

Redline Ed. 2014

Modular DIN-rail devices
and residential enclosures

Just feel protected



GE imagination at work



Modular DIN-rail devices and residential enclosures

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Just feel

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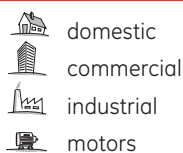
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G

X

Selection table of MCBs

Page no.	Series	Applications	Poles	Add-on devices	Tripping characteristic	Rating current (A)	Short-circuit capacity (kA)
A.14	G30		1, 2, 3, 4	yes	B	6 - 40	3 5 10
				yes	C	2 - 40	3 5 10
A.16	G45		1, 2, 3, 4	yes	B	6 - 40	4.5 6 14
				yes	C	2 - 40	4.5 6 14
A.18	G60	  	1, 1+N, 2, 3, 4	yes	B	6 - 63	6 10 ⁽¹⁾ 20
				yes	C	0.5 - 63	6 10 ⁽¹⁾ 20
				yes	D	0.5 - 63	6 10 ⁽¹⁾ 20
A.20	EP60	 	1, 2, 3, 4	yes	K	0.5 - 63	6 10 ⁽¹⁾ 20
A.22	G100	 	1, 1+N, 2, 3, 4	yes	B	6 - 63	10 ⁽¹⁾ 15 ⁽²⁾ 30
				yes	C	0.5 - 63	10 ⁽¹⁾ 15 ⁽²⁾ 30
				yes	D	0.5 - 63	10 ⁽¹⁾ 15 ⁽²⁾ 30
A.24	EP100	 	1, 2, 3, 4	yes	K	0.5 - 63	10 15 ⁽²⁾ 30 ⁽²⁾
A.26	GT10	 	1, 2, 3, 4	yes	B	6 - 63	10 ⁽¹⁾ 30
				yes	C	0.5 - 63	10 ⁽¹⁾ 30
				yes	D	0.5 - 63	10 ⁽¹⁾ 30
A.28	GT25		1, 2, 3, 4	yes	B	6 - 63	15 ⁽²⁾ 20 ⁽²⁾ 25 ⁽²⁾
				yes	C	0.5 - 63	15 ⁽²⁾ 20 ⁽²⁾ 25 ⁽²⁾
				yes	D	0.5 - 63	15 ⁽²⁾ 20 ⁽²⁾ 25 ⁽²⁾
A.30	EP100 UC		1, 2	yes	B	6 - 63	6 10
				yes	C	0.5 - 63	6 10
A.32	Hti	 	1, 2, 3, 4	yes	B	80 - 125	10 15
				yes	C	80 - 125	10 15
				yes	D	80 - 125	10 15
A.36	EP60 UL	  	1, 2, 3, 4	yes	B	6 - 63	6 6 10 ⁽¹⁾
				yes	C	0.5 - 63	6 6 10 ⁽¹⁾
				yes	D	0.5 - 63	6 6 10 ⁽¹⁾
A.38	EP100 UL	 	1, 2, 3, 4	yes	B	6 - 63	10 10 15 ⁽¹⁾
				yes	C	0.5 - 63	10 10 15 ⁽¹⁾
				yes	D	0.5 - 63	10 10 15 ⁽¹⁾
A.40	EP100 ULH		1, 2, 3	yes	B	5 - 32	10 15 ⁽²⁾
				yes	C	0.5 - 32	10 15 ⁽²⁾
				yes	D	0.5 - 32	10 15 ⁽²⁾



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

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

(1) Ics = 75% Icu
(2) Ics = 50% Icu



Selection table of MCBs - continued

Page no.	Series	Applications	Poles	Add-on devices	Tripping characteristic	Rating current (A)	Short-circuit capacity (kA)
A.42	EP100R		3	yes	B	0.5 - 63	10 15
				yes	C	0.5 - 63	10 15
A.44	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.46	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.48	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 no.	Series	Applications	Poles	Add-on devices	Tripping characteristic	Rating current (A)	Short-circuit capacity (kA)
A.60	EPC 451N		1+N (1 mod)	yes	B-C	2 - 40	4.5 6
A.61	EPC 61N		1+N (1 mod)	yes	B-C	2 - 40	6 10 ⁽³⁾
A.63	EPC 611		1P+1P (1 mod)	yes	B-C	2 - 20	6 6
A.64	EPC 45		2	yes	B-C	2 - 40	4.5 6
			3, 4	yes	B-C	2 - 32	4.5 6
A.66	EPC 60		2	yes	B-C	2 - 40	6 10
			3, 4	yes	B-C	2 - 32	6 6

Selection table of screwless MCBs - Fixwell™

Page no.	Series	Applications	Poles	Add-on devices	Tripping characteristic	Rating current (A)	Short-circuit capacity (kA)
A.76	EPP60		1, 1+N, 2, 3, 3+N, 4	yes	C	2 - 40	6 ⁽¹⁾ 10
A.78	EPP100		1, 2, 3, 3+N, 4	yes	B-C	2 - 40	10 ⁽¹⁾ 15 ⁽²⁾



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

EN/IEC 60898-1
EN/IEC 60947-2

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

Technical data of MCBs

Series				G30 / G45	G60 / EP60 char. K	G100 / EP100 char. K
Standards				EN/IEC 60898-1	EN/IEC 60898-1	EN/IEC 60898-1
Tripping characteristics				B, C	B, C, D, K ^[2]	B, C, D, K ^[2]
Nominal current				A	B(6-63), C/D/K(0.5-63)	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 ^[2]	1/1+N/2/3/4 ^[2]
Neutral pole protected				-	yes	yes
Nominal voltage Un	AC	1P	V	240/415	240/415	240/415
		1P+N	V	240	-	-
		2P	V	415	415	415
	DC	3P/3P+N/4P	V	415	415	415
		1P (1)	VDC	48	48	48
		2P (in series) (1)	VDC	110	110	110
Frequency			Hz	50/60	50/60	
			Hz	DC: magn.trip +40%	DC: magn.trip +40%	
			Hz	400: magn.trip +50%	400: magn.trip +50%	
Maximum service voltage Ubmax between two wires			V	250/440; 53/120 ==	250/440; 53/120 ==	250/440; 53/120 ==
Minimum service voltage Ubmin			V	12; 12 ==	12; 12 ==	12; 12 ==
Selectivity class (EN/IEC 60898-1)				3	3	3
Isolator application			EN/IEC 60947-2	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
Insulation resistance			MΩ	10000	10000	10000
Dielectric rigidity			kV	2.5	2.5	2.5
Vibrations resistance (in x, y, z direction) (EN/IEC 77/16.3)				3g	3g	3g
Endurance	electrical at Un, In			10000	10000	10000
	mechanical			20000	20000	20000
Utilisation category (EN/IEC 60947-2)				A	A	A
Mounting position (for all devices): any except upside down				any	any	any
Incoming top or bottom				yes	yes	yes
Protection degree (outside / inside enclosure with door)				IP20/IP40	IP20/IP40	IP20/IP40
Self-extinguish degree (according to UL94)				V2	V2	V2
Tropicalisation (according to EN/IEC 60068-2 / DIN 40046) °C/RH				+55°C/95% RH	+55°C/95% RH	+55°C/95% RH
Operating temperature			°C	-25/+55	-25/+55	-25/+55
Storage temperature			°C	-55/+55	-55/+55	-55/+55
Terminal capacity	Rigid cable min/max (top)		mm ²	1/35	1/35	1/35
	Flexible cable min*/max (top)		mm ²	0.75/25	0.75/25	0.75/25
	Rigid cable min/max (bottom)		mm ²	1/35	1/35	1/35
	Flexible cable min*/max (bottom)		mm ²	0.75/25	0.75/25	0.75/25
	(* Flexible cable 0.75/1/1.5mm ² with cable lug)					
	Torque		Nm	4.5	4.5	4.5
Add-on devices (side add-on)	Contacts CA/CB			yes	yes	yes
	Tele U			yes	yes	yes
	Tele L			yes	yes	yes
	Tele MP			yes	yes	yes
	PBS			yes	yes	yes
Busbar systems	Pin (top/bottom)			yes/yes	yes/yes	yes/yes
	Fork (top/bottom)			-/yes	-/yes	-/yes
Accessories				yes	yes	yes
Dimensions	(HxDxW) 86x68xW	mm/mod.		18	18	18
Weight/mod.		g		120	120	120
Package		mod.		12	12	12
Approvals				KEMA	KEMA	KEMA
CE-marking				yes	yes	yes
Page				A.14/A.16	A.18/A.20 ^[2]	A.22/A.24 ^[2]

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



GT10 / GT25	EP100 UC	Hti	EP100R / EP100T	EP100UCR / EP100UCT
EN/IEC 60947-2	(3)	EN/IEC 60947-2	EN/IEC 60898-1	EN/IEC 60947-2 ⁽³⁾
3-5In/5-10In/10-20In	B, C	3-5In/5-10In/10-20In	Z, B, C, D, K ⁽⁵⁾	Z, B, C, K ⁽⁴⁾
0.5-63	B(6-63), C(0.5-63)	80 up to 125	B(6-63), C/D/K(0.5-63)	0.5 - 63
40	30	40	30	30
1/2/3/4	1/2/4	1/2/3/4	1/2/3/4 ⁽⁶⁾	1/2
-	-	-	yes	-
240/415	240/415	230/400	240/415	240/415
-	-	-	-	-
415	415	415	415	415
415	415	415	415	415
48	250	48	48	250
110	500	110	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; 250/440 ==	250/440; 53/120 ==	250/440; 53/120 ==	250/440; 250/440 ==
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	5g	3g	3g	5g
4000	1000	4000	10000	1000
20000	20000	20000	20000	20000
A	A	A	A	A
any	any	any	any	any
yes	follow polarity	yes	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/+55	-25/+55	-25/+55	-40/+70	-40/+70
-55/+55	-55/+55	-55/+55	-40/+70	-40/+70
1/35	1/35	70	1/35	1/35
0.75/25	0.75/25	-	0.75/25	0.75/25
1/35	1/35	70	1/35	1/35
0.75/25	0.75/25	-	0.75/25	0.75/25
4.5	4.5	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
18	18	27	18	18
120	125	210	120	125
12	12	1/4/8	12	12
-	-	-	KEMA	-
yes	yes	yes	yes	yes
A.26/A.28	A.30	A.32	A.42/A.46	A.44/A.48

(2) Motor lines application
no 1+N execution in K curve
EP60K in page A.21
EP100K in page A.25

(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

MCBS

A

B

C

D

E

F

G

X



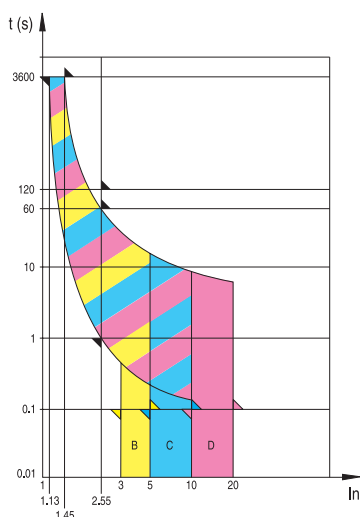
Short-circuit capacity of MCBs

Series			G30	G45	G60 / EP60 char. K	
Short-circuit capacity AC (kA)						
EN/IEC 60898-1	Icn	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
	Ics (service)			100% Icn	100% Icn	100% Icn
EN/IEC 60947-2	Icu (ultimate)	1P	127V	-	-	20
			240V	5	6	10
			415V	3	3	3
		1P+N/2P	127V	-	15	30
			240	10	10	20
			2P	415V	5	6
		3P, 4P	240V	10	10	20
			415V	5	6	10
			440V	-	-	6
	Ics (service)			75% Icu	75% Icu	75% Icu
NEMA AB1 (120/240V)			10	14	20	
Short-circuit capacity DC (kA)						
EN/IEC 60947-2	Icu (ultimate)	1P	≤60V ==	-	-	20
			≤220V ==	-	-	-
		2P	≤125V ==	-	-	25
			≤440V ==	-	-	-
	Ics (service)			-	-	100% Icu
Page			A.14	A.16	A.18/A.20	

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.

Tripping characteristic curves (EN/IEC 60898-1)



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

(1) if I_n ≤ 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 × I _n	t ≥ 1h (I _n ≤ 63A) t ≥ 2h (I _n > 63A)
1.45 × I _n	t < 1h (I _n ≤ 63A) t < 2h (I _n > 63A)
2.55 × I _n	1s < t < 60s (I _n ≤ 32A) 1s < t < 120s (I _n > 32A)

G100 / EP100 char. K EP100T / EP100R	GT10	GT25	EP100 UC / EP100 UCR	Hti
10	-	-	6 (220VDC) ⁽²⁾	-
10	-	-	-	-
10	-	-	6 (440VDC) ⁽³⁾	-
10	-	-	-	-
75% Icn	-	-	100% Icn	-
30	25	50	-	-
15	10	50/25/20/15 ⁽¹⁾	6 ⁽⁵⁾	B/C 10; D 7.5
4	-	-	-	4.5
40	30	-	-	-
30	20	50/50/40/30 ⁽¹⁾	-	B/C 15
15	10	50/25/20/15 ⁽¹⁾	6 ⁽⁵⁾	B/C 10; D 7.5
30	20	50/50/40/30 ⁽¹⁾	-	B/C 15
15	10	50/25/20/15 ⁽¹⁾	-	B/C 10; D 7.5
10	-	50/20/15/10 ⁽¹⁾	-	-
50% Icu	75% Icu	50% Icu	-	100% Icu
30	30	-	-	-
25	20	25	-	10
-	-	-	10 ⁽⁴⁾	-
30	25	30	20 ⁽⁴⁾	15
-	-	-	10 ⁽⁴⁾	-
100% Icu	100% Icu	100% Icu	-	100% Icu
A.22/A.24/A.42/A.46	A.26	A.28	A.30/A.44	A.32

(1) 0.5-4A/6-25A/32-40A/50-63A

(2) 10 (125VDC)

(3) 10 (250VDC)

(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 In
- C: 8.5 In (7.5 In for 63A)
- D and M: 14 In
- K: 10 In (6 In ≥ 2 s.)

Thermal release

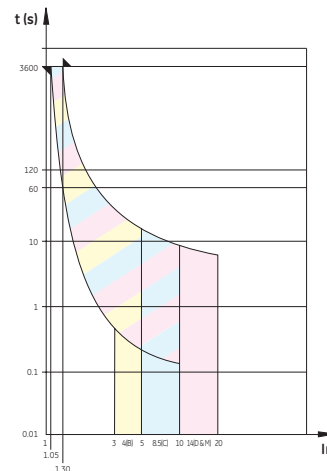
The release is initiated by a bimetal strip in case of overload. The standard defines the range of releases for two special overload values.

Reference ambient temperature is:

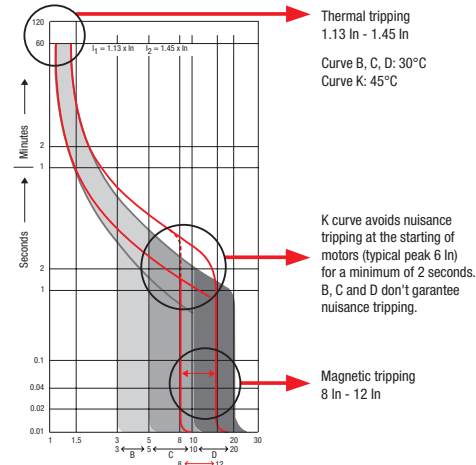
- 40°C for GT10 and GT25
- 50°C for G60 and G100, except for K: 45°C

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

Tripping characteristic curves (EN/IEC 60947-2)



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



Technical data of MCBs

Series			EP60 UL	EP100 UL	EP100 ULH
Standards UL 1077 (recognized) and CSA C22.2			yes	yes	-
Standards UL 489 (listed)			-	-	yes
UL file			E151139	E151139	E256870
CSA file			235-04	235-04	-
Nominal voltage acc. UL & CSA	1P		277VAC/50VDC	277VAC/50VDC	120VAC/50VDC
	2P		480VAC/110VDC	480VAC/110VDC	240VAC/110VDC
	3P		480VAC/110VDC	480VAC/110VDC	240VAC/110VDC
	4P		480VAC/110VDC	480VAC/110VDC	-
Reference temperature	°C		25	25	25
Terminal capacity	60/75°C		14-4 AWG	14-4 AWG	14-8 AWG
Torque	N.m/lbs.in		2.5/22.5	2.5/22.5	2.5/22.5
Standards EN/IEC 60947-2			yes	yes	yes
Tripping characteristics			B,C,D	B,C,D	B,C,D
Nominal current	A		B 6-63, C/D 0.5-63	B 6-63, C/D 0.5-63	B 5-32, C/D 0.5-32
Calibration temperature	°C		50	50	50
Number of poles			1/2/3/4	1/2/3/4	1/2/3
Number of modules			1, 2, 3, 4	1, 2, 3, 4	1, 2, 3
Nominal voltage Un					
AC	1P	V	230/400	230/400	230/400
	1P+N	V	-	-	-
	2P	V	400	400	400
	3P	V	400	400	400
	3P+N/4P	V	400	400	400
DC	1P ⁽¹⁾	VDC	48	48	48
	2P (in series) ⁽¹⁾	VDC	110	110	110
Frequency	Hz		50/60	50/60	50/60
Maximum service voltage U _{bmax} between two wires	V		250/440; 53/120 ==	250/440; 53/120 ==	250/440; 53/120 ==
Minimum service voltage U _{bmin}	V		12 and 12 ==	12 and 12 ==	12 and 12 ==
Selectivity class (EN/IEC 60898)			3	3	3
Isolator application EN/IEC 60947-2			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
Insulation resistance	MΩ		10000	10000	10000
Dielectric rigidity	kV		2.5	2.5	2.5
Mounting position			Any	Any	Any
Incoming top or bottom			Any	Any	Any
Vibrations resistance (in x, y, z direction) (EN/IEC 77/16.3)			3g	3g	3g
Endurance	electrical at Un, In		10000	10000	10000
	mechanical		20000	20000	20000
Utilisation category (EN/IEC 60947-2)			A	A	A
Protection distance (EN/IEC 60947-2)			12	12	12
Protection degree (outside / inside enclosure with door)			IP20/IP40	IP20/IP40	IP20/IP40
Self-extinguish degree (according to UL94)			V0	V0	V0
Tropicalisation (according to EN/IEC 60068-2 / DIN 40046)			+55°C / 95%RH	+55°C / 95%RH	+55°C / 95%RH
Operating temperature	°C		-25/+55	-25/+55	-25/+55
Storage temperature	°C		-55/+55	-55/+55	-55/+55
Terminal capacity					
	Rigid cable min/max (top)	mm ²	1/35	1/35	1/35
	Flexible cable min*/max (top)	mm ²	0.75/25	0.75/25	0.75/25
	Rigid cable min/max (bottom)	mm ²	1/35	1/35	1/35
	Flexible cable min*/max (bottom)	mm ²	0.75/25	0.75/25	0.75/25
	(* Flexible cable 0.75/1/1.5mm ² with cable lug)				
	Torque	Nm	max 4.5	max 4.5	max 4.5
Add-on devices (side add-on)	Auxiliary contacts		yes	yes	yes
	Tele L		yes	yes	yes
	Tele MP		yes	yes	yes
Dimensions (HxDxW) 86x68xW ⁽²⁾			18	18	18
Weight/mod.	g		125	125	130
Package	mod.		see page A.37	see page A.39	see page A.41
Approvals			UL/CSA/VDE	UL/CSA/VDE	UL
CE-marking			yes	yes	yes
Page			A.36	A.38	A.40

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

(2) EP100ULH executions 2P and 3P: H = 116 mm



Short-circuit capacity of MCBs

Series			EP60 UL	EP100 UL	EP100 ULH
Interrupting capacity acc. to			UL1077	UL1077	UL489
UL	1P	277VAC	6	10	-
	2P/3P/4P	480VAC	6	10	-
	1P	120VAC	6	10	10
	2P/3P	240VAC	6	10	10
	1P	50VDC	6	10	10
	2P	110VDC	6	10	10
Short-circuit capacity AC					
EN/IEC 60947-2	Icu (ultimate)	kA			
	1 P	127 V	20	30	30
		240V	10	15	15
		415 V	3	4	4
	1+N /2P	127 V	30	40	40
		240 V	20	30	30
	2 P	415 V	10	15	15
	3/3+N/4P	240 V	20	30	30
		415 V	10	15	15
		440 V	6	10	10
	Ics (service)		75% Icu	50% Icu	50% Icu
Short-circuit capacity DC					
EN/IEC 60947-2	Icu (ultimate)	kA			
	1 P	≤ 60 V $\overline{=}$	20	25	25
		≤ 220 V $\overline{=}$	-	-	-
	2 P	≤ 125 V $\overline{=}$	25	30	30
		≤ 440 V $\overline{=}$	-	-	-
	Ics (service)		100%Icu	100%Icu	10%Icu
Page			A.36	A.38	A.40

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:

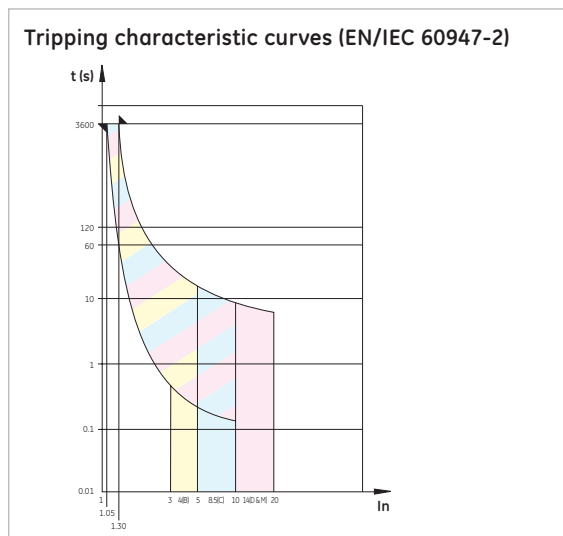
- B: 4 I_n
- C: 8.5 I_n (7.5 I_n for 63A)
- D: 14 I_n

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	Tripping time
B - C - D 1.05 × I _n	t ≥ 1h (I _n ≤ 63A) t ≥ 2h (I _n > 63A)
1.30 × I _n	t < 1h (I _n ≤ 63A) t < 2h (I _n > 63A)



Back-up protection (association)

Downstream: MCBs - Upstream: MCBs

Redline		U 230V					
Downstream MCB		Upstream MCB (kA)					
Types	In (A)	G60 and EPP60	G100 and EPP100	GT25	GT25	GT25	Hti
EPC 451N - EPC45	2-40	0.5-63	0.5-63	< 32	32-40	50-63	80-125
EPC 61N - EPC60	2-10	22	25	25	25	25	-
	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™																																																			
		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	
Downstream	Icu In (kA)	25	40	50	85	100	200	85	100	200	65	85	100	200	85	100	200	65	85	100	200	85	100	200	85	100	200	85	100	200	85	100	200	80	100	170	80	100	170	80	100	170	80	100	170	80	100						
		Icu of the combination (kA)																																																			
Redline																																																					
EPC 451N / EPC 45	6	15	18	18	18	18	18	15	15	15	12	12	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
DP45	6	15	18	22	22	22	22	18	18	18	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	-	-	50	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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
Surion																																																					
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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Record Plus™																																																					
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	150	80	100	150	80	100	150	80	100	150	80	100	150	80	100	150	80	100	150	80	100	150	80		
FD160/160H	100	-	-	-	-	-	200	-	-	200	-	-	-	200	-	-	200	-	-	200	-	100	150	-	100	150	-	100	150	-	100	150	-	100	150	-	100	150	-	100	150	-	100	150	-	100	150	-	100				
FE160N	85	-	-	-	-	-	-	-	100	200	-	-	100	200	-	100	200	-	100	200	80	100	150	80	100	150	80	100	150	80	100	150	80	100	150	80	100	150	80	100	150	80	100	150	80	100	150	80	100	150	80		
FE160H	100	-	-	-	-	-	-	-	-	200	-	-	-	200	-	-	200	-	-	200	-	100	150	-	100	150	-	100	150	-	100	150	-	100	150	-	100	150	-	100	150	-	100	150	-	100	150	-	100				
FE250N	85	-	-	-	-	-	-	-	-	-	-	-	-	100	200	-	100	200	-	100	200	80	100	150	80	100	150	80	100	150	80	100	150	80	100	150	80	100	150	80	100	150	80	100	150	80	100	150	80	100			
FE250H	100	-	-	-	-	-	-	-	-	-	-	-	-	200	-	-	200	-	-	200	-	100	150	-	100	150	-	100	150	-	100	150	-	100	150	-	100	150	-	100	150	-	100	150	-	100	150	-	100				
FG400N	85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	200	-	100	200	80	100	150	80	100	150	80	100	150	80	100	150	80	100	150	80	100	150	80	100	150	80	100	150	80	100	150	80	100			
FG400H	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200	-	-	200	-	100	150	-	100	150	-	100	150	-	100	150	-	100	150	-	100	150	-	100	150	-	100	150	-	100	150	-	100			
FG630N	85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	200	80	100	150	80	100	150	80	100	150	80	100	150	80	100	150	80	100	150	80	100	150	80	100	150	80	100	150	80			
FG630H	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200	-	100	150	-	100	150	-	100	150	-	100	150	-	100	150	-	100	150	-	100	150	-	100	150	-	100						
FK800N	80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	100	150	80	100	150	80	100	150	80	100	150	80	100	150	80	100	150	80	100	150	80	100	150	80	100	150	80				
FK800H	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	170	-	100	170	-	100	170	-	100	170	-	100	170	-	100	170	-	100	170	-	100	170	-	100	170	-	100				
FK1250N	80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	100	170	80	100	170	80	100	170	80	100	170	80	100	170	80	100	170	80	100	170	80	100	170	80	100	170	80				
FK1250H	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	170	-	100	170	-	100	170	-	100	170	-	100	170	-	100	170	-	100	170	-	100	170	-	100	170	-	100				



Record Plus™ MCCBs at 400/415V AC

Upstream Downstream		Icu In (kA)	MCCBs Record Plus™																											
			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	
			Icu of the combination (kA)																											
Redline																														
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	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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Surion																														
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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Record Plus™																														
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	-	
FD160/160H	80	-	-	-	-	-	150	-	-	150	-	-	-	150	-	-	150	-	-	150	-	-	100	-	-	100	-	-	-	
FE160N	50	-	-	-	-	-	-	-	80	150	-	-	80	150	-	80	150	-	80	150	-	80	100	-	80	100	-	80	-	
FE160H	80	-	-	-	-	-	-	-	-	150	-	-	-	150	-	-	150	-	-	150	-	-	100	-	-	100	-	-	-	
FE250N	50	-	-	-	-	-	-	-	-	-	-	-	-	80	150	-	80	150	-	80	150	-	80	100	-	80	100	-	80	
FE250H	80	-	-	-	-	-	-	-	-	-	-	-	-	-	150	-	-	150	-	-	150	-	-	100	-	-	100	-	-	
FG400N	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	150	-	80	150	-	80	100	-	80	100	-	80	
FG400H	80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150	-	-	150	-	-	100	-	-	100	-	-	
FG630N	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	150	-	80	100	-	80	100	-	80	
FG630H	80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150	-	-	100	-	-	100	-	-	
FK800N	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	100	-	80	100	-	80	
FK800H	80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	-	-	100	-	-	
FK1250N	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	100	-	80	100	-	80	
FK1250H	80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	-	-	100	-	-	

MCBS

A

B

C

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X

Selectivity

Record Plus™ MCCBs

Upstream Downstream		MCCBs Record Plus™																		
		FDC and FDE 160 LTM						FDS 160 LTMD						FDN, H and L 160 LTMD						
		In (A)	40	50	63	80	100	125	40	50	63	80	100	125	40	50	63	80	100	125
		Selectivity limit (kA) ⁽¹⁾																		
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	3.5	T	T	T	T	T	T	3.5	T	T	T	T	T
	25	-	0.8	1.2	T	T	T	1.6	3.5	T	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
Redline EPC60 and DME60 B/C curve	40	-	-	-	3	4	T	-	-	-	T	T	T	T	-	-	-	T	T	T
	≥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	3.5	T	T	T	T	T	T	3.5	T	T	T	T	T
	25	-	0.8	1.2	6	6	T	1.6	3.5	T	T	T	T	T	1.6	3.5	T	T	T	T
Redline DM60 DME100 B/C curve	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
	50	-	-	-	-	1.2	1.5	6	-	-	-	3.5	T	T	-	-	-	3.5	T	T
	63	-	-	-	-	-	1.5	2	-	-	-	-	8	T	-	-	-	-	8	T
Redline G60 EPC 101N DM100 B/C curve	≤16	0.6	2.5	6	6	10	T	10	10	T	T	T	T	T	10	10	T	T	T	T
	20	0.6	2.5	3	6	8	T	3.5	10	T	T	T	T	T	3.5	10	T	T	T	T
	25	-	0.8	1.2	6	6	T	1.6	3.5	T	T	T	T	T	1.6	3.5	T	T	T	T
	32	-	-	1.2	3	6	8	-	-	10	10	T	T	T	-	-	10	10	T	T
Redline G100 GT25 B/C curve	40	-	-	-	3	4	6	-	-	-	10	15	T	-	-	-	10	15	T	T
	50	-	-	-	1.2	1.5	6	-	-	-	3.5	10	T	-	-	-	3.5	10	T	T
	63	-	-	-	-	-	1.5	2	-	-	-	8	T	-	-	-	-	8	T	T
	100	-	-	-	-	-	-	-	-	-	-	-	15	-	-	-	-	-	15	-
Hti C curve	≤20	0.6	2.5	6	6	10	T	10	10	T	T	T	T	T	10	10	T	T	T	T
	25	-	1	1.2	6	6	T	-	3.5	15	15	T	T	T	-	3.5	15	15	T	T
	32	-	-	1.2	3	6	10	-	-	6	6	T	T	T	-	-	6	6	T	T
	40	-	-	-	3	4	6	-	-	-	6	T	T	T	-	-	-	6	T	T
S90 C curve	50	-	-	-	1.2	1.6	6	-	-	-	3.5	T	T	T	-	-	-	3.5	T	T
	63	-	-	-	-	-	1.9	-	-	-	-	-	8	T	-	-	-	-	8	T
	80	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	-	-	15	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	-	-	15	-
Surion GPS1BS and GPS1MS GPS2BS and GPS2MS	≤20	0.6	2.5	6	6	10	T	10	10	T	T	T	T	T	10	10	T	T	T	T
	25	-	1	1.2	6	6	T	-	3.5	15	15	T	T	T	-	3.5	15	15	T	T
	32	-	-	1.2	3	6	10	-	-	6	6	T	T	T	-	-	6	6	T	T
	40	-	-	-	3	4	6	-	-	-	6	T	T	T	-	-	-	6	T	T
Surion GPS1BH and GPS1MH GPS2BH and GPS2MH	50	-	-	-	1.2	1.6	6	-	-	-	3.5	T	T	T	-	-	-	3.5	T	T
	63	-	-	-	-	1.6	2	-	-	-	-	8	T	-	-	-	-	8	T	T
	≤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	T	-	3.5	T	T	T	T
Record Plus™ FD160/160E LTM	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	-	-	-	0.8	1	1.3	-	-	-	1.2	1.5	3.5	-	-	-	-	1.2	1.5	3.5
	63	-	-	-	-	1	1.3	-	-	-	-	1.5	3.5	-	-	-	-	-	1.5	3.5
	80	-	-	-	-	-	1.3	-	-	-	-	-	1.5	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.



A

D

E

F

G

X



Miniature Circuit Breakers

Series G30

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

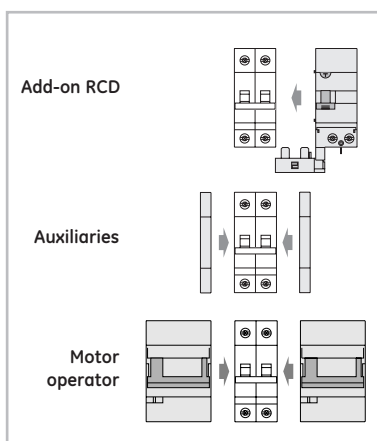
Application



Approval / Marking



Add-on devices



- Add-on RCD ● pg B.32
- Auxiliary contacts ● pg C.4
- Motor operator ● pg C.7
- Shunt trip ● pg C.8
- Undervoltage release ● pg C.8
- Panel board switch ● pg C.8

- Accessories ● pg A.50
- Busbars ● pg E.2
- More technical data ● website
- Dimensions ● pg A.80

Performance

Thermal setting I_n	(A)	2-40
Rated voltage AC U_n	(V)	240/415
Minimum operating voltage $U_{8\ min}$	(V)	12
Tripping characteristics		B-C
Selectivity 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 ²)	25-35
Poles		1, 2, 3, 4
Weight	(g/pole)	120

Short-circuit capacity

AC acc. to EN/IEC 60898-1

Poles	V	I_{cn}/I_{cs} (kA)
1-4	230/400	3

AC acc. to EN/IEC 60947-2

Poles	V	I_{cu} (kA)
1	240	5
2	127	-
	240	10
	415	5
3, 4	240	10
	415	5

Series G30 - 3kA - characteristics B-C



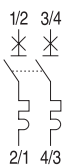
**1P
1 mod.**



In (A)	B		C		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
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



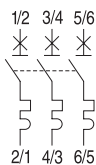
**2P
2 mod.**



2	-	-	G32C02	674397	6
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



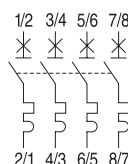
**3P
3 mod.**



2	-	-	G33C02	674413	4
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	3
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



Miniature Circuit Breakers

Series G45

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

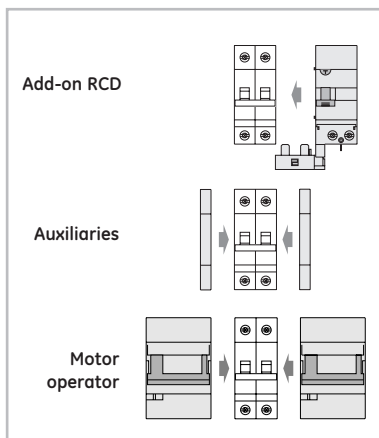
Application



Approval / Marking



Add-on devices



- Add-on RCD ● pg B.32
- Auxiliary contacts ● pg C.4
- Motor operator ● pg C.7
- Shunt trip ● pg C.8
- Undervoltage release ● pg C.8
- Panel board switch ● pg C.8

- Accessories ● pg A.50
- Busbars ● pg E.2
- More technical data ● website
- Dimensions ● pg A.80

Performance

Thermal setting I_n	(A)	2-40
Rated voltage AC U_n	(V)	240/415
Minimum operating voltage $U_{8 min}$	(V)	12
Tripping characteristics		B-C
Selectivity 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 ²)	25-35
Poles		1, 2, 3, 4
Weight	(g/pole)	120

Short-circuit capacity

AC acc. to EN/IEC 60898-1

Poles	V	I_{cn}/I_{cs} (kA)
1-4	230/400	4.5

AC acc. to EN/IEC 60947-2

Poles	V	I_{cu} (kA)
1	240	6
2	127	15
	240	10
	415	6
3, 4	240	10
	415	6

Compact MCBs 4.5 kA, see page A.60, A.64

Series G45 - 4.5kA - characteristics B-C



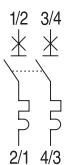
1P
1 mod.



In (A)	B		C		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
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



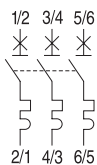
2P
2 mod.



2	-	-	G42C02	674506	6
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



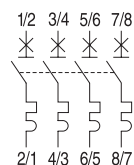
3P
3 mod.



2	-	-	G43C02	674522	4
4	-	-	G43C04	674524	4
6	G43B06	674574	G43C06	674525	4
10	G43B10	674576	G43C10	674527	4
16	G43B16	674578	G43C16	674529	4
20	G43B20	674579	G43C20	674530	4
25	G43B25	674580	G43C25	674531	4
32	G43B32	674581	G43C32	674532	4
40	G43B40	674582	G43C40	674533	4



4P
4 mod.



2	-	-	G44C02	674538	3
4	-	-	G44C04	674540	3
6	G44B06	674585	G44C06	674541	3
10	G44B10	674587	G44C10	674543	3
16	G44B16	674589	G44C16	674545	3
20	G44B20	674590	G44C20	674546	3
25	G44B25	674591	G44C25	674547	3
32	G44B32	674592	G44C32	674548	3
40	G44B40	674593	G44C40	674549	3

Series G45

A

B

C

D

E

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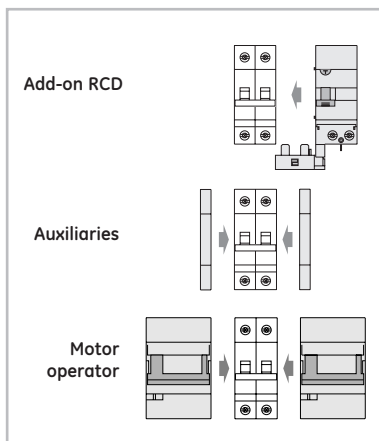
Applications



Approvals / Marking



Add-on devices



- Add-on RCD ● pg B.32
- Auxiliary contacts ● pg C.4
- Motor operator ● pg C.7
- Shunt trip ● pg C.8
- Undervoltage release ● pg C.8
- Panel board switch ● pg C.8

- Accessories ● pg A.50
- Busbars ● pg E.2
- More technical data ● website
- Dimensions ● pg A.80

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.

Performance

Thermal setting I_n	(A)	2-63
Rated voltage AC U_n	(V)	240/415
Minimum operating voltage $U_{8\ min}$	(V)	12
Tripping characteristics		B-C-D
Selectivity 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 ²)	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	I_{cn}/I_{cs} (kA)
1-4	230/400	6

AC acc. to EN/IEC 60947-2

Poles	V	I_{cu} (kA) ⁽¹⁾
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 _{DC} ⁽²⁾	I_{cu}/I_{cs} (kA)
1	60	20
2	125	25

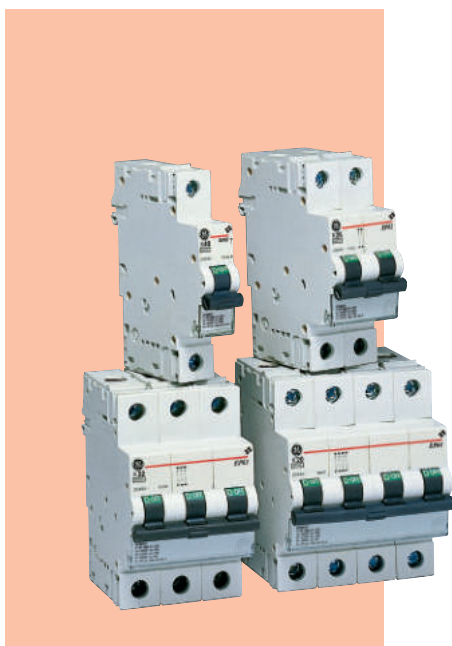
(1) $I_{cs} = 75\% I_{cu}$

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

Compact MCBs 6 kA, see page A.61, A.63, A.66
Screwless MCBs 6 kA, see page A.76

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

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



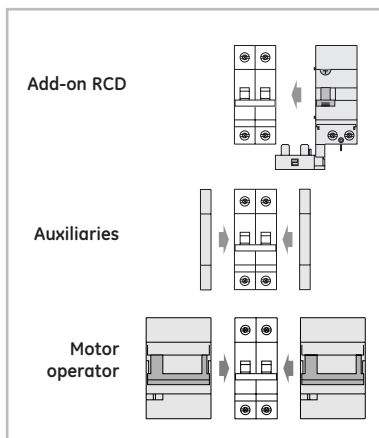
Applications



Marking



Add-on devices



- Add-on RCD ● pg B.32
- Auxiliary contacts ● pg C.4
- Motor operator ● pg C.7
- Shunt trip ● pg C.8
- Undervoltage release ● pg C.8
- Panel board switch ● pg C.8

- Accessories ● pg A.50
- Busbars ● pg E.2
- More technical data ● website
- Dimensions ● pg A.80

Miniature Circuit Breakers

Series EP60

EN/IEC 60898-1 6000

EN/IEC 60947-2 10kA

Performance

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

Short-circuit capacity

AC acc. to EN/IEC 60947-2

Poles	V	I_{cu} (kA) ⁽¹⁾
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_{DC} ⁽²⁾	I_{cu}/I_{cs} (kA)
1	60	20
2	125	25

(1) $I_{cs} = 75\% I_{cu}$

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

Series EP60 - 6kA - characteristic K



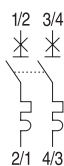
1P
1 mod.



In (A)	K		Pack.
	Cat. No.	Ref. No.	
0.5	EP61K0.5	681600	12
1	EP61K01	681601	12
1.6	EP61K1.6	681602	12
2	EP61K02	681603	12
3	EP61K03	681604	12
4	EP61K04	681605	12
6	EP61K06	681606	12
8	EP61K08	681607	12
10	EP61K10	681608	12
16	EP61K16	681609	12
20	EP61K20	681610	12
25	EP61K25	681611	12
32	EP61K32	681612	12
40	EP61K40	681613	12
50	EP61K50	681614	12
63	EP61K63	681615	12



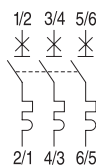
2P
2 mod.



0.5	EP62K0.5	681616	6
1	EP62K01	681617	6
1.6	EP62K1.6	681618	6
2	EP62K02	681619	6
3	EP62K03	681620	6
4	EP62K04	681621	6
6	EP62K06	681622	6
8	EP62K08	681623	6
10	EP62K10	681624	6
16	EP62K16	681625	6
20	EP62K20	681626	6
25	EP62K25	681627	6
32	EP62K32	681628	6
40	EP62K40	681629	6
50	EP62K50	681630	6
63	EP62K63	681631	6



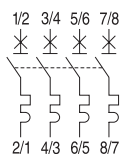
3P
3 mod.



0.5	EP63K0.5	681632	4
1	EP63K01	681633	4
1.6	EP63K1.6	681634	4
2	EP63K02	681635	4
3	EP63K03	681636	4
4	EP63K04	681637	4
6	EP63K06	681638	4
8	EP63K08	681639	4
10	EP63K10	681640	4
16	EP63K16	681641	4
20	EP63K20	681642	4
25	EP63K25	681643	4
32	EP63K32	681644	4
40	EP63K40	681645	4
50	EP63K50	681646	4
63	EP63K63	681647	4



4P
4 mod.



0.5	EP64K0.5	681648	3
1	EP64K01	681649	3
1.6	EP64K1.6	681650	3
2	EP64K02	681651	3
3	EP64K03	681652	3
4	EP64K04	681653	3
6	EP64K06	681654	3
8	EP64K08	681655	3
10	EP64K10	681656	3
16	EP64K16	681657	3
20	EP64K20	681658	3
25	EP64K25	681659	3
32	EP64K32	681660	3
40	EP64K40	681661	3
50	EP64K50	681662	3
63	EP64K63	681663	3



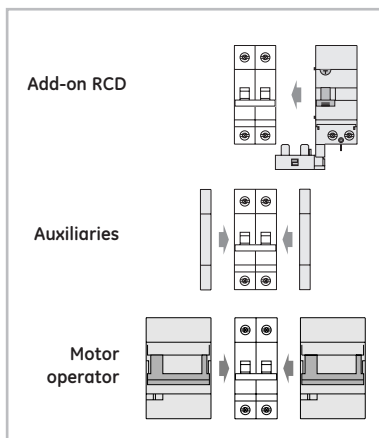
Applications



Approvals / Marking



Add-on devices



- Add-on RCD ● pg B.32
- Auxiliary contacts ● pg C.4
- Motor operator ● pg C.7
- Shunt trip ● pg C.8
- Undervoltage release ● pg C.8
- Panel board switch ● pg C.8

- Accessories ● pg A.50
- Busbars ● pg E.2
- More technical data ● website
- Dimensions ● pg A.80

Miniature Circuit Breakers

Series G100

EN/IEC 60898-1 10000

3

EN/IEC 60947-2 15kA

Special executions G100S for Shipping application and EP100R for Railways application in separate document.

Performance

Thermal setting I_n	(A) 0.5-63
Rated voltage AC U_n	(V) 240/415
Minimum operating voltage $U_{8\ min}$	(V) 12
Tripping characteristics	B-C-D
Selectivity 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 ²)	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	I_{cn} (kA) ⁽¹⁾
1-4	230/400	10

AC acc. to EN/IEC 60947-2

Poles	V	I_{cu} (kA) ⁽²⁾
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 _{DC} ⁽³⁾	I_{cu}/I_{cs} (kA)
1	60	25
2	125	30

(1) $I_{cs} = 75\% I_{cu}$

(2) $I_{cs} = 50\% I_{cu}$

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

Screwless MCBs 10 kA, see page A.78

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



1P
1 mod.



In (A)	B		C		D		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
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



1P+N
2 mod.



In (A)	B		C		D		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
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



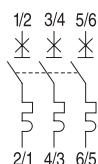
2P
2 mod.



In (A)	B		C		D		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
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



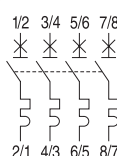
3P
3 mod.



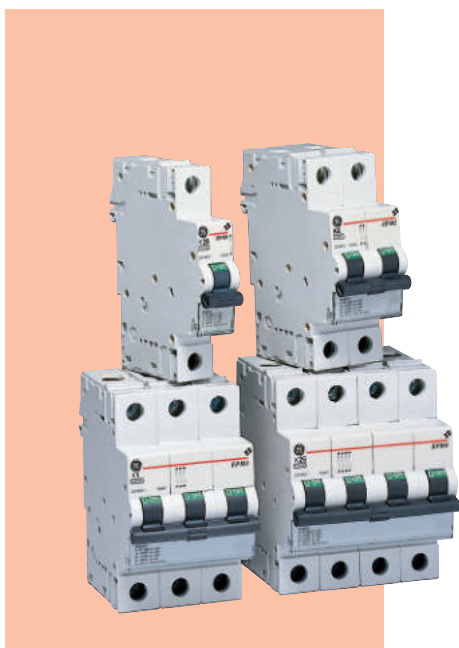
In (A)	B		C		D		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
0.5	-	-	G103C0.5	674902	G103D0.5	675064	4
1	-	-	G103C01	674903	G103D01	675065	4
2	-	-	G103C02	674904	G103D02	675066	4
3	-	-	G103C03	674905	G103D03	675067	4
4	-	-	G103C04	674906	G103D04	675068	4
6	G103B06	674983	G103C06	674907	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



4P
4 mod.



In (A)	B		C		D		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
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



Miniature Circuit Breakers

Series EP100

EN/IEC 60898-1 10000

EN/IEC 60947-2 15kA

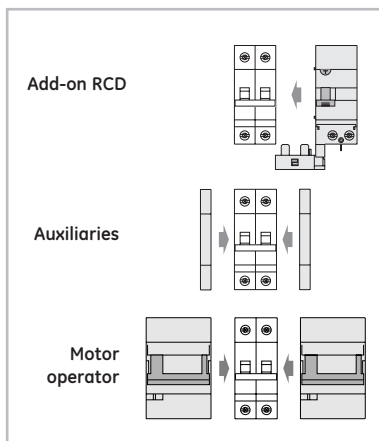
Applications



Marking



Add-on devices



- Add-on RCD ● pg B.32
- Auxiliary contacts ● pg C.4
- Motor operator ● pg C.7
- Shunt trip ● pg C.8
- Undervoltage release ● pg C.8
- Panel board switch ● pg C.8

- Accessories ● pg A.50
- Busbars ● pg E.2
- More technical data ● website
- Dimensions ● pg A.80

Performance

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

Short-circuit capacity

AC acc. to EN/IEC 60947-2

Poles	V	I_{cu} (kA) ⁽¹⁾
1	240	15
1+N, 2	127	40
	240	30
2	415	15
3, 4	240	30
	415	15

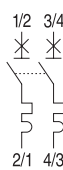
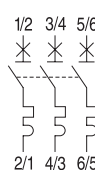
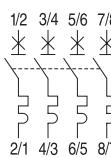
DC acc. to EN/IEC 60947-2

Poles	V_{DC} ⁽²⁾	I_{cu}/I_{cs} (kA)
1	60	25
2	125	30

(1) $I_{cs} = 50\% I_{cu}$

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

Series EP100 - 10kA - characteristic K

	In (A)	K		Pack.
		Cat. No.	Ref. No.	
1P 1 mod.  	0.5	EP101K0.5	672402	12
	1	EP101K01	672403	12
	1.6	EP101K1.6	681588	12
	2	EP101K02	672404	12
	3	EP101K03	672405	12
	4	EP101K04	672406	12
	6	EP101K06	672407	12
	8	EP101K08	672408	12
	10	EP101K10	672409	12
	16	EP101K16	672411	12
	20	EP101K20	672412	12
	25	EP101K25	672413	12
	32	EP101K32	672414	12
	40	EP101K40	672415	12
	50	EP101K50	672416	12
	63	EP101K63	672417	12
2P 2 mod.  	0.5	EP102K0.5	672434	6
	1	EP102K01	672435	6
	1.6	EP102K1.6	681591	6
	2	EP102K02	672436	6
	3	EP102K03	672437	6
	4	EP102K04	672438	6
	6	EP102K06	672439	6
	8	EP102K08	672440	6
	10	EP102K10	672441	6
	16	EP102K16	672443	6
	20	EP102K20	672444	6
	25	EP102K25	672445	6
	32	EP102K32	672446	6
	40	EP102K40	672447	6
	50	EP102K50	672448	6
	63	EP102K63	672449	6
3P 3 mod.  	0.5	EP103K0.5	672450	4
	1	EP103K01	672451	4
	1.6	EP103K1.6	681594	4
	2	EP103K02	672452	4
	3	EP103K03	672453	4
	4	EP103K04	672454	4
	6	EP103K06	672455	4
	8	EP103K08	672456	4
	10	EP103K10	672457	4
	16	EP103K16	672459	4
	20	EP103K20	672460	4
	25	EP103K25	672461	4
	32	EP103K32	672462	4
	40	EP103K40	672463	4
	50	EP103K50	672464	4
	63	EP103K63	672465	4
4P 4 mod.  	0.5	EP104K0.5	672466	3
	1	EP104K01	672467	3
	1.6	EP104K1.6	681597	3
	2	EP104K02	672468	3
	3	EP104K03	672469	3
	4	EP104K04	672470	3
	6	EP104K06	672471	3
	8	EP104K08	672472	3
	10	EP104K10	672473	3
	16	EP104K16	672475	3
	20	EP104K20	672476	3
	25	EP104K25	672477	3
	32	EP104K32	672478	3
	40	EP104K40	672479	3
	50	EP104K50	672480	3
	63	EP104K63	672481	3

Series EP100

A

B

C

D

E

F

G

X



Miniature Circuit Breakers

Series GT10

EN/IEC 60947-2 10kA

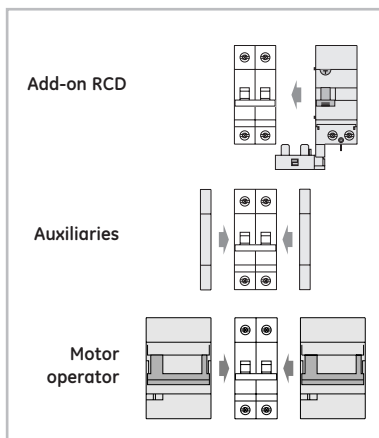
Applications



Marking



Add-on devices



- Add-on RCD ● pg B.32
- Auxiliary contacts ● pg C.4
- Motor operator ● pg C.7
- Shunt trip ● pg C.8
- Undervoltage release ● pg C.8
- Panel board switch ● pg C.8

- Accessories ● pg A.50
- Busbars ● pg E.2
- More technical data ● website
- Dimensions ● pg A.80

Performance

Thermal setting I_n	(A) 0.5-63
Rated voltage AC U_n	(V) 240/415
Minimum operating voltage $U_{8 min}$	(V) 12
Tripping characteristics	3-5In (B) 5-10In (C) 10-20In (D)
Mechanical/electrical endurance	20000/10000
Tropicalisation acc.to EN/IEC 60068-2	95%RH at 55°C
Terminal capacity flexible/rigid cable	(mm ²) 25-35
Poles	1, 2, 3, 4
Weight	(g/pole) 120

Short-circuit capacity

AC acc. to EN/IEC 60947-2

Poles	V	I_{cu} (kA) ⁽¹⁾
1	240	10
2	127	30
	240	20
	415	10
3, 4	240	20
	415	10

DC acc. to EN/IEC 60947-2

Poles	V_{DC} ⁽²⁾	I_{cu} (kA)/ I_{cs} (kA)
1	60	20
2	125	25

(1) $I_{cs} = 75\% I_{cu}$

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

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



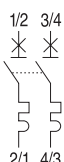
1P
1 mod.



In (A)	3-5In (B)		5-10In (C)		10-20In (D)		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
0.5	-	-	GT101C0.5	675112	GT101D0.5	675220	12
1	-	-	GT101C01	675113	GT101D01	675221	12
2	-	-	GT101C02	675114	GT101D02	675222	12
3	-	-	GT101C03	675115	GT101D03	675223	12
4	-	-	GT101C04	675116	GT101D04	675224	12
6	GT101B06	675176	GT101C06	675117	GT101D06	675225	12
10	GT101B10	675178	GT101C10	675119	GT101D10	675227	12
13	GT101B13	675179	GT101C13	675120	GT101D13	675228	12
16	GT101B16	675180	GT101C16	675121	GT101D16	675229	12
20	GT101B20	675181	GT101C20	675122	GT101D20	675230	12
25	GT101B25	675182	GT101C25	675123	GT101D25	675231	12
32	GT101B32	675183	GT101C32	675124	GT101D32	675232	12
40	GT101B40	675184	GT101C40	675125	GT101D40	675233	12
50	GT101B50	675185	GT101C50	675126	GT101D50	675234	12
63	GT101B63	675186	GT101C63	675127	GT101D63	675235	12



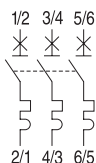
2P
2 mod.



0.5	-	-	GT102C0.5	675128	GT102D0.5	675236	6
1	-	-	GT102C01	675129	GT102D01	675237	6
2	-	-	GT102C02	675130	GT102D02	675238	6
3	-	-	GT102C03	675131	GT102D03	675239	6
4	-	-	GT102C04	675132	GT102D04	675240	6
6	GT102B06	675187	GT102C06	675133	GT102D06	675241	6
10	GT102B10	675189	GT102C10	675135	GT102D10	675243	6
13	GT102B13	675190	GT102C13	675136	GT102D13	675244	6
16	GT102B16	675191	GT102C16	675137	GT102D16	675245	6
20	GT102B20	675192	GT102C20	675138	GT102D20	675246	6
25	GT102B25	675193	GT102C25	675139	GT102D25	675247	6
32	GT102B32	675194	GT102C32	675140	GT102D32	675248	6
40	GT102B40	675195	GT102C40	675141	GT102D40	675249	6
50	GT102B50	675196	GT102C50	675142	GT102D50	675250	6
63	GT102B63	675197	GT102C63	675143	GT102D63	675251	6



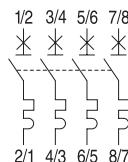
3P
3 mod.



0.5	-	-	GT103C0.5	675144	GT103D0.5	675252	4
1	-	-	GT103C01	675145	GT103D01	675253	4
2	-	-	GT103C02	675146	GT103D02	675254	4
3	-	-	GT103C03	675147	GT103D03	675255	4
4	-	-	GT103C04	675148	GT103D04	675256	4
6	GT103B06	675198	GT103C06	675149	GT103D06	675257	4
10	GT103B10	675200	GT103C10	675151	GT103D10	675259	4
13	GT103B13	675201	GT103C13	675152	GT103D13	675260	4
16	GT103B16	675202	GT103C16	675153	GT103D16	675261	4
20	GT103B20	675203	GT103C20	675154	GT103D20	675262	4
25	GT103B25	675204	GT103C25	675155	GT103D25	675263	4
32	GT103B32	675205	GT103C32	675156	GT103D32	675264	4
40	GT103B40	675206	GT103C40	675157	GT103D40	675265	4
50	GT103B50	675207	GT103C50	675158	GT103D50	675266	4
63	GT103B63	675208	GT103C63	675159	GT103D63	675267	4



4P
4 mod.



0.5	-	-	GT104C0.5	675160	GT104D0.5	675268	3
1	-	-	GT104C01	675161	GT104D01	675269	3
2	-	-	GT104C02	675162	GT104D02	675270	3
3	-	-	GT104C03	675163	GT104D03	675271	3
4	-	-	GT104C04	675164	GT104D04	675272	3
6	GT104B06	675209	GT104C06	675165	GT104D06	675273	3
10	GT104B10	675211	GT104C10	675167	GT104D10	675275	3
13	GT104B13	675212	GT104C13	675168	GT104D13	675276	3
16	GT104B16	675213	GT104C16	675169	GT104D16	675277	3
20	GT104B20	675214	GT104C20	675170	GT104D20	675278	3
25	GT104B25	675215	GT104C25	675171	GT104D25	675279	3
32	GT104B32	675216	GT104C32	675172	GT104D32	675280	3
40	GT104B40	675217	GT104C40	675173	GT104D40	675281	3
50	GT104B50	675218	GT104C50	675174	GT104D50	675282	3
63	GT104B63	675219	GT104C63	675175	GT104D63	675283	3

Series GT10

A

B

C

D

E

F

G

X



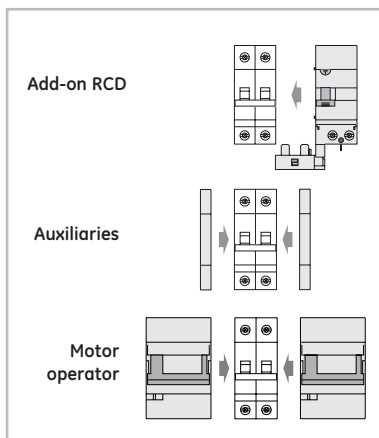
Application



Marking



Add-on devices



- Add-on RCD ● pg B.32
- Auxiliary contacts ● pg C.4
- Motor operator ● pg C.7
- Shunt trip ● pg C.8
- Undervoltage release ● pg C.8
- Panel board switch ● pg C.8

- Accessories ● pg A.50
- Busbars ● pg E.2
- More technical data ● website
- Dimensions ● pg A.80

Miniature Circuit Breakers

Series GT25

EN/IEC 60947-2	100kA
	25kA
	20kA
	15kA

Performance

Thermal setting I_n	(A) 0.5-63
Rated voltage AC U_n	(V) 240/415
Minimum operating voltage $U_{8 min}$	(V) 12
Tripping characteristics	3-5 I_n (B) 5-10 I_n (C) 10-20 I_n (D)
Mechanical/electrical endurance	20000/10000
Tropicalisation acc.to EN/IEC 60068-2	95%RH at 55°C
Terminal capacity flexible/rigid cable	(mm ²) 25-35
Poles	1, 2, 3, 4
Weight	(g/pole) 120

Short-circuit capacity

AC acc. to EN/IEC 60947-2

I_n (A)	Poles	V	I_{cu} (kA) ⁽¹⁾
0.5-4	1	240	100
	2-4	415	100
6-25	1	240	25
	2-4	240	50
		415	25
32-40	1	240	20
	2-4	240	40
		415	20
50-63	1	240	15
	2-4	240	30
		415	15

DC acc. to EN/IEC 60947-2

Poles	V_{DC} ⁽²⁾	I_{cu}/I_{cs} (kA)
1	60	25
2	125	30

(1) $I_{cs} = 50\% I_{cu}$

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

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



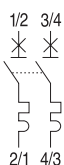
1P
1 mod.



In (A)	3-5In (B)		5-10In (C)		10-20In (D)		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
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



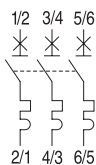
2P
2 mod.



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



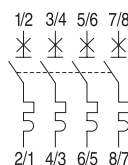
3P
3 mod.



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



4P
4 mod.



