>	1/10 <sup>(2)</sup>	1/10 <sup>(2)</sup>	1/10 <sup>(2)</sup>	1/10
1/16 <sup>(2)</sup>	1/16 <sup>(2)</sup>	1/16 <sup>(2)</sup>	1/16 <sup>(2)</sup>	1/16
1/10 <sup>(2)</sup>	1/10 <sup>(2)</sup>	1/10 <sup>(2)</sup>	1/10 <sup>(2)</sup>	1/10
3	3	3	3	3
yes	yes	yes	yes	yes
yes <sup>(3)</sup>	yes <sup>(3)</sup>	yes <sup>(3)</sup>	yes <sup>(3)</sup>	yes <sup>(3)</sup>
yes <sup>(3)</sup>	yes <sup>(3)</sup>	yes <sup>(3)</sup>	yes <sup>(3)</sup>	yes <sup>(3)</sup>
yes <sup>(3)</sup>	yes	yes <sup>(3)</sup>	yes <sup>(3)</sup>	yes <sup>(3)</sup>
yes <sup>(3)</sup>	yes <sup>(3)</sup>	yes <sup>(3)</sup>	yes <sup>(3)</sup>	yes <sup>(3)</sup>
yes/yes	yes/yes	yes/yes	yes/yes	yes/yes
no/no	no/no	no/no	no/no	no/no
yes	yes	yes	yes	yes
18	18/36	18/36	18/36	18
160	160/320	160/320	160/320	160
12/6	12/6	12/6	12/6	-
VDE, KEMA	NF, CEPEC	CEPEC, NF	VDE, IMQ, NF, CEPEC	-
yes	yes	yes	yes	yes
A.91	A.92	A.94	A.96	A.98

Unibus\*

A

B

C

D

E

F

G

X

EPC 611	EPC 30	EPC 45	EPC 60	EPC 62R
(kA)	(kA)	(kA)	(kA)	(kA)
-	-	-	-	-
6	-	-	-	6
-	3	4.5	6	6
-	3	4.5	6	6
-	3	4.5	6	6
-	-	-	-	-
6	-	-	-	-
-	-	-	-	10
-	3	6	10	6
-	3	6	6	6
-	3	6	6	6
-	3	4.5	6	6
-	-	-	-	6

(1) 8000 for 32 and 40A

(2) Also accepting (2x4mm<sup>2</sup>) or (1x4mm<sup>2</sup>)+(1x6mm<sup>2</sup>)

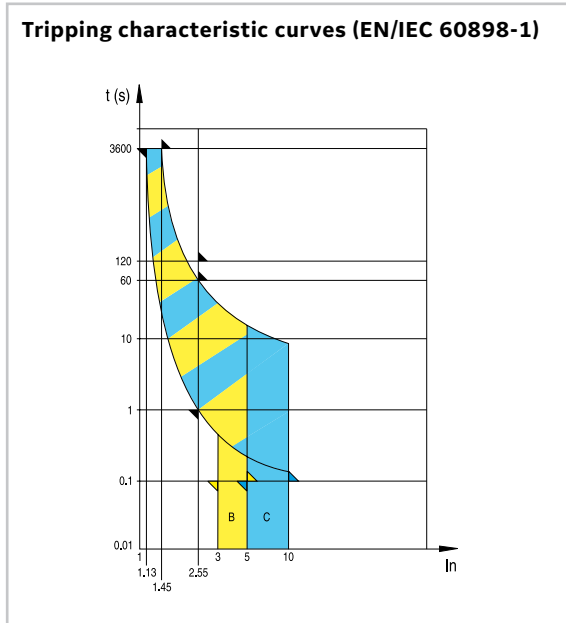
(3) Requires CA UN auxiliary contact as interface

(4) Single phase supply or same phase in 3Ph supply



## Characteristics according to IEC/EN 60898-1

Miniature Circuit Breakers (MCB) are intended for the protection of wiring installations against both overloads and short-circuits in domestic or commercial wiring installations where operation is possible by uninstructed people.



### Magnetic release

An electromagnet with plunger ensures instantaneous tripping in the event of short-circuit. The standard distinguishes two different types, following the current for instantaneous release: type B and C.

In	Test (A) current	Tripping time	Applications
B	3 x In	0.1 < t < 45s (In ≤ 32A) 0.1 < t < 90s (In > 32A)	Only for resistive loads such as: - electrical heating - water heater - stoves
	5 x In	t < 0.1s	
C	5 x In	0.1 < t < 15s (In ≤ 32A) 0.1 < t < 30s (In > 32A)	Usual loads such as: - lighting - socket-outlets - small motors
	10 x In	t < 0.1s	

### Thermal release

The release is initiated by a bimetal strip in case of overload. The standard defines the range of releases for specific overload values. Reference ambient temperature is 30°C.

Test current	Tripping time
1.13 x In	t ≥ 1h (In ≤ 63A) t ≥ 2h (In > 63A)
1.45 x In	t < 1h (In ≤ 63A) t < 2h (In > 63A)
2.55 x In	1s < t < 60s (In ≤ 32A) 1s < t < 120s (In > 32A)

## Influence of ambient air temperature on the rated current

The maximum value of the current which can flow through an MCB depends of the nominal current of the MCB, the conductor cross-section as well as of the ambient air temperature.

The values shown in the table below are for devices in free air. For devices installed with other modular devices in the same switchboard a correction factor (K) shall be applied relative to the mounting situation of the MCB, the ambient temperature and the number of main circuits in the installation (EN 60439-1):

No. of devices	K
2 or 3	0.9
4 or 5	0.8
6 to 9	0.7
> 10	0.6

### Calculation example

Within a distribution panel consisting of eight MCBs 2PC16 with an operating ambient temperature of 45°C, which is the highest temperature at which the MCB can operate without unwanted tripping.

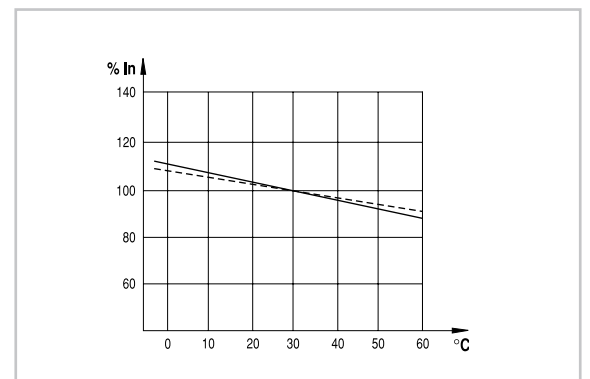
### Calculation

The correction factor K = 0.7, for use in an eight circuit installation: 16A x 0.7 = 11.2A

As the MCB is working at 45°C, another factor shall be applied (90% = 0.9):

$$I_n \text{ at } 45^\circ\text{C} = I_n \text{ at } 30^\circ\text{C} \times 0.9 = 11.2\text{A} \times 0.9 = 10.1\text{A}$$

The thermal calibration of the MCBs was carried out at an ambient temperature of 30°C. Ambient temperatures different from 30°C influence the bimetal and this results in earlier or later thermal tripping.



Circuit protection

A

B

C

D

E

F

G

X



### Tripping current as a function of the frequency

All MCBs are designed to work at frequencies of 50-60Hz, therefore to work at different values, consideration must be given to the variation of the tripping characteristics. The thermal tripping does not change with variation of the frequency but the magnetic tripping values can be up to 50% higher than the ones at 50-60Hz. For DC current magnetic tripping is 50% higher.

#### Tripping current variations

60Hz	100Hz	200Hz	300Hz	400Hz
1	1.1	1.2	1.4	1.5

### Power losses

The power losses are calculated by measuring the voltage drop between the incoming and the outgoing terminals of the device at rated current.

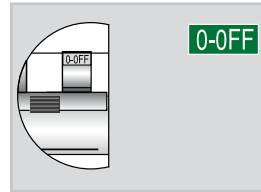
#### Power losses per pole

In (A)	Voltage drop (V)	Energy loss Pw (W)	Resistance Z (MOhm)
2	0.55	1.1	275.00
4	0.34	1.35	84.38
6	0.25	1.52	42.22
10	0.16	1.64	16.40
16	0.13	2.1	8.20
20	0.13	2.52	6.30
25	0.12	3.1	4.96
32	0.12	3.8	3.71
40	0.11	4.46	2.79

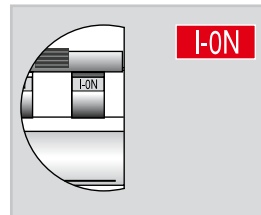
### Toggle

The toggle permits to switch the MCB ON or OFF

Printing on the toggle provides information of the real contact position.



**O-OFF**  
Contacts in open position. Ensures a distance between contacts > 5mm in the Uni-bis\* range.



**I-ON**  
Contacts in closed position. Ensures continuity in the main circuit.

Unibis\*

A

B

C

D

E

F

G

X



## Compact MCBs

### Series EPC 451N

EN/IEC 60898-1

4500

3

EN/IEC 60947-2

6kA

Circuit protection



### Applications

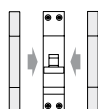


### Approvals / Marking

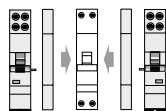


### Add-on devices

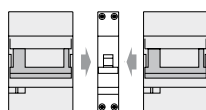
Auxiliaries  
CA UN



Tele L  
Tele U  
PBS



Tele MP



When coupling an add-on device (Tele L, Tele U, PBS, Tele MP) to the MCB, an universal CA UN auxiliary has to be coupled first as interface.

### Performance

Thermal setting In	(A) 2-40
Rated voltage AC Un	(V) 240
Minimum operating voltage UBmin	(V) 12
Tripping characteristics	B-C
Energy limiting class	3
Mechanical/electrical endurance	20000/10000 <sup>(1)</sup>
Tropicalisation acc. to EN/IEC 60068-2	95% RH at 55°C
Terminal capacity flexible/rigid cable	(mm <sup>2</sup> ) 10-16 <sup>(2)</sup>
Poles	1P+N (1 mod)
Weight	(g) 125

### Short-circuit capacity

#### AC acc. to EN/IEC 60898-1

Poles	V	Icn/Ics (kA)
1P+N	240	4.5

#### AC acc. to EN/IEC 60947-2

Poles	V	Icu (kA)
1P+N	240	6

Attention: do not use on IT net configuration

(1) 8000 for 32 and 40A

(2) Also accepting (2 x 4mm<sup>2</sup>) or (1 x 4mm<sup>2</sup>)+(1 x 6mm<sup>2</sup>)

### Series EPC 451N - 4.5kA - characteristics B-C

In (A)	B		C		Pack.	
	Cat. No.	Ref. No.	Cat. No.	Ref. No.		
1P+N 1 mod.	2	EPC 451N B02	692810	EPC 451N C02	692781	12
	4	EPC 451N B04	692811	EPC 451N C04	692782	12
	6	EPC 451N B06	692812	EPC 451N C06	692783	12
	10	EPC 451N B10	692813	EPC 451N C10	692784	12
	16	EPC 451N B16	692814	EPC 451N C16	692786	12
	20	EPC 451N B20	692815	EPC 451N C20	692787	12
	25	EPC 451N B25	692816	EPC 451N C25	692788	12
	32	EPC 451N B32	692817	EPC 451N C32	692789	12
40	EPC 451N B40	692818	EPC 451N C40	692790	12	

Compact MCBs

Series EPC 61N



EN/IEC 60898-1 **6000**  
**3**  
 EN/IEC 60947-2 **10kA**

Series EPC 611N

Applications

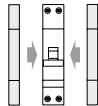


Approvals / Marking

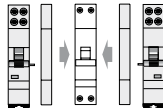


Add-on devices

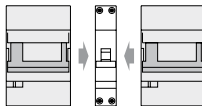
Auxiliaries  
CA UN



Tele L  
Tele U  
PBS



Tele MP



When coupling an add-on device (Tele L, Tele U, PBS, Tele MP) to the MCB, an universal CA UN auxiliary has to be coupled first as interface.

Performance

Thermal setting In	(A) 2-40
Rated voltage AC Un	(V) 240
Minimum operating voltage UBmin	(V) 12
Tripping characteristics	B-C
Energy limiting class	3
Mechanical/electrical endurance	20000/10000 <sup>(1)</sup>
Tropicalisation acc. to EN/IEC 60068-2	95% RH at 55°C
Terminal capacity flexible/rigid cable	(mm <sup>2</sup> ) 10-16 <sup>(2)</sup>
Poles	1P+N (1 mod)
Weight	(g) 125

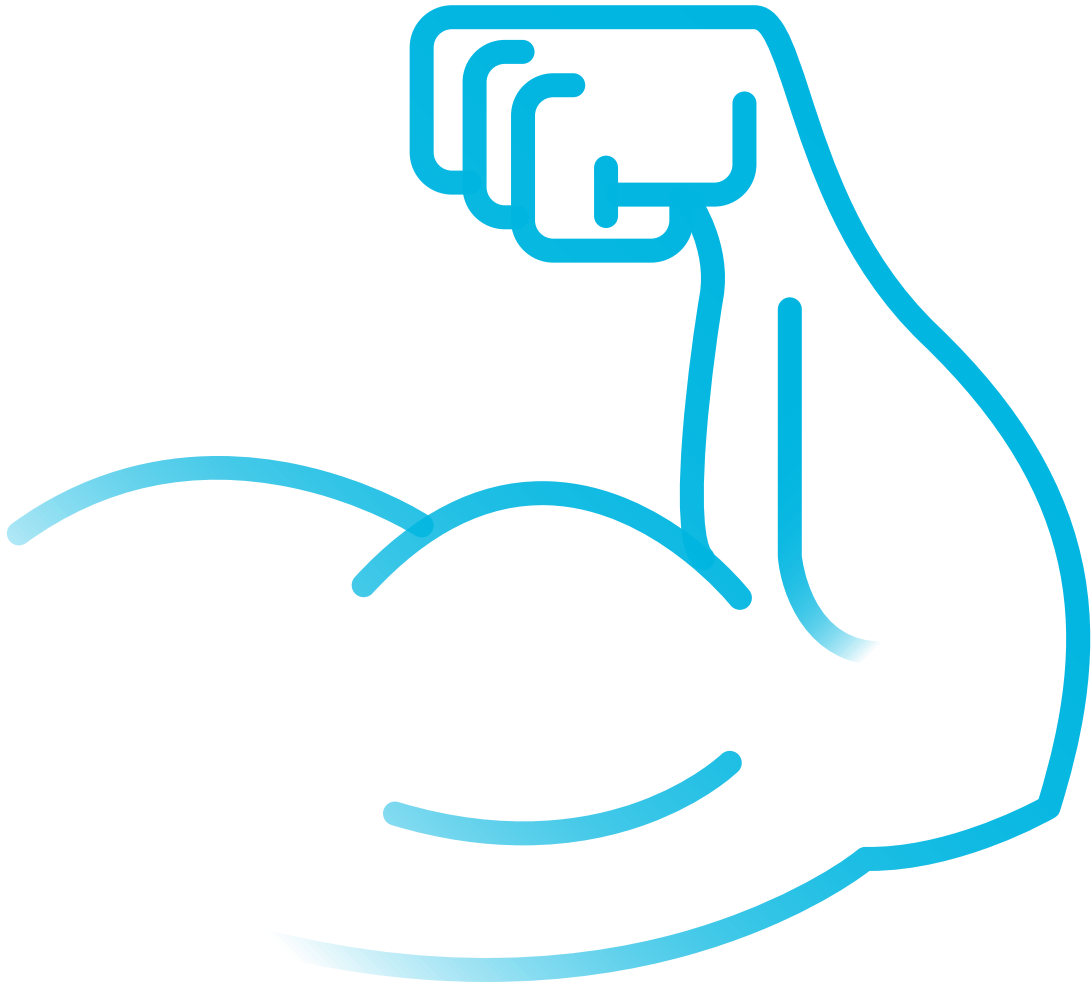
Short-circuit capacity

AC acc. to EN/IEC 60898-1		
Poles	V	Icn/Ics (kA)
1P+N	240	6
AC acc. to EN/IEC 60947-2		
Poles	V	Icu (kA)
1P+N	240	10

Attention: do not use on IT net configuration  
 (1) 8000 for 32 and 40A  
 (2) Also accepting (2 x 4mm<sup>2</sup>) or (1 x 4mm<sup>2</sup>) + (1 x 6mm<sup>2</sup>)

Series EPC 61N - 6kA - characteristics B-C

In (A)	B		C		Pack.	
	Cat. No.	Ref. No.	Cat. No.	Ref. No.		
1P+N 1 mod.	2	EPC 61N B02	692819	EPC 61N C02	692791	12
	4	EPC 61N B04	692820	EPC 61N C04	692792	12
	6	EPC 61N B06	692821	EPC 61N C06	692793	12
	10	EPC 61N B10	692822	EPC 61N C10	692794	12
	13	EPC 61N B13	692604	EPC 61N C13	692795	12
	16	EPC 61N B16	692823	EPC 61N C16	692796	12
	20	EPC 61N B20	692824	EPC 61N C20	692797	12
	25	EPC 61N B25	692825	EPC 61N C25	692798	12
	32	EPC 61N B32	692826	EPC 61N C32	692799	12
	40	EPC 61N B40	692827	EPC 61N C40	692800	12



Compact MCBs

Series EPC 611



EN/IEC 60898-1 **6000**  
**3**  
 EN/IEC 60947-2 **6kA**

Series EPC 611

Applications

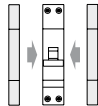


Approvals / Marking

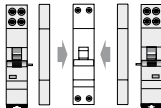


Add-on devices

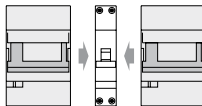
Auxiliaries  
CA UN



Tele L  
Tele U  
PBS



Tele MP



When coupling an add-on device (Tele L, Tele U, PBS, Tele MP) to the MCB, an universal CA UN auxiliary has to be coupled first as interface.

Performance

Thermal setting In	(A) 2-20
Rated voltage AC Un	(V) 230 <sup>(1)</sup>
Minimum operating voltage UBmin	(V) 12
Tripping characteristics	B-C
Energy limiting class	3
Mechanical/electrical endurance	20000/10000
Tropicalisation acc. to EN/IEC 60068-2	95% RH at 55°C
Terminal capacity flexible/rigid cable	(mm <sup>2</sup> ) 10-16 <sup>(2)</sup>
Poles	1P+1P (1 mod)
Weight	(g) 125

Short-circuit capacity

AC acc. to EN/IEC 60898-1		
Poles	V	Icn/Ics (kA)
1+1	230	6
AC acc. to EN/IEC 60947-2		
Poles	V	Icu (kA)
1+1	230	10

Attention: do not use on IT net configuration  
 (1) Single phase supply or same phase in 3Ph supply  
 (2) Also accepting (2 x 4mm<sup>2</sup>) or (1 x 4mm<sup>2</sup>)+(1 x 6mm<sup>2</sup>)

Series EPC 611 - 6kA - characteristics B-C

In (A)	B		C		Pack.	
	Cat. No.	Ref. No.	Cat. No.	Ref. No.		
1P+1P 1 mod.	2	EPC 611 B02	692689	EPC 611 C02	692699	12
	4	EPC 611 B04	692690	EPC 611 C04	692700	12
	6	EPC 611 B06	692691	EPC 611 C06	692701	12
	10	EPC 611 B10	692692	EPC 611 C10	692702	12
	13	EPC 611 B13	692693	EPC 611 C13	692703	12
	16	EPC 611 B16	692694	EPC 611 C16	692704	12
	20	EPC 611 B20	692695	EPC 611 C20	692705	12

A  
B  
C  
D  
E  
F  
G  
X



## Compact MCBs

### Series EPC 30

Circuit protection



EN/IEC 60898-1

6000

3

EN/IEC 60947-2

3kA

#### Applications

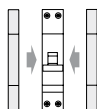


#### Approvals / Marking

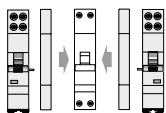


#### Add-on devices

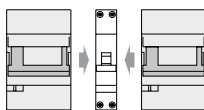
Auxiliaries  
CA UN



Tele L  
Tele U  
PBS



Tele MP



When coupling an add-on device (Tele L, Tele U, PBS, Tele MP) to the MCB, an universal CA UN auxiliary has to be coupled first as interface.

#### Performance

Thermal setting In	(A) 2-40
Rated voltage AC Un	(V) 230/400
Minimum operating voltage UBmin	(V) 12
Tripping characteristics	C
Energy limiting class	3
Mechanical/electrical endurance	20000/10000 <sup>(1)</sup>
Tropicalisation acc. to EN/IEC 60068-2	95% RH at 55°C
Terminal capacity flexible/rigid cable	mm <sup>2</sup> 10-16 <sup>(2)</sup>
Poles	2, 3, 4
Weight	g 160

#### Short-circuit capacity

##### AC acc. to EN/IEC 60898-1

Poles	V	Icn/Ics (kA)
2	400	3
3	400	3
4	400	3

##### AC acc. to EN/IEC 60947-2

Poles	V	Icu (kA)
2	415	3
3	415	3
4	415	3

##### AC acc. to EN/IEC 60947-2

Poles	Un (V <sub>~</sub> )	Icu (kA)
2	96	3






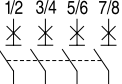
(1) 8000 for 32A and 40A

(2) Also accepting (2 x 4mm<sup>2</sup>) or (1 x 4mm<sup>2</sup>)+(1 x 6mm<sup>2</sup>)





**Series EPC 30 - 3 kA - characteristic C**

		C			
		In (A)	Cat. No.	Ref. No.	Pack.
 <p><b>2P 1 mod.</b></p> <p>1/2 3/4</p>  <p>2/1 4/3</p>	2	EPC 32 C02	<b>692500</b>	12	
	4	EPC 32 C04	<b>692501</b>	12	
	6	EPC 32 C06	<b>692502</b>	12	
	10	EPC 32 C10	<b>692503</b>	12	
	16	EPC 32 C16	<b>692504</b>	12	
	20	EPC 32 C20	<b>692505</b>	12	
	25	EPC 32 C25	<b>692506</b>	12	
	32	EPC 32 C32	<b>692507</b>	12	
	40	EPC 32 C40	<b>692508</b>	12	
	 <p><b>3P(1) 2 mod.</b></p> <p>1/2 3/4 5/6</p>  <p>2/1 4/3 6/5</p>	2	EPC 33 C02	<b>692509<sup>(1)</sup></b>	6
		4	EPC 33 C04	<b>692510<sup>(1)</sup></b>	6
		6	EPC 33 C06	<b>692511<sup>(1)</sup></b>	6
10		EPC 33 C10	<b>692512<sup>(1)</sup></b>	6	
16		EPC 33 C16	<b>692513<sup>(1)</sup></b>	6	
20		EPC 33 C20	<b>692514<sup>(1)</sup></b>	6	
25		EPC 33 C25	<b>692515<sup>(1)</sup></b>	6	
32		EPC 33 C32	<b>692516<sup>(1)</sup></b>	6	
 <p><b>4P 2 mod.</b></p> <p>1/2 3/4 5/6 7/8</p>  <p>2/1 4/3 6/5 8/7</p>		2	EPC 34 C02	<b>692518</b>	6
	4	EPC 34 C04	<b>692519</b>	6	
	6	EPC 34 C06	<b>692520</b>	6	
	10	EPC 34 C10	<b>692521</b>	6	
	16	EPC 34 C16	<b>692522</b>	6	
	20	EPC 34 C20	<b>692523</b>	6	
	25	EPC 34 C25	<b>692524</b>	6	
	32	EPC 34 C32	<b>692525</b>	6	

(1) The auxiliary contact CA UN must be placed only on the **left side** of the 3P MCBs

Series EPC 30

A

B

C

D

E

F

G

X



## Compact MCBs

### Series EPC 45

Circuit protection



EN/IEC 60898-1

4500

3

EN/IEC 60947-2

6kA

#### Applications

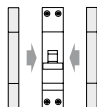


#### Approvals / Marking

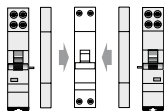


#### Add-on devices

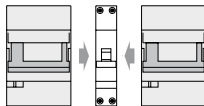
Auxiliaries  
CA UN



Tele L  
Tele U  
PBS



Tele MP



When coupling an add-on device (Tele L, Tele U, PBS, Tele MP) to the MCB, an universal CA UN auxiliary has to be coupled first as interface.

#### Performance

Thermal setting In	(A) 2-40 <sup>(1)</sup>
Rated voltage AC Un	(V) 240/415
Minimum operating voltage UBmin	(V) 12
Tripping characteristics	B-C
Energy limiting class	3
Mechanical/electrical endurance	20000/10000 <sup>(2)</sup>
Tropicalisation acc. to EN/IEC 60068-2	95% RH at 55°C
Terminal capacity flexible/rigid cable	(mm <sup>2</sup> ) 10-16 <sup>(3)</sup>
Poles	2, 3, 4
Weight	(g/mod) 160

#### Short-circuit capacity

##### AC acc. to EN/IEC 60898-1

Poles	V	Icn/Ics (kA)
2	415	4.5
3	415	4.5
4	415	4.5

##### AC acc. to EN/IEC 60947-2

Poles	V	Icu (kA)
2	415	6
3	415	6
4	415	6

##### AC acc. to EN/IEC 60947-2


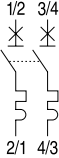

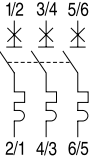

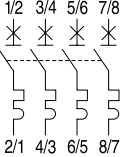
Poles	Un (V $\overline{=}$ )	Icu (kA)
2	96	4.5

(1) 32A, 3P and 4P

(2) 8000 for 32A

(3) Also accepting (2 x 4mm<sup>2</sup>) or (1 x 4mm<sup>2</sup>)+(1 x 6mm<sup>2</sup>)

**Series EPC 45 - 4.5kA - characteristics B-C**

	In (A)	B		C		Pack.	
		Cat. No.	Ref. No.	Cat. No.	Ref. No.		
 1/2 3/4  2/1 4/3	2	EPC 452 B02	<b>692608</b>	EPC 452 C02	<b>692527</b>	12	
	4	EPC 452 B04	<b>692609</b>	EPC 452 C04	<b>692528</b>	12	
	6	EPC 452 B06	<b>692610</b>	EPC 452 C06	<b>692529</b>	12	
	10	EPC 452 B10	<b>692611</b>	EPC 452 C10	<b>692530</b>	12	
	16	EPC 452 B16	<b>692612</b>	EPC 452 C16	<b>692531</b>	12	
	20	EPC 452 B20	<b>692613</b>	EPC 452 C20	<b>692532</b>	12	
	25	EPC 452 B25	<b>692614</b>	EPC 452 C25	<b>692533</b>	12	
	32	EPC 452 B32	<b>692615</b>	EPC 452 C32	<b>692534</b>	12	
	40	EPC 452 B40	<b>692616</b>	EPC 452 C40	<b>692535</b>	12	
	 1/2 3/4 5/6  2/1 4/3 6/5	2	EPC 453 B02	<b>692617<sup>(1)</sup></b>	EPC 453 C02	<b>692536<sup>(1)</sup></b>	6
4		EPC 453 B04	<b>692618<sup>(1)</sup></b>	EPC 453 C04	<b>692537<sup>(1)</sup></b>	6	
6		EPC 453 B06	<b>692619<sup>(1)</sup></b>	EPC 453 C06	<b>692538<sup>(1)</sup></b>	6	
10		EPC 453 B10	<b>692620<sup>(1)</sup></b>	EPC 453 C10	<b>692539<sup>(1)</sup></b>	6	
16		EPC 453 B16	<b>692621<sup>(1)</sup></b>	EPC 453 C16	<b>692540<sup>(1)</sup></b>	6	
20		EPC 453 B20	<b>692622<sup>(1)</sup></b>	EPC 453 C20	<b>692541<sup>(1)</sup></b>	6	
25		EPC 453 B25	<b>692623<sup>(1)</sup></b>	EPC 453 C25	<b>692542<sup>(1)</sup></b>	6	
32		EPC 453 B32	<b>692624<sup>(1)</sup></b>	EPC 453 C32	<b>692543<sup>(1)</sup></b>	6	
 1/2 3/4 5/6 7/8  2/1 4/3 6/5 8/7		2	EPC 454 B02	<b>692626</b>	EPC 454 C02	<b>692545</b>	6
		4	EPC 454 B04	<b>692627</b>	EPC 454 C04	<b>692546</b>	6
	6	EPC 454 B06	<b>692628</b>	EPC 454 C06	<b>692547</b>	6	
	10	EPC 454 B10	<b>692629</b>	EPC 454 C10	<b>692548</b>	6	
	16	EPC 454 B16	<b>692630</b>	EPC 454 C16	<b>692549</b>	6	
	20	EPC 454 B20	<b>692631</b>	EPC 454 C20	<b>692550</b>	6	
	25	EPC 454 B25	<b>692632</b>	EPC 454 C25	<b>692551</b>	6	
	32	EPC 454 B32	<b>692633</b>	EPC 454 C32	<b>692552</b>	6	

(1) The auxiliary contact CA UN must be placed only on the **left side** of the 3P MCBs



## Compact MCBs

### Series EPC 60

Circuit protection



EN/IEC 60898-1

6000  
3

EN/IEC 60947-2

10kA<sup>(1)</sup>

### Applications

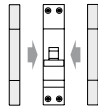


### Approvals / Marking

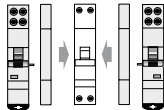


### Add-on devices

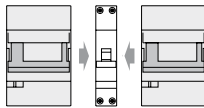
Auxiliaries  
CA UN



Tele L  
Tele U  
PBS



Tele MP



When coupling an add-on device (Tele L, Tele U, PBS, Tele MP) to the MCB, an universal CA UN auxiliary has to be coupled first as interface.

### Performance

Thermal setting In	(A) 2-40 <sup>(2)</sup>
Rated voltage AC Un	(V) 240/415
Minimum operating voltage UBmin	(V) 12
Tripping characteristics	B-C
Energy limiting class	3
Mechanical/electrical endurance	20000/10000 <sup>(3)</sup>
Tropicalisation acc. to EN/IEC 60068-2	95% RH at 55°C
Terminal capacity flexible/rigid cable	(mm <sup>2</sup> ) 10-16 <sup>(4)</sup>
Poles	2, 3, 4
Weight/mod	(g) 160

### Short-circuit capacity

#### AC acc. to EN/IEC 60898-1

Poles	V	Icn/Ics (kA)
2	240/415	4.5
3	240/415	4.5
4	240/415	4.5

#### AC acc. to EN/IEC 60947-2

Poles	V	Icu (kA)
2	240/415	10
3	240/415	6
4	240/415	6






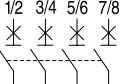
(1) 6kA at 415V

(2) 32A, 3P and 4P

(3) 8000 for 32A


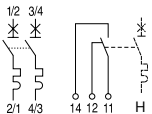
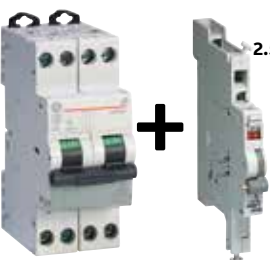
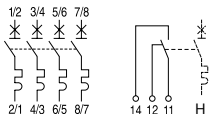
(4) Also accepting (2 x 4mm<sup>2</sup>) or (1 x 4mm<sup>2</sup>)+(1 x 6mm<sup>2</sup>)

**Series EPC 60 - 6kA - characteristics B-C**

	In (A)	B		C		Pack.	
		Cat. No.	Ref. No.	Cat. No.	Ref. No.		
 <p><b>2P</b> 1 mod.</p> <p>1/2 3/4</p>  <p>2/1 4/3</p>	2	EPC 62 B02	<b>692635</b>	EPC 62 C02	<b>692554</b>	12	
	4	EPC 62 B04	<b>692636</b>	EPC 62 C04	<b>692555</b>	12	
	6	EPC 62 B06	<b>692637</b>	EPC 62 C06	<b>692556</b>	12	
	10	EPC 62 B10	<b>692638</b>	EPC 62 C10	<b>692557</b>	12	
	16	EPC 62 B16	<b>692639</b>	EPC 62 C16	<b>692558</b>	12	
	20	EPC 62 B20	<b>692640</b>	EPC 62 C20	<b>692559</b>	12	
	25	EPC 62 B25	<b>692641</b>	EPC 62 C25	<b>692560</b>	12	
	32	EPC 62 B32	<b>692642</b>	EPC 62 C32	<b>692561</b>	12	
	40	EPC 62 B40	<b>692643</b>	EPC 62 C40	<b>692562</b>	12	
	 <p><b>3P</b> 2 mod.</p> <p>1/2 3/4 5/6</p>  <p>2/1 4/3 6/5</p>	2	EPC 63 B02	<b>692644<sup>(1)</sup></b>	EPC 63 C02	<b>692563<sup>(1)</sup></b>	6
4		EPC 63 B04	<b>692645<sup>(1)</sup></b>	EPC 63 C04	<b>692564<sup>(1)</sup></b>	6	
6		EPC 63 B06	<b>692646<sup>(1)</sup></b>	EPC 63 C06	<b>692565<sup>(1)</sup></b>	6	
10		EPC 63 B10	<b>692647<sup>(1)</sup></b>	EPC 63 C10	<b>692566<sup>(1)</sup></b>	6	
16		EPC 63 B16	<b>692648<sup>(1)</sup></b>	EPC 63 C16	<b>692567<sup>(1)</sup></b>	6	
20		EPC 63 B20	<b>692649<sup>(1)</sup></b>	EPC 63 C20	<b>692568<sup>(1)</sup></b>	6	
25		EPC 63 B25	<b>692650<sup>(1)</sup></b>	EPC 63 C25	<b>692569<sup>(1)</sup></b>	6	
32 <sup>(2)</sup>		EPC 63 B32	<b>692651<sup>(1)</sup></b>	EPC 63 C32	<b>692570<sup>(1)</sup></b>	6	
 <p><b>4P</b> 2 mod.</p> <p>1/2 3/4 5/6 7/8</p>  <p>2/1 4/3 6/5 8/7</p>		2	EPC 64 B02	<b>692653</b>	EPC 64 C02	<b>692572</b>	6
		4	EPC 64 B04	<b>692654</b>	EPC 64 C04	<b>692573</b>	6
	6	EPC 64 B06	<b>692655</b>	EPC 64 C06	<b>692574</b>	6	
	10	EPC 64 B10	<b>692656</b>	EPC 64 C10	<b>692575</b>	6	
	16	EPC 64 B16	<b>692657</b>	EPC 64 C16	<b>692576</b>	6	
	20	EPC 64 B20	<b>692658</b>	EPC 64 C20	<b>692577</b>	6	
	25	EPC 64 B25	<b>692659</b>	EPC 64 C25	<b>692578</b>	6	
	32	EPC 64 B32	<b>692660</b>	EPC 64 C32	<b>692579</b>	6	

(1) The auxiliary contact CA UN must be placed only on the **left side** of the 3P MCBs

**Series EPC 60 - 6kA - characteristics B-C<sup>(2)</sup>**

	In (A)	B		C		Pack.
		Cat. No.	Ref. No.	Cat. No.	Ref. No.	
 <p><b>2P</b> 1.5 mod.</p> 	2	-	-	EPC 62 C02 + CA UN S/H G	<b>693636</b>	1
	4	-	-	EPC 62 C04 + CA UN S/H G	<b>693635</b>	1
	6	EPC 62 B06 + CA UN S/H G	<b>693643</b>	EPC 62 C06 + CA UN S/H G	<b>693634</b>	1
	10	EPC 62 B10 + CA UN S/H G	<b>693642</b>	EPC 62 C10 + CA UN S/H G	<b>693637</b>	1
	16	-	-	EPC 62 C16 + CA UN S/H G	<b>693638</b>	1
	25	-	-	EPC 62 C25 + CA UN S/H G	<b>693641</b>	1
	32	-	-	EPC 62 C32 + CA UN S/H G	<b>693644</b>	1
	 <p><b>4P</b> 2.5 mod.</p> 	10	-	-	EPC 64 C10 + CA UN S/H G	<b>693639</b>
16		-	-	EPC 64 C16 + CA UN S/H G	<b>693640</b>	6

(2) MCB + auxiliary contact provided already mounted like a set  
 CA UN is set on H function (auxiliary contact indication).  
 S function (fault indication) is possible.



## Compact circuit breakers for railway application

Circuit protection



### Series EPC 62R

### Series CA UN

EN/IEC 60898-1

6000  
3

EN/IEC 60947-2

10kA<sup>(1)</sup>

EN 45545-2

EN 50155

EN/IEC 62019

EN 50155 (Railway applications - electronic equipment for rolling stock)

### Application

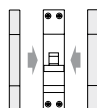


### Marking

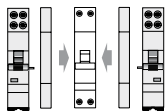


### Add-on devices

Auxiliaries  
CA UN



Tele L  
Tele U  
PBS



When coupling an add-on device (Tele L, Tele U, PBS, Tele MP) to the MCB, an universal CA UN auxiliary has to be coupled first as interface.

### Performance

Thermal setting In	(A)	2-40
Rated voltage AC Un	(V)	240/415
Minimum operating voltage UBmin	(V)	12
Tripping characteristics		B-C
Energy limiting class		3
Mechanical/electrical endurance		20000/10000 <sup>(2)</sup>
Tropicalisation acc. to EN/IEC 60068-2		95% RH at 55°C
Terminal capacity flexible/rigid cable	(mm <sup>2</sup> )	10-16 <sup>(2)</sup>
Poles		2
Weight	(g)	160

### Short-circuit capacity

#### AC acc. to EN/IEC 60898-1

Poles	V <sub>AC</sub>	I <sub>cu</sub> (kA)/I <sub>cs</sub> (kA)
2	240/415	6

#### AC acc. to EN/IEC 60947-2

Poles	V <sub>AC</sub>	I <sub>cu</sub> (kA)/I <sub>cs</sub> (kA)
2	240/415	10

#### DC acc. to EN/IEC 60947-2

Poles	V <sub>DC</sub>	I <sub>cu</sub> (kA)/I <sub>cs</sub> (kA)
2	125	6

### Performance CA UN

Change-over contact		1
Rated current In	(A)	5
Rated voltage AC Un	(V)	240
Electrical endurance		10000
Terminal capacity flexible/rigid cable	(mm <sup>2</sup> )	2.5
Weight	(g)	70
Torque	(Nm)	0.8

<sup>(1)</sup> 6kA at 415V

<sup>(3)</sup> 8000 for 32/40A

<sup>(2)</sup> Also accepting (2 x 4 mm<sup>2</sup>) or (1 x 4 mm<sup>2</sup>) + (1 x 6 mm<sup>2</sup>)



**Series EPC 62 - 6kA - characteristics B-C**



2P  
1 mod.  
1/2 3/4  
2/1 4/3

In (A)	B		C		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
2	EPC 62R B02	<b>693645</b>	EPC 62R C02	<b>693653</b>	12
4	EPC 62R B04	<b>693646</b>	EPC 62R C04	<b>693654</b>	12
6	EPC 62R B06	<b>693647</b>	EPC 62R C06	<b>693655</b>	12
10	EPC 62R B10	<b>693648</b>	EPC 62R C10	<b>693656</b>	12
16	EPC 62R B16	<b>693649</b>	EPC 62R C16	<b>693657</b>	12
20	EPC 62R B20	<b>693650</b>	EPC 62R C20	<b>693658</b>	12
25	EPC 62R B25	<b>693651</b>	EPC 62R C25	<b>693659</b>	12
32	EPC 62R B32	<b>693652</b>	EPC 62R C32	<b>693660</b>	12
40	EPC 62 B40	<b>692643</b>	EPC 62 C40	<b>692562</b>	12

40A for the standard version

Series EPC 62R

A

B

C

D

E

F

G

X

New

# Screwless & Plug

The new range of **Fixwell\*** MCBs



## Screwless contact

At the top all *Fixwell\** MCBs are equipped with 2 screwless contacts per pole, up to 2 x 4mm<sup>2</sup>.

## Terminal contact stability guaranteed

No tightening needed later on.



## Easy to disconnect

Plug-in the cable to connect, release by pressing the push-button. Tightening and releasing by screws is history!

- ✓ 100% screwless top cable connection up to 20A
- ✓ 100% screwless bottom plug-in connection for standard GE pin busbars up to 63A
- ✓ 100% toolfree installation
- ✓ 100% reliable and safe



# g-in and RCCBs

## Plug-in connection with standard pin busbars

Click and unclick a standard busbar  
with a simple operation

## Terminal contact stability guaranteed

No tightening needed later on.

## Standard pin busbars as used for all Redline products

## Plug-in connection

All *Fixwell\** MCBs and RCCBs are  
equipped with plug-in busbar contacts.

Fixwell\*

A

B

C

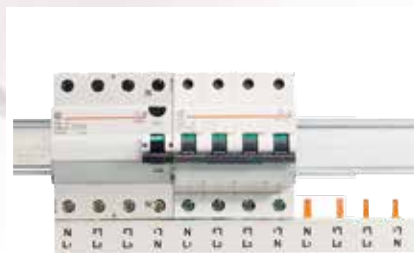
D

E

F

G

X



# Easy, Fast and

## How to install MCBs and RCCBs without tools within seconds

Circuit protection

Fixwell\* **MCBs** and **RCCBs** are the most recent extension of the Redline range and are developed **to reduce time of installation to the absolute minimum**. A toolfree installation with guaranteed reliability from the very first moment by **plug & play**. A 100% compatibility with all Redline accessories and auxiliaries are the keys of success of this innovative range of MCBs and RCCBs.

A

B

C

D

E

F

G

X

**1 hour becomes 30 min.**

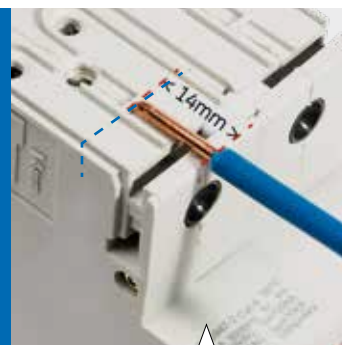
>50% time reduction using manual screwdriver  
>30% time reduction using electrical screwdriver



Easy DIN-rail extraction

### Plug-in connection with standard busbars

All Fixwell\* MCBs and RCCBs are equipped at the bottom with screwless plug-in contacts for GE standard pin busbars. Click and unclick with a simple operation. Time consuming tightening is no longer needed.



### Integrated guide

Moulded channels smoothly guide the cables to the terminals in all conditions.



### User-friendly

Determine the perfect length (14mm) of the bare cable using the integrated measurement tool.



Up to 63A

# Reliable



Fixwell\*

A

B

C

D

E

F

G

X

<p><b>Up to 20A</b></p>	<p><b>Sure and secure from the first moment</b></p> <p>Push down vertically the cable into the contact until the withstand. From that very moment is the cable in perfect position. No additional tightening is required.</p>		<p><b>Part of the family</b></p> <p>Fixwell* MCBs and RCCBs fit perfectly in the Redline range and are compatible with all Redline auxiliaries and accessories.</p>
<p><b>Rigid and flexible cable</b></p> <p>You have the choice : rigid cable or multiwire from 1 up to 4mm<sup>2</sup>. It doesn't matter, our Fixwell* MCBs are accepting both! No cable crimps needed.</p>	<p><b>plug&amp;play</b></p>	<p><b>Reliable connection</b></p> <p>The unique concept of Fixwell* screwless contacts guarantees a permanent pull-out force much higher than standards request. The terminal contacts stability along the time is guaranteed. You can rely on Fixwell*.</p>	

**Technical data of screwless MCBs**

Series		EPP60	EPP100
Standards		IEC/EN 60898-1	IEC/EN 60898-1
Tripping characteristics		B,C	B,C
Nominal current <sup>(1)</sup>	(A)	6 - 63	6 - 63
Calibration temperature	(°C)	30	30
Number of poles (# mod)		1/1P+N/2/3/3P+N/4P	1/2/3/3P+N/4P
Neutral pole protected		yes	yes
Clip-on (rapid closing)		yes	yes
Nominal voltage (Un)	AC		
	1P	240/415	240/415
	1P+N	240	240
	2P	415	415
DC			
	3P/3P+N/4P	415	415
	1P <sup>(2)</sup>	48	48
	2P (in series) <sup>(2)</sup>	110	110
Frequency	(Hz)	50 to 60	50 to 60
Use in D.C.	(Hz)	DC:	DC:
	(Hz)	magn. trip. +40%	magn. trip. +40%
	(Hz)	400Hz:	400Hz:
		magn. trip. +50%	magn. trip. +50%
Maximum service voltage (U <sub>Bmax</sub> ) between two wires	(V)	250/440; 53/120 DC	250/440; 53/120 DC
Minimum service voltage (U <sub>Bmin</sub> )	(V)	12; 12 DC	12; 12 DC
Energy limiting class (IEC/EN 60898-1)		3	3
Isolator application	EN 60947-2	yes	yes
Rated insulation voltage	Pollution degree 2	500	500
	Pollution degree 3	440	440
Impulse withstand test voltage	(kV)	6	6
Insulation resistance	(MΩ)	10000	10000
Dielectric rigidity	(kV)	2.5	2.5
Vibration resistance (in x, y, z direction) (IEC 77/16.3)		3g	3g
Endurance	Electrical at Un, In	10000	10000
	Mechanical	20000	20000
Utilisation category (EN 60947-2)		A	A
Protection degree (outside / inside enclosure)		IP20/IP40	IP20/IP40
Self-extinguish degree (acc. to UL94)		V2	V2
Tropicalisation (EN 60068-2 / DIN 40046)		+55°C / 95%RH	+55°C / 95%RH
Operating temperature <sup>(3)</sup>	(°C)	-25/+55	-25/+55
Storage temperature	(°C)	-55/+55	-55/+55
Terminal capacity		see page A.72	see page A.74
Add-on devices (side add-on)	Auxiliary contacts CA	yes	yes
	Tele U <sup>(4)</sup>	yes	yes
	Tele L <sup>(4)</sup>	yes	yes
	Tele MP <sup>(4)</sup>	yes	yes
	PBS <sup>(4)</sup>	yes	yes
Busbar system bottom	Pin	yes	yes
	Fork	no	no
Accessories		yes	yes
Dimensions, weights, packaging			
	(HxDxW) per module	(mm)	88.4x68x18
	Weight/module	(g)	125
	Package unit		12
Approvals <sup>(5)</sup>		VDE-KEMA-CEBEC-IMQ	VDE-KEMA-CEBEC-IMQ
CE-marking		yes	yes

(1) Rating current derating as usual in function of installation conditions.

(2) Preferred values of rated control supply voltage (EN/IEC 60947-2): 24V DC, 48V DC, 110V DC, 125V DC, 220V DC, 250V DC.

(3) With plug-in pin busbar: -25/+50°C

(4) Only at **any extreme side** of the row. No pin busbars let through allowed.

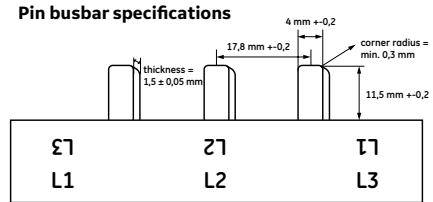
(5) 4P execution approval pending.



### Terminal capacity

Top terminals		Ratings 6A to 20A:	Ratings 25A to 63A:
		Screwless (Max. 2 wires)	Cage terminals
Rigid cable (min/max)	mm <sup>2</sup>	2 x (1/4) <sup>(1)</sup>	1/35
Flexible cable (min/max)	mm <sup>2</sup>	2 x (1.5/4) <sup>(1)</sup>	0.75/25
Recommended torque	Nm	-	2.5
Maximum torque	Nm	-	4.5

Bottom terminals		Ratings 6A to 63A:	Ratings 6A to 63A:
		Bottom cage terminals <sup>(2)</sup>	Bottom flat plug-in terminals <sup>(3)</sup>
Rigid cable (min/max)	mm <sup>2</sup>	1/25	To insert GE pin busbars, or other brands under following dimensions:
Flexible cable (min/max)	mm <sup>2</sup>	0.75/16	Length = 11.5 ± 0.2mm
Recommended torque	Nm	2.5	Width = 4 ± 0.2mm
Maximum torque	Nm	4.5	Thickness = 1.5 ± 0.05mm
			Corners min. radius = 0.3mm



- (1) The top screwless terminal is composed of two separate and parallel terminals. You can connect one rigid or flexible cable into each terminal. The bare cable (insulation removed to the appropriate length) should be pushed into the screwless terminal (Fig 5), the terminals will not accept cables with cable lugs or ferrules. For flexible cables it is recommended to twist wires and insert it into the terminal by pressing the push button of the MCB and at the same time gently pull the cable (Fig 6).
- (2) Bottom terminals provide a cage terminal to connect also cables to feed other rows / devices limited to rated current of the device.
- (3) Plug-in window terminals are only foreseen for pin busbars providing the incoming supply to several devices from the bottom side. Not intended for any other conductor with or without cable lugs or cable connectors.

Fixwell\*

A

### How to mount the busbar into devices

1. Mount first 2, 3 or 4 poles devices on the DIN-rail at the extreme left side of the row.

2. Mount one device at the extreme right side on the DIN-rail.

3. Fit the pin busbar on both devices.

4. Then, mount one by one the rest of poles pulling down the grey clip previously, inserting the pin bars inside the devices and then closing the clip of every device.

5. Finally, remove 14mm of plastic from every wire and insert them vertically one by one inside the top screwless terminals.

6. For disconnecting the outgoing wires.

14 mm

Easy to dismantle from DIN-rail

B

C

D

E

F

G

X



### Short-circuit capacity of screwless MCBs

Series			EPP60	EPP100
<b>Short-circuit capacity AC (kA)</b>				
IEC/EN 60898-1	<b>I<sub>cn</sub></b>	1P 230/400V	6	10
		1P+N 230V	6	10
		2P 230/400V	6	10
		3P/3P+N/4P 230/400V	6	10
	<b>I<sub>cs</sub> (service)</b>		100% I <sub>cu</sub>	75% I <sub>cu</sub>
IEC/EN 60947-2	<b>I<sub>cu</sub> (max.)</b>	1P 127V	20	30
		1P 240V	10	15
		1P 415V	3	4
		1P+N/2P 127V	30	40
		1P+N/2P 240V	20	30
		1P+N/2P 415V	10	15
		2P 240V	20	30
		2P 415V	10	15
		3P/3P+N/4P 240V	20	30
		3P/3P+N/4P 415V	10	15
	<b>I<sub>cs</sub> (service)</b>		75% I <sub>cu</sub>	50% I <sub>cu</sub>
<b>Short-circuit capacity DC (kA)</b>				
IEC/EN 60947-2	<b>I<sub>cu</sub> (max.)</b>	1P ≤60V	20	25
		1P ≤125V	-	-
		1P ≤220V	-	-
		2P ≤125V	25	30
		2P ≤440V	-	-
	<b>I<sub>cs</sub> (service)</b>		100% I <sub>cu</sub>	100% I <sub>cu</sub>

Circuit protection

A

B

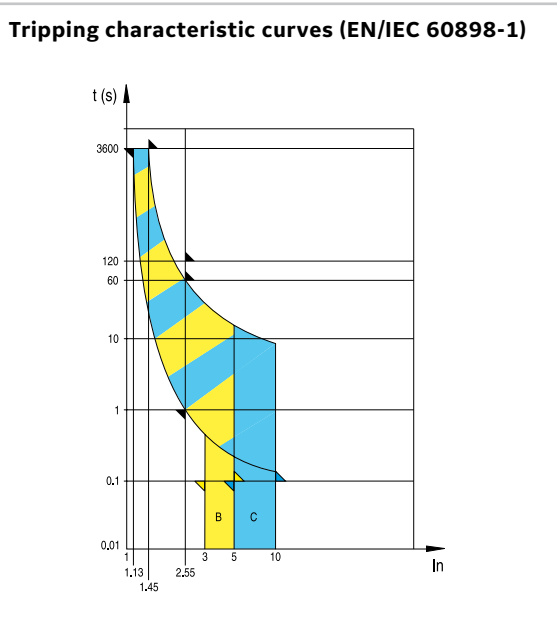
### Characteristics according to IEC/EN 60898-1

C

Miniature Circuit Breakers (MCB) are intended for the protection of wiring installations against both overloads and short-circuits in domestic or commercial wiring installations where operation is possible by un instructed people.

D

E



F

G

X

#### Magnetic release

An electromagnet with plunger ensures instantaneous tripping in the event of short-circuit. The standard distinguishes two different types, following the current for instantaneous release: type B and C.

I <sub>cn</sub>	Test (A) current	Tripping time	Applications
B	3 x I <sub>n</sub>	0.1 < t < 45s (I <sub>n</sub> ≤ 32A) 0.1 < t < 90s (I <sub>n</sub> > 32A)	Only for resistive loads such as: - electrical heating - water heater - stoves
	5 x I <sub>n</sub>	t < 0.1s	
C	5 x I <sub>n</sub>	0.1 < t < 15s (I <sub>n</sub> ≤ 32A) 0.1 < t < 30s (I <sub>n</sub> > 32A)	Usual loads such as: - lighting - socket-outlets - small motors
	10 x I <sub>n</sub>	t < 0.1s	

#### Thermal release

The release is initiated by a bimetal strip in case of overload. The standard defines the range of releases for specific overload values.

Reference ambient temperature is 30°C.

Test current	Tripping time
1.13 x I <sub>n</sub>	t ≥ 1h (I <sub>n</sub> ≤ 63A) t ≥ 2h (I <sub>n</sub> > 63A)
1.45 x I <sub>n</sub>	t < 1h (I <sub>n</sub> ≤ 63A) t < 2h (I <sub>n</sub> > 63A)
2.55 x I <sub>n</sub>	1s < t < 60s (I <sub>n</sub> ≤ 32A) 1s < t < 120s (I <sub>n</sub> > 32A)



## Influence of ambient air temperature on the rated current

The maximum value of the current which can flow through a MCB depends of the nominal current of the MCB, the conductor cross-section as well as of the ambient air temperature.

The values shown in the table below are for devices in the free air. For devices installed with other modular devices in the same switchboard a correction factor (K) shall be applied relative to the mounting situation of the MCB, the ambient temperature and the number of main circuits in the installation (EN 60439-1):

No. of devices	K
2 or 3	0.9
4 or 5	0.8
6 to 9	0.7
> 10	0.6

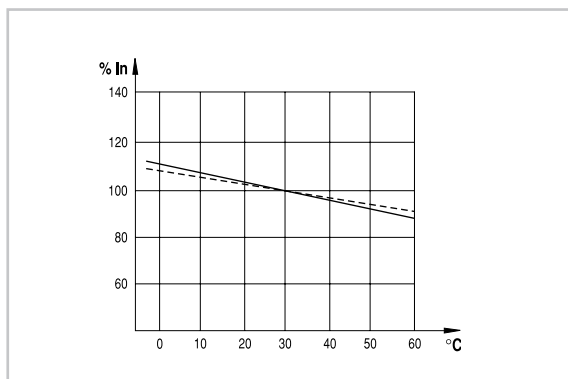
### Calculation example

Within a distribution panel consisting of eight MCB 2PC16 with an operating ambient temperature of 45°C, which is the highest temperature the MCB can operate without unwanted tripping.

### Calculation

The correction factor  $K=0.7$ , for use in an eight circuit installation:  $16A \times 0.7= 11.2A$   
 As the MCB is working at 45°C it shall be applied another factor (90% = 0.9):  
 $I_n \text{ at } 45^\circ\text{C} = I_n \text{ at } 30^\circ\text{C} \times 0.9 = 11.2A \times 0.9 = 10.1A$

The thermal calibration of the MCBs was carried out at ambient temperature of 30°C. Ambient temperatures different from 30°C influence the bimetal and this results in earlier or later thermal tripping.



## Tripping current as a function of the frequency

All MCBs are designed to work at frequencies of 50-60Hz, therefore to work at different values, consideration must be given to the variation of the tripping characteristics. The thermal tripping does not change with variation of the frequency but the magnetic tripping values can be up to 50% higher than the ones at 50-60Hz. For DC current magnetic tripping is 50% higher.

### Tripping current variations

60Hz	100Hz	200Hz	300Hz	400Hz
1	1.1	1.2	1.4	1.5

## Power losses

The power losses are calculated by measuring the voltage drop between the incoming and the outgoing terminals of the device at rated current.

### Power losses per pole

In (A)	Voltage drop (V)	Energy loss Pw (W)	Resistance Z (MOhm)
0.5	2.23	1.12	4458.00
1	1.27	1.27	1272.00
2	0.62	1.24	310.00
3	0.52	1.56	173.00
4	0.37	1.49	93.00
6	0.26	1.57	43.60
8	0.16	1.24	19.40
10	0.16	1.56	15.60
13	0.16	2.01	11.90
16	0.16	2.57	10.10
20	0.14	2.76	6.90
25	0.13	3.19	5.10
32	0.10	3.07	3.00
40	0.10	4.00	2.50
50	0.09	4.50	1.80
63	0.08	5.16	1.30



### Screwless MCBs

#### Series EPP60



<b>EN/IEC 60898-1</b>	<b>6000</b>
	<b>3</b>
<b>IEC/EN 60947-2</b>	<b>10kA</b>

Circuit protection

A

#### Applications



B

#### Approvals / Marking

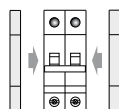


C

#### Add-on devices

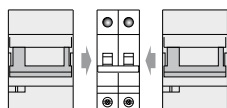
D

Auxiliaries<sup>(1)</sup>



E

Motor operator<sup>(2)</sup>



F

(1) Series CA - Tele L - Tele U - PBS  
 (2) Only one extension at the extreme end of the pin busbar

G

X

#### Performance

<b>Thermal setting In</b>	(A) 6-63
<b>Rated voltage AC Un</b>	(V) 240/415
<b>Minimum operating voltage UBmin</b>	(V) 12, 12 DC
<b>Tripping characteristics</b>	B,C
<b>Mechanical/electrical endurance</b>	20000/10000
<b>Tropicalisation acc.to IEC 60068-2</b>	95% RH at 55°C
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> ) 25-35
<b>Poles</b>	1/1P+N/2/3/3P+N/4P
<b>Weight</b>	(g/mod) 125

#### Short-circuit capacity







AC acc. to EN/IEC 60898-1		
Poles	V	Icn/Ics (kA) <sup>(1)</sup>
1-4	230/400	6
AC acc. to EN/IEC 60947-2		
Poles	V	Icu (kA)
1	240	10
1+N, 2	127	30
	240	20
2	415	10
3, 3+N, 4	240	20
	415	10
DC acc. to EN/IEC 60947-2		
Poles	V <sub>DC</sub>	Icu (kA)
1	≤ 60	20
2	≤ 125	25

(1) Ics= 75% Icn





**Series EPP60 - characteristics B and C**

In (A)	B		C		Pack.	
	Cat. No.	Ref. No.	Cat. No.	Ref. No.		
 <p><b>1P</b></p> <p>1/2</p> <p>2/1</p>	6	EPP61B06	<b>678172</b>	EPP61C06	<b>678212</b>	12
	10	EPP61B10	<b>678173</b>	EPP61C10	<b>678213</b>	12
	13	EPP61B13	<b>678174</b>	EPP61C13	<b>678214</b>	12
	16	EPP61B16	<b>678175</b>	EPP61C16	<b>678215</b>	12
	20	EPP61B20	<b>678176</b>	EPP61C20	<b>678216</b>	12
	25	EPP61B25	<b>678177</b>	EPP61C25	<b>678217</b>	12
	32	EPP61B32	<b>678178</b>	EPP61C32	<b>678218</b>	12
	40	EPP61B40	<b>678179</b>	EPP61C40	<b>678219</b>	12
	50	EPP61B50	<b>678180</b>	EPP61C50	<b>678220</b>	12
	63	EPP61B63	<b>678181</b>	EPP61C63	<b>678221</b>	12
 <p><b>1P+N</b></p> <p>1/2 N</p> <p>2/1 N</p>	6	-	-	EPP61NC06	<b>678222</b>	6
	10	-	-	EPP61NC10	<b>678223</b>	6
	13	-	-	EPP61NC13	<b>678224</b>	6
	16	-	-	EPP61NC16	<b>678225</b>	6
	20	-	-	EPP61NC20	<b>678226</b>	6
	25	-	-	EPP61NC25	<b>678227</b>	6
	32	-	-	EPP61NC32	<b>678228</b>	6
	40	-	-	EPP61NC40	<b>678229</b>	6
	50	-	-	EPP61NC50	<b>678230</b>	6
	63	-	-	EPP61NC63	<b>678231</b>	6
 <p><b>2P</b></p> <p>1/2 3/4</p> <p>2/1 4/3</p>	6	EPP62B06	<b>678182</b>	EPP62C06	<b>678232</b>	6
	10	EPP62B10	<b>678183</b>	EPP62C10	<b>678233</b>	6
	13	EPP62B13	<b>678184</b>	EPP62C13	<b>678234</b>	6
	16	EPP62B16	<b>678185</b>	EPP62C16	<b>678235</b>	6
	20	EPP62B20	<b>678186</b>	EPP62C20	<b>678236</b>	6
	25	EPP62B25	<b>678187</b>	EPP62C25	<b>678237</b>	6
	32	EPP62B32	<b>678188</b>	EPP62C32	<b>678238</b>	6
	40	EPP62B40	<b>678189</b>	EPP62C40	<b>678239</b>	6
	50	EPP62B50	<b>678190</b>	EPP62C50	<b>678240</b>	6
	63	EPP62B63	<b>678191</b>	EPP62C63	<b>678241</b>	6
 <p><b>3P</b></p> <p>1/2 3/4 5/6</p> <p>2/1 4/3 6/5</p>	6	EPP63B06	<b>678192</b>	EPP63C06	<b>678242</b>	4
	10	EPP63B10	<b>678193</b>	EPP63C10	<b>678243</b>	4
	13	EPP63B13	<b>678194</b>	EPP63C13	<b>678244</b>	4
	16	EPP63B16	<b>678195</b>	EPP63C16	<b>678245</b>	4
	20	EPP63B20	<b>678196</b>	EPP63C20	<b>678246</b>	4
	25	EPP63B25	<b>678197</b>	EPP63C25	<b>678247</b>	4
	32	EPP63B32	<b>678198</b>	EPP63C32	<b>678248</b>	4
	40	EPP63B40	<b>678199</b>	EPP63C40	<b>678249</b>	4
	50	EPP63B50	<b>678200</b>	EPP63C50	<b>678250</b>	4
	63	EPP63B63	<b>678201</b>	EPP63C63	<b>678251</b>	4
 <p><b>3P+N</b></p> <p>1/2 3/4 5/6 N</p> <p>2/1 4/3 6/5 N</p>	6	EPP63NB06	<b>678202</b>	EPP63NC06	<b>678252</b>	3
	10	EPP63NB10	<b>678203</b>	EPP63NC10	<b>678253</b>	3
	13	EPP63NB13	<b>678204</b>	EPP63NC13	<b>678254</b>	3
	16	EPP63NB16	<b>678205</b>	EPP63NC16	<b>678255</b>	3
	20	EPP63NB20	<b>678206</b>	EPP63NC20	<b>678256</b>	3
	25	EPP63NB25	<b>678207</b>	EPP63NC25	<b>678257</b>	3
	32	EPP63NB32	<b>678208</b>	EPP63NC32	<b>678258</b>	3
	40	EPP63NB40	<b>678209</b>	EPP63NC40	<b>678259</b>	3
	50	EPP63NB50	<b>678210</b>	EPP63NC50	<b>678260</b>	3
	63	EPP63NB63	<b>678211</b>	EPP63NC63	<b>678261</b>	3
 <p><b>4P</b></p> <p>1/2 3/4 5/6 7/8</p> <p>2/1 4/3 6/5 8/7</p>	6	EPP64B06	<b>678705</b>	EPP64C06	<b>678715</b>	3
	10	EPP64B10	<b>678706</b>	EPP64C10	<b>678716</b>	3
	13	EPP64B13	<b>678707</b>	EPP64C13	<b>678717</b>	3
	16	EPP64B16	<b>678708</b>	EPP64C16	<b>678718</b>	3
	20	EPP64B20	<b>678709</b>	EPP64C20	<b>678719</b>	3
	25	EPP64B25	<b>678710</b>	EPP64C25	<b>678720</b>	3
	32	EPP64B32	<b>678711</b>	EPP64C32	<b>678721</b>	3
	40	EPP64B40	<b>678712</b>	EPP64C40	<b>678722</b>	3
	50	EPP64B50	<b>678713</b>	EPP64C50	<b>678723</b>	3
	63	EPP64B63	<b>678714</b>	EPP64C63	<b>678724</b>	3

Series EPP60

A

B

C

D

E

F

G

X



**SCREWLESS**  
top terminals  
In=6 to 20A



## Screwless MCBs

### Series EPP100



<b>EN/IEC 60898-1</b>	<b>10000</b> <b>3</b>
<b>IEC/EN 60947-2</b>	<b>15kA</b>

Circuit protection

A

### Applications



B

### Approvals / Marking

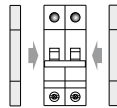


C

### Add-on devices

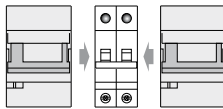
D

Auxiliaries<sup>(1)</sup>



E

Motor operator<sup>(2)</sup>



F

(1) Series CA - Tele L - Tele U - PBS

(2) Only one extension at the extreme end of the pin busbar

G

X

### Performance

<b>Thermal setting In</b>	(A) 6-63
<b>Rated voltage AC Un</b>	(V) 240/415
<b>Minimum operating voltage UBmin</b>	(V) 12, 12 DC
<b>Tripping characteristics</b>	B,C
<b>Mechanical/electrical endurance</b>	20000/10000
<b>Tropicalisation acc.to IEC 60068-2</b>	95% RH at 55°C
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> ) 25-35
<b>Poles</b>	1/2/3/3P+N/4P
<b>Weight</b>	(g/mod) 125

### Short-circuit capacity

#### AC acc. to EN/IEC 60898-1

Poles	V	Icn/Ics (kA) <sup>(1)</sup>
1-4	230/400	10

#### AC acc. to EN/IEC 60947-2

Poles	V	Icu (kA) <sup>(2)</sup>
1	240	15
1+N, 2	127	40
	240	30
2	415	15
3, 3+N, 4	240	30
	415	15

#### DC acc. to EN/IEC 60947-2




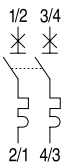

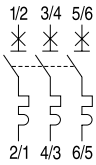

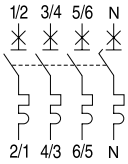

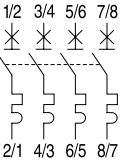
Poles	V <sub>DC</sub>	Icu (kA)
1	≤ 60	25
2	≤ 125	30

(1) Ics= 75% Icn

(2) Ics= 50% Icu



**Series EPP100 - characteristics B and C**

	In (A)	B		C		Pack.
		Cat. No.	Ref. No.	Cat. No.	Ref. No.	
 1P 1/2  2/1	6	EPP101B06	678262	EPP101C06	678302	12
	10	EPP101B10	678263	EPP101C10	678303	12
	13	EPP101B13	678264	EPP101C13	678304	12
	16	EPP101B16	678265	EPP101C16	678305	12
	20	EPP101B20	678266	EPP101C20	678306	12
	25	EPP101B25	678267	EPP101C25	678307	12
	32	EPP101B32	678268	EPP101C32	678308	12
	40	EPP101B40	678269	EPP101C40	678309	12
	50	EPP101B50	678270	EPP101C50	678310	12
	63	EPP101B63	678271	EPP101C63	678311	12
 2P 1/2 3/4  2/1 4/3	6	EPP102B06	678272	EPP102C06	678312	6
	10	EPP102B10	678273	EPP102C10	678313	6
	13	EPP102B13	678274	EPP102C13	678314	6
	16	EPP102B16	678275	EPP102C16	678315	6
	20	EPP102B20	678276	EPP102C20	678316	6
	25	EPP102B25	678277	EPP102C25	678317	6
	32	EPP102B32	678278	EPP102C32	678318	6
	40	EPP102B40	678279	EPP102C40	678319	6
	50	EPP102B50	678280	EPP102C50	678320	6
	63	EPP102B63	678281	EPP102C63	678321	6
 3P 1/2 3/4 5/6  2/1 4/3 6/5	6	EPP103B06	678282	EPP103C06	678322	4
	10	EPP103B10	678283	EPP103C10	678323	4
	13	EPP103B13	678284	EPP103C13	678324	4
	16	EPP103B16	678285	EPP103C16	678325	4
	20	EPP103B20	678286	EPP103C20	678326	4
	25	EPP103B25	678287	EPP103C25	678327	4
	32	EPP103B32	678288	EPP103C32	678328	4
	40	EPP103B40	678289	EPP103C40	678329	4
	50	EPP103B50	678290	EPP103C50	678330	4
	63	EPP103B63	678291	EPP103C63	678331	4
 3P+N 1/2 3/4 5/6 N  2/1 4/3 6/5 N	6	EPP103NB06	678292	EPP103NC06	678332	3
	10	EPP103NB10	678293	EPP103NC10	678333	3
	13	EPP103NB13	678294	EPP103NC13	678334	3
	16	EPP103NB16	678295	EPP103NC16	678335	3
	20	EPP103NB20	678296	EPP103NC20	678336	3
	25	EPP103NB25	678297	EPP103NC25	678337	3
	32	EPP103NB32	678298	EPP103NC32	678338	3
	40	EPP103NB40	678299	EPP103NC40	678339	3
	50	EPP103NB50	678300	EPP103NC50	678340	3
	63	EPP103NB63	678301	EPP103NC63	678341	3
 4P 1/2 3/4 5/6 7/8  2/1 4/3 6/5 8/7	6	EPP104B06	678725	EPP104C06	678735	3
	10	EPP104B10	678726	EPP104C10	678736	3
	13	EPP104B13	678727	EPP104C13	678737	3
	16	EPP104B16	678728	EPP104C16	678738	3
	20	EPP104B20	678729	EPP104C20	678739	3
	25	EPP104B25	678730	EPP104C25	678740	3
	32	EPP104B32	678731	EPP104C32	678741	3
	40	EPP104B40	678732	EPP104C40	678742	3
	50	EPP104B50	678733	EPP104C50	678743	3
	63	EPP104B63	678734	EPP104C63	678744	3

Series EPP100

A

B

C

D

E

F

G

X





Series SF

Circuit protection



A

Applications



B

Approval / Marking



C

Standards

IEC 60269-2, IEC 60947-3

D

E

F

G

X

Features

- Fuse Holders are used in the industrial and tertiary sector for the protection against overloading and short-circuit. On the other side, the circuit cut-off allows the maintenance tasks fulfillment with total security for the operator.
- All circuits for motors, transformers, low voltage distribution, circuits control and drive protection.
  - Non-load operation

Function

- The fuse holders disconnectors are suitable devices for the protection of low voltage lines in circuits with high short-circuit current.
- Modular fuse-holders are finger-safe under IEC standards to an IP20 grade of protection, including fuse changing (with the flick of a finger).
  - Modular fuse-holders are available in 1, 2 and 3 poles, with or without visual blown fuse indicator, in IEC version or IEC + UL version.
  - SF Series are made of tough and durable thermoplastic or thermoset material.

Advantages

- Finger safe
- Degree of protection: IP20
- Optional visual blown fuse indicator<sup>(1)</sup>
- DIN rail mounting
- Modular design
- Lockable<sup>(1)</sup>
- Sealable in closed and open position
- Plastic material UL94V2 mini
- Flame retardant materials with glow wire flammability index to 960°C

Performance

Type	Series SF Fuseholders			
	8x31	10x38	14x51	22x58
<b>Voltage AC</b>	500VAC	690VAC	690VAC	690VAC
<b>Voltage DC</b>	500 VDC	690VDC	690VDC	690VDC
<b>Amper (A)</b>	25A	32A	50A	125A
<b>SCCR</b>	-	200kA	100kA	100kA
<b>Power dissipation</b>	2.5W	3W	5W	9.5W
<b>Impulse withstand voltage</b>	6kV	6kV	8kV	8kV
<b>Storage temperature</b>	-25°C to 80°C			
<b>Operating temperature</b>	-25°C to 60°C			

(1) For sizes 14x51 and 22x58



**Series SF - Fuse Holders**



	Poles	In (A)	Modules	Approval	Cat. No	Ref. No	Pack
<b>8x31</b>	N	32A	1	CE	SFN/8x31	<b>676551</b> <sup>(2)</sup>	12
	1P	25A	1	CE	SF1/8x31	<b>676552</b>	12
	1P+N <sup>(2)</sup>	25A	2	CE	SF1N/8x31	<b>676553</b>	6
	2P	25A	2	CE	SF2/8x31	<b>676554</b>	6
	3P	25A	3	CE	SF3/8x31	<b>676555</b>	4
	3P+N	25A	4	CE	SF3N/8x31	<b>676556</b>	3

<b>10x38</b>	1P	32A	1		SF1/10x38	<b>676558</b>	12
	1P+N <sup>(2)</sup>	32A	2		SF1N/10x38	<b>676559</b>	6
	2P	32A	2		SF2/10x38	<b>676560</b>	6
	3P	32A	3		SF3/10x38	<b>676561</b>	4
	3P+N <sup>(2)</sup>	32A	4		SF3N/10x38	<b>676562</b>	3



<b>14x51</b>	N	50A	1.5		SFN/14x51	<b>676563</b>	6
	1P	50A	1.5		SF1/14x51	<b>676564</b>	6
	1P+N <sup>(2)</sup>	50A	3		SF1N/14x51	<b>676565</b>	3
	2P	50A	3		SF2/14x51	<b>676566</b>	3
	3P	50A	4.5		SF3/14x51	<b>676567</b>	2
	3P+N <sup>(2)</sup>	50A	6		SF3N/14x51	<b>676568</b>	1



<b>22x58</b>	N	125A	2		SFN/22x58	<b>676569</b>	6
	1P	125A	2		SF1/22x58	<b>676570</b>	6
	1P+N	125A	4		SF1N/22x58	<b>676571</b>	3
	2P	125A	4		SF2/22x58	<b>676572</b>	3
	3P	125A	6		SF3/22x58	<b>676573</b>	2
	3P+N	125A	8		SF3N/22x58	<b>676574</b>	1

(1) Left Neutral  
(2) Common Neutral for 8x31 and 10x38 sizes

**Series SF - Unbis Fuse Holders**

	Poles	In (A)	Modules	Approval	Cat. No	Ref. No	Pack
<b>10x38</b>	1P+N <sup>(1)</sup>	32A	1	CE	SFU1N/10x38	<b>679590</b> <sup>(2)</sup>	12

(1) Left Neutral  
(2) Fuse Holder has the CE Marking

**Series SF - Fuse Holders with visual indicator and microswitch**

	Poles	In (A)	Modules	Approval	Cat. No	Ref. No	Pack
<b>14x51</b>	1P	50A	1.5		SF1/14X51IM	<b>679556</b>	6
	2P	50A	3		SF2/14X51IM	<b>679557</b>	3
	3P	50A	4.5		SF3/14X51IM	<b>679558</b>	2

<b>22x58</b>	1P	120A	2		SF1/22X58IM	<b>679559</b>	6
	2P	120A	4		SF2/22X58IM	<b>679560</b>	3
	3P	120A	6		SF3/22X58IM	<b>679561</b>	2

Series SF

A

B

C

D

E

F

G

X





## Fuse Holders

### Series SF UL for class CC Fuses

Circuit protection



A

#### Applications



B

#### Approval / Marking



C

D

E

F

G

X

#### Features

- All circuits up to 600V for protection of motors, transformers, low voltage distribution, control circuits, drive protection
- Non-load operation

#### Function

Modular fuse-holders are finger-safe under IEC standards to an IP20 grade of protection, including fuse changing (with the flick of a finger). Modular fuse-holders SFUL-CC are available in 1, 2 or 3 poles, with or without visual blown fuse indicator. SFUL-CC range is made of tough and durable thermoplastic material.

#### Performance

<b>Size</b>	Class CC fuse-links
<b>Number of poles</b>	1P, 2P, 3P
<b>Mounting</b>	Installation on to DIN-rails EN 60715
<b>Protection Degree</b>	IP20
<b>SCCR</b>	200kA AC and 100kA DC
<b>Amper (A)</b>	30A
<b>Plastic material</b>	UL94V2
<b>Weight 1P / P / 3P</b>	70 / 125 / 200

#### Technical data

Type	SF UL 30 CC	SF UL 30CC I
<b>Thermal Current</b>	30A	30A
<b>Insulation Voltage</b>	600VAC/DC	600VAC/DC
<b>Indication System</b>	without indicator	with indicator
<b>Operating Temperature</b>	-25°C to 60°C	-25°C to 60°C
<b>Storage Temperature</b>	-25°C to 80°C	-25°C to 80°C





**Series SF UL for CC Fuses**



**Without indicator**

Poles	In (A)	Modules	Cat. No	Ref. No	Pack
1P	30A	1	SFUL1/30CC	<b>679562</b>	12
2P	30A	2	SFUL2/30CC	<b>679563</b>	6
3P	30A	3	SFUL3/30CC	<b>679564</b>	4

**With indicator**

1P	30A	1	SFUL1/30ICC	<b>679565</b>	12
2P	30A	2	SFUL2/30ICC	<b>679566</b>	6
3P	30A	3	SFUL3/30ICC	<b>679567</b>	4

**Series SF UL for CC Fuses**

**A**

B

C

D

E

F

G

X





## Fuse Holders

### Series SF UL for class J Fuses

Circuit protection



A

#### Applications



B

#### Approval / Marking



C

D

E

F

G

X

#### Features

- All circuits up to 600V for protection of motors, transformers, low voltage distribution, control circuits, drive protection
- Non-load operation

#### Function

- Modular 600 Volt Fuse Holders for Class J fuses introduce a new level of safety and ease for installing or replacing Class J fuses.
- SF UL J Series are qualify as "finger-safe" to an IP20 grade of protection under IEC standards.
- The SF UL J Series accommodates 30A Class J or 22 x 58 mm French Ferrule<sup>(1)</sup> fuses.
- It is for 60A Class J fuses. J holders are available in compact 1, 2, or 3 pole units, with or without blown-fuse indicators in each pole.
- All units have provisions for locking in the open position for safety during fuse changeouts or equipment servicing.
- SFUL/30J and SFUL/60J holders can be snap-mounted to 35 mm DIN-rail and they have a unique latch which will stay open to allow re-positioning of the holder in the future.
- SF Series body material is tough and durable polyamide.

*(1) Holder not UL listed when installed with French Female Fuses*

#### Performance

<b>Volts</b>	600VAC/DC
<b>Amps</b>	<b>SFUL/30J</b> 30A Maximum
	<b>SFUL/60J</b> 60A Maximum
<b>SCCR</b>	200kA

#### Highlights:

- Compact footprint
- Quick, easy fuse change
- Optional indicator lights
- DIN-rail
- Finger-safe IP20 protection







**Series SF UL for J Fuses**



Poles	In (A)	Modules	Cat. No	Ref. No	Pack
1P	30A	2	SFUL1/30J	<b>679583</b>	12
2P	30A	4	SFUL2/30J	<b>679584</b>	6
3P	30A	6	SFUL3/30J	<b>679585</b>	4



1P	60A	3	SFUL1/60J	<b>679586</b>	6
2P	60A	5	SFUL2/60J	<b>679587</b>	3
3P	60A	7	SFUL3/60J	<b>679588</b>	2

Series SF UL for J Fuses

**A**

B

C

D

E

F

G

X





## Fuse Holders

### Series SF UL for Photovoltaic

Circuit protection



#### Applications



#### Approval / Marking



#### Function

- GE's new Photovoltaic fuseholders series deliver the ultimate ease-of-use, time (labor) saving and reliable solution available in the marketplace.
- Offering screw-less, spring pressure, wire termination technology into a power fuseholder, delivering the best of both technologies to its customers.
- Now you can experience the combined benefits of safety, ease-of-use, labor savings and reliability of SF fuseholders and spring pressure technology

#### Advantages

- Equipped with industry proven, patented WAGO CAGE CLAMP® technology (over 25 years of field experience and acceptance)
- Reduce wire installation time by up to 75%
- Highly reliable, maintenance free wire contact
- Secure, vibration proof, corrosion resistant, temperature cycling resistant, cost saving wire connection
- Quick, tool-free, easy fuse change-outs
- IP20 finger-safe protection
- Option visual blown fuse indicator
- DIN-rail mounting
- Compact footprint
- Environmentally conscious, RoHS compliant and lead free

#### Performance

<b>Nominal Current</b>	32A
<b>Rated Voltage</b>	1000VDC
<b>Operation temperature</b>	-40°C to +85°C
<b>Watts Loss</b>	3W or less
<b>Flammability rating</b>	UL 94-VO
<b>Wire range</b>	2.5 to 16mm <sup>2</sup> single conductor 2.5 to 5mm <sup>2</sup> dual conductor
<b>Wire type</b>	60/75/90°C solid/stranded copper

A

B

C

D

E

F



G

X





**Series SF UL for Photovoltaic**

	Poles	In (A)	Modules	Cat. No	Ref. No	Pack
 <p><b>With screws Without Indicator With Indicator</b></p>	1P	32A	1	SFUL1/10X38	<b>679568</b>	12
	1P	32A	1	SFUL1/10X38I	<b>679569</b>	12
 <p><b>Screwless Without Indicator With Indicator</b></p>	1P	32A	1	SFUL1/10X38S	<b>679570</b>	12
	1P	32A	1	SFUL1/10X38IS	<b>679571</b>	12

*For photovoltaic fuses ask for availability*

**Series SF UL for Photovoltaic**

**A**

B

C

D

E

F

G

X

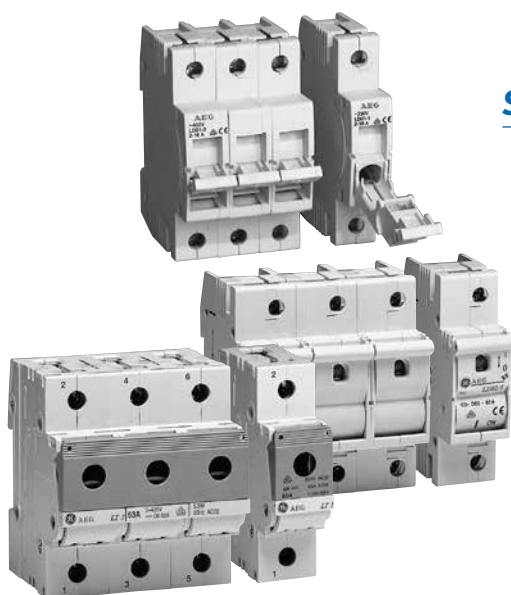




## Fuse Holders

### Series LT - LD

Circuit protection



#### Applications



#### Marking



#### Technical data LT and LD02

<b>Nominal Current</b>	A 2 - 63
<b>Nominal Voltage</b>	V 240/400 AC 65 DC
<b>Utilization category</b>	AC - 22 (63A) AC - 23 (35A)
<b>Breaking capacity</b>	kA 50
<b>Switching life time</b>	10.000
<b>Ambient temperature</b>	°C -5 to +40
<b>Linking capacity</b>	mm <sup>2</sup> to 35
<b>Number of Poles</b>	1, 4
<b>Pole Width</b>	mm 27

#### Technical data LD01

<b>Nominal Current</b>	A 2 - 16
<b>Nominal Voltage</b>	V 230/400 AC 250 DC
<b>Utilization category</b>	AC - 22 (63A)
<b>Breaking capacity</b>	kA 50
<b>Switching life time</b>	2.000
<b>Ambient temperature</b>	°C -5 to +40
<b>Connection clamps</b>	mm <sup>2</sup> to 25
<b>Number of Poles</b>	1, 3
<b>Pole Width</b>	mm 18



**Disconnecter for D02-Fuses (without fuse link)**

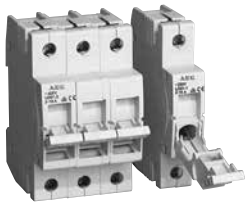


Description	Modules	Cat. No	Ref. No	Pack
<b>2 - 63A, fuses D02</b>				
1P	1.5	LT1 N	676910	3
3P	4.5	LT3 N	676911	1



<b>2 - 63A, fuses with push-bottom insert system</b>				
1P	1.5	LD021	544332	1
3P	4.5	LD023	544333	4

**Disconnecter for D01-Fuses (without fuse link)**



Description	Modules	Cat. No	Ref. No	Pack
<b>16A</b>				
2P	1	LD011	544339	10
3P	3	LD013	544340	3

**Accessories**



For LD02

Description	Modules	Cat. No	Ref. No	Pack
<b>Adapter for D01</b>				
3P	3	LD02AD01	544338	20
<b>Operation</b>				
20A	-	LD02P20	544334	1
25A	-	LD02P25	544335	1
35A	-	LD02P35	544336	50
50A	-	LD02P50	544337	1

Series LT - LD

A

B

C

D

E

F

G

X

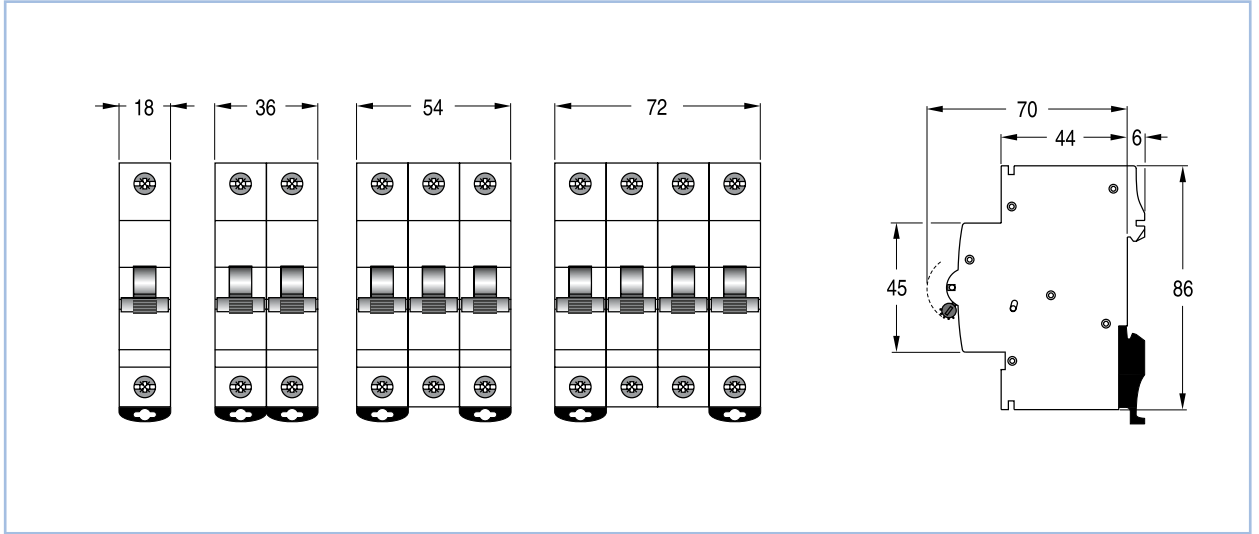




Dimensional drawings

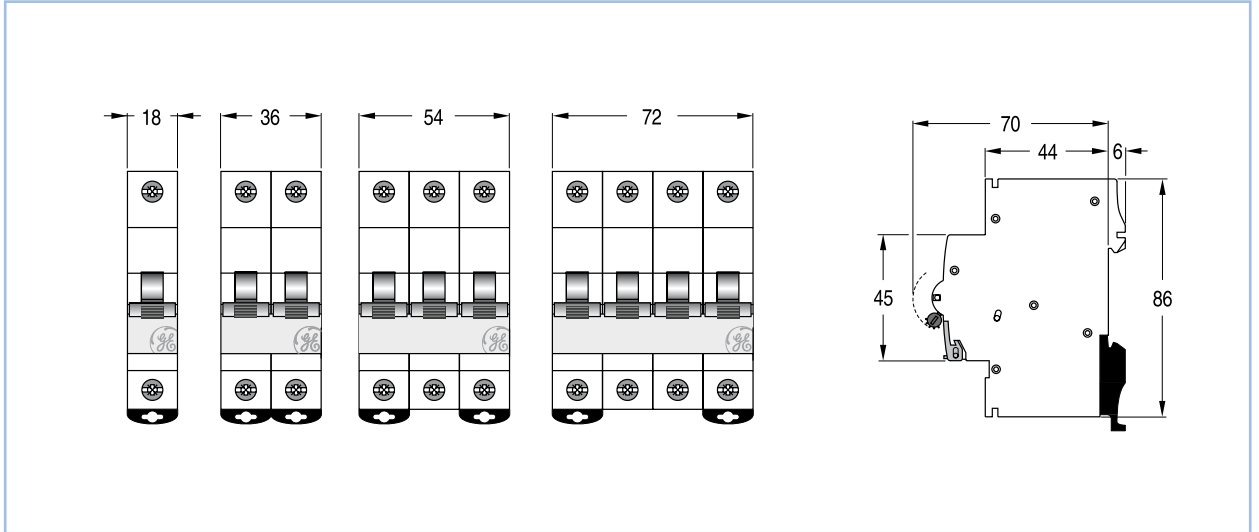
Miniature Circuit Breakers - Series G, GT, Series EP100 UC, EP60 UL and EP100 UL

Circuit protection



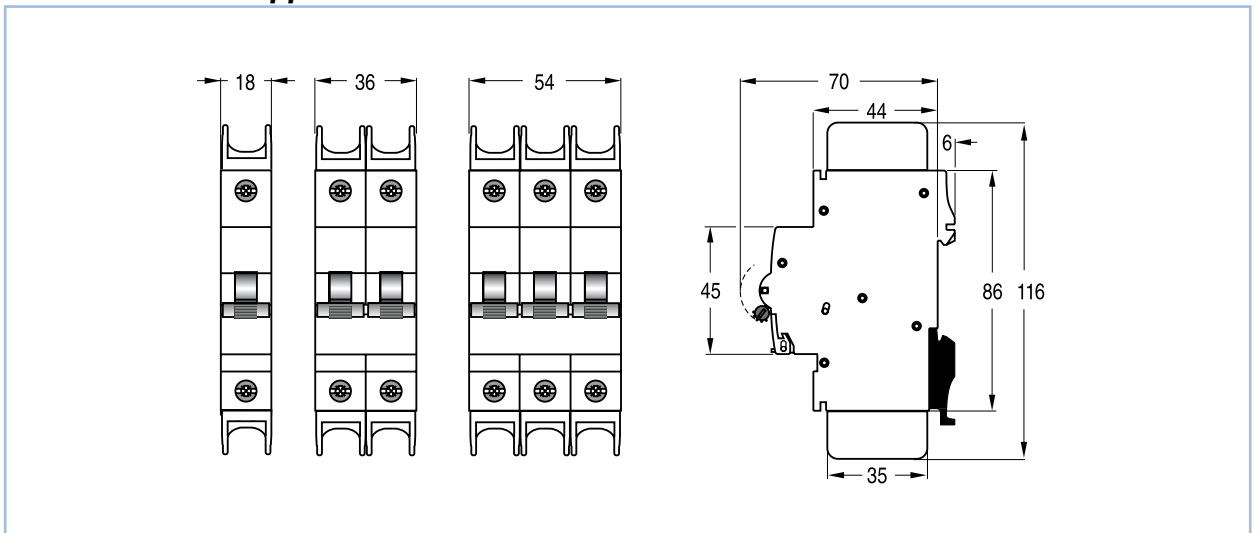
**A** Miniature Circuit Breakers - Series EP60, EP100, EP100T, EP100 UCT, EP100R and EP100 UCR

B  
C  
D  
E  
F



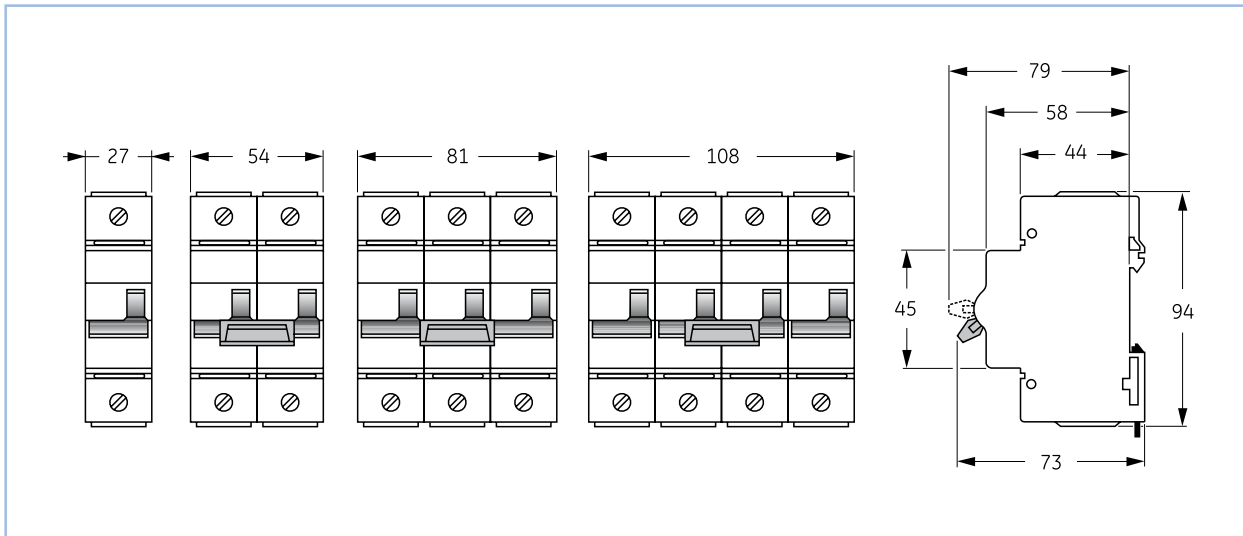
MCB with UL 489 approval - Series EP100 ULH

G  
X

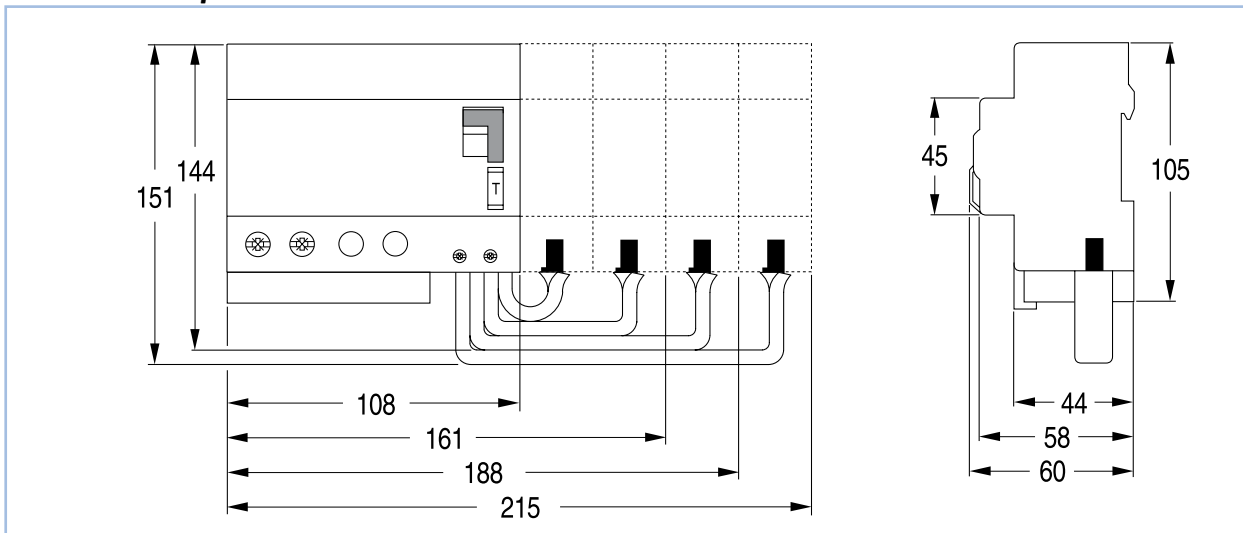


Dimensional drawings

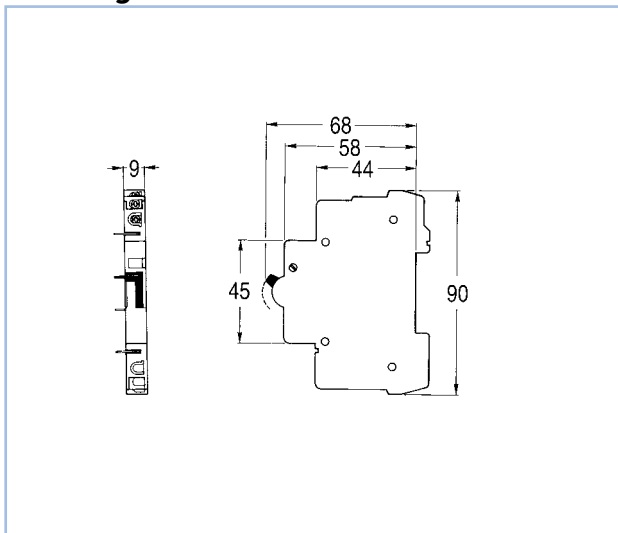
**Miniature Circuit Breakers - Series Hti**



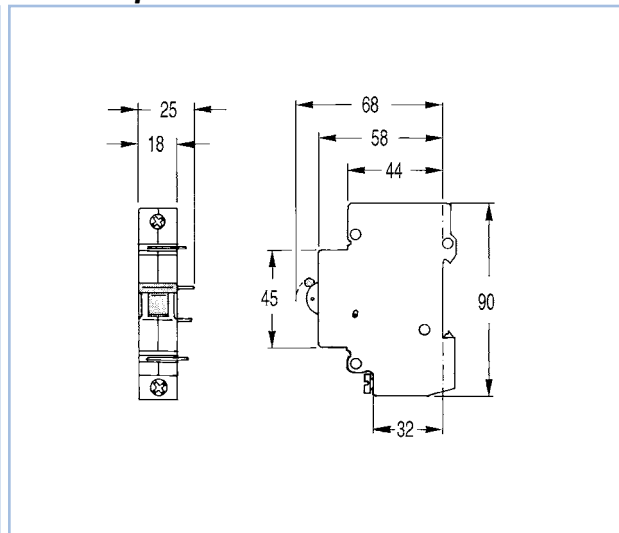
**Add-on RCDs for Series Hti**



**Auxiliary contact - Series Hti**



**Shunt trip - Series Hti**



Dimensional drawings

A

B

C

D

E

F

G

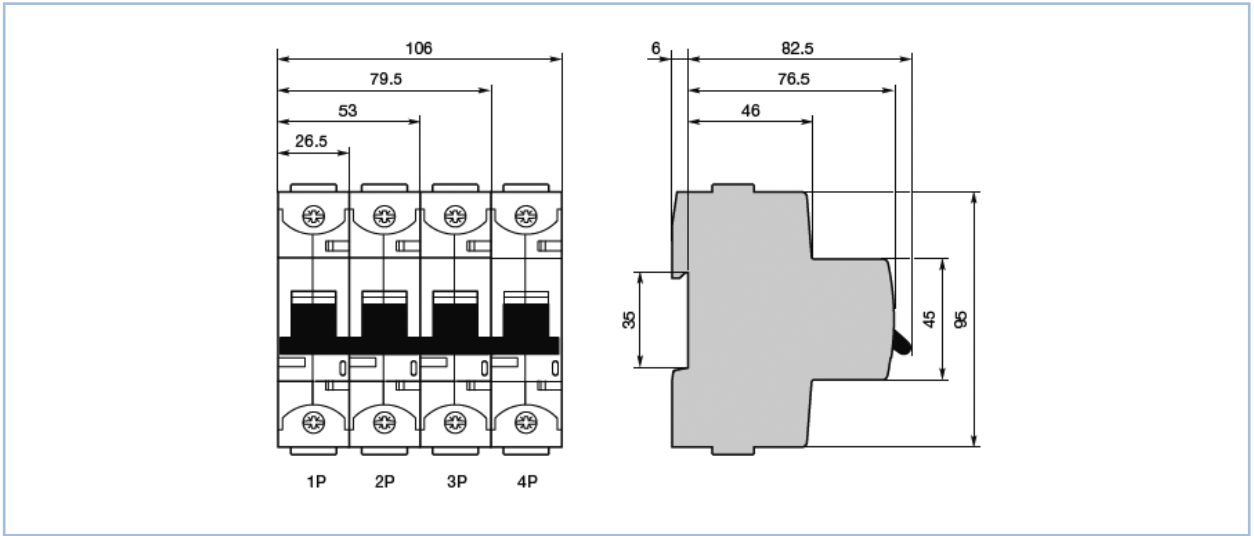
X



Dimensional drawings

Miniature Circuit Breakers - Series Hti+16, Hti+25, Hti+36, Hti+50

Circuit protection



A

Auxiliary contacts - Series Hti+

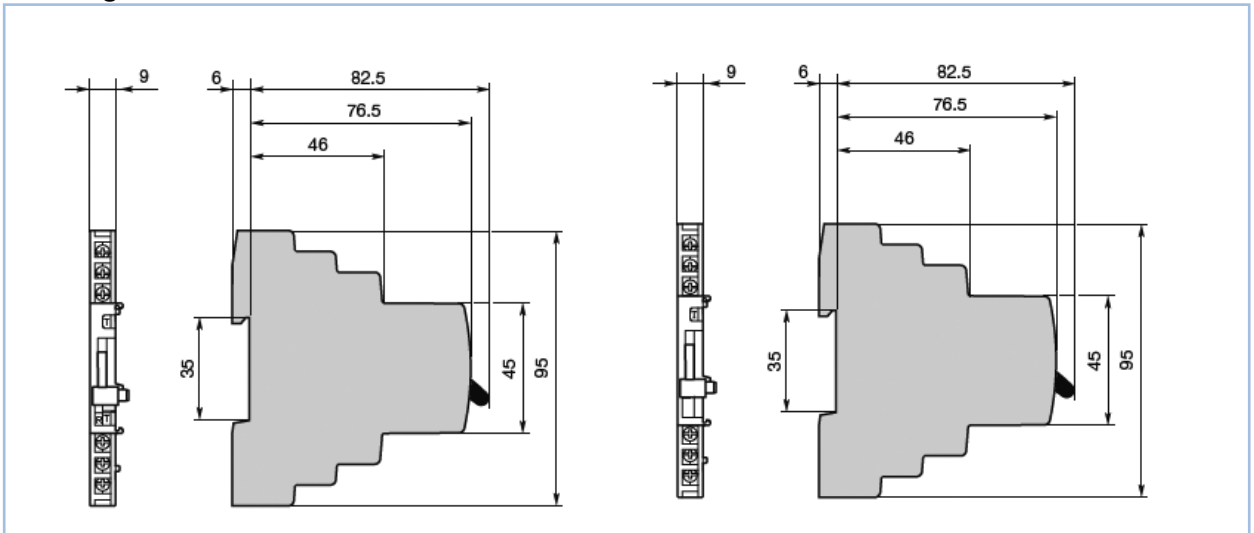
B

C

D

E

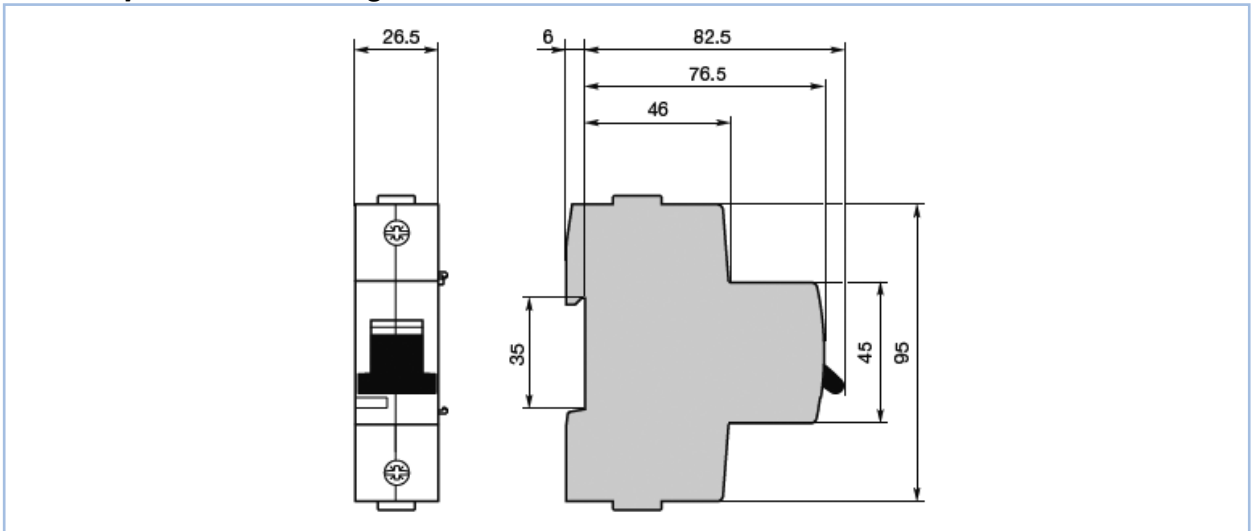
F



G

X

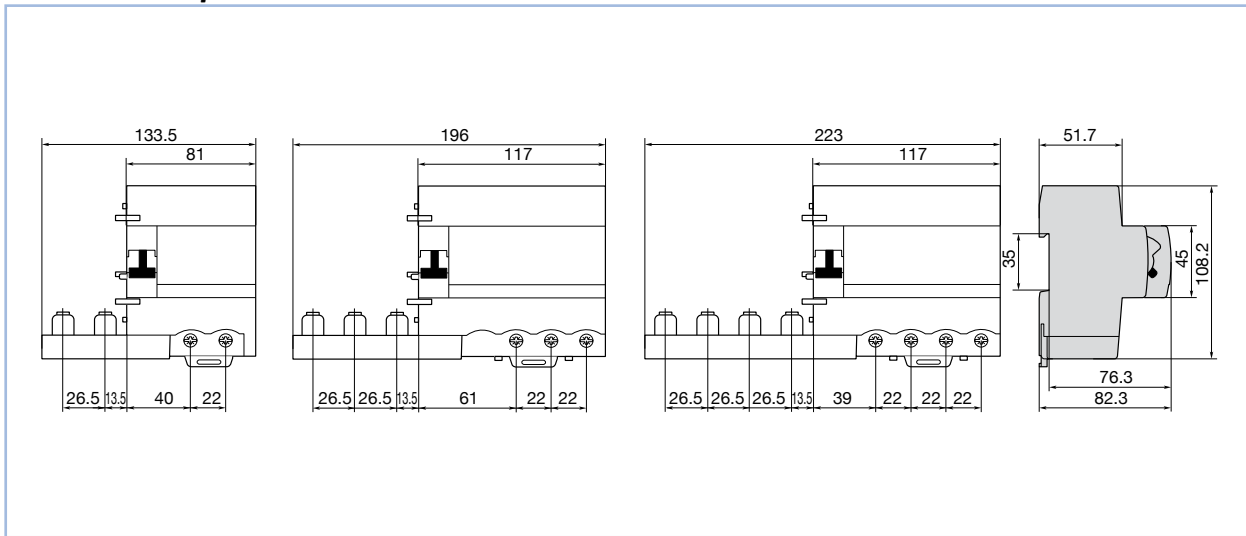
Shunt trip and Undervoltage - Series Hti+



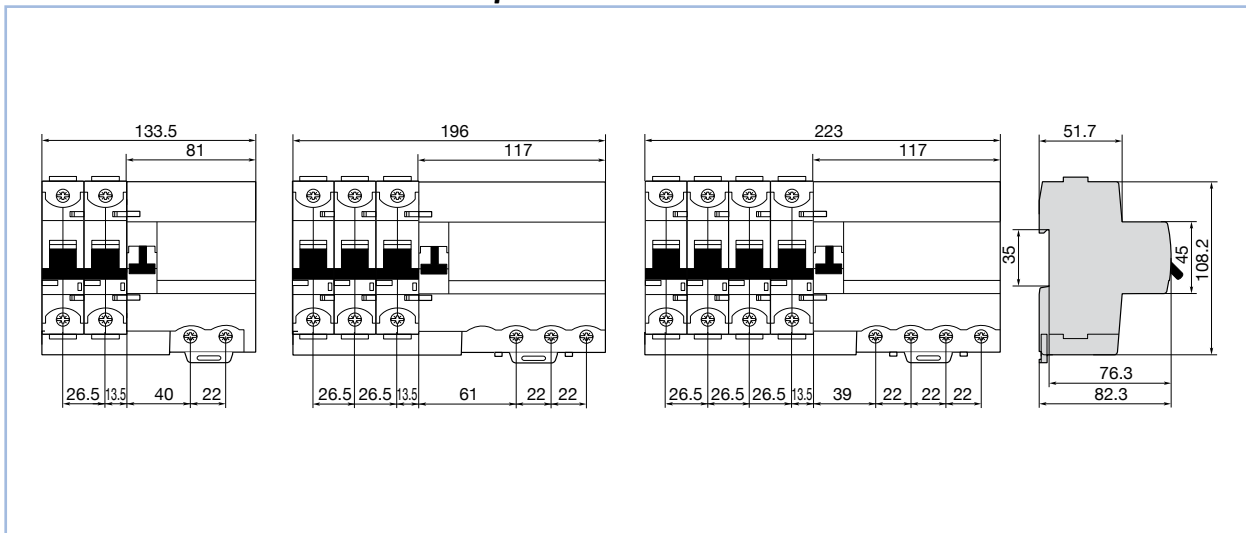


Dimensional drawings

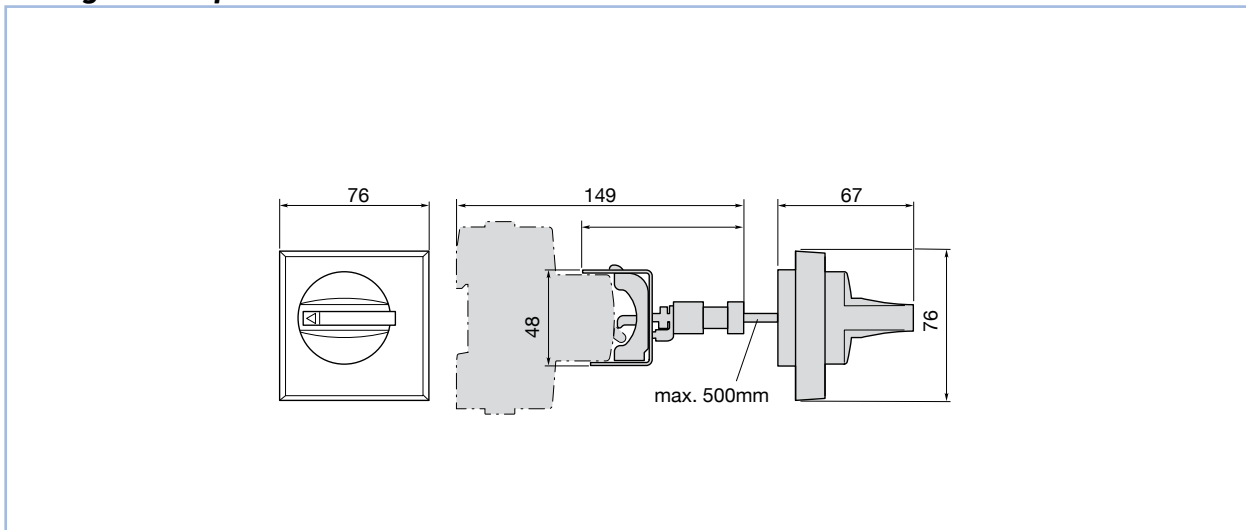
**Add-on RCDs for Series Hti+**



**Residual Current Circuit Breakers for Series Hti+ 50DOC**



**Rotary Handle for Series Hti+**



Dimensional drawings

A

B

C

D

E

F

G

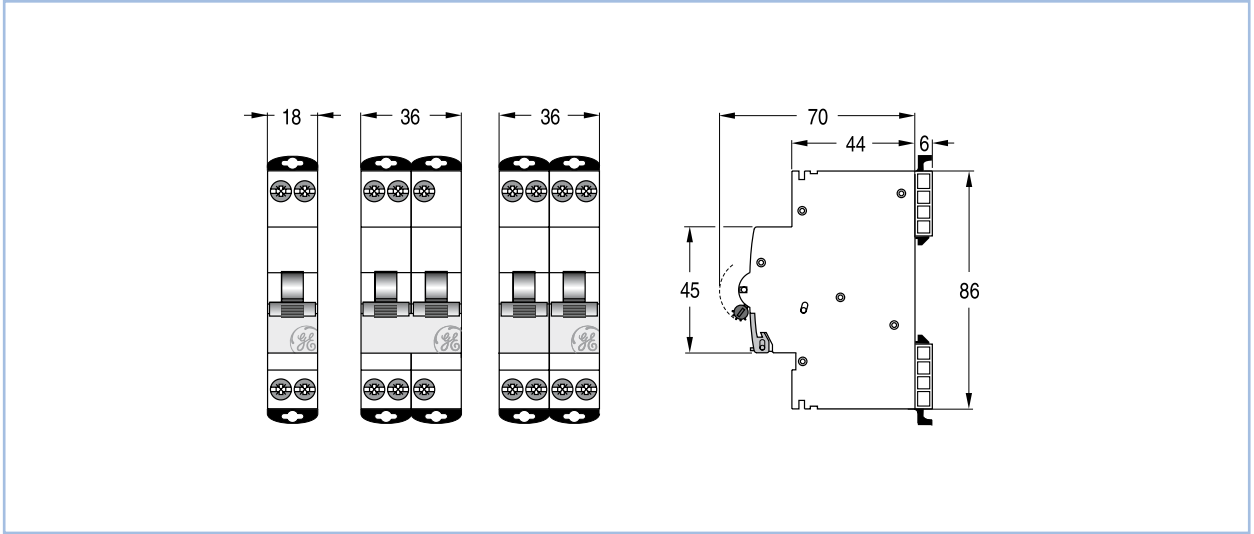
X



Dimensional drawings

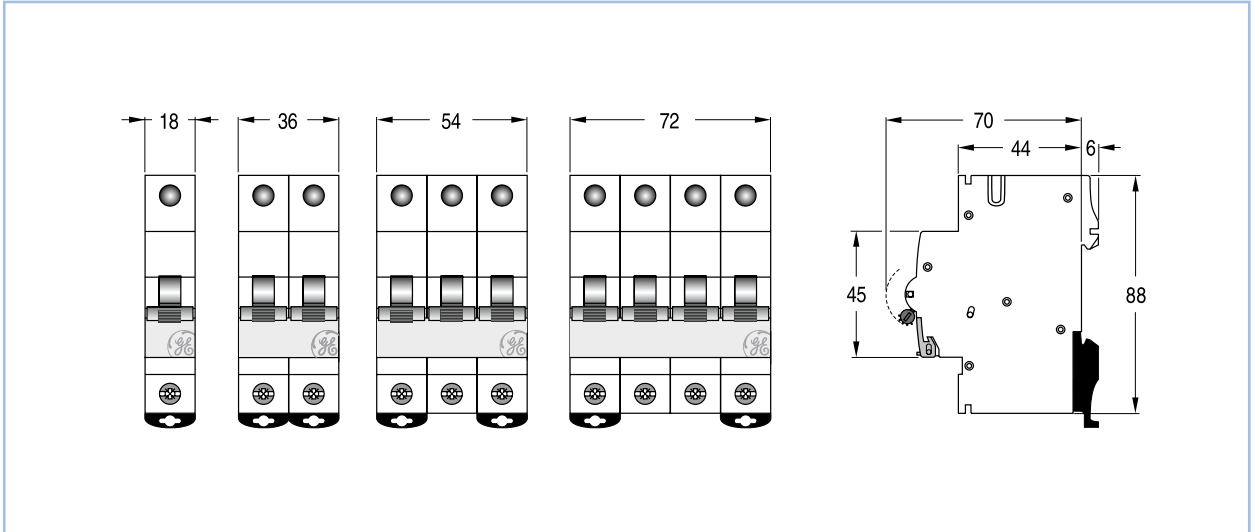
Circuit protection

Compact MCBs - Series EPC - Unibis\*



A

Screwless MCBs - Series EPP - Fixwell\*



B

C

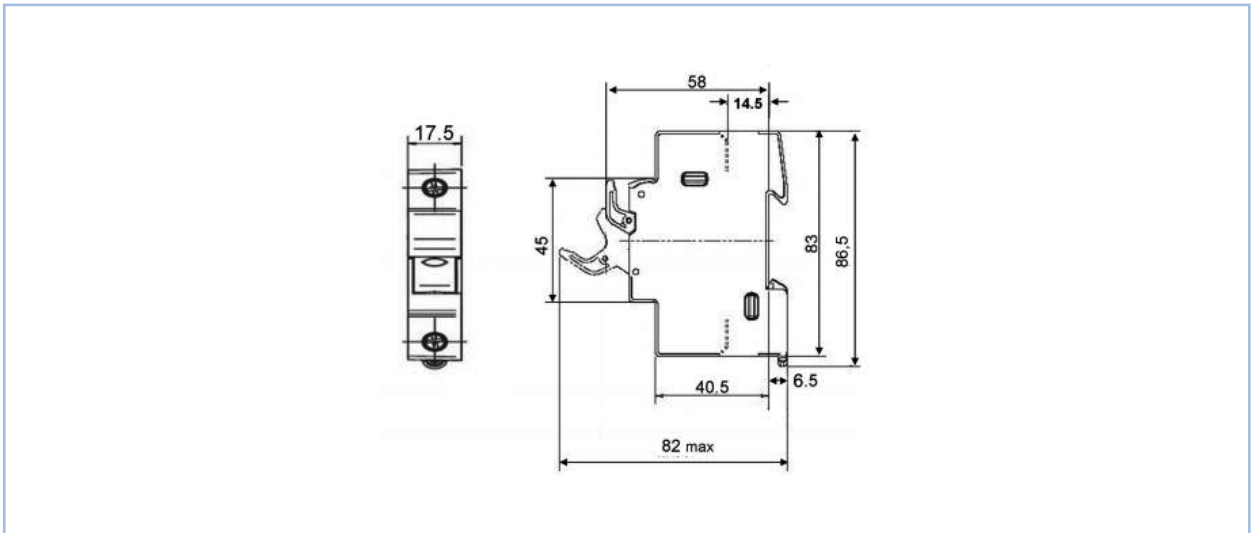
D

E

F

G

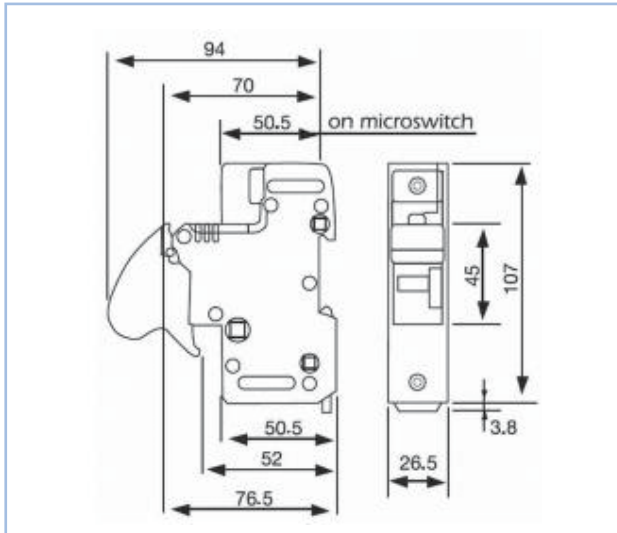
Fuse Holders Series SF- 8x31 & 10x38



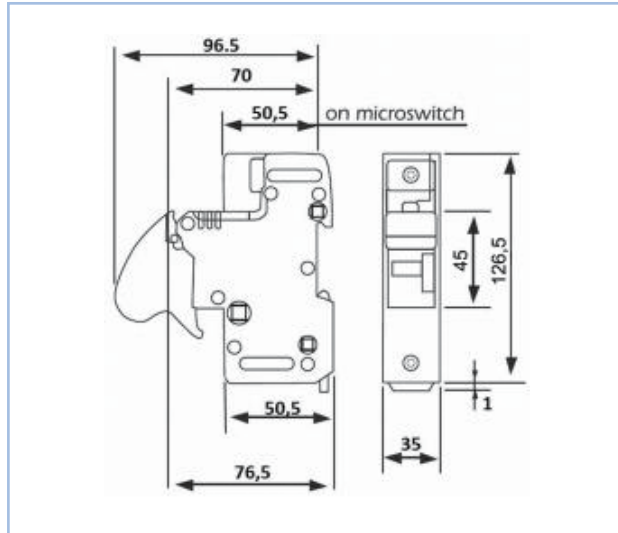
X

Dimensional drawings

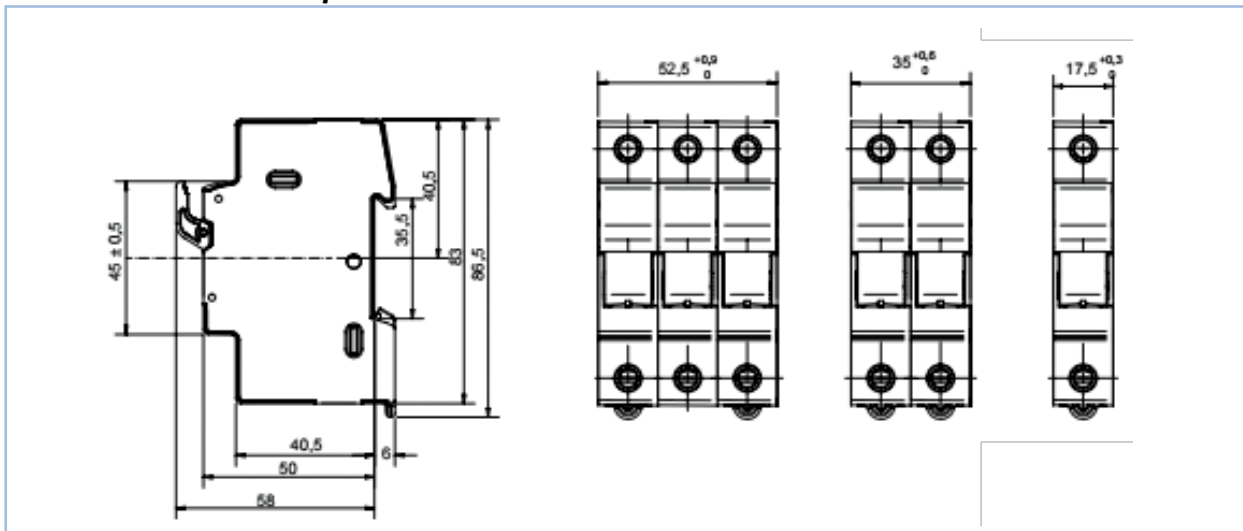
**Fuse Holders Series SF- 14x51**



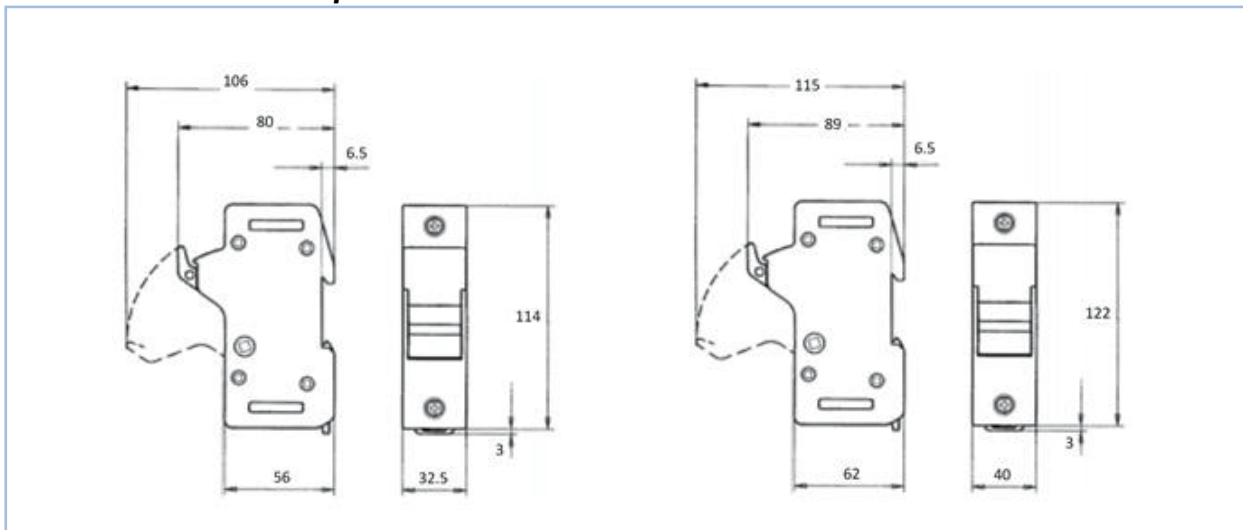
**Fuse Holders Series SF- 22x58**



**Fuse Holders Series SF for Class CC Fuses**



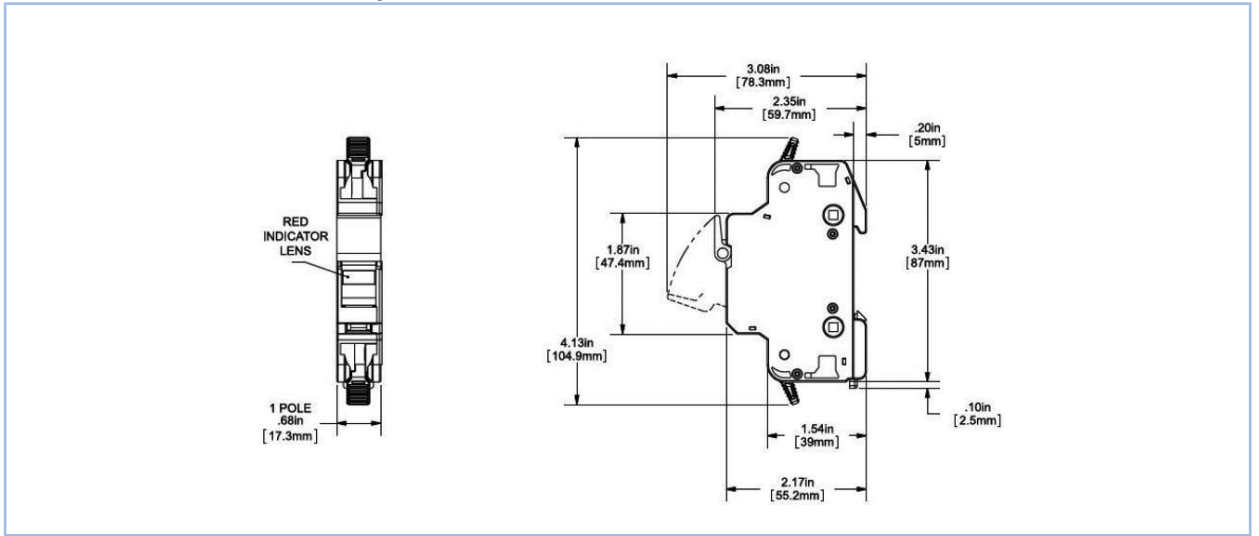
**Fuse Holders Series SF for Class 30J and 60J Fuses**





### Fuse Holders Series SF UL for Photovoltaic

Circuit protection



A

B

C

D

E

F

G

X

B.3 Types of Wave form detected by RCCBs and classification

#### **Unibis\* 2P & 3P+N -Compact RCBOs**

B.4 Advantages

B.8 Technical data

B.9 Selection table

B.10 2P RCBOs - **Series DPC45**

B.12 2P RCBOs - **Series DPC60**

B.14 2P RCBOs - **Series DPC100**

New

B.16 2P RCBOs - **Series DPCA100**

New

B.18 3P+N RCBOs - **Series DMA63N**

#### **1P+N RCBOs, Add-on RCCBs, compact electronic RCBOs, RCCBs with UL, Fixwell**

B.20 Selection table

B.22 Technical data

New

B.26 RCCBs - **Series BP/BD**

New

B.32 RCCBs - Residual Current Circuit Breakers - **Series FP type B**

New

B.34 RCCBs - Residual Current Circuit Breakers - **Series FP type F**

B.36 RCBOs with overcurrent protection - **Series DM60** electromechanical

B.38 RCBOs with overcurrent protection - **Series DM100** electromechanical

B.40 Add-on RCCBs - **Diff-o-Click**

#### **Unibis\* - Compact electronic RCBOs**

New

B.44 RCBOs - **Series DMCE60NS and DICE60NS**

B.48 RCBOs - **Series DMCE60 and DICE60**

B.50 RCBOs with overcurrent protection - **Series DME**

B.52 RCBOs with overcurrent protection - **Series DMET**

#### **RCCBs with UL Approval**

B.54 RCCBs with UL approval - **Series FPAUL**

B.56 RCBOs with UL approval - **Series DPA100UL**

#### **Fixwell\* - Screwless RCCBs**

B.58 RCCBs - **Series FPP**

B.60 Terminal capacity - Mounting instruction

#### **Earth leakage relay with external toroid**

B.62 Residential earth leakage relay - **Series GRDT+TOP**

#### **Earth leakage Current Breaker - Utility Devices**

New

B.64 ELCB - **Series Disb**

New

B.64 ELCB - **Series NDP/NDF**

B.70 Dimensional drawings

Circuit Protection

A

**People Protection**

**B**

Add-on Devices

C

Comfort Functions

D

Busbars

E

Enclosures

F

Product overview

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Numerical index

X



# Residual Current Circuit Breakers

## Residual Current Protection Devices

Types of Wave form detected by RCCBs and classification

Waveform definition	Current waveform	Type AC 	Type A-Ai 	Type F 	Type B 	Tripping current
Sine wave		✓	✓	✓	✓	0.5 to 1 I <sub>Δn</sub>
Pulsating half wave		X	✓	✓	✓	0.35 to 1.4 I <sub>Δn</sub>
Pulsating 90°/135° wave		X	✓	✓	✓	Current delay angle 90°: 0.25 to 1.4 I <sub>Δn</sub>
		X	✓	✓	✓	Current delay angle 135°: 0.11 to 1.4 I <sub>Δn</sub>
Pulsating Half wave + direct current (6mA)		X	✓	✓	✓	max. 1.4 I <sub>Δn</sub> +6mA
Pulsating Half wave + direct current (10mA)		X	X	✓	✓	max. 1.4 I <sub>Δn</sub> +10mA
Composite wave		X	X	✓	✓	0.5 to 1.4 I <sub>Δn</sub>
High frequency (up to 1kHz)		X	X	✓	✓	Current Frequency 150Hz 0.5 to 2.4 I <sub>Δn</sub>
		X	X	✓	✓	Current Frequency 400Hz 0.5 to 6 I <sub>Δn</sub>
		X	X	✓	✓	Current Frequency 1000Hz 1 to 14 I <sub>Δn</sub>
Two phase rectified full wave		X	X	X	✓	0.5 to 2 I <sub>Δn</sub>
Three phase rectified full wave		X	X	X	X	
Direct current		X	X	X	X	

RCCBs  
A  
B  
C  
D  
E  
F  
G  
X

### Discover advantages: Type F

Offer the same range of protection and functionality as a Type A RCD; this means that release with sinusoidal AC currents as well as pulsating DC currents.

In addition to this, they are capable of detecting residual currents from mixed frequencies of up to 1000 Hz, which can often occur on the outgoing feeder side of single-phase frequency converters.

This prevents undesirable interruptions to the electrical supply if, for example, pulsed leakage currents of up to ten milliseconds occur at activation of filter capacitors.

### Type B

In addition to release residual current waveforms of type A, B type RCCBs are used to detect smooth DC residual currents. B Type RCCBs are recommended for use with EV Charge and drives and inverters for supplying motors for pumps, lifts, textile machines, machine tools... since they recognise a continuous fault current with low level ripple.

**Type AC:** Release with sinusoidal currents which occur suddenly or slowly rise in magnitude.

**Type A-Ai:** Release with sinusoidal currents and also with pulsating direct current which occur suddenly or slowly rise in magnitude.

**Type S-Si (type A-Ai):** Time delay release with sinusoidal currents and also with pulsating direct current which occur suddenly or slowly rise in magnitude.

# 2P in two modules compact RCBOs The complete protection and ...

**U**nibus\* RCBOs are the latest innovation in the ElfaPlus modular devices range. They have been developed to reduce the size of distribution boards to the minimum. Performances have been up-graded up to 10kA and extended with high immunity residual tripping characteristics. For each line where integrated overload protection and residual current protection are required, a RCBO is now available in only **two modules!**

Saving up to 50% space  
in distribution boards!

#### Protected cables

up to 35mm<sup>2</sup> rigid cable  
up to 25mm<sup>2</sup> flexible cable





# ... the solution for space issues



Unibis\*

A

B

C

D

E

F

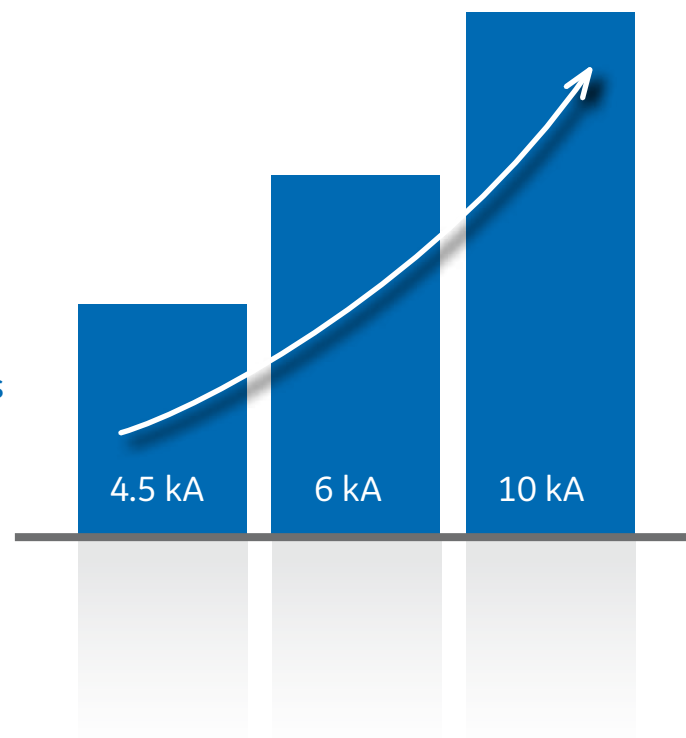
G

X

Shipping approvals

**4500A**6-40A  
AC, A  
30-300mA**6000A**6-40A  
AC, A, Ai  
10-30-300mA**10000A**6-40A  
AC, A, Ai  
10-30-300mA

- ✓ Brand-new design: 2P RCBO in 2 modules
- ✓ Complete range: 4.5 kA - 6 kA - 10 kA
- ✓ 6-40 Amps, B and C curves
- ✓ Classes: AC - A - Ai
- ✓ 100% compatible with all ElfaPlus auxiliaries, accessories and busbar systems
- ✓ Approvals: CEBC, KEMA, VDE, IMQ, NF
- ✓ RINA and Lloyd's Register certified



# The most complete **RCBO** offer on the market for double phase circuits

Saving up to 50% space in distribution boards!

Protected terminals  
Plastic tongue in IP20 terminals



Earth leakage indicator



Easy to replace

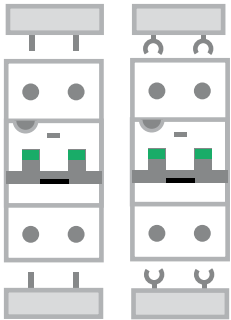
Double clips make it easy to replace the RCBO, especially when a busbar is installed.

PIN and FORK busbars

For residential, commercial and industrial applications

Green and red flag on toggle

with isolation applications



Pin and fork busbars can be placed at the **bottom** and at the **top**.

High immunity type Ai RCBO 2 poles protected in 2 modules!



# Quality and reliability guaranteed in distribution boards



## Userfriendly

All screws are on the same level to work fast and easy.

Perfectly in line with ElfaPlus, Unibis and Redline devices.

## High performance torque

Up to 4Nm

## Part of the family

The compact RCBO fits perfectly with the Unibis MCB ranges.

## Shipping applications

New shipping devices are completing the current Redline and ElfaPlus shipping ranges.



2P RCBO

2P MCB

3P MCB

4P MCB



## Full functionality

A small auxiliary contact is the interface to the full functionality of the add-on devices and auxiliaries. The interface can be mounted at the **left** and at the **right** side.



Unibis\*

A

**B**

C

D

E

F

G

X



## Technical data - Compact 2P and 3P+N RCBOs

Series		DPC45	DPC60	DPC100 <sup>(1)</sup>	DMA63N
Standards		EN 61009-1	EN 61009-1	EN 61009-1	EN 61009-1
Magnetic tripping characteristics		C	B,C	B,C	B, C
Residual tripping characteristics		AC, A	AC, A, Ai	AC, A, Ai	A
Tripping time at IΔn instantaneous	ms	<60	<60	<60	-
Rated current	A	6-40	6-40	6-40	10-32
Rated residual current (IΔn)	mA	30, 300	10, 30, 300	10, 30, 300	30, 300
Earth leakage tripping indicator: blue flag		yes	yes	yes	yes
Calibration temperature	°C	30	30	30	30
Number of poles (# mod.)		2P (2 mod.)	2P (2 mod.)	2P (2 mod.)	3P (4 mod.) 3P+N (4 mod.)
Rated voltage Un AC 2P	V	230	230 <sup>(1)</sup>	230	400
Frequency	Hz	50	50 <sup>(2)</sup>	50 <sup>(2)</sup>	50/60
Maximum service voltage U <sub>Bmax</sub>	V	265	265	265	-
Minimum service voltage U <sub>Bmin</sub>	V	117 <sup>(3)</sup>	117 <sup>(3)</sup>	117 <sup>(3)</sup>	-
Minimum voltage for leakage protection	V	Voltage independent	Voltage independent	Voltage independent	Voltage independent
Power supply		top/bottom	top/bottom	top/bottom	top/bottom
Energy limiting class		3	3	3	3
Residual making and breaking capacity (IΔm)	A	4500	6000	6000	3000
Rated short-circuit capacity (Icn)	A	4500	6000	10000	6000
Grid distance (safety distance between two devices)	mm	35	35	60	-
Isolator application		yes	yes	yes	-
Insulation degree					
Insulation voltage	V(DC)	440	440	440	500
Test shock voltage 1.2/50μs	kV	6	6	6	6
Insulation resistance	Mohm	1000	1000	1000	1000
Dielectric strength	V	2500	2500	2500	2500
Shock resistance in x, y, z direction (EN/IEC 60077/16.3)		40g, 18 shocks 5 ms	40g, 18 shocks 5 ms	40g, 18 shocks 5 ms	40g, 18 shocks 5 ms
Vibration resistance in x, y, z direction (EN/IEC 60068-2-6)		1.5g, 30 min, 0...80Hz	1.5g, 30 min, 0...80Hz	1.5g, 30 min, 0...80Hz	5g, 30 min, 0...80Hz
Endurance					
Electrical at Un, In		10000	10000	10000	10000
Mechanical		20000	20000	20000	20000
Protection degree (EN 60529) (outside/inside electrical enclosure with door)		IP20/IP40	IP20/IP40	IP20/IP40	IP20/IP40
Self extinguish degree (UL94)		V2	V2	V2	V2
Tropicalisation (EN/IEC 60068-2, DIN 40046)	°C/RH	55°C/95%	55°C/95%	55°C/95%	55°C/95%
Pollution degree (EN/IEC 60947-1)		3	3	3	3
Operating temperature	°C	-5 up to +60 (-25°C type A)	-5 up to +60 (-25°C type A, Ai)	-5 up to +60 (-25°C type A, Ai)	-5 up to +60
Storage temperature	°C	-25 up to +70	-25 up to +70	-25 up to +70	-25 up to +40
Terminal capacity					
Rigid cable Min./Max. (top)	mm <sup>2</sup>	1/35	1/35	1/35	1/25
Flexible cable Min./Max. (top)	mm <sup>2</sup>	1/25	1/25	1/25	1/25
Rigid cable Min./Max. (bottom)	mm <sup>2</sup>	1/35	1/35	1/35	1/35
Flexible cable Min./Max. (bottom)	mm <sup>2</sup>	1/25	1/25	1/25	1/35
Torque top/bottom (max.)	Nm	4	4	4	3
Add-on devices (side add-on)					
Auxiliary contacts		yes	yes	yes	yes
Tele U		yes <sup>(4)</sup>	yes <sup>(4)</sup>	yes <sup>(4)</sup>	no
Tele L		yes <sup>(4)</sup>	yes <sup>(4)</sup>	yes <sup>(4)</sup>	no
Tele MP		yes <sup>(4)</sup>	yes <sup>(4)</sup>	yes <sup>(4)</sup>	no
PBS		yes <sup>(4)</sup>	yes <sup>(4)</sup>	yes <sup>(4)</sup>	no
Maximum add-on combinations (per side)		4x CA + 1x TeleL + 1x Tele U	4x CA + 1x TeleL + 1x Tele U	4x CA + 1x TeleL + 1x Tele U	no
TeleREC Plus		no	yes	yes	no
Busbar systems					
Pin (top/bottom)		yes/yes	yes/yes	yes/yes	yes/yes
Fork (top/bottom)		yes/yes	yes/yes	yes/yes	yes/yes
Accessories		yes	yes	yes	no
Width per mod.	mm	18	18	18	18
Weight per mod.	gr	110	110	110	110
Package	pcs	1/6	1/6	1/6	1/3
Approvals		IMQ	NF, CEBC, KEMA, IMQ, VDE	NF, CEBC, KEMA, IMQ, VDE, LR, RINA	IMQ
CE-marking		yes	yes	yes	yes
Page		B.10	B.12	B.14	B.18

(1) Special application for 120V: DPCA100  
 (2) 50/60Hz for Ai residual tripping characteristic  
 (3) U<sub>Bmin</sub> = 150V for 30mA  
 (4) Requires CA auxiliary contact as interface

People protection

A

B

C

D

E

F

G

X



**Short-circuit capacity - Compact 2P and 3P+N RCBOs**

Series		DPC45	DPC60	DPC100	DMA63N
Short-circuit capacity (Icn) at 230Vac (EN/IEC 61009-1)	A	4500	6000	10000	6000
Service short-circuit capacity (Ics)	kA	4.5	6	7.5	6
Rated short-circuit capacity (Icu) acc. EN/IEC 60947-2	kA	6	10	10	6

**Selection table - Compact 2P RCBOs**

Page	Series	Sensitivity (mA)	Pole	Type	Tripping char.	Short-circuit cap.	6	10	13	16	20	25	32	40	Isolator appl.	Add-on devices	Rated voltage	
B.10	DPC45	30	2P	AC	C	4500									x	x	230	
		300	2P	AC	C	4500										x	x	230
		30	2P	A	C	4500										x	x	230
		300	2P	A	C	4500										x	x	230
B.12	DPC60	10	2P	AC	C	6000									x	x	230	
		30	2P	AC	C	6000										x	x	230
		300	2P	AC	C	6000										x	x	230
		10	2P	A	B	6000										x	x	230
					C	6000										x	x	230
		30	2P	A	B	6000										x	x	230
					C	6000										x	x	230
		300	2P	A	B	6000										x	x	230
					C	6000										x	x	230
		30	2P	Ai	B	6000										x	x	230
					C	6000										x	x	230
					Ai	B	6000									x	x	230
			C	6000										x	x	230		
B.14	DPC100	10	2P	AC	C	10000									x	x	230	
		30	2P	AC	C	10000										x	x	230
		300	2P	AC	C	10000										x	x	230
		10	2P	A	B	10000										x	x	230
					C	10000										x	x	230
		30	2P	A	B	10000		•	•	•	•					x	x	230
					C	10000		•	•	•	•					x	x	230
		300	2P	A	B	10000										x	x	230
					C	10000										x	x	230
		30	2P	Ai	B	10000										x	x	230
			C	10000										x	x	230		
B.16	DPCA100	30	2P	A	C	10000								x	no	120		
B.18	DMA63N	30	3P+N	A	C	6000								x	no	400		
B.18	DPCA100	30	3P+N	A	B	6000									x	x	400	
		300	3P+N	A	C	6000									x	x	400	
		300	3P+N	A	B	6000									x	x	400	
		30	3P	A	C	6000										x	x	400

• Special thermal tripping curves for Norway and Paneuropean types

Technical data

A

**B**

C

D

E

F

G

X



# 2P RCBOs - Residual Current Circuit Breaker with Overcurrent Protection

## Series DPC45

**EN /IEC 61009-1 4.5kA**

**Type AC**



**Type A**



People protection



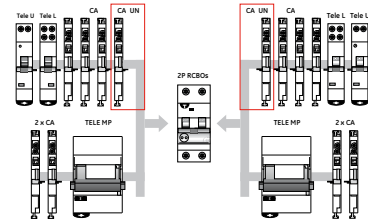
### Applications



### Approvals / Marking



### Add-on devices



The auxiliary contact CA UN is needed as interface if Tele MP needs to trip the 2P RCBO. If the RCBO is used only to reconnect, the interface is not needed.

### Performance

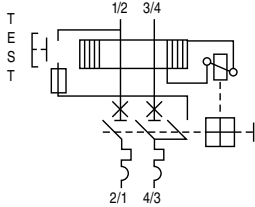
<b>Thermal setting In</b>	(A) 6-40
<b>Residual current</b>	(mA) 30, 300
<b>Tripping characteristics</b>	C
<b>Rated voltage AC Un</b>	(V) 230
<b>Minimum operating voltage UBmin</b>	(V) 117 <sup>(1)</sup>
<b>Mechanical / electrical endurance</b>	10000/20000
<b>Tropicalisation acc. to EN/IEC 60068-2</b>	95% RH at 55°C
<b>Terminal capacity flexible / rigid cable</b>	(mm <sup>2</sup> ) 25/35
<b>Poles</b>	2P
<b>Nuisance tripping resistance</b>	(A) 250
<b>Ambient temperature</b>	(°C) Type AC: -5 up to 60 Type A: -25 up to 60
<b>Weight / mod.</b>	(g) 110

### Short-circuit capacity

<b>AC acc. to EN/IEC 61009-1</b>	
<b>Residual making and breaking capacity</b>	IΔm = 4500A
<b>Energy limiting class</b>	3
<b>Short-circuit capacity</b>	Icn = 4500A at 230V

(1) UBmin = 150V for 30mA

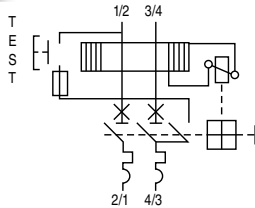
**Series DPC45 - Type AC - characteristic C**



2P

In (A)	10mA		30mA		300mA		Pack.
	Cat. no.	Ref. no.	Cat. no.	Ref. no.	Cat. no.	Ref. no.	
6	-	-	DPC45C06/030	<b>606786</b>	DPC45C06/300	<b>606794</b>	1/6
10	-	-	DPC45C10/030	<b>606787</b>	DPC45C10/300	<b>606795</b>	1/6
13	-	-	DPC45C13/030	<b>606788</b>	DPC45C13/300	<b>606796</b>	1/6
16	-	-	DPC45C16/030	<b>606789</b>	DPC45C16/300	<b>606797</b>	1/6
20	-	-	DPC45C20/030	<b>606790</b>	DPC45C20/300	<b>606798</b>	1/6
25	-	-	DPC45C25/030	<b>606791</b>	DPC45C25/300	<b>606799</b>	1/6
32	-	-	DPC45C32/030	<b>606792</b>	DPC45C32/300	<b>606800</b>	1/6
40	-	-	DPC45C40/030	<b>606793</b>	DPC45C40/300	<b>606801</b>	1/6

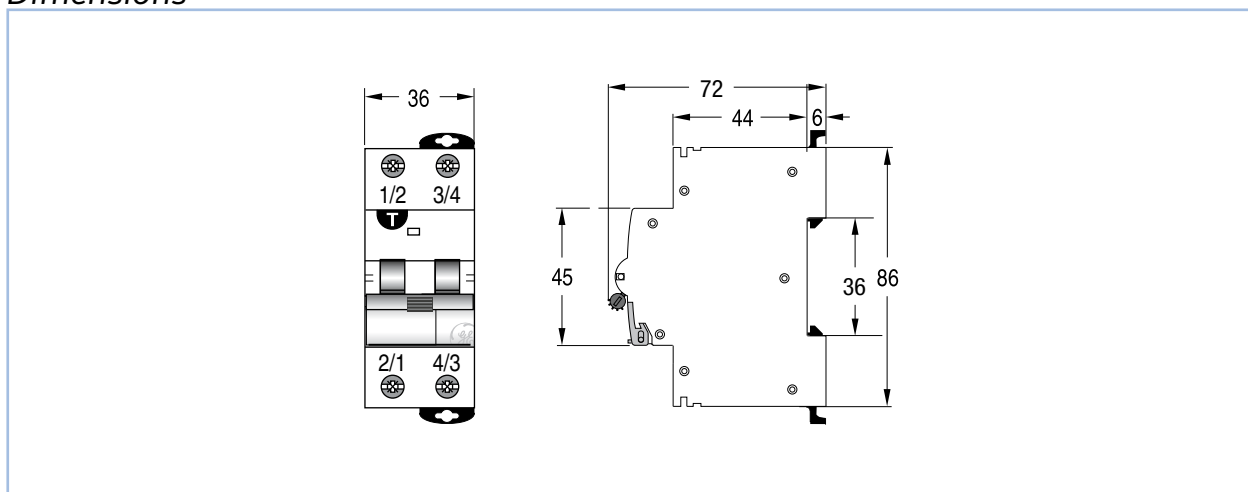
**Series DPC45 - Type A - characteristic C**



2P

6	-	-	DPCA45C06/030	<b>606802</b>	DPCA45C06/300	<b>606810</b>	1/6
10	-	-	DPCA45C10/030	<b>606803</b>	DPCA45C10/300	<b>606811</b>	1/6
13	-	-	DPCA45C13/030	<b>606804</b>	DPCA45C13/300	<b>606812</b>	1/6
16	-	-	DPCA45C16/030	<b>606805</b>	DPCA45C16/300	<b>606813</b>	1/6
20	-	-	DPCA45C20/030	<b>606806</b>	DPCA45C20/300	<b>606814</b>	1/6
25	-	-	DPCA45C25/030	<b>606807</b>	DPCA45C25/300	<b>606815</b>	1/6
32	-	-	DPCA45C32/030	<b>606808</b>	DPCA45C32/300	<b>606816</b>	1/6
40	-	-	DPCA45C40/030	<b>606809</b>	DPCA45C40/300	<b>606817</b>	1/6

**Dimensions**



Series DPC45

A

**B**

C

D

E

F

G

X



# 2P RCBOs - Residual Current Circuit Breaker with Overcurrent Protection

## Series DPC60

**EN /IEC 61009-1 6kA**

**Type AC**



**Type A - Ai**



People protection



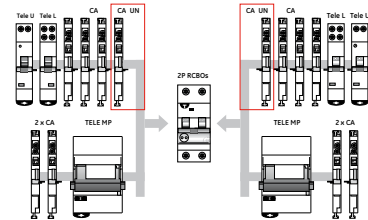
### Applications



### Approvals / Marking



### Add-on devices



The auxiliary contact CA UN is needed as interface if Tele MP needs to trip the 2P RCBO. If the RCBO is used only to reconnect, the interface is not needed.

### Performance

<b>Thermal setting In</b>	(A) 6-40
<b>Residual current</b>	(mA) 10, 30, 300
<b>Tripping characteristics</b>	B, C
<b>Rated voltage AC Un</b>	(V) 230
<b>Minimum operating voltage UBmin</b>	(V) 117 <sup>(1)</sup>
<b>Mechanical / electrical endurance</b>	10000/20000
<b>Tropicalisation acc. to EN/IEC 60068-2</b>	95% RH at 55°C
<b>Terminal capacity flexible / rigid cable</b>	(mm <sup>2</sup> ) 25/35
<b>Poles</b>	2P
<b>Nuisance tripping resistance</b>	(A) 250 (A, AC), 3000 (Ai)
<b>Ambient temperature</b>	(°C) Type AC: -5 up to 60 Type A: -25 up to 60
<b>Weight / mod.</b>	(g) 110

### Short-circuit capacity

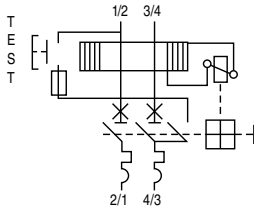
<b>AC acc. to EN/IEC 61009-1</b>	
<b>Residual making and breaking capacity</b>	IΔm = 6000A
<b>Energy limiting class</b>	3
<b>Short-circuit capacity</b>	Icn = 6000A at 230V

(1) UBmin = 150V for 30mA



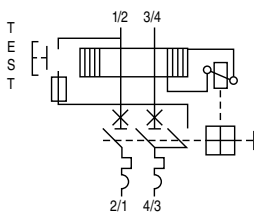


**Series DPC60 - Type AC - characteristic C**



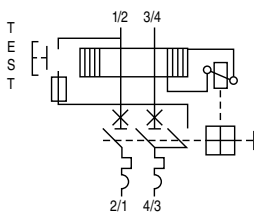
In (A)	10mA		30mA		300mA		Pack.
	Cat. no.	Ref. no.	Cat. no.	Ref. no.	Cat. no.	Ref. no.	
6	-	-	DPC60C06/030	<b>606820</b>	DPC60C06/300	<b>606828</b>	1/6
10	DPC60C10/010	<b>606818</b>	DPC60C10/030	<b>606821</b>	DPC60C10/300	<b>606829</b>	1/6
13	-	-	DPC60C13/030	<b>606822</b>	DPC60C13/300	<b>606830</b>	1/6
16	DPC60C16/010	<b>606819</b>	DPC60C16/030	<b>606823</b>	DPC60C16/300	<b>606831</b>	1/6
20	-	-	DPC60C20/030	<b>606824</b>	DPC60C20/300	<b>606832</b>	1/6
25	-	-	DPC60C25/030	<b>606825</b>	DPC60C25/300	<b>606833</b>	1/6
32	-	-	DPC60C32/030	<b>606826</b>	DPC60C32/300	<b>606834</b>	1/6
40	-	-	DPC60C40/030	<b>606827</b>	DPC60C40/300	<b>606835</b>	1/6

**Series DPC60 - Type A - characteristic B**



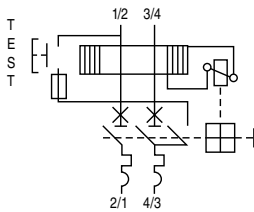
6	-	-	DPCA60B06/030	<b>606872</b>	DPCA60B06/300	<b>606880</b>	1/6
10	DPCA60B10/010	<b>606870</b>	DPCA60B10/030	<b>606873</b>	DPCA60B10/300	<b>606881</b>	1/6
13	-	-	DPCA60B13/030	<b>606874</b>	DPCA60B13/300	<b>606882</b>	1/6
16	DPCA60B16/010	<b>606871</b>	DPCA60B16/030	<b>606875</b>	DPCA60B16/300	<b>606883</b>	1/6
20	-	-	DPCA60B20/030	<b>606876</b>	DPCA60B20/300	<b>606884</b>	1/6
25	-	-	DPCA60B25/030	<b>606877</b>	DPCA60B25/300	<b>606885</b>	1/6
32	-	-	DPCA60B32/030	<b>606878</b>	DPCA60B32/300	<b>606886</b>	1/6
40	-	-	DPCA60B40/030	<b>606879</b>	DPCA60B40/300	<b>606887</b>	1/6

**Series DPC60 - Type A - characteristic C**



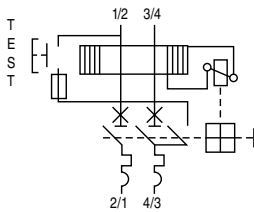
6	-	-	DPCA60C06/030	<b>606838</b>	DPCA60C06/300	<b>606846</b>	1/6
10	DPCA60C10/010	<b>606836</b>	DPCA60C10/030	<b>606839</b>	DPCA60C10/300	<b>606847</b>	1/6
13	-	-	DPCA60C13/030	<b>606840</b>	DPCA60C13/300	<b>606848</b>	1/6
16	DPCA60C16/010	<b>606837</b>	DPCA60C16/030	<b>606841</b>	DPCA60C16/300	<b>606849</b>	1/6
20	-	-	DPCA60C20/030	<b>606842</b>	DPCA60C20/300	<b>606850</b>	1/6
25	-	-	DPCA60C25/030	<b>606843</b>	DPCA60C25/300	<b>606851</b>	1/6
32	-	-	DPCA60C32/030	<b>606844</b>	DPCA60C32/300	<b>606852</b>	1/6
40	-	-	DPCA60C40/030	<b>606845</b>	DPCA60C40/300	<b>606853</b>	1/6

**Series DPC60 - Type Ai - characteristic B**



6	-	-	DPCAI60B06/030	<b>606888</b>	DPCAI60B06/300	<b>606896</b>	1/6
10	-	-	DPCAI60B10/030	<b>606889</b>	DPCAI60B10/300	<b>606897</b>	1/6
13	-	-	DPCAI60B13/030	<b>606890</b>	DPCAI60B13/300	<b>606898</b>	1/6
16	-	-	DPCAI60B16/030	<b>606891</b>	DPCAI60B16/300	<b>606899</b>	1/6
20	-	-	DPCAI60B20/030	<b>606892</b>	DPCAI60B20/300	<b>606900</b>	1/6
25	-	-	DPCAI60B25/030	<b>606893</b>	DPCAI60B25/300	<b>606901</b>	1/6
32	-	-	DPCAI60B32/030	<b>606894</b>	DPCAI60B32/300	<b>606902</b>	1/6
40	-	-	DPCAI60B40/030	<b>606895</b>	DPCAI60B40/300	<b>606903</b>	1/6

**Series DPC60 - Type Ai - characteristic C**



6	-	-	DPCAI60C06/030	<b>606854</b>	DPCAI60C06/300	<b>606862</b>	1/6
10	-	-	DPCAI60C10/030	<b>606855</b>	DPCAI60C10/300	<b>606863</b>	1/6
13	-	-	DPCAI60C13/030	<b>606856</b>	DPCAI60C13/300	<b>606864</b>	1/6
16	-	-	DPCAI60C16/030	<b>606857</b>	DPCAI60C16/300	<b>606865</b>	1/6
20	-	-	DPCAI60C20/030	<b>606858</b>	DPCAI60C20/300	<b>606866</b>	1/6
25	-	-	DPCAI60C25/030	<b>606859</b>	DPCAI60C25/300	<b>606867</b>	1/6
32	-	-	DPCAI60C32/030	<b>606860</b>	DPCAI60C32/300	<b>606868</b>	1/6
40	-	-	DPCAI60C40/030	<b>606861</b>	DPCAI60C40/300	<b>606869</b>	1/6

Series DPC60

A

B

C

D

E

F

G

X



## 2P RCBOs - Residual Current Circuit Breaker with Overcurrent Protection

### Series DPC100

**EN /IEC 61009-1 10kA**

**Type AC**



**Type A - Ai**



People protection



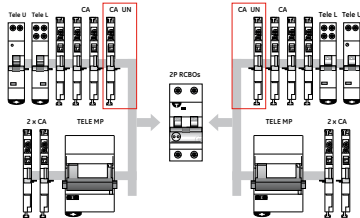
### Applications



### Approvals / Marking



### Add-on devices



The auxiliary contact CA UN is needed as interface if Tele MP needs to trip the 2P RCBO. If the RCBO is used only to reconnect, the interface is not needed.

### Performance

<b>Thermal setting In</b>	(A) 6-40
<b>Residual current</b>	(mA) 10, 30, 300
<b>Tripping characteristics</b>	B <sup>(1)</sup> , C <sup>(1)</sup>
<b>Rated voltage AC Un</b>	(V) 230
<b>Minimum operating voltage UBmin</b>	(V) 117 <sup>(2)</sup>
<b>Mechanical / electrical endurance</b>	10000/20000
<b>Tropicalisation acc. to EN/IEC 60068-2</b>	95% RH at 55°C
<b>Terminal capacity flexible / rigid cable</b>	(mm <sup>2</sup> ) 25/35
<b>Poles</b>	2P
<b>Nuisance tripping resistance</b>	(A) 250 (A, AC), 3000 (Ai)
<b>Ambient temperature</b>	(°C) Type AC: -5 up to 60 Type A: -25 up to 60
<b>Weight / mod.</b>	(g) 110

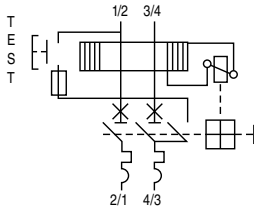
### Short-circuit capacity

<b>AC acc. to EN/IEC 61009-1</b>	
<b>Residual making and breaking capacity</b>	I $\Delta$ m = 6000A
<b>Energy limiting class</b>	3
<b>Short-circuit capacity</b>	Icn = 10000A at 230V

(1) Additional to traditional B and C curves, specials ones focused in Norwegian standards for 10A, 13A, 16A, 20A  
(2) UBmin = 150V for 30mA



**Series DPC100 - Type AC - characteristic C**



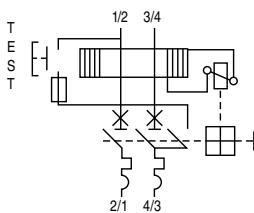
In (A)	10mA		30mA		300mA		Pack.
	Cat. no.	Ref. no.	Cat. no.	Ref. no.	Cat. no.	Ref. no.	
2P 6	-	-	DPC100C06/030	<b>606906</b>	DPC100C06/300	<b>606914</b>	1/6
10	DPC100C10/010	<b>606904</b>	DPC100C10/030	<b>606907</b>	DPC100C10/300	<b>606915</b>	1/6
13	-	-	DPC100C13/030	<b>606908</b>	DPC100C13/300	<b>606916</b>	1/6
16	DPC100C16/010	<b>606905</b>	DPC100C16/030	<b>606909</b>	DPC100C16/300	<b>606917</b>	1/6
20	-	-	DPC100C20/030	<b>606910</b>	DPC100C20/300	<b>606918</b>	1/6
25	-	-	DPC100C25/030	<b>606911</b>	DPC100C25/300	<b>606919</b>	1/6
32	-	-	DPC100C32/030	<b>606912</b>	DPC100C32/300	<b>606920</b>	1/6
40	-	-	DPC100C40/030	<b>606913</b>	DPC100C40/300	<b>606921</b>	1/6

**Series DPC100 - Type A - characteristic B**



2P 6	-	-	DPCA100B06/030	<b>606964</b>	DPCA100B06/300	<b>606976</b>	1/6
10	DPCA100B10/010	<b>606961</b>	DPCA100B10/030	<b>606965</b>	DPCA100B10/300	<b>606977</b>	1/6
13	DPCA100B13/010	<b>606962</b>	DPCA100B13/030	<b>606966</b>	DPCA100B13/300	<b>606978</b>	1/6
16	DPCA100B16/010	<b>606963</b>	DPCA100B16/030	<b>606967</b>	DPCA100B16/300	<b>606979</b>	1/6
20	-	-	DPCA100B20/030	<b>606968</b>	DPCA100B20/300	<b>606980</b>	1/6
10	-	-	DPCA100B10/030	<b>606969<sup>(1)</sup></b>	-	-	1/6
13	-	-	DPCA100B13/030	<b>606970<sup>(1)</sup></b>	-	-	1/6
16	-	-	DPCA100B16/030	<b>606971<sup>(1)</sup></b>	-	-	1/6
20	-	-	DPCA100B20/030	<b>606972<sup>(1)</sup></b>	-	-	1/6
25	-	-	DPCA100B25/030	<b>606973</b>	DPCA100B25/300	<b>606981</b>	1/6
32	-	-	DPCA100B32/030	<b>606974</b>	DPCA100B32/300	<b>606982</b>	1/6
40	-	-	DPCA100B40/030	<b>606975</b>	DPCA100B40/300	<b>606983</b>	1/6

**Series DPC100 - Type A - characteristic C**



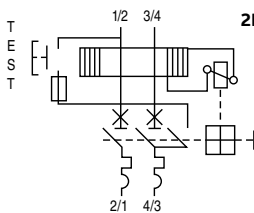
2P 6	-	-	DPCA100C06/030	<b>606925</b>	DPCA100C06/300	<b>606937</b>	1/6
10	DPCA100C10/010	<b>606922</b>	DPCA100C10/030	<b>606926</b>	DPCA100C10/300	<b>606938</b>	1/6
13	DPCA100C13/010	<b>606923</b>	DPCA100C13/030	<b>606927</b>	DPCA100C13/300	<b>606939</b>	1/6
16	DPCA100C16/010	<b>606924</b>	DPCA100C16/030	<b>606928</b>	DPCA100C16/300	<b>606940</b>	1/6
20	-	-	DPCA100C20/030	<b>606929</b>	DPCA100C20/300	<b>606941</b>	1/6
10	-	-	DPCA100C10/030	<b>606930<sup>(1)</sup></b>	-	-	1/6
13	-	-	DPCA100C13/030	<b>606931<sup>(1)</sup></b>	-	-	1/6
16	-	-	DPCA100C16/030	<b>606932<sup>(1)</sup></b>	-	-	1/6
20	-	-	DPCA100C20/030	<b>606933<sup>(1)</sup></b>	-	-	1/6
25	-	-	DPCA100C25/030	<b>606934</b>	DPCA100C25/300	<b>606942</b>	1/6
32	-	-	DPCA100C32/030	<b>606935</b>	DPCA100C32/300	<b>606943</b>	1/6
40	-	-	DPCA100C40/030	<b>606936</b>	DPCA100C40/300	<b>606944</b>	1/6

**Series DPC100 - Type Ai - characteristic B**



2P 6	-	-	DPCAi100B06/030	<b>606984</b>	DPCAi100B06/300	<b>606992</b>	1/6
10	-	-	DPCAi100B10/030	<b>606985</b>	DPCAi100B10/300	<b>606993</b>	1/6
13	-	-	DPCAi100B13/030	<b>606986</b>	DPCAi100B13/300	<b>606994</b>	1/6
16	-	-	DPCAi100B16/030	<b>606987</b>	DPCAi100B16/300	<b>606995</b>	1/6
20	-	-	DPCAi100B20/030	<b>606988</b>	DPCAi100B20/300	<b>606996</b>	1/6
25	-	-	DPCAi100B25/030	<b>606989</b>	DPCAi100B25/300	<b>606997</b>	1/6
32	-	-	DPCAi100B32/030	<b>606990</b>	DPCAi100B32/300	<b>606998</b>	1/6
40	-	-	DPCAi100B40/030	<b>606991</b>	DPCAi100B40/300	<b>606999</b>	1/6

**Series DPC100 - Type Ai - characteristic C**



2P 6	-	-	DPCAi100C06/030	<b>606945</b>	DPCAi100C06/300	<b>606953</b>	1/6
10	-	-	DPCAi100C10/030	<b>606946</b>	DPCAi100C10/300	<b>606954</b>	1/6
13	-	-	DPCAi100C13/030	<b>606947</b>	DPCAi100C13/300	<b>606955</b>	1/6
16	-	-	DPCAi100C16/030	<b>606948</b>	DPCAi100C16/300	<b>606956</b>	1/6
20	-	-	DPCAi100C20/030	<b>606949</b>	DPCAi100C20/300	<b>606957</b>	1/6
25	-	-	DPCAi100C25/030	<b>606950</b>	DPCAi100C25/300	<b>606958</b>	1/6
32	-	-	DPCAi100C32/030	<b>606951</b>	DPCAi100C32/300	<b>606959</b>	1/6
40	-	-	DPCAi100C40/030	<b>606952</b>	DPCAi100C40/300	<b>606960</b>	1/6

(1) Special thermal tripping curves for Norway

Series DPC100

A

B

C

D

E

F

G

X



# 2P RCBOs - Residual Current Circuit Breaker with Overcurrent Protection

## Series DPCA100 - 120V

**EN /IEC 61009-1 10kA**

**Type A**



People protection

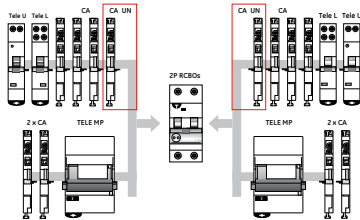
### Applications



### Marking



### Add-on devices



The auxiliary contact CA UN is needed as interface if Tele MP needs to trip the 2P RCBO. If the RCBO is used only to reconnect, the interface is not needed.

### Performance

<b>Thermal setting In</b>	(A) 6-40
<b>Residual current</b>	(mA) 30
<b>Tripping characteristics</b>	C
<b>Rated voltage AC Un</b>	(V) 120
<b>Frequency</b>	(Hz) 50..60
<b>Minimum operating voltage UBmin</b>	(V) 85
<b>Mechanical / electrical endurance</b>	10000/20000
<b>Tropicalisation acc. to EN/IEC 60068-2</b>	95% RH at 55°C
<b>Terminal capacity flexible / rigid cable</b>	(mm <sup>2</sup> ) 25/35
<b>Poles</b>	2P
<b>Nuisance tripping resistance</b>	(A) 250
<b>Ambient temperature</b>	(°C) Type A: -25 up to 60
<b>Weight / mod.</b>	(g) 110

### Short-circuit capacity

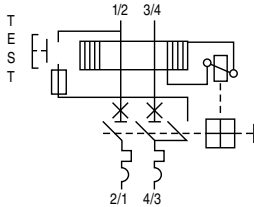
<b>AC acc. to EN/IEC 61009-1</b>	
<b>Residual making and breaking capacity</b>	IΔm = 6000A
<b>Energy limiting class</b>	3
<b>Short-circuit capacity</b>	Icn = 10000A at 230V

<b>AC acc. to EN/IEC 61009-1</b>	
<b>Short-circuit capacity</b>	Icu = 10kA



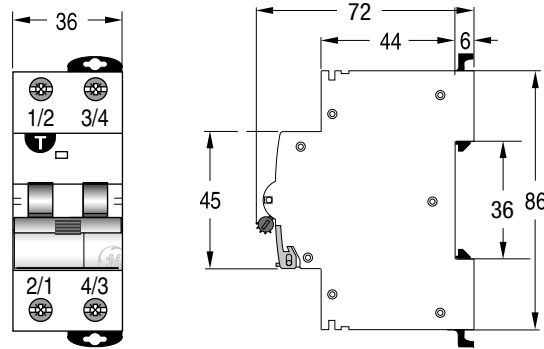


**Series DPCA100 - Type A - characteristic C**



3P	30mA			Pack.
	In (A)	Cat. no.	Ref. no.	
	6	DPCA100C06/030-120V	<b>606375</b>	1/6
	10	DPCA100C10/030-120V	<b>606376</b>	1/6
	16	DPCA100C16/030-120V	<b>606377</b>	1/6
	20	DPCA100C20/030-120V	<b>606378</b>	1/6
	25	DPCA100C25/030-120V	<b>606379</b>	1/6
	32	DPCA100C32/030-120V	<b>606380</b>	1/6
	40	DPCA100C40/030-120V	<b>606381</b>	1/6

**Dimensions**



Series DPCA100

A

**B**

C

D

E

F

G

X





### 3P+N, 3P RCBOs - Residual Current Circuit Breaker with Overcurrent Protection

#### Series DMA63N

People protection



EN 61009-1

6000

3

Type A



A

#### Applications



B

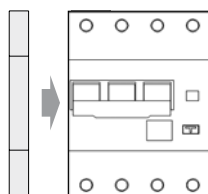
#### Approval / Marking



C

#### Add-on devices

Auxiliaries



Max. 1 aux. contact 1NO 1NC on the left

D

E

F

G

X

#### Performance

<b>Thermal setting In</b>	(A) 10 - 32
<b>Residual current</b>	(mA) 30, 300
<b>Tripping characteristics</b>	C, B
<b>Rated voltage AC Un</b>	(V) 400
<b>Minimum operating voltage UBmin</b>	(V) 195
<b>Mechanical / electrical endurance</b>	10000/20000
<b>Tropicalisation acc. to EN/IEC 60068-2</b>	95% RH at 55°C
<b>Terminal capacity flexible / rigid cable</b>	(mm <sup>2</sup> ) 25/35
<b>Poles</b>	3P+N (right), 3P
<b>Nuisance tripping resistance</b>	(A) 250A 8/20µs
<b>Ambient temperature</b>	(°C) -25 up to +40
<b>Weight / mod.</b>	(g) 120

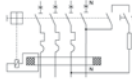
#### Short-circuit capacity

<b>AC acc. to EN/IEC 61009-1</b>	
<b>Residual making and breaking capacity</b>	I $\Delta$ m = 3000A
<b>Energy limiting class</b>	3
<b>Short-circuit capacity</b>	Icn = 6000A at 230V

(1) UBmin = 150V for 30mA

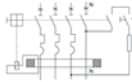


**Type A - characteristic C - 3P+N**



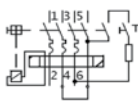
In (A)	30mA		300mA		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
10	DMA63NC10/030	<b>783517</b>	DMA63NC10/300	<b>565381</b>	1
13	DMA63NC13/030	<b>783518</b>	DMA63NC13/300	<b>565382</b>	
16	DMA63NC16/030	<b>783519</b>	DMA63NC16/300	<b>565383</b>	
20	DMA63NC20/030	<b>783520</b>	DMA63NC20/300	<b>565384</b>	
25	DMA63NC25/030	<b>568323</b>	DMA63NC25/300	<b>565385</b>	
32	DMA63NC32/030	<b>568322</b>	DMA63NC32/300	<b>565386</b>	

**Type A - characteristic B - 3P+N**



In (A)	30mA		300mA		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
10	DMA63NB10/030	<b>565387</b>	DMA63NB10/300	<b>565393</b>	1
13	DMA63NB13/030	<b>565388</b>	DMA63NB13/300	<b>565394</b>	
16	DMA63NB16/030	<b>565389</b>	DMA63NB16/300	<b>565395</b>	
20	DMA63NB20/030	<b>565390</b>	DMA63NB20/300	<b>565396</b>	
25	DMA63NB25/030	<b>565391</b>	DMA63NB25/300	<b>565397</b>	
32	DMA63NB32/030	<b>565392</b>	DMA63NB32/300	<b>565398</b>	

**Type A - characteristic C - 3P (IT nets applications)**



In (A)	30mA		300mA		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
10	DMA63C10/030IT	<b>568326</b>	-	-	1
16	DMA63C16/030IT	<b>568327</b>	-	-	
20	DMA63C20/030IT	<b>568328</b>	-	-	
25	DMA63C25/030IT	<b>568329</b>	-	-	
32	DMA63C32/030IT	<b>568330</b>	-	-	

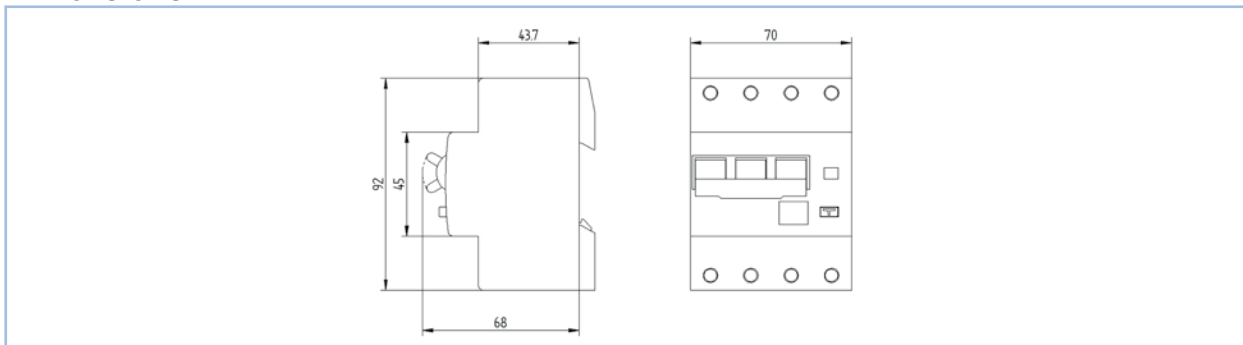
**Series CAH DMA63N - Auxiliary contact**



Function	Type of contacts	Cat. No.	Ref. No.	Pack.
H	1NO + 1NC	CAH DMA63N	<b>568324</b>	1

3P+N RCBO and 3P RCBO left side

**Dimensions**



Series DMA63N

A

**B**

C

D

E

F

G

X





**Selection table of RCCBs**

Page no.	Series	Sensitivity (mA)	Poles	Type	Nominal current (A)						Isolator appl.	Add-on devices	Rated voltage				
					16	25	40	63	80	100							
B.26	BP/BD																
		10	2P	AC/A										x	x	240	
		30	2P	AC/A										x	x	240	
				G										x	x	240	
				AC										x	x	110	
			4P	AC/A										x	x	240/415	
				G										x	x	240/415	
				AC										x	x	220	
		100	2P	AC/A/S										x	x	240	
				G										x	x	240	
			4P	AC/A/S										x	x	240/415	
				G										x	x	240/415	
		300	2P	AC/A/S										x	x	240	
			4P	AC/A/S										x	x	240/415	
				AC										x	x	220/127	
		500	2P	AC/A/S										x	x	240	
			4P	AC/A/S										x	x	240/415	
		1000	2P	AC/A/S										x	x	240	
			4P	AC/A/S										x	x	240/415	

People protection

**Selection table of 1P+N - RCBOs**

Page no.	Series	Sensitivity (mA)	Pole	Type	Tripping charact.	Nominal current (A)								Isolator appl.	Add-on devices	Rated voltage			
						4	6	10	13	16	20	25	32				40		
B.36	DM60																		
		10	1P+N	AC/A	B												x	x	240
					C												x	x	240
		30	1P+N	AC/A	B												x	x	240
					C												x	x	240
		100	1P+N	AC/A	B												x	x	240
					C												x	x	240
		300	1P+N	AC/A	B												x	x	240
					C												x	x	240
B.37	DMT60																		
		30	1P+N	AC	C												x	x	240
B.38	DM100																		
		10	1P+N	AC/A	B												x	x	240
					C												x	x	240
		30	1P+N	AC/A	B												x	x	240
					C												x	x	240
		100	1P+N	AC/A	B												x	x	240
					C												x	x	240
		300	1P+N	AC/A	B												x	x	240
					C												x	x	240
B.39	DMT100																		
		30	1P+N	AC	C												x	x	240

A

B

C

D

E

F

**Selection table for add-on RCCBs**

Page no.	Series	Sensitivity (mA)	Poles	Type	Tripping charact.	Nominal current (A)		Isolator appl.	Add-on devices	Rated voltage
						32	63			
B.40	Diff-o-Click									
		10	2-3-4P	AC/A	-			-	-	240/415
		100, 300, 500, 1000	2-3-4P	AC/A/S	-			-	-	240/415

G

X





**Selection table for Unibis Compact electronic RCBOs**

Page no.	Series	Sensitivity (mA)	Pole	Type	Tripping charact.	Nominal current (A)								Isolator appl.	Add-on devices	Rated voltage	
						4	6	10	13	16	20	25	32				40
B.36	DM60	30, 100	1P+N	AC	C										x	x	240
B.44	DMC60NS	10, 30	1P+NS	AC, A	C, B										x	x	240
B.47	DICE60NS	10, 30	1P+NS	AC/A	C, B										x	x	240
B.48	DMCE60	30	1P+N	AC/A	C, B										x	x	240
B.48	DICE60	30	1P+N	AC/A	C, B										x	x	240
B.50	DME100	10, 30, 100	1P+N	AC/A	C										x	x	240
		10, 30, 100	1P+N	AC	B										x	x	240
		100	1P+N	AC	D										x	x	240
		10, 30	1P+N	A	B										x	x	240
		10, 30, 100	1P+N	A	C, D										x	x	240
B.52	DMET60	30	1P+N	AC/A	C										x	x	240
B.52	DMET100	10, 30, 100, 300	1P+N	AC	C										x	x	240
		30	1P+N	A	C										x	x	240

**Selection table for RCCBs with UL approval**

Page no.	Series	Sensitivity (mA)	Poles	Type	Nominal current (A)						Isolator appl.	Add-on devices	Rated voltage				
					16	25	40	63	80	100							
B.54	FPAUL	10, 30, 100															
		300, 500	2P	A											x	x	240
		10, 30, 100															
		300, 500	4P	A											x	x	415

Page no.	Series	Sensitivity (mA)	Pole	Type	Tripping charact.	Nominal current (A)								Isolator appl.	Add-on devices	Rated voltage	
						4	6	10	13	16	20	25	32				40
B.56	DPA100UL	10, 30	1P+N	A	-										x	x	277

**Selection table for screwless RCCBs Fixwell**

Page no.	Series	Sensitivity (mA)	Poles	Type	Nominal current (A)						Isolator appl.	Add-on devices	Rated voltage			
					16	25	40	63	80	100						
B.58	FPP	10, 30, 100	2P	A/S										x	x	240/415
		10, 30, 100	4P	A/S										x	x	240/415

Technical data

A

**B**

C

D

E

F

G

X



**Technical data of RCDs**

People protection

A

B

C

D

E

F

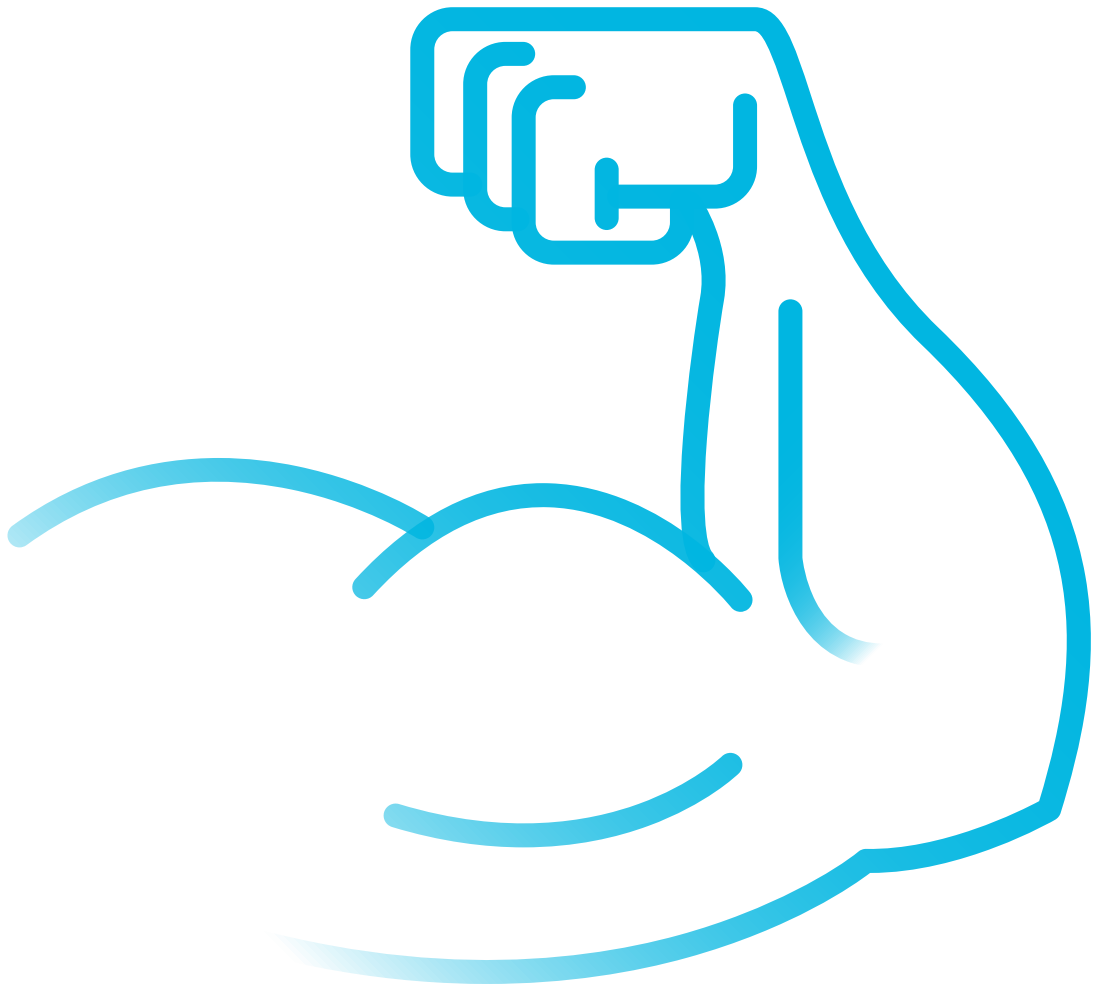
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Series		Series BP/BD	Series BPCV	FP Type B	FP Type F
Standards		EN/IEC 61008-1	EN/IEC 61008-1	EN 62423/ VDE 0664-40	EN 62423/ VDE 0664-40
Magnetic tripping characteristics		-	-	-	-
Residual tripping characteristic		AC, A, S, Ai, Si	AC	B	F
Tripping time at I $\Delta$ n	ms	< 40	< 40	< 300	< 300
	ms	> 150	-	-	-
Rated current	A	16, 25, 40, 63, 80, 100	< 25, < 40, < 63 < 80, < 100	16, 25, 40, 63, 80	25, 40, 63, 80
Rated residual current I $\Delta$ n	mA	10, 30, 100, 300, 500, 1000	30, 300	30, 100, 300, 500	30
Calibration temperature	°C	30	30	30	30
Number of poles versus modules		1P	1P	2P=4 mod.; 4P=4 mod.	2P=2 mod.; 4P=4 mod.
Rated voltage Un	V	240	110	230	240
	V	-	-	-	-
	V	415	220/127	230/400	415
Frequency	Hz	50/60	50/60	50/60	50/60
Maximum service voltage U $B_{max}$	V	2P=255/4P=455	2P=140; 4P=245/140	2P=265/4P=460	2P=265/4P=455
Minimum service voltage U $B_{min}$	V	2P=117/4P=205 <sup>(2)</sup>	2P=95; 4P=178/100	2P=117/4P=205 <sup>(2)</sup>	2P=176/4P=306
Minimum voltage for leakage protection		Voltage independent	Voltage independent	Voltage independent	Voltage independent
Power supply		Top/Bottom	Top/Bottom	Top/Bottom	Top/Bottom
Energy limiting class		-	-	-	-
Rated making and breaking capacity (I $m$ )	A	500 (or 10xI $n$ )	500 (or 10xI $n$ )	500 (or 10xI $n$ )	500 (or 10xI $n$ )
Residual making and breaking capacity (I $\Delta$ m)	A	500 (or 10xI $n$ )	500 (or 10xI $n$ )	500 (or 10xI $n$ )	500 (or 10xI $n$ )
Conditional short-circuit capacity (I $nc$ )	A	10000 fuse 100A gLgG	10000 fuse 100A gLgG	10000 fuse 80A gLgG	10000 fuse 80A gLgG
Conditional residual short-circuit capacity (I $\Delta$ c)	A	10000 fuse 100A gLgG	10000 fuse 100A gLgG	10000 fuse 80A gLgG	10000 fuse 80A gLgG
Rated Short-circuit capacity (I $cn$ )	A	-	-	-	-
Grid distance (safety distance between two devices)		35	35	35	35
Isolator application		yes	yes	yes	yes
Insulation degree					
Insulation voltage	VDC	440	440	440	440
Shock voltage (1.2/50 $\mu$ s)	kV	6	6	6	6
Insulation resistance	Mohm	1000	1000	1000	1000
Dielectric strength	V	2500	2500	2500	2500
Shock resist. (in x, y, z direction) (EN/IEC 60077/16.3)		40g, 18 shocks 5 ms	40g, 18 shocks 5 ms	40g, 18 shocks 5 ms	40g, 18 shocks 5 ms
Vibration resist. (in x, y, z direction) (EN/IEC 60068-2-6)		1.5g, 30 min, 0...80Hz	1.5g, 30 min, 0...80Hz	1.5g, 30 min, 0...80Hz	1.5g, 30 min, 0...80Hz
Endurance					
electrical at Un, In		10000	10000	10000	10000
mechanical at Un, In		20000	20000	20000	20000
Protection degree (outside/inside electrical enclosure with door)		IP20 / IP40	IP20 / IP40	IP20 / IP40	IP20 / IP40
Self extinguish degree (according to UL94)		V2	V2	V2	V2
Tropicalisation (acc. to EN/IEC 60068-2, DIN 40046)		+55/95% H.R.	+55/95% H.R.	+55/95% H.R.	+55/95% H.R.
Pollution degree (acc. EN/IEC 60947-1)		3	3	3	3
Operating temperature		AC (-5...+40); A -25...+40)	-25°C...+40°C	-25°C...+40°C	-25°C...+40°C
Storage temperature		-25°C...+70°C	-25°C...+70°C	-25°C...+70°C	-25°C...+70°C
Terminals capacity					
Rigid cable min/max (top)		1.5/50 (1.5/35)	1,5/50	1,5/50 (1,5/35)	1,5/50 (1,5/35)
Flexible cable min <sup>(1)</sup> /max (top)		1.5/35 (1.5/25)	1,5/35	1,5/35 (1,5/25)	1,5/35 (1,5/25)
Rigid cable min/max (bottom)		1.5/50 (1.5/35)	1,5/50	1,5/50 (1,5/35)	1,5/50 (1,5/35)
Flexible cable min <sup>(1)</sup> /max (bottom)		1.5/35 (1.5/25)	1,5/35	1,5/35 (1,5/25)	1,5/35 (1,5/25)
Torque	Nm	5/5	5/5	5/5	5/5
Add-on devices (side add-on)					
Auxiliary contacts		yes	yes	yes	yes
Tele U		yes	yes	yes	yes
Tele L		yes	yes	yes	yes
Tele M		yes	yes	yes	yes
PBS		no	yes	yes	yes
Busbars systems					
Pin		Button	yes...yes	yes	yes
Fork		yes	yes...yes	yes	yes
# Poles		2-4P	2-4P	2-4P	2-4P
Dimensions					
(H x D x W) 86 x 70 x W		36/72	36/72	72	36/72
Weight		2P=250 / 4P=368	2P=250 / 4P=368	2P=340 / 4P=420	2P=220 / 4P=385
Package	pcs	2P=1/6 / 4P=1/3	2P=6 / 4P=3	1/3	2P=1/6 / 4P=1/3
Approvals		KEMA, CCC	-	VDE	-
CE-marking		yes	yes	yes	yes
Page		B.26	B.27	B.32	B.34

(1) Flexible cable 0.75/1/1.5mm<sup>2</sup> with cable lug

(2) Minimum service voltage for 30mA: 2P=176V / 4P=287V





**Technical data of 1P+N RCBOs and compact electronic RCBOs**

People protection

A

B

C

D

E

F

G

X

Series		DM60	DM100	Diff-o-Click	DMCE60NS / DICE60NS
Standards		EN/IEC 61009-1	EN/IEC 61009-1	EN/IEC 61009-1	EN/IEC 61009-1 ed3.2 (2013-09), BS EN 61009-1:2012 and AS/NZS 61009-1:20011
Magnetic tripping characteristics		B-C	B-C	B-C-D	C, B
Residual tripping characteristic		AC	AC	AC, A, S	AC, A
Tripping time at I Δn	Instantaneous	ms	< 40	< 40	< 40
	Selective	ms	-	> 150	-
Rated current	A	4, 6, 10, 13, 16, 20, 25, 32, 40	4, 6, 10, 13, 16, 20, 25, 32, 40	0.5,1,2,4,6,10,16, 20,25,32,40,50,63	6-32
Rated residual current I Δn	mA	10, 30, 300	10, 30, 300	30, 100, 300, 500, 1000	10, 30 / 30
Calibration temperature	°C	30	30	30	30
Number of poles versus modules		1P	1P	1P	1P+N switch (1 module)
Rated voltage Un	2P AC	V	230 (1P+N)	230 (1P+N)	240/415
	3P AC	V	-	-	400
	4P AC	V	-	-	400
Frequency	Hz	50/60	50/60	50/60	50
Maximum service voltage U <sub>Bmax</sub>	V	255	255	2P = 255 / 4P = 455	265
Minimum service voltage U <sub>Bmin</sub>	V	117 <sup>(2)</sup>	117 <sup>(2)</sup>	2P = 205 / 4P = 205 <sup>(2)</sup>	85
Minimum voltage for leakage protection	V	Voltage independent			85
Power supply		Top/Bottom	Top/Bottom	Top	Bottom
Energy limiting class		3	3	3	3
Rated making and breaking capacity (I <sub>m</sub> )	A	-	-	-	-
Residual making and breaking capacity (IΔ <sub>m</sub> )	A	6000	6000	see MCB	4500
Conditional short-circuit capacity (I <sub>nc</sub> )	A	-	-	-	-
Conditional residual short-circuit capacity (IΔ <sub>c</sub> )	A	-	-	-	-
Rated Short-circuit capacity (I <sub>cn</sub> )	A	6000	10000	see MCB	6000
Grid distance (safety distance between two devices)		35	35	35	-
Isolator application		yes	yes	no	yes
Insulation degree	Insulation voltage V(DC)	440	440	440	440
	Shock voltage (1.2/50μs) V	6	6	6	6
	Insulation resistance Mohm	1000	1000	1000	1000
	Dielectric strength V	2500	2500	2500	2500
Shock resist. (in x, y, z direction) (EN/IEC 60077/16.3)		40g, 18 shocks 5 ms	40g, 18 shocks 5 ms	40g, 18 shocks 5 ms	40g, 18 shocks 5 ms
Vibration resist. (in x, y, z direction) (EN/IEC 60068-2-6)		1.5g, 30 min, 0...80Hz	1.5g, 30 min, 0...80Hz	5g, 30 min, 0...80Hz	1.5g, 30 min, 0...80Hz
Endurance	electrical at Un, In	10000	10000	10000	10000
	mechanical at Un, In	20000	20000	20000	20000
Protection degree (outs./inside electrical enclosure with door)		IP20 / IP40	IP20 / IP40	IP20 / IP40	IP20 / IP40
Self extinguish degree (according to UL94)		V2	V2	V2	V2
Tropicalisation (acc. to EN/IEC 60068-2, DIN 40046)		+55/95%	+55/95%	+55/95%	+55/95%
Pollution degree (acc. EN/IEC 60947-1)		3	3	3	3
Operating temperature		-5...+60	-25...+60	AC (-5...+60); A(-25...+60)	-5...+60
Storage temperature	°C	-25...+70	-5...+70	-25...+70	-25...+70
Terminals capacity	Rigid cable min/max (top) mm <sup>2</sup>	1/25	1/25	1/25	1/25
	Flexible cable min <sup>(1)</sup> /max (top)	1/16	1/16	1/16	1.5/16
	Rigid cable min/max (bottom)	1/35	1/35	1/35	1/25
	Flexible cable min <sup>(1)</sup> /max (bottom)	1/25	1/25	1/25	1.5/16
Torque	Top/Bottom Nm	3/4	3/4	-/4.5	3
Add-on devices (side add-on) Auxiliary contacts		yes	yes	yes (coupled to MCB)	yes CA UN
	Tele U	yes	yes	yes (coupled to MCB)	yes <sup>(4)</sup>
	Tele L	yes	yes	yes (coupled to MCB)	yes <sup>(4)</sup>
	Tele M	yes	yes	yes (coupled to MCB)	yes <sup>(4)</sup>
	PBS	yes	yes	yes (coupled to MCB)	yes <sup>(4)</sup>
Busbars systems	Pin	Bottom	Bottom	-	Bottom
	Fork	Bottom	Bottom	-	no/no / no/yes
	# Poles	1P+N	1P+N	2-3-4P	1P+N
Dimensions	(HxDxW) 86x70xW mm	36	36	72/90/108/125/144	18
	Weight g	250	250	2P=250 / 3P=320 / 4P=340	125
	Package pcs	1/6	1/6	1	1/12
Approvals		KEMA	KEMA	KEMA	CEBEC and RCM
CE-marking		yes	yes	yes	yes
Page		B.36	B.38	B.40	B.44

(1) Flexible cable 0.75/1/1.5mm<sup>2</sup> with cable lug  
 (2) Minimum service voltage for 30mA: 2P = 176V / 4P = 287V  
 (3) Making sure that N-L and both flying leads are disconnected  
 (4) Requires CA UN auxiliary contact as interface



DMCE/DICE	DME60/DMET60	DME100/DMET100	FPAUL	DPA100 UL	FPP
EN/IEC 61009-1	EN/IEC 61009-1	EN/IEC 61009-1	UL1053 and EN/IEC 61008-1	UL1053 and EN/IEC 61009-1	EN 61008-1
B-C AC, A < 40 - 6...40	C AC, A < 40 - 6...40	B-C-D AC, A < 40 - 6, 10, 16, 20, 25, 32, 40	- A < 40 - 16, 25, 40, 63	B-C A < 40 - 10, 13, 16, 32, 40	- A, S < 40 > 150 25, 40, 63 <sup>(5)</sup>
30 30 1P 240 (1P+N) - 50 255 195 85 Top/Bottom 3 10xIn 6000 - 6000 - yes 440 6 <sup>(3)</sup> 1000 <sup>(3)</sup> 2500 <sup>(3)</sup>	30, 100 30 1P 240 (1P+N) - 50/60 255 195 100 Bottom 3 10xIn 6000 - 6000 - yes 440 6 <sup>(3)</sup> 1000 <sup>(3)</sup> 2500 <sup>(3)</sup>	10, 30, 100, 300 30 1P 240 (1P+N) - 50/60 255 195 100 Bottom 3 10xIn 10000 - 10000 - yes 440 6 <sup>(3)</sup> 1000 <sup>(3)</sup> 2500 <sup>(3)</sup>	10, 30, 100, 300, 500 30 1P 240 UL: 240; EN/IEC: 415 50/60 2P = 2255 / 4P = 455 2P = 117 / 4P = 205 <sup>(2)</sup> Voltage independent Top/Bottom - 500 (or 10xIn) 500 (or 10xIn) 10000 fuse 100A glgG 10000 - 35 yes 500 8 1000 2500	10, 30 30 1P 277 & 240 (1P+N) - 50/60 255 195 Voltage independent Top/Bottom 3 - 6000 - 5000/10000 35 yes 500 6 1000 2500	30, 100, 300 30 1P 240 - 415 50/60 2P = 255 / 4P = 455 2P = 110 / 4P = 190 <sup>(2)</sup> Voltage independent Top/Bottom - 500 (or 10xIn) 500 (or 10xIn) 10000 fuse 100A 10000 - yes 500 8 1000 2500
40g, 18 shocks 5 ms 1.5g, 30 min, 0...80Hz 10000 20000 IP20 / IP40 V2 +55/95% 3 -5..+60 -25..+70 1/25 1.5/16 1/35 1.5/25 3/3(DMCE) 3/4.5(DICE) yes (coupled to CAUN) yes yes yes yes - 1P+N 18 125/215 1/12 RCM yes B.48	40g, 18 shocks 5 ms 2g, 30 min, 0...80Hz 10000 20000 IP20 / IP40 V2 +55/95% 3 -5..+60 -25..+70 1/25 1/16 1/35 1/25 3/4.5 - Bottom Bottom 1P+N 18 235 1 KEMA yes B.50 - B.52	40g, 18 shocks 5 ms 2g, 30 min, 0...80Hz 10000 20000 IP20 / IP40 V2 +55/95% 3 -5..+60 -25..+70 1/25 1/16 1/35 1/25 3/4.5 - Bottom Bottom 1P+N 18 235 1 CEBEC yes B.50 - B.52	40g, 18 shocks 5 ms 1.5g, 30 min, 0...80Hz 10000 20000 IP20 / IP40 V2 +55/95% 3 AC (-5.. +60); A (-25.. +60) -25..+70 1.5/50 (1.5/35) 1.5/35 (1.5/25) 1.5/50 (1.5/35) 1.5/35 (1.5/25) 5/5 yes yes <sup>(7)</sup> yes yes <sup>(7)</sup> yes <sup>(7)</sup> yes <sup>(7)</sup> yes <sup>(7)</sup> yes <sup>(7)</sup> 2-4P 36/72 2P = 250 / 4P = 368 2P = 1/6 / 4P = 1/3 UL yes B.54	40g, 18 shocks 5 ms 1.5g, 30 min, 0...80Hz 10000 20000 IP20 / IP40 V2 +55/95% 3 -5..+60 -25..+70 1/25 1/16 1/35 1/25 3/4 yes yes <sup>(7)</sup> yes yes <sup>(7)</sup> yes <sup>(7)</sup> yes <sup>(7)</sup> yes <sup>(7)</sup> yes <sup>(7)</sup> 1P+N 36 250 1/6 UL and CEBEC yes B.56	40g, 18 shocks 5 ms 1.5g, 30 min, 0...80Hz 10000 20000 IP20 / IP40 V2 +55/95% 3 -25..+60 <sup>(6)</sup> -25..+70 see page B.58 - - - - yes yes <sup>(8)</sup> yes <sup>(8)</sup> yes <sup>(8)</sup> yes <sup>(8)</sup> yes yes 88x68x36/73.2 2P = 248 / 4P = 364 2P = 1/6 / 4P = 1/3 VDE-KEMA-CEBEC-IMQ yes B.58

Technical data

A

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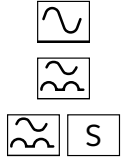
(5) Rating current derating as usual in function of installation conditions  
 (6) With plug-in busbar: -25/+50°C  
 (7) Not UL registered  
 (8) With plug-in busbar only at right extreme side of each row. No pin busbars let through allowed



Series BP/BD

EN /IEC 61008-1

Type AC  
Type A - Ai  
Type S - Si



People protection

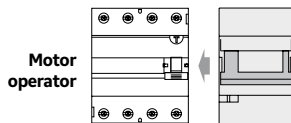
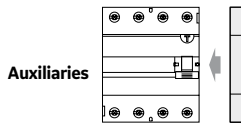
Applications



Approvals / Marking



Add-on devices



Performance

<b>Thermal setting I<sub>n</sub></b>	(A) 16, 25, 40, 63, 80, 100
<b>Residual current I<sub>Δn</sub></b>	(mA) 10, 30, 100, 300, 500, 1000
<b>Rated voltage AC U<sub>n</sub></b>	(V) 2P: 240 ; 110 <sup>(3)</sup> 4P: 240/415 ; 220/127 <sup>(3)</sup>
<b>Minimum operating voltage U<sub>Bmin</sub></b> <sup>(1)</sup>	(V) 2P: 117, 95 <sup>(3)</sup> 4P: 205, 178/100 <sup>(3)</sup> 20000/10000
<b>Mechanical/electrical endurance</b>	
<b>Tropicalisation acc.to EN/IEC 60068-2-28/2-30 and DIN 40046</b>	95% RH at 55°C
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> ) 35-50 <sup>(2)</sup>
<b>Poles</b>	2P, 4P
<b>Nuisance tripping resistance</b>	Type A, AC: 250A 8/20μs; 200A 0.5μs - 100kHz Type S: 3000A 8/20μs Type Ai: 3000A 8/20μs Type Si: 5000A 8/20μs
<b>Ambient temperature</b>	(°C) Type AC: -5 up to 40 Type A: -25 up to 40
<b>Weight</b>	(g) 2P: 220 4P: 385

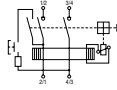
Short-circuit capacity

<b>AC acc. to EN/IEC 61008-1</b>	
<b>Making and breaking capacity</b>	I <sub>m</sub> = 500A from 16 up to 40A I <sub>n</sub> = 10I <sub>n</sub> from 63 up to 100A
<b>Residual making and breaking capacity</b>	I <sub>Δm</sub> = 500A from 16 up to 40A I <sub>Δm</sub> = 10I <sub>n</sub> from 63 up to 100A
<b>Short-circuit capacity</b>	
<b>Series BD</b>	I <sub>nc</sub> = 6000A at 240/415V fuse 63A gG
<b>Series BP</b>	I <sub>nc</sub> = 10000A at 240/415V fuse 80A gG

(1) Minimum service voltage for 30mA: 2P=176V / 4P=287V  
(2) Series BD: 25-35mm<sup>2</sup>  
(3) Serie BPCV



**Series BP/BD - Type AC**

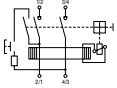


In (A)	10*/30mA		100mA		300mA		Pack.	
	Cat. no.	Ref. no.	Cat. no.	Ref. no.	Cat. no.	Ref. no.		
<b>2P</b>	16	BPC216/010*	<b>606131</b>	-	-	-	6	
	25	BDC225/030	<b>607125</b>	BPC225/100	<b>606140</b>	BDC225/300	<b>607127</b>	6
	40	BDC240/030	<b>607126</b>	BPC240/100	<b>606141</b>	BDC240/300	<b>607128</b>	6
	63	BPC263/030	<b>606134</b>	BPC263/100	<b>606142</b>	BPC263/300	<b>606150</b>	6
	80	BPC280/030	<b>606135</b>	BPC280/100	<b>606143</b>	BPC280/300	<b>606151</b>	6
	100	BPC2100/030	<b>606136</b>	BPC2100/100	<b>606144</b>	BPC2100/300	<b>606152</b>	6
	500mA		1000mA					
	25	BPC225/500	<b>606153</b>	BPC225/1000	<b>606158</b>		3	
	40	BPC240/500	<b>606154</b>	BPC240/1000	<b>606159</b>		3	
	63	BPC263/500	<b>606155</b>	BPC263/1000	<b>606160</b>		3	
	80	BPC280/500	<b>606156</b>	BPC280/1000	<b>606161</b>		3	
	100	BPC2100/500	<b>606157</b>	BPC2100/1000	<b>606162</b>		3	
	30mA		100mA		300mA			
<b>4P</b>	25	BPC425/030	<b>606208</b>	BPC425/100	<b>606216</b>	BPC425/300	<b>606224</b>	6
	40	BPC440/030	<b>606209</b>	BPC440/100	<b>606217</b>	BPC440/300	<b>606225</b>	6
	63	BPC463/030	<b>606210</b>	BPC463/100	<b>606218</b>	BPC463/300	<b>606226</b>	6
	80	BPC480/030	<b>606211</b>	BPC480/100	<b>606219</b>	BPC480/300	<b>606227</b>	6
	100	BPC4100/030	<b>606212</b>	BPC4100/100	<b>606220</b>	BPC4100/300	<b>606228</b>	6
		500mA		1000mA				
	25	BPC425/500	<b>606229</b>	BPC425/1000	<b>606234</b>		3	
	40	BPC440/500	<b>606230</b>	BPC440/1000	<b>606235</b>		3	
	63	BPC463/500	<b>606231</b>	BPC463/1000	<b>606236</b>		3	
	80	BPC480/500	<b>606232</b>	BPC480/1000	<b>606237</b>		3	
	100	BPC4100/500	<b>606233</b>	BPC4100/1000	<b>606238</b>		3	

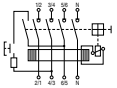
Series BP/BD

A

**Series BPCV - Type AC 110V and 220/127V AC**



In (A)	10/30mA		100mA		300mA		Pack.	
	Cat. no.	Ref. no.	Cat. no.	Ref. no.	Cat. no.	Ref. no.		
<b>2P</b>	25	BPCV225/30	<b>606296</b>	-	-	BPCV225/300	<b>606301</b>	1/6
	40	BPCV240/30	<b>606297</b>	-	-	BPCV240/300	<b>606302</b>	1/6
	63	BPCV263/30	<b>606298</b>	-	-	BPCV263/300	<b>606303</b>	1/6
	80	BPCV280/30	<b>606299</b>	-	-	BPCV280/300	<b>606304</b>	1/6
	100	BPCV2100/30	<b>606300</b>	-	-	BPCV2100/300	<b>606305</b>	1/6
<b>4P</b>	25	BPCV225/30	<b>604285</b>	-	-	-	-	1/3
	40	BPCV240/30	<b>604286</b>	-	-	-	-	1/3
	63	BPCV263/30	<b>604287</b>	-	-	-	-	1/3
	80	BPCV280/30	<b>604288</b>	-	-	-	-	1/3
	100	BPCV2100/30	<b>604289</b>	-	-	-	-	1/3



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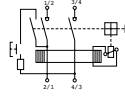
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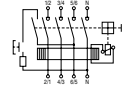
New



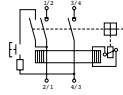
Series BP - Type A



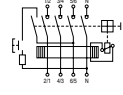
In (A)	10*/30mA		100mA		300mA		Pack.	
	Cat. no.	Ref. no.	Cat. no.	Ref. no.	Cat. no.	Ref. no.		
2P	16	BPA216/010*	<b>606085</b>	-	-	-	6	
	25	BPA225/030	<b>606086</b>	BPA225/100	<b>606091</b>	BPA225/300	<b>606101</b>	6
	40	BPA240/030	<b>606087</b>	BPA240/100	<b>606092</b>	BPA240/300	<b>606102</b>	6
	63	BPA263/030	<b>606088</b>	BPA263/100	<b>606093</b>	BPA263/300	<b>606103</b>	6
	80	BPA280/030	<b>606089</b>	BPA280/100	<b>606094</b>	BPA280/300	<b>606104</b>	6
	100	BPA2100/030	<b>606090</b>	BPA2100/100	<b>606095</b>	BPA2100/300	<b>606105</b>	6
		500mA		1000mA				
	25	BPA225/500	<b>606111</b>	BPA225/1000	<b>606121</b>		3	
	40	BPA240/500	<b>606112</b>	BPA240/1000	<b>606122</b>		3	
	63	BPA263/500	<b>606113</b>	BPA263/1000	<b>606123</b>		3	
	80	BPA280/500	<b>606114</b>	BPA280/1000	<b>606124</b>		3	
	100	BPA2100/500	<b>606115</b>	BPA2100/1000	<b>606125</b>		3	
4P		30mA		100mA		300mA		
	25	BPA425/030	<b>606163</b>	BPA425/100	<b>606168</b>	BPA425/300	<b>606178</b>	6
	40	BPA440/030	<b>606164</b>	BPA440/100	<b>606169</b>	BPA440/300	<b>606179</b>	6
	63	BPA463/030	<b>606165</b>	BPA463/100	<b>606170</b>	BPA463/300	<b>606180</b>	6
	80	BPA480/030	<b>606166</b>	BPA480/100	<b>606171</b>	BPA480/300	<b>606181</b>	6
	100	BPA4100/030	<b>606167</b>	BPA4100/100	<b>606172</b>	BPA4100/300	<b>606182</b>	6
		500mA		1000mA				
	25	BPA425/500	<b>606188</b>	BPA425/1000	<b>606198</b>		3	
	40	BPA440/500	<b>606189</b>	BPA440/1000	<b>606199</b>		3	
	63	BPA463/500	<b>606190</b>	BPA463/1000	<b>606200</b>		3	
	80	BPA480/500	<b>606191</b>	BPA480/1000	<b>606201</b>		3	
	100	BPA4100/500	<b>606192</b>	BPA4100/1000	<b>606202</b>		3	



Series BP - Type S



In (A)	100mA		300mA		500mA		1000mA			
	Cat. no.	Ref. no.	Cat. no.	Ref. no.	Cat. no.	Ref. no.	Pack.	Ref. no. Pack.		
2P	25	BPS225/100	<b>606096</b>	BPS225/300	<b>606106</b>	BPS225/500	<b>606116</b>	BPS225/1000	<b>606126</b>	6
	40	BPS240/100	<b>606097</b>	BPS240/300	<b>606107</b>	BPS240/500	<b>606117</b>	BPS240/1000	<b>606127</b>	6
	63	BPS263/100	<b>606098</b>	BPS263/300	<b>606108</b>	BPS263/500	<b>606118</b>	BPS263/1000	<b>606128</b>	6
	80	BPS280/100	<b>606099</b>	BPS280/300	<b>606109</b>	BPS280/500	<b>606119</b>	BPS280/1000	<b>606129</b>	6
	100	BPS2100/100	<b>606100</b>	BPS2100/300	<b>606110</b>	BPS2100/500	<b>606120</b>	BPS2100/1000	<b>606130</b>	6
4P	25	BPS425/100	<b>606173</b>	BPS425/300	<b>606183</b>	BPS425/500	<b>606193</b>	BPS425/1000	<b>606203</b>	3
	40	BPS440/100	<b>606174</b>	BPS440/300	<b>606184</b>	BPS440/500	<b>606194</b>	BPS440/1000	<b>606204</b>	3
	63	BPS463/100	<b>606175</b>	BPS463/300	<b>606185</b>	BPS463/500	<b>606195</b>	BPS463/1000	<b>606205</b>	3
	80	BPS480/100	<b>606176</b>	BPS480/300	<b>606186</b>	BPS480/500	<b>606196</b>	BPS480/1000	<b>606206</b>	3
	100	BPS4100/100	<b>606177</b>	BPS4100/300	<b>606187</b>	BPS4100/500	<b>606197</b>	BPS4100/1000	<b>606207</b>	3



People protection

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B

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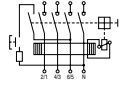
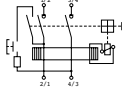
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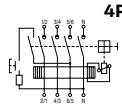
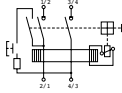


**Series BP - Type Ai** 



In (A)	30mA		100mA		Pack.	
	Cat. no.	Ref. no.	Cat. no.	Ref. no.		
2P	25	BPAi225/030	<b>606331</b>	BPAi225/300	<b>606347</b>	6
	40	BPAi240/030	<b>606332</b>	BPAi240/300	<b>606348</b>	6
	63	BPAi263/030	<b>606333</b>	BPAi263/300	<b>606349</b>	6
4P	25	BPAi425/030	<b>606334</b>	BPAi425/300	<b>606350</b>	3
	40	BPAi440/030	<b>606335</b>	BPAi440/300	<b>606351</b>	3
	63	BPAi463/030	<b>606336</b>	BPAi463/300	<b>606352</b>	3

**Series BP - Type Si**  



In (A)	300mA		Pack.	
	Cat. no.	Ref. no.		
2P	25	BPSi225/300	<b>606337</b>	6
	40	BPSi240/300	<b>606338</b>	6
	63	BPSi263/300	<b>606339</b>	6
	80	BPSi280/300	<b>606340</b>	6
	100	BPSi2100/300	<b>606341</b>	6
4P	25	BPSi425/300	<b>606342</b>	3
	40	BPSi440/300	<b>606343</b>	3
	63	BPSi463/300	<b>606344</b>	3
	80	BPSi480/300	<b>606345</b>	3
	100	BPSi4100/300	<b>606346</b>	3

Series BP

A

**B**

C

D

E

F

G

X

PROTECT



# Type B applications



A

**B**

C

D

E

F

G

X

## Industrial

Controllers and variable speed drives | Battery chargers and inverters | Frequency converters | Photovoltaic systems, a.c side | Charging stations for electric vehicles

| Installation in general where we can expect d.c. smooth direct residual currents |

Variable speed machine tools | UPS, Computer Data Centers |

Elevator controls | Cranes of all kinds | Test set-ups in laboratories

| Backed-up power supplies | Electronic equipment on construction sites |



### Series FP

**EN 62423/ VDE 0664-40**

**Type B**



People protection



### Applications

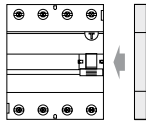


### Approval / Marking

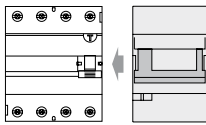


### Add-on devices

FP Auxiliaries<sup>(1)</sup>



Motor operator<sup>(2)</sup>



(1) Series CA - Tele L - Tele U - PBS - TeleREC Plus  
(2) Only at right side end of the extreme pin busbar

### Performance

<b>Rated current I<sub>n</sub></b>	(A)	16, 25, 40, 63, 80
<b>Residual current I<sub>Δ</sub></b>	(mA)	30, 100, 300, 500
<b>Rated voltage AC U<sub>n</sub></b>	(V)	2P: 230 4P: 230/400
<b>Minimum operating voltage U<sub>Bmin</sub></b>	30mA (V)	2P: 176 4P: 287
	100,300,500mA (V)	2P: 117 4P: 205
<b>Mechanical/electrical endurance</b>		20000/10000
<b>Tropicalisation acc. to EN/IEC 60068-2-28/2-30 and DIN 40046</b>		95% RH at 55°C
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> )	1.5-50
<b>Poles</b>		2P, 4P
<b>Nuisance tripping resistance</b>		3000A 8/20 μs
<b>Ambient temperature</b>	(°C)	-25 up to 40
<b>Weight</b>	(g)	2P: 340 4P: 420

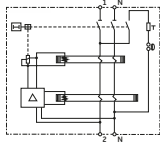
### Short-circuit capacity

#### AC acc. to EN/IEC 61009-1

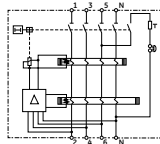
<b>Making and breaking capacity</b>	I <sub>m</sub> = 500A from 16A up to 40A I <sub>m</sub> = 10I <sub>n</sub> from 63 up to 80A
<b>Residual making and breaking capacity</b>	I <sub>Δm</sub> = 50I <sub>n</sub> from 16A up to 40A I <sub>Δm</sub> = 10I <sub>n</sub> from 63A up to 80A
<b>Short-circuit capacity</b>	I <sub>nc</sub> = 10000A at 230/400V fuse 80A gG



**Series FP - Type B**



In (A)	30mA		100mA		300mA		500mA		Pack.	
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.		
2P	16	FPB 2 16/030	<b>565353</b>	FPB 2 16/100	<b>565354</b>	FPB 2 16/300	<b>565355</b>	FPB 2 16/500	<b>565356</b>	3
	25	FPB 2 25/030	<b>565357</b>	FPB 2 25/100	<b>565358</b>	FPB 2 25/300	<b>565359</b>	FPB 2 25/500	<b>565360</b>	3
	40	FPB 2 40/030	<b>565361</b>	FPB 2 40/100	<b>565362</b>	FPB 2 40/300	<b>565363</b>	FPB 2 40/500	<b>565364</b>	3
	63	FPB 2 63/030	<b>565365</b>	FPB 2 63/100	<b>565366</b>	FPB 2 63/300	<b>565367</b>	FPB 2 63/500	<b>565368</b>	3
	80	FPB 2 80/030	<b>565369</b>	FPB 2 80/100	<b>565370</b>	FPB 2 80/300	<b>565371</b>	FPB 2 80/500	<b>565372</b>	3



4P	16	FPB 4 16/030	<b>565333</b>	FPB 4 16/100	<b>565334</b>	FPB 4 16/300	<b>565335</b>	FPB 4 16/500	<b>565336</b>	3
	25	FPB 4 25/030	<b>565337</b>	FPB 4 25/100	<b>565338</b>	FPB 4 25/300	<b>565339</b>	FPB 4 25/500	<b>565340</b>	3
	40	FPB 4 40/030	<b>565341</b>	FPB 4 40/100	<b>565342</b>	FPB 4 40/300	<b>565343</b>	FPB 4 40/500	<b>565344</b>	3
	63	FPB 4 63/030	<b>565345</b>	FPB 4 63/100	<b>565346</b>	FPB 4 63/300	<b>565347</b>	FPB 4 63/500	<b>565348</b>	3
	80	FPB 4 80/030	<b>565349</b>	FPB 4 80/100	<b>565350</b>	FPB 4 80/300	<b>565351</b>	FPB 4 80/500	<b>565352</b>	3

Series FP

A

**B**

C

D

E

F

G

X





### Series FP

People protection



**EN/IEC EN 62423/  
VDE 0664-40**

**Type F**



### Applications

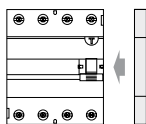


### Marking

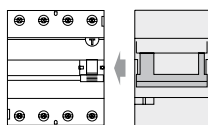


### Add-on devices

Auxiliaries<sup>(1)</sup>



Motor operator<sup>(2)</sup>



(1) Series CA - Tele L - Tele U - PBS - TeleREC Plus

(2) Only at right side end of the extreme pin busbar

### Performance

<b>Rated current In</b>	(A)	25, 40, 63, 80
<b>Residual current I<math>\Delta</math></b>	(mA)	30
<b>Rated voltage AC Un</b>	(V)	2P: 240 4P: 240/415
<b>Minimum operating voltage UBmin</b>	30mA (V)	2P: 176 4P: 306
<b>Mechanical/electrical endurance</b>		20000/10000
<b>Tropicalisation acc. to EN/IEC 60068-2-28/2-30 and DIN 40046</b>		95% RH at 55°C
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> )	1,5-50 (1,5-50)
<b>Poles</b>		2P, 4P (4)
<b>Nuisance tripping resistance</b>		3000A 8/20 $\mu$ s
<b>Ambient temperature</b>	(°C)	-25 up to 40
<b>Weight</b>	(g)	2P: 220 4P: 385

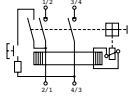
### Short-circuit capacity

#### AC acc. to EN/IEC 61009-1

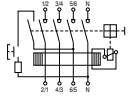
<b>Making and breaking capacity</b>	I <sub>m</sub> = 500A from 16A up to 40A I <sub>m</sub> = 10I <sub>n</sub> from 63 up to 80A
<b>Residual making and breaking capacity</b>	I $\Delta$ m = 500I <sub>n</sub> from 16A up to 80A I $\Delta$ m = 10I <sub>n</sub> from 63A up to 80A
<b>Short-circuit capacity</b>	I <sub>nc</sub> = 10000A at 240/415V (230V/400V) fuse 80A gG



**Series FP - Type F**

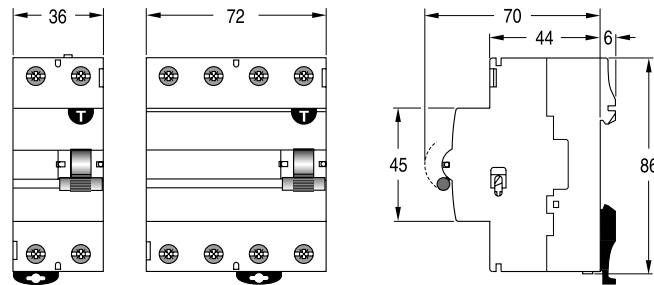


		30mA		
In (A)	Cat. No.	Ref. No.		Pack.
<b>2P</b>	25	FPF 2 25/030	<b>565373</b>	6
	40	FPF 2 40/030	<b>565374</b>	6
	63	FPF 2 63/030	<b>565375</b>	6
	80	FPF 2 80/030	<b>565376</b>	6



<b>4P</b>	25	FPF 4 25/030	<b>565377</b>	3
	40	FPF 4 40/030	<b>565378</b>	3
	63	FPF 4 63/030	<b>565379</b>	3
	80	FPF 4 80/030	<b>565380</b>	3

**Dimensions**



Series FP

A

**B**

C

D

E

F

G

X





# RCBOs - Residual Current Circuit Breakers with Overcurrent Protection

## Series DM60

EN /IEC 61009-1

6000

3

Type AC



Type A



People protection

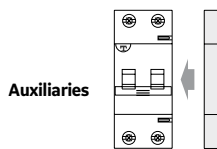
### Applications



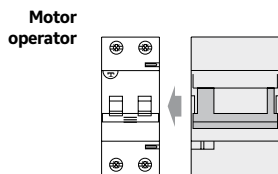
### Approvals / Marking



### Add-on devices



Auxiliaries



Motor operator

### Performance

<b>Thermal setting I<sub>n</sub></b>	(A)	4 to 40
<b>Residual current I<sub>Δn</sub></b>	(mA)	10, 30, 100, 300
<b>Tripping characteristic</b>		B-C
<b>Rated voltage AC U<sub>n</sub></b>	(V)	230
<b>Minimum operating voltage U<sub>Bmin</sub>(1)</b>	(V)	117
<b>Mechanical/electrical endurance</b>		20000/10000
<b>Tropicalisation acc. to EN/IEC 60068-2-28/2-30 and DIN 40046</b>		95% RH at 55°C
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> )	Top terminal: 16-25 Bottom terminal: 25-35
<b>Poles</b>		1P+N
<b>Nuisance tripping resistance</b>		250A 8/20μs; 200A 0.5μs - 100kHz
<b>Ambient temperature</b>	(°C)	Type AC: -5 up to 40 Type A: -25 up to 40
<b>Weight</b>	(g)	250

### Short-circuit capacity

<b>Acc. to EN/IEC 61009-1 and EN/IEC 60898-1</b>	
<b>Residual making and breaking capacity</b>	I <sub>Δm</sub> = 6000A
<b>Energy limiting class</b>	3
<b>Short-circuit capacity</b>	I <sub>cn</sub> = 6000A at 240V

<b>Acc. to EN/IEC 60947-2</b>	
<b>Residual making and breaking capacity</b>	I <sub>cu</sub> = 10000A at 240V

(1) Minimum service voltage for 30mA: 2P=176V / 4P=287V

A

B

C

D

E

F

G

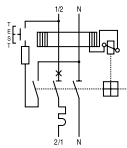
X



**Series DM60 - Type AC**

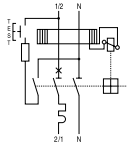


**Characteristic B  
1P+N**



In (A)	10mA		30mA		100mA		300mA	
	Cat. no.	Ref. no.	Cat. no.	Ref. no.	Cat. no.	Ref. no.	Cat. no.	Ref. no. Pack.
6	DM60B06/010	<b>609802</b>	DM60B06/030	<b>609807</b>	DM60B06/100	<b>609815</b>	DM60B06/300	<b>609823</b> 6
10	DM60B10/010	<b>609803</b>	DM60B10/030	<b>609808</b>	DM60B10/100	<b>609816</b>	DM60B10/300	<b>609824</b> 6
13	DM60B13/010	<b>609804</b>	DM60B13/030	<b>609809</b>	DM60B13/100	<b>609817</b>	DM60B13/300	<b>609825</b> 6
16	DM60B16/010	<b>609805</b>	DM60B16/030	<b>609810</b>	DM60B16/100	<b>609818</b>	DM60B16/300	<b>609826</b> 6
20	DM60B20/010	<b>609806</b>	DM60B20/030	<b>609811</b>	DM60B20/100	<b>609819</b>	DM60B20/300	<b>609827</b> 6
25	-	-	DM60B25/030	<b>609812</b>	DM60B25/100	<b>609820</b>	DM60B25/300	<b>609828</b> 6
32	-	-	DM60B32/030	<b>609813</b>	DM60B32/100	<b>609821</b>	DM60B32/300	<b>609829</b> 6
40	-	-	DM60B40/030	<b>609814</b>	DM60B40/100	<b>609822</b>	DM60B40/300	<b>609830</b> 6

**Characteristic C  
1P+N**

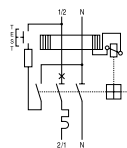


4	DM60C04/010	<b>609831</b>	DM60C04/030	<b>609837</b>	DM60C04/100	<b>609846</b>	DM60C04/300	<b>609855</b> 6
6	DM60C06/010	<b>609832</b>	DM60C06/030	<b>609838</b>	DM60C06/100	<b>609847</b>	DM60C06/300	<b>609856</b> 6
10	DM60C10/010	<b>609833</b>	DM60C10/030	<b>609839</b>	DM60C10/100	<b>609848</b>	DM60C10/300	<b>609857</b> 6
13	DM60C13/010	<b>609834</b>	DM60C13/030	<b>609840</b>	DM60C13/100	<b>609849</b>	DM60C13/300	<b>609858</b> 6
16	DM60C16/010	<b>609835</b>	DM60C16/030	<b>609841</b>	DM60C16/100	<b>609850</b>	DM60C16/300	<b>609859</b> 6
20	DM60C20/010	<b>609836</b>	DM60C20/030	<b>609842</b>	DM60C20/100	<b>609851</b>	DM60C20/300	<b>609860</b> 6
25	-	-	DM60C25/030	<b>609843</b>	DM60C25/100	<b>609852</b>	DM60C25/300	<b>609861</b> 6
32	-	-	DM60C32/030	<b>609844</b>	DM60C32/100	<b>609853</b>	DM60C32/300	<b>609862</b> 6
40	-	-	DM60C40/030	<b>609845</b>	DM60C40/100	<b>609854</b>	DM60C40/300	<b>609863</b> 6

**Series DM60 - Type A**

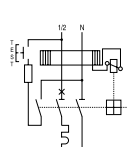


**Characteristic B  
1P+N**



In (A)	10mA		30mA		100mA		300mA	
	Cat. no.	Ref. no.	Cat. no.	Ref. no.	Cat. no.	Ref. no.	Cat. no.	Ref. no. Pack.
6	DMA60B06/010	<b>609740</b>	DMA60B06/030	<b>609745</b>	DMA60B06/100	<b>609753</b>	DMA60B06/300	<b>609761</b> 6
10	DMA60B10/010	<b>609741</b>	DMA60B10/030	<b>609746</b>	DMA60B10/100	<b>609754</b>	DMA60B10/300	<b>609762</b> 6
13	DMA60B13/010	<b>609742</b>	DMA60B13/030	<b>609747</b>	DMA60B13/100	<b>609755</b>	DMA60B13/300	<b>609763</b> 6
16	DMA60B16/010	<b>609743</b>	DMA60B16/030	<b>609748</b>	DMA60B16/100	<b>609756</b>	DMA60B16/300	<b>609764</b> 6
20	DMA60B20/010	<b>609744</b>	DMA60B20/030	<b>609749</b>	DMA60B20/100	<b>609757</b>	DMA60B20/300	<b>609765</b> 6
25	-	-	DMA60B25/030	<b>609750</b>	DMA60B25/100	<b>609758</b>	DMA60B25/300	<b>609766</b> 6
32	-	-	DMA60B32/030	<b>609751</b>	DMA60B32/100	<b>609759</b>	DMA60B32/300	<b>609767</b> 6
40	-	-	DMA60B40/030	<b>609752</b>	DMA60B40/100	<b>609760</b>	DMA60B40/300	<b>609768</b> 6

**Characteristic C  
1P+N**

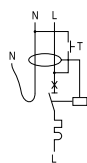


4	DMA60C04/010	<b>609769</b>	DMA60C04/030	<b>609775</b>	DMA60C04/100	<b>609784</b>	DMA60C04/300	<b>609793</b> 6
6	DMA60C06/010	<b>609770</b>	DMA60C06/030	<b>609776</b>	DMA60C06/100	<b>609785</b>	DMA60C06/300	<b>609794</b> 6
10	DMA60C10/010	<b>609771</b>	DMA60C10/030	<b>609777</b>	DMA60C10/100	<b>609786</b>	DMA60C10/300	<b>609795</b> 6
13	DMA60C13/010	<b>609772</b>	DMA60C13/030	<b>609778</b>	DMA60C13/100	<b>609787</b>	DMA60C13/300	<b>609796</b> 6
16	DMA60C16/010	<b>609773</b>	DMA60C16/030	<b>609779</b>	DMA60C16/100	<b>609788</b>	DMA60C16/300	<b>609797</b> 6
20	DMA60C20/010	<b>609774</b>	DMA60C20/030	<b>609780</b>	DMA60C20/100	<b>609789</b>	DMA60C20/300	<b>609798</b> 6
25	-	-	DMA60C25/030	<b>609781</b>	DMA60C25/100	<b>609790</b>	DMA60C25/300	<b>609799</b> 6
32	-	-	DMA60C32/030	<b>609782</b>	DMA60C32/100	<b>609791</b>	DMA60C32/300	<b>609800</b> 6
40	-	-	DMA60C40/030	<b>609783</b>	DMA60C40/100	<b>609792</b>	DMA60C40/300	<b>609801</b> 6

**Series DMT60 - Type AC**



**Characteristic C  
Unswitched neutral  
1P+N**



In (A)	30mA		Pack.
	Cat. no.	Ref. no.	
4	DMT60C04/030	<b>609280</b>	6
6	DMT60C06/030	<b>609281</b>	6
10	DMT60C10/030	<b>609282</b>	6
13	DMT60C13/030	<b>609283</b>	6
16	DMT60C16/030	<b>609284</b>	6
20	DMT60C20/030	<b>609285</b>	6
25	DMT60C25/030	<b>609286</b>	6
32	DMT60C32/030	<b>609287</b>	6
40	DMT60C40/030	<b>609288</b>	6

(1) Please consult us for blue neutral flying lead

Series DM60

A

**B**

C

D

E

F

G

X



# RCBOs - Residual Current Circuit Breakers with Overcurrent Protection

## Series DM100

EN /IEC 61009-1

10000

3

Type AC



Type A



People protection

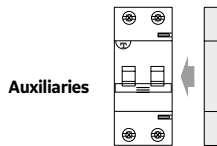
### Applications



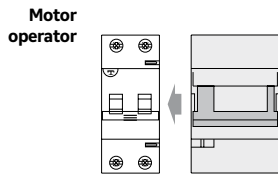
### Approvals / Marking



### Add-on devices



Auxiliaries



Motor operator

### Performance

<b>Thermal setting In</b>	(A)	4 to 40
<b>Residual current I<math>\Delta</math>n</b>	(mA)	10, 30, 100, 300
<b>Tripping characteristic</b>		B-C
<b>Rated voltage AC Un</b>	(V)	230
<b>Minimum operating voltage UBmin<sup>(1)</sup></b>	(V)	117
<b>Mechanical/electrical endurance</b>		20000/10000
<b>Tropicalisation acc. to EN/IEC 60068-2-28/2-30 and DIN 40046</b>		95% RH at 55°C
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> )	Top terminal: 16-25 Bottom terminal: 25-35
<b>Poles</b>		1P+N
<b>Nuisance tripping resistance</b>		250A 8/20 $\mu$ s; 200A 0.5 $\mu$ s - 100kHz
<b>Ambient temperature</b>	(°C)	Type AC: -5 up to 40 Type A: -25 up to 40
<b>Weight</b>	(g)	250

### Short-circuit capacity

<b>Acc. to EN/IEC 61009-1 and EN/IEC 60898-1</b>	
<b>Residual making and breaking capacity</b>	I $\Delta$ m = 6000A
<b>Energy limiting class</b>	3
<b>Short-circuit capacity</b>	Icn = 10000A at 240V

<b>Acc. to EN/IEC 60947-2</b>	
<b>Residual making and breaking capacity</b>	Icu = 15000A at 240V

(1) Minimum service voltage for 30mA: 2P=176V / 4P=287V

A

B

C

D

E

F

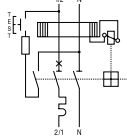
G

X

**Series DM100 - Type AC**

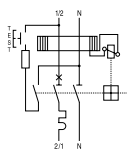


**Characteristic B  
1P+N**



In (A)	10mA		30mA		100mA		300mA		
	Cat. no.	Ref. no.	Cat. no.	Ref. no.	Cat. no.	Ref. no.	Cat. no.	Ref. no. Pack.	
6	DM100B06/010	609926	DM100B06/030	609931	DM100B06/100	609939	DM100B06/300	609947	6
10	DM100B10/010	609927	DM100B10/030	609932	DM100B10/100	609940	DM100B10/300	609948	6
13	DM100B13/010	609928	DM100B13/030	609933	DM100B13/100	609941	DM100B13/300	609949	6
16	DM100B16/010	609929	DM100B16/030	609934	DM100B16/100	609942	DM100B16/300	609950	6
20	DM100B20/010	609930	DM100B20/030	609935	DM100B20/100	609943	DM100B20/300	609951	6
25	-	-	DM100B25/030	609936	DM100B25/100	609944	DM100B25/300	609952	6
32	-	-	DM100B32/030	609937	DM100B32/100	609945	DM100B32/300	609953	6
40	-	-	DM100B40/030	609938	DM100B40/100	609946	DM100B40/300	609954	6

**Characteristic C  
1P+N**

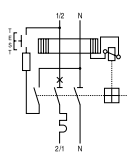


4	DM100C04/010	609955	DM100C04/030	609961	DM100C04/100	609970	DM100C04/300	609979	6
6	DM100C06/010	609956	DM100C06/030	609962	DM100C06/100	609971	DM100C06/300	609980	6
10	DM100C10/010	609957	DM100C10/030	609963	DM100C10/100	609972	DM100C10/300	609981	6
13	DM100C13/010	609958	DM100C13/030	609964	DM100C13/100	609973	DM100C13/300	609982	6
16	DM100C16/010	609959	DM100C16/030	609965	DM100C16/100	609974	DM100C16/300	609983	6
20	DM100C20/010	609960	DM100C20/030	609966	DM100C20/100	609975	DM100C20/300	609984	6
25	-	-	DM100C25/030	609967	DM100C25/100	609976	DM100C25/300	609985	6
32	-	-	DM100C32/030	609968	DM100C32/100	609977	DM100C32/300	609986	6
40	-	-	DM100C40/030	609969	DM100C40/100	609978	DM100C40/300	609987	6

**Series DM100 - Type A**

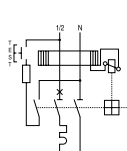


**Characteristic B  
1P+N**



In (A)	10mA		30mA		100mA		300mA		
	Cat. no.	Ref. no.	Cat. no.	Ref. no.	Cat. no.	Ref. no.	Cat. no.	Ref. no. Pack.	
6	DMA100B06/010	609864	DMA100B06/030	609869	DMA100B06/100	609877	DMA100B06/300	609885	6
10	DMA100B10/010	609865	DMA100B10/030	609870	DMA100B10/100	609878	DMA100B10/300	609886	6
13	DMA100B13/010	609866	DMA100B13/030	609871	DMA100B13/100	609879	DMA100B13/300	609887	6
16	DMA100B16/010	609867	DMA100B16/030	609872	DMA100B16/100	609880	DMA100B16/300	609888	6
20	DMA100B20/010	609868	DMA100B20/030	609873	DMA100B20/100	609881	DMA100B20/300	609889	6
25	-	-	DMA100B25/030	609874	DMA100B25/100	609882	DMA100B25/300	609890	6
32	-	-	DMA100B32/030	609875	DMA100B32/100	609883	DMA100B32/300	609891	6
40	-	-	DMA100B40/030	609876	DMA100B40/100	609884	DMA100B40/300	609892	6

**Characteristic C  
1P+N**

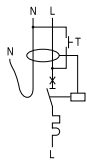


4	DMA100C04/010	609893	DMA100C04/030	609899	DMA100C04/100	609908	DMA100C04/300	609917	6
6	DMA100C06/010	609894	DMA100C06/030	609900	DMA100C06/100	609909	DMA100C06/300	609918	6
10	DMA100C10/010	609895	DMA100C10/030	609901	DMA100C10/100	609910	DMA100C10/300	609919	6
13	DMA100C13/010	609896	DMA100C13/030	609902	DMA100C13/100	609911	DMA100C13/300	609920	6
16	DMA100C16/010	609897	DMA100C16/030	609903	DMA100C16/100	609912	DMA100C16/300	609921	6
20	DMA100C20/010	609898	DMA100C20/030	609904	DMA100C20/100	609913	DMA100C20/300	609922	6
25	-	-	DMA100C25/030	609905	DMA100C25/100	609914	DMA100C25/300	609923	6
32	-	-	DMA100C32/030	609906	DMA100C32/100	609915	DMA100C32/300	609924	6
40	-	-	DMA100C40/030	609907	DMA100C40/100	609916	DMA100C40/300	609925	6

**Series DM100 - Type AC**



**Characteristic C  
Unswitched neutral  
1P+N**



In (A)	30mA		Pack.
	Cat. no.	Ref. no.	
4	DMT100C04/030	609289	6
6	DMT100C06/030	609290	6
10	DMT100C10/030	609291	6
13	DMT100C13/030	609292	6
16	DMT100C16/030	609293	6
20	DMT100C20/030	609294	6
25	DMT100C25/030	609295	6
32	DMT100C32/030	609296	6
40	DMT100C40/030	609297	6

(1) Please consult us for blue neutral flying lead

Series DM100

A

**B**

C

D

E

F

G

X



Diff-o-Click

People protection



EN /IEC 61009-1

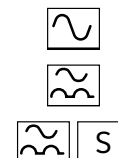
Type AC

Type A

Type S

Type Ai on demand

Type ASI on demand



Applications



Approvals / Marking



Add-on devices

Integrated auxiliary contact on demand.