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



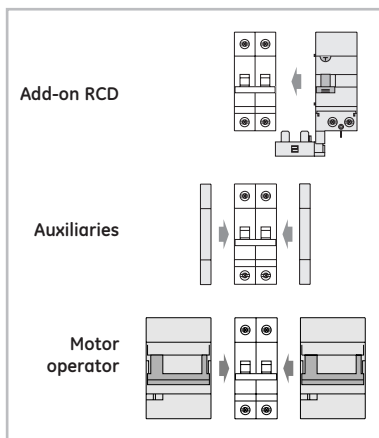
Applications



Standards / Marking

EN/IEC 60898-2, DIN VDE 0641 

Add-on devices



- Add-on RCD ● pg B.32
- Auxiliary contacts ● pg C.4
- Motor operator ● pg C.7
- Shunt trip ● pg C.8
- Undervoltage release ● pg C.8
- Panel board switch ● pg C.8

- Accessories ● pg A.50
- Busbars ● pg E.2
- More technical data ● website
- Dimensions ● pg A.80

Miniature Circuit Breakers for universal currents

Series EP100 UC

EN/IEC 60898-2

6000	T15
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DIN VDE 0641

EN/IEC 60947-2 10kA

Performance

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

Short-circuit capacity

AC/DC acc. to EN/IEC 60898-2⁽⁵⁾

Poles	V	$I_{cn}=I_{cs}$ (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	I_{cu} (kA)
1	220 DC	10 ⁽³⁾
2	440 DC	10 ⁽³⁾
1	230 AC	6 ⁽⁴⁾
2	400 AC	6 ⁽⁴⁾

(1) Polarity labeling to be respected due to the permanent magnet in the MCB

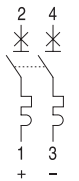
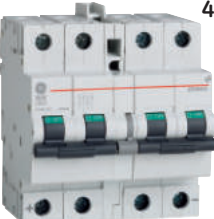
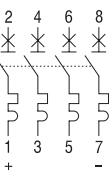
(2) For 4P execution open circuit voltage $U_{CO} = 1000 \equiv$

(3) $T = 4ms$

(4) 4.5kA for 50A and 63A

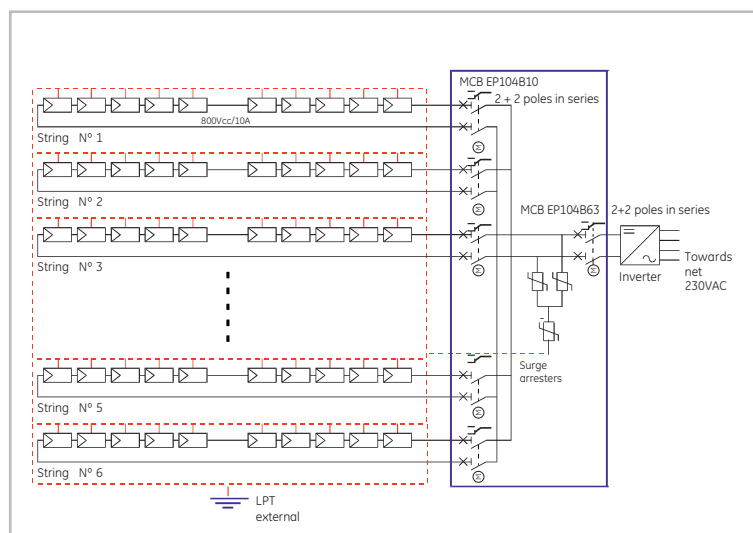
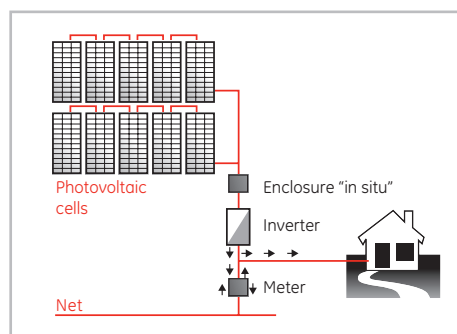
(5) After a switching of the net with more than 6kA in AC it should not be used in DC

Series EP100 UC - 10kA - characteristics B-C

	In (A)	B		C		Pack.
		Cat. No.	Ref. No.	Cat. No.	Ref. No.	
1P 1 mod.  	0.5	-	-	EP101UCC0.5	673301	12
	1	-	-	EP101UCC01	673302	12
	2	-	-	EP101UCC02	673303	12
	4	-	-	EP101UCC04	673305	12
	6	EP101UCB06	673333	EP101UCC06	673306	12
	10	EP101UCB10	673334	EP101UCC10	673308	12
	16	EP101UCB16	673335	EP101UCC16	673310	12
	20	EP101UCB20	673336	EP101UCC20	673311	12
	25	EP101UCB25	673337	EP101UCC25	673312	12
	32	EP101UCB32	673338	EP101UCC32	673313	12
	40	EP101UCB40	673339	EP101UCC40	673314	12
	50	EP101UCB50	673340	EP101UCC50	673315	12
	63	EP101UCB63	673341	EP101UCC63	673316	12
2P 2 mod.  	0.5	-	-	EP102UCC0.5	673317	6
	1	-	-	EP102UCC01	673318	6
	2	-	-	EP102UCC02	673319	6
	4	-	-	EP102UCC04	673321	6
	6	EP102UCB06	673342	EP102UCC06	673322	6
	10	EP102UCB10	673343	EP102UCC10	673324	6
	16	EP102UCB16	673344	EP102UCC16	673326	6
	20	EP102UCB20	673345	EP121UCC20	673327	6
	25	EP102UCB25	673346	EP102UCC25	673328	6
	32	EP102UCB32	673347	EP102UCC32	673329	6
	40	EP102UCB40	673348	EP102UCC40	673330	6
	50	EP102UCB50	673349	EP102UCC50	673331	6
	63	EP102UCB63	673350	EP102UCC63	673332	6
4P 4.5 mod. (1)  	10	EP104UCB10	690200			3
	16	EP104UCB16	688029			3
	20	EP104UCB20	688026			3
	25	EP104UCB25	691580			3
	32	EP104UCB32	691581			3
	40	EP104UCB40	688027			3
	63	EP104UCB63	688028			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"



Miniature Circuit Breakers

Series Hti

EN/IEC 60947-2 10kA

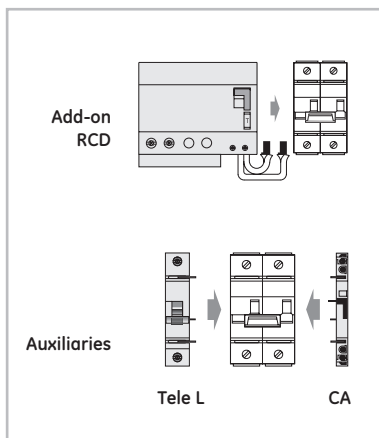
Applications



Standard / Marking

EN/IEC 60947-2

Add-on devices



Add-on RCD pg A.34
 Auxiliary contacts pg A.35
 Shunt trip pg A.35

More technical data website
 Dimensions pg A.81

Performance

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

Short-circuit capacity

AC acc. to EN/IEC 60947-2 (B, C)

Poles	V	I_{cu} (kA) ⁽¹⁾
1	230/400	10 ⁽²⁾
2	230	15 ⁽³⁾
3, 4	230	15 ⁽³⁾
3, 4	400	10 ⁽²⁾

Add-on RCD - technical performances

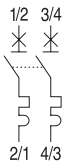
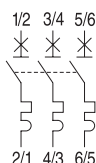
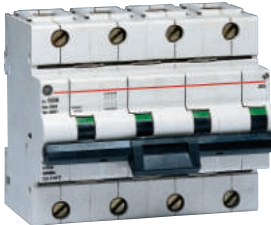
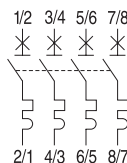
Standard	EN/IEC 60947-2
Nominal current I_n	(A) 80-125
Residual current $I_{\Delta n}$	(mA) 30, 300
Rated voltage AC U_n	(V) 2P: 230/400
	3P-4P: 400
Resistance against unwanted tripping	Type A, AC: 250A 8/20 μ s
	Type S: 3000A 8/20 μ s
Terminal capacity flexible/rigid cable	(mm ²) 70
Poles	2, 3, 4

(1) Only for 3-5 I_n (B) and 5-10 I_n (C)

(2) 7.5kA for 10-20 I_n (D)

(3) 10kA for 10-20 I_n (D)

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

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

Only for 3-5 In (B) and 5-10 In (C)
 For D see page A.32

Series Hti

A

B

C

D

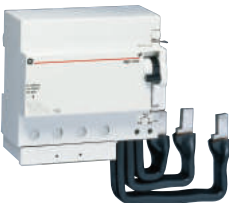
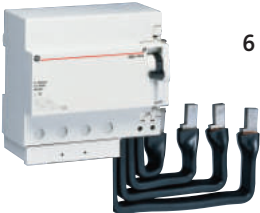
E

F

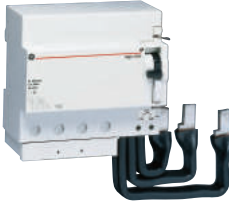
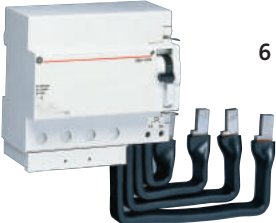
G

X

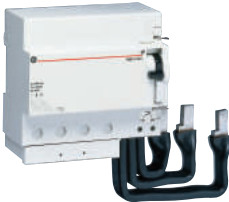
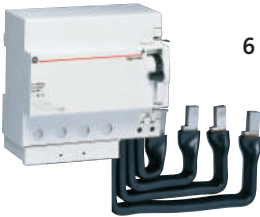
Series Hti - Add-on RCD - Type AC

	In (A)	30 mA		300 mA		Pack.
		Cat. No.	Ref. No.	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

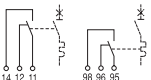
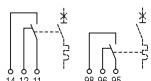
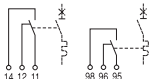
	In (A)	30 mA		300 mA		Pack.
		Cat. No.	Ref. No.	Cat. No.	Ref. No.	
 3P 6 mod.	80-125	DOCA 3125/030	671581	DOCA 3125/300	671583	1
 4P 6 mod.	80-125	DOCA 4125/030	671589	DOCA 4125/300	671591	1

Series Hti - Add-on RCD - Type S

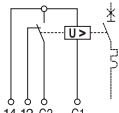
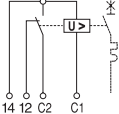
	In (A)	30 mA		300 mA		Pack.
		Cat. No.	Ref. No.	Cat. No.	Ref. No.	
 3P 6 mod.	80-125	-	-	DOCS 3125/300	671585	1
 4P 6 mod.	80-125	-	-	DOCS 4125/300	671593	1

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 - Auxiliary contacts (left or right side)

	Rated voltage	Closing current	Operating time	Coil impedance at 50Hz	Cat. No.	Ref. No.	Pack.
1 mod. 	110 to 415V	0.3A at 110V	10 ms	ca. 29 Ohm	TELE L 110	624945	8
	110 to 125VDC	0.6A at 230V	4ms	ca. 29 Ohm			
		1A at 400V	2ms	ca. 29 Ohm			
1 mod. 	24 to 48VDC	1A at 24VDC	10ms	ca. 24 Ohm	TELE L 24	624946	8
	24 to 60V	2A at 48VDC	4ms	ca. 24 Ohm			



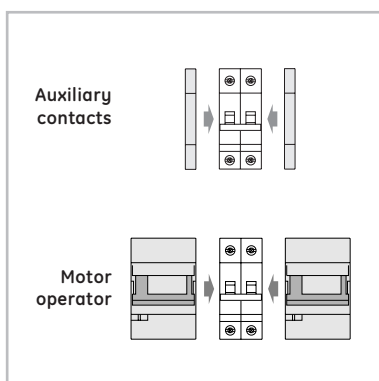
Applications



Approvals / Marking



Add-on devices



Auxiliary contacts ● pg C.4
 Motor operator ● pg C.7
 Shunt trip ● pg C.8

Dimensions ● pg A.80

Miniature circuit breakers with UL approval

Series EP60 UL (Supplementary protection)

Recognized UL 1077 6 kA

EN/IEC 60898-1 6000
3

EN/IEC 60947-2 10 kA

Performance

Thermal setting In	(A) 0.5-63
Rated voltage AC Un	(V) 277/480; 110V $\equiv$
Minimum operating voltage U _{8min}	(V) 12
Tripping characteristics	B-C-D
Selectivity class	3
Mechanical/electrical endurance	20000/10000
Tropicalisation acc. EN/IEC 60068-2-28/2-30	95%RH at 55°C
Terminal capacity flexible/rigid cable (mm ²)	25-35
Poles	1, 2, 3, 4
Weight/pole	(g) 125

Short-circuit capacity

According to UL 1077

Poles	V	I _{cc} (kA)
1	277	6
2, 3, 4	277/480	6

According to EN/IEC 60898-1

Poles	V	I _{cn} /I _{cs} (kA)
1	230/400	6
2, 3, 4	400	6

According to EN/IEC 60947-2

Poles	V	I _{cu} (kA) ⁽¹⁾
1	127	20
	240	10
	415	3
2, 3, 4	127	30
	240	20
	415	10
	440	6

DC according to EN/IEC 60947-2

Poles	Un (V $\equiv$)	I _{cu} (kA)/I _{cs} (kA)
1	60	25
2	125	30

(1) I_{cs} = 75% I_{cu}

with UL 1077 approval

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



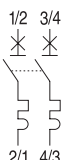
1P
1 mod.



In (A)	B		C		D		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
0.5	-	-	EP61ULC0.5	686656	EP61ULD0.5	686732	12
1	-	-	EP61ULC01	686657	EP61ULD01	686733	12
2	-	-	EP61ULC02	686658	EP61ULD02	686734	12
4	-	-	EP61ULC04	686660	EP61ULD04	686736	12
6	EP61ULB06	686601	EP61ULC06	686662	EP61ULD06	686738	12
10	EP61ULB10	686602	EP61ULC10	686663	EP61ULD10	686739	12
16	EP61ULB16	686605	EP61ULC16	686666	EP61ULD16	686742	12
20	EP61ULB20	686606	EP61ULC20	686667	EP61ULD20	686743	12
25	EP61ULB25	686607	EP61ULC25	686668	EP61ULD25	686744	12
32	EP61ULB32	686609	EP61ULC32	686670	EP61ULD32	686746	12
40	EP61ULB40	686610	EP61ULC40	686671	EP61ULD40	686747	12
50	EP61ULB50	686611	EP61ULC50	686672	EP61ULD50	686748	12
63	EP61ULB63	686613	EP61ULC63	686674	EP61ULD63	686750	12



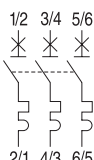
2P
2 mod.



0.5	-	-	EP62ULC0.5	686675	EP62ULD0.5	686751	6
1	-	-	EP62ULC01	686676	EP62ULD01	686752	6
2	-	-	EP62ULC02	686677	EP62ULD02	686753	6
4	-	-	EP62ULC04	686679	EP62ULD04	686755	6
6	EP62ULB06	686615	EP62ULC06	686681	EP62ULD06	686757	6
10	EP62ULB10	686616	EP62ULC10	686682	EP62ULD10	686758	6
16	EP62ULB16	686619	EP62ULC16	686685	EP62ULD16	686761	6
20	EP62ULB20	686620	EP62ULC20	686686	EP62ULD20	686762	6
25	EP62ULB25	686621	EP62ULC25	686687	EP62ULD25	686763	6
32	EP62ULB32	686623	EP62ULC32	686689	EP62ULD32	686765	6
40	EP62ULB40	686624	EP62ULC40	686690	EP62ULD40	686766	6
50	EP62ULB50	686625	EP62ULC50	686691	EP62ULD50	686767	6
63	EP62ULB63	686627	EP62ULC63	686693	EP62ULD63	686769	6



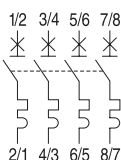
3P
3 mod.



0.5	-	-	EP63ULC0.5	686694	EP63ULD0.5	686770	4
1	-	-	EP63ULC01	686695	EP63ULD01	686771	4
2	-	-	EP63ULC02	686696	EP63ULD02	686772	4
4	-	-	EP63ULC04	686698	EP63ULD04	686774	4
6	EP63ULB06	686629	EP63ULC06	686700	EP63ULD06	686776	4
10	EP63ULB10	686630	EP63ULC10	686701	EP63ULD10	686777	4
16	EP63ULB16	686633	EP63ULC16	686704	EP63ULD16	686780	4
20	EP63ULB20	686634	EP63ULC20	686705	EP63ULD20	686781	4
25	EP63ULB25	686635	EP63ULC25	686706	EP63ULD25	686782	4
32	EP63ULB32	686637	EP63ULC32	686708	EP63ULD32	686784	4
40	EP63ULB40	686638	EP63ULC40	686709	EP63ULD40	686785	4
50	EP63ULB50	686639	EP63ULC50	686710	EP63ULD50	686786	4
63	EP63ULB63	686641	EP63ULC63	686712	EP63ULD63	686788	4



4P
4 mod.



0.5	-	-	EP64ULC0.5	686713	EP64ULD0.5	686789	3
1	-	-	EP64ULC01	686714	EP64ULD01	686790	3
2	-	-	EP64ULC02	686715	EP64ULD02	686791	3
4	-	-	EP64ULC04	686717	EP64ULD04	686793	3
6	EP64ULB06	686643	EP64ULC06	686719	EP64ULD06	686795	3
10	EP64ULB10	686644	EP64ULC10	686720	EP64ULD10	686796	3
16	EP64ULB16	686647	EP64ULC16	686723	EP64ULD16	686799	3
20	EP64ULB20	686648	EP64ULC20	686724	EP64ULD20	686800	3
25	EP64ULB25	686649	EP64ULC25	686725	EP64ULD25	686801	3
32	EP64ULB32	686651	EP64ULC32	686727	EP64ULD32	686803	3
40	EP64ULB40	686652	EP64ULC40	686728	EP64ULD40	686804	3
50	EP64ULB50	686653	EP64ULC50	686729	EP64ULD50	686805	3
63	EP64ULB63	686655	EP64ULC63	686731	EP64ULD63	686807	3

with UL 1077 approval

On request: 3 - 5 - 13 - 15 - 30 - 60A

Series EP60 UL

A

B

C

D

E

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X



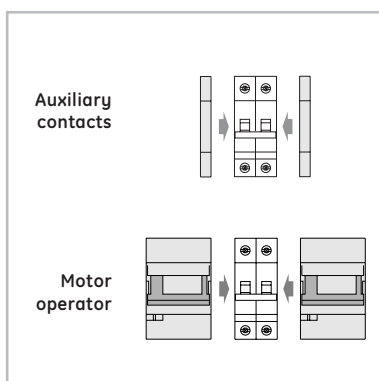
Applications



Approvals / Marking



Add-on devices



Auxiliary contacts ● pg C.4
 Motor operator ● pg C.7
 Shunt trip ● pg C.8

Dimensions ● pg A.80

Miniature circuit breakers with UL approval

Series EP100 UL (Supplementary protection)

Recognized	UL 1077	10 kA
EN/IEC 60898-1		10000
		3
EN/IEC 60947-2		15 kA

Performance

Thermal setting In	(A) 0.5-63
Rated voltage AC Un	(V) 277/480; 110V $\equiv$
Minimum operating voltage U _{8min}	(V) 12
Tripping characteristics	B-C-D
Selectivity class	3
Mechanical/electrical endurance	20000/10000
Tropicalisation acc. EN/IEC 60068-2-28/2-30	95%RH at 55°C
Terminal capacity flexible/rigid cable (mm ²)	25-35
Poles	1, 2, 3, 4
Weight/pole	(g) 125

Short-circuit capacity

According to UL 1077

Poles	V	I _{cc} (kA)
1	277	10
2, 3, 4	277/480	10

According to EN/IEC 60898-1

Poles	V	I _{cn} /I _{cs} (kA)
1	230/400	10
2, 3, 4	400	10

According to EN/IEC 60947-2

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

DC according to EN/IEC 60947-2

Poles	Un (V $\equiv$)	I _{cu} (kA)/I _{cs} (kA)
1	60	25
2	125	30

(1) I_{cs} = 50% I_{cu}

with UL 1077 approval

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



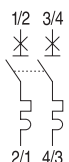
1P
1 mod.



In (A)	B		C		D		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
4	-	-	EP101ULC04	686868	EP101ULD04	686944	12
6	EP101ULB06	686809	EP101ULC06	686870	EP101ULD06	686946	12
10	EP101ULB10	686810	EP101ULC10	686871	EP101ULD10	686947	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
32	EP101ULB32	686817	EP101ULC32	686878	EP101ULD32	686954	12
40	EP101ULB40	686818	EP101ULC40	686879	EP101ULD40	686955	12
50	EP101ULB50	686819	EP101ULC50	686880	EP101ULD50	686956	12
63	EP101ULB63	686821	EP101ULC63	686882	EP101ULD63	686958	12



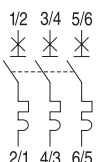
2P
2 mod.



0.5	-	-	EP102ULC0.5	686883	EP102ULD0.5	686959	6
1	-	-	EP102ULC01	686884	EP102ULD01	686960	6
2	-	-	EP102ULC02	686885	EP102ULD02	686961	6
4	-	-	EP102ULC04	686887	EP102ULD04	686963	6
6	EP102ULB06	686823	EP102ULC06	686889	EP102ULD06	686965	6
10	EP102ULB10	686824	EP102ULC10	686890	EP102ULD10	686966	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
32	EP102ULB32	686831	EP102ULC32	686897	EP102ULD32	686973	6
40	EP102ULB40	686832	EP102ULC40	686898	EP102ULD40	686974	6
50	EP102ULB50	686833	EP102ULC50	686899	EP102ULD50	686975	6
63	EP102ULB63	686835	EP102ULC63	686901	EP102ULD63	686977	6



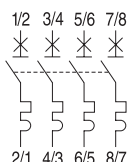
3P
3 mod.



0.5	-	-	EP103ULC0.5	686902	EP103ULD0.5	686978	4
1	-	-	EP103ULC01	686903	EP103ULD01	686979	4
2	-	-	EP103ULC02	686904	EP103ULD02	686980	4
4	-	-	EP103ULC04	686906	EP103ULD04	686982	4
6	EP103ULB06	686837	EP103ULC06	686908	EP103ULD06	686984	4
10	EP103ULB10	686838	EP103ULC10	686909	EP103ULD10	686985	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
32	EP103ULB32	686845	EP103ULC32	686916	EP103ULD32	686992	4
40	EP103ULB40	686846	EP103ULC40	686917	EP103ULD40	686993	4
50	EP103ULB50	686847	EP103ULC50	686918	EP103ULD50	686994	4
63	EP103ULB63	686849	EP103ULC63	686920	EP103ULD63	686996	4



4P
4 mod.



0.5	-	-	EP104ULC0.5	686921	EP104ULD0.5	686997	3
1	-	-	EP104ULC01	686922	EP104ULD01	686998	3
2	-	-	EP104ULC02	686923	EP104ULD02	686999	3
4	-	-	EP104ULC04	686925	EP104ULD04	687001	3
6	EP104ULB06	686851	EP104ULC06	686927	EP104ULD06	687003	3
10	EP104ULB10	686852	EP104ULC10	686928	EP104ULD10	687004	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
32	EP104ULB32	686859	EP104ULC32	686935	EP104ULD32	687011	3
40	EP104ULB40	686860	EP104ULC40	686936	EP104ULD40	687012	3
50	EP104ULB50	686861	EP104ULC50	686937	EP104ULD50	687013	3
63	EP104ULB63	686863	EP104ULC63	686939	EP104ULD63	687015	3

with UL 1077 approval

On request: 3 - 5 - 13 - 15 - 30 - 60A

Series EP100 UL

A

B

C

D

E

F

G

X



Miniature circuit breakers with UL approval

Series EP100 ULH (Branch circuit protection)

Listed UL 489 10 kA
EN 60947-2 15 kA

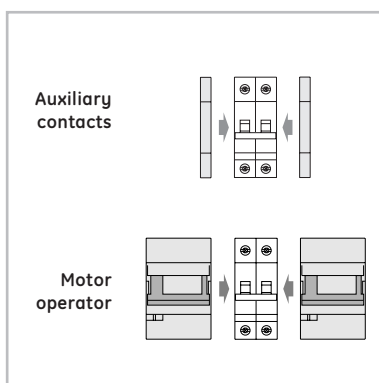
Application



Approval / Marking



Add-on devices



Auxiliary contacts ● pg C.4
Motor operator ● pg C.7
Shunt trip ● pg C.8

Dimensions ● pg A.80

Performance

Thermal setting In	(A) 0.5-32
Rated voltage AC Un	(V) 120/240; 110V $\equiv$
Minimum operating voltage U _{8min}	(V) 12
Tripping characteristics	B-C-D
Selectivity class	3
Mechanical/electrical endurance	20000/10000
Tropicalisation acc. EN/IEC 60068-2-28/2-30	95%RH at 55°C
Terminal capacity flexible/rigid cable (mm ²)	25-35
Poles	1, 2, 3
Weight/pole	(g) 130

Short-circuit capacity

According to UL 489

Poles	V	I _{cc} (kA)
1	120	10
2, 3	240	10

According to EN/IEC 60947-2

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

DC according to EN/IEC 60947-2

Poles	Un (V $\equiv$)	I _{cu} (kA)/I _{cs} (kA)
1	60	25
2	125	30

(1) I_{cs} = 50% I_{cu}

with UL 489 approval

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



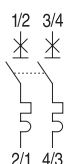
1P
1 mod.
(1)



In (A)	B		C		D		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
0.5	-	-	EP101ULHC0.5	690265	EP101ULHD0.5	690313	12
1	-	-	EP101ULHC01	690266	EP101ULHD01	690314	12
2	-	-	EP101ULHC02	690267	EP101ULHD02	690315	12
4	-	-	EP101ULHC04	690269	EP101ULHD04	690317	12
5	EP101ULHB05	690214	EP101ULHC05	690270	EP101ULHD05	690318	12
6	EP101ULHB06	690215	EP101ULHC06	690271	EP101ULHD06	690320	12
10	EP101ULHB10	690216	EP101ULHC10	690273	EP101ULHD10	690321	12
13	EP101ULHB13	690217	EP101ULHC13	690274	EP101ULHD13	690322	12
15	EP101ULHB15	690218	EP101ULHC15	690275	EP101ULHD15	690323	12
16	EP101ULHB16	690219	EP101ULHC16	690276	EP101ULHD16	690324	12
20	EP101ULHB20	690220	EP101ULHC20	690277	EP101ULHD20	690325	12
25	EP101ULHB25	690221	EP101ULHC25	690278	EP101ULHD25	690326	12
30	EP101ULHB30	690222	EP101ULHC30	690279	EP101ULHD30	690327	12
32	EP101ULHB32	690223	EP101ULHC32	690280	EP101ULHD32	690328	12



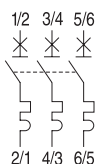
2P
2 mod.



0.5	-	-	EP102ULHC0.5	690281	EP102ULHD0.5	690329	6
1	-	-	EP102ULHC01	690282	EP102ULHD01	690330	6
2	-	-	EP102ULHC02	690283	EP102ULHD02	690331	6
4	-	-	EP102ULHC04	690285	EP102ULHD04	690333	6
5	EP102ULHB05	690224	EP102ULHC05	690286	EP102ULHD05	690334	6
6	EP102ULHB06	690225	EP102ULHC06	690287	EP102ULHD06	690335	6
10	EP102ULHB10	690226	EP102ULHC10	690289	EP102ULHD10	690337	6
13	EP102ULHB13	690227	EP102ULHC13	690290	EP102ULHD13	690338	6
15	EP102ULHB15	690228	EP102ULHC15	690291	EP102ULHD15	690339	6
16	EP102ULHB16	690229	EP102ULHC16	690292	EP102ULHD16	690340	6
20	EP102ULHB20	690230	EP102ULHC20	690293	EP102ULHD20	690341	6
25	EP102ULHB25	690231	EP102ULHC25	690294	EP102ULHD25	690342	6
30	EP102ULHB30	690232	EP102ULHC30	690295	EP102ULHD30	690343	6
32	EP102ULHB32	690233	EP102ULHC32	690296	EP102ULHD32	690344	6



3P
3 mod.



0.5	-	-	EP103ULHC0.5	690297	EP103ULHD0.5	690345	4
1	-	-	EP103ULHC01	690298	EP103ULHD01	690346	4
2	-	-	EP103ULHC02	690299	EP103ULHD02	690347	4
4	-	-	EP103ULHC04	690301	EP103ULHD04	690349	4
5	EP103ULHB05	290234	EP103ULHC05	690302	EP103ULHD05	690350	4
6	EP103ULHB06	690235	EP103ULHC06	690303	EP103ULHD06	690351	4
10	EP103ULHB10	690236	EP103ULHC10	690305	EP103ULHD10	690353	4
13	EP103ULHB13	290237	EP103ULHC13	690306	EP103ULHD13	690354	4
15	EP103ULHB15	290238	EP103ULHC15	690307	EP103ULHD15	690355	4
16	EP103ULHB16	690239	EP103ULHC16	690308	EP103ULHD16	690356	4
20	EP103ULHB20	690240	EP103ULHC20	690309	EP103ULHD20	690357	4
25	EP103ULHB25	690241	EP103ULHC25	690310	EP103ULHD25	690358	4
30	EP103ULHB30	290242	EP103ULHC30	690311	EP103ULHD30	690359	4
32	EP103ULHB32	690243	EP103ULHC32	690312	EP103ULHD32	690360	4

with UL 489 approval

Accessories for MCBs

Walls



	Cat. No.	Ref. No.	Pack.
Walls for terminals IP	WUL	690244	10

Several 1 pole MCBs side to side mounted and opposite polarity must be provided by walls on poles.
Also when 1 pole MCBs mounting add-on extensions.

Padlocking bracket



Allows padlocking in ON and OFF position	KS	624929	2
--	----	--------	---

Series EP100 ULH

A

B

C

D

E

F

G

X



Miniature circuit breakers for railway applications

Series EP100 R

EN 60898-1	10000
	3
EN 60947-2	15 kA



Applications

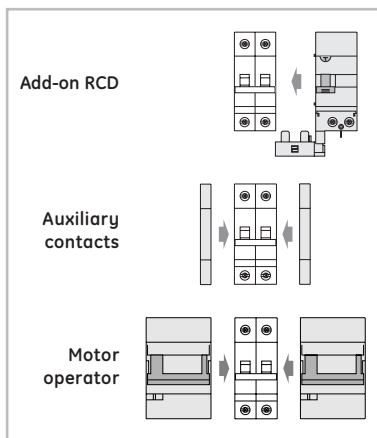


Approval / Marking

Bombardier Transportation Approval
acc. to EN50155



Add-on devices



- Add-on RCD ● pg B.32
- Auxiliary contacts ● pg C.4
- Motor operator ● pg C.7
- Shunt trip ● pg C.8
- Undervoltage release ● pg C.8
- Panel Board Switch ● pg C.8

- Accessories ● pg A.50
- Busbars ● pg E.2
- More technical data ● website
- Dimensions ● pg A.80

Performance

Thermal setting I_n	(A) 0.5 -63
Rated voltage AC U_n	(V) 230/400
Minimum operating voltage U_{8min}	(V) 12
Tripping characteristics	B-C
Selectivity 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 ²)	25-35
Poles	3
Weight/pole	(g) 125

Short-circuit capacity

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

Poles	V	$I_{cn}=I_{cs}$ (kA)
3	400 DC	10 ⁽¹⁾

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

Poles	V	I_{cu} (kA) ⁽²⁾
3	240 DC	30
	415 DC	15
	440 AC	10

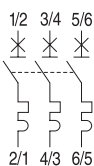
(1) Grid distance of 60 mm for B-C and D; $I_{cs} = 75\% I_{cu}$

(2) $I_{cs} = 50\% I_{cu}$

Railway
Applications



3P
3 mod.



Series EP100 R - 10kA - characteristics B-C

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

Series EP100 R

A

B

C

D

E

F

G

X





Applications

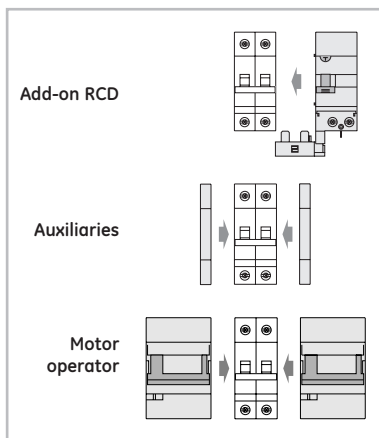


Approval / Marking

Bombardier Transportation Approval
acc. to EN50155



Add-on devices



- Add-on RCD ● pg B.32
- Auxiliary contacts ● pg C.4
- Motor operator ● pg C.7
- Shunt trip ● pg C.8
- Undervoltage release ● pg C.8
- Panel Board Switch ● pg C.8

- Accessories ● pg A.50
- Busbars ● pg E.2
- More technical data ● website
- Dimensions ● pg A.80

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



Performance

Thermal setting In	(A) 0.5 - 63
Rated voltage AC Un	(V) 230/400 250/500 =
Minimum operating voltage U _{8min}	(V) 12 12 =
Tripping characteristics	B-C-K
Mechanical/electrical endurance	20000/10000
Tropicalisation acc. to EN/IEC 60068-2	95%RH at 55°C
Terminal capacity flexible/rigid cable (mm ²)	25-35
Poles ⁽¹⁾	1, 2
Weight	(g/pole) 125

Short-circuit capacity

AC/DC acc. to EN/IEC 60898-2⁽⁴⁾

Poles	V	I _{cn} =I _{cs} (kA)
1	125 DC	10
	220 DC	6
	230/400 AC	6
2	250 DC	10
	440 DC	6
	400 AC	6

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

Poles	V	I _{cu} (kA)
1	220 DC	10 ⁽²⁾
2	440 DC	10 ⁽²⁾
1	230 AC	6 ⁽³⁾
2	400 AC	6 ⁽³⁾

(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

Railway
Applications



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



2P
1 mod.
(1) (2)
(3)

In (A)	B		C		K		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
0.5	-	-	EP101RucC0,5	681493	EP101UCRK0,5	673267	12
1	-	-	EP101RucC01	681494	EP101UCRK01	673268	12
2	-	-	-	-	EP101UCRK1,6	673269	12
4	-	-	EP101RucC02	681495	EP101UCRK02	673270	12
6	-	-	-	-	EP101UCRK03	673271	12
10	EP101RucB06	681475	EP101RucC04	681496	EP101UCRK04	673272	12
16	-	-	EP101RucC06	681497	EP101UCRK06	673273	12
20	-	-	-	-	EP101UCRK08	673274	12
25	EP101RucB10	681476	EP101RucC10	681498	EP101UCRK10	673275	12
32	-	-	-	-	EP101UCRK13	673276	12
40	EP101RucB16	681477	EP101RucC16	681499	EP101UCRK16	673277	12
50	EP101RucB20	681478	EP101RucC20	681500	EP101UCRK20	673278	12
63	EP101RucB25	681479	EP101RucC25	681501	EP101UCRK25	673279	12
1	EP101RucB32	681480	EP101RucC32	681502	EP101UCRK32	673280	12
2	EP101RucB40	681481	EP101RucC40	681503	EP101UCRK40	673281	12
3	EP101RucB50	681482	EP101RucC50	681504	EP101UCRK50	673282	12
4	EP101RucB63	681483	EP101RucC63	681505	EP101UCRK63	673283	12



2P
2 mod.
(1) (2)
(3)

0.5	-	-	EP102RucC0,5	681506	-	-	6
1	-	-	EP102RucC01	681507	-	-	6
2	-	-	-	-	-	-	6
4	-	-	EP102RucC02	681508	-	-	6
6	-	-	-	-	-	-	6
10	EP102RucB06	681484	EP102RucC04	681509	-	-	6
16	-	-	EP102RucC06	681510	-	-	6
20	-	-	-	-	-	-	6
25	EP102RucB10	681485	EP102RucC10	681511	-	-	6
32	-	-	-	-	-	-	6
40	EP102RucB16	681486	EP102RucC16	681512	-	-	6
50	EP102RucB20	681487	EP102RucC20	681513	-	-	6
63	EP102RucB25	681488	EP102RucC25	681514	-	-	6
1	EP102RucB32	681489	EP102RucC32	681515	-	-	6
2	EP102RucB40	681490	EP102RucC40	681516	-	-	6
3	EP102RucB50	681491	EP102RucC50	681517	-	-	6
4	EP102RucB63	681492	EP102RucC63	681518	-	-	6



2P
2 mod.
(1) (2)
(3)

0.5	-	-	EP102UCRC0,5	680565	EP102UCRK0,5	673284	6
1	-	-	EP102UCRC01	680566	EP102UCRK01	673285	6
2	-	-	-	-	EP102UCRK1,6	673286	6
4	-	-	EP102UCRC02	680567	EP102UCRK02	673287	6
6	-	-	-	-	EP102UCRK03	673288	6
10	EP102UCRC04	680568	EP102UCRC06	680569	EP102UCRK04	673289	6
16	-	-	-	-	EP102UCRK06	673290	6
20	-	-	-	-	EP102UCRK08	673291	6
25	EP102UCRC10	680570	EP102UCRC16	680571	EP102UCRK10	673292	6
32	-	-	-	-	EP102UCRK13	673293	6
40	EP102UCRC20	680572	EP102UCRC25	680573	EP102UCRK16	673294	6
50	-	-	EP102UCRC32	680574	EP102UCRK20	673295	6
63	-	-	EP102UCRC40	680575	EP102UCRK25	673296	6
1	EP102UCRC50	680576	EP102UCRC63	680577	EP102UCRK32	673297	6
2	-	-	-	-	EP102UCRK40	673298	6
3	-	-	-	-	EP102UCRK50	673299	6
4	-	-	-	-	EP102UCRK63	673300	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

B

C

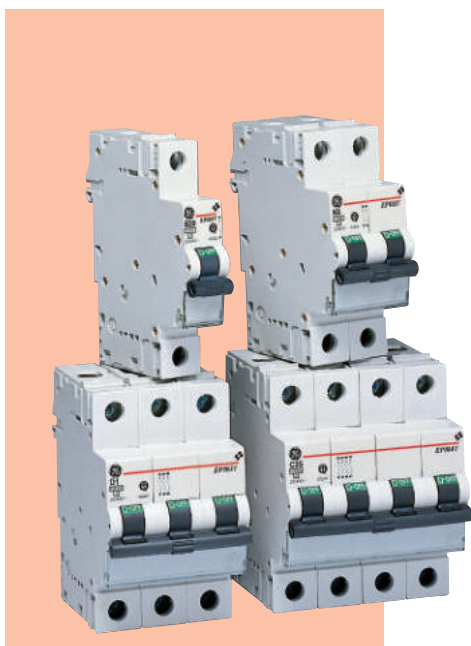
D

E

F

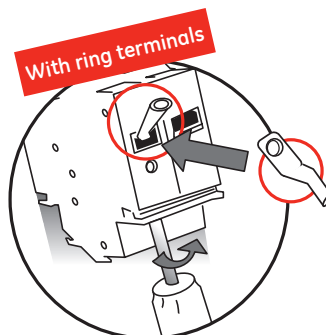
G

X



Miniature circuit breakers with ring terminals

Series EP100T



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

Applications



Standards

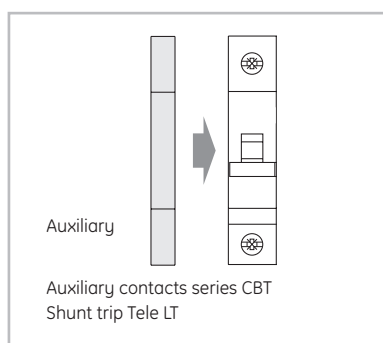
- Certified acc. new CEI UNI 11170 (higher protection against fires)
- Certified acc. to NF 16-101, smoke index F
- Shock and vibrations tests acc. to IEC 61373

Approval / Marking

Trenitalia n° 371441.01



Add-on devices



- Auxiliary contacts ● pg C.10
- Shunt trip ● pg C.11
- Dimensions ● pg A.80

Performances

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

Short-circuit capacity

AC acc. to EN/IEC 60898

Poles	V~	I_{cn} (kA)
1-4	230/400	10

AC acc. to EN 60947-2 (minimum value)

Poles	V~	I_{cu} (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---	I_{cu} (kA)/ I_{cs} (kA)
1	60	25/15 ms
2	110	30/15 ms

Railway applications
with ring terminals

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



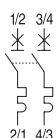
1P
1 mod.



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.	
0.5	EP101TZ0.5	691277	-	-	EP101TC0.5	691245	EP101TK0.5	691261	12
1	EP101TZ01	691278	-	-	EP101TC01	691246	EP101TK1	691267	12
1.6	EP101TZ1.6	691284	-	-	EP101TC1.6	691252	EP101TK1.6	691268	12
2	EP101TZ02	691279	-	-	EP101TC02	691247	EP101TK02	691262	12
3	EP101TZ03	691280	-	-	EP101TC03	691248	EP101TK03	691263	12
4	EP101TZ04	691281	-	-	EP101TC04	691249	EP101TK04	691264	12
6	EP101TZ06	691282	EP101TB6	691234	EP101TC06	691250	EP101TK06	691265	12
8	EP101TZ08	691283	EP101TB8	691235	EP101TC08	691251	EP101TK08	691266	12
10	EP101TZ10	691285	EP101TB10	691236	EP101TC10	691253	EP101TK10	691269	12
13	-	-	EP101TB13	691237	EP101TC13	691254	-	-	12
16	EP101TZ16	691286	EP101TB16	691238	EP101TC16	691255	EP101TK16	691270	12
20	EP101TZ20	691287	EP101TB20	691239	EP101TC20	691256	EP101TK20	691271	12
25	EP101TZ25	691288	EP101TB25	691240	EP101TC25	667248	EP101TK25	691272	12
32	EP101TZ32	691289	EP101TB32	691241	EP101TC32	691257	EP101TK32	691273	12
40	EP101TZ40	691290	EP101TB40	691242	EP101TC40	691258	EP101TK40	691274	12
50	EP101TZ50	691291	EP101TB50	691243	EP101TC50	691259	EP101TK50	691275	12
63	EP101TZ63	691292	EP101TB63	691244	EP101TC63	691260	EP101TK63	691276	12



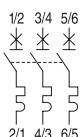
2P
2 mod.



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.	
0.5	EP102TZ0.5	691337	-	-	EP102TC0.5	691304	EP102TK0.5	691321	6
1	EP102TZ01	691338	-	-	EP102TC01	691305	EP102TK01	691322	6
1.6	EP102TZ1.6	691344	-	-	EP102TC1.6	691311	EP102TK1.6	691328	6
2	EP102TZ02	691339	-	-	EP102TC02	691306	EP102TK02	691323	6
3	EP102TZ03	691340	-	-	EP102TC03	691307	EP102TK03	691324	6
4	EP102TZ04	691341	-	-	EP102TC04	691308	EP102TK04	691325	6
6	EP102TZ06	691342	EP102TB06	691293	EP102TC06	691309	EP102TK06	691326	6
8	EP102TZ08	691343	EP102TB08	691294	EP102TC08	691310	EP102TK08	691327	6
10	EP102TZ10	691345	EP102TB10	691295	EP102TC10	691312	EP102TK10	691329	6
13	-	-	EP102TB13	691296	EP102TC13	691313	-	-	6
16	EP102TZ16	691346	EP102TB16	691297	EP102TC16	691314	EP102TK16	691330	6
20	EP102TZ20	691347	EP102TB20	691298	EP102TC20	691315	EP102TK20	691331	6
25	EP102TZ25	691348	EP102TB25	691299	EP102TC25	691316	EP102TK25	691332	6
32	EP102TZ32	691349	EP102TB32	691300	EP102TC32	691317	EP102TK32	691333	6
40	EP102TZ40	691350	EP102TB40	691301	EP102TC40	691318	EP102TK40	691334	6
50	EP102TZ50	691351	EP102TB50	691302	EP102TC50	691319	EP102TK50	691335	6
63	EP102TZ63	691352	EP102TB63	691303	EP102TC63	691320	EP102TK63	691336	6



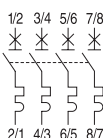
3P
3 mod.



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.	
0.5	-	-	-	-	EP103TC0.5	691364	EP103TK0.5	691381	4
1	-	-	-	-	EP103TC01	691365	EP103TK01	691382	4
1.6	-	-	-	-	EP103TC1.6	691371	EP103TK1.6	691388	4
2	-	-	-	-	EP103TC02	691366	EP103TK02	691383	4
3	-	-	-	-	EP103TC03	691367	EP103TK03	691384	4
4	-	-	-	-	EP103TC04	691368	EP103TK04	691385	4
6	-	-	EP103TB06	691353	EP103TC06	691369	EP103TK06	691386	4
8	-	-	EP103TB08	691354	EP103TC08	691370	EP103TK08	691387	4
10	-	-	EP103TB10	691355	EP103TC10	691372	EP103TK10	691389	4
13	-	-	EP103TB13	691356	EP103TC13	691373	-	-	4
16	-	-	EP103TB16	691357	EP103TC16	691374	EP103TK16	691390	4
20	-	-	EP103TB20	691358	EP103TC20	691375	EP103TK20	691391	4
25	-	-	EP103TB25	691359	EP103TC25	691376	EP103TK25	691392	4
32	-	-	EP103TB32	691360	EP103TC32	691377	EP103TK32	691393	4
40	-	-	EP103TB40	691361	EP103TC40	691378	EP103TK40	691394	4
50	-	-	EP103TB50	691362	EP103TC50	691379	EP103TK50	691395	4
63	-	-	EP103TB63	691363	EP103TC63	691380	EP103TK63	691396	4



4P
4 mod.



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.	
0.5	-	-	-	-	EP104TC0.5	691407	EP104TK0.5	691424	3
1	-	-	-	-	EP104TC01	691408	EP104TK01	691425	3
1.6	-	-	-	-	EP104TC1.6	691414	EP104TK1.6	691431	3
2	-	-	-	-	EP104TC02	691409	EP104TK02	691426	3
3	-	-	-	-	EP104TC03	691410	EP104TK03	691427	3
4	-	-	-	-	EP104TC04	691411	EP104TK04	691428	3
6	-	-	EP104TB06	691397	EP104TC06	691412	EP104TK06	691429	3
8	-	-	EP104TB08	691398	EP104TC08	691413	EP104TK08	691430	3
10	-	-	EP104TB10	691399	EP104TC10	691415	EP104TK10	691432	3
13	-	-	EP104TB13	691400	EP104TC13	691416	-	-	3
16	-	-	EP104TB16	667247	EP104TC16	691417	EP104TK16	691433	3
20	-	-	EP104TB20	691401	EP104TC20	691418	EP104TK20	691434	3
25	-	-	EP104TB25	691402	EP104TC25	691419	EP104TK25	691435	3
32	-	-	EP104TB32	691403	EP104TC32	691420	EP104TK32	691436	3
40	-	-	EP104TB40	691404	EP104TC40	691421	EP104TK40	691437	3
50	-	-	EP104TB50	691405	EP104TC50	691422	EP104TK50	691438	3
63	-	-	EP104TB63	691406	EP104TC63	691423	EP104TK63	691439	3

Railway applications
with ring terminals

Series EP100T

A

B

C

D

E

F

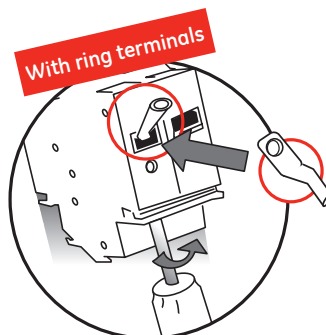
G

X



Miniature circuit breakers with ring terminals Universal currents

Series EP100 UCT



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

Applications



Standards

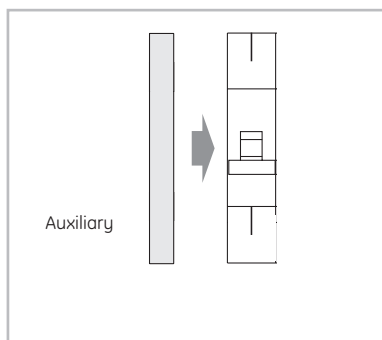
- Certified acc. new CEI UNI 11170 (higher protection against fires)
- Certified acc. to NF 16-101, smoke index F
- Shock and vibrations tests acc. to IEC 61373

Approval / Marking

Trenitalia n° 371441.01



Add-on devices



- Auxiliary contacts ● pg C.10
- Shunt trip ● pg C.11
- Dimensions ● pg A.80

Performances

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

Short-circuit capacity

DC acc. to EN/IEC 60947-2

Poles	V ---	I_{cu} (kA)/ I_{cs} (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

Railway applications
with ring terminals

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



1P
1 mod.

2
1
+

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.	
0.5	EP101UCTZ0.5	691484	-	-	EP101UCTC0.5	691451	EP101UCTK0.5	691468	12
1	EP101UCTZ01	691485	-	-	EP101UCTC01	691452	EP101UCTK01	691469	12
1.6	EP101UCTZ1.6	691491	-	-	EP101UCTC1.6	691458	EP101UCTK1.6	691475	12
2	EP101UCTZ02	691486	-	-	EP101UCTC02	691453	EP101UCTK02	691470	12
3	EP101UCTZ03	691487	-	-	EP101UCTC03	691454	EP101UCTK03	691471	12
4	EP101UCTZ04	691488	-	-	EP101UCTC04	691455	EP101UCTK04	691472	12
6	EP101UCTZ06	691489	EP101UCTB06	691440	EP101UCTC06	691456	EP101UCTK06	691473	12
8	EP101UCTZ08	691490	EP101UCTB08	691441	EP101UCTC08	691457	EP101UCTK08	691474	12
10	EP101UCTZ10	691492	EP101UCTB10	691442	EP101UCTC10	691459	EP101UCTK10	691476	12
13	-	-	EP101UCTB13	691443	EP101UCTC13	691460	-	-	12
16	EP101UCTZ16	691493	EP101UCTB16	691444	EP101UCTC16	691461	EP101UCTK16	691477	12
20	EP101UCTZ20	691494	EP101UCTB20	691445	EP101UCTC20	691462	EP101UCTK20	691478	12
25	EP101UCTZ25	691495	EP101UCTB25	691446	EP101UCTC25	691463	EP101UCTK25	691479	12
32	EP101UCTZ32	691496	EP101UCTB32	691447	EP101UCTC32	691464	EP101UCTK32	691480	12
40	EP101UCTZ40	691497	EP101UCTB40	691448	EP101UCTC40	691465	EP101UCTK40	691481	12
50	EP101UCTZ50	691498	EP101UCTB50	691449	EP101UCTC50	691466	EP101UCTK50	691482	12
63	EP101UCTZ63	691499	EP101UCTB63	691450	EP101UCTC63	691467	EP101UCTK63	691483	12



2P
2 mod.

2 4
1 3
+

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.	
0.5	EP102UCTZ0.5	691544	-	-	EP102UCTC0.5	691511	EP102UCTK0.5	691528	6
1	EP102UCTZ01	691545	-	-	EP102UCTC01	691512	EP102UCTK01	691529	6
1.6	EP102UCTZ02	691546	-	-	EP102UCTC1.6	691518	EP102UCTK1.6	691535	6
2	EP102UCTZ03	691551	-	-	EP102UCTC02	691513	EP102UCTK02	691530	6
3	EP102UCTZ03	691547	-	-	EP102UCTC03	691514	EP102UCTK03	691531	6
4	EP102UCTZ04	691548	-	-	EP102UCTC04	691515	EP102UCTK04	691532	6
6	EP102UCTZ06	691549	EP102UCTB06	691500	EP102UCTC06	691516	EP102UCTK06	691533	6
8	EP102UCTZ08	691550	EP102UCTB08	691501	EP102UCTC08	691517	EP102UCTK08	691534	6
10	EP102UCTZ10	691552	EP102UCTB10	691502	EP102UCTC10	691519	EP102UCTK10	691536	6
13	-	-	EP102UCTB13	691503	EP102UCTC13	691520	-	-	6
16	EP102UCTZ16	691553	EP102UCTB16	691504	EP102UCTC16	691521	EP102UCTK16	691537	6
20	EP102UCTZ20	691554	EP102UCTB20	691505	EP102UCTC20	691522	EP102UCTK20	691538	6
25	EP102UCTZ25	691555	EP102UCTB25	691506	EP102UCTC25	691523	EP102UCTK25	691539	6
32	EP102UCTZ32	691556	EP102UCTB32	691507	EP102UCTC32	691524	EP102UCTK32	691540	6
40	EP102UCTZ40	691557	EP102UCTB40	691508	EP102UCTC40	691525	EP102UCTK40	691541	6
50	EP102UCTZ50	691558	EP102UCTB50	691509	EP102UCTC50	691526	EP102UCTK50	691542	6
63	EP102UCTZ63	691559	EP102UCTB63	691510	EP102UCTC63	691527	EP102UCTK63	691543	6

Railway applications
with ring terminals

Series EP100 UCT

A

B

C

D

E

F

G

X

Accessories for MCBs - Series G, GT and EP

		Cat. No.	Ref. No.	Pack.	
	Sealing plate for 4P	Cut off the number of poles needed for Series G, GT	EPP	669486	100
	Padlocking bracket	Allows padlocking in ON and OFF position Ø padlock 5 mm	KS	624929	2
	Spacer	1/2 module	PLS / CTX SP	686069	50

2 circuits in 1 mo

Redline Unibis™: the solution

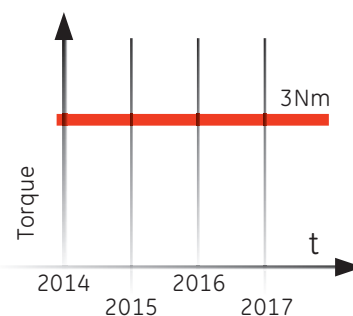
Unibis™ compact MCBs are one of the latest introductions in the Redline range and are developed to **reduce the size of the distribution board to the minimum**.

The performances are upgraded to **10kA**.



Safety terminals

Up to 6mm² + 4mm² wires combined.



Module for 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⁽¹⁾**,
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

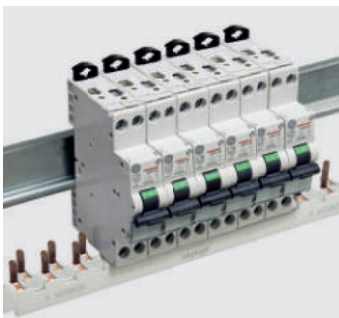
3 performances
up to 10kA



(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 4mm²) or (1 x 4mm²) + (1 x 6mm²).



Full functionality

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

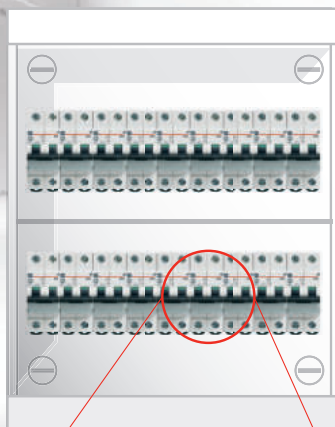


renovations

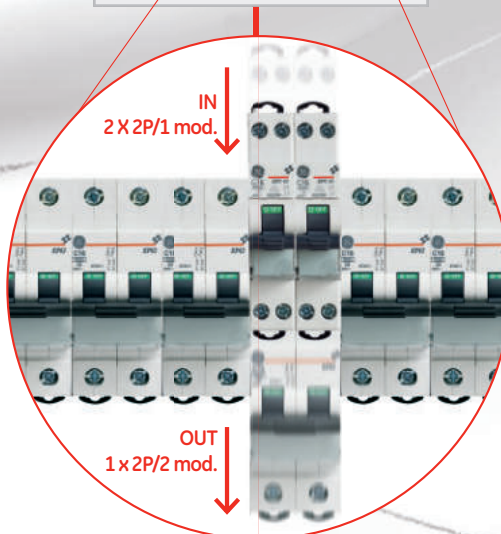
Saving up to 50% space
in distribution boards!

Before

18 x 2P MCBs
36 MODULES



Replacing standard
MCBs by compact
Unibis™ MCBs

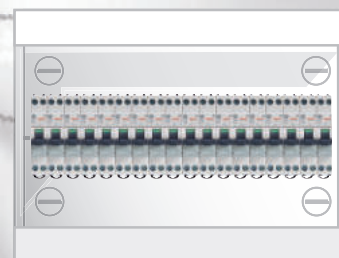


OR

FREE DIN-RAIL FOR
EXTENSIONS



DISTRIBUTION BOARD
REDUCED BY 50%



After

18 x 2P MCBs
18 MODULES

Technical data of compact MCBs

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

Short-circuit capacity of compact MCBs

Series			EPC 451N
Short-circuit capacity AC			(kA)
EN/IEC 60898-1 Icn	1P+N	240 V	4.5
	1P+1P	240 V	-
	2P	415 V	-
	3P	415 V	-
	4P	415 V	-
EN 60947-2 Icu	1P+N	230 V	6
	1P+1P	230 V	-
	2P	415 V	-
	3P	415 V	-
	4P	415 V	-
Short-circuit capacity DC			
EN 60947-2 Icu	2P	96 V=	

(1) 8000 for 32 and 40 A

(2) Also accepting (2x4mm²) or (1x4mm²)+(1x6mm²)

(3) Requires CA UN auxiliary contact as interface



EPC 61N	EPC 611	EPC 45	EPC 60
EN 60898-1	EN 60898-1	EN 60898-1	EN 60898-1
B,C	B,C	B,C	B,C
2-40	2-20	2-40	2-40
30	30	30	30
1+N (1 mod.)	1P+1P (1 mod.)	2 (1 mod.), 3 and 4 (2 mod.)	2 (1 mod.), 3 and 4 (2 mod.)
-	-	-	-
240	-	-	-
-	230 ⁽⁴⁾	-	-
-	-	415	415
-	-	415	415
-	-	415	415
-	-	96	96
50/60	50/60	50/60	50/60
Thresh. magn. + 40%	Thresh. magn. + 40%	Thresh. magn. + 40%	Thresh. magn. + 40%
Thresh. magn. + 50%	Thresh. magn. + 50%	Thresh. magn. + 50%	Thresh. magn. + 50%
250	250/440	250/440	250/440
12	12	12	12
3	3	3	3
500	500	500	500
400	400	400	400
6	6	6	6
1000	1000	10000	10000
2.5	2.5	2.5	2.5
3	3	3	3
10000 ⁽¹⁾	10000 ⁽¹⁾	10000 ⁽¹⁾	10000 ⁽¹⁾
20000	20000	20000	20000
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/+55	-25/+55	-25/+55	-25/+55
-55/+55	-55/+55	-55/+55	-55/+55
1/16 ⁽²⁾	1/16 ⁽²⁾	1/16 ⁽²⁾	1/16 ⁽²⁾
1/10 ⁽²⁾	1/10 ⁽²⁾	1/10 ⁽²⁾	1/10 ⁽²⁾
1/16 ⁽²⁾	1/16 ⁽²⁾	1/16 ⁽²⁾	1/16 ⁽²⁾
1/10 ⁽²⁾	1/10 ⁽²⁾	1/10 ⁽²⁾	1/10 ⁽²⁾
3	3	3	3
yes	yes	yes	yes
yes ⁽³⁾	yes ⁽³⁾	yes ⁽³⁾	yes ⁽³⁾
yes ⁽³⁾	yes ⁽³⁾	yes ⁽³⁾	yes ⁽³⁾
yes ⁽³⁾	yes ⁽³⁾	yes ⁽³⁾	yes ⁽³⁾
yes ⁽³⁾	yes ⁽³⁾	yes ⁽³⁾	yes ⁽³⁾
yes/yes	yes/yes	yes/yes	yes/yes
no/no	no/no	no/no	no/no
yes	yes	yes	yes
18	18	18/36	18/36
125	160	160/320	160/320
12	12/6	12/6	12/6
VDE, KEMA, IMQ	VDE, IMQ	IMQ, NF	VDE, IMQ, NF, CEBEC
yes	yes	yes	yes
A.61	A.63	A.64	A.66

EPC 61N	EPC 611	EPC 45	EPC 60
(kA)	(kA)	(kA)	(kA)
6	-	-	-
-	6	-	-
-	-	4.5	6
-	-	4.5	6
-	-	4.5	6
10	-	-	-
-	6	-	-
-	-	6	10
-	-	6	6
-	-	6	6
-	-	4.5	6

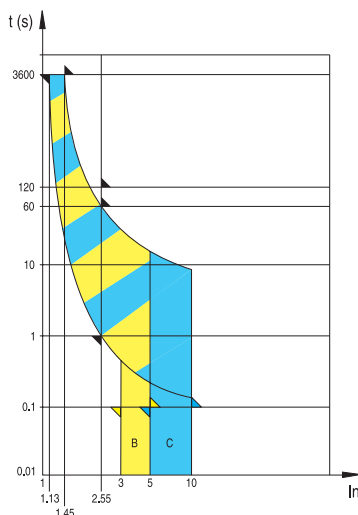
(1) 8000 for 32 and 40 A
(2) Also accepting (2x4mm²) or (1x4mm²)+(1x6mm²)
(3) Requires CA UN auxiliary contact as interface
(4) Single phase supply or same phase in 3Ph supply



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.

Tripping characteristic curves (EN/IEC 60898-1)



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 _{cn}	Test current	Tripping time	Applications
B	3 × I _n	0.1 < t < 45s (I _n ≤ 32A) 0.1 < t < 90s (I _n > 32A)	Only for resistive loads such as: - electrical heating - water heater - stoves
	5 × I _n	t < 0.1s	
C	5 × I _n	0.1 < t < 15s (I _n ≤ 32A) 0.1 < t < 30s (I _n > 32A)	Usual loads such as: - lighting - socket-outlets - small motors
	10 × I _n	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 × I _n	t ≥ 1h (I _n ≤ 63A) t ≥ 2h (I _n > 63A)
1.45 × I _n	t < 1h (I _n ≤ 63A) t < 2h (I _n > 63A)
2.55 × I _n	1s < t < 60s (I _n ≤ 32A) 1s < t < 120s (I _n > 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.

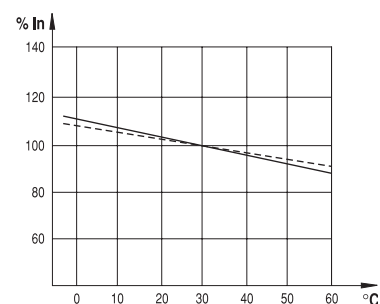
Calculation

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

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

I_n at 45°C = I_n at 30°C × 0.9 = 11.2A × 0.9 = 10.1A

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.



Tripping current as a function of the frequency

All MCBs are designed to work at frequencies of 50-60 Hz, 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 50-60 Hz. 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.