Performance

<b>Thermal setting In</b>	(A) 32, 63
<b>Residual current IΔn</b>	(mA) 30, 100, 300, 500, 1000
<b>Rated voltage AC Un</b>	(V) 2P: 240/415 3P: 415 4P: 415
<b>Minimum operating voltage UBmin<sup>(1)</sup></b>	(V) 2P: 205 3P: 205 4P: 205
<b>Mechanical/electrical endurance</b>	20000/10000
<b>Tropicalisation acc. to EN/IEC 60068-2/3 and DIN 40046</b>	95% RH at 55°C
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> ) 2P 32 & 63A: 25-35 3P 32 & 63A: 25-35 4P 2 mod. 32A: 16 4P 32 & 63A 4 mod.: 25-35
<b>Poles</b>	2P, 3P, 4P
<b>Nuisance tripping resistance</b>	Type A, AC: 250A 8/20μs; 200A 0.5μs - 100kHz Type S: 3000A 8/20μs
<b>Ambient temperature</b>	(°C) Type AC: -5 up to 55 Type A, S: -25 up to 55
<b>Weight</b>	(g) 2P: 250 3P: 320 4P: 340

Short-circuit capacity

Depends on the associated MCB		MCB			
		G30	G45	G60	G100
<b>Residual making and breaking capacity</b>	<b>IΔm</b>	3000	4500	6000	7500
<b>Short-circuit capacity</b>	<b>Icn</b>	3000	4500	6000	10000

(1) Minimum service voltage for 30mA: 2P= 176V / 4P= 287V

**Add-on RCD - Series Diff-o-Click - Type AC**

	In (A)	30mA		100mA		300mA		500mA		1000mA			
		Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No. Pack.		
	2P - 2 mod.	32	DOC 232/030	<b>607536</b>	DOC 232/100	<b>607537</b>	DOC 232/300	<b>607538</b>	DOC 232/500	<b>607539</b>	DOC 232/1000	<b>607540</b>	1
		63	DOC 263/030	<b>607542</b>	DOC 263/100	<b>607543</b>	DOC 263/300	<b>607544</b>	DOC 263/500	<b>607545</b>	DOC 263/1000	<b>607546</b>	1
	3P - 2 mod.	32	DOC 332/030	<b>607620</b>	DOC 332/100	<b>607621</b>	DOC 332/300	<b>607622</b>	DOC 332/500	<b>607623</b>	DOC 332/1000	<b>607624</b>	1
	4 mod.	63	DOC 363/030	<b>607626</b>	DOC 363/100	<b>607627</b>	DOC 363/300	<b>607628</b>	DOC 363/500	<b>607629</b>	DOC 363/1000	<b>607630</b>	1
	4P - 2 mod. 4 mod.	32	DOC 532/030	<b>607722</b>	DOC 532/100	<b>607723</b>	DOC 532/300	<b>607724</b>	DOC 532/500	<b>607725</b>	DOC 532/1000	<b>607726</b>	1
		32	DOC 432/030	<b>607728</b>	DOC 432/100	<b>607729</b>	DOC 432/300	<b>607730</b>	DOC 432/500	<b>607731</b>	DOC 432/1000	<b>607732</b>	1
		63	DOC 463/030	<b>607734</b>	DOC 463/100	<b>607735</b>	DOC 463/300	<b>607736</b>	DOC 463/500	<b>607737</b>	DOC 463/1000	<b>607738</b>	1

Note: 3P+N (unswitched) flying lead on request.

**Add-on RCD - Series Diff-o-Click - Type A**

	In (A)	30mA		100mA		300mA		500mA		1000mA			
		Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No. Pack.		
	2P - 2 mod.	32	DOCA 232/030	<b>607500</b>	DOCA 232/100	<b>607501</b>	DOCA 232/300	<b>607502</b>	DOCA 232/500	<b>607503</b>	DOCA 232/1000	<b>607504</b>	1
		63	DOCA 263/030	<b>607506</b>	DOCA 263/100	<b>607507</b>	DOCA 263/300	<b>607508</b>	DOCA 263/500	<b>607509</b>	DOCA 263/1000	<b>607510</b>	1
	3P - 2 mod.	32	DOCA 332/030	<b>607584</b>	DOCA 332/100	<b>607585</b>	DOCA 332/300	<b>607586</b>	DOCA 332/500	<b>607587</b>	DOCA 332/1000	<b>607588</b>	1
	4 mod.	63	DOCA 363/030	<b>607590</b>	DOCA 363/100	<b>607591</b>	DOCA 363/300	<b>607592</b>	DOCA 363/500	<b>607593</b>	DOCA 363/1000	<b>607594</b>	1
	4P - 2 mod. 4 mod.	32	DOCA 532/030	<b>607668</b>	DOCA 532/100	<b>607670</b>	DOCA 532/300	<b>607669</b>	DOCA 532/500	<b>607671</b>	DOCA 532/1000	<b>607672</b>	1
		32	DOCA 432/030	<b>607674</b>	DOCA 432/100	<b>607675</b>	DOCA 432/300	<b>607676</b>	DOCA 432/500	<b>607677</b>	DOCA 432/1000	<b>607678</b>	1
		63	DOCA 463/030	<b>607680</b>	DOCA 463/100	<b>607681</b>	DOCA 463/300	<b>607682</b>	DOCA 463/500	<b>607683</b>	DOCA 463/1000	<b>607684</b>	1

**Add-on RCD - Series Diff-o-Click - Type S**

	In (A)	100mA		300mA		500mA		1000mA				
		Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No. Pack.			
	2P - 2 mod.	32		DOCS 232/100	<b>607513</b>	DOCS 232/300	<b>607514</b>	DOCS 232/500	<b>607515</b>	DOCS 232/1000	<b>607516</b>	1
		63		DOCS 263/100	<b>607519</b>	DOCS 263/300	<b>607520</b>	DOCS 263/500	<b>607521</b>	DOCS 263/1000	<b>607522</b>	1
	3P - 2 mod.	32		DOCS 332/100	<b>607597</b>	DOCS 332/300	<b>607598</b>	DOCS 332/500	<b>607599</b>	DOCS 332/1000	<b>607600</b>	1
	4 mod.	63		DOCS 363/100	<b>607603</b>	DOCS 363/300	<b>607604</b>	DOCS 363/500	<b>607605</b>	DOCS 363/1000	<b>607606</b>	1
	4P - 2 mod. 4 mod.	32		DOCS 532/100	<b>607687</b>	DOCS 532/300	<b>607688</b>	DOCS 532/500	<b>607689</b>	DOCS 532/1000	<b>607690</b>	1
		32		DOCS 432/100	<b>607693</b>	DOCS 432/300	<b>607694</b>	DOCS 432/500	<b>607695</b>	DOCS 432/1000	<b>607696</b>	1
		63		DOCS 463/100	<b>607699</b>	DOCS 463/300	<b>607700</b>	DOCS 463/500	<b>607701</b>	DOCS 463/1000	<b>607702</b>	1

Diff-o-Click

A

**B**

C

D

E

F

G

X

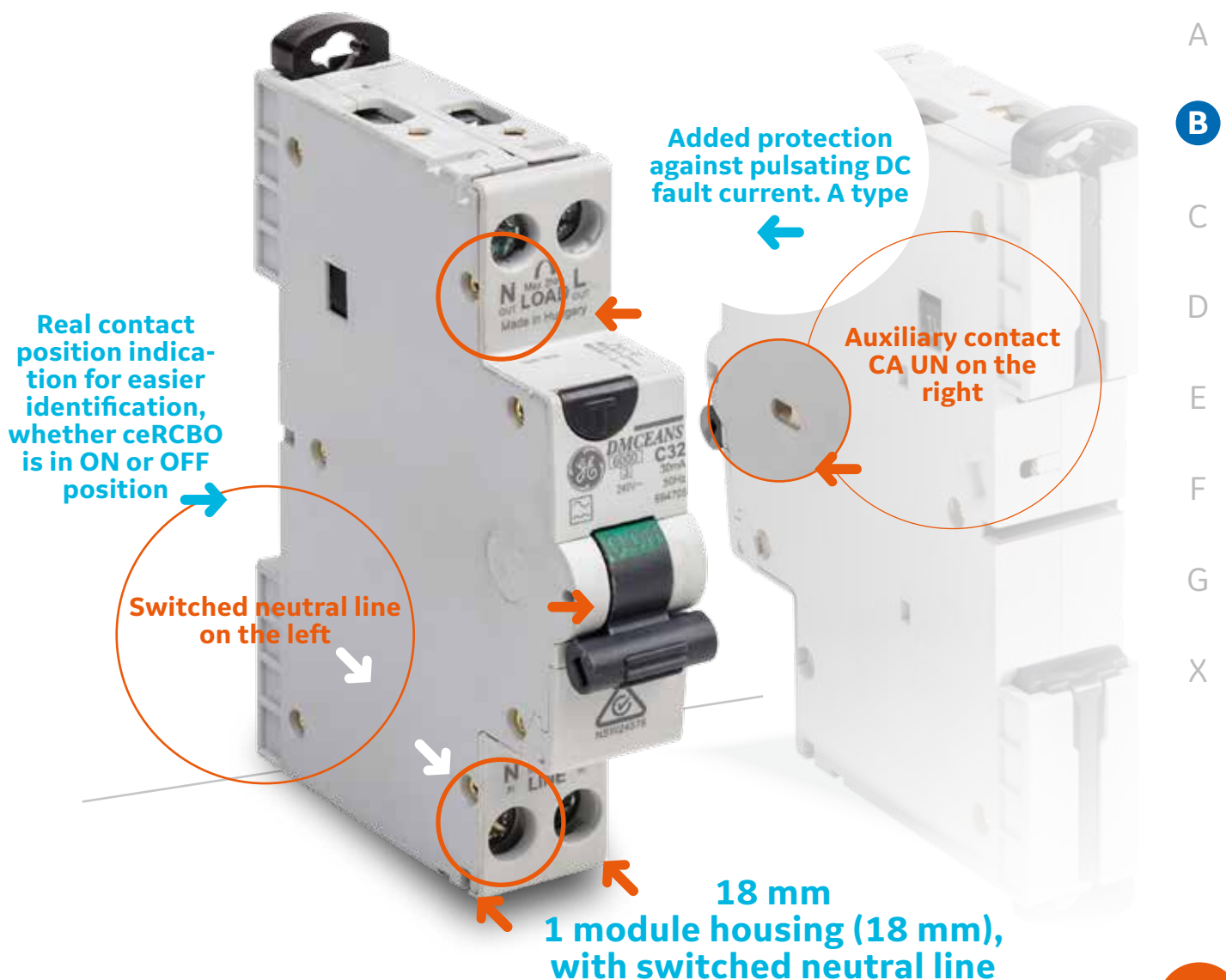


# compact electronic RCBO

## Switched neutral line

### Combining the features of Miniature Circuit Breaker & Residual Current Circuit Breaker

- ✓ Functionally dependent on line voltage, minimum supply voltage 85V
- ✓ Energy limiting class 3:
  - highest energy limiting performance for optimal protection of cable insulation and maximally reducing risk of fire and other damage
- ✓ The terminals accept not only wires but also time saving PIN busbars





## Compact electronic Residual Current Circuit Breaker with Overcurrent Protection - Neutral Switch

### Serie DMCE60NS / DICE60NS

EN/ IEC 61009-1 ed3.2 (2013-09),  
BS EN 61009-1:2012 and  
AS/NZS 61009-1:20011

<b>6000</b>
<b>3</b>

Type AC  
Type A



People protection

A

### Applications



B

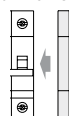
### Approvals / Marking



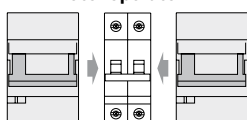
C

### Add-on devices

Auxiliaries<sup>(1)</sup>



Motor operator<sup>(2)</sup>



(1) Series CA UN auxiliary contact right side mounted is interface to make compatible all extensions CA, CB, Tele L, Tele U, PSB  
(2) Tele MP can be mounted on both sides

D

E

F

G

X

### Performance

Thermal setting In	(A) 6, 10, 13, 16, 20, 25, 32
Residual current	(mA) 10, 30
Tripping characteristics	B, C
Rated voltage AC Un	(V) 240
Minimum operating voltage UBmin	(V) 85
Mechanical/electrical endurance	20000/10000
Tropicalisation acc. to EN/IEC 60068-2-30	95% RH at 55°C
Terminal capacity flexible /rigid cable	(mm <sup>2</sup> ) 16 <sup>(1)</sup> /25 <sup>(2)</sup>
Poles	1P+N <sup>(3)</sup> (1 module)
Nuisance tripping resistance	(A) 250A
Ambient temperature	(°C) -5°C...60°C
Weight / mod.	(g) 125g

### Short-circuit capacity

<b>AC acc. to EN/IEC 61009-1</b>	
Residual making and breaking capacity	IΔm = 3000A
Energy limiting class	3
Short-circuit capacity	Icn = 6000A at 240V

Terminal capacity:  
(1) Flexible copper wires from 1.5mm<sup>2</sup> up to 16mm<sup>2</sup>  
(2) Rigid copper wires from 1mm<sup>2</sup> up to 25mm<sup>2</sup>  
25mm<sup>2</sup> wires need be reshaped before the terminal can accept them.  
(3) Switched neutral on the left







**DMCE60NS - Type AC - characteristic C - Domestic application**

In (A)	10mA		30mA		Pack.	
	Cat. No.	Ref. No.	Cat. No.	Ref. No.		
1P+N 	6	DMCE60C06/010NS	694769	DMCE60C06/030NS	694783	1
	10	DMCE60C10/010NS	694770	DMCE60C10/030NS	694784	1
	13	DMCE60C13/010NS	694771	DMCE60C13/030NS	694785	1
	16	DMCE60C16/010NS	694772	DMCE60C16/030NS	694786	1
	20	DMCE60C20/010NS	694773	DMCE60C20/030NS	694787	1
	25	DMCE60C25/010NS	694774	DMCE60C25/030NS	694788	1
32	DMCE60C32/010NS	694775	DMCE60C32/030NS	694789	1	

**DMCE60NS - Type AC - characteristic B - Domestic application**

In (A)	10mA		30mA		Pack.	
	Cat. No.	Ref. No.	Cat. No.	Ref. No.		
1P+N 	6	DMCE60B06/010NS	694791	DMCE60B06/030NS	694776	1
	10	DMCE60B10/010NS	694763	DMCE60B10/030NS	694777	1
	13	DMCE60B13/010NS	694764	DMCE60B13/030NS	694778	1
	16	DMCE60B16/010NS	694765	DMCE60B16/030NS	694779	1
	20	DMCE60B20/010NS	694766	DMCE60B20/030NS	694780	1
	25	DMCE60B25/010NS	694767	DMCE60B25/030NS	694781	1
32	DMCE60B32/010NS	694768	DMCE60B32/030NS	694782	1	

**DMCE60NS - Type A - characteristic C - Domestic application**

In (A)	10mA		30mA		Pack.	
	Cat. No.	Ref. No.	Cat. No.	Ref. No.		
1P+N 	6	DMCEA60C06/010NS	694685	DMCEA60C06/030NS	694699	1
	10	DMCEA60C10/010NS	694686	DMCEA60C10/030NS	694700	1
	13	DMCEA60C13/010NS	694687	DMCEA60C13/030NS	694701	1
	16	DMCEA60C16/010NS	694688	DMCEA60C16/030NS	694702	1
	20	DMCEA60C20/010NS	694689	DMCEA60C20/030NS	694703	1
	25	DMCEA60C25/010NS	694690	DMCEA60C25/030NS	694704	1
32	DMCEA60C32/010NS	694691	DMCEA60C32/030NS	694705	1	

**DMCE60NS - Type A - characteristic B - Domestic application**

In (A)	10mA		30mA		Pack.	
	Cat. No.	Ref. No.	Cat. No.	Ref. No.		
1P+N 	6	DMCEA60B06/010NS	694678	DMCEA60B06/030NS	694692	1
	10	DMCEA60B10/010NS	694679	DMCEA60B10/030NS	694693	1
	13	DMCEA60B13/010NS	694680	DMCEA60B13/030NS	694694	1
	16	DMCEA60B16/010NS	694681	DMCEA60B16/030NS	694695	1
	20	DMCEA60B20/010NS	694682	DMCEA60B20/030NS	694696	1
	25	DMCEA60B25/010NS	694683	DMCEA60B25/030NS	694697	1
32	DMCEA60B32/010NS	694684	DMCEA60B32/030NS	694698	1	

Serie DMCE60NS

A

B

C

D

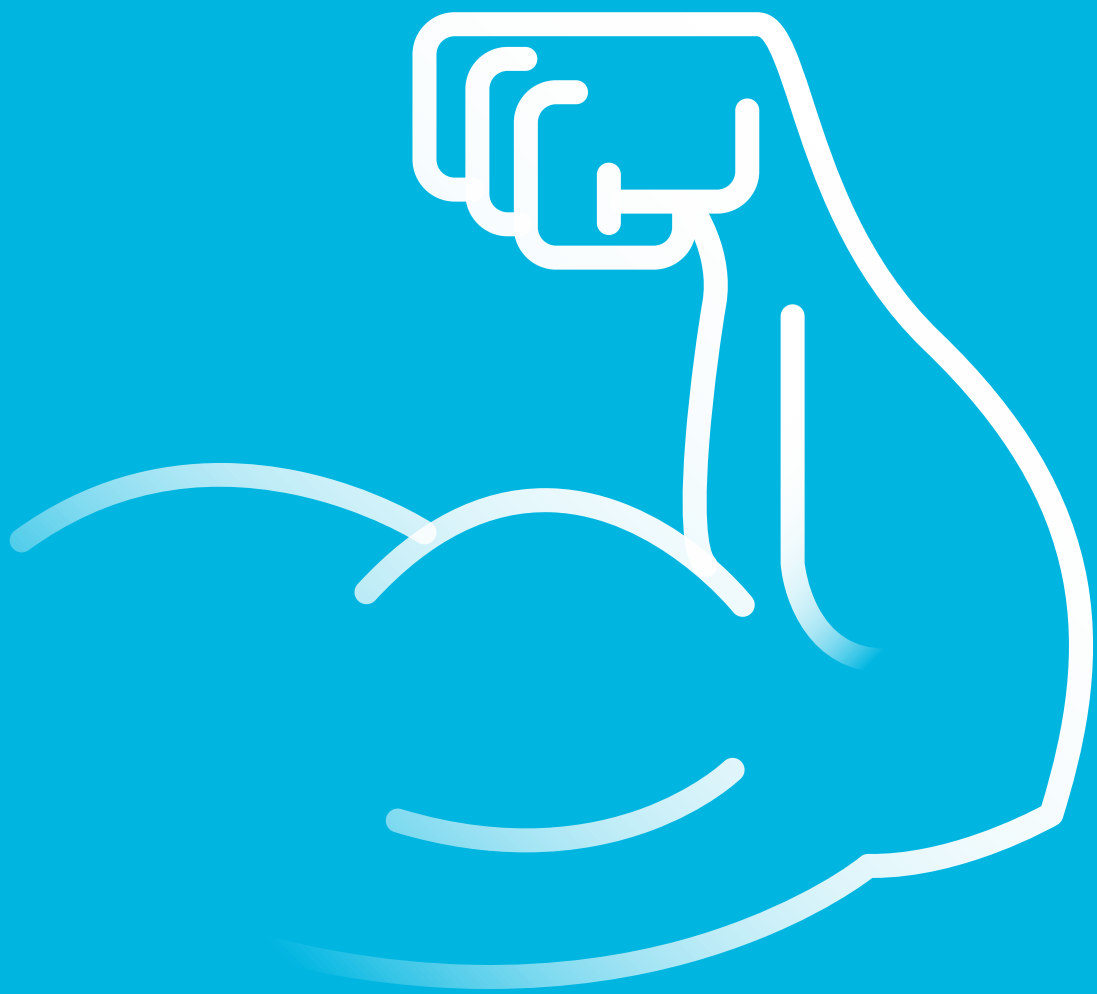
E

F

G

X

New

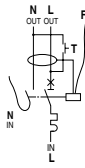




**DICE60NS - Type AC - characteristic B - Industrial application**



Switched neutral  
1P+N

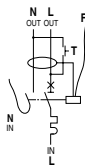


In (A)	10mA		30mA		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
6	-	-	DICE60B06/030NS	694792	1
10	-	-	DICE60B10/030NS	694793	1
16	-	-	DICE60B16/030NS	694794	1
20	-	-	DICE60B20/030NS	694795	1
25	-	-	DICE60B25/030NS	694796	1
32	-	-	DICE60B32/030NS	694797	1

**DICE60NS - Type A - characteristic B - Industrial application**



Switched neutral  
1P+N

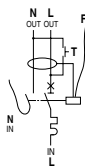


In (A)	10mA		30mA		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
6	-	-	DICEA60B06/030NS	694804	1
10	-	-	DICEA60B10/030NS	694805	1
16	-	-	DICEA60B16/030NS	694806	1
20	-	-	DICEA60B20/030NS	694807	1
25	-	-	DICEA60B25/030NS	694808	1
32	-	-	DICEA60B32/030NS	694809	1

**DICE60NS - Type AC - characteristic C - Industrial application**



Switched neutral  
1P+N

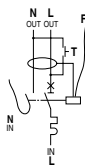


In (A)	10mA		30mA		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
6	-	-	DICE60B06/030NS	694798	1
10	-	-	DICE60B10/030NS	694798	1
16	-	-	DICE60B16/030NS	694800	1
20	-	-	DICE60B20/030NS	694801	1
25	-	-	DICE60B25/030NS	694802	1
32	-	-	DICE60B32/030NS	694803	1

**DICE60NS - Type A - characteristic C - Industrial application**



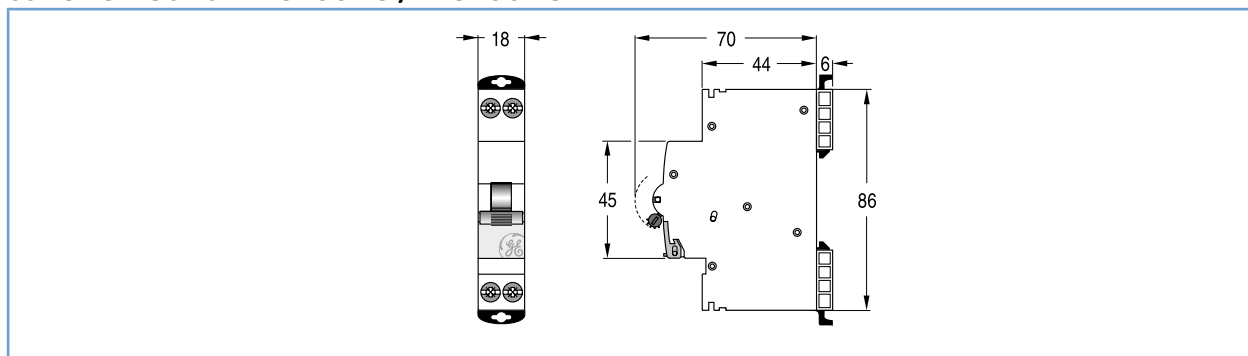
Switched neutral  
1P+N



In (A)	10mA		30mA		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
6	-	-	DICEA60B06/030NS	694810	1
10	-	-	DICEA60B10/030NS	694811	1
16	-	-	DICEA60B16/030NS	694812	1
20	-	-	DICEA60B20/030NS	694813	1
25	-	-	DICEA60B25/030NS	694814	1
32	-	-	DICEA60B32/030NS	694815	1

Dimensions

**ceRCBO - Serie DMCE60NS / DICE60NS**



Serie DICE60NS

A

**B**

C

D

E

F

G

X





## Compact electronic Residual Current Circuit Breaker

### Series DMCE60, DICE60

People protection



EN /IEC 61009-1

6000

3

Type AC



Type A



With Overcurrent Protection functionality dependent on Line Voltage

### Applications

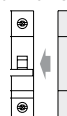


### Approval / Marking

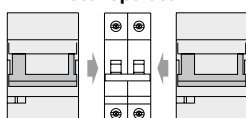


### Add-on devices

Auxiliaries<sup>(1)</sup>



Motor operator<sup>(2)</sup>



(1) Series CA UN auxiliary contact right side mounted is interface to make compatible all extensions CA, CB, Tele L, Tele U, PSB  
(2) Tele MP can be mounted on both sides

### Performance

<b>Thermal setting In</b>	(A)	6, 10, 16, 20, 25, 32
<b>Residual current IΔ n</b>	(mA)	30
<b>Tripping characteristic</b>		B, C
<b>Rated voltage AC Un</b>	(V)	240
<b>Minimum operating voltage UBmin</b>	(V)	85
<b>Mechanical/electrical endurance</b>		20000/10000
<b>Tropicalisation acc. to EN/IEC 60068-2-28/2-30</b>		95% RH at 55°C
<b>Terminals</b>		
<b>DICE (Industry)</b>	<b>Top</b>	Phase out <sup>(1)</sup> , Neutral out <sup>(1)</sup> , Neutral in <sup>(2)</sup>
	<b>Bottom</b>	Phase in <sup>(3)</sup>
<b>DMCE (Domestic)</b>	<b>Top</b>	Phase out <sup>(1)</sup> , Neutral out <sup>(1)</sup>
	<b>Bottom</b>	Phase in <sup>(1)</sup> , Neutral in <sup>(1)</sup> , 1P+N (1 module) <sup>(4)</sup>
<b>Poles</b>		250A 8/20μs
<b>Nuisance tripping resistance</b>		250A 8/20μs
<b>Ambient temperature</b>	(°C)	-5 up to 55
<b>Weight DMCE-DICE</b>	(g)	125-215g

### Short-circuit capacity

#### AC acc. to EN/IEC 61009-1

#### DMCE60 according to EN/IEC 61009-1

<b>Residual making and breaking capacity</b>	IΔm = 3000A
<b>Energy limiting class</b>	3
<b>Short-circuit capacity</b>	Icn = 6000A at 240V

Terminal capacity:

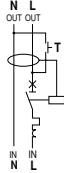
(1) Rigid copper wires 1-25mm<sup>2</sup>, flexible copper wires 1.5 - 16mm<sup>2</sup>  
(2) Flying lead entering the device from top side. Cross section of 4mm<sup>2</sup> up to 25A, 6mm<sup>2</sup> up to 40A, 1200mm length.  
(3) Rigid copper wires 1-35mm<sup>2</sup>, Flexible copper wires 1.5 - 25mm<sup>2</sup>  
(4) Unswitched neutral on the left.



**Series DMCE60 - Type AC - Domestic Applications**



Unswitched neutral  
1P+N

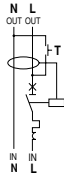


In (A)	B		C		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
6	DMCE60B06/030	<b>694014</b>	DMCE60C06/030	<b>694000</b>	1
10	DMCE60B10/030	<b>694015</b>	DMCE60C10/030	<b>694001</b>	1
16	DMCE60B16/030	<b>694016</b>	DMCE60C16/030	<b>694002</b>	1
20	DMCE60B20/030	<b>694017</b>	DMCE60C20/030	<b>694003</b>	1
25	DMCE60B25/030	<b>694018</b>	DMCE60C25/030	<b>694004</b>	1
32	DMCE60B32/030	<b>694019</b>	DMCE60C32/030	<b>694005</b>	1

**Series DMCEA60 - Type A - Domestic Applications**



Unswitched neutral  
1P+N

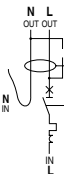


In (A)	B		C		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
6	DMCEA60B06/030	<b>694021</b>	DMCEA60C06/030	<b>694007</b>	1
10	DMCEA60B10/030	<b>694022</b>	DMCEA60C10/030	<b>694008</b>	1
16	DMCEA60B16/030	<b>694023</b>	DMCEA60C16/030	<b>694009</b>	1
20	DMCEA60B20/030	<b>694024</b>	DMCEA60C20/030	<b>694010</b>	1
25	DMCEA60B25/030	<b>694025</b>	DMCEA60C25/030	<b>694011</b>	1
32	DMCEA60B32/030	<b>694026</b>	DMCEA60C32/030	<b>694012</b>	1

**Series DICE60 - Type AC - Industrial Applications**



Unswitched neutral  
1P+N

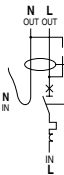


In (A)	B		C		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
6	DICE60B06/030	<b>694042</b>	DICE60C06/030	<b>694028</b>	1
10	DICE60B10/030	<b>694043</b>	DICE60C10/030	<b>694029</b>	1
16	DICE60B16/030	<b>694044</b>	DICE60C16/030	<b>694030</b>	1
20	DICE60B20/030	<b>694045</b>	DICE60C20/030	<b>694031</b>	1
25	DICE60B25/030	<b>694046</b>	DICE60C25/030	<b>694032</b>	1
32	DICE60B32/030	<b>694047</b>	DICE60C32/030	<b>694033</b>	1

**Series DICEA60 - Type A - Industrial Applications**



Unswitched neutral  
1P+N



In (A)	B		C		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
6	DICEA60B06/030	<b>694049</b>	DICEA60C06/030	<b>694035</b>	1
10	DICEA60B10/030	<b>694050</b>	DICEA60C10/030	<b>694036</b>	1
16	DICEA60B16/030	<b>694051</b>	DICEA60C16/030	<b>694037</b>	1
20	DICEA60B20/030	<b>694052</b>	DICEA60C20/030	<b>694038</b>	1
25	DICEA60B25/030	<b>694053</b>	DICEA60C25/030	<b>694039</b>	1
32	DICEA60B32/030	<b>694054</b>	DICEA60C32/030	<b>694040</b>	1

Series DMCE60/DICE60

A

B

C

D

E

F

G

X



## eRCBOs - Residual Current Circuit Breakers with Overcurrent Protection NEUTRAL BLUE

### Series DME

<b>EN /IEC 61009-1</b>	<b>6000</b>
	<b>3</b>
<b>Type AC</b>	
<b>Type A</b>	

### Applications



For use in consumer units and distribution boards.

### Marking



### Performance

<b>Thermal setting In</b>	(A)	6, 10, 16, 20, 25, 32, 40
<b>Residual current I<math>\Delta</math>n</b>	(mA)	10, 30, 100
<b>Tripping characteristic</b>		B, C, D
<b>Rated voltage AC Un</b>	(V)	240
<b>Minimum operating voltage UBmin</b>	(V)	195
<b>Mechanical/electrical endurance</b>		20000/10000
<b>Tropicalisation acc. to EN/IEC 60068-2-28/2-30</b>		95% RH at 55°C
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> )	Bottom terminal: 16-25
<b>Poles</b>		1P+N (1 module)
<b>Nuisance tripping resistance</b>		250A 8/20 $\mu$ s
<b>Ambient temperature</b>		-5 up to 55
<b>Weight</b>		235

The earth reference cable (FE white) ensures protection against earth leakage in case of loss of supply neutral.

### Short-circuit capacity

#### AC acc. to EN/IEC 61009-1

##### DME60

<b>Residual making and breaking capacity</b>	I $\Delta$ m = 6000A
<b>Energy limiting class</b>	3
<b>Short-circuit capacity</b>	Icn = 6000A at 240V

##### DME100

<b>Residual making and breaking capacity</b>	I $\Delta$ m = 10000A
<b>Energy limiting class</b>	3
<b>Short-circuit capacity</b>	Icn = 10000A at 240V

A

**B**

C

D

E

F

G

X



**Series DME60 - Type AC - Characteristic C**

In (A)	30mA		100mA		Pack.		
	Cat. No.	Ref. No.	Cat. No.	Ref. No.			
6	-	-	DME60C06/030	<b>605060</b>	DME60C06/100	<b>605067</b>	1
10	-	-	DME60C10/030	<b>605061</b>	DME60C10/100	<b>605068</b>	1
16	-	-	DME60C16/030	<b>605062</b>	DME60C16/100	<b>605069</b>	1
20	-	-	DME60C20/030	<b>605063</b>	DME60C20/100	<b>605070</b>	1
25	-	-	DME60C25/030	<b>605064</b>	DME60C25/100	<b>605071</b>	1
32	-	-	DME60C32/030	<b>605065</b>	DME60C32/100	<b>605072</b>	1
40	-	-	DME60C40/030	<b>605066</b>	DME60C40/100	<b>605073</b>	1

**Series DME100 - Type AC - Characteristic B**

In (A)	10mA		30mA		100mA		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
6	DME100B06/010	<b>605030</b>	DME100B06/030	<b>605037</b>	DME100B06/100	<b>605260</b>	1
10	DME100B10/010	<b>605031</b>	DME100B10/030	<b>605038</b>	DME100B10/100	<b>605261</b>	1
16	DME100B16/010	<b>605032</b>	DME100B16/030	<b>605039</b>	DME100B16/100	<b>605262</b>	1
20	DME100B20/010	<b>605033</b>	DME100B20/030	<b>605040</b>	DME100B20/100	<b>605263</b>	1
25	DME100B25/010	<b>605034</b>	DME100B25/030	<b>605041</b>	DME100B25/100	<b>605264</b>	1
32	DME100B32/010	<b>605035</b>	DME100B32/030	<b>605042</b>	DME100B32/100	<b>605265</b>	1
40	DME100B40/010	<b>605036</b>	DME100B40/030	<b>605043</b>	DME100B40/100	<b>605266</b>	1

**Series DME100 - Type AC - Characteristic C**

6	DME100C06/010	<b>605044</b>	DME100C06/030	<b>605051</b>	DME100C06/100	<b>605240</b>	1
10	DME100C10/010	<b>605045</b>	DME100C10/030	<b>605052</b>	DME100C10/100	<b>605241</b>	1
16	DME100C16/010	<b>605046</b>	DME100C16/030	<b>605053</b>	DME100C16/100	<b>605242</b>	1
20	DME100C20/010	<b>605047</b>	DME100C20/030	<b>605054</b>	DME100C20/100	<b>605243</b>	1
25	DME100C25/010	<b>605048</b>	DME100C25/030	<b>605055</b>	DME100C25/100	<b>605244</b>	1
32	DME100C32/010	<b>605049</b>	DME100C32/030	<b>605056</b>	DME100C32/100	<b>605245</b>	1
40	DME100C40/010	<b>605050</b>	DME100C40/030	<b>605057</b>	DME100C40/100	<b>605246</b>	1

**Series DME100 - Type AC - Characteristic D**

6	-	-	-	-	DME100D06/100	<b>606519</b>	1
10	-	-	-	-	DME100D10/100	<b>606520</b>	1
16	-	-	-	-	DME100D16/100	<b>606521</b>	1
20	-	-	-	-	DME100D20/100	<b>606522</b>	1
25	-	-	-	-	DME100D25/100	<b>606523</b>	1
32	-	-	-	-	DME100D32/100	<b>606524</b>	1
40	-	-	-	-	DME100D40/100	<b>606525</b>	1

**Series DMEA100 - Type A - Characteristic B**

In (A)	10mA		30mA		100mA		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
6	DMEA100B06/010	<b>605150</b>	DMEA100B06/030	<b>605157</b>	-	-	1
10	DMEA100B10/010	<b>605151</b>	DMEA100B10/030	<b>605158</b>	-	-	1
16	DMEA100B16/010	<b>605152</b>	DMEA100B16/030	<b>605159</b>	-	-	1
20	DMEA100B20/010	<b>605153</b>	DMEA100B20/030	<b>605160</b>	-	-	1
25	DMEA100B25/010	<b>605154</b>	DMEA100B25/030	<b>605161</b>	-	-	1
32	DMEA100B32/010	<b>605155</b>	DMEA100B32/030	<b>605162</b>	-	-	1
40	DMEA100B40/010	<b>605156</b>	DMEA100B40/030	<b>605163</b>	-	-	1

**Series DMEA100 - Type A - Characteristic C**

6	DMEA100C06/010	<b>605164</b>	DMEA100C06/030	<b>605171</b>	DMEA100C06/100	<b>606526</b>	1
10	DMEA100C10/010	<b>605165</b>	DMEA100C10/030	<b>605172</b>	DMEA100C10/100	<b>606527</b>	1
16	DMEA100C16/010	<b>605166</b>	DMEA100C16/030	<b>605173</b>	DMEA100C16/100	<b>606528</b>	1
20	DMEA100C20/010	<b>605167</b>	DMEA100C20/030	<b>605174</b>	DMEA100C20/100	<b>606529</b>	1
25	DMEA100C25/010	<b>605168</b>	DMEA100C25/030	<b>605175</b>	DMEA100C25/100	<b>606530</b>	1
32	DMEA100C32/010	<b>605169</b>	DMEA100C32/030	<b>605176</b>	DMEA100C32/100	<b>606531</b>	1
40	DMEA100C40/010	<b>605170</b>	DMEA100C40/030	<b>605177</b>	DMEA100C40/100	<b>606532</b>	1

**Series DMEA100 - Type A - Characteristic D**

6	DMEA100D06/010	<b>606505</b>	DMEA100D06/030	<b>606512</b>	DME100D06/100	<b>606519</b>	1
10	DMEA100D10/010	<b>606506</b>	DMEA100D10/030	<b>606513</b>	DME100D10/100	<b>606520</b>	1
16	DMEA100D16/010	<b>606507</b>	DMEA100D16/030	<b>606514</b>	DME100D16/100	<b>606521</b>	1
20	DMEA100D20/010	<b>606508</b>	DMEA100D20/030	<b>606515</b>	DME100D20/100	<b>606522</b>	1
25	DMEA100D25/010	<b>606509</b>	DMEA100D25/030	<b>606516</b>	DME100D25/100	<b>606523</b>	1
32	DMEA100D32/010	<b>606510</b>	DMEA100D32/030	<b>606517</b>	DME100D32/100	<b>606524</b>	1
40	DMEA100D40/010	<b>606511</b>	DMEA100D40/030	<b>606518</b>	DME100D40/100	<b>606525</b>	1

Series DME

A

**B**

C

D

E

F

G

X



## eRCBOs - Residual Current Circuit Breakers with Overcurrent Protection NEUTRAL BLACK

### Series DMET

<b>EN /IEC 61009-1</b>	<b>6000</b>
	<b>3</b>
<b>Type AC</b>	
<b>Type A</b>	<b>10000</b>
	<b>3</b>

### Applications



For use in consumer units and distribution boards.

### Marking



### Performance

<b>Thermal setting I<sub>n</sub></b>	(A)	6, 10, 16, 20, 25, 32, 40
<b>Residual current I<sub>Δn</sub></b>	(mA)	10, 30, 100
<b>Tripping characteristic</b>		B, C, D
<b>Rated voltage AC U<sub>n</sub></b>	(V)	240
<b>Minimum operating voltage U<sub>Bmin</sub></b>	(V)	195
<b>Mechanical/electrical endurance</b>		20000/10000
<b>Tropicalisation acc. to EN/IEC 60068-2-28/2-30</b>		95% RH at 55°C
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> )	Bottom terminal: 16-25
<b>Poles</b>		1P+N (1 module)
<b>Nuisance tripping resistance</b>		250A 8/20μs
<b>Ambient temperature</b>		-5 up to 55
<b>Weight</b>		235

The earth reference cable (FE white) ensures protection against earth leakage in case of loss of supply neutral.

### Short-circuit capacity

#### AC acc. to EN/IEC 61009-1

##### DMET60

<b>Residual making and breaking capacity</b>	I <sub>Δm</sub> = 6000A
<b>Energy limiting class</b>	3
<b>Short-circuit capacity</b>	I <sub>cn</sub> = 6000A at 240V

##### DMET100

<b>Residual making and breaking capacity</b>	I <sub>Δm</sub> = 10000A
<b>Energy limiting class</b>	3
<b>Short-circuit capacity</b>	I <sub>cn</sub> = 10000A at 240V

A

B

C

D

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X

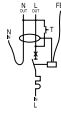




**Series DMET60 - Type AC - Characteristic C**



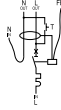
Unswitched neutral  
1P+N



In (A)	10mA		30mA		100mA		300mA		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
10	-	-	DMET60C10/030	607427	-	-	-	-	1
16	-	-	DMET60C16/030	607428	-	-	-	-	1
20	-	-	DMET60C20/030	607429	-	-	-	-	1
25	-	-	DMET60C25/030	607430	-	-	-	-	1
32	-	-	DMET60C32/030	607431	-	-	-	-	1

**Series DMET60 - Type A - Characteristic C**

Unswitched neutral  
1P+N

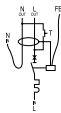


10	-	-	DMEAT60C10/030	608135	-	-	-	-	1
16	-	-	DMEAT60C16/030	608136	-	-	-	-	1
20	-	-	DMEAT60C20/030	608137	-	-	-	-	1
25	-	-	DMEAT60C25/030	608138	-	-	-	-	1
32	-	-	DMEAT60C32/030	608139	-	-	-	-	1

**Series DMET100 - Type AC - Characteristic C**



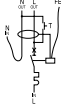
Unswitched neutral  
1P+N



In (A)	10mA		30mA		100mA		300mA		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
6	DMET100C06/010	606567	DMET100C06/030	606574	DMET100C06/100	606560	DMEA100C06/300	606588	1
10	DMET100C10/010	606568	DMET100C10/030	606575	DMET100C10/100	606561	DMEA100C10/300	606589	1
16	DMET100C16/010	606569	DMET100C16/030	606576	DMET100C16/100	606562	DMEA100C16/300	606590	1
20	DMET100C20/010	606570	DMET100C20/030	606577	DMET100C20/100	606563	DMEA100C20/300	606591	1
25	DMET100C25/010	606571	DMET100C25/030	606578	DMET100C25/100	606564	DMEA100C25/300	606592	1
32	DMET100C32/010	606572	DMET100C32/030	606579	DMET100C32/100	606565	DMEA100C32/300	606593	1
40	DMET100C40/010	606573	DMET100C40/030	606580	DMET100C40/100	606566	DMEA100C40/300	606581	1

**Series DMET100 - Type A - Characteristic C**

Unswitched neutral  
1P+N



10	-	-	DMEAT100C10/030	607285	-	-	-	-	1
16	-	-	DMEAT100C16/030	607286	-	-	-	-	1
20	-	-	DMEAT100C20/030	607287	-	-	-	-	1
25	-	-	DMEAT100C25/030	607288	-	-	-	-	1
32	-	-	DMEAT100C32/030	607289	-	-	-	-	1

Series DMET

A

**B**

C

D

E

F

G

X



Residual Current Circuit Breakers  
Recognized UL1053

Series FPAUL

EN /IEC 61009-1

Type A



with UL approval

People protection

A

Applications



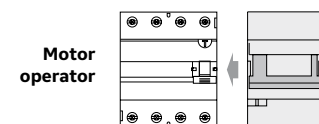
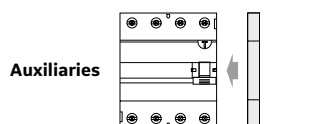
B

Approvals / Marking



C

Add-on devices



D

E

F

G

X

Performances UL

Maximum voltage AC	(V)	240
Fault current withstand	(kA)	10
UL file		E248309

Performances EN/IEC

Thermal setting I <sub>n</sub>	(A)	16, 25, 40, 63
Residual current I <sub>Δn</sub>	(mA)	10, 30, 100, 300, 500
Rated maximum voltage AC U <sub>n</sub>	(V)	2P: 240 4P: 240/415
Minimum operating voltage U <sub>Bmin</sub> <sup>(1)</sup>	(V)	2P: 117 4P: 205
Mechanical/electrical endurance		20000/10000
Tropicalisation acc. to EN/IEC 60068-2-28/2-30 and DIN 40046		95% RH at 55°C 95% RH at 55°C
Terminal capacity flexible/rigid cable	(mm <sup>2</sup> )	35-50
Poles		2P, 4P
Nuisance tripping resistance	Type A:	250A 8/20μs; 3000A 8/20μs
Ambient temperature	(°C)	-25 up to 40
Weight	(g)	2P: 220 4P: 385

Short-circuit capacity

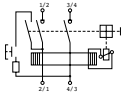
Acc. to EN/IEC 61008-1

Making and breaking capacity	I <sub>m</sub> = 500A
Residual making and breaking capacity	I <sub>Δm</sub> ≥ 500A from 16 up to 40A I <sub>Δm</sub> = 10I <sub>n</sub> from 63 up to 100A
Short-circuit capacity	I <sub>nc</sub> = 10000A at 230/400V fuse 80A gG

(1) Minimum service voltage for 30mA: 2P=176V / 4P=287V

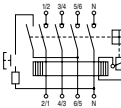


**Series FPAUL - Type A**



2P In (A)	10"/30mA		100mA		300mA		500mA	
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.Pack.
16	FPAUL 216/010*	<b>608377</b>	-	-	-	-	-	6
25	FPAUL 225/030	<b>608378</b>	FPAUL 225/100	<b>608379</b>	FPAUL 225/300	<b>608380</b>	FPAUL 225/500	<b>608381</b> 6
40	FPAUL 240/030	<b>608382</b>	FPAUL 240/100	<b>608383</b>	FPAUL 240/300	<b>608384</b>	FPAUL 240/500	<b>608385</b> 6
63	FPAUL 263/030	<b>608386</b>	FPAUL 263/100	<b>608387</b>	FPAUL 263/300	<b>608388</b>	FPAUL 263/500	<b>608401</b> 6

**Series FPAUL - Type A**



4P In (A)	30mA		100mA		300mA		500mA	
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.Pack.
25	FPAUL 425/030	<b>608389</b>	FPAUL 425/100	<b>608390</b>	FPAUL 425/300	<b>608391</b>	FPAUL 425/500	<b>608392</b> 3
40	FPAUL 440/030	<b>608393</b>	FPAUL 440/100	<b>608394</b>	FPAUL 440/300	<b>608395</b>	FPAUL 440/500	<b>608396</b> 3
63	FPAUL 463/030	<b>608397</b>	FPAUL 463/100	<b>608398</b>	FPAUL 463/300	<b>608399</b>	FPAUL 463/500	<b>608400</b> 3

Series FPAUL

A

**B**

C

D

E

F

G

X



# Residual Current Circuit Breakers with Overcurrent Protection - Recognized UL1053

## Series DPA100UL

EN /IEC 61009-1

10000
3

Type A



with UL approval

People protection

### Applications



### Performances UL

<b>Rated/Maximum voltage AC</b>	(V) 240 or 277
<b>Fault current withstand</b>	5kA (277V), 10kA (240V)
<b>UL file</b>	E248309

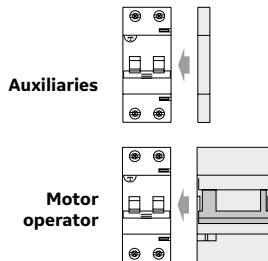
### Approval / Marking



### Performances EN/IEC

<b>Thermal setting I<sub>n</sub></b>	(A) 10 to 32
<b>Residual current I<sub>Δn</sub></b>	(mA) 10, 30, 100, 300
<b>Tripping characteristic</b>	B-C
<b>Rated voltage AC U<sub>n</sub></b>	(V) 240
<b>Minimum operating voltage U<sub>Bmin</sub><sup>(1)</sup></b>	(V) 195
<b>Mechanical/electrical endurance</b>	20000/10000
<b>Tropicalisation acc. to EN/IEC 60068-2-28/2-30 and DIN 40046</b>	20000/10000 95% RH at 55°C
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> ) Top terminal: 16-25 Bottom term.: 25-35
<b>Poles</b>	1P+N
<b>Nuisance tripping resistance</b>	250A 8/20μs; 200A 0.5μs - 100kHz
<b>Ambient temperature</b>	(°C) -25 up to 40
<b>Weight</b>	(g) 250 4P: 385

### Add-on devices



### Short-circuit capacity

#### Acc. to EN/IEC 61009-1

<b>Residual making and breaking capacity</b>	I <sub>Δm</sub> = 6000A
<b>Short-circuit capacity</b>	I <sub>cn</sub> = 5000/10000A at 230V
<b>Energy limiting class</b>	3

#### Acc. to EN/IEC 60947-2

<b>Short-circuit capacity</b>	cu = 15000A at 230V
-------------------------------	---------------------

(1) Minimum service voltage for 30mA: 2P=176V / 4P=287V

A

B

C

D

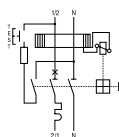
E

F

G

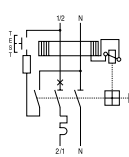
X

**Series DPA100 - Type A - characteristic B**



1P+N	In (A)	10mA		30mA		Pack.
		Cat. No.	Ref. No.	Cat. No.	Ref. No.	
	10	DPA100B10/010	<b>608706</b>	DPA100B10/030	<b>608712</b>	6
	13	DPA100B13/010	<b>608707</b>	DPA100B13/030	<b>608713</b>	6
	16	DPA100B16/010	<b>608708</b>	DPA100B16/030	<b>608714</b>	6
	20	DPA100B20/010	<b>608709</b>	DPA100B20/030	<b>608715</b>	6
	25	-	-	DPA100B25/030	<b>608716</b>	6
	32	-	-	DPA100B32/030	<b>608717</b>	6

**Series DPA100 - Type A - characteristic C**



1P+N	In (A)	10mA		30mA		Pack.
		Cat. No.	Ref. No.	Cat. No.	Ref. No.	
	10	DPA100C10/010	<b>608757</b>	DPA100C10/030	<b>608763</b>	6
	13	DPA100C13/010	<b>608758</b>	DPA100C13/030	<b>608764</b>	6
	16	DPA100C16/010	<b>608759</b>	DPA100C16/030	<b>608765</b>	6
	20	DPA100C20/010	<b>608760</b>	DPA100C20/030	<b>608766</b>	6
	25	-	-	DPA100C25/030	<b>608767</b>	6
	32	-	-	DPA100C32/030	<b>608768</b>	6

Series DPA100UL

A

**B**

C

D

E

F

G

X



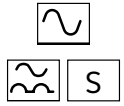
## Residual Current Circuit Breakers Screwless connection

### Series FPP

#### EN/IEC 61008-1

Type A

Type S



People protection

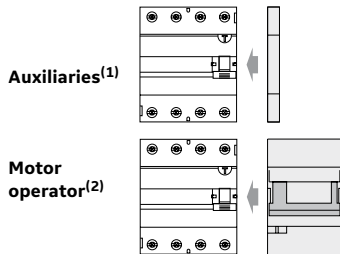
#### Applications



#### Approvals / Marking



#### Add-on devices



(1) Series CA - Tele L - Tele U - PBS

(2) Only at right side end of the extreme pin busbar

#### Performance

<b>Thermal setting <math>I_n</math></b>	(A) 25, 40, 63
<b>Residual current <math>I_{\Delta n}</math></b>	(mA) 30, 100, 300
<b>Rated voltage AC <math>U_n</math></b>	(V) 2P: 240 4P: 415
<b>Minimum operating voltage <math>U_{Bmin}^{(1)}</math></b>	(V) 2P: 117 4P: 205
<b>Mechanical/electrical endurance</b>	20000/10000
<b>Tropicalisation acc. to EN/IEC 60068-2-28/2-30 and DIN 40046</b>	95% RH at 55°C
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> ) 35-50
<b>Poles</b>	2P, 4P
<b>Nuisance tripping resistance</b>	Type A: 250A 8/20µs Type S: 3000A 8/20µs
<b>Ambient temperature</b>	(°C) -25 ... +50
<b>Weight</b>	(g) 2P: 248 4P: 364

#### Short-circuit capacity

##### Acc. to EN/IEC 61008-1

<b>Making and breaking capacity</b>	$I_m = 500A$
<b>Residual making and breaking capacity</b>	$I_{\Delta m} \geq 500A$ from 16 up to 40A $I_{\Delta m} = 10I_n$ from 63 up to 100A
<b>Short-circuit capacity</b>	$I_{nc} = 10000A$ at 240/415V fuse 80A gG

A

B

C

D

E

F

G



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**Series FPP - Type A** 



In (A)	30mA			100mA		300mA		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.		
2P	25	FPPA225/030	<b>678359</b>	FPPA225/100	<b>678365</b>	FPPA225/300	<b>678371</b>	6
	40	FPPA240/030	<b>678360</b>	FPPA240/100	<b>678366</b>	FPPA240/300	<b>678372</b>	6
	63	FPPA263/030	<b>678361</b>	FPPA263/100	<b>678367</b>	FPPA263/300	<b>678373</b>	6
4P	25	FPPA425/030	<b>678362</b>	FPPA425/100	<b>678368</b>	FPPA425/300	<b>678374</b>	6
	40	FPPA440/030	<b>678363</b>	FPPA440/100	<b>678369</b>	FPPA440/300	<b>678375</b>	6
	63	FPPA463/030	<b>678364</b>	FPPA463/100	<b>678370</b>	FPPA463/300	<b>678376</b>	6

**Series FPP - Type S**  



In (A)	300mA			Pack.
	Cat. No.	Ref. No.	Ref. No.	
2P	40	FPPS240/300	<b>678377</b>	6
	63	FPPS263/300	<b>678378</b>	6
4P	40	FPPS440/300	<b>678379</b>	3
	63	FPPS463/300	<b>678380</b>	3

Series FPP

A

**B**

C

D

E

F

G

X

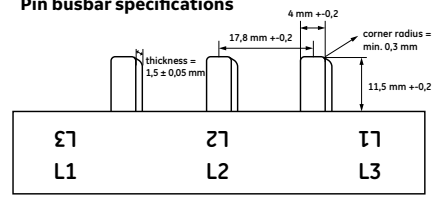


## Fixwell - Screwless connection

### Terminal capacity

Top terminals		
Ratings 25A, 40A and 63A:		
Cage terminals		
Rigid cable (min/max)	mm <sup>2</sup>	1.5/50
Flexible cable (min/max)	mm <sup>2</sup>	1.5/35
Recommended torque	Nm	2.5
Maximum torque	Nm	5

Bottom terminals			Ratings 25A, 40A and 63A:		Pin busbar specifications
Ratings 25A, 40A and 63A:		Ratings 25A, 40A and 63A:			
Cage terminals (1)		Flat plug-in terminals (2)			
Rigid cable (min/max)	mm <sup>2</sup>	1/25	To insert GE pin busbars, or other brands under following dimensions: Length = 11.5 ± 0.2mm Width = 4 ± 0.2mm Thickness = 1.5 ± 0.05mm Corners min. radius = 0.3mm		
Flexible cable (min/max)	mm <sup>2</sup>	0.75/16			
Recommended torque	Nm	2.5			
Maximum torque	Nm	4.5			



- (1) Bottom terminals provide a cage terminal to connect also cables to feed other rows / devices limited to rated current of the device.  
 (2) Plug-in window terminals are only foreseen for pin busbars providing the incoming to several devices from the bottom side.  
 Not intended for any other conductor with or without cable lugs or cable connectors.

### How to mount the busbar into devices

- Mount first 2, 3 or 4 poles devices on the DIN-rail at the extreme **left** side of the row.
- Mount one device at the extreme **right** side on the DIN-rail.
- Fit the pin busbar on both devices.
- Then, mount one by one the rest of poles pulling down the grey clip previously, inserting the pin bars inside the devices and then closing the clip of every device.

Easy to dismount from DIN-rail

People protection

A

B

C

D

E

F

G

X







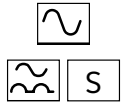
# Residential earth leakage relay

## Series GRDT+TOP / TOR

EN/IEC 61008-1

Type A

Type S



People protection

### Applications



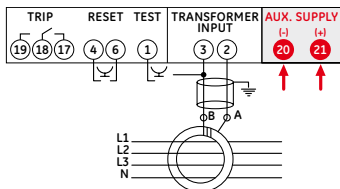
### Standard

EN 60947-2

### Marking



### Electric diagram



### Features

This residential residual current device in only 2 modules works at  $I_{dn} = 30mA$  instantaneous.

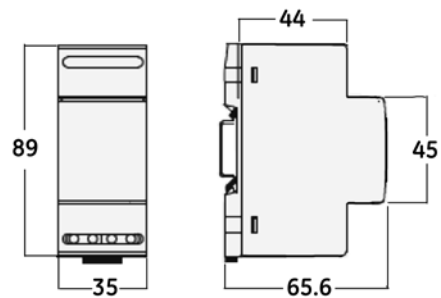
Till 19 ranges selectable set point 30mA...30A sensibility with 7 selectable intervention time being the residual tripping characteristic A type It's available with alarm (1 relay output) and local and remote test button.

GRDT+ TOP works in connection with TOR series which allow to detect earth leakage currents towards ground caused by insulation faults on machines or plants.

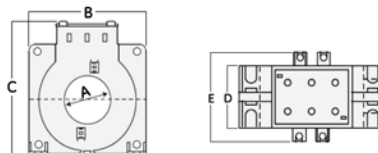
### Functions

Detect earth leakage current through external toroid and open the line protecting people.

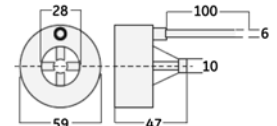
### Dimensions



TOR+35, TOR+60, TOR+110



TOR+28



A	B	C	D	E
35	92	113	36	56
60	105	138	36	56
110	165	198	36	56

A

B

C

D

E

F

G

X



**Series GRDT+TOP**



Idelta n	Intervention time	Modules	Cat. No.	Ref. No.	Pack.
30mA..30A	0-5 seconds	2	GRDT+TOP	665394	1

**Series TOR**



Toroids	Diameter	Cat. No.	Ref. No.	Pack.
	28mm	TOR+28	665297	1
	35mm	TOR+35	665298	1
	60mm	TOR+60	665299	1
	110mm	TOR+110	665917	1

**Performance GRDT+TOP**

	GRDT+TOP	TOR
<b>Input</b>		
Connection	Low voltage lines, with TOR toroids	-
Waveform earth leakage current	A type	-
Rated frequency	50Hz	-
Working frequency	47..63Hz	-
<b>Setup</b>		
Sensibility set point	Selectable by 7-position potentiometer, 3 ranges x1, x10, x100	-
Non-operating residual current	0.5 I delta n	-
Intervention time	Selectable by 7-position potentiometer	-
Adjustable range t:	0; 0.15; 0.25; 0.5; 1; 2.5; 5 seconds	-
<b>Signaling</b>		
Power On	Green LED ON	-
Alarm intervention	Red LED "TRIP" + relay switching	-
Ring toroid-realy connection failure	Red LED "TRIP" blinking + relay switching	-
<b>Control</b>		
Manual test	It verifies the residual current relay perfect working	-
Local	Front key	-
Remote	By external contact closing	-
Automatic continuous test	It verifies the integrity of the connection between realy and ring core	-
<b>Terminal capacity</b>		
TRIP state memorisation	Red LED "TRIP" + relay self-retaining	-
Reset	Manual or automatic, selectable by DIP switch	-
Local manual	Front key	-
Remote manual	External contact closing	-
Automatic	3 restart attempts (1 each 60 seconds)	-
Inhibit reset with persistent residual current	>50% I delta n	-
<b>Output</b>		
Relay	1 SPDT relay	-
Contact range	5A 250V AC	-
<b>Auxiliary supply</b>		
Rated value Uaux:	230V AC	-
Rated frequency:	50Hz	-
Tolerance	47-63Hz	-
Rated burden	<2.5W	-
<b>Environmental conditions</b>		
Operating temperature	-5...50°C	-
Number of modules	2	-

For complete technical performances, please ask for technical datasheet of each device

A

**B**

C

D

E

F

G

X



Redline

# Upgrading our Sol Utility Companies

People protection

A

**B**

C

D

E

F

G

X

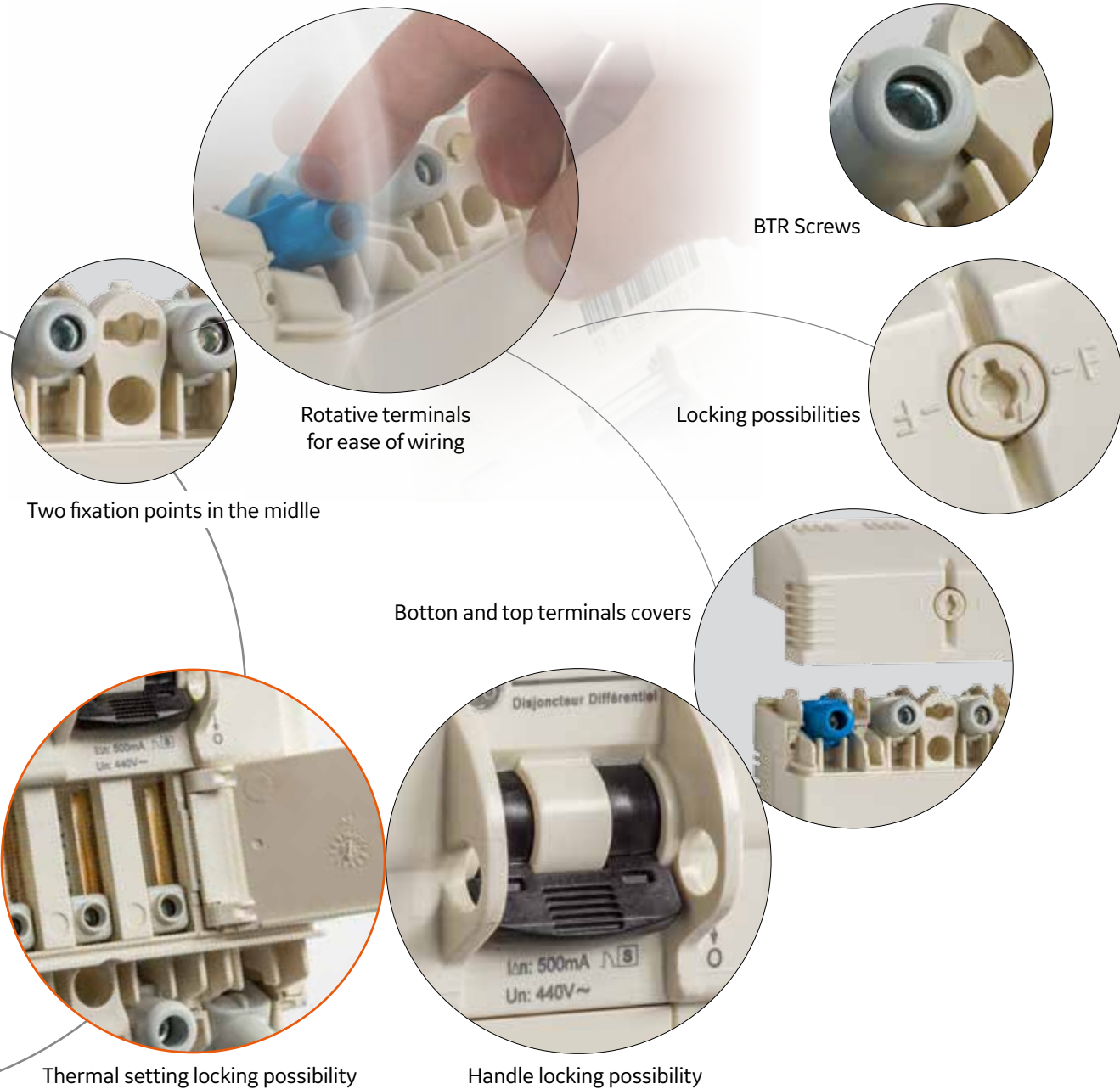
*New  
DisB  
ELCB*



## Main Features

- ✓ User friendly
- ✓ Installation time savings
- ✓ Easier to install even in small space
- ✓ 100% safety and reliable compatible terminals
- ✓ Integrated locker area

# Options for



Series DisB

A

**B**

C

D

E

F

G

X

## Installation time savings

- ✓ Comply with eRDF Specs CPT M&S Spe 11015B
- ✓ Locking terminal covers possibility
- ✓ Increase reliability (BTR screws)
- ✓ Harmonized tool for installation
- ✓ Simplified wiring through rotative terminals



# Earth Leakage Current Breaker

## Series DisB

**NF C 62-411**

**Instantaneous**

**G**

**Selective**

**S**



According to ERDF CPT M&S Spe 11015B

People protection

### Applications



### Approval / Marking



### Features



### Performance

<b>Nominal voltage Un</b>	(V AC)	1P+N: 250 3P+N: 440
<b>Minimum voltage UBmin</b>	(V AC)	1P+N: 200 3P+N: 200 (Ph+N)
<b>Poles</b>		2P/1 Protected 4P/3 Protected
<b>Operating temperature</b>	(°C)	-5 to +40
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> )	35/50
<b>Screws head type</b>		BTR
<b>Thermal constraint</b>	kA <sup>2</sup> s	40 < I <sup>2</sup> t < 57
<b>Max screw torque</b>	(N.m)	8
<b>Voltage loss per pole</b>	(V)	< 0.3
<b>Dielectric rigidity</b>	kV	2.5-4
<b>Terminals</b>		Rotating terminals
<b>Isolation resistance</b>		8
<b>Locking possibilities</b>		YES
<b>External mechanism</b>		Rotating handle

According to EDF prescription from 2015

### Short-circuit capacity

<b>Ics (A)</b>	1P+N	15/30/45	(A)	2000
		30/45/60	(A)	2400
		60/75/90	(A)	2400
3P+N	10/15/20/25/30	(A)	2000	
	30/40/50/60	(A)	2400	
<b>I peak (A)</b>	1P+N	15/30/45	(A)	3000
		30/45/60	(A)	3600
		60/75/90	(A)	3600
3P+N	10/15/20/25/30	(A)	3000	
	30/40/50/60	(A)	3600	



A

B

C

D

E

F

G

X

### Earth Leakage Current Breaker - Instantaneous G



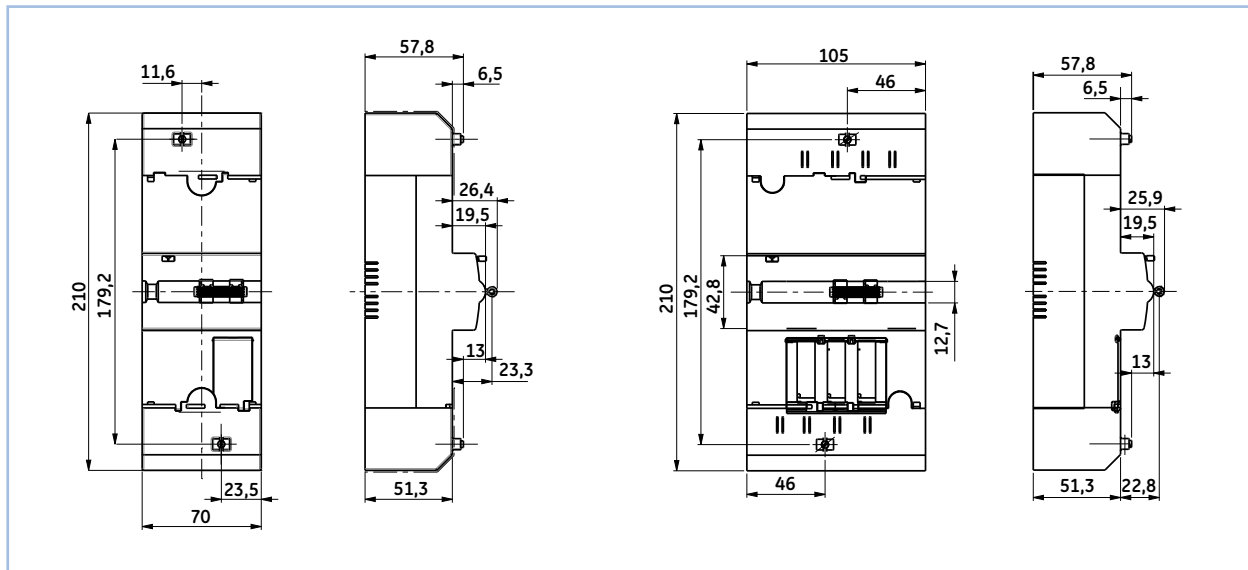
		500mA		
	In (A)	Cat. No.	Ref. No.	Pack.
1P+N	15-45	DisB2 15/45	585436	1
	30-60	DisB2 30/60	585435	1
3P+N	10-30	DisB4 10/30	585440	1
	30-60	DisB4 30/60	585439	1

### Earth Leakage Current Breaker - Selective S



		500mA		
	In (A)	Cat. No.	Ref. No.	Pack.
1P+N	15-45	DisBS2 15/45	585438	1
	30-60	DisBS2 30/60	585437	1
3P+N	10-30	DisBS4 10/30	585442	1
	30-60	DisBS4 30/60	585441	1

### Dimensions



Series DisB

A

B

C

D

E

F

G

X





# Earth Leakage Current Breaker

## Series NDP/NDF

**NF C 62-411**

**Instantaneous**

**G**

**Selective**

**S**



According to ERDF CPT M&S Spe 11015B

People protection

### Applications



### Marking



### Features



### Performance

<b>Nominal voltage Un</b>	(V AC)	1P+N: 250 3P+N: 440
<b>Minimum voltage UBmin</b>	(V AC)	1P+N: 200 3P+N: 200 (Ph+N)
<b>Poles</b>		2P/1 Protected 4P/3 Protected
<b>Operating temperature</b>	(°C)	-5 to +40
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> )	35/50
<b>Screws head type</b>		BTR
<b>Thermal constraint</b>	kA <sup>2</sup> s	40 < I <sub>2t</sub> < 57
<b>Max screw torque</b>	(N.m)	5
<b>Voltage loss per pole</b>	(V)	< 0.3
<b>Dielectric rigidity</b>	kV	2.5-4
<b>Terminals</b>	(MOhm)	Fix terminals
<b>Isolation resistance</b>		5
<b>Locking possibilities</b>		NO
<b>External mechanism</b>		Rotating handle

According to EDF prescription from 2015

According to EDF prescription before 2015

### Short-circuit capacity

<b>Ics (A)</b>	1P+N	15/30/45	(A)	2000
		30/45/60	(A)	2400
	3P+N	60/75/90	(A)	2400
		10/15/20/25/30	(A)	2000
	3P+N	30/40/50/60	(A)	2400
		15/30/45	(A)	3000
<b>I peak (A)</b>	1P+N	30/45/60	(A)	3600
		60/75/90	(A)	3600
	3P+N	10/15/20/25/30	(A)	3000
		30/40/50/60	(A)	3600





**Series NDP/NDF - Earth Leakage Current Breaker - Non differential**



	In (A)	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Pack.
1P+N	10-30	NDPS2 10/30	585013	-	-	1
	15-45	-	-	-	-	1
	30-60	NDPS2 30/60	585018	-	-	1
	60-90	-	-	-	-	1
3P+N	10-30	NDPS4 10/30	585029	-	-	1
	30-60	NDPS4 30/60	585035	-	-	1

**Series NDP/DB - Earth Leakage Current Breaker - Instantaneous G**



500mA						
	In (A)	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Pack.
1P+N	5	NDP2 5/5	585008	-	-	1
	10-30	NDP2 10/30	585014	-	-	1
	15-45	-	-	NDF2 15/45	585016	1
	30-60	NDP2 30/60	585019	NDF2 30/60	585020	1
	60-90	-	-	NDF2 60/90	585025	1
3P+N	10-30	NDP4 10/30	585030	NDF4 10/30	585031	1
	30-60	-	-	NDF4 30/60	585036	1

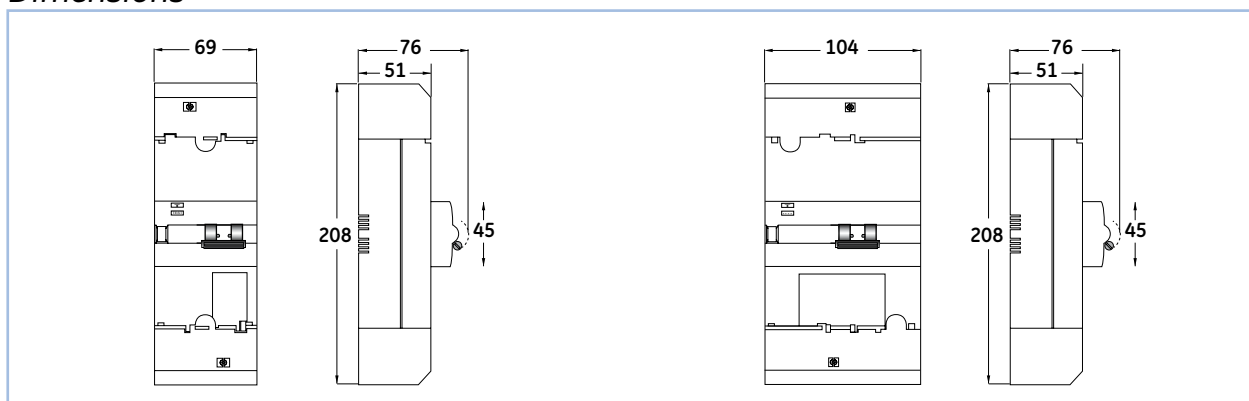
**Series NDP/DB - Earth Leakage Current Breaker - Selective S**



500mA						
	In (A)	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Pack.
1P+N	15-45	-	-	NDFS2 15/45	585017	1
	30-60	-	-	NDFS2 30/60	585021	1
	60-90	-	-	NDFS2 60/90	585026	1
3P+N	10-30	-	-	NDFS4 10/30	584032	1
	30-60	-	-	NDFS4 30/60	584037	1

Cat. No. and Ref. No. = French language technical information in the front of the device  
 Cat. No. and Ref. No. = Portuguese language technical information in the front of the device

**Dimensions**



Series NDP/NDF

A

B

C

D

E

F

G

X

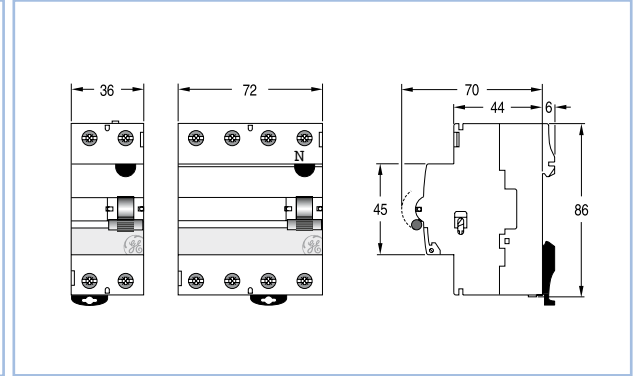
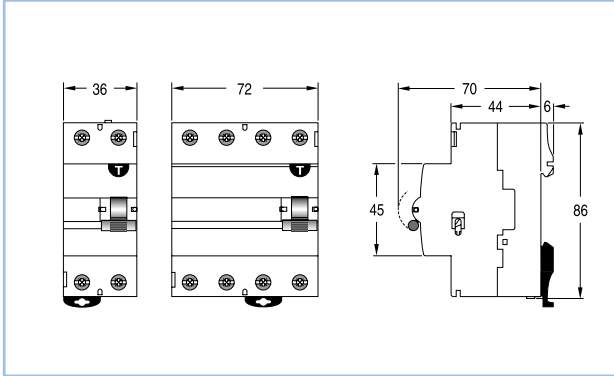




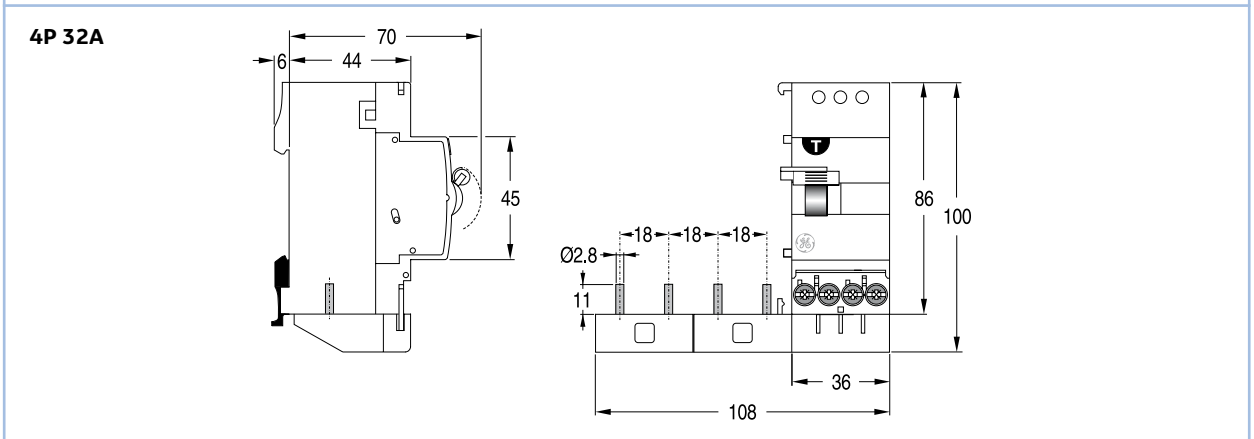
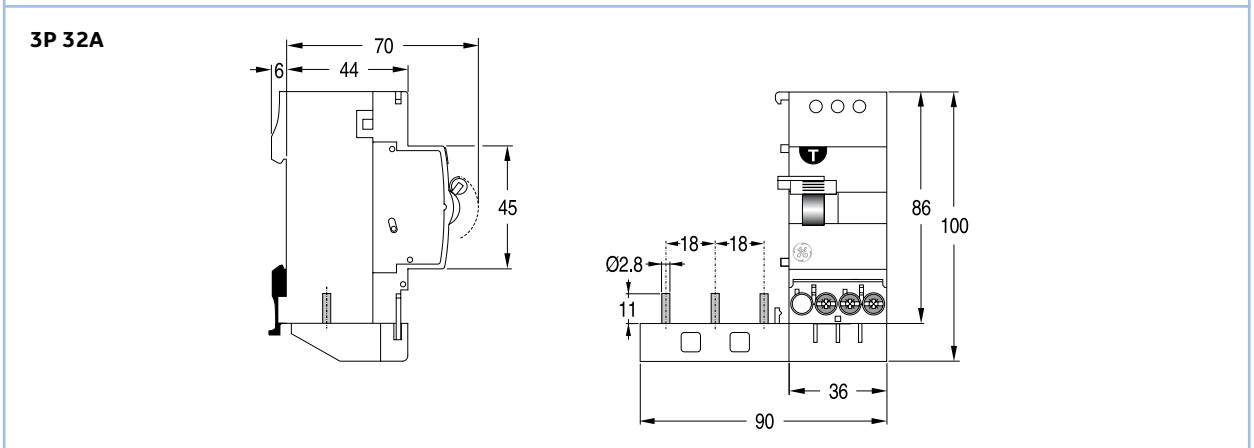
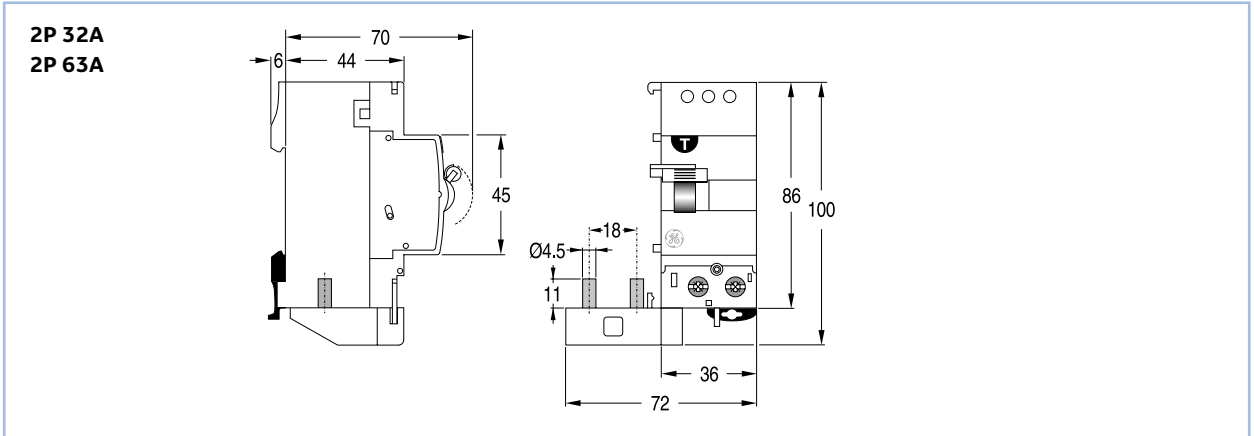
Dimensional drawings

RCCBs - Series BP/BD and FPAUL

RCCBs - Series FPP - Fixwell



Add-on RCCB - Series Diff-o-Click



People protection

A

**B**

C

D

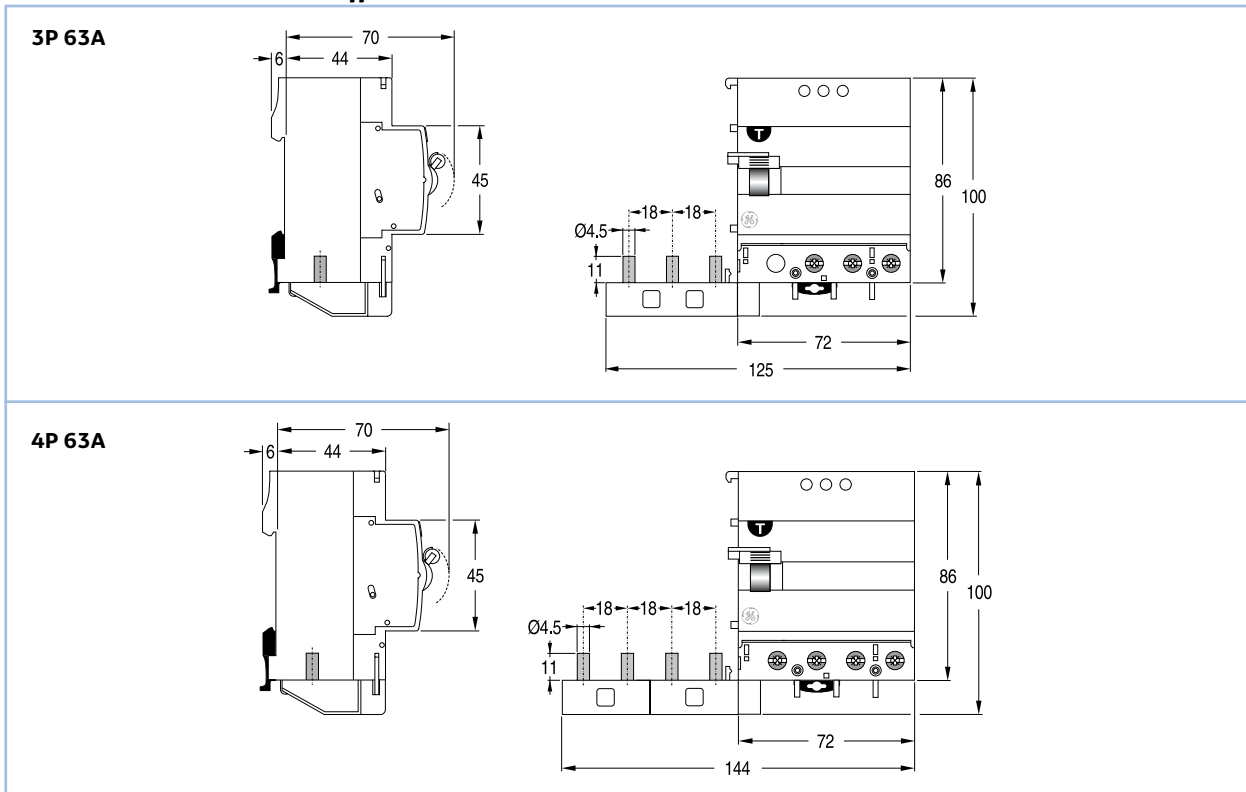
E

F

G

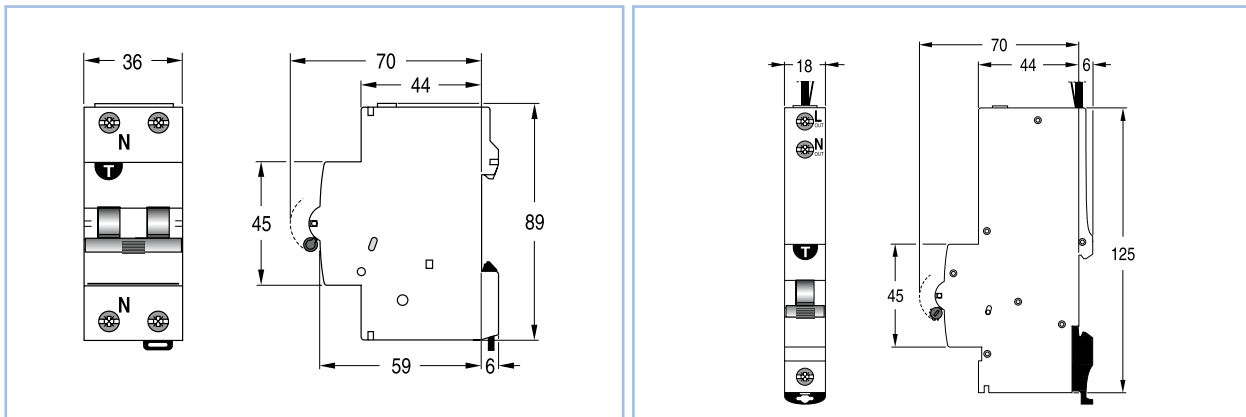
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**Add-on RCCB - Series Diff-o-Click (continued)**

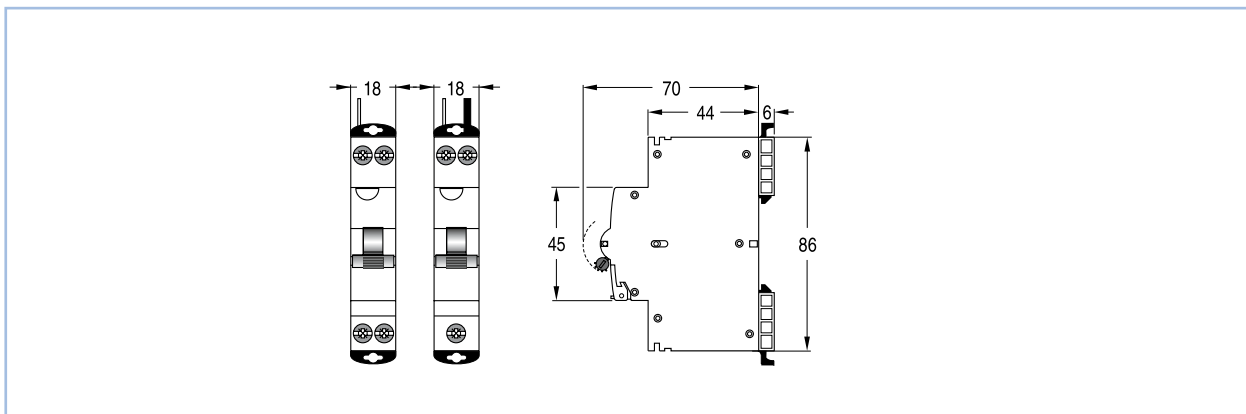


**RCBOs - Series DM and DPA100**

**RCBOs - Series DME**



**ceRCBO - Series DMCE and DICE**



Dimensions

A

B

C

D

E

F

G

X

PROTECT



C.2	Selection table		
C.3	Coupling combinations		
C.4	Auxiliary - <b>Series CA</b>		
C.5	Auxiliary - <b>Series CB</b>		
	<b>Unibis*</b>		
C.6	Interface - <b>Series CA UN</b>		
C.7	Motor operator - <b>Tele MP</b>		
C.8	Shunt trip - <b>Tele L</b>		
C.8	Undervoltage release - <b>Tele U</b>		
C.8	Panel board switch - <b>PBS</b>		
	<b>Add-on devices with ring terminals</b>		
C.10	Auxiliary contacts - <b>Series CBT</b>		
C.11	Shunt trip - <b>Series Tele LT</b>		
C.12	<b>Reclosing system</b>		
C.14	Series TeleREC 2		
C.18	Series TeleREC Top - MCBs		
C.20	Series TeleREC Plus - For industrial applications		
C.21	Dimensional drawings		
		Circuit Protection	A
		People Protection	B
		<b>Add-on Devices</b>	<b>C</b>
		Comfort Functions	D
		Busbars	E
		Enclosures	F
		Product overview	G
		Numerical index	X



**Add-on devices for MCBs and RCDs**

Add-on devices



A

**Common add-on devices suitable for all MCBs and RCDs**

B

C

D

E

F

G

X

Function			Type
<b>H</b>		<b>Auxiliary Contact H</b> For monitoring the status of the protection device (Open/Closed) independently, if it has been actuated manually or automatically.	<b>CA</b>
<b>S</b>		<b>Signal or Auxiliary Contact S/H</b> For signalling the automatic tripping of the protection devices: Overload or short-circuit for MCBs Earth leakage tripping for RCDs	<b>CA</b>
<b>S/H+H</b>		<b>Signal or Auxiliary Contact S/H + Auxiliary Contact H</b> Two change-over contacts that include both functions as described above (S/H+H)	<b>CB</b>
<b>PBS</b>		<b>Panel Board Switch</b> For opening the main device when the panel frame is removed	<b>PBS</b>
<b>TL</b>		<b>Shunt Trip (Distance tripping by emission)</b> For opening the device when it is fed locally or remotely	<b>Tele L</b>
<b>TU</b>		<b>Undervoltage Release</b> For opening the device when the voltage goes lower than a certain value	<b>Tele U</b>
<b>TM</b>		<b>Motor Operator</b> Allows to switch on/off the devices from a distance	<b>Tele MP</b>

### Coupling of add-on devices on MCBs, RCCBs and modular switches

Cat. No.	Description	Function	EPC /DPC DMCE DICE	G30	G45	G60	G100	GT10	GT25	EP100 UC EP100T EPP100	BP	DM <sup>(4)</sup>	Series G + Diff-o- Click	ASTER
CA H	Auxiliary contact	H	L-R <sup>(2)</sup>	L-R	L-R	L-R	L-R	L-R	L-R	L-R	R	R	L	L-R
CA S/H	Signal or auxiliary contact	S/H	L-R <sup>(2)</sup>	L-R	L-R	L-R	L-R	L-R	L-R	L-R	R	R	L	L-R
CA S/H-G	Signal or auxiliary contact, gold contact	S/H	L-R <sup>(2)</sup>	L-R	L-R	L-R	L-R	L-R	L-R	L-R	R	R	L	L-R
CA UN H	Auxiliary contact	H	L-R <sup>(1)</sup>	-	-	-	-	-	-	-	-	-	-	-
CA UN S/H	Signal or auxiliary contact	S/H	L-R <sup>(1)</sup>	-	-	-	-	-	-	-	-	-	-	-
CB SH/HH-R	Signal or auxiliary + auxiliary contact	S/H+H	-	R	R	R	R	R	R	R	R	R	-	-
CB SH/HH-L	Signal or auxiliary + auxiliary contact	S/H+H	-	L	L	L	L	L	L	L	-	-	L	-
PBS	Panel board switch	PBS	L-R <sup>(2)</sup>	L-R	L-R	L-R	L-R	L-R	L-R	L-R	-	-	L-R	-
Tele L	Shunt trip	TL	L-R <sup>(2)</sup>	L-R	L-R	L-R	L-R	L-R	L-R	L-R	R	R	L	-
Tele U	Undervoltage release	TU	L-R <sup>(2)</sup>	L-R	L-R	L-R	L-R	L-R	L-R	L-R	R	R	L	-
Tele MP	Motor operator	TM	L-R	L-R	L-R	L-R	L-R	L-R	L-R	L-R	R	R	L	-

(1) Except 3P Unibis that only accept CA UN on the **left** side

(2) Except Tele MP, all add-on devices on EPC need one CA UN as interface

(3) Except DMA63N which has its own auxiliary contact

L = Coupling on the left

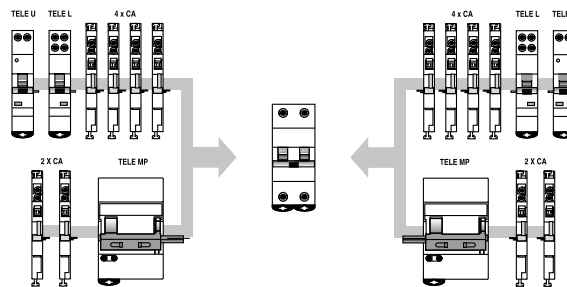
R = Coupling on the right

For detailed information, see website

#### Miniature Circuit Breakers

Series G/EP

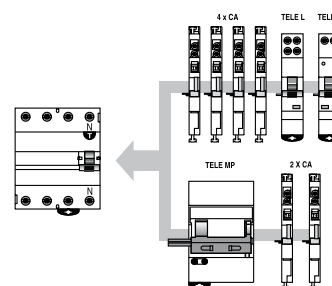
Series EPC<sup>(4)</sup>



(4) Except for Tele MP the first auxiliary contact on MCB should always be CA UN

#### Residual Current Circuit Breakers (RCCB)

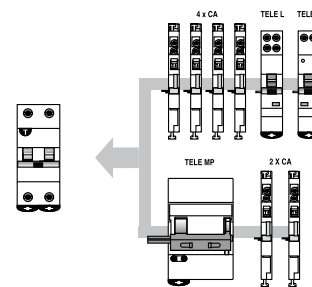
Series BP / FP



#### Residual Current Circuit Breakers (RCBO)

with Overcurrent Protection

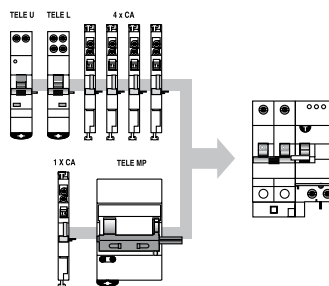
Series DM



#### Miniature Circuit Breakers

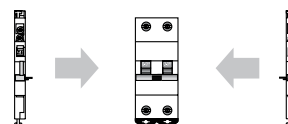
Series G

+ Diff-o-Click



#### Modular switches

Aster





## Auxiliary

### Series CA

**EN/IEC 62019**

**UL file: E151139**

Add-on-devices



### Applications

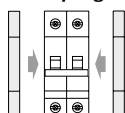


### Approvals

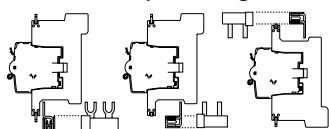


### Add-on devices

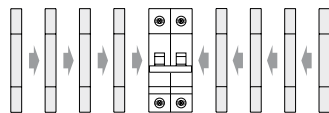
Coupling



Busbar pass-through



Stack-on



### Performance

<b>Change-over contacts</b>	1
<b>Rated current In</b>	(A) 5
<b>Rated voltage AC Un</b>	(V) 240
<b>Electrical endurance</b>	10000
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> ) 2.5
<b>Weight</b>	(g) 70

### Function

The auxiliary contacts are units to be added on to protection devices. They allow information to be monitored from a distance about the protection devices.

#### Auxiliary contact CA H (function H)

Provides the status of the protection device, OPEN/CLOSED.

#### Signal or auxiliary contact CA S/H, CA S/H G (function S/H)

This auxiliary can act as an auxiliary contact (function H) or as a signal contact (function S).

The user can change the function at the moment of installation.

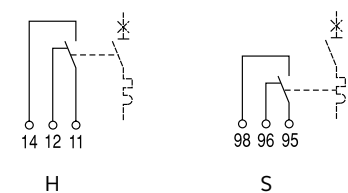
Used as signal contact (function S) it provides the information about the automatic tripping of the protection devices: overload or short-circuit for MCBs, earth leakage tripping for RCDs.

- The device has a test button on the front to simulate the function (acting as a function H or S)
- Reset button for the contacts (function S)
- Tripping signal on the front (function S)

### Advantages

- Common for all modular protection devices: MCBs and RCBOs up to 63A, RCBOs up to 100A and mains disconnect switches type ASTER (ASTM).
- Can be coupled on both sides of MCBs and modular switches type ASTM.
- Version with golden contacts, available for low current as well as low voltage applications.
- Stack-on left and right up to 4 CA units.
- Permits the pass-through of busbars, pin & fork, top and bottom, just changing the position of the base of the auxiliaries.

### Series CA



1/2 mod.

Function	Cat. No	Ref. No.	Pack.	
H	CA H	672567	40	
S/H	CA S/H	672568	40	
S/H	CA S/H G	672569	40	golden contacts

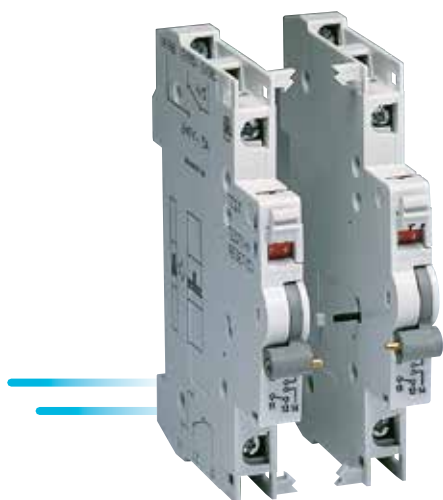


## Auxiliary

### Series CB

**EN/IEC 62019**

**UL file: E151139**



### Performance

<b>Change-over contacts</b>	2
<b>Rated current In</b>	(A) 5
<b>Rated voltage AC Un</b>	(V) 240
<b>Electrical endurance</b>	10000
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> ) 2.5
<b>Weight</b>	(g) 80

### Function

**Bottom auxiliary contact (function H)**

Provides the status of the protection device, OPEN/CLOSED.

**Top signal or auxiliary contact (function S/H).**

This auxiliary can act as an auxiliary contact (function H) or as a signal contact (function S)

The user can make the change of the function at the moment of installation. Used as signal contact (function S) it provides information about automatic tripping of the protection devices: overload or short-circuit for MCBs, earth leakage tripping for RCCBs.

- The device has a test button on the front to simulate the function (acting as a function H or S)
- Reset button for the contacts (function S)
- Tripping signal on the front (function S)

### Advantages

- Common for all modular protection devices: MCBs and RCBOs up to 63A, RCCBs up to 100A
- Common for all modular protection devices: MCBs and RCBOs up to 63A, RCCBs up to 100A.
- This device has 2 change-over contacts, the upper one with changeable function (S/H).
- Two versions: CB SH/HH-R to be coupled on the right side of the protection devices, CBSH/HH-L when assembled on the left side
- No stack-on possibilities (only 1 auxiliary)
- No busbar pass-through facilities

### Applications

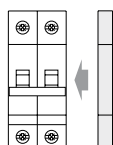


### Approvals

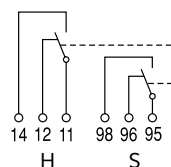
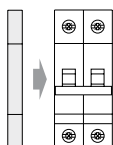


### Add-on devices

**Coupling right**



**Coupling left**



1/2 mod.

### Series CB

Function	Cat. No	Ref. No.	Pack.
SH/HH	CB SH/HH-R <sup>(1)</sup>	<b>672570</b>	40
SH/HH	CB SH/HH-L <sup>(2)</sup>	<b>672571</b>	40

(1) R = coupling on the right

(2) L = coupling on the left

Series CA / CB

A

B

**C**

D

E

F

G

X



# Auxiliary

## Series CA UN - Unibis Interface

EN/IEC 62019

### Performance

Change-over contacts	1
Rated current In	(A) 5
Rated voltage AC Un	(V) 240
Electrical endurance	10000
Terminal capacity flexible/rigid cable	(mm <sup>2</sup> ) 2.5
Weight	(g) 70

### Function

**The auxiliary contact Unibis has a double function:**

1. The standard function as auxiliary monitoring contact for which it has been developed.
2. The interface function, which allows the use of all auxiliaries in combination with the Unibis MCB range.

**Example:** to couple the undervoltage release Tele U to a Unibis MCB, the CA 672972 has to be added in between the MCB and the Tele U as interface.

The auxiliary contacts are units to be added on to protection devices. They allow information to be monitored from a distance about the protection devices.

**Auxiliary contact CA UN H (function H)**

Provides the status of the protection device, OPEN/CLOSED.

**Signal or auxiliary contact CA UN S/H, CA UN S/H G (function S/H)**

This auxiliary can act as an auxiliary contact (function H) or as a signal contact (function S).

The user can change the function at the moment of installation. Used as signal contact (function S) it provides the information about the automatic tripping of the protection devices: overload or short-circuit for MCBs, earth leakage tripping for RCDs.

- The device has a test button on the front to simulate the function (acting as a function H or S)
- Reset button for the contacts (function S)
- Tripping signal on the front (function S)

### Advantages

- Common for all Unibis modular protection devices: MCBs and RCBOs.
- Can be coupled on both sides of Unibis MCBs, 2P RCBOs and ceRCBOs.
- Version with golden contacts, available for low current as well as low voltage applications.
- Stack-on left or right up to 4 CA units.
- Permits the pass-through of busbars, pin & fork, top and bottom, just changing the position of the base of the auxiliaries.

## Series CA UN - Unibis Interface



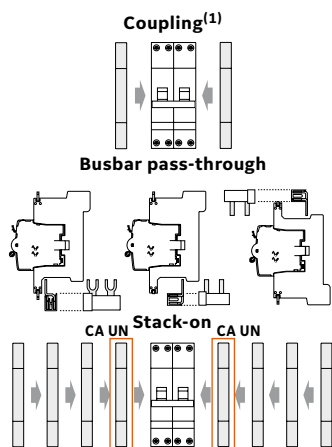
### Applications



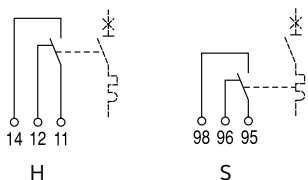
### Approvals / Marking



### Add-on devices



(1) 3P Unibis MCBs accept CA UN only on the left side  
 (2) Only first auxiliary contact on MCB must be CA UN type as interface, than every extension can be stack-on mounted



1/2 mod.

Function	Cat. No	Ref. No.	Pack.	
H	CA UN H	672972	1/40	
S/H	CA UN S/H	672973	1/40	
S/H	CA UN S/H G	672974	1/40	golden contacts

Add-on-devices

A

B

C

D

E

F

G

X

## Motor Operator

### Tele MP



### Performance

<b>Rated voltage AC Un</b>	(V)	240
<b>Minimum voltage</b>	(V)	200
<b>Impulse to switch on</b>	(ms)	50
<b>Impulse to switch off</b>	(ms)	50
<b>Closing time</b>	(s)	0.5
<b>Opening time</b>	(s)	0.2
<b>Electrical endurance</b>		10000
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> )	2.5
<b>Weight</b>	(g)	380

### Applications

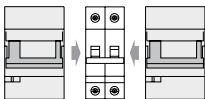


### Standard

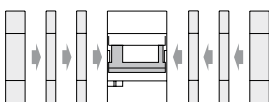
EN/IEC 60947-2

### Add-on devices

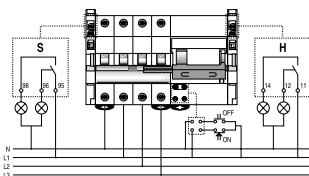
#### Coupling



#### Stack-on



### Application example



### Function

- Common device for all modular protection devices.
- Can be coupled on both sides of MCBs and on the right hand side of RCCBs and RCBOs.
- Stack-on left and right sides up to 4 modules. One of them can be coupled between the main device and the motor operator.
- Can be locked in off position with a lock.
- Manual operating is possible.

The Tele MP allows to remotely open or close any MCB, RCCB, RCBO by means of a push-button or any other automatic management processor (PLC..).

In case of mounting a Tele MP and a Undervoltage Tele U together: when the Tele U trips, a manual reset of the Tele U is locally needed due to safety reasons.

### Tele MP - Motor operator

	Voltage	Cat. No	Ref. No.	Pack.
3 mod.	AC 230V	TELE MP	672580	1



Shunt trip, Undervoltage release,  
Panel board switch

**UL file: E151139**

Add-on-devices



## Applications



## Approval

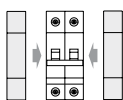


## Standard

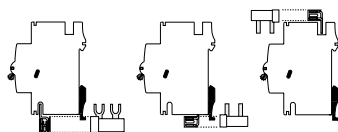
EN/IEC 60947-2

## Add-on devices

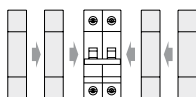
Coupling



Busbar pass-through



Stack-on



(1) For Tele L-1 and Tele L-2

## Function

- Common device for all modular protection devices.
- Can be coupled on both sides of MCBs, on the right side of RCCBs and RCBOs.
- Permit the pass-through of busbars, pin & fork, at top or bottom terminals.
- Stack-on left and right side up to 4 modules.

## Shunt trip Tele L

The Tele L allows to remotely switch off any MCB, RCCB or RCBO by means of push-buttons or any other automatic management processor.  
A built-in contact in series with the coil prevents burn-out damage if the voltage remains.

## Performance

<b>Rated voltage</b>	(V)	110/415, 110/125 DC
	(V)	24/60, 24/48 DC
<b>Tripping time</b>	(ms)	< 10
<b>Electrical endurance</b>		10000
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> )	2.5
<b>Weight</b>	(g)	125
<b>Inrush current (Tele 2)</b>		at 110V AC 0.4A
		at 230V AC 0.9A
		at 415V AC 1.5A

## Undervoltage release Tele U

The Tele U releases the main MCB, RCCB, RCBO and modular switch in case the power supply drops below 0.5 x Un. Time delay adjusting up to 300ms.

## Performance

<b>Rated voltage AC Un</b>	(V)	240
<b>Rated voltage DC/AC Un</b>	(V)	12, 24, 48 DC/AC
<b>Tripping voltage</b>	(V)	≤ 0.5 x Un ± 10%
<b>Resetting voltage</b>	(V)	> 0.5 x Un ± 10%
<b>Tripping time</b>	(ms)	Adjustable 0...300
<b>Electrical endurance</b>		2000
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> )	2.5
<b>Weight</b>	(g)	125

## Panel board switch PBS

The panel board switch PBS is a mechanical switch. When the panel frame releases the PBS switch, it will trip the protection devices (MCBs or RCDs). Consequently the distribution board will become isolated.

A

B

C

D

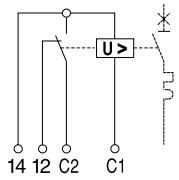
E

F

G

X

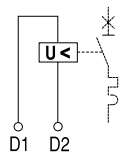
**Tele L - Shunt trip** **US**



1P  
1 mod.

Voltage	Cat. No	Ref. No.	Pack.
AC 24-60V / DC 24-48V	TELE L-1	672573	1
AC 110-415V / DC 110-125V	TELE L-2	672574	1

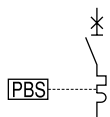
**Tele U - Undervoltage release**



1P  
1 mod.

Voltage	Cat. No	Ref. No.	Pack.
AC 240V	TELE U-230	672575	1
AC/DC 12V	TELE U-12	672576	1
AC/DC 24V	TELE U-24	672577	1
AC/DC 48V	TELE U-48	672578	1

**PBS - Panel board switch**

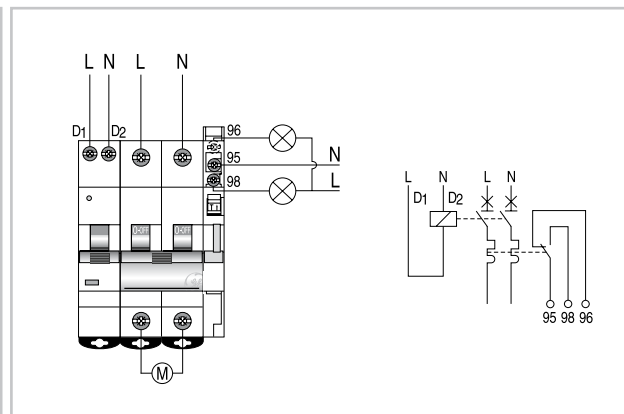
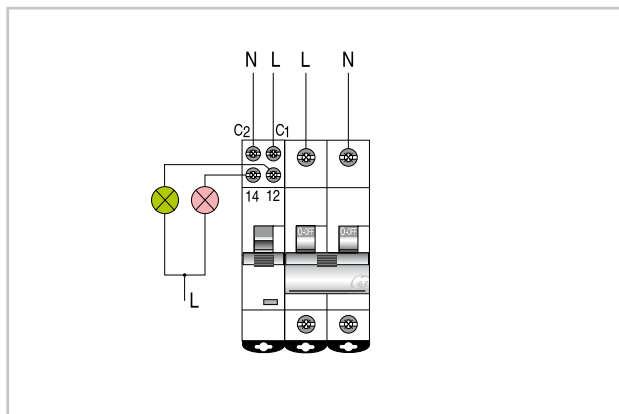


1P  
1/2 mod.

Cat. No	Ref. No.	Pack.
PBS	672572	1

**Tele L**

**Tele U**



Tele L - Tele U - PBS

A

B

**C**

D

E

F

G

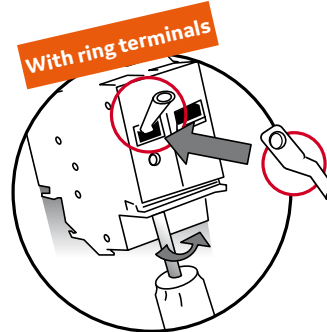
X



## Auxiliary contacts

### Series CBT

Add-on-devices



The miniature circuit breakers in RAIL-design have been developed with regard to shakes, shocks and vibrations

### Standards

EN 60898, EN 60947-2, UNI CEI 11170, EN 61373

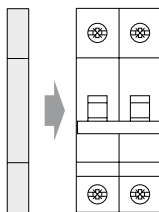
### Approvals



Trenitalia n° 371441.01

### Add-on devices

Coupling



### Features

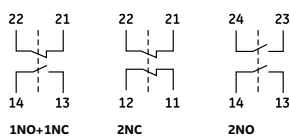
- Three versions: 1NO+1NC, 2NC, 2NO
- CBT accepts ring terminals on wires
- Certified acc. new CEI UNI 11170 (higher protection against fires)
- Certified acc. to NF 16-101, smoke index F1
- Shock and vibration tests acc. to IEC 61373

### Technical data

<b>Number of change-over contacts</b>	2
<b>Thermal setting I<sub>n</sub></b>	5A (230V AC) 4A (24V DC) 1A (60V DC) 230V AC, 60V DC
<b>Rated voltage U<sub>n</sub></b>	10000
<b>Endurance electrical</b>	10000
<b>Terminal capacity for flexible/rigid cable</b>	mm <sup>2</sup> 2.5
<b>Unlosable screws</b>	Pozidrive 2

A  
B  
C  
D  
E  
F  
G  
X

### Series CBT

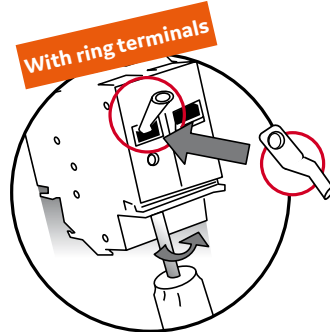


Contact combination	Cat. No.	Ref. No.	Pack.
1NO+1NC	CBTH NO-NC	667249	1
2NC	CBTH 2NC	667250	1
2NO	CBTH 2NO	667251	1



Shunt trip (Distance tripping by emission)

Series Tele LT



The miniature circuit breakers in RAIL-design have been developed with regard to shakes, shocks and vibrations

Series CBT / Tele LT

Standards

EN 60898, EN 60947-2, UNI CEI 11170, EN 61373

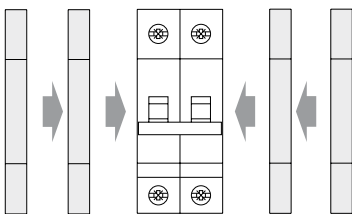
Approval



Trenitalia n° 371441.01

Add-on devices

Coupling



Features

- Tele LT accepts ring terminals on wires
- Certified acc. new CEI UNI 11170 (higher protection against fires)
- Certified acc. to NF 16-101, smoke index F1
- Shock and vibrations tests acc. to IEC 61373

Technical data

<b>Rated voltage</b>	(V) 110/415 ~ 110/128/150 ==
	(V) 24/60 ~ 24/48 ==
<b>Tripping time</b>	(ms) < 10
<b>Electrical endurance</b>	10000
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> ) 2.5
<b>Unlosable screws</b>	Pozidrive 2
<b>Umin</b>	(V) 0.70 x Un
<b>Umax</b>	(V) 1.25 x Un

A

B

C

D

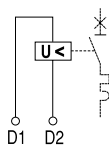
E

F

G

X

Tele LT



1/2 mod.

Voltage	Cat. No.	Ref. No.	Pack.
CA 110/415V ~ CC 110/128/150V =	TELE LT-1	667252	1
CA 24/60V ~ CC 24/48V =	TELE LT-2	667253	1



Redline

# TeleREC 2

## Double clips to the DIN-rail

Strong fixation to the DIN-rail throughout  
Two clips for 2P and 4P version.

## Interlock

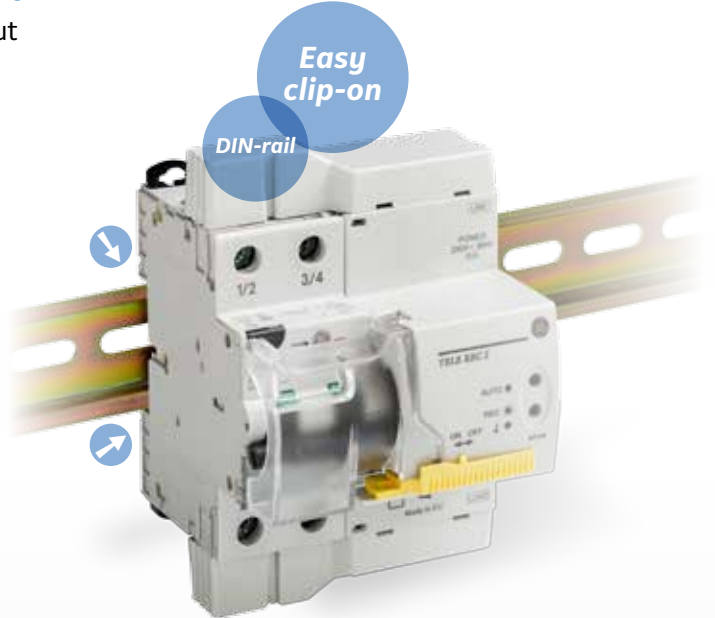
M2 hole to attach a seal or  
packlock to block access to  
the RCCB or RCBO in case  
of works downstream.

## 4 Poles version

Changeover contact in 4P RCCB  
version to indicate the TeleREC 2  
status remotely.

## Transparent windows

Transparent windows covering  
the RCCB following EN 50557  
and with a visor to identify the  
RCCB or RCBO properly.





# TeleREC Top

## Monitorised control

Complete screen, buttons and LEDs to program and visualize the state of the reclosing system.

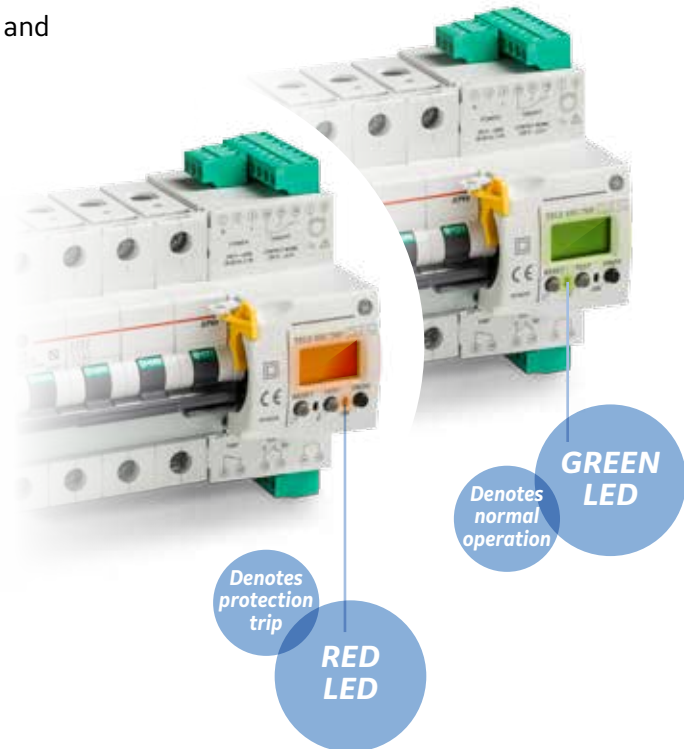
## Remote indicators

AUX and TRIP status outputs (voltage-free contacts).

The AUX output is a NO contact, which closes when the auxiliary power supply is connected.

The TRIP output is an alarm output.

The EXT input (not insulated) enables the switch to be controlled remotely.



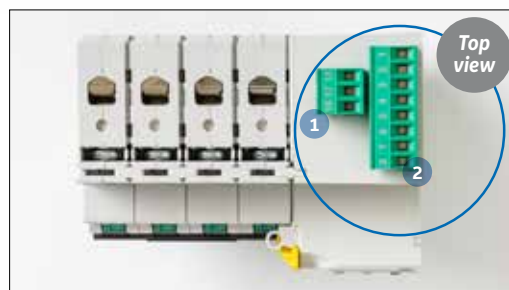
## Remote indicators

1

Status outputs for the main switch.  
When the switch is closed, contact 16-17 is closed.  
When switch is open, contact 16-18 is closed.

2

The auxiliary power supply is connected between terminals 1-3.  
The earth leakage transformer is connected between terminals 7-8.



The TeleREC Top is used to protect single and three-phase electrical installations (up to 63A), in which a high level of continuity in the electrical service must be guaranteed. The unit has an automatic rearming system which is activated following a trip, so that it reconnects itself after a certain amount of time, restoring the installations powersupply without the need for any human intervention.

### In short, the protection functions performed by the TeleREC Top are:

- Earth leakage protection (protects people against electric shock).
- Protection against overloads and short-circuits via a circuit breaker switch.



# Reclosing system for Residual Current Circuit Breakers

## Series TeleREC 2

**EN 50557:2012**



Add-on-devices

A

### Applications



B

### Approvals / Marking



C

### Performance

<b>Thermal setting In</b>	(A) 25-100
<b>Residual current</b>	(mA) 30, 300
<b>Rated voltage AC Un</b>	(V) 2P: 230 4P: 230/400
<b>Minimum operating voltage UBmin</b>	(V) 2P: 127 4P: 190
<b>Mechanical/electrical endurance</b>	20000/10000
<b>Tropicalisation acc. to EN/IEC 60068-2</b>	95% RH at 55°C
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> ) 25/35
<b>Poles</b>	2P, 4P
<b>Nuisance tripping resistance</b>	(A) Type A: 250 Type Ai, S: 3000
<b>Ambient temperature</b>	(°C) -25 up to +55
<b>Weight</b>	(g) 2P: 416 4P: 598

D

E

F

G

X

### Short-circuit capacity


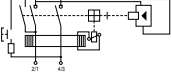

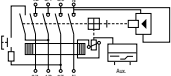
<b>Acc. to EN/IEC 61008-1</b>	
<b>Making and breaking capacity</b>	Im = 500A
<b>Residual making and breaking capacity</b>	ΔIm ≥ 500A from 16 up to 40A ΔIm = 630A for 63A ΔIm = 800A from 80A to 100A
<b>Short-circuit capacity</b>	Inc = 10000A at 230/400V fuse 80A gG

### Reclosing system by insulation, M mode


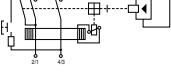

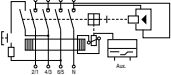
RECLOSURES					
1		2		3	
Delay	Restart	Delay	Restart	Delay	Restart
< 3 sec.	10 sec.	30 sec.	30 sec.	120 sec.	60 sec.

The leakage current will be supervised by measuring the resistance downstream of the tripped RCCB.


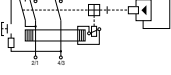

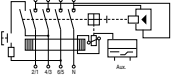
**Series TeleREC 2 - RCCBs - Type A**

	In (A)	30mA		300mA		Pack.
		Cat. no.	Ref. no.	Cat. no.	Ref. no.	
 	25	REC2 A 225/30	<b>676986</b>	REC2 A 225/300	<b>676994</b>	1
	40	REC2 A 240/30	<b>676987</b>	REC2 A 240/300	<b>676995</b>	1
	63	REC2 A 263/30	<b>676988</b>	REC2 A 263/300	<b>676996</b>	1
	80	REC2 A 280/30	<b>676989</b>	REC2 A 280/300	<b>676997</b>	1
	100	REC2 A 2100/30	<b>676990</b>	REC2 A 2100/300	<b>676998</b>	1
 	25	REC2 A 425/30	<b>677042</b>	REC2 A 425/300	<b>677050</b>	1
	40	REC2 A 440/30	<b>677043</b>	REC2 A 440/300	<b>677071</b>	1
	63	REC2 A 463/30	<b>677044</b>	REC2 A 463/300	<b>677072</b>	1
	80	REC2 A 480/30	<b>677045</b>	REC2 A 480/300	<b>677073</b>	1
	100	REC2 A 4100/30	<b>677046</b>	REC2 A 4100/300	<b>677074</b>	1

**Series TeleREC 2 - RCCBs - Type Ai**

	In (A)	30mA		300mA		Pack.
		Cat. no.	Ref. no.	Cat. no.	Ref. no.	
 	25	REC2 Ai 225/30	<b>676991</b>	-	-	1
	40	REC2 Ai 240/30	<b>676992</b>	-	-	1
	63	REC2 Ai 263/30	<b>676993</b>	-	-	1
	80	-	-	-	-	-
	100	-	-	-	-	-
 	25	REC2 Ai 425/30	<b>677047</b>	-	-	1
	40	REC2 Ai 440/30	<b>677048</b>	-	-	1
	63	REC2 Ai 463/30	<b>677049</b>	-	-	1
	80	-	-	-	-	-
	100	-	-	-	-	-

**Series TeleREC 2 - RCCBs - Type S**

	In (A)	30mA		300mA		Pack.
		Cat. no.	Ref. no.	Cat. no.	Ref. no.	
 	25	-	-	-	-	-
	40	-	-	REC2 S 240/300	<b>676999</b>	1
	63	-	-	REC2 S 263/300	<b>677039</b>	1
	80	-	-	REC2 S 280/300	<b>677040</b>	1
	100	-	-	REC2 S 2100/300	<b>677041</b>	1
 	25	-	-	-	-	-
	40	-	-	REC2 S 440/300	<b>677075</b>	1
	63	-	-	REC2 S 463/300	<b>677076</b>	1
	80	-	-	REC2 S 480/300	<b>677077</b>	1
	100	-	-	REC2 S 4100/300	<b>677098</b>	1

Series TeleREC 2

A

B

**C**

D

E

F

G

X

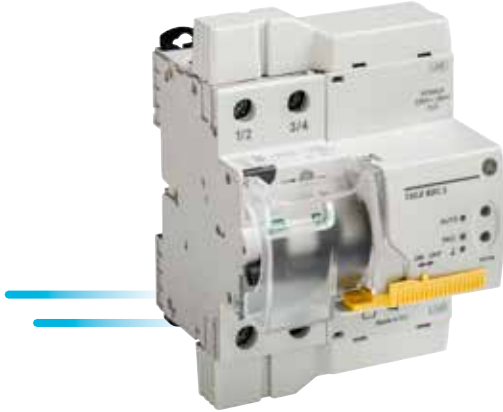


# Reclosing system for 2P RCBOs - Residual Current Circuit Breakers with Overcurrent Protection

## Series TeleREC 2

**EN 50557:2012**

Add-on-devices



### Applications



### Performance

<b>Thermal setting In</b>	(A)	10-40
<b>Residual current</b>	(mA)	30, 300
<b>Tripping characteristics</b>		B-C
<b>Rated voltage AC Un</b>	(V)	230
<b>Minimum operating voltage UBmin</b>	(V)	150
<b>Mechanical/electrical endurance</b>		20000/10000
<b>Tropicalisation acc. to EN/IEC 60068-2</b>		95% RH at 55°C
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> )	25/35
<b>Poles</b>		2P
<b>Nuisance tripping resistance</b>	(A)	Type A: 250 Type Ai: 3000
<b>Ambient temperature</b>	(°C)	-25 up to +55
<b>Weight</b>	(g)	346

### Marking



### Short-circuit capacity

#### Acc. to EN/IEC 61008-1

<b>Residual making and breaking capacity</b>	I $\Delta$ m=6000A
<b>Energy limiting class</b>	3
<b>Short-circuit capacity</b>	Icn=10000A at 230V

### Reclosing system by insulation, M mode

RECLOSURES					
1		2		3	
Rec time	Restart	Rec time	Restart	Rec time	Restart
3	60	240	240	960	960

The leakage current will be supervised by measuring the resistance downstream of the tripped RCBO. The short-circuit current will be supervised by measuring the resistance downstream of the tripped RCBO.