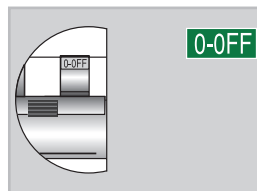
Power losses per pole

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

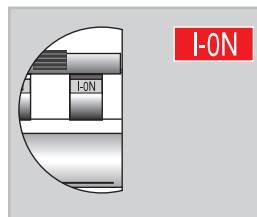
The toggle permits to switch the MCB ON or OFF

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



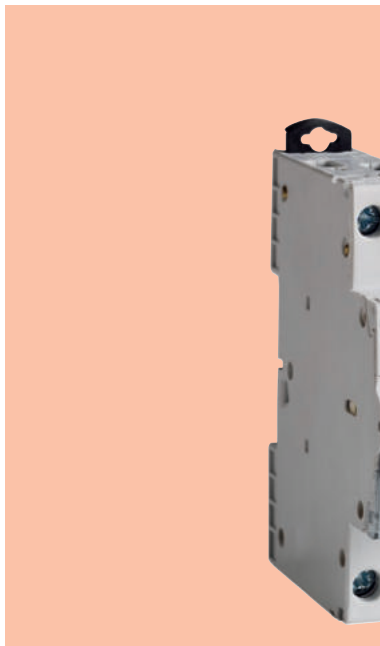
0-OFF

Contacts in open position. Ensures a distance between contacts > 5mm in the Unibis™ range.



I-ON

Contacts in closed position. Ensures continuity in the main circuit.



Compact MCBs

Series EPC 451N

EN/IEC 60898-1

4500

3

EN/IEC 60947-2

6kA

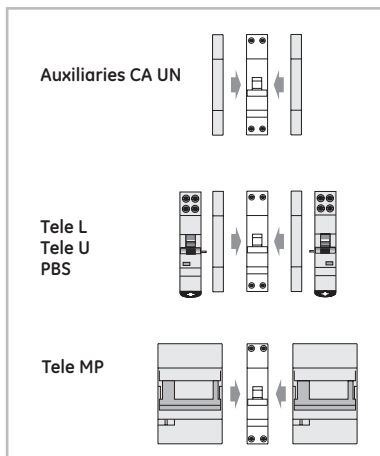
Applications



Approvals / Marking



Add-on devices



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.

Auxiliary contacts ● pg C.6

Busbars ● pg E.2
Dimensions ● pg A.82

Performances

Thermal setting I_n	(A) 2-40
Rated voltage AC U_n	(V) 240
Minimum operating voltage U_{Bmin}	(V) 12
Tripping characteristics	B-C
Selectivity class	3
Mechanical/electrical endurance	20000/10000 ⁽¹⁾
Tropicalisation acc. to EN/IEC 60068-2	55°C at 95% RH
Terminal capacity flexible/rigid cable	(mm ²) 10-16 ⁽²⁾
Poles	1P+N (1 mod)
Weight	(g) 125

Short-circuit capacity

AC acc. to EN/IEC 60898-1

Poles	V	I_{cn}/I_{cs} (kA)
1P+N	240	4.5

AC acc. to EN/IEC 60947-2

Poles	V	I_{cu} (kA)
1P+N	240	6

Attention: do not use on IT net configuration

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
1/2 N 2/1 N	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

(1) 8000 for 32 and 40A

(2) Also accepting (2x4mm²) or (1x4mm²)+(1x6mm²)

Compact MCBs

Series EPC 61N



EN/IEC 60898-1

6000

3

EN/IEC 60947-2

10kA

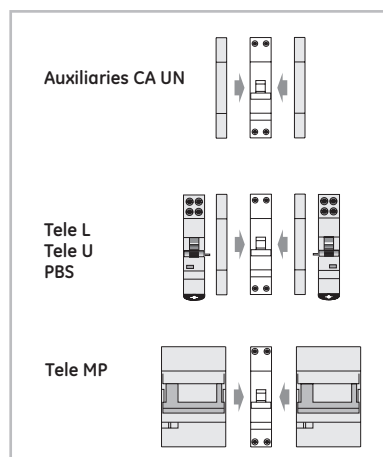
Applications



Approvals / Marking



Add-on devices



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.

Auxiliary contacts ● pg C.6

Busbars ● pg E.2
Dimensions ● pg A.82

Performances

Thermal setting I_n	(A) 2-40
Rated voltage AC U_n	(V) 240
Minimum operating voltage U_{Bmin}	(V) 12
Tripping characteristics	B-C
Selectivity class	3
Mechanical/electrical endurance	20000/10000 ⁽¹⁾
Tropicalisation acc. to EN/IEC 60068-2	55°C at 95% RH
Terminal capacity flexible/rigid cable	(mm ²) 10-16 ⁽²⁾
Poles	1P+N (1 mod)
Weight	(g) 125

Short-circuit capacity

AC acc. to EN/IEC 60898-1

Poles	V	I_{cn}/I_{cs} (kA)
1P+N	240	6

AC acc. to EN/IEC 60947-2

Poles	V	I_{cu} (kA)
1P+N	240	10

Attention: do not use on IT net configuration

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
1/2 N 2/1 N	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

(1) 8000 for 32 and 40A

(2) Also accepting (2x4mm²) or (1x4mm²)+(1x6mm²)



Notes

Circuit protection

A

B

C

D

E

F

G

X



Compact MCBs

Series EPC 611

EN/IEC 60898-1

6000

3

EN/IEC 60947-2

6kA

Performances

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

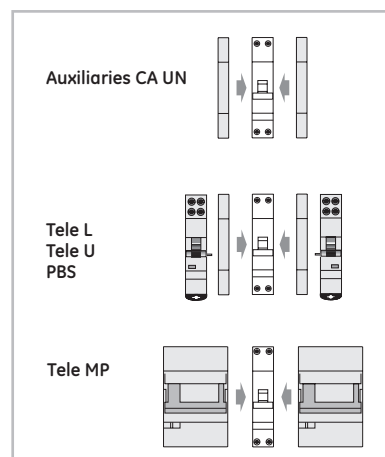
Applications



Approvals / Marking



Add-on devices



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.

Short-circuit capacity

AC acc. to EN/IEC 60898-1

Poles	V	I _{cn} /I _{cs} (kA)
1 + 1	230	6

AC acc. to EN/IEC 60947-2

Poles	V	I _{cu} (kA)
1 + 1	230	6

Attention: do not use on IT net configuration

Series EPC 611 - 6kA - characteristics B-C

		B		C			
		In (A)	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Pack
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
1/2 1/2 		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
2/1 2/1 							

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

(2) Also accepting (2x4mm²) or (1x4mm²)+(1x6mm²)

Auxiliary contacts ● pg C.6

Busbars ● pg E.2
 Dimensions ● pg A.82





Compact MCBs

Series EPC 45

EN/IEC 60898-1

4500

3

EN/IEC 60947-2

6kA

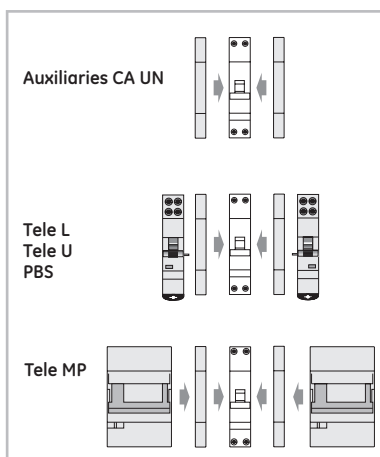
Applications



Approvals / Marking



Add-on devices



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.

Performances

Thermal setting I_n	(A) 2-40 ⁽¹⁾
Rated voltage AC U_n	(V) 240/415
Minimum operating voltage U_{Bmin}	(V) 12
Tripping characteristics	B-C
Selectivity class	3
Mechanical/electrical endurance	20000/10000 ⁽²⁾
Tropicalisation acc. to EN/IEC 60068-2	55°C at 95% RH
Terminal capacity flexible/rigid cable	(mm ²) 10-16 ⁽³⁾
Poles	2, 3, 4
Weight	(g/mod) 160

Short-circuit capacity

AC acc. to EN/IEC 60898-1

Poles	V	I_{cn}/I_{cs} (kA)
2P	415	4.5
3P	415	4.5
4P	415	4.5

AC acc. to EN/IEC 60947-2

Poles	V	I_{cu} (kA)
2P	415	6
3P	415	6
4P	415	6

DC acc. EN/IEC 60947-2

Poles	U_n (V $\overline{=}$)	I_{cu} (kA)
2P	96	4.5

(1) 32A, 3P and 4P

(2) 8000 for 32A

(3) Also accepting (2x4mm²) or (1x4mm²)+(1x6mm²)

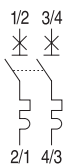
Auxiliary contacts ● pg C.6

Busbars ● pg E.2
Dimensions ● pg A.82

Series EPC 45 - 4.5kA - characteristics B-C



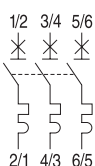
2P
1 mod.



In (A)	B		C		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
2	EPC 452 B02	692608	EPC 452 C02	692527	12
4	EPC 452 B04	692609	EPC 452 C04	692528	12
6	EPC 452 B06	692610	EPC 452 C06	692529	12
10	EPC 452 B10	692611	EPC 452 C10	692530	12
16	EPC 452 B16	692612	EPC 452 C16	692531	12
20	EPC 452 B20	692613	EPC 452 C20	692532	12
25	EPC 452 B25	692614	EPC 452 C25	692533	12
32	EPC 452 B32	692615	EPC 452 C32	692534	12
40	EPC 452 B40	692616	EPC 452 C40	692535	12



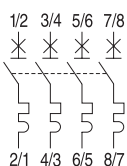
3P
2 mod.



2	EPC 453 B02	692617 ⁽¹⁾	EPC 453 C02	692536 ⁽¹⁾	6
4	EPC 453 B04	692618 ⁽¹⁾	EPC 453 C04	692537 ⁽¹⁾	6
6	EPC 453 B06	692619 ⁽¹⁾	EPC 453 C06	692538 ⁽¹⁾	6
10	EPC 453 B10	692620 ⁽¹⁾	EPC 453 C10	692539 ⁽¹⁾	6
16	EPC 453 B16	692621 ⁽¹⁾	EPC 453 C16	692540 ⁽¹⁾	6
20	EPC 453 B20	692622 ⁽¹⁾	EPC 453 C20	692541 ⁽¹⁾	6
25	EPC 453 B25	692623 ⁽¹⁾	EPC 453 C25	692542 ⁽¹⁾	6
32	EPC 453 B32	692624 ⁽¹⁾	EPC 453 C32	692543 ⁽¹⁾	6



4P
2 mod.



2	EPC 454 B02	692626	EPC 454 C02	692545	6
4	EPC 454 B04	692627	EPC 454 C04	692546	6
6	EPC 454 B06	692628	EPC 454 C06	692547	6
10	EPC 454 B10	692629	EPC 454 C10	692548	6
16	EPC 454 B16	692630	EPC 454 C16	692549	6
20	EPC 454 B20	692631	EPC 454 C20	692550	6
25	EPC 454 B25	692632	EPC 454 C25	692551	6
32	EPC 454 B32	692633	EPC 454 C32	692552	6

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



Compact MCBs

Series EPC 60

EN/IEC 60898-1

6000

3

EN/IEC 60947-2

10kA⁽¹⁾

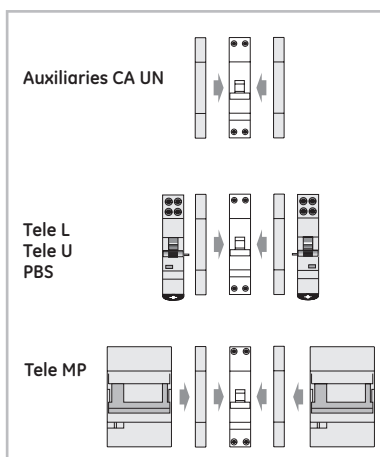
Applications



Approvals / Marking



Add-on devices



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.

Performances

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

Short-circuit capacity

AC acc. to EN/IEC 60898-1

Poles	V	I _{cn} /I _{cs} (kA)
2P	240/415	6
3P	240/415	6
4P	240/415	6

AC acc. to EN/IEC 60947-2

Poles	V	I _{cu} (kA)
2P	240/415	10
3P	240/415	6
4P	240/415	6

(1) 6kA at 415V

(2) 32A, 3P and 4P

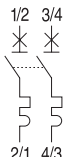
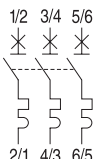
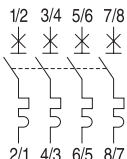
(3) 8000 for 32A

(4) Also accepting (2x4mm²) or (1x4mm²)+(1x6mm²)

Auxiliary contacts ● pg C.6

Busbars ● pg E.2
Dimensions ● pg A.82

Series EPC 60 - 6kA - characteristics B-C

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

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

Screwless & Plug-in

The new range of Fixwell™ MCBs

Circuit protection

A

B

C

D

E

F

G

X



Screwless contact

At the top all Fixwell™ MCBs are equipped with 2 screwless contacts per pole, up to 2 x 4mm².

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 s and RCCBs

Plug-in connection with standard pin busbars

Click and unclick a standard busbar
with a simple operation

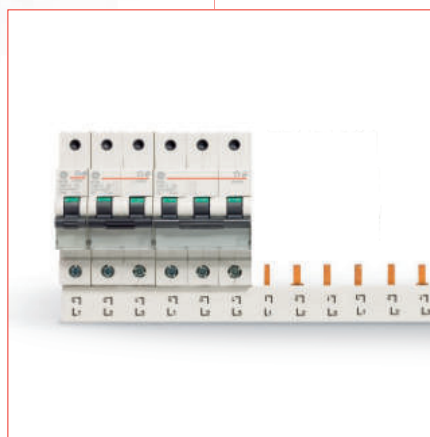
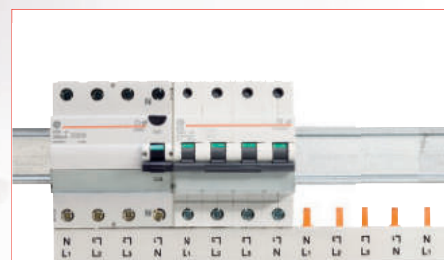
Terminal contact stability guaranteed

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.



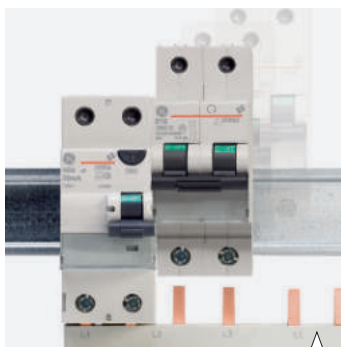
Easy, Fast and

How to install MCBs and RCCBs without tools within seconds

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.

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 unclic with a simple operation. Time consuming tightening is no longer needed.



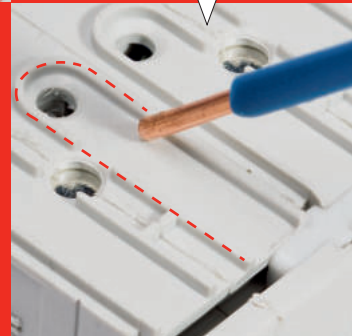
Integrated guide

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



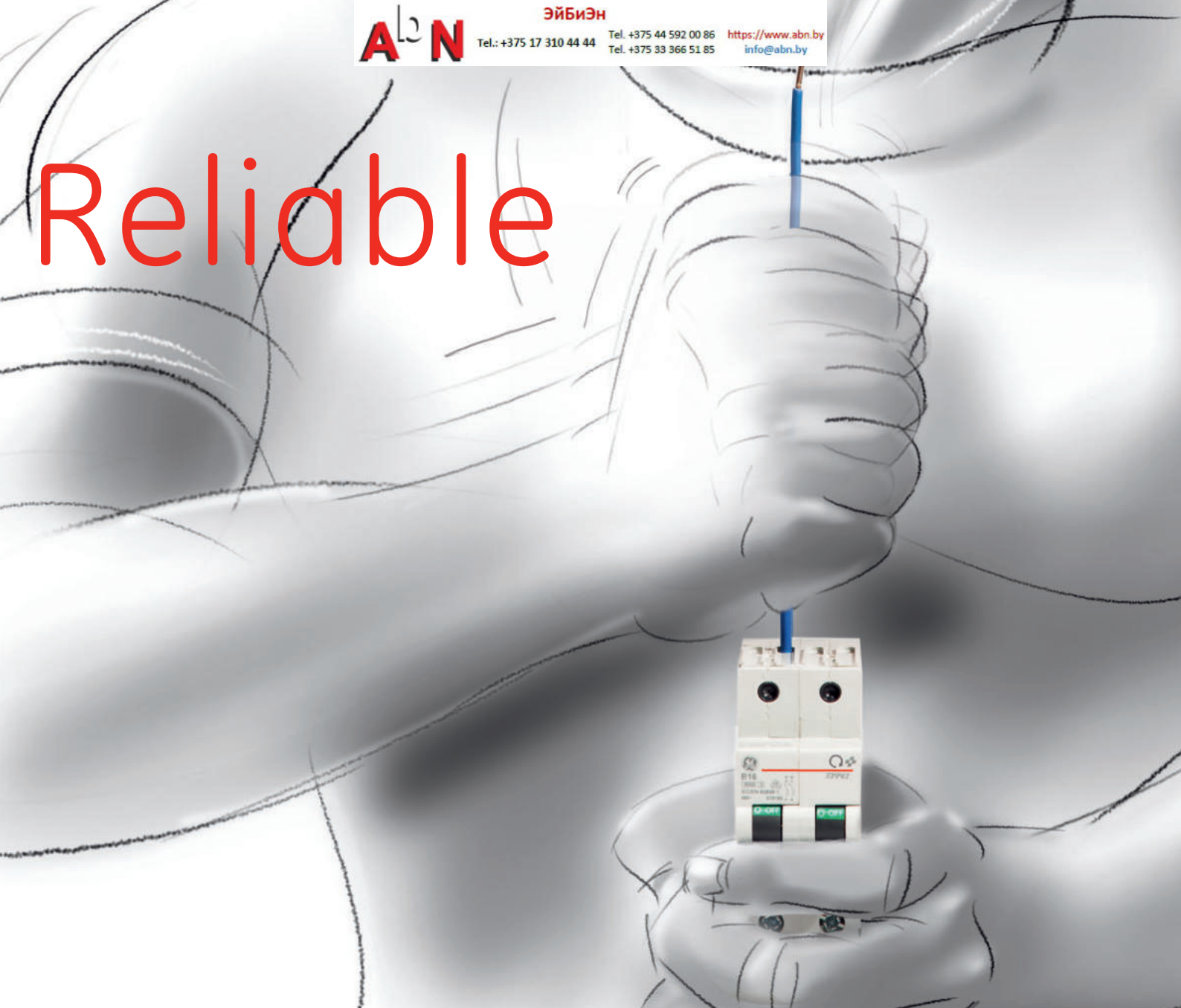
User-friendly

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



Up to
63A

Reliable



Up to
20A

Sure and secure from the first moment

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.



Part of the family

Fixwell™ MCBs and RCCBs fit perfectly in the Redline range and are compatible with all Redline auxiliaries and accessories.

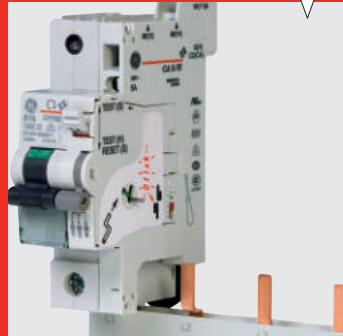
Rigid and flexible cable
 You have the choice : rigid cable or multiwire from 1 up to 4mm². It doesn't matter, our Fixwell™ MCBs are accepting both! No cable crimps needed.



'plug&play'

Reliable connection

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™.



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 ⁽¹⁾				(A)	6 - 63
Calibration temperature				(°C)	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	(V)	240/415	240/415
		1P+N	(V)	240	240
		2P	(V)	415	415
		3P/3P+N/4P	(V)	415	415
	DC	1P ⁽²⁾	(VDC)	48	48
		2P (in series) ⁽²⁾	(VDC)	110	110
Frequency				(Hz)	50 to 60
Use in D.C.				(Hz)	DC:
				magn. trip. +40%	magn. trip. +40%
				(Hz)	400Hz:
				magn. trip. +50%	magn. trip.+ 50%
Maximum service voltage (Ubmax) between two wires				(V)	250/440; 53/120 DC
Minimum service voltage (Ubmin)				(V)	12; 12 DC
Selectivity class (IEC/EN 60898-1)				3	3
Isolator application				EN 60947-2	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)				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)				(°C/RH)	+55°C / 95%RH
Operating temperature ⁽³⁾				(°C)	-25/+55
Storage temperature				(°C)	-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 ⁽⁴⁾			yes	yes
	Tele L ⁽⁴⁾			yes	yes
	Tele MP ⁽⁴⁾			yes	yes
	PBS ⁽⁴⁾			yes	yes
Busbar system bottom	Pin			yes	yes
	Fork			no	no
Accessories				yes	yes
Dimensions, weights, packaging					
				(HxDxW) per module	(mm)
				88.4x68x18	88.4x68x18
				Weight/module	(g)
				125	125
				Package unit	12
Approvals ⁽⁵⁾				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): 24VDC, 48VDC, 110VDC, 125VDC, 220VDC, 250VDC.

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

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

- (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. To release the cable press 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.

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.
- Finally, remove 14mm of plastic from every wire and insert them vertically one by one inside the top screwless terminals.
- For disconnecting the outgoing wires.

Easy to dismantle from DIN rail

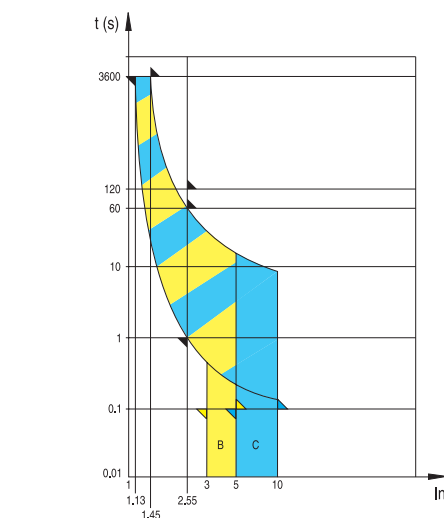
Short-circuit capacity of screwless MCBs

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

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.

Tripping characteristic curves (EN/IEC 60898-1)



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.

Icn (A)	Test current	Tripping time	Applications
B	3 x I _n	0.1 < t < 45s (I _n ≤ 32A) 0.1 < t < 90s (I _n > 32A)	Only for resistive loads such as: - electrical heating - water heater - stoves
	5 x I _n	t < 0.1s	
C	5 x I _n	0.1 < t < 15s (I _n ≤ 32A) 0.1 < t < 30s (I _n > 32A)	Usual loads such as: - lighting - socket-outlets - small motors
	10 x I _n	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 _n	t ≥ 1h (I _n ≤ 63A) t ≥ 2h (I _n > 63A)
1.45 x I _n	t < 1h (I _n ≤ 63A) t < 2h (I _n > 63A)
2.55 x I _n	1s < t < 60s (I _n ≤ 32A) 1s < t < 120s (I _n > 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.

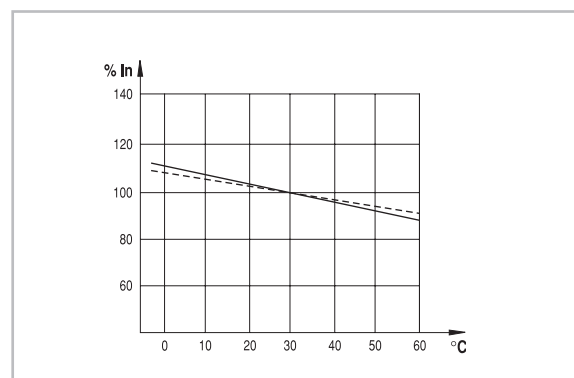
Calculation

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 50-60 Hz, 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 50-60 Hz.

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

I_n (A)	Voltage drop (V)	Energy loss P_w (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

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

Applications



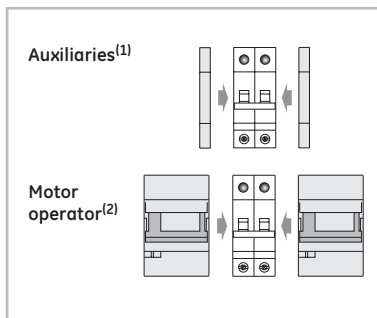
Approvals / Marking



Screwless connection



Add-on devices



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

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

Performance

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

Short-circuit capacity

AC acc. IEC/EN 60898-1

Poles	V	Icn/Ics (kA) ⁽¹⁾
1	230/400	6

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

Poles	Un (V $\overline{\text{---}}$)	Icu/Ics (kA)
1	≤ 60	20
2	≤ 125	25

(1) Ics= 75% Icn

Screwless & Plug-in

Series EPP60 - characteristics B and C



1P

1/2

1/2

2/1

In (A)	B		C		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
6	EPP61B06	678172	EPP61C06	678212	12
10	EPP61B10	678173	EPP61C10	678213	12
13	EPP61B13	678174	EPP61C13	678214	12
16	EPP61B16	678175	EPP61C16	678215	12
20	EPP61B20	678176	EPP61C20	678216	12
25	EPP61B25	678177	EPP61C25	678217	12
32	EPP61B32	678178	EPP61C32	678218	12
40	EPP61B40	678179	EPP61C40	678219	12
50	EPP61B50	678180	EPP61C50	678220	12
63	EPP61B63	678181	EPP61C63	678221	12



1P+N

1/2 N

1/2

2/1

2/1 N

6	-		EPP61NC06	678222	6
10	-		EPP61NC10	678223	6
13	-		EPP61NC13	678224	6
16	-		EPP61NC16	678225	6
20	-		EPP61NC20	678226	6
25	-		EPP61NC25	678227	6
32	-		EPP61NC32	678228	6
40	-		EPP61NC40	678229	6
50	-		EPP61NC50	678230	6
63	-		EPP61NC63	678231	6



2P

1/2 3/4

1/2

2/1

2/1 4/3

6	EPP62B06	678182	EPP62C06	678232	6
10	EPP62B10	678183	EPP62C10	678233	6
13	EPP62B13	678184	EPP62C13	678234	6
16	EPP62B16	678185	EPP62C16	678235	6
20	EPP62B20	678186	EPP62C20	678236	6
25	EPP62B25	678187	EPP62C25	678237	6
32	EPP62B32	678188	EPP62C32	678238	6
40	EPP62B40	678189	EPP62C40	678239	6
50	EPP62B50	678190	EPP62C50	678240	6
63	EPP62B63	678191	EPP62C63	678241	6



3P

1/2 3/4 5/6

1/2

2/1

2/1 4/3 6/5

6	EPP63B06	678192	EPP63C06	678242	4
10	EPP63B10	678193	EPP63C10	678243	4
13	EPP63B13	678194	EPP63C13	678244	4
16	EPP63B16	678195	EPP63C16	678245	4
20	EPP63B20	678196	EPP63C20	678246	4
25	EPP63B25	678197	EPP63C25	678247	4
32	EPP63B32	678198	EPP63C32	678248	4
40	EPP63B40	678199	EPP63C40	678249	4
50	EPP63B50	678200	EPP63C50	678250	4
63	EPP63B63	678201	EPP63C63	678251	4



3P+N

1/2 3/4 5/6 N

1/2

2/1

2/1 4/3 6/5 N

6	EPP63NB06	678202	EPP63NC06	678252	3
10	EPP63NB10	678203	EPP63NC10	678253	3
13	EPP63NB13	678204	EPP63NC13	678254	3
16	EPP63NB16	678205	EPP63NC16	678255	3
20	EPP63NB20	678206	EPP63NC20	678256	3
25	EPP63NB25	678207	EPP63NC25	678257	3
32	EPP63NB32	678208	EPP63NC32	678258	3
40	EPP63NB40	678209	EPP63NC40	678259	3
50	EPP63NB50	678210	EPP63NC50	678260	3
63	EPP63NB63	678211	EPP63NC63	678261	3



4P

1/2 3/4 5/6 7/8

1/2

2/1

2/1 4/3 6/5 8/7

6	EPP64B06	678705	EPP64C06	678715	3
10	EPP64B10	678706	EPP64C10	678716	3
13	EPP64B13	678707	EPP64C13	678717	3
16	EPP64B16	678708	EPP64C16	678718	3
20	EPP64B20	678709	EPP64C20	678719	3
25	EPP64B25	678710	EPP64C25	678720	3
32	EPP64B32	678711	EPP64C32	678721	3
40	EPP64B40	678712	EPP64C40	678722	3
50	EPP64B50	678713	EPP64C50	678723	3
63	EPP64B63	678714	EPP64C63	678724	3



SCREWLESS
top terminals
In=6 to 20A



Applications



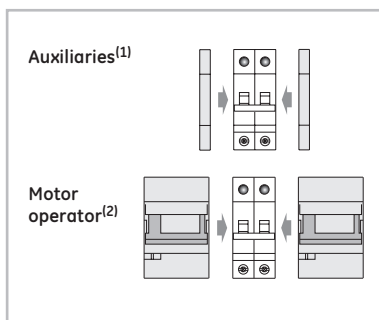
Approvals / Marking



Screwless connection



Add-on devices



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

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

Screwless MCBs

Series EPP100

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

Performance

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

Short-circuit capacity

AC acc. IEC/EN 60898-1

Poles	V	I _{cn} (kA) ⁽¹⁾
1-4	230/400	10

AC acc. IEC/EN 60947-2

Poles	V	I _{cu} (kA) ⁽²⁾
1	240	15
1+N, 2	127	40
	240	30
2	415	15
3, 3+N, 4	240	30
	415	15

DC acc. IEC/EN 60947-2

Poles	Un (V )	I _{cu} /I _{cs} (kA)
1	≤ 60	25
2	≤ 125	30

(1) I_{cs} = 75% I_{cn}

(2) I_{cs} = 50% I_{cu}

Screwless & Plug-in

Series EPP100 - characteristics B and C



1P

1/2

1/2

1/2

1/2

1/2

1/2

2/1

In (A)	B		C		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
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

1/2

3/4

1/2

3/4

1/2

3/4

1/2

3/4

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

1/2

3/4

5/6

1/2

3/4

5/6

2/1

4/3

5/6

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

1/2

3/4

5/6

N

1/2

3/4

5/6

N

2/1

4/3

5/6

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

1/2

3/4

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7/8

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3/4

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7/8

2/1

4/3

5/6

8/7

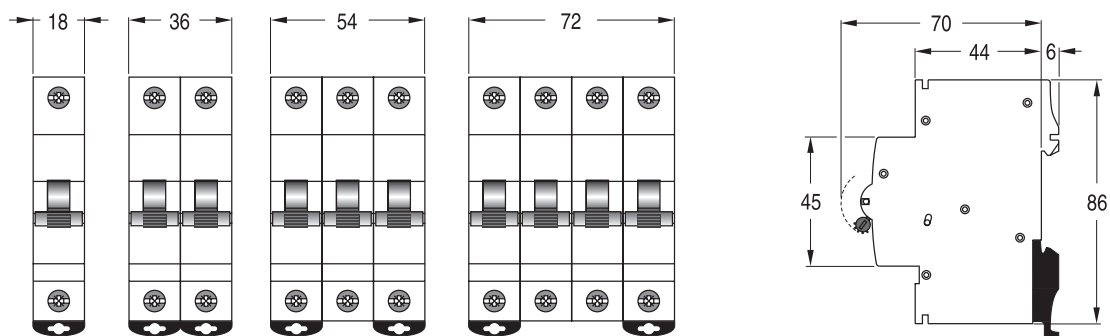
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13	EPP104B13	678727	EPP104C13	678737	3
16	EPP104B16	678728	EPP104C16	678738	3
20	EPP104B20	678729	EPP104C20	678739	3
25	EPP104B25	678730	EPP104C25	678740	3
32	EPP104B32	678731	EPP104C32	678741	3
40	EPP104B40	678732	EPP104C40	678742	3
50	EPP104B50	678733	EPP104C50	678743	3
63	EPP104B63	678734	EPP104C63	678744	3

SCREWLESS
top terminals
In=6 to 20A

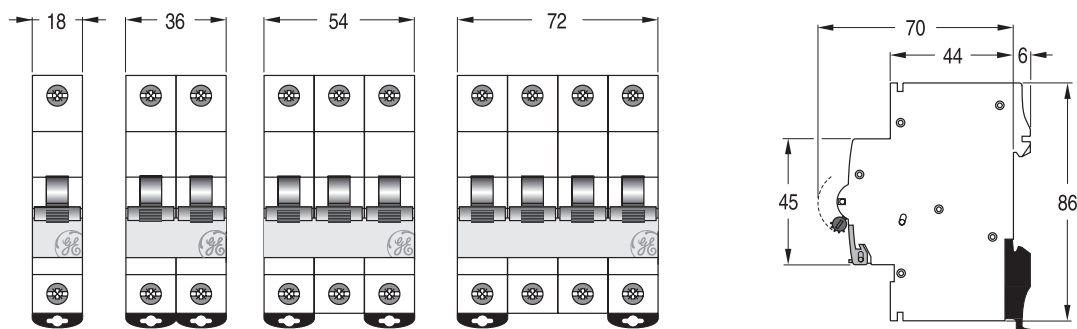


Dimensional drawings

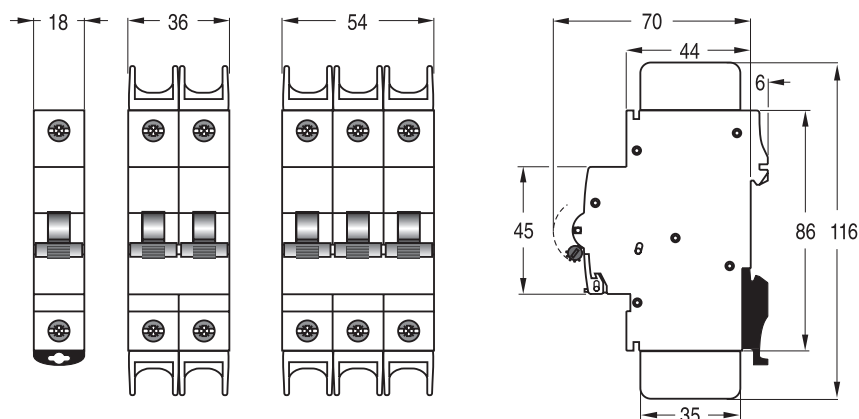
Miniature Circuit Breakers - Series G and GT and Series EP100 UC, EP60 UL and EP100 UL



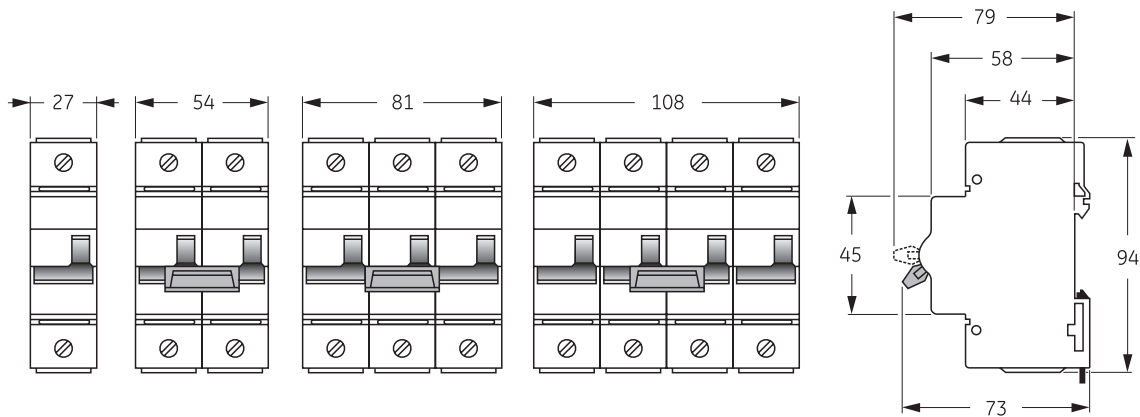
Miniature Circuit Breakers - Series EP60, EP100, EP100T, EP100 UCT, EP100R and EP100 UCR



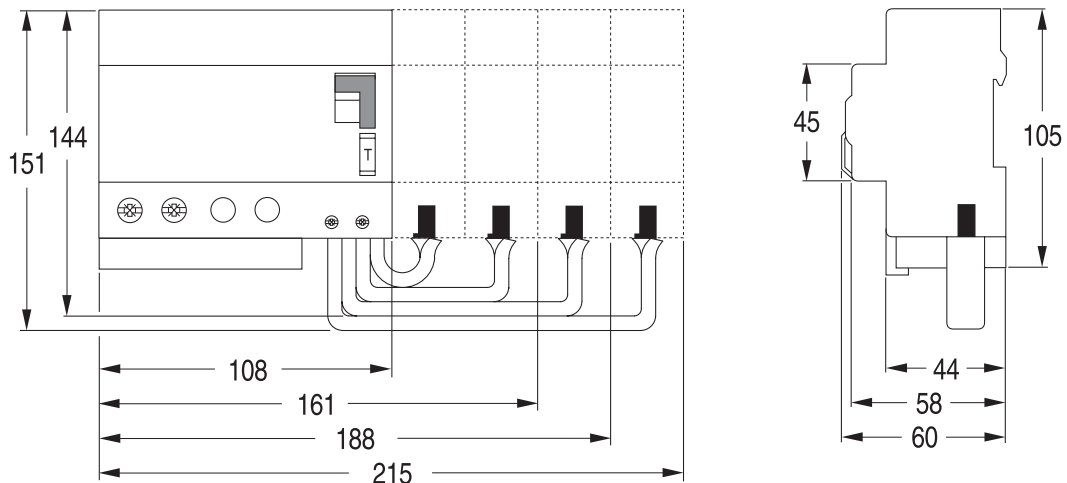
MCB with UL 489 approval - Series EP100 ULH



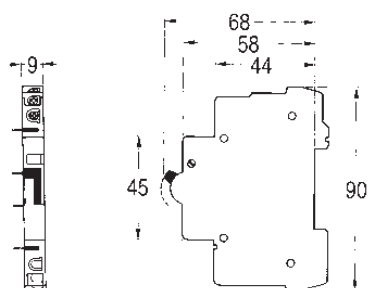
Miniature Circuit Breakers - Series Hti



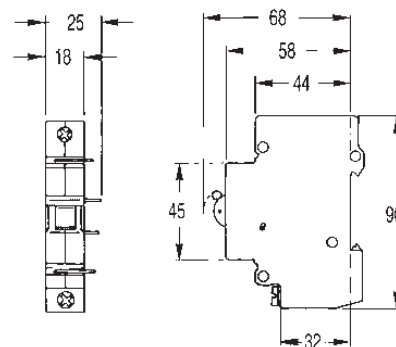
Add-on RCDs for Series Hti



Auxiliary contact - Series Hti

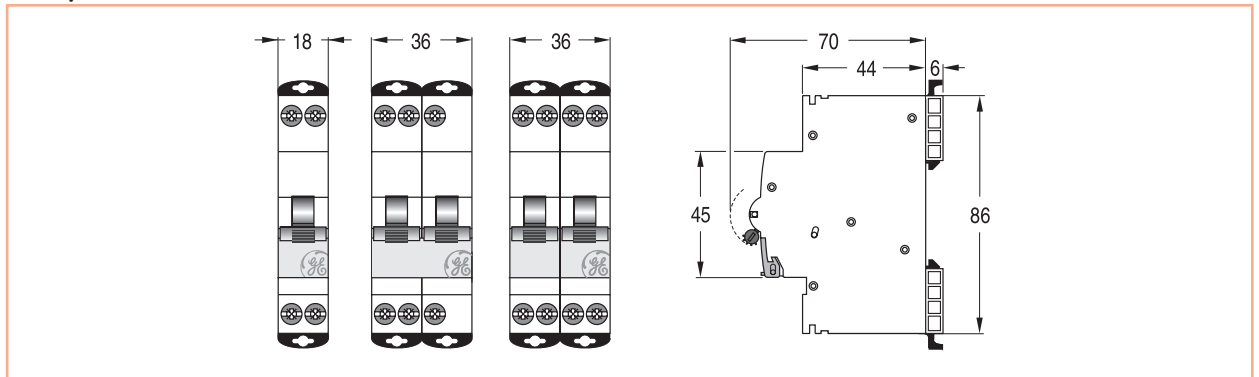


Shunt trip - Series Hti

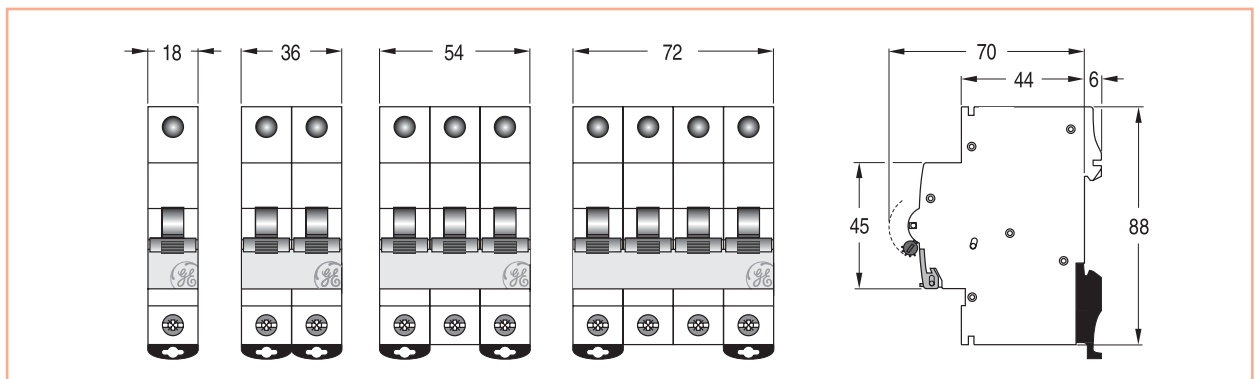


Dimensional drawings

Compact MCBs - Series EPC - Unibis™



Screwless MCBs - Series EPP - Fixwell™



Residual Current Circuit Breaker with Overcurrent Protection

- B.2 Advantages
- B.6 Technical data
- B.8 2P RCBOs - **Series DPC45**
- B.10 2P RCBOs - **Series DPC60**
- B.12 2P RCBOs - **Series DPC100**
- B.14 3P+N RCBOs - **Series DMA63N**
- B.16 Selection table RCCBs and RCBOs
- B.18 Technical data
- B.20 RCCBs - **Series BP/BD**
- B.22 RCBOs with overcurrent protection - **Series DM60**
- B.24 RCBOs with overcurrent protection - **Series DM100**

Compact RCBOs

- B.26 RCBOs - **Series DMCE60 and DICE60**

Circuit Protection

People Protection

- B.28 RCBOs with overcurrent protection - **Series DME**
- B.30 RCBOs with overcurrent protection - **Series DMET**
- B.32 Add-on RCCBs - **Diff-o-Click**
- B.34 RCCBs with UL approval - **Series FPAUL**
- B.35 RCBOs with UL approval - **Series DPA100**

Add-on Devices

Comfort Functions

Busbars

Fixwell™ - Screwless RCCBs

- B.36 RCCBs - **Series FPP**
- B.37 Terminal capacity - Mounting instruction
- B.38 Residential earth leakage relay - **Series GRDT+TOP**

Enclosures

MCCBs Record Plus

Numerical Index

TeleREC 2 / TeleREC Top

- B.42 Series TeleREC 2
- B.46 Series TeleREC Top - MCBs
- B.48 Series TeleREC Plus - For industrial applications
- B.49 Dimensional drawings



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

Unibis™ 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 upgraded 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**!

New

Saving up to 50% space
in distribution boards!

Protected cables

up to 35mm² rigid cable
up to 25mm² flexible cable

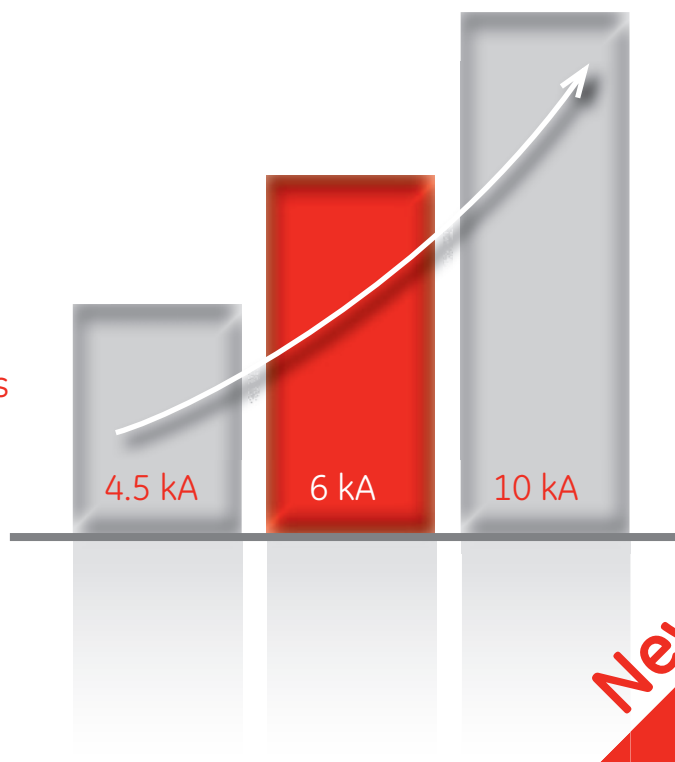


New

... the solution for space issues



- ✓ 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: CEBEC, KEMA, VDE, IMQ, NF
- ✓ RINA and Lloyd's Register certified



New

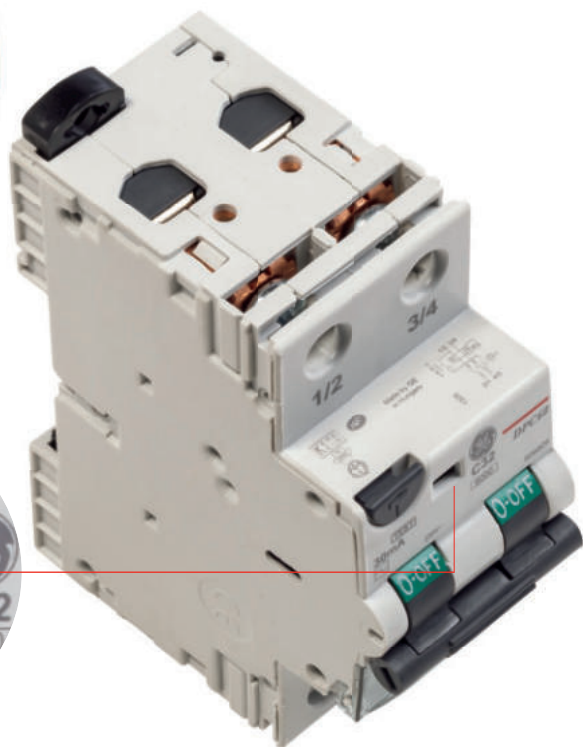
The most complete **RCBO** offer on the market for double phase circuits

New

Saving up to 50% space
in distribution boards!



Earth
leakage
indicator



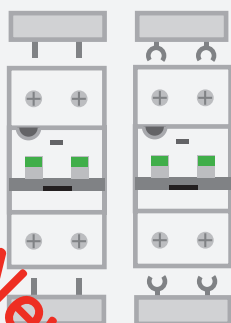
Protected terminals
Plastic tongue in IP20 terminals



Easy to replace

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

PIN and FORK busbars



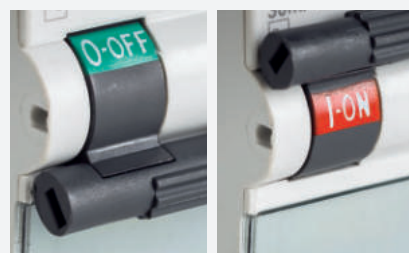
Pin and fork
busbars can
be placed at
the **bottom**
and at the
top.

For residential,
commercial and
industrial applications

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

Green and red flag
on toggle

with isolation applications



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.

New



Shipping applications

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

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.



New

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

Series		DPC45	DPC60	DPC100	DMA63N
Standards		EN 61009-1	EN 61009-1	EN 61009-1	EN 61009-1
Magnetic tripping characteristics		C	B,C	B,C	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
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+N (4 mod.)
Rated voltage Un AC 2P	V	230	230	230	400
Frequency	Hz	50	50 ⁽³⁾	50 ⁽³⁾	50/60
Maximum service voltage Ub max	V	265	265	265	-
Minimum service voltage Ub min	V	117 ⁽²⁾	117 ⁽²⁾	117 ⁽²⁾	-
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 1.2/50us	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 Mechanical	10000 20000	10000 20000	10000 20000	10000 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)	mm²	1/35	1/35	1/35	1/25
Flexible cable Min./Max. (top)	mm²	1/25	1/25	1/25	1/25
Rigid cable Min./Max. (bottom)	mm²	1/35	1/35	1/35	1/35
Flexible cable Min./Max. (bottom)	mm²	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	no
Tele U		yes ⁽¹⁾	yes ⁽¹⁾	yes ⁽¹⁾	no
Tele L		yes ⁽¹⁾	yes ⁽¹⁾	yes ⁽¹⁾	no
Tele MP		yes ⁽¹⁾	yes ⁽¹⁾	yes ⁽¹⁾	no
PBS		yes ⁽¹⁾	yes ⁽¹⁾	yes ⁽¹⁾	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		in development	in development	in development	no
Busbar systems	Pin (top/bottom) Fork (top/bottom)	yes/yes yes/yes	yes/yes yes/yes	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, CEBEC, KEMA, IMQ, VDE	NF, CEBEC, KEMA, IMQ, VDE, LR, RINA	IMQ
CE- marking		yes	yes	yes	no
Page		B.8	B.10	B.12	B.14

(1) Requires CA auxiliary contact as interface

(2) Ub min = 150V for 30mA

(3) 50/60 Hz for Ai residual tripping characteristic

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.9	DPC45	30	2	AC	C	4500									x	x	230
B.9		300	2	AC	C	4500									x	x	230
B.9		30	2	A	C	4500									x	x	230
B.9		300	2	A	C	4500									x	x	230
B.11	DPC60	10	2	AC	C	6000									x	x	230
B.11		30	2	AC	C	6000									x	x	230
B.11		300	2	AC	C	6000									x	x	230
B.11		10	2	A	B	6000									x	x	230
					C	6000									x	x	230
B.11		30	2	A	B	6000									x	x	230
					C	6000									x	x	230
B.11		300	2	A	B	6000									x	x	230
					C	6000									x	x	230
B.11		30	2	Ai	B	6000									x	x	230
					C	6000									x	x	230
B.11		300	2	Ai	B	6000									x	x	230
					C	6000									x	x	230
B.13	DPC100	10	2	AC	C	10000									x	x	230
B.13		30	2	AC	C	10000									x	x	230
B.13		300	2	AC	C	10000									x	x	230
B.13		10	2	A	B	10000									x	x	230
					C	10000									x	x	230
B.13		30	2	A	B	10000		•	•	•	•				x	x	230
					C	10000		•	•	•	•				x	x	230
B.13		300	2	A	B	10000									x	x	230
					C	10000									x	x	230
B.13		30	2	Ai	B	10000									x	x	230
					C	10000									x	x	230
B.13		300	2	Ai	B	10000									x	x	230
					C	10000									x	x	230
B.14	DMA63N	30	3+N	A	C	6000									x	no	400

• Special thermal tripping curves for Norway and Paneuropean types



2P RCBOs - Residual Current Circuit Breaker with Overcurrent Protection

Series DPC45

EN /IEC 61009-1 4.5kA

Type AC



Type A



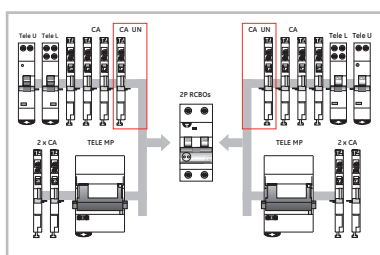
Applications



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

Thermal setting In	(A) 6-40
Residual current	(mA) 30, 300
Tripping characteristics	C
Rated voltage AC Un	(V) 230
Minimum operating voltage Ub min.	(V) 117 ⁽¹⁾
Mechanical / electrical endurance	10000/20000
Tropicalisation acc. to EN/IEC 60068-2	55°C/95%
Terminal capacity flexible / rigid cable	(mm²) 25/35
Poles	2
Nuisance tripping resistance	(A) 250
Ambient temperature	(°C) Type AC: -5 up to 60 Type A: -25 up to 60
Weight / mod.	(g) 110

Short-circuit capacity

Acc. to EN 61009-1

Residual making and breaking capacity	I Δ m = 4500A
Energy limiting class	3
Short-circuit capacity	Icn = 4500A at 230V

(1) U_{bmin} = 150V for 30mA

New

- Auxiliary contacts ● pg C.6
- Technical data ● pg B.6
- Dimensions ● pg B.9

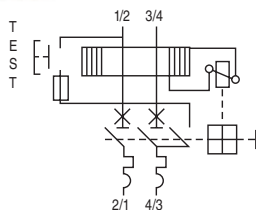


Compact RCBOs

Series DPC45 - Type AC - characteristic C



2P

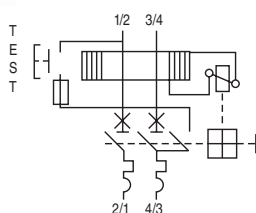


In (A)	10mA		30 mA		300 mA		Pack
	Cat. no.	Ref. no.	Cat. no.	Ref. no.	Cat. no.	Ref. no.	
6	-	-	DPCA45C06/030	606786	DPCA45C06/300	606794	1/6
10	-	-	DPCA45C10/030	606787	DPCA45C10/300	606795	1/6
13	-	-	DPCA45C13/030	606788	DPCA45C13/300	606796	1/6
16	-	-	DPCA45C16/030	606789	DPCA45C16/300	606797	1/6
20	-	-	DPCA45C20/030	606790	DPCA45C20/300	606798	1/6
25	-	-	DPCA45C25/030	606791	DPCA45C25/300	606799	1/6
32	-	-	DPCA45C32/030	606792	DPCA45C32/300	606800	1/6
40	-	-	DPCA45C40/030	606793	DPCA45C40/300	606801	1/6

Series DPC45 - Type A - characteristic C

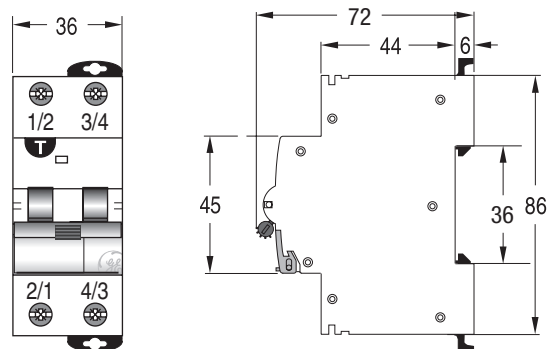


2P



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



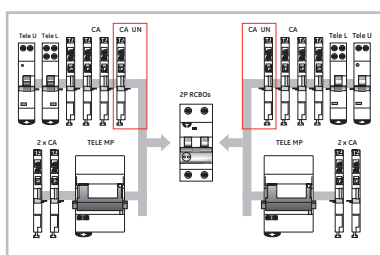
Applications



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

Thermal setting In	(A) 6-40
Residual current	(mA) 10, 30, 300
Tripping characteristics	B, C
Rated voltage AC Un	(V) 230
Minimum operating voltage Ub min.	(V) 117 ⁽¹⁾
Mechanical / electrical endurance	10000/20000
Tropicalisation acc. to EN/IEC 60068-2	55°C/95%
Terminal capacity flexible / rigid cable	(mm²) 25/35
Poles	2
Nuisance tripping resistance	(A) 250 (A, AC), 3000 (Ai)
Ambient temperature	(°C) Type AC: -5 up to 60 Type A: -25 up to 60
Weight / mod.	(g) 110

Short-circuit capacity

Acc. to EN 61009-1

Residual making and breaking capacity	IΔm = 6000A
Energy limiting class	3
Short-circuit capacity	Icn = 6000A at 230V

(1) U_{bmin} = 150V for 30mA

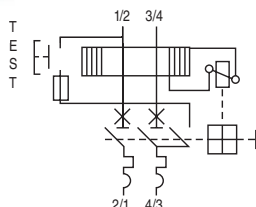
New

- Auxiliary contacts ● pg C.6
- Technical data ● pg B.6
- Dimensions ● pg B.9



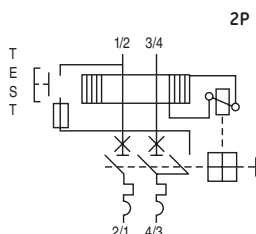
Compact RCBOs

Series DPC60 - Type AC - characteristic C



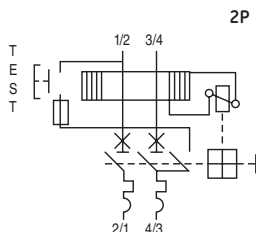
In (A)	10mA		30 mA		300 mA		Pack
	Cat. no.	Ref. no.	Cat. no.	Ref. no.	Cat. no.	Ref. no.	
6	-	-	DPCA60C06/030	606820	DPCA60C06/300	606828	1/6
10	DPCA60C10/010	606818	DPCA60C10/030	606821	DPCA60C10/300	606829	1/6
13	-	-	DPCA60C13/030	606822	DPCA60C13/300	606830	1/6
16	DPCA60C16/010	606819	DPCA60C16/030	606823	DPCA60C16/300	606831	1/6
20	-	-	DPCA60C20/030	606824	DPCA60C20/300	606832	1/6
25	-	-	DPCA60C25/030	606825	DPCA60C25/300	606833	1/6
32	-	-	DPCA60C32/030	606826	DPCA60C32/300	606834	1/6
40	-	-	DPCA60C40/030	606827	DPCA60C40/300	606835	1/6

Series DPC60 - Type A - characteristic B



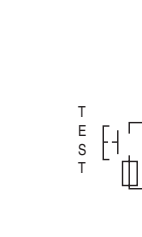
6	-	-	DPCA60B06/030	606872	DPCA60B06/300	606880	1/6
10	DPCA60B10/010	606870	DPCA60B10/030	606873	DPCA60B10/300	606881	1/6
13	-	-	DPCA60B13/030	606874	DPCA60B13/300	606882	1/6
16	DPCA60B16/010	606871	DPCA60B16/030	606875	DPCA60B16/300	606883	1/6
20	-	-	DPCA60B20/030	606876	DPCA60B20/300	606884	1/6
25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

Series DPC60 - Type A - characteristic C



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

Series DPC60 - Type Ai - characteristic B



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

Series DPC60 - Type Ai - characteristic C

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

Series DPC60

A

B

C

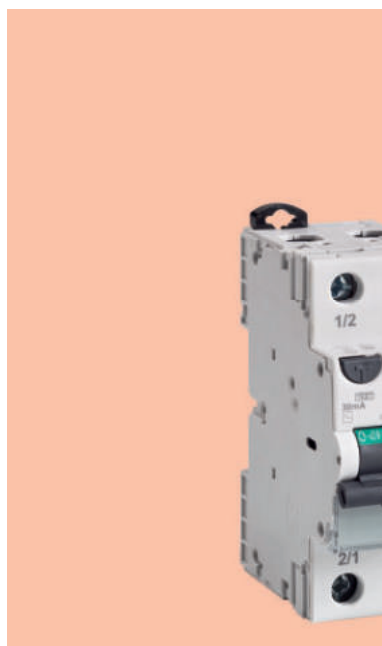
D

E

F

G

X



2P RCBOs - Residual Current Circuit Breaker with Overcurrent Protection

Series DPC100

EN /IEC 61009-1

10kA

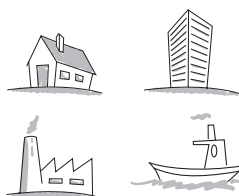
Type AC



Type A - Ai



Applications

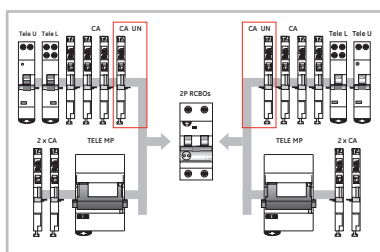


Approvals / Marking



(1) Lloyd's register
(2) RINA

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

Thermal setting In	(A) 6-40
Residual current	(mA) 10, 30, 300
Tripping characteristics	B ⁽¹⁾ -C ⁽¹⁾
Rated voltage AC Un	(V) 230
Minimum operating voltage Ub min.	(V) 117 ⁽²⁾
Mechanical / electrical endurance	10000/20000
Tropicalisation acc. to EN/IEC 60068-2	55°C/95%
Terminal capacity flexible / rigid cable	(mm²) 25/35
Poles	2
Nuisance tripping resistance	(A) 250 (A, AC), 3000 (Ai)
Ambient temperature	(°C) Type AC: -5 up to 60 Type A: -25 up to 60
Weight / mod.	(g) 110

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

Short-circuit capacity

Acc. to EN 61009-1

Residual making and breaking capacity	IΔm = 6000A
Energy limiting class	3
Short-circuit capacity	Icn = 10000A at 230V

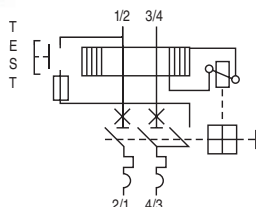
Auxiliary contacts ● pg C.6
Technical data ● pg B.6
Dimensions ● pg B.9

New



Compact RCBOs

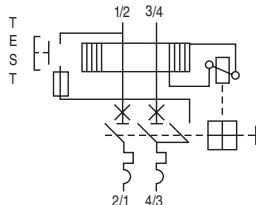
Series DPC100 - Type AC - characteristic C