A

B

C

D

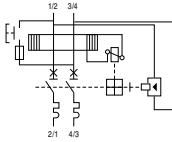
E

F

G

X

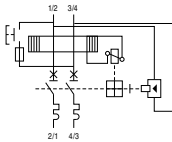
**Series TeleREC 2 - RCBOs - Type A - Characteristic C**



2P  
4.5M

In (A)	30mA		300mA		Pack.
	Cat. no.	Ref. no.	Cat. no.	Ref. no.	
10	REC2 DPCA100C10/030	<b>677150</b>	REC2 DPCA100C10/300	<b>677156</b>	1
16	REC2 DPCA100C16/030	<b>677151</b>	REC2 DPCA100C16/300	<b>677157</b>	1
20	REC2 DPCA100C20/030	<b>677152</b>	REC2 DPCA100C20/300	<b>677158</b>	1
25	REC2 DPCA100C25/030	<b>677153</b>	REC2 DPCA100C25/300	<b>677159</b>	1
32	REC2 DPCA100C32/030	<b>677154</b>	REC2 DPCA100C32/300	<b>677160</b>	1
40	REC2 DPCA100C40/030	<b>677155</b>	REC2 DPCA100C40/300	<b>677161</b>	1

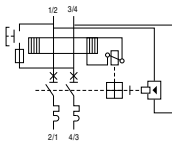
**Series TeleREC 2 - RCBOs - Type A - Characteristic B**



2P  
4.5M

In (A)	30mA		300mA		Pack.
	Cat. no.	Ref. no.	Cat. no.	Ref. no.	
10	REC2 DPCA100B10/030	<b>677174</b>	REC2 DPCA100B10/300	<b>677180</b>	1
16	REC2 DPCA100B16/030	<b>677175</b>	REC2 DPCA100B16/300	<b>677181</b>	1
20	REC2 DPCA100B20/030	<b>677176</b>	REC2 DPCA100B20/300	<b>677182</b>	1
25	REC2 DPCA100B25/030	<b>677177</b>	REC2 DPCA100B25/300	<b>677183</b>	1
32	REC2 DPCA100B32/030	<b>677178</b>	REC2 DPCA100B32/300	<b>677184</b>	1
40	REC2 DPCA100B40/030	<b>677179</b>	REC2 DPCA100B40/300	<b>677185</b>	1

**Series TeleREC 2 - RCBOs - Type Ai - Characteristic C**



2P  
4.5M

In (A)	30mA		300mA		Pack.
	Cat. no.	Ref. no.	Cat. no.	Ref. no.	
10	REC2 DPCAi100C10/030	<b>677162</b>	REC2 DPCAi100C10/300	<b>677168</b>	1
16	REC2 DPCAi100C16/030	<b>677163</b>	REC2 DPCAi100C16/300	<b>677169</b>	1
20	REC2 DPCAi100C20/030	<b>677164</b>	REC2 DPCAi100C20/300	<b>677170</b>	1
25	REC2 DPCAi100C25/030	<b>677165</b>	REC2 DPCAi100C25/300	<b>677171</b>	1
32	REC2 DPCAi100C32/030	<b>677166</b>	REC2 DPCAi100C32/300	<b>677172</b>	1
40	REC2 DPCAi100C40/030	<b>677167</b>	REC2 DPCAi100C40/300	<b>677173</b>	1

Series TeleREC 2

A

B

**C**

D

E

F

G

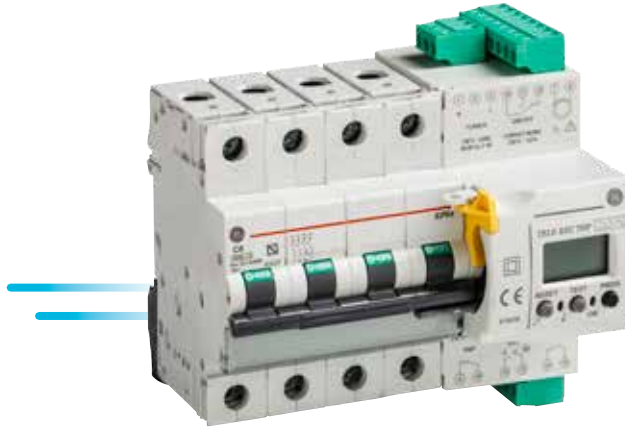
X



Reclosing system with earth leakage protection for Miniature Circuit Breakers

Series TeleREC Top - MCBs

Add-on-devices



A

Application



B

Marking



D

E

F

G

X

Performance

<b>Thermal setting In</b>	(A) 6-63
<b>Residual current</b>	adjustable 30mA ... 1A
<b>Tripping characteristics</b>	B-C
<b>Rated voltage AC Un</b>	(V) 230/400
<b>Minimum operating voltage UBmin</b>	(V) 12
<b>Energy limiting class</b>	3
<b>Mechanical/electrical endurance</b>	20000/10000
<b>Tropicalisation acc. to EN/IEC 60068-2</b>	95% RH at 55°C
<b>Terminal capacity flexible/rigid cable</b>	(mm <sup>2</sup> ) 25/35
<b>Poles</b>	2P, 4P
<b>Nuisance tripping resistance</b>	(A) Type A: 378
<b>Ambient temperature</b>	(°C) -10 up to +50
<b>Weight</b>	(g) 2P: 516 4P: 769

Short-circuit capacity

AC acc. to EN/IEC 60947-2

Poles	V	Icn/Ics (kA)
2-4	230/400	10

DC acc. to EN/IEC 60947-2

Poles	V	Icu/Ics (kA) <sup>(1)</sup>
2	127	40
	230	30
2	415	15
4	240	30
	415	15

Reclosing system

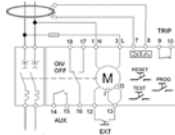
Configuration of the reclosing system after a trip caused by overcurrent or short-circuit fault: maximum number of reclose attempts (NR), the timer (ST) and the resetting time of the partial meter (TR) can be configured. See manual configuration of the reclosing system following a trip caused by an earth leakage: maximum number of reclose attempts (NR), the timer (ST) and the resetting time of the partial meter (TR) can be configured. See manual.

**Series TeleREC Top - MCBs - Characteristic C**



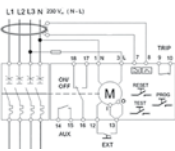
**2P  
4.5M**

In (A)	Cat. no.	Ref. no.	Pack.
6	-	-	-
10	REC TOP EP102 C10	<b>677186</b>	1
16	REC TOP EP102 C16	<b>677187</b>	1
20	REC TOP EP102 C20	<b>677188</b>	1
25	REC TOP EP102 C25	<b>677189</b>	1
32	REC TOP EP102 C32	<b>677190</b>	1
40	REC TOP EP102 C40	<b>677191</b>	1
50	REC TOP EP102 C50	<b>677192</b>	1
63	REC TOP EP102 C63	<b>677193</b>	1



**4P  
6.5M**

In (A)	Cat. no.	Ref. no.	Pack.
6	-	-	-
10	REC TOP EP104 C10	<b>678028</b>	1
16	REC TOP EP104 C16	<b>678029</b>	1
20	REC TOP EP104 C20	<b>678030</b>	1
25	REC TOP EP104 C25	<b>678031</b>	1
32	REC TOP EP104 C32	<b>678032</b>	1
40	REC TOP EP104 C40	<b>678033</b>	1
50	REC TOP EP104 C50	<b>678034</b>	1
63	REC TOP EP104 C63	<b>678035</b>	1

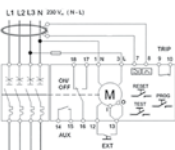


**Series TeleREC Top - MCBs - Characteristic B**



**4P  
6.5M**

In (A)	Cat. no.	Ref. no.	Pack.
6	-	-	-
10	REC TOP EP104 B10	<b>677194</b>	1
16	REC TOP EP104 B16	<b>677195</b>	1
20	REC TOP EP104 B20	<b>677196</b>	1
25	REC TOP EP104 B25	<b>677197</b>	1
32	REC TOP EP104 B32	<b>677198</b>	1
40	REC TOP EP104 B40	<b>677199</b>	1
50	REC TOP EP104 B50	<b>678026</b>	1
63	REC TOP EP104 B63	<b>678027</b>	1



**Accessories**



∅	Cat. no.	Ref. no.	Pack.
<b>Toroidal transformer for earth leakage detection</b>			
25mm <sup>2</sup>	REC TOP TT 25	<b>678036</b>	1
35mm <sup>2</sup>	REC TOP TT 35	<b>678037</b>	1

Series TeleREC Top

A

B

**C**

D

E

F

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X

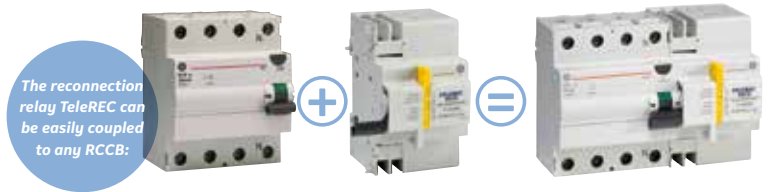


# Reclosing system for Residual Current Circuit Breakers

## Series TeleREC Plus

For industrial applications

Add-on-devices



The reconnection relay TeleREC can be easily coupled to any RCCB:

### Application

A



B

### Marking



D

E

F

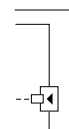
G

X

### Performance

<b>Rated voltage AC Un</b>	(V)	220/400
<b>Frequency</b>	(Hz)	50/60
<b>Reclosing numbers</b>		6
<b>Reclosing cycles</b>	(sec)	10, 20, 30, 60, 120, 600
<b>Auxiliary contact</b>	I <sub>max</sub>	2A (250V AC or 24V DC)
<b>I<sub>min</sub> (auxiliary contact)</b>	(mA)	20
<b>Remote control</b>		Manual reclosing with push-button
<b>Weight</b>	(g)	358

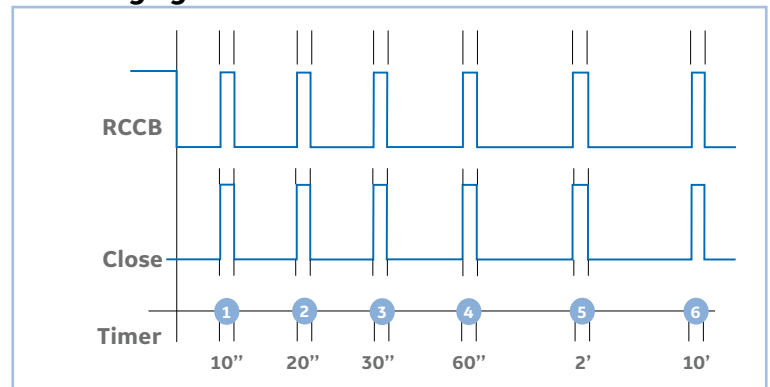
### Series TeleREC Plus



3 mod.

	Cat. no.	Ref. no.	Pack.
	Tele REC PLUS Motor	677132	1

### Reclosing cycles

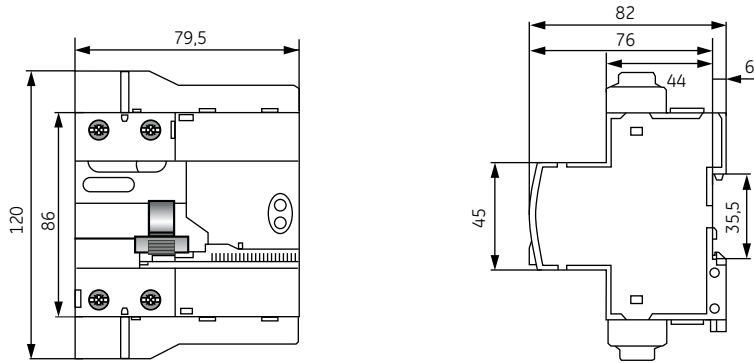




Dimensional drawings

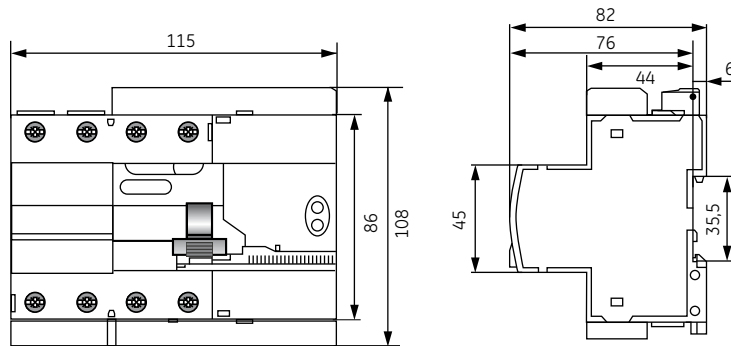
**TeleREC 2 RCCB / RCBO**

2P  
4.5 mod.



**TeleREC 2 RCBO**

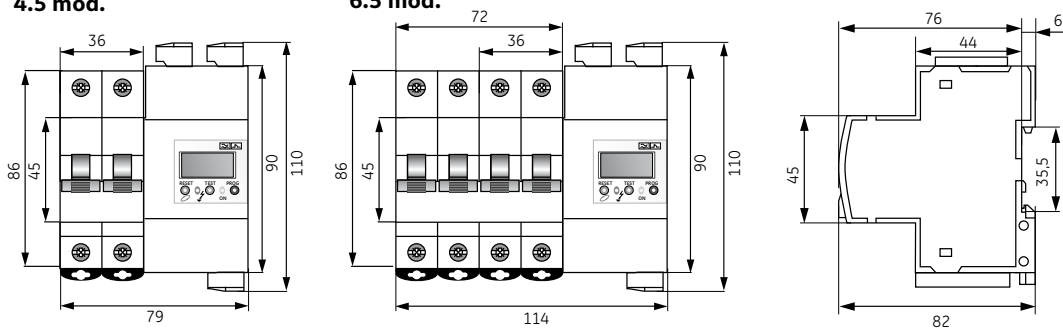
4P  
6.5 mod.



**TeleREC Top MCB**

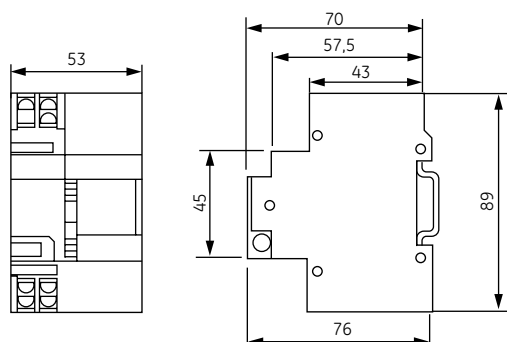
2P  
4.5 mod.

4P  
6.5 mod.



**TeleREC Plus**

3 mod.





Dimensional drawings

Add-on-devices

A

B

C

D

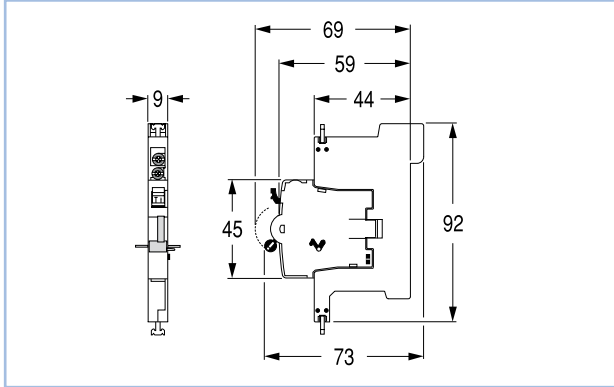
E

F

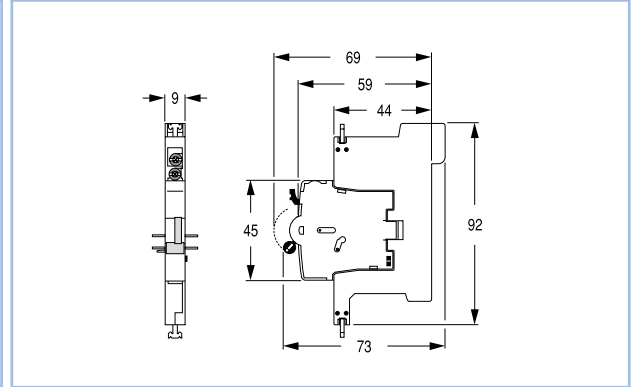
G

X

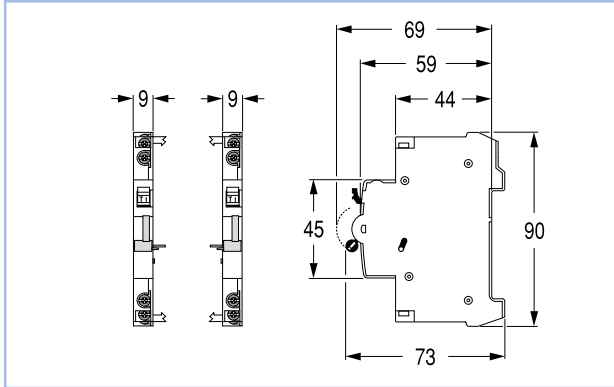
**Auxiliary - Series CA**



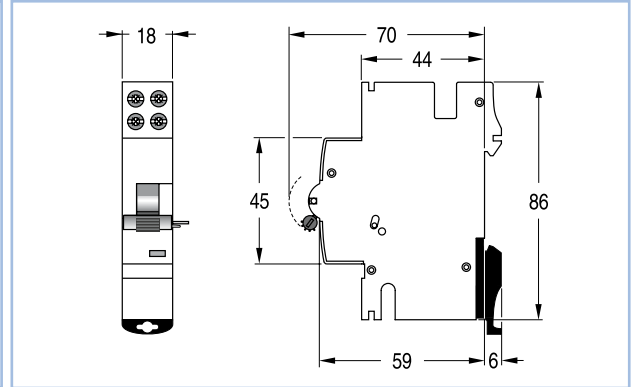
**Auxiliary interface - Series CA UN (Unibis)**



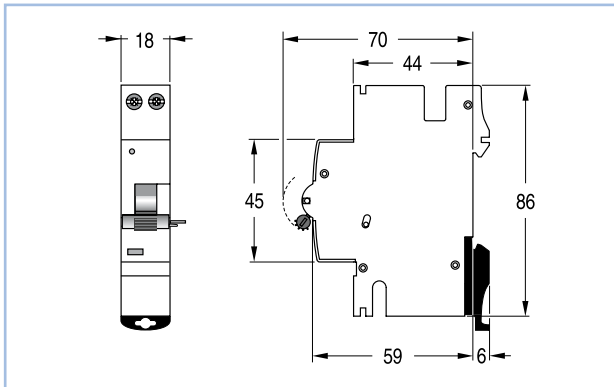
**Auxiliary - Series CB / CBT**



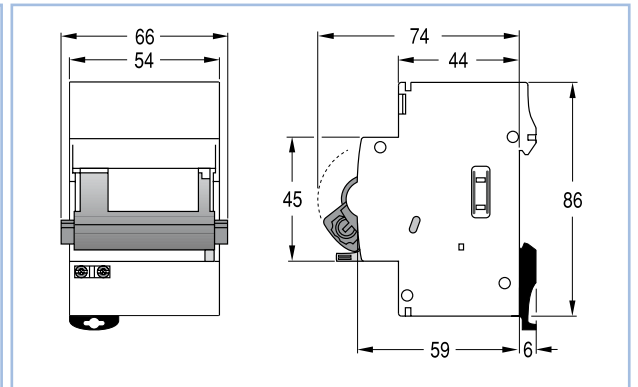
**Shunt Trip - Tele L / Tele LT**



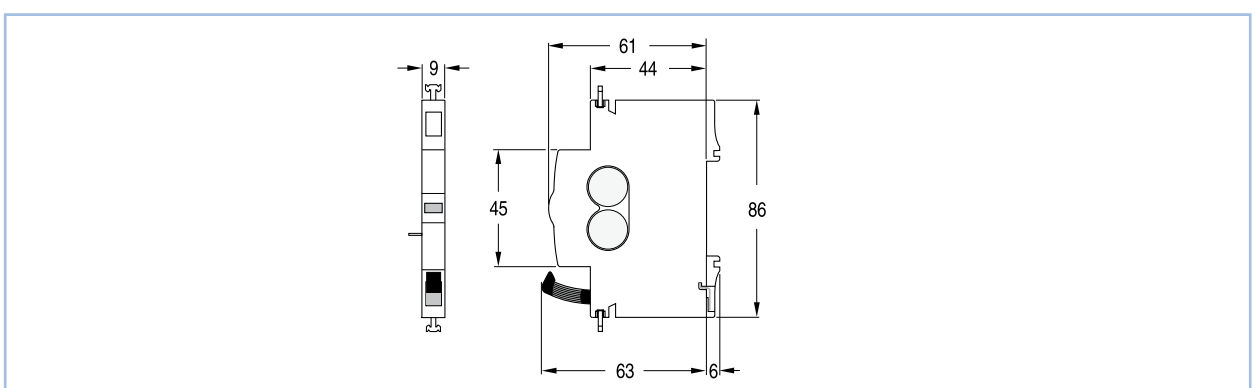
**Undervoltage Release - Tele U**



**Motor operator - Tele MP**



**Panel board switch - PBS**





	D.2	Switches and Push-buttons - <b>Aster</b>
<b>New</b>	D.4	LED Indication Lamp - <b>Aster BL</b>
	D.6	Indication Lamps and Socket outlets - <b>Aster</b>
	D.8	Contactors - <b>Contax</b>
<b>New</b>	D.12	Contactors - <b>Contax L</b>
<b>New</b>	D.14	Relays - <b>Contax R</b>
<b>New</b>	D.18	Impulse Switches - <b>Pulsar S</b>
<b>New</b>	D.24	Staircase Switches - <b>Pulsar SC</b>
<b>New</b>	D.26	Universal reliable multifunction - Time Relays
<b>New</b>	D.30	Time Relays - <b>Pulsar T+</b>
<b>New</b>	D.34	DIN-rail dimmers - <b>DIM</b>
<b>New</b>	D.40	Analogue Time Switches - <b>Classic</b>
<b>New</b>	D.42	Digital Time Switches - <b>Galax</b>
<b>New</b>	D.46	Time Switches - <b>72 x 72 Classic and Galax</b>
<b>New</b>	D.48	Light Sensitive Switches - <b>Galax LSS</b>
	D.50	Safety and bell transformers Buzzers and bells - <b>Series T+ BU+ BE+</b>
	D.52	Digital kWh - <b>Series MT+D kWh</b>
	D.54	Digital measurement instruments - <b>Series MT+D</b>
	D.56	Analogue measurement instruments - <b>Series MT+A</b>
	D.58	Current transformers - <b>Series MT+CT</b>
	D.60	Compact three-phase analyser - <b>Series MTDIN</b>
	D.62	Basic three-phase analyser - <b>Series MT96</b>
	D.64	Advanced three-phase analyser - <b>Series MT144</b>
	D.66	Power Analysers - Parameter table
<b>New</b>	D.68	Surge Arresters - <b>SurgeGuard</b>
	D.80	Dimensional drawings

Circuit Protection A

People Protection B

Add-on Devices C

**Comfort Functions** **D**

Busbars E

Enclosures F

Product overview G

Numerical index X



Aster

Comfort functions



Applications



Switching of lighting and heating in homes, shops, offices, warehouses, factories, hospitals, etc.

Approvals<sup>(1)</sup> / Marking



(1) Depending on type.

Features

Wide range with respect to available contact combinations and switching capacity. Mains disconnect switches and switches with change-over contact and off position available. Compact (4-pole in 1 module) with high switching capacity due to double interruption per path. All switches are sealable through padlock or by means of a lock. The terminals are equipped with captive Pozidriv screws and have IP20 protection degree. Mains disconnect switches accepts auxiliary contacts CA

Functions

Manual control of all kinds of electrical devices.

Standards

<b>Switches 16/32A</b>	BS EN 60669-1	VDE 0632 Part 1
<b>Mains disconnect switches 40-100</b>	BS EN 60947-3	VDE 0632 Part 101
<b>Rotary switches</b>	BS EN 60947-3	

Performance

	Push-buttons	Switches	Rotary switches	Mains disconnect switches
<b>Clockwork</b>	16A	16A   32A	32-40-63A	40-63-80-100A
Usable as mains disconnect switch	no	no	yes	yes
Nominal breaking capacity at 415V, cos $\Psi$ = 0.95	-	1.25xIn	8xIn	3xIn
Nominal breaking capacity at 415V, cos $\Psi$ = 0.65	-	-	8xIn	3xIn
Nominal voltage single pole devices	240V	240V	-	240/415V
Nominal voltage multipole devices	-	415V	240/415V	240/415V
Maximum allowed current during less than 1 s.	-	-	-	2kA
Mechanical service life (complete on-off-cycle)	>20000	>20000	>10000	>20000
Electrical service life, cos $\Psi$ = 0.95, Un and In	>20000	>20000   >5000	>1500	>1500
Short-circuit resistance with upfront fuses Gg/gL 100A (nominal)	4.5kA (nominal)	4.5kA (nominal)	15kA (nominal)	16kA (nominal)
(peak)	3kA (peak)	3kA (peak)	10kA (peak)	7kA (peak)
Protection degree	IP20	IP20	IP20	IP20
Screws	Pozidriv 1	Pozidriv 1	Pozidriv 2	Pozidriv 2
Terminal capacity:				
min	1x1.5mm <sup>2</sup>	1x1.5mm <sup>2</sup>	1x2.5mm <sup>2</sup>	1x6mm <sup>2</sup>
max	1x10mm <sup>2</sup>	1x10mm <sup>2</sup>	1x25mm <sup>2</sup>	1x50mm <sup>2</sup>

A

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D.2

### Aster - Switches and push-buttons

	Nominal current	Contact combination	Number of modules	Cat. No.	Ref. No.	Pack.	
<b>Mains disconnect switch</b> 	40A/240V	1NO	1	AST M 40 10	<b>666614</b>	12	
	40A/415V	2NO	2	AST M 40 20	<b>666615</b>	6	
	40A/415V	3NO	3	AST M 40 30	<b>666616</b>	4	
	40A/415V	4NO	4	AST M 40 40	<b>666617</b>	3	
	63A/240V	1NO	1	AST M 63 10	<b>666562</b>	12	
	63A/415V	2NO	2	AST M 63 20	<b>666563</b>	6	
	63A/415V	3NO	3	AST M 63 30	<b>666564</b>	4	
	63A/415V	4NO	4	AST M 63 40	<b>666565</b>	3	
	80A/240V	1NO	1	AST M 80 10	<b>666566</b>	12	
	80A/415V	2NO	2	AST M 80 20	<b>666567</b>	6	
	80A/415V	3NO	3	AST M 80 30	<b>666568</b>	4	
	80A/415V	4NO	4	AST M 80 40	<b>666569</b>	3	
	100A/240V	1NO	1	AST M 100 10	<b>666558</b>	12	
	100A/415V	2NO	2	AST M 100 20	<b>666559</b>	6	
100A/415V	3NO	3	AST M 100 30	<b>666560</b>	4		
100A/415V	4NO	4	AST M 100 40	<b>666561</b>	3		
<b>Rotary switch</b> 	32A/415V	2NO	4	AST R 32 20	<b>666574</b>	1	
	32A/415V	3NO	4	AST R 32 30	<b>666575</b>	1	
	32A/415V	3NO+NC	4	AST R 32 3N	<b>666576</b>	1	
	32A/415V	4NO	4	AST R 32 40	<b>666577</b>	1	
	40A/415V	2NO	4	AST R 40 20	<b>666578</b>	1	
	40A/415V	3NO	4	AST R 40 30	<b>666579</b>	1	
	40A/415V	3NO+NC	4	AST R 40 3N	<b>666580</b>	1	
	40A/415V	4NO	4	AST R 40 40	<b>666581</b>	1	
	63A/415V	2NO	4	AST R 63 20	<b>666582</b>	1	
	63A/415V	3NO	4	AST R 63 30	<b>666583</b>	1	
	63A/415V	3NO+NC	4	AST R 63 3N	<b>666584</b>	1	
	63A/415V	4NO	4	AST R 63 40	<b>666585</b>	1	
<b>Changeover switches</b> 	16A/240V	1NO	1	AST S 16 10	<b>666587</b>	12	
	16A/415V	2NO	1	AST S 16 20	<b>666589</b>	12	
	16A/415V	3NO	1	AST S 16 30	<b>666590</b>	12	
	16A/415V	4NO	1	AST S 16 40	<b>666593</b>	12	
	16A/415V	3NO	2	AST S 16 30 2	<b>666591</b>	6	
	16A/415V	4NO	2	AST S 16 40 2	<b>666592</b>	6	
	16A/240V	1CO	1	AST S 16 1	<b>666586</b>	12	
	16A/240V	2CO	1	AST S 16 2	<b>666588</b>	12	
	32A/240V	1NO	1	AST S 32 10	<b>666595</b>	12	
	32A/415V	2NO	1	AST S 32 20	<b>666597</b>	12	
	32A/415V	3NO	1	AST S 32 30	<b>666599</b>	12	
	32A/415V	4NO	1	AST S 32 40	<b>666600</b>	12	
	32A/415V	3NO	2	AST S 32 30 2	<b>666598</b>	6	
	32A/415V	4NO	2	AST S 32 40 2	<b>666601</b>	6	
	32A/240V	1CO	1	AST S 32 1	<b>666594</b>	12	
	32A/240V	2CO	1	AST S 32 2	<b>666596</b>	12	
	<b>Switch with signal lamp</b> 	16A/240V	1NO	1	AST SL 16 10	<b>666602</b>	12
		16A/240V	2NO	1	AST SL 16 20	<b>666603</b>	12
32A/240V		1NO	1	AST SL 32 10	<b>666604</b>	12	
32A/240V		2NO	1	AST SL 32 20	<b>666605</b>	12	
<b>Changeover switches with zero position</b> 	16A/240V	1CO	1	AST SZ 16 1	<b>666606</b>	12	
	16A/240V	2CO	1	AST SZ 16 2	<b>666607</b>	12	
	32A/240V	1CO	1	AST SZ 32 1	<b>666608</b>	12	
	32A/240V	2CO	1	AST SZ 32 2	<b>666609</b>	12	
<b>Push-button</b> 	16A/240V	1NC	1	AST P 16 01	<b>666570</b>	12	
	16A/240V	1NO	1	AST P 16 10	<b>666571</b>	12	
	16A/240V	1NO 1NC	1	AST P 16 11	<b>666572</b>	12	
<b>Push-button with signal lamp</b> 	16A/240V	1NO	1	AST PL 16 10	<b>666573</b>	12	
<b>Accessories for rotary switches</b>							
<b>Extension shaft</b> 	238 mm with emergency handle			AST R ES E	<b>666555</b>	1	
	238 mm with standard handle			AST R ES S	<b>666556</b>	1	
<b>Sealing piece</b> 			4	AST R TS	<b>666557</b>	1	

Aster  
A  
B  
C  
D  
E  
F  
G  
X



## Assembled indication lamps

### Aster BL

Comfort functions



#### Applications



Mainly used to visualize the status of a (sub)part of the installation, heater, motor, fan, pump etc.

#### Standards / Marking

VDE 0633, BS EN 60730-1, BS EN 60730-2-7



#### Features

Available in different colored leds. UNIVERSAL Current application DC/AC.

#### Functions

Status visualisation.

#### Performance

Standards	EN 60 947-5-1
Number of poles	1
Rated voltage U <sub>n</sub>	V AC 230
	V DC 230
Light source	high capacity LED diode
Light source capacity W	0,8
Colours	green - G, red - R, blue - B, Yellow-Y
Terminal capacity mm <sup>2</sup>	0,75 - 6 for Cu conductors
Mounting	on rail DIN 35x7,5 EN 60 715
Degree of protection	IP 20
	IP 40 from the front panel
Ambient air temperature °C	from -25 to +55
Working positions	optional

A

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**Aster BL - Assembled indication lamps**



Nominal voltage	Color	Number of modules	Cat. No.	Ref. No.	Pack.
230 V AC/DC	Red	1	ASTBLR230	<b>661692</b>	12
230 V AC/DC	Green	1	ASTBLG230	<b>661693</b>	12
230 V AC/DC	Blue	1	ASTBLB230	<b>661694</b>	12
230 V AC/DC	Yellow /Amber	1	ASTBLY230	<b>661695</b>	12

**Aster BL**

A

B

C

**D**

E

F

G

X





A

B

C

D

E

F

G

X

## Indication lamps

### Aster

#### Features

Available in different voltages and with different coloured lenses.

#### Functions

Status visualisation.



#### Applications



Mainly used to visualise the status of a (sub)part of the installation, heater, motor, fan, pump etc.

#### Standards / Marking

VDE 0633, BS EN 60730-1, BS EN 60730-2-7



#### Performance

Nominal voltage	12V	24V
Own consumption	120mA	85mA
Lamp	Incandescent lamp	
Lens colours	Red, green, orange and transparent	
Protection degree	IP20	
Screws	Pozidriv 1	
Terminal capacity:	min	1x1.5mm <sup>2</sup>
	max	1x10mm <sup>2</sup> / 2x4mm <sup>2</sup>

#### Socket-outlets

### MSC

#### Applications



#### Approvals<sup>(1)</sup> / Marking



#### Standards

BS EN C61112-1, NF C61-303 (86), IEC 60884-1


(1) Depending on type.

#### Performance



Nominal current	16A
Nominal voltage	250V
Operating temperature	-20 ... +55°C
Protection degree	IP20
Screws	Pozidriv 2
Terminal capacity:	min
	max
	1x1mm <sup>2</sup>
	1x6mm <sup>2</sup> or 2x2.5mm <sup>2</sup>





### Aster - Indication lamp

	Nominal operating voltage	Colour	Number of modules	Cat. No.	Ref. No.	Pack.	
	Lampholder	-	-	1	AST B	666347	12

### Accessories

	Nominal operating voltage	Colour	Number of modules	Cat. No.	Ref. No.	Pack.	
	Lamp	12V	-	-	AST B 12	666340	12
		24V	-	-	AST B 24	666342	12
	Lens	-	Transparent	-	AST L CL	666343	12
		-	Green	-	AST L GN	666344	12
		-	Orange	-	AST L OR	666345	12
		-	Red	-	AST L RD	666346	12

### MSC - Socket-outlets

	Nominal current	Nominal voltage	Number of modules	Cat. No.	Ref. No.	Pack.	
	Edged with child protection	16A	250V	2.5	MSC SEP	666501	4
	Edged without child protection	16A	250V	2.5	MSC SE	666499	4
	Pin with child protection	16A	250V	2.5	MSC SPP	666502	4

Aster and MSC

A

B

C

**D**

E

F

G

X



Contax

Comfort functions



Applications



Switching of lighting, heating-equipment, motors for pumps and fans, ... Day and night contactors are used mainly in combination with dual-tariff applications to allow high-energy-loads (i.e. electrical water heaters, accumulation heaters) only to consume energy during the low-tariff period. A forced-on, forced-off, auto-switch allows to overrule the normal operation of the DN-contactor at all times.

Features

Except for the 20A version, all contactors have DC coils, resulting in an absolutely noise-free, real silent operation: 50 or 60Hz noise generation by the contactor is impossible. As all DC coil contactors have an internal diode rectifier bridge, they all can be operated by both DC and AC power supplies. The built-in varistor protects the coil against an overvoltage of up to 5kV. The switch position of the contactor is visualised through an indicator flag. The loss-proof safety terminals are equipped with Pozidriv screws and have IP20 protection degree. Add-on auxiliary contacts as well as spacers and sealing pieces are available.

Functions

Contactors are electromechanically controlled switches used to control single or multi-phase (high) power loads while the control itself can be (very) low power.

Standards

IEC 60947-4-1, BS EN 60947-4-1, IEC 61095, BS EN 61095. Approval VDE.

Performance

Rated switching capacity	20A	24A	40A	63A
<b>Contacts</b>				
Switching capacity for different loads				
Rated insulation voltage	400V	500V	500V	500V
Rated operational voltage	250V	440V	440V	440V
Switching-on capacity $\cos \varphi = 0.65$ at 380-400V 3phase	-	90A	176A	300A
Switching-on capacity $\cos \varphi = 0.95$ at 220-230V 1phase	100A	-	-	-
Switching-off capacity $\cos \varphi = 0.65$ at 380-400V 3phase	-	72A	176A	240A
Switching-off capacity $\cos \varphi = 0.95$ at 220-230V 1phase	80A	-	-	-
Fuse type GL for short-circuit protection	20A	35A	63A	80A
Ohmic loss per contact at $I_n$	1.0W	1.5W	3.0W	6.0W
Maximum switching frequency AC1 / AC7a	300/h	300/h	300/h	300/h
Maximum switching frequency AC3 / AC7b	600/h	600/h	600/h	600/h
Mechanical service life	$10^6$	$10^6$	$10^6$	$10^6$
Electrical service life AC1 / AC7a	150000	150000	150000	150000
Electrical service life AC3 / AC7b	150000	500000	170000	240000
Screws	Pozidriv 1	Pozidriv 1	Pozidriv 2	Pozidriv 2
Terminal capacity:	min 1x1mm <sup>2</sup> max 1x10mm <sup>2</sup> or 2x4mm <sup>2</sup>	1x1mm <sup>2</sup> 1x10mm <sup>2</sup> or 2x4mm <sup>2</sup>	1x1.5mm <sup>2</sup> 1x25mm <sup>2</sup> or 2x10mm <sup>2</sup>	1x1.5mm <sup>2</sup> 1x25mm <sup>2</sup> or 2x10mm <sup>2</sup>
<b>Magnetic control system</b>				
Control voltage range	85 ... 110% $\times$ Un	85 ... 110% $\times$ Un	85 ... 110% $\times$ Un	85 ... 110% $\times$ Un
Rated operating frequency	50 or 60Hz	DC, 40 ... 450Hz	DC, 40 ... 450Hz	DC, 40 ... 450Hz
Operating temperature range	-25 ... +55°C <sup>(1)</sup>	-25 ... +55°C <sup>(1)</sup>	-25 ... +55°C <sup>(1)</sup>	-25 ... +55°C <sup>(1)</sup>
Maximum pull-in coil power loss	8.0VA / 5.0W	4VA / 4W	5VA / 5W	6.5VA / 6.5W
Maximum holding coil power loss	3.2VA / 1.2W	4VA / 4W	5VA / 5W	4.2VA / 4.2W
Switching-on delay	9 ... 12 ms	< 40 ms	< 40 ms	< 40 ms
Switching-off delay	10 ... 12 ms	< 40 ms	< 40 ms	< 40 ms
Screws	Pozidriv 1	Pozidriv 1	Pozidriv 1	Pozidriv 1
Terminal capacity:	min 1x1mm <sup>2</sup> max 1x4mm <sup>2</sup> or 2x2.5mm <sup>2</sup>	1x1mm <sup>2</sup> 1x4mm <sup>2</sup> or 2x2.5mm <sup>2</sup>	1x1mm <sup>2</sup> 1x4mm <sup>2</sup> or 2x2.5mm <sup>2</sup>	1x1mm <sup>2</sup> 1x4mm <sup>2</sup> or 2x2.5mm <sup>2</sup>

(1) Remark: If several contactors are mounted next to each-other and the time of operation exceeds 1 hour and the ambient temperature rises above 40°C, a 1/2-module spacer must be added every second contactor (i.e. contactor contactor spacer contactor contactor spacer contactor contactor etc.)

### Contax - Contactors

Contactor	Nominal current	Contact combination	Coil voltage	AC/DC	Number of modules	Cat. No.	Ref. No.	Pack.	
	20A	1NO 1NC	24V	AC	1	CTX 20 11 024 A	<b>666127</b>	12	
	20A	1NO 1NC	230V	AC	1	CTX 20 11 230 A	<b>666126</b>	12	
	20A	2NC	24V	AC	1	CTX 20 02 024 A	<b>666129</b>	12	
	20A	2NC	230V	AC	1	CTX 20 02 230 A	<b>666128</b>	12	
	20A	2NO	12V	AC	1	CTX 20 20 012 A	<b>666130</b>	12	
	20A	2NO	24V	AC	1	CTX 20 20 024 A	<b>666133</b>	12	
	20A	2NO	48V	AC	1	CTX 20 20 048 A	<b>666134</b>	12	
	20A	2NO	230V	AC	1	CTX 20 20 230 A	<b>666131</b>	12	
	20A	2NO	240V	AC	1	CTX 20 20 240 A	<b>666132</b>	12	
		24A	2NO 2NC	24V	AC/DC	2	CTX 24 22 024 U	<b>666136</b>	5
		24A	2NO 2NC	230V	AC/DC	2	CTX 24 22 230 U	<b>666135</b>	5
		24A	3NO	24V	AC/DC	2	CTX 24 30 024 U	<b>666138</b>	5
24A		3NO	230V	AC/DC	2	CTX 24 30 230 U	<b>666137</b>	5	
24A		4NC	24V	AC/DC	2	CTX 24 04 024 U	<b>666140</b>	5	
24A		4NC	230V	AC/DC	2	CTX 24 04 230 U	<b>666139</b>	5	
24A		4NO	12V	AC/DC	2	CTX 24 40 012 U	<b>666141</b>	5	
24A		4NO	24V	AC/DC	2	CTX 24 40 024 U	<b>666144</b>	5	
24A		4NO	48V	AC/DC	2	CTX 24 40 048 U	<b>666145</b>	5	
24A		4NO	230V	AC/DC	2	CTX 24 40 230 U	<b>666142</b>	5	
24A		4NO	240V	AC/DC	2	CTX 24 40 240 U	<b>666143</b>	5	
		40A	2NC	230V	AC/DC	3	CTX 40 02 230 U	<b>666170</b>	3
	40A	2NO	230V	AC/DC	3	CTX 40 20 230 U	<b>666146</b>	3	
	40A	3NO	24V	AC/DC	3	CTX 40 30 024 U	<b>666149</b>	3	
	40A	3NO	230V	AC/DC	3	CTX 40 30 230 U	<b>666148</b>	3	
	40A	4NO	12V	AC/DC	3	CTX 40 40 012 U	<b>666150</b>	3	
	40A	4NO	24V	AC/DC	3	CTX 40 40 024 U	<b>666153</b>	3	
	40A	4NO	48V	AC/DC	3	CTX 40 40 048 U	<b>666154</b>	3	
	40A	4NO	230V	AC/DC	3	CTX 40 40 230 U	<b>666151</b>	3	
	40A	2NO	24V	AC/DC	3	CTX 40 20 024 U	<b>666147</b>	3	
	40A	4NO	240V	AC/DC	3	CTX 40 40 240 U	<b>666152</b>	3	
		63A	4NO	24V	AC/DC	3	CTX 63 40 024 U	<b>666158</b>	3
		63A	4NO	230V	AC/DC	3	CTX 63 40 230 U	<b>666156</b>	3
63A		2NO	230V	AC/DC	3	CTX 63 20 230 U	<b>666155</b>	3	
63A		4NO	240V	AC/DC	3	CTX 63 40 240 U	<b>666157</b>	3	

Contactor Day and Night	Nominal current	Contact combination	Coil voltage	AC/DC	Number of modules	Cat. No.	Ref. No.	Pack.
	20A	2NO	230V	AC	1	CTX DN 20 20 230 A	<b>666164</b>	12
	24A	3NO	230V	AC/DC	2	CTX DN 24 30 230 U	<b>666165</b>	5
	24A	4NO	230V	AC/DC	2	CTX DN 24 40 230 U	<b>666166</b>	5
	40A	2NO	230V	AC/DC	3	CTX DN 40 20 230 U	<b>666167</b>	3
	40A	3NO	230V	AC/DC	3	CTX DN 40 30 230 U	<b>666168</b>	3
	40A	4NO	230V	AC/DC	3	CTX DN 40 40 230 U	<b>666169</b>	3

### Add-on auxiliary contact for 24-40-63A contactors

Left mounting	Nominal current	Contact combination	Number of modules	Cat. No.	Ref. No.	Pack.
	6A	1NO 1NC	0.5	CTX 06 11	<b>666162</b>	5
	6A	2NO	0.5	CTX 06 20	<b>666163</b>	5
	2NO					

### Accessories

	Number of modules	Cat. No.	Ref. No.	Pack.
	2	CTX TS 2	<b>666160</b>	3
	3	CTX TS 3	<b>666159</b>	3
	0.5	PLS + / CTX + SP	<b>686069</b>	50

Contax  
A  
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CTX Modular installation contactors - Lighting application

Comfort functions

A

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**D**

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Lamp type	Lamp data Watt	Permitted number of lamps per phase (230V, 50Hz) for contactor type					Capacitor (µF)	
		In (A)	CTX20	CTX24	CTX40	CTX63		
<b>Incandescent lamp</b>	60	0.26	21	25	54	83	-	
	100	0.43	13	15	32	50	-	
	200	0.87	7	7	16	25	-	
	300	1.3	4	5	11	16	-	
	500	2.17	3	3	6	10	-	
	1000	4.35	1	1	3	5	-	
<b>Fluorescent lamp</b>	<b>uncompensated and series compensation</b>							
	15	0.35	25	30	100	155	-	
	20	0.37	22	26	85	140	-	
	40	0.43	17	20	65	105	-	
	42	0.54	13	16	52	85	-	
	65	0.67	10	12	40	60	-	
	115	1.5	4	5	18	28	-	
	140	1.5	4	5	18	28	-	
	<b>two lamp circuit</b>							
	2x20	2x0.13	2x22	2x26	2x85	2x140	-	
	2x40	2x0.22	2x17	2x20	2x65	2x105	-	
	2x42	2x0.24	2x13	2x16	2x52	2x85	-	
	2x65	2x0.34	2x10	2x12	2x40	2x60	-	
	2x115	2x0.65	2x4	2x5	2x18	2x28	-	
	2x140	2x0.75	2x4	2x5	2x18	2x28	-	
	<b>parallel compensation</b>							
	15	0.11	6	8	15	67	4.5	
	20	0.13	5	7	14	60	5	
	40	0.22	6	8	15	67	4.5	
	42	0.24	4	6	12	50	6	
	65	0.65	4	5	10	43	7	
	115	0.65	1	2	4	17	18	
	140	0.75	1	2	4	17	18	
	<b>High pressure mercury vapor lamps</b> (eg. HQL, HPL)	<b>uncompensated</b>						
		50	0.61	12	14	36	50	-
		80	0.8	7	10	27	36	-
		125	1.15	5	7	19	26	-
		250	2.15	3	4	10	14	-
400		3.25	1	2	7	10	-	
700		5.4	-	1	4	6	-	
1000		7.5	-	1	3	4	-	
200/400		8	-	1	3	4	-	
<b>parallel compensation</b>								
50		0.28	4	5	10	43	7	
60		0.41	3	4	8	37	8	
125		0.65	2	3	6	26	10	
250		1.22	1	2	3	15	18	
400		1.95	-	1	3	10	25	
700		3.45	-	-	1	5	45	
1000		4.8	-	-	1	4	60	
200/400		5.45	-	1	2	2	35	
<b>Lamps with electronic power supply units</b>	<b>permitted number of electropower supply units per phase</b>							
	1x18	15	24	55	76	-	-	
	2x18	8	18	34	46	-	-	
	1x36	12	16	34	47	-	-	
	2x36	7	11	20	29	-	-	
	1x58	11	14	32	46	-	-	
	2x58	6	8	17	24	-	-	
	<b>Metal-halogen lamps</b> (eg. HQL, HPI)	<b>uncompensated</b>						
35		0.53	-	10	28	38	-	
70		1	-	5	14	20	-	
150		1.8	-	3	8	11	-	
250		3	-	2	5	7	-	
400		3.5	-	1	4	6	-	
1000		9.5	-	-	1	2	-	
2000		16.5	-	-	1	1	-	
2000/400V		10.5	-	-	2	2	-	
3500/400V		18	-	-	1	1	-	
<b>parallel compensation</b>								
35		0.25	-	5	11	30	6	
70		0.45	-	3	5	18	14	
150		0.75	-	1	3	9	20	
250		1.5	-	1	2	7	33	
400	2.5	-	1	2	6	35		
1000	5.8	-	-	-	2	95		
2000	11.5	-	-	-	1	148		
2000/400V	6.6	-	-	1	2	58		
3500/400V	11.6	-	-	-	1	100		



## CTX Modular installation contactors - Lighting application

Lamp type	Lamp data Watt	Permitted number of lamps per phase (230V, 50Hz) for contactor type					Capacitor (µF)	
		In (A)	CTX20	CTX24	CTX40	CTX63		
Low pressure sodium vapor lamps	<b>uncompensated</b>							
	35	1.5	5	8	22	30	-	
	55	1.5	5	8	22	30	-	
	90	2.4	3	5	13	19	-	
	135	3.5	2	3	10	13	-	
	150	3.3	2	3	10	14	-	
	180	3.3	2	3	10	14	-	
	200	2.3	3	5	14	20	-	
	<b>parallel compensation</b>							
	35	0.31	-	1	4	15	20	
	55	0.42	-	1	4	15	20	
	90	0.63	-	1	3	10	30	
	135	0.94	-	-	2	7	45	
	150	1	-	-	2	8	40	
180	1.16	-	-	2	8	40		
200	1.32	-	1	3	12	25		
High pressure sodium vapor lamps	<b>uncompensated</b>							
	150	1.8	-	4	15	20	-	
	250	3	-	3	9	15	-	
	330	3.7	-	2	8	10	-	
	400	4.7	-	1	6	8	-	
	1000	10.3	-	-	3	4	-	
	<b>parallel compensation</b>							
	150	0.83	-	1	3	15	20	
	250	1.5	-	1	2	9	33	
	330	2	-	-	2	7	40	
	400	2.4	-	-	1	6	48	
	1000	6.3	-	-	-	2	106	
	<b>Transformer data</b>		<b>Permitted number of transformers per phase (230V, 50Hz)</b>					
	WATT							
Transformers for halogen for low voltage lamps	20	-	40	52	110	174	-	
	50	-	20	24	50	80	-	
	75	-	13	16	35	54	-	
	100	-	10	12	27	43	-	
	150	-	7	9	19	29	-	
	200	-	5	6	14	23	-	
	300	-	3	4	9	14	-	

## CTX Modular installation contactors DC1-/DC-3 switching DC with NO contacts

Type	Rated operational Voltage Ue (A)	DC-1 (L/R ≤ 1ms)			DC-3 (L/R ≤ 2ms)		
		1 current path (A)	2 current path series (A)	3 current path series (A)	1 current path (A)	2 current path series (A)	3 current path series (A)
CTX24	24VDC	24	24	24	16	24	24
	48VDC	21	24	24	8	18	24
	60VDC	17	24	24	4	14	24
	110VDC	7	16	24	16	6.5	16
	220VDC	0.9	4.5	13	0.2	1	4
CTX24	24VDC	40	40	40	19	40	40
	48VDC	23	40	40	10	20	40
	60VDC	18	32	40	5	16	34
	110VDC	8	17	30	1.8	7	18
	220VDC	1	5	15	0.3	1.1	4.5
CTX24	24VDC	50	63	63	21	44	63
	48VDC	25	43	63	11	22	47
	60VDC	20	35	60	5.5	18	38
	110VDC	9	19	33	2	8	21
	220VDC	1.1	5.5	17	0.3	1.2	5

Lighting application

A

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**D**

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## Contactors

### Contax L

Comfort functions



### Applications



Switching of lighting, heating-equipment, motors for pumps and fans, ...  
Day and night contactors are used mainly in combination with dual-tariff applications to allow high-energy-loads (i.e. electrical water heaters, accumulation heaters) only to consume energy during the low-tariff period. A forced-on, forced-off, auto-switch allows to overrule the normal operation of the DN-contactor at all times.

### Features

All contactors have DC coils, resulting in an absolutely noise-free, real silent operation: 50 or 60Hz noise generation by the contactor is impossible. As all DC coil contactors have an internal diode rectifier bridge, they all can be operated by both DC and AC power supplies. The builtin varistor protects the coil against an overvoltage of up to 2kV. The switch position of the contactor is visualised through an indicator flag. The loss-proof safety terminals are equipped with Pozidriv screws and have IP20 protection degree.

These contactor allows:

- Add-on auxiliary contacts:  
Contax AUXII, Contax AUX20 (except 1-module AC/DC contactors).
- Sealing caps:  
Contax R1CAP, Contax R2CAP (for 3 module available upon request).

### Functions

Contactors are electromechanically controlled switches used to control single or multi-phase (high) power loads while the control itself can be (very) low power

### Standards / Marking

IEC/EN 61095, IEC/EN 60947-4-1, IEC/EN 60947-5-1, CE

### Performance

Rated switching capacity	20A	25A	40A	63A
<b>Contacts</b>				
Switching capacity for different loads				
Rated insulation voltage	440V	440V	440V	440V
Rated operational voltage	400V	400V	400V	400V
Switching-on capacity $\cos \varphi = 0.65$ at 380-400V 3phase	-	85A	220A	300A
Switching-on capacity $\cos \varphi = 0.95$ at 220-230V 1phase	90A	-	-	-
Switching-off capacity $\cos \varphi = 0.65$ at 380-400V 3phase	-	68A	176A	240A
Switching-off capacity $\cos \varphi = 0.95$ at 220-230V 1phase	72A	-	-	-
Fuse type GL for short-circuit protection	20A	25A	63A	80A
Ohmic loss per contact at In	1.7W	2.2W	4.0W	8.0W
Maximum switching frequency AC1 / AC7a	600/h	600/h	600/h	600/h
Maximum switching frequency AC3 / AC7b	600/h	600/h	600/h	600/h
Mechanical service life	10x10 <sup>6</sup>	10x10 <sup>6</sup>	10x10 <sup>6</sup>	10x10 <sup>6</sup>
Electrical service life AC1 / AC7a	200000	200000	100000	100000
Electrical service life AC3 / AC7b	300000	500000	150000	150000
Screws	Pozidriv 1	Pozidriv 1	Pozidriv 2	Pozidriv 2
Terminal capacity:				
rigid	1x6mm <sup>2</sup>	1x6mm <sup>2</sup>	1.5x16mm <sup>2</sup>	1.5x16mm <sup>2</sup>
flexible	1x10mm <sup>2</sup>	1x10mm <sup>2</sup>	1.5x25mm <sup>2</sup>	1.5x25mm <sup>2</sup>
<b>Magnetic control system</b>				
Control voltage range	85 ... 110%xUn	85 ... 110%xUn	85 ... 110%xUn	85 ... 110%xUn
Rated operating frequency	40 ... 500Hz	40 ... 500Hz	50/60Hz	50/60Hz
Operating temperature range	-25 ... +55°C <sup>(1)</sup>	-25 ... +55°C <sup>(1)</sup>	-25 ... +55°C <sup>(1)</sup>	-25 ... +55°C <sup>(1)</sup>
Maximum switch-on coil power loss	2.1VA / 2.1W	2.6VA / 2.6W	5VA / 5W	5VA / 5W
Maximum operation coil power loss	2.1VA / 2.1W	2.6VA / 2.6W	5VA / 5W	5VA / 5W
Make delay	15 ... 45 ms	15 ... 45 ms	15 ... 20 ms	15 ... 20 ms
Brake delay	20 ... 50 ms	20 ... 70 ms	35 ... 45 ms	35 ... 45 ms
Screws	Pozidriv 1	Pozidriv 1	Pozidriv 1	Pozidriv 1
Terminal capacity:				
rigid	1x2.5mm <sup>2</sup>	1x2.5mm <sup>2</sup>	1x2.5mm <sup>2</sup>	1x2.5mm <sup>2</sup>
flexible	2x2.5mm <sup>2</sup>	2x2.5mm <sup>2</sup>	2x2.5mm <sup>2</sup>	2x2.5mm <sup>2</sup>

<sup>(1)</sup> Valid for 2NO and 4NO versions of contacts. For other version of contacts is temperature range -15 ... +55°C

Auxiliary contacts pag. **D.17**

More technical data pag. [website](#) | Dimensions pag. **D.82**

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



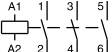



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



X



### Contax L - Contactors

	Nominal current	Contact combination	Coil voltage	AC/DC	Number of modules	Cat. No.	Ref. No.	Pack.
	20A	2NO	230V	AC/DC	1	CONTAX2020230U	<b>685935</b>	1
								
	25A	4NO	230V	AC/DC	2	CONTAX2540230U	<b>685936</b>	1
								
	25A	3NO	230V	AC/DC	2	CONTAX2530230U	<b>685937</b>	1
								
	25A	2NO 2NC	230V	AC/DC	2	CONTAX2522230U	<b>685938</b>	1
								
	40A	4NO	230V	AC/DC	3	CONTAX4040230U	<b>685939</b>	1
	63A	4NO	230V	AC/DC	3	CONTAX6340230U	<b>685940</b>	1

### Contax L - Contactor Day and Night

	20A	2NO	230V	AC/DC	1	CONTAXDN2020230U	<b>685941</b>	1
								
	25A	4NO	230V	AC/DC	2	CONTAXDN2540230U	<b>685942</b>	1
								
	25A	3NO	230V	AC/DC	2	CONTAXDN2530230U	<b>685943</b>	1
	32A	3NO	230V	AC/DC	3	CONTAXDN3230230U	<b>685944</b>	1

Contax L

A

B

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**D**

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X

New



## Relays

### Contax R

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Comfort functions



### Applications

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- Switching of lighting, heating, etc.
- Galvanic insulation of i.e. status signalisation lamps from a (high) power (high voltage) circuit.
- Galvanic insulation of PLC-inputs or outputs to avoid destruction through excessive voltage.

### Features

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- The switch position is visualised by the position of the front handle.
- The safety terminals are equipped with captive Pozidriv screws and have IP20 protection degree.
- Add-on auxiliary contacts available.
- Because of the advanced product design, no spacers are needed.
- Increased safety: sealing caps for both coil and terminal are available.

### Functions

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Relays are electromechanically controlled switches used to control low power loads.

### Standards / Marking

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IEC/EN 61095, IEC/EN 60947-4-1,  
IEC/EN 60947-5-1



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**D**

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X





## Performance

			Contax R
<b>Rated current (according to EN 60947-4-1)</b>			
230VAC (1 and 2 pole) / 400VAC (3 and 4 pole)	A		16
Nominal thermal current (I <sub>th</sub> )	A		16
Number of pole			1 → 4
<b>Contacts</b>			
	NO		1 → 4
	Changeover		1 → 2
	NO + NC		1+1 / 2+2
<b>Width (in 17.8mm DIN modules)</b>			
	1P and 2P	Mod.	1
	3P and 4P	Mod.	2
<b>Coil specifications</b>			
Supply voltage range (in % of U <sub>n</sub> )		%	85-110
Coil voltage frequency		Hz	50/60
Coil pick-up power	1P and 2P	VA	10
	3P and 4P	VA	25
Coil power loss - AC	1P and 2P	VA	1.2
	3P and 4P	VA	1.6
Maximum coil holding voltage time			unlimited
<b>Contact bounce time at closing</b>		sec.	< 0.010
<b>Operate and release time</b>			
Pick-up time	NO contact	sec.	< 0.025
(from 0 to U <sub>n</sub> )	NC contact	sec.	< 0.025
Drop-out time	NO contact	sec.	< 0.030
(from U <sub>n</sub> to 0)	NC contact	sec.	< 0.030
<b>Maximum peak current at closing</b>			
Single phase 230V AC cos $\Psi$ = 0.95			70
3-phase 400V~ cos $\Psi$ = 0.65			70
<b>Maximum peak current at opening</b>			
Single phase 230V AC cos $\Psi$ = 0.95			56
3-phase 400V~ cos $\Psi$ = 0.65			56
<b>Lifetime (in number of operations)</b>			
Electrical (in AC-1 - At full load)			2 x 10 <sup>5</sup>
Mechanical			3 x 10 <sup>6</sup>
<b>Load specifications per phase</b>			
Maximum load AC-1	1P and 2P	kW	2.9
	3P and 4P	kW	8.8
Maximum load AC-5b		kW	2.0
Maximum load AC-7b		kW	1.1
Maximum load AC-3	230V AC	kW	1.1
	400V AC	kW	3.0
Minimum load (under 5V)		W	2
Short-circuit fuse protection		A	16
<b>General specifications</b>			
Auxiliary contact add-on (CTX R)			yes
Need for spacer			no
DIN rail mounting			yes
Front handle for manual operation			yes
Permanent ON/OFF			no
Indicator of contact position			yes
Clamping terminals			yes
Unlosable screws			yes
Sealable terminals (coil and load)			yes
Cable cross section (Ø min/max)	Coil	mm <sup>2</sup>	1.0 / 2.5
	Load	mm <sup>2</sup>	1.0 / 10
Maximum torque on terminals	Coil / load	Nm	0.6 / 1.2
Ambient temperature at installation point (min./max.)		°C	-15 / 55

Contax R

A

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**Impulse switches, Contax L and relays: maximum lamp loads**

Comfort functions

A

B

C

D

E

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X



Lamps type	Lamp Watts Power consumption	Pulsar S PULSAR16	Pulsar S PULSAR 32	Contax R	Contax L Contactors 20A	Contax L Contactors 25A	Contax L Contactors 40A	Contax L Contactors 63A
<b>Incandescent lamps</b>								
Max. load 230VAC		2100W	3600W	2100W	2100W	2220W	4050W	5100W
Max. number of lamps	15W	133	233	133	133	147	267	333
	25W	80	140	80	80	88	160	200
	40W	50	88	50	50	55	100	125
	60W	33	58	33	33	37	67	83
	75W	27	47	27	27	29	53	67
	100W	20	35	20	20	22	40	50
	150W	13	23	13	13	15	27	33
	200W	10	18	10	10	11	20	25
	300W	7	12	7	7	7	13	17
	500W	4	7	3	4	4	8	10
<b>Fluo lamp PF uncorrected</b>								
Max. load 230VAC		1560W	1560W	845W	845W	1105W	1950W	3120W
Max. number of lamps	18W	43	43	24	24	30	54	86
	36W	37	37	20	20	26	47	74
	40W	37	37	20	20	26	47	74
	58W	24	24	13	13	17	30	48
	65W	24	24	13	13	17	30	48
<b>Fluo twin lamps</b>								
Max. load 230VAC		2730W	2730W	1360W	1360W	1760W	4320W	6500W
Max. number of lamps	2x18W	62	62	31	31	40	100	150
	2x36W	33	33	17	17	22	54	81
	2x40W	33	33	17	17	22	54	81
	2x58W	21	21	10	10	13	33	50
	2x65W	21	21	10	10	13	33	50
<b>Fluo lamp parallel compensation</b>								
Max. load 230VAC		720W	1365W	390W	390W	325W	2015W	3055W
Max. number of lamps	18W	18	33	7	7	8	49	73
	36W	18	33	7	7	8	49	73
	40W	18	33	7	7	8	49	73
	58W	11	21	4	4	5	31	47
	65W	11	21	4	4	5	31	47
<b>Halogen 230V</b>								
Max. load 230VAC		2100W	3600W	2100W	2100W	2250W	4050W	5100W
Max. number of lamps	150W	13	23	13	13	15	27	33
	250W	8	14	8	8	9	16	20
	300W	7	12	7	7	7	13	17
	400W	5	9	5	5	6	10	13
	500W	4	7	4	4	4	8	10
	1000W	2	4	2	2	2	4	5
<b>HP sodium vapour</b>								
Max. load 230VAC		1200W	1600W	800W	800W	1000W	2500W	3300W
Max. number of lamps	70W	13	16	9	9	10	30	35
	150W	7	9	5	5	6	17	22
	250W	4	5	3	3	4	10	13
	400W	3	4	2	2	2	6	8
	1000W	1	1	-	-	1	3	3
<b>LP sodium vapour</b>								
Max. load 230VAC		1800W	2880W	540W	540W	720W	1800W	2340W
Max. number of lamps	55W	15	27	7	7	9	23	30
	90W	10	18	4	4	5	14	19
	135W	10	18	3	3	4	10	13
	180W	10	16	3	3	4	10	13
	185W	9	15	2	2	3	9	12
<b>HP mercury vapour</b>								
Max. load 230VAC		1250W	2000W	1000W	1000W	1250W	3000W	4000W
Max. number of lamps	50W	17	27	14	14	18	38	55
	80W	13	20	10	10	13	29	42
	125W	8	13	7	7	9	20	29
	250W	5	7	4	4	5	10	15
	400W	3	5	2	2	3	7	10
	1000W	1	2	1	1	1	3	4
<b>VLV halogen</b>								
Max. load 230VAC		1050W	3000W	1050W	1050W	1200W	2700W	4350W
Max. number of lamps	20W	50	150	50	50	60	135	215
	50W	20	60	20	20	24	54	86
	75W	14	40	14	14	16	36	57
	100W	10	30	10	10	12	27	43
	150W	7	20	7	7	8	18	29
	200W	5	15	5	5	6	14	22
	300W	3	10	3	3	4	9	14
<b>Electronic reactor</b>								
Max. load 230VAC		720W	2800W	470W	470W	720W	2090W	2880W
Max. number of lamps	1x18W	33	133	22	22	35	100	139
	1x36W	19	75	13	13	20	56	78
	1x58W	11	43	7	7	11	32	45
	2x18W	18	71	12	12	19	53	74
	2x36W	10	39	6	6	10	29	40
	2x58W	5	21	4	4	6	16	22
<b>LEDs</b>								
Max. load 230VAC	Non dimmable	2A	12A	1.5A	2.4A	3.8A	11A	18A
	Dimmable	2A	12A	1.5A	2.4A	3.8A	11A	18A

### Contax R - Relays

	Nominal current	Contact combination	Coil voltage AC	Number of Modules	Cat. No.	Ref. No.	Pack.	
	1 NO 	16A	1 NO	8V	1	CONTAXR1610008A	685693	1
		16A	1 NO	12V	1	CONTAXR1610012A	685694	1
		16A	1 NO	24V	1	CONTAXR1610024A	685695	1
		16A	1 NO	48V	1	CONTAXR1610048A	685696	1
		16A	1 NO	115V	1	CONTAXR1610115A	685697	1
		16A	1 NO	230V	1	CONTAXR1610230A	685699	1
		16A	1 NO	240V	1	CONTAXR1610240A	685700	1
	1 CO 	16A	1 CO	8V	1	CONTAXR161008A	685701	1
		16A	1 CO	12V	1	CONTAXR161012A	685702	1
		16A	1 CO	24V	1	CONTAXR161024A	685703	1
		16A	1 CO	48V	1	CONTAXR161048A	685704	1
		16A	1 CO	115V	1	CONTAXR161115A	685705	1
		16A	1 CO	230V	1	CONTAXR161230A	685706	1
		16A	1 CO	240V	1	CONTAXR161240A	685707	1
	2 NO 	16A	2 NO	8V	1	CONTAXR1620008A	685708	1
		16A	2 NO	12V	1	CONTAXR1620012A	685709	1
		16A	2 NO	24V	1	CONTAXR1620024A	685710	1
		16A	2 NO	48V	1	CONTAXR1620048A	685711	1
		16A	2 NO	115V	1	CONTAXR1620115A	685712	1
		16A	2 NO	230V	1	CONTAXR1620230A	685714	1
		16A	2 NO	240V	1	CONTAXR1620240A	685715	1
	1 NO 1 NC 	16A	1 NO 1 NC	8V	1	CONTAXR1611008A	685716	1
		16A	1 NO 1 NC	12V	1	CONTAXR1611012A	685717	1
		16A	1 NO 1 NC	24V	1	CONTAXR1611024A	685718	1
		16A	1 NO 1 NC	48V	1	CONTAXR1611048A	685719	1
		16A	1 NO 1 NC	115V	1	CONTAXR1611115A	685720	1
		16A	1 NO 1 NC	230V	1	CONTAXR1611230A	685722	1
		16A	1 NO 1 NC	240V	1	CONTAXR1611240A	685723	1
	2 CO 	16A	2 CO	8V	2	CONTAXR162008A	685724	1
		16A	2 CO	12V	2	CONTAXR162012A	685725	1
		16A	2 CO	24V	2	CONTAXR162024A	685726	1
		16A	2 CO	48V	2	CONTAXR162048A	685727	1
		16A	2 CO	115V	2	CONTAXR162115A	685728	1
		16A	2 CO	230V	2	CONTAXR162230A	685729	1
		16A	2 CO	240V	2	CONTAXR162240A	685730	1
	3 NO 	16A	3 NO	12V	2	CONTAXR1630012A	685731	1
		16A	3 NO	24V	2	CONTAXR1630024A	685732	1
		16A	3 NO	48V	2	CONTAXR1630048A	685733	1
		16A	3 NO	230V	2	CONTAXR1630230A	685734	1
	4 NO 	16A	4 NO	8V	2	CONTAXR1640008A	685735	1
		16A	4 NO	12V	2	CONTAXR1640012A	685736	1
		16A	4 NO	24V	2	CONTAXR1640024A	685737	1
		16A	4 NO	48V	2	CONTAXR1640048A	685738	1
		16A	4 NO	230V	2	CONTAXR1640230A	685740	1
		16A	4 NO	240V	2	CONTAXR1640240A	685741	1
	2 NO 2 NC 	16A	2 NO 2 NC	8V	2	CONTAXR1622008A	685742	1
		16A	2 NO 2 NC	12V	2	CONTAXR1622012A	685743	1
		16A	2 NO 2 NC	24V	2	CONTAXR1622024A	685744	1
		16A	2 NO 2 NC	48V	2	CONTAXR1622048A	685745	1
		16A	2 NO 2 NC	230V	2	CONTAXR1622230A	685747	1
		16A	2 NO 2 NC	240V	2	CONTAXR1622240A	685748	1
Sealing covers			-	1	CONTAXR1CAP	685945	2	
			-	2	CONTAXR2CAP	685934	2	
	Add-on auxiliary contact	6A	1NO 1NC	-	0.5	CONTAXRAUX11	685883	1
	1 NO 1 NC	6A	2NO	-	0.5	CONTAXRAUX20	685930	1

Contax R

A

B

C

**D**

E

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X

New



Redline

# Pulsar Impulse switches range

New

Impulse switches are switching devices without power consumption in operating switch-on position and very small power consumption per pole. On a very effective way helps to reduce greenhouse gas emissions of CO<sub>2</sub>.

Comfort functions

A

B

C

D

E

F

G

X



## Main Benefits

- Small switch on coil consumption
- No hold coil consumption
- Wide application
- Mounting on 35mm rail
- Sealing terminal covers
- All control voltages from 8V till 240V are possible

### For remote switching

- Advanced operation
- Lights and lighting
- Electric heating
- Electric drives

### Intelligent installations

- Impulse control
- Manual control

## Main features

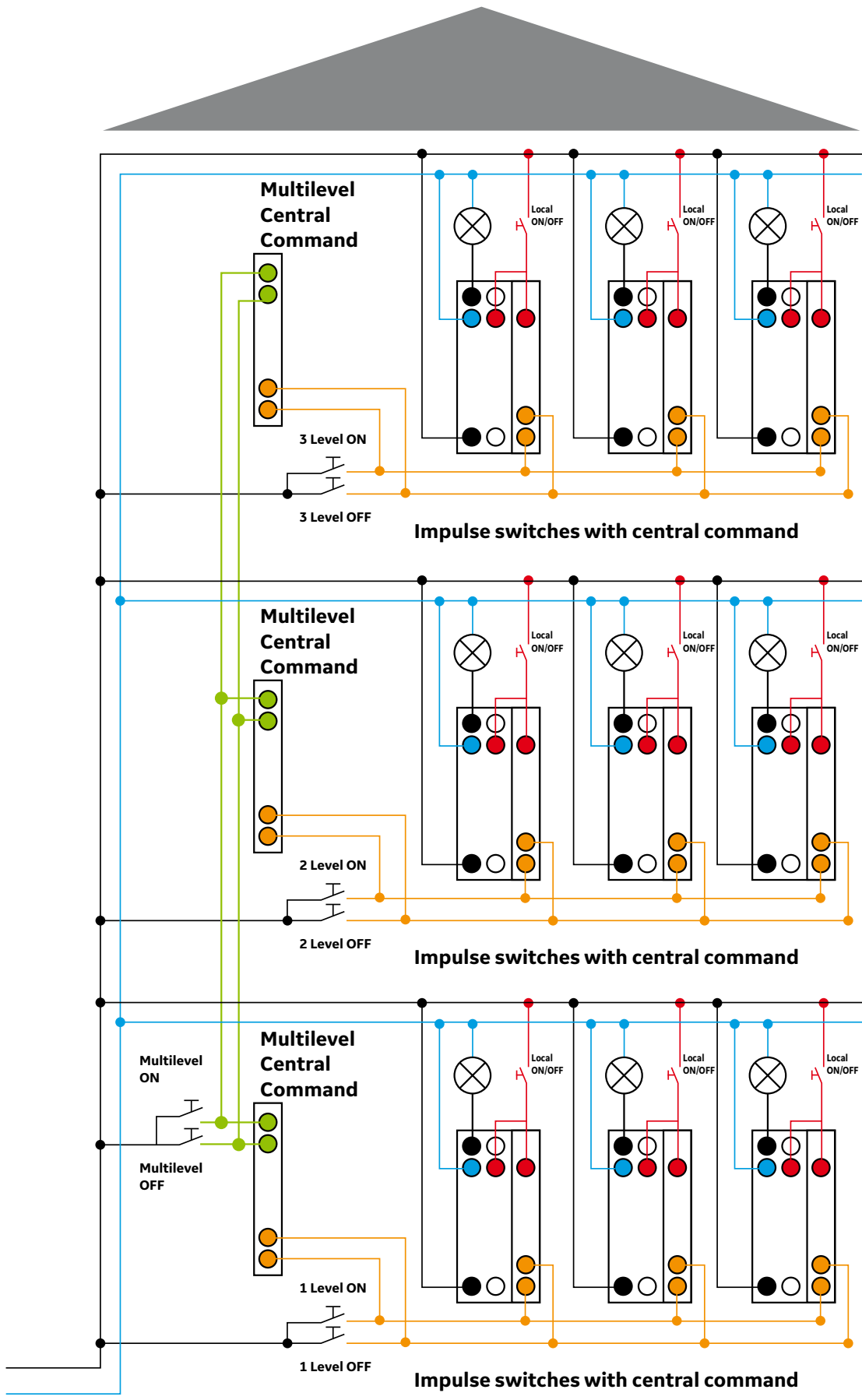
- Redline shape
- Pozidriv screws
- Market terminals
- Electric diagram in front of the device

## Plenty of accessories

- Sealing cover
- Capacitor
- Auxiliaries
- General command
- Multilevel



# Full functionality





**Pulsar S**

Comfort functions



**Applications**



Mainly used for the switching of lighting and heating equipment and/or to obtain a simplified wiring in case the load needs to be controlled at reduced voltage and/or from more than 2 different places.

**Standards / Marking**

IEC/EN 60669-1, IEC/EN 60669-2-2



**Features**

- Besides the normal operation through electrically energising the coil, manual operation is possible at all times.
- The switch position is visualised by the position of the front handle for all devices.
- The central command version was developed to force several devices at the same time to the on or off position, independently of the current status of each individual device. Also in this case, the possibility of operating the device locally remains.
- The safety terminals are equipped with captive Pozidriv screws and have IP20 protection degree.
- An add-on auxiliary contact, add-on central-command module and a spacer are available.
- The use of a large number of luminous push-buttons is possible.
- Availability of sealing cap for coil and load terminals.

DIN-rail positioning: used in vertical/horizontal position

**Functions**

Impulse switches are electromechanically controlled switches used to control single- or multi-phase medium-power loads while the control itself can be (very) low power.

The device switches between 2 stable positions, each time a (brief) impulse energises its control circuit.

A

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**D**

E

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G

X



## Performance

		PLS +			PLS + C	
		PLS + 16	PLS + 32	PLS + PU 16	PLS + C 16	PLS + C 32
<b>Rated current (according to IEC/EN 60669-2-2)</b>						
250VAC (1 pole) / 440V AC (2, 3 and 4 pole)	A	16	32	16	16	32
Direct current (at 30V DC)	A	16	20	16	16	20
Number of pole		1 → 4	1 → 4	1 → 4	1 → 4	1 → 3
<b>Contacts</b>						
	NO	1 → 4	1 → 4	1 → 4	1 → 3	-
	Changeover	1 → 2	-	1 → 2	1 → 2	-
	NO + NC	1+1 / 2+2	-	1+1 / 2+2	-	-
<b>Width (in 17.8mm DIN modules)</b>						
	1 P	Mod. 1	1	1	1	1
	2 P	Mod. 1	1	1	1 ½	1 ½
	3 P	Mod. 2	2	2	-	2 ½
	4 P	Mod. 2	2	2	2 ½	-
<b>Coil specifications</b>						
Supply voltage range (in % of Un)	%	90-110	90-110	90-110	90-110	90-110
Coil pick-up power	1P and 2P	VA 18	18	18	18	18
	3P and 4P	VA 18	18	18	18	18
Coil power loss - AC	1P and 2P	VA 9	9	9	9	9
	3P and 4P	VA 9	9	9	9	9
Maximum coil holding voltage time		1h	1h	permanent	1h	1h
<b>Impulse times</b>						
Minimum impulse time (under Un)	sec.	0.050	0.050	0.050	0.050	0.050
Minimum impulse time (90% Un)	sec.	0.100	0.100	0.100	0.100	0.100
Minimum time between impulses	sec.	0.150	0.150	0.150	0.150	0.150
Maximum number of impulses per hour		900	450	900	900	600
<b>Lifetime (in number of operations)</b>						
Electrical (AC - At full load)		2 × 10 <sup>5</sup>	2 × 10 <sup>5</sup>	2 × 10 <sup>5</sup>	2 × 10 <sup>5</sup>	2 × 10 <sup>5</sup>
Mechanical		2 × 10 <sup>6</sup>	2 × 10 <sup>6</sup>	2 × 10 <sup>6</sup>	2 × 10 <sup>6</sup>	2 × 10 <sup>6</sup>
<b>Load specifications</b>						
Maximum load AC-1	A	16	32	16	16	32
Maximum load DC (30V DC)	A	16	20	16	16	20
Minimum load per phase (under 5V)	W	2	2	2	2	2
Short-circuit fuse protection	A	16	32	16	16	32
<b>Maximum number of push-buttons</b>						
Non illuminated push-buttons		unlimited	unlimited	unlimited	unlimited	unlimited
Luminous push-buttons (0.6mA)						
	Without compensator	4	4	4	4	4
	1 compensator	30	30	30	30	30
	2 compensators	50	50	50	50	50
<b>General specifications</b>						
Auxiliary contact add-on (PLS)		yes	yes	yes	no	no
Need for spacer (up to 40°C) <sup>(1)</sup>		no	no	yes	no	no
DIN rail mounting		yes	yes	yes	yes	yes
2-POSITION HANDLE		yes	yes	yes	yes	yes
Indicator of contact position		yes	yes	yes	yes	yes
Clamping terminals		yes	yes	yes	yes	yes
Unlosable screws		yes	yes	yes	yes	yes
Sealable terminals (coil and load)		yes	yes	yes	yes	yes
Cable cross section (Ø min/max)	Coil	mm <sup>2</sup> 1 / 4	1 / 4	1 / 4	1 / 4	1 / 4
	Load 1P-3P and 4P	mm <sup>2</sup> 1 / 10	1 / 10	1 / 10	1 / 10	1 / 10
	Load 2P	1 / 10	1 / 10	1 / 10	1 / 10	1 / 10
	Coil / Load	mm <sup>2</sup> 1.2 / 0.6	1.2 / 0.6	1.2 / 0.6	1.2 / 0.6	1.2 / 0.6
Ambient temperature at installation point (min./max.)	°C	-25 / 55	-25 / 55	-25 / 55	-25 / 55	-25 / 55

(1) For temperatures 40 ... 55°C the spacer is required on the side of 3 switches side-by-side and for temperatures 55 ... 70 °C the spacer is required on the side of each switch.



Pulsar S - Impulse switches

Comfort functions

A

B

C

D

E

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X

	Nominal current	Contact combination	Coil voltage AC	Number of modules	Cat. No.	Ref. No.	Pack.
<b>Impulse switches 1NO</b> 	16A	1NO	8V	1	PULSAR1610008A	685779	1
	16A	1NO	12V	1	PULSAR1610012A	685780	1
	16A	1NO	24V	1	PULSAR1610024A	685781	1
	16A	1NO	48V	1	PULSAR1610048A	685782	1
	16A	1NO	115V	1	PULSAR1610115A	685783	1
	16A	1NO	230V	1	PULSAR1610230A	685784	1
	16A	1NO	230V/60Hz	1	PULSAR16123060	685785	1
	16A	1NO	240V	1	PULSAR1610240A	685786	1
<b>1CO</b> 	16A	1CO	8V	1	PULSAR161008A	685787	1
	16A	1CO	12V	1	PULSAR161012A	685788	1
	16A	1CO	24V	1	PULSAR161024A	685789	1
	16A	1CO	48V	1	PULSAR161048A	685790	1
	16A	1CO	115V	1	PULSAR161115A	685791	1
	16A	1CO	230V	1	PULSAR161230A	685792	1
	16A	1CO	240V	1	PULSAR161240A	685793	1
	<b>2NO</b> 	16A	2NO	8V	1	PULSAR1620008A	685794
16A		2NO	12V	1	PULSAR1620012A	685795	1
16A		2NO	24V	1	PULSAR1620024A	685796	1
16A		2NO	48V	1	PULSAR1620048A	685797	1
16A		2NO	115V	1	PULSAR1620115A	685798	1
16A		2NO	230V/60Hz	1	PULSAR162023060	685799	1
16A		2NO	230V	1	PULSAR1620230A	685800	1
16A		2NO	240V	1	PULSAR1620240A	685801	1
<b>1NO 1NC</b> 	16A	1NO 1NC	8V	1	PULSAR1611008A	685802	1
	16A	1NO 1NC	12V	1	PULSAR1611012A	685803	1
	16A	1NO 1NC	24V	1	PULSAR1611024A	685804	1
	16A	1NO 1NC	48V	1	PULSAR1611048A	685805	1
	16A	1NO 1NC	115V	1	PULSAR1611115A	685806	1
	16A	1NO 1NC	230V	1	PULSAR1611230A	685807	1
	16A	1NO 1NC	230V/60Hz	1	PULSAR161123060	685808	1
	16A	1NO 1NC	240V	1	PULSAR1611240A	685809	1
<b>2CO</b> 	16A	2CO	8V	2	PULSAR162008A	685810	1
	16A	2CO	12V	2	PULSAR162012A	685811	1
	16A	2CO	24V	2	PULSAR162024A	685812	1
	16A	2CO	48V	2	PULSAR162048A	685813	1
	16A	2CO	115V	2	PULSAR162115A	685814	1
	16A	2CO	230V	2	PULSAR162230A	685815	1
	16A	2CO	240V	2	PULSAR162240A	685816	1
<b>1NO</b> 	32A	1NO	8V	1	PULSAR3210008A	685817	1
	32A	1NO	12V	1	PULSAR3210012A	685818	1
	32A	1NO	24V	1	PULSAR3210024A	685819	1
	32A	1NO	48V	1	PULSAR3210048A	685820	1
	32A	1NO	115V	1	PULSAR3210115A	685821	1
	32A	1NO	230V	1	PULSAR3210230A	685822	1
	32A	1NO	240V	1	PULSAR3210240A	685823	1
<b>2NO</b> 	32A	2NO	8V	1	PULSAR3220008A	685824	1
	32A	2NO	12V	1	PULSAR3220012A	685825	1
	32A	2NO	24V	1	PULSAR3220024A	685826	1
	32A	2NO	48V	1	PULSAR3220048A	685827	1
	32A	2NO	115V	1	PULSAR3220115A	685828	1
	32A	2NO	230V	1	PULSAR3220230A	685829	1
	32A	2NO	240V	1	PULSAR3220240A	685830	1





### Pulsar S - Impulse switches

	Nominal current	Contact combination	Coil voltage AC	Number of modules	Cat. No.	Ref. No.	Pack.
<b>All-in central command</b> 	16A	1NO	8V	1.5	PULSARC1610008A	<b>685831</b>	1
	16A	1NO	12V	1.5	PULSARC1610012A	<b>685832</b>	1
	16A	1NO	24V	1.5	PULSARC1610024A	<b>685833</b>	1
	16A	1NO	48V	1.5	PULSARC1610048A	<b>685834</b>	1
	16A	1NO	230V	1.5	PULSARC1610230A	<b>685835</b>	1
	16A	1NO	240V	1.5	PULSARC1610240A	<b>685836</b>	1
	16A	1CO	8V	1.5	PULSARC161008A	<b>685837</b>	1
	16A	1CO	12V	1.5	PULSARC161012A	<b>685838</b>	1
	16A	1CO	24V	1.5	PULSARC161024A	<b>685839</b>	1
	16A	1CO	48V	1.5	PULSARC161048A	<b>685840</b>	1
	16A	1CO	230V	1.5	PULSARC161230A	<b>685841</b>	1
	16A	1CO	240V	1.5	PULSARC161240A	<b>685842</b>	1
	16A	2NO	8V	1.5	PULSARC1620008A	<b>685843</b>	1
	16A	2NO	12V	1.5	PULSARC1620012A	<b>685844</b>	1
	16A	2NO	24V	1.5	PULSARC1620024A	<b>685845</b>	1
	16A	2NO	48V	1.5	PULSARC1620048A	<b>685846</b>	1
	16A	2NO	230V	1.5	PULSARC1620230A	<b>685847</b>	1
	16A	2NO	240V	1.5	PULSARC1620240A	<b>685848</b>	1
16A	2CO	8V	2.5	PULSARC162008A	<b>685849</b>	1	
16A	2CO	12V	2.5	PULSARC162012A	<b>685850</b>	1	
16A	2CO	24V	2.5	PULSARC162024A	<b>685851</b>	1	
16A	2CO	48V	2.5	PULSARC162048A	<b>685852</b>	1	
16A	2CO	230V	2.5	PULSARC162230A	<b>685853</b>	1	
16A	2CO	240V	2.5	PULSARC162240A	<b>685854</b>	1	
<b>Permanent use</b> 	32A	1NO	8V	1.5	PULSARC3210008A	<b>685855</b>	1
	32A	1NO	12V	1.5	PULSARC3210012A	<b>685856</b>	1
	32A	1NO	24V	1.5	PULSARC3210024A	<b>685857</b>	1
	32A	1NO	48V	1.5	PULSARC3210048A	<b>685858</b>	1
	32A	1NO	230V	1.5	PULSARC3210230A	<b>685859</b>	1
	32A	1NO	240V	1.5	PULSARC3210240A	<b>685860</b>	1
	32A	2NO	8V	1.5	PULSARC3220008A	<b>685861</b>	1
	32A	2NO	12V	1.5	PULSARC3220012A	<b>685862</b>	1
	32A	2NO	24V	1.5	PULSARC3220024A	<b>685863</b>	1
	32A	2NO	48V	1.5	PULSARC3220048A	<b>685864</b>	1
	32A	2NO	230V	1.5	PULSARC3220230A	<b>685865</b>	1
	32A	2NO	240V	1.5	PULSARC3220240A	<b>685866</b>	1
32A	3NO	8V	2.5	PULSARC3230008A	<b>685867</b>	1	
32A	3NO	12V	2.5	PULSARC3230012A	<b>685868</b>	1	
32A	3NO	24V	2.5	PULSARC3230024A	<b>685869</b>	1	
32A	3NO	48V	2.5	PULSARC3230048A	<b>685870</b>	1	
32A	3NO	230V	2.5	PULSARC3230230A	<b>685871</b>	1	
32A	3NO	240V	2.5	PULSARC3230240A	<b>685872</b>	1	
<b>Add-on auxiliary contact</b> 	6A	1NO 1NC	-	0.5	PULSARAUX11	<b>685879</b>	1
	6A	2NO	-	0.5	PULSARAUX20	<b>685880</b>	1
	-	A2 OFF ON	-	0.5	PULSARC	<b>685881</b>	1
	-	OFF ON OFF ON	-	0.5	PULSARM	<b>685882</b>	1
<b>Add-on central control</b> 	-	-	230/240V	-	PULSARCAPM	<b>685884</b>	1
	-	-	-	1	PULSARCAP	<b>685885</b>	2
<b>Sealing cap</b> 	-	-	-	0.5	PLC/CTX SP	<b>686069</b>	50

Pulsar S

A

B

C

**D**

E

F

G

X

New



### Staircase switches

### Pulsar SC

Comfort functions



#### Applications



Lighting or ventilation of staircases, basements, halls, etc

#### Standard

EN 60669-2-1

#### Features



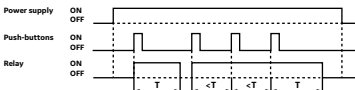
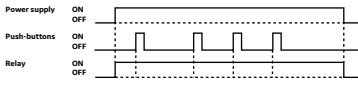
- Designed for a real 4.000W switching capacity.
- User adjustable time.
- 3 or 4 wire wiring possible.
- Safety terminals equipped with captive PH screws and IP20 protection degree.
- Anti vandalism: resistant to blocked push-buttons.

#### Functions

The staircase switch Pulsar SC is an electronic switching device with micro-distance ( $\mu$ ) of opening between contacts. It manages over time the lights permanence in rooms such as hallways, stairs, cellars to avoid wasting energy.

A  
B  
C  
**D**  
E  
F  
G  
X

### Pulsar SC - Staircase switches

	Nominal Current	Contact Combination	Coil Voltage AC	Coil Voltage DC	Number of modules	Cat. No.	Ref. No.	Pack.
 <p>Electronic staircase switch 1 NO</p> 	16A	1 NO	230 V AC(-15%..+10%)	-	1	PULSAR SC 1-15 16A 1M	687474	1
<p><b>Automatic</b></p> 		<p><b>Staircase light fixed on</b></p> 						



## Performance

			PULSAR SC
<b>Rated current (acc. IEC 669-2-3)</b>	A		16
<b>Width</b>	(in number of DIN-modules)		1
<b>Contacts</b>	NO		1
<b>Time range</b>	2 function		30 sec. - 20 min.
<b>Supply voltage</b>	230V - 50/60 Hz		yes
	Supply voltage range (in % of Un)	%	85 - 110
<b>Rated power consumption</b>			
	Closed circuit current	230V VA	6 (1W)
	Working current (ignition and running)	230V VA	6 (1W)
<b>Light types</b>			
	Incandescent lamps		yes
	Fluorescent lamps		yes
	LED		yes
<b>Load type P max</b>			
	Incandescent lamps (230V)	W	4000
	Fluorescence lamps (230V)	W	1000
	LED (<2W)	W	55
	LED (2-8W)	W	150
	LED (>8W)	W	180
<b>Lifetime (in number of operations)</b>			
	Electrical	at 1200W	5.10 <sup>4</sup>
		at full load	1.10 <sup>5</sup>
	Mechanical		1.10 <sup>7</sup>
<b>Max. number of push-buttons</b>			
	Non illuminated push-buttons		unlimited
	Luminous push-buttons:		50 (1mA)
<b>General specifications</b>			
	DIN-rail mounting		yes
	Silent operations		yes
	3-wire and 4-wire installation		yes
	Resistent to blocked push-buttons		yes
	Continuously adjustable time-lag		yes
	Manual switching (number of positions)		2
	Front switch-off lever		yes
	Clamping screw terminals, unloosable screws	Coil mm <sup>2</sup>	4
	Cable cross section (Ø min/max)	Load mm <sup>2</sup>	1.0 / 2.5
	Maximum torque on terminals	N x m	0.6
	Ambient temperature at installation point (min./max.)	°C	0 / +50
	Storage temperature	°C	-10 / +60

Pulsar SC

A

B

C

D

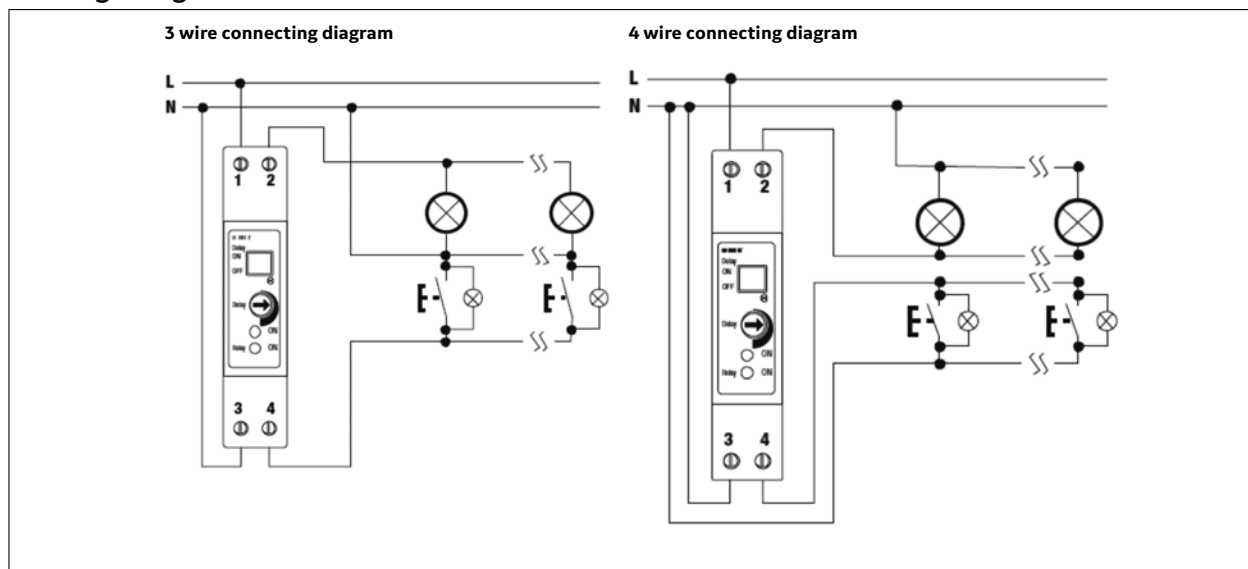
E

F

G

X

## Wiring diagram



New

# Universal reliable multifunction

## Multifunction Time Relays

Ten functions:

- Five time functions controlled via supply voltage
- Four time functions controlled via control input
- One latching relay function

Used for regular room ventilation, cyclic dehumidification, light control, circulating pumps, neon signs, etc.

## Time Relay

Time Relay is defined as the controlled period between two operations. A Time relay is a combination of an electromechanical output relay and a control circuit. The control circuit comprises solid-state components and timing circuits that control the operation of the relay and the timing range.

Over time, advances in electronic technology have greatly increased the number and variety of applications available for industrial modular relays. Selecting a relay can often be difficult and confusing task. Hopefully, this brief explanation will help you to understand which factors to consider when selecting a time relay.

Relays perform the crucial function of using one level of voltage to control what is often a different level of voltage. They also provide a high degree of isolation between power wiring and control wiring. Time relays add an extra dimension in terms of application, as they allow the introduction of a time element into the control circuit. It is virtually impossible to design a control circuit in a system without using time relays.

## Asymmetrical cycle Time Relay

Used for warning illumination on the road, flashers, cyclers, frequently-switched systems

The PLT+ Time relays range is highly versatile, it provides the basic switching or controlling function as mentioned, and the timing functions in the circuit. The PLT+ range is compact in size, with a modular 18 mm-width shape, and offers unrivalled performance in its function. Time relay contacts are rated from 8 Amp. (3 COM contacts in only 1 mod.) to 16 Amp. AC1.

Timing functions for the PLT+ time relays range include: Delay ON after energization, Delay OFF after energization, Cycler beginning with pause after energization, Cycler beginning with impulse after energization, Delay OFF after de-energization, Instant make of output, Delay OFF responding to make of control contact regardless its length, Delay OFF after break of control contact with instant output, Delay OFF after make and break of control contact, Impulse relay, Pulse generator, Asymmetrical Cycler beginning with pulse, Asymmetrical Cycler beginning with pause.

Timing values may be set using a rotary switch and potentiometer in the front of the device, from 0.1 seconds to 10 days.



## Save energy

### Examples of Use

- Stagger start of motors to limit inrush current.
- Security systems, delay system lockdown for a set period. This allows the person setting the alarm to clear the area.
- Stairwell light operated via momentary "ON" switch.
- Switch OFF delay of toilet exhaust fan. If used in conjunction with a light circuit, the timer will allow the fan to continue to operate (for a set delay time) after the light has been turned OFF.
- When connected to the main light switch, a True OFF delay timer allows the last person sufficient time to clear the building before all the lights are turned off.
- Running a discharge pump for 1 hour per every 10-hour cycle.
- Turning a beacon "ON" for 2 seconds per every 6-second cycle.

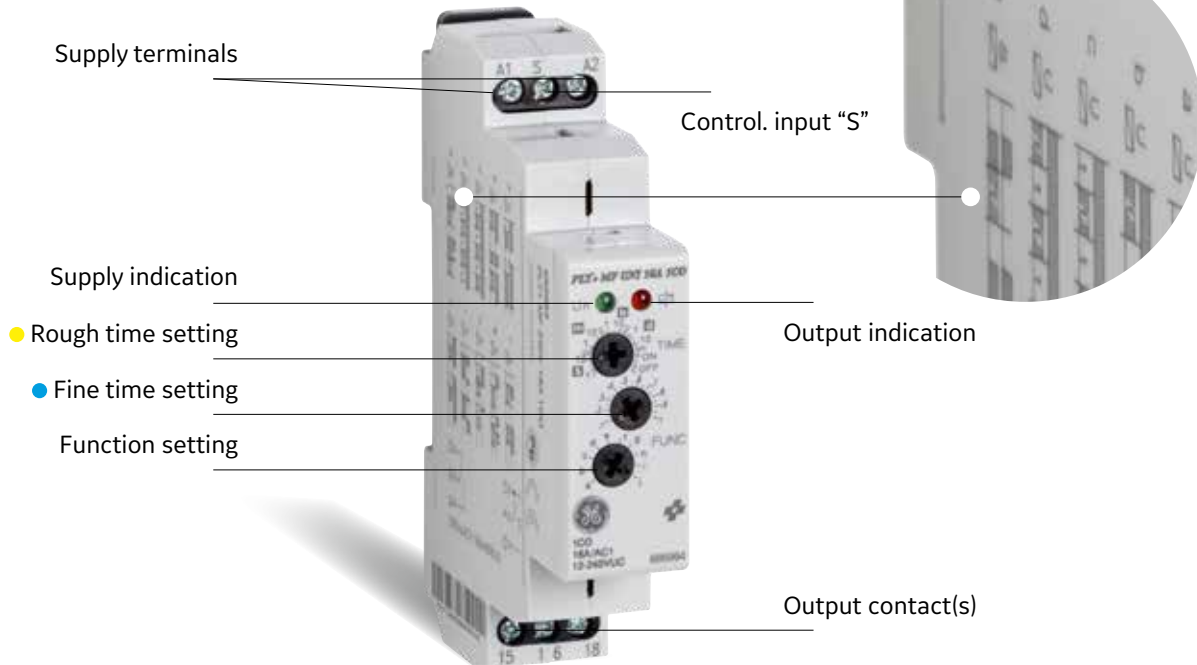


New

# Performances and features

## Multifunction Time Relays

Functions



Time Relays

A

B

C

**D**

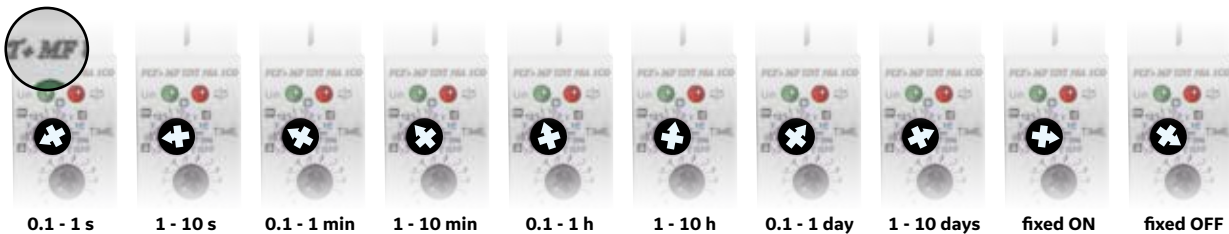
E

F

G

X

## Multifunctional cycle Time Relay (MF)

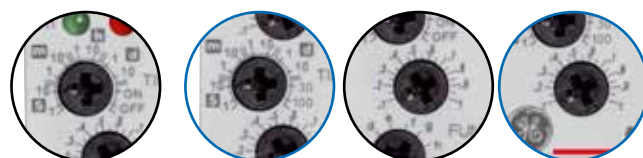


Rough time setting - IMPULS  
time setting in range 0.1 .. 10 days



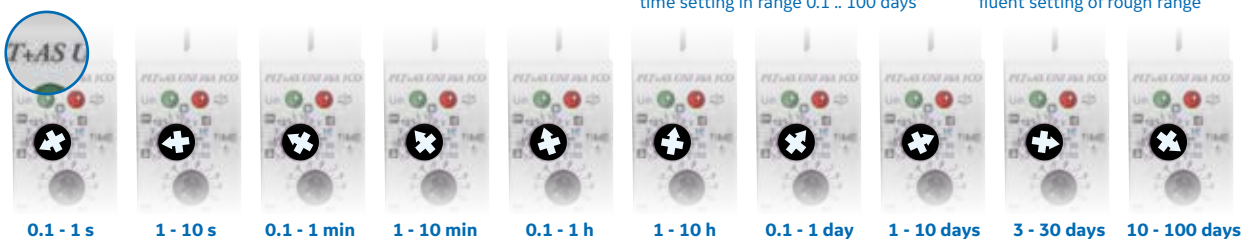
Fine time setting - IMPULS  
fluent setting of rough range

## Asymmetrical cycle Time Relay (AS)



Rough time setting - IMPULS /PAUSE  
time setting in range 0.1 .. 100 days

Fine time setting - IMPULS /PAUSE  
fluent setting of rough range



**New**

# Temporize/Dim whatever you want

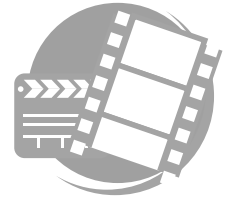
Our new DIM range dimmers have been specifically created to control R, L, C, LED light sources (dimmable) and energy-saving lamps.

The DIM RANGE is designed to be mounted on a DIN-rail onto panelboard. These dimmers have a number of characteristics that make them rank amongst the best on the market:

- The option to set the minimum brightness of the lamp - which eliminates flashing.
- Built-in protection, meaning that the light source will neither flash nor change brightness when the input voltage fluctuates. This dimmer is designed for use in a house, apartment or office.



Enjoy a movie



## Dim it. And enjoy yourself

Conjure up rainbows of intense colour when watching fairy tales. Or do you like horror films? Bathe your living room in atmospheric light by programming your LED to shine in dark colours.

The positive impact of dimmers is not limited to private spaces; they can also add value to business premises, where the right lighting can help to create a commercial advantage.

## Dimmers in hotels

From the moment hotel guests enter the lobby, they expect immaculate service and perfect comfort. This includes pleasant lighting in their hotel room. Dimmed lights contribute to wellbeing in a hotel room, and it is simple for each guest to adjust the lighting to meet his or her individual needs and preferences.

## Dimmers in restaurants

In restaurants and bars, dimmers create the right lighting mood for guests. At the same time, bright lighting is required for laying tables and making preparations at the bar and buffet.

## Dimmers in shops

In sales environments, optimal illumination of presentation areas and products is essential. Whenever changes are made to the shop concept, dimmers make it easy to adapt the lighting concept to a new product presentation.

# Save up to 30% energy on lighting

## Requirement

I want to maintain the same light intensity on my site.

## Solution

Get the automatic DIM LC 300 UNI 230V lighting intensity controller, and you will no longer need to keep checking if your employees are switching off the lights.

## How to do it?

Connect the product to your existing Push-button (you don't need to cut anything). It will enable you to control brightness or to switch to an automatic mode.

## How much will you save?

A 40W lamp switched on for 8 hours for 200 days per year will equal 64KWh; and therefore ten of these lamps in a single office will equal 640kWh.

If you use an automatic lighting intensity controller, the intensity of the light will remain exactly where you set it. So if the sunshine is illuminating a room with high intensity, the lamp will automatically lower its brightness. This will enable you to save up to 50% of costs.



New

# Performances and Features

## DIM LC 300 UNI 230V

Labels for DIM LC 300 UNI 230V:

- Supply voltage L
- Output
- Thyristor
- Supply voltage indicator
- Output indication
- Light source type selection
- Automated reg. luminance adjustment
- Automatic fade and luminance setting
- Min. luminance adjustment
- Supply voltage N
- Terminals for connecting sensor
- Controlling input

Circuit diagram notes: T 2.5 A recommended upstream protection

Time Relays

A

B

C

**D**

E

F

G

X

## DIM 300 UNI 230V

Labels for DIM 300 UNI 230V:

- Supply voltage L
- Output
- Supply voltage indication
- Output indication
- Light source type selection
- Minimal luminance setting
- Supply voltage N
- Controlling input

Circuit diagram notes: T 2.5 A ballast protection recommended

New



## Time Relays

Comfort functions



### Pulsar T+

#### Features

- Multi-function time relay with 10 functions, 1 CO contact 16A or 3 CO contacts 8A
- Multi-voltage time relay two versions: AC/DC 12-240V (AC50-60Hz) and AC 230V (AC50-60Hz)
- Assymetrical time relay with 2 functions and multivoltage AC/DC 12-240V (AC50-60Hz)
- Only 4 references cover the complete range
- In the case of the multi-function relay, the function itself is also user selectable, bringing impulse switch function as default (factory setting)
- Compact version of 3 CO contacts 10 functions time relay in only 1 module!
- The loss-proof safety terminals are equipped with Pozidriv screws and have IP20 protection degree.

#### Applications



Asymmetrical cycle time relay  
Using for warning illumination on the road, flashers, cyclers, often switched systems

Multifunction relays  
10 functions:

- Five time functions controlled via supply voltage
- Four time functions controlled via control input
- One function of latching relay

It is used for regular room ventilation, cyclic dehumidification, light control, circulating pumps, noon signs, etc.

#### Functions

Conditioning of incoming source to exact predictable output.

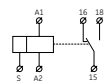
#### Standards / Marking

EN 61812-1, EN 61010-1

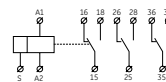


#### Wiring

1 COM



3 COM



#### Loads type

Product: **PLT+MF230V16A1CO<sup>(1)</sup>** **PLT+MFUNI16A1CO** **PLT+ASUNI16A1CO**

Type of load	AC1 cos φ ≥ 0.95	AC2	AC3	AC5a uncompensated	AC5a compensated	AC5b HAL230V	AC6a	AC7b	AC12
mat. contacts AgNi, contact 16A	250V / 16A	250V / 5A	250V / 3A	230V / 3A (690VA)	x	800W	x	250V / 3A	250V / 10A
Type of load	AC13	AC14	AC15	DC1	DC3	DC5	DC12	DC13	DC14
mat. contacts AgNi, contact 16A	250V / 6A	250V / 6A	250V / 6A	24V / 16A	24V / 6A	24V / 4A	24V / 16A	24V / 2A	24V / 2A

Product: **PLT+MFUNI8A3CO**

Type of load	AC1 cos φ ≥ 0.95	AC2	AC3	AC5a uncompensated	AC5a compensated	AC5b HAL230V	AC6a	AC7b	AC12
mat. contacts AgNi, contact 8A	250V / 8A	250V / 3A	250V / 32A	230V / 1.5A (345VA)	x	300W	x	250V / 1A	250V / 1A
Type of load	AC13	AC14	AC15	DC1	DC3	DC5	DC12	DC13	DC14
mat. contacts AgNi, contact 8A	x	250V / 3A	250V / 3A	24V / 8A	24V / 3A	24V / 2A	24V / 8A	24V / 2A	x

(1) Only at 230V AC





## Pulsar T+ Time Relays

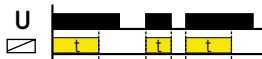


Nom. current	Cont. nr	Contact combin.	Funct. nr	Coil voltage AC	Coil voltage DC	Voltage tolerance	Timing scale	No. of mod.	Cat. No.	Ref. No.	Pack.
16A	1	1 COM	a ... j <sup>(1)</sup>	230V 50-60Hz	-	-15% ... +10%	0.1s ... 10 days	1	PLT+MF230V16A1CO	<b>685993</b>	1
16A	1	1 COM	a ... j <sup>(1)</sup>	12-240V 50-60Hz	12-240V	-15% ... +10%	0.1s ... 10 days	1	PLT+MFUNI16A1CO	<b>685994</b>	1
16A	1	1 COM	k, l	12-240V 50-60Hz	12-240V	-15% ... +10%	0.1s ... 100 days	1	PLT+ASUNI16A1CO	<b>685996</b>	1
8A	3	3 COM	a ... j <sup>(1)</sup>	12-240V 50-60Hz	12-240V	-15% ... +10%	0.1s ... 10 days	1	PLT+MFUNI8A3CO	<b>685995</b>	1

(1) Factory setting: i



**a-On delay (Power On)** When the input voltage U is applied, timing delay t begins. Relay contacts R change state after time delay is complete. Contacts R return to their shelf state when input voltage U is removed. Trigger switch is not used in this function.



**b-Off delay** When input voltage U is applied, relay contacts R change state immediately and timing cycle begins. When time delay is complete, contacts return to shelf state. When input voltage U is removed, contacts will also return to their shelfstate. Trigger switch is not used in this function.



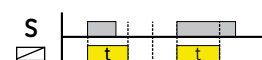
**c-Repeat Cycle (Starting Off)** When input voltage U is applied, time delay t begins. When time delay t is complete, relay contacts R change state for time delay t. This cycle will repeat until input voltage U is removed. Trigger switch is not used in this function.



**d-Repeat Cycle (Starting On)** When input voltage U is applied, relay contacts R change state immediately and time delay t begins. When time delay t is complete, contacts return to their shelf state for time delay t. This cycle will repeat until input voltage U is removed. Trigger switch is not used in this function.



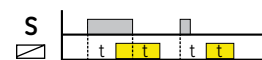
**e-Off delay (S Break)** Input voltage U must be applied continuously. When trigger switch S is closed, relay contacts R change state. When trigger switch S is opened, delay t begins. When delay t is complete, contacts R return to their shelf state. If trigger switch S is closed before time delay t is complete, then time is reset. When trigger switch S is opened, the delay begins again, and relay contacts R remain in their energized state. If input voltage U is removed, relay contacts R return to their shelf state.



**f-Single Shot** Upon application of input voltage U, the relay is ready to accept trigger signal S. Upon application of the trigger signal S, the relay contacts R transfer and the preset time t begins. During time-out, the trigger signal S is ignored. The relay resets by applying the trigger switch S when the relay is not energized.



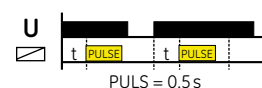
**g-Single Shot Trailing Edge (Non-Retriggerable)** Upon application of input voltage U, the relay is ready to accept trigger signal S. Upon application of the trigger signal S, the relay contacts R transfer and the preset time t begins. At the end of the preset time t, the relay contacts R return to their normal condition unless the trigger switch S is opened and closed prior to time out t (before preset time elapses). Continuous cycling of the trigger switch S at a rate faster than the preset time will cause the relay contacts R to remain closed. If input voltage U is removed, relay contacts R return to their shelf state.



**h-On/Off delay** Input voltage U must be applied continuously. When trigger switch S is closed, time delay t begins. When time delay is complete, relay contacts R change state and remain transferred until trigger switch S is opened. If input voltage U is removed, relay contacts R return to their shelf state.



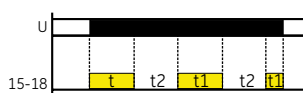
**i-Latching relay** Input voltage U must be applied continuously. Output changes state with every trigger switch S closure. If input voltage U is removed, relay contacts R return to their shelf state.



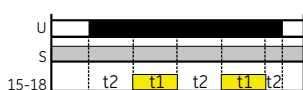
**j-Pulse generator** Upon application of input voltage U, a single output pulse of 0.5 seconds is delivered to relay after time delay t. Power must be removed and reapplied to repeat pulse. Trigger switch is not used in this function.

### ASSYMETRICAL CYCLER RELAY

**k-Cycler beginning with pulse**



**l-Cycler beginning with pause**

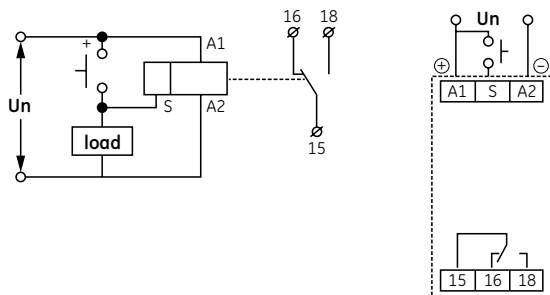




Technical data Time Relays

	PLT+MFUNI16A1CO	PLT+MF230V16A1CO	PLT+MFUNI8A3C	PLT+ASUNI16A1CO
<b>Technical data</b>				
Number of functions	10 (a...j)			2: k, l. (second func. is chosen by connecting S-A1)
Supply	A1-A2			
Supply voltage	AC/DC12-240V (AC50-60Hz)	AC 230V / 50 - 60Hz	AC/DC12-240V (AC50-60Hz)	AC/DC12-240V (AC50-60Hz)
Consumption	AC0.7-3VA/DC 0.5-1.7W	AC max. 12VA / 1.3W	AC max. 12VA/1.9W	AC0.7-3VA/DC 0.5-1.7W
Supply voltage tolerance	-15%; +10%			
Supply indication	green LED			
Time ranges	0.1 s - 10 days			
Time setting	rotary switch and potentiometer			
Time deviation	5% mechanical setting			
Repeat accuracy	0.2% set value stability			
Temperature coefficient	0.01% °C, at =20°C			
<b>Output</b>				
Changeover contacts	1 x changeover		3 x changeover	1 x changeover
Rated current	16A / AC1		8A / AC1	16A / AC1
Breaking capacity	4000VA/AC1;384W/DC		2000VA/AC1;192W/DC	4000VA/AC1;384W/DC
Inrush current	30 A/<3s		10 A/<3s	30 A/<3s
Switching voltage	250V AC1 / 24V DC			
Min. breaking capacity DC	500 mW			
Output indication	multifunction red LED			
Mechanical life	3 x 1000000			
Electrical life (AC1)	0.7 x 100000			
<b>Controlling</b>				
Consumption of input	AC 0.025-0.2 VA/ DC 0.1 - 0.7W (UNI), AC 0.53 VA (AC 230V)			-
Load between S-A2	YES <sup>(1)</sup>			NO
Glow tubes connections	230V - Yes / UNI - No			-
Max. amount of glow lamps connected to controlling input	UNI - glow lamps cannot connected/NO			-
Control terminals	A1-S			-
Impulse length	min. 25ms / max. unlimited			-
<b>Other information</b>				
Reset time	max. 150ms			
Operating temperature	-20.. +55°C			
Storage temperature	-30.. +70°C			
Electrical strength	4kV (supply-output)			
Operating position	any			
Mounting	DIN-rail EN 60715			
Protection degree	IP40 from front panel; IP20 terminals			
Overvoltage category	III.			
Pollution degree	2			
Max. cable size	max.1x2.5; max. 2x1.5/with cavern max. 1x2.5			
Dimensions	90 x 17.6 x 64 mm			
Weight (g)	64	62	89	65
Standards	EN 61812-1, EN 61010-1			

(1) Through clamps S-A2 can be connect the loading parallel (for example contactor or other units) - without damage of right operation.



Comfort functions

A

B

C

D

E

F

G

X

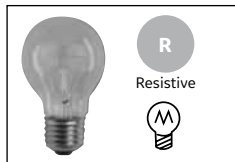


# Dimmers

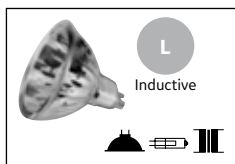
Today we encounter all kinds of different light sources, which makes it relatively hard for the average person to keep track of all of them.

So in the following section, we will try to explain exactly what light sources you will find on the market, and how to control and/or dim them.

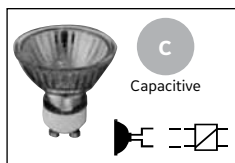
## TYPES OF LAMPS



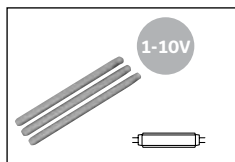
**R** – You mainly encounter resistance load with the ordinary lamp. The entire process works on the principle of heating a thin, usually tungsten filament, with an electric current running through it.



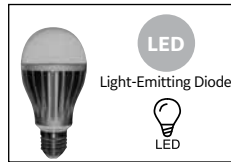
**L** – This is an inductive load mainly characteristic for low-voltage (12-24V) halogen lamps, which are controlled by a wound transformer, whose principle is the passage of voltage through the coil. By decreasing the voltage at the input, we in turn also change the value of the voltage at the output, which enables dimming.



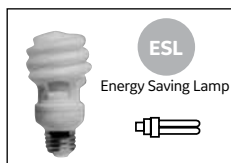
**C** – This is a capacity load mainly characteristic for energy-saving lamps, fluorescent or halogen lamps controlled by an electronic transformer. The principle is based on electrical ballast, which brightens or darkens the lamp. A dimmable transformer is used to dim.



**1-10V** - This type of regulation is conditional to so-called dimmable electrical ballast with input for 1-10V. Consequently, at this input, the product is connected with the output 1-10V (RFDA-71B, LBC3-22M), which enables brightness control within this range. This mostly concerns dimming tube fluorescent lamps.



**LED** – A Light-Emitting Diode (LED) is an electronic semiconductor component, which radiates a visible light. In the last few years, they have replaced the lamps in automobiles, streetlights and home appliances, and their popularity as active household illumination is constantly growing. The basis of the LED is the P-N junction. The actual LED chip is often connected with a cooler for efficient removal of waste heat away from the chip, and is covered by an epoxy capsule. This design makes LEDs highly mechanically resistant. It is even more effective than a compact fluorescent lamp - and is up to 15x more efficient than a classic incandescent lamp.



**ESL** – Energy saving lamp, often called a compact fluorescent lamp. In its design it is a capacity load, but for better separability of this type of light source, a special designation was created for it. The principle is a glass tube with heating electrodes filled with mercury vapors, in which the discharge occurs. This falls upon the walls of the tube covered with a lumino-phore - and the lamp illuminates. Disadvantages of this lamp are its sensitivity to frequent switching and the luminous flux that decreases over time.