2P

In (A)	10mA		30 mA		300 mA		Pack
	Cat. no.	Ref. no.	Cat. no.	Ref. no.	Cat. no.	Ref. no.	
6	-	-	DPCA100C06/030	606906	DPCA100C06/300	606914	1/6
10	DPCA100C10/010	606904	DPCA100C10/030	606907	DPCA100C10/300	606915	1/6
13	-	-	DPCA100C13/030	606908	DPCA100C13/300	606916	1/6
16	DPCA100C16/010	606905	DPCA100C16/030	606909	DPCA100C16/300	606917	1/6
20	-	-	DPCA100C20/030	606910	DPCA100C20/300	606918	1/6
25	-	-	DPCA100C25/030	606911	DPCA100C25/300	606919	1/6
32	-	-	DPCA100C32/030	606912	DPCA100C32/300	606920	1/6
40	-	-	DPCA100C40/030	606913	DPCA100C40/300	606921	1/6

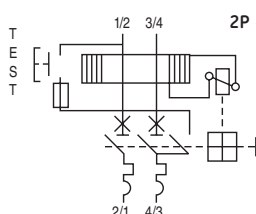
Series DPC100 - Type A - characteristic B



2P

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

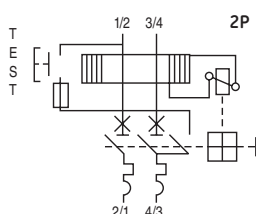
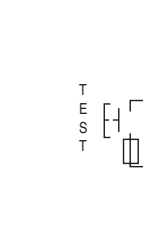
Series DPC100 - Type A - characteristic C



2P

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

Series DPC100 - Type Ai - characteristic B



2P

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

Series DPC100 - Type Ai - characteristic C

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

(1) Special thermal tripping curves for Norway



New

Series DPC100

A

B

C

D

E

F

G

X



Applications



Approval / Marking



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

Series DMA63N

EN 61009-1

6000

3

Type A



Performance

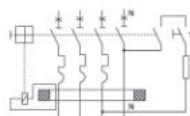
Thermal setting I_n	(A) 10 - 32
Residual current	(mA) 30
Tripping characteristics	C
Rated voltage AC U_n	(V) 400
Minimum operating voltage U_b min.	(V) 100
Mechanical / electrical endurance	10000/20000
Tropicalisation acc. to EN/IEC 60068-2	55°C/95%
Terminal capacity flexible / rigid cable	(mm ²) 25/35
Poles	3+N (right)
Nuisance tripping resistance	(A) 250A 8/20μs
Ambient temperature	(°C) 25 up to 40
Weight / mod.	(g) 440

Short-circuit capacity

Acc. to EN 61009-1

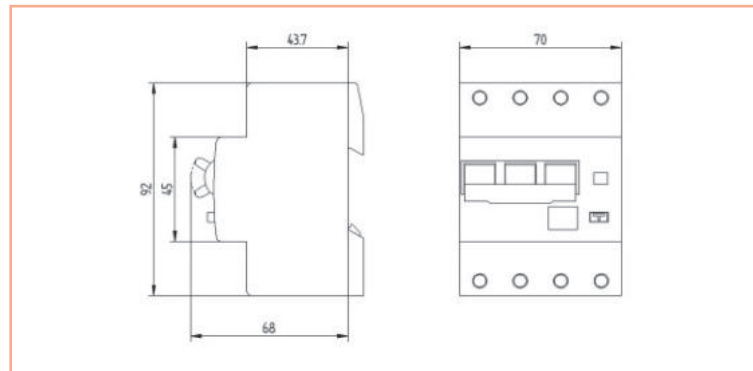
Residual making and breaking capacity	$I_{\Delta m} = 3000A$
Energy limiting class	3
Short-circuit capacity	$I_{cn} = 6000A$ at 230V

Series DMA63N - Type A - characteristic C - 3P+N



I_n (A)	30mA		
	Cat. no.	Ref. no.	Pack
10	DMA 63NC10/030	783517	1/3
13	DMA 63NC13/030	783518	1/3
16	DMA 63NC16/030	783519	1/3
20	DMA 63NC20/030	783520	1/3
32	DMA 63NC32/030	568322	1/3

Dimensions



People protection

B

E

F

G

X

Selection table of RCCBs

Page no.	Series	Sensitivity (mA)	Poles	Type	16	25	Nominal current (A)				80	100	Isolator appl.	Add-on devices	Rated voltage
B.20	BP/BD														
		10	2P	AC/A									x	x	240
		30	2P	AC/A									x	x	240
				G									x	x	240
			4P	AC/A									x	x	240/415
				G									x	x	240/415
		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
		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
B.36	FPP	30,100, 300	2P	A/S									x	x	240/415
			4P	A/S									x	x	240/415

Selection table of RCBOs

Page no.	Series	Sensitivity (mA)	Pole	Type	Tripping charact.	4	6	Nominal current (A)								Isolator appl.	Add-on devices	Rated voltage
B.22	DM60																	
		10	1+N	AC/A	B											x	x	240
					C											x	x	240
		30	1+N	AC/A	B											x	x	240
					C											x	x	240
		100	1+N	AC/A	B											x	x	240
					C											x	x	240
		300	1+N	AC/A	B											x	x	240
					C											x	x	240
B.23	DMT60																	
		30	1+N	AC	C											x	x	240
B.24	DM100	10	1+N	AC/A	B											x	x	240
					C											x	x	240
		30	1+N	AC/A	B											x	x	240
					C											x	x	240
		100	1+N	AC/A	B											x	x	240
					C											x	x	240
		300	1+N	AC/A	B											x	x	240
					C											x	x	240
B.25	DMT100																	
		30	1+N	AC	C											x	x	240
B.26	DMC/DICE																	
		30	1+N	AC/A	B/C											x	x	240



Selection table of RCBOs (continued)

Page no.	Series	Sensitivity (mA)	Pole	Type	Tripping charact.	6	10	Nominal current (A)					32	40	Isolator appl.	Add-on devices	Rated voltage
B.29	DME60	30, 100	1+N	AC	C										x	x	240
B.29	DME100	10, 30, 100	1+N	AC/A	C										x	x	240
		10, 30, 100	1+N	AC	B										x	x	240
		100	1+N	AC	D										x	x	240
		10, 30	1+N	A	B										x	x	240
		10, 30, 100	1+N	A	C, D										x	x	240
B.31	DMET60	30	1+N	AC/A	C										x	x	240
B.31	DMET100	10, 30, 100, 300	1+N	AC	C										x	x	240
		30	1+N	A	C										x	x	240

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.32	Diff-o-Click	10	2-3-4	AC/A	-			-	-	240/415
		100, 300, 500, 1000	2-3-4	AC/A/S	-			-	-	240/415

Technical data of RCDs

Series			BP/BD	DM60	DM100	DMCE/DICE
Standards			EN/IEC 61008-1	EN/IEC 61009-1	EN/IEC 61009-1	EN/IEC 61009-1
Magnetic tripping characteristics			-	B-C	B-C	B-C
Residual tripping characteristic			AC, A, S	AC	AC	AC, A
Tripping time at I _{Δn}	Instantaneous	ms	<40	<40	<40	<40
	Selective	ms	>150	-	-	-
Rated current			16, 25, 40, 63, 80, 100	4, 6, 10, 13, 16, 20, 25, 32, 40	4, 6, 10, 13, 16, 20, 25, 32, 40	6 ... 40
Rated residual current I _{Δn}			10, 30, 100, 300, 500, 1000	10, 30, 300	10, 30, 300	30
Calibration temperature			30	30	30	30
Number of poles versus modules			1	1	1	1
Rated voltage U _n	2P AC	V	240	230 (1P+N)	230 (1P+N)	240 (1P+N)
	3P AC	V	-	-	-	-
	4P AC	V	415	-	-	-
Frequency			50/60	50/60	50/60	50
Maximum service voltage U _{bmax}			2P=265 / 4P=455	255	255	265
Minimum service voltage U _{bmin}			2P=117 / 4P=205	117	117	195
Minimum voltage for leakage protection			Voltage independent	Voltage independent	Voltage independent	85
Power supply			Top/Bottom	Top/Bottom	Top/Bottom	Bottom
Selectivity class			-	3	3	3
Rated making and breaking capacity (I _m)			500 (or 10xI _n)	-	-	10xI _n
Residual making and breaking capacity (I _{Δm})			500 (or 10xI _n)	6000	6000	6000
Conditional short-circuit capacity (I _{nc})			10000 fuse 100A gLgG	-	-	-
Conditional residual short-circuit capacity (I _{Δc})			10000 fuse 100A gLgG	-	-	-
Rated Short-circuit capacity (I _{cn})			-	6000	10000	6000
Grid distance (safety distance between two devices)			35	35	35	-
Isolator application			yes	yes	yes	yes
Insulation degree	Insulation voltage	V (DC)	440	440	440	440
	Shock voltage (1.2/50μs)	kV	6	6	6	6 ⁽¹⁾
	Insulation resistance	MΩ	1000	1000	1000	1000 ⁽¹⁾
	Dielectric strength	V	2500	2500	2500	2500 ⁽¹⁾
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	2g, 30 min, 0...80Hz
Endurance	electrical at U _n , I _n		10000	10000	10000	10000
	mechanical at U _n , I _n		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 (according 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			AC (-5...+60); A -25...+60	-5...+60	-25...+60	-5...+60
Storage temperature			-25...+70	-25...+70	-5...+70	-25...+70
Terminals capacity	Rigid cable min/max (top)	mm ²	1.5/50 [1.5/35]	1/25	1/25	1/25
	Flexible cable min*/max (top)	mm ²	1.5/35 [1.5/25]	1/16	1/16	1.5/16
	Rigid cable min/max (bottom)	mm ²	1.5/50 [1.5/35]	1/35	1/35	1/35
	Flexible cable min*/max (bottom)	mm ²	1.5/35 [1.5/25]	1/25	1/25	1.5/25
Torque			5/5	3/4	3/4	3/3(DMCE) 3/4.5(DICE)
Add-on devices (side add-on)	Auxiliary contacts		yes	yes	yes	yes (coupled to CAUN)
	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		yes	Bottom	Bottom	yes
	Fork		yes	Bottom	Bottom	-
	# Poles		2-4	1+N	1+N	1+N
Dimensions	(HxDxW) 86x68xW		36/72	36	36	18
	Weight	mm	2P=250 / 4P=368	250	250	125/215
	Package	g	2P=1/6 / 4P=1/3	1/6	1/6	1/12
Approvals			KEMA	KEMA	KEMA	RCM
CE-marking			yes	yes	yes	yes
Page			B.20	B.22	B.24	B.26

*Flexible cable 0.75/1/1.5 mm² with cable lug

DME60/DMET60	DME100/DMET100	Diff-o-Click	FPAUL	DPA100	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
C	B-C-D	B-C-D	-	B-C	-
AC, A	AC, A	AC, A, S	A	A	A, S
<40	<40	<40	< 40	< 40	<40
-	-	>150	-	-	>150
6...40	6,10,16,20,25,32,40	0.5,1,2,4,6,10,16,20,25,32,40,50,63	16, 25, 40, 63	10, 13, 16, 32, 40	25, 40, 63 ⁽³⁾
30, 100	10, 30, 100, 300	30,100,300,500,1000	10, 30, 100, 300, 500	10, 30	30, 100, 300
30	30	30	30	30	30
1	1	1	1	1	1
240 (1P+N)	240 (1P+N)	240/415	240	277 & 240 (1P+N)	240
-	-	400	-	-	-
-	-	400	UL: 240; EN/IEC: 415	-	415
50/60	50/60	50/60	50/60	50/60	50/60
265	265	2P=265 / 4P=455	2P=265 / 4P=455	255	2P=265 / 4P=455
195	195	2P=205 / 4P=205	2P=117 / 4P=205	195	2P=110 / 4P=190
100	100	Voltage independent	Voltage independent	Voltage independent	Voltage independent
Bottom	Bottom	Top	Top/Bottom	Top/Bottom	Top/Bottom
3	3	3	-	3	-
10xIn	10xIn	-	500 (or 10xIn)	-	500 (or 10xIn)
6000	10000	see MCB	500 (or 10xIn)	6000	500 (or 10xIn)
-	-	-	10000 fuse 100A glgG	-	10000 fuse 100A
-	-	-	10000	-	10000
6000	10000	see MCB	-	5000/10000	-
-	-	35	35	35	-
yes	yes	no	yes	yes	yes
440	440	440	500	500	500
6 ⁽¹⁾	6 ⁽¹⁾	6	8	6	8
1000 ⁽¹⁾	1000 ⁽¹⁾	1000	1000	1000	1000
2500 ⁽¹⁾	2500 ⁽¹⁾	2500	2500	2500	2500
40g, 18 shocks 5 ms	40g, 18 shocks 5 ms	40g, 18 shocks 5 ms	40g, 18 shocks 5 ms	40g, 18 shocks 5 ms	40g, 18 shocks 5 ms
2g, 30 min, 0...80Hz	2g, 30 min, 0...80Hz	5g, 30 min, 0...80Hz	1.5g, 30 min, 0...80Hz	1.5g, 30 min, 0...80Hz	1.5g, 30 min, 0...80Hz
10000	10000	10000	10000	10000	10000
20000	20000	20000	20000	20000	20000
IP20 / IP40	IP20 / IP40	IP20 / IP40	IP20 / IP40	IP20 / IP40	IP20 / IP40
V2	V2	V2	V2	V2	V2
+55/95%	+55/95%	+55/95%	+55/95%	+55/95%	+55/95%
3	3	3	3	3	3
-5...+60	-5...+60	AC (-5...+60); A(-25...+60)	AC (-5...+60); A (-25...+60)	-5...+60	-25...+60 ⁽⁴⁾
-25...+70	-25...+70	-25...+70	-25...+70	-25...+70	-25...+70
1/25	1/25	1/25	1.5/50 [1.5/35]	1/25	see page B.20
1/16	1/16	1/16	1.5/35 [1.5/25]	1/16	-
1/35	1/35	1/35	1.5/50 [1.5/35]	1/35	-
1/25	1/25	1/25	1.5/35 [1.5/25]	1/25	-
3/4.5	3/4.5	-/4.5	5/5	3/4	-
-	-	yes (coupled to MCB)	yes	yes	yes
-	-	yes (coupled to MCB)	yes ⁽²⁾	yes ⁽²⁾	yes ⁽⁵⁾
-	-	yes (coupled to MCB)	yes	yes	yes ⁽⁵⁾
-	-	yes (coupled to MCB)	yes ⁽²⁾	yes ⁽²⁾	yes ⁽⁵⁾
-	-	yes (coupled to MCB)	yes ⁽²⁾	yes ⁽²⁾	yes ⁽⁵⁾
Bottom	Bottom	-	yes ⁽²⁾	yes ⁽²⁾	yes
Bottom	Bottom	-	yes ⁽²⁾	yes ⁽²⁾	yes
1+N	1+N	2-3-4	2-4	1+N	2/4
18	18	72/90/108/125/144	36/72	36	88x68x36/73.2
235	235	2P=250 / 3P=320 / 4P=340	2P=250 / 4P=368	250	2P=248 / 4P=364
1	1	1	2P=1/6 / 4P=1/3	1/6	2P=1/6 / 4P=1/3
KEMA	CEBEC	KEMA	UL	UL and CEBEC	VDE-KEMA-CEBEC-IMQ
yes	yes	yes	yes	yes	yes
B.29/B.31	B.29/B.31	B.32	B.34	B.35	B.36

(1) Making sure that N-L and both flying leads are disconnected.
(2) Not UL registered
(3) Rating current derating as usual in function of installation conditions.

(4) With plug-in busbar: -25/+50°C
(5) With plug-in busbar only at right extreme side of each row. No pin busbars let through allowed



RCCBs - Residual Current Circuit Breakers

Series BP/BD

EN/IEC 61008-1

Type AC



Type A - Ai



Type S - Si



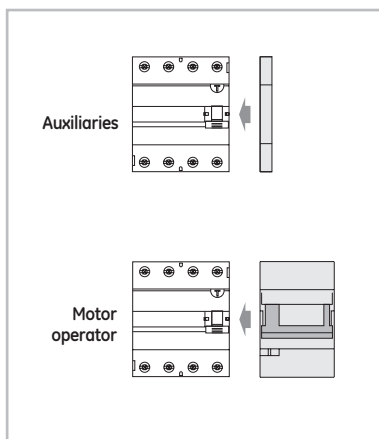
Applications



Approval / Marking



Add-on devices



- Auxiliary contacts ● pg C.4
- Motor operator ● pg C.7
- Shunt trip ● pg C.8
- Undervoltage release ● pg C.8
- Panel board switch ● pg C.8

- Busbars ● pg E.2
- More technical data ● pg B.18
- Dimensions ● pg B.50

Performance

Thermal setting I_n	(A) 16, 25, 40, 63, 80, 100
Residual current $I_{\Delta n}$	(mA) 10, 30, 100, 300, 500, 1000
Rated voltage AC U_n	(V) 2P: 240 4P: 240/415
Minimum operating voltage U_{8min}	(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
Terminal capacity flexible/rigid cable	(mm ²) 35-50 ⁽¹⁾
Poles	2, 4
Nuisance tripping resistance	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
Ambient temperature	(°C) Type AC: -5 up to 40 Type A: -25 up to 40
Weight	(g) 2P: 220 4P: 385

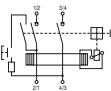
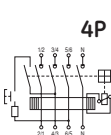
Short-circuit capacity

Acc. to EN/IEC 61008-1

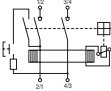
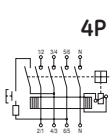
Making and breaking capacity	$I_m \geq 500A$ from 16 up to 40A $I_n = 10I_n$ from 63 up to 100A
Residual making and breaking capacity	$I_{\Delta m} \geq 500A$ from 16 up to 40A $I_{\Delta m} = 10I_n$ from 63 up to 100A
Short-circuit capacity	
Series BD	$I_{nc} = 6000A$ at 240/415V fuse 63A gG
Series BP	$I_{nc} = 10000A$ at 240/415V fuse 80A gG

(1) Series BD: 25-35 mm²

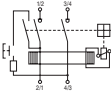
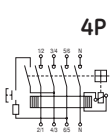
Series BP/BD - Type AC

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

Series BP - Type A

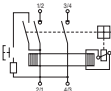
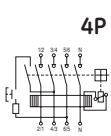
	In (A)	10*/30mA		100mA		300mA		500mA		1000mA		Pack.
		Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
 2P 	16	BPA216/010*	606085	-	-	-	-	-	-	-	-	6
	25	BPA225/030	606086	BPA225/100	606091	BPA225/300	606101	BPA225/500	606111	BPA225/1000	606121	6
	40	BPA240/030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

Series BP - Type S

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

Series BP - Type Ai

Series BP - Type Si

	In (A)	30mA		300mA		300mA		Pack.
		Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
 2P 	25	BPAi225/030	606331	BPAi225/300	606347	BPSi225/300	606337	6
	40	BPAi240/030	606332	BPAi240/300	606348	BPSi240/300	606338	6
	63	BPAi263/030	606333	BPAi263/300	606349	BPSi263/300	606339	6
	80	-	-	-	-	BPSi280/300	606340	6
	100	-	-	-	-	BPSi2100/300	606341	6
 4P 	25	BPAi425/030	606334	BPAi425/300	606350	BPSi425/300	606342	3
	40	BPAi440/030	606335	BPAi440/300	606351	BPSi440/300	606343	3
	63	BPAi463/030	606336	BPAi463/300	606352	BPSi463/300	606344	3
	80	-	-	-	-	BPSi480/300	606345	3
	100	-	-	-	-	BPSi4100/300	606346	3



RCBOs - Residual Current Circuit Breakers With Overcurrent Protection

Series DM60

EN/IEC 61009-1

6000

3

Type AC



Type A



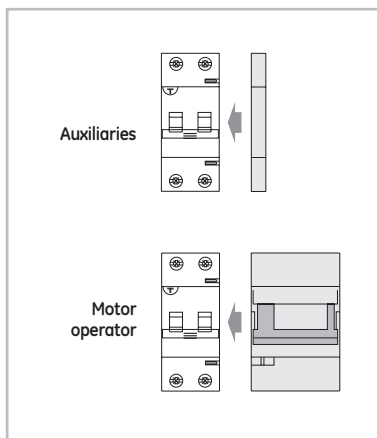
Applications



Approval / Marking



Add-on devices



- Auxiliary contacts ● pg C.4
- Motor operator ● pg C.7
- Shunt trip ● pg C.8
- Undervoltage release ● pg C.8
- Panel board switch ● pg C.8

- Busbars ● pg E.2
- More technical data ● pg B.18
- Dimensions ● pg B.51

Performance

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

Short-circuit capacity

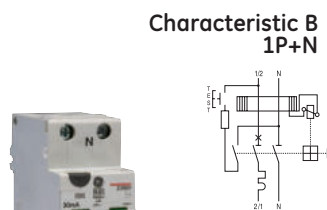
Acc. to EN/IEC 61009-1 and EN/IEC 60898-1

Residual making and breaking capacity	$I_{\Delta m} = 6000A$
Short-circuit capacity	$I_{cn} = 6000A$ at 240V
Selectivity class	3

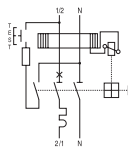
Acc. to EN/IEC 60947-2

Short-circuit capacity	$I_{cu} = 10000A$ at 240V
------------------------	---------------------------

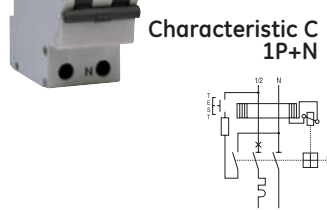
Series DM60 - Type AC



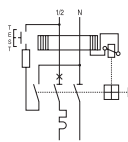
Characteristic B
1P+N



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

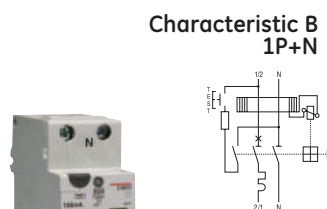


Characteristic C
1P+N

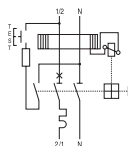


In (A)	10 mA		30 mA		100 mA		300 mA		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
4	DM60C04/010	609831	DM60C04/030	609837	DM60C04/100	609846	DM60C04/300	609855	6
6	DM60C06/010	609832	DM60C06/030	609838	DM60C06/100	609847	DM60C06/300	609856	6
10	DM60C10/010	609833	DM60C10/030	609839	DM60C10/100	609848	DM60C10/300	609857	6
13	DM60C13/010	609834	DM60C13/030	609840	DM60C13/100	609849	DM60C13/300	609858	6
16	DM60C16/010	609835	DM60C16/030	609841	DM60C16/100	609850	DM60C16/300	609859	6
20	DM60C20/010	609836	DM60C20/030	609842	DM60C20/100	609851	DM60C20/300	609860	6
25	-	-	DM60C25/030	609843	DM60C25/100	609852	DM60C25/300	609861	6
32	-	-	DM60C32/030	609844	DM60C32/100	609853	DM60C32/300	609862	6
40	-	-	DM60C40/030	609845	DM60C40/100	609854	DM60C40/300	609863	6

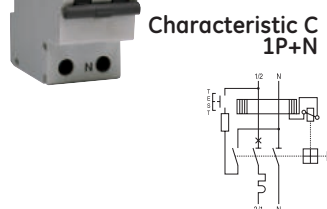
Series DM60 - Type A



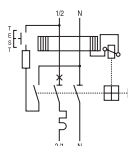
Characteristic B
1P+N



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



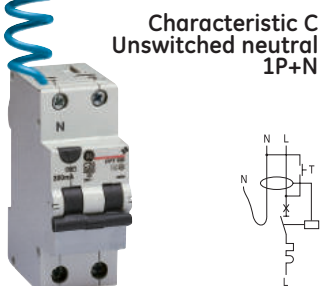
Characteristic C
1P+N



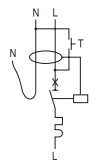
In (A)	10 mA		30 mA		100 mA		300 mA		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
4	DMA60C04/010	609769	DMA60C04/030	609775	DMA60C04/100	609784	DMA60C04/300	609793	6
6	DMA60C06/010	609770	DMA60C06/030	609776	DMA60C06/100	609785	DMA60C06/300	609794	6
10	DMA60C10/010	609771	DMA60C10/030	609777	DMA60C10/100	609786	DMA60C10/300	609795	6
13	DMA60C13/010	609772	DMA60C13/030	609778	DMA60C13/100	609787	DMA60C13/300	609796	6
16	DMA60C16/010	609773	DMA60C16/030	609779	DMA60C16/100	609788	DMA60C16/300	609797	6
20	DMA60C20/010	609774	DMA60C20/030	609780	DMA60C20/100	609789	DMA60C20/300	609798	6
25	-	-	DMA60C25/030	609781	DMA60C25/100	609790	DMA60C25/300	609799	6
32	-	-	DMA60C32/030	609782	DMA60C32/100	609791	DMA60C32/300	609800	6
40	-	-	DMA60C40/030	609783	DMA60C40/100	609792	DMA60C40/300	609801	6

Series DMT60 - Type AC

(1)



Characteristic C
Unswitched neutral
1P+N



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

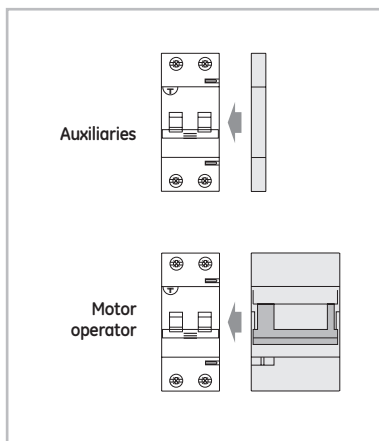
Applications



Approval / Marking



Add-on devices



- Auxiliary contacts ● pg C.4
- Motor operator ● pg C.7
- Shunt trip ● pg C.8
- Undervoltage release ● pg C.8
- Panel board switch ● pg C.8

- Busbars ● pg E.2
- More technical data ● pg B.18
- Dimensions ● pg B.51

Performance

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

Short-circuit capacity

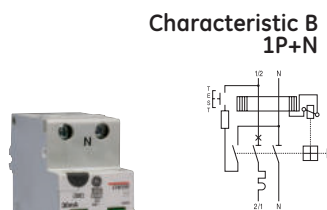
Acc. to EN/IEC 61009-1 and EN/IEC 60898-1

Residual making and breaking capacity	$I_{\Delta m} = 6000A$
Short-circuit capacity	$I_{cn} = 10000A$ at 240V
Selectivity class	3

Acc. to EN/IEC 60947-2

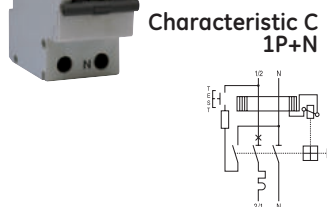
Short-circuit capacity	$I_{cu} = 15000A$ at 240V
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Series DM100 - Type AC



Characteristic B
1P+N

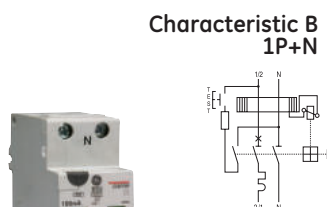
In (A)	10 mA		30 mA		100 mA		300 mA		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
6	DM100B06/010	609926	DM100B06/030	609931	DM100B06/100	609939	DM100B06/300	609947	6
10	DM100B10/010	609927	DM100B10/030	609932	DM100B10/100	609940	DM100B10/300	609948	6
13	DM100B13/010	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

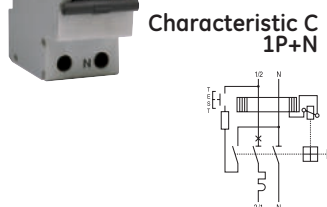
In (A)	10 mA		30 mA		100 mA		300 mA		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
4	DM100C04/010	609955	DM100C04/030	609961	DM100C04/100	609970	DM100C04/300	609979	6
6	DM100C06/010	609956	DM100C06/030	609962	DM100C06/100	609971	DM100C06/300	609980	6
10	DM100C10/010	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

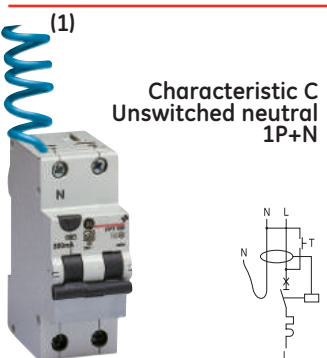
In (A)	10 mA		30 mA		100 mA		300 mA		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
6	DMA100B06/010	609864	DMA100B06/030	609869	DMA100B06/100	609877	DMA100B06/300	609885	6
10	DMA100B10/010	609865	DMA100B10/030	609870	DMA100B10/100	609878	DMA100B10/300	609886	6
13	DMA100B13/010	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

In (A)	10 mA		30 mA		100 mA		300 mA		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
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 DMT100 - Type AC



Characteristic C
Unswitched neutral
1P+N

In (A)	30 mA		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



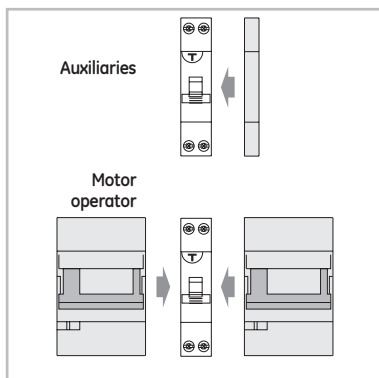
Applications



Approval / Marking



Add-on devices



(1) 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.

- Auxiliary contacts ● pg C.4
- Motor operator ● pg C.7
- Shunt trip ● pg C.8
- Undervoltage release ● pg C.8
- Panel board switch ● pg C.8

- Busbars ● pg E.2
- More technical data ● pg B.18
- Dimensions ● pg B.51

Compact Electronic Residual Current Circuit Breaker

Series DMCE60, DICE60

EN/IEC 61009-1	6000
	3
Type AC	
Type A	

With Overcurrent Protection functionality dependent on Line Voltage

Performance

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

Short-circuit capacity

DME60 according to EN/IEC 61009-1

Residual making and breaking capacity	$I_{\Delta m} = 3000A$
Short-circuit capacity	$I_{cn} = 6000A$ at 240V
Selectivity class	3

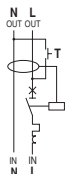
Terminal capacity:

- (1) Rigid copper wires 1-25mm², flexible copper wires 1.5 - 16mm²
- (2) Flying lead entering the device from top side. Cross section of 4mm² up to 25A, 6mm² up to 40A, 1200mm length.
- (3) Rigid copper wires 1-35mm², Flexible copper wires 1.5 - 25mm²
- (4) Unswitched neutral on the left.

Series DMCE60 - Type AC - Domestic Applications



Switched neutral
1P+N

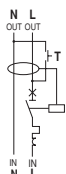


In (A)	B		C		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
6	DMCE60B06/030	694014	DMCE60C06/030	694000	1
10	DMCE60B10/030	694015	DMCE60C10/030	694001	1
16	DMCE60B16/030	694016	DMCE60C16/030	694002	1
20	DMCE60B20/030	694017	DMCE60C20/030	694003	1
25	DMCE60B25/030	694018	DMCE60C25/030	694004	1
32	DMCE60B32/030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

Series DMCEA60 - Type A - Domestic Applications



Switched neutral
1P+N

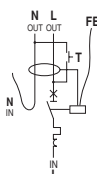


In (A)	B		C		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
6	DMCEA60B06/030	694021	DMCEA60C06/030	694007	1
10	DMCEA60B10/030	694022	DMCEA60C10/030	694008	1
16	DMCEA60B16/030	694023	DMCEA60C16/030	694009	1
20	DMCEA60B20/030	694024	DMCEA60C20/030	694010	1
25	DMCEA60B25/030	694025	DMCEA60C25/030	694011	1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

Series DICE60 - Type AC - Industrial Applications



Unswitched neutral
1P+N

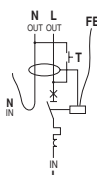


In (A)	B		C		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
6	DICE60B06/030	694042	DICE60C06/030	694028	1
10	DICE60B10/030	694043	DICE60C10/030	694029	1
16	DICE60B16/030	694044	DICE60C16/030	694030	1
20	DICE60B20/030	694045	DICE60C20/030	694031	1
25	DICE60B25/030	694046	DICE60C25/030	694032	1
32	DICE60B32/030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

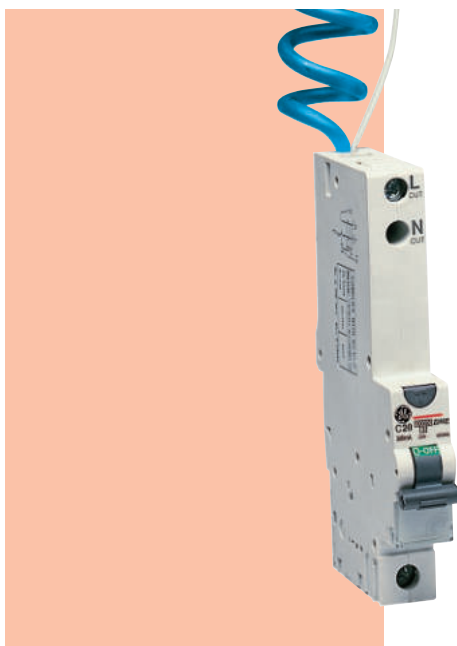
Series DICEA60 - Type A - Industrial Applications



Unswitched neutral
1P+N



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



eRCCBs - Residual Current Circuit Breakers with Overcurrent Protection NEUTRAL BLUE

Series DME

EN/IEC 61009-1	6000
	3
	10000
	3
Type AC	
Type A	

Applications



For use in consumer units and distribution boards.

Marking



Performance

Thermal setting I_n	(A) 6, 10, 16, 20, 25, 32, 40
Residual current $I_{\Delta n}$	(mA) 10, 30, 100
Tripping characteristic	B, C, D
Rated voltage AC U_n	(V) 265
Minimum operating voltage U_{8min}	(V) 195
Mechanical/electrical endurance	20000/10000
Tropicalisation acc. to EN/IEC 60068-2-28/2-30	95%RH at 55°C
Terminal capacity flexible/rigid cable	(mm ²) Bottom terminal: 16-25
Poles	1+N (1 module)
Nuisance tripping resistance	250A 8/20μs
Ambient temperature	(°C) -5 up to 55
Weight	(g) 235

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

Short-circuit capacity

DME60 acc. to EN/IEC 61009-1

Residual making en breaking capacity	$I_{\Delta m} = 6000A$
Short-circuit capacity	$I_{cn} = 6000A$ at 240V
Selectivity class	3

DME100 acc. to EN/IEC 61009-1

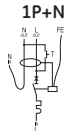
Residual making en breaking capacity	$I_{\Delta m} = 10000A$
Short-circuit capacity	$I_{cn} = 10000A$ at 240V
Selectivity class	3

Busbars ● pg E.2
More technical data ● pg B.18
Dimensions ● pg B.51

Series DME60 - Type AC - Characteristic C



Unswitched neutral

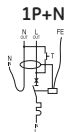


In (A)			30mA		100mA		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
6	-	-	DME60C06/030	605060	DME60C06/100	605067	1
10	-	-	DME60C10/030	605061	DME60C10/100	605068	1
16	-	-	DME60C16/030	605062	DME60C16/100	605069	1
20	-	-	DME60C20/030	605063	DME60C20/100	605070	1
25	-	-	DME60C25/030	605064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

Series DME100 - Type AC - Characteristic B



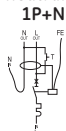
Unswitched neutral



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

Series DME100 - Type AC - Characteristic C

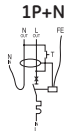
Unswitched neutral



In (A)							Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
6	DME100C06/010	605044	DME100C06/030	605051	DME100C06/100	605240	1
10	DME100C10/010	605045	DME100C10/030	605052	DME100C10/100	605241	1
16	DME100C16/010	605046	DME100C16/030	605053	DME100C16/100	605242	1
20	DME100C20/010	605047	DME100C20/030	605054	DME100C20/100	605243	1
25	DME100C25/010	605048	DME100C25/030	605055	DME100C25/100	605244	1
32	DME100C32/010	605049	DME100C32/030	605056	DME100C32/100	605245	1
40	DME100C40/010	605050	DME100C40/030	605057	DME100C40/100	605246	1

Series DME100 - Type AC - Characteristic D

Unswitched neutral

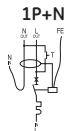


In (A)							Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
6	-	-	-	-	DME100D06/100	606519	1
10	-	-	-	-	DME100D10/100	606520	1
16	-	-	-	-	DME100D16/100	606521	1
20	-	-	-	-	DME100D20/100	606522	1
25	-	-	-	-	DME100D25/100	606523	1
32	-	-	-	-	DME100D32/100	606524	1
40	-	-	-	-	DME100D40/100	606525	1

Series DMEA100 - Type A - Characteristic B



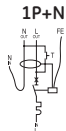
Unswitched neutral



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

Series DMEA100 - Type A - Characteristic C

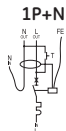
Unswitched neutral



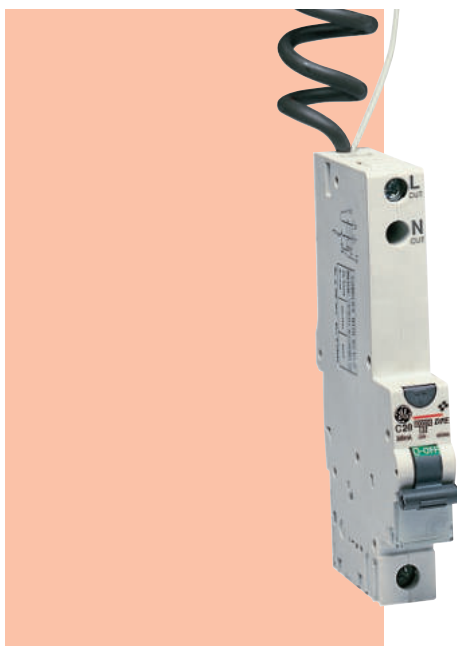
In (A)							Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
6	DMEA100C06/010	605164	DMEA100C06/030	605171	DMEA100C06/100	606526	1
10	DMEA100C10/010	605165	DMEA100C10/030	605172	DMEA100C10/100	606527	1
16	DMEA100C16/010	605166	DMEA100C16/030	605173	DMEA100C16/100	606528	1
20	DMEA100C20/010	605167	DMEA100C20/030	605174	DMEA100C20/100	606529	1
25	DMEA100C25/010	605168	DMEA100C25/030	605175	DMEA100C25/100	606530	1
32	DMEA100C32/010	605169	DMEA100C32/030	605176	DMEA100C32/100	606531	1
40	DMEA100C40/010	605170	DMEA100C40/030	605177	DMEA100C40/100	606532	1

Series DMEA100 - Type A - Characteristic D

Unswitched neutral



In (A)							Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
6	DMEA100D06/010	606505	DMEA100D06/030	606512	DMEA100D06/100	606519	1
10	DMEA100D10/010	606506	DMEA100D10/030	606513	DMEA100D10/100	606520	1
16	DMEA100D16/010	606507	DMEA100D16/030	606514	DMEA100D16/100	606521	1
20	DMEA100D20/010	606508	DMEA100D20/030	606515	DMEA100D20/100	606522	1
25	DMEA100D25/010	606509	DMEA100D25/030	606516	DMEA100D25/100	606523	1
32	DMEA100D32/010	606510	DMEA100D32/030	606517	DMEA100D32/100	606524	1
40	DMEA100D40/010	606511	DMEA100D40/030	606518	DMEA100D40/100	606525	1



eRCBOs - Residual Current Circuit Breakers with Overcurrent Protection NEUTRAL BLACK

Series DMET

EN/IEC 61009-1	6000
	3
	10000
	3
Type AC	
Type A	

Applications



For use in consumer units and distribution boards.

Marking



Performance

Thermal setting I_n	(A) 6, 10, 16, 20, 25, 32, 40
Residual current $I_{\Delta n}$	(mA) 10, 30, 100
Tripping characteristic	B, C, D
Rated voltage AC U_n	(V) 265
Minimum operating voltage U_{8min}	(V) 195
Mechanical/electrical endurance	20000/10000
Tropicalisation acc. to EN/IEC 60068-2-28/2-30	95%RH at 55°C
Terminal capacity flexible/rigid cable	(mm ²) Bottom terminal: 16-25
Poles	1+N (1 module)
Nuisance tripping resistance	250A 8/20μs
Ambient temperature	(°C) -5 up to 55
Weight	(g) 235

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

Short-circuit capacity

DMET60 acc. to EN/IEC 61009-1

Residual making en breaking capacity	$I_{\Delta m} = 6000A$
Short-circuit capacity	$I_{cn} = 6000A$ at 240V
Selectivity class	3

DMET100 acc. to EN/IEC 61009-1

Residual making en breaking capacity	$I_{\Delta m} = 10000A$
Short-circuit capacity	$I_{cn} = 10000A$ at 240V
Selectivity class	3

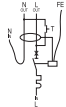
Busbars ● pg E.2
More technical data ● pg B.18
Dimensions ● pg B.51

Series DMET60 - Type AC - Characteristic C



Unswitched neutral

1P+N

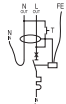


In (A)	10mA		30mA		100mA		300mA		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
10	-	-	DMET60C10/030	607427	-	-	-	-	1
16	-	-	DMET60C16/030	607428	-	-	-	-	1
20	-	-	DMET60C20/030	607429	-	-	-	-	1
25	-	-	DMET60C25/030	607430	-	-	-	-	1
32	-	-	DMET60C32/030	607431	-	-	-	-	1

Series DMET60 - Type A - Characteristic C

Unswitched neutral

1P+N



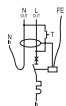
10	-	-	DMEAT60C10/030	608135	-	-	-	-	1
16	-	-	DMEAT60C16/030	608136	-	-	-	-	1
20	-	-	DMEAT60C20/030	608137	-	-	-	-	1
25	-	-	DMEAT60C25/030	608138	-	-	-	-	1
32	-	-	DMEAT60C32/030	608139	-	-	-	-	1

Series DMET100 - Type AC - Characteristic C



Unswitched neutral

1P+N

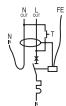


In (A)	10mA		30mA		100mA		300mA		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
6	DMET100C06/010	606567	DMET100C06/030	606574	DMET100C06/100	606560	DMEA100C06/300	606588	1
10	DMET100C10/010	606568	DMET100C10/030	606575	DMET100C10/100	606561	DMEA100C10/300	606589	1
16	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

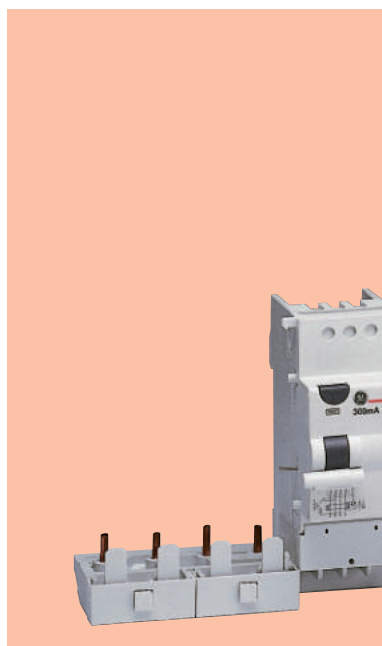
Series DMET100 - Type A - Characteristic C

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



Add-on Residual Current Devices

Diff-o-Click

EN/IEC 61009-1

Type AC



Type A



Type S



Type Ai on demand

Type ASi on demand

Applications



Approval / Marking



Add-on devices

Integrated auxiliary contact on demand.

Performance

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

Short-circuit capacity

Depends on the associated MCB

		MCB			
		G30	G45	G60	G100
Residual making and breaking capacity	$I_{\Delta m}$	3000	4500	6000	7500
Short-circuit capacity	I_{cn}	3000	4500	6000	10000

More technical data ● pg B.18
Dimensions ● pg B.50

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

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

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

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

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

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

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

Diff-o-Click

A

B

C

D

E

F

G

X



Applications

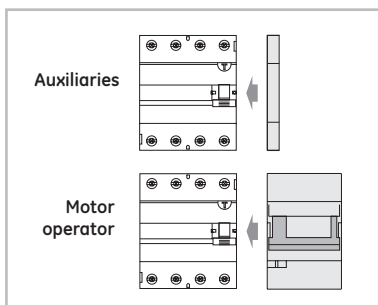


Approval



with UL approval

Add-on devices



Dimensions ● pg B.49

Residual Current Circuit Breakers

Series FPAUL

Recognized UL1053

EN/IEC 61008-1

Type A



Performances UL

Maximum voltage AC	(V) 240
Fault current withstand	(kA) 10
UL file	E248309

Performances EN/IEC

Thermal setting In	(A) 16, 25, 40, 63
Residual current $I_{\Delta n}$	(mA) 10, 30, 100, 300, 500
Rated maximum voltage AC U_n	(V) 2P: 240 4P: 240/415
Minimum operating voltage U_{Bmin}	(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
Terminal capacity flexible/rigid cable	(mm ²) 35-50
Poles	2, 4
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

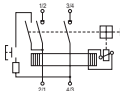
Acc. to EN/IEC 61008-1

Making and breaking capacity	$I_m = 500A$
Residual making and breaking capacity	$I_{\Delta m} \geq 500A$ from 16 up to 40A $I_{\Delta m} = 10I_n$ from 63 up to 100A
Short-circuit capacity	$I_{nc} = 10000A$ at 230/400V fuse 80A gG

Series FPAUL - Type A



2P

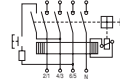


In (A)	10*/30mA			100mA		300mA		500mA		Pack.
	Cat. No.	Ref. No.		Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
16	FPAUL 216/010*	608377		-	-	-	-	-	-	
25	FPAUL 225/030	608378	FPAUL 225/100	608379	FPAUL 225/300	608380	FPAUL 225/500	608381		6
40	FPAUL 240/030	608382	FPAUL 240/100	608383	FPAUL 240/300	608384	FPAUL 240/500	608385		6
63	FPAUL 263/030	608386	FPAUL 263/100	608387	FPAUL 263/300	608388	FPAUL 263/500	608401		6

Series FPAUL - Type A



4P



In (A)	30mA		100mA		300mA		500mA		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
25	FPAUL 425/030	608389	FPAUL 425/100	608390	FPAUL 425/300	608391	FPAUL 425/500	608392	3
40	FPAUL 440/030	608393	FPAUL 440/100	608394	FPAUL 440/300	608395	FPAUL 440/500	608396	3
63	FPAUL 463/030	608397	FPAUL 463/100	608398	FPAUL 463/300	608399	FPAUL 463/500	608400	3



Residual Current Circuit Breakers with Overcurrent Protection

Series DPA100

Recognized UL1053

EN 61009-1

10000

3

Type A



Performances UL

Rated/Maximum voltage AC	(V) 240 or 277
Fault current withstand	5kA (277V), 10kA (240V)
UL file	E248309

Performances EN/IEC

Thermal setting I_n	(A) 10 to 32
Residual current $I_{\Delta n}$	(mA) 10, 30, 100, 300
Tripping characteristic	B-C
Rated voltage AC U_n	(V) 240
Minimum operating voltage U_{8min}	(V) 195
Mechanical/electrical endurance	20000/10000
Tropicalisation acc. to	
EN/IEC 60068-2-28/2-30 and DIN 40046	95%RH at 55°C
Terminal capacity flexible/rigid cable	(mm ²) Top terminal: 16-25 Bottom terminal: 25-35
Poles	1+N
Nuisance tripping resistance	250A 8/20μs; 200A 0.5μs - 100kHz
Ambient temperature	(°C) -25 up to 40
Weight	(g) 250

Short-circuit capacity

Acc. to EN/IEC 61009-1	
Residual making and breaking capacity	$I_{\Delta m} = 6000A$
Short-circuit capacity	$I_{cn} = 5000/10000A$ at 230V
Selectivity class	3
Acc. to EN/IEC 60947-2	
Short-circuit capacity	$I_{cu} = 15000A$ at 230V

Applications

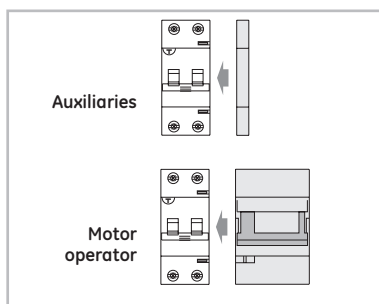


Approvals



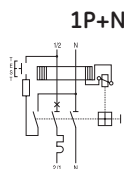
with UL approval

Add-on devices



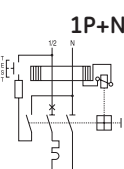
Dimensions ● pg B.50

Series DPA100 - ¹⁰⁰⁰⁰/₃ Type A - characteristic B



In (A)	10 mA		30 mA		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
10	DPA100B10/010	608706	DPA100B10/030	608712	6
13	DPA100B13/010	608707	DPA100B13/030	608713	6
16	DPA100B16/010	608708	DPA100B16/030	608714	6
20	DPA100B20/010	608709	DPA100B20/030	608715	6
25	-	-	DPA100B25/030	608716	6
32	-	-	DPA100B32/030	608717	6

Series DPA100 - ¹⁰⁰⁰⁰/₃ Type A - characteristic C



In (A)	10 mA		30 mA		Pack.
	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
10	DPA100C10/010	608757	DPA100C10/030	608763	6
13	DPA100C13/010	608758	DPA100C13/030	608764	6
16	DPA100C16/010	608759	DPA100C16/030	608765	6
20	DPA100C20/010	608760	DPA100C20/030	608766	6
25	-	-	DPA100C25/030	608767	6
32	-	-	DPA100C32/030	608768	6





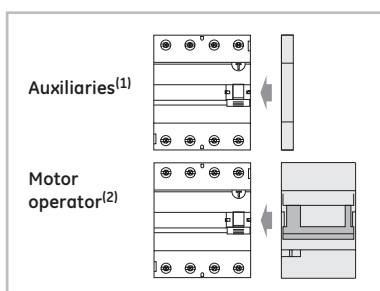
Applications



Approvals / Marking



Add-on devices



Residual Current Circuit Breakers

Series FPP

Screwless connection

EN/IEC 61008-1

Type A

Type S

Performances

Thermal setting I_n	(A) 25, 40, 63
Residual current ΔI_n	(mA) 30, 100, 300
Rated voltage AC U_n	(V) 2P: 240 4P: 415
Minimum operating voltage U_{Bmin}	(V) 2P: 117 4P: 205
Mechanical/electrical endurance	20000/10000
Tropicalisation acc.to	EN/IEC 60068-2-28/2-30 and DIN 40046
Terminal capacity flexible/rigid cable	(mm ²) 35-50
Poles	2, 4
Nuisance tripping resistance	Type A: 250A 8/20 μ s Type S: 3000A 8/20 μ s
Ambient temperature	(°C) -25 ... +50
Weight	(g) 2P: 248 4P: 364

Short-circuit capacity

Acc. EN/IEC 61008-1	
Making and breaking capacity	$I_m = 500A$
Residual making and breaking capacity	$\Delta I_m \geq 500A$ from 16 up to 40A $\Delta I_m = 10I_n$ from 63 up to 100A
Short-circuit capacity	$I_{nc} = 10000A$ at 240/415V fuse 80A gG

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

Series FPP - Type A



Plug-in

	In (A)	30 mA		100 mA		300 mA		Pack.
		Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	
2P	25	FPPA225/030	678359	FPPA225/100	678365	FPPA225/300	678371	6
	40	FPPA240/030	678360	FPPA240/100	678366	FPPA240/300	678372	6
	63	FPPA263/030	678361	FPPA263/100	678367	FPPA263/300	678373	6
4P	25	FPPA425/030	678362	FPPA425/100	678368	FPPA425/300	678374	3
	40	FPPA440/030	678363	FPPA440/100	678369	FPPA440/300	678375	3
	63	FPPA463/030	678364	FPPA463/100	678370	FPPA463/300	678376	3



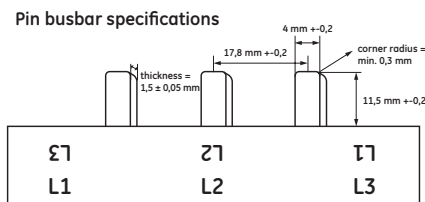
Series FPP - Type S

2P	40					FPPS240/300	678377	6
	63					FPPS263/300	678378	6
4P	40					FPPS440/300	678379	3
	63					FPPS463/300	678380	3

Terminal capacity

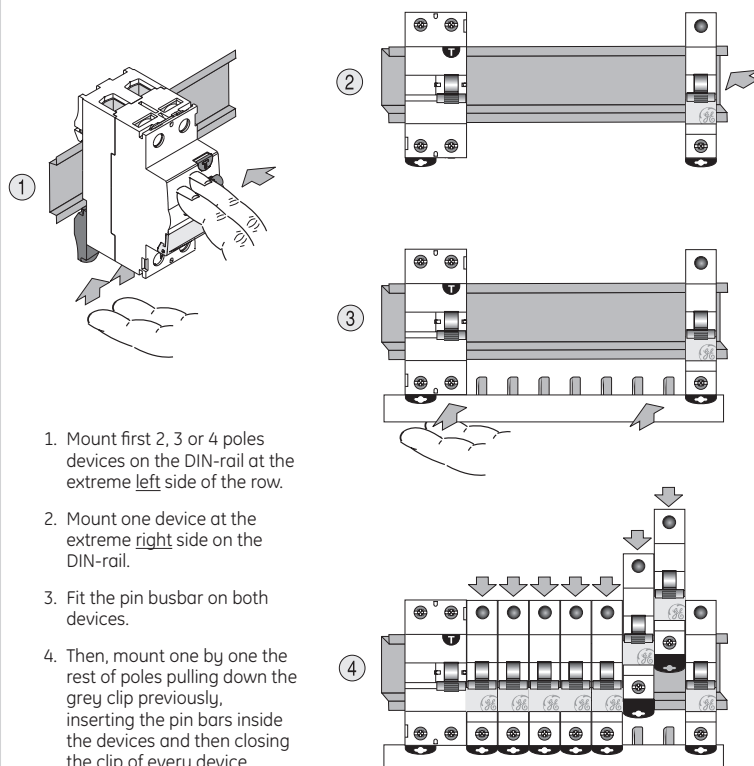
Top terminals			
		Ratings 25A, 40A and 63A: Cage terminals	
Rigid cable (min/max)	mm ²	1.5/50	
Flexible cable (min/max)	mm ²	1.5/35	
Recommended torque	Nm	2.5	
Maximum torque	Nm	5	

Bottom terminals			
		Ratings 25A, 40A and 63A: Cage terminals ⁽¹⁾	Ratings 25A, 40A and 63A: Flat plug-in terminals ⁽²⁾
Rigid cable (min/max)	mm ²	1/25	To insert GE pin busbars, or other brands under following dimensions: Length = 11.5 ± 0.2 mm Width = 4 ± 0.2 mm Thickness = 1.5 ± 0.05 mm Corners min. radius = 0.3 mm
Flexible cable (min/max)	mm ²	0.75/16	
Recommended torque	Nm	2.5	
Maximum torque	Nm	4.5	

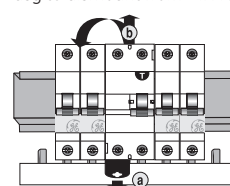


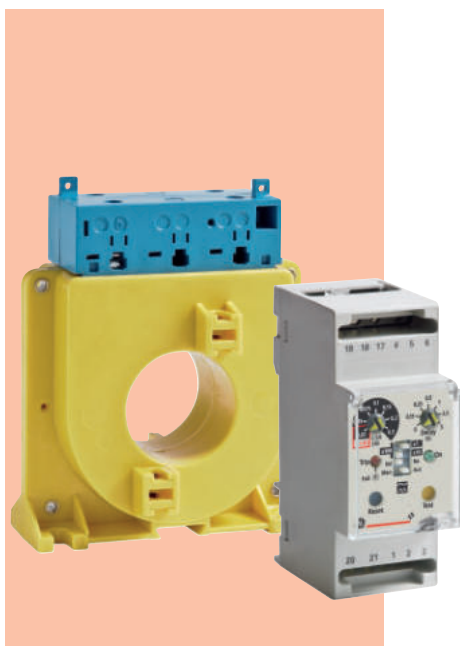
- (1) Bottom terminals provide a cage terminal to connect also cables to feed other rows /devices limited to rated current of the device.
 (2) Plug-in window terminals are only foreseen for pin busbars providing the incoming to several devices from the bottom side.
 Not intended for any other conductor with or without cable lugs or cable connectors.

How to mount the busbar into devices



Easy to dismount from DIN rail





Residential earth leakage relay

Series GRDT+TOP / TOR

Applications



Features

This residential residual current device in only 2 modules works at $I_{dn}=30\text{mA}$ instantaneous.

Till 19 ranges selectable set point $30\text{mA}...30\text{A}$ 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.

Standards

EN 60947-2

Function

Detect earth leakage current through external toroid and open the line protecting people.

Marking



Performance GRDT+TOP

	GRDT+TOP	TOR
Input		
Connection	Low voltage lines, with TOR toroids	-
Waveform earth leakage current	A type	-
Rated frequency	50Hz	-
Working frequency	47..63Hz	-
Setup		
Sensibility set point	Selectable by 7-position potentiometer, 3 ranges $\times 1$, $\times 10$, $\times 100$	-
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	-
Signaling		
Power On	Green LED ON	-
Alarm intervention	Red LED "TRIP" + relay switching	-
Ring toroid-realy connection failure	Red LED "TRIP" blinking + relay switching	-
Control		
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 really and ring core	-
Terminal capacity		
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	-
Output		
Relay	1 SPDT relay	-
Contact range	5A 250V AC	-
Auxiliary supply		
Rated value U_{aux} :	230V AC	-
Rated frequency:	50 Hz	-
Tolerance	47-63Hz	-
Rated burden	<2.5W	-
Environmental conditions		
Operating temperature	-5...50°C	-
Number of modules	2	-

* For complete technical performances, please ask for technical datasheet of each device

Series GRDT+TOP



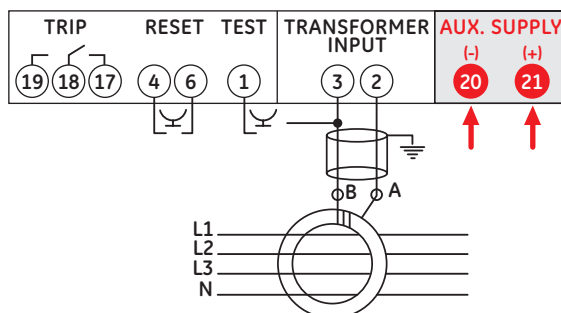
Idelta n	Intervention time	Modules	Cat. No.	Ref. No.	Pack
30mA, 30A	0-5 seconds	2	GRDT+TOP	665394	1

Series TOR

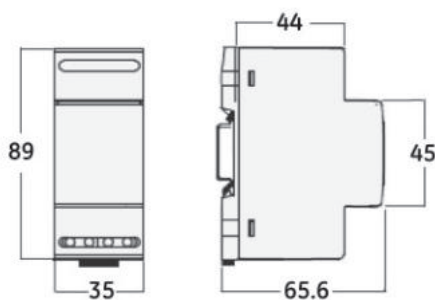


	Diameter	Cat. No.	Ref. No.	Pack
Toroids	28 mm	TOR+28	665297	1
	35 mm	TOR+35	665298	1
	60 mm	TOR+60	665299	1
	110 mm	TOR+110	665917	1

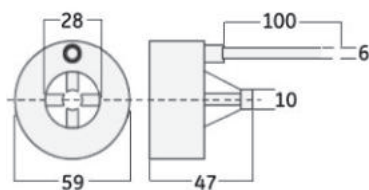
Electric diagram



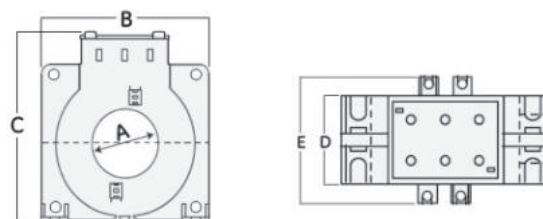
Dimensions



TOR+28



TOR+35, TOR+60, TOR+110



A	B	C	D	E
35	92	113	36	56
60	105	138	36	56
110	165	198	36	56

Series GRDT+TOP / TOR

A

B

C

D

E

F

G

X

TeleREC 2

Double clips to the DIN-rail

Strong fixation to the DIN-rail throughout
Two clips for 2P and 4P version.

Interlock

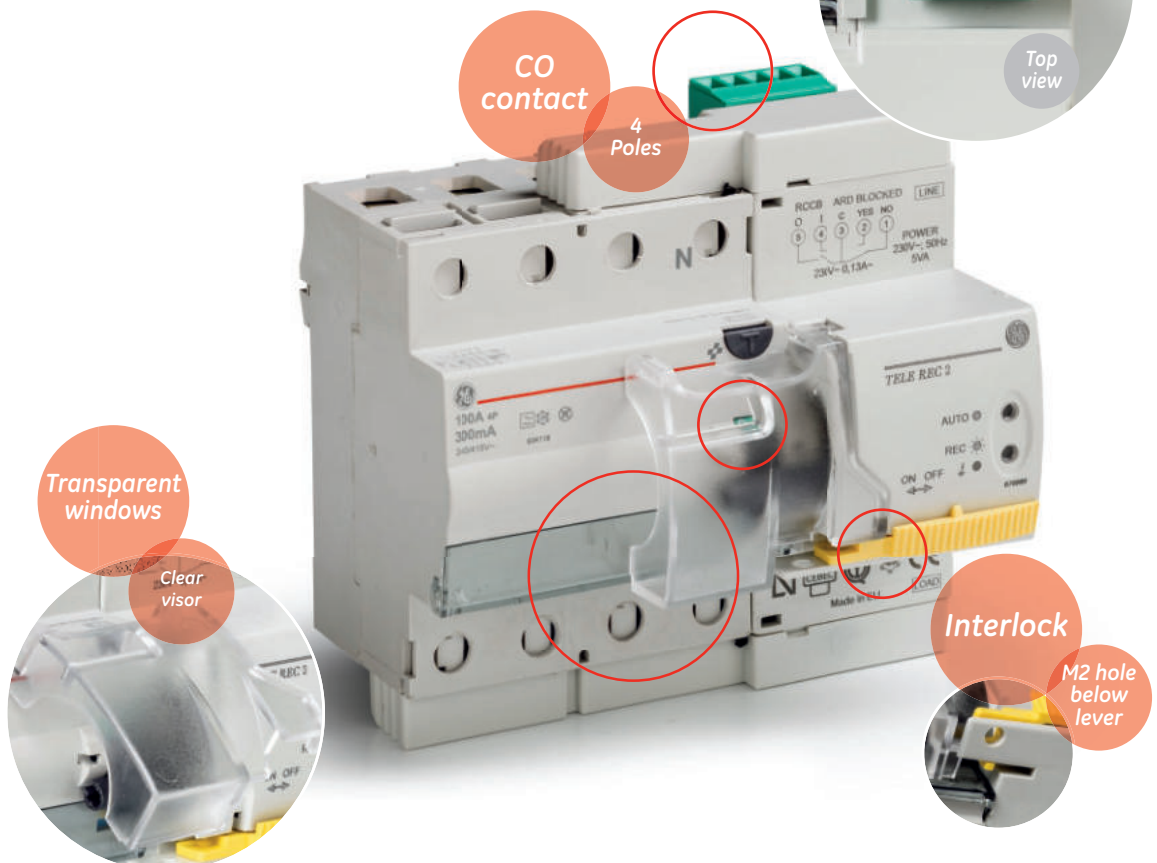
M2 hole to attach a seal or
packlock to block access to
the RCCB or RCBO in case
of works downstream.

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.



New

TeleREC Top

Monitorised control

Complete screen, buttons and LEDs to program and visualize the state of the reclosing system.

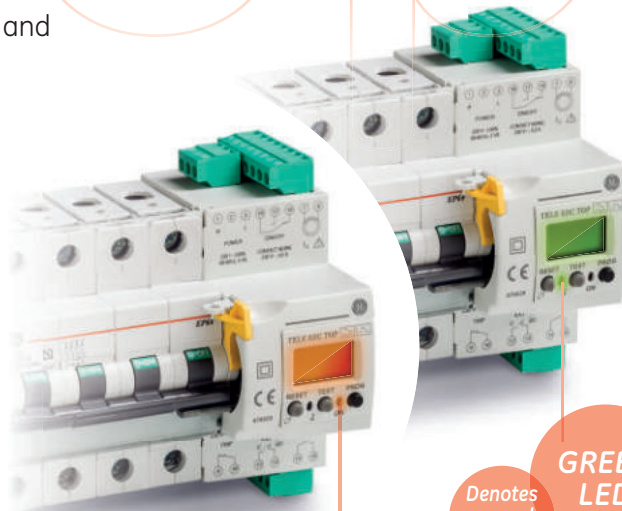
Remote indicators

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.



Denotes protection trip

RED LED

Denotes normal operation

GREEN LED

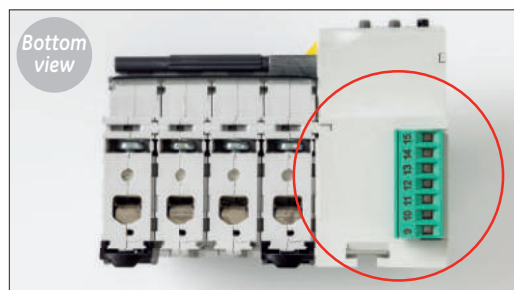
Remote indicators

1

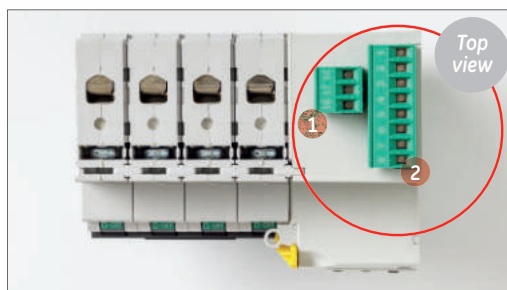
Status outputs for the main switch.
When the switch is closed, contact 16-17 is closed.
When switch is open, contact 16-18 is closed.

2

The auxiliary power supply is connected between terminals 1-3.
The earth leakage transformer is connected between terminals 7-8.



Bottom view



Top view

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.

Advantages and benefits

A

B

C

D

E

F

G

X



Reclosing system for Residual Current Circuit Breakers

Series TeleREC 2

EN 50557:2012

Applications



Approvals / Marking



Performance

Thermal setting In	(A) 25-100
Residual current	(mA) 30, 300
Rated voltage AC Un	(V) 2P: 230 4P: 230/400
Minimum operating voltage Ub min	(V) 2P: 127 4P: 190
Mechanical/electrical endurance	20000/10000
Tropicalisation acc. to EN/IEC 60068-2	95%RH at 55°C
Terminal capacity flexible/rigid cable	(mm²) 25/35
Poles	2, 4
Nuisance tripping resistance	(A) Type A: 250 Type Ai, S: 3000
Ambient temperature	(°C) -25 up to +55
Weight	(g) 2P: 416 4P: 598

Short-circuit capacity

Acc. to EN/IEC 61008-1

Making and breaking capacity	Im = 500A
Residual making and breaking capacity	IΔm ≥ 500A from 16 up to 40A IΔm = 630A for 63A IΔm = 800A from 80A to 100A
Short-circuit capacity	Isc = 10000A at 230/400V fuse 80A gG

Reclosing system by insulation, M mode

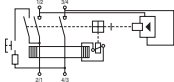
RECLOSURES					
1		2		3	
Delay	Restart	Delay	Restart	Delay	Restart
< 3 sec.	10 sec.	30 sec.	30 sec.	120 sec.	60 sec.

The leakage current will be supervised by measuring the resistance downstream of the tripped RCCB.

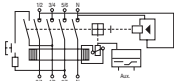
New

Dimensions ● pg B.49

Series TeleREC 2 - RCCBs - Type A



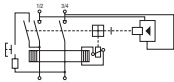
2P
4.5M



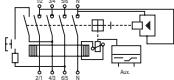
4P
6.5M

In (A)	30 mA		300 mA		Pack
	Cat. no.	Ref. no.	Cat. no.	Ref. no.	
25	REC2 A 225/30	676986	REC2 A 225/300	676994	1
40	REC2 A 240/30	676987	REC2 A 240/300	676995	1
63	REC2 A 263/30	676988	REC2 A 263/300	676996	1
80	REC2 A 280/30	676989	REC2 A 280/300	676997	1
100	REC2 A 2100/30	676990	REC2 A 2100/300	676998	1

Series TeleREC 2 - RCCBs - Type Ai



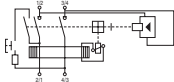
2P
4.5M



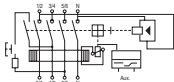
4P
6.5M

In (A)	30 mA		300 mA		Pack
	Cat. no.	Ref. no.	Cat. no.	Ref. no.	
25	REC2 Ai 225/30	676991	-	-	1
40	REC2 Ai 240/30	676992	-	-	1
63	REC2 Ai 263/30	676993	-	-	1
80	-	-	-	-	-
100	-	-	-	-	-

Series TeleREC 2 - RCCBs - Type S

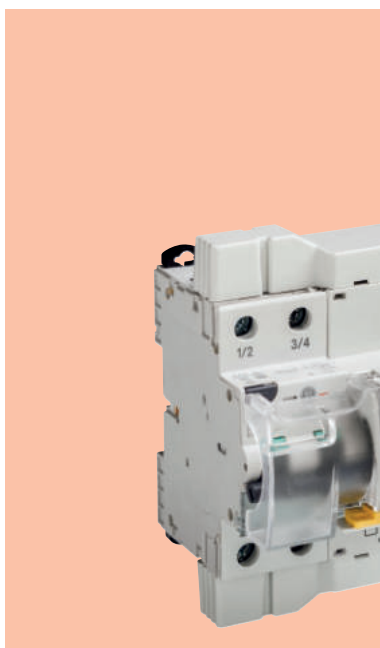


2P
4.5M



4P
6.5M

In (A)	30 mA		300 mA		Pack
	Cat. no.	Ref. no.	Cat. no.	Ref. no.	
25	-	-	-	-	-
40	-	-	REC2 S 240/300	676999	1
63	-	-	REC2 S 263/300	677039	1
80	-	-	REC2 S 280/300	677040	1
100	-	-	REC2 S 2100/300	677041	1



Reclosing system for 2P RCBOs - Residual Current Circuit Breakers with Overcurrent Protection

Series TeleREC 2

EN 50557:2012

Applications



Marking



Performance

Thermal setting In	(A) 10-40
Residual current	(mA) 30, 300
Tripping characteristics	B-C
Rated voltage AC Un	(V) 230
Minimum operating voltage Ub min	(V) 150
Mechanical/electrical endurance	20000/10000
Tropicalisation acc. to EN/IEC 60068-2	95%RH at 55°C
Terminal capacity flexible/rigid cable	(mm²) 25/35
Poles	2
Nuisance tripping resistance	(A) Type A: 250 Type Ai: 3000
Ambient temperature	(°C) -25 up to +55
Weight	(g) 346

Short-circuit capacity

Acc. to EN 61009-1

Residual Making and Breaking capacity	IΔm=6000A
Energy limiting class	3
Short-circuit capacity	Icn=10000A at 230V

Reclosing system by insulation, M mode

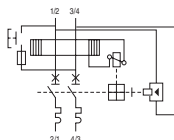
RECLOSURES					
1		2		3	
Rec time	Restart	Rec time	Restart	Rec time	Restart
3	60	240	240	960	960

The leakage current will be supervised by measuring the resistance downstream of the tripped RCBO.
The ShortCircuit current will be supervised by measuring the resistance downstream of the tripped RCBO.

Series TeleREC 2 - RCBOs - Type A - Characteristic C



2P
4.5M

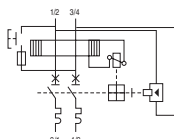


In (A)	30 mA		300 mA		Pack
	Cat. no.	Ref. no.	Cat. no.	Ref. no.	
10	REC2 DPCA100C10/030	677150	REC2 DPCA100C10/300	677156	1
16	REC2 DPCA100C16/030	677151	REC2 DPCA100C16/300	677157	1
20	REC2 DPCA100C20/030	677152	REC2 DPCA100C20/300	677158	1
25	REC2 DPCA100C25/030	677153	REC2 DPCA100C25/300	677159	1
32	REC2 DPCA100C32/030	677154	REC2 DPCA100C32/300	677160	1
40	REC2 DPCA100C40/030	677155	REC2 DPCA100C40/300	677161	1

Series TeleREC 2 - RCBOs - Type A - Characteristic B



2P
4.5M

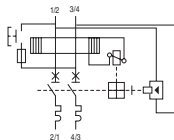


In (A)	30 mA		300 mA		Pack
	Cat. no.	Ref. no.	Cat. no.	Ref. no.	
10	REC2 DPCA100B10/030	677174	REC2 DPCA100B10/300	677180	1
16	REC2 DPCA100B16/030	677175	REC2 DPCA100B16/300	677181	1
20	REC2 DPCA100B20/030	677176	REC2 DPCA100B20/300	677182	1
25	REC2 DPCA100B25/030	677177	REC2 DPCA100B25/300	677183	1
32	REC2 DPCA100B32/030	677178	REC2 DPCA100B32/300	677184	1
40	REC2 DPCA100B40/030	677179	REC2 DPCA100B40/300	677185	1

Series TeleREC 2 - RCBOs - Type Ai - Characteristic C



2P
4.5M



In (A)	30 mA		300 mA		Pack
	Cat. no.	Ref. no.	Cat. no.	Ref. no.	
10	REC2 DPCAi100C10/030	677162	REC2 DPCAi100C10/300	677168	1
16	REC2 DPCAi100C16/030	677163	REC2 DPCAi100C16/300	677169	1
20	REC2 DPCAi100C20/030	677164	REC2 DPCAi100C20/300	677170	1
25	REC2 DPCAi100C25/030	677165	REC2 DPCAi100C25/300	677171	1
32	REC2 DPCAi100C32/030	677166	REC2 DPCAi100C32/300	677172	1
40	REC2 DPCAi100C40/030	677167	REC2 DPCAi100C40/300	677173	1

Available second half of 2014.

Series TeleREC 2

A

B

C

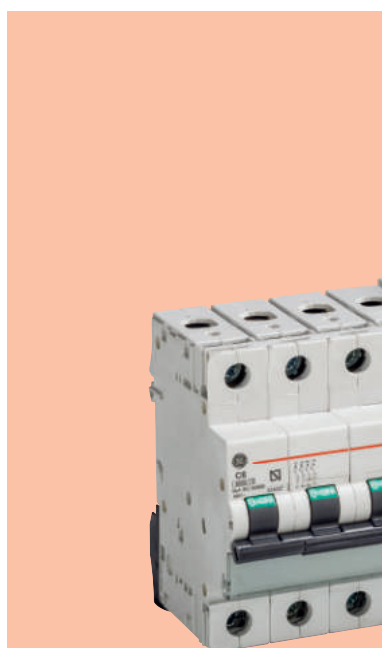
D

E

F

G

X



Reclosing system with earth leakage protection for Miniature Circuit Breakers

Series TeleREC Top - MCBs

Applications



Marking



Performance

Thermal setting In	(A) 6-63
Residual current	adjustable 30mA ... 1A
Tripping characteristics	B-C
Rated voltage AC Un	(V) 230/400
Minimum operating voltage Ub min	(V) 12
Selectivity class	3
Mechanical/electrical endurance	20000/10000
Tropicalisation acc. to EN/IEC 60068-2	95%RH at 55°C
Terminal capacity flexible/rigid cable	(mm²) 25/35
Poles	2, 4
Nuisance tripping resistance	(A) Type A: 378
Ambient temperature	(°C) -10 up to +50
Weight	(g) 2P: 516 4P: 769

Short-circuit capacity

AC acc. to EN/IEC 60898-1

Poles	V	Icn/Ics (kA)
2-4	230/400	10

AC acc. to EN/IEC 60947-2

Poles	V	Icu (kA)(1)
2	127	40
	230	30
2	415	15
4	240	30
	415	15

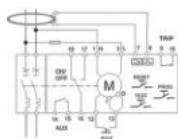
Reclosing system

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.

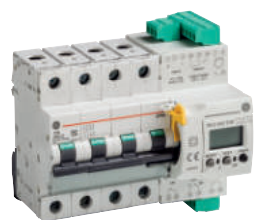
Series TeleREC Top - MCBs - Characteristic C



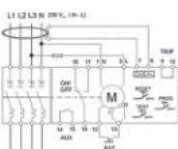
2P
4.5M



In (A)	Cat. no.	Ref. no.	Pack
6	-	-	-
10	REC TOP EP102 C10	677186	1
16	REC TOP EP102 C16	677187	1
20	REC TOP EP102 C20	677188	1
25	REC TOP EP102 C25	677189	1
32	REC TOP EP102 C32	677190	1
40	REC TOP EP102 C40	677191	1
50	REC TOP EP102 C50	677192	1
63	REC TOP EP102 C63	677193	1



4P
6.5M

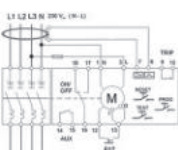


6	-	-	-
10	REC TOP EP104 C10	678028	1
16	REC TOP EP104 C16	678029	1
20	REC TOP EP104 C20	678030	1
25	REC TOP EP104 C25	678031	1
32	REC TOP EP104 C32	678032	1
40	REC TOP EP104 C40	678033	1
50	REC TOP EP104 C50	678034	1
63	REC TOP EP104 C63	678035	1

Series TeleREC Top - MCBs - Characteristic B



4P
6.5M



In (A)	Cat. no.	Ref. no.	Pack
6	-	-	-
10	REC TOP EP104 B10	677194	1
16	REC TOP EP104 B16	677195	1
20	REC TOP EP104 B20	677196	1
25	REC TOP EP104 B25	677197	1
32	REC TOP EP104 B32	677198	1
40	REC TOP EP104 B40	677199	1
50	REC TOP EP104 B50	678026	1
63	REC TOP EP104 B63	678027	1

Accessories



Ø	Cat. no.	Ref. no.	Pack
Toroidal transformer for earth leakage detection			
25mm ²	REC TOP TT 25	678036	1
35mm ²	REC TOP TT 35	678037	1

Series TeleREC Top

A

B

C

D

E

F

G

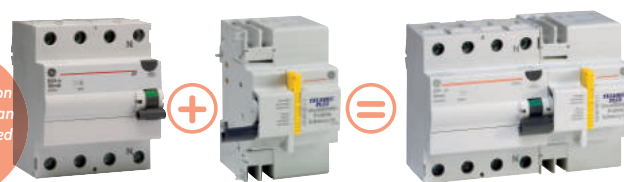
X



Reclosing system for Residual Current Circuit Breakers

Series TeleREC Plus - For industrial applications

The reconnection relay TeleREC can be easily coupled to any RCCB:



Applications



Marking



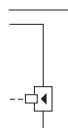
Performance

Rated voltage AC Un	(V) 220/400
Frequency	(Hz) 50/60
Reclosing numbers	6
Reclosing cycles	(sec) 10, 20, 30, 60, 120, 600
Auxiliary contact	I _{max} 2A (250V AC or 24V DC)
I _{min} (auxiliary contact)	(mA) 20
Remote control	Manual reclosing with push-button
Weight	(g) 358

Series TeleREC Plus

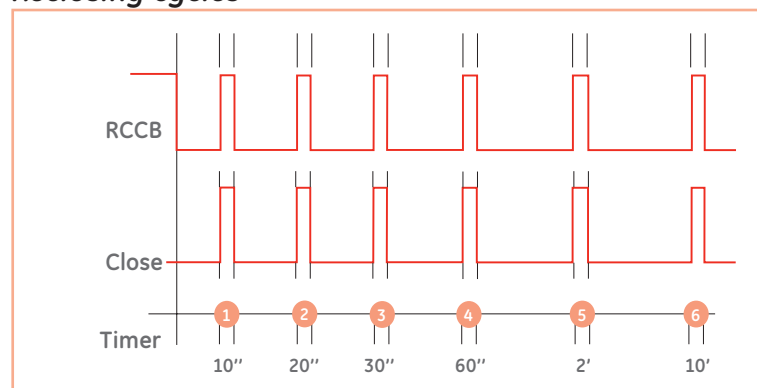


3 mod.



Cat. no.	Ref. no.	Pack
Tele REC PLUS Motor	677132	1

Reclosing cycles

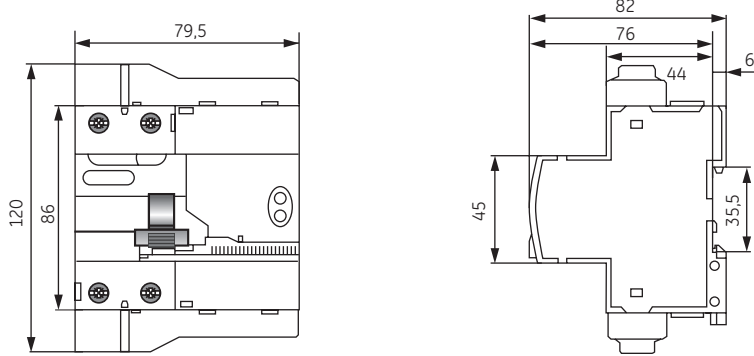


Dimensions ● pg B.49

Dimensional drawings

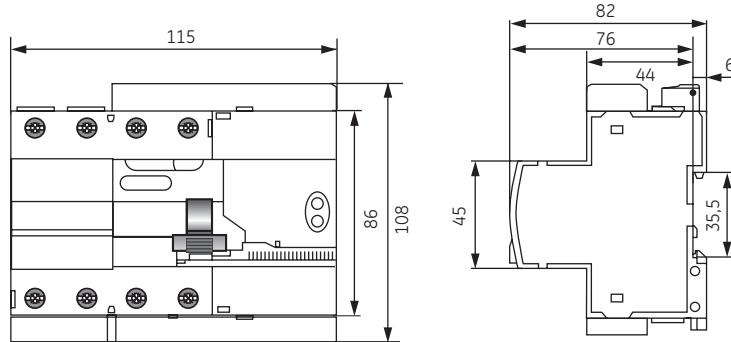
TeleREC 2 RCCB / RCBO

2P
4.5 mod.



TeleREC 2 RCBO

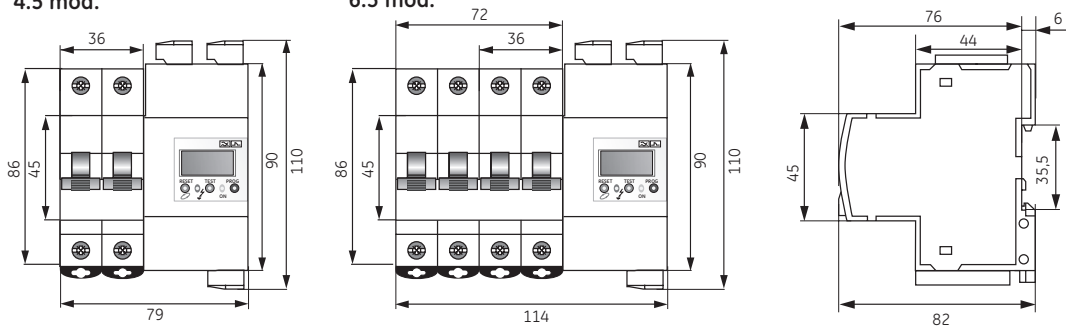
4P
6.5 mod.



TeleREC Top MCB

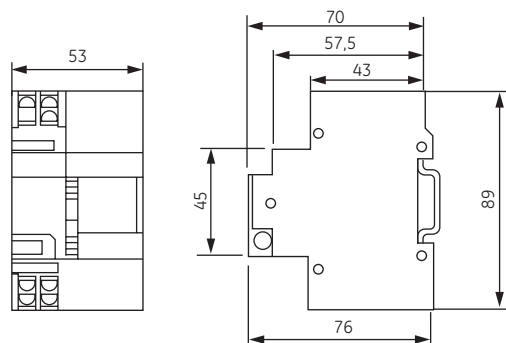
2P
4.5 mod.

4P
6.5 mod.



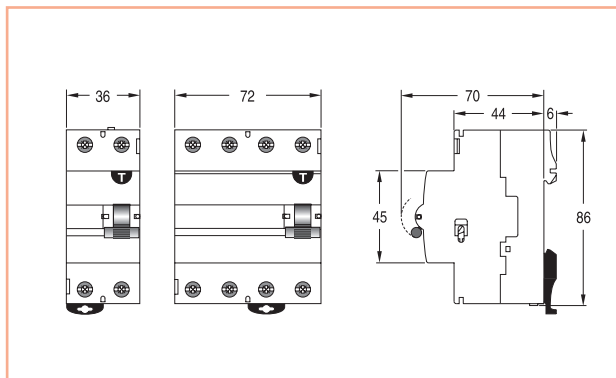
TeleREC Plus

3 mod.

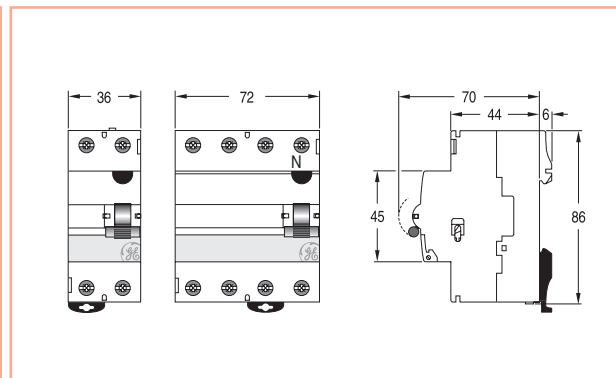


Dimensional drawings

RCCBs - Series BP/BD and FPAUL

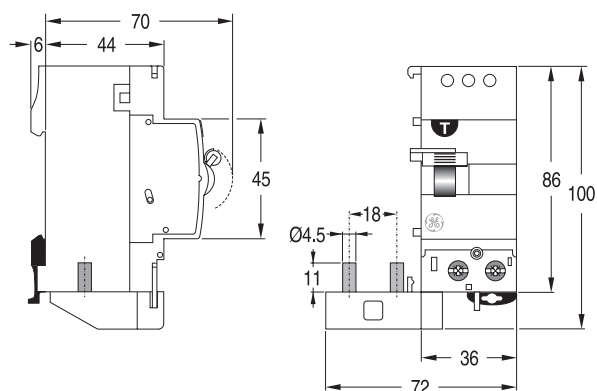


RCCBs - Series FPP - Fixwell™

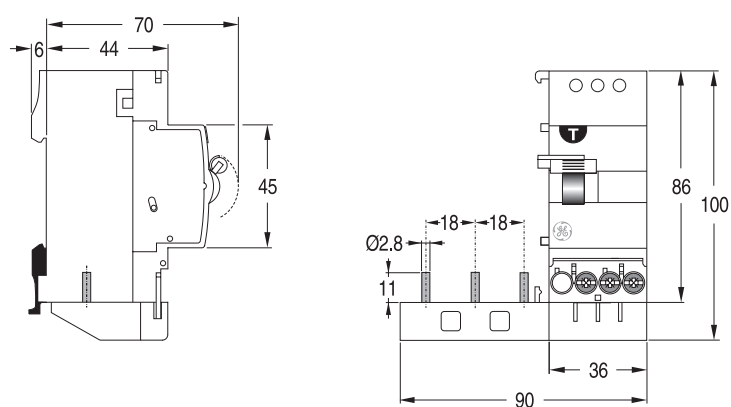


Add-on RCCB - Series Diff-o-Click

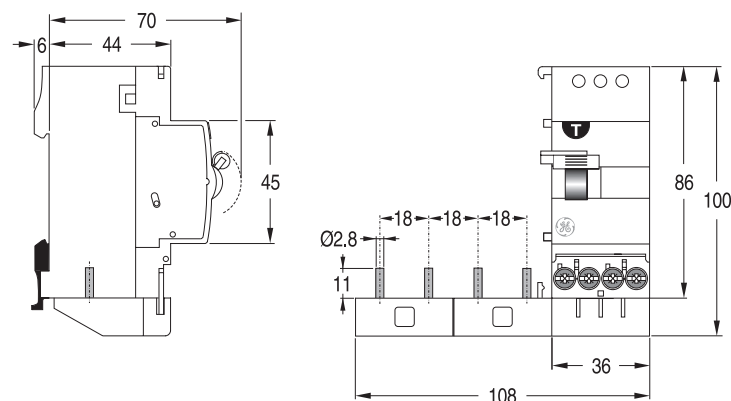
2P 32A
2P 63A



3P 32A

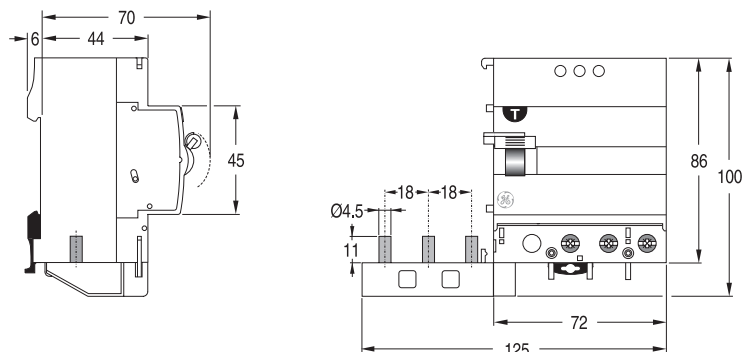


4P 32A

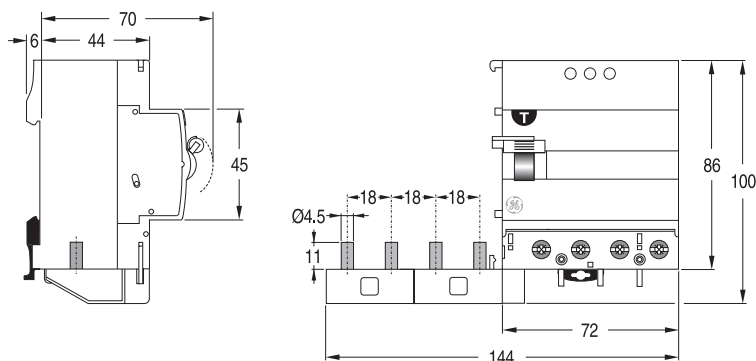


Add-on RCCB - Series Diff-o-Click (continued)

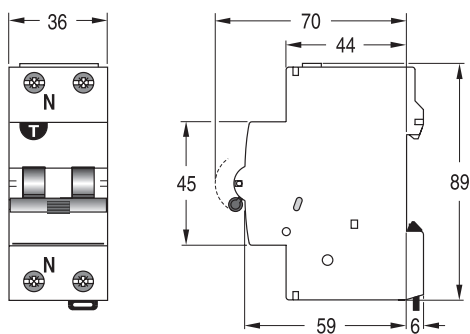
3P 63A



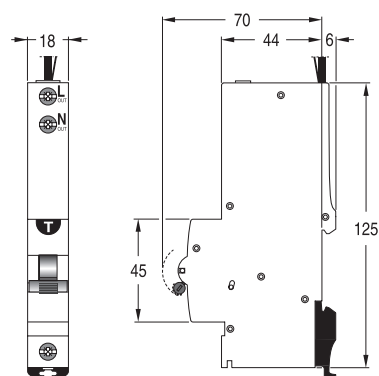
4P 63A



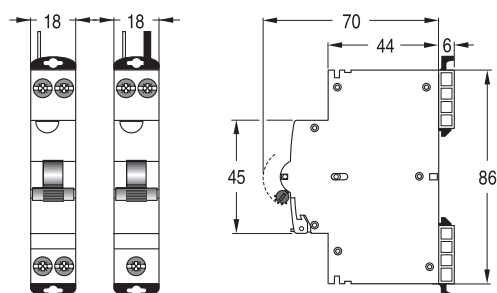
RCBOs - Series DM and DPA100



RCBOs - Series DME



Compact e-RCBO - Series DMCE and DICE



Dimensions

A

B

C

D

E

F

G

X

Notes

People protection

A

B

C

D

E

F

G

X



- C.2 Selection table
- C.3 Coupling combinations
- C.4 Auxiliary - **Series CA**
- C.5 Auxiliary - **Series CB**



- C.6 Interface - **Series CA**

- C.7 Motor operator - **Tele MP**
- C.8 Shunt trip - **Tele L**
- C.8 Undervoltage release - **Tele U**
- C.8 Panel board switch - **PBS**
- C.10 Auxiliary contacts - **Series CBT**
- C.11 Shunt trip - **Series Tele LT**
- C.12 Dimensional drawings

Circuit Protection

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Comfort Functions

Busbars

Enclosures

MCCBs Record Plus

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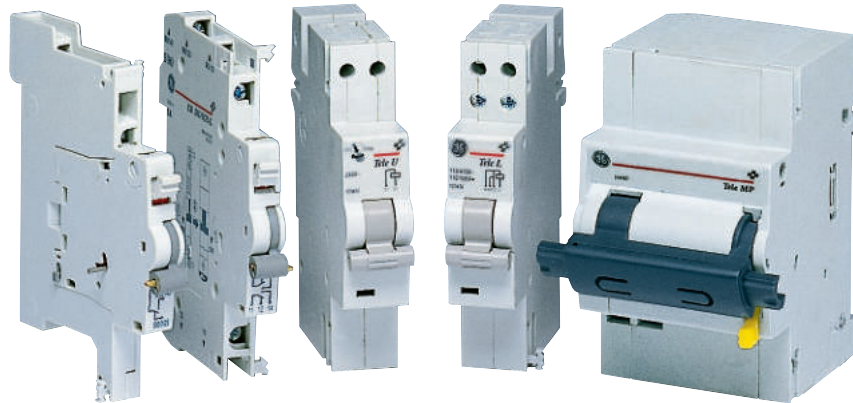
E

F

G

X

Add-on devices for MCBs and RCDs



Common add-on devices suitable for all MCBs and RCDs

Function			Type
H		Auxiliary Contact H For monitoring the status of the protection device (Open/Closed) independently, if it has been actuated manually or automatically.	CA
S		Signal or Auxiliary Contact S/H For signalling the automatic tripping of the protection devices: Overload or short-circuit for MCBs Earth leakage tripping for RCDs	CA
S/H+H		Signal or Auxiliary Contact S/H + Auxiliary Contact H Two change-over contacts that include both functions as described above (S/H+H)	CB
PBS		Panel Board Switch For opening the main device when the panel frame is removed	PBS
TL		Shunt Trip (Distance tripping by emission) For opening the device when it is fed locally or remotely	Tele L
TU		Undervoltage Release For opening the device when the voltage goes lower than a certain value	Tele U
TM		Motor Operator Allows to switch on/off the devices from a distance	Tele MP

Coupling of add-on devices on MCBs, RCCBs and modular switches

Cat. No.	Description	Function	EPC	G30	G45	G60	G100	GT10	GT25	EP100 UC EP100T EPP100	BP	DM	Series G + Diff-o-Click	ASTER
CA H	Auxiliary contact	H	L-R ⁽²⁾	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 ⁽²⁾	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 ⁽²⁾	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 ⁽¹⁾	-	-	-	-	-	-	-	-	-	-	-
CA UN S/H	Signal or auxiliary contact	S/H	L-R ⁽¹⁾	-	-	-	-	-	-	-	-	-	-	-
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 ⁽²⁾	L-R	L-R	L-R	L-R	L-R	L-R	L-R	-	-	L-R	-
Tele L	Shunt trip	TL	L-R ⁽²⁾	L-R	L-R	L-R	L-R	L-R	L-R	L-R	R	R	L	-
Tele U	Undervoltage release	TU	L-R ⁽²⁾	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

L = Coupling on the left

R = Coupling on the right

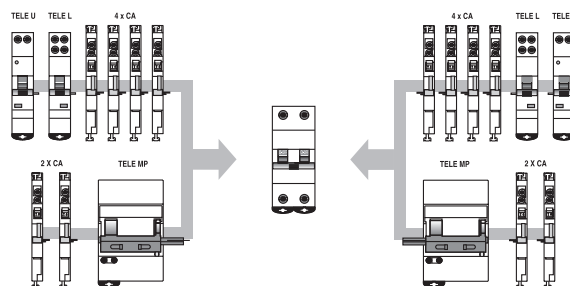
(2) Except Tele MP, all add-on devices on EPC need one CA UN as interface

For detailed information, see website

Miniature Circuit Breakers

Series G/EP

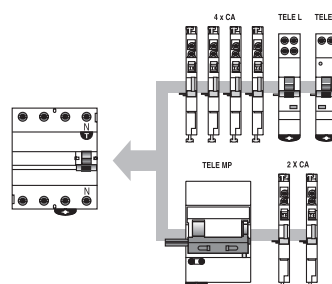
Series EPC⁽³⁾



(3) Except for Tele MP the first auxiliary contact on MCB should always be CA UN

Residual Current Circuit Breakers (RCCB)

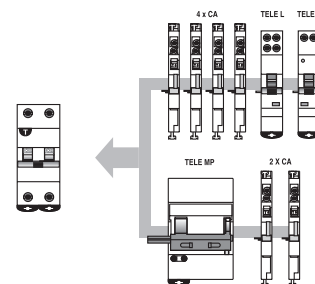
Series BP



Residual Current Circuit Breakers (RCBO)

with Overcurrent Protection

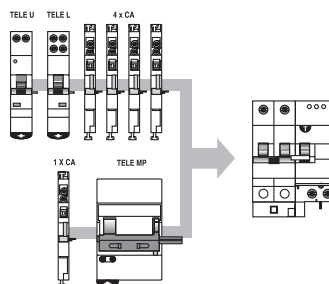
Series DM



Miniature Circuit Breakers

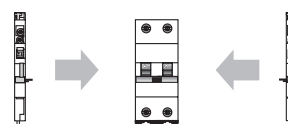
Series G

+ Diff-o-Click



Modular switches

Aster

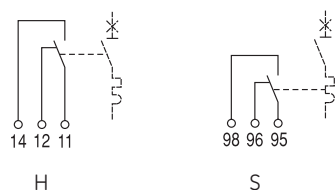
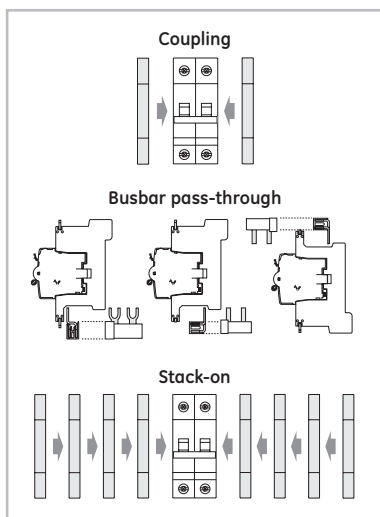




Applications



Approvals



1/2 mod.

Auxiliary

Series CA

EN/IEC 62019

- Common for all modular protection devices: MCBs and RCBOs up to 63 A, RCCBs 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.

Performance

Change-over contacts	1
Rated current I_n	(A) 5
Rated voltage AC U_n	(V) 240
Electrical endurance	10000
Terminal capacity flexible/rigid cable	(mm ²) 2.5
Weight	(g) 70

Utilisation

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)

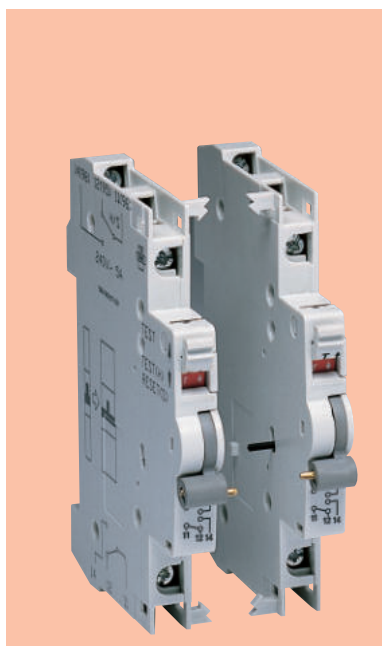
Series CA

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



Applications



Approvals



Performance

Change-over contacts	2
Rated current I_n	(A) 5
Rated voltage AC U_n	(V) 240
Electrical endurance	10000
Terminal capacity flexible/rigid cable	(mm ²) 2.5
Weight	(g) 80

Utilisation

Bottom auxiliary contact (function H)

Provides the status of the protection device, OPEN/CLOSED.

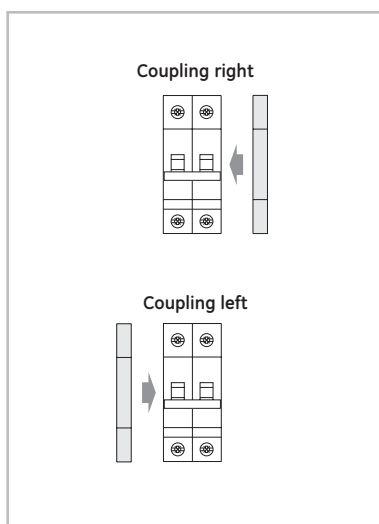
Top signal or auxiliary contact (function S/H).

This auxiliary can act as an auxiliary contact (function H) or as a signal contact (function S)

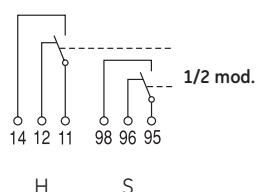
The user can make the change of the function at the moment of installation.

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 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)



Series CB



Function	Cat. No	Ref. No.	Pack.
SH/HH	CB SH/HH-R ⁽¹⁾	672570	40
SH/HH	CB SH/HH-L ⁽²⁾	672571	40

(1) R= coupling on the right (2) L= coupling on the left



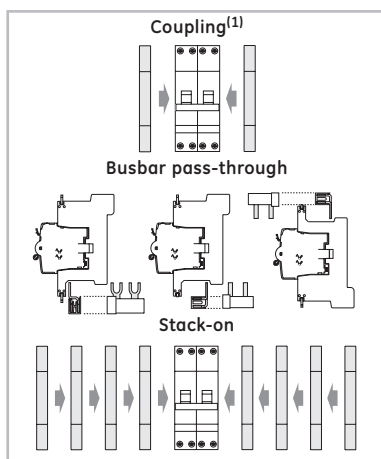
Applications



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

Auxiliary

Series CA UN - Unibis™ Interface EN/IEC 62019

- Common for all modular protection devices: MCBs and RCBOs up to 63 A, RCCBs up to 100A and mains disconnect switches type ASTER (ASTM).
- Can be coupled on both sides of MCBs⁽¹⁾ and modular switches type ASTM.
- 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.

Performances

Change-over contacts	1
Rated current In	(A) 5
Rated voltage AC Un	(V) 240
Electrical endurance	10000
Terminal capacity flexible/rigid cable	(mm ²) 2.5
Weight	(g) 70

Application

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)

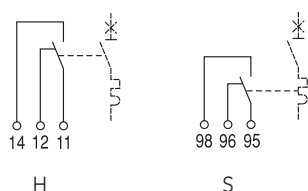
This auxiliary can act as an auxiliary contact (function H) or as a signal contact (function S).

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)

Series CA UN - Unibis™ Interface



1/2 mod.

Function	Cat. No	Ref. No.	Pack.	
H	CA UN H	672972	1/40	golden contacts
S/H	CA UN S/H	672973	1/40	
S/H	CA UN S/H G	672974	1/40	

Motor Operator

Tele MP

- Common device for all modular protection devices.
- Can be coupled on both sides of MCBs and modular switches, 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 or modular switch 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.

Applications



Standard

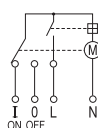
EN/IEC 60947-2

Performance

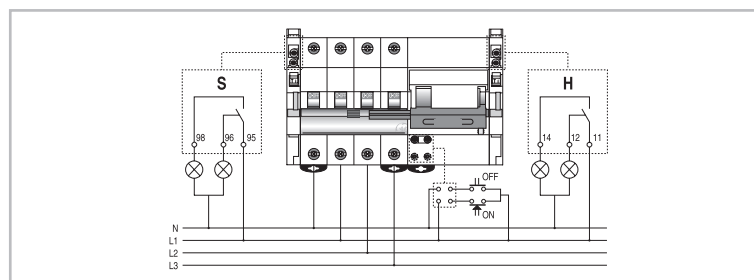
Rated voltage AC Un	(V) 240
Minimum voltage	(V) 200
Impulse to switch on	(ms) 50
Impulse to switch off	(ms) 50
Closing time	(s) 0.5
Opening time	(s) 0.2
Electrical endurance	10000
Terminal capacity flexible/rigid cable	(mm ²) 2.5
Weight	(g) 380

Tele MP - Motor operator

	Voltage	Cat. No.	Ref. No.	Pack.
3 mod.	AC 230V	TELE MP	672580	1



Application example



More technical data ● website
 Dimensions ● pg C.12





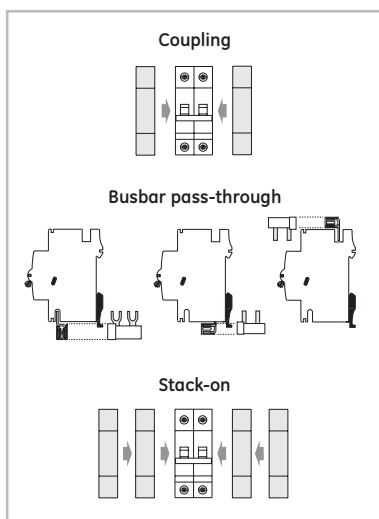
Applications



Approvals

EN/IEC 60947-2  (1)

(1) For TELE L-1 and TELE L-2



Shunt trip, Undervoltage release, Panel board switch

- 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

Rated voltage	(V)	110/415, 110/125 DC
	(V)	24/60, 24/48 DC
Tripping time	(ms)	<10
Electrical endurance		10000
Terminal capacity flexible/rigid cable	(mm ²)	2.5
Weight	(g)	125
Inrush current (Tele 2)	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 $0.5 \times U_n$. Time delay adjusting up to 300 ms.

Performance

Rated voltage AC U_n	(V)	240
Rated voltage DC/AC U_n	(V)	12, 24, 48 DC/AC
Tripping voltage	(V)	$\leq 0.5 \times U_n \pm 10\%$
Resetting voltage	(V)	$> 0.5 \times U_n \pm 10\%$
Tripping time	(ms)	Adjustable 0...300
Electrical endurance		2000
Terminal capacity flexible/rigid cable	(mm ²)	2.5
Weight	(g)	125

Panel Board Switch PBS

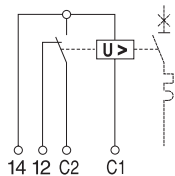
The panel board switch PBS is a mechanical switch. When the panel frame releases the PBS switch, it will trip the protection devices (MCBs or RCDs). Consequently the distribution board will become isolated.

More technical data  website
Dimensions  pg C.12

Tele L - Shunt trip



1P
1 mod.

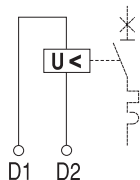


Voltage	Cat. No.	Ref. No.	Pack.
AC 24-60V DC 24-48V	TELE L-1	672573	1
AC 110-415V DC 110-125V	TELE L-2	672574	1

Tele U - Undervoltage release



1P
1 mod.

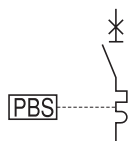


Voltage	Cat. No.	Ref. No.	Pack.
AC 240V	TELE U-230	672575	1
AC/DC 12V	TELE U-12	672576	1
AC/DC 24V	TELE U-24	672577	1
AC/DC 48V	TELE U-48	672578	1

PBS - Panel board switch

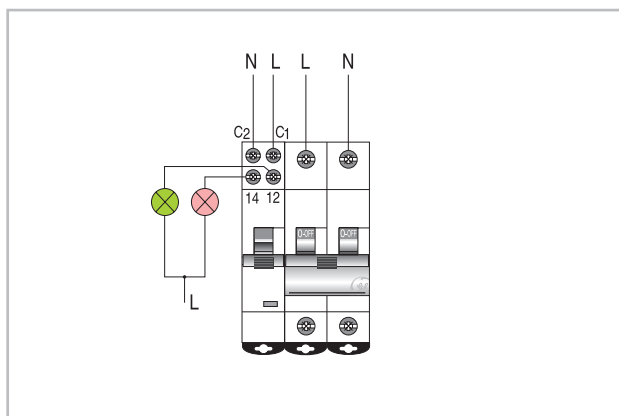


1P
1/2 mod.

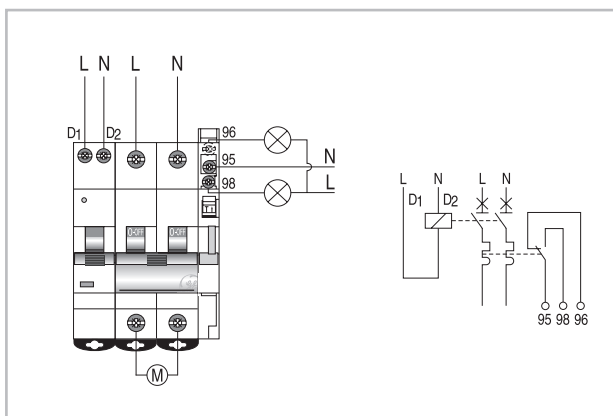


Cat. No.	Ref. No.	Pack.
PBS	672572	1

Tele L



Tele U



Tele L - Tele U - PBS

A

B

C

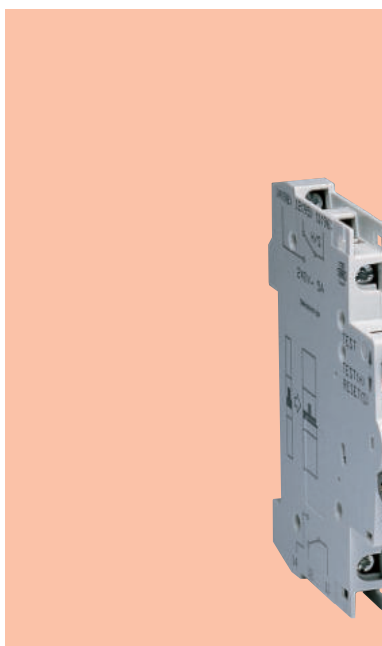
D

E

F

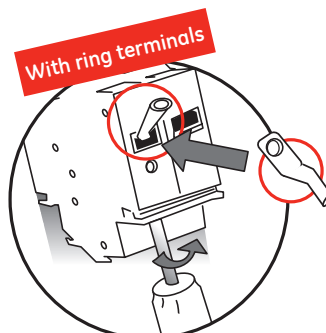
G

X



Auxiliary contacts

Series CBT



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

Features

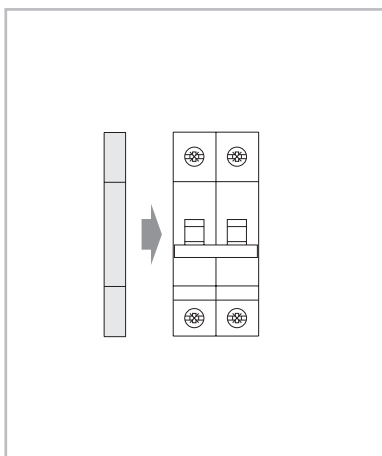
- Three versions: 1NO+1NC, 2NC, 2 NO
- CBT accepts ring terminals on wires
- Certified acc. new CEI UNI 11170 (higher protection against fires)
- Certified acc. to NF 16-101, smoke index F1
- Shock and vibration tests acc. to IEC 61373

Standards / Marking

EN 60898, EN 60947-2, UNI CEI 11170, EN 61373

Approval

Trenitalia n° 371441.01



Technical data

Number of change-over contacts	2
Thermal setting In	5A (230Vac), 4A (24Vdc), 1A (60Vdc)
Rated voltage Un	230Vac, 60Vdc
Endurance electrical	10.000
Terminal capacity for flexible/rigid cable	2.5mm ²
Unloosable screws	Pozidrive 2

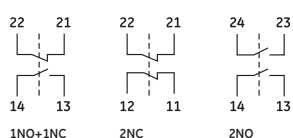
Bottom auxiliary contact (function H)

Provides the status of the protection device: OPEN/CLOSED.

More technical data ● website

Dimensions ● pg C.12

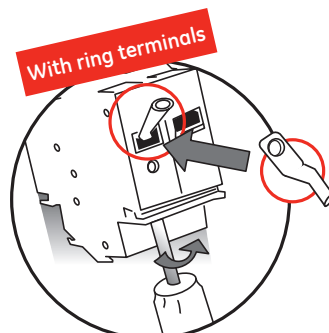
Series CBT



Contact combination	Cat. No.	Ref. No.	Pack.
1NO+1NC	CBT H NO-NC	667249	1
2NC	CBT H 2NC	667250	1
2NO	CBT H 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

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

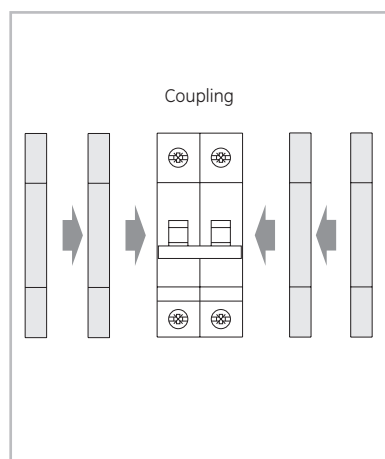
Rated voltage	(V) 110/415~110/128/150---
	(V) 24/60~24/48---
Tripping time	(ms) <10
Electrical endurance	10.000
Terminal capacity flexible/rigid cable	(mm ²) 2.5
Unloosable screws	Pozidrive 2
U _{min}	(V) 0,70 × U _n
U _{max}	(V) 1.25 × U _n

Standards / Marking

EN 60898, EN 60947-2, UNI CEI 11170, EN 61373

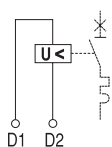
Approval

Trenitalia n° 371441.01



More technical data ● website
Dimensions ● pg C.12

Tele LT

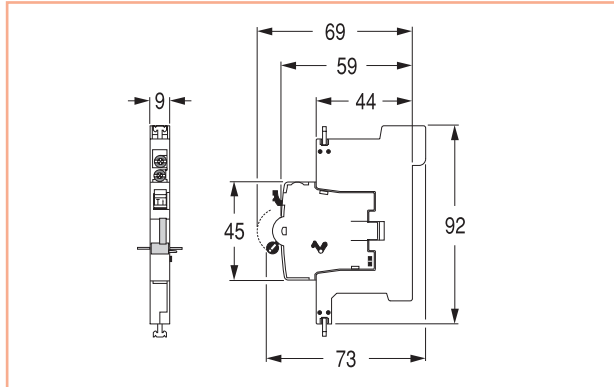


1/2 mod.

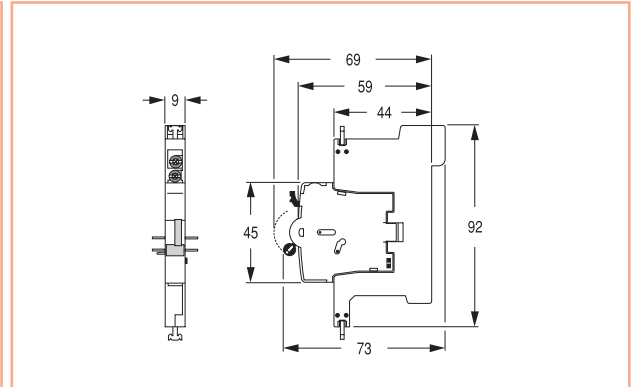
Voltage	Cat. No.	Ref. .No.	Pack.
CA 110/415 V ~ CC 110/128/150 V =	TELE LT-1	667252	1
CA 24/60 V ~ CC 24/48 V =	TELE LT-2	667253	1

Dimensional drawings

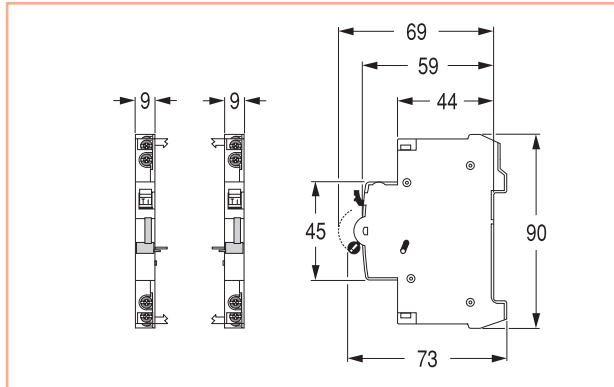
Auxiliary - Series CA



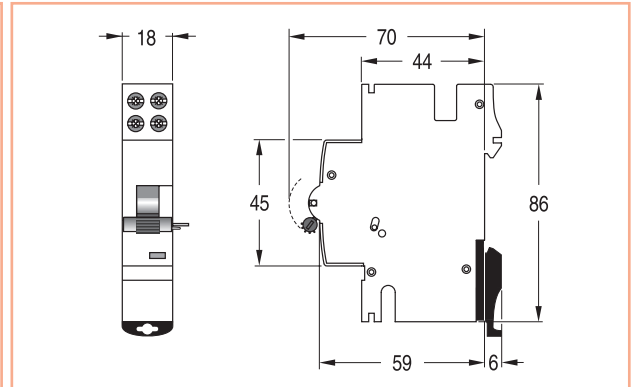
Auxiliary interface - Series CA - Unibis™



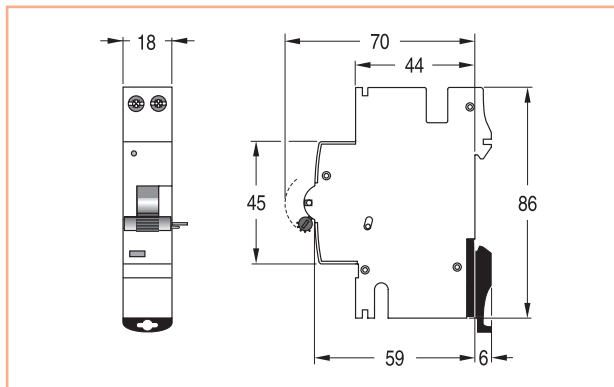
Auxiliary - Series CB / CBT



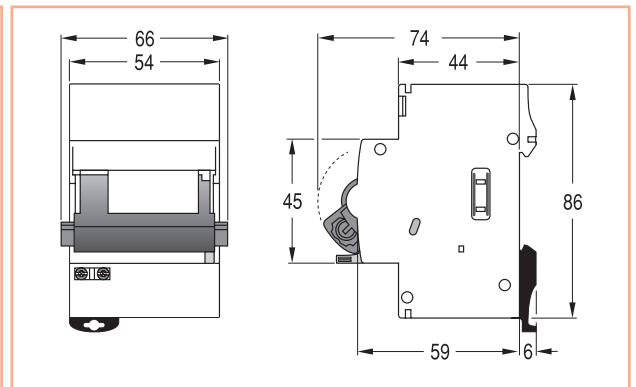
Shunt Trip - Tele L / Tele LT



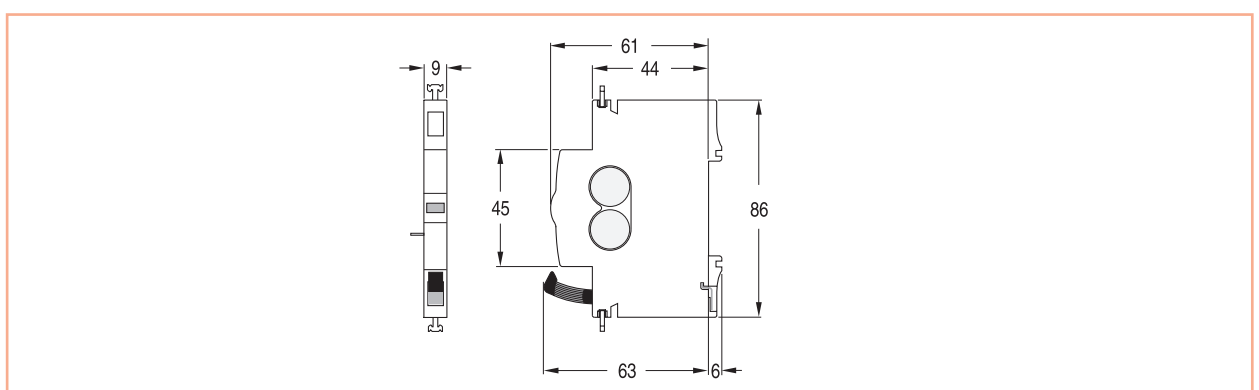
Undervoltage Release - Tele U



Motor operator - Tele MP



Panel board switch - PBS



D.2 Switches and Push-buttons - **Aster**

D.4 Indication Lamp - **Aster**

D.6 Contactors - **Contax**

D.8 Relays - **Contax R**

D.12 Impulse Switches - **Pulsar S**

D.16 Staircase Switches - **Pulsar TS**

D.18 Time Relays - **Pulsar T**

Circuit Protection

D.20 Analogue Time Switches - **Classic**

People Protection

D.22 Digital Time Switches - **Galax**

D.24 Time Switches - **72 X 72 Classic and Galax**

Add-on Devices

D.26 Light Sensitive Switches - **Galax LSS**

Comfort Functions

D.28 Safety and bell transformers Buzzers and bells - **Series T+ BU+ BE+**

Busbars

D.30 Digital kWh - **Series MT+D kWh**

D.32 Digital measurement instruments - **Series MT+D**

Enclosures

D.34 Analogue measurement instruments - **Series MT+A**

D.36 Current transformers - **Series MT+CT**

MCCBs Record Plus

D.38 Compact three-phase analyser - **Series MTDIN**

Numerical Index

D.40 Basic three-phase analyser - **Series MT96**

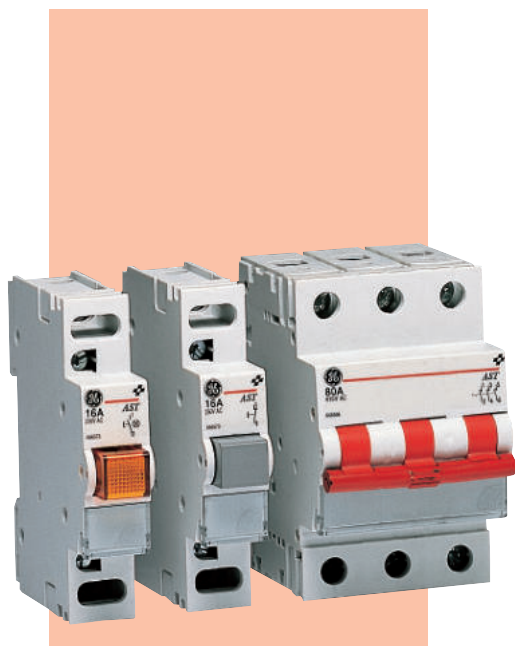
D.42 Advanced three-phase analyser - **Series MT144**

D.44 Power Analysers - Parameter table

D.46 Surge Arresters - **SurgeGuard**

D.52 Terminal capacity

D.54 Dimensional drawings



Function

Manual control of all kinds of electrical devices.

Approvals⁽¹⁾



(1) Depending on type.