## Dimmers and type of lamps

Order codes	EAN code	R	L	C	ESL	LED		
		Standard light bulbs, halogen lamps	Low voltage lamps 12-24V wound transformers	Low voltage lamps 12-24V electronic transformers	Efficient dimmable fluorescent lamps	Category 1 Mostly "multiple LED" illumination sources power provided by LINEAR source limiting current (sharper dimming), lower price	Category 2 Sources that have 1-3 power LEDs, power provided by SWITCHING the source regulating brightness based on the input voltage (smoother dimming), higher price GU10 have higher body	Category 3 LED with DC and current regulation. Designed for dimming LED chips, LED strips, RGB LED
<b>685997</b> DIM500RL230V Short press ON/OFF, pressing and holding dims, 500VA	5413656859970	X	X					
<b>685998</b> DIM300UNI230V Dimmer for LED lamps and dimmable efficient fluorescent lamps, potentiometer brightness setting	5413656859987	X	X	X	X	X	X	
<b>685999</b> DIMLC300UNI230V Dimmer maintaining and light intensity in Lx, including SKS photo-sensor	5413656859994	X	X	X	X	X	X	





## DIN-rail dimmers

Comfort functions



### DIM

#### Features

- Low version dimmer only valid for resistive and halogen lamps
- Universal dimmer optimised for LED and CFL lighting, a new universal dimmers perfectly align to any DIN-rail installation.
- Thanks to the low width of 18mm only, the DIN dimmers are particularly suitable for retrofitting.
- The universal DIN-dimmers are the perfect choice for all buildings which demand individual and efficient lighting such as shops, restaurants or public areas.
- Universal dimmer with automatic lighting level control. Ideal to maintain the same light intensity in any site.

#### Functions

In the past, many different lamps required many different specific dimmers. So changing lamps often led to the situation that the installed dimmer could not control the new lamp without disturbances. Your customers thus faced humming and flickering lighting - and you were forced to choose the right dimmer from a more and more complicated offer.

Industrial Solutions has developed a universal dimmer module you can easily upgrade an installed push-button to future-proof dimmer. The dimmer is optimised to control LED and reliable dims other loads as well. Installed in a switchboard, on a DIN-rail, they can be controlled by several push-buttons.

#### Applications



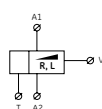
DIM dimmers are designed to adjust light intensity to your needs. They are particularly intended for the residential and tertiary sectors, for example to light conference rooms, cinemas, restaurants and shops.

Nowadays, there are a lot of lighting sources and of course, for a layman, it is really hard to understand which one is the best. Dimming can save up to 20% of your energy bills. Moreover, dimming can create the right atmosphere for party, reading a book or watching a movie...

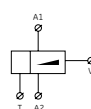
#### Marking



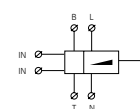
#### Wiring



RL dimmer



Universal dimmer



Universal dimmer with automatic lighting level control

#### Performance

Load	lamp, halogen light	low-voltage el. bulbs 12-24V wound trans.	low-voltage el. bulbs 12-24V el. transformers	LED bulbs	saving fluorescent lamps	switching management	
	HAL230V R	L	C	230V AC dimmable	dimmable	incline edge	descending edge
DIM 500 RL 230V	•	•	X	X	X	•	X
DIM 300 UNI 230V	•	•	•	•	•	•	•
DIM LC 300 UNI 230V	•	•	•	•	•	•	•

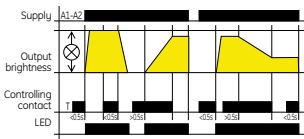


**DIM DIN-rail dimmers**



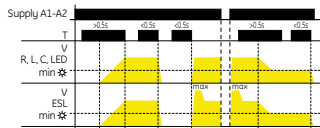
Dimmed load	Type of lamps	Output	Control by	Nominal voltage AC	Voltage tolerance	No. of mod.	Cat. No.	Ref. No.	Pack
<b>RL dimmer</b>									
R: 10...500VA L: 10...250VA	R, L	2A	Push-button	230V/ 50Hz	-15%..+10%	1	DIM500RL230V	<b>685997</b>	1
<b>Universal dimmer</b>									
300W ( $\cos \varphi = 1$ ) <sup>(1)</sup>	R, L, C, LED, ESL	2xMOSFET	Push-Button	230V /50Hz	-15%..+10%	1	DIM300UNI230V	<b>685998</b>	1
<b>Universal dimmer with automatic lighting level control</b>									
300W ( $\cos \varphi = 1$ ) <sup>(1)</sup>	R, L, C, LED, ESL	2xMOSFET	Push-button & Light sensitive photocell	230V/ 50Hz-60Hz	-15%+15%	1	DIMLC300UNI230V	<b>685999</b>	1

(1) Due to a large number of light source types, the maximum load depends on the internal construction of dimmable LEDs and ESL bulbs and their power factor  $\cos \varphi$ . The power factor of dimmable LEDs and ESL bulbs ranges from  $\cos \varphi = 0.95$  to  $0.4$ . An approximate value of maximum load may be obtained by multiplying the load capacity of the dimmer by the power factor of the connected light source.



**RL dimmer**

- short press for switch on/off the lamp, longer press (> 0.5 s) for fluent illumination regulation
- when a device is de-energized, the brightness level is stored in its memory. When the device is energized again, a light is off. You can switch this light on by pressing a button. The light then switches on in the brightness level which is stored in its memory.



**Universal dimmer**

*Controlling*

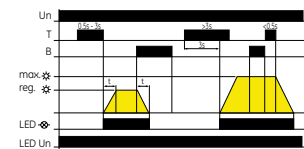
- short button press (<0.5s) turns the light off or on
- long press (>0.5s) enables slight regulation of light intensity
- setting of minimal luminance is possible only during decreasing of luminance by long button press
- setting of minimal luminance by saving fluorescent lamps serves for harmonizing of lowest light intensity prior its unprompted switching off

*Luminance setting*

- R, L, C, LED - if the light is turned off, short press (<0.5s) switches the light onto last set luminance level
- ESL - if the light is turned off, short press increases the luminance onto maximal level (saving fluorescent lamps fires up) and then luminance decreases onto set level.

*Notice*

- it is not possible to dim saving fluorescent lamps without marking: dimmable
- an incorrect setting of light source has effect only on dimming range, it means neither dimmer or load get damaged
- The maximum number of dimmable light sources depends on their internal construction



**Universal dimmer with automatic lighting level control**

*T-button control*

- pressing button shortly (<0.5s) always turns of lamp
- pressing button longer (0.5... 3s) turns on lamp in automatic regulation mode
- pressing button long (>3s) turns on lamp to full illumination - „cleaner“ mode
- after turning on the power supply, the dimmer is always turned off

*Thyristor B*

serves to block automatic regulation (lamp turns off)  
**WARNING!** The lamp may be turned on in “cleaner” mode even while blocked.  
 After ending block mode, the lamp remains off.

*Control elements on the instrument panel*

- load switch - has 2 positions for each type of load that differ in their regulation curves (sets the best position for the connected load)
- the lamp turns off (if previously on) whenever the switch settings are changed
- potentiometer setting of minimal luminance
- potentiometer setting of desired lighting level during automatic regulation
- the potentiometer status is stored in short-term memory whenever a change occurs - a green LED flashes (approx. 3s) while storing
- both lighting levels are storing in EEPROM memory during a power supply failure - LED meanwhile briefly turns off

**WARNING!**

- both lighting levels must be reset when switching Load type
- both lighting levels may only be set in automatic mode while the lamp is on
- potentiometer setting of lighting level fade speed - only available in automatic regulation mode
- determines the reaction time to changes in surrounding lighting level



## Technical data dimmers

Comfort functions

A

B

C

D

E

F

G

X

	DIM500RL230V	DIM300UNI230V	DIMLC300UNI230V
<b>Supply</b>			
Supply terminals	A1-A2		L-N
Supply voltage	AC 230V / 50Hz		AC 230V / 50-60Hz
Supply voltage tolerance	-15%; +10%		-15%; +10%
Consumption	max. 5 VA	max. 1.5 VA/0.7W	max. 1.6 VA/0.8W
Supply indication	Green LED		
<b>Controlling</b>			
Button - control. terminals	T-A1		L-T
Control voltage	AC 230V		
Control input power	max. 1.5VA	AC 0.3-0.6VA	max. 0.6VA
Control impulse length	min. 80ms / max. unlimited		
Glow tubes connection	YES		
Maximum number of connected glow lamps the control input	max. 15 pcs (measured with glow lamp 0.68mA/230V AC)		230V - max.count 50ks (measured with glow 0.68mA/230V AC)
Blocking input - terminals	-		L - B
Control voltage	-		AC 230V
Consumption	-		max. 0.1VA
Connect glow-lamps (terminals L - B)	-		NO
Impulse length	-		min. 80ms / max. unlimited
<b>Output</b>			
Output type	2A	2 x MOSFET	
Output status indication	red LED		
Load capability	R: 10 - 500VA; L: 10 - 250VA	300W (at $\cos \varphi = 1$ ) <sup>(1)</sup>	
<b>Other data</b>			
Operating temperature	-20... +55°C		-20... +35°C
Storing temperature	-30... +70°C		-20... +60°C
Operating position	any		vertical
Mounting	DIN-rail EN 60715		
Protection degree	IP40 from front panel, IP10 terminals		
Overvoltage category	III.		
Pollution level	2		
Max. cable size	max. 2 x 2.5; max. 1 x 4 s/with carven max. 1 x 2.5; max. 2 x 1.5		
Dimensions	90 x 17.6 x 64mm		
Weight (g)	58	57	
Applying standards	EN 60669-2-1; EN 61010-1		

(1) Due to a large number of light source types, the maximum load depends on the internal construction of dimmable LEDs and ESL bulbs and their power factor  $\cos \varphi$ . The power factor of dimmable LEDs and ESL bulbs ranges from  $\cos \varphi = 0.95$  to  $0.4$ . An approximate value of maximum load may be obtained by multiplying the load capacity of the dimmer by the power factor of the connected light source.



# New electromechanical time switches

## Complete range of possibilities

- 1, 2, 2.5 modules
- With and without battery
- Daily (Grey trippers), weekly (Yellow trippers) timers
- Shortest switch time: 15 minutes or 30 minutes models
- Normally Open and Changeover contacts



**New**



Redline

# New SIMPLE digital time and astronomical switches

## GLX+Q 30 Time switch



Comfort functions

The perfect combination of the precision of digital time switch and the simplicity of the electromechanical one.

- Display clarity, simplicity in the 3 keys
- Replaceable backup battery through the rear cover on the back

Use

- Gardens lighting, courtyards, alleys, ...
- Opening gates, doors, ...

A

B

### Electric utilities management throughout the day

C

- Desired program setting with simple ON/OFF of the virtual trippers lasting 30 minutes each

**D**

- All performed programming is immediately viewable on the display
- 1 program for everyday or 7 programs, one for each day of the week (weekly version of the instrument)

E

- Automatic summer/winter time change
- The instrument is supplied with already set time and date

F

G

## Astronomical switch

X

- Automatic programming of switching on (at sunset) and switching off (at sunrise)
- Possibility of night switching off with OFF virtual trippers
- Automatic summer/winter time change
- The instrument is supplied with already set time and date

Use

- Shops, shop windows, ...
- Roads, parks, fountains, ...
- Illuminated signs, monuments, ...





# New digital time and astronomical switches

## GLX+Q 1

Digital time switches 2 DIN-modules to manage electrical utilities in time with the maximum precision. The available models permit to make daily, weekly, monthly and yearly programs with 1 of 2 channels.

Electronic time switch that combines the functionality of astronomical (channel 2) and digital switch (channel 1)



Digital time switch 3 DIN-modules with add on power contacts module and software to program remotely or through IR interface

## New light sensitive switches

### CHARATERISTICS

- Compact form of the cover
- Adjusting method of the intervention threshold (which occurs via trimmer without the need to open the device)





### Classic Plus

Comfort functions



A

### Applications



Going from the pre-programmed switching of lighting (car park, advertising signs, public roads, etc.) over pre-programmed switching of heating equipment (home and work-environment, waterheating, etc.), to the pre-programmed switching of motors for pumps and fans and even to presence simulation.

B

C

D

E

F

G

X

### Features

Going from the pre-programmed switching of lighting (car park, advertising signs, public roads, etc.) over pre-programmed switching of heating equipment (home and work-environment, waterheating, etc.), to the pre-programmed switching of motors for pumps and fans and even to presence simulation.

### Functions

Pre-programmed switching of all kinds of electrical devices

### Standards / Marking

VDE 0633, BS EN 60730-1, BS EN 60730-2-7


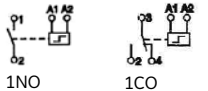






### Performance

	Plastic switches					
	NET SYNCHRONISED			QUARTZ SYNCHRONISED		
	1 module	2 modules	2.5 modules	1 module	2 modules	2.5 modules
<b>Contact</b>	Voltage free NO	Voltage free CO	Voltage free CO	Voltage free NO	Voltage free CO	Voltage free CO
Fix on, Fix off, Auto switch	yes	yes	yes	yes	yes	yes
Rated switching capacity						
- Resistive load	16A/250V	16A/250V	16A/250V	16A/250V	16A/250V	16A/250V
<b>Connectable Loads</b>						
- Incandescent	2500W	3000W	3000W	2500W	3000W	3000W
- Fluorescent (neon)	1200VA	1200VA	1200VA	1200VA	1200VA	1200VA
- Low voltage halogen	2000VA	2000VA	2000VA	2000VA	2000VA	2000VA
- Halogen (230V)	2500W	3000W	3000W	2500W	3000W	3000W
- Low consumption (CFL)	900VA - 1000VA	900VA - 1000VA	900VA - 1000VA	900VA - 1000VA	900VA - 1000VA	900VA - 1000VA
- Led	100VA	1000VA	1000VA	100VA	1000VA	1000VA
Shortest switching time day-program	15 min.	30 min.	15 min.	15 min.	30 min.	15 min.
Shortest switching time week-program	-	-	-	-	210 min.	120 min.
Screws	Pozidriv1	Pozidriv1	Pozidriv1	Pozidriv1	Pozidriv1	Pozidriv1
Terminal capacity: min	1mm <sup>2</sup>	1mm <sup>2</sup>	1mm <sup>2</sup>	1mm <sup>2</sup>	1mm <sup>2</sup>	1mm <sup>2</sup>
max	4mm <sup>2</sup>	4mm <sup>2</sup>	4mm <sup>2</sup>	4mm <sup>2</sup>	4mm <sup>2</sup>	4mm <sup>2</sup>
<b>Clockwork</b>						
Operating voltage	230 V AC(-15%...+10%)	230 V AC(-15%...+10%)	230 V AC(-15%...+10%)	230 V AC(-15%...+10%)	230 V AC(-15%...+10%)	230 V AC(-15%...+10%)
Own consumption at 230V	0.5W	0.5W	0.5W	0.5W	0.5W	0.5W
Running reserve	-	-	-	150h	150h	150h
Battery charging time	-	-	-	120h	96h	96h
Operating temperature range	-10 °C ... +50°C	-10 °C ... +50°C	-10 °C ... +50°C	-10 °C ... +50°C	-10 °C ... +50°C	-10 °C ... +50°C
Accuracy	±1s/24h at 25°C	±1s/24h at 25°C	±1s/24h at 25°C	±1s/24h at 25°C	±1s/24h at 25°C	±1s/24h at 25°C
Sealable	yes	yes	yes	yes	yes	yes



### Classic Plus - Analogue time switches

	Program	No. of channels	Nominal Current	Running reserve	Shortest switch time	Fix on/off auto	No. of mod.	Cat. No.	Ref. No.	Pack.	
<b>NET SYNCHRONISED</b> Day programmable 	<b>Operating Voltage:</b> 230 V AC(-15%...+10%)										
	1x24x4	1NO	16A/250Vac	-	15min.	yes	1	CLS+S 15 1NA 16A 1M D	<b>687436</b>	1	
	1x24x2	1CO	16A/250Vac	-	30min.	yes	2	CLS+S 30 1COM 16A 2M D	<b>687438</b>	1	
	1x24x4	1CO	16A/250Vac	-	15min.	yes	2.5	CLS+S 15 1COM 16A 2.5M D	<b>687441</b>	1	
											
<b>QUARTZ SYNCHRONISED</b> Day programmable 	<b>Operating Voltage:</b> 230 V AC(-15%...+10%)										
	1x24x4	1NO	16A/250Vac	150h	15min.	yes	1	CLS+Q 15 1NA 16A 1M D	<b>687437</b>	1	
	1x24x2	1CO	16A/250Vac	150h	30min.	yes	2	CLS+Q 30 1COM 16A 2M D	<b>687439</b>	1	
	1x24x4	1CO	16A/250Vac	150h	15min.	yes	2.5	CLS+Q 15 1COM 16A 2.5M D	<b>687442</b>	1	
											
<b>QUARTZ SYNCHRONISED</b> Week programmable 	<b>Operating Voltage:</b> 230 V AC(-15%...+10%)										
	7x24/3.5	1CO	16A/250Vac	150h	210min.	yes	2	CLS+Q 210 1COM 16A 2M W	<b>687440</b>	1	
	7x24/2	1CO	16A/250Vac	150h	120min.	yes	2.5	CLS+Q 120 1COM 16A 2.5M W	<b>687443</b>	1	
											

Classic Plus

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### Galax Plus

Comfort functions



#### Applications



Going from the pre-programmed switching of lighting (car park, advertising signs, public roads, etc.) over pre-programmed switching of heating equipment (home and work environment, water heating, etc.), to the pre-programmed switching of motors for pumps and fans and even to random presence simulation.

#### Features

Very easy programming, with quasi unlimited possibilities compared to the analogue time switches. Devices with daily, weekly and yearly event programming possibilities are available in 1, 2 up to 8 channel execution. All devices have a shortest switching time of one minute. On all devices, the summer/winter time change is fully automatic. Devices with block-programming,

#### Functions

Pre-programmed switching of all kinds of electrical devices

#### Standards

BS EN-60730-1, BS EN-60730-2-7, VDE 0633

#### Performance

	DAY/WEEK PROGRAMMABLE		DAY/WEEK/MONTH/YEAR	
	1 module	2 modules	DW	BUS
<b>Contact</b>	Voltage free NO	Voltage free CO	Voltage free CO	Voltage free NO
Rated switching capacity				
- Resistive load	16A/250 VAC	16A/250 VAC	16A/250 VAC	16A/250 VAC
Connectable Loads				
- Incandescent 240V	1500W	1500W	1500W	1500W
- Fluorescent (neon)	600W	600W	600W	600W
- Halogen (230V)	1500W	1500W	1500W	1500W
Minimum switching load	100mA/5 VDC	100mA/5 VDC	100mA/5 VDC	100mA/5 VDC
DC switching capacity	16A/24 VDC	16A/24 VDC	16A/24 VDC	16A/24 VDC
Shortest switching time	30 min	30 min	1 min	1 min
Screws	PH	PH	PH	PH
Terminal capacity:	1-4mm <sup>2</sup>	1-6mm <sup>2</sup>	1-6mm <sup>2</sup>	1-6mm <sup>2</sup>
<b>Clockwork</b>				
Operating voltage	230V AC(-15%...+10%)	230V AC(-15%...+10%)	230V AC(-10%...+10%)	230V AC(-15%...+10%)
Own consumption at 230V	6VA (1W)	5.5VA (1W)	8VA (2W)	7VA (2.6W)
Operating temperature range	-20°C...+50°C	-20°C...+50°C	-20°C...+50°C	-20°C...+50°C
Accuracy	± 1 second/day at 25°C	± 1 second/day at 25°C	± 1 second/day at 25°C	± 0.5 second/day at 25°C
Sealable	no	no	yes	yes



### Galax Plus - Digital time switches



	Program	No. of channels	Switching capacity	Running reserve	Shortest switch time	No. of modules	Cat. No.	Ref. No.	Pack.
<b>QUARTZ SYNCHRONISED</b>	<b>Operating Voltage:</b> 230V AC(-15%...+10%)								
Day programmable	1x24x2	1CO	16A (10) at 250V AC	5 years	30 min	2	GLX+Q 30 1COM 16A 2M D ANA	<b>687447</b>	1
Astro programmable	1x24x2	1CO	16A (10) at 250V AC	5 years	30 min	2	GLX+Q AST30 1NA 16A 2M D ANA	<b>687449</b>	1
Week programmable	7x24h/0.5	1CO	16A (10) at 250V AC	5 years	30 min	2	GLX+Q 30 1COM 16A 2M W ANA	<b>687448</b>	1



**For day/week timers**

- Power supply: 230V 50/60Hz
- Daily or weekly versions
- Switching of the relay only in presence of power supply
- Manual override of the relay (temporary or permanent)
- Summer time automatic update
- Date and time already default set
- Backup battery for maintaining the date and time without power from the mains
- Low battery signal
- Password protected lock keypad
- Backlighting always on when instrument is mains powered (auto power off for energy saving in the case of blackout)
- 48 virtual trippers for a resolution of 30 minutes

**For Astro Timers**

- Available programming:
  - P1 fixed with possibility of night-switch ON/OFF of minimum 30 minutes
  - Sunrise and sunset hours are calculated according to phone prefix or geographical coordinates
  - Display of the sunset/sunrise times calculated by the device
  - Update of sunrise/sunset hours: ±120 minutes
  - Summertime automatic update
- Manual override of the relay (temporary or permanent)
- Relay switching only with power supply
- Depleted battery signaling

### Galax Plus - Digital time switches



	Program	No. of channels	Switching capacity	Running reserve	Shortest switch time	No. of modules	Cat. No.	Ref. No.	Pack.
<b>QUARTZ SYNCHRONISED</b>	<b>Operating Voltage:</b> 230V AC(-15%...+10%)								
Day programmable	1x24x4	1NO	16A (10) at 250V AC	4 years	30 min	1	GLX+Q 30 1NA 16A 1M D	<b>687444</b>	1
Astro programmable	1x24x4	1NO	16A (10) at 250V AC	4 years	30 min	1	GLX+Q 30 1NA 16A 1M AST D	<b>687446</b>	1
Week programmable	1x24x2	1NO	16A (10) at 250V AC	4 years	30 min	1	GLX+Q 30 1NA 16A 1M W	<b>687445</b>	1



**For day/week timers**

- Power supply: 230V 50/60Hz
- Daily or weekly versions
- Switching of the relay only in presence of power supply
- Manual override of the relay (temporary or permanent)
- Summer time automatic update
- Backup battery for maintaining the date and time without power from the mains
- Low battery signal
- Backlighting always on when instrument is mains powered (auto power off for energy saving in the case of blackout)
- 48 virtual trippers for a resolution of 30 minutes

**For Astro Timers**

- Available programming:
  - P1 fixed with possibility of night-switch ON/OFF of minimum 30 minutes
  - Sunrise and sunset hours are calculated according to phone prefix or geographical coordinates
  - Display of the sunset/sunrise times calculated by the device
  - Update of sunrise/sunset hours: ±120 minutes
  - Summertime automatic update
- Manual override of the relay (temporary or permanent)
- Relay switching only with power supply
- Depleted battery signaling

Galax Plus

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### Galax Plus - Digital time switches

Comfort functions

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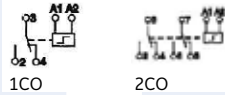
**QUARTZ SYNCHRONISED  
With no IR interface**

**With IR  
interface**

**ASTRO**

**remote  
Infrared  
control**

Program	No. of channels	Switching capacity	Running reserve	Shortest switch time	No. of modules	Cat. No.	Ref. No.	Pack.
<b>Operating Voltage:</b> 230V AC(-10%...+10%)								
7x24x60	1CO	16A (10) at 250V AC	3 years	1 min	2	GLX+Q 1 1COM 16A 2M DW	<b>687450</b>	1
7x24x60	2CO	16A (10) at 250V AC	3 years	1 min	2	GLX+Q 1 2COM 16A 2M DW	<b>687451</b>	1
7x24x60	1CO	16A (10) at 250V AC	3 years	1 min	2	GLX+Q 1 1COM 16A 2M DW IR	<b>687452</b>	1
7x24x60	2CO	16A (10) at 250V AC	3 years	1 min	2	GLX+Q 1 2COM 16A 2M DW IR	<b>687453</b>	1
7x24x60	1CO	16A (10) at 250V AC	3 years	1 min	2	GLX+Q 1 1COM 16A 2M AST IR	<b>687454</b>	1
7x24x60	2CO	16A (10) at 250V AC	3 years	1 min	2	GLX+Q 1 2COM 16A 2M AST IR	<b>687455</b>	1
-	-	2x1.5V (AAA type batteries)	-	-	-	GLX+IR	<b>687456</b>	1



**For day/week timers**

- Power supply: 230V 50/60Hz
- Version: 1 or 2 channels
- Switching of the relay only in presence of power supply
- Manual override of the relay (temporary or permanent)
- Program: ON, OFF, CYCLE, PULSE (1...9 seconds) HOLIDAY, RANDOM
- Maximum storable programs for each channel:
  - 30 events (on, off, cycle, pulse)
  - 4 holiday periods (period = more consecutive days)
  - 20 holiday days (single days)
- Integrated infrared interface (only available in GLX+Q DW IR)
- Password protected lock keypad
- Display automatically shuts-off after 3 minutes of inactivity of the keyboard

**For Astro Timers**

- Available programming:
  - P1 fixed and not modifiable
  - Only for GLX Q 2COM: 6 programs on output 1
- Maximum holiday events for each channel: 4 periods + 20 days
- Display of the sunset/sunrise times calculated by the device
- Update of sunrise/sunset hours: ±120 minutes
- Summertime automatic update
- Manual override of the relay (temporary or permanent)
- Relay switching only with power supply
- Depleted battery signaling
- Integrated infrared interface

**For GLX+IR**

- Charge reserve for battery replacement: 2 minutes
- Viewing with display LCD (non-backlit)
- Text guide
- Available languages: English/Italian/Spanish/French/German
- Maximum number of programs that can be stored: 126

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### Galax Plus - Digital time switches



**QUARTZ SYNCHRONISED**

**GEOBUS**

Program	No. of channels	Switching capacity	Running reserve	Shortest switch time	No. of modules	Cat. No.	Ref. No.	Pack.
<b>Operating Voltage:</b> 230V AC(-10%...+10%)								
365x24x60	1CO	16A (10) at 250V AC	5 years	1 min	3	GLX+Q 1 1COM 16A 3M Y BUS	<b>687464</b>	1
<b>Operating Voltage:</b> 230V AC (-15%...+10%)								
-	4CO	8A (5) at 250V AC	-	-	4	GLX+Q 4COM 8A 4M BUS	<b>687466</b>	1
<b>Operating Voltage:</b> 12V DC(-20%...+20%)								
-	-	-	-	-	-	GLX+ GEO BUS	<b>687465</b>	1



**For day/week/month/year timers**

- Time programming (D/W/M/Y) or astronomical programming
- Available programs: on/off, on pulse, on holiday, off holiday, random, night (astronomical)
- Independent channels to control 9 loads (relays):
  - 1 relay on board of the device
  - 8 relays to be realized by connecting two actuators
- Maximum number of storable programs: 450 (900 events) allocable on 9 channels
- Possibility to automatically capture date, time and geographical position connecting GEO BUS
- Manual override of the relay (temporary or permanent)
- Possibility to copy:
  - The programs of a channel on other channels
  - All programs from another GLX+Q BUS connected
- Password protected lock keypad
- Automatic time update (DST)
- Menu in five languages: English/Italian/Spanish/French/German

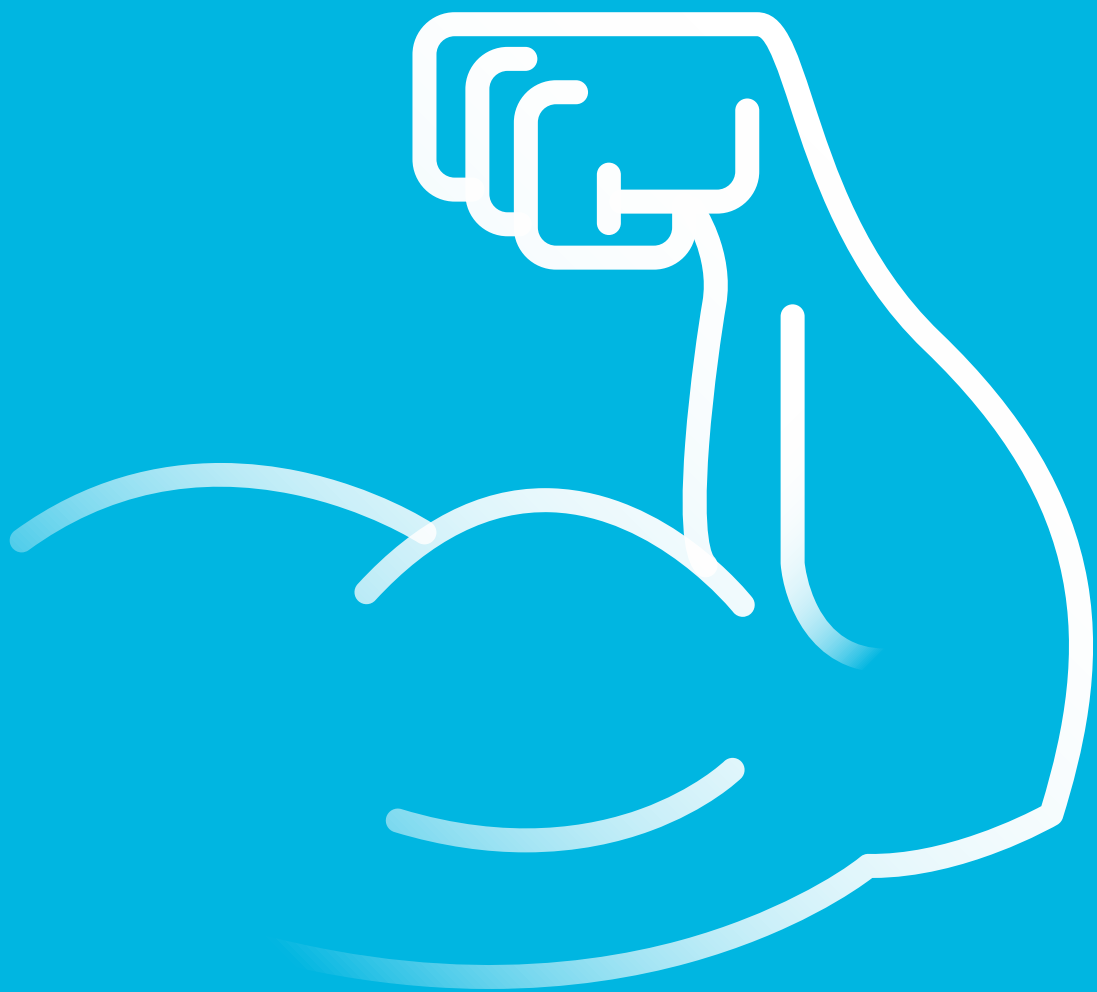
**For Receiver:**

- Power supply: 230V AC (-15%...+10%), 50/60Hz
- Output: 4 bistable relays with change-over contact from 8A (250V AC)

**GLX+ GEO BUS**

Is a GPS module that allows you to capture the information of date, time and position from satellites. This information will be shared with GLX+Q BUS







## Time Switches

### 72 x 72 Classic Plus and Galax Plus

Comfort functions



#### Applications



Going from the pre-programmed switching of lighting (car park, advertising signs, public roads, etc.) over pre-programmed switching of heating equipment (home and work environment, water heating, etc.), to the pre-programmed switching of motors for pumps and fans and even to random presence simulation.

#### Features

Very easy programming by means of mechanical switches or digital buttons. Devices with daily and weekly event programming possibilities. Analogue devices have a shortest switching time of 15 minutes and digital device has 1 minute.

#### Functions

Pre-programmed switching of all kind of electrical devices.

#### Standards

EN 60780-1, EN 60780-2-7




#### Performance

	DAY PROGRAMMABLE	WEEK PROGRAMMABLE	DAY/WEEK PROGRAMMABLE
<b>Contact</b>	switched	switched	changeover
Maximum recommended load			
- Incandescent lamps	3000W	3000W	3000W
- Fluorescent with compensation	1200VA	1200VA	-
- Low voltage halogen lamps	2000VA	2000VA	2000VA
- Halogen (230V AC)	3000W	3000W	3000W
- Low consumption lamps	1000VA	1000VA	1000VA
- Downlight lamps	900VA	900VA	-
- LEDs	1000VA	1000VA	1000VA
- Non-compensated	-	-	1200VA
Running reserve	>100h	>100h	5 years
Shortest switching time	15 min	2 h	1 min
Modules	4	4	4
Nominal current	16A/250 VAC	16A/250 VAC	16A/250 VAC
Accuracy	± 1 second/day at 25°C	± 1 second/day at 25°C	± 1 second/day at 25°C
Number of channels	1	1	1
Operating voltage	230V AC	230V AC	230V AC
Fix on/off auto	yes	yes	yes
Own consumption at 230V	1.8W	1.8W	6VA
Operating temperature range	0°C...55°C	-10°C...+45°C	-10°C...+45°C
Flush mounting	yes	yes	yes
Surface mounting	yes	yes	yes
Number of memory position	-	-	50





### 72 x 72 Classic Plus - Analogue time switches

	Program	No. of channels	Nominal Current	Running reserve	Shortest switch time	Fix on/off auto	No. of modules	Cat. No.	Ref. No.	Pack.	
	<b>Operating Voltage: 120 or 230V AC</b>										
	Day program	1x24	1CO	16A/250 VAC	>100h	15 min	yes	4	CLS+Q 15 1COM 16A 72x72 D	<b>687467</b>	1
	<b>Operating Voltage: 120 or 230V AC - 24 or 48V AC/DC</b>										
	Week program	7x24	1CO	16A/250 VAC	>100h	2 h	yes	4	CLS+Q 15 1COM 16A 72x72 W	<b>687468</b>	1
	<b>Operating Voltage: 120 or 230V AC - 24 or 48V AC/DC</b>										
	Day/Week program	1x24/7x24	1CO	16A/250 VAC	5 years	1min	yes	4	GLX+Q 15 1COM 16A 72x72 W	<b>687469</b>	1

72 x 72 Classic Plus and Galax Plus

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### Galax LSS

Comfort functions



### Applications



Control of lighting in shop windows, offices, car parking areas, controlling street lights, advertising signs, sun blinds, shutters, or even lighting in a home to simulate the presence of people.

### Standards

VDE 0632, VDE 0633, EN 60669-2-1

### Features

User presettable switch light intensity, intensity range and hysteresis (to avoid on/off a stable behavior). Reaction time is also user presettable. 1 channel and 2 channel with week-cycle, all with separate photocell are available besides a 1 channel all-in-one device.

### Functions







Electronic switch controlled by the intensity of the ambient light, detected by a separate or integrated photocell (depending on the model). When the light intensity drops below the threshold setting, the switch changes its state to the on position. An increasing ambient light intensity eventually will switch off the device again.

### Performance

	GLX+Q LUX 1NA 1 module 1 NO	GLX+Q LUX/T1COM 2 module 1 relay in monostable change over	GLX+ LUX WALL Relay with NO contact
<b>Contact</b>	1 NO	1 relay in monostable change over	Relay with NO contact
Switching capacity			
- Resistive load	16A/250 VAC	16A/250 VAC	10A/230 VAC
Connectable Loads			
- Incandescent Lamps	4000W	4000W	4000W
- Fluorescent Lamps	1000W	1000W	1000W
- LED <2W/2-8W/ >8W	55/150/180W	55/150/180W	55/150/180W
DC switching capacity	16A/24VDC	16A/24VDC	16A/24VDC
Shortest switching time	20 sec	1 min	10 sec
Screws	PH	PH	PH
Terminal capacity:			
max	4mm <sup>2</sup>	6mm <sup>2</sup>	4mm <sup>2</sup>
min	1mm <sup>2</sup>	1mm <sup>2</sup>	1mm <sup>2</sup>
Operating voltage	230V AC (-20%...+10%)	230V AC (-10%...+10%)	230V AC (-10%...+10%)
Own consumption at 230V	6VA (1W)	8VA (2W)	8VA (1W)
Running reserve	-	3 years	-
Battery	-	Lithium	-
Operating temperature range	-0°C...+50°C	-20°C...+50°C	-0°C...+50°C
Accuracy	-	± 1 second/day at 25°C	± 1 second/day at 25°C
Sealable	-	yes	-
<b>Light sensitive operating part</b>			
Light intensity switching range	10 to 100 lux	5 to 500 lux	3 to 70 lux
Switching hysteresis	0	1 to 50% threshold	4
On/Off switching delay	15s ON 15s OFF	1-50min (programmable) 1-50min (programmable)	15s 15s
Light sensitive sensor wire-length	max. 100m	max. 50m	-
Light sensitive sensor protection degree	IP65	IP65	IP54
Operating temperature range	-20°C...+50°C	-20°C...+50°C	-0°C...+50°C



**Galax LSS**

	Program	No. of channels	Nominal Current	No. of modules	Cat. No.	Ref. No.	Pack.
 	<b>Operating Voltage: 230V AC (-20%...+10%)</b>						
	10 to 100 lux	1NO	16A/250 VAC	1	GLX+Q LUX 1NA 16A 1M	<b>687470</b>	1
 	<b>Operating Voltage: 230V AC (-10%...+10%)</b>						
	5 to 500 lux	1CO	16A/250 VAC	2	GLX+Q LUX/T1COM16A2M	<b>687472</b>	1
	<b>Sensor for GLX+ QLUX</b>						
	-	-	-	-	GLX+LSS EXT	<b>687471</b>	1
 	<b>Operating Voltage: 230V AC (-10%...+10%)</b>						
	3 to 70 lux	1NO	10A	-	GLX+ LUX WALL	<b>687473</b>	1

GLX LSS

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## Safety and bell transformers

### Buzzers and bells

#### Series T+ BU+ BE+

Comfort functions



### Applications



Going from supplying power to a bell circuit, to supplying power to the control circuit of impulse switches, relays or contactors for the control of lighting, heating, etc.

### Standards / Marking

IEC 61558-1-2-6: Safety transformer  
IEC 61558-1-2-8: Bell transformer  
EN 62080: Bells and buzzers



### Features

Safety transformers have short-circuit protection through PTC or fail-safe transformers and continuous nominal power.  
Bell transformers are recommended for intermittent use at the nominal power declared. Complete noiseless operation.  
4, 8, 12, 24, 48V secondary voltages available at power indicated. Terminals are equipped with captive Pozidriv screws and have IP20 protection degree. Possibility to connect till 2 loads at lower secondary voltages taking into account the power. For bells and safety transformers over 25VA terminals CAPS available as accesorie with sealing performances.


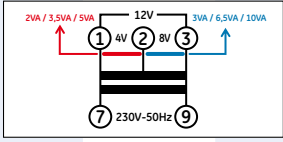

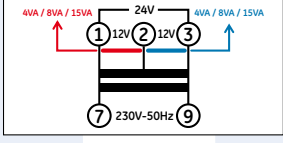
### Functions

Reducing the voltage to a very low (safety) voltage used mainly as control-voltage in order to reduce the risk of electrocution due to environmental circumstances (I.e. high degree of humidity like outdoors, in a swimming pool complex, etc.).


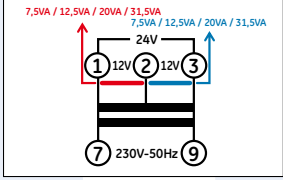
### Performance

	Bell transformer	Safety transformer	Buzzers and bells
Nominal primary voltage and frequency//Command voltage	230V 50Hz / 240V 60Hz	230V 50Hz / 240V 60Hz	230V AC-12V AC
Power VA / Comsumption VA	5-10-15-8-16-30	15-25-40-63	4.5
Secondary voltage at nominal primary voltage	4-8- 12V; 12-12-24V	12-12-24V	-
Maximum secondary voltage at zero load	1.5 x Un sec.	1.3 x Un sec.	-
Minimum secondary voltage at nominal load	0.85 x Un sec.	0.95 x Un sec.	-
Maximum load	Nominal power	Nominal power	-
Short-circuit protection	PTC and Fail Safe	PTC and Fail Safe	-
Operating temperature	-20...+40°C	-20...+40°C	-20...+45°C
Isolation voltage	4kV	4kV	-
Protection degree	IP20	IP20	IP20
Use	Inttermitent	Permanent	Permanent
Maximum permanent working time	-	-	10 <sup>6</sup>
Sound level	-	-	77-75 dB
Screw	Slotted and PH1	Slotted and PH1	Pozidriv 1
Terminal capacity:			
min	1x0.5mm <sup>2</sup>	1x0.5mm <sup>2</sup>	1x1.5mm <sup>2</sup>
max	1x4mm <sup>2</sup> or 2x2.5mm <sup>2</sup>	1x4mm <sup>2</sup> or 2x2.5mm <sup>2</sup>	1x10mm <sup>2</sup>
Maximum torque	0.5Nm	0.5Nm	0.5Nm


### Series TR+ Bells transformers

	Output power VA	Secondary voltages	Primary voltage	Number of modules	Primary circuit protection	Cat. No.	Ref. No.	Pack.
	5	4-8-12V AC	230V AC	2	PTC	TR+ B 5	<b>665900</b>	1
	10	4-8-12V AC	230V AC	2	fail safe	TR+B10	<b>665902</b>	1
	15	4-8-12V AC	230V AC	2	fail safe	TR+B15	<b>665903</b>	1
								
	8	12-12-24V AC	230V AC	2	fail safe	TR+B 8	<b>665901</b>	1
	16	12-12-24V AC	230V AC	2	fail safe	TR+B16	<b>665904</b>	1
	30	12-12-24V AC	230V AC	3	fail safe	TR+B30	<b>665905</b>	1
								



### Series TS+ Safety transformers

	Output power VA	Secondary voltages	Primary voltage	Number of modules	Primary circuit protection	Cat. No.	Ref. No.	Pack.
	15	12-12-24V AC	230V AC	2	fail safe	TR+S15	<b>665909</b>	1
	25	12-12-24V AC	230V AC	3	fail safe	TR+S25	<b>665910</b>	1
	40	12-12-24V AC	230V AC	3	PTC	TR+S40	<b>665911</b>	1
	63	12-12-24V AC	230V AC	6	PTC	TR+S63	<b>665912</b>	1
								

### Series TR+/TS+ sealing CAPS for Bells and safety transformers

	To be used In			Number of modules		Cat. No.	Ref. No.	Pack.
	TR+S25	TR+S40	TR+B30	3	-	TR&KT+C3MOD	<b>665918</b>	1
	TR+S63	-	-	6	-	TR&KT+C6MOD	<b>665919</b>	1

### Bells and Buzzers

	Power Consumption VA	Voltages	dB	Number of modules	Permanent use	Cat. No.	Ref. No.	Pack.
	4.5	230Vac	77	1	12 h	BE230	<b>687498</b>	1
	4.5	12Vac	77	1	12 h	BE12	<b>687499</b>	1
	4.5	230Vac	75	1	12 h	BU230	<b>687496</b>	1
	4.5	12Vac	75	1	12 h	BU12	<b>687497</b>	1



Series MT+D kWh

Comfort functions



Applications



Measurement of energy consumption. Possibility to integrate in only one system electricity, water, gas... consumptions.

Standards

EN/IEC 62053-21, EN/IEC 62053-23, EN/IEC 62052-11

Approval / Marking



Features

An electricity meter or energy meter is a device that measures the amount of electric energy consumed by a residence, business, or an electrically powered device.

Electricity meters are typically calibrated in billing units, the most common one being the kilowatt hour (kWh). Periodic readings of electricity meters establishes billing cycles and energy used during a cycle.

GE offers a new electronic meter, which display the energy used on an LCD display, and they can also transmit readings to remote places via pulse output, ModBus RS485 or through Ethernet building a powerfull system of measure.

In order to build this system, some accesories devices are offered like RS232/485 converter, RS485/ethernet converter or Pulse output concentrator. The concentrator can also receive pulses from other type of meters like gas meter or water meter in order to integrate in only one system all type of consumptions in a house, village or commercial and industrial building.

Functions

Measurement, visualisation and logging of Energy kWh to be used in BMS systems.

Performance MT+D KWh Performance MT+D KWh

	D1132	D1163	D3NI63	D3NI X/5
Display				
<b>Display type</b>	LCD 7 digits	LCD 6 digits	LCD 8 digits	LCD 8 digits
Maximum display	99999.99kWh	99999.9kWh	999999.99kWh	See Tech. Datasheet
<b>Energy</b>				
Resolution	10Wh	100Wh	10Wh	See Tech. Datasheet
Metering LED	1imp/Wh	1imp/Wh	1imp/Wh	1imp/0.1Wh
Total energy count	not resettable	not resettable	not resettable	not resettable
Partial energy count	N/A	resettable	resettable	resettable
Accuracy (EN/IEC 62053-21):	Class 1	Class 1	Class 1	Class 1
<b>Input</b>				
Network	Single-phase	Single-phase	Three phase, 3-4wires	Single Phase, 3-phase, 3-4 wires
Reference voltage	230V AC	230-240V AC	400-415V AC	230-240V single & 400-415 Three phase
Specified operating range	196..264V AC	196..264V AC	197..480V AC	210..264V single & 210..440V Three phase
Reference frequency	50-60Hz	50-60Hz	50-60Hz	50-60Hz
Tolerance (Hz)	47...63Hz	47...63Hz	47...63Hz	47...63Hz
Basic current Ib	5A	5A	10A	x/5A
Max. Current, Imax	32A	63A	63A	6A
Starting current	20mA	20mA	40mA	20mA
<b>Pulse output</b>				
Pulse weight	1 imp/Wh	1, 10, 100, 1000Wh	1, 10, 100, 1000Wh	10, 100Wh; 1, 10, 100, 1000kWh
Type	Class A	Optoelectronic relay	Optoelectronic relay	Optoelectronic relay
Voltage Uimp	12...27V DC	110V DC/AC	110V DC/AC	110V DC/AC
Current	10...27mA	50mA	50mA	50mA
Pulse duration	70ms	50,100,150,200,300,400,500ms	50,100,150,200,300,400,500ms	50,100,150,200,300,400,500ms
RS485 ouput	NO	MT+D1485 63 2M	MT+D3N485 63 4M	MT+D3NI x/5 4M
<b>Thermal capacity</b>				
Rigid cable	1/10mm <sup>2</sup>	1/16mm <sup>2</sup>	1/16mm <sup>2</sup>	1/4mm <sup>2</sup>
Flexible cable	1/7mm <sup>2</sup>	1/10mm <sup>2</sup>	1/10mm <sup>2</sup>	0.05/2.5mm <sup>2</sup>
Tightening torque advised	1.1mm <sup>2</sup>	1.4mm <sup>2</sup>	1.4mm <sup>2</sup>	0.8mm <sup>2</sup>
Number of modules	1	2	4	4
<b>Environmental conditions</b>				
Operating temperature	-5°C..55°C	-5°C..55°C	-5°C..55°C	-5°C..55°C
Additional Approvals				
MID directive compliance	MT+D1145 1M MID	MT+D1485 63 2M MID MT+D11 63 2M MID	MT+D3N485 63 4M MID MT+D3NI 63 4M MID	MT+D3NI x/5 4M MID MT+D3N485 x/54M MID

### Series MT+D kWh

	Scale	Accuracy	Number of modules	Outputs	Additional measures	Cat. No.	Ref. No.	Pack.
<p><b>Monophase kWh</b></p>	<32A	Class 1	1	Pulse	-	MT+D1i 32 1M	<b>665248</b>	1
	<63A	Class 1	2	Pulse	In, Vn, Wt, Hz, PF, HM	MT+D1i 63 2M	<b>665250</b>	1
	<63A	Class 1	2	RS485	In, Vn, Wt, Hz, PF, HM	MT+D1485 63 2M	<b>665252</b>	1
<p><b>Triphase 3-4 wires kWh</b></p> <p>For x/5 version see tech. datasheet</p>	<63A	Class 1	4	PULSE	partial kwh, double tariff, Var, Un, In, Wt, Hz, PF, HM	MT+D3Ni 63 4M	<b>665254</b>	1
	<63A	Class 1	4	RS485	partial kwh, double tariff, Var, Un, In, Wt, Hz, PF, HM	MT+D3N485 63 4M	<b>665256</b>	1
	x/5A	Class 1	4	PULSE	partial kwh, Var, Un, In, Wt, Hz, PF	MT+D3Ni x/5 4M	<b>665258</b>	1
	x/5A	Class 1	4	RS485	partial kwh, Var, Un, In, Wt, Hz, PF	MT+D3N485 x/5 4M	<b>665260</b>	1

Series MT+D kWh

### Series MT+D kWh. MID Directive approval

	Scale	Accuracy	Number of modules	Outputs	Additional measures (non MID)	Cat. No.	Ref. No.	Pack.
<p><b>Monophase kWh</b></p>	<45A	Class B	1	PULSE	-	MT+D1i 45 1M MID	<b>665249</b>	1
	<63A	Class B	2	PULSE	In, Vn, Wt, Hz, PF, HM	MT+D1i 63 2M MID	<b>665251</b>	1
	<63A	Class B	2	RS485	In, Vn, Wt, Hz, PF, HM	MT+D1485 63 2M MID	<b>665253</b>	1
<p><b>Triphase 3-4 wires kWh</b></p> <p>For x/5 version see tech. datasheet</p>	<63A	Class B	4	PULSE	partial kwh, Var, Un, In, Wt, Hz, PF, HM	MT+D3Ni 63 4M MID	<b>665255</b>	1
	<63A	Class B	4	RS485	partial kwh, Var, Un, In, Wt, Hz, PF, HM	MT+D3N485 63 4M MID	<b>665257</b>	1
	x/5A	Class B	4	PULSE	partial kwh, Var, Un, In, Wt, Hz, PF	MT+D3Ni x/5 4M MID	<b>665259</b>	1
	x/5A	Class B	4	RS485	partial kwh, Var, Un, In, Wt, Hz, PF	MT+D3N485 x/5 4M MID	<b>665261</b>	1

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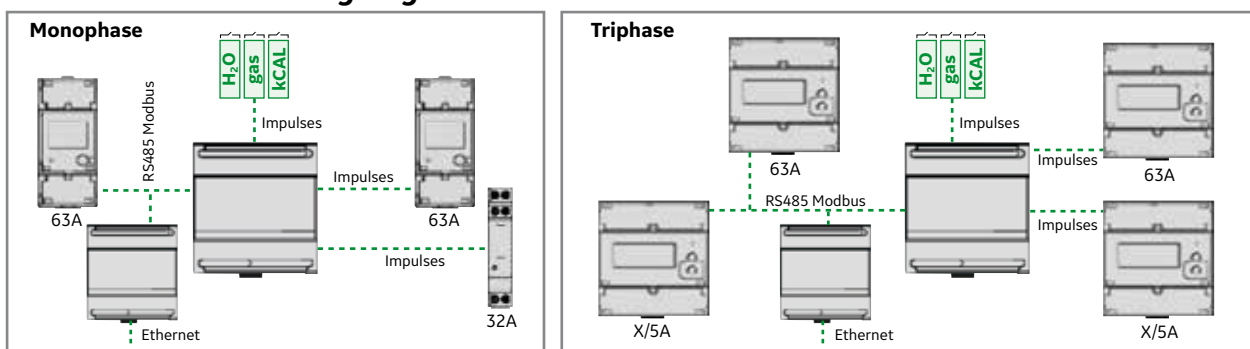
### Series MT+D kWh

	Number of modules	Description	Cat. No.	Ref. No.	Pack.
	4	Pulse acquisition 3 program input configuration - 12 contact inputs PASSIVE - 6 contact inputs+6 active inputs ACTIVE - S0 (GME ENEL)	MT+ImpCon	<b>665262</b>	1
	4	RS485-Ethernet conversion	MT+RS485/Ethernet	<b>665389</b>	1
	2	RS485 RS232 conversion	MT+RSC TOP	<b>665390</b>	1

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### Series MT+kWh. Building a system





Series MT+D

Comfort functions



Features

AC measurement devices with digital technology and readout are available. The simple devices (one measurement only voltage, current, frequency) are only available in single phase, while the complex devices (more than one measurement i.e. power, energy, net analyser) are also available in 3-phase execution. High current can be measured through the intermediate use of a current transformer. All devices have very good precision and have also a very low self-consumption to limit as much as possible the measurement error. The net analysers are true RMS measuring devices. Monitoring and logging all electrical values on to a PC is possible by using communication modules to RS484, RS232 and Ethernet.

Applications



Measurement, visualisation and logging of voltage, current, frequency, hours of operation, power, energy, cos φ, etc..

Functions

Measurement of all possible electrical values from simple measurement as voltage, current, frequency over more complex such as power and energy, to all-in-one measurement with the net analyser devices. To avoid down-time due to abnormal situations, i.e. power-supply voltage too high, absorbed power too high, etc., leading to malfunctioning and even breakdown of the machinery, the measurement and monitoring of the electrical values like voltage, current, power, energy etc. is an absolute must and even an indispensable asset when it comes to preventive maintenance.

Standards

EN 61010-1, BS EN 60051-1-2

Marking




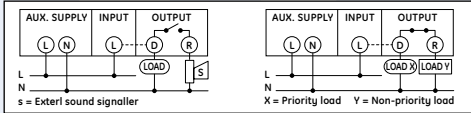

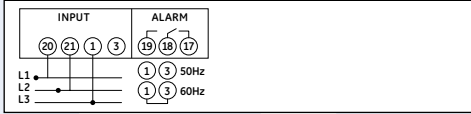


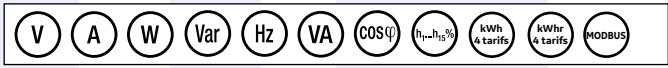


Performance MT+D KWh Performance MT+D KWh

	D1132	D1163	D3Ni63	D3Ni X/5
<b>Display type</b>	LCD 7 digits	LCD 6 digits	LCD 8 digits	LCD 8 digits
Maximum display	99999.99kWh	99999.9kWh	999999.99kWh	See Tech. Datasheet
<b>Energy</b>				
Resolution	10Wh	100Wh	10Wh	See Tech. Datasheet
Metering LED	1imp/Wh	1imp/Wh	1imp/Wh	1Imp/0.1Wh
Total energy count	not resettable	not resettable	not resettable	not resettable
Partial energy count	N/A	resettable	resettable	resettable
Accuracy (EN/IEC 62053-21):	Class 1	Class 1	Class 1	Class 1
<b>Input</b>				
Network	Single-phase	Single-phase	Three phase, 3-4wires	Single Phase, 3-phase, 3-4 wires
Reference voltage	230V AC	230-240V AC	400-415V AC	230-240V single & 400-415 3-phase
Specified operating range	196..264V AC	196..264V AC	197...480V AC	210..264V single & 210..440V 3-phase
Reference frequency	50-60Hz	50-60Hz	50-60Hz	50-60Hz
Tolerance (Hz)	47...63Hz	47...63Hz	47...63Hz	47...63Hz
Basic current Ib	5A	5A	10A	x/5A
Max. Current, Imax	32A	63A	63A	6A
Starting current	20mA	20mA	40mA	20mA
<b>Pulse output</b>				
Pulse weight	1 imp/Wh	1, 10, 100, 1000Wh	1, 10, 100, 1000Wh	10, 100Wh; 1, 10, 100, 1000kWh
Type	Class A	Optoelectronic relay	Optoelectronic relay	Optoelectronic relay
Voltage Uimp	12...27V DC	110V DC/AC	110V DC/AC	110V DC/AC
Current	10...27mA	50mA	50mA	50mA
Pulse duration	70ms	50,100,150,200,300,400,500ms	50,100,150,200,300,400,500ms	50,100,150,200,300,400,500ms
RS485 output	NO	MT+D1485 63 2M	MT+D3N485 63 4M	MT+D3N485 x/5 4M
<b>Thermal capacity</b>				
Rigid cable	1/10mm <sup>2</sup>	1/16mm <sup>2</sup>	1/16mm <sup>2</sup>	1/4mm <sup>2</sup>
Flexible cable	1/7mm <sup>2</sup>	1/10mm <sup>2</sup>	1/10mm <sup>2</sup>	0.05/2.5mm <sup>2</sup>
Tightening torque advised	1.1mm <sup>2</sup>	1.4mm <sup>2</sup>	1.4mm <sup>2</sup>	0.8mm <sup>2</sup>
Number of modules	1	2	4	4
<b>Environmental conditions</b>				
Operating temperature	-5°C..55°C	-5°C..55°C	-5°C..55°C	-5°C..55°C
Additional Approvals				
MID directive compliance	MT+D1132 1M MID	MT+D1485 63 2M MID MT+D11 63 2M MID	MT+D3N485 63 4M MID MT+D3Ni 63 4M MID	MT+D3Ni x/5 4M MID MT+D3N485 x/54M MID



**Series MT+D**

	Scale	Accuracy	Number of Outputs	Additional measures	Cat. No.	Ref. No.	Pack.		
	V, A, Hz	x/5A	±1%+1 digit	4	-	voltage, current, frequency	MT+D DV500 DA5 F 4M	<b>665387</b>	1
									
	Priority Relay+Buzzer	direct 28A	-	2	Buzzer	V, A, kW	MT+D PRI BASIC 2M	<b>665395</b>	1
									
	Phase sequence relay	380..415V (phase-phase) 50-60Hz (selectable)	-	2	Alarm	-	MT+ AP 3F 2M	<b>665396</b>	1
									
	Multimeter	x/5A 230/400V	±0.5 (I,V), -1.5%(W), -0.2%(Hz)	4	-	Ph V, Ph A, Linked Voltage Ph act./reactive Power, Act.,React., appar. Power Neutral current, Hz, PF, Working H&min., Power demand, Max. Power demand	MT+D BASIC 4M	<b>665393</b>	1
<p>Single Phase, three phase, 3-4 wires, for electric diagram</p>									
	Net Analyser	x/5A 230/400V	Class 0.5 (kWh) Class 1 (VAr)	4	Pulse	see tech. datasheet	MT+D TOPi 4M	<b>665391</b>	1
<p>Pulse +RS485 see tech. datasheet MT+D TOPiRS485 4M <b>665392</b> 1</p>									
									
<p>Single Phase, three phase, 3-4 wires, for electric diagram. See tech. datasheet</p>									

Series MT+D

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Series MT+A

Comfort functions



Applications



Measurement, visualisation and logging of voltage, current, frequency and hours of operation

Standards

EN 61010-1, BS EN 60051-1-2

Marking



Features

AC measurement devices with analogue technology and readout are available. The simple devices (one measurement only i.e. voltage, current, frequency) are only available in single phase. High currents can be measured through the intermediate use of a current transformer (for the analogue amp-meter combined with an interchangeable scale-plate). All devices have very good precision and have also a very low self-consumption to limit as much as possible the measurement error. Using one monophase-volt or amp-meter in a 3-phase system is possible by using the appropriate selector switch also available in our range.











Functions

Measurement of voltage, current, frequency and hours of operation with analogue visualisation of the measure.

Performance MT+A

	Ammeter MT+AA	Voltmeter MT+AV	Frequency meter MT+F	Hour Counter MT+AH	Selector MT+S
Scale selection	Interchangeable scaleplate	-	-	Counter 7 digit	I1-I2-I3 V12-V23-V31-V1n-V2n-V3n
Rated burden	< 1.1VA	< 3.5VA(500V) < 3VA (300V)	≤ 4VA	< 8mA	-
Operating temperature range	-25...50°C	-25...50°C	-25...50°C	-20...70°C	-
Class of precision (accuracy)	1.5	1.5	1	0.02%	-
Type	Single phase, AC	Single phase, AC	Single phase, AC	230V-110V-24V	-
Connection	direct or CT /5	300V-500V	-	-	-
Measure	true RMS value	true RMS value	-	-	-
Continuous overload	1.2In	1.2Un	-	-	-
Instantaneous overload	10In / 5 seconds	10Un / 5 seconds	-	-	-
Rating frequency	50Hz	50Hz	50-60Hz	50Hz	-
Working frequency	45..65Hz	45..65Hz	45..65Hz	-	-

**Series MT+A analogue measurement instruments**

	Scale	Accuracy	Nr. of phases	Nr. of modules	Cat. No.	Ref. No.	Pack.
 <p><b>Ammeters</b></p> 	-	1.5	1	4	MT+AA 4M	<b>665264</b>	<b>1</b>
	5A	1.5	1	4	MT+AA5 4M	<b>665265</b>	<b>1</b>
	10A	1.5	1	4	MT+AA10 4M	<b>665266</b>	<b>1</b>
	15A	1.5	1	4	MT+AA15 4M	<b>665267</b>	<b>1</b>
	20A	1.5	1	4	MT+AA20 4M	<b>665268</b>	<b>1</b>
	25A	1.5	1	4	MT+AA25 4M	<b>665269</b>	<b>1</b>
	30A	1.5	1	4	MT+AA30 4M	<b>665270</b>	<b>1</b>
	<p><b>Interchangeable Ammeter scaleplates</b></p> 	Scale		To use in		Cat. No.	Ref. No.
40/5			665264		MT+SP40	<b>665283</b>	10
50/5			665264		MT+SP50	<b>665284</b>	10
60/5			665264		MT+SP60	<b>665285</b>	10
80/5			665264		MT+SP80	<b>665286</b>	10
100/5			665264		MT+SP100	<b>665287</b>	10
150/5			665264		MT+SP150	<b>665288</b>	10
200/5			665264		MT+SP200	<b>665289</b>	10
250/5			665264		MT+SP250	<b>665290</b>	10
300/5			665264		MT+SP300	<b>665291</b>	10
400/5			665264		MT+SP400	<b>665292</b>	10
500/5			665264		MT+SP500	<b>665293</b>	10
600/5			665264		MT+SP600	<b>665294</b>	10
800/5			665264		MT+SP800	<b>665295</b>	10
1000/5			665264		MT+SP1000	<b>665296</b>	10
 <p><b>Voltmeters</b></p> 	Scale	Accuracy	Nr. of phases	Nr. of modules	Cat. No.	Ref. No.	Pack.
	300V	1.5	1	4	MT+AV300 4M	<b>665271</b>	1
	500V	1.5	1	4	MT+AV500 4M	<b>665272</b>	1
<p><b>Frequency meter</b></p> 	Scale	Accuracy	Nr. of phases	Nr. of modules	Cat. No.	Ref. No.	Pack.
45...65Hz	1.5	1	4	MT+AF 4M	<b>665273</b>	1	
 <p><b>Hour counter</b></p> 	Scale	Accuracy	Nr. of phases	Nr. of modules	Cat. No.	Ref. No.	Pack.
	110V/50Hz	0.02%	1	2	MT+AH110 2M	<b>665274</b>	1
	230V/50Hz	0.02%	1	2	MT+AH230 2M	<b>665275</b>	1
	24V/50Hz	0.02%	1	2	MT+AH24 2M	<b>665276</b>	1
 <p><b>Selector switch</b></p> 				Nr. of modules	Cat. No.	Ref. No.	Pack.
	Amp.			3	MT+S4 3M	<b>665385</b>	1
Voltage				3	MT+S7 3M	<b>665386</b>	1

Series MT+A

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## Current transformers

### Series MT+CT

Comfort functions



### Applications



Current transformers are commonly used in metering.

### Standard

EN60044-1

### Marking



### Features

Current transformers are used extensively for measuring current. This new CTs range covers every facility with three-phase service and single-phase services greater from 40A to 4000A.

The CT is typically described by its current ratio from primary to secondary. Often, multiple CTs are installed for various uses. For example, protection devices and revenue metering may use separate CTs to provide isolation between metering and protection circuits, and allows current transformers with different characteristics (accuracy, overload performance) to be used for the devices. The primary circuit is largely unaffected by the insertion of the CT. The rated secondary current is commonly standardized at 5A.

For example, a 4000:5 CT secondary winding will supply an output current of 5 Amperes when the primary winding current is 4000 A.

The load, or burden, of the CT should be a low resistance.

The accuracy of a CT is directly related to a number of factors including: burden, burden class/saturation class, rating factor, load and physical configuration. For the IEC standard, accuracy classes for various types of measurement are set out in IEC 60044-1, Classes 0.5, 1 and 3.

The class designation is an approximate measure of the CTs accuracy.

The ratio (primary to secondary current) error of a Class 1 CT is 1% at rated current; the ratio error of a Class 0.5 CT is 0.5% or less.

### Functions

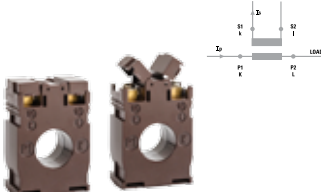







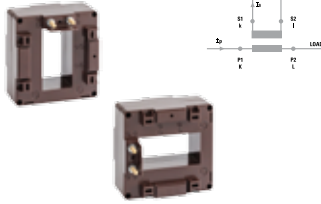

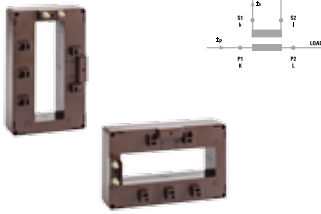

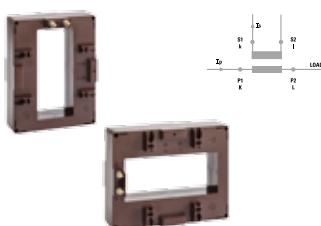

When current in a circuit is too high to apply directly to measuring instruments, a current transformer produces a reduced current accurately proportional to the current in the circuit, which can be conveniently connected to measuring and recording instruments.

A current transformer isolates the measuring instruments from what may be very high Current in the monitored circuit.

### Performance MT+V

	CT40-CT80	CT100-CT400	CT500-CT600	CT800-CT1000	CT1200-CT2000	CT2500-CT4000
Rated primary current I <sub>pn</sub>	40-50-60-80	100-150-200-250-300-400	500-600	800-1000	1200-1500-2000	2500-3200-4000
Rated frequency	50Hz	50Hz	50Hz	50Hz	50Hz	50Hz
Working frequency	47...63Hz	47...63Hz	47...63Hz	47...63Hz	47...63Hz	47...63Hz
<b>Rated continuous thermal current according to EN60044-1</b>						
Rated short-time thermal current I <sub>th</sub>	< 60I <sub>n</sub>	< 60I <sub>n</sub>	< 60I <sub>n</sub>	< 60I <sub>n</sub>	< 60I <sub>n</sub>	< 60I <sub>n</sub>
Rated dynamic current I <sub>dyn</sub>	2.5I <sub>th</sub>	2.5I <sub>th</sub>	2.5I <sub>th</sub>	2.5I <sub>th</sub>	2.5I <sub>th</sub>	2.5I <sub>th</sub>
Instrument security factor (FS)	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5
Rated secondary current I <sub>sn</sub>	5	5	5	5	5	5
Rated burden	1...2.5VA (see table)	1.5...12VA (see table)	10...15VA (see table)	8...12VA (see table)	15...25VA (see table)	20...50VA (see table)
Accuracy class	1 - 3 (see table)	0.5-1 (see table)	0.5-1 (see table)	0.5-1 (see table)	0.5-1 (see table)	0.5-1 (see table)
Max. power dissipation	≤ 3W	≤ 7W	≤ 9W	≤ 10.5W	≤ 20W	≤ 23W
Allowed max cable or busbar temp.	125°C	125°C	125°C	125°C	125°C	125°C
Rated insulation level	3kV r.m.s. 50Hz/1min	3kV r.m.s. 50Hz/1min	3kV r.m.s. 50Hz/1min	3kV r.m.s. 50Hz/1min	3kV r.m.s. 50Hz/1min	3kV r.m.s. 50Hz/1min
Class of insulation (EN60044-1)	B	B	B	B	B	B
Nominal temperature range	-25...50°C	-25...50°C	-25...50°C	-25...50°C	-25...50°C	-25...40°C
Limit temperature range for storage	-40...85°C	-40...85°C	-40...85°C	-40...85°C	-40...85°C	-40...85°C
<b>Connections</b>						
Primary winding	passing cable	passing cable/ busbar primary	passing cable/ busbar primary	passing cable/ busbar primary	busbar primary	busbar primary
Max. tightening torque for passing primary bar fixing screws:	0.2Nm	0.2Nm	0.2Nm	0.2Nm	0.2Nm	0.2Nm
Secondary winding	screw terminals, max 2x2.5mm <sup>2</sup>	screw terminals, max 6mm <sup>2</sup>	4 screw terminals, max 6mm <sup>2</sup> +2 faston (4.8x0.8mm)	4 screw terminals, max 6mm <sup>2</sup> +2 faston (4.8x0.8mm)	tightening by nut	tightening by nut

**Series MT+CT Current Transformers**

	VA CL. 0.5	VA CL. 1	Secondary current	Primary current	Size (mm)	Cat. No.	Ref. No.	Pack.
	-	1	5	40	65x44x30	MT+CT40	<b>665368</b>	1
	1	1.5	5	50	65x44x30	MT+CT50	<b>665369</b>	1
	1	2	5	60	65x44x30	MT+CT60	<b>665370</b>	1
	1.5	2.5	5	80	65x44x30	MT+CT80	<b>665371</b>	1
								
	1.5	3	5	100	80x56x43	MT+CT100	<b>665372</b>	1
	3	4	5	150	80x56x43	MT+CT150	<b>665373</b>	1
	4	7	5	200	80x56x43	MT+CT200	<b>665374</b>	1
	6	8	5	250	80x56x43	MT+CT250	<b>665375</b>	1
	8	10	5	300	80x56x43	MT+CT300	<b>665376</b>	1
	10	12	5	400	80x56x43	MT+CT400	<b>665377</b>	1
								
	10	12	5	500	95x70x45	MT+CT500	<b>665378</b>	1
	12	13	5	600	95x70x45	MT+CT600	<b>665379</b>	1
								
	10	12	5	800	95x70x45	MT+CT800	<b>665380</b>	1
	12	15	5	1000	95x70x45	MT+CT1000	<b>665381</b>	1
								
	15	20	5	1200	94x90x40	MT+CT1200	<b>665382</b>	1
	20	25	5	1500	94x90x40	MT+CT1500	<b>665383</b>	1
	20	25	5	2000	94x90x40	MT+CT2000	<b>665384</b>	1
								
	30	50	5	2500	160x99x58	MT+CT2500	<b>665924</b>	1
								
	30	50	5	3200	160x125x40	MT+CT3200	<b>665925</b>	1
	30	50	5	4000	160x125x40	MT+CT4000	<b>665926</b>	1
								

Series MT+CT

A

B

C

**D**

E

F

G

X



## Current transformers

### Series MTDIN

Comfort functions



#### Applications



- Control switchboards for low and medium voltage applications where DIN-rail mounting is preferred due to size restraints.
- Allows the measurement of electrical variables utilized for the effective control of systems.

#### Approval / Marking



#### Features

- Current measuring .../5 or .../1A
- DIN-rail format with only 3 modules (52mm).
- Assembly on the 72 x 72 mm panel with frontal adaptor (Ref. No. 665244).
- RS485 communications (Modbus-RTU).
- Two transistor outputs.
- Optional ITF technology: galvanic insulation for inputs.
- THD available per phase for power factor, voltage and current.
- Instantaneous display of important electrical parameters.

#### Functions

Three-phase power analyser for mounting on DIN-rail. Also adaptable for panel mounting with 72 x 72mm dimension.

#### Standards

IEC 664, VDE 0110, UL 94, IEC 801, IEC 348, IEC 571-1, EN 61000-6-3, EN 61000-6-1, EN 61010-1

#### Performance

<b>Power supply circuit</b>	230V AC (-15% to +10%) or 85 to 265V AC / 95 to 300V DC
Consumption	3VA
Frequency	50 or 60Hz
Nominal current (In)	5A
<b>Metering circuit</b>	
Maximum voltage	300V AC (Ph-N) 520V AC (Ph-Ph)
Frequency	45 to 65Hz
Voltage consumption of the circuit	0.7VA
Current consumption of the circuit	0.9VA (ITF) / 0.75VA (shunt)
Nominal current	In / 5A
Permanent overload	1.2 In
<b>Class/Accuracy</b>	
Voltage	0.5% ± 1 digit
Current	0.5% ± 1 digit
Power rating	1% ± 1 digit
<b>Ambient conditions</b>	
Operating temperature	-10°C up to +50°C
Relative humidity (non-condensing)	5% up to 95%

<b>Output transistor</b>	Opto-isolated (open collector) NPN
Max. operating voltage	24V DC
Max. operating current	50mA
Max. impulse frequency	5 impulse / s
Duration of the impulse	100ms
<b>Housing</b>	
Type of box	VO self-extinguishing plastic
Degree of protection	Embedded equipment: IP41 Terminals: IP20
Dimensions (H x W x D)	85 x 52.5 x 67.9mm (3 modules)
Weight	210g
<b>Safety</b>	
	Designed for CAT III 300/520V AC installations, in accordance with EN 61010. Class II double insulated for protection against electric shock

### Compact three-phase power analyser - Series MTDIN



Modules	Class (V, A)	Communication	Protocol	Digital output	Voltage	Harmonics	Cat. No.	Ref. No.
3	0.5	-	-	-	85 to 265VAC 95 to 300VAC	-	MTDIN1	<b>665010</b>
3	0.5	-	-	-	230VAC	-	MTDIN2	<b>665011</b>
3	0.5	RS485	ModBus/RTU	2	230VAC	-	MTDIN2COM	<b>665155</b>
3	0.5	RS485	ModBus/RTU	2	85 to 265VAC 95 to 300VDC	U and I (15°)	MTDIN1HARCOM	<b>665012</b>

For other versions, contact GE or your local distributor.

### Accessories



#### Front panel adaptor

MTAdapt	<b>665244</b>	1
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Adaptor installing MTDIN on 72x72 mm panels.

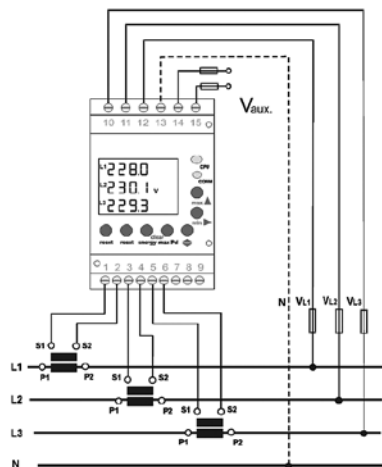
Central fixing.

Adjustable on the rear with two straps.

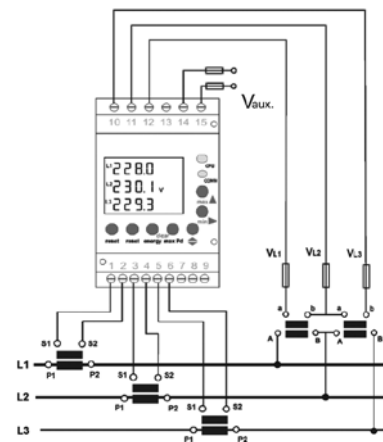
For converters, see page D.43

### Connections

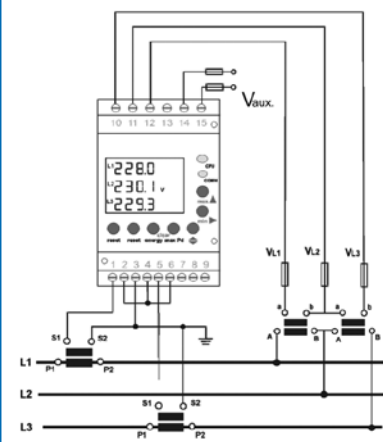
#### 3 or 4 wires (low voltage)



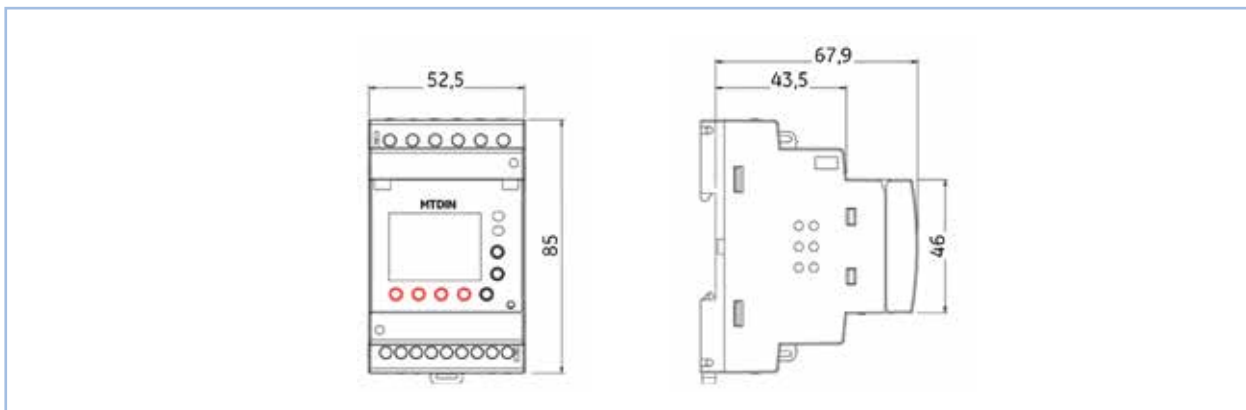
#### 3 wires (2 voltage transformers and 3 current transformers)



#### 3 wires (2 voltage transformers and 2 current transformers)



### Dimensions (mm)





### Series MT96

Comfort functions



### Applications



- Control switchboards for low and medium voltage applications.
- Allows the measurement of electrical variables utilized for the effective control of systems.
- Consumed energy can be set to trigger pulses.
- Alarm controls: full programming capability for each output, i.e., the maximum value, minimum value, and delay.

### Features

- Class 0.5 energy precision.
- Current measure .../5
- Optional RS485 Modbus /RTU communications.
- Instantaneous display of important electrical parameters.
- Digital outputs with opto-isolated transistor.
- Optional ITF technology: galvanic insulation for inputs.
- THD available per phase for power factor, voltage and current.

### Functions

Three-phase power analyser for panel mounting with a 96 x 96mm front fascia with compact depth.

### Standards

IEC 664, VDE 0110, UL 94, IEC 801, IEC 348, IEC 571-1, EN 61000-6-3, EN 61000-6-1, EN 61010-1

### Marking



### Performance

<b>Power supply circuit</b>	230V AC (-15% tot +10%) or 85 to 265V AC / 95 to 300V DC
Consumption	5VA
Frequency	50 or 60Hz
Nominal current (In)	5A
<b>Metering circuit</b>	
Maximum voltage	300V AC (Ph-N) 520V AC (Ph-Ph)
Frequency	45 to 65Hz
Voltage consumption of the circuit	0.75VA
Current consumption of the circuit	0.9VA (ITF) /1.2VA (shunt)
Nominal current	In / 5A or In /1A
Permanent overload	1.1 In
<b>Class/Accuracy</b>	
Voltage	0.5% ± 2 digits
Current	0.5% ± 2 digits
Power rating	1% ± 2 digits
<b>Ambient conditions</b>	
Operating temperature	-10°C up to +50°C
Relative humidity (non-condensing)	5% up to 95%

<b>Output transistor</b>	Opto-isolated (open collector) NPN
Max. operating voltage	24V DC
Max. operating current	50mA
Max. impulse frequency	5 impulse / s
Duration of the impulse	100 ms
<b>Housing</b>	
Type of box	VO self-extinguishing plastic
Degree of protection	Fitted unit (frontal): IP51 Non-fitted unit (sides and rear cover) IP31
Dimensions (H x W x D)	96 x 96 x 63mm
<b>Safety</b>	Designed for CAT III 300/520V AC installations, in accordance with EN 61010. Class II double insulated for protection against electric shock



### Basic three-phase power analyser - Series MT96

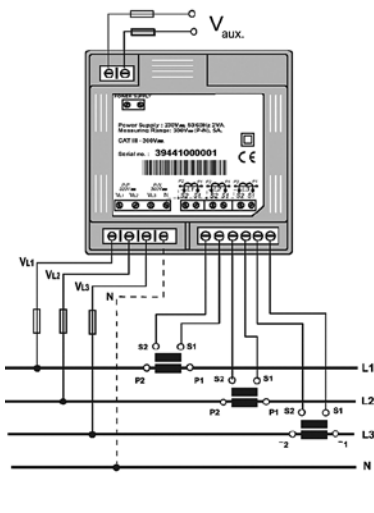


Modules	Class (V, A)	Communication	Protocol	Digital output	Voltage	Harmonics	Cat. No.	Ref. No.
4	0.5	-	-	-	85 to 265VAC 95 to 300VAC	-	MT961	665190
4	0.5	-	-	-	230VAC	-	MT962	665191
4	0.5	RS485	ModBus/RTU	1	230VAC	-	MT962COM	665192
4	0.5	RS485	ModBus/RTU	1	85 to 265VAC 95 to 300VDC	U and I (15°)	MT961HARCOM	665193

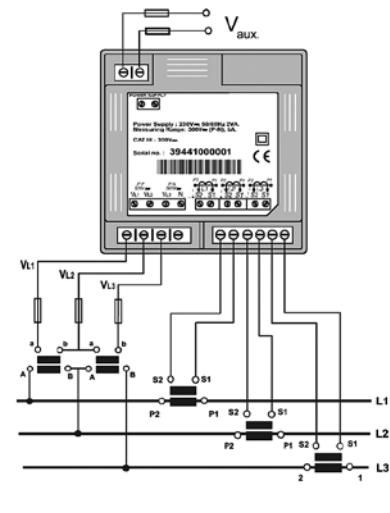
For converters, see page D.43.  
For other versions, contact GE or your local distributor.

### Connections

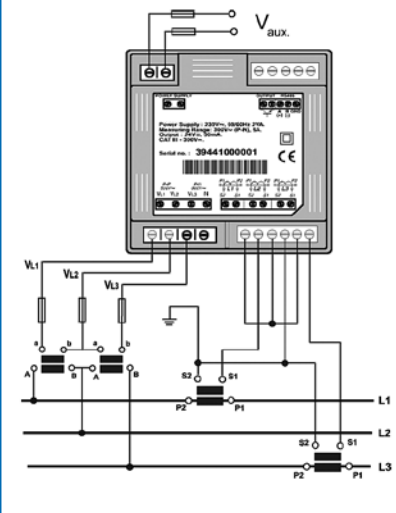
3 or 4 wires (low voltage)



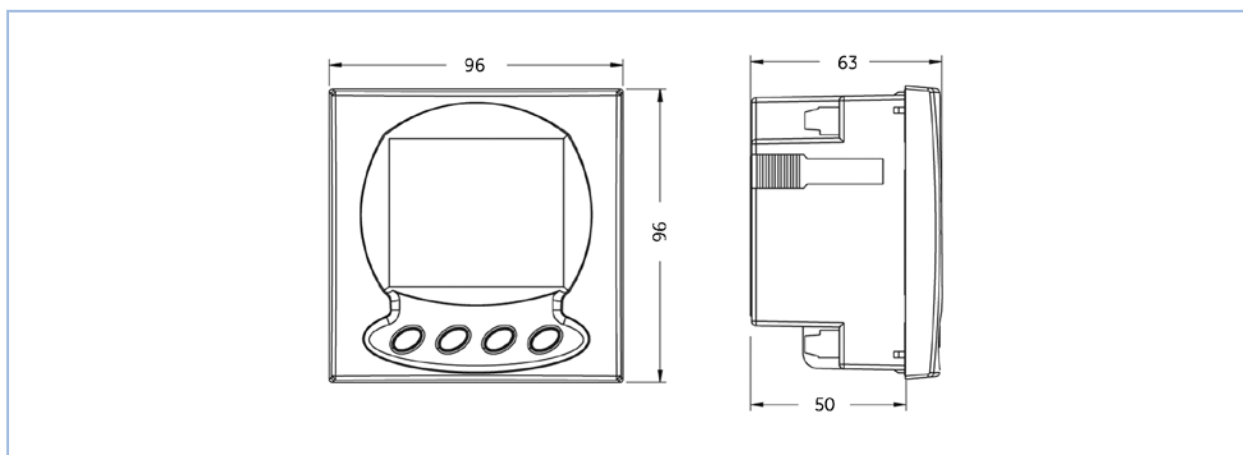
3 wires (2 voltage transformers and 3 current transformers)



3 wires (2 voltage transformers and 2 current transformers)



### Dimensions (mm)



Serie MT96

A

B

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**D**

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F

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### Series MT144

Comfort functions



### Applications



- Control switchboards for low and medium voltage applications.
- Alarm center by means of voltage-free digital inputs.
- Submetering: can measure through impulses other types of consumption, such as gas, water, steam, etc. via their digital inputs.
- Measurement converters: possible to associate instantaneous parameter to one of the analogue outputs (0 to 20mA / 4 to 20mA).
- Recording of instantaneous, maximum, and minimum parameters with a date and hour by means of an expandable memory card.
- Power quality analyser: harmonic decomposition up to order 50<sup>o</sup>, asymmetries, flicker, unbalances, overvoltages, gaps, interruptions, etc.

### Features

- Class 0.2 energy and power precision.
- Class B power quality analyser.
- One display can monitor up to 32 measurement modules.
- Current measuring .../5 or .../1A
- Measure of neutral current with transformer.
- Optional energy consumption and generation billing (up to 9 rates).
- Expansion possibilities (up to 3 modules).
- RS485 Modbus/RTU communications.
- Profibus GSD module available.
- SD memory module with max capacity of 20 GB available.
- Backlit VGA graphical display.
- Instantaneous display of maximum and minimum electrical parameters with date and hour.
- Measure of energy consumed and generated, up to 100 GWh.
- Up to 8 digital inputs and outputs available.
- ITF technology: galvanic insulation for inputs.

### Functions

Three-phase advanced power analyser for panel mounting with a 144 x 144mm front fascia.

### Standards

IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-11, IEC 61000-4-4, IEC 61000-4-5

### Approval / Marking



### Performance

<b>Power supply circuit</b>	85 to 265V AC and 95 to 300V DC
AC power supply frequency	50/60Hz
AC pow. supp. consumption	3VA
DC pow. supp. consumption	< 25W
<b>Metering circuit</b>	
Voltage	15 to 360V AC (L-N) 26 to 600V AC (L-L)
Frequency	45 to 65Hz
Metering margin	5 to 120% Un
Admissible overvoltage	750V AC
Voltage consumption of the circuit	< 0.5VA
<b>Current measuring circuit</b>	
Nominal current (In)	5A or 1A
Metering range	1 to 120% of In
Primary current metered	Programmable < 30,000A
Admissible overload	6A permanent, 100A t < 1s

<b>Maximum meter value</b>	100GWh
Operating temperature	0.2 or 0.5 power and energy
<b>Ambient conditions</b>	
Max. operating voltage	-10°C up to +50°C
Relative humidity	5% up to 95%
<b>Housing</b>	
Metering module	Assembly on DIN-rail 46277 (EN 50022)
Screen or screen + metering module	Assembly on panel (96 x 96mm, 144 x 144mm) or opening with a 103 mm diameter
Dimensions (H x W x D)	144 x 144 x 116mm
<b>Safety</b>	
	Designed for CAT III 300/520V AC installations, in accordance with EN 61010. Class II double insulated for protection against electric shock

### Compact units (metering + display module) - Series MT144



Quadrants	Class (V, A)	Communication	Protocol	Neutral current	Universal power supply	Harmonics	Cat. No.	Ref. No.
4	0.2	RS485	ModBus/RTU	Yes	85 to 265VAC 95 to 300VAC	U and I (15°)	MT144UMD	665194

### Measuring units (measuring module and display sold separately) - Series MT144

	Quadrants	Class (V, A)	Communication	Protocol	Neutral current	Universal power supply	Harmonics	Cat. No.	Ref. No.
Measuring module	4	0.2	RS485	ModBus/RTU	Yes	85 to 265VAC 95 to 300VAC	U and I (15°)	MT144UM	665195
VGA display	4	-	-	-	Yes	-	-	MT144UD	665196

For converters, see page D.43.  
For other versions, contact GE or your local distributor.

### Dimensions

Fig. 1  
Fig. 2  
Holes guide  
Fig. 3  
Lock points

Figures above illustrate how the front display mounts on the panel either with a 92 x 92mm square cutout or a circular cutout with a diameter of 110mm. View is the rear of the display module.

### Exchangeable cards

	<b>8I/80 digital expansion card</b> MT8I80   <b>665197</b>   1 8 digital inputs and 8 digitale outputs. Outputs with opto-coupled transistor.	<b>ProfiBus expansion card - GSD modules</b> MTPBUS   <b>665243</b>   1	
	<b>8I/40 analogue expansion card</b> MT8I40   <b>665198</b>   1 8 analog inputs and 4 analog outputs		
	<b>8I/40 digital expansion card</b> MT8I40R   <b>665199</b>   1 8 digital inputs and 4 digital outputs. Outputs with relay.	<b>SD memory expansion card</b> MTSDMEM   <b>665240</b>   1	
	<b>Common accessories for MTDIN, MT96 en MT44 - Converters</b>		

### Common accessories for MTDIN, MT96 en MT44 - Converters

	<b>Converter for RS232/485 to Ethernet (and vice-versa)</b> MT485Enet   <b>665245</b>   1 Power supply 85...265VAC / 115...374VDC. Ethernet speed: 10/100 BaseTX RS Bus transmission speed: 1200 bps to 115200 bps.	
	<b>USB converter to RS232 or RS485</b> MTUSB485   <b>665246</b>   1 Converter from USB network protocol to RS232 or RS485. Power supply through the PC's USB port. Transmission speed: 4800 to 128000 bps.	



**Power Analysers - Parameter table**

Comfort functions

A

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	MTDIN				MT96				MT144				
	L1	L2	L3	III	L1	L2	L3	III	L1	L2	L3	N	III
<b>MEASUREMENT</b>													
Single phase voltage	•	•	•		•	•	•		•	•	•		•
Phase phase voltage	•	•	•		•	•	•		•	•	•		
Reference voltage (GND)-neutral												•	
Current	•	•	•	•	•	•	•	◆	•	•	•	•	
Frequency	•				•				•				
Active power	•	•	•	•	•	•	•	•	•	•	•		•
Reactive power L (inductance)	•	•	•	•	•	•	•	•	•	•	•		•
Reactive power C (capacitance)	•	•	•	•	•	•	•	•	•	•	•		•
Apparent power	•	•	•	•					•	•	•		•
Power factor	•	•	•	•	•	•	•		•	•	•		•
Cosine				•				•	•	•	•		•
Maximum active power demand				•				•					•
Maximum apparent power demand				•				•					•
Maximum current demand	•	•	•	•	•	•	•	•	•	•	•		•
Neutral current			•				•				•		
THD voltage	•	•	•		•	•	•		•	•	•		•
THD current	•	•	•		•	•	•		•	•	•		•
Voltage harmonics	•	•	•	15	•	•	•	15	•	•	•	•	50
Current harmonics	•	•		15	•	•		15	•	•	•	•	50
Active energy				•				•					•
Reactive energy L				•				•					•
Reactive energy C				•				•					•
Apparent energy				•				•					•
Flicker (WA and PST)									•	•	•		
Factor K (current)									•	•	•		
Peak factor (voltage)									•	•	•		
Unbalance (voltage and current)									•	•	•		
Asymmetry (voltage and current)									•	•	•		
Rates (optional)			3				1				9		
Analogue inputs (0/4 20mA)												•	
Analogue outputs (0/4 20mA)												•	
Digital inputs												•	
Digital outputs			•				•				•		
<b>COMMUNICATIONS</b>													
RS232													
RS485			•				•					•	
Ethernet												•	
<b>PROTOCOLS</b>													
Modbus RTU			•				•					•	
Modbus TCP												•	
Profibus DP (optional)												•	

• Available for display and communications  
 ◆ Available only for communications





**SurgeGuard for distribution networks**

Comfort functions



**Applications**



**Standards**

IEC 61643-I  
IEC 61643-11/EN 61643-11  
DIN VDE 0675-6  
NF C61-740  
BS 6651  
UL1449 4th Edition

**Approval / Marking**



**Features**

- The line of surge arresters includes a full range of compact protectors for installation on DIN-rail. The devices are especially designed to provide complete and effective protection against surges, protecting equipment and property connected to the low voltage network.
- The range of surge arresters includes:
  - Class I limp = 100kA (monoblock)
  - Class I+II limp = 12.5kA and limp = 25kA (plug-in)
  - Class I+II limp = 7.5kA and limp = 15kA (monoblock) in 10/350ms waveform
  - Class II with different discharge capacities: 15kA, 40kA in 8/20ms waveform
  - Class II+III: 20kA in 8/20ms
 The most suitable value will be selected according to the type of installation, premises and equipments to be protected.
- NEW plug-in ranges in Class I+II, Class II and for photovoltaic application in uni- and multipole format.
- New Class II SPDs with UL approval for NEMA distribution nets line single Phase System, split phase, Delta, HLD, Wye Systems.
- New Class II plug-in SPDs for DC Photovoltaic application up to 1500Vdc
- Several different formats one pole, single phase, two phase and three phases are available for all types of electrical net systems: TT, TN-S, TN-C, IT.

**Functions**

Protection of an electrical installation and all electrical and electronic devices connected to this installation against destructive surges. Such voltage surges can be generated by lightning induced currents, by network polluting devices (such a motors, frequency converters, dimmers, etc..) and by power supply networks switching operations.

Surge arresters cover the protection of home appliances (TV, Hifi , VCR, laundry machine, dishwasher...), commercial building equipment (computer, data networks, intrusion and alarm systems, access control and building automation systems), but also industrial equipment (PLC, instrumentation, medical apparatus, monitoring devices) and even the protection of entire offshore drilling platforms.

A  
B  
C  
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## Parameters

### Impulse current (I<sub>imp</sub>)

This is the peak current that the surge arrester can withstand without failing. The waveform of the applied current is normalised as 10/350µs, used in Class I devices.

### Maximum discharge current (I<sub>max</sub>)

This is the peak current that the surge arrester can withstand in a single pulse without failing. The waveform of the applied current is normalised as 8/20µs, used in Class II devices.

### Nominal discharge current (I<sub>n</sub>)

This is the current that the surge protection device is capable of shunting to ground at least 20 times without failing.

### Level of protection (Up)

This is the parameter that characterises the action of the protection device against surges by limiting the voltage between its terminals. It must be less than the surge withstand capacity given by the category of the equipment to be protected. However, if the protector is far from the equipment to be protected it may be necessary to use additional protectors.

### Maximum continuous operating voltage U<sub>max</sub> (U<sub>c</sub>)

This is the maximum AC or DC voltage which may be continuously applied to the terminals of the surge arrester.


## Performance

	SA BLOCK I	SA BLOCK I and II	SAP I+II	SAP II	SAP II+III	SA BLOCK II multi-phase
Energy impulse wave	10/350µs	10/350µs and 8/20µs	10/350µs and 8/20µs	8/20µs	8/20µs	8/20µs
Response time	<100ns	<25ns	<25ns	<25ns	<25ns	<25ns
Thermal fuse	no	yes	yes	yes	yes	yes
Thermal fuse healthy indication	no	yes	yes	yes	yes	yes
Nominal voltage	230V or 400V	230V or 400V	230V or 400V	230V or 400V	230V or 400V	230V or 400V
Frequency	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz
Usable in networks	TT, TN-S, TN-C, IT	TT, TN-S, TN-C, IT	TT, TN-S, TN-C, IT	TT, TN-S, TN-C, IT	TT, TN-S, TN-C, IT	TT, TN-S, TN-C, IT
Operating temperature	-40°C+80°C	-40°C...+80°C	-40°C...+80°C	-40°C...+80°C	-40°C...+80°C	-40°C...+80°C
Screws	Pozidriv 3	Pozidriv 3	Pozidriv 3	Pozidriv 3	Pozidriv 3	Pozidriv 3
Terminal capacity:						
min	16mm <sup>2</sup>	6mm <sup>2</sup>	10mm <sup>2</sup>	6mm <sup>2</sup>	6mm <sup>2</sup>	6mm <sup>2</sup>
max (flexible/grid)	35/50mm <sup>2</sup>	25/35mm <sup>2</sup>	25/35mm <sup>2</sup>	25/35mm <sup>2</sup>	25/35mm <sup>2</sup>	25/35mm <sup>2</sup>




**SurgeGuard - Surge arresters - SA BLOCK I - Class I/B**






	System type	Electrical diagram	Un (VAC)	Uc (V)	Iimp	In (kA)	Up (kV)	Cat. No.	Ref. No.	Pack.
 2 mod.	L-N (1ph)	A	230	275	50	50	<2	SA BLOCK I 50 2M	<b>660494</b>	1
	N-PE (N)	B	Neutral	255	100	100	<2	SA BLOCK I 100 2M	<b>660495</b>	1



**SurgeGuard - Surge arresters - Class I+II/B+C**

Comfort functions

Single phase PLUG-IN		Iimp	I <sub>max</sub>	In	Up	Up (L-N)	Up (N-PE)	U <sub>max</sub> (Uc) per pole	No. of poles	Auxiliary contact	No. of modules	Cat. No.	Ref. No.	Pack.
 TT, TN-S, TN-C, IT system	25kA	100kA	25kA	1500V	-	-	-	275V	1P	-	2	SAP1 I+II 25/230	<b>660125</b>	1
	25kA	100kA	25kA	1500V	-	-	-	275V	1P	1CO	2	SAP1 I+II 25/230 C	<b>660127</b>	1
<b>Neutral-earth SPD's for TT systems</b>														
	100kA	100kA	50kA	1500V	-	-	-	255V	1P	-	2	SAP1 I+II 100N	<b>660391</b>	1

Multi-phase PLUG-IN		Iimp	I <sub>max</sub>	In	Up	Up (L-N)	Up (N-PE)	U <sub>max</sub> (Uc) per pole	No. of poles	Auxiliary contact	No. of modules	Cat. No.	Ref. No.	Pack.
 TT system	12.5kA	65kA	20kA	-	1300V	1500V	-	275V	2P	-	2	SAP2 I+II 12.5 TT	<b>660139</b>	1
	12.5kA	65kA	20kA	-	1300V	1500V	-	275V	2P	1CO	2	SAP2 I+II 12.5 TT C	<b>660140</b>	1
	12.5kA	65kA	20kA	-	1300V	1500V	-	275V	4P	-	4	SAP4 I+II 12.5 TT	<b>660150</b>	1
	12.5kA	65kA	20kA	-	1300V	1500V	-	275V	4P	1CO	4	SAP4 I+II 12.5 TT C	<b>660151</b>	1
 TN-S system	12.5kA	65kA	20kA	-	1300V	-	-	275V	2P	-	2	SAP2 I+II 12.5 TNS	<b>660143</b>	1
	12.5kA	65kA	20kA	-	1300V	-	-	275V	2P	1CO	2	SAP2 I+II 12.5 TNS C	<b>660144</b>	1
	12.5kA	65kA	20kA	-	1300V	-	-	275V	4P	-	4	SAP4 I+II 12.5 TNS	<b>660152</b>	1
	12.5kA	65kA	20kA	-	1300V	-	-	275V	4P	1CO	4	SAP4 I+II 12.5 TNS C	<b>660156</b>	1
 TN-C system	12.5kA	65kA	20kA	-	1300V	-	-	275V	3P	-	3	SAP3 I+II 12.5 TNC	<b>660147</b>	1
	12.5kA	65kA	20kA	-	1300V	-	-	275V	3P	1CO	3	SAP3 I+II 12.5 TNC C	<b>660148</b>	1

**Replacement modules for Class I+II/B+C**

	Iimp	I <sub>max</sub>	In	Up	Up (L-N)	Up (N-PE)	U <sub>max</sub> (Uc)	No. of poles	Auxiliary contact	No. of modules	Cat. No.	Ref. No.	Pack.	
	25kA	100kA	25kA	1500V	-	-	275V	1P	-	2	SAM I+II 25/230	<b>660199</b>	1	
	12.5kA	65kA	20kA	1300V	-	-	275V	1P	-	1	SAM I+II 12.5/230	<b>660294</b>	1	
<b>Neutral-earth replacement modules for SAPx I+II...N</b>														
	100kA	100kA	50kA	1500V	-	-	255V	1P	-	2	SAM I+II 100N	<b>660393</b>	1	
	50kA	65kA	50kA	1500V	-	-	255V	1P	-	1	SAM I+II 50N	<b>660274</b>	1	
	25kA	65kA	25kA	1500V	-	-	255V	1P	-	1	SAM I+II 25N	<b>660296</b>	1	





## SurgeGuard - Surge arresters - Class II/C

Class II protectors are the most frequently used because they offer high protection and are compatible with most equipments.

Single phase PLUG-IN		I <sub>max</sub>	In	U <sub>p</sub>	U <sub>p</sub> (L-N)	U <sub>p</sub> (N-PE)	U <sub>max</sub> (U <sub>c</sub> ) per pole	No. of poles	Auxiliary contact	No. of modules	Cat. No.	Ref. No.	Pack.
	TT, TN-S, TN-C, IT system	40kA	20kA	-	1300V	-	275V	1P	-	1	SAP1 II 40/230	660158	1
		40kA	20kA	-	1300V	-	275V	1P	1CO	1	SAP1 II 40/230 C	660160	1
		40kA	20kA	-	2000V	-	440V	1P	-	1	SAP1 II 40/400	660159	1
		40kA	20kA	-	2000V	-	440V	1P	1CO	1	SAP1 II 40/400 C	660162	1
	<b>Neutral-earth SPD's for TT systems</b>												
		40kA	20kA	-	-	1500V	265V	1P	-	1	SAP1 II 40N	660163	1
		20kA	10kA	-	-	1500V	255V	1P	-	1	SAP1 II 20N	660169	1
Multi-phase PLUG-IN		I <sub>max</sub>	In	U <sub>p</sub>	U <sub>p</sub> (L-N)	U <sub>p</sub> (N-PE)	U <sub>max</sub> (U <sub>c</sub> ) per pole	No. of poles	Auxiliary contact	No. of modules	Cat. No.	Ref. No.	Pack.
	TT system	40kA	20kA	-	1300V	1500V	275V	2P	-	2	SAP2 II 40/230 TT	660171	1
		40kA	20kA	-	1300V	1500V	275V	2P	1CO	2	SAP2 II 40/230 TTC	660172	1
	TN-S system	40kA	20kA	-	1300V	1500V	275V	4P	-	4	SAP4 II 40/400 TT	660183	1
		40kA	20kA	-	1300V	1500V	275V	4P	1CO	4	SAP4 II 40/400 TTC	660184	1
	TN-S system	40kA	20kA	-	1300V	-	275V	2P	-	2	SAP2 II 40/230 TNS	660175	1
		40kA	20kA	-	1300V	-	275V	2P	1CO	2	SAP2 II 40/230 TNSC	660176	1
	TN-C system	40kA	20kA	-	1300V	-	275V	4P	-	4	SAP4 II 40/400 TNS	660187	1
		40kA	20kA	-	1300V	-	275V	4P	1CO	4	SAP4 II 40/400 TNSC	660188	1
	TN-C system	40kA	20kA	-	1300V	-	275V	3P	-	3	SAP3 II 40/400 TNC	660179	1
		40kA	20kA	-	1300V	-	275V	3P	1CO	3	SAP3 II 40/400 TNCC	660180	1

## SurgeGuard - Surge arresters - Class II+III/C+D

New

	TT system	20kA	10kA	-	1400V	1500V	320V	2P	-	2	SAP2 II 20/230 TT	660173	1
		20kA	10kA	-	1400V	1500V	320V	2P	1CO	2	SAP2 II 20/230 TTC	660174	1
	TN-S system	20kA	10kA	-	1400V	-	320V	4P	-	4	SAP4 II 20/400 TT	660185	1
		20kA	10kA	-	1400V	-	320V	4P	1CO	4	SAP4 II 20/400 TTC	660186	1
	TN-S system	20kA	10kA	-	1400V	-	320V	2P	-	2	SAP2 II 20/230 TNS	660177	1
		20kA	10kA	-	1400V	-	320V	2P	1CO	2	SAP2 II 20/230 TNSC	660178	1
	TN-C system	20kA	10kA	-	1400V	-	320V	4P	-	4	SAP4 II 20/400 TNS	660189	1
		20kA	10kA	-	1400V	-	320V	4P	1CO	4	SAP4 II 20/400 TNSC	660190	1
	TN-C system	20kA	10kA	-	1400V	-	320V	3P	-	3	SAP3 II 20/400 TNC	660181	1
		20kA	10kA	-	1400V	-	320V	3P	1CO	3	SAP3 II 20/400 TNCC	660182	1

## Replacement modules for Class II/B and Class II+III/C+D

	I <sub>max</sub>	In	U <sub>p</sub>	U <sub>p</sub> (L-N)	U <sub>p</sub> (N-PE)	U <sub>max</sub> (U <sub>c</sub> )	No. of poles	Auxiliary contact	No. of modules	Cat. No.	Ref. No.	Pack.
For TT, TN-S, TN-C, IT system	40kA	20kA	1300V	-	-	275V	1P	-	1	SAM II 40/230	660373	1
	40kA	20kA	2000V	-	-	440V	1P	-	1	SAM II 40/400	660374	1
	20kA	10kA	1400V	-	-	320V	1P	-	1	SAM II 20/230	660297	1
<b>Neutral-earth replacement modules for SAPx II...N</b>												
	40kA	20kA	1500V	-	-	265V	1P	-	1	SAM II 40N	660375	1
	20kA	10kA	1500V	-	-	255V	1P	-	1	SAM II 20N	660299	1





### MonoBlock - SurgeGuard - Surge arresters - Class I+II/B+C

The surge arrester can operate as a Class I and Class II protection in accordance with the IEC 61643-11 Class I/B and Class II/C integrated in only one device. Used in main panelboards (incomer of installations) with high risk from direct lightning strike discharge. Decoupling coils not needed

Single phase MONOBLOCK



TT, TN-S  
TN-C, IT

limp Class I/Class II	In Class II	Up	Up (L-N)	Up (N-PE)	Umax (Uc) per pole	No. of poles	Auxiliary contact	No. of modules	Cat. No.	Ref. No.	Pack.
15kA/100KA	30kA	-	1300V	-	275V	1P	-	2	SA BLOCK I and II 100	667486	1
30kA/100KA	60kA	-	-	1500V	275V	1P	-	2	SA BLOCK I and II 100N	667487	1
7.5kA/65KA	20kA	-	1300V	-	275V	1P	-	1	SA BLOCK I and II 65	667517	1
12kA/65KA	20kA	-	-	1500V	275V	1P	-	1	SA BLOCK I and II 65N	667518	1

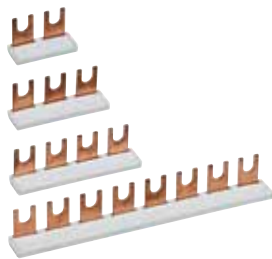
### MonoBlock - SurgeGuard - Surge arresters - Class II/C

Multi-phase MONOBLOCK



limp	In	Up	Up (L-N)	Up (N-PE)	Umax (Uc) per pole	No. of poles	Auxiliary contact	No. of modules	Cat. No.	Ref. No.	Pack.
<b>Common and differential mode protection - TT system</b>											
15kA	5kA	-	1200V	1500V	275V	2P	-	1	SA BLOCK II 15LN	667483	1
15kA	5kA	-	1200V	1500V	275V	2P	-	2	SA BLOCK II 15/230 LNE	667488	1
40kA	15kA	-	1300V	1500V	275V	2P	-	2	SA BLOCK II 40/230 LNE	667490	1
15kA	5kA	-	1200V	1500V	440V	4P	-	4	SA BLOCK II 15/400 3L+NE	667494	1
40kA	15kA	-	1300V	1500V	440V	4P	-	4	SA BLOCK II 40/400 3L+NE	667496	1
<b>Common mode protection - TNS system</b>											
15kA	5kA	1200V	-	-	275V	2P	-	2	SA BLOCK II 15/230 LLE	667489	1
40kA	15kA	1300V	-	-	275V	2P	-	2	SA BLOCK II 40/230 LLE	667491	1
15kA	5kA	1200V	-	-	440V	4P	-	4	SA BLOCK II 15/400 4L/NE	667495	1
40kA	15kA	1300V	-	-	440V	4P	-	4	SA BLOCK II 40/400 4L/NE	667497	1
40kA	15kA	1300V	-	-	440V	4P	1CO	4	SA BLOCK II 40/400 4L/NE C	667498	1

### Insulated FORK type busbars



Section	Description	Cat. No.	Ref. No.	Pack.
10mm <sup>2</sup>	2x1P - 90°	EV-G.1.2.80-90°	624993	20
10mm <sup>2</sup>	3x1P - 90°	EV-G.1.3.80-90°	644893	20
10mm <sup>2</sup>	4x1P - 90°	EV-G.1.4.80-90°	568106	20
10mm <sup>2</sup>	8x1P - 90°	EV-G.1.8.80-90°	644897	20

Comfort functions

A

B

C

D

E

F

G

X

PROTECT



# Surge protection devices DIN-rail with UL approval

UL1449 4th edition

Comfort functions

The objective of UL1449 has always been to increase safety in terms of surge protection. Thus, major changes have recently been made to the surge protection standard. The latest edition, known as UL1449 3rd edition, was published on September 29, 2006 and took effect September 2009, and is now also an ANSI standard. A revision was made on February 8, 2011.

To avoid confusion, the objective of this paper is to explain and summarize the major changes made to the standard.

**The key updates are:**

- Change in the standard's name
- The nominal discharge current

**Change in the standard's name: from TVSS to SPDs**

Prior to UL1449 3rd edition taking effect, the devices this standard covers were known as transient voltage surge suppressors standard covers were known as transient voltage surge suppressors (TVSS), operating on power circuits not exceeding 600V. With the inception of the 3rd edition, these devices are now known as surge protective devices (SPDs), and may operate on power circuits not exceeding 1000V. This new designation moves the UL standard closer to the International designation and to IEC standards. The new edition is now renamed UL standard for safety for surge protective devices, UL1449.

**The nominal discharge current, known as In test is new to UL1449, coming from the IEC standard.**

During the test, the SPD is subjected to 15 impulses at the selected nominal discharge current. In order to pass, the SPD cannot create a shock or fire hazard during the test, and nothing in the surge path can open during or after the test.

The nominal discharge current values, with a 8/20 μs wave shape, are selected by the manufacturer as follows:

Type 1: 10 or 20kA

Type 2: 3, 5, 10 or 20kA


Type 1, Type 2 and Type 4 SPDs (intended for type 1 or Type 2 applications) are subjected to this test.


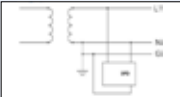
Sources: Underwriters Laboratories Inc., standard for safety, surge protective devices (UL1449 4th Edition, 2014)


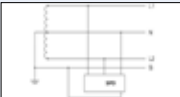
## Approval / Marking


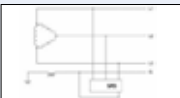



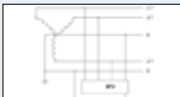
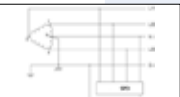
### Surge arresters - Class II- SAP Line UL1449 3rd Edition

	In (A)	Imax	Service voltage	MCOV Uc	Auxiliary contact	No. of modules <sup>(1)</sup>	Cat. No.	Ref. No.	Pack.
	20	40	120V	175	no	1	SAP1II40175	660608	1
	20	40	240V	275	no	1	SAP1II40275	660609	1
	20	40	277V	320	no	1	SAP1II40320	660611	1
	20	40	120V	175	yes	1	SAP1II40175C	660612	1
	20	40	240V	275	yes	1	SAP1II40275C	660613	1
	20	40	277V	320	yes	1	SAP1II40320C	660614	1


	In (A)	Imax	Service voltage	MCOV Uc	Auxiliary contact	No. of modules <sup>(1)</sup>	Cat. No.	Ref. No.	Pack.
	20	40	120V single phase	175	no	2	SAP2II40175	660615	1
	20	40	240V single phase	320	no	2	SAP2II40320	660616	1
	20	40	277V single phase	320	no	2	SAP2II40320	660616	1
	20	40	120V single phase	175	yes	2	SAP2II40175C	660617	1
	20	40	240V single phase	320	yes	2	SAP2II40320C	660618	1
	20	40	277V single phase	320	yes	2	SAP2II40320C	660618	1
									

	In (A)	Imax	Service voltage	MCOV Uc	Auxiliary contact	No. of modules <sup>(1)</sup>	Cat. No.	Ref. No.	Pack.
	20	40	240V/120V split phase	175	no	3	SAP3II40175	660619	1
	20	40	480V/240V split phase	320	no	3	SAP3II40320	660620	1
	20	40	240V/120V split phase	175	yes	3	SAP3II40175C	660621	1
	20	40	480V/240V split phase	320	yes	3	SAP3II40320C	660622	1
									

	In (A)	Imax	Service voltage	MCOV Uc	Auxiliary contact	No. of modules <sup>(1)</sup>	Cat. No.	Ref. No.	Pack.
	20	40	240V Delta	320	no	3	SAP3II40320	660620	1
	10	30	600V Delta	750V	yes	3	SAP3II30750	660624	1
	20	40	240V Delta	320	yes	3	SAP3II40320C	660622	1
	10	30	600V Delta	750	yes	3	SAP3II30750C	660626	1
									

	In (A)	Imax	Service voltage	MCOV Uc	Auxiliary contact	No. of modules <sup>(1)</sup>	Cat. No.	Ref. No.	Pack.
	20	40	240V/120V High Leg Delta	320	no	4	SAP4II40320	660627	1
	20	40	240V/120V High Leg Delta	320	yes	4	SAP4II40320C	660628	1
	20	40	480V/277V Wye system	320	no	4	SAP4II40320	660627	1
	20	40	480V/277V Wye system	320	yes	4	SAP4II40320C	660628	1
	20	40	208V/120V Wye System	175	no	4	SAP4II40175	660629	1
	20	40	208V/120V Wye System	175	yes	4	SAP4II40175C	660630	1
				 					

### Pluggable cartridges

	In (A)	Imax	MCOV Uc	Cartridges replacement In	Cat. No.	Ref. No.	Pack.
	20	40	175	SAP1II40175; SAP1II40175C; SAP2II40175; SAP2II40175C; SAP3II40175; SAP3II40175C; SAP4II40175; SAP4II40175C	SAMII40175	660631	1
	20	40	275	SAP1II40275; SAP1II40275C	SAMII40275	660632	1
	20	40	320	SAP1II40320; SAP1II40320C; SAP2II40320; SAP2II40320C; SAP3II40320; SAP3II40320C; SAP4II40320	SAMII40320	660633	1
	10	30	750	SAP3II30750; SAP3II30750C	SAMII30750	660634	1

(1) 1 mod. = 18mm



**Technical features - SPDs with UL approval**

Comfort functions

A

B

C

D

E

F

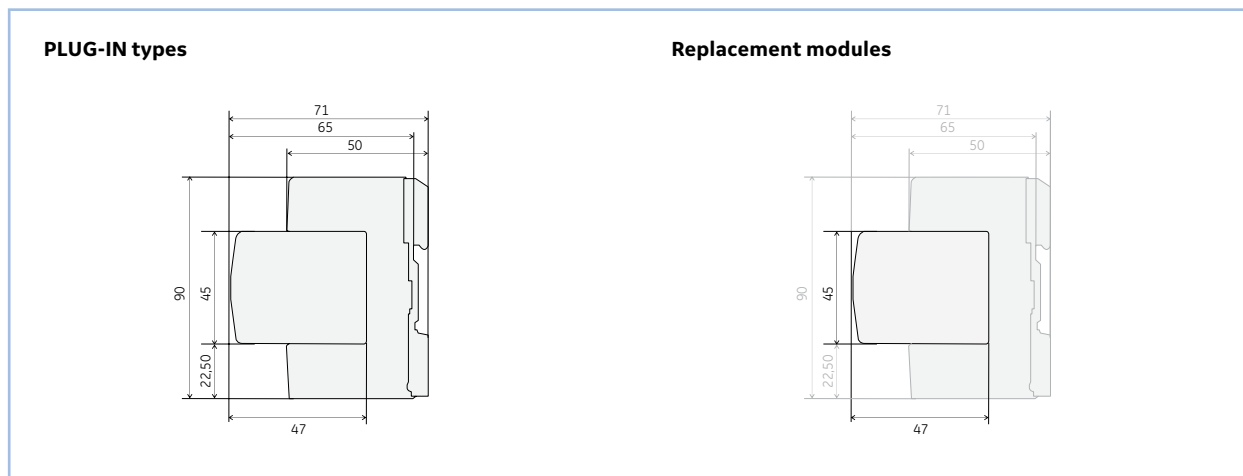
G

X

Models Codes	SAP1 II 40/175 660608	SAP1 II 40/275 660609	SAP1 II 40/320 660611
Communication models Communication codes	SAP1 II 40/175C 660612	SAP1 II 40/275C 660613	SAP1 II 40/320C 660614
UL File	E468805	E468805	E468805
Designation according UL 1449 4th edition	SPD Type 2CA	SPD Type 2CA	SPD Type 2CA
Maximum continuous operating voltage MCOV (V)	175	275	320
Nominal discharge current (8/20 μ) I <sub>n</sub> (kA)	20	20	20
Voltage protection rating VPR (V)	700	900	1200
Short circuit current rating SCCR (kA)	100	85	100
Designation according to EN 61643-11/IEC 61643-1	Type 2/Class II	Type 2/Class II	Type 2/Class II
Nominal voltage AC 50-60Hz U <sub>n</sub> (V)	120	230	277
Max. continuous operating voltage U <sub>C</sub> (V)	175	275	320
Max. discharge current (8/20 μs) I <sub>max</sub> (kA)	40	40	40
Voltage protection level U <sub>p</sub> (kV)	≤1	≤1.3	≤1.4
Response time t <sub>A</sub> (ns)	≤25	≤25	≤25
Max. mains-side overcurrent protection (A gL/gG)	125	125	125
Short-circuit withstand capability for max. mains-side overcurrent protection I <sub>cc</sub> (kA)	25	25	25
Temporary overvoltage (TOV) U <sub>T</sub> (V)	337/5sec.	337/5sec.	337/5sec.
TOV characteristics	withstand	withstand	withstand
Operating temperature range (parallel)/(series) T <sub>U</sub> (°C)	-40 ... +85	-40 ... +85	-40 ... +85
Operating state/fault indication	green/red	green/red	green/red
Number of ports	1	1	1
Cross-sectional area (min.)	6mm <sup>2</sup> solid/flexible	6mm <sup>2</sup> solid/flexible	6mm <sup>2</sup> solid/flexible
Cross-sectional area (max.)	35mm <sup>2</sup> stranded/25mm <sup>2</sup> flexible	35mm <sup>2</sup> stranded/25mm <sup>2</sup> flexible	35mm <sup>2</sup> stranded/25mm <sup>2</sup> flexible
For mounting on	36mm DIN-rail acc. to EN 60715	36mm DIN-rail acc. to EN 60715	36mm DIN-rail acc. to EN 60715
Enclosure material	PA+FG UL94 V-0	PA+FG UL94 V-0	PA+FG UL94 V-0
Location category	indoor	indoor	indoor
Degree of protection	IP 20	IP 20	IP 20
Capacity	1 mod/phase DIN 43880	1 mod/phase DIN 43880	1 mod/phase DIN 43880
Approvals, certifications	UL, CE	UL, CE	UL, CE
Type of remote signalling contact	changeover contact (C models)	changeover contact (C models)	changeover contact (C models)
Switching capacity a.c. (pollution degree = 2)	250V/1A (C models)	250V/1A (C models)	250V/1A (C models)
Switching capacity a.c. (pollution degree = 3)	125V/3A (C models)	125V/3A (C models)	125V/3A (C models)
Cross-sectional area for remote signalling terminals	max 1.5mm <sup>2</sup> solid/flexible	max 1.5mm <sup>2</sup> solid/flexible	max 1.5mm <sup>2</sup> solid/flexible

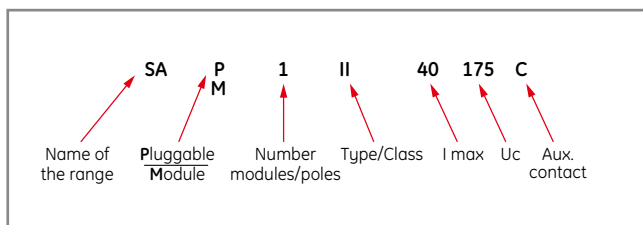
**Dimensional drawings**

**Surge protection devices (SPDs) - SAP, SAPV, SAM**



SAP2 II 40/175 660615	SAP2 II 40/320 660616	SAP3 II 40/175 660619	SAP3 II 40/320 660620	SAP3 II 30/750 660624	SAP4 II 40/175 660629	SAP4 II 40/320 660627
SAP2 II 40/175C 660617	SAP2 II 40/320C 660618	SAP3 II 40/175C 660621	SAP3 II 40/320 660620	SAP3 II 30/750C 660626	SAP4 II 40/175C 660630	SAP4 II 40/320C 660628
E468805	E468805	E468805	E468805	E468805	E468805	E468805
SPD Type 2CA	SPD Type 2CA	SPD Type 2CA	SPD Type 2CA	SPD Type 2CA	SPD Type 2CA	SPD Type 2CA
175	320	175	320	750	175	320
20	20	20	20	10	20	20
700	1200	700	1200	2500	700	1200
100	100	100	100	50	100	100
Type 2/Class II	Type 2/Class II	Type 2/Class II	Type 2/Class II	Type 2/Class II	Type 2/Class II	Type 2/Class II
120	277	120	277	600	120	277
175	320	175	320	750	175	320
40	40	40	40	30	40	40
≤1	≤1,4	≤1	≤1,4	≤3	≤1	≤1,4
≤25	≤25	≤25	≤25	≤25	≤25	≤25
125	125	125	125	63	125	125
25	25	25	25	25	25	25
337/5sec. withstand	337/5sec. withstand	337/5sec. withstand	337/5sec. withstand	337/5sec. withstand	337/5sec. withstand	337/5sec. withstand
-40 ... +85 green/red	-40 ... +85 green/red	-40 ... +85 green/red	-40 ... +85 green/red	-40 ... +85 green/red	-40 ... +85 green/red	-40 ... +85 green/red
1	1	1	1	1	1	1
6mm <sup>2</sup> solid/flexible	6mm <sup>2</sup> solid/flexible	6mm <sup>2</sup> solid/flexible	6mm <sup>2</sup> solid/flexible	6mm <sup>2</sup> solid/flexible	6mm <sup>2</sup> solid/flexible	6mm <sup>2</sup> solid/flexible
35mm <sup>2</sup> stranded/25mm <sup>2</sup> flexible	35mm <sup>2</sup> stranded/25mm <sup>2</sup> flexible	35mm <sup>2</sup> stranded/25mm <sup>2</sup> flexible	35mm <sup>2</sup> stranded/25mm <sup>2</sup> flexible	35mm <sup>2</sup> stranded/25mm <sup>2</sup> flexible	35mm <sup>2</sup> stranded/25mm <sup>2</sup> flexible	35mm <sup>2</sup> stranded/25mm <sup>2</sup> flexible
36mm DIN-rail acc. to EN 60715	36mm DIN-rail acc. to EN 60715	36mm DIN-rail acc. to EN 60715	36mm DIN-rail acc. to EN 60715	36mm DIN-rail acc. to EN 60715	36mm DIN-rail acc. to EN 60715	36mm DIN-rail acc. to EN 60715
PA+FG UL94 V-0	PA+FG UL94 V-0	PA+FG UL94 V-0	PA+FG UL94 V-0	PA+FG UL94 V-0	PA+FG UL94 V-0	PA+FG UL94 V-0
indoor	indoor	indoor	indoor	indoor	indoor	indoor
IP 20	IP 20	IP 20	IP 20	IP 20	IP 20	IP 20
1 mod/phase DIN 43880 UL, CE	1 mod/phase DIN 43880 UL, CE	1 mod/phase DIN 43880 UL, CE	1 mod/phase DIN 43880 UL, CE	1 mod/phase DIN 43880 UL, CE	1 mod/phase DIN 43880 UL, CE	1 mod/phase DIN 43880 UL, CE
changeover contact (C models)	changeover contact (C models)	changeover contact (C models)	changeover contact (C models)	changeover contact (C models)	changeover contact (C models)	changeover contact (C models)
250V/1A (C models)	250V/1A (C models)	250V/1A (C models)	250V/1A (C models)	250V/1A (C models)	250V/1A (C models)	250V/1A (C models)
125V/3A (C models)	125V/3A (C models)	125V/3A (C models)	125V/3A (C models)	125V/3A (C models)	125V/3A (C models)	125V/3A (C models)
max 1.5mm <sup>2</sup> solid/flexible	max 1.5mm <sup>2</sup> solid/flexible	max 1.5mm <sup>2</sup> solid/flexible	max 1.5mm <sup>2</sup> solid/flexible	max 1.5mm <sup>2</sup> solid/flexible	max 1.5mm <sup>2</sup> solid/flexible	max 1.5mm <sup>2</sup> solid/flexible

**Catalogue number guide for ElfaPlus line surge protective devices**



**Examples**

SA	P	1	II	40	175	-
SA	P	2	II	40	320	-
SA	P	3	II	40	320	-
SA	P	3	II	30	750	-
SA	P	1	II	40	175	C
SA	P	2	II	40	320	C
SA	P	3	II	40	320	C
SA	P	3	II	30	750	C



**SPDs for photovoltaic application**

Comfort functions



**Features**

SAPV is the series of devices that provide advanced overvoltage protection to photovoltaic systems by utilizing GEIS's optimized dynamic thermal disconnection system, which does not require additional overcurrent protection (back-up fuse) due to its high short-circuit withstand rating. These surge protective devices are suitable for all PV applications: large-scale, rooftop and self-consumption (off-grid) DC installations.