Performance

	Push-buttons	Switches	Rotary switches	Mains disconnect switches
	16A	16A 32A	32-40-63A	40-63-80-100A
Nominal rated current	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 Φ = 0.95	-	1.25xIn	8xIn	3xIn
Nominal breaking capacity at 415V, cos Φ = 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 Φ = 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 ²	1x1.5mm ²	1x2.5mm ²	1x6mm ²
max	1x10mm ²	1x10mm ²	1x25mm ²	1x50mm ²

Auxiliary contacts ● pg. C.4
 More technical data ● website
 Dimensions ● pg D.54

Switches and Push-buttons

Aster

Applications



Switching of lighting and heating in homes, shops, offices, warehouses, factories, hospitals, etc.

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.

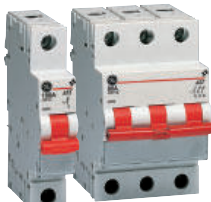
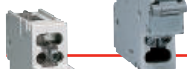
The terminals are equipped with captive Pozidriv screws and have IP20 protection degree.

Mains disconnect switches accepts auxiliary contacts CA.

Standards

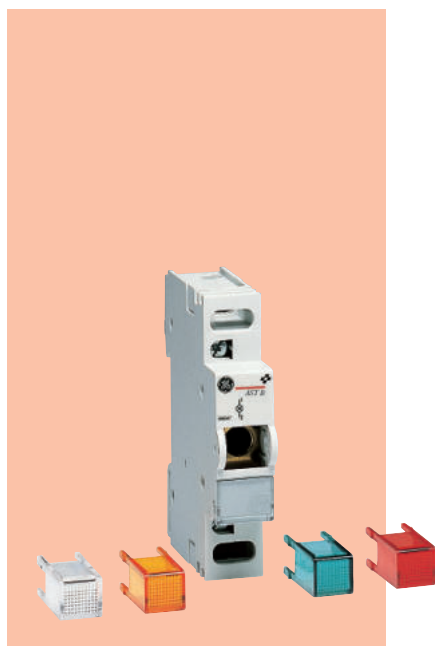
Switches	BS EN 60669-1
16/32A	VDE 0632 Part 1
Mains disconnect switches 40-100	BS EN 60947-3
	VDE 0632 Part 101
Rotary switches	BS EN 60947-3

Aster - Switches and push-buttons

	Nominal current	Contact combination	Number of modules	Cat. No.	Ref. No.	Pack.
Mains disconnect switch    	40A/240V	1NO	1	AST M 40 10	666614	12
	40A/415V	2NO	2	AST M 40 20	666615	6
	40A/415V	3NO	3	AST M 40 30	666616	4
	40A/415V	4NO	4	AST M 40 40	666617	3
	63A/240V	1NO	1	AST M 63 10	666562	12
	63A/415V	2NO	2	AST M 63 20	666563	6
	63A/415V	3NO	3	AST M 63 30	666564	4
	63A/415V	4NO	4	AST M 63 40	666565	3
	80A/240V	1NO	1	AST M 80 10	666566	12
	80A/415V	2NO	2	AST M 80 20	666567	6
	80A/415V	3NO	3	AST M 80 30	666568	4
	80A/415V	4NO	4	AST M 80 40	666569	3
	100A/240V	1NO	1	AST M 100 10	666558	12
	100A/415V	2NO	2	AST M 100 20	666559	6
	100A/415V	3NO	3	AST M 100 30	666560	4
	100A/415V	4NO	4	AST M 100 40	666561	3
Rotary switch    	32A/415V	2NO	4	AST R 32 20	666574	1
	32A/415V	3NO	4	AST R 32 30	666575	1
	32A/415V	3NO+NC	4	AST R 32 3N	666576	1
	32A/415V	4NO	4	AST R 32 40	666577	1
	40A/415V	2NO	4	AST R 40 20	666578	1
	40A/415V	3NO	4	AST R 40 30	666579	1
	40A/415V	3NO+NC	4	AST R 40 3N	666580	1
	40A/415V	4NO	4	AST R 40 40	666581	1
	63A/415V	2NO	4	AST R 63 20	666582	1
	63A/415V	3NO	4	AST R 63 30	666583	1
	63A/415V	3NO+NC	4	AST R 63 3N	666584	1
	63A/415V	4NO	4	AST R 63 40	666585	1
Changeover switches 	16A/240V	1NO	1	AST S 16 10	666587	12
	16A/415V	2NO	1	AST S 16 20	666589	12
	16A/415V	3NO	1	AST S 16 30	666590	12
	16A/415V	4NO	1	AST S 16 40	666593	12
	16A/415V	3NO	2	AST S 16 30 2	666591	6
	16A/415V	4NO	2	AST S 16 40 2	666592	6
	16A/240V	1CO	1	AST S 16 1	666586	12
	16A/240V	2CO	1	AST S 16 2	666588	12
	32A/240V	1NO	1	AST S 32 10	666595	12
	32A/415V	2NO	1	AST S 32 20	666597	12
	32A/415V	3NO	1	AST S 32 30	666599	12
	32A/415V	4NO	1	AST S 32 40	666600	12
	32A/415V	3NO	2	AST S 32 30 2	666598	6
	32A/415V	4NO	2	AST S 32 40 2	666601	6
	32A/240V	1CO	1	AST S 32 1	666594	12
	32A/240V	2CO	1	AST S 32 2	666596	12
Switch with signal lamp 	16A/240V	1NO	1	AST SL 16 10	666602	12
	16A/240V	2NO	1	AST SL 16 20	666603	12
	32A/240V	1NO	1	AST SL 32 10	666604	12
	32A/240V	2NO	1	AST SL 32 20	666605	12
Changeover switches with zero position 	16A/240V	1CO	1	AST SZ 16 1	666606	12
	16A/240V	2CO	1	AST SZ 16 2	666607	12
	32A/240V	1CO	1	AST SZ 32 1	666608	12
	32A/240V	2CO	1	AST SZ 32 2	666609	12
Push-button 	16A/240V	1NC	1	AST P 16 01	666570	12
	16A/240V	1NO	1	AST P 16 10	666571	12
	16A/240V	1NO 1NC	1	AST P 16 11	666572	12
Push-button with signal lamp 	16A/240V	1NO	1	AST PL 16 10	666573	12

Accessories for rotary switches

 Extension shaft	238 mm with emergency handle			AST R ES E	666555	1
	238 mm with standard handle			AST R ES S	666556	1
 Sealing piece			4	AST R TS	666557	1



Indication lamps

Aster

Function

Status visualisation.

Applications



Mainly used to visualise the status of a (sub)part of the installation, heater, motor, fan, pump etc.

Features

Available in different voltages and with different coloured lenses.

Performance

Nominal voltage	12V	24V	230V
Own consumption	120mA	85mA	2.2mA
Lamp	Incandescent lamp	Incandescent lamp	Neon lamp
Lens colours	Red, green, orange and transparent	Red, green, orange and transparent	Red, green, orange and transparent
Protection degree	IP20	IP20	IP20
Screws	Pozidriv 1	Pozidriv 1	Pozidriv 1
Terminal capacity: min	1x1.5mm ²	1x1.5mm ²	1x1.5mm ²
max	1x10mm ² / 2x4mm ²	1x10mm ² / 2x4mm ²	1x10mm ² / 2x4mm ²



Socket-outlets

MSC

Standards

BS EN C61112-1, NF C61-303 (86), IEC 60884-1

Approvals⁽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	1x1 mm ²
max	1x6 mm ² or 2x2.5 mm ²

More technical data ● website
Dimensions ● pg D.54-55

Aster - Indication lamp



Lampholder

Nominal operating voltage	Colour	Number of modules	Cat. No.	Ref. No.	Pack.
-	-	1	AST B	666347	12

Accessories



Lamp LED E10

Nominal operating voltage	Colour	Number of modules	Cat. No.	Ref. No.	Pack.
12V	-	-	AST B 12	666340	12
24V	-	-	AST B 24	666342	12
230V	-	-	AST B 230	666341	12
235V ~/=	Green	-	AST LG 230V	666876	10
235V ~/=	Amber	-	AST LA 230V	666874	10
235V ~/=	Red	-	AST LR 230V	666877	10
235V ~/=	Blue	-	AST LB 230V	666875	10
235V ~/=	White	-	AST LW 230V	666878	10



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



Edged with child protection

Edged without child protection



Nominal current	Nominal voltage	Number of modules	Cat. No.	Ref. No.	Pack.
16A	250V	2.5	MSC SEP	666501	4
16A	250V	2.5	MSC SE	666499	4



Pin with child protection



16A	250V	2.5	MSC SPP	666502	4
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Aster and MSC

A

B

C

D

E

F

G

X



Function

Contactors are electromechanically controlled switches used to control single or multi-phase (high) power loads while the control itself can be (very) low power.

Dimensions ● pg D.55

Contactors

Contax

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.

Standards

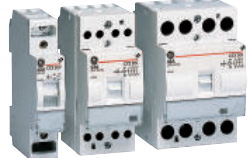
IEC 60947-4-1, BS EN 60947-4-1, IEC 61095, BS EN 61095. Approval VDE.

Performance

Rated switching capacity	20A	24A	40A	63A
Contacts				
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	220A	300A
$\cos \varphi = 0.95$ at 220-230V 1phase	100A	-	-	-
Switching-off capacity				
$\cos \varphi = 0.65$ at 380-400V 3phase	-	72A	176A	240A
$\cos \varphi = 0.95$ at 220-230V 1phase	80A	-	-	-
Fuse type GL for short-circuit protection	20A	35A	63A	80A
Ohmic loss per contact at In	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	1x1 mm ²	1x1 mm ²	1x1.5 mm ²	1x1.5 mm ²
max	1x10mm ² or 2x4 mm ²	1x10mm ² or 2x4 mm ²	1x25mm ² or 2x10 mm ²	1x25mm ² or 2x10 mm ²
Magnetic control system				
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 ⁽¹⁾	-25 ... +55°C ⁽¹⁾	-25 ... +55°C ⁽¹⁾	-25 ... +55°C ⁽¹⁾
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	1x1 mm ²	1x1 mm ²	1x1 mm ²	1x1 mm ²
max	1x4mm ² or 2x2.5 mm ²	1x4mm ² or 2x2.5 mm ²	1x4mm ² or 2x2.5 mm ²	1x4mm ² or 2x2.5 mm ²

(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

		Nominal current	Contact combination	Coil voltage	AC/DC	Number of modules	Cat. No.	Ref. No.	Pack.
	Contactor 	20A	1NO 1NC	24V	AC	1	CTX 20 11 024 A	666127	12
		20A	1NO 1NC	230V	AC	1	CTX 20 11 230 A	666126	12
		20A	2NC	24V	AC	1	CTX 20 02 024 A	666129	12
		20A	2NC	230V	AC	1	CTX 20 02 230 A	666128	12
		20A	2NO	12V	AC	1	CTX 20 20 012 A	666130	12
		20A	2NO	24V	AC	1	CTX 20 20 024 A	666133	12
		20A	2NO	48V	AC	1	CTX 20 20 048 A	666134	12
		20A	2NO	230V	AC	1	CTX 20 20 230 A	666131	12
		20A	2NO	240V	AC	1	CTX 20 20 240 A	666132	12
		2 NO							
	2 NO 	24A	2NO 2NC	24V	AC/DC	2	CTX 24 22 024 U	666136	5
		24A	2NO 2NC	230V	AC/DC	2	CTX 24 22 230 U	666135	5
		24A	3NO	24V	AC/DC	2	CTX 24 30 024 U	666138	5
		24A	3NO	230V	AC/DC	2	CTX 24 30 230 U	666137	5
		24A	4NC	24V	AC/DC	2	CTX 24 04 024 U	666140	5
		24A	4NC	230V	AC/DC	2	CTX 24 04 230 U	666139	5
		24A	4NO	12V	AC/DC	2	CTX 24 40 012 U	666141	5
		24A	4NO	24V	AC/DC	2	CTX 24 40 024 U	666144	5
		24A	4NO	48V	AC/DC	2	CTX 24 40 048 U	666145	5
		24A	4NO	230V	AC/DC	2	CTX 24 40 230 U	666142	5
	2 NO 2 NC 	24A	4NO	240V	AC/DC	2	CTX 24 40 240 U	666143	5
		40A	2NC	230V	AC/DC	3	CTX 40 02 230 U	666170	3
		40A	2NO	230V	AC/DC	3	CTX 40 20 230 U	666146	3
		40A	3NO	24V	AC/DC	3	CTX 40 30 024 U	666149	3
		40A	3NO	230V	AC/DC	3	CTX 40 30 230 U	666148	3
		40A	4NO	12V	AC/DC	3	CTX 40 40 012 U	666150	3
		40A	4NO	24V	AC/DC	3	CTX 40 40 024 U	666153	3
		40A	4NO	48V	AC/DC	3	CTX 40 40 048 U	666154	3
		40A	4NO	230V	AC/DC	3	CTX 40 40 230 U	666151	3
		40A	2NO	24V	AC/DC	3	CTX 40 20 024 U	666147	3
	4 NO 	40A	4NO	240V	AC/DC	3	CTX 40 40 240 U	666152	3
		63A	4NO	24V	AC/DC	3	CTX 63 40 024 U	666158	3
		63A	4NO	230V	AC/DC	3	CTX 63 40 230 U	666156	3
		63A	2NO	230V	AC/DC	3	CTX 63 20 230 U	666155	3
		63A	4NO	240V	AC/DC	3	CTX 63 40 240 U	666157	3
	Contactor Day and Night 	20A	2NO	230V	AC	1	CTX DN 20 20 230 A	666164	12
		24A	3NO	230V	AC/DC	2	CTX DN 24 30 230 U	666165	5
		24A	4NO	230V	AC/DC	2	CTX DN 24 40 230 U	666166	5
		40A	2NO	230V	AC/DC	3	CTX DN 40 20 230 U	666167	3
		40A	3NO	230V	AC/DC	3	CTX DN 40 30 230 U	666168	3
		40A	4NO	230V	AC/DC	3	CTX DN 40 40 230 U	666169	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	666162	5
		6A	2NO	-	0.5	CTX 06 20	666163	5

Accessories

				Number of modules	Cat. No.	Ref. No.	Pack.
	Sealing piece			2	CTX TS 2	666160	3
				3	CTX TS 3	666159	3
	Spacer			0.5	PLS + / CTX + SP	686069	50



Standards / Marking

EN 60947-4-1 

Relays

Contax R

Function

Relays are electromechanically controlled switches used to control low power loads.

Applications



- 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

- 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.

More technical data  website
Dimensions  pg D.56

Performance

			Contax R
			CTX + R16
Rated current (according to EN 60947-4-1)			
250VAC (1 and 2 pole) / 400VAC (3 and 4 pole)	A		16
Nominal thermal current (I _{th})	A		16
Number of pole			1 → 4
Contacts	NO		1 → 4
	Changeover ("m" contacts)		1 → 4
	NO + NC		1+1 / 2+2
Width (in 17.8mm DIN modules)	1P and 2P	Mod.	1
	3P and 4P	Mod.	2
Coil specifications			
Supply voltage : DC/AC ratio ⁽¹⁾			0.5 / 1
Supply voltage range (in % of U _n)		%	85-110
Coil pick-up power	1P and 2P	VA	3.4
	3P and 4P	VA	6.7
Coil power loss - AC	1P and 2P	VA	1.8
	3P and 4P	VA	3.4
Coil power loss - DC	1P and 2P	W	2.1
	3P and 4P	W	3.9
Maximum coil holding voltage time			unlimited
Contact bounce time at closing	sec.		<0.010
Operate and release time (bounce time incl.)			
Pick-up time	NO contact	sec.	< 0.040
(from 0 to U _n)	NC contact	sec.	< 0.020
Drop-out time	NO contact	sec.	< 0.050
(from U _n to 0)	NC contact	sec.	< 0.050
Maximum peak current at closing			
Single phase 250VAC cos φ = 0.95	A		45
3-phase 400V~ cos φ = 0.65	A		60
Maximum peak current at opening			
Single phase 250VAC cos φ = 0.95	A		75
3-phase 400V~ cos φ = 0.65	A		60
Lifetime (in number of operations) ⁽²⁾			
Electrical (in AC-1 - At full load)			3 × 10 ⁵
Mechanical			2 × 10 ⁶
Load specifications per phase			
Maximum load AC-1	1P and 2P	kW	3.0
	3P and 4P	kW	8.5
Maximum load AC-5b		kW	1.8
Maximum load AC-7b		kW	0.9
Maximum load AC-3	250VAC	kW	1.5
	400VAC	kW	2.2
Minimum load (under 5V)		W	2
Short-circuit fuse protection		A	20
Maximum lamp load (10 ³ operations/h)			
Incandesc. and halogen (40 to 200 W lamps)		W	1,800
Fluorescence, compensated (cos φ = 0.9)	Serial compensation	VA	1,800
	Parallel compensation	VA	500
Fluorescence, non compensated (cos φ = 0.5)		VA	900
General specifications			
Auxiliary contact add-on (PLS / CTX R)			yes
Need for spacer			no
DIN rail mounting			yes
2-position DIN rail lock			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 ²	1.5 / 10
	Load	mm ²	1.5 / 10
Maximum torque on terminals		Nm	1
Ambient temperature at installation point (min./max.)		°C	-20 / +45

(1) DC supply voltage = AC supply voltage × DC/AC ratio, except for 8VAC and 115VAC (48VDC)

(2) 1 cycle = 2 operations per pole (closing + opening)

Contax R

A

B

C

D

E

F

G

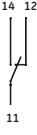
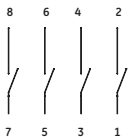
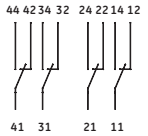
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Impulse switches and relays: maximum lamp loads

Lamps type	Lamp Watts Power consumption	Pulsar S PLS + 16	Pulsar S PLS + 32	Contax R CTX + R16
Incandescent lamps				
Max. load 230VAC		3000 W	4000 W	1800 W
Max. number of lamps	15 W	200	266	120
	25 W	120	160	72
	40 W	75	102	45
	60 W	50	65	30
	75 W	40	52	24
	100 W	30	40	18
	150 W	20	26	12
	200 W	15	20	9
	300 W	9	12	6
	500 W	5	8	3
Fluo lamp PF uncorrected				
Max. load 230VAC		1800 W	2200 W	900 W
Max. number of lamps	18 W	81	110	50
	36 W	44	58	25
	40 W	38	53	23
	58 W	29	35	16
	65 W	26	34	13
Fluo twin lamps				
Max. load 230VAC		3000 W	4000 W	1800 W
Max. number of lamps	2 x 18 W	78	110	50
	2 x 36 W	38	55	25
	2 x 40 W	35	50	23
	2 x 58 W	23	34	16
	2 x 65 W	22	30	13
Fluo lamp parallel compensation				
Max. load 230VAC		2500 W	3200 W	500 W
Max. number of lamps	18 W	103	132	17
	36 W	55	72	13
	40 W	50	65	12
	58 W	34	45	8
	65 W	30	40	7
Halogen 230V				
Max. load 230VAC		3000 W	4000 W	1800 W
Max. number of lamps	150 W	20	26	12
	250 W	12	16	7
	300 W	10	13	6
	400 W	7	10	4
	500 W	6	8	3
	1000 W	3	4	2
HP sodium vapour				
Max. load 230VAC		1200 W	1600 W	800 W
Max. number of lamps	70 W	15	18	10
	150 W	8	10	5
	250 W	4	6	3
	400 W	3	4	2
	1000 W	1	1	-
LP sodium vapour				
Max. load 230VAC		1400 W	2000 W	400 W
Max. number of lamps	55 W	27	36	6
	90 W	16	22	4
	135 W	11	14	3
	180 W	8	11	2
	185 W	8	10	2
HP mercury vapour				
Max. load 230VAC		1200 W	1600 W	800 W
Max. number of lamps	50 W	19	25	16
	80 W	15	20	10
	125 W	9	12	7
	250 W	4	6	3
	400 W	3	4	2
	1000 W	1	2	-
VLV halogen				
Max. load 230VAC		2300 W	3200 W	1500 W
Max. number of lamps	20 W	116	160	72
	50 W	46	64	29
	75 W	31	42	20
	100 W	24	32	15
	150 W	15	21	10
	200 W	12	16	7
	300 W	7	10	5
Electronic reactor				
Max. load 230VAC		1600 W	2200 W	1000 W
Max. number of lamps	1 x 18 W	83	112	38
	1 x 36 W	46	61	30
	1 x 58 W	31	38	17
	2 x 18 W	40	56	19
	2 x 36 W	23	30	15
	2 x 58 W	14	19	8

Contax R - Relays

	Nominal current	Contact combination	Coil voltage AC	Coil voltage DC	Number of Modules	Cat. No.	Ref. No.	Pack.
		16A 1 NO	8	-	1	CTX + R 16 10 008 A	686007	12
		16A 1 NO	12	6	1	CTX + R 16 10 012 A	686008	12
		16A 1 NO	24	12	1	CTX + R 16 10 024 A	686009	12
		16A 1 NO	48	24	1	CTX + R 16 10 048 A	686010	12
		16A 1 NO	115	48	1	CTX + R 16 10 115 A	686011	12
		16A 1 NO	230	115	1	CTX + R 16 10 230 A	686013	12
		16A 1 NO	230/60Hz	-	1	CTX + R 16 10 23060	686012	12
		16A 1 NO	240	120	1	CTX + R 16 10 240 A	686014	12
		16A 1 CO	8	-	1	CTX + R 16 1 008 A	686000	12
		16A 1 CO	12	6	1	CTX + R 16 1 012 A	686001	12
		16A 1 CO	24	12	1	CTX + R 16 1 024 A	686002	12
		16A 1 CO	48	24	1	CTX + R 16 1 048 A	686003	12
		16A 1 CO	115	48	1	CTX + R 16 1 115 A	686004	12
		16A 1 CO	230	115	1	CTX + R 16 1 230 A	686005	12
		16A 1 CO	240	120	1	CTX + R 16 1 240 A	686006	12
		16A 2 NO	8	-	1	CTX + R 16 20 008 A	686036	12
		16A 2 NO	12	6	1	CTX + R 16 20 012 A	686037	12
		16A 2 NO	24	12	1	CTX + R 16 20 024 A	686038	12
		16A 2 NO	48	24	1	CTX + R 16 20 048 A	686039	12
		16A 2 NO	115	48	1	CTX + R 16 20 115 A	686040	12
		16A 2 NO	230	115	1	CTX + R 16 20 230 A	686042	12
		16A 2 NO	230/60Hz	-	1	CTX + R 16 20 23060	686041	12
		16A 2 NO	240	120	1	CTX + R 16 20 240 A	686043	12
		16A 1 NO 1 NC	8	-	1	CTX + R 16 11 008 A	686015	12
		16A 1 NO 1 NC	12	6	1	CTX + R 16 11 012 A	686016	12
		16A 1 NO 1 NC	24	12	1	CTX + R 16 11 024 A	686017	12
		16A 1 NO 1 NC	48	24	1	CTX + R 16 11 048 A	686018	12
		16A 1 NO 1 NC	115	48	1	CTX + R 16 11 115 A	686019	12
		16A 1 NO 1 NC	230	115	1	CTX + R 16 11 230 A	686021	12
		16A 1 NO 1 NC	230/60Hz	-	1	CTX + R 16 11 23060	686020	12
		16A 1 NO 1 NC	240	120	1	CTX + R 16 11 240 A	686022	12
		16A 2 CO	8	-	1	CTX + R 16 2 008 A	686023	12
		16A 2 CO	12	6	1	CTX + R 16 2 012 A	686024	12
		16A 2 CO	24	12	1	CTX + R 16 2 024 A	686026	12
		16A 2 CO	48	24	1	CTX + R 16 2 048 A	686028	12
		16A 2 CO	115	48	1	CTX + R 16 2 115 A	686030	12
		16A 2 CO	230	115	1	CTX + R 16 2 230 A	686032	12
		16A 2 CO	240	120	1	CTX + R 16 2 240 A	686034	12
		16A 3 NO	12	6	2	CTX + R 16 30 012 A	686050	6
		16A 3 NO	24	12	2	CTX + R 16 30 024 A	686051	6
		16A 3 NO	48	24	2	CTX + R 16 30 048 A	686052	6
		16A 3 NO	230	115	2	CTX + R 16 30 230 A	686053	6
		16A 4 NO	8	-	2	CTX + R 16 40 008 A	686025	6
		16A 4 NO	12	6	2	CTX + R 16 40 012 A	686060	6
		16A 4 NO	24	12	2	CTX + R 16 40 024 A	686061	6
		16A 4 NO	48	24	2	CTX + R 16 40 048 A	686062	6
		16A 4 NO	230	115	2	CTX + R 16 40 230 A	686064	6
		16A 4 NO	230/60Hz	-	2	CTX + R 16 40 23060	686063	6
		16A 4 NO	240	120	2	CTX + R 16 40 240 A	686065	6
		16A 4 CO	12	6	2	CTX + R 16 4 012 A	686054	6
		16A 4 CO	24	12	2	CTX + R 16 4 024 A	686055	6
		16A 4 CO	48	24	2	CTX + R 16 4 048 A	686056	6
		16A 4 CO	115	48	2	CTX + R 16 4 115 A	686057	6
		16A 4 CO	230	115	2	CTX + R 16 4 230 A	686058	6
		16A 4 CO	240	120	2	CTX + R 16 4 240 A	686059	6
		16A 2 NO 2 NC	8	-	2	CTX + R 16 22 008 A	686027	6
		16A 2 NO 2 NC	12	6	2	CTX + R 16 22 012 A	686044	6
		16A 2 NO 2 NC	24	12	2	CTX + R 16 22 024 A	686045	6
		16A 2 NO 2 NC	48	24	2	CTX + R 16 22 048 A	686046	6
		16A 2 NO 2 NC	230	115	2	CTX + R 16 22 230 A	686048	6
		16A 2 NO 2 NC	230/60Hz	-	2	CTX + R 16 22 23060	686047	6
		16A 2 NO 2 NC	240	120	2	CTX + R 16 22 240 A	686049	6

Terminal identification, see page D.53

Contax R

A

B

C

D

E

F

G

X



Impulse switches

Pulsar S

Standards / Marking

IEC 60669-1, IEC 60669-2-2



Function

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.

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.

Features

- Besides the normal operation through electrically energising the coil, manual operation is possible at all times, except PLS series SA and SB.
- The switch position is visualised by the position of the front handle for all devices, except PLS series SA and SB.
- 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.
- 3 and 4 poles devices are multi voltage (except all-in central command).
- The use of a large number of luminous push-buttons is possible.
- Availability of sealing cap for coil and load terminals.

For the table Impulse switches maximum lamp loads, see page D.10

More technical data ● website
Dimensions ● pg D.56

Performance

				PLS +				PLS + C ⁽⁴⁾	
				PLS + 16	PLS + 32	PLS + SA and SB	PLS + PU 16	PLS + C 16	PLS + C 32
Rated current (acc. to IEC 669-2-3)									
250VAC (1 and 2 pole) / 400VAC (3 and 4 pole)	A			16	32	16	16	16	32
Direct Current (at 30VDC)	A			16	16	16	16	16	16
Number of poles				1 → 4	1 → 4	2	1 → 4	1 → 3	1 → 3
Contacts	NO			1 → 4	1 → 4	2	1 → 4	1 → 3	1 → 3
	Changeover ("m")			1 → 4	-	-	1 → 4	1 → 3	-
	NO + NC			1+1 / 2+2	-	-	1+1 / 2+2	-	-
Width (in 17.8mm DIN modules)									
	1 P	Mod.		1	1	-	1	1	1
	2 P	Mod.		1	1	1	1	1½	1½
	3 P	Mod.		2	2	-	2	2	2
	4 P	Mod.		2	2	-	2	-	-
Coil specifications									
Supply voltage : DC/AC ratio ⁽¹⁾				0.5 / 1	0.5 / 1	0.5 / 1	0.5 / 1	0.5 / 1	0.5 / 1
Supply voltage range (in % of Un)	%			90-110	90-110	90-110	90-110	90-110	90-110
Coil pick-up power (AC)	1P and 2P	VA		14.5	16.0	14.5	4.8	14.5	14.5
	3P and 4P	VA		14.5	16.0	-	8.0	16.0	16.0
Coil power loss - AC	1P and 2P	VA		11.0	11.5	11.0	3.2	11.0	14.5
	3P and 4P	VA		11.0	11.5	-	6.0	11.0	16.0
Coil power loss - DC	1P and 2P	W		7.5	8.0	7.5	2.9	12.5	12.5
	3P and 4P	W		7.5	8.0	-	5.4	14.5	14.5
Maximum coil holding voltage time				⁽²⁾	⁽²⁾	⁽²⁾	unlimited	⁽²⁾	⁽²⁾
Impulse times									
Minimum impulse time (under Un)	sec.			0.050	0.050	0.050	0.050	0.100	0.100
Minimum impulse time (90% Un)	sec.			0.100	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	0.150
Maximum number of impulses per mn				250	250	250	250	250	250
Lifetime (in number of operations)⁽³⁾									
Electrical (in AC-1 - At full load) ⁽⁴⁾				4 × 10 ⁵	3 × 10 ⁵	3 × 10 ⁵	2 × 10 ⁵	4 × 10 ⁵	3 × 10 ⁵
Mechanical				2 × 10 ⁶	2 × 10 ⁶	2 × 10 ⁶	1 × 10 ⁶	2 × 10 ⁶	2 × 10 ⁶
Load specifications									
Maximum load AC-1 per phase	A			20	32	20	20	20	32
Maximum load DC (30VDC)	A			16	16	16	16	16	16
Minimum load per phase (under 5V)	W			2	2	2	2	2	2
Short-circuit fuse protection	A			20	32	20	20	20	32
Maximum lamp load (10³ operations/h)									
Incandescence and halogen (40 to 200 W lamps)	W			3,000	4,000	3,000	3,000	3,000	4,000
Fluorescence, compensated (cos φ = 0.9)									
	Serial compensation	VA		3,000	4,000	3,000	3,000	3,000	4,000
	Parallel compensation	VA		2,500	3,200	2,500	2,500	2,500	3,200
Fluorescence, non compensated (cos φ = 0.5)	VA			1,800	2,200	1,800	1,800	1,800	2,200
Maximum number of push-buttons									
Non illuminated push-buttons				unlimited	unlimited	unlimited	unlimited	unlimited	unlimited
Luminous push-buttons (0.6mA)									
4 terminals				unlimited	unlimited	unlimited	unlimited	unlimited	unlimited
3 terminals	Without compensator			8	8	8	6	8	8
	1 compensator			18	18	18	15	27	27
	2 compensators			45	45	45	38	43	43
General specifications									
Power contact add-on				yes	yes	no	no	no	no
Auxiliary contact add-on (PLS / CTX R)				yes	yes	no	yes	yes	yes
Need for spacer ⁽²⁾				yes	yes	yes	no	yes	yes
DIN rail mounting				yes	yes	yes	yes	yes	yes
2-position DIN rail lock				yes	yes	yes	yes	yes	yes
2-position handle				yes	yes	no	yes	yes	yes
Indicator of contact position				yes	yes	yes	yes	yes	yes
Clamping terminals				yes	yes	yes	yes	yes	yes
Unlosable screws				yes	yes	yes	yes	yes	yes
Sealable terminals (coil and load)				yes	yes	yes	yes	yes	yes
Cable cross section (Ø min/max)	Coil	mm ²		1.5 / 10	1.5 / 10	1.5 / 10	1.5 / 10	1.5 / 10	1.5 / 10
	Load 1P-3P and 4P	mm ²		1.5 / 10	1.5 / 10	1.5 / 10	1.5 / 10	1.5 / 10	1.5 / 10
	Load 2P	mm ²		1.5 / 10	1.5 / 10	1.5 / 10	1.5 / 10	1.5 / 6	1.5 / 10
Maximum torque on terminals	Nm			1	1	1	1	1	1
Ambient temperature at installation point (min./max.)	°C			-20 / +45	-20 / +45	-20 / +45	-20 / +45	-20 / +45	-20 / +45

(1) For all impulse relays, DC supply voltage = AC supply voltage x DC/AC ratio, except for 8VAC and 115VAC (48VDC)

(2) Whenever the normal use of the impulse relay integrates a permanent coil working, use of a spacer is required on both sides. Make sure that the duty factor allows the device to come back to the ambient temperature (not required for PLS PU)

(3) 1 cycle = 2 operations per pole (closing + opening)

(4) For any central command installation, a PLS SG module per phase must be installed in order to protect the coils against overvoltages

Pulsar S - Impulse switches

Comfort functions

A

B

C

D

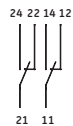
E

F

G

X

Impulse switches



Add-on power contact



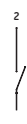
Step by step multi circuit



SA= 0-A-0-B-0
SB=0-A-AB-B-0



All-in central command



Nominal current	Contact combination	Coil voltage AC	Coil voltage DC	No. of Modules	Cat. No.	Ref. No.	Pack.
16A	1NO	8	-	1	PLS + 16 10 008 A	686078	12
16A	1NO	12	6	1	PLS + 16 10 012 A	686079	12
16A	1NO	24	12	1	PLS + 16 10 024 A	686080	12
16A	1NO	48	24	1	PLS + 16 10 048 A	686081	12
16A	1NO	115	48	1	PLS + 16 10 115 A	686082	12
16A	1NO	230	115	1	PLS + 16 10 230 A	686083	12
16A	1NO	230/60Hz	-	1	PLS + 16 10 23060	686284	12
16A	1NO	240	120	1	PLS + 16 10 240 A	686084	12
16A	1CO	8	-	1	PLS + 16 1 008 A	686071	12
16A	1CO	12	6	1	PLS + 16 1 012 A	686072	12
16A	1CO	24	12	1	PLS + 16 1 024 A	686073	12
16A	1CO	48	24	1	PLS + 16 1 048 A	686074	12
16A	1CO	115	48	1	PLS + 16 1 115 A	686075	12
16A	1CO	230	115	1	PLS + 16 1 230 A	686076	12
16A	1CO	240	120	1	PLS + 16 1 240 A	686077	12
16A	2NO	8	-	1	PLS + 16 20 008 A	686102	12
16A	2NO	12	6	1	PLS + 16 20 012 A	686103	12
16A	2NO	24	12	1	PLS + 16 20 024 A	686104	12
16A	2NO	48	24	1	PLS + 16 20 048 A	686105	12
16A	2NO	115	48	1	PLS + 16 20 115 A	686106	12
16A	2NO	230	115	1	PLS + 16 20 230 A	686108	12
16A	2NO	230/60Hz	-	1	PLS + 16 20 23060	686107	12
16A	2NO	240	120	1	PLS + 16 20 240 A	686109	12
16A	1NO 1NC	8	-	1	PLS + 16 11 008 A	686086	12
16A	1NO 1NC	12	6	1	PLS + 16 11 012 A	686087	12
16A	1NO 1NC	24	12	1	PLS + 16 11 024 A	686088	12
16A	1NO 1NC	48	24	1	PLS + 16 11 048 A	686089	12
16A	1NO 1NC	115	48	1	PLS + 16 11 115 A	686090	12
16A	1NO 1NC	230	115	1	PLS + 16 11 230 A	686091	12
16A	1NO 1NC	230/60Hz	-	1	PLS + 16 11 23060	686285	12
16A	1NO 1NC	240	120	1	PLS + 16 11 240 A	686092	12
16A	2 CO	8	-	1	PLS + 16 2 008 A	686093	12
16A	2 CO	12	6	1	PLS + 16 2 012 A	686094	12
16A	2 CO	24	12	1	PLS + 16 2 024 A	686095	12
16A	2 CO	48	24	1	PLS + 16 2 048 A	686096	12
16A	2 CO	115	48	1	PLS + 16 2 115 A	686097	12
16A	2 CO	230	115	1	PLS + 16 2 230 A	686098	12
16A	2 CO	240	120	1	PLS + 16 2 240 A	686099	12
32A	1NO	8	-	1	PLS + 32 10 008 A	686110	12
32A	1NO	12	6	1	PLS + 32 10 012 A	686111	12
32A	1NO	24	12	1	PLS + 32 10 024 A	686112	12
32A	1NO	48	24	1	PLS + 32 10 048 A	686113	12
32A	1NO	115	48	1	PLS + 32 10 115 A	686114	12
32A	1NO	230	115	1	PLS + 32 10 230 A	686115	12
32A	1NO	240	120	1	PLS + 32 10 240 A	686116	12
32A	2NO	8	-	1	PLS + 32 20 008 A	686118	12
32A	2NO	12	6	1	PLS + 32 20 012 A	686119	12
32A	2NO	24	12	1	PLS + 32 20 024 A	686120	12
32A	2NO	48	24	1	PLS + 32 20 048 A	686121	12
32A	2NO	115	48	1	PLS + 32 20 115 A	686122	12
32A	2NO	230	115	1	PLS + 32 20 230 A	686123	12
32A	2NO	240	120	1	PLS + 32 20 240 A	686124	12
16A	2NO	-	-	1	PLS + 16 20	686100	10
16A	1NO 1NC	-	-	1	PLS + 16 11	686085	10
16A	2CO	-	-	1	PLS + 16 2	686101	10
32A	2NO	-	-	1	PLS + 32 20	686117	10
16A	2NO	12	6	1	PLS + SA 16 20 012 A	686182	12
16A	2NO	24	12	1	PLS + SA 16 20 024 A	686183	12
16A	2NO	48	24	1	PLS + SA 16 20 048 A	686184	12
16A	2NO	230	115	1	PLS + SA 16 20 230 A	686185	12
16A	2NO	240	120	1	PLS + SA 16 20 240 A	686186	12
16A	2NO	12	6	1	PLS + SB 16 20 012 A	686187	12
16A	2NO	24	12	1	PLS + SB 16 20 024 A	686188	12
16A	2NO	48	24	1	PLS + SB 16 20 048 A	686189	12
16A	2NO	230	115	1	PLS + SB 16 20 230 A	686190	12
16A	2NO	240	120	1	PLS + SB 16 20 240 A	686191	12
16A	1NO	8	-	1	PLS + C 16 10 008 A	686132	12
16A	1NO	12	6	1	PLS + C 16 10 012 A	686133	12
16A	1NO	24	12	1	PLS + C 16 10 024 A	686134	12
16A	1NO	48	24	1	PLS + C 16 10 048 A	686135	12
16A	1NO	230	115	1	PLS + C 16 10 230 A	686136	12
16A	1NO	240	120	1	PLS + C 16 10 240 A	686137	12

32A other version available on request.
Terminal identification, see page D.52



Pulsar S - Impulse switches

	Nominal current	Contact combination	Coil voltage AC	Coil voltage DC	No. of Modules	Cat. No.	Ref. No.	Pack.
All-in central command (continued)       	16A	1CO	8	-	1	PLS + C 16 1 008 A	686126	12
	16A	1CO	12	6	1	PLS + C 16 1 012 A	686127	12
	16A	1CO	24	12	1	PLS + C 16 1 024 A	686128	12
	16A	1CO	48	24	1	PLS + C 16 1 048 A	686129	12
	16A	1CO	230	115	1	PLS + C 16 1 230 A	686130	12
	16A	1CO	240	120	1	PLS + C 16 1 240 A	686131	12
	16A	2NO	8	-	1.5	PLS + C 16 20 008 A	686144	8
	16A	2NO	12	6	1.5	PLS + C 16 20 012 A	686145	8
	16A	2NO	24	12	1.5	PLS + C 16 20 024 A	686146	8
	16A	2NO	48	24	1.5	PLS + C 16 20 048 A	686147	8
    	16A	2CO	8	-	1.5	PLS + C 16 2 008 A	686138	8
	16A	2CO	12	6	1.5	PLS + C 16 2 012 A	686139	8
	16A	2CO	24	12	1.5	PLS + C 16 2 024 A	686140	8
	16A	2CO	48	24	1.5	PLS + C 16 2 048 A	686141	8
	16A	2CO	230	115	1.5	PLS + C 16 2 230 A	686142	8
	16A	2CO	240	120	1.5	PLS + C 16 2 240 A	686143	8
	16A	3CO	8	-	2	PLS + C 16 3 008 A	686150	6
	16A	3CO	12	6	2	PLS + C 16 3 012 A	686151	6
	16A	3CO	24	12	2	PLS + C 16 3 024 A	686152	6
	16A	3CO	48	24	2	PLS + C 16 3 048 A	686153	6
   	16A	3CO	230	115	2	PLS + C 16 3 230 A	686154	6
	16A	3CO	240	120	2	PLS + C 16 3 240 A	686155	6
	32A	1NO	8	-	1	PLS + C 32 10 008 A	686156	12
	32A	1NO	12	6	1	PLS + C 32 10 012 A	686157	12
	32A	1NO	24	12	1	PLS + C 32 10 024 A	686158	12
	32A	1NO	48	24	1	PLS + C 32 10 048 A	686159	12
	32A	1NO	230	115	1	PLS + C 32 10 230 A	686160	12
	32A	1NO	240	120	1	PLS + C 32 10 240 A	686161	12
	32A	2NO	8	-	1.5	PLS + C 32 20 008 A	686162	8
	32A	2NO	12	6	1.5	PLS + C 32 20 012 A	686163	8
 	32A	2NO	24	12	1.5	PLS + C 32 20 024 A	686164	8
	32A	2NO	48	24	1.5	PLS + C 32 20 048 A	686165	8
	32A	2NO	230	115	1.5	PLS + C 32 20 230 A	686166	8
	32A	2NO	240	120	1.5	PLS + C 32 20 240 A	686167	8
	32A	3NO	8	-	2	PLS + C 32 30 008 A	686168	6
	32A	3NO	12	6	2	PLS + C 32 30 012 A	686169	6
	32A	3NO	24	12	2	PLS + C 32 30 024 A	686170	6
	32A	3NO	48	24	2	PLS + C 32 30 048 A	686171	6
	32A	3NO	230	115	2	PLS + C 32 30 230 A	686172	6
	32A	3NO	240	120	2	PLS + C 32 30 240 A	686173	6
Permanent use   	16A	2NO	24	12	1	PLS + PU 16 20 024 A	686178	12
	16A	2NO	230	115	1	PLS + PU 16 20 230 A	686179	12
	16A	2CO	24	12	1	PLS + PU 16 2 024 A	686176	12
	16A	2CO	230	115	1	PLS + PU 16 2 230 A	686177	12
  	16A	4NO	24	12	2	PLS + PU 16 40 024 A	686180	6
	16A	4NO	230	115	2	PLS + PU 16 40 230 A	686181	6
Add-on auxiliary contact 	5A	1NO 1NC	-	-	0.5	CTX + R 5 11	686067	16
	5A	2NO	-	-	0.5	CTX + R 5 20	686068	16
	5A	2NC	-	-	0.5	CTX + R 5 02	686066	16
Add-on central control 	-	-	-	-	0.5	PLS + C	686125	16
	-	-	-	-	1	PLS + M	686175	12
Multilevel central command module 	-	-	-	-	1	PLS + M	686175	12
	-	-	230/240	-	1	PLS + SG	686192	12
SurgeGuard safety module 	-	-	230/240	-	1	PLS + SG	686192	12
	-	-	230/240	-	1	PLS + CAP	686174	12
Capacity module 	-	-	230/240	-	1	PLS + CAP	686174	12
	-	-	-	-	0.5	PLS + / CTX + SP	686069	50
Spacer 	-	-	-	-	0.5	PLS + / CTX + SP	686069	50
	-	-	-	-	1	PLS + / CTX + TS 1	686070	50
Sealing cap 	-	-	-	-	1	PLS + / CTX + TS 1	686070	50

Terminal identification, see page D.52



Staircase switches

Pulsar TS

Function

Push-button operated single-shot timer, switching the power to the load after the push-button has been pushed briefly, and switching off again after the preset time has elapsed.

Energy saving: the PLTS + TD is especially developed to switch off during the preset time when the staircase switch receives a new impulse.

Applications



Lighting or ventilation of staircases, basements, halls, etc.

Features

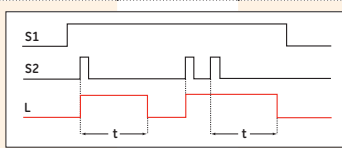
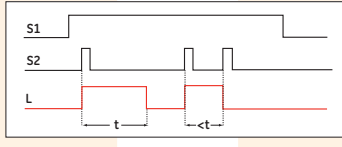
- Designed for a real 3.500W switching capacity.
- User adjustable time.
- Electromechanical contact and electronic timer with manual override off or on possible at all time for PLTS + M.
- 3 or 4 wire wiring possible.
- Device for pre-extinction warning adjustable from 20 to 40 sec only for incandescence sources.
- Safety terminals equipped with captive Pozidriv screws and IP20 protection degree.
- Anti vandalisme: resistant to blocked push-buttons.

Standards

EN 60669-2-3



Pulsar TS - Staircase switches

	Nominal current	Contact combination	Coil voltage AC	Coil voltage DC	Number of Modules	Cat. No.	Ref. No.	Pack.
 Staircase switch 	16	1NO	230	-	1	PLTS + M	686216	12
 Dimmer for staircase switch	16	3500W	230	-	1	PLTS + D	686214	12
To be used only in combination with the staircase switch. Wiring diagram on page D.17								
 Time-delay impulse relay 	16	1NO	230	-	1	PLTS + TD	666311	12

Terminal identification, see page D.53

More technical data ● website

Dimensions ● pg D.57

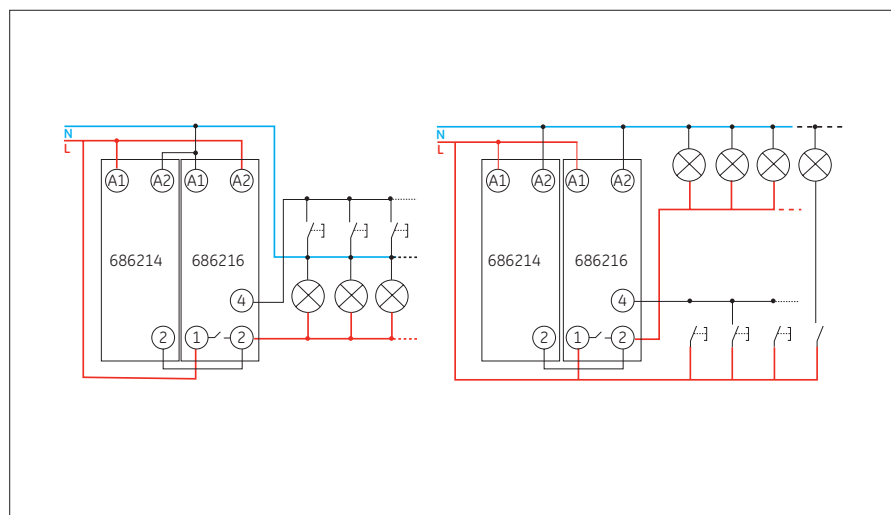
Performance

				PLTS + TD	PLTS + M	PLTS + D
Rated current (acc. IEC 669-2-3)				16	16	16
Width (in number of DIN-modules)				1	1	1
Contacts				1	1	1
Time range				1mn / 20mn	30s / 15mn	20s / 40s
Supply voltage				yes	yes	yes
				on request	on request	on request
Supply voltage range (in % of Un)				90-110	90-110	90-110
Rated power consumption						
Closed circuit current				4.0	4.0	4.0
Working current (ignition and running)				4.0	4.0	4.0
Light types						
Incandescent lamps				yes	yes	yes
Fluorescent lamps				yes	yes	no
Switching capacity						
AC-5b Incandescent lamps (40 to 200 W lamps)				3,500	3,500	3,500
Fluorescence compensated (cos $\Psi = 0.9$)						
Serial compensation				3,500	3,500	n/a
Parallel compensation				2,500	2,500	n/a
Lifetime (in number of operations) ⁽¹⁾						
Electrical (AC-1)						
at 1,200 W				2×10^6	2×10^6	2×10^6
at full load				1×10^6	3×10^5	3×10^5
Mechanical				1×10^7	1×10^7	1×10^7
Max. number of push-buttons						
Non illuminated push-buttons				unlimited	unlimited	unlimited
Luminous push-buttons (0.6mA):						
4 terminals				unlimited	unlimited	unlimited
3 terminals						
Without compensator				39	83	83
1 compensator (2 μ F) ⁽²⁾				45	300	300
2 compensators (2 x 2 μ F)				59	600	600
General specifications						
DIN rail mounting				yes	yes	yes
Silent operations				yes	yes	yes
Setting accuracy - Full range				% +/- 15	% +/- 15	% +/- 15
3-wire and 4-wire installation				yes	yes	yes
Resistent to blocked push-buttons				yes	yes	yes
Continuously adjustable time-lag				yes	yes	yes
Manual switching (number of positions)				2	3	-
Front switch-off lever				yes	yes	-
Clamping screw terminals, unloosable screws				yes	yes	yes
Cable cross section (Ø min/max)						
Coil				mm ² 1.5 / 10	1.5 / 10	1.5 / 10
Load				mm ² 1.5 / 10	1.5 / 10	1.5 / 10
Maximum torque on terminals				N x m 1	1	1
Ambient temperature at installation point (min./max.)				°C -20 / +45	-20 / +45	-20 / +45

(1) cycle = 2 operations per pole (closing + opening)

(2) See page D.15: code 686174

Wiring diagram





Time Relays

Pulsar T

Function

Conditioning of incoming source to exact predictable output.

Applications



From the delayed lighting of driveways (to avoid unnecessary on/off switching), to after-circulation of a pump (to build in some hysteresis, again to avoid continuous on/off switching) to the post-present ventilation of a meeting room.

Features

- Devices with delay on (ON), delay off (OFF), combined on-off-delay (ON/OFF), astable (AS), positive edge single shot (PS) negative edge single shot (NS) and even with all the above combined in one multi-function (MF) device are available.
- User presettable prescaler and time.
- In the case of the multi-function relay, the function itself is also user selectable.
- The loss-proof safety terminals are equipped with Pozidriv screws and have IP20 protection degree.

Standards

IEC 60669-2-3



Performance

			PLT + AS	Other PLT +
Rated current (acc. IEC 669-2-3)	A		1 (static)	16
Width (number of DIN-modules)			1	1
Contacts	Changeover		-	1
	Static input		1	-
Time range	1 function		0.1s / 60s.	1s / 60mn
	Multifunction		no	0.1s. / 20h.
Supply voltage	230/240V - 50/60 Hz		yes	yes
	24VAC/24VDC		yes	yes
Supply voltage range (in % of Un)	%		90-110	90-110
Rated power consumption				
Closed circuit current	230V	VA	4.0	1.5
	24V	VA	-	0.2
Working current (ignition and running)	230V	VA	4.0	4.0
	24V	VA	-	2.0
Light types				
Incandescent lamps			yes	yes
Fluorescent lamps			yes	yes
Switching capacity				
AC-5b Incandescent lamps (40 to 200 W lamps)	W		2,300	2,300
Fluorescence compensated (cos φ = 0.9)				
	Serial compensation	W	-	2,300
	Parallel compensation	VA	-	1,000
Inductive load cos φ = 0.5			230W	10A
	Load AC-7b	W	-	900
Lifetime (in number of operations)⁽¹⁾				
Electrical (AC-1)	at 1,200 W		2×10^6	2×10^6
	at full load		1×10^6	3×10^5
Mechanical			1×10^7	1×10^7
General specifications				
DIN rail mounting			yes	yes
Silent operations			yes	yes
Setting accuracy - Full range	%		+/- 15	+/- 15
Continuously adjustable time-lag			yes	yes
Front switch-off lever			yes	no
Clamping screw terminals, unlosable screws			yes	yes
Cable cross section (Ø min/max)	Coil	mm ²	1.5 / 10	1.5 / 10
	Load	mm ²	1.5 / 10	1.5 / 10
Maximum torque on terminals		N x m	1	1
Ambient temperature at installation point (min./max.)		°C	-20 / +45	-20 / +45

(1) cycle = 2 operations per pole (closing + opening)

More technical data ● website

Dimensions ● pg D.57

Pulsar T - Time Relays



Delay on



Operating scale from 1 sec. up to 60 seconds

16 A
16 A

1 CO
1 CO

24
230

24
-

1
1

PLT + ON 024U 1-60S
PLT + ON 230A 1-60S

686207
686209

12
12

Operating scale from 1 min. up to 60 minutes

16 A
16 A

1 CO
1 CO

24
230

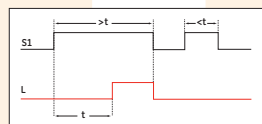
24
-

1
1

PLT + ON 024U 1-60M
PLT + ON 230A 1-60M

686206
686208

12
12



Positive edge single shot



Operating scale from 1 sec. up to 60 seconds

16 A
16 A

1 CO
1 CO

24
230

24
-

1
1

PLT + PS 024U 1-60S
PLT + PS 230A 1-60S

686211
686213

12
12

Operating scale from 1 min. up to 60 minutes

16 A
16 A

1 CO
1 CO

24
230

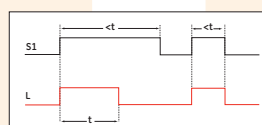
24
-

1
1

PLT + PS 024U 1-60M
PLT + PS 230A 1-60M

686210
686212

12
12



Delay off



Operating scale from 1 sec. up to 60 seconds

16 A
16 A

1 CO
1 CO

24
230

24
-

1
1

PLT + OF 024U 1-60S
PLT + OF 230A 1-60S

686203
686205

12
12

Operating scale from 1 min. up to 60 minutes

16 A
16 A

1 CO
1 CO

24
230

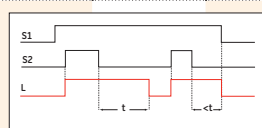
24
-

1
1

PLT + OF 024U 1-60M
PLT + OF 230A 1-60M

686202
686204

12
12



Asymmetrical flasher



1 A

1 NO

230

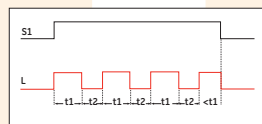
-

1

PLT + AS 230A

686195

12



Symmetrical flasher



16 A
16 A

1 CO
1 CO

24
230

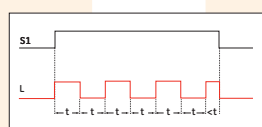
24
-

1
1

PLT + SS 024U
PLT + SS 230A

686218
686219

6
6



Impulse generator



16 A
16 A

1 CO
1 CO

24
230

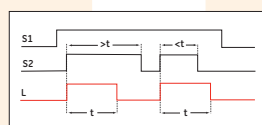
24
-

1
1

PLT + IG 024U
PLT + IG 230A

686196
686197

6
6



Multifunction



16 A
16 A

1 CO
1 CO

24
230

24
-

1
1

PLT + MF 024U 0.1S-60M⁽¹⁾
PLT + MF 230A 0.1S-60M⁽¹⁾

686198*
686200*

1/6
1/6

Operating scale from 30 sec. up to 20 hours

16 A
16 A

1 CO
1 CO

24
230

24
-

1
1

PLT + MF 024U 30S-20H⁽¹⁾
PLT + MF 230A 30S-20H⁽¹⁾

686199*
686201*

1/6
1/6

(1) PLT + MF = Multifunction, including functions PLT + ON, PLT + OF and PLT + PS.
Terminal identification, see page D.53



Classic

Features

Very easy programming by means of mechanical switches on a dial, but with restricted possibilities compared to the digital time switches. Both devices with 1 dial for programming of daily or weekly events, as well as devices with 2 dials for 2 channel daily events and combined daily and weekly events are available in 2 versions: quartz and net synchronised, with and without running reserve respectively. Manual override Off or On is possible at all times. All devices are sealable.

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.

Standards

VDE 0633, BS EN 60730-1, BS EN 60730-2-7

Function

Pre-programmed switching of all kinds of electrical devices.

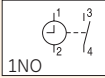
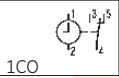
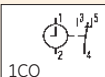
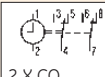
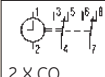
Performance

Plastic switches				
	Net synchronised 1 module	Net synchronised 3 and 6 modules	Quartz synchronised 1 module	Quartz synchronised 3 and 6 modules
Contact	Voltage free NO	Voltage free CO	Voltage free NO	Voltage free CO
Fix on, Fix off, Auto switch	Not fix off	yes	Not fix off	yes
Rated switching capacity				
- Resistive load	16A/250V	16A/250V	16A/250V	16A/250V
- Inductive load (cos φ = 0.6)	4A/250V	4A/250V	4A/250V	4A/250V
- Incandescent lamps	1000W	1350W	1000W	1350W
Shortest switching time day-program	30min.	30min.	30min.	30min.
Shortest switching time week-program	-	3h	-	3h
Screws	Pozidriv 1	Pozidriv 1	Pozidriv 1	Pozidriv 1
Terminal capacity: min	1x0.5mm ²	1x0.5mm ²	1x0.5mm ²	1x0.5mm ²
max	1x6 or 2x2.5mm ²	1x6 or 2x2.5mm ²	1x6 or 2x2.5mm ²	1x6 or 2x2.5mm ²
Clockwork				
Operating voltage	220 - 240V 50Hz	220 - 240V 50Hz	230V - 130VDC	230V - 130VDC
Own consumption at 230V	1VA	1VA	1VA	1VA
Running reserve	-	-	150h	150h
Battery charging time	-	-	70h	70h
Operating temperature range	-20 to +55°C	-20 to +55°C	-20 to +55°C	-20 to +55°C
Accuracy	net synchronised	net synchronised	±2.5s./day at 20°C	±2.5s./day at 20°C
Sealable	yes	yes	yes	yes
Screws	Pozidriv 1	Pozidriv 1	Pozidriv 1	Pozidriv 1
Terminal capacity: min	1x0.5mm ²	1x0.5mm ²	1x0.5mm ²	1x0.5mm ²
max	1x6 or 2x2.5mm ²	1x6 or 2x2.5mm ²	1x6 or 2x2.5mm ²	1x6 or 2x2.5mm ²

More technical data ● website

Dimensions ● pg D.58

Classic - Analogue time switches

NET SYNCHRONISED		Program	No. of channels	Nominal current	Operating voltage	Running reserve	Shortest switch time	Fix on/off auto	No. of mod.	Cat. No.	Ref. No.	Pack.
Day programmable		1x24x2	1NO	16A/250V	220 ... 240V 50Hz	-	30min.	Not "OFF"	1	CLS S 11 D	666111	1
		1x24x2	1CO	16A/250V	220 ... 240V 50Hz	-	30min.	yes	3	CLS S 31 D	666112	1
												
Week programmable		7x24/3	1CO	16A/250V	220 ... 240V 50Hz	-	3h	yes	3	CLS S 31 W	666114	1
												
QUARTZ SYNCHRONISED		Program	No. of channels	Nominal current	Operating voltage	Running reserve	Shortest switch time	Fix on/off auto	No. of mod.	Cat. No.	Ref. No.	Pack.
Day programmable		1x24x2	1NO	16A/250V	130VDC/ 230V	50h	30min.	Not "OFF"	1	CLS Q 11 D	666105	1
		1x24x2	1CO	16A/250V	130VDC/ 230V	150h	30min.	yes	3	CLS Q 31 D	666104	1
												
Week programmable		7x24/3	1CO	16A/250V	130VDC/ 230V	150h	3h	yes	3	CLS Q 31 W	666109	1
												
Day-Day programmable		1x24x2 + 1x24x2	2CO	16A/250V	130VDC/ 230V	150h	30/30min.	yes	6	CLS Q 62 DD	666103	1
												
Day-Week programmable		1x24x2 + 7x24/3	2CO	16A/250V	130VDC/ 230V	150h	30min./3h	yes	6	CLS Q 62 DW	666108	1
												

Accessories

	No. of mod.	Cat. No.	Ref. No.	Pack.
Surface mounting set 	1	SMS 1	666100	1
	3	SMS 3	666101	1
	6	SMS 6	666102	1



Function

Pre-programmed switching of all kinds of electrical devices.

Standards

BS EN-60730-1, BS EN-60730-2-7, VDE 0633

Digital Time Switches

Galax

Applications

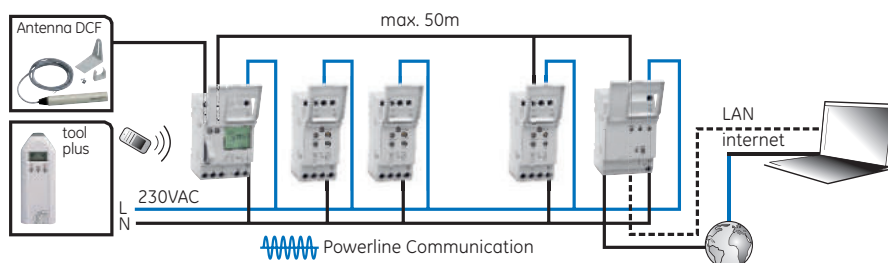


Going from the pre-programmed switching of lighting (car park, advertising signs, public roads, etc.) over pre-programmed switching of heating equipment (home and work environment, water heating, etc.), to the pre-programmed switching of motors for pumps and fans and even to random presence simulation.

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, some of them even one second, and are all internally quartz-synchronized, some of them with the possibility of being DCF77-synchronized. On all devices, the summer/winter time change is fully automatic. Devices with block-programming, holiday, random and impulse-function are available. Manual On or Off override is possible at all times and all devices are sealable. ASTRO timers are specially designed for lighting applications. Only the longitude and latitude need to be entered for precise automatic determination of the times for sunrise and sunset.

Example of the system solution for new timers GLX Q32 V800 with extension channels GLX Q22 CE and LAN device GLX Q30



Performance

	GLX Q ## W 70 / ASTRO 1, 2 CO Voltage-free changeover	GLX Q ## W 100C 1 CO: 1 CO + 1 NO Voltage-free changeover	GLX Q 32 / GLX 22CE ⁽²⁾ 2 CO (up to 8 CO) Voltage-free changeover
Contact			
Rated switching capacity			
- Resistive load	16A/250V	16A/250V	16A/250V
- Inductive load (cos φ = 0.6)	10A/250V	10A/250V	10A/250V
- Incandescent lamps	2600W	2600W	2600W
Fluorescent uncorrected / serial corrected	1000VA	1000VA	1000VA
- Halogen lamp load	2600W	2600W	2600W
- Compact fluorescent lamp		22 x 7W, 18 x 11W, 16 x 15W, 16 x 20W, 14 x 23W	
- Energy saving lamps		37 x 7W, 30 x 11W, 26 x 15W, 26 x 20W, 11 x 23W	
Minimum switching load	300mW	300mW	500mW
DC switching capacity 24V / 50V / 220V	800mA / 300mA / 150mA	800mA / 300mA / 150mA	800mA / 300mA / 150mA
Shortest switching time	1min.	1min./1s (pulse and cycle)	1min./1s (pulse and cycle)
Screws	Pozidriv 1	Pozidriv 1	Pozidriv 1
Terminal capacity:	1-4mm ²	1-4mm ²	1-4mm ²
Clockwork			
Operating voltage	110-230VAC	24VAC/DC; 110-230VAC	230V 50-60Hz
Own consumption at 230V	1VA	1VA	5VA
Running reserve (at 20° C)	3 years at 20°C	10 years at 20°C	3 years at 20°C
Battery type	CR2032	CR2450	CR2032
Operating temperature range	-25 ⁽¹⁾ to +55°C	-25 to +55°C	-10 to +55°C
Accuracy	±0.5s/day at 20°C	±0.3s/day at 20°C	±1s/day at 20°C
Sealable and unloosable cover	yes	yes	yes

More technical data ● website
Dimensions ● pg D.58

(1) Limited display readability possible but full functionality guaranteed
(2) GLX 22 CE has got the same switching capacity

Galax - Digital time switches

QUARTZ SYNCHRONISED

Week programmable



Programme	No. of channels	Switching capacity	Operating voltage	Running reserve	Shortest switch time	No. of prog. steps	No. of mod.	Cat. No	Ref. No.	Pack.
7x24h	1CO	16A/250V	110-230V	3yr	1min.	70	2	GLX Q 21 W 70	666312	1
7x24h	2CO	16A/250V	110-230V	3yr	1min.	70	2	GLX Q 22 W 70	666313	1
7x24h	1CO	16A/250V	110-230V	10yr	1s	100	2	GLX Q 21 W 100C	666314	1
7x24h	1CO+1NO	16A/250V	110-230V	10yr	1s	100	2	GLX Q 22 W 100C	666315	1

For 2 modules timers

- Display lighting
- PIN-code
- Hour counter with service function
- 12/24h time setting
- Weekly and holiday program (ON/OFF)
- Free weekdays block formation
- Summer/winter time changeover: auto/free selectable/OFF
- Manual switch: auto/override/fix ON-OFF
- Non-volatile memory (EEPROM)
- Easy battery replacement (from top side)

Additional functions only for 666314 and 666315

- Pulse and cycle function with shortest switching time 1s
- Random switching up to 30min.
- External input (override, countdown, pulse counter)
- PC-supported program creation (with use of GLX PRG)

ASTRO/Holiday programm.



-	1CO	16A/250V	110-230V	3yr	1min.	70	2	GLX Q 21 70 ASTRO	666348	1
-	2CO	16A/250V	110-230V	3yr	1min.	70	2	GLX Q 22 70 ASTRO	666349	1

- ASTRO function
- Entering longitude / latitude or selecting cities from stored list
- Auto offset
- Nighttime switching - off
- Non-volatile memory (EEPROM)
- Easy battery replacement (from top side)
- Summer/winter time changeover: auto/free selectable/OFF

- Display lighting
- PIN-code
- Hour counter with service function
- 12/24h time setting
- Holiday program
- Free weekdays block formation

QUARTZ SYNCHRONISED

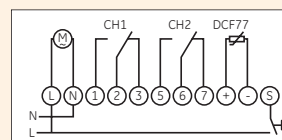
Day/Week/Year programmable



365x24x3600	2CO	16A/250V	220...240V	3yr	1s	800	3	GLX Q 32 Y 800	666351	1
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- 800 memory spaces
- Date-dependent programming
- Expandable to up to 8 channels
- Exchangeable battery
- PIN code secured, tamper-proof
- External output with pulse meter, count-down timer and override
- Operating hour counter with reset function
- ON/OFF, pulse and cycle functions
- PC-assisted program generation

- DCF antenna for exact time synchronization (Not needed when LAN unit is used)
- Program transmission via GLX PRG or with GLX LAN via a LAN network or internet
- Communication with channel extensions and LAN module via Powerline GPL
- Channel extensions and LAN module can be placed in different switch cabinets
- Notification of service messages to support problem-free maintenance (Only when LAN unit is used)
- Programming in 7 languages

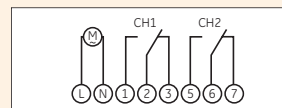


Channel extension



	2CO	16A/250V	220...240V				2	GLX 22 CE	666352	1
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The channel extensions allow the annual time switch to be expanded to a complete mini control system of up to 8 channels. The connected channel extensions receive their switching commands via the Powerline. This allows the GLX CE to be mounted in different switch cabinets at a distance of up to 50m from the main unit. The switching status is displayed on the channel extension.

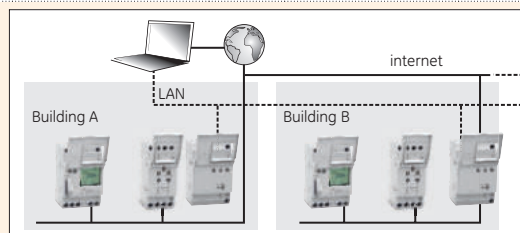


LAN device



			220...240V				3	GLX 30 LAN	666353	1
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- Communication with GLX Q 32 Y800 via Powerline
- Integrated web server
- Upload/Download/Monitoring of switching programs
- Alarm function
- Time synchronization via internet
- LAN/Internet communication
- Static and dynamic IP addressing
- Ethernet Port: 10Base T
- Ethernet connection: RJ-45
- Supported network protocols: TCP, UDP, ARP, ICMP, TFTP, DHCP, NBNS, HTTP, SMTP and NTP



Accessories

	No. of mod.	Cat. No.	Ref. No.	Pack.
--	-------------	----------	----------	-------



DCF-77 antenna for GLX Q 32 Y800

- Maximum cable length: 300 metres
- Can be used outdoors (IP 54)

GLX DCF

666181

1



Programming tools for timers GLX Q W100C / GLX Y 800

Including also: - mini CD with PC software and manuals
- connection cable for connection PC to GLX PRG

- Hand-held programming device, transfers date/time and a maximum of 4 programs
- Stores programs in EEPROM; bidirectional serial part
- Transmission/reception of programs

GLX PRG

666354

1

Programming languages: - GLX Q W70 / Astro in DE/EN-FR/IT-ES/PT-NL/PL

- GLX Q W100C; GLX Q Y 800; GLX PRG in DE-EN-FR-IT-ES-NL

Electronic manuals for the other languages available on the request.



New



Time Switches

72 X 72 Classic and Galax

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.

Function

Pre-programmed switching of all kind of electrical devices.

Performance

	Weekly timers		Daily timers	Daily/Week timer
Code	666176	666175	666178	666179
Type	CLS 72Q41W	CLS72S41W	CLS72Q41D	GLX72Q41DW
Running reserve	150h	-	150h	3yr.
Shortest switch time	2h	2h	15min	1min
Modules	4	4	4	4
Nominal current	16A/250V	16A/250V	16A/250V	16A/250V
Accuracy	<2.5s/day	<2.5s/day	<2.5s/day	<2.5s/day
Number of channels	1CO	1CO	1CO	1CO
Operating voltage	220-240VAC/50-60Hz	220-240VAC/50-60Hz	220-240VAC/50-60Hz	220-240VAC/50-60Hz
Fix on/off auto	yes	yes	yes	yes
Flush mounting	yes	yes	yes	yes
Surface mounting	yes	yes	yes	yes
DIN-rail mounting	yes	yes	yes	yes
Number of memory position	-	-	-	50

More technical data ● website

Dimensions ● pg D.59

72 X 72 Classic - Analogue time switches

	Program	No. of channels	Nominal current	Operating voltage	Running reserve	Shortest switch time	Fix on/off auto	No. of mod.	Cat. No.	Ref. No.	Pack.
Day program	1x24	1CO	16A/250V	220...240VAC	150 h	15 min	yes	4	CLS72Q41D	666178	1
Week program	7x24	1CO	16A/250V	220...240VAC	-	2 h	yes	4	CLS72S41W	666175	1
	7x24	1CO	16A/250V	220...240VAC	150 h	2 h	yes	4	CLS72Q41W	666176	1



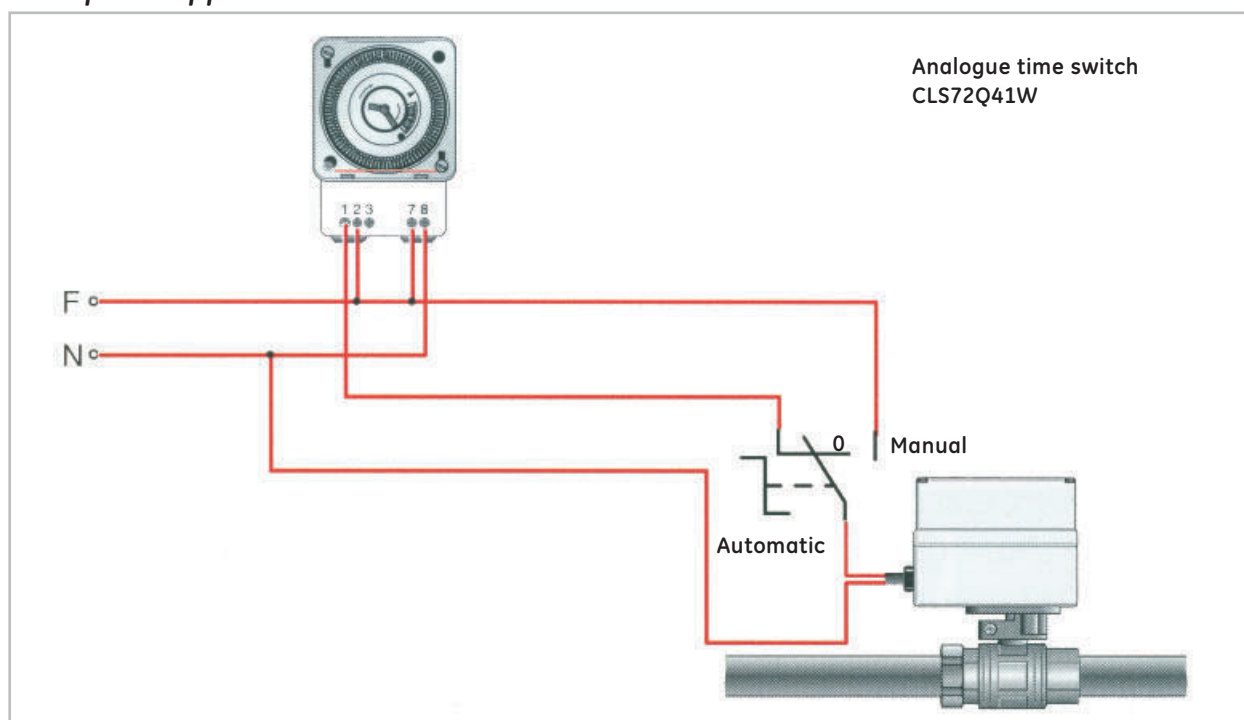
72 X 72 Galax - Digital time switches

	Program	No. of channels	Nominal current	Operating voltage	Running reserve	Shortest switch time	Fix on/off auto	No. of mod.	Cat. No.	Ref. No.	Pack.
Day-Week program	1x24/7x24	1CO	16A/250V	220 240VAC	3 yr.	1 min	yes	4	GLX72Q41DW	666179	1



- Easy to use
- Text programming in different languages (D, GB, F, E, I, P, Cz, NL)
- Summer/winter time change is fully automatic
- Switching capacity for inductive load 8A/250V

Example of application





Light Sensitive Switches

Galax LSS

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.

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.

Function

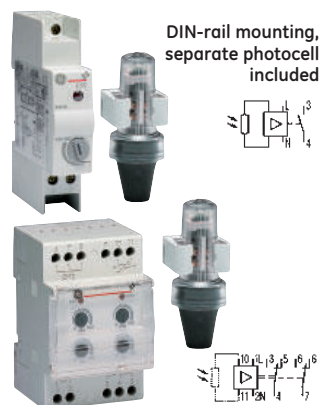
Electronic switch controlled by the intensity of the ambient light, detected by a separate or integrated photocell (depending on the model). When the light intensity drops below the threshold setting, the switch changes its state to the on position. An increasing ambient light intensity eventually will switch off the device again.

Performance

	LSS 11 1 channel	LSS 32 2 channel	LSS 31 LS 1 1 channel + digital time switch	LSS W 1 channel wall mounting
Contact	1 make contact NO	Voltage-free changeover	Voltage-free changeover	1 make contact NO
Switching capacity				
- Resistive load	16A/250V	10A/250V	16A/250V	10A/250V
- Inductive load (cos φ = 0.6)	8A/250V	8A/250V	10A/250V	2A/250V
- Incandescent lamps	2000W	2000W	2600W	1200W
DC Switching capacity	800mA at 24V, 300mA at 60V; 150mA at 220V			Not allowed
Shortest switching time	-	-	1min.	-
Screws	Pozidriv 1	Pozidriv 1	Pozidriv 1	Slot head
Terminal capacity: min	1x0.5mm ²	1x0.5mm ²	1x0.5mm ²	1x0.5mm ²
max.	1x6mm ² or 2x2.5mm ²	1x6mm ² or 2x2.5mm ²	1x4mm ²	1x6mm ² or 2x2.5mm ²
Operating voltage	220/240V 50/60Hz	230/240V 50/60Hz	230V 50/60Hz	220/240V 50/60Hz
Own consumption at 230V	5VA	2.5VA	5VA	6VA
Running reserve	-	-	3 years at 20°C	-
Battery	-	-	Lithium	-
Operating temperature range	-20 to +55°C	-20 to +55°C	-10 to +55°C	-35 to +60°C
Accuracy	-	-	±1s/day at 20°C	-
Sealable	yes	yes	yes	-
Screws	Pozidriv 1	Pozidriv 1	Pozidriv 1	Slot head
Terminal capacity: min	1x0.5mm ²	1x0.5mm ²	1x0.5mm ²	1x0.5mm ²
max.	1x6mm ² or 2x2.5mm ²	1x6mm ² or 2x2.5mm ²	1x6mm ² or 2x2.5mm ²	1x6mm ² or 2x2.5mm ²
Light sensitive operating part				
Light intensity switching range	2 to 500 lux	2 to 500 lux	2 to 500 lux	2 to 2000 lux
Switching hysteresis	30% above On-switching point			-
On/Off switching delay	100s On 100s Off	Use presettable from 0 to 100s	Use presettable from 0 to 100s	20 to 120s
Light sensitive sensor wire-length	max. 100m	max. 100m	max. 100m	-
Light sensitive sensor protection degree	IP65	IP65	IP65	IP54 (complete device)
Operating temperature range	-30 to +70°C	-30 to +70°C	-30 to +70°C	-35 to +60°C
Terminal capacity: min	2x0.75mm ²	2x0.75mm ²	2x0.75mm ²	-

More technical data ● website
Dimensions ● pg D.59

Galax LSS - Light Sensitive Switches



DIN-rail mounting,
separate photocell
included

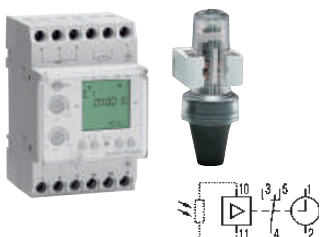
Programme	No. of channels	Nominal current	Operating voltage	No. of modules	Cat. No.	Ref. No.	Pack.
2 to 500 lux	1NO	16A/250V	230V	1	LSS 11	666361	1
2 to 500 lux	2CO	16A/250V	230V	3	LSS 32	666362	1
2 to 2000 lux	1NO	16A/250V	230V	-	LSS W	666364	1



Wall mounting,
photocell
incorporated

GALAX – Light Sensitive Switches with digital timer

DIN rail mounting, separate photocell
included with digital timer



Programme	Number of channels	Nominal current	Operating voltage	Running reserve	Shortest switch time	No. of program steps	No. of mod.	Cat. No.	Ref. No.	Pack.
2 to 500 lux and 7x24x60	1CO	16A/250V	230V	3yr	1 min.	50	3	LSS 31 LS 1 ⁽¹⁾	666365	1

- Automatic summer time / winter time changeover
- Manual switch: FIX ON / FIX OFF
- Free weekday black formation
- Non-volatile memory (EEPROM)

Accessories



Photocell
(spare part)

No. of modules	Cat. No.	Ref. No.	Pack.
-	LSS LDR	666358	1

Surface mounting set



No. of modules	Cat. No.	Ref. No.	Pack.
1	SMS 1	666100	1
3	SMS 3	666101	1
6	SMS 6	666102	1

(1) Language set (codes LS) valable for: German, English, French, Spanish, Italian, Portuguese, Czech, Dutch



Safety and bell transformers Buzzers and bells

Series T+ BU+ BE+

Applications



Function

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.).

Approvals



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.

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.

Standards

IEC 61558-1-2-6: Safety transformer

IEC 61558-1-2-8: Bell transformer

EN 62080: Bells and buzzers

Performance

	Bell transformer	Safety transformer	Buzzers and bells
Nominal primary voltage and frequency//Command voltage	230V 50Hz / 240V 60Hz	230V 50Hz / 240V 60Hz	230VAC-12VAC
Power VA / Consumption 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	1.5xUn sec.	1.3xUn sec.	-
Minimum secondary voltage at nominal load	0.85xUn sec.	0.95xUn sec.	-
Maximum load	Nominal power	Nominal power	-
Short-circuit protection	PTC and Fail Safe	PTC and Fail safe	-
Operating temperature	-20...+40°C	0-20...+40°C	-20...+45°C
Isolation voltage	4kV	4kV	-
Protection degree	IP20	IP20	IP20
Use	Intermittent	Permanent	Permanent
Maximum permanent working time	-	-	12 hours
Sound level	-	-	77-75 dB
Screw	Slotted and PH1	Slotted and PH1	Pozidriv 1
Terminal capacity min	1x0.5mm ²	1x0.5mm ²	1x1.5 mm ²
max	1x4mm ² or 2x2.5mm ²	1x4mm ² or 2x2.5mm ²	1x10 mm ²

New

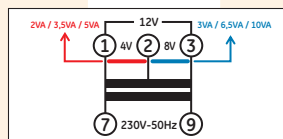


Series TR+ Bells transformers



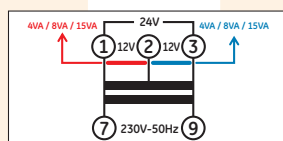
Bell transformer

Output power VA	Secondary voltages	Primary voltage	Number of modules	Primary circuit protection	Cat. No.	Ref. No.	Pack.
5	4-8-12 Vac	230 Vac	2	PTC	TR+ B 5	665900	1
10	4-8-12 Vac	230 Vac	2	fail safe	TR+B10	665902	1
15	4-8-12 Vac	230 Vac	2	fail safe	TR+B15	665903	1



Bell transformer

8	12-12-24 Vac	230 Vac	2	fail safe	TR+B 8	665901	1
16	12-12-24 Vac	230 Vac	2	fail safe	TR+B16	665904	1
30	12-12-24 Vac	230 Vac	3	fail safe	TR+B30	665905	1

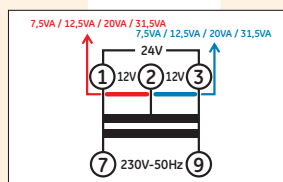


Series TS+ Safety transformers



Safety transformer

Output power VA	Secondary voltages	Primary voltage	Number of modules	Primary circuit protection	Cat. No.	Ref. No.	Pack.
15	12-12-24 Vac	230 Vac	2	fail safe	TR+S15	665909	1
25	12-12-24 Vac	230 Vac	3	fail safe	TR+S25	665910	1
40	12-12-24 Vac	230 Vac	3	PTC	TR+S40	665911	1
63	12-12-24 Vac	230 Vac	6	PTC	TR+S63	665912	1



Series TR+/TS+ sealing CAPS for Bells and safety transformers



Sealing CAPS

To be used in	Number of modules	Cat. No.	Ref. No.	Pack.
TR+S25	3	TR&KT+C3MOD	665918	1
TR+S63	6	TR&KT+C6MOD	665919	1

Series BE+/BU+ Bells and buzzers



Bells



Buzzers

Power consumption VA	Voltages	dB	Number of modules	Permanent use	Cat. No.	Ref. No.	Pack.
4.5	230 Vac	77	1	12 h	BE+230	665920	12
4.5	12 Vac	77	1	12 h	BE+12	665922	12
4.5	230 Vac	75	1	12 h	BU+230	665921	12
4.5	12 Vac	75	1	12 h	BU+12	665923	12

Series T+ BU+ BE+

A

B

C

D

E

F

G

X



Function

Measurement, visualisation and logging of Energy kWh to be used in BMS systems.

Approvals



Digital kWh

Series MT+D kWh

Applications



Measurement of energy consumption. Possibility to integrate in only one system electricity, water, gas... consumptions.

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.

GEIS offer 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 powerful system of measure. In order to build this system, some accessories 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.

Standards

EN/IEC 62053-21, EN/IEC 62053-23, EN/IEC 62052-11

Performance MT+D KWh

	D1i32	D1i63	D3Ni63	D3Ni x/5
Display				
Display type	LCD 7 digits	LCD 6 digits	LCD 8 digits	LCD 8 digits
Maximum display	99999.99kWh	99999.9kWh	999999.99kWh	See Tech. Datasheet
Energy				
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
Input				
Network	Single-phase	Single-phase	Three phase, 3-4wires	Single Phase, Three 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
Pulse output				
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
Thermal capacity				
Rigid cable	1/10mm ²	1/16mm ²	1/16mm ²	1/4mm ²
Flexible cable	1/7mm ²	1/10mm ²	1/10mm ²	0.05/2.5mm ²
Tightening torque advised	1.1mm ²	1.4mm ²	1.4mm ²	0.8mm ²
Number of modules	1	2	4	4
Environmental conditions				
Operating temperature	-5°C...55°C	-5°C...55°C	-5°C...55°C	-5°C...55°C
Additional Approvals				
MID directive compliance	MT+D1i32 1M MID	MT+D1485 63 2M MID MT+D1i 63 2M MID	MT+D3N485 63 4M MID MT+D3Ni 63 4M MID	MT+D3Ni x/5 4M MID MT+D3N485 x/5 4M MID

New

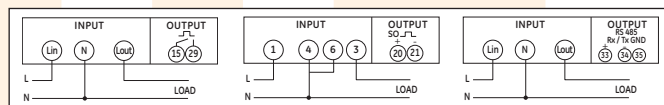


Series MT+D kWh



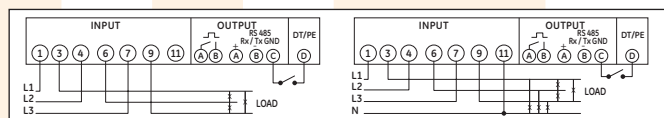
Monophase kWh

Scale	Accuracy	Number of modules	Outputs	Additional measures	Cat. No.	Ref. No.	Pack
<32A	Class 1	1	Pulse	-	MT+D1i 32 1M	665248	1
<63A	Class 1	2	Pulse	In, Vn, Wt, Hz, PF, HM	MT+D1i 63 2M	665250	1
<63A	Class 1	2	RS485	In, Vn, Wt, Hz, PF, HM	MT+D1485 63 2M	665252	1



Triphase 3-4 wires kWh

<63A	Class 1	4	PULSE	partial kWh, double tariff, Var, Un, In, Wt, Hz, PF, HM	MT+D3Ni 63 4M	665254	1
<63A	Class 1	4	RS485	partial kWh, double tariff, Var, Un, In, Wt, Hz, PF, HM	MT+D3N485 63 4M	665256	1
x/5A	Class 1	4	PULSE	partial kWh, double tariff, Var, Un, In, Wt, Hz, PF	MT+D3Ni x/5 4M	665258	1
x/5A	Class 1	4	RS485	partial kWh, double tariff, Var, Un, In, Wt, Hz, PF	MT+D3N485 x/5 4M	665260	1



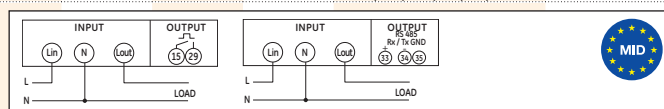
For x/5 version see tech. datasheet

Series MT+D kWh. MID Directive approval



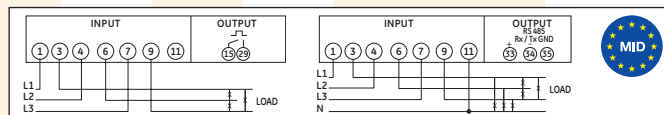
Monophase kWh

Scale	Accuracy	Number of modules	Outputs	Additional measures (non MID)	Cat. No.	Ref. No.	Pack
<32A	Class B	1	PULSE	-	MT+D1i 32 1M MID	665249	1
<63A	Class B	2	PULSE	In, Vn, Wt, Hz, PF, HM	MT+D1i 63 2M MID	665251	1
<63A	Class B	2	RS485	In, Vn, Wt, Hz, PF, HM	MT+D1485 63 2M MID	665253	1



Triphase 3-4 wires kWh

<63A	Class B	4	PULSE	partial kWh, double tariff, Var, Un, In, Wt, Hz, PF, HM	MT+D3Ni 63 4M MID	665255	1
<63A	Class B	4	RS485	partial kWh, double tariff, Var, Un, In, Wt, Hz, PF, HM	MT+D3N485 63 4M MID	665257	1
x/5A	Class B	4	PULSE	partial kWh, double tariff, Var, Un, In, Wt, Hz, PF	MT+D3Ni x/5 4M MID	665259	1
x/5A	Class B	4	RS485	partial kWh, double tariff, Var, Un, In, Wt, Hz, PF	MT+D3N485 x/5 4M MID	665261	1



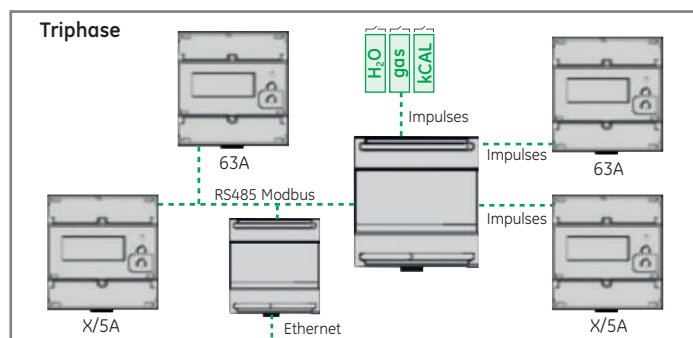
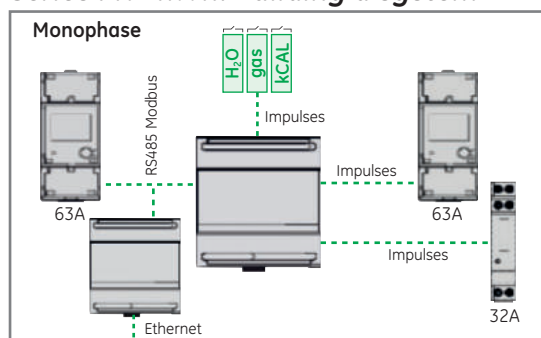
For x/5 version see tech. datasheet

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	665262	1
4	RS485-Ethernet conversion	MT+RS485/Ethernet	665389	1
2	RS485 RS232 conversion	MT+RSC TOP	665390	1

Series MT+kWh. Building a system





Digital measurement instruments

Series MT+D

Applications



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 downtime 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.

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

Standards

Function

Measurement, visualisation and logging of voltage, current, frequency, hours of operation, power, energy, $\cos \varphi$, etc..

Approvals



Performance MT+D

EN 61010-1, BS EN 60051-1-2

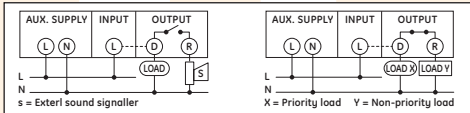
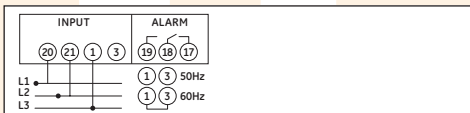
	V-A-F DV500 DA5 F	Priority Relay PRI BASIC	Phase sequence AP 3F	Multimeter BASIC	Net analyser TOPI
Display					
Display type	7 segments, LEDs	red LEDs	-	LCD backlighter	LCD backlighter
Maximum display	999	999	-	9999x3	See Tech. Datasheet
Measurements/Alarms					
Values	V, A, Hz	V, A, kW	-	Ph V, Ph A, Linked Voltage	kWh, Var, -kWh, -Var, total and partial
	-	-	-	Ph act./reactive Power, Act., React., appar. Power	V, I, neutral current, PF
	-	-	-	Neutral current, Hz, PF, Working H&Min., Power Demand, Max. Power demand	Power: active, reactive, apparent, Demand and max. Demand, THD, Harmonic distortion, Hz, Hour meter,
Alarms values	-	Non Priority load tripping management	Phase sequence, Lack of Phase, Phase asymmetric	-	Alarms relays
Accuracy	+/-1%+1 digit	-	-	±0.5 (I/V), ±1.5%(W), ±0.2%(Hz)	Class 0.5 (kWh) Class 1 (Var)
Input					
Network	Single-phase	Single-phase	Three phase, 3 wires	Single Phase, Three phase, 3-4wires	Single Phase, Three phase, 3-4wires
Voltage connection	direct	direct 195..264V	direct	1ph 50..350V 3ph 80..600V	1ph 50..290V 3ph 80..500V
Current connection	external CT	direct. Max 28A	-	x/5A	x/5A
Frequency connection	direct	50 Hz	-	50 Hz	-
Tolerance (Hz)	10..100Hz	47..63Hz	-	47..63Hz	45..65Hz (fn=50Hz)
Rated current In	5A	-	-	5A	x/5A
Rated Voltage Un	500V	-	380..415V (phase-phase)	230/400Vac	230/400Vac
Rated Frequency	-	-	50-60Hz (selectable)	50 Hz	50-400 Hz
Pulse output					
Pulse weight	-	-	-	-	1 pulse/10,100Wh; 1,10,100 kWh, 1, 10 MWh
Type	-	-	-	-	Optoelectronic relay
Voltage Uimp.	-	-	-	-	110Vdc/ac
Current	-	-	-	-	50mA
Pulse duration	-	-	-	-	50,100,150,200,300,400,500ms
RS485 output	-	-	-	-	MT+D TOPIRS485 4M
Terminal capacity					
Rigid cable	1/10mm ²	-	4/35mm ²	1/4mm ²	1/4mm ²
Flexible cable	1/7mm ²	-	10/25mm ²	1/2.5mm ²	0.05/2.5mm ²
Tightening torque advised	1.1mm ²	-	-	-	0.6Nm
Number of modules	4	2	2	4	4
Environmental conditions					
Operating temperature	-5°C..55°C	-5°C..55°C	-5°C..55°C	-5°C..55°C	-5°C..55°C

* For complete technical performances, please ask for technical datasheet of each device

New



Series MT+D

	Scale	Accuracy	Number of modules	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	665387	1
								
	Priority Relay+Buzzer	direct 28A	-	2	Buzzer	V, A, kW	MT+D PRI BASIC 2M	665395
								
	Phase sequence relay	380..415V (phase-phase) 50-60Hz (selectable)	-	2	Alarm	-	MT+ AP 3F 2M	665396
								
	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	665393
Single Phase, three phase, 3-4 wires, for electric diagram								
	Net Analyser	x/5A 230/400V	Class 0,5 (kWh) Class 1 (VAr)	4	Pulse Pulse +RS485	see tech. datasheet see tech. datasheet	MT+D TOPi 4M MT+D TOPiRS485 4M	665391 665392
								
Single Phase, three phase, 3-4 wires, for electric diagram. See tech. datasheet								



Function

Measurement, visualisation and logging of voltage, current, frequency and hours of operation

Approvals



Analogue measurement instruments

Series MT+A

Applications



Measurement of voltage, current, frequency and hours of operation with analogue visualisation of the measure.

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 monophasic-volt or amp-meter in a 3-phase system is possible by using the appropriate selector switch also available in our range.

Standards

EN 61010-1, BS EN 60051-1-2

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/5second	10Un/5second	-	-	-
Rating Frequency	50Hz	50Hz	50-60Hz	50Hz	-
Working Frequency	45..65Hz	45..65Hz	45..65Hz	-	-

New



Series MT+A analogue measurement instruments



Ammeters



Scale	Accuracy	Nr. of phases	Nr. of modules	Cat. No.	Ref. No.	Pack
-	1.5	1	4	MT+AA 4M	665264	1
5A	1.5	1	4	MT+AA5 4M	665265	1
10A	1.5	1	4	MT+AA10 4M	665266	1
15A	1.5	1	4	MT+AA15 4M	665267	1
20A	1.5	1	4	MT+AA20 4M	665268	1
25A	1.5	1	4	MT+AA25 4M	665269	1
30A	1.5	1	4	MT+AA30 4M	665270	1

Interchangeable Ammeter scaleplates



Scale	To use in	Cat. No.	Ref. No.	Pack
40/5	665264	MT+SP40	665283	10
50/5	665264	MT+SP50	665284	10
60/5	665264	MT+SP60	665285	10
80/5	665264	MT+SP80	665286	10
100/5	665264	MT+SP100	665287	10
150/5	665264	MT+SP150	665288	10
200/5	665264	MT+SP200	665289	10
250/5	665264	MT+SP250	665290	10
300/5	665264	MT+SP300	665291	10
400/5	665264	MT+SP400	665292	10
500/5	665264	MT+SP500	665293	10
600/5	665264	MT+SP600	665294	10
800/5	665264	MT+SP800	665295	10
1000/5	665264	MT+SP1000	665296	10



Voltmeters



Scale	Accuracy	Nr. of phases	Nr. of modules	Cat. No.	Ref. No.	Pack
300V	1.5	1	4	MT+AV300 4M	665271	1
500V	1.5	1	4	MT+AV500 4M	665272	1

Frequency meter



Scale	Accuracy	Nr. of phases	Nr. of modules	Cat. No.	Ref. No.	Pack
45...65Hz	1.5	1	4	MT+AF 4M	665273	1



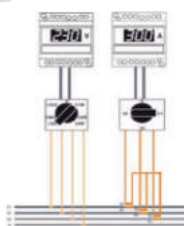
Hour counter



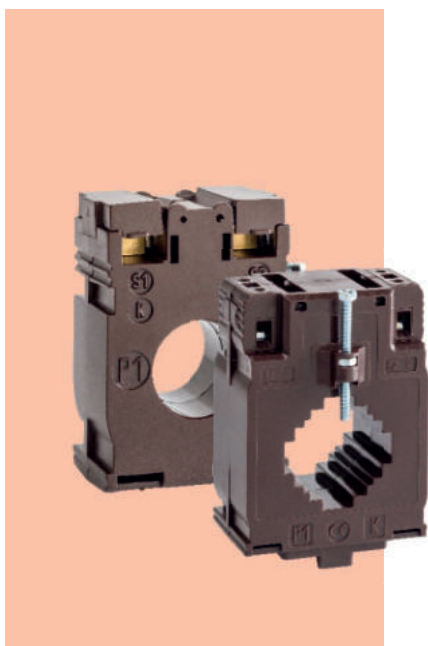
Scale	Accuracy	Nr. of phases	Nr. of modules	Cat. No.	Ref. No.	Pack
230V/50Hz	0.02%	1	2	MT+AH110 2M	665274	1
110V/50Hz	0.02%	1	2	MT+AH230 2M	665275	1
24V/50Hz	0.02%	1	2	MT+AH24 2M	665276	1



Selector switch



			Nr. of modules	Cat. No.	Ref. No.	Pack
Amp.			3	MT+S4 3M	665385	1
Voltage			3	MT+S7 3M	665386	1



Function

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.

Approvals



Performance MT+V

	CT40-CT80	CT100-CT400	CT500-CT600	CT800-CT1000	CT1200-CT2000	CT2500-CT4000
Rated primary current I_{pn}	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
Rated continuous thermal current according to EN60044-1						
Rated short-time thermal current I_{th}	< 60In	< 60In	< 60In	< 60In	< 60In	< 60In
Rated dynamic current I_{dyn}	2.5Ith	2.5Ith	2.5Ith	2.5Ith	2.5Ith	2.5Ith
Instrument security factor (FS)	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5
Rated secondary current I_{sn}	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
Connections						
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 ²	screw terminals, max 6mm ²	4 screw terminals, max 6mm ² +2 faston (4.8x0.8mm)	4 screw terminals, max 6mm ² +2 faston (4.8x0.8mm)	tightening by nut	tightening by nut

Current transformers

Series MT+CT

Applications



Current transformers are commonly used in metering.

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.

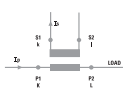
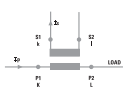
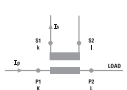
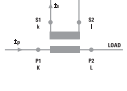
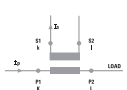
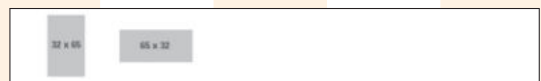
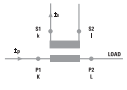
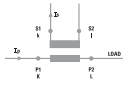
Standards

EN60044-1

New



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	665368	1
	1.25	1.5	5	50	65x44x30	MT+CT50	665369	1
	1.25	2	5	60	65x44x30	MT+CT60	665370	1
	1.5	2.5	5	80	65x44x30	MT+CT80	665371	1
								
 	1.5	3	5	100	80x56x43	MT+CT100	665372	1
	3	4	5	150	80x56x43	MT+CT150	665373	1
	4	7	5	200	80x56x43	MT+CT200	665374	1
	6	8	5	250	80x56x43	MT+CT250	665375	1
	8	10	5	300	80x56x43	MT+CT300	665376	1
	10	12	5	400	80x56x43	MT+CT400	665377	1
								
 	10	12	5	500	95x70x45	MT+CT500	665378	1
	12	13	5	600	95x70x45	MT+CT600	665379	1
								
 	10	12	5	800	95x70x45	MT+CT800	665380	1
	12	15	5	1000	95x70x45	MT+CT1000	665381	1
								
 	15	20	5	1200	94x90x40	MT+CT1200	665382	1
	20	25	5	1500	94x90x40	MT+CT1500	665383	1
	20	25	5	2000	94x90x40	MT+CT2000	665384	1
								
 	30	50	5	2500	160x99x58	MT+CT2500	665924	1
								
 	30	50	5	3200	160x125x40	MT+CT3200	665925	1
	30	50	5	4000	160x125x40	MT+CT4000	665926	1
								

Series MT+CT

A

B

C

D

E

F

G

X



Compact three-phase analyser

Series MTDIN

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.

Description

Three-phase power analyser for mounting on DIN-rail. Also adaptable for panel mounting with 72 x 72mm dimension.

Key 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.

Features

Power supply circuit	230VAC (-15% to +10%) or 85 to 265VAC / 95 to 300VDC
Consumption	3VA
Frequency	50 or 60Hz
Nominal current (In)	5A
Metering circuit	
Maximum voltage	300VAC (Ph-N) / 520VAC (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
Class/Accuracy	
Voltage	0.5% ± 1 digit
Current	0.5% ± 1 digit
Power rating	1% ± 1 digit
Ambient conditions	
Operating temperature	-10°C up to +50°C
Relative humidity (non-condensing)	5% up to 95%

Output transistor	Opto-isolated (open collector) NPN
Max. operating voltage	24VDC
Max. operating current	50mA
Max. impulse frequency	5 impulse / s
Duration of the impulse	100 ms
Housing	
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 67.9 mm (3 modules)
Weight	210 g
Safety	Designed for CAT III 300/520VAC installations, in accordance with EN 61010. Class II double insulated for protection against electric shock
Standards	IEC 664, VDE 0110, UL 94, IEC 664, VDE 0110, UL 94, IEC 801, IEC 348, IEC 571-1, EN 61000-6-3, EN 61000-6-1, EN 61010-1

New



Compact three-phase power analyser - Series MTDIN



Modules	Class (V, A)	Communication	Protocol	Output	Voltage	Harmonics	Cat. No.	Ref. No.
3	0.5	-	-	-	85 to 265VAC	-	MTDIN1	665010
3	0.5	-	-	-	95 to 300VAC	-	MTDIN2	665011
3	0.5	RS485	ModBus/RTU	2	230VAC	-	MTDIN2COM	665155
3	0.5	RS485	ModBus/RTU	2	85 to 265VAC 95 to 300VDC	U and I (15°)	MTDIN1HARCOM	665012

For other versions, contact GE or your local distributor.

Accessories



Front panel adaptor

MTAdapt 665244 1

Adaptor installing MTDIN on 72 x 72 mm panels.

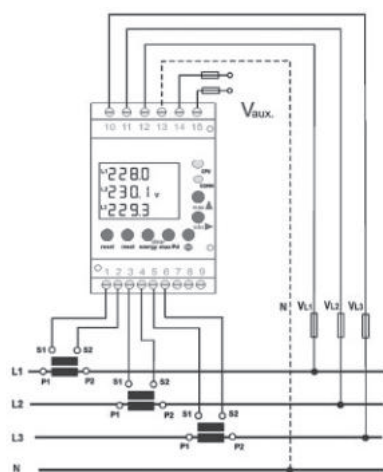
Central fixing.

Adjustable on the rear with two straps.

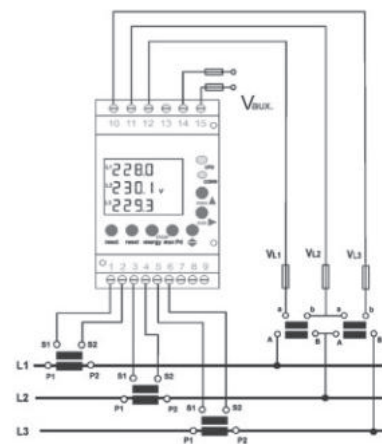
For converters, see page D.43

Connections

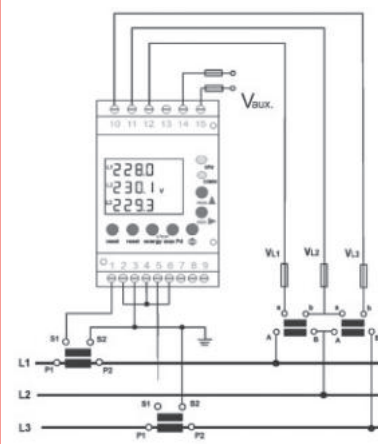
3 or 4 wires (low voltage)



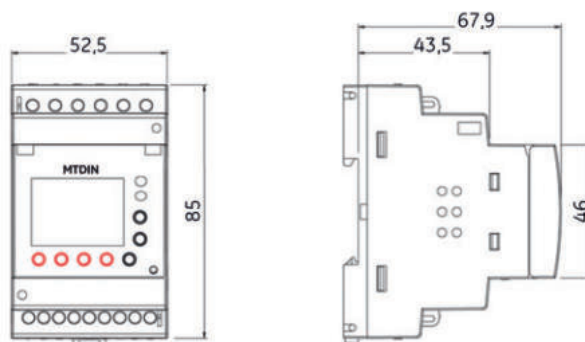
3 wires (2 voltage transformers and 3 current transformers)



3 wires (2 voltage transformers and 2 current transformers)



Dimensions (mm)



Serie MTDIN

A

B

C

D

E

F

G

X



Basic three-phase analyser

Series MT96

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.

Description

Three-phase power analyser for panel mounting with a 96 x 96 mm front fascia with compact depth.

Key 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.

Features

Power supply circuit	230VAC (-15% tot +10%) or 85 to 265VAC / 95 to 300VDC
Consumption	5VA
Frequency	50 or 60Hz
Nominal current (In)	5A
Metering circuit	
Maximum voltage	300VAC (Ph-N) / 520VAC (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
Class/Accuracy	
Voltage	0.5% ± 2 digits
Current	0.5% ± 2 digits
Power rating	1% ± 2 digits
Ambient conditions	
Operating temperature	-10°C up to +50°C
Relative humidity	5% up to 95%

Output transistor	Opto-isolated (open collector) NPN
Max. operating voltage	24VDC
Max. operating current	50mA
Max. impulse frequency	5 impulse / s
Duration of the impulse	100 ms
Housing	
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 63 mm
Safety	Designed for CAT III 300/520VAC installations, in accordance with EN 61010. Class II double insulated for protection against electric shock
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

New



Basic three-phase power analyser - Series MT96



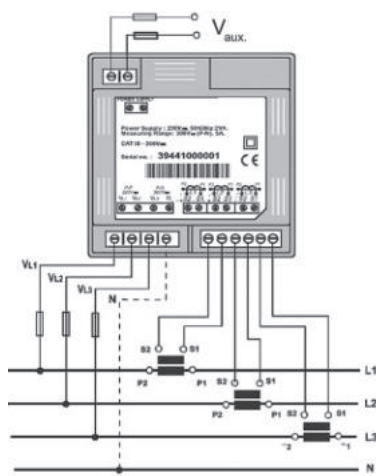
Modules	Class (V, A)	Communication	Protocol	Digital output	Voltage	Harmonics	Cat. No.	Ref. No.
4	0.5	-	-	-	85 to 265VAC 95 to 300VDC	-	MT961	665190
4	0.5	-	-	-	230VAC	-	MT962	665191
4	0.5	RS485	ModBus/RTU	1	230VAC	-	MT962COM	665192
4	0.5	RS485	ModBus/RTU	1	85 to 265VAC 95 to 300VDC	U and I (15°)	MT961HARCOM	665193

For converters, see page D.43.

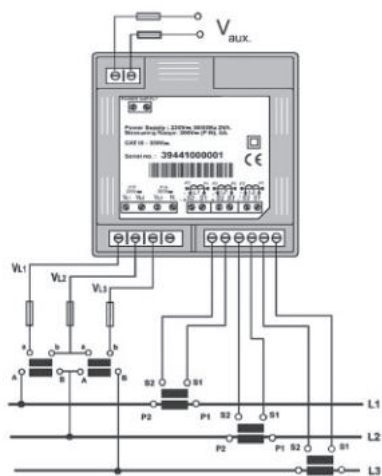
For other versions, contact GE or your local distributor.

Connections

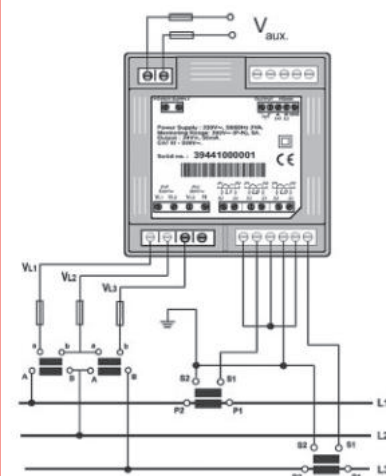
3 or 4 wires (low voltage)



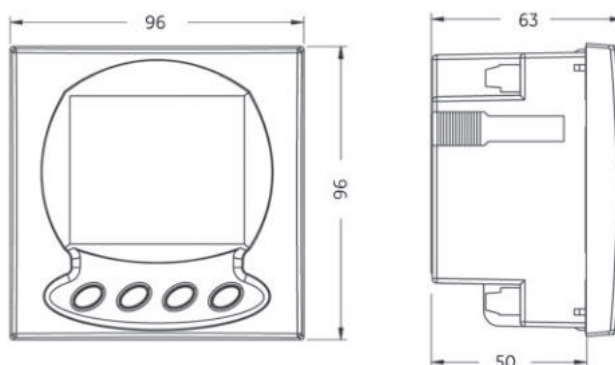
3 wires (2 voltage transformers and 3 current transformers)



3 wires (2 voltage transformers and 2 current transformers)



Dimensions (mm)





Advanced three-phase analyser

Series MT144

Description

Three-phase advanced power analyser for panel mounting with a 144 x 144 mm front fascia.

Key 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 2 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.

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^o, asymmetries, flicker, unbalances, overvoltages, gaps, interruptions, etc.

Features

Power supply circuit	85 to 265VAC and 95 to 300VDC
AC power supply frequency	50/60Hz
AC pow. supp. consumption	3VA
DC pow. supp. consumption	< 25W
Metering circuit	
Voltage	15 to 360VAC (L-N) 26 to 600VAC (L-L)
Frequency	45 to 65Hz
Metering margin	5 to 120% Un
Admissible overvoltage	750VAC
Voltage consumption of the circuit	< 0.5VA
Current measuring circuit	
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
Current consumption of the circuit	< 0.45VA

Maximum meter value	100GWh
Class/Accuracy	0.2 or 0.5 power and energy
Ambient conditions	
Operating temperature	-10°C up to +50°C
Relative humidity	5% up to 95%
Housing	
Metering module	Assembly on DIN rail 46277 (EN 50022)
Screen or screen + metering module	Assembly on panel (96 x 96 mm, 144 x 144 mm) or opening with a 103 mm diameter
Dimensions (H x W x D)	144 x 144 x 116 mm
Safety	
Designed for CAT III 300/520VAC installations, in accordance with EN 61010. Class II double insulated for protection against electric shock	
Standards	
IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-11, IEC 61000-4-4, IEC 61000-4-5	

New



Compact units (metering + display module) - Series MT144



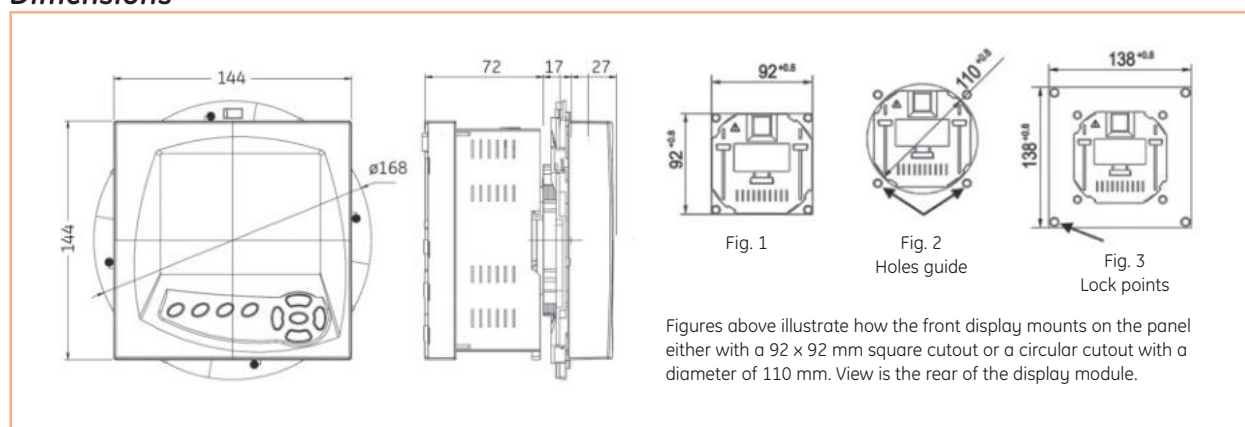
Quadrants	Class (V, A)	Communication	Protocol	Neutral current	Universal power supply	Harmonics	Cat. No.	Ref. No.
4	0.2	RS485	ModBus/RTU	Yes	85 to 265VAC 95 to 300VDC	U and I (50°)	MT144UMD	665194

Measuring units (measuring module and display sold separately) - Series MT144

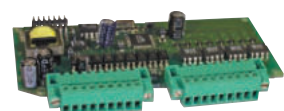
	Quadrants	Class (V, A)	Communication	Protocol	Neutral current	Universal power supply	Harmonics	Cat. No.	Ref. No.
Measuring module	4	0.2	RS485	ModBus/RTU	Yes	85 to 265VAC 95 to 300VDC	U and I (50°)	MT144UM	665195
VGA display	4	-	-	-	Yes	-	-	MT144UD	665196

For other versions, contact GE or your local distributor.

Dimensions

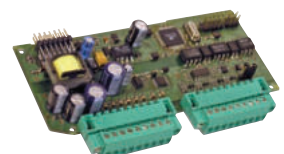


Exchangeable cards



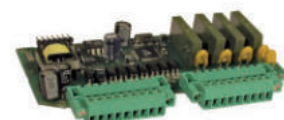
8I/8O digital expansion card		
MT8I8O	665197	1
8 digital inputs and 8 digitale outputs. Outputs with opto-coupled transistor.		

Profibus expansion card - GSD modules		
MTPBUS	665243	1



8I/4O analogue expansion card		
MT8I4O	665198	1
8 analog inputs and 4 analog outputs		

Ethernet and SD memory card		
MTMBUS	665239	1
Ethernet communications card and SD memory.		



8I/4O digital expansion card		
MT8I4OR	665199	1
8 digital inputs and 4 digital outputs. Outputs with relay.		

SD memory expansion card		
MTSDMEM	665240	1



Common accessories for MTDIN, MT96 en MT44 - Converters



Converter for RS232/485 to Ethernet (and vice-versa)		
MT485Enet	665245	1
Power supply 85...265VAC / 115...374VDC. Ethernet speed: 10/100 BaseTX RS Bus transmission speed: 1200 bps to 115200 bps.		

USB converter to RS232 or RS485		
MTUSB485	665246	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

MTDIN



MT96



MT144



MEASUREMENT	L1	L2	L3	III	L1	L2	L3	III	L1	L2	L3	N	III
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		•				•					•		
COMMUNICATIONS													
RS232													
RS485		•				•					•		
Ethernet											•		
PROTOCOLS													
Modbus RTU		•				•					•		
Modbus TCP											•		
Profibus DP (optional)											•		

- Available for display and communications
- ◆ Available only for communications

Surge Arresters

SurgeGuard



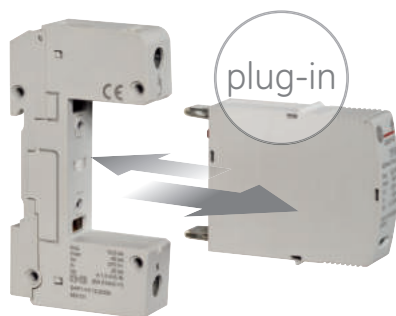
Functions

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 as motors, frequency converters, dimmers, etc.) and by power supply networks switching operations.

Standards

IEC 61643-1
IEC 61643-11/EN 61643-11
DIN VDE 0675-6
NF C61-740
BS 6651

Marking



Applications



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.

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, 20kA, 40kA in 8/20ms waveform
 - Class II for DC photovoltaic applications, communication and TV lines are also available.

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.
 - 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.
 - Additionally, dedicated versions for temporary overvoltage (TOV) are included in the offer.
- TOV is a voltage peak of hundreds of volts for an indeterminate period due to the unbalance of the network (normally caused by neutral fault).
- The Tele OV devices follow the new European standard EN 50550.

New



Parameters

Impulse current (I_{imp})

This is the peak current that the surge arrester can withstand without failing. The waveform of the applied current is normalised as 10/350 μ s, used in Class I devices.

Maximum discharge current (I_{max})

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 8/20 μ s, used in Class II devices.

Nominal discharge current (I_n)

This is the current that the surge protection device is capable of shunting to ground at least 20 times without failing.

Level of protection (U_p)

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.

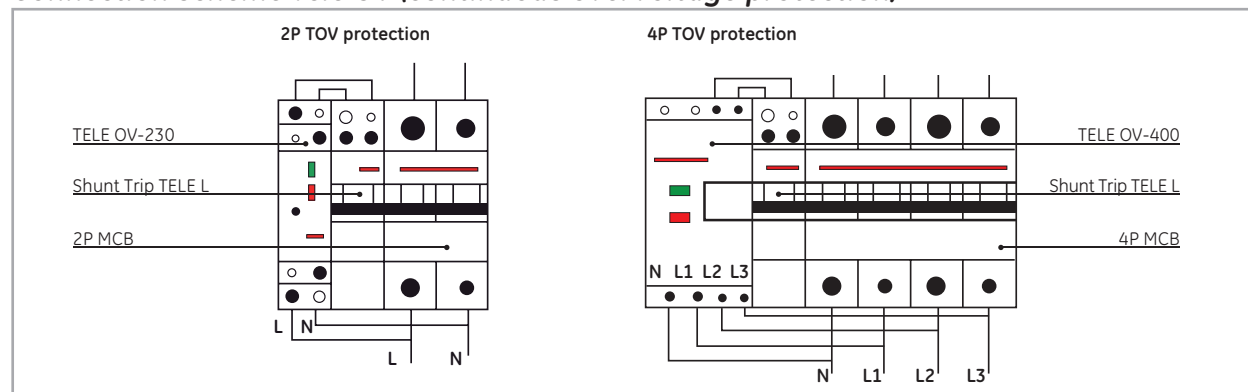
Maximum continuous operating voltage U_{max} (U_c)

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	SAPV I+II photovoltaic	SAPV II photovoltaic	SA BLOCK II single phase	SA BLOCK II multi-phase
Energy impulse wave	10/350 μ s	10/350 μ s and 8/20 μ s	10/350 μ s and 8/20 μ s	8/20 μ s	10/350 μ s and 8/20 μ s	8/20 μ s	8/20 μ s	8/20 μ s
Response time	<100ns	<25ns	<25ns	<25ns	<25ns	<25ns	<25ns	<25ns
Thermal fuse	no	yes	yes	yes	yes	yes	yes	yes
Thermal fuse healthy indication	no	yes	yes	yes	yes	yes	yes	yes
Nominal voltage	230V or 400V	230V or 400V	230V or 400V	230V or 400V	600V or 1000V	600V or 1000V	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	DC	DC	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	-40°C...+80°C	-40°C...+80°C
Screws	Pozidriv 3	Pozidriv 3	Pozidriv 3	Pozidriv 3	Pozidriv 3	Pozidriv 3	Pozidriv 3	Pozidriv 3
Terminal capacity: min	16mm ²	6mm ²	10mm ²	6mm ²	10mm ²	6mm ²	6mm ²	6mm ²
max (flexible/grid)	35/50mm ²	25/35mm ²	25/35mm ²	25/35mm ²	25/35mm ²	25/35mm ²	25/35mm ²	25/35mm ²

Connection scheme Tele OV (continuous overvoltage protection)



SurgeGuard - Surge arresters - Class I+II/B+C

Single phase PLUG-IN

TT, TN-S,
TN-C, IT system



Iimp	I _{max}	I _n	U _p	U _p (L-N)	U _p (N-PE)	U _{max} (U _c) per pole	No. of poles	Auxiliary contact	No. of modules	Cat. No.	Ref. No.	Pack
25kA	100kA	25kA	1500V	-	-	275V	1P	-	2	SAP1 I+II 25/230	660125	1
25kA	100kA	25kA	1500V	-	-	275V	1P	1CO	2	SAP1 I+II 25/230 C	660127	1
25kA	100kA	25kA	2000V	-	-	440V	1P	-	2	SAP1 I+II 25/400	660126	1
25kA	100kA	25kA	2000V	-	-	440V	1P	1CO	2	SAP1 I+II 25/400 C	660128	1
12.5kA	65kA	20kA	1300V	-	-	275V	1P	-	1	SAP1 I+II 12.5/230	660131	1
12.5kA	65kA	20kA	1300V	-	-	275V	1P	1CO	1	SAP1 I+II 12.5/230 C	660135	1
12.5kA	65kA	20kA	1800V	-	-	440V	1P	-	1	SAP1 I+II 12.5/400	660132	1
12.5kA	65kA	20kA	1800V	-	-	440V	1P	1CO	1	SAP1 I+II 12.5/400 C	660136	1
Neutral-earth SPD's for TT systems												
100kA	100kA	50kA	1500V	-	-	255V	1P	-	2	SAP1 I+II 100N	660391	1
50kA	65kA	50kA	1500V	-	-	255V	1P	-	1	SAP1 I+II 50N	660130	1
25kA	65kA	25kA	1500V	-	-	255V	1P	-	1	SAP1 I+II 25N	660138	1

Multi-phase PLUG-IN

TT system



12.5kA	65kA	20kA	-	1300V	1500V	275V	2P	-	2	SAP2 I+II 12.5 TT	660139	1
12.5kA	65kA	20kA	-	1300V	1500V	275V	2P	1CO	2	SAP2 I+II 12.5 TT C	660140	1
12.5kA	65kA	20kA	-	1300V	1500V	275V	4P	-	4	SAP4 I+II 12.5 TT	660150	1
12.5kA	65kA	20kA	-	1300V	1500V	275V	4P	1CO	4	SAP4 I+II 12.5 TT C	660151	1

TN-S system



12.5kA	65kA	20kA	-	1300V	-	275V	2P	-	2	SAP2 I+II 12.5 TNS	660143	1
12.5kA	65kA	20kA	-	1300V	-	275V	2P	1CO	2	SAP2 I+II 12.5 TNS C	660144	1
12.5kA	65kA	20kA	-	1300V	-	275V	4P	-	4	SAP4 I+II 12.5 TNS	660152	1
12.5kA	65kA	20kA	-	1300V	-	275V	4P	1CO	4	SAP4 I+II 12.5 TNS C	660156	1

TN-C system



12.5kA	65kA	20kA	-	1300V	-	275V	3P	-	3	SAP3 I+II 12.5 TNC	660147	1
12.5kA	65kA	20kA	-	1300V	-	275V	3P	1CO	3	SAP3 I+II 12.5 TNC C	660148	1

Replacement modules for Class I+II/B+C



Iimp	I _{max}	I _n	U _p	U _p (L-N)	U _p (N-PE)	U _{max} (U _c)	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	660199	1
25kA	100kA	25kA	2000V	-	-	440V	1P	-	2	SAM I+II 25/400	660257	1
12.5kA	65kA	20kA	1300V	-	-	275V	1P	-	1	SAM I+II 12.5/230	660294	1
12.5kA	65kA	20kA	1800V	-	-	440V	1P	-	1	SAM I+II 12.5/400	660295	1

Neutral-earth replacement modules for SAPx I+II...N



100kA	100kA	50kA	1500V	-	-	255V	1P	-	2	SAM I+II 100N	660393	1
50kA	65kA	50kA	1500V	-	-	255V	1P	-	1	SAM I+II 50N	660274	1
25kA	65kA	25kA	1500V	-	-	255V	1P	-	1	SAM I+II 25N	660296	1



New

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

TT, TN-S,
TN-C, IT system



I _{max}	I _n	Up	Up (L-N)	Up (N-PE)	U _{max} (U _c) per pole	No. of poles	Auxiliary contact	No. of modules	Cat. No.	Ref. No.	Pack
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
20kA	10kA	-	1400V	-	320V	1P	-	1	SAP1 II 20/230	660164	1
20kA	10kA	-	1400V	-	320V	1P	1CO	1	SAP1 II 20/230 C	660166	1
20kA	10kA	-	2000V	-	440V	1P	-	1	SAP1 II 20/400	660165	1
20kA	10kA	-	2000V	-	440V	1P	1CO	1	SAP1 II 20/400 C	660167	1

Neutral-earth SPD's for TT systems

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

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
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
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
20kA	10kA	-	1400V	1500V	320V	4P	-	4	SAP4 II 20/400 TT	660185	1
20kA	10kA	-	1400V	1500V	320V	4P	1CO	4	SAP4 II 20/400 TTC	660186	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
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
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
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



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
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

For TT, TN-S,
TN-C, IT system



I _{max}	I _n	Up	Up (L-N)	Up (N-PE)	U _{max} (U _c)	No. of poles	Auxiliary contact	No. of modules	Cat. No.	Ref. No.	Pack
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
20kA	10kA	2000V	-	-	440V	1P	-	1	SAM II 20/400	660298	1

Neutral-earth replacement modules for SAPx II...N

40kA	20kA	1500V	-	-	265V	1P	-	1	SAM II 40N	660375	1
20kA	10kA	1500V	-	-	255V	1P	-	1	SAM II 20N	660299	1



SurgeGuard - Surge arresters - Class I/B

The surge arresters have the capacity to divert excess energy for low voltage line protection.
Class I surge arresters should be installed in areas at high risk from direct lightning strike discharge.