**Ratings and features**

- Maximum discharge current (8/20µs): 40kA
- Nominal discharge current (8/20µs): 20kA (10kA for 1500V DC)
- Ucpv: 660, 1060 Vdc and 1500V DC
- Iscpv: 10kA (EN-50539-11), no back-up fuse required
- SCCR: 50kA, 65kA, 100kA (UL1449 3rd edition)
- DIN-rail mountable, plug-in format
- Visual and remote end of life indicators

**Application**



**Approval / Marking**



**Surge arresters - Class II- SAPV Line UL1449 3rd Edition**



Photovoltaic application

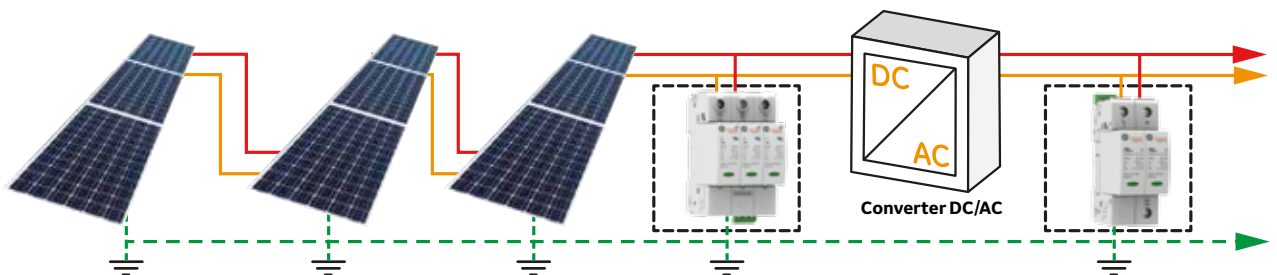
In (kA)	I <sub>max</sub>	Service voltage AC/DC/DC PV	MCOV Uc	Up (Ures)	Auxiliary contact	No. of modules <sup>(1)</sup>	Cat. No.	Ref. No.	Pack.
20	40	600 DC PV	600	2600	no	3	SAPVII40/600	<b>660195</b>	1
20	40	600 DC PV	600	2600	yes	3	SAPVII40/600C	<b>660196</b>	1
20	40	1000 DC PV	1000	4000	no	3	SAPVII40/1000	<b>660197</b>	1
20	40	1000 DC PV	1000	4000	yes	3	SAPVII40/1000C	<b>660198</b>	1
10	40	1500 DC PV	1500	5000	no	3	SAPVII40/1500	<b>660496</b>	1
10	40	1500 DC PV	1500	5000	yes	3	SAPVII40/1500C	<b>660497</b>	1

(1) 1 mod. = 18mm

**Pluggable cartridges**

In (kA)	I <sub>max</sub>	Service voltage AC/DC/DC PV	To be replaced in		Cat. No.	Ref. No.	Pack.
20	40	600 DC PV	SAPVII40/600	SAPVII40/600C	SAM II 40/600PV	<b>660378</b>	1
20	40	1000 DC PV	SAPVII40/1000	SAPVII40/1000C	SAM II 40/1000PV	<b>660379</b>	1
10	40	1500 DC PV	SAPVII40/1500	SAPVII40/1500C	SAM II 40/1500PV	<b>660498</b>	1

**Installation of SAP SPDs on photovoltaic networks**





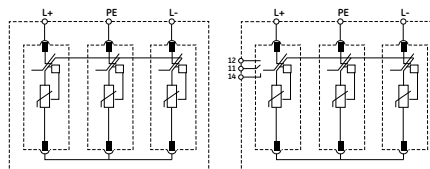
# SAPV II 40

## UL1449 3rd edition, DIN-rail

### Three pole transient surge protector



Internal configuration



### Technical features

Models Codes	SAP3 II 40/600 660195	SAP3 II 40/1000 660197	SAP3 II 40/1500 660496
Communication models Communication codes	SAP3 II 40/600 660196	SAP3 II 40/1000C 660198	SAP3 II 40/1500C 660497
UL File	E468805	E468805	E468805
Designation according UL 1449 3rd Edition	PV SPD Type 2CA	PV SPD Type 2CA	PV SPD Type 2CA
Maximum continuous operating voltage	MCOV (V) 600	1000	1500
Nominal discharge current (8/20 $\mu$ s)	$I_n$ (kA) 20	20	10
Voltage protection rating	VPR (V) 1800	3000	4000
Short circuit current rating	SCCR (kA) 100	50	65
Designation according to EN 50539-11	Type 2	Type 2	Type 2
Maximum continuous operating voltage DC	$U_{CVP}$ (V) 660	1060	1500
Max. Discharge current (8/20 $\mu$ s)	$I_{max}$ (kA) 40	40	20
Short-circuit withstand capability for max. mains-side overcurrent protection	$I_{SCVP}$ (kA) 10	10	10
Voltage protection level	$U_p$ (kV) $\leq 2.6$	$\leq 4$	$\leq 5$
Response time	$t_A$ (ns) $\leq 25$	$\leq 25$	$\leq 25$
Operating temperature range (parallel)/(series)	$T_U$ (C°)	-40 ... +85	
Operating state/fault indication		green/red	
Number of ports		1	
Cross-sectional area (min.)		6mm <sup>2</sup> solid / flexible	
Cross-sectional area (max.)		35mm <sup>2</sup> stranded / 25mm <sup>2</sup> flexible	
For mounting on		36mm DIN rail acc. To EN 60715	
Enclosure material		PA+FG UL94 V-0	
Location category		indoor	
Degree of protection		IP 20	
Capacity		1 mod/phase DIN 4388	
Approvals, Certifications		UL, CE	
Type of remote signalling contact		changeover contact (C models)	
Switching capacity AC		250V / 1A (C models)	
Switching capacity DC		125V / 0,2A (C models)	
Cross-sectional area for remote signalling terminals		max 1,5 mm <sup>2</sup> solid / flexible (C models)	

### Accessories - Replacement modules

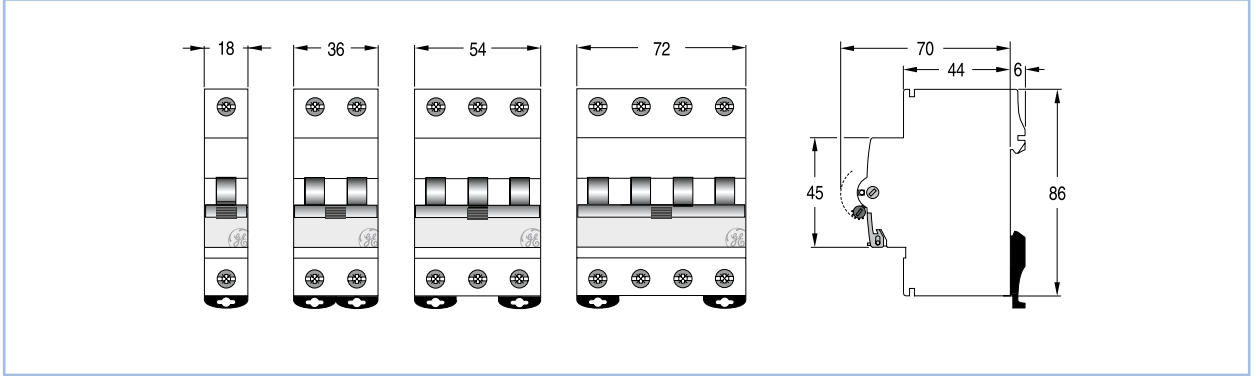
Models Codes	SAM II 40/600 PV 660378	SAM II 40/1000 PV 660379	SAM II 40/1500 PV 660498
	Protection module phase-neutral for		
	SAPV II 40/600	SAPV II 40/1000	SAPV II 40/1500
	SAPV II 40/600 C	SAPV II 40/1000 C	SAPV II 40/1500 C



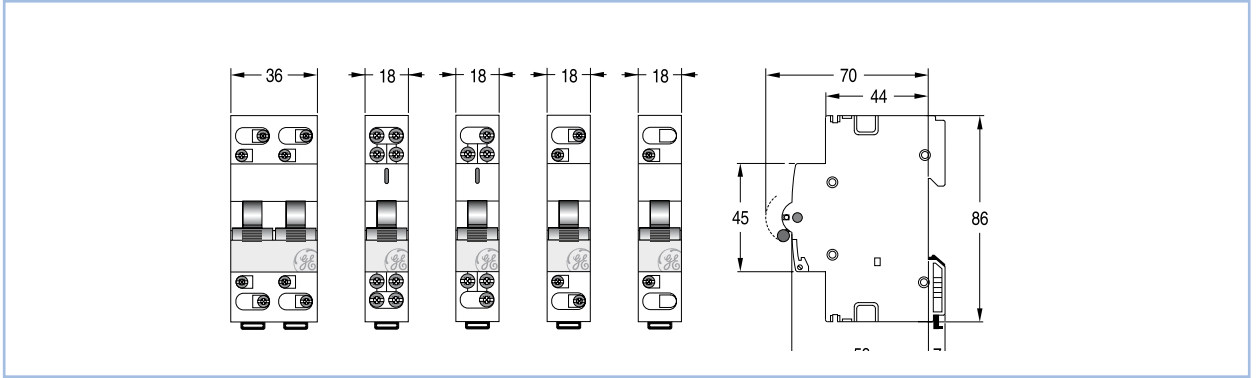
Dimensional drawings

Comfort functions

Mains disconnect switches - Aster

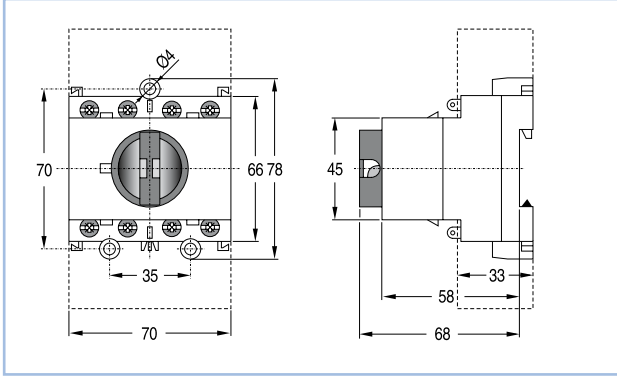


Switches - Aster



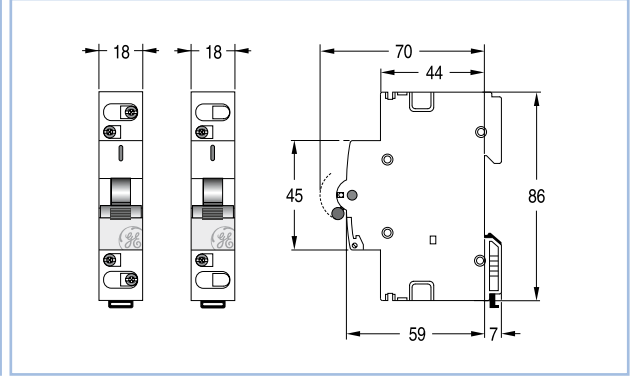
A  
B  
C

Rotary switches - Aster



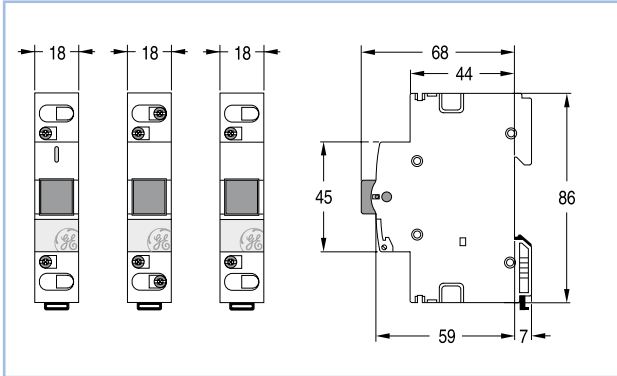
D  
E  
F  
G

Switches with signal lamp - Aster

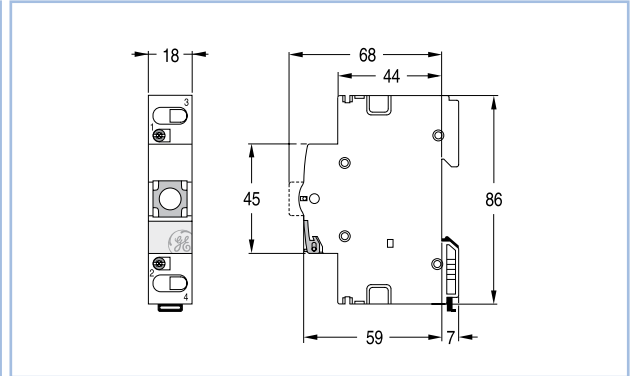


X

Push-buttons - Aster



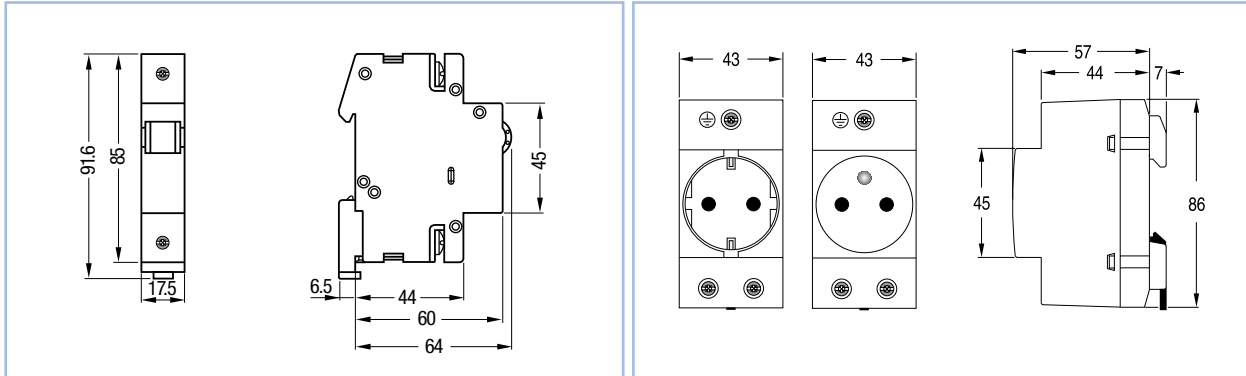
Indication lamp - Aster



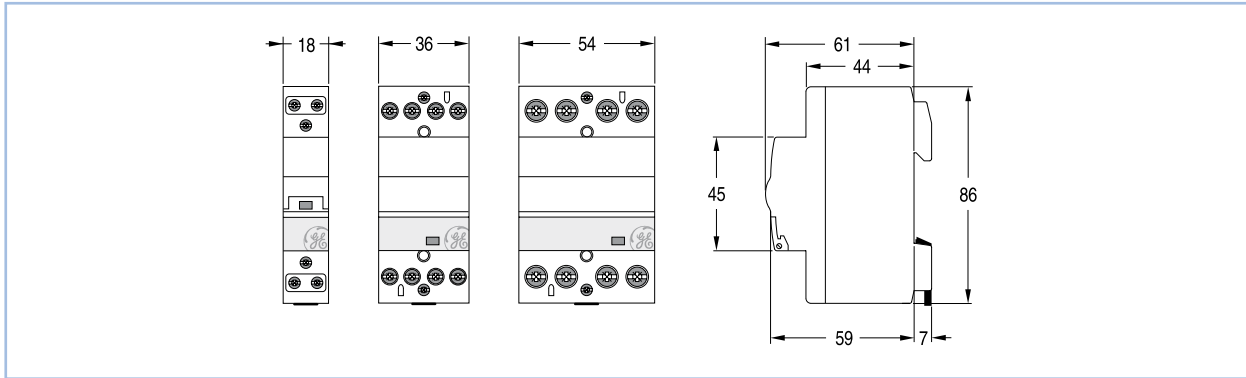
Dimensional drawings

**Aster BL - Assembled indication lamps**

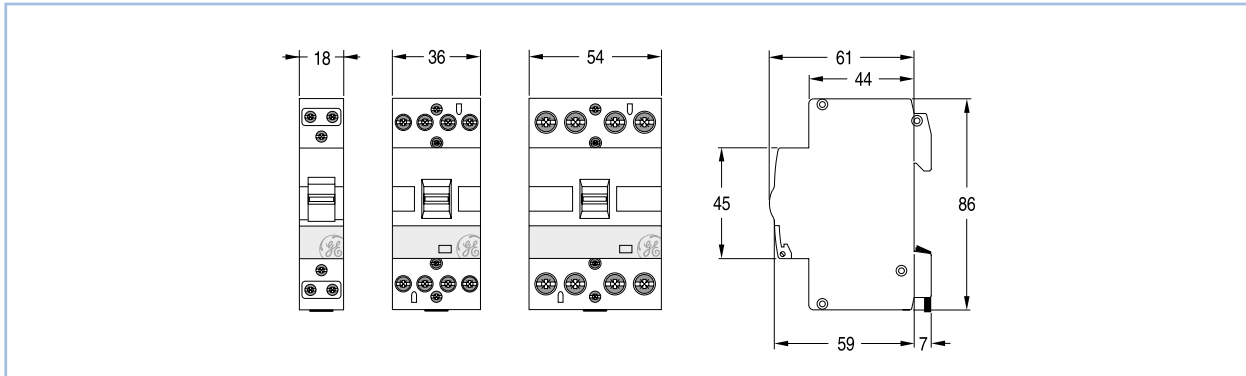
**Socket-outlet - Series MSC**



**Contactors - Contax**

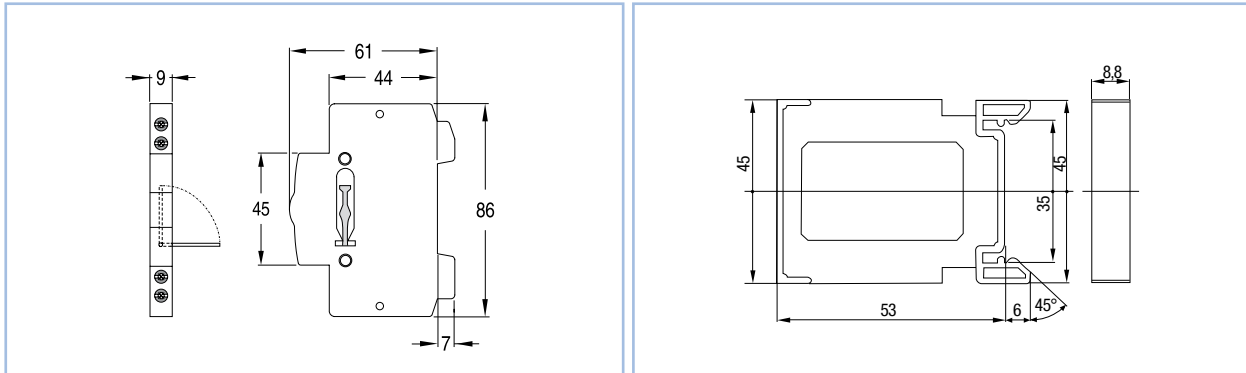


**Contactors Day and Night - Contax (L) (R)**



**Contactors - Auxiliary contact - Contax**

**Contactors - Spacer - Contax**



Dimensional drawings

A

B

C

**D**

E

F

G

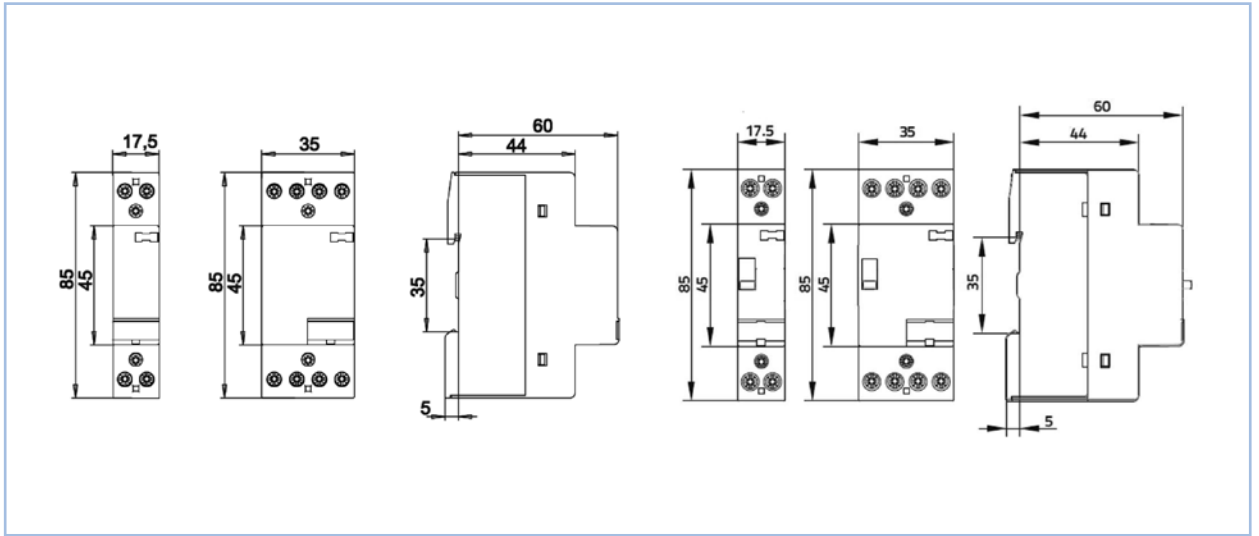
X



Dimensional drawings

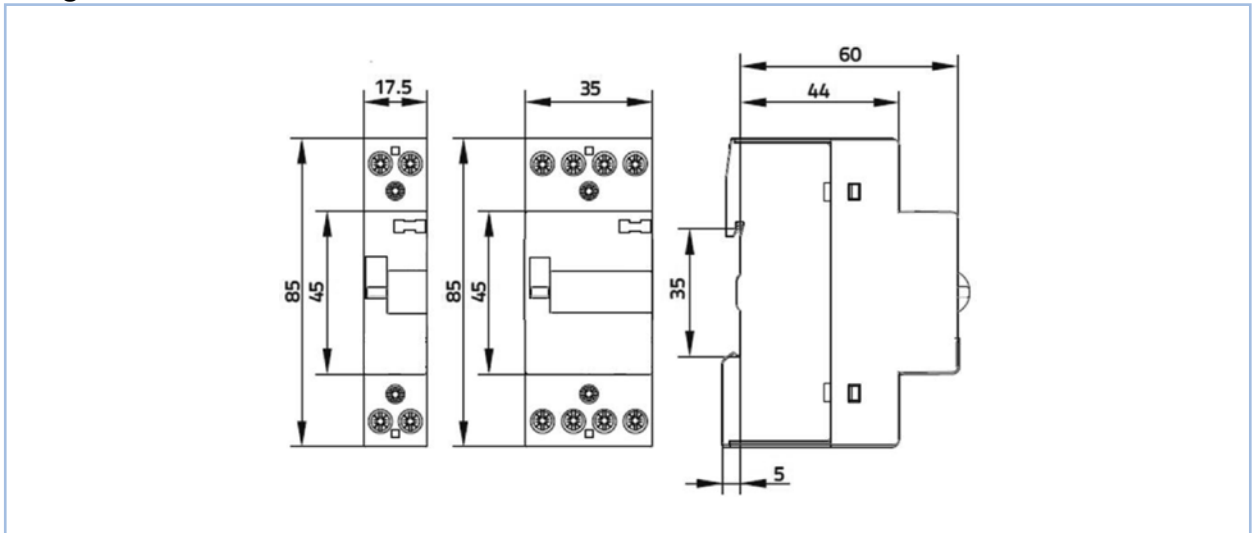
Comfort functions

**Contactors - Contax L**



A

**Relays - Contax R**



B

C

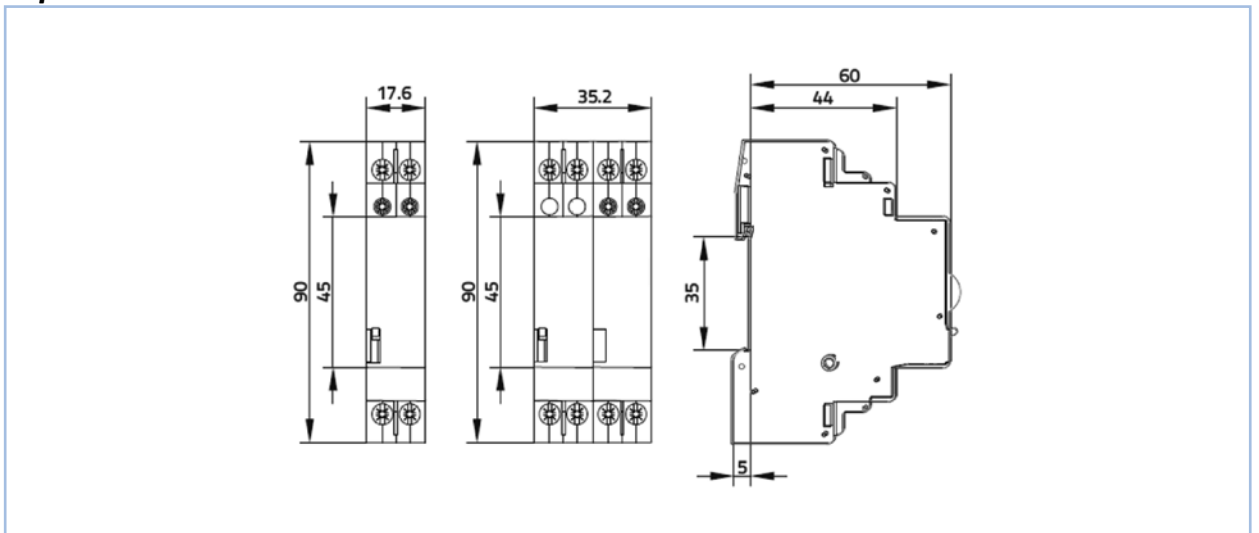
**D**

E

F

G

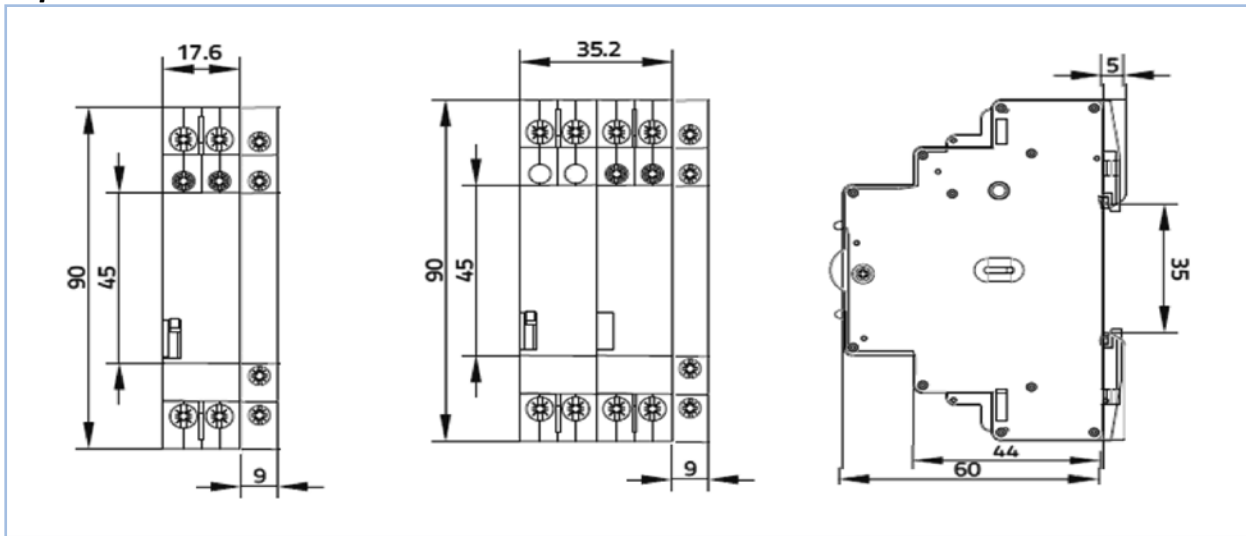
**Impulse switches - Pulsar S**



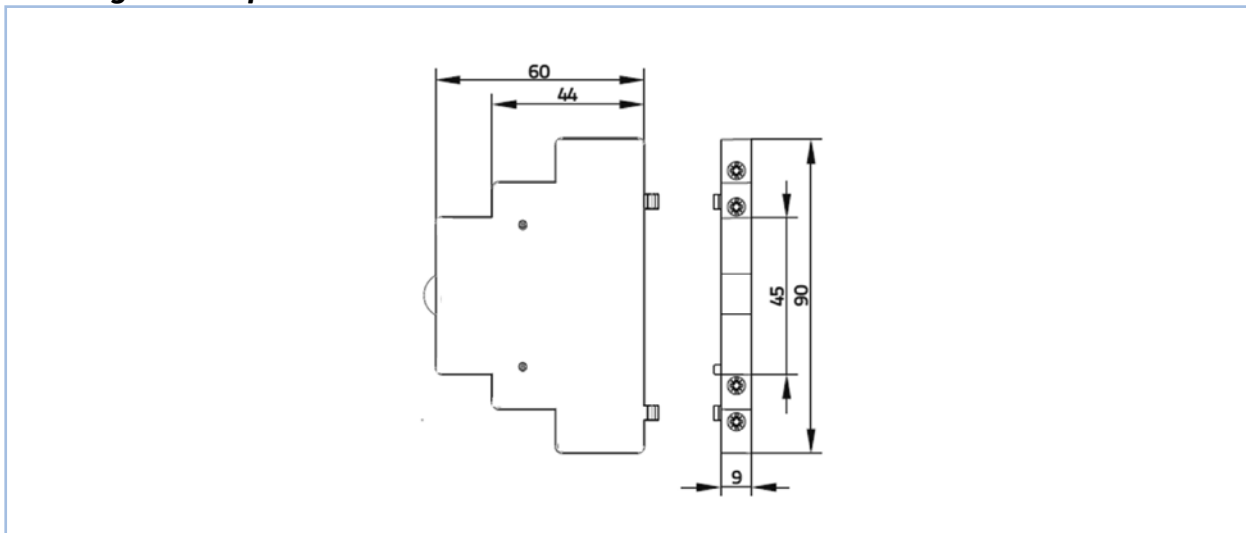
X

Dimensional drawings

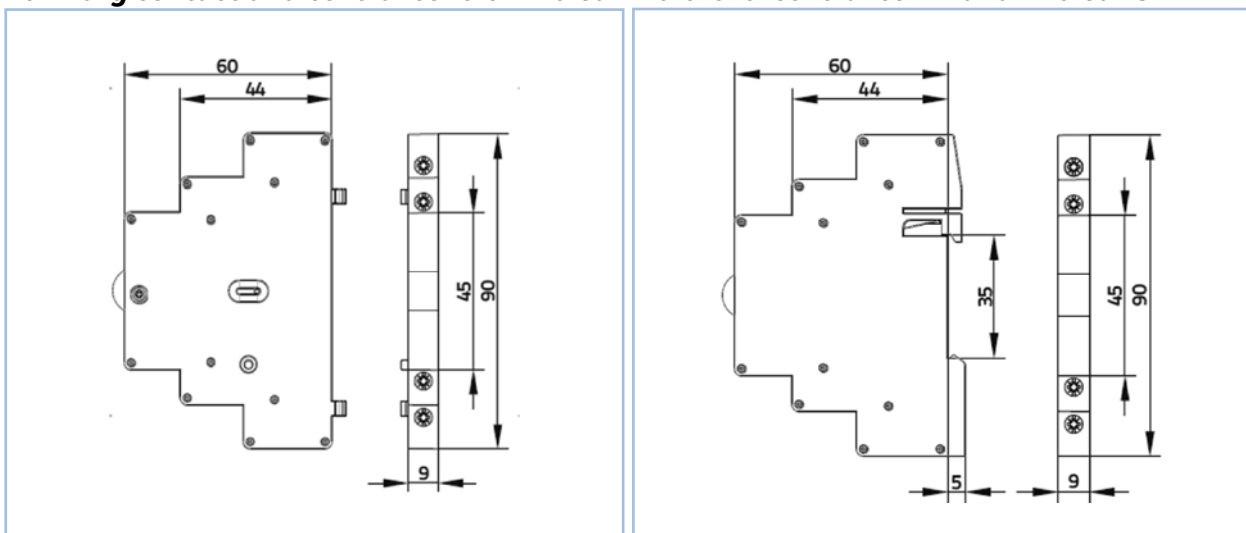
**Impulse switches - Pulsar S - PLSC**



**Auxiliary contact for Contax R**



**Auxiliary contact and central control - Pulsar Multilevel central command - Pulsar S**



A

B

C

**D**

E

F

G

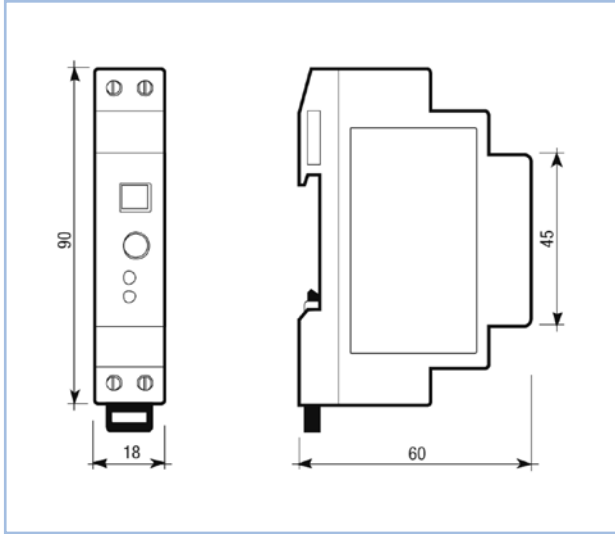
X



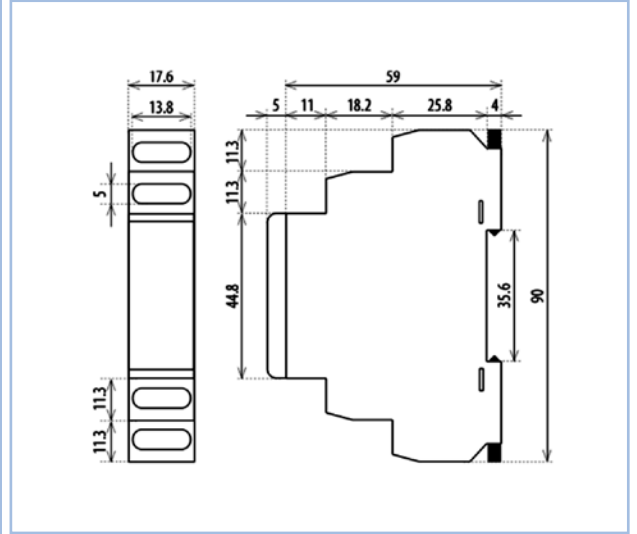
Dimensional drawings

Comfort functions

Staircase switches - Pulsar SC

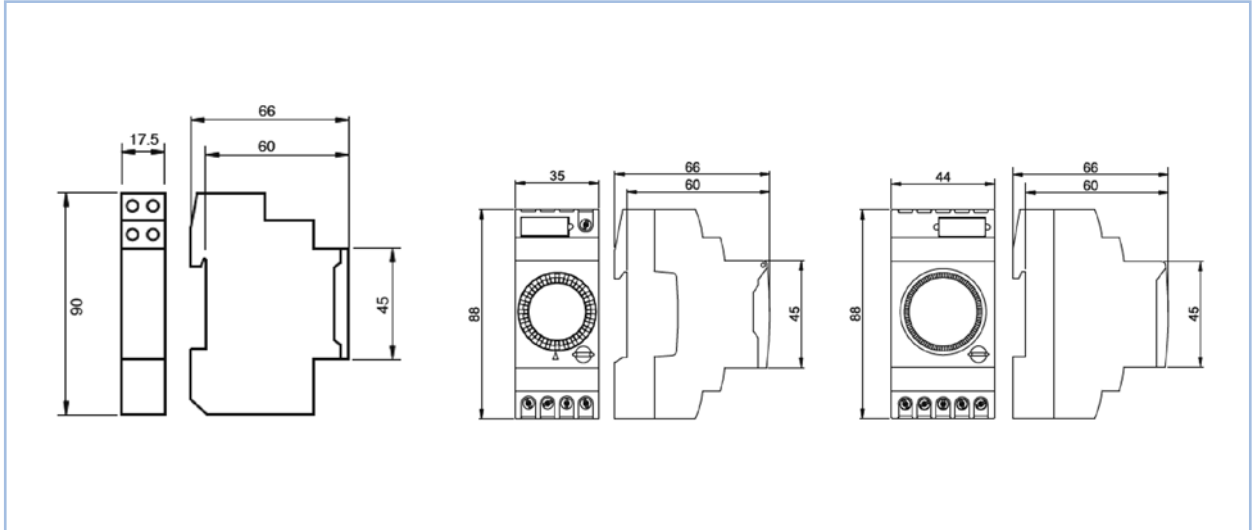


Dimmers and time relays - DIM and Pulsar T+



A

Analogue time switches - Classic Plus



B

C

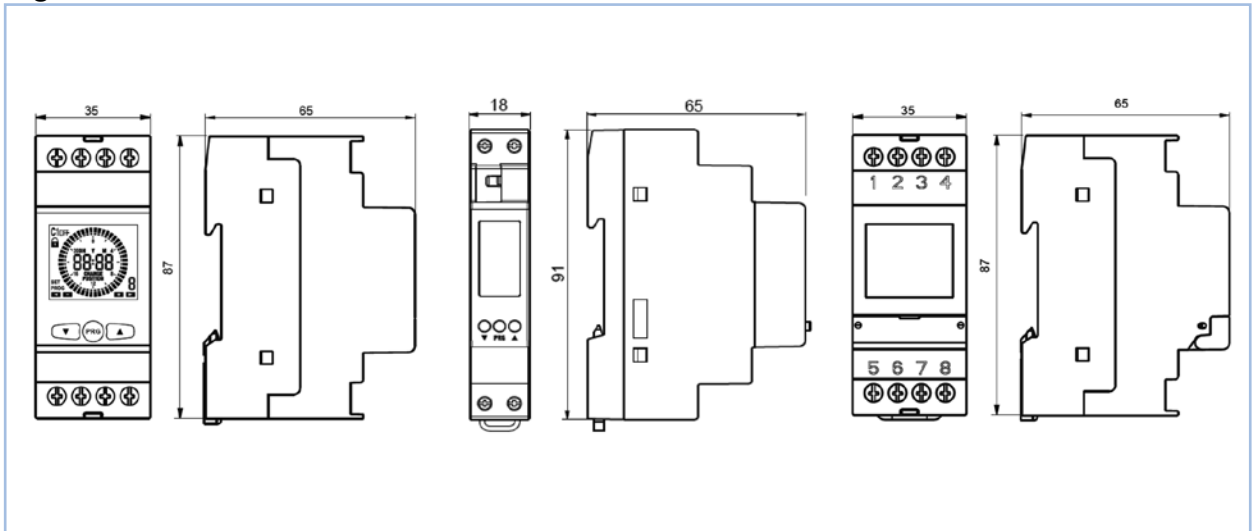
D

E

F

G

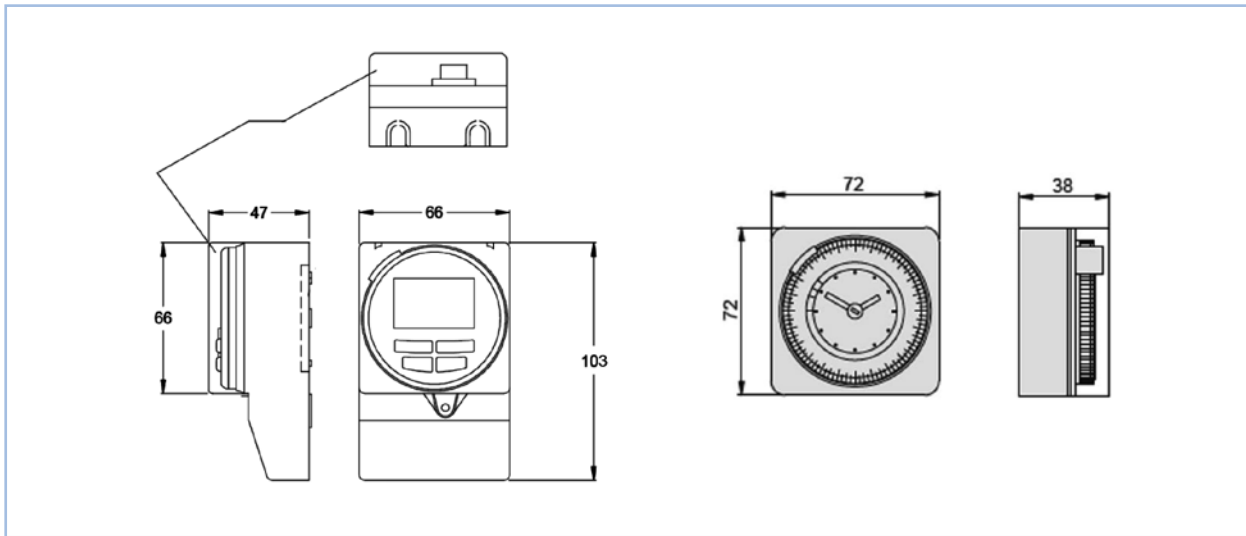
Digital time switches - Galax Plus



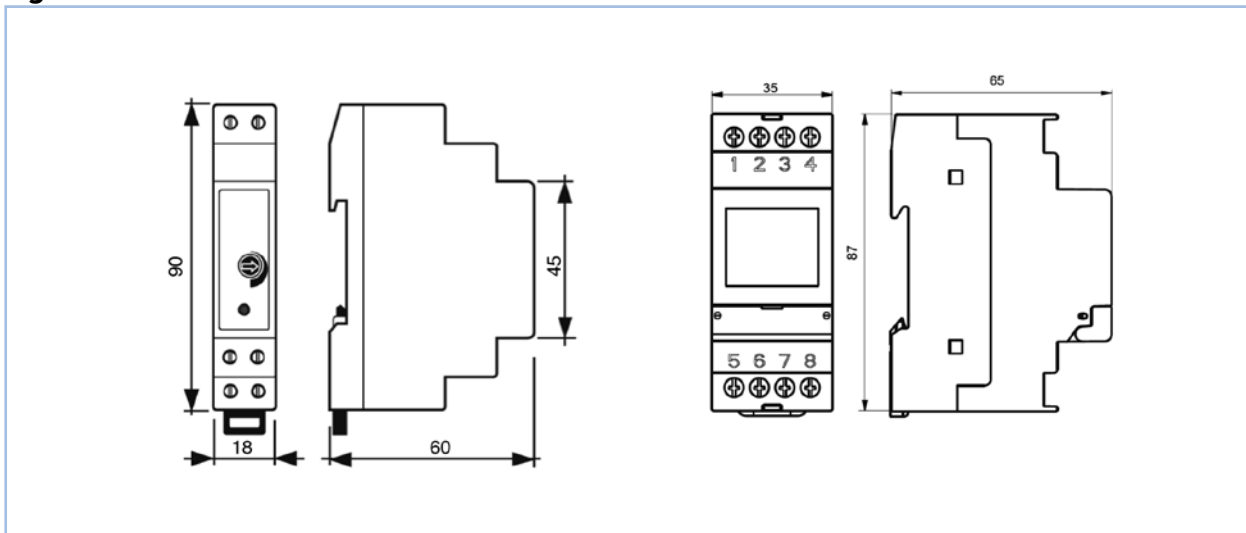
X

Dimensional drawings

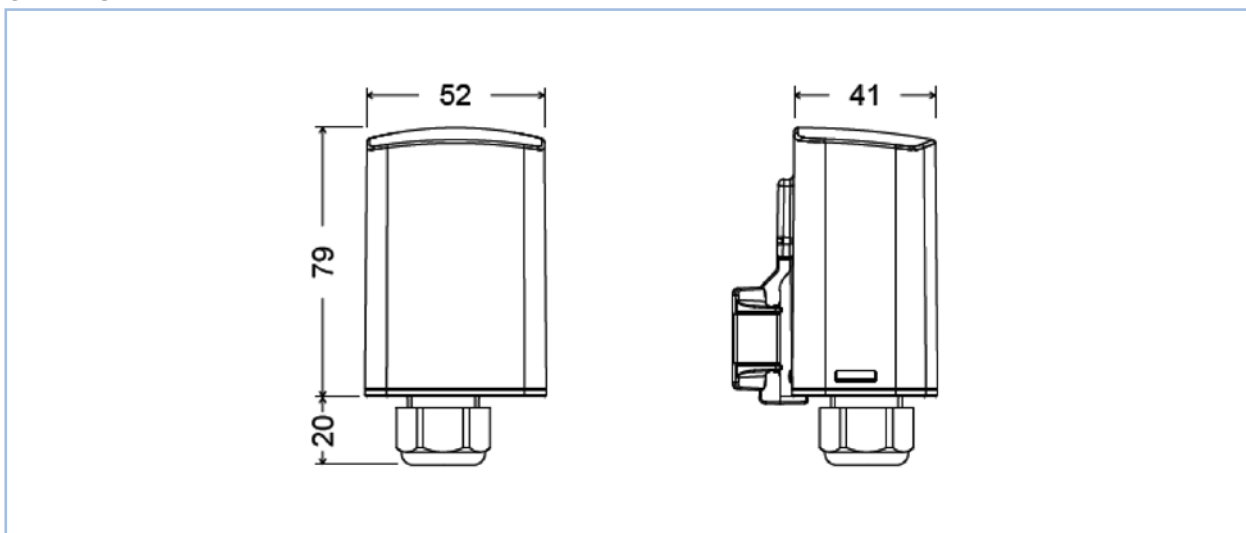
**Time switches 72x72 - Classic Plus and Galax Plus**



**Light sensitive switches - Galax LSS**



**GLX+LUX WALL**

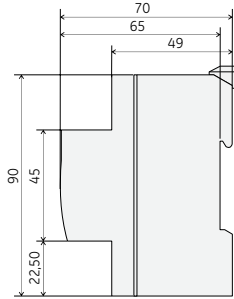




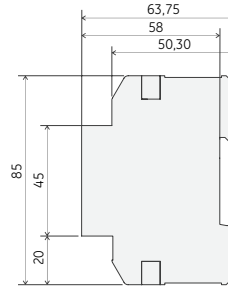
Dimensional drawings

Surge arresters - SurgeGuard

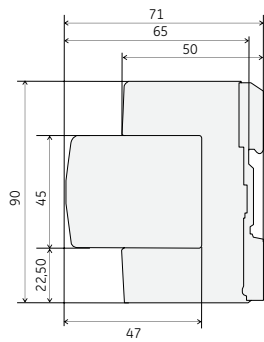
MONOBLOCK types  
SA BLOCK, SA BLOCK ADSL



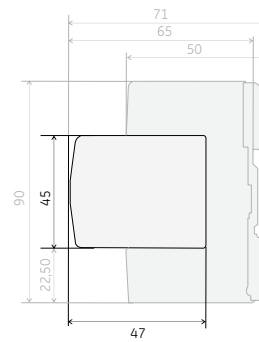
SA BLOCK II 15 LN



PLUG-IN types



Replacement modules



Comfort functions

A

B

C

**D**

E


F

G

X





- E.2 **Busbar system**
- E.4 Insulated PIN type busbars
- E.5 Insulated PIN type busbars for compact MCBs Unibis\*
- E.6 Insulated FORK type busbars
- E.8 Busbars for connection of auxiliaries
- E.8 Accessories
-  E.9 UL Busbars

Circuit Protection A

People Protection B

Add-on Devices C

Comfort Functions D

**Busbars** **E**

Enclosures F

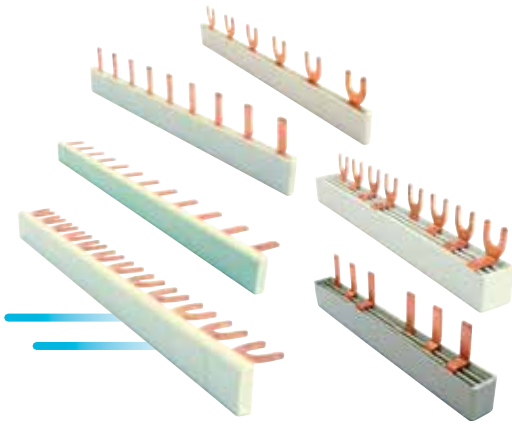
Product overview G

Numerical index X



# Busbar system

## Rails



### Technical data

<b>Rail</b>	Copper (oxygen free) Heat resistant >96°C Self extinguishing V0
<b>Dielectric strength</b>	36kV/mm (acc. to DIN 53481/1.2)
<b>Short-circuit resistance</b>	25kA (100A fuse)
<b>Climate proofing</b>	According to IEC 60068-2-30
<b>Creepage resistance/tracking index</b>	400V (acc. to IEC 60112)
<b>Insulation group acc. to EN 60439-1</b>	Material group II, 400V

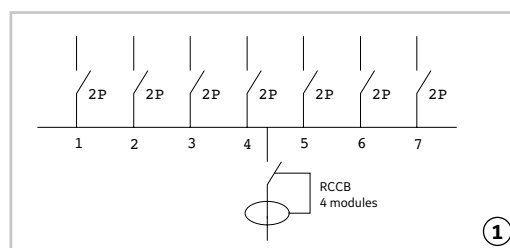
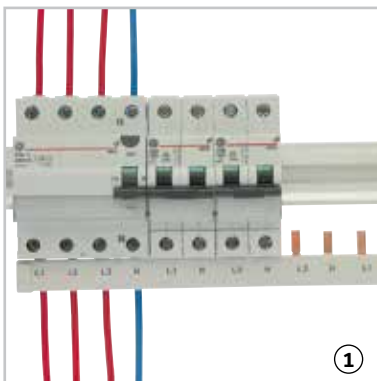
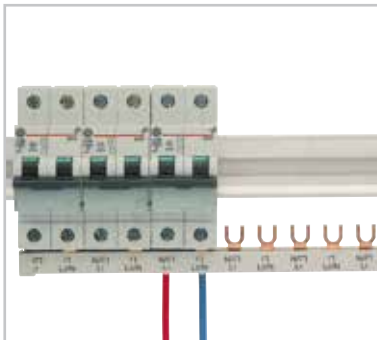
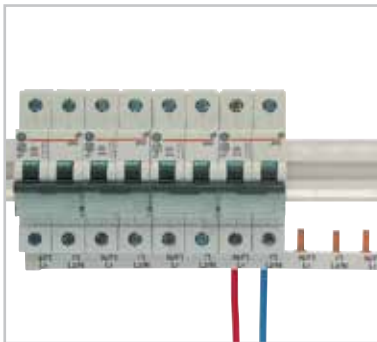
### Load values in A (I<sub>th</sub>)

Polarity	Connection	side		1 pole	
		I <sub>th</sub> (A)	K (mm <sup>2</sup> )	I <sub>th</sub> (A)	K (mm <sup>2</sup> )
	10 isolated	80	10	100	25
	12 non isolated	90	16	110	35
	16 non isolated	110	25	130	35
	24 non isolated	160	25	180	2x25
	36 non isolated	200	35	220	2x35

Polarity	Connection	side		n poles	
		I <sub>th</sub> (A)	K (mm <sup>2</sup> )	I <sub>th</sub> (A)	K (mm <sup>2</sup> )
	10 isolated	80	16	100	25
	16 isolated	120	25	130	35

K = section of the connection wire

n = 2P, 1P+N, 3P, 3P+N, 4P





## Insulated PIN type busbars

Busbars

A

B

C

D

E

F

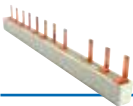

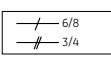
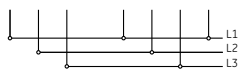
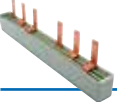

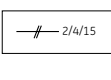
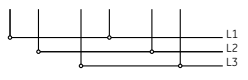
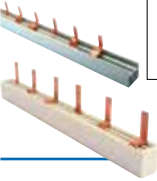

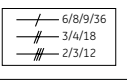
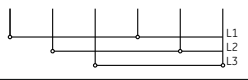
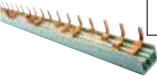

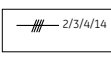
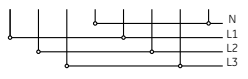
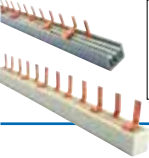

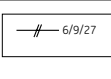

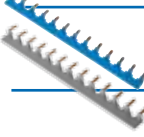

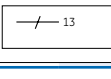



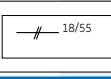
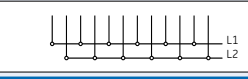
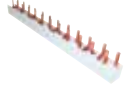

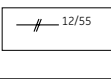
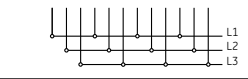
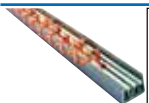

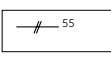
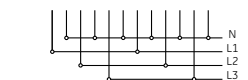


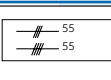
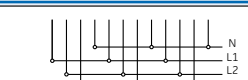
G

X

		Section mm <sup>2</sup>	Description	Ref. No.	Pack.
<b>1-phase</b>					
	10	2x1P		546253	10
	10	6x1P		546254	10
	10	12x1P		546255	10
	10	13x1P		650156	10
	10	57x1P - length 1m		624991*	1/10
	16	57x1P - length 1m		544193*	1/10
<b>1-phase 90°</b>					
	10	3x1P - 90°		624959	20
	10	4x1P - 90°		624960	20
	10	5x1P - 90°		624961	20
	10	6x1P - 90°		624962	20
	10	7x1P - 90°		624963	20
	10	8x1P - 90°		624964	20
	10	9x1P - 90°		624965	20
	10	10x1P - 90°		624966	20
	10	11x1P - 90°		624967	20
	10	12x1P - 90°		624968	20
	10	13x1P - 90°		624969	20
	10	14x1P - 90°		624970	20
	10	15x1P - 90°		624971	20
	10	16x1P - 90°		624972	20
10	17x1P - 90°		624973	20	
10	18x1P - 90°		624974	20	
<b>1-phase with 1P + auxiliary</b>					
	10	2x(1P + auxiliary)		546256	10
	10	6x(1P + auxiliary)		546257	10
	10	8x(1P + auxiliary)		546237	10
	10	36x(1P + auxiliary) or MCBs Hti - length 1m		546152*	1/50
	16	36x(1P + auxiliary) or MCBs Hti - length 1m		624994*	1/50
	<b>2-phase</b>				
	10	4x1P or 2x2P		546265	10
	10	6x1P or 3x2P		546266	10
	10	12x1P or 6x2P		546267	10
	10	14x1P or 7x2P		544186	10
	10	18x1P or 9x2P		624805	10
	16	14x1P or 7x2P		618294	20
	16	56x1P or 28x2P - length 1m		546139*	1/20
<b>2-phase with 2P + auxiliary</b>					
	10	3x(2P + auxiliary)		546269	10
	10	5x(2P + auxiliary)		546270	10
	16	22x(2P + auxiliary) - length 1m		546126*	1/20
<b>3-phase</b>					
	10	6x1P or 3x2P or 2x3P		546277	10
	10	9x1P or 4x2P or 3x3P		546308	10
	10	12x1P or 4x3P or 3x4P		546278	10
	10	15x1P or 5x3P		544180	10
	10	18x1P or 6x3P		544181	10
	10	21x1P or 7x3P		544182	10
	10	24x1P or 12x2P or 8x3P		624839	20
	10	57x1P or 28x2P or 19x3P - length 1m		546142*	1/20
	16	57x1P or 28x2P or 19x3P - length 1m		546143*	1/20



**Insulated PIN type busbars (continued)**

		Section mm <sup>2</sup>	Description	Ref. No.	Pack.		
<b>3-phase RCDs</b>							
	 3P			10	1xRCD + 6x1P or 3x2P	544183	10
				10	1xRCD + 8x1P or 4x2P	544184	10
<b>3-phase with 3P + auxiliary</b>							
	 3P			10	2x(3P + auxiliary)	555434	10
				10	4x(3P + auxiliary)	555435	10
				10	15x(3P + auxiliary) - length 1m	544195*	1/20
<b>3-phase with 1P + auxiliary</b>							
	 3P			10	6x(1P + auxiliary) or 6x1P MCBs Hti or 3x2P MCBs Hti or 2x3P MCBs Hti	546396	10
				10	8x(1P + auxiliary) or 8x1P Hti MCB or 4x2P Hti MCB	544185	10
				10	9x(1P + auxiliary) or 3x3P MCBs Hti	546397	10
				10	36x(1P + auxiliary) or 18x2P Hti MCB or 12x3P Hti MCB - length 1m	546128*	1/20
<b>4-phase 4P or 3P+N</b>							
	 3P+N/4P			10	2x4P or 2x3P+N	546282	5
				10	3x4P or 3x3P+N	546283	5
				10	4x4P or 4x3P+N	544187	5
				10	14x4P or 14x3P+N - length 1m	624807*	1/15
				16	14x4P or 14x3P+N - length 1m	546130*	1/15
<b>4-phase 1P+N or 2P</b>							
	 3P+N			10	6x1P+N or 6x2P	546284	5
				10	9x1P+N or 9x2P	546285	5
				10	27x1P+N or 27x2P - length 1m	624995*	1/15
				16	27x1P+N or 27x2P - length 1m	624996*	1/15
<b>1-phase 90° for compact MCBs Unibis</b>							
	 1P			10	13x1P - 90° - grey	646091	15
				10	13x1P - 90° - blue	646092	15
<b>1-phase+N / 2P for compact MCBs Unibis</b>							
	 2P			10	18x1P+N / 2P	624796	20
				10	55x1P+N / 2P - length 1m	624893*	1/20
<b>3-phase for compact MCBs Unibis</b>							
	 3P			10	12x2P	624797	15
				10	55x2P - length 1m	624798*	1/15
<b>4-phase 1P+N or 2P for compact MCBs Unibis</b>							
	 3P+N/4P			10	55x2P - length 1m	624892*	1/10
<b>4-phase 4P or 3P+N for compact MCBs Unibis</b>							
	 3P+N/4P			10	55x3P or 4P - length 1m incl. 4 end caps and 4 connection clamps	624800*	1/5

PIN type busbars

A

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E

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**Insulated FORK type busbars**

Busbars

A

B

C

D

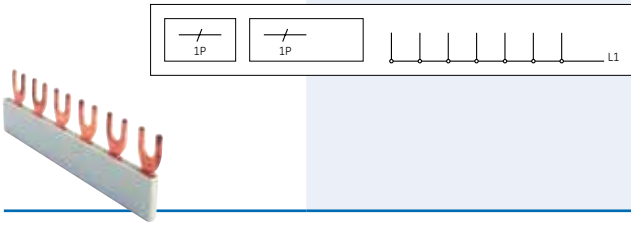
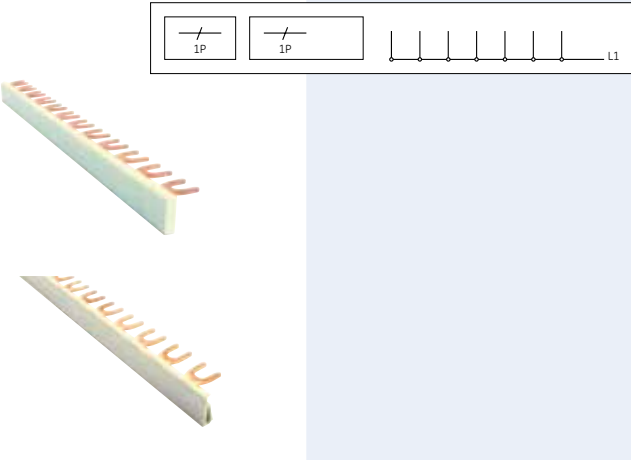
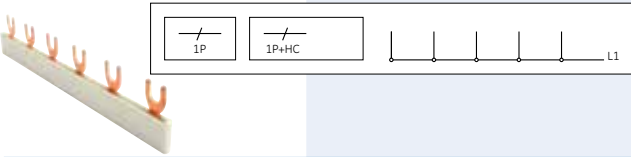
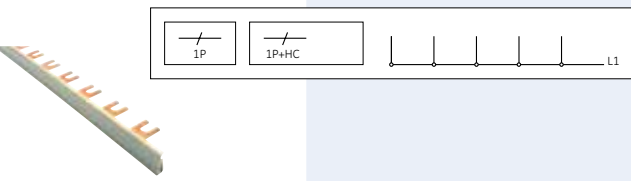
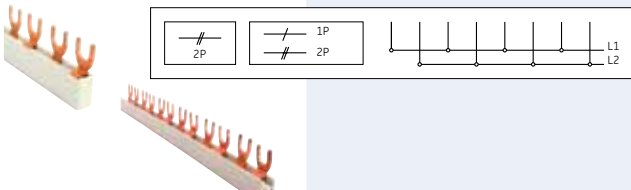
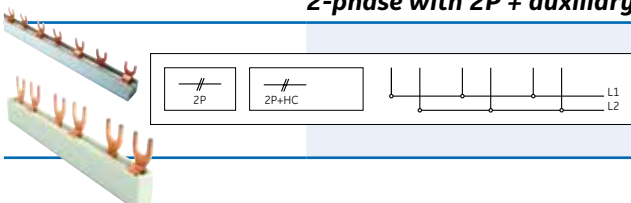
E

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X

E.6

		Section mm <sup>2</sup>	Description	Ref. No.	Pack.	
<b>1-phase</b>						
		10	2x1P	546247	20	
		10	3x1P	644873	20	
		10	4x1P	546341	20	
		10	5x1P	650164	20	
		10	6x1P	546248	20	
		10	12x1P	546249	20	
		10	13x1P	650152	20	
		10	57x1P - length 1m	546187*	1/10	
		16	57x1P - length 1m	544188*	1/10	
	<b>1-phase 90°</b>					
		10	2x1P - 90°	624975	20	
		10	4x1P - 90°	624976	20	
		10	5x1P - 90°	624977	20	
		10	6x1P - 90°	624978	20	
		10	7x1P - 90°	624979	20	
		10	8x1P - 90°	624980	20	
		10	9x1P - 90°	624981	20	
		10	10x1P - 90°	624982	20	
		10	11x1P - 90°	624983	20	
		10	12x1P - 90°	624984	20	
		10	13x1P - 90°	624985	20	
		10	14x1P - 90°	624986	20	
		10	15x1P - 90°	624987	20	
		10	16x1P - 90°	624988	20	
		10	17x1P - 90°	624989	20	
		10	18x1P - 90°	624990	20	
		16	57x1P - 90° - length 1m	644890*	1/50	
		10	2x1P - 90° for surge arresters SurgeGuard	624993	20	
	10	3x1P - 90° for surge arresters SurgeGuard	644893	20		
	10	4x1P - 90° for surge arresters SurgeGuard	568106	20		
	10	8x1P - 90° for surge arresters SurgeGuard	644897	20		
<b>1-phase with 1P + auxiliary</b>						
		10	2x(1P + auxiliary)	546250	20	
		10	3x(1P + auxiliary)	644875	20	
		10	4x(1P + auxiliary)	644876	20	
		10	5x(1P + auxiliary)	644877	20	
		10	6x(1P + auxiliary)	546251	20	
		10	8x(1P + auxiliary)	546295	20	
		10	9x(1P + auxiliary)	546252	20	
	<b>1-phase with 1P + auxiliary 90°</b>					
		10	2x(1P + auxiliary) - 90°	544272	20	
		10	7x(1P + auxiliary) - 90°	544277	20	
		10	13x(1P + auxiliary) - 90°	544296	50	
		10	14x(1P + auxiliary) - 90°	644879	20	
		10	15x(1P + auxiliary) - 90°	644880	20	
		16	15x(1P + auxiliary) - 90°	544327	20	
		10	37x(1P + auxiliary) - 90° - length 1m	546197*	1/50	
		16	37x(1P + auxiliary) - 90° - length 1m	544189*	1/50	
	<b>2-phase</b>					
			10	4x1P or 2x2P	546259	10
		10	6x1P or 3x2P	546260	10	
		10	10x1P or 5x2P	644881	10	
		10	12x1P or 6x2P	546261	10	
		10	14x1P or 7x2P	544178	10	
		10	18x1P or 9x2P	644882	10	
		10	56x1P or 28x2P - length 1m	544191*	1/20	
		16	56x1P or 28x2P - length 1m	546227*	1/20	
<b>2-phase with 2P + auxiliary</b>						
			10	2x(2P + auxiliary)	546262	10
		10	3x(2P + auxiliary)	546263	10	
		10	4x(2P + auxiliary)	544344	10	
		10	5x(2P + auxiliary)	546264	10	
		16	22x(2P + auxiliary) - length 1m	546125*	1/20	



**Insulated FORK type busbars (continued)**

		Section mm <sup>2</sup>	Description	Ref. No.	Pack.
<b>3-phase</b>					
	10	6x1P or 3x2P or 2x3P	<b>546271</b>	10	
	10	7x1P	<b>624957</b>	10	
	10	9x1P or 3x3P	<b>546296</b>	10	
	10	12x1P or 6x2P or 4x3P	<b>546272</b>	10	
	10	13x1P	<b>650153</b>	10	
	10	14x1P or 7x2P	<b>650154</b>	10	
	10	15x1P or 5x3P	<b>544172</b>	10	
	10	18x1P or 9x2P or 6x3P	<b>544173</b>	10	
	10	21x1P or 7x3P	<b>544174</b>	10	
	10	24x1P or 12x2P or 8x3P	<b>624958</b>	20	
	10	57x1P or 28x2P or 19x3P - length 1m All forks on the lateral side of the busbar	<b>546229*</b>	1/20	
	16	57x1P or 19x3P - length 1m All forks in the middle of the busbar	<b>546176*</b>	1/20	
16	57x1P or 28x2P or 19x3P - length 1m All forks in the middle of the busbar	<b>546230*</b>	1/20		
<b>3-phase RCDs</b>					
	10	1xRCD + 5x1P	<b>555609</b>	10	
	10	1xRCD + 6x1P or 3x2P or 2x3P	<b>544175</b>	10	
	10	1xRCD + 8x1P or 4x2P	<b>544176</b>	10	
<b>3-phase with 3P + auxiliary</b>					
	10	2x(3P + auxiliary)	<b>546273</b>	10	
	10	3x(3P + auxiliary)	<b>644884</b>	10	
	10	4x(3P + auxiliary)	<b>546274</b>	10	
	10	5x(3P + auxiliary)	<b>644885</b>	10	
	10	6x(3P + auxiliary)	<b>644886</b>	10	
	16	15x(3P + auxiliary) - length 1m	<b>546129*</b>	1/20	
<b>3-phase with 1P + auxiliary</b>					
	10	6x(1P + auxiliary) or 6x MCBs Hti	<b>546275</b>	10	
	10	8x(1P + auxiliary) or 8x MCBs Hti	<b>544177</b>	10	
	10	9x(1P + auxiliary) or 9x MCBs Hti	<b>546276</b>	10	
	16	36x(1P + auxiliary) - length 1m	<b>546127*</b>	1/20	
	<b>4-phase 4P or 3P+N</b>				
	10	2x4P or 2x3P+N	<b>546279</b>	5	
	10	3x4P or 3x3P+N	<b>546280</b>	5	
	10	4x4P or 4x3P+N	<b>544179</b>	5	
	10	14x4P or 14x3P+N - length 1m	<b>618293*</b>	1/15	
	16	14x4P or 14x3P+N - length 1m	<b>546234*</b>	1/15	
	<b>4-phase 1P+N or 2P</b>				
	10	6x1P+N or 6x2P	<b>546398</b>	5	
	10	9x1P+N or 9x2P	<b>546281</b>	5	
	10	2xAdd on 32A +4P	<b>546228</b>	5	
	10	27x1P+N or 27x2P - length 1m	<b>624799*</b>	1/15	
	16	27x1P+N or 27x2P - length 1m	<b>544192*</b>	1/15	
	<b>4-phase with 4P + auxiliary</b>				
	10	2x(4P + auxiliary) or 2x(3P+N + auxiliary)	<b>646084</b>	5	
	16	12x(4P + auxiliary) or 12x(3P+N + auxiliary) - length 1m	<b>646083*</b>	1/15	

FORK type busbars

A

B

C

D

**E**




F

G

X



### Busbars for connection of auxiliaries

	Section mm <sup>2</sup>	Description	Ref. No.	Pack.
	<b>For auxiliary function added on 1P MCB</b>			
	27mm / 8P		546244	10
	27mm / 4P		544346	10
	<b>For auxiliary function added on 2P MCB</b>			
	45mm / 5P		546245	10
	45mm / 4P		544347	10
	<b>For auxiliary function added on 3P MCB</b>			
	63mm / 4P		546246	10

### Accessories

Busbars

A

B

C








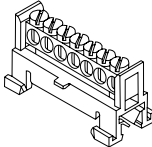
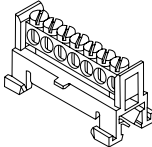

D

**E**

F

G

X

	<b>End caps</b>			
	10/16	for 1P busbars	644891	50
	10	for 2P busbars	546181	10
	10	for 3P busbars	546200	10
	16	for 2P and 3P busbars	546184	10
	10/16	for 4P busbars	629867	10
	<b>Connection clamps</b>			
	25	fork	546287	30
	25	pin	546288	30
	25	pin long	546289	50
	35	for fork and pin direct on busbar	546290	10
	25	4P compact MCBs Unibis	624795	30
	<b>Insulation cap</b>			
		Pin/fork - Yellow (RAL 1004)	546291	10
	<b>Insulation strip</b>			
		For fork and pin - length 1m	624860	10
	<b>Clamps for neutral conductor</b>			
	16	7 poles	546297	10
	16	12 poles	546298	10
	16	12 poles, insulated	568083	10
	16	15 poles	546299	10
	<b>Clamps for phase conductors</b>			
	16	7 poles	546300	10
	16	12 poles	546301	10
	16	12 poles, insulated	568084	10
	16	15 poles	546302	10
	<b>DIN-rail (EN 50022)</b>			
		Length 1000mm - Height 7mm	564092	10





**UL Busbars for Circuit Breakers, supplementary protection and ground fault protection devices**

Series		BS..PULL	BS..PULR
Standards		UL489	UL1077
Certifications		UL489; UL File Nr E488748	UL1077; UL File Nr E151139
Standards		UL508	
Certifications		UL508, E356776	
<b>Operational Voltage</b>			
UL489	V AC	600V	480Y/277 and 240
Short-circuit resistance with 100A fuse		25kA	25kA
Dielectric strength acc. DIN 53481/1.2	KV/mm	36	36
Rated current at 40°C ambient temperature		110	110
Maximum operating voltage	V AC	600	500
<b>Insulation coordination</b>			
Degree of pollution		2	2
Overvoltage category		II	II
Busbar cross-section	mm <sup>2</sup> Cu	16	16
Infeed		Any	Any
Rail		Copper (oxygen free)	Copper (oxygen free)
Insulation strip		Plastic	Plastic
Heat resistance		>96°C self extinguishing V0	>96°C self extinguishing V0
Poles		1,2,3	1,2,3
<b>Accessories</b>			
Tooth cap		yes	yes
Pin connector		yes	yes

**Performance**

- Busbars for MCBs in conformance with UL489, UL1077 and UL508
- For application in that is a bigger air- and creep-distance necessary.
- 30% Installation time savings!
- Panel space savings.
- Available in 1, 2, 3 – phase busbars.
- Combining 6 or 12 modules UL489 busbars is possible to link 12 up to 60 poles.
- Yellow tooth-cap available for live free pins.
- Pin connectors adapted for UL489 busbars to feed the mcbs row.

**Approval**



UL Busbars

A

B

C

D

**E**

F

G

X





**Busbars according to UL489 for use with EP100ULH<sup>(1)</sup>**



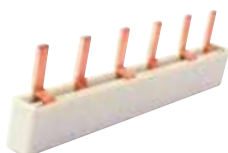
	Poles	Max. Voltage	Modules	PIN spacing <sup>(2)</sup>	Cat. No.	Ref. No.	Pack.
For 6 MCBs	1	600V AC	6	1 module	BS1PULL600/06	<b>624785</b>	1/100
For 12 MCBs	1	600V AC	12	1 module	BS1PULL600/12	<b>624786</b>	1/50
For 3 MCBs	2	600V AC	6	1 module	BS2PULL600/06	<b>624818</b>	1/100
For 6 MCBs	2	600V AC	12	1 module	BS2PULL600/12	<b>624873</b>	1/50
For 2 MCBs	3	600V AC	6	1 module	BS3PULL600/06	<b>624874</b>	1/100
For 4 MCBs	3	600V AC	12	1 module	BS3PULL600/12	<b>624881</b>	1/50

**Busbars accessories according to UL489 for use with EP100ULH**



	Cat. No.	Ref. No.	Pack.
Tooth cap	IcapUL1	<b>624897</b>	10/20
Pin connector	ASUL	<b>624898</b>	1/30

**Busbars to UL1077 for use with EP100UL, FP and DP RCCBs and RCBOs<sup>(1)</sup>**



	Poles	Voltage	Modules	PIN spacing <sup>(2)</sup>	Cat. No.	Ref. No.	Pack.
For 12 MCBs	1	480Y/277	12	1 module	BS1PULR277/12	<b>624882</b>	1/50
For 6 MCBs	2	480Y/277	12	1 module	BS2PULR480/12	<b>624883</b>	1/50
For 4 MCBs	3	480Y/277	12	1 module	BS3PULR480/12	<b>624896</b>	1/50

**Busbars accessories according to UL1077**

	Cat. No.	Ref. No.	Pack.
Tooth cap	IcapUL2	<b>624808</b>	5/20
Pin connector	ASUL2	<b>624809</b>	1/30

**Accessories for MCBs**



	Cat. No.	Ref. No.	Pack.
<b>Walls</b> Walls for terminals	WUL	<b>690244</b>	10

**Padlocking bracket**



	Cat. No.	Ref. No.	Pack.
Allows padlocking in ON and OFF position	KS	<b>624929</b>	2

(1) Fixed lengths, can't be cut  
(2) 1 module width = 18mm

Busbars

A

B

C

D

E

F

G


X



**Metal enclosures**

- F.2 Surface mounting - **Fix-o-Rail Senior**
- F.4 Surface and flush mounting - **Fix-o-Rail 144**
- F.8 Surface mounting - **Modular 200**

**Insulated plastic enclosures**

- F.12 Junction boxes - **Flex-o-Box**
- F.14 Junction boxes - **Series 55**
- F.18 Surface mounting - **Fix-o-Rail Covers**
- F.20 Surface mounting - **Fix-o-Rail Junior**
- F.22 Surface mounting - **Fix-o-Rail Classic**
- F.26 Surface mounting - **Abaco S**
-  F.28 Surface mounting - **Fix-o-Rail 150**
- F.32 Surface mounting - **Fix-o-Rail 55**
- F.34 Surface mounting - **Aquaria**
- F.36 Flush mounting - **Abaco F**
- F.38 Flush mounting - **Fix-o-Rail 150-F4**
- F.40 Dimensional drawings

Circuit Protection A

People Protection B

Add-on Devices C

Comfort Functions D

Busbars E

**Enclosures** **F**

Product overview G

Numerical index X



# Metal enclosures - Surface mounting

Enclosures



## Fix-o-Rail Senior

IP43

### Features

- **Secure: total insulation**
- **Double wall: a steel outer wall plus an inner insulated extruded wall**
- Protection degree: IP43-IK08 (plain door), IK05-transparent door
- Universal: for DIN-rail equipment up to 92.5mm
- Installation friendly: ample wiring room and a removable mounting frame
- Two-component cable entries at top and bottom, integrated in the base

### Components

The Fix-o-Rail Senior enclosure includes:

- base in RAL 9016
- mounting frame
- labels for circuit indication
- coverplates
- a transparent or grey door in RAL 9016
- closed by handle without lock
- sealing option



### Applications



As an elegant insulated enclosure in:

- restaurants and hotels
- workshops
- hospitals
- shopping centers
- offices
- commercial buildings
- leisure and sport locations

### Marking





### Standard

EN/IEC 62208

EN/IEC 61439-2 (in preparation)

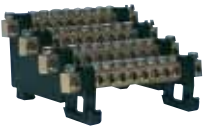







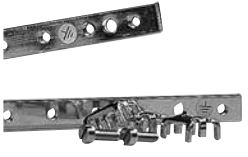
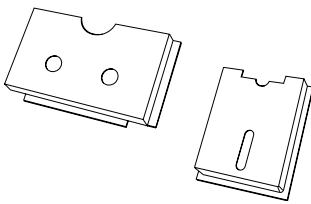

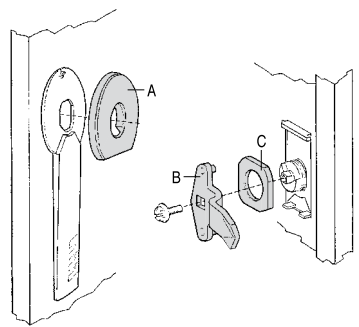
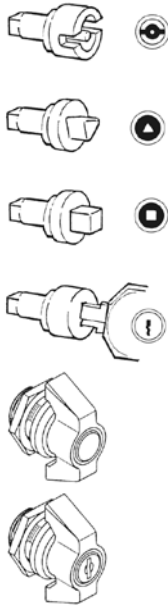


## Fix-o-Rail Senior

	HxWxD (mm)	Number of modules	Number of rows	Ref. No.	Pack.	
	<b>Plain door</b>	650 x 300 x 210	48	4	<b>610239</b>	1
		800 x 300 x 210	60	5	<b>610248</b>	1
		650 x 550 x 210	96	4	<b>610240</b>	1
		800 x 550 x 210	120	5	<b>610249</b>	1
		950 x 550 x 210	144	6	<b>610257</b>	1
		1100 x 550 x 210	168	7	<b>610241</b>	1
		1250 x 550 x 210	192	8	<b>610242</b>	1
		1100 x 800 x 210	252	7	<b>610243</b>	1
		1250 x 800 x 210	288	8	<b>610244</b>	1
			<b>Transparent door</b>	650 x 300 x 210	48	4
800 x 300 x 210	60			5	<b>610330</b>	1
650 x 550 x 210	96			4	<b>610329</b>	1
800 x 550 x 210	120			5	<b>610331</b>	1
950 x 550 x 210	144			6	<b>610332</b>	1



Accessories

	<p><b>4-pole terminal 63A</b></p> <table border="1"> <tr> <td><b>610022</b></td> <td>18</td> </tr> </table> <p>63A Connection range 4x(10x16mm<sup>2</sup>) Cu section 6,5x9mm</p>	<b>610022</b>	18	<p><b>Cable-entry plate</b></p> <table border="1"> <tr> <td><b>815094</b></td> <td>1</td> </tr> </table> <p>Smooth surface, in case the standard two-component cable-entry plate needs to be replaced.</p>	<b>815094</b>	1																				
<b>610022</b>	18																									
<b>815094</b>	1																									
	<p><b>4-pole terminal 160A</b></p> <table border="1"> <tr> <td><b>617992</b></td> <td>5</td> </tr> </table> <p>160 A with cover 4x(1x10 to 50mm<sup>2</sup> incoming + 3x6 to 35mm<sup>2</sup> + 8x2.5 to 16mm<sup>2</sup> outgoing) Cu section 12x10mm</p>	<b>617992</b>	5	<p><b>Foam rubber (IP30)</b></p> <table border="1"> <tr> <td><b>815095</b></td> <td>1</td> </tr> </table>	<b>815095</b>	1																				
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	<p><b>4-pole terminal 160A</b></p> <table border="1"> <tr> <td><b>610020</b></td> <td>1</td> </tr> </table> <p>160A connection range 4x(10x10mm<sup>2</sup>) Cu section 12x5mm</p>	<b>610020</b>	1	<p><b>Pre-drilled plates</b></p> <table border="1"> <tr> <td><b>815093</b></td> <td>5</td> </tr> <tr> <td>21xM16</td> <td></td> </tr> <tr> <td><b>815092</b></td> <td>5</td> </tr> <tr> <td>2xM50; 5xM20</td> <td></td> </tr> </table>	<b>815093</b>	5	21xM16		<b>815092</b>	5	2xM50; 5xM20															
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	<p><b>Protective shroud</b></p> <table border="1"> <tr> <td><b>610021</b></td> <td>1</td> </tr> </table> <p>For 160A terminal (ref. 610020)</p>	<b>610021</b>	1	<p><b>Label for circuit indication</b></p> <table border="1"> <tr> <td><b>610232</b></td> <td>10</td> </tr> <tr> <td>For enclosure width 300mm</td> <td></td> </tr> <tr> <td><b>610233</b></td> <td>10</td> </tr> <tr> <td>For enclosure width 550mm</td> <td></td> </tr> <tr> <td><b>610238</b></td> <td>10</td> </tr> <tr> <td>For enclosure width 800mm</td> <td></td> </tr> </table>	<b>610232</b>	10	For enclosure width 300mm		<b>610233</b>	10	For enclosure width 550mm		<b>610238</b>	10	For enclosure width 800mm											
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	<p><b>Earth bar</b></p> <table border="1"> <tr> <td><b>828152</b></td> <td>1</td> </tr> <tr> <td>For enclosure width 300mm - length 190mm</td> <td></td> </tr> <tr> <td><b>828153</b></td> <td>1</td> </tr> <tr> <td>For enclosure width 550mm - length 437mm</td> <td></td> </tr> <tr> <td><b>828149</b></td> <td>1</td> </tr> <tr> <td>For enclosure width 800mm - length 684mm</td> <td></td> </tr> </table>	<b>828152</b>	1	For enclosure width 300mm - length 190mm		<b>828153</b>	1	For enclosure width 550mm - length 437mm		<b>828149</b>	1	For enclosure width 800mm - length 684mm		<p><b>Document pocket</b></p> <table border="1"> <tr> <td><b>811516</b></td> <td>1</td> </tr> <tr> <td>DIN A4 - W x H = 325 x 180mm</td> <td></td> </tr> <tr> <td><b>832000</b></td> <td>1</td> </tr> <tr> <td>DIN A5 - W x H = 155 x 225mm</td> <td></td> </tr> </table>	<b>811516</b>	1	DIN A4 - W x H = 325 x 180mm		<b>832000</b>	1	DIN A5 - W x H = 155 x 225mm					
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	<p><b>Cover strip</b></p> <table border="1"> <tr> <td><b>828056</b></td> <td>1</td> </tr> </table> <p>For cut-out of 45mm, length 1m</p>	<b>828056</b>	1	<p><b>Non standard lock</b></p> <table border="1"> <tr> <td><b>815105</b></td> <td>1</td> </tr> </table> <p>Adaptor kit</p> <p style="text-align: center;"><b>+</b></p>	<b>815105</b>	1	<p>The standard handle can be replaced by adaptor kit + insert or handle</p>																			
<b>828056</b>	1																									
<b>815105</b>	1																									
<p><b>Adaptor kit = A + B + C</b></p> 	<table border="1"> <tr> <td><b>811327</b></td> <td>1</td> </tr> <tr> <td>Insert 3mm double bit key</td> <td></td> </tr> <tr> <td><b>811326</b></td> <td>1</td> </tr> <tr> <td>Insert 8mm triangle key</td> <td></td> </tr> <tr> <td><b>811325</b></td> <td>1</td> </tr> <tr> <td>Insert 8mm square key</td> <td></td> </tr> <tr> <td><b>811331</b></td> <td>1</td> </tr> <tr> <td>Cylinder with 2 keys V2432-E</td> <td></td> </tr> <tr> <td><b>813146</b></td> <td>1</td> </tr> <tr> <td>Neutral handle</td> <td></td> </tr> <tr> <td><b>813156</b></td> <td>1</td> </tr> <tr> <td>Handle with key V2432-E</td> <td></td> </tr> </table>	<b>811327</b>	1	Insert 3mm double bit key		<b>811326</b>	1	Insert 8mm triangle key		<b>811325</b>	1	Insert 8mm square key		<b>811331</b>	1	Cylinder with 2 keys V2432-E		<b>813146</b>	1	Neutral handle		<b>813156</b>	1	Handle with key V2432-E		
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A

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E

**F**

G

X



### Fix-o-Rail 144 F - 144 S

### IP40

Enclosures



#### Features

- In accordance with EN/IEC 61439-3
- Protection degree: IP40 – IK07 without door  
IP40 – IK08 with plain door  
IP40 – IK07 with transparent door
- Each DIN-rail can be equipped with 24 modules
- Centre distance between two DIN-rails: 150mm
- Flush mounting depth: 105mm
- Can be equipped with the Record Plus D-frame
- Colour: RAL 7035

#### Electrical properties

- Designated voltage: 415V AC
- Designated current: 125A

#### Masking frame and door

- Ridged masking frame
- Manufactured in quality mild steel of 1mm thick, cold reduced
- Pre-treated prior to electrostatic powder coating in RAL 7035 (light grey)
- Transparent or plain door

#### Protection plate

- Made from sheet steel 1mm, double folded corner

#### Base

- Ridged base (mono-block)
- Manufactured in sendzimir zinc plated steel of 1mm thick (FOR 144F)
- Sidewalls foreseen with position lugs (FOR 144F)
- Pre-treated prior to electrostatic powder coating in RAL 7035, light grey (FOR 144S)
- Knock-outs in the upper, lower and the bottom side of the base
- Fixing points for the fixation of cables with cable ties

#### Mounting frame

- Ridged and removable mounting frame
- Adjustable in depth ( $\pm 20$ mm) (FOR 144F)
- Adjustable left or right ( $\pm 10$ mm) (FOR 144F)
- Distance between two DIN-rails: 150mm

#### Door

- Transparent or plain door, security lock included

#### Earth bar (L = 380mm)

- Copper bar, 12 x 5mm, 18 x M5 threaded holes + connectors and screws

#### Applications



As a surface or flush mounted distribution board in:

- restaurants and hotels
- workshops
- hospitals
- shopping centers
- offices

#### Marking



#### Advantages

- Suitable for DIN-rail mounting devices up to 70mm as MCBs, RCDs, relays, ...
- Door, transparent or plain easy to install (optional)
- Generous wiring room
- Easy to install
- Earth terminal can be installed on the upper and the lower side of the base
- Removable mounting frame
- Easy removable protection plates
- Electrostatic powder coating RAL 7035
- Flush mounting depth base 105mm
- Can be equipped with wiring trunks (W x H): 15 x 40mm, 25 x 40mm, 40 x 40mm, 60 x 40mm

#### Components

##### The enclosure packaging includes:

- Base
- Mounting frame
- Earth terminal
- Protection plate
- Masking frame
- User instructions

##### The door packaging includes:

- Plain or transparent door
- Security lock
- Hinges
- Earth continuity set
- User instructions



A

B

C

D

E

F

G

X



**Fix-o-Rail 144-F - Flush mounting enclosures without door<sup>(1)</sup>**

Included ref. 617965 = an earth terminal: copper bar 12x5mm, 18 threaded holes M 5, connectors and screws

	Dimensions HxWxD (mm)	Number of modules	Number of rows	Power dissipation (W)		Ref. No.	Pack.
				Without door	With door		
	650x740x140 <sup>(1)</sup> 560x610x105 <sup>(2)</sup>	72	3	140	83	<b>617934</b>	1
	800x740x140 <sup>(1)</sup> 710x610x105 <sup>(2)</sup>	96	4	152	95	<b>617935</b>	1
	950x740x140 <sup>(1)</sup> 860x610x105 <sup>(2)</sup>	120	5	164	110	<b>617936</b>	1
	1100x740x140 <sup>(1)</sup> 1010x610x105 <sup>(2)</sup>	144	6	176	116	<b>617937</b>	1
 Equipped with function for Record Plus 160A D-frame	1100x740x140 <sup>(1)</sup> 1010x610x105 <sup>(2)</sup>	120	5	176	116	<b>617938</b>	1

Fix-o-Rail 144

A

B

C

D



E

**F**

G

X

**Transparent and plain doors**

	For enclosure	Number of modules	Number of rows	Transparent door	Plain door	Pack.
				Ref. No.	Ref. No.	
 	617934	72	3	<b>617939</b>	<b>617943</b>	1
	617935	96	4	<b>617940</b>	<b>617944</b>	1
	617936	120	5	<b>617941</b>	<b>617945</b>	1
	617937	144	6	<b>617942</b>	<b>617946</b>	1
	617938	120	5	<b>617942</b>	<b>617946</b>	1

(1) External dimensions  
(2) Internal dimensions



**Fix-o-Rail 144-S - Surface mounting enclosures without door**

Included ref. 617965 = an earth terminal: copper bar 12x5mm, 18 threaded holes M 5, connectors and screws

Enclosures

A

B

C

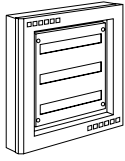
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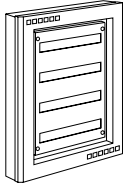
**F**

G

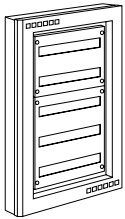
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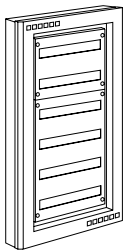
Dimensions HxWxD (mm)	Number of modules	Number of rows	Power dissipation (W)		Ref. No.	Pack.
			Without door	With door		
650x740x140	72	3	160	88	<b>617966</b>	1



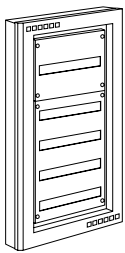
800x740x140	96	4	175	100	<b>617967</b>	1
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950x740x140	120	5	187	115	<b>617968</b>	1
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1100x740x140	144	6	195	125	<b>617969</b>	1
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Equipped with function for Record Plus 160A D-frame

1100x740x140	120	5	195	125	<b>617970</b>	1
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**Transparent and plain doors**



For enclosure	Number of modules	Number of rows	Transparent door	Plain door	Pack.
			Ref. No.	Ref. No.	
617966	72	3	<b>617939</b>	<b>617943</b>	1
617967	96	4	<b>617940</b>	<b>617944</b>	1
617968	120	5	<b>617941</b>	<b>617945</b>	1
617969	144	6	<b>617942</b>	<b>617946</b>	1
617970	120	5	<b>617942</b>	<b>617946</b>	1





**Accessories**



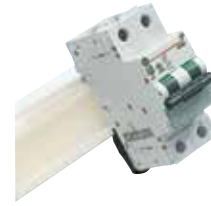
**4-pole terminal 160A**  
**617992** 5  
 160 A  
 with cover  
 4x(1x10 to 50mm<sup>2</sup> incoming  
 + 3x6 to 35mm<sup>2</sup>  
 + 8x2.5 to 16mm<sup>2</sup> outgoing)  
 Cu section 12x10mm

**Function for Record Plus 125A**  
**D-frame**  
 Fix-o-Rail 144 F/S **617018** 1  
 HxW: 326x552mm



**4-pole terminal 160A**  
**610020** 1  
 160A  
 connection range 4x(10x10mm<sup>2</sup>)  
 Cu section 12x5mm

**Depth adapter & support**  
**617947** 1  
 PVC profile: lenght 355mm  
 used with the function 617964



**Protective shroud**  
**610021** 1  
 For 160A terminal (ref. 610020)

**Security lock**  
**617948** 1  
 With two keys



**Earth terminal kit**  
**617965** 1  
 Cu bar 12x5, 18 threaded holes M5,  
 L = 380mm, with connectors and screws  
 Can be installed in the upper and  
 lower side of the base

**Label for circuit indication**  
**610233** 10  
 For enclosure width 550mm



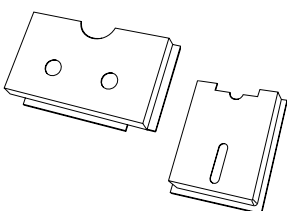
**Cover strip**  
**828056** 1  
 For cut out of 45mm, length 1m

**Support for wiring-trunking**  
**617949** 1



**Blank plate**  
**610142** 4  
**610484** 500  
 Length: 72mm  
 Cut-out width: 45mm  
 Can be cut into 9mm lengths  
 RAL 7035

**Wiring supports**  
**828145** 1  
 Cable-tray support (20 pieces)  
**828146** 1  
 Cable-tray (10 pieces)



**Document pocket**  
**811516** 1  
 DIN A4 - W x H = 325 x 180mm  
**832000** 1  
 DIN A5 - W x H = 155 x 225mm



**Fix-o-Rail 144**

A

B

C

D

E

**F**

G

X



Type B MCB Distribution Board

Modular 200

IP30 / IP31



Enclosures

A

Applications



Distribution Board for:  
- commercial buildings  
- hotels  
- hospitals  
- small factories

B

C

Marking



D

Standards

BSEN 61439-3  
BS5486

E

F

G

X

Performance


<b>Busbar rating</b>	(A) 200
<b>Rated short circuit strength (Icw)</b>	(Icw) 16kA - 0,1s
<b>Rated conditional short circuit current</b>	(Icc) 16kA (415V)
<b>Rated voltage</b>	(V) 415
<b>E+N out terminal capacity</b>	(mm <sup>2</sup> ) 25
<b>E+N incoming cable capacity</b>	(mm <sup>2</sup> ) 70
<b>No of TP ways</b>	4, 6, 8, 12, 18, 24
<b>Ingress protection</b>	IP30 IP31 (with additional roof)
<b>Enclosure colour</b>	Light grey (RAL7035)

Features

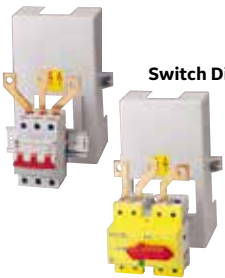

- Durable structured powder coated finish
- Matching light grey throughout the range
- All incomers benefit from positive contact indication
- Modular extension boxes to install modular control devices
- Pan assembly can be easily removed to ease installation
- One piece (no welds or rivets) phase busbar - NO hot spots!
- Ample space behind pan assembly aids wiring installation
- Split terminal bars to reduce wiring installation time
- Neutral disconnect as standard to aid speedy testing
- Doors can be removed to ease installation
- Sturdy folded sheet steel construction
- Accepts 6kA, 10kA and 25kA MCB's
- Generous wiring room even when using 1 module RCBO



**Type B MCB Distribution Board**

	No of TP Ways	Dimension code	Busbar Rating	Art. No.	Ref. No.
 <p><b>Boards</b></p>	4	A	200A	MOD2DB40	<b>619100</b>
	6	B	200A	MOD2DB60	<b>619101</b>
	8	C	200A	MOD2DB80	<b>619102</b>
	12	D	200A	MOD2DB120	<b>619103</b>
	18	E	200A	MOD2DB180	<b>619104</b>
	24	F	200A	MOD2DB240	<b>619122</b>
<p><b>Pan assembly</b></p>	4	-	200A	MOD2PA40	<b>619177</b>
	6	-	200A	MOD2PA60	<b>619178</b>
	8	-	200A	MOD2PA80	<b>619179</b>
	12	-	200A	MOD2PA120	<b>619180</b>
	18	-	200A	MOD2PA180	<b>619181</b>
	24	-	200A	MOD2PA240	<b>619192</b>

**Integral Incomer Kits**

	Rating	Description	Poles	Terminal Capacity	Art. No.	Ref. No.
 <p><b>Switch Disconnectors</b></p>	100A	Switch disconnecter	3	50mm <sup>2</sup>	MOD2ISO3	<b>619111</b>
	125A	Switch disconnecter	3	50mm <sup>2</sup>	MOD2DIL125	<b>619114</b>
	125A	Switch disconnecter	4	50mm <sup>2</sup>	MOD2DIL125/	<b>619124</b>
 <p><b>RCD Main Switch</b></p>	100A	30mA RCD	4	50mm <sup>2</sup>	MOD2RCDA	<b>619119</b>
	100A	100mA RCD	4	50mm <sup>2</sup>	MOD2RCDB	<b>619112</b>
	100A	300mA RCD	4	50mm <sup>2</sup>	MOD2RCDC	<b>619113</b>
	100A	100mA time delayed RCD	4	50mm <sup>2</sup>	MOD2RCDBTD	<b>619120</b>
 <p><b>MCB Main Switch</b></p>	63A	MCB main switch	3	35mm <sup>2</sup>	MOD2MCB63	<b>619605</b>
	100A	MCB main switch	3	70mm <sup>2</sup>	MOD2MCB100	<b>619606</b>
 <p><b>Direct Connection Kit</b></p>	200A	Direct connection kit	3	95mm <sup>2</sup>	MOD2DC	<b>619115</b>
 <p><b>Single Phase Kit</b></p>	100A	Single phase conversion kit	1P+N	50mm <sup>2</sup>	MOD2SPK1	<b>618300</b>

Modular 200 Type B

A

B

C

D

E

**F**

G

X



**Add-on Incomer Extension Kits**



Rating	Description	Poles	Terminal Capacity		Dimension code	Art. No.	Ref. No.
			Standard palm	Narrow palm			
200A	Switch disconnector	4	70mm <sup>2</sup>	150mm <sup>2</sup>	G	MOD2DIL200	<b>619110</b>
200A	MCCB non auto	3	70mm <sup>2</sup>	150mm <sup>2</sup>	H	MOD2MC200NA	<b>619107</b>
200A	TP automatic MCCB	3	70mm <sup>2</sup>	150mm <sup>2</sup>	H	MOD2MC200A	<b>619109</b>
200A	TP MCCB with RCD	4	70mm <sup>2</sup>	150mm <sup>2</sup>	H	MOD2MCRCD	<b>619108</b>

For increased terminal capacity narrow palm lugs must be used in conjunction with MOD2SB1.

Enclosures

**Add-on Incomer Extension Kits**



Dimension code	Description	Art. No.	Ref. No.
G	18 module modular devices	MOD218D	<b>619105</b>
G	Modular spreader box	MOD2SB1	<b>619106</b>
-	Heavy duty gland plate 2mm thick	MOD2HDGP	<b>619116</b>

A

B

C

D

E

**F**

G

X



**Accessories Type B MCB Distribution Board**

	<p><b>Busbar shroud</b></p> <table border="1"> <tr> <td>619018</td> <td>10</td> </tr> </table> <p>3 module busbar shroud for unused ways preformed in 1 module widths.</p>	619018	10	<p><b>Security</b></p> <table border="1"> <tr> <td>610063</td> <td>1</td> </tr> </table> <p>Ronis security door lock supplied with two keys</p> 	610063	1		
619018	10							
610063	1							
	<p><b>Blank plate</b></p> <table border="1"> <tr> <td>610142</td> <td>4</td> </tr> <tr> <td>610484</td> <td>500</td> </tr> </table> <p>length: 72 mm cut out width : 45 mm can be cut into 9 mm length RAL 7035</p>	610142	4	610484	500	<p><b>Safety</b></p> <table border="1"> <tr> <td>624929</td> <td>2</td> </tr> </table> <p>MCB padlocking bracket (padlocks not supplied)</p> 	624929	2
610142	4							
610484	500							
624929	2							
	<p><b>Clean earth facility</b></p> <table border="1"> <tr> <td>619118</td> <td>1</td> </tr> </table> <p>can be fitted for increased flexibility</p>	619118	1					
619118	1							

Modular 200 Type B

A

B

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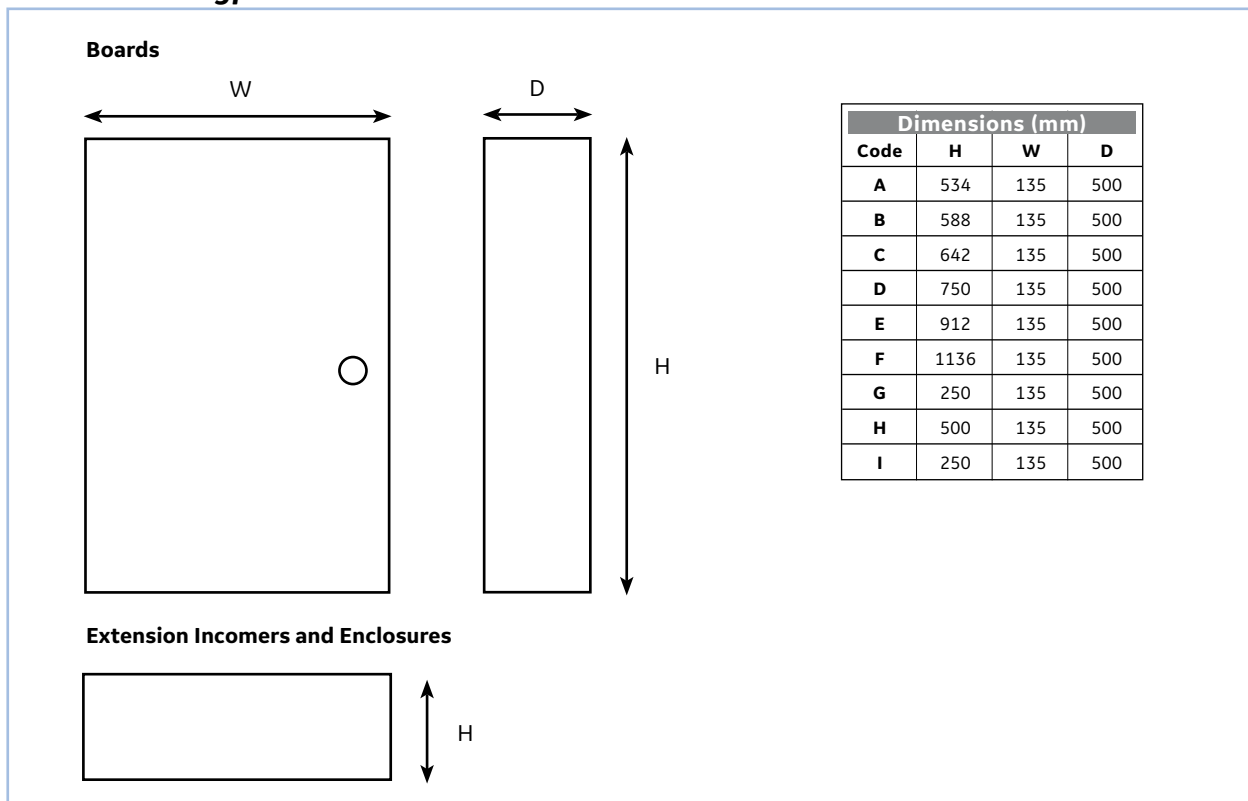
E

**F**

G

X

**Dimensional drawing  
Modular 200 Type B**





Enclosures



Applications



Application as junction box in:
- residential application
- commercial buildings
- automation and control wiring

Approvals / Marking



Standards

EN/IEC 60670-22

Features

Flex-o-Box Junior

Technical data

- Suitable for surface mounting
• 2.5mm² - 500V
• IP65 protection degree
• IK07
• Colour: RAL 7035
• Material: resists the 650°C incandescent wire test
• Halogen-free(1)
• Operating temperature: -5°C to +60°C
• Total insulation: □

Eight flexible entries

- 7 x Ø 20 in the side wall
• 1 x Ø 20 in the back
• Suitable for cable max. Ø 13
• Suitable for tubes Ø 16 and Ø 20

Flex-o-Box JB6

Technical data

- Suitable for surface mounting
• 6mm² - 500V
• IP65 protection degree
• IK07
• Colour: RAL 7035
• Material: resists the 650°C incandescent wire test
• Halogen-free(1)
• Operating temperature: -5°C to +60°C
• Total insulation: □

Nine flexible entries

- 7 x M20 in the side wall
• 2 x Ø 20mm max. entries in the back of the base
• Suitable for cable max. Ø 13
• Suitable for tubes Ø 16 and Ø 20
• Suitable for cable seals M20 (10mm min. thread length) , max. Torque 2.5 Nm. Cable diam. up-to 8mm.



(1) Halogens are not intentionally added and are not expected to be present.

A

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X



**Flex-o-Box**

		Description	Ref. No.	Pack
	<b>Junior</b>	Junction box 2.5mm <sup>2</sup>	<b>600656</b>	10/100
		Junction box 2.5mm <sup>2</sup> (40 pieces in a red polybox basket)	<b>600311</b>	1
	<b>JB<sup>6</sup></b>	Junction box 6mm <sup>2</sup>	<b>600651</b>	10/100
		Junction box 6mm <sup>2</sup> (24 pieces in a grey polybox basket)	<b>600310</b>	1

**Accessories**

		for Junior and JB <sup>6</sup>	only for JB <sup>6</sup>	
	<b>Terminal block</b>	<b>600950</b> 30	<b>851652</b> 50	
	6mm <sup>2</sup> - 500V - pin-type			
	5-terminal blocks Possible connections per terminal: 6x1.5mm <sup>2</sup> 2x6mm <sup>2</sup> 4x2.5mm <sup>2</sup> 2x10mm <sup>2</sup> 3x4mm <sup>2</sup> grey			
	<b>Terminal strip</b>	<b>600650</b> 20	<b>851660</b> 50	
	6mm <sup>2</sup> - 500V - hole-type			
	5-terminal strips Possible connections per terminal: 6x1.5mm <sup>2</sup> 3x4mm <sup>2</sup> 4x2.5mm <sup>2</sup> 2x6mm <sup>2</sup> grey			
	<b>Screws</b>	<b>600642</b> 40	<b>851674</b> 100	
	For cover fastening			
	Stainless steel			
			<b>IP68</b> - RAL 7035	
			<b>IP54</b> - RAL 7035	
			<b>IP54</b> - RAL7035	

Flex-o-Box

A

B

C

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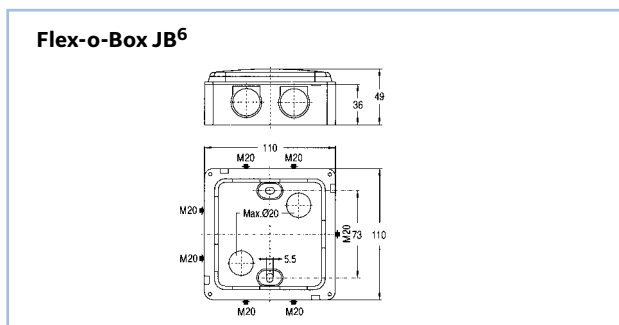
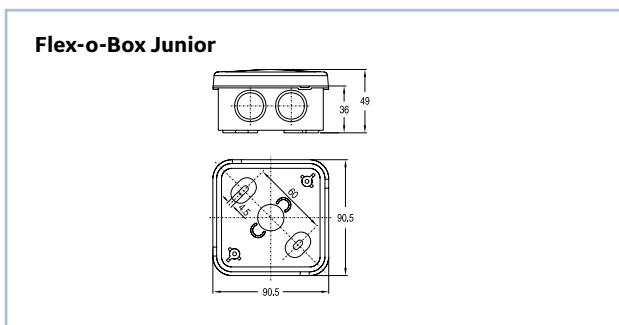
E

**F**

G

X

**Dimensional drawings**





Series 55

IP66

Enclosures



Applications



Application as junction and terminal box in:

- residential application
- commercial buildings
- automation and control wiring
- On-site control box
- As an empty box
- As a junction box (10/16/25mm<sup>2</sup>)
- Coupled

Approval / Marking



Standard

EN/IEC 60670-22

Dimensions

Three sizes - three types  
 55100 - 125 x 125 x 75mm  
 55200 - 175 x 175 x 95mm  
 55300 - 225 x 175 x 95mm

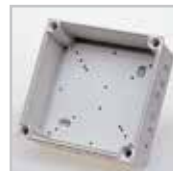
Features

- Material: Cover in ABS, base in high impact polystyrene
- Total insulation: □

Benefits



The cable entries are selective knockouts placed as close as possible to the wall.



Oval openings in the base allow levelling. Four fixing holes outside the gasket and two fixing holes inside the box.



The raised bottom avoids obstruction while cabling and bending of the cables.



Raised supports for the placement of the mounting plate.



The screws are thermoplastic, captive, full turn, with a big pitch and placed outside the gasket area.

All the boxes are sealable.



A

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C

D

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X





**Series 55100 - 10 mm<sup>2</sup>**

☐ **IP66 - IK07**

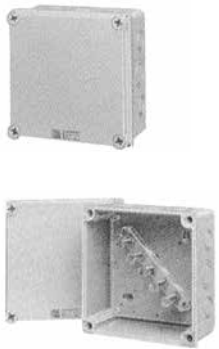
Cover	Entries	Characteristics	Ref. No.	Pack.
grey	5 x PG 16/21	Empty. Can be equipped with terminal blocks 600516	<b>600514</b>	16
grey	5 x PG 16/21	Equipped with terminal blocks 600516: 5 clamps with maximum capacity: 5 x 4 mm <sup>2</sup> / 4 x 6 mm <sup>2</sup> / 3 x 10 mm <sup>2</sup>	<b>600515</b>	16



**Series 55200 - 16 mm<sup>2</sup>**

☐ **IP66 - IK07**

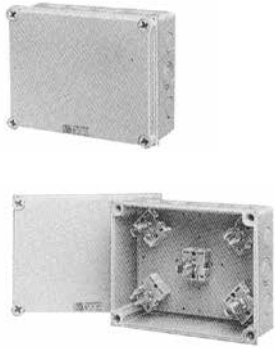
Cover	Entries	Characteristics	Ref. No.	Pack.
grey	6 x PG 16/21 5 x PG 21/29	Empty. Can be equipped with terminal blocks 600525 600526 (x5) 600544 (x5) 600545 (x5) 600516	<b>600517</b>	9
grey	6 x PG 16/21 5 x PG 21/29	Equipped with terminal blocks 600525: 5 clamps with maximum capacity: 5 x 6 mm <sup>2</sup> / 4 x 10 mm <sup>2</sup> / 3 x 16 mm <sup>2</sup>	<b>600524</b>	9



**Series 55300 - 25 mm<sup>2</sup>**

☐ **IP66 - IK07**

Cover	Entries	Characteristics	Ref. No.	Pack.
grey	8 x PG 21 6 x PG 21/29	Empty. Can be equipped with terminal blocks 600544 (x5) 600545 (x5) 600525 600526 (x5)	<b>600532</b>	1
grey	8 x PG 21 6 x PG 21/29	Equipped with terminal blocks 600544 (x5): 5 clamps/nuts with maximum capacity: 4 x 16 mm <sup>2</sup> / 3 x 25 mm <sup>2</sup> / 2 x 35 mm <sup>2</sup>	<b>600543</b>	9



Series 55

A

B

C

D

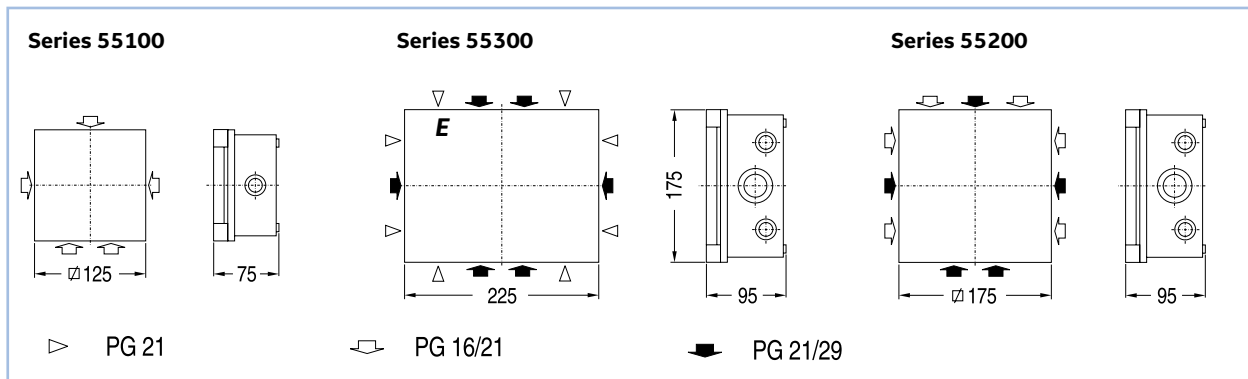
E

**F**

G

X

**Dimensional drawings**





### Accessories Series 55

Enclosures

A

B

C

D

E

F

G

X



#### Terminal blocks 500V 10mm<sup>2</sup>

**600516** 6

Set terminal blocks with two fixation screws. With five clamps suitable for Al or Cu connection.

Maximum cable section per clamp:

5x4mm<sup>2</sup> / 5x4mm<sup>2</sup> / 5x4mm<sup>2</sup>.

Can be fitted in types 55100 and 55200.

#### Couplings

**600509** 1

Set of two pieces

PG21

It is possible to combine types

55200 and 55300



#### Terminal blocks 500V 16mm<sup>2</sup>

**600525** 6

With five clamps, suitable for Al or Cu connection.

Maximum cable section per clamp:

5x6mm<sup>2</sup> / 4x10mm<sup>2</sup> / 3x16mm<sup>2</sup>.

Can be fitted in types 55200 and 55300.

#### Compression glands

**600504** 25

PG21 with nut in glass fibre reinforced polyamide. Grey.

**600505** 25

PG29 with nut in glass fibre reinforced polyamide. Grey.



#### Terminal blocks 500V 16mm<sup>2</sup>

**600526** 24

With one clamp/nut (with nut), suitable for Al or Cu connection.

Maximum cable section per clamp:

5x6mm<sup>2</sup> / 4x10mm<sup>2</sup> / 3x16mm<sup>2</sup>.

Can be fitted in types 55200 and 55300.

#### Compression glands

**600501** 25

PG21 polyamide with nut in glass fibre reinforced polyamide. Brown.

**600502** 25

PG29 polyamide with nut in glass fibre reinforced polyamide. Brown.



#### Terminal blocks 500V 25mm<sup>2</sup>

**600544** 24

With one clamp/nut (with nut), suitable for Al or Cu connection.

Maximum cable section per clamp:

4x16mm<sup>2</sup> / 3x25mm<sup>2</sup> / 2x35mm<sup>2</sup>.

Can be fitted in types 55200 and 55300.

#### Locknuts

**600506** 100

Nut in glass fibre reinforced polyamide to connect compression glands PG21. Grey.

**600507** 50

Nut in glass fibre reinforced polyamide to connect compression glands PG29. Grey.



#### Terminal blocks 500V 25mm<sup>2</sup>

**600545** 24

With one clamp/nut (double nut), suitable for Al or Cu connection.

Maximum cable section per clamp:

4x16mm<sup>2</sup> / 3x25mm<sup>2</sup> / 2x35mm<sup>2</sup>.

Can be fitted in types 55200 and 55300.

#### Universal entries (grey)

**610130** 25

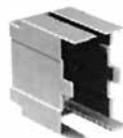
Cable max. 18mm, drill 23mm, PG16

**610132** 25

Cable max. 24mm, drill 29mm, PG21

**610133** 25

Cable max. 32mm, drill 38mm, PG29.



#### Insulated cap

**890838** 48

Suitable for terminal blocks

600526

600544

600545



**Accessories Series 55 (continued)**

	<p><b>DIN-rails</b> Set DIN-rail with two fixation screws</p> <p><b>600521</b> 1</p> <p>Length = 144mm, for type 55200 and short side of type 55300</p>	<p><b>Coverplate</b> Set of 1 coverplate (no need for fixation screws)</p> <p><b>600519</b> 1</p> <p>8 modules for type 55200</p>	
	<p><b>600537</b> 1</p> <p>Length = 192mm, for type 55300</p>	<p><b>600535</b> 1</p> <p>8 modules for type 55300, short side</p>	
	<p><b>600522</b> 1</p> <p>for type 55200 and short side of type 55300</p>	<p><b>600520</b> 1</p> <p>Al-plate for type 55200</p>	
	<p><b>600538</b> 1</p> <p>For type 55300</p>	<p><b>600536</b> 1</p> <p>Al-plate for type 55300</p>	

**Type 55200 combinations**

	HxWxD (mm)	IP	Ref. No.	Pack
	8 modules below hinged cover for installing modular devices (DIN-rail mounted)	IP55	<b>600531</b>	1

Series 55

A

B

C

D

E

**F**

G

X



**Fix-o-Rail covers**

**IP30**

Enclosures



**Applications**



- As an empty box
- As a junction box (10/16/25mm<sup>2</sup>)
- Coupled

**Features**

- Protection degree: IP30, IK07
- Made from high resistance ABS
- Flame resistance: self extinguishing material, resist the 650°C
- Colour: grey RAL7035 and white RAL9003
- Installation temperature: -15°C up to +60°C

**Marking**



**Standard**

EN/IEC 60670-24



A

B

C

D

E

**F**

G

X



**Fix-o-Rail covers - Without door**



HxWxD (mm)	Color	No. of modules	No. of rows	Ref. No.	Pack
139x51x61	Grey RAL 7035	2	1	<b>610090</b>	50
139x88x61	Grey RAL 7035	4	1	<b>610091</b>	60
140x165x72	Grey RAL 7035	6	1	<b>610354</b>	28
198x200x72	Grey RAL 7035	8	1	<b>610355</b>	18
139x51x61	White RAL 9003	2	1	<b>600579</b>	50
139x88x61	White RAL 9003	4	1	<b>600580</b>	60
140x165x72	White RAL 9003	6	1	<b>600581</b>	28
198x200x72	White RAL 9003	8	1	<b>600582</b>	18

Fix-o-Rail covers

*Dimensional drawing*

Dimensions (mm)			
Type	H	W	D
2 mod.	139	51	61
4 mod.	139	88	61
6 mod.	140	165	72
8 mod.	198	200	72

A

B

C

D

E

**F**

G

X



**Fix-o-Rail Junior**

**IP40**

Enclosures



**Applications**



For new buildings, replacing old units and adding add-on devices.

**Approval / Marking**



**Standards**

EN/IEC 61439-3  
EN/IEC 60670-24

**Features**

- High resistance material
- Modern design
- Compact construction
- High protection degree IP40
- Total insulation  $\square$
- Total security
- Transparent cover allowing visibility of devices
- For all modular equipment
- Available in 4 and 8 modules
- Colour: RAL 7035
- HIPS for the base
- Flame resistance: self extinguishing material, resist the 650°C glow-wire test
- Polycarbonate for the lid



A

B

C

D

E

**F**

G

X



### Fix-o-Rail Junior

	HxWxD (mm)	Equipment	No. of modules	Ref. No.	Pack
	170x90x100 Max. depth of the devices: 70mm Entries: 2xPG29, 4xPG21	Earth terminal: connection 5x16mm <sup>2</sup> Neutral terminal: connection 5x16mm <sup>2</sup>	4	<b>610344</b>	1/15
	170x175x120 Max. depth of the devices: 92.5mm Entries: 2xPG21, 4xPG16	Earth termin. connect. 6x10 + 2x16mm <sup>2</sup> Neutral termin.: connecti. 6x10 + 2x16mm <sup>2</sup>	8	<b>610345</b>	1/8

### Accessories

	<b>Earth/neutral terminals</b> <b>For Junior 4 modules</b>	<b>610141</b> 2	
	Connection range 5x16mm <sup>2</sup>		
	<b>Earth/neutral terminals</b> <b>For Junior 8 modules</b>	<b>610186</b> 4	
	<b>Earth</b> connection range 6x10mm <sup>2</sup> + 2x16mm <sup>2</sup>	<b>610187</b> 4	
	<b>Neutral</b> connection range 6x10mm <sup>2</sup> + 2x16mm <sup>2</sup>		
	<b>Grommets</b>	<b>610130</b> 25	length: 72mm cut out width: 45mm can be cut into 9mm length RAL 7035
	PG16	<b>610132</b> 25	
	PG21	<b>610133</b> 25	
	PG29		

Fix-o-Rail Junior

A

B

C

D

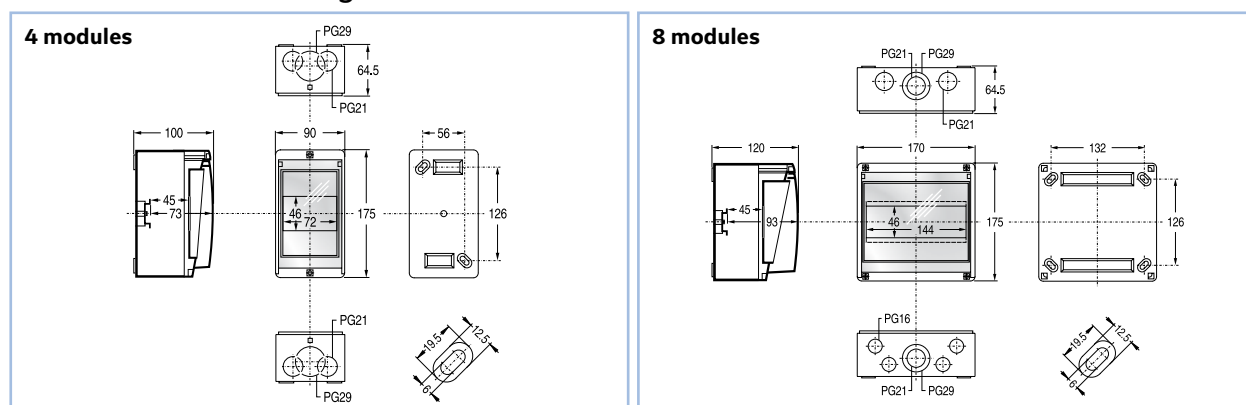
E

**F**

G

X

### Dimensional drawings





**Fix-o-Rail Classic**

**IP30 / IP40**

Enclosures



**Applications**



Fix-o-Rail Classic and the accessories are a homogeneous system for power distribution in new homes, adding add-on devices and replacing old units.

**Approval / Marking**



**Standards**

EN/IEC 61439-3  
NF C61-910

**Features**

- Protection degree: IP30 / IP40 with door (optional)
- Colour: RAL 9010
- 13, 26, 39 and 52 modules
- Total insulation (with backplate and door)
- Transparent or plain door
- Surface mounting
- Adjustable DIN-rail
- HIPS for the covers
- Polycarbonate for the transparent doors
- Flame resistance: self extinguishing material, resist the glowwire 650°C

**Components**

**The Fix-o-Rail Classic A packaging includes:**

- A mounting frame
- A protective cover
- A backplate
- A support with earth and neutral terminals
- A modular blank plate
- Four insulating caps
- Labels for circuit identification
- Installation guidelines

**The Fix-o-Rail Classic B packaging includes:**

- A mounting frame
- A protective cover
- Labels for circuit identification
- Installation guidelines

**Advantages**

- Two DIN-rail positions: 47 and 55mm
- Generous wiring room 30mm behind the mounting frame
- 13 modules on each row
- 125mm distance between two DIN-rails
- Self positioning protective cover, fixation with four captive quarter-turn screws
- Door can be opened to the left or the right and hinges over 180°
- The Classic range can be coupled

A

B

C

D

E

F

G

X







Accessories Fix-o-Rail Classic (continued)

Enclosures

A

B

C

D

E

F

G

X



**Shrouding for earth and neutral support**

Protects against direct contact with live parts

618531 1

**Cable entry**

For a perfect finish

Can be fixed on the top as well as on the bottom of the mounting frame

619084 1

Knockouts: 11xPG 13.5 + 1xPG 21/29



**Metal support for connection terminals**

618524 1

**Blank plate 4 modules**

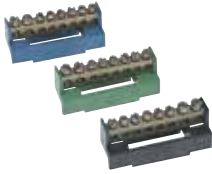
610382 4

Length: 72mm

Cut-out width: 45mm

Can be cut into 9mm length

RAL 9010



**Connection terminals**

610185 4

Phase terminal 6x10mm<sup>2</sup> + 2x16mm<sup>2</sup>

610186 4

Earth terminal 6x10mm<sup>2</sup> + 2x16mm<sup>2</sup>

610187 4

Neutral terminal 6x10mm<sup>2</sup> + 2x16mm<sup>2</sup>

**Coupling**

618528 2



**Sealing bracket**

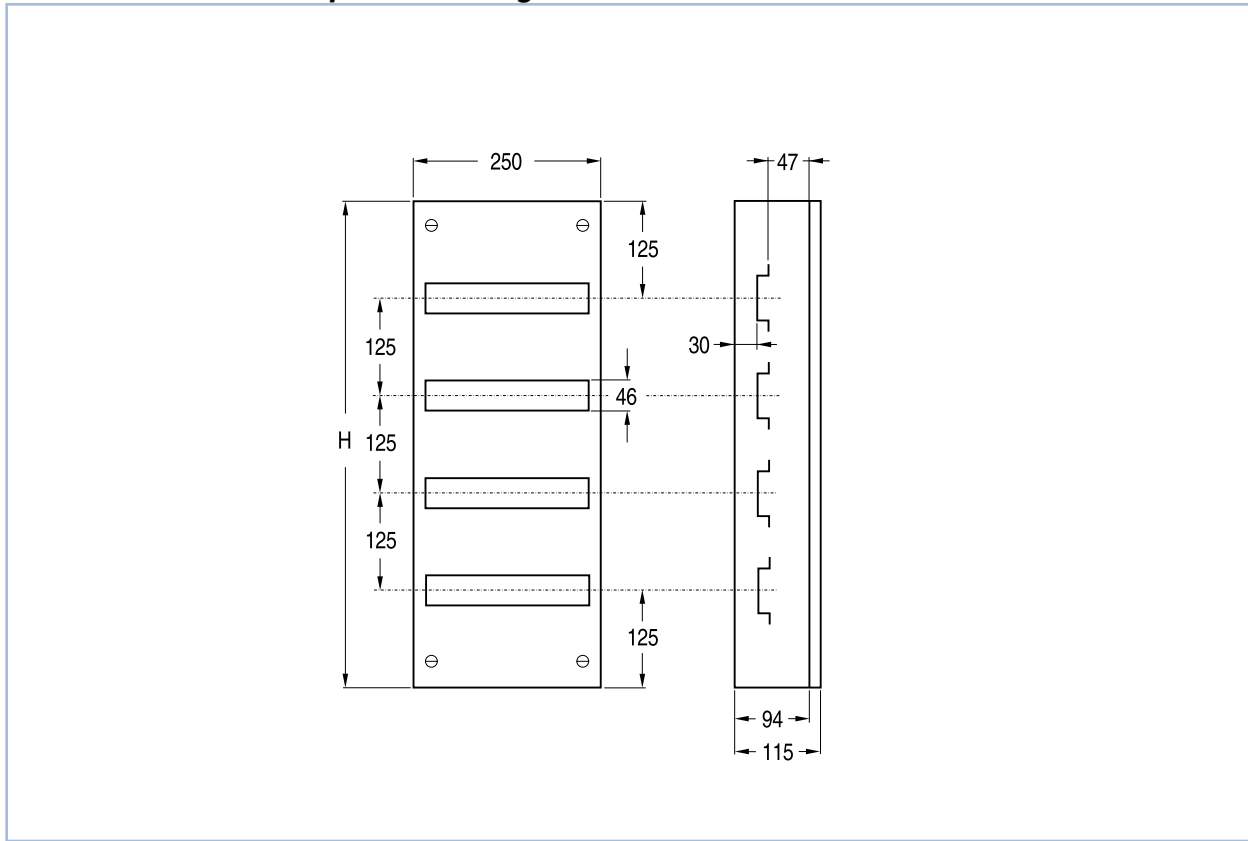
618527 2





Dimensional drawings

**Fix-o-Rail Classic - Surface mounting**



**Dimensions**

A

B

C

D

E

**F**

G

X



### Abaco S

IP40



Enclosures

### Applications



The Abaco surface enclosures are used for power distribution in house building and commercial buildings as offices, banks, etc.

### Features

- Protection degree IP40.
- Total insulation: class II ☐ .
- Four dimensions in two colours.
- Colours: grey RAL 7035 and white RAL 9010.
- Range from 8 modules up to 39 modules.
- Flame resistance: self extinguishing material, resists the 650°C.
- Operating temperature: -15°C to +60°C.
- Surface mounting with flat panels; easy mounting of cable entries.
- The DIN-rails can be taken off to make the equipment externally.
- The position of the mounting frame can be adjusted.

### Marking



### Standards

EN/IEC 60670-24

A

B

C

D

E

**F**

G

X



**Abaco S - Transparent door**



Colour	HxWxD (mm)	Modules 17.5mm	Number of rows	Ref. No.	Pack.
Grey: RAL 7035	230x200x110	8/10	1	<b>619375</b>	14
White: RAL 9010	230x200x110	8/10	1	<b>619376</b>	14
Grey: RAL 7035	300x200x110	12/14	1	<b>619369</b>	10
White: RAL 9010	300x200x110	12/14	1	<b>619372</b>	10
Grey: RAL 7035	315x400x110	24/26	2	<b>619370</b>	1
White: RAL 9010	315x400x110	24/26	2	<b>619373</b>	1
Grey: RAL 7035	315x525x110	36/39	3	<b>619371</b>	1
White: RAL 9010	315x525x110	36/39	3	<b>619374</b>	1

**Accessories**

Insulated support for earth and neutral	Blank plate	Security lock																																				
<table border="1"> <tr> <td><b>619319</b></td> <td>120</td> </tr> <tr> <td colspan="2">for enclosure 6/10 modules</td> </tr> <tr> <td colspan="2">connection range</td> </tr> <tr> <td colspan="2">2x16mm<sup>2</sup> + 8x10mm<sup>2</sup></td> </tr> <tr> <td><b>619320</b></td> <td>120</td> </tr> <tr> <td colspan="2">for enclosure 10/14 modules</td> </tr> <tr> <td colspan="2">connection range</td> </tr> <tr> <td colspan="2">2x16mm<sup>2</sup> + 12x10mm<sup>2</sup></td> </tr> <tr> <td><b>619321</b></td> <td>60</td> </tr> <tr> <td colspan="2">for enclosure 24/36 modules</td> </tr> <tr> <td colspan="2">connection range</td> </tr> <tr> <td colspan="2">2x16mm<sup>2</sup> + 12x10mm<sup>2</sup></td> </tr> </table>	<b>619319</b>	120	for enclosure 6/10 modules		connection range		2x16mm <sup>2</sup> + 8x10mm <sup>2</sup>		<b>619320</b>	120	for enclosure 10/14 modules		connection range		2x16mm <sup>2</sup> + 12x10mm <sup>2</sup>		<b>619321</b>	60	for enclosure 24/36 modules		connection range		2x16mm <sup>2</sup> + 12x10mm <sup>2</sup>		<table border="1"> <tr> <td><b>619323</b></td> <td>150</td> </tr> <tr> <td colspan="2">RAL7035, 5 modules</td> </tr> <tr> <td><b>619338</b></td> <td>150</td> </tr> <tr> <td colspan="2">RAL9010, 5 modules</td> </tr> </table>	<b>619323</b>	150	RAL7035, 5 modules		<b>619338</b>	150	RAL9010, 5 modules		<table border="1"> <tr> <td><b>619350</b></td> <td>1</td> </tr> <tr> <td colspan="2">24 and 36 modules</td> </tr> </table>	<b>619350</b>	1	24 and 36 modules	
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<b>619338</b>	150																																					
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<b>619350</b>	1																																					
24 and 36 modules																																						



Abaco S

A

B

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D

E

**F**

G

X

**Dimensional drawings**

Dimensions (mm)			
Type	A	B	C
1 row - 8/10 mod.	230	200	110
1 row - 12/14 mod.	300	200	110
2 rows - 24/26 mod.	315	400	110
3 rows - 36/39 mod.	315	525	110



## Surface mounting



### Fix-o-Rail 150

### IP40

Enclosures



- Total safety
- Complete
- Time saving
- Quality
- Design

### Applications



### Standards / Marking

EN 61439-3



*Halogens are not intentionally added and are not expected to be present.*

### Advantages

- Removable cable entry plate – to adjust to specific site requirements – with pre-defined break-out sections for easy on-site adjustments.
- Very rigid enclosure base, re-inforced by ribs – adapts to surface conditions
- Plenty wiring space at top and bottom of 150mm each.
- Cable stress relieve bar (optional) – for cable management.
- Strong frame for DIN-rail devices – can be equipped outside the enclosure – easy to position and fix by means of studs and 4 screws.
- Wiring space behind the DIN-rail makes installers life easy.
- Can be coupled to extend existing installations. Domotica or Media functionality can be added easily therefore.
- Aesthetic door design that allows left/right hinge adaptation to accommodate site conditions. Foreseen for optional key-lock.
- Wiring diagram holder on the back-side of the cover can be integrated optionally.

### Features

- Protection degree IP40-IK08 (IP30 without door).
- Total insulation: class II .
- Colour: white RAL 9010.
- 1 to 4 rows with 18 modules per row.
- Operating temperature: -15°C to +60°C.
- Flame resistance: complies with the 650°C glow-wire test
- Nominal current 80A (1 and 2 row), 100A (3 and 4 row)

### Components

Packaging includes

- Earth-rail (screwless)<sup>(1)</sup>
- Cable entry-plate
- One blanking plate
- 7 insulating caps
- Circuit identification:
  - adhesive labels
  - adhesive pictograms
- Installation guide

*(1) Fix-o-Rail 150, 4-row includes 2 screwless earth-rails*



A

B

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X





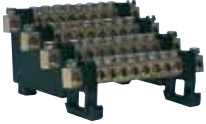

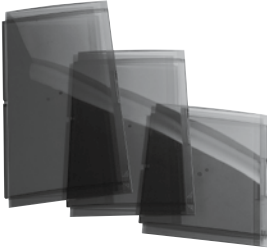


**Fix-o-Rail 150**

**Distribution board RAL9010**

	# of rows	# of modules	Dimensions HxWxD (mm)	In	Ref. No.	Pack.
 <p>Transparent door</p>	1	18	270x355x150	80A	<b>610636</b>	1
	2	36	450x355x150	80A	<b>610637</b>	1
	3	54	600x355x150	100A	<b>610638</b>	1
	4	72	750x355x150	100A	<b>610639</b>	1
 <p>Plain door</p>	1	18	270x355x150	80A	<b>610646</b>	1
	2	36	450x355x150	80A	<b>610647</b>	1
	3	54	600x355x150	100A	<b>610648</b>	1
	4	72	750x355x150	100A	<b>610649</b>	1
Clamping section screwless earth-rail 6x16mm <sup>2</sup> and 21x4mm <sup>2</sup>						

**Fix-o-Rail 150**

**Accessories**

	Description	Ref. No.	Pack.
	<b>Terminals</b>		
	63A - Connection range 4 x (10 x 16mm <sup>2</sup> ), Cu section 6.5 x 9mm	<b>610022</b>	18
	160A - Connection range 4 x (1 x 10 to 50mm <sup>2</sup> incoming + 3 x 6 to 35mm <sup>2</sup> + 8 x 2.5 to 16mm <sup>2</sup> outgoing), Cu section 12 x 10mm 20kA (10 ms) l <sub>cw</sub> : 6,2kA (1 s)	<b>617992</b>	1/5
	160A - Connection range 4 x (10 x 10mm <sup>2</sup> ), Cu section 12 x 5mm	<b>610020</b>	16
	<b>Replacement door transparent</b>		
	For 1-row distribution board	<b>610277</b>	1
	For 2-row distribution board	<b>610287</b>	1
	For 3-row distribution board	<b>610297</b>	1
	<b>Replacement door plain (RAL9010)</b>		
	For 1-row distribution board	<b>610654</b>	1
	For 2-row distribution board	<b>610655</b>	1
	For 3-row distribution board	<b>610656</b>	1
	For 4-row distribution board	<b>610657</b>	1

Fix-o-Rail 150

A

B

C

D

E

**F**

G

X





Fix-o-Rail 150

Accessories (continued)

Enclosures

A

B

C

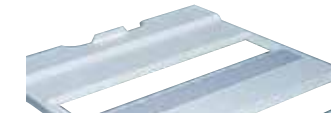
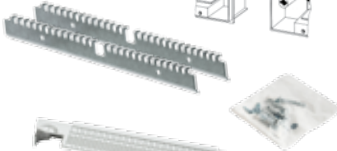
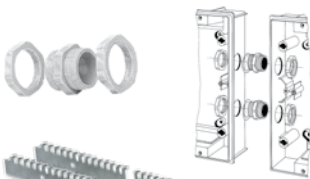
D

E

F

G

X



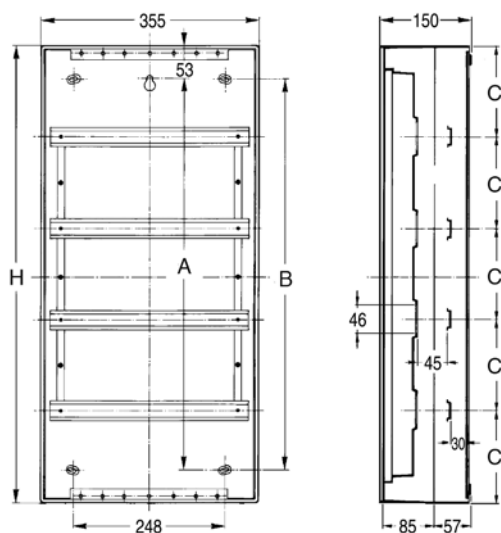
Description	Ref. No.	Pack.
<b>Protective shroud</b> For 160A terminal (ref. 610020)	610021	1
<b>Support with screwless earth-bar</b> Connection: 6x16mm <sup>2</sup> and 21x4mm <sup>2</sup> (Included with all distribution boards)	610396	1
<b>Support with earth or neutral terminals</b> Cable section: 14 x 16mm <sup>2</sup>	610386	4
Cable section: 18 x 16mm <sup>2</sup>	610385	4
<b>Support with terminal bars</b> Cable section: 2 (17 x 16mm <sup>2</sup> )	610532	4
<b>Support with terminal bars L1-L2-L3-N</b> Cable section: 4 (5 x 16mm <sup>2</sup> )	610387	4
<b>Coupling set (2 pcs)</b> Allows to couple two Fix-o-Rail 150 enclosures horizontally 1 set is needed to couple two enclosures.	600509	1
<b>Cable relief (2 pcs) with 4 fixation screws</b>	610630	1
<b>Set:</b> 4 quarter-turn screws for cover-plate, 7 isolation caps, 4 screws for cable entry-plate, 4 screws for screwless earth-rail	610629	1
<b>Cable-entry plate (2 pcs) with 4 fixation screws</b>	610645	1
<b>Lock</b> Security lock with 2 keys	610170	1
<b>Blanking plate</b> Length: 72mm, cut-out height: 45mm, breaking sections per 9mm	610382	4
<b>Labels and labelholders</b> Set of 50 pieces	610270	1
<b>Adhesive pictograms</b> For clear and permanent identification of circuits. Set of 50 pieces	610380	1
<b>Drawing pocket</b> To be positioned at the bottom or top backside of the cover-plate	610265	1





Dimensional drawing

**Fix-o-Rail 150**



Dimensions (mm)				
Type	H	A	B	C
1 row - 18 mod.	270	163	162	135
2 rows - 36 mod.	450	343	342	150
3 rows - 54 mod.	600	493	492	150
4 rows - 72 mod.	750	643	642	150

**Fix-o-Rail 150**

A

B

C

D

E

**F**

G

X





Fix-o-Rail 55

IP55

Enclosures



Applications



The Abaco surface enclosures are used for power distribution in house building and commercial buildings as offices, banks, etc.

Marking



Standards

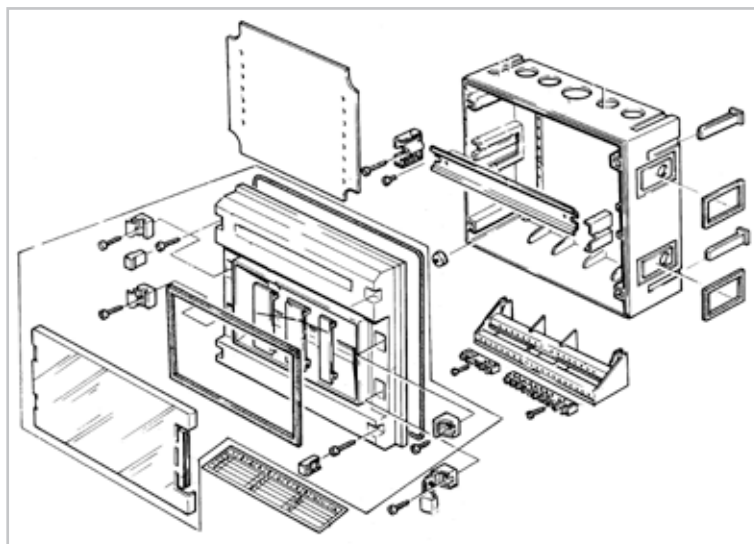
EN/IEC 60670-24

Features

- Total insulation
- Protection degree IP55-IK07
- Can be coupled
- Transparent door
- Adjustable DIN-rails, according the height of the DIN-equipment
- For equipment up to 92.5mm
- Padlocking option
- The transparent door can be opened to the left or the right (12, 24, 36 module versions)
- Base:
  - ABS for the 3 up to 8 modules
  - Polystyrene for the 12 up to 36 modules
- Flame resistance: self extinguishing material, resist the 650°C
- Polycarbonate for the transparent door
- Halogene free (Halogens are not intentionally added and are not expected to be present).

Components

- Rigid base and protection cover, colour RAL 7035
- Transparent door
- DIN-rails, the centre distance between two DIN-rail is 125mm
- Labeling facilities
- With earth bar for the 12, 24 and 36 modules



A

B

C

D

E







F

G

X



**Fix-o-Rail 55**

	HxWxD (mm)	Equipment	Number of modules	Number of rows	Ref. No.	Pack.
	175x83x106	Without earth bar	3	1	<b>600573</b>	12
	175x125x114	Without earth bar	5	1	<b>600574</b>	20
	175x215x114	Without earth bar	8	1	<b>600575</b>	12
	250x285x136	Earth bar, connection range: 2x16mm <sup>2</sup> and 6x10mm <sup>2</sup>	12	1	<b>610316</b>	1
	375x285x136	Earth bar, connection range: 2x16mm <sup>2</sup> and 8x16mm <sup>2</sup>	24	2	<b>610317</b>	1
	500x285x136	Earth bar, connection range: 2x16mm <sup>2</sup> and 12x16mm <sup>2</sup>	36	3	<b>610318</b>	1

Fix-o-Rail 55

A

B

C

D

E

**F**

G

X

**Accessories**

**Terminal**

Additional busbar for earth and neutral connections



**610314** 1

Cable section: 2x16mm<sup>2</sup> and 6x6mm<sup>2</sup>

**Locking device**

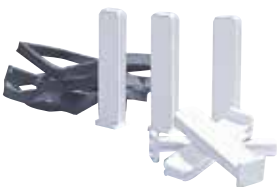
Allows the enclosure to be fitted with a padlocking device



**610313** 1

**Coupling set**

To couple two enclosures in a simple way



**610315** 1





**Aquaria**

**IP65**

Enclosures



**Applications**



Aquaria is the best choice for power distribution purposes in premises with a need for high protection degree eg. power plants, technical areas small laboratories, etc..

**Approval / Marking**



**Standards**

EN/IEC 60670-1  
EN/IEC 60670-24  
CEI 23-48, CEI 23-49

**Features**

- Total insulation
- Protection degree IP65 - IK08
- Colour: RAL 7035
- Transparent lid or hinged door (3 rows)
- For DIN-rail equipment up to 92.5mm
- DIN-rails adjustable up to 3 different levels
- Operating temperature: -5°C to +60°C
- Flame resistance: resist the 650°C
- Non UV stable
- Enclosures can not be coupled

**Power dissipation**

Enclosure	# mod.	Ref. No.	Maximal power dissipation (W)
1 row	5	<b>597956</b>	8
1 row	8	<b>597957</b>	11
1 row	12	<b>597958</b>	17
1 row	12	<b>597959</b>	20
2 rows	24	<b>597960</b>	30
3 rows	48	<b>597961</b>	45

A

B

C

D

E

**F**

G

X



**Aquaria - Waterproof enclosures surface mounting IP65**

	Colour	Dimensions mm (HxLxW)	Modules 17.5mm	# rows	Art. No.	ENCLOSURE		EARTH BAR	
						Ref. No.	Pack	Ref. No.	Pack
	Grey RAL 7035	120x160x90	3/5	1	AQA005PG	<b>597956</b>	1/40/840	<b>597962</b>	1/20/120
	Grey RAL 7035	200x160x90	4/8	1	AQA008PG	<b>597957</b>	1/26/546	<b>597963</b>	1/20/120
	Grey RAL 7035	225x200x110	6/12	1	AQA012PG	<b>597958</b>	1/14/294	<b>619320</b>	1/20/120
	Grey RAL 7035	250x250x145	6/12	1	AQA912PG	<b>597959</b>	1/1/152	<b>619320</b>	1/20/120
	Grey RAL 7035	375x250x145	24	2	AQA024PG	<b>597960</b>	1/1/108	<b>619320</b>	1/20/120
	Grey RAL 7035	550x350x145	48	3	AQA048PG	<b>597961</b>	1/1/44	<b>619321</b>	1/10/60

Aquaria

A

B

C

D

E

**F**

G

X

**Accessories - Earth bars<sup>(1)</sup>**

Connection	# earth bars	Ref. No.	Pack
2 x 16mm <sup>2</sup> + 5 x 10mm <sup>2</sup>	1	<b>597962</b>	1/20/120
2 x 16mm <sup>2</sup> + 8 x 10mm <sup>2</sup>	2	<b>597963</b>	1/20/120
2 x 16mm <sup>2</sup> + 12 x 10mm <sup>2</sup>	2	<b>619320</b>	1/20/120
2 x 16mm <sup>2</sup> + 12 x 10mm <sup>2</sup>	4	<b>619321</b>	1/10/60

(1) To be ordered separately



**Abaco F**

**IP40**

Enclosures



**Applications**



Abaco F enclosures find their place in the power distribution into the house building industry: new homes, apartments, offices, hotels. Due to the design of the masking frame and the door, the Abaco flush mounting enclosure offers significant aesthetic appeal, particularly in applications where appearance is important.

**Features**

- Flush mounting
- Total insulation
- Protection degree IP40
- Six dimensions in three colours
- Colours: grey RAL 7035, white RAL 9010 and metallised black
- Range from 2 modules up to 39 modules
- Transparent door made from polycarbonate
- High impact resistance material
- Removable mounting frame
- 20mm clearance behind the mounting frame

**Marking**



**Standards**

EN/IEC 60670-24

A

B

C

D

E

**F**

G

X



**Abaco F - Enclosure base with transparent door**

	Colour	HxWxD (mm)	Modules 17.5mm	Number of rows	Ref. No.	Pack.
	Grey	120x200x73	2/4	1	<b>619300</b>	12
	Metallised black	120x200x73	2/4	1	<b>619362</b>	12
	Grey	180x200x73	4/7	1	<b>619301</b>	24
	White	180x200x73	4/7	1	<b>619325</b>	24
	Metallised black	180x200x73	4/7	1	<b>619331</b>	24
	Grey	230x200x73	6/10	1	<b>619302</b>	14
	White	230x200x73	6/10	1	<b>619326</b>	14
	Metallised black	230x200x73	6/10	1	<b>619332</b>	14
	Grey	300x200x73	10/14	1	<b>619303</b>	12
	White	300x200x73	10/14	1	<b>619327</b>	12
	Metallised black	300x200x73	10/14	1	<b>619333</b>	12
	Grey	315x400x80	24/26	2	<b>619304</b>	1
	White	315x400x80	24/26	2	<b>619328</b>	1
	Metallised black	315x400x80	24/26	2	<b>619334</b>	1
	Grey	315x525x80	36/39	3	<b>619305</b>	1
	White	315x525x80	36/39	3	<b>619329</b>	1
	Metallised black	315x525x80	36/39	3	<b>619335</b>	1

**Accessories**

	<b>Coupling</b>					
	<b>619322</b>	10/100/600				
		2/4 and 10/14 modules				
	<b>Blank plate</b>					
	<b>619323</b>	150/450				
		Grey, RAL7035, 5 modules				
	<b>619338</b>	150/450				
		White, RAL9010, 5 modules				
	<b>619339</b>	1/450				
		Metallised black, 5 modules				
	<b>Security lock</b>					
	<b>619350</b>	1				
		24 and 36 modules				
	<b>Transparent lid</b>					
	<b>619340</b>	1				
		2/4 modules				
	<b>619341</b>	1				
		4/7 modules				
	<b>619342</b>	1				
		6/10 modules				
	<b>619343</b>	1				
		10/14 modules				
	<b>619344</b>	1				
		24/26 modules				
	<b>619345</b>	1				
		36/39 modules				
	<b>Insulated support for earth or neutral</b>					
<b>619337</b>	1/30/180					
	for enclosure 4/7 modules connection range 7x10mm <sup>2</sup>					
<b>619319</b>	1/20/120					
	for enclosure 6/10 modules connection range 2x16mm <sup>2</sup> + 8x10mm <sup>2</sup>					
<b>619320</b>	1/20/210					
	for enclosure 10/14 modules connection range 2x16mm <sup>2</sup> + 12x10mm <sup>2</sup>					
<b>619321</b>	1/10/60					
	for enclosure 24/36 modules connection range 2x16mm <sup>2</sup> + 12x10mm <sup>2</sup>					

Abaco F

A

B

C

D

E

**F**

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X



## Insulated enclosures - Flush mounting

### Fix-o-Rail 150-F4

IP40



-  Total safety
-  Complete
-  Time saving
-  Quality
-  Design

Enclosures

### Applications



The Fix-o-Rail 150-F4 is an electrical distribution board for the following applications:

- homes: new buildings, renovations and add-on devices
- commercial buildings: offices, shops, etc.

Due to the discreet design and colour of the masking frame and door, the Fix-o-Rail 150-F4 flush mounting enclosure offers significant aesthetic appeal, particularly in applications where appearance is important.

### Approval / Marking



### Standards

EN/IEC 61439-3  
EN/IEC 60670-24

### Features

- Protection degree: IP40-IP07
- Total insulation
- CEBEC- approval
- 1-2-3-4 rows / 14 modules per row
- For all flush mounting installations
- One enclosure for installation in brickwork and studed walls
- Transparent or plain door
- Universal for all modular equipment with a shoulder height of 47mm and a max. depth of 70mm
- Wiring space:
  - 20mm behind the mounting frame
  - 150mm between the DIN-rails
  - above and below the base
- Removable mounting frame / Removable entries
- Easy to install
- Base, cable entries and protective cover are made in high resistant material
- HIPS for the base and cover
- Flame resistance: self extinguishing material, resist the 850°C glow-wire test
- The door and the masking frame are in sheet steel, coated with a white epoxy powder (colour RAL 9010)
- In accordance with EN/IEC 61439-3 and EN/IEC 60670-24
- Sturdy enclosure and mounting frame
- Due to the discreet design of the masking frame and door, the Fix-o-Rail 150-F4 offers significant aesthetic appeal
- Colour RAL 9010
- Optional security lock

### Components

#### Fix-o-Rail 150-F4 enclosure includes:

- earth bar
- label holders
- neutral bar
- installation guidelines
- adhesive pictograms
- a blank plate
- labels for circuit identification
- protective plate on the base (against dust and plaster)

A

B

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D

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**Fix-o-Rail 150-F4 - Base and door included**

	HxWxD (mm)	Equipment	No. of modules	No. of rows	Ref. No.	Pack.
 <p><b>Transparent door</b></p>	350x375x108	Earth bar: connection 14x16mm <sup>2</sup> Neutral bar: connection 14x16mm <sup>2</sup>	In 50A	14	1	<b>610368</b> 1
	525x375x108	Earth bar: connection 14x16mm <sup>2</sup> Neutral bar: connection 14x16mm <sup>2</sup>	In 63A	28	2	<b>610369</b> 1
	675x375x108	Earth bar: connection 18x16mm <sup>2</sup> Neutral bar: connection 18x16mm <sup>2</sup>	In 80A	42	3	<b>610370</b> 1
	825x375x108	Earth bar: connection 18x16mm <sup>2</sup> Neutral bar: connection 18x16mm <sup>2</sup>	In 100A	56	4	<b>610371</b> 1
 <p><b>Plain door</b></p>	350x375x108	Earth bar: connection 14x16mm <sup>2</sup> Neutral bar: connection 14x16mm <sup>2</sup>	In 50A	14	1	<b>610372</b> 1
	525x375x108	Earth bar: connection 14x16mm <sup>2</sup> Neutral bar: connection 14x16mm <sup>2</sup>	In 63A	28	2	<b>610373</b> 1
	675x375x108	Earth bar: connection 18x16mm <sup>2</sup> Neutral bar: connection 18x16mm <sup>2</sup>	In 80A	42	3	<b>610374</b> 1
	825x375x108	Earth bar: connection 18x16mm <sup>2</sup> Neutral bar: connection 18x16mm <sup>2</sup>	In 100A	56	4	<b>610375</b> 1

**Accessories**

	<b>Half-inset frame (RAL 9010)</b>					
		<b>610376</b>	1			
	For 1 row enclosure					
		<b>610377</b>	1			
	For 2 rows enclosure					
		<b>610378</b>	1			
For 3 rows enclosure						
		<b>610379</b>	1			
For 4 rows enclosure						
	<b>Blank plate</b>					
		<b>610382</b>	500			
	Length = 72mm Cut-out width = 45mm Section of 9mm Colour RAL 9010					
	<b>Labels and label holders</b>					
		<b>610383</b>	1			
	Set of 50 pieces					
	<b>Adhesive pictograms</b>					
		<b>610380</b>	1			
	For clear and permanent identification of circuits Set of 50 pieces					
	<b>Grips</b>					
	For building into studded walls					
		<b>610381</b>	1			
	<b>Security lock</b>					
		<b>610384</b>	1			
	With two keys					
	<b>Support with earth or neutral terminals</b>					
		<b>610385</b>	4			
	Cable section: 18x16mm <sup>2</sup> Delivered with 3 and 4 rows enclosures					
		<b>610386</b>	4			
Cable section: 14x16mm <sup>2</sup> Delivered with 1 and 2 rows enclosures						
	<b>Support with terminals L1, L2, L3, N</b>					
		<b>610387</b>	4			
	Cable section: 4 (5x16mm <sup>2</sup> )					
	<b>Support with terminals</b>					
		<b>610532</b>	4			
	Cable section: 2 (17x16mm <sup>2</sup> )					

Fix-o-Rail 150-F4

A

B

C

D

E

**F**

G

X



Dimensional drawings

Fix-o-Rail 150-F4 - Flush mounting

Enclosures

A

B

C

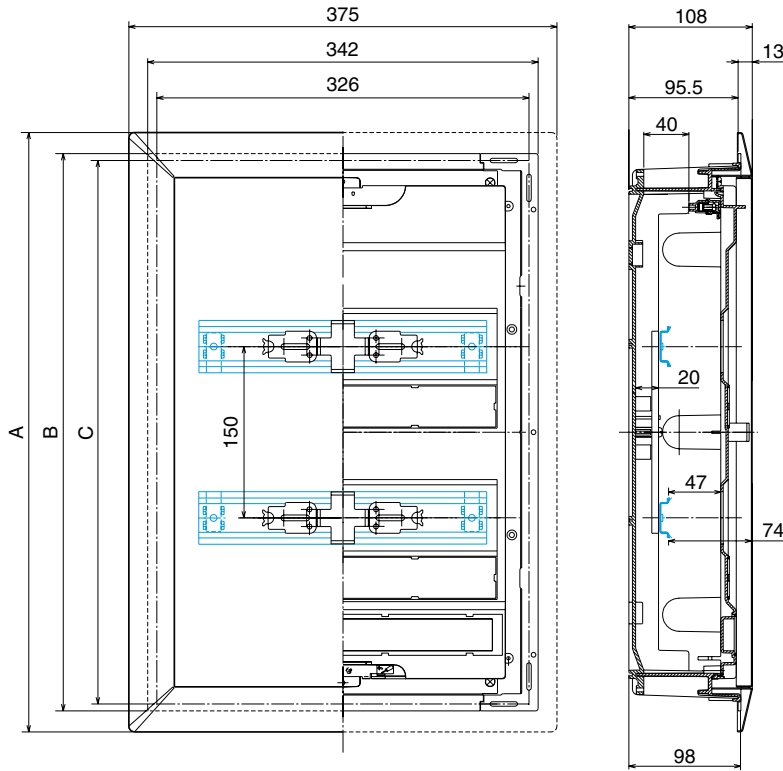
D

E

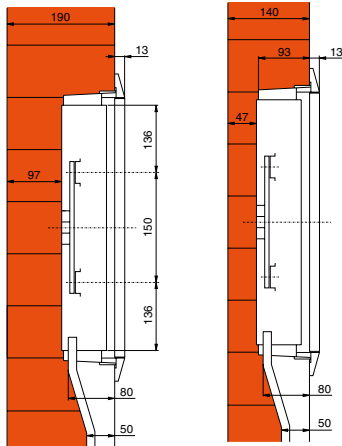
F

G

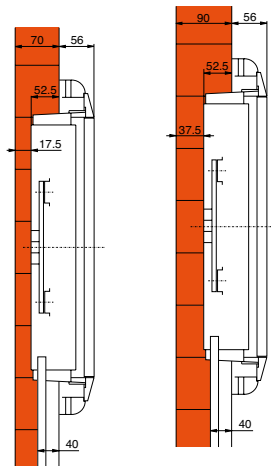
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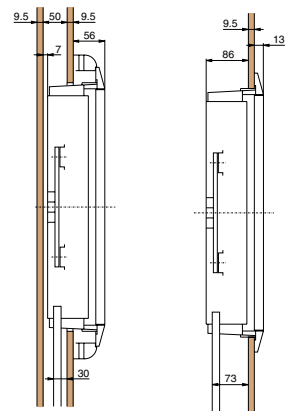
Dimensions (mm)			
Type	A	B	C
1 row - 14 mod.	350	313	301
2 rows - 28 mod.	525	488	476
3 rows - 42 mod.	675	638	626
4 rows - 56 mod.	825	788	776



Flush mounting into brickwork



Flush mounting and semi flush mounting into brickwork



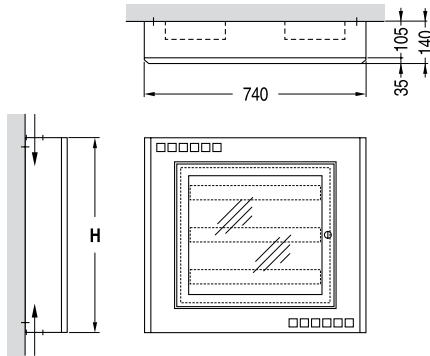
Semi flush mounting into studed walls



Dimensional drawings

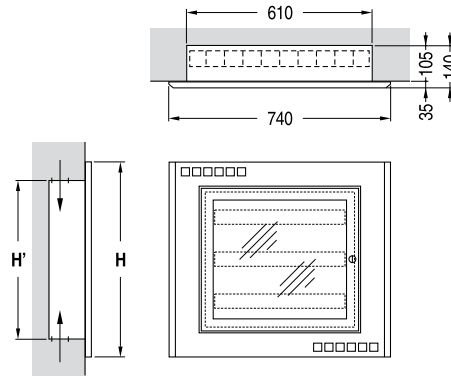
**Fix-o-Rail 144**

**Fix-o-Rail 144 S**  
Surface mounting

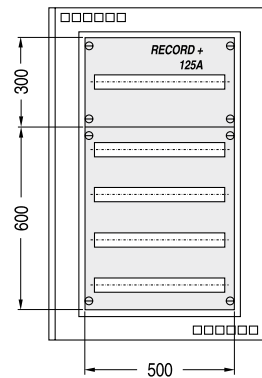
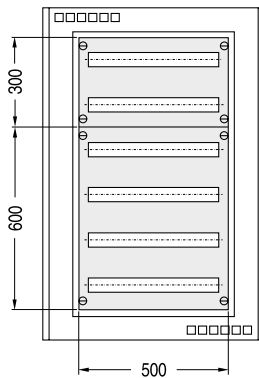
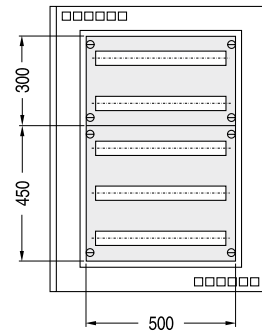
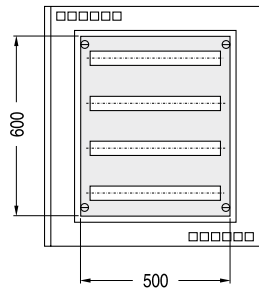
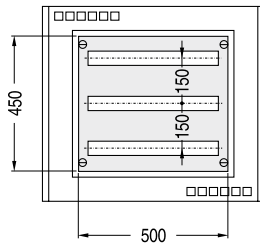


Dimensions (mm)	
	H
3 rows - 72 mod.	650
4 rows - 96 mod.	800
5 rows - 120 mod.	950
6 rows - 144 mod.	1100
4 rows+Record - 120 mod.	1100

**Fix-o-Rail 144 F**  
Flush mounting



Dimensions (mm)		
	H	H'
3 rows - 72 mod.	650	560
4 rows - 96 mod.	800	710
5 rows - 120 mod.	950	860
6 rows - 144 mod.	1100	1010
4 rows+Record - 120 mod.	1100	1010



Dimensions

A

B

C

D

E

F

G

X

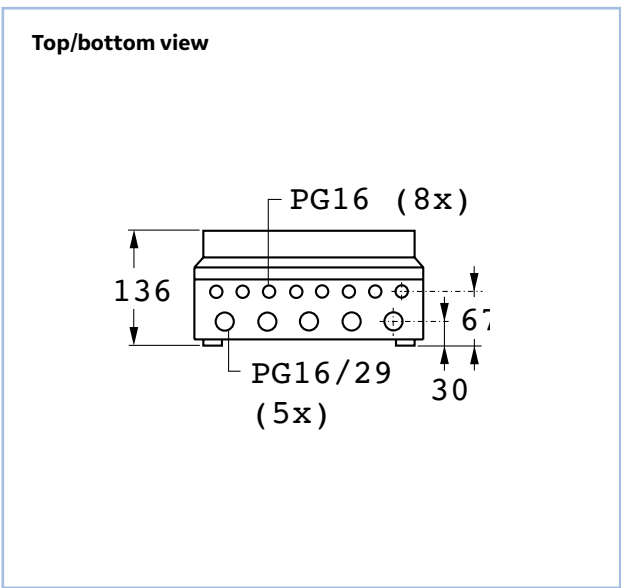
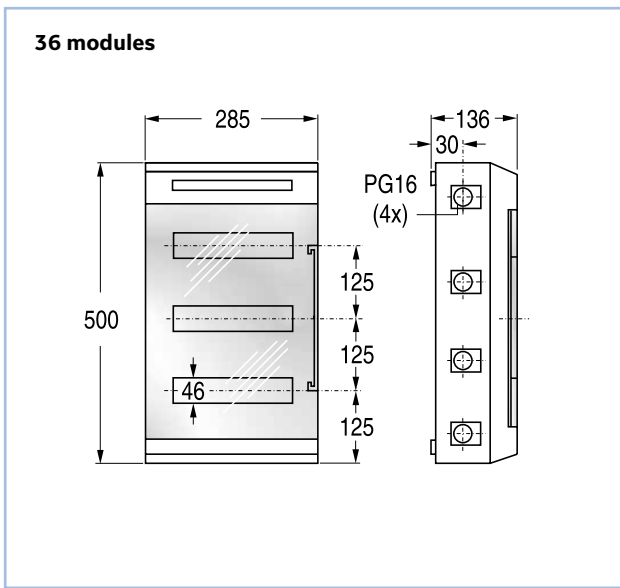
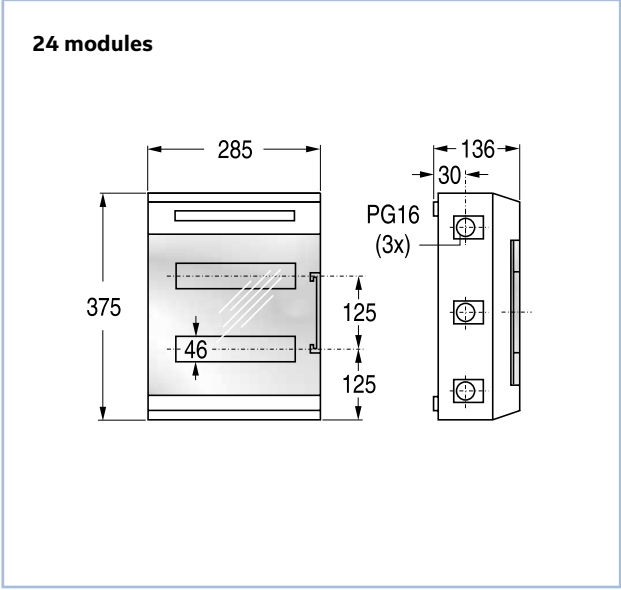
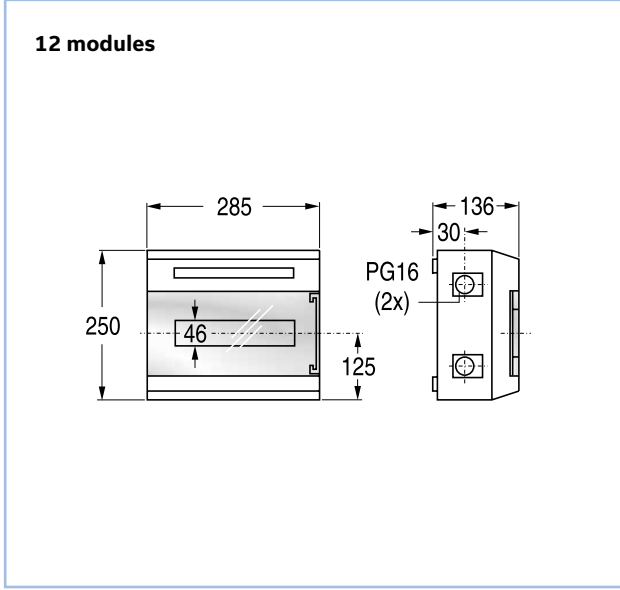
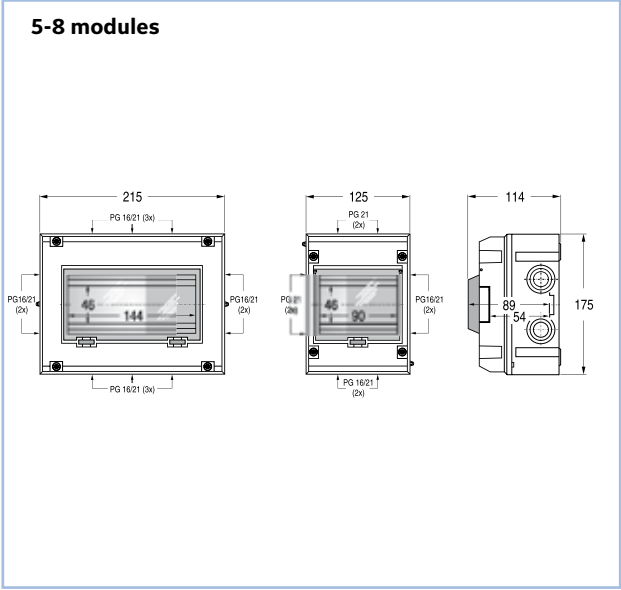
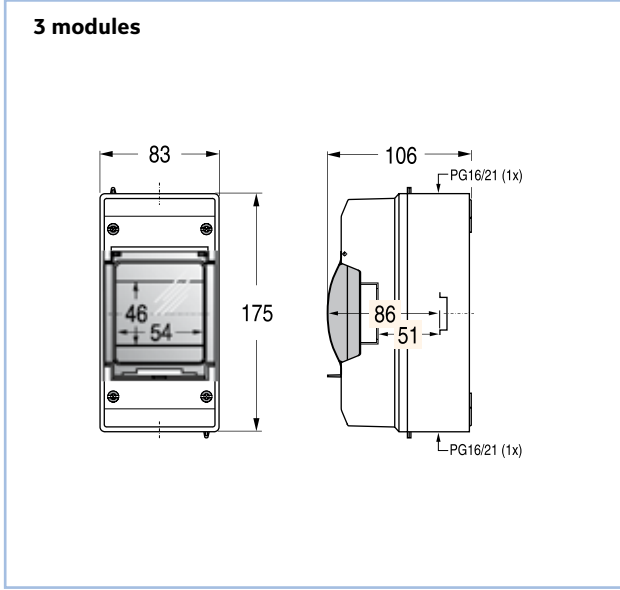


Dimensional drawings

Fix-o-Rail 55 - Surface mounting

Enclosures

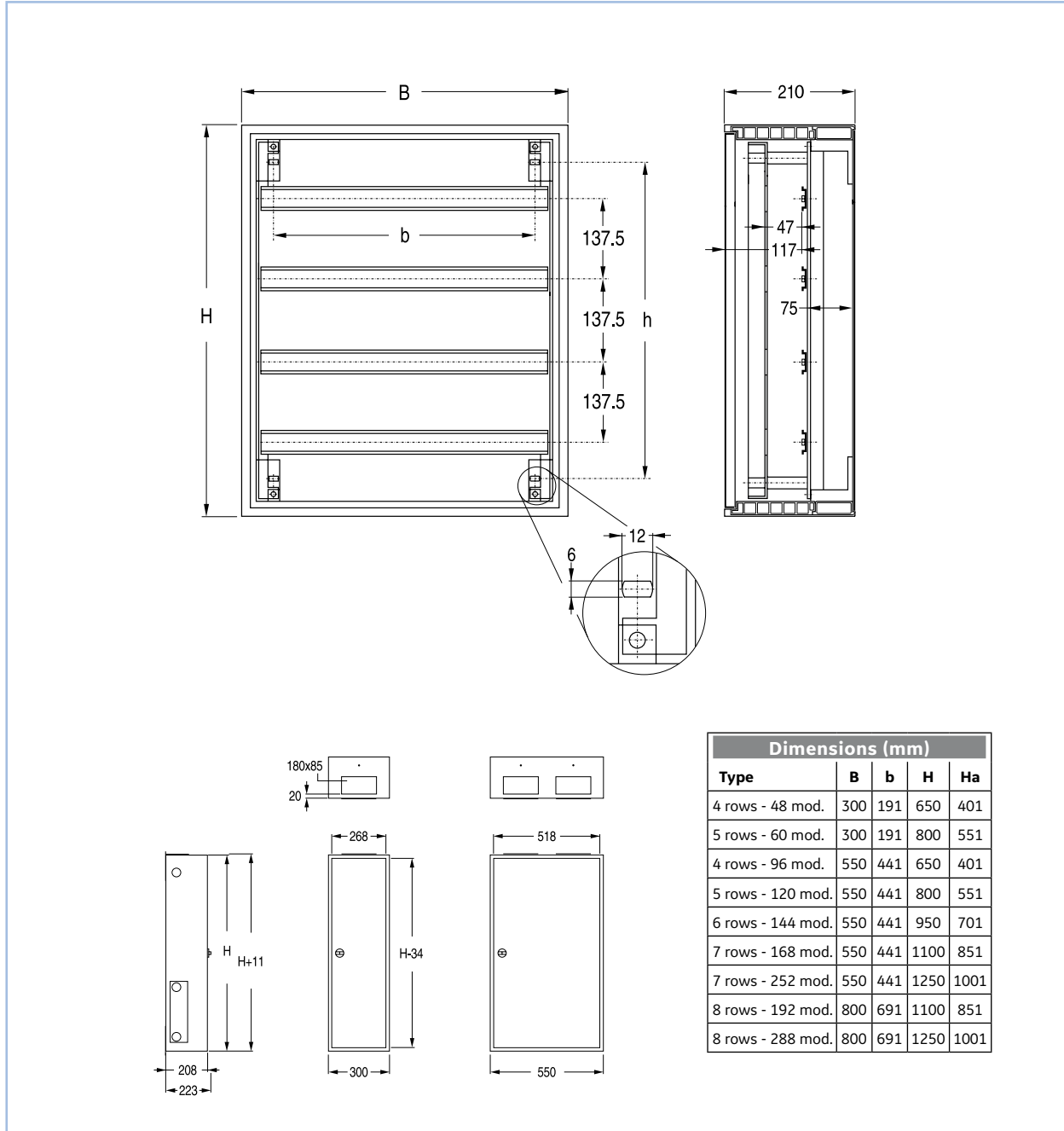
A  
B  
C  
D  
E  
F  
G  
X





Dimensional drawings

Fix-o-Rail Senior - Surface mounting



Dimensions

A

B

C

D

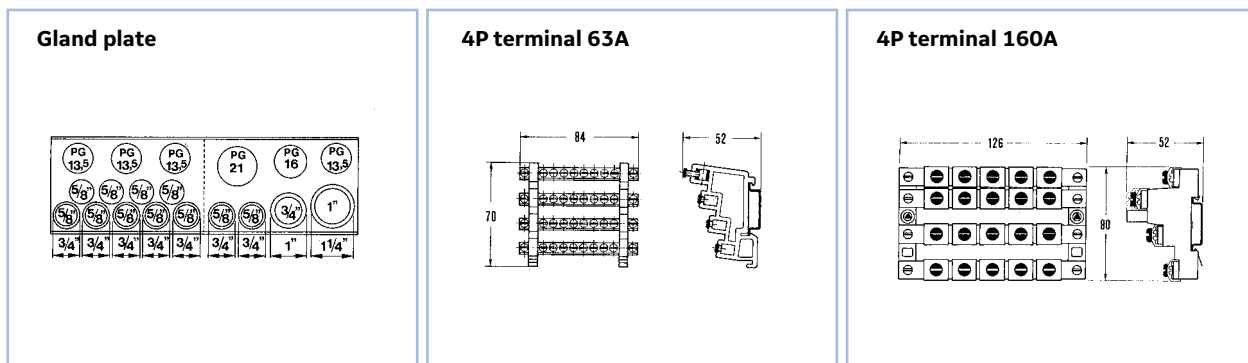
E

F

G

X

Accessories distribution boards





## Dimensional drawings

### Abaco F - Flush mounting

Enclosures

A

B

C

D

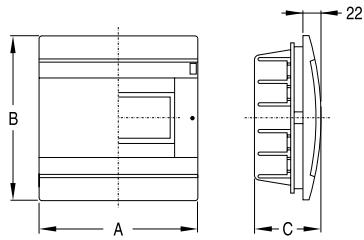
E

**F**

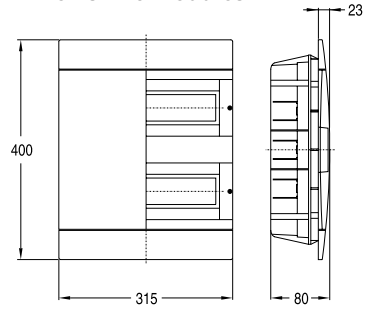
G

X

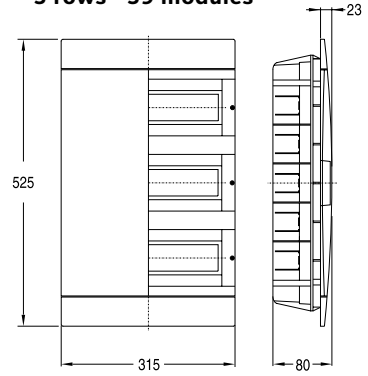
1 row - 14 modules



2 rows - 26 modules



3 rows - 39 modules



Dimensions (mm)			
Type	A	B	C
4 mod.	120	200	73
7 mod.	180	200	73
10 mod.	230	200	73
14 mod.	300	200	73



	<b>Overview</b>
G.3	Controls and Power Electronics
G.4	Industrial Breakers
G.5	Low voltage applications

Circuit Protection	A
People Protection	B
Add-on Devices	C
Comfort Functions	D
Busbars	E
Enclosures	F
<b>Product overview</b>	<b>G</b>
Numerical index	X





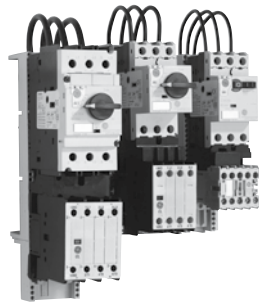


**Push-buttons**

Industrial push-buttons and switches

**Series P9** - Ø 22.5 mm

**Series 077** - Ø 30 mm



**Motor protection devices  
Surion**

Thermal and magnetic protection.  
Standard and high breaking capacity.  
Rocker and rotary handle operator.



**Variable Speed Drives**

**AF-7 & AF-6 series**

Variable speed drives for three phase induction motors from 0.18 up to 1400kW



**Contactors &  
Manual Motor Starters**

Four ranges, 3 and 4 poles

**Efficor\*** - from 9 to 105A in AC3

**Series M** - from 6 to 9A in AC3

**Series CL** - from 9 to 105A in AC3

**Series CK** - from 150 to 780A in AC3



**Electronic relays**

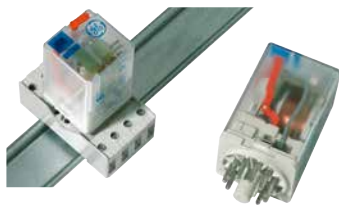
Multivoltage timers  
Detector relays (tension, intensity, liquid level, etc.) and control and protection relays



**Softstarters**

**ASTAT XB-XBm-XL**

Compact softstarters  
**XB** and **XBm** in the power range from 18 to 200A, 7.5 to 110kW at 400Vac, 10 to 180HP at 460Vac, with a wide voltage range of 200 to 575Vac  
**XL** in the power range from 23 to 1600A, 11 to 850kW at 400Vac, 15 to 1340HP at 460Vac, with a wide voltage range of 200 to 690Vac



**Plug-in relays - Series PRC**

Miniature, 8-11 pins and interface

**Overload relays**

To fit on the four contactor ranges:  
**Series MT** - from 0.11 to 14A setting  
**Series RT** - from 0.16 to 110A setting  
**Series RT** - from 55 to 850A setting  
**Series RE** - (Electronic): 0.1 to 150A

A

B

C

D

E

F

**G**

X



Product overview

A

B

C

D

E

F

G

X



**GuardEon\***  
**Moulded case circuit breakers**

Selective and current limiting  
Available in two sizes, GuardEon was designed with customers to meet a variety of applications from basic to advanced.

**Frame E** up to 250A  
**Frame F** up to 630A

GuardEon circuit breakers meet the requirements of IEC, CCC, and CE allowing for a standardized global design.

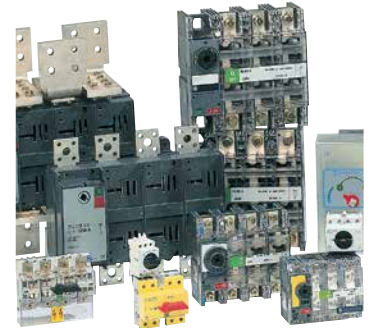


**EntelliGuard\***  
**Power circuit breakers**

Uncompromising, fast and selective

**Frame T (compact)**  
400A to 1600A - 50kA and 65kA  
**Frame 1**  
400A to 2000A - 50kA and 65kA  
**Frame 2**  
400A to 4000A - 50, 65, 80 and 100kA  
**Frame 3**  
3200A to 6400A - 100kA and 150kA

Fixed pattern and withdrawable type.  
In accordance with EN/IEC 60947-2



**Dilos**  
**Loadbreak disconnectors**

From 16A up to 4000A

**Fulos**  
**Fused loadbreak disconnectors**

From 32A up to 1000/1250A



**Trip Unit Toolkit**

A broad and expanding set of tools designed to monitor, set, and customize the data present in the GE range of EntelliGuard, PremEon\* and MET trip units.



**Gerapid**  
**High speed DC breaker**

From 2600A up to 10 000A

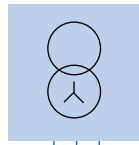
A wide range of models with rated voltages up to 3900V



**Distribution boards**

**SEN Plus**

Rated voltage: up to 690Vac / 600Vdc  
 Rated current: up to 7600A



**Power circuit breakers**

**EntelliGuard\***

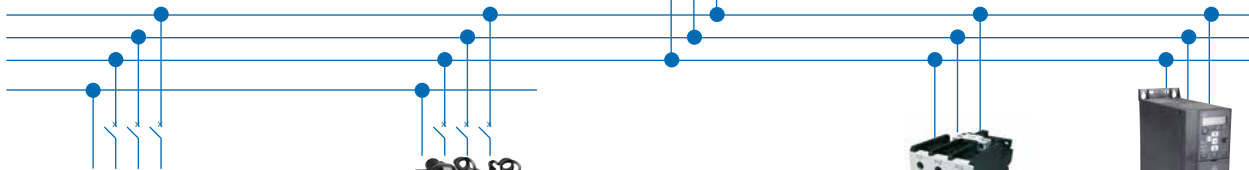
Rating: from 400A to 6400A



**Moulded case circuit breakers**

**Record Plus\*/GuardEon\***

Selective and current limiting  
 Rating: from 8A to 1600A



**MCCBs**

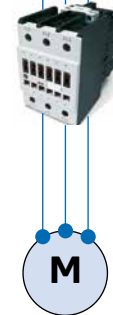
acc. EN/IEC 60947-2/UL489



**Special contactors**

for capacitor protection

A full range of **contactors** and auxiliaries, according to EN/IEC 60947-4



A full range of **starters**:  
 Direct-on-line, Star-Delta, Reversing  
**ASTAT** Softstarters  
**AF-7/AF-6** Variable speed drives  
 for commercial and industrial applications



A wide range of **push-buttons**, round and square, in metal and in engineering thermoplastic, illuminated, with or without key,...

A full range of **modular DIN-rail devices**  
 MCBs acc. EN/IEC 60898-1 and EN/IEC 60947-2  
 Add-on RCDs acc. EN/IEC 61009-1  
 RCCBs acc. EN/IEC 61008-1  
 RCBOs acc. EN/IEC 61009-1  
 Switches, timers, contactors, surge arresters, measurement devices.

**Disconnecter loadbreak switches** and changeover switches from 16A to 4000A.

**Fused disconnector load-break switches** from 32A to 1250A.

According to EN/IEC 60947-3 and UL 508 (listed).

A full range of **enclosures** to house your equipment: plastic or metallic, for indoor and outdoor use. For industrial as well as residential and commercial applications. According to EN/IEC 60529

A

B

C

D

E

F



X

PROTECT



X.2 Numerical index by reference number  
X.17 Numerical index by catalogue number  
X.30 Product Selector

Circuit Protection	A
People Protection	B
Add-on Devices	C
Comfort Functions	D
Busbars	E
Enclosures	F
Product overview	G
Numerical index	<b>X</b>



By reference number

A

B

C

D

E

F

G

X

Ref. No.	Cat. No.	Page	Ref. No.	Cat. No.	Page	Ref. No.	Cat. No.	Page	Ref. No.	Cat. No.	Page
290000			546273		E.7	565387	DMA63NB10/030	B.19	600545		F.16
290237	EP103ULH2B13	A.65	546274		E.7	565388	DMA63NB13/030	B.19	600573		F.33
290238	EP103ULH2B15	A.65	546275		E.7	565389	DMA63NB16/030	B.19	600574		F.33
544000			546276		E.7	565390	DMA63NB20/030	B.19	600575		F.33
544172		E.7	546277		E.4	565391	DMA63NB25/030	B.19	600579		F.19
544173		E.7	546278		E.4	565392	DMA63NB32/030	B.19	600580		F.19
544174		E.7	546279		E.7	565393	DMA63NB10/300	B.19	600581		F.19
544175		E.7	546280		E.7	565394	DMA63NB13/300	B.19	600582		F.19
544176		E.7	546281		E.7	565395	DMA63NB16/300	B.19	600642		F.13
544177		E.7	546282		E.5	565396	DMA63NB20/300	B.19	600650		F.13
544178		E.6	546283		E.5	565397	DMA63NB25/300	B.19	600651		F.13
544179		E.7	546284		E.5	565398	DMA63NB32/300	B.19	600656		F.13
544180		E.4	546285		E.5	568000			600950		F.13
544181		E.4	546287		E.8	568083		E.8	604000		
544182		E.4	546288		E.8	568084		E.8	604285	BPCV225/30	B.27
544183		E.5	546289		E.8	568106	EV-G.1.4.80-90°	D.72	604286	BPCV240/30	B.27
544184		E.5	546290		E.8	568322	DMA63NC32/030	B.19	604287	BPCV263/30	B.27
544185		E.5	546291		E.8	568323	DMA63NC25/030	B.19	604288	BPCV280/30	B.27
544186		E.4	546295		E.6	568324	CAH DMA63N	B.19	604289	BPCV2100/30	B.27
544187		E.5	546296		E.7	568326	DMA63C10/030IT	B.19	605000		
544188		E.6	546297		E.8	568327	DMA63C16/030IT	B.19	605030	DME100B06/010	B.51
544189		E.6	546298		E.8	568328	DMA63C20/030IT	B.19	605031	DME100B10/010	B.51
544191		E.6	546299		E.8	568329	DMA63C25/030IT	B.19	605032	DME100B16/010	B.51
544192		E.7	546300		E.8	568330	DMA63C32/030IT	B.19	605033	DME100B20/010	B.51
544193		E.4	546301		E.8	584000			605034	DME100B25/010	B.51
544195		E.5	546302		E.8	584032	NDFS4 10/30	B.69	605035	DME100B32/010	B.51
544272		E.6	546308		E.4	584037	NDFS4 30/60	B.69	605036	DME100B40/010	B.51
544277		E.6	546341		E.6	585000			605037	DME100B06/030	B.51
544296		E.6	546396		E.5	585008	NDP2 5/5	B.69	605038	DME100B10/030	B.51
544327		E.6	546397		E.5	585013	NDPS2 10/30	B.69	605039	DME100B16/030	B.51
544332	LD021	A.121	546398		E.7	585014	NDP2 10/30	B.69	605040	DME100B20/030	B.51
544333	LD023	A.121	555000			585016	NDF2 15/45	B.69	605041	DME100B25/030	B.51
544334	LD02P20	A.121	555434		E.5	585017	NDFS2 15/45	B.69	605042	DME100B32/030	B.51
544335	LD02P25	A.121	555435		E.5	585018	NDPS2 30/60	B.69	605043	DME100B40/030	B.51
544336	LD02P35	A.121	555609		E.7	585019	NDP2 30/60	B.69	605044	DME100C06/010	B.51
544337	LD02P50	A.121	564000			585020	NDF2 30/60	B.69	605045	DME100C10/010	B.51
544338	LD02AD01	A.121	564092		E.8	585021	NDFS2 30/60	B.69	605046	DME100C16/010	B.51
544339	LD011	A.121	565000			585025	NDF2 60/90	B.69	605047	DME100C20/010	B.51
544340	LD013	A.121	565333	FPB 4 16/030	B.33	585026	NDFS2 60/90	B.69	605048	DME100C25/010	B.51
544344		E.6	565334	FPB 4 16/100	B.33	585029	NDPS4 10/30	B.69	605049	DME100C32/010	B.51
544346		E.8	565335	FPB 4 16/300	B.33	585030	NDP4 10/30	B.69	605050	DME100C40/010	B.51
544347		E.8	565336	FPB 4 16/500	B.33	585031	NDF4 10/30	B.69	605051	DME100C06/030	B.51
546000			565337	FPB 4 25/030	B.33	585035	NDFS4 30/60	B.69	605052	DME100C10/030	B.51
546125		E.6	565338	FPB 4 25/100	B.33	585036	NDF4 30/60	B.69	605053	DME100C16/030	B.51
546126		E.4	565339	FPB 4 25/300	B.33	585435	DisB2 30/60	B.67	605054	DME100C20/030	B.51
546127		E.7	565340	FPB 4 25/500	B.33	585436	DisB2 15/45	B.67	605055	DME100C25/030	B.51
546128		E.5	565341	FPB 4 40/030	B.33	585437	DisB2 30/60	B.67	605056	DME100C32/030	B.51
546129		E.7	565342	FPB 4 40/100	B.33	585438	DisB2 15/45	B.67	605057	DME100C40/030	B.51
546130		E.5	565343	FPB 4 40/300	B.33	585439	DisB4 30/60	B.67	605060	DME60C06/030	B.51
546139		E.4	565344	FPB 4 40/500	B.33	585440	DisB4 10/30	B.67	605061	DME60C10/030	B.51
546142		E.4	565345	FPB 4 63/030	B.33	585441	DisBS4 30/60	B.67	605062	DME60C16/030	B.51
546143		E.4	565346	FPB 4 63/100	B.33	585442	DisBS4 10/30	B.67	605063	DME60C20/030	B.51
546152		E.4	565347	FPB 4 63/300	B.33	597000			605064	DME60C25/030	B.51
546176		E.7	565348	FPB 4 63/500	B.33	597956	AQA005PG	F.35	605065	DME60C32/030	B.51
546181		E.8	565349	FPB 4 80/030	B.33	597957	AQA008PG	F.35	605066	DME60C40/030	B.51
546184		E.8	565350	FPB 4 80/100	B.33	597958	AQA012PG	F.35	605067	DME60C06/100	B.51
546187		E.6	565351	FPB 4 80/300	B.33	597959	AQA912PG	F.35	605068	DME60C10/100	B.51
546197		E.6	565352	FPB 4 80/500	B.33	597960	AQA024PG	F.35	605069	DME60C16/100	B.51
546200		E.8	565353	FPB 2 16/030	B.33	597961	AQA048PG	F.35	605070	DME60C20/100	B.51
546227		E.6	565354	FPB 2 16/100	B.33	597962		F.35	605071	DME60C25/100	B.51
546228		E.7	565355	FPB 2 16/300	B.33	597963		F.35	605072	DME60C32/100	B.51
546229		E.7	565356	FPB 2 16/500	B.33	600000			605073	DME60C40/100	B.51
546230		E.7	565357	FPB 2 25/030	B.33	600310		F.13	605150	DMEA100B06/010	B.51
546234		E.7	565358	FPB 2 25/100	B.33	600311		F.13	605151	DMEA100B10/010	B.51
546237		E.4	565359	FPB 2 25/300	B.33	600346		F.13	605152	DMEA100B16/010	B.51
546244		E.8	565360	FPB 2 25/500	B.33	600501		F.16	605153	DMEA100B20/010	B.51
546245		E.8	565361	FPB 2 40/030	B.33	600502		F.16	605154	DMEA100B25/010	B.51
546246		E.8	565362	FPB 2 40/100	B.33	600504		F.16	605155	DMEA100B32/010	B.51
546247		E.6	565363	FPB 2 40/300	B.33	600505		F.16	605156	DMEA100B40/010	B.51
546248		E.6	565364	FPB 2 40/500	B.33	600506		F.16	605157	DMEA100B06/030	B.51
546249		E.6	565365	FPB 2 63/030	B.33	600507		F.16	605158	DMEA100B10/030	B.51
546250		E.6	565366	FPB 2 63/100	B.33	600509		F.16	605159	DMEA100B16/030	B.51
546251		E.6	565367	FPB 2 63/300	B.33	600514		F.15	605160	DMEA100B20/030	B.51
546252		E.6	565368	FPB 2 63/500	B.33	600515		F.15	605161	DMEA100B25/030	B.51
546253		E.4	565369	FPB 2 80/030	B.33	600516		F.16	605162	DMEA100B32/030	B.51
546254		E.4	565370	FPB 2 80/100	B.33	600517		F.15	605163	DMEA100B40/030	B.51
546255		E.4	565371	FPB 2 80/300	B.33	600519		F.17	605164	DMEA100C06/010	B.51
546256		E.4	565372	FPB 2 80/500	B.33	600520		F.17	605165	DMEA100C10/010	B.51
546257		E.4	565373	FPF 2 25/030	B.35	600521		F.17	605166	DMEA100C16/010	B.51
546259		E.6	565374	FPF 2 40/030	B.35	600522		F.17	605167	DMEA100C20/010	B.51
546260		E.6	565375	FPF 2 63/030	B.35	600524		F.15	605168	DMEA100C25/010	B.51
546261		E.6	565376	FPF 2 80/030	B.35	600525		F.16	605169	DMEA100C32/010	B.51
546262		E.6	565377	FPF 4 25/030	B.35	600526		F.16	605170	DMEA100C40/010	B.51
546263		E.6	565378	FPF 4 40/030	B.35	600531		F.17	605171	DMEA100C06/030	B.51
546264		E.6	565379	FPF 4 63/030	B.35	600532		F.15	605172	DMEA100C10/030	B.51
546265		E.4	565380	FPF 4 80/030	B.35	600534		F.17	605173	DMEA100C16/030	B.51
546266		E.4	565381	DMA63NC10/300	B.19	600535		F.17	605174	DMEA100C20/030	B.51
546267		E.4	565382	DMA63NC13/300	B.19	600536		F.17	605175	DMEA100C25/030	B.51
546269		E.4	565383	DMA63NC16/300	B.19	600537		F.17	605176	DMEA100C32/030	B.51
546270		E.4	565384	DMA63NC20/300	B.19	600538		F.17	605177	DMEA100C40/030	B.51
546271		E.7	565385	DMA63NC25/300	B.19	600543		F.15	605240	DME100C06/100	B.51
546272		E.7	565386	DMA63NC32/300	B.19	600544		F.16	605241	DME100C10/100	B.51



Ref. No.	Cat. No.	Page	Ref. No.	Cat. No.	Page	Ref. No.	Cat. No.	Page	Ref. No.	Cat. No.	Page
605242	DME100C16/100	B.51	606174	BPS440/100	B.28	606376	DPCA100C10/030-120V	B.17	606816	DPCA45C32/300	B.11
605243	DME100C20/100	B.51	606175	BPS463/100	B.28	606377	DPCA100C16/030-120V	B.17	606817	DPCA45C40/300	B.11
605244	DME100C25/100	B.51	606176	BPS480/100	B.28	606378	DPCA100C20/030-120V	B.17	606820	DPC60C06/030	B.13
605245	DME100C32/100	B.51	606177	BPS4100/100	B.28	606379	DPCA100C25/030-120V	B.17	606821	DPC60C10/030	B.13
605246	DME100C40/100	B.51	606178	BPA425/300	B.28	606380	DPCA100C32/030-120V	B.17	606822	DPC60C13/030	B.13
605260	DME100B06/100	B.51	606179	BPA440/300	B.28	606381	DPCA100C40/030-120V	B.17	606823	DPC60C16/030	B.13
605261	DME100B10/100	B.51	606180	BPA463/300	B.28	606505	DMEA100D06/010	B.51	606824	DPC60C20/030	B.13
605262	DME100B16/100	B.51	606181	BPA480/300	B.28	606506	DMEA100D10/010	B.51	606825	DPC60C25/030	B.13
605263	DME100B20/100	B.51	606182	BPA4100/300	B.28	606507	DMEA100D16/010	B.51	606826	DPC60C32/030	B.13
605264	DME100B25/100	B.51	606183	BPS425/300	B.28	606508	DMEA100D20/010	B.51	606827	DPC60C40/030	B.13
605265	DME100B32/100	B.51	606184	BPS440/300	B.28	606509	DMEA100D25/010	B.51	606828	DPC60C06/300	B.13
605266	DME100B40/100	B.51	606185	BPS463/300	B.28	606510	DMEA100D32/010	B.51	606829	DPC60C10/300	B.13
606000			606186	BPS480/300	B.28	606511	DMEA100D40/010	B.51	606830	DPC60C13/300	B.13
606085	BPA216/010	B.28	606187	BPS4100/300	B.28	606512	DMEA100D06/030	B.51	606831	DPC60C16/300	B.13
606086	BPA225/030	B.28	606188	BPA425/500	B.28	606513	DMEA100D10/030	B.51	606832	DPC60C20/300	B.13
606087	BPA240/030	B.28	606189	BPA440/500	B.28	606514	DMEA100D16/030	B.51	606833	DPC60C25/300	B.13
606088	BPA263/030	B.28	606190	BPA463/500	B.28	606515	DMEA100D20/030	B.51	606834	DPC60C32/300	B.13
606089	BPA280/030	B.28	606191	BPA480/500	B.28	606516	DMEA100D25/030	B.51	606835	DPC60C40/300	B.13
606090	BPA2100/030	B.28	606192	BPA4100/500	B.28	606517	DMEA100D32/030	B.51	606838	DPCA60C06/030	B.13
606091	BPA225/100	B.28	606193	BPS425/500	B.28	606518	DMEA100D40/030	B.51	606839	DPCA60C10/030	B.13
606092	BPA240/100	B.28	606194	BPS440/500	B.28	606519	DME100D06/100	B.51	606840	DPCA60C13/030	B.13
606093	BPA263/100	B.28	606195	BPS463/500	B.28	606520	DME100D10/100	B.51	606841	DPCA60C16/030	B.13
606094	BPA280/100	B.28	606196	BPS480/500	B.28	606521	DME100D16/100	B.51	606842	DPCA60C20/030	B.13
606095	BPA2100/100	B.28	606197	BPS4100/500	B.28	606522	DME100D20/100	B.51	606843	DPCA60C25/030	B.13
606096	BPS225/100	B.28	606198	BPA425/1000	B.28	606523	DME100D25/100	B.51	606844	DPCA60C32/030	B.13
606097	BPS240/100	B.28	606199	BPA440/1000	B.28	606524	DME100D32/100	B.51	606845	DPCA60C40/030	B.13
606098	BPS263/100	B.28	606200	BPA463/1000	B.28	606525	DME100D40/100	B.51	606846	DPCA60C06/300	B.13
606099	BPS280/100	B.28	606201	BPA480/1000	B.28	606526	DMEA100C06/100	B.51	606847	DPCA60C10/300	B.13
606100	BPS2100/100	B.28	606202	BPA4100/1000	B.28	606527	DMEA100C10/100	B.51	606848	DPCA60C13/300	B.13
606101	BPA225/300	B.28	606203	BPS425/1000	B.28	606528	DMEA100C16/100	B.51	606849	DPCA60C16/300	B.13
606102	BPA240/300	B.28	606204	BPS440/1000	B.28	606529	DMEA100C20/100	B.51	606850	DPCA60C20/300	B.13
606103	BPA263/300	B.28	606205	BPS463/1000	B.28	606530	DMEA100C25/100	B.51	606851	DPCA60C25/300	B.13
606104	BPA280/300	B.28	606206	BPS480/1000	B.28	606531	DMEA100C32/100	B.51	606852	DPCA60C32/300	B.13
606105	BPA2100/300	B.28	606207	BPS4100/1000	B.28	606532	DMEA100C40/100	B.51	606853	DPCA60C40/300	B.13
606106	BPS225/300	B.28	606208	BPC425/030	B.27	606560	DMET100C06/100	B.53	606854	DPCA60C06/030	B.13
606107	BPS240/300	B.28	606209	BPC440/030	B.27	606561	DMET100C10/100	B.53	606855	DPCA60C10/030	B.13
606108	BPS263/300	B.28	606210	BPC463/030	B.27	606562	DMET100C16/100	B.53	606856	DPCA60C13/030	B.13
606109	BPS280/300	B.28	606211	BPC480/030	B.27	606563	DMET100C20/100	B.53	606857	DPCA60C16/030	B.13
606110	BPS2100/300	B.28	606212	BPC4100/030	B.27	606564	DMET100C25/100	B.53	606858	DPCA60C20/030	B.13
606111	BPA225/500	B.28	606216	BPC425/100	B.27	606565	DMET100C32/100	B.53	606859	DPCA60C25/030	B.13
606112	BPA240/500	B.28	606217	BPC440/100	B.27	606566	DMET100C40/100	B.53	606860	DPCA60C32/030	B.13
606113	BPA263/500	B.28	606218	BPC463/100	B.27	606567	DMET100C06/010	B.53	606861	DPCA60C40/030	B.13
606114	BPA280/500	B.28	606219	BPC480/100	B.27	606568	DMET100C10/010	B.53	606862	DPCA60C06/300	B.13
606115	BPA2100/500	B.28	606220	BPC4100/100	B.27	606569	DMET100C16/010	B.53	606863	DPCA60C10/300	B.13
606116	BPS225/500	B.28	606224	BPC425/300	B.27	606570	DMET100C20/010	B.53	606864	DPCA60C13/300	B.13
606117	BPS240/500	B.28	606225	BPC440/300	B.27	606571	DMET100C25/010	B.53	606865	DPCA60C16/300	B.13
606118	BPS263/500	B.28	606226	BPC463/300	B.27	606572	DMET100C32/010	B.53	606866	DPCA60C20/300	B.13
606119	BPS280/500	B.28	606227	BPC480/300	B.27	606573	DMET100C40/010	B.53	606867	DPCA60C25/300	B.13
606120	BPS2100/500	B.28	606228	BPC4100/300	B.27	606574	DMET100C06/030	B.53	606868	DPCA60C32/300	B.13
606121	BPA225/1000	B.28	606229	BPC425/500	B.27	606575	DMET100C10/030	B.53	606869	DPCA60C40/300	B.13
606122	BPA240/1000	B.28	606230	BPC440/500	B.27	606576	DMET100C16/030	B.53	606872	DPCA60B06/030	B.13
606123	BPA263/1000	B.28	606231	BPC463/500	B.27	606577	DMET100C20/030	B.53	606873	DPCA60B10/030	B.13
606124	BPA280/1000	B.28	606232	BPC480/500	B.27	606578	DMET100C25/030	B.53	606874	DPCA60B13/030	B.13
606125	BPA2100/1000	B.28	606233	BPC4100/500	B.27	606579	DMET100C32/030	B.53	606875	DPCA60B16/030	B.13
606126	BPS225/1000	B.28	606234	BPC425/1000	B.27	606580	DMET100C40/030	B.53	606876	DPCA60B20/030	B.13
606127	BPS240/1000	B.28	606235	BPC440/1000	B.27	606581	DMEA100C40/300	B.53	606877	DPCA60B25/030	B.13
606128	BPS263/1000	B.28	606236	BPC463/1000	B.27	606588	DMEA100C06/300	B.53	606878	DPCA60B32/030	B.13
606129	BPS280/1000	B.28	606237	BPC480/1000	B.27	606589	DMEA100C10/300	B.53	606879	DPCA60B40/030	B.13
606130	BPS2100/1000	B.28	606238	BPC4100/1000	B.27	606590	DMEA100C16/300	B.53	606880	DPCA60B06/300	B.13
606131	BPC216/010	B.27	606296	BPCV225/30	B.27	606591	DMEA100C20/300	B.53	606881	DPCA60B10/300	B.13
606134	BPC263/030	B.27	606297	BPCV240/30	B.27	606592	DMEA100C25/300	B.53	606882	DPCA60B13/300	B.13
606135	BPC280/030	B.27	606298	BPCV263/30	B.27	606593	DMEA100C32/300	B.53	606883	DPCA60B16/300	B.13
606136	BPC2100/030	B.27	606299	BPCV280/30	B.27	606786	DPC45C06/030	B.11	606884	DPCA60B20/300	B.13
606140	BPC225/100	B.27	606300	BPCV2100/30	B.27	606787	DPC45C10/030	B.11	606885	DPCA60B25/300	B.13
606141	BPC240/100	B.27	606301	BPCV225/300	B.27	606788	DPC45C13/030	B.11	606886	DPCA60B32/300	B.13
606142	BPC263/100	B.27	606302	BPCV240/300	B.27	606789	DPC45C16/030	B.11	606887	DPCA60B40/300	B.13
606143	BPC280/100	B.27	606303	BPCV263/300	B.27	606790	DPC45C20/030	B.11	606888	DPCA60B06/030	B.13
606144	BPC2100/100	B.27	606304	BPCV280/300	B.27	606791	DPC45C25/030	B.11	606889	DPCA60B10/030	B.13
606150	BPC263/300	B.27	606305	BPCV2100/300	B.27	606792	DPC45C32/030	B.11	606890	DPCA60B13/030	B.13
606151	BPC280/300	B.27	606331	BPAi225/030	B.29	606793	DPC45C40/030	B.11	606891	DPCA60B16/030	B.13
606152	BPC2100/300	B.27	606332	BPAi240/030	B.29	606794	DPC45C06/300	B.11	606892	DPCA60B20/030	B.13
606153	BPC225/500	B.27	606333	BPAi263/030	B.29	606795	DPC45C10/300	B.11	606893	DPCA60B25/030	B.13
606154	BPC240/500	B.27	606334	BPAi425/030	B.29	606796	DPC45C13/300	B.11	606894	DPCA60B32/030	B.13
606155	BPC263/500	B.27	606335	BPAi440/030	B.29	606797	DPC45C16/300	B.11	606895	DPCA60B40/030	B.13
606156	BPC280/500	B.27	606336	BPAi463/030	B.29	606798	DPC45C20/300	B.11	606896	DPCA60B06/300	B.13
606157	BPC2100/500	B.27	606337	BPSi225/300	B.29	606799	DPC45C25/300	B.11	606897	DPCA60B10/300	B.13
606158	BPC225/1000	B.27	606338	BPSi240/300	B.29	606800	DPC45C32/300	B.11	606898	DPCA60B13/300	B.13
606159	BPC240/1000	B.27	606339	BPSi263/300	B.29	606801	DPC45C40/300	B.11	606899	DPCA60B16/300	B.13
606160	BPC263/1000	B.27	606340	BPSi280/300	B.29	606802	DPCA45C06/030	B.11	606900	DPCA60B20/300	B.13
606161	BPC280/1000	B.27	606341	BPSi2100/300	B.29	606803	DPCA45C10/030	B.11	606901	DPCA60B25/300	B.13
606162	BPC2100/1000	B.27	606342	BPSi425/300	B.29	606804	DPCA45C13/030	B.11	606902	DPCA60B32/300	B.13
606163	BPA425/030	B.28	606343	BPSi440/300	B.29	606805	DPCA45C16/030	B.11	606903	DPCA60B40/300	B.13
606164	BPA440/030	B.28	606344	BPSi463/300	B.29	606806	DPCA45C20/030	B.11	606904	DPC100C10/010	B.15
606165	BPA463/030	B.28	606345	BPSi480/300	B.29	606807	DPCA45C25/030	B.11	606905	DPC100C16/010	B.15
606166	BPA480/030	B.28	606346	BPSi4100/300	B.29	606808	DPCA45C32/030	B.11	606906	DPC100C06/030	B.15
606167	BPA4100/030	B.28	606347	BPAi225/300	B.29	606809	DPCA46C40/030	B.11	606907	DPC100C10/030	B.15
606168	BPA425/100	B.28	606348	BPAi240/300	B.29	606810	DPCA45C06/300	B.11	606908	DPC100C13/030	B.15
606169											



By reference number

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606914	DPC100C06/300	B.15	607286	DMEAT100C16/030	B.53	607722	DOC 532/030	B.41	609772	DMA60C13/010	B.37
606915	DPC100C10/300	B.15	607287	DMEAT100C20/030	B.53	607723	DOC 532/100	B.41	609773	DMA60C16/010	B.37
606916	DPC100C13/300	B.15	607288	DMEAT100C25/030	B.53	607724	DOC 532/300	B.41	609774	DMA60C20/010	B.37
606917	DPC100C16/300	B.15	607289	DMEAT100C32/030	B.53	607725	DOC 532/500	B.41	609775	DMA60C04/030	B.37
606918	DPC100C20/300	B.15	607427	DMET60C10/030	B.53	607726	DOC 532/1000	B.41	609776	DMA60C06/030	B.37
606919	DPC100C25/300	B.15	607428	DMET60C16/030	B.53	607728	DOC 432/030	B.41	609777	DMA60C10/030	B.37
606920	DPC100C32/300	B.15	607429	DMET60C20/030	B.53	607729	DOC 432/100	B.41	609778	DMA60C13/030	B.37
606921	DPC100C40/300	B.15	607430	DMET60C25/030	B.53	607730	DOC 432/300	B.41	609779	DMA60C16/030	B.37
606922	DPCA100C10/010	B.15	607431	DMET60C32/030	B.53	607731	DOC 432/500	B.41	609780	DMA60C20/030	B.37
606923	DPCA100C13/010	B.15	607500	DOCA 232/030	B.41	607732	DOC 432/1000	B.41	609781	DMA60C25/030	B.37
606924	DPCA100C16/010	B.15	607501	DOCA 232/100	B.41	607734	DOC 463/030	B.41	609782	DMA60C32/030	B.37
606925	DPCA100C06/030	B.15	607502	DOCA 232/300	B.41	607735	DOC 463/100	B.41	609783	DMA60C40/030	B.37
606926	DPCA100C10/030	B.15	607503	DOCA 232/500	B.41	607736	DOC 463/300	B.41	609784	DMA60C04/100	B.37
606927	DPCA100C13/030	B.15	607504	DOCA 232/1000	B.41	607737	DOC 463/500	B.41	609785	DMA60C06/100	B.37
606928	DPCA100C16/030	B.15	607506	DOCA 263/030	B.41	607738	DOC 463/1000	B.41	609786	DMA60C10/100	B.37
606929	DPCA100C20/030	B.15	607507	DOCA 263/100	B.41	608000			609787	DMA60C13/100	B.37
606930	DPCA100C10/030	B.15	607508	DOCA 263/300	B.41	608135	DMEAT60C10/030	B.53	609788	DMA60C16/100	B.37
606931	DPCA100C13/030	B.15	607509	DOCA 263/500	B.41	608136	DMEAT60C16/030	B.53	609789	DMA60C20/100	B.37
606932	DPCA100C16/030	B.15	607510	DOCA 263/1000	B.41	608137	DMEAT60C20/030	B.53	609790	DMA60C25/100	B.37
606933	DPCA100C20/030	B.15	607513	DOCS 232/100	B.41	608138	DMEAT60C25/030	B.53	609791	DMA60C32/100	B.37
606934	DPCA100C25/030	B.15	607514	DOCS 232/300	B.41	608139	DMEAT60C32/030	B.53	609792	DMA60C40/100	B.37
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606936	DPCA100C40/030	B.15	607516	DOCS 232/1000	B.41	608707	DPA100B13/010	B.57	609794	DMA60C06/300	B.37
606937	DPCA100C06/300	B.15	607519	DOCS 263/100	B.41	608708	DPA100B16/010	B.57	609795	DMA60C10/300	B.37
606938	DPCA100C10/300	B.15	607520	DOCS 263/300	B.41	608709	DPA100B20/010	B.57	609796	DMA60C13/300	B.37
606939	DPCA100C13/300	B.15	607521	DOCS 263/500	B.41	608712	DPA100B10/030	B.57	609797	DMA60C16/300	B.37
606940	DPCA100C16/300	B.15	607522	DOCS 263/1000	B.41	608713	DPA100B13/030	B.57	609798	DMA60C20/300	B.37
606941	DPCA100C20/300	B.15	607536	DOC 232/030	B.41	608714	DPA100B16/030	B.57	609799	DMA60C25/300	B.37
606942	DPCA100C25/300	B.15	607537	DOC 232/100	B.41	608715	DPA100B20/030	B.57	609800	DMA60C32/300	B.37
606943	DPCA100C32/300	B.15	607538	DOC 232/300	B.41	608716	DPA100B25/030	B.57	609801	DMA60C40/300	B.37
606944	DPCA100C40/300	B.15	607539	DOC 232/500	B.41	608717	DPA100B32/030	B.57	609802	DM60B06/010	B.37
606945	DPCAi100C06/030	B.15	607540	DOC 232/1000	B.41	608757	DPA100C10/010	B.57	609803	DM60B10/010	B.37
606946	DPCAi100C10/030	B.15	607542	DOC 263/030	B.41	608758	DPA100C13/010	B.57	609804	DM60B13/010	B.37
606947	DPCAi100C13/030	B.15	607543	DOC 263/100	B.41	608759	DPA100C16/010	B.57	609805	DM60B16/010	B.37
606948	DPCAi100C16/030	B.15	607544	DOC 263/300	B.41	608760	DPA100C20/010	B.57	609806	DM60B20/010	B.37
606949	DPCAi100C20/030	B.15	607545	DOC 263/500	B.41	608763	DPA100C10/030	B.57	609807	DM60B06/030	B.37
606950	DPCAi100C25/030	B.15	607546	DOC 263/1000	B.41	608764	DPA100C13/030	B.57	609808	DM60B10/030	B.37
606951	DPCAi100C32/030	B.15	607584	DOCA 332/030	B.41	608765	DPA100C16/030	B.57	609809	DM60B13/030	B.37
606952	DPCAi100C40/030	B.15	607585	DOCA 332/100	B.41	608766	DPA100C20/030	B.57	609810	DM60B16/030	B.37
606953	DPCAi100C06/300	B.15	607586	DOCA 332/300	B.41	608767	DPA100C25/030	B.57	609811	DM60B20/030	B.37
606954	DPCAi100C10/300	B.15	607587	DOCA 332/500	B.41	608768	DPA100C32/030	B.57	609812	DM60B25/030	B.37
606955	DPCAi100C13/300	B.15	607588	DOCA 332/1000	B.41	609000			609813	DM60B32/030	B.37
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606957	DPCAi100C20/300	B.15	607591	DOCA 363/100	B.41	609281	DMT60C06/030	B.37	609815	DM60B06/100	B.37
606958	DPCAi100C25/300	B.15	607592	DOCA 363/300	B.41	609282	DMT60C10/030	B.37	609816	DM60B10/100	B.37
606959	DPCAi100C32/300	B.15	607593	DOCA 363/500	B.41	609283	DMT60C13/030	B.37	609817	DM60B13/100	B.37
606960	DPCAi100C40/300	B.15	607594	DOCA 363/1000	B.41	609284	DMT60C16/030	B.37	609818	DM60B16/100	B.37
606961	DPCA100B10/010	B.15	607597	DOCS 332/100	B.41	609285	DMT60C20/030	B.37	609819	DM60B20/100	B.37
606962	DPCA100B13/010	B.15	607598	DOCS 332/300	B.41	609286	DMT60C25/030	B.37	609820	DM60B25/100	B.37
606963	DPCA100B16/010	B.15	607599	DOCS 332/500	B.41	609287	DMT60C32/030	B.37	609821	DM60B32/100	B.37
606964	DPCA100B06/030	B.15	607600	DOCS 332/1000	B.41	609288	DMT60C40/030	B.37	609822	DM60B40/100	B.37
606965	DPCA100B10/030	B.15	607603	DOCS 363/100	B.41	609289	DMT100C04/030	B.39	609823	DM60B06/300	B.37
606966	DPCA100B13/030	B.15	607604	DOCS 363/300	B.41	609290	DMT100C06/030	B.39	609824	DM60B10/300	B.37
606967	DPCA100B16/030	B.15	607605	DOCS 363/500	B.41	609291	DMT100C10/030	B.39	609825	DM60B13/300	B.37
606968	DPCA100B20/030	B.15	607606	DOCS 363/1000	B.41	609292	DMT100C13/030	B.39	609826	DM60B16/300	B.37
606969	DPCA100B10/030	B.15	607620	DOC 332/030	B.41	609293	DMT100C16/030	B.39	609827	DM60B20/300	B.37
606970	DPCA100B13/030	B.15	607621	DOC 332/100	B.41	609294	DMT100C20/030	B.39	609828	DM60B25/300	B.37
606971	DPCA100B16/030	B.15	607622	DOC 332/300	B.41	609295	DMT100C25/030	B.39	609829	DM60B32/300	B.37
606972	DPCA100B20/030	B.15	607623	DOC 332/500	B.41	609296	DMT100C32/030	B.39	609830	DM60B40/300	B.37
606973	DPCA100B25/030	B.15	607624	DOC 332/1000	B.41	609297	DMT100C40/030	B.39	609831	DM60C04/010	B.37
606974	DPCA100B32/030	B.15	607626	DOC 363/030	B.41	609740	DMA60B06/010	B.37	609832	DM60C06/010	B.37
606975	DPCA100B40/030	B.15	607627	DOC 363/100	B.41	609741	DMA60B10/010	B.37	609833	DM60C10/010	B.37
606976	DPCA100B06/300	B.15	607628	DOC 363/300	B.41	609742	DMA60B13/010	B.37	609834	DM60C13/010	B.37
606977	DPCA100B10/300	B.15	607629	DOC 363/500	B.41	609743	DMA60B16/010	B.37	609835	DM60C16/010	B.37
606978	DPCA100B13/300	B.15	607630	DOCA 363/1000	B.41	609744	DMA60B20/010	B.37	609836	DM60C20/010	B.37
606979	DPCA100B16/300	B.15	607668	DOCA 532/030	B.41	609745	DMA60B06/030	B.37	609837	DM60C04/030	B.37
606980	DPCA100B20/300	B.15	607669	DOCA 532/300	B.41	609746	DMA60B10/030	B.37	609838	DM60C06/030	B.37
606981	DPCA100B25/300	B.15	607670	DOCA 532/100	B.41	609747	DMA60B13/030	B.37	609839	DM60C10/030	B.37
606982	DPCA100B32/300	B.15	607671	DOCA 532/500	B.41	609748	DMA60B16/030	B.37	609840	DM60C13/030	B.37
606983	DPCA100B40/300	B.15	607672	DOCA 532/1000	B.41	609749	DMA60B20/030	B.37	609841	DM60C16/030	B.37
606984	DPCAi100B06/030	B.15	607674	DOCA 432/030	B.41	609750	DMA60B25/030	B.37	609842	DM60C20/030	B.37
606985	DPCAi100B10/030	B.15	607675	DOCA 432/100	B.41	609751	DMA60B32/030	B.37	609843	DM60C25/030	B.37
606986	DPCAi100B13/030	B.15	607676	DOCA 432/300	B.41	609752	DMA60B40/030	B.37	609844	DM60C32/030	B.37
606987	DPCAi100B16/030	B.15	607677	DOCA 432/500	B.41	609753	DMA60B06/100	B.37	609845	DM60C40/030	B.37
606988	DPCAi100B20/030	B.15	607678	DOCA 432/1000	B.41	609754	DMA60B10/100	B.37	609846	DM60C04/100	B.37
606989	DPCAi100B25/030	B.15	607680	DOCA 463/030	B.41	609755	DMA60B13/100	B.37	609847	DM60C06/100	B.37
606990	DPCAi100B32/030	B.15	607681	DOCA 463/100	B.41	609756	DMA60B16/100	B.37	609848	DM60C10/100	B.37
606991	DPCAi100B40/030	B.15	607682	DOCA 463/300	B.41	609757	DMA60B20/100	B.37	609849	DM60C13/100	B.37
606992	DPCAi100B06/300	B.15	607683	DOCA 463/500	B.41	609758	DMA60B25/100	B.37	609850	DM60C16/100	B.37
606993	DPCAi100B10/300	B.15	607684	DOCA 463/1000	B.41	609759	DMA60B32/100	B.37	609851	DM60C20/100	B.37
606994	DPCAi100B13/300	B.15	607687	DOCS 532/100	B.41	609760	DMA60B40/100	B.37	609852	DM60C25/100	B.37
606995	DPCAi100B16/300	B.15	607688	DOCS 532/300	B.41	609761	DMA60B06/300	B.37	609853	DM60C32/100	B.37
606996	DPCAi100B20/300	B.15	607689	DOCS 532/500	B.41	609762	DMA60B10/300	B.37	609854	DM60C40/100	B.37
606997	DPCAi100B25/300	B.15									





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609864	DMA100B06/010	B.39	609956	DM100C06/010	B.39	610376		F.39	619106	MOD2SBI	F.10
609865	DMA100B10/010	B.39	609957	DM100C10/010	B.39	610377		F.39	619107	MOD2MCRCD	F.10
609866	DMA100B13/010	B.39	609958	DM100C13/010	B.39	610378		F.39	619108	MOD2MCRCD	F.10
609867	DMA100B16/010	B.39	609959	DM100C16/010	B.39	610379		F.39	619109	MOD2MCRCD	F.10
609868	DMA100B20/010	B.39	609960	DM100C20/010	B.39	610380		F.30	619110	MOD2DIL200	F.10
609869	DMA100B06/030	B.39	609961	DM100C04/030	B.39	610381		F.39	619111	MOD2ISO3	F.9
609870	DMA100B10/030	B.39	609962	DM100C06/030	B.39	610382		F.30	619112	MOD2RCDB	F.9
609871	DMA100B13/030	B.39	609963	DM100C10/030	B.39	610383		F.39	619113	MOD2RCDC	F.9
609872	DMA100B16/030	B.39	609964	DM100C13/030	B.39	610384		F.39	619114	MOD2DIL125	F.9
609873	DMA100B20/030	B.39	609965	DM100C16/030	B.39	610385		F.30	619115	MOD2DC	F.9
609874	DMA100B25/030	B.39	609966	DM100C20/030	B.39	610386		F.30	619116	MOD2HDGP	F.10
609875	DMA100B32/030	B.39	609967	DM100C25/030	B.39	610387		F.30	619118		F.11
609876	DMA100B40/030	B.39	609968	DM100C32/030	B.39	610396		F.30	619119	MOD2RCDA	F.9
609877	DMA100B06/100	B.39	609969	DM100C40/030	B.39	610484		F.11	619120	MOD2RCDBTD	F.9
609878	DMA100B10/100	B.39	609970	DM100C04/100	B.39	610532		F.30	619122	MOD2DB240	F.9
609879	DMA100B13/100	B.39	609971	DM100C06/100	B.39	610629		F.30	619124	MOD2DIL125/	F.9
609880	DMA100B16/100	B.39	609972	DM100C10/100	B.39	610630		F.30	619177	MOD2PA40	F.9
609881	DMA100B20/100	B.39	609973	DM100C13/100	B.39	610636		F.29	619178	MOD2PA60	F.9
609882	DMA100B25/100	B.39	609974	DM100C16/100	B.39	610637		F.29	619179	MOD2PA80	F.9
609883	DMA100B32/100	B.39	609975	DM100C20/100	B.39	610638		F.29	619180	MOD2PA120	F.9
609884	DMA100B40/100	B.39	609976	DM100C25/100	B.39	610639		F.29	619181	MOD2PA180	F.9
609885	DMA100B06/300	B.39	609977	DM100C32/100	B.39	610645		F.30	619192	MOD2PA240	F.9
609886	DMA100B10/300	B.39	609978	DM100C40/100	B.39	610646		F.29	619200		F.23
609887	DMA100B13/300	B.39	609979	DM100C04/300	B.39	610647		F.29	619201		F.23
609888	DMA100B16/300	B.39	609980	DM100C06/300	B.39	610648		F.29	619202		F.23
609889	DMA100B20/300	B.39	609981	DM100C10/300	B.39	610649		F.29	619203		F.23
609890	DMA100B25/300	B.39	609982	DM100C13/300	B.39	610654		F.29	619204		F.23
609891	DMA100B32/300	B.39	609983	DM100C16/300	B.39	610655		F.29	619205		F.23
609892	DMA100B40/300	B.39	609984	DM100C20/300	B.39	610656		F.29	619206		F.23
609893	DMA100C04/010	B.39	609985	DM100C25/300	B.39	610657		F.29	619207		F.23
609894	DMA100C06/010	B.39	609986	DM100C32/300	B.39	617000			619208		F.23
609895	DMA100C10/010	B.39	609987	DM100C40/300	B.39	617018		F.7	619300		F.37
609896	DMA100C13/010	B.39	610000			617934		F.5	619301		F.37
609897	DMA100C16/010	B.39	610020		F.29	617935		F.5	619302		F.37
609898	DMA100C20/010	B.39	610021		F.3	617936		F.5	619303		F.37
609899	DMA100C04/030	B.39	610022		F.29	617937		F.5	619304		F.37
609900	DMA100C06/030	B.39	610063		F.11	617938		F.5	619305		F.37
609901	DMA100C10/030	B.39	610090		F.19	617939		F.5	619319		F.27
609902	DMA100C13/030	B.39	610091		F.19	617940		F.5	619320		F.27
609903	DMA100C16/030	B.39	610130		F.16	617941		F.5	619321		F.27
609904	DMA100C20/030	B.39	610132		F.16	617942		F.5	619322		F.37
609905	DMA100C25/030	B.39	610133		F.16	617943		F.5	619323		F.27
609906	DMA100C32/030	B.39	610140		F.21	617944		F.5	619325		F.37
609907	DMA100C40/030	B.39	610141		F.21	617945		F.5	619326		F.37
609908	DMA100C04/100	B.39	610142		F.11	617946		F.5	619327		F.37
609909	DMA100C06/100	B.39	610170		F.30	617947		F.7	619328		F.37
609910	DMA100C10/100	B.39	610185		F.24	617948		F.7	619329		F.37
609911	DMA100C13/100	B.39	610186		F.21	617949		F.7	619331		F.37
609912	DMA100C16/100	B.39	610187		F.21	617961		F.23	619332		F.37
609913	DMA100C20/100	B.39	610232		F.3	617962		F.23	619333		F.37
609914	DMA100C25/100	B.39	610233		F.3	617965		F.7	619334		F.37
609915	DMA100C32/100	B.39	610238		F.3	617966		F.6	619335		F.37
609916	DMA100C40/100	B.39	610239		F.2	617967		F.6	619337		F.37
609917	DMA100C04/300	B.39	610240		F.2	617968		F.6	619338		F.27
609918	DMA100C06/300	B.39	610241		F.2	617969		F.6	619339		F.37
609919	DMA100C10/300	B.39	610242		F.2	617970		F.6	619340		F.37
609920	DMA100C13/300	B.39	610243		F.2	617992		F.29	619341		F.37
609921	DMA100C16/300	B.39	610244		F.2	618000			619342		F.37
609922	DMA100C20/300	B.39	610248		F.2	618116		F.23	619343		F.37
609923	DMA100C25/300	B.39	610249		F.2	618117		F.23	619344		F.37
609924	DMA100C32/300	B.39	610257		F.2	618293		E.7	619345		F.37
609925	DMA100C40/300	B.39	610265		F.30	618294		E.4	619350		F.37
609926	DM100B06/010	B.39	610270		F.30	618300	MOD2SPK1	F.9	619362		F.37
609927	DM100B10/010	B.39	610277		F.29	618503		F.23	619369		F.27
609928	DM100B13/010	B.39	610287		F.29	618505		F.23	619370		F.27
609929	DM100B16/010	B.39	610297		F.29	618506		F.23	619371		F.27
609930	DM100B20/010	B.39	610305		F.29	618509		F.23	619372		F.27
609931	DM100B06/030	B.39	610313		F.33	618511		F.23	619373		F.27
609932	DM100B10/030	B.39	610314		F.33	618512		F.23	619374		F.27
609933	DM100B13/030	B.39	610315		F.33	618515		F.23	619375		F.27
609934	DM100B16/030	B.39	610316		F.33	618517		F.23	619376		F.27
609935	DM100B20/030	B.39	610317		F.33	618518		F.23	619411		F.23
609936	DM100B25/030	B.39	610318		F.33	618519		F.23	619605	MOD2MCB63	F.9
609937	DM100B32/030	B.39	610328		F.2	618520		F.23	619606	MOD2MCB100	F.9
609938	DM100B40/030	B.39	610329		F.2	618521		F.23	62000		
609939	DM100B06/100	B.39	610000			618522		F.23	624785		E.10
609940	DM100B10/100	B.39	610330		F.2	618523		F.23	624786		E.10
609941	DM100B13/100	B.39	610000			618524		F.24	624000		
609942	DM100B16/100	B.39	610331		F.2	618527		F.24	624795		E.8
609943	DM100B20/100	B.39	610332		F.2	618528		F.24	624796		E.5
609944	DM100B25/100	B.39	610344		F.21	618529		F.23	624797		E.5
609945	DM100B32/100	B.39	610345		F.21	618530		F.23	624798		E.5
609946	DM100B40/100	B.39	610354		F.19	618531		F.24	624799		E.7
609947	DM100B06/300	B.39	610355		F.19	619000			624800		E.5
609948	DM100B10/300	B.39	610368		F.39	619018		F.11	624805		E.4
609949	DM100B13/300	B.39	610369		F.39	619084		F.24	624807		E.5
609950	DM100B16/300	B.39	610370		F.39	619100	MOD2DB40	F.9	62000		
609951	DM100B20/300	B.39	610371		F.39	619101	MOD2DB60	F.9	624808		E.10
609952	DM100B25/300	B.39	610372		F.39	619102	MOD2DB80	F.9	624809		E.10
609953	DM100B32/300	B.39	610373		F.39	619103	MOD2DB120	F.9	624818		E.10
609954	DM100B40/300	B.39	610374		F.39	619104	MOD2DB180	F.9	624000		
609955	DM100C04/010	B.39	610375		F.39	619105	MOD218D	F.10	624839		E.4

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624860		E.8	660144	SAP2 I+II 12.5 TNS C	D.70	665193	MT961HARCOM	D.63	665909	TR+S15	D.51
62000			660147	SAP3 I+II 12.5 TNC	D.70	665194	MT144UMD	D.65	665910	TR+S25	D.51
624873		E.10	660148	SAP3 I+II 12.5 TNC C	D.70	665195	MT144UM	D.65	665911	TR+S40	D.51
624874		E.10	660150	SAP4 I+II 12.5 TT	D.70	665196	MT144UD	D.65	665912	TR+S63	D.51
624881		E.10	660151	SAP4 I+II 12.5 TTC	D.70	665197	MT8180	D.65	665917	TOR+110	B.63
624882		E.10	660152	SAP4 I+II 12.5 TNS	D.70	665198	MT8140	D.65	665918	TR&KT+C3MOD	D.51
624883		E.10	660156	SAP4 I+II 12.5 TNS C	D.70	665199	MT8140R	D.65	665919	TR&KT+C6MOD	D.51
624000			660158	SAP1 II 40/230	D.71	665239	MTMBUS	D.65	665924	MT+CT2500	D.59
624892		E.5	660159	SAP1 II 40/400	D.71	665240	MTSDMEM	D.65	665925	MT+CT3200	D.59
624893		E.5	660160	SAP1 II 40/230 C	D.71	665243	MTBPU5	D.65	665926	MT+CT4000	D.59
62000			660162	SAP1 II 40/400 C	D.71	665244	MTAdapt	D.61	666000		
624896		E.10	660163	SAP1 II 40N	D.71	665245	MT485Enet	D.65	666126	CTX 20 11 230 A	D.9
624897		E.10	660169	SAP1 II 20N	D.71	665246	MTUSB485	D.65	666127	CTX 20 11 024 A	D.9
624898		E.10	660171	SAP2 II 40/230 TT	D.71	665248	MT+D1i 32 1M	D.53	666128	CTX 20 02 230 A	D.9
624000			660172	SAP2 II 40/230 TTC	D.71	665249	MT+D1i 45 1M MID	D.53	666129	CTX 20 02 024 A	D.9
624929	KS	A.78	660173	SAP2 II 20/230 TT	D.71	665250	MT+D1i 63 2M	D.53	666130	CTX 20 20 012 A	D.9
624945	TELE L 110	A.41	660174	SAP2 II 20/230 TTC	D.71	665251	MT+D1i 63 2M MID	D.53	666131	CTX 20 20 230 A	D.9
624946	TELE L 24	A.41	660175	SAP2 II 40/230 TNS	D.71	665252	MT+D1485 63 2M	D.53	666132	CTX 20 20 240 A	D.9
624957		E.7	660176	SAP2 II 40/230 TNSC	D.71	665253	MT+D1485 63 2M MID	D.53	666133	CTX 20 20 024 A	D.9
624958		E.7	660177	SAP2 II 20/230 TNS	D.71	665254	MT+D3Ni 63 4M	D.53	666134	CTX 20 20 048 A	D.9
624959		E.4	660178	SAP2 II 20/230 TNSC	D.71	665255	MT+D3Ni 63 4M MID	D.53	666135	CTX 24 22 230 U	D.9
624960		E.4	660179	SAP3 II 40/400 TNC	D.71	665256	MT+D3N485 63 4M	D.53	666136	CTX 24 22 024 U	D.9
624961		E.4	660180	SAP3 II 40/400 TNCC	D.71	665257	MT+D3N485 63 4MMID	D.53	666137	CTX 24 30 230 U	D.9
624962		E.4	660181	SAP3 II 20/400 TNC	D.71	665258	MT+D3Ni x/5 4M	D.53	666138	CTX 24 30 024 U	D.9
624963		E.4	660182	SAP3 II 20/400 TNCC	D.71	665259	MT+D3Ni x/5 4M MID	D.53	666139	CTX 24 04 230 U	D.9
624964		E.4	660183	SAP4 II 40/400 TT	D.71	665260	MT+D3N485 x/5 4M	D.53	666140	CTX 24 04 024 U	D.9
624965		E.4	660184	SAP4 II 40/400 TTC	D.71	665261	MT+D3N485 x/54MMID	D.53	666141	CTX 24 40 012 U	D.9
624966		E.4	660185	SAP4 II 20/400 TT	D.71	665262	MT+ImpCon	D.53	666142	CTX 24 40 230 U	D.9
624967		E.4	660186	SAP4 II 20/400 TTC	D.71	665264	MT+AA 4M	D.57	666143	CTX 24 40 240 U	D.9
624968		E.4	660187	SAP4 II 40/400 TNS	D.71	665265	MT+AA5 4M	D.57	666144	CTX 24 40 024 U	D.9
624969		E.4	660188	SAP4 II 40/400 TNSC	D.71	665266	MT+AA10 4M	D.57	666145	CTX 24 40 048 U	D.9
624970		E.4	660189	SAP4 II 20/400 TNS	D.71	665267	MT+AA15 4M	D.57	666146	CTX 20 20 230 U	D.9
624971		E.4	660190	SAP4 II 20/400 TNSC	D.71	665268	MT+AA20 4M	D.57	666147	CTX 40 20 024 U	D.9
624972		E.4	660195	SAPVII40/600	D.78	665269	MT+AA25 4M	D.57	666148	CTX 40 30 230 U	D.9
624973		E.4	660196	SAPVII40/600C	D.78	665270	MT+AA30 4M	D.57	666149	CTX 40 30 024 U	D.9
624974		E.4	660197	SAPVII40/1000	D.78	665271	MT+AV300 4M	D.57	666150	CTX 40 40 012 U	D.9
624975		E.6	660198	SAPVII40/1000C	D.78	665272	MT+AV500 4M	D.57	666151	CTX 40 40 230 U	D.9
624976		E.6	660199	SAM I+II 25/230	D.70	665273	MT+AF 4M	D.57	666152	CTX 40 40 240 U	D.9
624977		E.6	660274	SAM I+II 50N	D.70	665274	MT+AH110 2M	D.57	666153	CTX 40 40 024 U	D.9
624978		E.6	660294	SAM I+II 12.5/230	D.70	665275	MT+AH230 2M	D.57	666154	CTX 40 40 048 U	D.9
624979		E.6	660296	SAM I+II 25N	D.70	665276	MT+AH24 2M	D.57	666155	CTX 63 20 230 U	D.9
624980		E.6	660297	SAM II 20/230	D.71	665283	MT+SP40	D.57	666156	CTX 63 40 230 U	D.9
624981		E.6	660299	SAM II 20N	D.71	665284	MT+SP50	D.57	666157	CTX 63 40 240 U	D.9
624982		E.6	660373	SAM II 40/230	D.71	665285	MT+SP60	D.57	666158	CTX 63 40 024 U	D.9
624983		E.6	660374	SAM II 40/400	D.71	665286	MT+SP80	D.57	666159	CTX TS 3	D.9
624984		E.6	660375	SAM II 40N	D.71	665287	MT+SP100	D.57	666160	CTX TS 2	D.9
624985		E.6	660378	SAM II 40/600PV	D.78	665288	MT+SP150	D.57	666162	CTX 06 11	D.9
624986		E.6	660379	SAM II 40/1000PV	D.78	665289	MT+SP200	D.57	666163	CTX 06 20	D.9
624987		E.6	660391	SAP1 I+II 100N	D.70	665290	MT+SP250	D.57	666164	CTX DN 20 20 230 A	D.9
624988		E.6	660393	SAP1 I+II 100N	D.70	665291	MT+SP300	D.57	666165	CTX DN 24 30 230 U	D.9
624989		E.6	660494	SA BLOCK I 50 2M	D.70	665292	MT+SP400	D.57	666166	CTX DN 24 40 230 U	D.9
624990		E.6	660495	SA BLOCK I 100 2M	D.70	665293	MT+SP500	D.57	666167	CTX DN 40 20 230 U	D.9
624991		E.4	660496	SAPVII40/1500	D.78	665294	MT+SP600	D.57	666168	CTX DN 40 30 230 U	D.9
624993	EV-G.1.2.80-90°	D.72	660497	SAPVII40/1500C	D.78	665295	MT+SP800	D.57	666169	CTX DN 40 40 230 U	D.9
624994		E.4	660498	SAM II 40/1500PV	D.78	665296	MT+SP1000	D.57	666170	CTX 40 02 230 U	D.9
624995		E.5	660608	SAP1II40175	D.75	665297	TOR+28	B.63	666340	AST B 12	D.7
624996		E.5	660609	SAP1II40275	D.75	665298	TOR+35	B.63	666342	AST B 24	D.7
629000			660611	SAP1II40320	D.75	665299	TOR+60	B.63	666343	AST L CL	D.7
629867		E.8	660612	SAP1II40175C	D.75	665368	MT+CT40	D.59	666344	AST L GN	D.7
644000			660613	SAP1II40275C	D.75	665369	MT+CT50	D.59	666345	AST L OR	D.7
644873		E.6	660614	SAP1II40320C	D.75	665370	MT+CT60	D.59	666346	AST L RD	D.7
644875		E.6	660615	SAP2II40175	D.75	665371	MT+CT80	D.59	666347	AST B	D.7
644876		E.6	660616	SAP2II40320	D.75	665372	MT+CT100	D.59	666499	PLS + / CTX + SP	D.9
644877		E.6	660617	SAP2II40175C	D.75	665373	MT+CT150	D.59	666501	MSC SEP	D.7
644879		E.6	660618	SAP2II40320C	D.75	665374	MT+CT200	D.59	666502	MSC SPP	D.7
644880		E.6	660619	SAP3II40175	D.75	665375	MT+CT250	D.59	666555	AST R ES E	D.3
644881		E.6	660620	SAP3II40320	D.75	665376	MT+CT300	D.59	666556	AST R ES S	D.3
644882		E.6	660621	SAP3II40175C	D.75	665377	MT+CT400	D.59	666557	AST R TS	D.3
644884		E.7	660622	SAP3II40320C	D.75	665378	MT+CT500	D.59	666558	AST M 100 10	D.3
644885		E.7	660624	SAP3II30750	D.75	665379	MT+CT600	D.59	666559	AST M 100 20	D.3
644886		E.7	660626	SAP3II30750C	D.75	665380	MT+CT800	D.59	666560	AST M 100 30	D.3
644890		E.6	660627	SAP4II40320	D.75	665381	MT+CT1000	D.59	666561	AST M 100 40	D.3
644891		E.8	660628	SAP4II40320C	D.75	665382	MT+CT1200	D.59	666562	AST M 63 10	D.3
644893	EV-G.1.3.80-90°	D.72	660629	SAP4II40175	D.75	665383	MT+CT1500	D.59	666563	AST M 63 20	D.3
644897	EV-G.1.8.80-90°	D.72	660630	SAP4II40175C	D.75	665384	MT+CT2000	D.59	666564	AST M 63 30	D.3
646000			660631	SAMIII40175	D.75	665385	MT+S4 3M	D.57	666565	AST M 63 40	D.3
646083		E.7	660632	SAMIII40275	D.75	665386	MT+S7 3M	D.57	666566	AST M 80 10	D.3
646084		E.7	660633	SAMIII40320	D.75	665387	MT+D DV500 DA5 F 4M	D.55	666567	AST M 80 20	D.3
646091		E.5	660634	SAMIII30750	D.75	665389	MT+RS485/Ethernet	D.53	666568	AST M 80 30	D.3
646092		E.5	661000			665390	MT+RSC TOP	D.53	666569	AST M 80 40	D.3
650000			661692	ASTBLR230	D.5	665391	MT+D TOPI 4M	D.55	666570	AST P 16 01	D.3
650152		E.6	661693	ASTBLG230	D.5	665392	MT+D TOPIRS485 4M	D.55	666571	AST P 16 10	D.3
650153		E.7	661694	ASTBLB230	D.5	665393	MT+D BASIC 4M	D.55	666572	AST P 16 11	D.3
650154		E.7	661695	ASTBLY230	D.5	665394	GRDT+TOP	B.63	666573	AST PL 16 10	D.3
650156		E.4	665000			665395	MT+D PRI BASIC 2M	D.55	666574	AST R 32 20	D.3
650164		E.6	665010	MTDIN1	D.61	665396	MT+ AP 3F 2M	D.55	666575	AST R 32 30	D.3
660000			665011	MTDIN2	D.61	665900	TR+ B 5	D.51	666576	AST R 32 3N	D.3
660125	SAP1 I+II 25/230	D.70	665012	MTDIN1HARCOM	D.61	665901	TR+B 8	D.51	666577	AST R 32 40	D.3
660127	SAP1 I+II 25/230 C	D.70	665155	MTDIN2COM	D.61	665902	TR+B10	D.51	666578	AST R 40 20	D.3
660139	SAP2 I+II 12.5 TT	D.70	665190	MT961	D.63	665903	TR+B15	D.51	666579	AST R 40 30	D.3
660140	SAP2 I+II 12.5 TTC	D.70	665191	MT962	D.63	665904	TR+B16	D.51	666580	AST R 40 3N	D.3
660143	SAP2 I+II 12.5 TNS	D.70	665192	MT962COM	D.63	665905	TR+B30	D.51	666581	AST R 40 40	D.3



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666582	AST R 63 20	D.3	671072	HTI+504C125	A.51	671164	HTI+252D80	A.47	671584	DOC 3125/300	A.40
666583	AST R 63 30	D.3	671073	AST R 504C100	A.51	671165	HTI+251D125	A.47	671585	DOC 3125/300	A.40
666584	AST R 63 3N	D.3	671074	HTI+504C80	A.51	671166	HTI+251D100	A.47	671589	DOCA 4125/030	A.40
666585	AST R 63 40	D.3	671075	HTI+503C125	A.51	671167	HTI+251D80	A.47	671590	DOC 4125/030	A.40
666586	AST S 16 1	D.3	671076	HTI+503C100	A.51	671168	HTI+164D125	A.45	671591	DOCA 4125/300	A.40
666587	AST S 16 10	D.3	671077	HTI+503C80	A.51	671169	HTI+164D100	A.45	671592	DOC 4125/300	A.40
666588	AST S 16 2	D.3	671078	HTI+502C125	A.51	671170	HTI+164D80	A.45	671597	Hti H	A.41
666589	AST S 16 20	D.3	671079	HTI+502C100	A.51	671171	HTI+163D125	A.45	671598	Hti S	A.41
666590	AST S 16 30	D.3	671080	HTI+502C80	A.51	671172	HTI+163D100	A.45	671599	Hti H/S	A.41
666591	AST S 16 30 2	D.3	671081	HTI+501C125	A.51	671173	HTI+163D80	A.45	671600	Hti HH/HS	A.41
666592	AST S 16 40 2	D.3	671082	HTI+501C100	A.51	671174	HTI+162D125	A.45	671602	Hti HSR	A.41
666593	AST S 16 40	D.3	671083	HTI+501C80	A.51	671175	HTI+162D100	A.45	672000		
666594	AST S 32 1	D.3	671084	HTI+254C125	A.47	671176	HTI+162D80	A.45	672402	EP101K0.5	A.31
666595	AST S 32 10	D.3	671085	HTI+254C100	A.47	671177	HTI+161D125	A.45	672403	EP101K01	A.31
666596	AST S 32 2	D.3	671086	HTI+254C80	A.47	671178	HTI+161D100	A.45	672404	EP101K02	A.31
666597	AST S 32 20	D.3	671087	HTI+253C125	A.47	671179	HTI+161D80	A.45	672405	EP101K03	A.31
666598	AST S 32 30 2	D.3	671088	HTI+253C100	A.47	671504	Hti 101 B080	A.39	672406	EP101K04	A.31
666599	AST S 32 30	D.3	671089	HTI+253C80	A.47	671505	Hti 101 B100	A.39	672407	EP101K06	A.31
666600	AST S 32 40	D.3	671090	HTI+252C125	A.47	671506	Hti 101 B125	A.39	672408	EP101K08	A.31
666601	AST S 32 40 2	D.3	671091	HTI+252C100	A.47	671507	HTI+502B125Ai/030	A.55	672409	EP101K10	A.31
666602	AST SL 16 10	D.3	671092	HTI+252C80	A.47	671508	HTI+502C125Ai/030	A.55	672411	EP101K16	A.31
666603	AST SL 16 20	D.3	671093	HTI+251C125	A.47	671509	HTI+502D125Ai/030	A.55	672412	EP101K20	A.31
666604	AST SL 32 10	D.3	671094	HTI+251C100	A.47	671510	Hti 102 B080	A.39	672413	EP101K25	A.31
666605	AST SL 32 20	D.3	671095	HTI+251C80	A.47	671511	Hti 102 B100	A.39	672414	EP101K32	A.31
666606	AST SZ 16 1	D.3	671096	HTI+164C125	A.45	671512	Hti 102 B125	A.39	672415	EP101K40	A.31
666607	AST SZ 16 2	D.3	671097	HTI+164C100	A.45	671513	HTI+502B125A/300	A.55	672416	EP101K50	A.31
666608	AST SZ 32 1	D.3	671098	HTI+164C80	A.45	671514	HTI+502C125A/300	A.55	672417	EP101K63	A.31
666609	AST SZ 32 2	D.3	671099	HTI+163C125	A.45	671515	HTI+502D125A/300	A.55	672434	EP102K0.5	A.31
666614	AST M 40 10	D.3	671100	HTI+163C100	A.45	671516	Hti 103 B080	A.39	672435	EP102K01	A.31
666615	AST M 40 20	D.3	671101	HTI+163C80	A.45	671517	Hti 103 B100	A.39	672436	EP102K02	A.31
666616	AST M 40 30	D.3	671102	HTI+162C125	A.45	671518	Hti 103 B125	A.39	672437	EP102K03	A.31
666617	AST M 40 40	D.3	671103	HTI+162C100	A.45	671519	HTI+503B125Ai/030	A.55	672438	EP102K04	A.31
667000			671104	HTI+162C80	A.45	671520	HTI+503C125Ai/030	A.55	672439	EP102K06	A.31
667247	EP104TB16	A.75	671105	HTI+161C125	A.45	671521	HTI+503D125Ai/030	A.55	672440	EP102K08	A.31
667248	EP101TC25	A.75	671106	HTI+161C100	A.45	671522	Hti 104 B80	A.39	672441	EP102K10	A.31
667249	CBT H NO-NC	C.10	671107	HTI+161C80	A.45	671523	Hti 104 B100	A.39	672443	EP102K16	A.31
667250	CBT H 2NC	C.10	671108	HTI+504B125	A.51	671524	Hti 104 B125	A.39	672444	EP102K20	A.31
667251	CBT H 2NO	C.10	671109	HTI+504B100	A.51	671525	HTI+503B125A/300	A.55	672445	EP102K25	A.31
667252	TELE LT-1	C.11	671110	HTI+504B80	A.51	671526	HTI+503C125A/300	A.55	672446	EP102K32	A.31
667253	TELE LT-2	C.11	671111	HTI+503B125	A.51	671527	HTI+503D125A/300	A.55	672447	EP102K40	A.31
667483	SA BLOCK II 15LN	D.72	671112	HTI+503B100	A.51	671528	Hti 101 C080	A.39	672448	EP102K50	A.31
667486	SA BLOCK I and II 100	D.72	671113	HTI+503B80	A.51	671529	Hti 101 C100	A.39	672449	EP102K63	A.31
667487	SA BLOCK I and II 100N	D.72	671114	HTI+502B125	A.51	671530	Hti 101 C125	A.39	672450	EP103K0.5	A.31
667488	SA BLOCK II 15/230 LNE	D.72	671115	HTI+502B100	A.51	671531	HTI+504B125Ai/030	A.55	672451	EP103K01	A.31
667489	SA BLOCK II 15/230 LLE	D.72	671116	HTI+502B80	A.51	671532	HTI+504C125Ai/030	A.55	672452	EP103K02	A.31
667490	SA BLOCK II 40/230 LNE	D.72	671117	HTI+501B125	A.51	671533	HTI+504D125Ai/030	A.55	672453	EP103K03	A.31
667491	SA BLOCK II 40/230 LLE	D.72	671118	HTI+501B100	A.51	671534	Hti 102 C080	A.39	672454	EP103K04	A.31
667494	SA BLOCK II 15/400 3L+NE	D.72	671119	HTI+501B80	A.51	671535	Hti 102 C100	A.39	672455	EP103K06	A.31
667495	SA BLOCK II 15/400 4L/NE	D.72	671120	HTI+254B125	A.47	671536	Hti 102 C125	A.39	672456	EP103K08	A.31
667496	SA BLOCK II 40/400 3L+NE	D.72	671121	HTI+254B100	A.47	671537	HTI+504B125A/300	A.55	672457	EP103K10	A.31
667497	SA BLOCK II 40/400 4L/NE	D.72	671122	HTI+254B80	A.47	671538	HTI+504C125A/300	A.55	672459	EP103K16	A.31
667517	SA BLOCK I and II 65	D.72	671123	HTI+253B125	A.47	671539	HTI+504D125A/300	A.55	672460	EP103K20	A.31
667518	SA BLOCK I and II 65N	D.72	671124	HTI+253B100	A.47	671540	Hti 103 C080	A.39	672461	EP103K25	A.31
669000			671125	HTI+253B80	A.47	671541	Hti 103 C100	A.39	672462	EP103K32	A.31
669486	EPP	A.78	671126	HTI+252B125	A.47	671542	Hti 103 C125	A.39	672463	EP103K40	A.31
671000			671127	HTI+252B100	A.47	671543	DOCAHTI+2100/030	A.53	672464	EP103K50	A.31
671024	HTI+364C125	A.49	671128	HTI+252B80	A.47	671544	DOCAHTI+2100/300	A.53	672465	EP103K63	A.31
671025	HTI+364C100	A.49	671129	HTI+251B125	A.47	671545	DOCAHTI+2100/500	A.53	672466	EP104K0.5	A.31
671026	HTI+364C80	A.49	671130	HTI+251B100	A.47	671546	Hti 104 C080	A.39	672467	EP104K01	A.31
671027	HTI+363C125	A.49	671131	HTI+251B80	A.47	671547	Hti 104 C100	A.39	672468	EP104K02	A.31
671028	HTI+363C100	A.49	671132	HTI+164B125	A.45	671548	Hti 104 C125	A.39	672469	EP104K03	A.31
671029	HTI+363C80	A.49	671133	HTI+164B100	A.45	671549	DOCSHTI+2100/300	A.53	672470	EP104K04	A.31
671030	HTI+362C125	A.49	671134	HTI+164B80	A.45	671550	DOCSHTI+2100/1000	A.53	672471	EP104K06	A.31
671031	HTI+362C100	A.49	671135	HTI+163B125	A.45	671551	DOCAHTI+3100/030	A.53	672472	EP104K08	A.31
671032	HTI+362C80	A.49	671136	HTI+163B100	A.45	671552	Hti 101 D080	A.39	672473	EP104K10	A.31
671033	HTI+361C125	A.49	671137	HTI+163B80	A.45	671553	Hti 101 D100	A.39	672475	EP104K16	A.31
671034	HTI+361C100	A.49	671138	HTI+162B125	A.45	671554	Hti 101 D125	A.39	672476	EP104K20	A.31
671035	HTI+361C80	A.49	671139	HTI+162B100	A.45	671555	DOCAHTI+3100/300	A.53	672477	EP104K25	A.31
671036	HTI+364B125	A.49	671140	HTI+162B80	A.45	671556	DOCAHTI+3100/500	A.53	672478	EP104K32	A.31
671037	HTI+364B100	A.49	671141	HTI+161B125	A.45	671557	DOCSHTI+3100/300	A.53	672479	EP104K40	A.31
671038	HTI+364B80	A.49	671142	HTI+161B100	A.45	671558	Hti 102 D080	A.39	672480	EP104K50	A.31
671039	HTI+363B125	A.49	671143	HTI+161B80	A.45	671559	Hti 102 D100	A.39	672481	EP104K63	A.31
671040	HTI+363B100	A.49	671144	HTI+504D125	A.51	671560	Hti 102 D125	A.39	672567	CA H	C.4
671041	HTI+363B80	A.49	671145	HTI+504D100	A.51	671561	DOCSHTI+3100/500	A.53	672568	CA S/H	C.4
671042	HTI+362B125	A.49	671146	HTI+504D80	A.51	671562	DOCSHTI+3100/1000	A.53	672569	CA S/H/G	C.4
671043	HTI+362B100	A.49	671147	HTI+503D125	A.51	671563	DOCAHTI+4100/030	A.53	672570	CB SH/HH-R	C.5
671044	HTI+362B80	A.49	671148	HTI+503D100	A.51	671564	Hti 103 D080	A.39	672571	CB SH/HH-L	C.5
671045	HTI+361B125	A.49	671149	HTI+503D80	A.51	671565	Hti 103 D100	A.39	672572	PBS	C.9
671046	HTI+361B100	A.49	671150	HTI+502D125	A.51	671566	Hti 103 D125	A.39	672573	TELE L-1	C.9
671047	HTI+361B80	A.49	671151	HTI+502D100	A.51	671567	DOCAHTI+4100/300	A.53	672574	TELE L-2	C.9
671048	HTI+364D125	A.49	671152	HTI+502D80	A.51	671568	DOCAHTI+4100/500	A.53	672575	TELE U-230	C.9
671049	HTI+364D100	A.49	671153	HTI+501D125	A.51	671569	DOCSHTI+4100/300	A.53	672576	TELE U-12	C.9
671050	HTI+364D80	A.49	671154	HTI+501D100	A.51	671570	Hti 104 D080	A.39	672577	TELE U-24	C.9
671051	HTI+363D125	A.49	671155	HTI+501D80	A.51	671571	Hti 104 D100	A.39	672578	TELE U-48	C.9
671052	HTI+363D100	A.49	671156	HTI+254D125	A.47	671572	Hti 104 D125	A.39	672580	TELE MP	C.7
671053	HTI+363D80	A.49	671157	HTI+254D100	A.47	671574	DOC 2125/030	A.40	672972	CA UN H	C.6
671054	HTI+362D125	A.49	671158	HTI+254D80	A.47	671576	DOC 2125/300	A.40	672973	CA UN S/H	C.6
671055	HTI+362D100	A.49	671159	HTI+253D125	A.47	671579	DOCSHTI+4100/500	A.53	672974	CA UN S/H/G	C.6
671056	HTI+362D80	A.49	671160	HTI+253D100	A.47	671580	DOCSHTI+4100/1000	A.53	673000		
671057</											



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673270	EP101UCRK02	A.73	674407	G32C32	A.21	674565	G42B10	A.23	674712	G61NB50	A.25
673271	EP101UCRK03	A.73	674408	G32C40	A.21	674567	G42B16	A.23	674713	G61NB63	A.25
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673310	EP101UCC16	A.37	674471	G33B20	A.21	674623	G61NC25	A.25	674771	G61D40	A.25
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673313	EP101UCC32	A.37	674474	G33B40	A.21	674626	G61NC50	A.25	674776	G61ND02	A.25
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673326	EP102UCC16	A.37	674493	G41C06	A.23	674641	G62C40	A.25	674789	G61ND63	A.25
673327	EP121UCC20	A.37	674495	G41C10	A.23	674642	G62C50	A.25	674792	G62D02	A.25
673328	EP102UCC25	A.37	674497	G41C16	A.23	674643	G62C63	A.25	674794	G62D04	A.25
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673337	EP101UCB25	A.37	674513	G42C16	A.23	674657	G63C40	A.25	674805	G62D63	A.25
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673339	EP101UCB40	A.37	674515	G42C25	A.23	674659	G63C63	A.25	674810	G63D04	A.25
673340	EP101UCB50	A.37	674516	G42C32	A.23	674660	G64C0.5	A.25	674811	G63D06	A.25
673341	EP101UCB63	A.37	674517	G42C40	A.23	674662	G64C02	A.25	674813	G63D10	A.25
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673343	EP102UCB10	A.37	674524	G43C04	A.23	674665	G64C06	A.25	674816	G63D20	A.25
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673345	EP102UCB20	A.37	674527	G43C10	A.23	674669	G64C16	A.25	674818	G63D32	A.25
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673349	EP102UCB50	A.37	674532	G43C32	A.23	674673	G64C40	A.25	674824	G64D02	A.25
673350	EP102UCB63	A.37	674533	G43C40	A.23	674674	G64C50	A.25	674826	G64D04	A.25
674000			674538	G44C02	A.23	674675	G64C63	A.25	674827	G64D06	A.25
674381	G31C02	A.21	674540	G44C04	A.23	674692	G61B06	A.25	674829	G64D10	A.25
674383	G31C04	A.21	674541	G44C06	A.23	674694	G61B10	A.25	674831	G64D16	A.25
674384	G31C06	A.21	674543	G44C10	A.23	674696	G61B16	A.25	674832	G64D20	A.25
674386	G31C10	A.21	674545	G44C16	A.23	674697	G61B20	A.25	674833	G64D25	A.25
674388	G31C16	A.21	674546	G44C20	A.23	674698	G61B25	A.25	674834	G64D32	A.25
674389	G31C20	A.21	674547	G44C25	A.23	674699	G61B32	A.25	674835	G64D40	A.25
674390	G31C25	A.21	674548	G44C32	A.23	674700	G61B40	A.25	674836	G64D50	A.25
674391	G31C32	A.21	674549	G44C40	A.23	674701	G61B50	A.25	674837	G64D63	A.25
674392	G31C40	A.21	674552	G41B06	A.23	674702	G61B63	A.25	674854	G101C0.5	A.29
674397	G32C02	A.21	674554	G41B10	A.23	674703	G61NB06	A.25	674855	G101C01	A.29
674399	G32C04	A.21	674556	G41B16	A.23	674705	G61NB10	A.25	674856	G101C02	A.29
674400	G32C06	A.21	674557	G41B20	A.23	674707	G61NB16	A.25	674857	G101C03	A.29
674402	G32C10	A.21	674558	G41B25	A.23	674708	G61NB20	A.25	674858	G101C04	A.29
674404	G32C16	A.21	674559	G41B32	A.23	674709	G61NB25	A.25	674859	G101C06	A.29
674405	G32C20	A.21	674560	G41B40	A.23	674710	G61NB32	A.25	674861	G101C10	A.29
674406	G32C25	A.21	674563	G42B06	A.23	674711	G61NB40	A.25	674862	G101C13	A.29



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674864	G101C20	A.29	674981	G102B50	A.29	675090	G104D20	A.29	675205	GT103B32	A.33
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674875	G101NC06	A.29	674991	G103B40	A.29	675115	GT101C03	A.33	675215	GT104B25	A.33
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674879	G101NC16	A.29	674994	G104B06	A.29	675119	GT101C10	A.33	675218	GT104B50	A.33
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674884	G101NC50	A.29	<b>675000</b>			675124	GT101C32	A.33	675223	GT101D03	A.33
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674978	G102B25	A.29	675087	G104D10	A.29	675202	GT103B16	A.33	675302	GT252C02	A.35
674979	G102B32	A.29	675088	G104D13	A.29	675203	GT103B20	A.33	675304	GT252C04	A.35



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675307	GT252C10	A.35	675420	GT252D32	A.35	677151	REC2 DPCA100C16/030	C.17	678188	EPP62B32	A.109
675309	GT252C16	A.35	675421	GT252D40	A.35	677152	REC2 DPCA100C20/030	C.17	678189	EPP62B40	A.109
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675314	GT252C50	A.35	675426	GT253D02	A.35	677157	REC2 DPCA100C16/300	C.17	678194	EPP63B13	A.109
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675317	GT253C01	A.35	675431	GT253D10	A.35	677160	REC2 DPCA100C32/300	C.17	678197	EPP63B25	A.109
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675345	GT254C40	A.35	676551	SFN/8x31	A.113	677182	REC2 DPCA100B20/300	C.17	678219	EPP61C40	A.109
675346	GT254C50	A.35	676552	SF1/8x31	A.113	677183	REC2 DPCA100B25/300	C.17	678220	EPP61C50	A.109
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675350	GT251B10	A.35	676556	SF3N/8x31	A.113	677186	REC TOP EP102 C10	C.19	678223	EPP61NC10	A.109
675352	GT251B16	A.35	676558	SF1/10x38	A.113	677187	REC TOP EP102 C16	C.19	678224	EPP61NC13	A.109
675353	GT251B20	A.35	676559	SFN/10x38	A.113	677188	REC TOP EP102 C20	C.19	678225	EPP61NC16	A.109
675354	GT251B25	A.35	676560	SF2/10x38	A.113	677189	REC TOP EP102 C25	C.19	678226	EPP61NC20	A.109
675355	GT251B32	A.35	676561	SF3/10x38	A.113	677190	REC TOP EP102 C32	C.19	678227	EPP61NC25	A.109
675356	GT251B40	A.35	676562	SF3N/10x38	A.113	677191	REC TOP EP102 C40	C.19	678228	EPP61NC32	A.109
675357	GT251B50	A.35	676563	SFN/14x51	A.113	677192	REC TOP EP102 C50	C.19	678229	EPP61NC40	A.109
675358	GT251B63	A.35	676564	SF1/14x51	A.113	677193	REC TOP EP102 C63	C.19	678230	EPP61NC50	A.109
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675364	GT252B20	A.35	676568	SF3N/14x51	A.113	677197	REC TOP EP104 B25	C.19	678234	EPP62C13	A.109
675365	GT252B25	A.35	676569	SFN/22x58	A.113	677198	REC TOP EP104 B32	C.19	678235	EPP62C16	A.109
675366	GT252B32	A.35	676570	SF1/22x58	A.113	677199	REC TOP EP104 B40	C.19	678236	EPP62C20	A.109
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675368	GT252B50	A.35	676572	SF2/22x58	A.113	678026	REC TOP EP104 B50	C.19	678238	EPP62C32	A.109
675369	GT252B63	A.35	676573	SF3/22x58	A.113	678027	REC TOP EP104 B63	C.19	678239	EPP62C40	A.109
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675372	GT253B10	A.35	676910	LT1 N	A.121	678029	REC TOP EP104 C16	C.19	678241	EPP62C63	A.109
675374	GT253B16	A.35	676911	LT3 N	A.121	678030	REC TOP EP104 C20	C.19	678242	EPP63C06	A.109
675375	GT253B20	A.35	676986	REC2 A 225/30	C.15	678031	REC TOP EP104 C25	C.19	678243	EPP63C10	A.109
675376	GT253B25	A.35	676987	REC2 A 240/30	C.15	678032	REC TOP EP104 C32	C.19	678244	EPP63C13	A.109
675377	GT253B32	A.35	676988	REC2 A 263/30	C.15	678033	REC TOP EP104 C40	C.19	678245	EPP63C16	A.109
675378	GT253B40	A.35	676989	REC2 A 280/30	C.15	678034	REC TOP EP104 C50	C.19	678246	EPP63C20	A.109
675379	GT253B50	A.35	676990	REC2 A 2100/30	C.15	678035	REC TOP EP104 C63	C.19	678247	EPP63C25	A.109
675380	GT253B63	A.35	676991	REC2 Ai 225/30	C.15	678036	REC TOP TT 25	C.19	678248	EPP63C32	A.109
675381	GT254B06	A.35	676992	REC2 Ai 240/30	C.15	678037	REC TOP TT 35	C.19	678249	EPP63C40	A.109
675383	GT254B10	A.35	676993	REC2 Ai 263/30	C.15	678082	HTI+H	A.56	678250	EPP63C50	A.109
675385	GT254B16	A.35	676994	REC2 A 225/300	C.15	678083	HTI+H/S	A.57	678251	EPP63C63	A.109
675386	GT254B20	A.35	676995	REC2 A 240/300	C.15	678084	HTI+KS	A.61	678252	EPP63NC06	A.109
675387	GT254B25	A.35	676996	REC2 A 263/300	C.15	678085	HTI+TELEL220	A.58	678253	EPP63NC10	A.109
675388	GT254B32	A.35	676997	REC2 A 280/300	C.15	678086	HTI+TELEU220	A.59	678254	EPP63NC13	A.109
675389	GT254B40	A.35	676998	REC2 A 2100/300	C.15	678087	HTI+RH-RED	A.61	678255	EPP63NC16	A.109
675390	GT254B50	A.35	676999	REC2 S 240/300	C.15	678088	HTI+RH-BLACK	A.61	678256	EPP63NC20	A.109
675391	GT254B63	A.35	677000			678089	HTI+TELEL110	A.58	678257	EPP63NC25	A.109
675392	GT251D0.5	A.35	677039	REC2 S 263/300	C.15	678090	HTI+TELEL48	A.58	678258	EPP63NC32	A.109
675393	GT251D01	A.35	677040	REC2 S 280/300	C.15	678091	HTI+TELEU48	A.59	678259	EPP63NC40	A.109
675394	GT251D02	A.35	677041	REC2 S 2100/300	C.15	678092	HTI+TELEU24	A.59	678260	EPP63NC50	A.109
675396	GT251D04	A.35	677042	REC2 A 425/30	C.15	678093	HTI+RH-A500	A.61	678261	EPP63NC63	A.109
675397	GT251D06	A.35	677043	REC2 A 440/30	C.15	678094	HTI+RH-DRIVE	A.61	678262	EPP101B06	A.111
675399	GT251D10	A.35	677044	REC2 A 463/30	C.15	678095	HTI+RH-IP54	A.61	678263	EPP101B10	A.111
675401	GT251D16	A.35	677045	REC2 A 480/30	C.15	678172	EPP61B06	A.109	678264	EPP101B13	A.111
675402	GT251D20	A.35	677046	REC2 A 4100/30	C.15	678173	EPP61B10	A.109	678265	EPP101B16	A.111
675403	GT251D25	A.35	677047	REC2 Ai 425/30	C.15	678174	EPP61B13	A.109	678266	EPP101B20	A.111
675404	GT251D32	A.35	677048	REC2 Ai 440/30	C.15	678175	EPP61B16	A.109	678267	EPP101B25	A.111
675405	GT251D40	A.35	677049	REC2 Ai 463/30	C.15	678176	EPP61B20	A.109	678268	EPP101B32	A.111
675406	GT251D50	A.35	677050	REC2 A 425/300	C.15	678177	EPP61B25	A.109	678269	EPP101B40	A.111
675407	GT251D63	A.35	677071	REC2 A 440/300	C.15	678178	EPP61B32	A.109	678270	EPP101B50	A.111
675408	GT252D0.5	A.35	677072	REC2 A 463/300	C.15	678179	EPP61B40	A.109	678271	EPP101B63	A.111
675409	GT252D01	A.35	677073	REC2 A 480/300	C.15	678180	EPP61B50	A.109	678272	EPP102B06	A.111
675410	GT252D02	A.35	677074	REC2 A 4100/300	C.15	678181	EPP61B63	A.109	678273	EPP102B10	A.111
675412	GT252D04	A.35	677075	REC2 S 440/300	C.15	678182	EPP62B06	A.109	678274	EPP102B13	A.111
675413	GT252D06	A.35	677076	REC2 S 463/300	C.15	678183	EPP62B10	A.109			



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678316	EPP102C20	A.111	679559	SF1/22X58IM	A.113	681509	EP102RucC04	A.73	682224	EP103ULH2B35	A.65
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678328	EPP103C32	A.111	679571	SFUL1/10X38IS	A.119	681594	EP103K1.6	A.31	682236	EP102ULH2C50	A.65
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678374	FPPA425/300	B.59	681458	EP103B40RAIL	A.71	681627	EP62K25	A.27	682265	EP101ULH3B16	A.63
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678376	FPPA463/300	B.59	681460	EP103B63RAIL	A.71	681629	EP62K40	A.27	682267	EP101ULH3B25	A.63
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678378	FPPS263/300	B.59	681462	EP103C01RAIL	A.71	681631	EP62K63	A.27	682269	EP101ULH3B32	A.63
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682290	EP103ULH4B15	A.63	682382	EP102ULH4D20	A.63	682843	EP104Z03	A.31	685744	CONTAXR1622024A	D.17
682291	EP103ULH4B16	A.63	682383	EP102ULH4D25	A.63	682844	EP104Z04	A.31	685745	CONTAXR1622048A	D.17
682292	EP103ULH4B20	A.63	682384	EP102ULH4D30	A.63	682845	EP104Z06	A.31	685747	CONTAXR1622230A	D.17
682293	EP103ULH4B25	A.63	682385	EP102ULH4D32	A.63	682846	EP104Z08	A.31	685748	CONTAXR1622240A	D.17
682294	EP103ULH4B30	A.63	682386	EP102ULH4D35	A.63	682847	EP104Z10	A.31	685779	PULSAR1610008A	D.22
682295	EP103ULH4B32	A.63	682387	EP102ULH4D40	A.63	682848	EP104Z16	A.31	685780	PULSAR1610012A	D.22
682296	EP103ULH4B35	A.63	682388	EP103ULH4D0.5	A.63	682849	EP104Z20	A.31	685781	PULSAR1610024A	D.22
682297	EP103ULH4B40	A.63	682389	EP103ULH4D01	A.63	682850	EP104Z25	A.31	685782	PULSAR1610048A	D.22
682298	EP101ULH3C0.5	A.63	682390	EP103ULH4D02	A.63	682851	EP104Z32	A.31	685783	PULSAR1610115A	D.22
682299	EP101ULH3C01	A.63	682391	EP103ULH4D03	A.63	682852	EP104Z40	A.31	685784	PULSAR1610230A	D.22
682300	EP101ULH3C02	A.63	682392	EP103ULH4D04	A.63	682853	EP104Z50	A.31	685785	PULSAR16123060	D.22
682301	EP101ULH3C03	A.63	682393	EP103ULH4D05	A.63	682854	EP104Z63	A.31	685786	PULSAR16120240A	D.22
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682303	EP101ULH3C05	A.63	682395	EP103ULH4D08	A.63	682936	EP101UCZ01	A.37	685788	PULSAR161012A	D.22
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682308	EP101ULH3C15	A.63	682400	EP103ULH4D20	A.63	682941	EP101UCZ06	A.37	685793	PULSAR161240A	D.22
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682323	EP102ULH4C08	A.63	682784	EP101Z16	A.31	682956	EP102UCZ04	A.37	685808	PULSAR161123060	D.22
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682333	EP102ULH4C40	A.63	682794	EP102Z02	A.31	682966	EP102UCZ63	A.37	685818	PULSAR3210012A	D.22
682334	EP103ULH4C0.5	A.63	682795	EP102Z03	A.31	685000			685819	PULSAR3210024A	D.22
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682336	EP103ULH4C02	A.63	682797	EP102Z06	A.31	685694	CONTAXR1610012A	D.17	685821	PULSAR3210115A	D.22
682337	EP103ULH4C03	A.63	682798	EP102Z08	A.31	685695	CONTAXR1610024A	D.17	685822	PULSAR3210230A	D.22
682338	EP103ULH4C04	A.63	682799	EP102Z10	A.31	685696	CONTAXR1610048A	D.17	685823	PULSAR3210240A	D.22
682339	EP103ULH4C05	A.63	682800	EP102Z16	A.31	685697	CONTAXR1610115A	D.17	685824	PULSAR3220008A	D.22
682340	EP103ULH4C06	A.63	682801	EP102Z20	A.31	685699	CONTAXR1610230A	D.17	685825	PULSAR3220012A	D.22
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682342	EP103ULH4C10	A.63	682803	EP102Z32	A.31	685701	CONTAXR161008A	D.17	685827	PULSAR3220048A	D.22
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682344	EP103ULH4C15	A.63	682805	EP102Z50	A.31	685703	CONTAXR161024A	D.17	685829	PULSAR3220230A	D.22
682345	EP103ULH4C16	A.63	682806	EP102Z63	A.31	685704	CONTAXR161048A	D.17	685830	PULSAR3220240A	D.22
682346	EP103ULH4C20	A.63	682807	EP103Z0.5	A.31	685705	CONTAXR161115A	D.17	685831	PULSARC1610008A	D.23
682347	EP103ULH4C25	A.63	682808	EP103Z01	A.31	685706	CONTAXR161230A	D.17	685832	PULSARC1610012A	D.23
682348	EP103ULH4C30	A.63	682809	EP103Z1.6	A.31	685707	CONTAXR161240A	D.17	685833	PULSARC1610024A	D.23
682349	EP103ULH4C32	A.63	682810	EP103Z02	A.31	685708	CONTAXR1620008A	D.17	685834	PULSARC1610048A	D.23
682350	EP103ULH4C35	A.63	682811	EP103Z03	A.31	685709	CONTAXR1620012A	D.17	685835	PULSARC1610230A	D.23
682351	EP103ULH4C40	A.63	682812	EP103Z04	A.31	685710	CONTAXR1620024A	D.17	685836	PULSARC1610240A	D.23
682352	EP101ULH3D0.5	A.63	682813	EP103Z06	A.31	685711	CONTAXR1620048A	D.17	685837	PULSARC161008A	D.23
682353	EP101ULH3D01	A.63	682814	EP103Z08	A.31	685712	CONTAXR1620115A	D.17	685838	PULSARC161012A	D.23
682354	EP101ULH3D02	A.63	682815	EP103Z10	A.31	685714	CONTAXR1620230A	D.17	685839	PULSARC161024A	D.23
682355	EP101ULH3D03	A.63	682816	EP103Z16	A.31	685715	CONTAXR1620240A	D.17	685840	PULSARC161048A	D.23
682356	EP101ULH3D04	A.63	682817	EP103Z20	A.31	685716	CONTAXR1611008A	D.17	685841	PULSARC161230A	D.23
682357	EP101ULH3D05	A.63	682818	EP103Z25	A.31	685717	CONTAXR1611012A	D.17	685842	PULSARC161240A	D.23
682358	EP101ULH3D06	A.63	682819	EP103Z32	A.31	685718	CONTAXR1611024A	D.17	685843	PULSARC1620008A	D.23
682359	EP101ULH3D08	A.63	682820	EP103Z40	A.31	685719	CONTAXR1611048A	D.17	685844	PULSARC1620012A	D.23
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682363	EP101ULH3D16	A.63	682824	EP103Z01N	A.31	685724	CONTAXR162008A	D.17	685848	PULSARC1620240A	D.23
682364	EP101ULH3D20	A.63	682825	EP103Z1.6N	A.31						





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685856	PULSARC3210012A	D.23	686640	EP63ULB60	A.69	686732	EP61ULD0.5	A.69	686824	EP102ULB10	A.67
685857	PULSARC3210024A	D.23	686641	EP63ULB63	A.69	686733	EP61ULD01	A.69	686825	EP102ULB13	A.67
685858	PULSARC3210048A	D.23	686642	EP64ULB05	A.69	686734	EP61ULD02	A.69	686826	EP102ULB15	A.67
685859	PULSARC3212030A	D.23	686643	EP64ULB06	A.69	686735	EP61ULD03	A.69	686827	EP102ULB16	A.67
685860	PULSARC3210240A	D.23	686644	EP64ULB10	A.69	686736	EP61ULD04	A.69	686828	EP102ULB20	A.67
685861	PULSARC3220008A	D.23	686645	EP64ULB13	A.69	686737	EP61ULD05	A.69	686829	EP102ULB25	A.67
685862	PULSARC3220012A	D.23	686646	EP64ULB15	A.69	686738	EP61ULD06	A.69	686830	EP102ULB30	A.67
685863	PULSARC3220024A	D.23	686647	EP64ULB16	A.69	686739	EP61ULD10	A.69	686831	EP102ULB32	A.67
685864	PULSARC3220230A	D.23	686648	EP64ULB20	A.69	686740	EP61ULD13	A.69	686832	EP102ULB40	A.67
685865	PULSARC3220240A	D.23	686649	EP64ULB25	A.69	686741	EP61ULD15	A.69	686833	EP102ULB50	A.67
685866	PULSARC3220240A	D.23	686650	EP64ULB30	A.69	686742	EP61ULD16	A.69	686834	EP102ULB60	A.67
685867	PULSARC3230008A	D.23	686651	EP64ULB32	A.69	686743	EP61ULD20	A.69	686835	EP102ULB63	A.67
685868	PULSARC3230012A	D.23	686652	EP64ULB40	A.69	686744	EP61ULD25	A.69	686836	EP103ULB05	A.67
685869	PULSARC3230024A	D.23	686653	EP64ULB50	A.69	686745	EP61ULD30	A.69	686837	EP103ULB06	A.67
685870	PULSARC3230048A	D.23	686654	EP64ULB60	A.69	686746	EP61ULD32	A.69	686838	EP103ULB10	A.67
685871	PULSARC3230230A	D.23	686655	EP64ULB63	A.69	686747	EP61ULD40	A.69	686839	EP103ULB13	A.67
685872	PULSARC3230240A	D.23	686656	EP61ULC0.5	A.69	686748	EP61ULD50	A.69	686840	EP103ULB15	A.67
685873	PULSARPU162024A	D.23	686657	EP61ULC01	A.69	686749	EP61ULD60	A.69	686841	EP103ULB16	A.67
685874	PULSARPU162230A	D.23	686658	EP61ULC02	A.69	686750	EP61ULD63	A.69	686842	EP103ULB20	A.67
685875	PULSARPU1620024A	D.23	686659	EP61ULC03	A.69	686751	EP62ULD0.5	A.69	686843	EP103ULB25	A.67
685876	PULSARPU1620230A	D.23	686660	EP61ULC04	A.69	686752	EP62ULD01	A.69	686844	EP103ULB30	A.67
685877	PULSARPU1640024A	D.23	686661	EP61ULC05	A.69	686753	EP62ULD02	A.69	686845	EP103ULB32	A.67
685878	PULSARPU1640230A	D.23	686662	EP61ULC06	A.69	686754	EP62ULD03	A.69	686846	EP103ULB40	A.67
685879	PULSARAU11	D.23	686663	EP61ULC10	A.69	686755	EP62ULD04	A.69	686847	EP103ULB50	A.67
685880	PULSARAU20	D.23	686664	EP61ULC13	A.69	686756	EP62ULD05	A.69	686848	EP103ULB60	A.67
685881	PULSARC	D.23	686665	EP61ULC15	A.69	686757	EP62ULD06	A.69	686849	EP103ULB63	A.67
685882	PULSARM	D.23	686666	EP61ULC16	A.69	686758	EP62ULD10	A.69	686850	EP104ULB05	A.67
685883	CONTAXRAUX11	D.17	686667	EP61ULC20	A.69	686759	EP62ULD13	A.69	686851	EP104ULB06	A.67
685884	PULSARCAPM	D.23	686668	EP61ULC25	A.69	686760	EP62ULD15	A.69	686852	EP104ULB10	A.67
685885	PULSARCAP	D.23	686669	EP61ULC30	A.69	686761	EP62ULD16	A.69	686853	EP104ULB13	A.67
685930	CONTAXRAUX20	D.17	686670	EP61ULC32	A.69	686762	EP62ULD20	A.69	686854	EP104ULB15	A.67
685934	CONTAXRCAP	D.17	686671	EP61ULC40	A.69	686763	EP62ULD25	A.69	686855	EP104ULB16	A.67
685935	CONTAX2020230U	D.13	686672	EP61ULC50	A.69	686764	EP62ULD30	A.69	686856	EP104ULB20	A.67
685936	CONTAX2540230U	D.13	686673	EP61ULC60	A.69	686765	EP62ULD32	A.69	686857	EP104ULB25	A.67
685937	CONTAX2530230U	D.13	686674	EP61ULC63	A.69	686766	EP62ULD40	A.69	686858	EP104ULB30	A.67
685938	CONTAX2522230U	D.13	686675	EP62ULC0.5	A.69	686767	EP62ULD50	A.69	686859	EP104ULB32	A.67
685939	CONTAX4040230U	D.13	686676	EP62ULC01	A.69	686768	EP62ULD60	A.69	686860	EP104ULB40	A.67
685940	CONTAX6340230U	D.13	686677	EP62ULC02	A.69	686769	EP62ULD63	A.69	686861	EP104ULB50	A.67
685941	CONTAXDN2020230U	D.13	686678	EP62ULC03	A.69	686770	EP63ULD0.5	A.69	686862	EP104ULB60	A.67
685942	CONTAXDN2540230U	D.13	686679	EP62ULC04	A.69	686771	EP63ULD01	A.69	686863	EP104ULB63	A.67
685943	CONTAXDN2530230U	D.13	686680	EP62ULC05	A.69	686772	EP63ULD02	A.69	686864	EP101ULC0.5	A.67
685944	CONTAXDN330230U	D.13	686681	EP62ULC06	A.69	686773	EP63ULD03	A.69	686865	EP101ULC01	A.67
685945	CONTAXR1CAP	D.17	686682	EP62ULC10	A.69	686774	EP63ULD04	A.69	686866	EP101ULC02	A.67
685993	PLT+MF230V16A1CO	D.31	686683	EP62ULC13	A.69	686775	EP63ULD05	A.69	686867	EP101ULC03	A.67
685994	PLT+MFUN16A1CO	D.31	686684	EP62ULC15	A.69	686776	EP63ULD06	A.69	686868	EP101ULC04	A.67
685995	PLT+MFUN18A3CO	D.31	686685	EP62ULC16	A.69	686777	EP63ULD10	A.69	686869	EP101ULC05	A.67
685996	PLT+ASUNI16A1CO	D.31	686686	EP62ULC20	A.69	686778	EP63ULD13	A.69	686870	EP101ULC06	A.67
685997	DIM500RL230V	D.35	686687	EP62ULC25	A.69	686779	EP63ULD15	A.69	686871	EP101ULC10	A.67
685998	DIM300UNI230V	D.35	686688	EP62ULC30	A.69	686780	EP63ULD16	A.69	686872	EP101ULC13	A.67
685999	DIMLC300UNI230V	D.35	686689	EP62ULC32	A.69	686781	EP63ULD20	A.69	686873	EP101ULC15	A.67
686000			686690	EP62ULC40	A.69	686782	EP63ULD25	A.69	686874	EP101ULC16	A.67
686009	PLC/CTX SP	D.23	686691	EP62ULC50	A.69	686783	EP63ULD30	A.69	686875	EP101ULC20	A.67
686600	EP61ULB05	A.69	686692	EP62ULC60	A.69	686784	EP63ULD32	A.69	686876	EP101ULC25	A.67
686601	EP61ULB06	A.69	686693	EP62ULC63	A.69	686785	EP63ULD40	A.69	686877	EP101ULC30	A.67
686602	EP61ULB10	A.69	686694	EP63ULC0.5	A.69	686786	EP63ULD50	A.69	686878	EP101ULC32	A.67
686603	EP61ULB13	A.69	686695	EP63ULC01	A.69	686787	EP63ULD60	A.69	686879	EP101ULC40	A.67
686604	EP61ULB15	A.69	686696	EP63ULC02	A.69	686788	EP63ULD63	A.69	686880	EP101ULC50	A.67
686605	EP61ULB16	A.69	686697	EP63ULC03	A.69	686789	EP64ULD0.5	A.69	686881	EP101ULC60	A.67
686606	EP61ULB20	A.69	686698	EP63ULC04	A.69	686790	EP64ULD01	A.69	686882	EP101ULC63	A.67
686607	EP61ULB25	A.69	686699	EP63ULC05	A.69	686791	EP64ULD02	A.69	686883	EP102ULC0.5	A.67
686608	EP61ULB30	A.69	686700	EP63ULC06	A.69	686792	EP64ULD03	A.69	686884	EP102ULC01	A.67
686609	EP61ULB32	A.69	686701	EP63ULC10	A.69	686793	EP64ULD04	A.69	686885	EP102ULC02	A.67
686610	EP61ULB40	A.69	686702	EP63ULC13	A.69	686794	EP64ULD05	A.69	686886	EP102ULC03	A.67
686611	EP61ULB50	A.69	686703	EP63ULC15	A.69	686795	EP64ULD06	A.69	686887	EP102ULC04	A.67
686612	EP61ULB60	A.69	686704	EP63ULC16	A.69	686796	EP64ULD10	A.69	686888	EP102ULC05	A.67
686613	EP61ULB63	A.69	686705	EP63ULC20	A.69	686797	EP64ULD13	A.69	686889	EP102ULC06	A.67
686614	EP62ULB05	A.69	686706	EP63ULC25	A.69	686798	EP64ULD15	A.69	686890	EP102ULC10	A.67
686615	EP62ULB06	A.69	686707	EP63ULC30	A.69	686799	EP64ULD16	A.69	686891	EP102ULC13	A.67
686616	EP62ULB10	A.69	686708	EP63ULC32	A.69	686800	EP64ULD20	A.69	686892	EP102ULC15	A.67
686617	EP62ULB13	A.69	686709	EP63ULC40	A.69	686801	EP64ULD25	A.69	686893	EP102ULC16	A.67
686618	EP62ULB15	A.69	686710	EP63ULC50	A.69	686802	EP64ULD30	A.69	686894	EP102ULC20	A.67
686619	EP62ULB16	A.69	686711	EP63ULC60	A.69	686803	EP64ULD32	A.69	686895	EP102ULC25	A.67
686620	EP62ULB20	A.69	686712	EP63ULC63	A.69	686804	EP64ULD40	A.69	686896	EP102ULC30	A.67
686621	EP62ULB25	A.69	686713	EP64ULC0.5	A.69	686805	EP64ULD50	A.69	686897	EP102ULC32	A.67
686622	EP62ULB30	A.69	686714	EP64ULC01	A.69	686806	EP64ULD60	A.69	686898	EP102ULC40	A.67
686623	EP62ULB32	A.69	686715	EP64ULC02	A.69	686807	EP64ULD63	A.69	686899	EP102ULC50	A.67
686624	EP62ULB40	A.69	686716	EP64ULC03	A.69	686808	EP101ULB05	A.67	686900	EP102ULC60	A.67
686625	EP62ULB50	A.69	686717	EP64ULC04	A.69	686809	EP101ULB06	A.67	686901	EP102ULC63	A.67
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686627	EP62ULB63	A.69	686719	EP64ULC06	A.69	686811	EP101ULB13	A.67	686903	EP103ULC01	A.67
686628	EP63ULB05	A.69	686720	EP64ULC10	A.69	686812	EP101ULB15	A.67	686904	EP103ULC02	A.67
686629	EP63ULB06	A.69	686721	EP64ULC13	A.69	686813	EP101ULB16	A.67	686905	EP103ULC03	A.67
686630	EP63ULB10	A.69	686722	EP64ULC15	A.69	686814	EP101ULB20	A.67	686906	EP103ULC04	A.67
686631	EP63ULB13	A.69	686723	EP64ULC16	A.69	686815	EP101ULB25	A.67	686907	EP103ULC05	A.67
686632	EP63ULB15	A.69	686724	EP64ULC20	A.69	686816	EP101ULB30	A.67	686908	EP103ULC06	A.67
686633	EP63ULB16	A.69	686725	EP64ULC25	A.69	686817	EP101ULB32	A.67	686909	EP103ULC10	A.67
686634	EP63ULB20	A.69	686726	EP64ULC30	A.69	686818	EP101ULB40	A.67	686910	EP103ULC13	A.67
686635	EP63ULB25	A.69	686727	EP64ULC32	A.69	686819	EP101ULB50	A.67	686911	EP103ULC15	A.67
686636	EP63ULB30	A.69	686728	EP64ULC40	A.69	686820	EP101ULB60	A.67	686912	EP103ULC16	A.67
686637	EP63ULB32	A.69	686729	EP64ULC50	A.69	686821	EP101ULB63	A.67	686913	EP103ULC20	A.67
686638	EP63ULB40	A.69	686730	EP64ULC60	A.69	686822	EP102ULB05	A.67	686914	EP103ULC25	A.67
686639	EP63ULB50	A.69	686731	EP64ULC63	A.69	686823	EP102ULB06	A.67	686915	EP103ULC30	A.67

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686917	EP103ULC40	A.67	687008	EP104ULD20	A.67	690277	EP101ULH1C20	A.65	691241	EP101TB32	A.75
686918	EP103ULC50	A.67	687009	EP104ULD25	A.67	690278	EP101ULH1C25	A.65	691242	EP101TB40	A.75
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686920	EP103ULC63	A.67	687011	EP104ULD32	A.67	690280	EP101ULH1C32	A.65	691244	EP101TB63	A.75
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686922	EP104ULC01	A.67	687013	EP104ULD50	A.67	690282	EP102ULH2C01	A.65	691246	EP101TC01	A.75
686923	EP104ULC02	A.67	687014	EP104ULD60	A.67	690283	EP102ULH2C02	A.65	691247	EP101TC02	A.75
686924	EP104ULC03	A.67	687015	EP104ULD63	A.67	690284	EP102ULH2C03	A.65	691248	EP101TC03	A.75
686925	EP104ULC04	A.67	687436	CLS+S 15 1NA 16A 1M D	D.41	690285	EP102ULH2C04	A.65	691249	EP101TC04	A.75
686926	EP104ULC05	A.67	687437	CLS+S 15 1NA 16A 1M D	D.41	690286	EP102ULH2C05	A.65	691250	EP101TC06	A.75
686927	EP104ULC06	A.67	687438	CLS+S 30 1COM 16A 2M D	D.41	690287	EP102ULH2C06	A.65	691251	EP101TC08	A.75
686928	EP104ULC10	A.67	687439	CLS+S 30 1COM 16A 2M D	D.41	690288	EP102ULH2C08	A.65	691252	EP101TC1.6	A.75
686929	EP104ULC13	A.67	687440	CLS+S 210 1COM 16A 2M W	D.41	690289	EP102ULH2C10	A.65	691253	EP101TC10	A.75
686930	EP104ULC15	A.67	687441	CLS+S 15 1COM 16A 2.5M D	D.41	690290	EP102ULH2C13	A.65	691254	EP101TC13	A.75
686931	EP104ULC16	A.67	687442	CLS+S 15 1COM 16A 2.5M D	D.41	690291	EP102ULH2C15	A.65	691255	EP101TC16	A.75
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686933	EP104ULC25	A.67	687444	GLX+Q 30 1NA 16A 1M D	D.43	690293	EP102ULH2C20	A.65	691257	EP101TC32	A.75
686934	EP104ULC30	A.67	687445	GLX+Q 30 1NA 16A 1M W	D.43	690294	EP102ULH2C25	A.65	691258	EP101TC40	A.75
686935	EP104ULC32	A.67	687446	GLX+Q 30 1NA 16A 1M ASTD	D.43	690295	EP102ULH2C30	A.65	691259	EP101TC50	A.75
686936	EP104ULC40	A.67	687447	GLX+Q 30 1COM 16A 2M D ANA	D.43	690296	EP102ULH2C32	A.65	691260	EP101TC63	A.75
686937	EP104ULC50	A.67	687448	GLX+Q 30 1COM 16A 2M WANA	D.43	690297	EP103ULH2C0.5	A.65	691261	EP101TK0.5	A.75
686938	EP104ULC60	A.67	687449	GLX+Q AST30 1NA 16A 2M D ANA	D.43	690298	EP103ULH2C01	A.65	691262	EP101TK02	A.75
686939	EP104ULC63	A.67	687450	GLX+Q 1 1COM 16A 2M DW	D.44	690299	EP103ULH2C02	A.65	691263	EP101TK03	A.75
686940	EP101ULD0.5	A.67	687451	GLX+Q 1 2COM 16A 2M DW	D.44	690300	EP103ULH2C03	A.65	691264	EP101TK04	A.75
686941	EP101ULD01	A.67	687452	GLX+Q 1 1COM 16A 2M DWIR	D.44	690301	EP103ULH2C04	A.65	691265	EP101TK06	A.75
686942	EP101ULD02	A.67	687453	GLX+Q 1 2COM 16A 2M DWIR	D.44	690302	EP103ULH2C05	A.65	691266	EP101TK08	A.75
686943	EP101ULD03	A.67	687454	GLX+Q 1 1COM 16A 2M ASTIR	D.44	690303	EP103ULH2C06	A.65	691267	EP101TK1	A.75
686944	EP101ULD04	A.67	687455	GLX+Q 1 2COM 16A 2M ASTIR	D.44	690304	EP103ULH2C08	A.65	691268	EP101TK1.6	A.75
686945	EP101ULD05	A.67	687456	GLX+ IR	D.44	690305	EP103ULH2C10	A.65	691269	EP101TK10	A.75
686946	EP101ULD06	A.67	687464	GLX+Q 1 1COM 16A 3MY BUS	D.44	690306	EP103ULH2C13	A.65	691270	EP101TK16	A.75
686947	EP101ULD10	A.67	687465	GLX+ GEO BUS	D.44	690307	EP103ULH2C15	A.65	691271	EP101TK20	A.75
686948	EP101ULD13	A.67	687466	GLX+Q 4COM 8A 4M BUS	D.44	690308	EP103ULH2C16	A.65	691272	EP101TK25	A.75
686949	EP101ULD15	A.67	687467	CLS+Q 15 1COM 16A 7x72 W	D.47	690309	EP103ULH2C20	A.65	691273	EP101TK32	A.75
686950	EP101ULD16	A.67	687468	CLS+Q 15 1COM 16A 7x72 W	D.47	690310	EP103ULH2C25	A.65	691274	EP101TK40	A.75
686951	EP101ULD20	A.67	687469	GLX+Q 15 1COM 16A 7x72 W	D.47	690311	EP103ULH2C30	A.65	691275	EP101TK50	A.75
686952	EP101ULD25	A.67	687470	GLX+Q LUX 1NA 16A 1M	D.49	690312	EP103ULH2C32	A.65	691276	EP101TK63	A.75
686953	EP101ULD30	A.67	687471	GLX+LSS EXT	D.49	690313	EP101ULH1D0.5	A.65	691277	EP101TZ0.5	A.75
686954	EP101ULD32	A.67	687472	GLX+Q LUX1T1COM16A2M	D.49	690314	EP101ULH1D01	A.65	691278	EP101TZ01	A.75
686955	EP101ULD40	A.67	687473	GLX+ LUX WALL	D.49	690315	EP101ULH1D02	A.65	691279	EP101TZ02	A.75
686956	EP101ULD50	A.67	687474	PULSAR SC 1-15 16A 1M	D.24	690316	EP101ULH1D03	A.65	691280	EP101TZ03	A.75
686957	EP101ULD60	A.67	687496	BU230	D.51	690317	EP101ULH1D04	A.65	691281	EP101TZ04	A.75
686958	EP101ULD63	A.67	687497	BU12	D.51	690318	EP101ULH1D05	A.65	691282	EP101TZ06	A.75
686959	EP102ULD0.5	A.67	687498	BE230	D.51	690319	EP101ULH1D06	A.65	691283	EP101TZ08	A.75
686960	EP102ULD01	A.67	687499	BE12	D.51	690320	EP101ULH1D08	A.65	691284	EP101TZ16	A.75
686961	EP102ULD02	A.67	<b>688000</b>			690321	EP101ULH1D10	A.65	691285	EP101TZ10	A.75
686962	EP102ULD03	A.67	688026	EP104UCB20	A.37	690322	EP101ULH1D13	A.65	691286	EP101TZ16	A.75
686963	EP102ULD04	A.67	688027	EP104UCB40	A.37	690323	EP101ULH1D15	A.65	691287	EP101TZ20	A.75
686964	EP102ULD05	A.67	688028	EP104UCB63	A.37	690324	EP101ULH1D16	A.65	691288	EP101TZ25	A.75
686965	EP102ULD06	A.67	688029	EP104UCB16	A.37	690325	EP101ULH1D20	A.65	691289	EP101TZ32	A.75
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686967	EP102ULD13	A.67	690200	EP104UCB10	A.37	690327	EP101ULH1D30	A.65	691291	EP101TZ50	A.75
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686990	EP103ULD25	A.67	690236	EP103ULH2B10	A.65	690350	EP103ULH2D05	A.65	691314	EP102TC16	A.75
686991	EP103ULD30	A.67	690239	EP103ULH2B16	A.65	690351	EP103ULH2D06	A.65	691315	EP102TC20	A.75
686992	EP103ULD32	A.67	690240	EP103ULH2B20	A.65	690352	EP103ULH2D08	A.65	691316	EP102TC25	A.75
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686994	EP103ULD50	A.67	690242	EP103ULH2B30	A.65	690354	EP103ULH2D13	A.65	691318	EP102TC40	A.75
686995	EP103ULD60	A.67	690243	EP103ULH2B32	A.65	690355	EP103ULH2D15	A.65	691319	EP102TC50	A.75
686996	EP103ULD63	A.67	690244		E.10	690356	EP103ULH2D16	A.65	691320	EP102TC63	A.75
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687002	EP104ULD05	A.67	690271	EP101ULH1C06	A.65	691235	EP101TB8	A.75	691327	EP102TK08	A.75
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691334	EP102TK40	A.75	691426	EP104TK02	A.75	691518	EP102UCTC1.6	A.77	692550	EPC 454 C20	A.95
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691423	EP104TC63	A.75	691515	EP102UCTC04	A.77	692547	EPC 454 C06	A.95	692702	EPC 611 C10	A.91



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692704	EPC 611 C16	A.91	694030	DICE60C16/030	B.49	694809	DICEA60B32/030NS	B.47
692705	EPC 611 C20	A.91	694031	DICE60C20/030	B.49	694810	DICEA60B06/030NS	B.47
692781	EPC 451N C02	A.88	694032	DICE60C25/030	B.49	694811	DICEA60B10/030NS	B.47
692782	EPC 451N C04	A.88	694033	DICE60C32/030	B.49	694812	DICEA60B16/030NS	B.47
692783	EPC 451N C06	A.88	694035	DICEA60C06/030	B.49	694813	DICEA60B20/030NS	B.47
692784	EPC 451N C10	A.88	694036	DICEA60C10/030	B.49	694814	DICEA60B25/030NS	B.47
692786	EPC 451N C16	A.88	694037	DICEA60C16/030	B.49	694815	DICEA60B32/030NS	B.47
692787	EPC 451N C20	A.88	694038	DICEA60C20/030	B.49	783000		
692788	EPC 451N C25	A.88	694039	DICEA60C25/030	B.49	783517	DMA63NC10/030	B.19
692789	EPC 451N C32	A.88	694040	DICEA60C32/030	B.49	783518	DMA63NC13/030	B.19
692790	EPC 451N C40	A.88	694042	DICE60B06/030	B.49	783519	DMA63NC16/030	B.19
692791	EPC 61N C02	A.89	694043	DICE60B10/030	B.49	783520	DMA63NC20/030	B.19
692792	EPC 61N C04	A.89	694044	DICE60B16/030	B.49	811000		
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692794	EPC 61N C10	A.89	694046	DICE60B25/030	B.49	811326		F.3
692795	EPC 61N C13	A.89	694047	DICE60B32/030	B.49	811327		F.3
692796	EPC 61N C16	A.89	694049	DICEA60B06/030	B.49	811331		F.3
692797	EPC 61N C20	A.89	694050	DICEA60B10/030	B.49	811516		F.3
692798	EPC 61N C25	A.89	694051	DICEA60B16/030	B.49	813000		
692799	EPC 61N C32	A.89	694052	DICEA60B20/030	B.49	813146		F.3
692800	EPC 61N C40	A.89	694053	DICEA60B25/030	B.49	813156		F.3
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692812	EPC 451N B06	A.88	694679	DMCEA60B10/010NS	B.45	815093		F.3
692813	EPC 451N B10	A.88	694680	DMCEA60B13/010NS	B.45	815094		F.3
692814	EPC 451N B16	A.88	694681	DMCEA60B16/010NS	B.45	815095		F.3
692815	EPC 451N B20	A.88	694682	DMCEA60B20/010NS	B.45	815105		F.3
692816	EPC 451N B25	A.88	694683	DMCEA60B25/010NS	B.45	828000		
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692818	EPC 451N B40	A.88	694685	DMCEA60C06/010NS	B.45	828145		F.7
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693644	EPC 62 C32 + CA UN S/H G	A.97	694763	DMCE60B10/010NS	B.45	608384	FPAUL 240/300	B.55
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694002	DMCE60C16/030	B.49	694783	DMCE60C06/030NS	B.45			
694003	DMCE60C20/030	B.49	694784	DMCE60C10/030NS	B.45			
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694007	DMCEA60C06/030	B.49	694787	DMCE60C20/030NS	B.45			
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694009	DMCEA60C16/030	B.49	694789	DMCE60C32/030NS	B.45			
694010	DMCEA60C20/030	B.49	694791	DMCE60B06/010NS	B.45			
694011	DMCEA60C25/030	B.49	694792	DICE60B06/030NS	B.47			
694012	DMCEA60C32/030	B.49	694793	DICE60B10/030NS	B.47			
694014	DMCE60B06/030	B.49	694794	DICE60B16/030NS	B.47			
694015	DMCE60B10/030	B.49	694795	DICE60B20/030NS	B.47			
694016	DMCE60B16/030	B.49	694796	DICE60B25/030NS	B.47			
694017	DMCE60B20/030	B.49	694797	DICE60B32/030NS	B.47			
694018	DMCE60B25/030	B.49	694798	DICE60B06/030NS	B.47			
694019	DMCE60B32/030	B.49	694800	DICE60B16/030NS	B.47			
694021	DMCEA60B06/030	B.49	694801	DICE60B20/030NS	B.47			
694022	DMCEA60B10/030	B.49	694802	DICE60B25/030NS	B.47			
694023	DMCEA60B16/030	B.49	694803	DICE60B32/030NS	B.47			
694024	DMCEA60B20/030	B.49	694804	DICEA60B06/030NS	B.47			
694025	DMCEA60B25/030	B.49	694805	DICEA60B10/030NS	B.47			
694026	DMCEA60B32/030	B.49	694806	DICEA60B16/030NS	B.47			
694028	DICE60C06/030	B.49	694807	DICEA60B20/030NS	B.47			



Table with 8 columns: Cat. No., Ref. No., Page, Cat. No., Ref. No., Page, Cat. No., Ref. No., Page. Contains entries for A... (AQA005PG to BPA225/300), B... (BDC225/030 to BPC463/300), C... (CAH, CA S/H, etc.), and CTX (CTX 06 11, CTX 20 02 024 A, etc.).



By catalogue number  
A  
B  
C  
D  
E  
F  
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X

Cat. No.	Ref. No.	Page	Cat. No.	Ref. No.	Page	Cat. No.	Ref. No.	Page	Cat. No.	Ref. No.	Page
CTX 40 40 240 U	666152	D.9	DM100C06/010	609956	B.39	DMA100B06/300	609885	B.39	DMA60C06/100	609785	B.37
CTX 63 20 230 U	666155	D.9	DM100C06/030	609962	B.39	DMA100B10/010	609865	B.39	DMA60C06/300	609794	B.37
CTX 63 40 024 U	666158	D.9	DM100C06/100	609971	B.39	DMA100B10/030	609870	B.39	DMA60C10/010	609771	B.37
CTX 63 40 230 U	666156	D.9	DM100C06/300	609980	B.39	DMA100B10/100	609878	B.39	DMA60C10/030	609777	B.37
CTX 63 40 240 U	666157	D.9	DM100C10/010	609957	B.39	DMA100B10/300	609886	B.39	DMA60C10/100	609786	B.37
CTX DN 20 20 230 A	666164	D.9	DM100C10/030	609963	B.39	DMA100B13/010	609866	B.39	DMA60C10/300	609795	B.37
CTX DN 24 30 230 U	666165	D.9	DM100C10/100	609972	B.39	DMA100B13/030	609871	B.39	DMA60C13/010	609772	B.37
CTX DN 24 40 230 U	666166	D.9	DM100C10/300	609981	B.39	DMA100B13/100	609879	B.39	DMA60C13/030	609778	B.37
CTX DN 40 20 230 U	666167	D.9	DM100C13/010	609958	B.39	DMA100B13/300	609887	B.39	DMA60C13/100	609787	B.37
CTX DN 40 30 230 U	666168	D.9	DM100C13/030	609964	B.39	DMA100B16/010	609867	B.39	DMA60C13/300	609796	B.37
CTX DN 40 40 230 U	666169	D.9	DM100C13/100	609973	B.39	DMA100B16/030	609872	B.39	DMA60C16/010	609773	B.37
CTX TS 2	666160	D.9	DM100C13/300	609982	B.39	DMA100B16/100	609880	B.39	DMA60C16/030	609779	B.37
CTX TS 3	666159	D.9	DM100C16/010	609959	B.39	DMA100B16/300	609888	B.39	DMA60C16/100	609788	B.37
D...			DM100C16/030	609965	B.39	DMA100B20/010	609868	B.39	DMA60C16/300	609797	B.37
DICE60B06/030	694042	B.49	DM100C16/100	609974	B.39	DMA100B20/030	609873	B.39	DMA60C20/010	609774	B.37
DICE60B06/030NS	694792	B.47	DM100C16/300	609983	B.39	DMA100B20/100	609881	B.39	DMA60C20/030	609780	B.37
DICE60B10/030	694043	B.49	DM100C20/010	609960	B.39	DMA100B20/300	609889	B.39	DMA60C20/100	609789	B.37
DICE60B10/030NS	694793	B.47	DM100C20/030	609966	B.39	DMA100B25/030	609874	B.39	DMA60C20/300	609798	B.37
DICE60B16/030	694044	B.49	DM100C20/100	609975	B.39	DMA100B25/100	609882	B.39	DMA60C25/030	609781	B.37
DICE60B16/030NS	694794	B.47	DM100C20/300	609984	B.39	DMA100B25/300	609890	B.39	DMA60C25/100	609790	B.37
DICE60B20/030	694045	B.49	DM100C25/030	609967	B.39	DMA100B32/030	609875	B.39	DMA60C25/300	609799	B.37
DICE60B20/030NS	694795	B.47	DM100C25/100	609976	B.39	DMA100B32/100	609883	B.39	DMA60C32/030	609782	B.37
DICE60B25/030	694046	B.49	DM100C25/300	609985	B.39	DMA100B32/300	609891	B.39	DMA60C32/100	609791	B.37
DICE60B25/030NS	694796	B.47	DM100C32/030	609968	B.39	DMA100B40/030	609876	B.39	DMA60C32/300	609800	B.37
DICE60B32/030	694047	B.49	DM100C32/100	609977	B.39	DMA100B40/100	609884	B.39	DMA60C40/030	609783	B.37
DICE60B32/030NS	694797	B.47	DM100C32/300	609986	B.39	DMA100B40/300	609892	B.39	DMA60C40/100	609792	B.37
DICE60C06/030	694028	B.49	DM100C40/030	609969	B.39	DMA100C04/010	609893	B.39	DMA60C40/300	609801	B.37
DICE60C10/030	694029	B.49	DM100C40/100	609978	B.39	DMA100C04/030	609899	B.39	DMA63C10/030IT	568326	B.19
DICE60C16/030	694030	B.49	DM100C40/300	609987	B.39	DMA100C04/100	609908	B.39	DMA63C16/030IT	568327	B.19
DICE60C20/030	694031	B.49	DM60B06/010	609802	B.37	DMA100C04/300	609917	B.39	DMA63C20/030IT	568328	B.19
DICE60C25/030	694032	B.49	DM60B06/030	609807	B.37	DMA100C06/010	609894	B.39	DMA63C25/030IT	568329	B.19
DICE60C32/030	694033	B.49	DM60B06/100	609815	B.37	DMA100C06/030	609900	B.39	DMA63C32/030IT	568330	B.19
DICEA60B06/030	694049	B.49	DM60B06/300	609823	B.37	DMA100C06/100	609909	B.39	DMA63NB10/030	565387	B.19
DICEA60B06/030NS	694804	B.47	DM60B10/010	609803	B.37	DMA100C06/300	609918	B.39	DMA63NB10/300	565393	B.19
DICEA60B10/030	694050	B.49	DM60B10/030	609808	B.37	DMA100C10/010	609895	B.39	DMA63NB13/030	565388	B.19
DICEA60B10/030NS	694805	B.47	DM60B10/100	609816	B.37	DMA100C10/030	609901	B.39	DMA63NB13/300	565394	B.19
DICEA60B16/030	694051	B.49	DM60B10/300	609824	B.37	DMA100C10/100	609910	B.39	DMA63NB16/030	565389	B.19
DICEA60B16/030NS	694806	B.47	DM60B13/010	609804	B.37	DMA100C10/300	609919	B.39	DMA63NB16/300	565395	B.19
DICEA60B20/030	694052	B.49	DM60B13/030	609809	B.37	DMA100C13/010	609896	B.39	DMA63NB20/030	565390	B.19
DICEA60B20/030NS	694807	B.47	DM60B13/100	609817	B.37	DMA100C13/030	609902	B.39	DMA63NB20/300	565396	B.19
DICEA60B25/030	694053	B.49	DM60B13/300	609825	B.37	DMA100C13/100	609911	B.39	DMA63NB25/030	565391	B.19
DICEA60B25/030NS	694808	B.47	DM60B16/010	609805	B.37	DMA100C13/300	609920	B.39	DMA63NB25/300	565397	B.19
DICEA60B32/030	694054	B.49	DM60B16/030	609810	B.37	DMA100C16/010	609897	B.39	DMA63NB32/030	565392	B.19
DICEA60B32/030NS	694809	B.47	DM60B16/100	609818	B.37	DMA100C16/030	609903	B.39	DMA63NB32/300	565398	B.19
DICEA60C06/030	694035	B.49	DM60B16/300	609826	B.37	DMA100C16/100	609912	B.39	DMA63NC10/030	783517	B.19
DICEA60C10/030	694036	B.49	DM60B20/010	609806	B.37	DMA100C16/300	609921	B.39	DMA63NC10/300	565381	B.19
DICEA60C16/030	694037	B.49	DM60B20/030	609811	B.37	DMA100C20/010	609898	B.39	DMA63NC13/030	783518	B.19
DICEA60C20/030	694038	B.49	DM60B20/100	609819	B.37	DMA100C20/030	609904	B.39	DMA63NC13/300	565382	B.19
DICEA60C25/030	694039	B.49	DM60B20/300	609827	B.37	DMA100C20/100	609913	B.39	DMA63NC16/030	783519	B.19
DICEA60C32/030	694040	B.49	DM60B25/030	609812	B.37	DMA100C20/300	609922	B.39	DMA63NC16/300	565383	B.19
DIM300UNI230V	685998	D.35	DM60B25/100	609820	B.37	DMA100C25/030	609905	B.39	DMA63NC20/030	783520	B.19
DIM500R1230V	685997	D.35	DM60B25/300	609828	B.37	DMA100C25/100	609914	B.39	DMA63NC20/300	565384	B.19
DIML3C300UNI230V	685999	D.35	DM60B32/030	609813	B.37	DMA100C25/300	609923	B.39	DMA63NC25/030	568323	B.19
DisB2 15/45	585436	B.67	DM60B32/100	609821	B.37	DMA100C32/030	609906	B.39	DMA63NC25/300	565385	B.19
DisB2 30/60	585435	B.67	DM60B32/300	609829	B.37	DMA100C32/100	609915	B.39	DMA63NC32/030	568322	B.19
DisB4 10/30	585440	B.67	DM60B40/030	609814	B.37	DMA100C32/300	609924	B.39	DMA63NC32/300	565386	B.19
DisB4 30/60	585439	B.67	DM60B40/100	609822	B.37	DMA100C40/030	609907	B.39	DMCE60B06/010NS	694791	B.45
DisB52 15/45	585438	B.67	DM60B40/300	609830	B.37	DMA100C40/100	609916	B.39	DMCE60B06/030	694014	B.49
DisB52 30/60	585437	B.67	DM60C04/010	609831	B.37	DMA100C40/300	609925	B.39	DMCE60B06/030NS	694776	B.45
DisB54 10/30	585442	B.67	DM60C04/030	609837	B.37	DMA60B06/010	609740	B.37	DMCE60B10/010NS	694763	B.45
DisB54 30/60	585441	B.67	DM60C04/100	609846	B.37	DMA60B06/030	609745	B.37	DMCE60B10/030	694015	B.49
DM100B06/010	609926	B.39	DM60C04/300	609855	B.37	DMA60B06/100	609753	B.37	DMCE60B10/030NS	694777	B.45
DM100B06/030	609931	B.39	DM60C06/010	609832	B.37	DMA60B06/300	609761	B.37	DMCE60B13/010NS	694764	B.45
DM100B06/100	609939	B.39	DM60C06/030	609838	B.37	DMA60B10/010	609741	B.37	DMCE60B13/030NS	694778	B.45
DM100B06/300	609947	B.39	DM60C06/100	609847	B.37	DMA60B10/030	609746	B.37	DMCE60B16/010NS	694765	B.45
DM100B10/010	609927	B.39	DM60C06/300	609856	B.37	DMA60B10/100	609754	B.37	DMCE60B16/030	694016	B.49
DM100B10/030	609932	B.39	DM60C10/010	609833	B.37	DMA60B10/300	609762	B.37	DMCE60B16/030NS	694779	B.45
DM100B10/100	609940	B.39	DM60C10/030	609839	B.37	DMA60B13/010	609742	B.37	DMCE60B20/010NS	694766	B.45
DM100B10/300	609948	B.39	DM60C10/100	609848	B.37	DMA60B13/030	609747	B.37	DMCE60B20/030	694017	B.49
DM100B13/010	609928	B.39	DM60C10/300	609857	B.37	DMA60B13/100	609755	B.37	DMCE60B20/030NS	694780	B.45
DM100B13/030	609933	B.39	DM60C13/010	609834	B.37	DMA60B13/300	609763	B.37	DMCE60B25/010NS	694767	B.45
DM100B13/100	609941	B.39	DM60C13/030	609840	B.37	DMA60B16/010	609743	B.37	DMCE60B25/030	694018	B.49
DM100B13/300	609949	B.39	DM60C13/100	609849	B.37	DMA60B16/030	609748	B.37	DMCE60B25/030NS	694781	B.45
DM100B16/010	609929	B.39	DM60C13/300	609858	B.37	DMA60B16/100	609756	B.37	DMCE60B32/010NS	694768	B.45
DM100B16/030	609934	B.39	DM60C16/010	609835	B.37	DMA60B16/300	609764	B.37	DMCE60B32/030	694019	B.49
DM100B16/100	609942	B.39	DM60C16/030	609841	B.37	DMA60B20/010	609744	B.37	DMCE60B32/030NS	694782	B.45
DM100B16/300	609950	B.39	DM60C16/100	609850	B.37	DMA60B20/030	609749	B.37	DMCE60C06/010NS	694769	B.45
DM100B20/010	609930	B.39	DM60C16/300	609859	B.37	DMA60B20/100	609757	B.37	DMCE60C06/030	694000	B.49
DM100B20/030	609935	B.39	DM60C20/010	609836	B.37	DMA60B20/300	609765	B.37	DMCE60C06/030NS	694783	B.45
DM100B20/100	609943	B.39	DM60C20/030	609842	B.37	DMA60B25/030	609750	B.37	DMCE60C10/010NS	694770	B.45
DM100B20/300	609951	B.39	DM60C20/100	609851	B.37	DMA60B25/100	609758	B.37	DMCE60C10/030	694001	B.49
DM100B25/030	609936	B.39	DM60C20/300	609860	B.37	DMA60B25/300	609766	B.37	DMCE60C10/030NS	694784	B.45
DM100B25/100	609944	B.39	DM60C25/030	609843	B.37	DMA60B32/030	609751	B.37	DMCE60C13/010NS	694771	B.45
DM100B25/300	609952	B.39	DM60C25/100	609852	B.37	DMA60B32/100	609759	B.37	DMCE60C13/030NS	694785	B.45
DM100B32/030	609937	B.39	DM60C25/300	609861	B.37	DMA60B32/300	609767	B			



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DMCE60C32/030	694005	B.49	DME60C10/100	605068	B.51	DMET100C32/100	606565	B.53	DOCA 432/1000	607678	B.41
DMCE60C32/030NS	694789	B.45	DME60C16/030	605062	B.51	DMET100C40/010	606573	B.53	DOCA 432/300	607676	B.41
DMCEA60B06/010NS	694678	B.45	DME60C16/100	605069	B.51	DMET100C40/030	606580	B.53	DOCA 432/500	607677	B.41
DMCEA60B06/030	694021	B.49	DME60C20/030	605063	B.51	DMET100C40/100	606566	B.53	DOCA 463/030	607680	B.41
DMCEA60B06/030NS	694692	B.45	DME60C20/100	605070	B.51	DMET60C10/030	607427	B.53	DOCA 463/100	607681	B.41
DMCEA60B10/010NS	694679	B.45	DME60C25/030	605064	B.51	DMET60C16/030	607428	B.53	DOCA 463/1000	607684	B.41
DMCEA60B10/030	694022	B.49	DME60C25/100	605071	B.51	DMET60C20/030	607429	B.53	DOCA 463/300	607682	B.41
DMCEA60B10/030NS	694693	B.45	DME60C32/030	605065	B.51	DMET60C25/030	607430	B.53	DOCA 463/500	607683	B.41
DMCEA60B13/010NS	694680	B.45	DME60C32/100	605072	B.51	DMET60C32/030	607431	B.53	DOCA 532/030	607668	B.41
DMCEA60B13/030NS	694694	B.45	DME60C40/030	605066	B.51	DMT100C04/030	609289	B.39	DOCA 532/100	607670	B.41
DMCEA60B16/010NS	694681	B.45	DME60C40/100	605073	B.51	DMT100C06/030	609290	B.39	DOCA 532/1000	607672	B.41
DMCEA60B16/030	694023	B.49	DMEA100B06/010	605150	B.51	DMT100C10/030	609291	B.39	DOCA 532/300	607669	B.41
DMCEA60B16/030NS	694695	B.45	DMEA100B06/030	605157	B.51	DMT100C13/030	609292	B.39	DOCA 532/500	607671	B.41
DMCEA60B20/010NS	694682	B.45	DMEA100B10/010	605151	B.51	DMT100C16/030	609293	B.39	DOCAHTI+2100/300	671544	A.53
DMCEA60B20/030	694024	B.49	DMEA100B10/030	605158	B.51	DMT100C20/030	609294	B.39	DOCAHTI+2100/500	671545	A.53
DMCEA60B20/030NS	694696	B.45	DMEA100B16/010	605152	B.51	DMT100C25/030	609295	B.39	DOCAHTI+3100/300	671555	A.53
DMCEA60B25/010NS	694683	B.45	DMEA100B16/030	605159	B.51	DMT100C32/030	609296	B.39	DOCAHTI+3100/500	671556	A.53
DMCEA60B25/030	694025	B.49	DMEA100B20/010	605153	B.51	DMT100C40/030	609297	B.39	DOCAHTI+4100/300	671567	A.53
DMCEA60B25/030NS	694697	B.45	DMEA100B20/030	605160	B.51	DMT60C04/030	609280	B.37	DOCAHTI+4100/500	671568	A.53
DMCEA60B32/010NS	694684	B.45	DMEA100B25/010	605154	B.51	DMT60C06/030	609281	B.37	DOCAHTI+2100/030	671543	A.53
DMCEA60B32/030	694026	B.49	DMEA100B25/030	605161	B.51	DMT60C10/030	609282	B.37	DOCAHTI+3100/030	671551	A.53
DMCEA60B32/030NS	694698	B.45	DMEA100B32/010	605155	B.51	DMT60C13/030	609283	B.37	DOCAHTI+4100/030	671563	A.53
DMCEA60C06/010NS	694685	B.45	DMEA100B32/030	605162	B.51	DMT60C16/030	609284	B.37	DOCS 232/100	607513	B.41
DMCEA60C06/030	694007	B.49	DMEA100B40/010	605156	B.51	DMT60C20/030	609285	B.37	DOCS 232/1000	607516	B.41
DMCEA60C06/030NS	694699	B.45	DMEA100B40/030	605163	B.51	DMT60C25/030	609286	B.37	DOCS 232/300	607514	B.41
DMCEA60C10/010NS	694686	B.45	DMEA100C06/010	605164	B.51	DMT60C32/030	609287	B.37	DOCS 232/500	607515	B.41
DMCEA60C10/030	694008	B.49	DMEA100C06/030	605171	B.51	DMT60C40/030	609288	B.37	DOCS 263/100	607519	B.41
DMCEA60C10/030NS	694700	B.45	DMEA100C06/100	606526	B.53	DOC 2125/030	671574	A.40	DOCS 263/1000	607522	B.41
DMCEA60C13/010NS	694687	B.45	DMEA100C06/300	606588	B.53	DOC 2125/300	671576	A.40	DOCS 263/300	607520	B.41
DMCEA60C13/030NS	694701	B.45	DMEA100C10/010	605165	B.51	DOC 232/030	607536	B.41	DOCS 263/500	607521	B.41
DMCEA60C16/010NS	694688	B.45	DMEA100C10/030	605172	B.51	DOC 232/100	607537	B.41	DOCS 3125/300	671585	A.40
DMCEA60C16/030	694009	B.49	DMEA100C10/100	606527	B.51	DOC 232/1000	607540	B.41	DOCS 332/100	607597	B.41
DMCEA60C16/030NS	694702	B.45	DMEA100C10/300	606589	B.53	DOC 232/300	607538	B.41	DOCS 332/1000	607600	B.41
DMCEA60C20/010NS	694689	B.45	DMEA100C16/010	605166	B.51	DOC 232/500	607539	B.41	DOCS 332/300	607598	B.41
DMCEA60C20/030	694010	B.49	DMEA100C16/030	605173	B.51	DOC 263/030	607542	B.41	DOCS 332/500	607599	B.41
DMCEA60C20/030NS	694703	B.45	DMEA100C16/100	606528	B.51	DOC 263/100	607543	B.41	DOCS 363/100	607603	B.41
DMCEA60C25/010NS	694690	B.45	DMEA100C16/300	606590	B.53	DOC 263/1000	607546	B.41	DOCS 363/1000	607606	B.41
DMCEA60C25/030	694011	B.49	DMEA100C20/010	605167	B.51	DOC 263/300	607544	B.41	DOCS 363/300	607604	B.41
DMCEA60C25/030NS	694704	B.45	DMEA100C20/030	605174	B.51	DOC 263/500	607545	B.41	DOCS 363/500	607605	B.41
DMCEA60C32/010NS	694691	B.45	DMEA100C20/100	606529	B.51	DOC 3125/030	671582	A.40	DOCS 4125/300	671585	A.40
DMCEA60C32/030	694012	B.49	DMEA100C20/300	606591	B.53	DOC 3125/300	671584	A.40	DOCS 432/100	607693	B.41
DMCEA60C32/030NS	694705	B.45	DMEA100C25/010	605168	B.51	DOC 332/030	607620	B.41	DOCS 432/1000	607696	B.41
DME100B06/010	605030	B.51	DMEA100C25/030	605175	B.51	DOC 332/100	607621	B.41	DOCS 432/300	607694	B.41
DME100B06/030	605037	B.51	DMEA100C25/100	606530	B.51	DOC 332/1000	607624	B.41	DOCS 432/500	607695	B.41
DME100B06/100	605260	B.51	DMEA100C25/300	606592	B.53	DOC 332/300	607622	B.41	DOCS 463/100	607699	B.41
DME100B10/010	605031	B.51	DMEA100C32/010	605169	B.51	DOC 332/500	607623	B.41	DOCS 463/1000	607702	B.41
DME100B10/030	605038	B.51	DMEA100C32/030	605176	B.51	DOC 363/030	607626	B.41	DOCS 463/300	607700	B.41
DME100B10/100	605261	B.51	DMEA100C32/100	606531	B.51	DOC 363/100	607627	B.41	DOCS 463/500	607701	B.41
DME100B16/010	605032	B.51	DMEA100C32/300	606593	B.53	DOC 363/1000	607630	B.41	DOCS 532/100	607687	B.41
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DME100B20/010	605033	B.51	DMEA100C40/100	606532	B.51	DOC 4125/030	671590	A.40	DOCS 532/500	607689	B.41
DME100B20/030	605040	B.51	DMEA100C40/300	606581	B.53	DOC 4125/300	671592	A.40	DOCSHTI+2100/1000	671550	A.53
DME100B20/100	605263	B.51	DMEA100D06/010	606505	B.51	DOC 432/030	607728	B.41	DOCSHTI+2100/300	671549	A.53
DME100B25/010	605034	B.51	DMEA100D06/030	606512	B.51	DOC 432/100	607729	B.41	DOCSHTI+3100/1000	671562	A.53
DME100B25/030	605041	B.51	DMEA100D10/010	606506	B.51	DOC 432/1000	607732	B.41	DOCSHTI+3100/300	671557	A.53
DME100B25/100	605264	B.51	DMEA100D10/030	606513	B.51	DOC 432/300	607730	B.41	DOCSHTI+3100/500	671561	A.53
DME100B32/010	605035	B.51	DMEA100D16/010	606507	B.51	DOC 432/500	607731	B.41	DOCSHTI+4100/1000	671580	A.53
DME100B32/030	605042	B.51	DMEA100D16/030	606514	B.51	DOC 463/030	607734	B.41	DOCSHTI+4100/300	671569	A.53
DME100B32/100	605265	B.51	DMEA100D20/010	606508	B.51	DOC 463/100	607735	B.41	DOCSHTI+4100/500	671579	A.53
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DME100D06/100	606519	B.51	DMET100C								



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DPC60C10/030	606821	B.13	DPCA60C10/300	606847	B.13	EP101RucB06	681475	A.73	EP101UCC40	673305	A.37
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DPC60C13/030	606822	B.13	DPCA60C13/300	606848	B.13	EP101RucB16	681477	A.73	EP101UCC10	673308	A.37
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DPCA100C20/300	606941	B.15	DPCAi60B13/030	606890	B.13	EP101TC63	691260	A.75	EP101UCTC20	691462	A.77
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DPCA100C32/030	606935	B.15	DPCAi60B20/030	606892	B.13	EP101TK04	691264	A.75	EP101UCTC50	691466	A.77
DPCA100C32/030-120V	606380	B.17	DPCAi60B20/300	606900	B.13	EP101TK06	691265	A.75	EP101UCTC63	691467	A.77
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GLX-Q 1 1COM 16A 2M DW IR	687452	D.44	GT102D50	675250	A.33	GT251C04	675288	A.35	GT254B10	675383	A.35
GLX-Q 1 1COM 16A 3M Y BUS	687464	D.44	GT102D63	675251	A.33	GT251C06	675289	A.35	GT254B16	675385	A.35
GLX-Q 1 2COM 16A 2M AST IR	687455	D.44	GT103B06	675198	A.33	GT251C10	675291	A.35	GT254B20	675386	A.35
GLX-Q 1 2COM 16A 2M DW	687451	D.44	GT103B10	675200	A.33	GT251C16	675293	A.35	GT254B25	675387	A.35
GLX-Q 1 2COM 16A 2M DW IR	687453	D.44	GT103B13	675201	A.33	GT251C20	675294	A.35	GT254B32	675388	A.35
GLX-Q 15 1COM 16A 72x72 W	687469	D.47	GT103B16	675202	A.33	GT251C25	675295	A.35	GT254B40	675389	A.35
GLX-Q 30 1COM 16A 2M DANA	687447	D.43	GT103B20	675203	A.33	GT251C32	675296	A.35	GT254B50	675390	A.35
GLX-Q 30 1COM 16A 2M WANA	687448	D.43	GT103B25	675204	A.33	GT251C40	675297	A.35	GT254B63	675391	A.35
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GLX-Q AST30 1NA 16A 2M DANA	687449	D.43	GT103C0.5	675144	A.33	GT251D10	675394	A.35	GT254C06	675337	A.35
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GLX-Q LUX/T1COM16A2M	687472	D.49	GT103C02	675146	A.33	GT251D06	675397	A.35	GT254C16	675341	A.35
GRDT+TOP	665394	B.63	GT103C03	675147	A.33	GT254C20	675399	A.35	GT254C20	675342	A.35
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GT101B40	675184	A.33	GT103C32	675156	A.33	GT254D02	675399	A.35	GT254D02	675442	A.35
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GT101C50	675126	A.33	GT103D40	675265	A.33	Hti 101 C100		671529	A.39		
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Hti 103 D100	671565	A.39	HTI+361D100	671058	A.49	HTI+TELE48	678090	A.58	MT+D3N485 63 4MMID	665257	D.53
Hti 103 D125	671566	A.39	HTI+361D125	671057	A.49	HTI+TELEU20	678086	A.59	MT+D3N485 x/5 4M	665260	D.53
Hti 104 B100	671523	A.39	HTI+361D80	671059	A.49	HTI+TELEU24	678092	A.59	MT+D3N485 x/54MMID	665261	D.53
Hti 104 B125	671524	A.39	HTI+362B100	671043	A.49	HTI+TELEU48	678091	A.59	MT+D3Ni 63 4M	665254	D.53
Hti 104 B80	671522	A.39	HTI+362B125	671042	A.49	KS	624929	A.78	MT+D3Ni 63 4M MID	665255	D.53
Hti 104 C080	671546	A.39	HTI+362B80	671044	A.49	LD011	544339	A.121	MT+D3Ni x/5 4M	665258	D.53
Hti 104 C100	671547	A.39	HTI+362C100	671031	A.49	LD013	544340	A.121	MT+D3Ni x/5 4M MID	665259	D.53
Hti 104 C125	671548	A.39	HTI+362C125	671030	A.49	LD021	544332	A.121	MT+ImpCon	665262	D.53
Hti 104 D080	671570	A.39	HTI+362C80	671032	A.49	LD023	544333	A.121	MT+R5485/Ethernet	665389	D.53
Hti 104 D100	671571	A.39	HTI+362D100	671055	A.49	LD02AD01	544338	A.121	MT+RSC TOP	665390	D.53
Hti 104 D125	671572	A.39	HTI+362D125	671054	A.49	LD02P20	544334	A.121	MT+S4 3M	665385	D.57
Hti H	671597	A.41	HTI+362D80	671056	A.49	LD02P25	544335	A.121	MT+S7 3M	665386	D.57
Hti H/S	671599	A.41	HTI+363B100	671040	A.49	LD02P35	544336	A.121	MT+SP100	665287	D.57
Hti HH/HS	671600	A.41	HTI+363B125	671039	A.49	LD02P50	544337	A.121	MT+SP1000	665296	D.57
Hti HSR	671602	A.41	HTI+363B80	671041	A.49	LT1 N	676910	A.121	MT+SP150	665288	D.57
Hti S	671598	A.41	HTI+363C100	671028	A.49	LT3 N	676911	A.121	MT+SP200	665289	D.57
HTI+161B100	671142	A.45	HTI+363C125	671027	A.49	MOD218D	619105	F.10	MT+SP250	665290	D.57
HTI+161B125	671141	A.45	HTI+363C80	671029	A.49	MOD2DB120	619103	F.9	MT+SP300	665291	D.57
HTI+161B80	671143	A.45	HTI+363D100	671052	A.49	MOD2DB180	619104	F.9	MT+SP400	665283	D.57
HTI+161C100	671106	A.45	HTI+363D125	671051	A.49	MOD2DB240	619122	F.9	MT+SP400	665292	D.57
HTI+161C125	671105	A.45	HTI+363D80	671053	A.49	MOD2DB40	619100	F.9	MT+SP500	665284	D.57
HTI+161C80	671107	A.45	HTI+364B100	671037	A.49	MOD2DB60	619101	F.9	MT+SP500	665293	D.57
HTI+161D100	671178	A.45	HTI+364B125	671036	A.49	MOD2DB80	619102	F.9	MT+SP600	665285	D.57
HTI+161D125	671177	A.45	HTI+364B80	671038	A.49	MOD2DC	619115	F.9	MT+SP600	665294	D.57
HTI+161D80	671179	A.45	HTI+364C100	671025	A.49	MOD2DIL125	619114	F.9	MT+SP80	665286	D.57
HTI+162B100	671139	A.45	HTI+364C125	671024	A.49	MOD2DIL25/	619124	F.9	MT+SP800	665295	D.57
HTI+162B125	671138	A.45	HTI+364C80	671026	A.49	MOD2DIL200	619110	F.10	MT144UD	665196	D.65
HTI+162B80	671140	A.45	HTI+364D100	671049	A.49	MOD2HDGP	619116	F.10	MT144UM	665195	D.65
HTI+162C100	671103	A.45	HTI+364D125	671048	A.49	MOD2ISO3	619111	F.9	MT144UMet	665194	D.65
HTI+162C125	671102	A.45	HTI+364D80	671050	A.49	MOD2M200A	619109	F.10	MT485Eund	665245	D.65
HTI+162C80	671104	A.45	HTI+501B100	671118	A.51	MOD2M200NA	619107	F.10	MT8I40	665198	D.65
HTI+162D100	671175	A.45	HTI+501B125	671117	A.51	MOD2M2CB100	619606	F.9	MT8I40R	665199	D.65
HTI+162D125	671174	A.45	HTI+501B80	671119	A.51	MOD2M2CB63	619605	F.9	MT8I80	665197	D.65
HTI+162D80	671176	A.45	HTI+501C100	671082	A.51	MOD2M2CRCD	619108	F.10	MT961	665190	D.63
HTI+163B100	671136	A.45	HTI+501C125	671081	A.51	MOD2PA120	619180	F.9	MT961HARCOM	665193	D.63
HTI+163B125	671135	A.45	HTI+501C80	671083	A.51	MOD2PA180	619181	F.9	MT962	665191	D.63
HTI+163B80	671137	A.45	HTI+501D100	671154	A.51	MOD2PA240	619192	F.9	MT962COM	665192	D.63
HTI+163C100	671100	A.45	HTI+501D125	671153	A.51	MOD2PA40	619177	F.9	MTAdapt	665244	D.61
HTI+163C125	671099	A.45	HTI+501D80	671155	A.51	MOD2PA60	619178	F.9	MTDIN1	665010	D.61
HTI+163C80	671101	A.45	HTI+502B100	671115	A.51	MOD2PA80	619179	F.9	MTDIN1HARCOM	665012	D.61
HTI+163D100	671172	A.45	HTI+502B125	671114	A.51	MOD2R2CDA	619119	F.9	MTDIN2	665011	D.61
HTI+163D125	671171	A.45	HTI+502B125A/300	671513	A.55	MOD2RCDB	619112	F.9	MTDIN2COM	665155	D.61
HTI+163D80	671173	A.45	HTI+502B125Ai/030	671507	A.55	MOD2RCDBTD	619120	F.9	MTMBUS	665239	D.65
HTI+164B100	671133	A.45	HTI+502B80	671116	A.51	MOD2RCDC	619113	F.9	MTBPBUS	665243	D.65
HTI+164B125	671132	A.45	HTI+502C100	671079	A.51	MOD2S81	619106	F.10	MTSDMEM	665240	D.65
HTI+164B80	671134	A.45	HTI+502C125	671078	A.51	MOD2SPK1	618300	F.9	MTUSB485	665246	D.65
HTI+164C100	671097	A.45	HTI+502C125A/300	671514	A.55	MSC SEP	666501	D.7	NDF2 15/45	585016	B.69
HTI+164C125	671096	A.45	HTI+502C125Ai/030	671508	A.55	MSC SPP	666502	D.7	NDF2 30/60	585020	B.69
HTI+164C80	671098	A.45	HTI+502C80	671080	A.51	MT+ AP 3F 2M	665396	D.55	NDF2 60/90	585025	B.69
HTI+164D100	671169	A.45	HTI+502D100	671151	A.51	MT+AA 4M	665264	D.57	NDF4 10/30	585031	B.69
HTI+164D125	671168	A.45	HTI+502D125	671150	A.51	MT+AA10 4M	665266	D.57	NDF4 30/60	585036	B.69
HTI+164D80	671170	A.45	HTI+502D125A/300	671515	A.55	MT+AA15 4M	665267	D.57	NDFS2 15/45	585017	B.69
HTI+251B100	671130	A.47	HTI+502D125Ai/030	671509	A.55	MT+AA20 4M	665268	D.57	NDFS2 30/60	585021	B.69
HTI+251B125	671129	A.47	HTI+502D80	671152	A.51	MT+AA25 4M	665269	D.57	NDFS2 60/90	585026	B.69
HTI+251B80	671131	A.47	HTI+503B100	671112	A.51	MT+AA30 4M	665270	D.57	NDFS4 10/30	584032	B.69
HTI+251C100	671094	A.47	HTI+503B125	671111	A.51	MT+AA5 4M	665265	D.57	NDFS4 30/60	584037	B.69
HTI+251C125	671093	A.47	HTI+503B125A/300	671525	A.55	MT+AF 4M	665273	D.57	NDP2 10/30	585014	B.69
HTI+251C80	671095	A.47	HTI+503B125Ai/030	671519	A.55	MT-AH110 2M	665274	D.57	NDP2 30/60	585019	B.69
HTI+251D100	671166	A.47	HTI+503B80	671113	A.51	MT-AH230 2M	665275	D.57	NDP2 5/5	585008	B.69
HTI+251D125	671165	A.47	HTI+503C100	671076	A.51	MT-AH24 2M	665276	D.57	NDP4 10/30	585030	B.69
HTI+251D80	671167	A.47	HTI+503C125	671075	A.51	MT+AV300 4M	665271	D.57	NDP2 10/30	585013	B.69
HTI+252B100	671127	A.47	HTI+503C125A/300	671526	A.55	MT+AV500 4M	665272	D.57	NDPS2 30/60	585018	B.69
HTI+252B125	671126	A.47	HTI+503C125Ai/030	671520	A.55	MT-CT100	665372	D.59	NDPS4 10/30	585029	B.69
HTI+252B80	671128	A.47	HTI+503C80	671077	A.51	MT-CT1000	665381	D.59	NDPS4 30/60	585035	B.69
HTI+252C100	671091	A.47	HTI+503D100	671148	A.51	MT-CT1500	665382	D.59	PBS	672572	C.9
HTI+252C125	671090	A.47	HTI+503D125	671147	A.51	MT-CT1200	665373	D.59	PLC/CTX SP	686069	D.23
HTI+252C80	671092	A.47	HTI+503D125A/300	671527	A.55	MT-CT1500	665383	D.59	PLS / CTX SP	686069	A.78
HTI+252D100	671163	A.47	HTI+503D125Ai/030	671521	A.55	MT-CT200	665374	D.59	PLS + / CTX + SP	666499	D.9
HTI+252D125	671162	A.47	HTI+503D80	671149	A.51	MT-CT2000	665384	D.59	PLT-ASUNI16A1CO	685996	D.31
HTI+252D80	671164	A.47	HTI+504B100	671109	A.51	MT-CT250	665375	D.59	PLT-MF230V16A1CO	685993	D.31
HTI+253B100	671124	A.47	HTI+504B125	671108	A.51	MT-CT2500	665924	D.59	PLT+MFUNI16A1CO	685994	D.31
HTI+253B125	671123	A.47	HTI+504B125A/300	671537	A.55	MT-CT300	665376	D.59	PLT+MFUNI8A3CO	685995	D.31
HTI+253B80	671125	A.47	HTI+504B125Ai/030	671531	A.55	MT-CT3200	665925	D.59	PULSAR SC 1-15 16A 1M	687474	D.24
HTI+253C100	671088	A.47	HTI+504B80	671110	A.51	MT-CT400	665368	D.59	PULSAR1610008A	685779	D.22
HTI+253C125	671087	A.47	HTI+504C100	671073	A.51	MT-CT400	665377	D.59	PULSAR1610012A	685780	D.22
HTI+253C80	671089	A.47	HTI+504C125	671072	A.51	MT-CT4000	665926	D.59	PULSAR1610024A	685781	D.22
HTI+253D100	671160	A.47	HTI+504C125A/300	671538	A.55	MT-CT500	665369	D.59	PULSAR1610048A	685782	D.22
HTI+253D125	671159	A.47	HTI+504C125Ai/030	671532	A.55	MT-CT500	665378	D.59	PULSAR161008A	685787	D.22
HTI+253D80	671161	A.47	HTI+504C80	671074	A.51	MT-CT600	665370	D.59	PULSAR1610115A	685783	D.22
HTI+254B100	671121	A.47	HTI+504D100	671145	A.51	MT-CT600	665379	D.59	PULSAR161012A	685788	D.22
HTI+254B125	671120	A.47	HTI+504D125	671144	A.51	MT-CT800	665371	D.59	PULSAR1610230A	685784	D.22
HTI+254B80	671122	A.47	HTI+504D125A/300	671539	A.55	MT-CT800	665380	D.59	PULSAR1610240A	685786	D.22
HTI+254C100	671085	A.47	HTI+504D125Ai/030	671533	A.55	MT+D BASIC 4M	665393	D.55	PULSAR161024A	685789	D.22
HTI+254C125	671084	A.47	HTI+504D80	671146	A.51	MT-D V500 DA5 F 4M	665387	D.55	PULSAR161048A	685790	D.22
HTI+254C80	671086	A.47	HTI+H	678082	A.56	MT-D PRI BASIC 2M	665395	D.55	PULSAR1611008A	685802	D.22
HTI+254D100	671157	A.47	HTI+H/S	678083	A.57	MT+D TOPI 4M	665391	D.55	PULSAR1611012A	685803	D.22
HTI+254D125	671156	A.47	HTI+KS	678084	A.61	MT-D TOPIRS485 4M	665392	D.55	PULSAR1611024A	685804	D.22
HTI+254D80	671158	A.47	HTI+RH-A500	678093	A.61	MT-D1485 63					





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PULSAR1611240A	685809 D.22	REC TOP EP104 B10	677194 C.19	SA BLOCK II 15/230 LLE	667489 D.72	SF1/22x58	676570 A.113
PULSAR16123060	685785 D.22	REC TOP EP104 B16	677195 C.19	SA BLOCK II 15/230 LNE	667488 D.72	SF1/22X58IM	679559 A.113
PULSAR161230A	685792 D.22	REC TOP EP104 B20	677196 C.19	SA BLOCK II 15/400 3L+NE	667494 D.72	SF1/8x31	676552 A.113
PULSAR161240A	685793 D.22	REC TOP EP104 B25	677197 C.19	SA BLOCK II 15/400 4L/NE	667495 D.72	SF1N/10x38	676559 A.113
PULSAR1620008A	685794 D.22	REC TOP EP104 B32	677198 C.19	SA BLOCK II 15L1N	667483 D.72	SF1N/14x51	676565 A.113
PULSAR1620012A	685795 D.22	REC TOP EP104 B40	677199 C.19	SA BLOCK II 40/230 LLE	667491 D.72	SF1N/22x58	676571 A.113
PULSAR1620024A	685796 D.22	REC TOP EP104 B50	678026 C.19	SA BLOCK II 40/230 LNE	667490 D.72	SF2/10x38	676560 A.113
PULSAR1620048A	685797 D.22	REC TOP EP104 B63	678027 C.19	SA BLOCK II 40/400 3L+NE	667496 D.72	SF2/14x51	676566 A.113
PULSAR162008A	685810 D.22	REC TOP EP104 C10	678028 C.19	SA BLOCK II 40/400 4L/NE	667497 D.72	SF2/14X51IM	679557 A.113
PULSAR1620115A	685798 D.22	REC TOP EP104 C16	678029 C.19	SAM I-II 100N	660393 D.70	SF2/22x58	676572 A.113
PULSAR162012A	685811 D.22	REC TOP EP104 C20	678030 C.19	SAM I-II 12.5/230	660294 D.70	SF2/22X58IM	679560 A.113
PULSAR162023060	685799 D.22	REC TOP EP104 C25	678031 C.19	SAM I-II 25/230	660199 D.70	SF2/8x31	676554 A.113
PULSAR1620230A	685800 D.22	REC TOP EP104 C32	678032 C.19	SAM I-II 25N	660296 D.70	SF3/10x38	676561 A.113
PULSAR1620240A	685801 D.22	REC TOP EP104 C40	678033 C.19	SAM I-II 50N	660274 D.70	SF3/14x51	676567 A.113
PULSAR162024A	685812 D.22	REC TOP EP104 C50	678034 C.19	SAM II 20/230	660297 D.71	SF3/14X51IM	679558 A.113
PULSAR162048A	685813 D.22	REC TOP EP104 C63	678035 C.19	SAM II 20N	660299 D.71	SF3/22x58	676573 A.113
PULSAR162115A	685814 D.22	REC TOP TT 25	678036 C.19	SAM II 40/1000PV	660379 D.78	SF3/22X58IM	679561 A.113
PULSAR162230A	685815 D.22	REC TOP TT 35	678037 C.19	SAM II 40/1500PV	660498 D.78	SF3/8x31	676555 A.113
PULSAR162240A	685816 D.22	REC2 A 2100/30	676990 C.15	SAM II 40/230	660373 D.71	SF3N/10x38	676562 A.113
PULSAR3210008A	685817 D.22	REC2 A 2100/300	676998 C.15	SAM II 40/400	660374 D.71	SF3N/14x51	676568 A.113
PULSAR3210012A	685818 D.22	REC2 A 225/30	676986 C.15	SAM II 40/600PV	660378 D.78	SF3N/22x58	676574 A.113
PULSAR3210024A	685819 D.22	REC2 A 225/300	676994 C.15	SAM II 40N	660375 D.71	SF3N/8x31	676556 A.113
PULSAR3210048A	685820 D.22	REC2 A 240/30	676987 C.15	SAMII30750	660634 D.75	SFN/14x51	676563 A.113
PULSAR3210115A	685821 D.22	REC2 A 240/300	676995 C.15	SAMII40175	660631 D.75	SFN/22x58	676569 A.113
PULSAR3210230A	685822 D.22	REC2 A 263/30	676988 C.15	SAMII40275	660632 D.75	SFN/8x31	676551 A.113
PULSAR3210240A	685823 D.22	REC2 A 263/300	676996 C.15	SAMII40320	660633 D.75	SFU1N/10x38	679590 A.113
PULSAR3220008A	685824 D.22	REC2 A 280/30	676989 C.15	SAP1 I-II 100N	660391 D.70	SFU1/10X38	679568 A.119
PULSAR3220012A	685825 D.22	REC2 A 280/300	676997 C.15	SAP1 I-II 25/230	660125 D.70	SFU1/10X38I	679569 A.119
PULSAR3220024A	685826 D.22	REC2 A 4100/30	677046 C.15	SAP1 I-II 25/230 C	660127 D.70	SFU1/10X38IS	679571 A.119
PULSAR3220048A	685827 D.22	REC2 A 4100/300	677074 C.15	SAP1 II 20N	660169 D.71	SFU1/10X38S	679570 A.119
PULSAR3220115A	685828 D.22	REC2 A 425/30	677042 C.15	SAP1 II 40/230	660158 D.71	SFU1/30CC	679562 A.115
PULSAR3220230A	685829 D.22	REC2 A 425/300	677050 C.15	SAP1 II 40/230 C	660160 D.71	SFU1/30ICC	679565 A.115
PULSAR3220240A	685830 D.22	REC2 A 440/30	677043 C.15	SAP1 II 40/400	660159 D.71	SFU1/30J	679583 A.117
PULSARAU11	685879 D.23	REC2 A 440/300	677071 C.15	SAP1 II 40/400 C	660162 D.71	SFU1/60J	679586 A.117
PULSARAU20	685880 D.23	REC2 A 463/30	677044 C.15	SAP1 II 40N	660163 D.71	SFU2/30CC	679563 A.115
PULSARC	685881 D.23	REC2 A 463/300	677072 C.15	SAP1II40175	660608 D.75	SFU2/30ICC	679566 A.115
PULSARC161 024A	685839 D.23	REC2 A 480/30	677045 C.15	SAP1II40175C	660612 D.75	SFU2/30J	679584 A.117
PULSARC1610008A	685831 D.23	REC2 A 480/300	677073 C.15	SAP1II40275	660609 D.75	SFU2/60J	679587 A.117
PULSARC1610012A	685832 D.23	REC2 Ai 225/30	676991 C.15	SAP1II40275C	660613 D.75	SFU3/30CC	679564 A.115
PULSARC1610024A	685833 D.23	REC2 Ai 240/30	676992 C.15	SAP1II40320	660611 D.75	SFU3/30ICC	679567 A.115
PULSARC1610048A	685834 D.23	REC2 Ai 263/30	676993 C.15	SAP1II40320C	660614 D.75	SFU3/30J	679585 A.117
PULSARC161008A	685837 D.23	REC2 Ai 425/30	677047 C.15	SAP2 I-II 12.5 TNS	660143 D.70	SFU3/60J	679588 A.117
PULSARC161012A	685838 D.23	REC2 Ai 440/30	677048 C.15	SAP2 I-II 12.5 TNS C	660144 D.70	TELE L 110	624945 A.41
PULSARC1610230A	685835 D.23	REC2 Ai 463/30	677049 C.15	SAP2 I-II 12.5 TT	660139 D.70	TELE L 24	624946 A.41
PULSARC1610240A	685836 D.23	REC2 DPCA100B10/030	677174 C.17	SAP2 II 12.5 TT C	660140 D.70	TELE L-1	672573 C.9
PULSARC161048A	685840 D.23	REC2 DPCA100B10/300	677180 C.17	SAP2 I 20/230 TNS	660177 D.71	TELE L-2	672574 C.9
PULSARC161230A	685841 D.23	REC2 DPCA100B16/030	677175 C.17	SAP2 II 20/230 TNSC	660178 D.71	TELE LT-1	667252 C.11
PULSARC161240A	685842 D.23	REC2 DPCA100B16/300	677181 C.17	SAP2 II 20/230 TT	660173 D.71	TELE LT-2	667253 C.11
PULSARC1620008A	685843 D.23	REC2 DPCA100B20/030	677176 C.17	SAP2 I 20/230 TTC	660174 D.71	TELE MP	672580 C.7
PULSARC1620012A	685844 D.23	REC2 DPCA100B20/300	677182 C.17	SAP2 I 40/230 TNS	660175 D.71	Tele REC PLUS Motor	677132 C.20
PULSARC1620024A	685845 D.23	REC2 DPCA100B25/030	677177 C.17	SAP2 II 40/230 TNSC	660176 D.71	TELE U-12	672576 C.9
PULSARC1620048A	685846 D.23	REC2 DPCA100B25/300	677183 C.17	SAP2 II 40/230 TT	660171 D.71	TELE U-230	672575 C.9
PULSARC162008A	685849 D.23	REC2 DPCA100B32/030	677178 C.17	SAP2 I 40/230 TTC	660172 D.71	TELE U-24	672577 C.9
PULSARC162012A	685850 D.23	REC2 DPCA100B32/300	677184 C.17	SAP2II40175	660615 D.75	TELE U-48	672578 C.9
PULSARC1620230A	685847 D.23	REC2 DPCA100B40/030	677179 C.17	SAP2II40175C	660617 D.75	TOR+110	665917 B.63
PULSARC1620240A	685848 D.23	REC2 DPCA100B40/300	677185 C.17	SAP2II40320	660616 D.75	TOR+28	665297 B.63
PULSARC162024A	685851 D.23	REC2 DPCA100C10/030	677150 C.17	SAP2II40320C	660618 D.75	TOR+35	665298 B.63
PULSARC162048A	685852 D.23	REC2 DPCA100C10/300	677156 C.17	SAP3 I-II 12.5 TNC	660147 D.70	TOR+60	665299 B.63
PULSARC162230A	685853 D.23	REC2 DPCA100C16/030	677151 C.17	SAP3 I-II 12.5 TNC C	660148 D.70	TR&KT+C3MOD	665918 D.51
PULSARC162240A	685854 D.23	REC2 DPCA100C16/300	677157 C.17	SAP3 I 20/400 TNC	660181 D.71	TR&KT+C6MOD	665919 D.51
PULSARC3210008A	685855 D.23	REC2 DPCA100C20/030	677152 C.17	SAP3 I 20/400 TNCC	660182 D.71	TR+ B 5	665900 D.51
PULSARC3210012A	685856 D.23	REC2 DPCA100C20/300	677158 C.17	SAP3 II 40/400 TNC	660179 D.71	TR+B 8	665901 D.51
PULSARC3210024A	685857 D.23	REC2 DPCA100C25/030	677153 C.17	SAP3 II 40/400 TNCC	660180 D.71	TR+B10	665902 D.51
PULSARC3210048A	685858 D.23	REC2 DPCA100C25/300	677159 C.17	SAP3II30750	660624 D.75	TR+B15	665903 D.51
PULSARC3210230A	685859 D.23	REC2 DPCA100C32/030	677154 C.17	SAP3II30750C	660626 D.75	TR+B16	665904 D.51
PULSARC3210240A	685860 D.23	REC2 DPCA100C32/300	677160 C.17	SAP3II40175	660619 D.75	TR+B30	665905 D.51
PULSARC3220008A	685861 D.23	REC2 DPCA100C40/030	677155 C.17	SAP3II40175C	660621 D.75	TR+S15	665909 D.51
PULSARC3220012A	685862 D.23	REC2 DPCA100C40/300	677161 C.17	SAP3II40320	660620 D.75	TR+S25	665910 D.51
PULSARC3220024A	685863 D.23	REC2 DPCA100C10/030	677162 C.17	SAP3II40320C	660622 D.75	TR+S40	665911 D.51
PULSARC3220230A	685864 D.23	REC2 DPCA100C10/300	677168 C.17	SAP4 I-II 12.5 TNS	660152 D.70	TR+S63	665912 D.51
PULSARC3220240A	685865 D.23	REC2 DPCA100C16/030	677163 C.17	SAP4 I-II 12.5 TNS C	660156 D.70		
PULSARC3230008A	685867 D.23	REC2 DPCA100C16/300	677169 C.17	SAP4 I-II 12.5 TT	660150 D.70		
PULSARC3230012A	685868 D.23	REC2 DPCA100C20/030	677164 C.17	SAP4 I-II 12.5 TT C	660151 D.70		
PULSARC3230024A	685869 D.23	REC2 DPCA100C20/300	677170 C.17	SAP4 II 20/400 TNS	660189 D.71		
PULSARC3230048A	685870 D.23	REC2 DPCA100C25/030	677165 C.17	SAP4 II 20/400 TNSC	660190 D.71		
PULSARC3230230A	685871 D.23	REC2 DPCA100C25/300	677171 C.17	SAP4 II 20/400 TT	660185 D.71		
PULSARC3230240A	685872 D.23	REC2 DPCA100C32/030	677166 C.17	SAP4 II 20/400 TTC	660186 D.71		
PULSARCAP	685885 D.23	REC2 DPCA100C32/300	677172 C.17	SAP4 II 40/400 TNS	660187 D.71		
PULSARCAMP	685884 D.23	REC2 DPCA100C40/030	677167 C.17	SAP4 II 40/400 TNSC	660188 D.71		
PULSARM	685882 D.23	REC2 DPCA100C40/300	677173 C.17	SAP4 II 40/400 TT	660183 D.71		
PULSARPU1620024A	685875 D.23	REC2 S 2100/300	677041 C.15	SAP4 II 40/400 TTC	660184 D.71		
PULSARPU1620230A	685876 D.23	REC2 S 240/300	676999 C.15	SAP4II40175	660629 D.75		
PULSARPU162024A	685873 D.23	REC2 S 263/300	677039 C.15	SAP4II40175C	660630 D.75		
PULSARPU162230A	685874 D.23	REC2 S 280/300	677040 C.15	SAP4II40320	660627 D.75		
PULSARPU1640024A	685877 D.23	REC2 S 4100/300	677098 C.15	SAP4II40320C	660628 D.75		
PULSARPU1640230A	685878 D.23	REC2 S 440/300	677075 C.15	SAPVII40/1000	660197 D.78		
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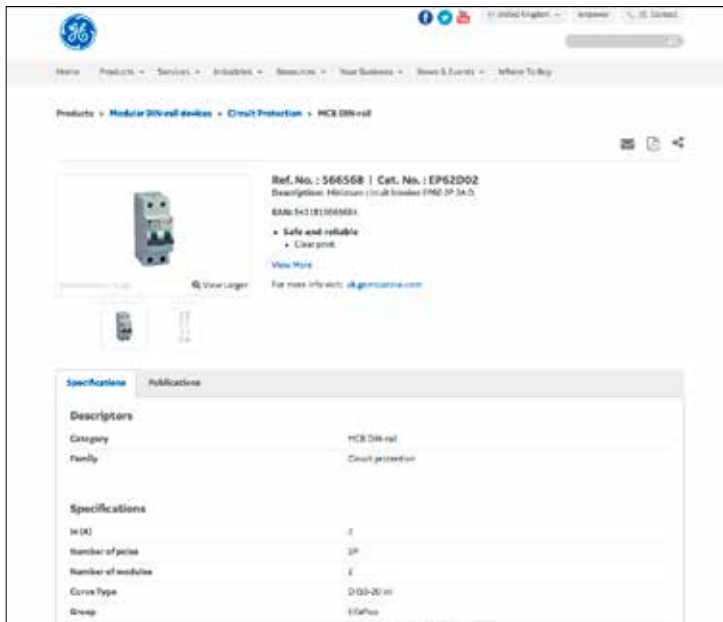
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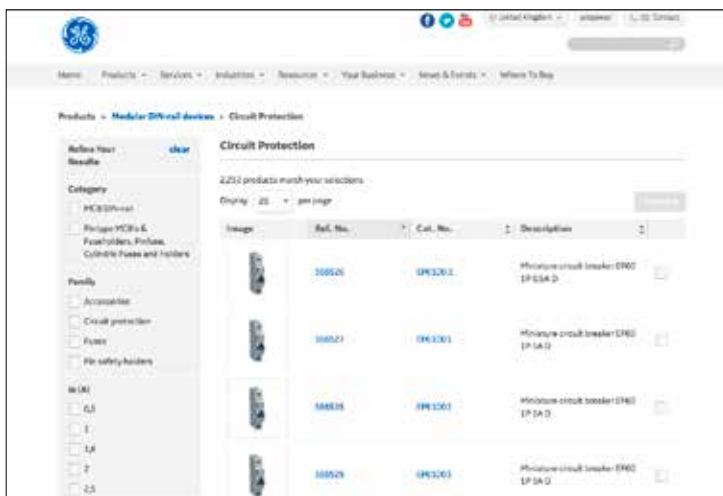
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