Single 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
	TT, TN-S TN-C, IT	35kA	-	-	4000V	-	255V	1P	-	1	SA BLOCK I 35	667470	1
		100kA	-	-	-	4000V	255V	1P	-	1	SA BLOCK I 100 N	667471	1
		Cable through	-	-	-	-	-	-	-	1	SA BLOCK I PC	667472	1

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		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
	TT, TN-S TN-C, IT	Class I/Class II	Class II	-	-	-	-	-	-	-	-	-	-
		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

SurgeGuard - Surge arresters - Class II/C

Single phase MONOBLOCK		limp	In	Up	Up (L-N)	Up (N-PE)	Umax (Uc) per pole	No. of poles	Auxiliary contact	No. modules	Cat. No.	Ref. No.	Pack
	TT, TN-S TN-C, IT	15kA	5kA	-	1200V	-	275V	1P	-	1	SA BLOCK II 15/230	667473	1
		15kA	5kA	-	1200V	-	275V	1P	1CO	1	SA BLOCK II 15/230 C	667475	1
		15kA	5kA	-	1800V	-	420V	1P	-	1	SA BLOCK II 15/400	667474	1
		15kA	5kA	-	1800V	-	420V	1P	1CO	1	SA BLOCK II 15/400 C	667476	1
		15kA	5kA	-	-	850V	255V	1P	-	1	SA BLOCK II 15N	667481	1
		40kA	15kA	-	1300V	-	275V	1P	-	1	SA BLOCK II 40/230	667477	1
		40kA	15kA	-	1300V	-	275V	1P	1CO	1	SA BLOCK II 40/230 C	667479	1
		40kA	15kA	-	1800V	-	420V	1P	-	1	SA BLOCK II 40/400	667478	1
		40kA	15kA	-	1800V	-	420V	1P	1CO	1	SA BLOCK II 40/400 C	667480	1
		40kA	20kA	-	-	1500V	275V	1P	-	1	SA BLOCK II 40N	667482	1

Multi-phase MONOBLOCK													
	Common and differential mode protection - TT system												
	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	
	Common mode protection - TNS system												
	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		

Surge arresters for communication lines and coax cables

The protective devices should be installed for sensitive equipment both in home and industries.

	Telephone, modem, router, alarm, home automation	I _{max}	I _n	U _p	U _p (L-N)	U _p (N-PE)	U _{max}	f _g Bandwidth	Protection type	No. of modules	Cat. No.	Ref. No.	Pack
		10kA	5kA	200V	-	-	180V	3MHz	1 par	1	SA BLOCK ADSL	667484	1

	Radio frequency signals, TV, cameras, receivers, satellite	I _{max}	I _n	U _p	U _p (L-N)	U _p (N-PE)	U _{max}	f _g Bandwidth	Protection type	No. of modules	Cat. No.	Ref. No.	Pack
		20kA	10kA	600V	-	-	230V	3GHz	BNC	-	SA TV	667510	1

SurgeGuard - Surge arresters - Class I+II for (DC) photovoltaic applications

PLUG-IN	Iimp	I _{max}	I _n	U _p	U _{max}	No. of poles	Auxiliary contact	No. of modules	Cat. No.	Ref. No.	Pack
	12.5kA	65kA	20kA	2600	700VDC	3P	-	3	SAPV I+II 12.5/600	660191	1
	12.5kA	65kA	20kA	2600	700VDC	3P	1CO	3	SAPV I+II 12.5/600 C	660192	1
	12.5kA	65kA	20kA	4000	1170VDC	3P	-	3	SAPV I+II 12.5/1000	660193	1
	12.5kA	65kA	20kA	4000	1170VDC	3P	1CO	3	SAPV I+II 12.5/1000 C	660194	1

Replacement modules for Class I+II photovoltaic applications

	12.5kA	65kA	20kA	-	350VDC	1P	-	1	SAM I+II 12.5/600PV	660376	1
	12.5kA	65kA	20kA	-	585VDC	1P	-	1	SAM I+II 12.5/1000PV	660377	1

SurgeGuard - Surge arresters - Class II for (DC) photovoltaic applications

PLUG-IN	I _{max}	I _n	U _p	U _{max}	No. of poles	Auxiliary contact	No. of modules	Cat. No.	Ref. No.	Pack
	40kA	20kA	2600V	700VDC	3P	-	3	SAPV II 40/600	660195	1
	40kA	20kA	2600V	700VDC	3P	1CO	3	SAPV II 40/600C	660196	1
	40kA	20kA	4000V	1170VDC	3P	-	3	SAPV II 40/1000	660197	1
	40kA	20kA	4000V	1170VDC	3P	1CO	3	SAPV II 40/1000C	660198	1

Replacement modules for Class II photovoltaic applications

	40kA	20kA	1300V	350VDC	1P	-	1	SAM II 40/600PV	660378	1
	40kA	20kA	2000V	585VDC	1P	-	1	SAM II 40/1000PV	660379	1

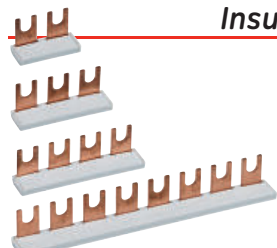
SurgeGuard - Surge arresters - Class II for (DC) photovoltaic applications

MONOBLOCK	I _{max}	I _n	U _p	U _{max}	No. of poles	Auxiliary contact	No. of modules	Cat. No.	Ref. No.	Pack
	40kA	15kA	2600V	600VDC	2P	-	2	SA PHOT 600V	667508	1
	40kA	15kA	3800V	1000VDC	2P	-	2	SA PHOT 1000V	667509	1

Surge arresters for temporary overvoltage protection (TOV)⁽¹⁾

	I _n	U _a L-N	Tripping time (U _a)	U _n	No. of poles	No. of modules	Cat. No.	Ref. No.	Pack
	MCB's	254V	<4s	<0.5s	230V	2	TELE OV 230	667485	1
	MCB's	254V	<4s	<0.5s	400V	4	TELE OV 400	667493	1

Insulated FORK type busbars

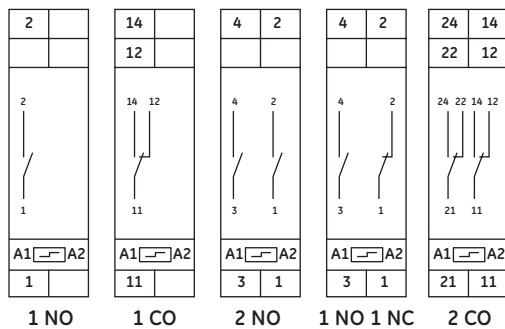
	Section	Description	Cat. No.	Ref. No.	Pack
	10mm ²	2x1P - 90°	EV-G.1.2.80-90°	624993	20
	10mm ²	3x1P - 90°	EV-G.1.3.80-90°	644893	20
	10mm ²	4x1P - 90°	EV-G.1.4.80-90°	568106	20
	10mm ²	8x1P - 90°	EV-G.1.8.80-90°	644897	20

(1) Connection scheme Tele OV, see page D.47

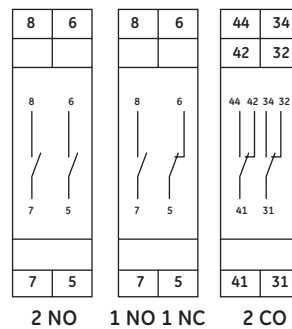
Terminal capacity

Impulse switches - Pulsar S

Impulse switches



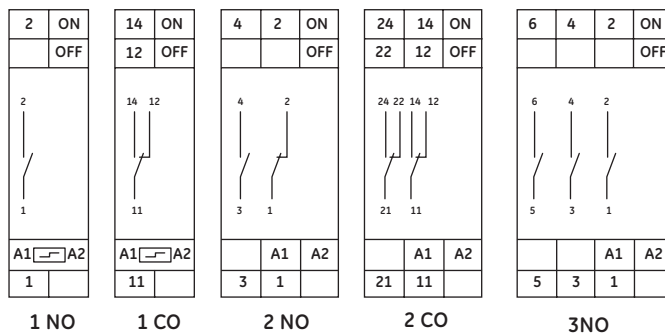
Add-on power contact



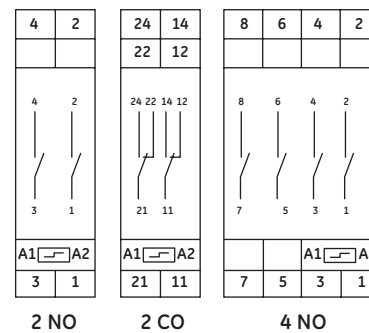
Step by step multi circuit



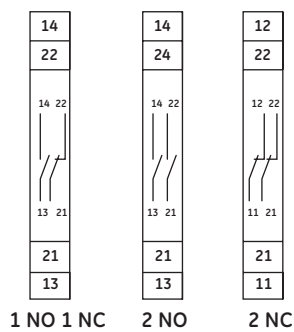
All-in central command



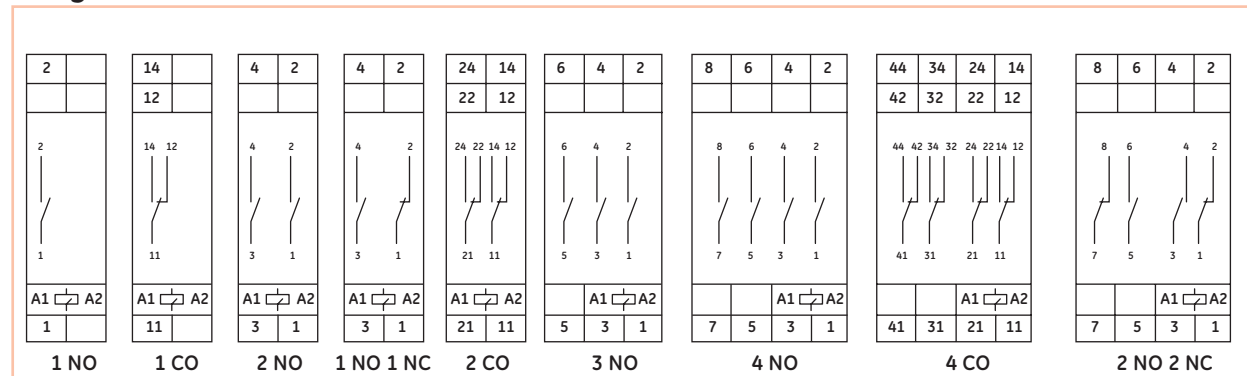
Permanent use



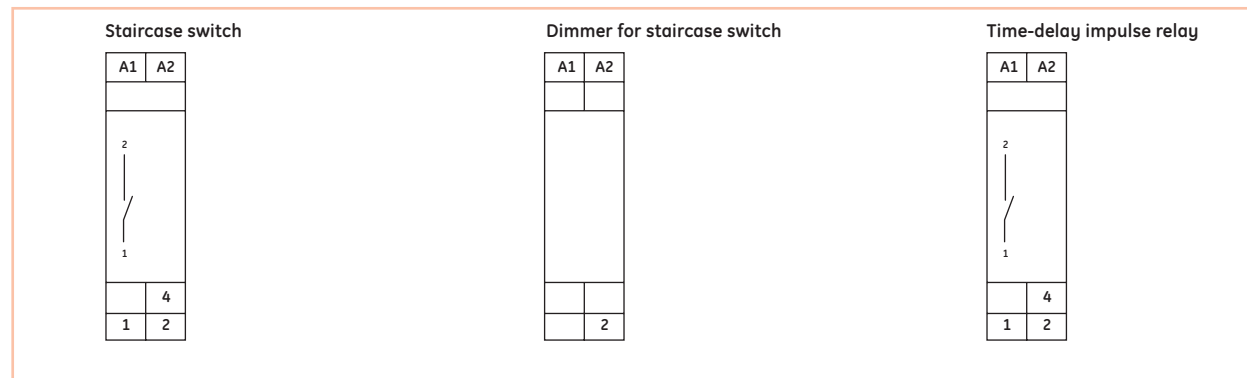
Add-on auxiliary contact



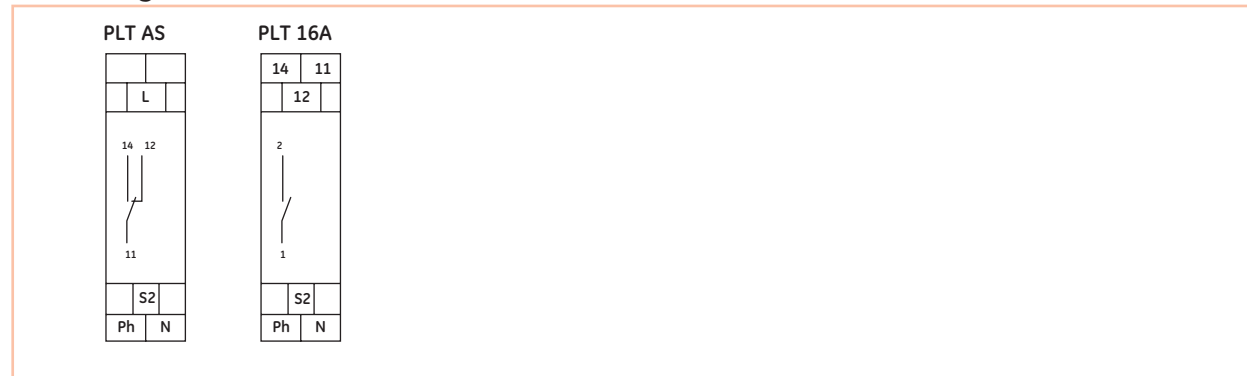
Relays - Contax R



Staircase switches - Pulsar TS



Time relays - Pulsar T



Pulsar

A

B

C

D

E

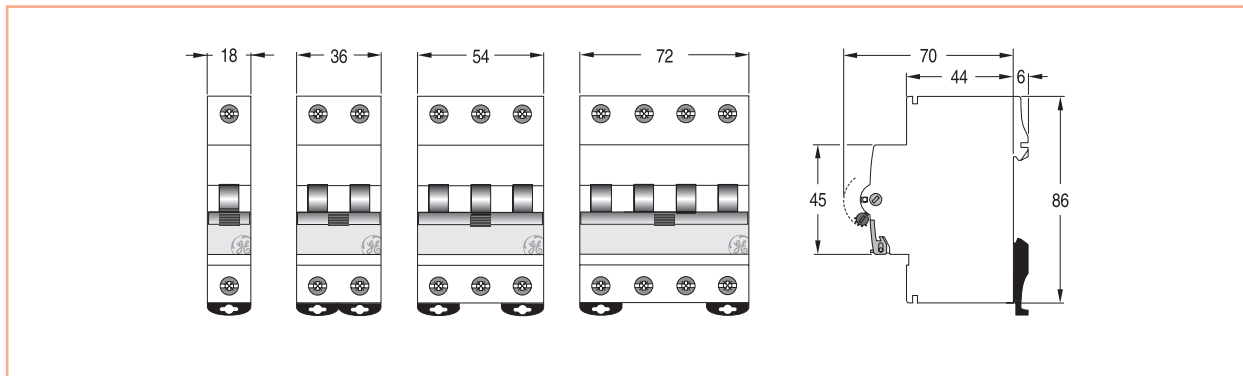
F

G

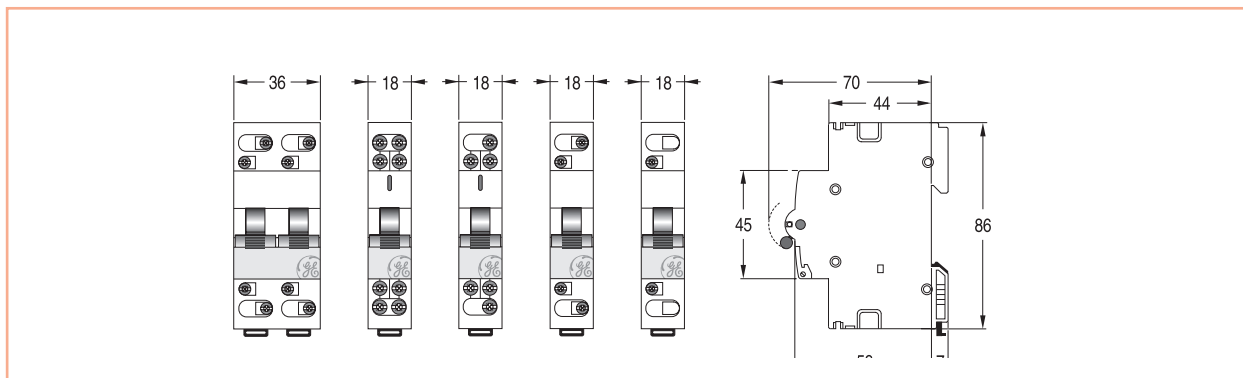
X

Dimensional drawings

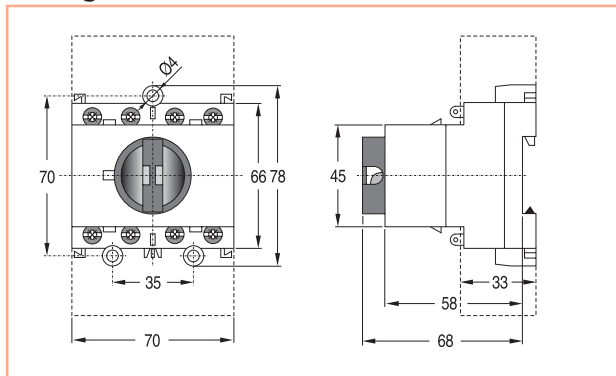
Mains disconnect switches - Aster



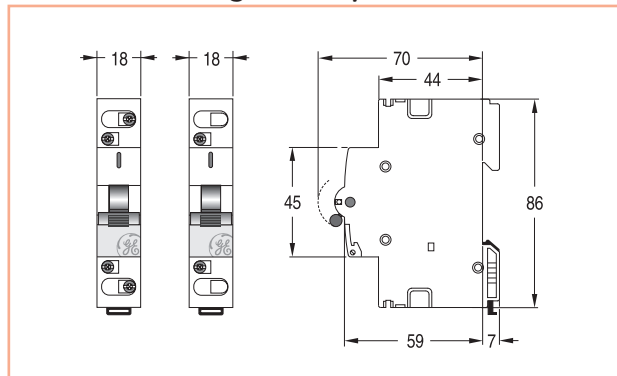
Switches - Aster



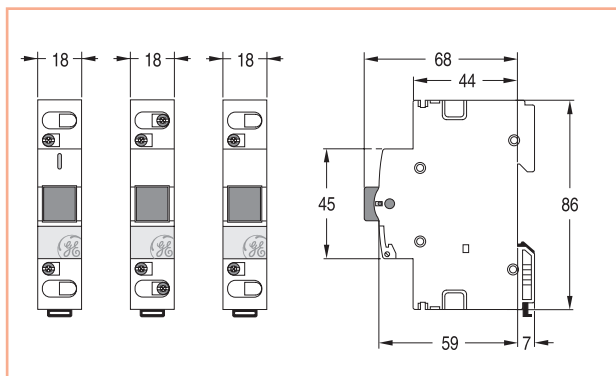
Rotary switches - Aster



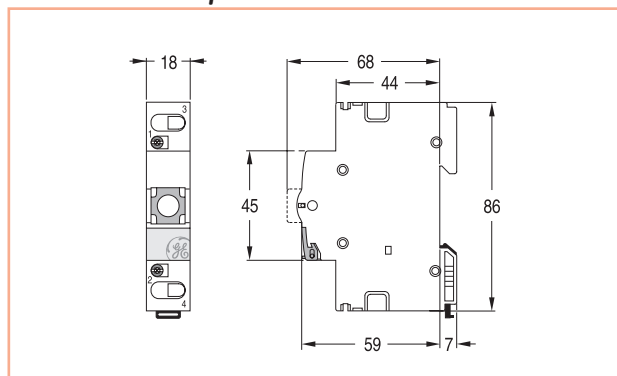
Switches with signal lamp - Aster



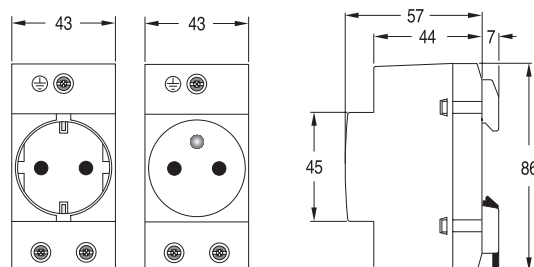
Push-buttons - Aster



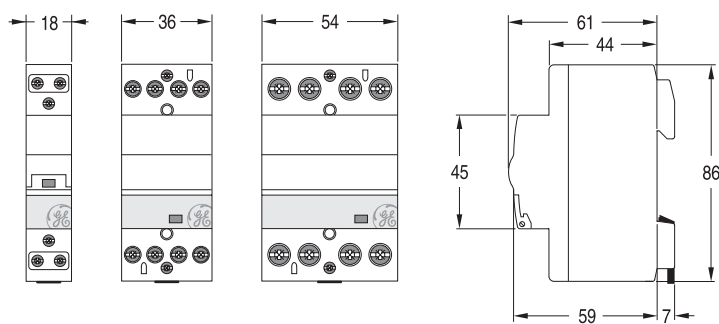
Indication lamp - Aster



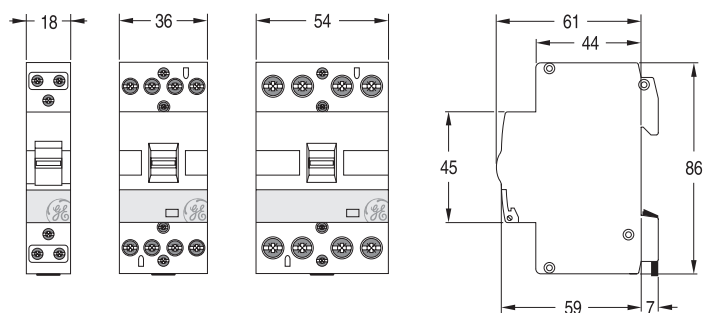
Socket-outlet - Series MSC



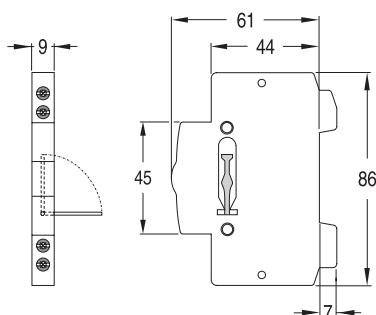
Contactors - Contax



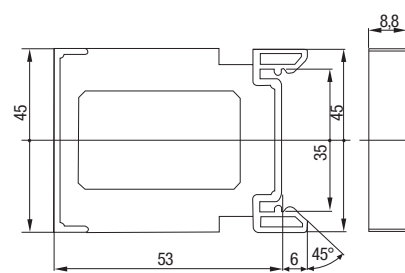
Contactors Day and Night - Contax



Contactors - Auxiliary contact

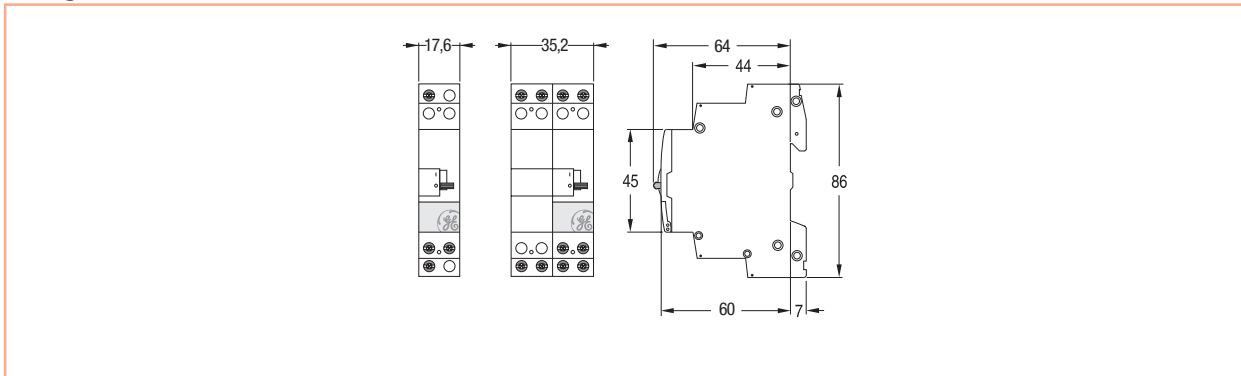


Contactors - Spacer

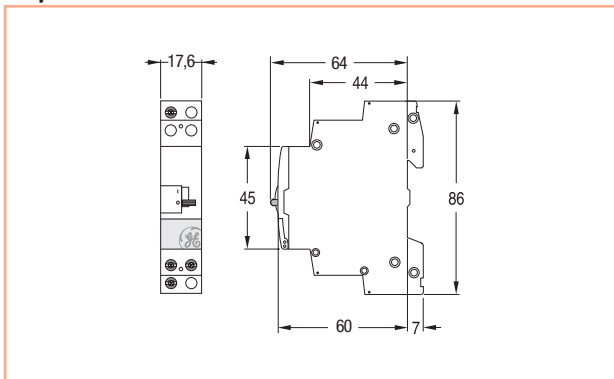


Dimensional drawings

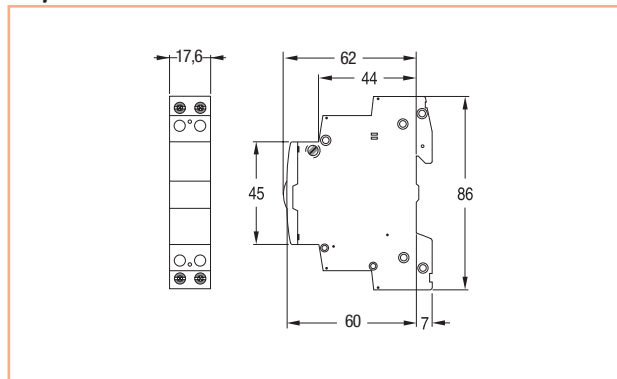
Relays - Contax R



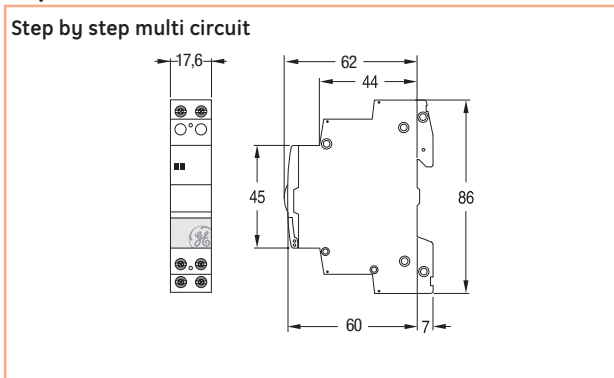
Impulse switches - Pulsar S



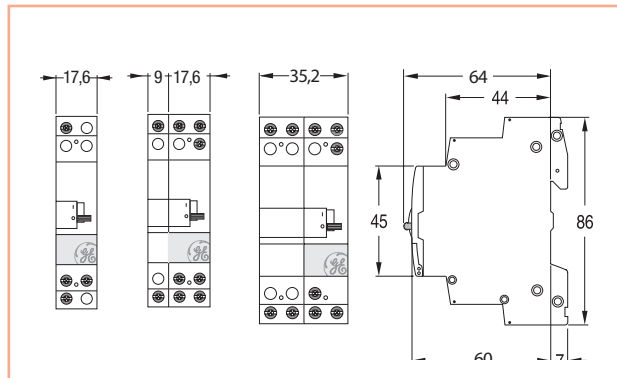
Impulse switches - Pulsar S



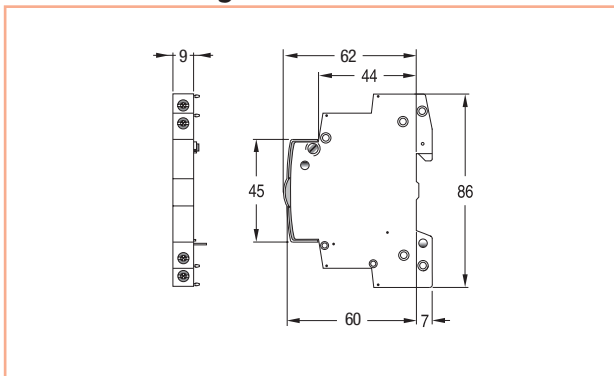
Impulse switches - Pulsar S



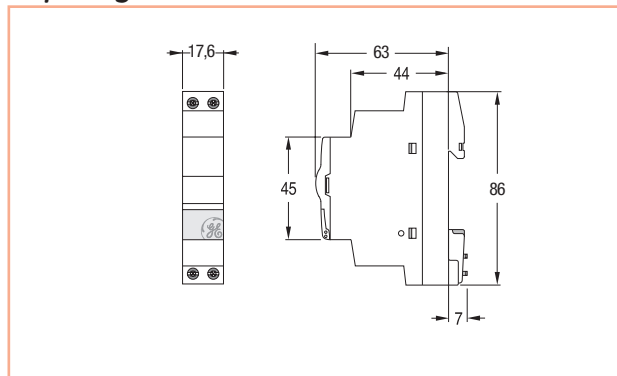
All-in central command - Pulsar S



Add-on auxiliary contact - Pulsar S

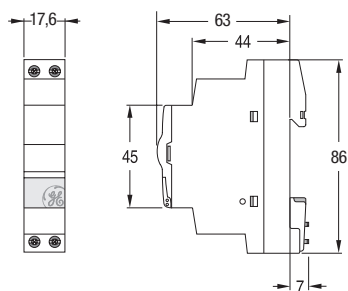


Capacity module - Pulsar S

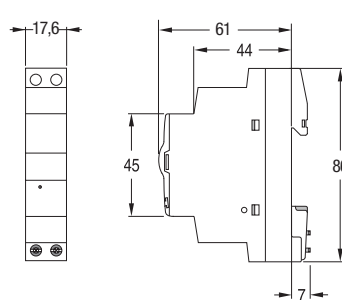


Central command - Pulsar S

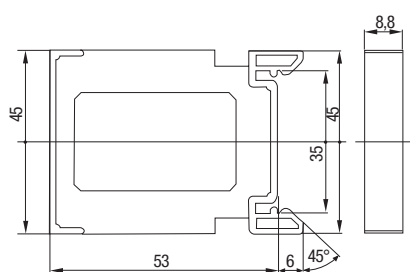
Multilevel central control module



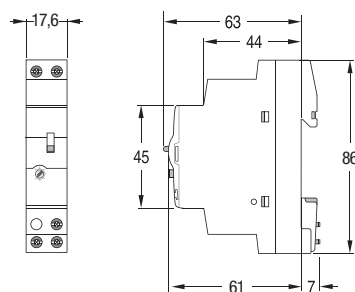
SurgeGuard safety module



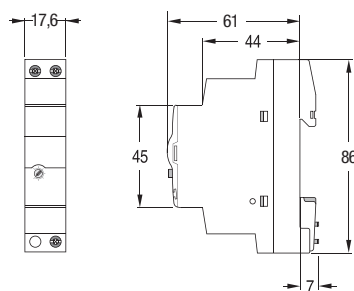
Spacer - Pulsar S



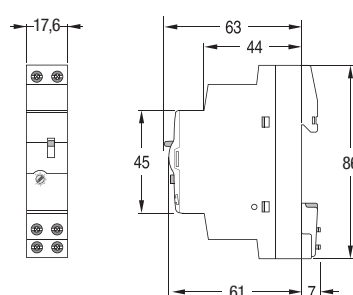
Staircase switches - Pulsar TS



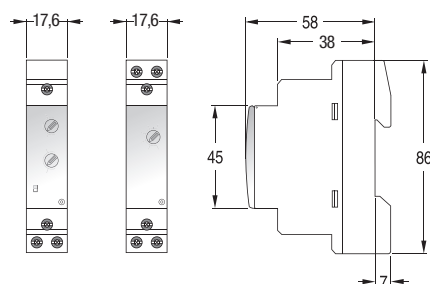
Dimmer - Pulsar TS



Time-delay impulse relay - Pulsar TS

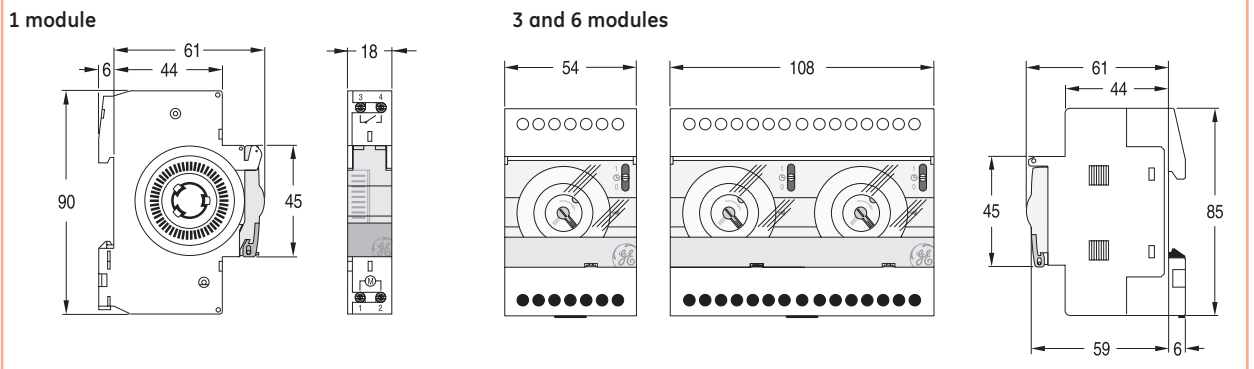


Time relays - Pulsar T

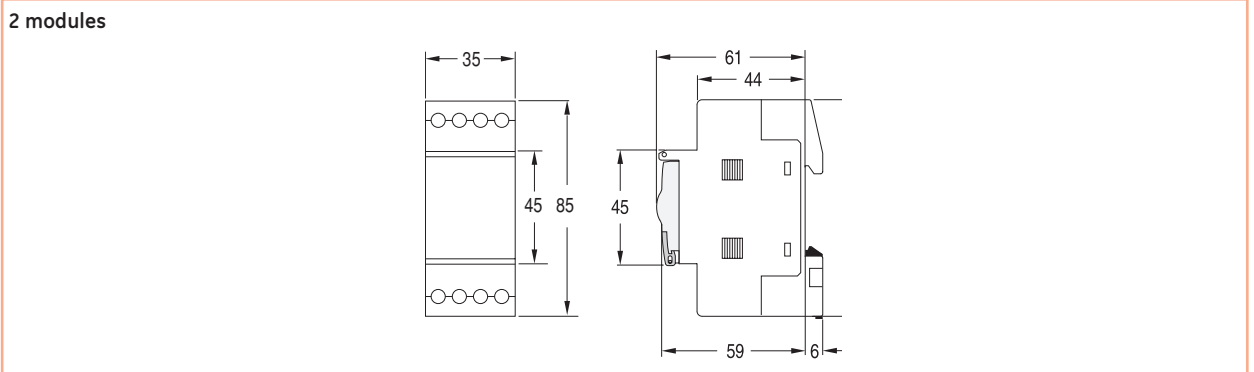


Dimensional drawings

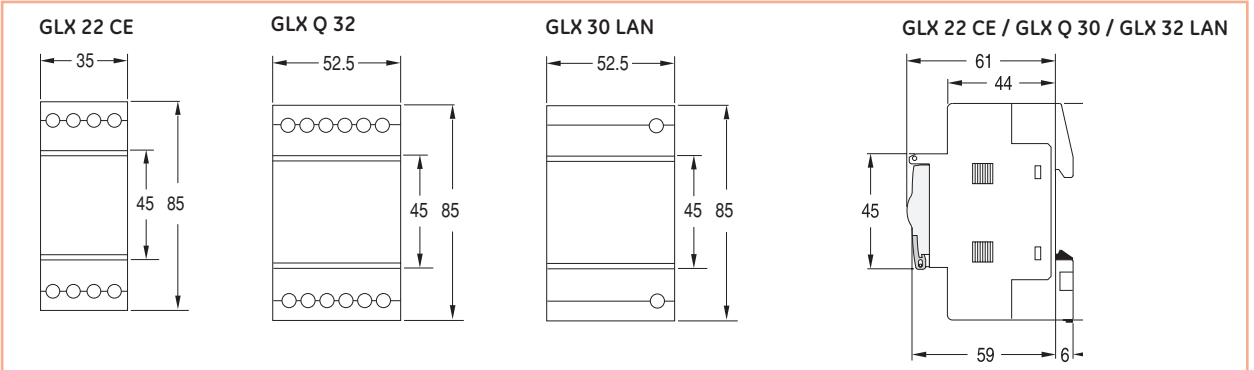
Analogue time switches - Classic



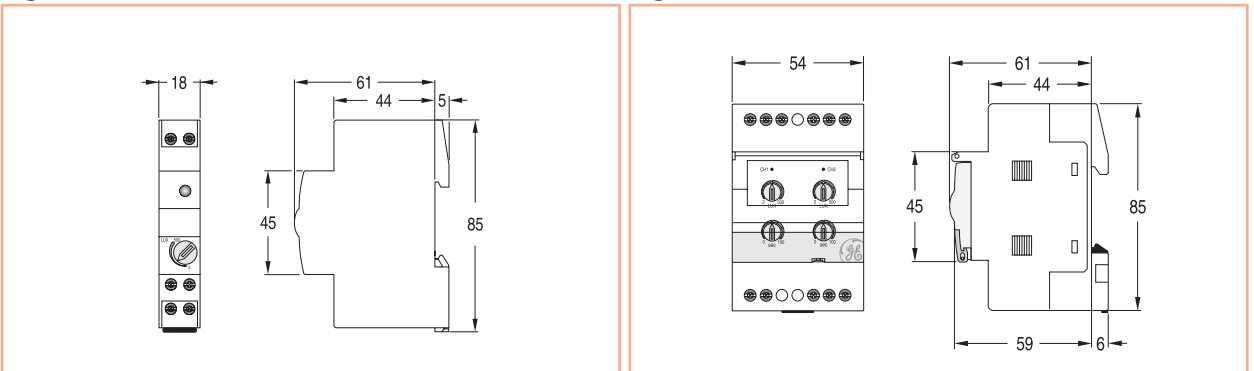
Digital time switches - Galax



Digital time switches - Galax - channel extension / annual time switches / LAN device

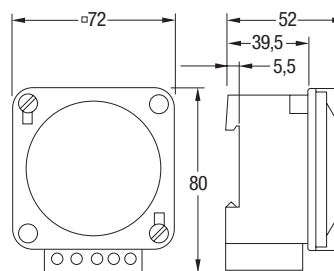
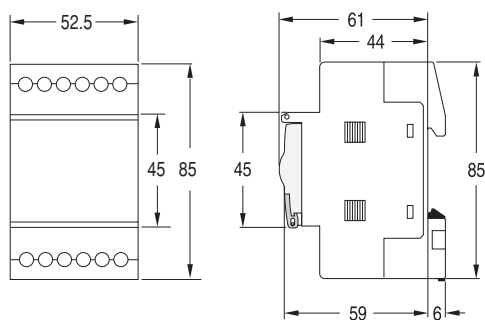


Light sensitive switch 1 module - Galax LSS Light sensitive switches 3 mod. - Galax LSS

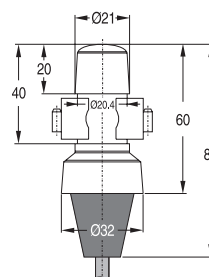
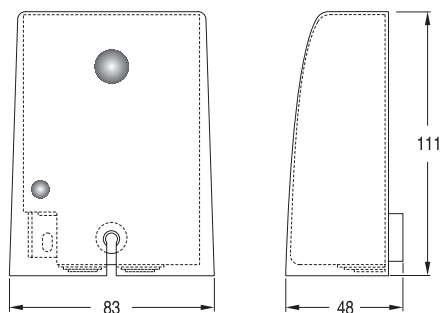


Light sensitive switches with timer Galax LSS Time Switches - 72x72 Classic and Galax

LSS 31



Light sensitive switch photocell incorporated Light sensitive switches - Photocell



Dimensional drawings

A

B

C

D

E

F

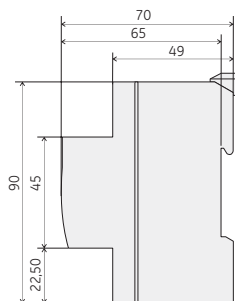
G

X

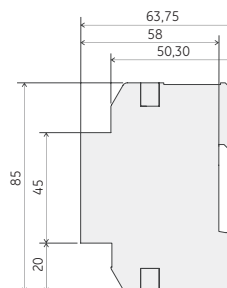
Dimensional drawings

Surge arresters - SurgeGuard

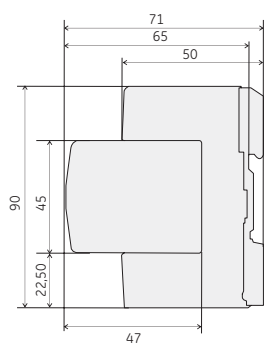
MONOBLOCK types
SA BLOCK, SA BLOCK ADSL



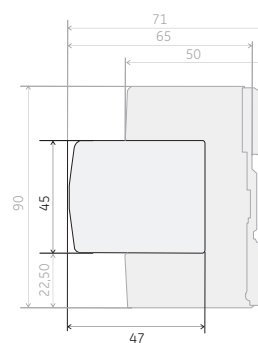
SA BLOCK II 15 LN



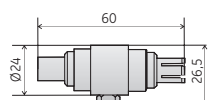
PLUG-IN types



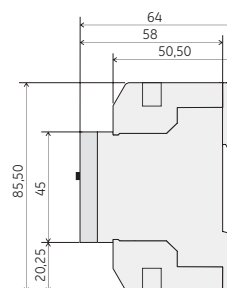
Replacement modules



For coax cables (SATV)



TELE OV - Overvoltage protection



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

Circuit Protection

People Protection

Add-on Devices

Comfort Functions

Busbars

Enclosures

MCCBs Record Plus

Numerical Index

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Notes

Busbars

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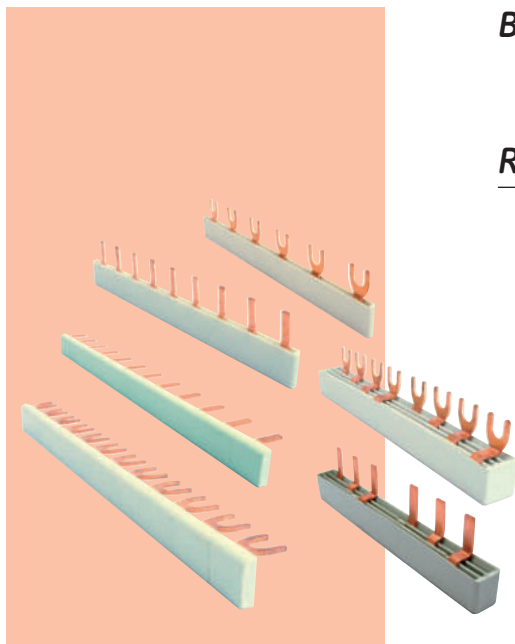
X

Grid area for notes, consisting of a large rectangular area with a light gray background and a grid of small orange dots.



Busbar system

Rails



Technical data

Rail	copper (oxygen free)
Insulation strip	plastic heat resistant > 96 °C self extinguishing V0
Dielectric strength	36kV/mm (acc. to DIN 53481/1.2)
Short-circuit resistance	25kA (100A fuse)
Climate proofing	according to IEC 60068-2-30
Creepage resistance/tracking index	400V (acc. to IEC 60112)
Insulation group acc. to EN 60439-1	Material group II, 400V

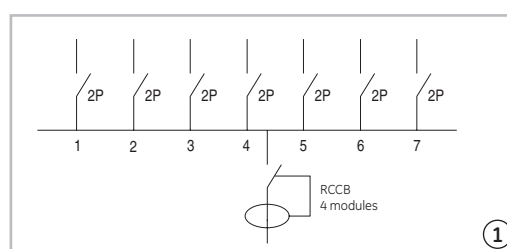
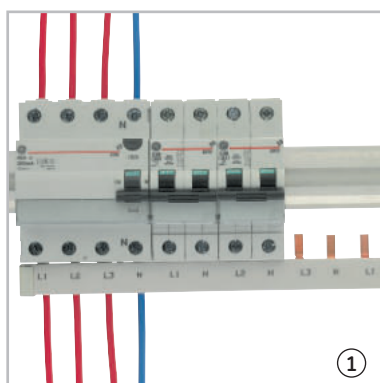
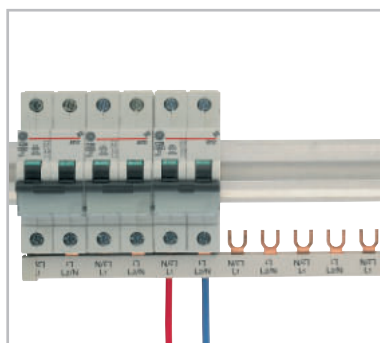
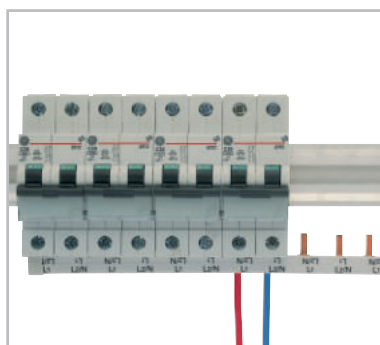
Load values in A (Ith)

Polarity		1 pole			
Connection		side		middle	
Section (mm ²)		Ith (A)	K (mm ²)	Ith (A)	K (mm ²)
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		n poles			
Connection		side		middle	
Section (mm ²)		Ith (A)	K (mm ²)	Ith (A)	K (mm ²)
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



Busbar system

A

B

C

D

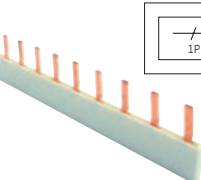
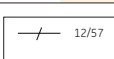
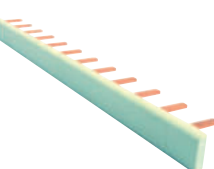
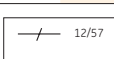
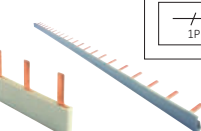
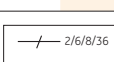
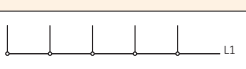
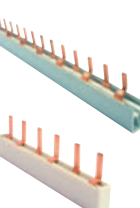
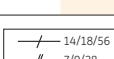
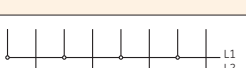
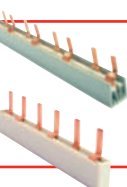
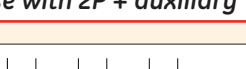
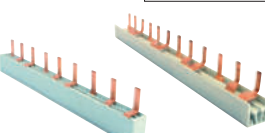
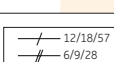
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F

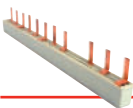
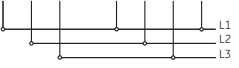
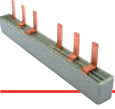
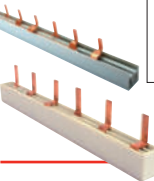
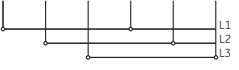
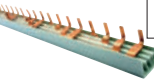
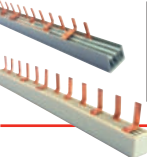
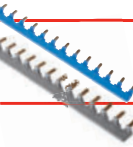
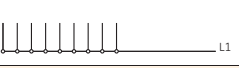
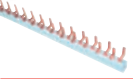
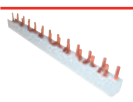
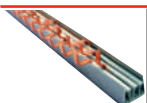
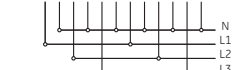
G

X

Insulated PIN type busbars

		Section mm ²	Description	Ref. No.	Pack.
1-phase					
	  	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
1-phase 90°					
	  	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
1-phase with 1P + auxiliary					
	  	10	2 x (1P + auxiliary)	546256	10
		10	6 x (1P + auxiliary)	546257	10
		10	8 x (1P + auxiliary)	546237	10
		10	36 x (1P + auxiliary) or MCBs Hti - length 1m	546152*	1/50
		16	36 x (1P + auxiliary) or MCBs Hti - length 1m	624994*	1/50
2-phase					
	  	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
2-phase with 2P + auxiliary					
	  	10	3 x (2P + auxiliary)	546269	10
		10	5 x (2P + auxiliary)	546270	10
		16	22 x (2P + auxiliary) - length 1m	546126*	1/20
3-phase					
	  	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

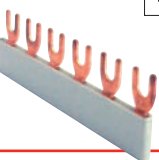
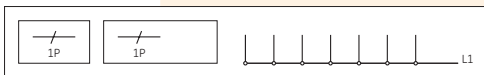
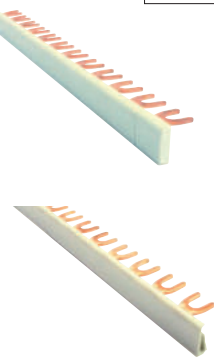
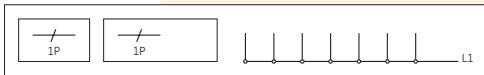
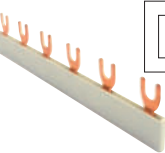
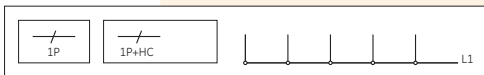
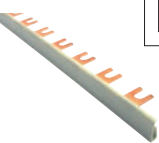
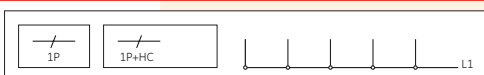
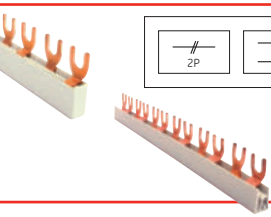
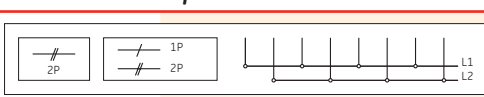
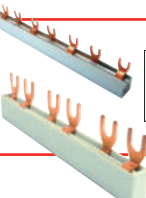
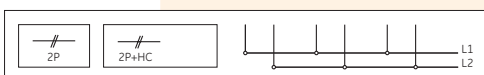
Insulated PIN type busbars (continued)

		Section mm ²	Description	Ref. No.	Pack.
3-phase for screwless MCBs Fixwell™					
	 6/8 3/4		10 1xRCD + 6x1P or 3x2P	544183	10
			10 1xRCD + 8x1P or 4x2P	544184	10
3-phase with 2P + auxiliary					
	 2/4/15		10 2 x (3P + auxiliary)	555434	10
			10 4 x (3P + auxiliary)	555435	10
			10 15 x (3P + auxiliary) - length 1m	544195*	1/20
3-phase with 1P + auxiliary					
	 6/8/9/36 3/4/18 2/3/12		10 6 x (1P + auxiliary) or 6x1P MCBs Hti or	546396	10
			3x2P MCBs Hti or 2x3P MCBs Hti		
			10 8 x (1P + auxiliary) or 8x1P Hti MCB or 4x2P Hti MCB	544185	10
			10 9 x (1P + auxiliary) or 3x3P MCBs Hti	546397	10
			10 36 x (1P + auxiliary) or 18x2P Hti MCB or	546128*	1/20
			12x3P Hti MCB - length 1m		
4-phase 4P or 3P+N					
	 2/3/4/14		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
4-phase 1P+N or 2P					
	 6/9/27		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
1-phase 90° for compact MCBs Unibis™					
	 13		10 13x1P - 90° - grey	646091	15
			10 13x1P - 90° - blue	646092	15
1-phase+N / 2P for compact MCBs Unibis™					
	 18/55		10 18x1P+N / 2P	624796	20
			10 55x1P+N / 2P - length 1m	624893*	1/20
3-phase for compact MCBs Unibis™					
	 12/55		10 12x2P	624797	15
			10 55x2P - length 1m	624798*	1/15
4-phase 1P+N or 2P for compact MCBs Unibis™					
	 55		10 55x2P - length 1m	624892*	1/10
4-phase 4P or 3P+N for compact MCBs Unibis™					
	 55 55		10 55x3P or 4P - length 1m incl. 4 end caps and 4 connection clamps	624800*	1/5

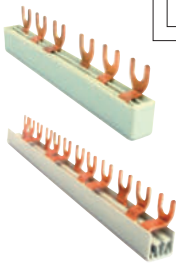
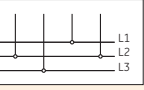
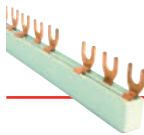
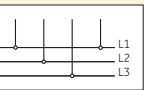
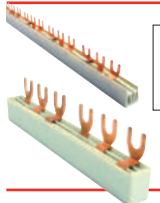
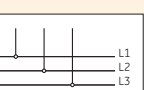
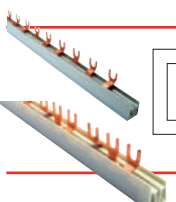
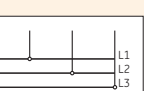
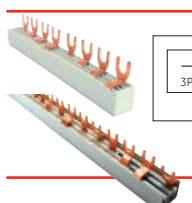
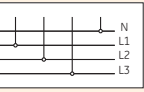
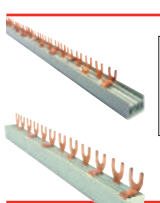
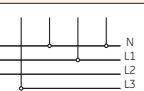
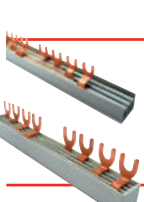
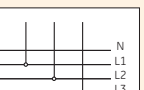
* Rails with 1m length can be shortened



Insulated FORK type busbars

		Section mm ²	Description	Ref. No.	Pack.		
1-phase							
		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		
		1-phase 90°					
		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		
1-phase with 1P + auxiliary							
		10	2 x (1P + auxiliary)	546250	20		
		10	3 x (1P + auxiliary)	644875	20		
		10	4 x (1P + auxiliary)	644876	20		
		10	5 x (1P + auxiliary)	644877	20		
		10	6 x (1P + auxiliary)	546251	20		
		10	8 x (1P + auxiliary)	546295	20		
		10	9 x (1P + auxiliary)	546252	20		
1-phase with 1P + auxiliary 90°							
		10	2 x (1P + auxiliary) - 90°	544272	20		
		10	7 x (1P + auxiliary) - 90°	544277	20		
		10	13 x (1P + auxiliary) - 90°	544296	50		
		10	14 x (1P + auxiliary) - 90°	644879	20		
		10	15 x (1P + auxiliary) - 90°	644880	20		
		16	15 x (1P + auxiliary) - 90°	544327	20		
		10	37 x (1P + auxiliary) - 90° - length 1m	546197*	1/50		
		16	37 x (1P + auxiliary) - 90° - length 1m	544189*	1/50		
		2-phase					
			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		
	2-phase with 2P + auxiliary						
				10	2 x (2P + auxiliary)	546262	10
10				3 x (2P + auxiliary)	546263	10	
10		4 x (2P + auxiliary)		544344	10		
10		5 x (2P + auxiliary)		546264	10		
16		22 x (2P + auxiliary) - length 1m		546125*	1/20		

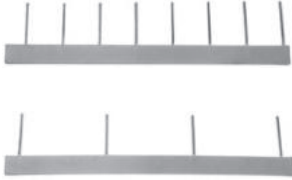
Insulated FORK type busbars (continued)

	Section mm ²	Description	Ref. No.	Pack.
3-phase				
     	10	6x1P or 3x2P or 2x3P	546271	10
	10	7x1P	624957	10
	10	9x1P or 3x3P	546296	10
	10	12x1P or 6x2P or 4x3P	546272	10
	10	13x1P	650153	10
	10	14x1P or 7x2P	650154	10
	10	15x1P or 5x3P	544172	10
	10	18x1P or 9x2P or 6x3P	544173	10
	10	21x1P or 7x3P	544174	10
	10	24x1P or 12x2P or 8x3P	624958	20
	10	57x1P or 28x2P or 19x3P - length 1m All forks on the lateral side of the busbar	546229*	1/20
	16	57x1P or 19x3P - length 1m All forks in the middle of the busbar	546176*	1/20
	16	57x1P or 28x2P or 19x3P - length 1m All forks in the middle of the busbar	546230*	1/20
3-phase RCD's				
     	10	1xRCD + 5x1P	555609	10
	10	1xRCD + 6x1P or 3x2P or 2x3P	544175	10
	10	1xRCD + 8x1P or 4x2P	544176	10
3-phase with 3P + auxiliary				
   	10	2 x (3P + auxiliary)	546273	10
	10	3 x (3P + auxiliary)	644884	10
	10	4 x (3P + auxiliary)	546274	10
	10	5 x (3P + auxiliary)	644885	10
	10	6 x (3P + auxiliary)	644886	10
	16	15 x (3P + auxiliary) - length 1m	546129*	1/20
3-phase with 1P + auxiliary				
     	10	6 x (1P + auxiliary) or 6x MCBs Hti	546275	10
	10	8 x (1P + auxiliary) or 8x MCBs Hti	544177	10
	10	9 x (1P + auxiliary) or 9x MCBs Hti	546276	10
	16	36 x (1P + auxiliary) - length 1m	546127*	1/20
4-phase 4P or 3P+N				
   	10	2x4P or 2x3P+N	546279	5
	10	3x4P or 3x3P+N	546280	5
	10	4x4P or 4x3P+N	544179	5
	10	14x4P or 14x3P+N - length 1m	618293*	1/15
	16	14x4P or 14x3P+N - length 1m	546234*	1/15
4-phase 1P+N or 2P				
   	10	6x1P+N or 6x2P	546398	5
	10	9x1P+N or 9x2P	546281	5
	10	2xAdd on 32A +4P	546228	5
	10	27x1P+N or 27x2P - length 1m	624799*	1/15
	16	27x1P+N or 27x2P - length 1m	544192*	1/15
4-phase with 4P + auxiliary				
   	10	2 x (4P + auxiliary) or 2 x (3P+N + auxiliary)	646084	5
	16	12 x (4P + auxiliary) or 12 x (3P+N + auxiliary) - length 1m	646083*	1/15

* Rails with 1m length can be shortened



Busbars for connection of auxiliaries

	Section mm ²	Description	Ref. No.	Pack.
		For auxiliary function added on 1P MCB		
	27mm / 8P		546244	10
	27mm / 4P		544346	10
		For auxiliary function added on 2P MCB		
	45mm / 5P		546245	10
	45mm / 4P		544347	10
		For auxiliary function added on 3P MCB		
	63mm / 4P		546246	10

Accessories

	End caps				
	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	
	Connection clamps				
	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	
	Insulation cap	Pin/fork - Yellow (RAL 1004)	546291	10	
	Insulation strip	For fork and pin - length 1m	624992	10	
	Clamps for neutral conductor				
	16	7 poles	546297	10	
	16	12 poles	546298	10	
	16	12 poles, insulated	568083	10	
	16	15 poles	546299	10	
	Clamps for phase conductors				
	16	7 poles	546300	10	
	16	12 poles	546301	10	
	16	12 poles, insulated	568084	10	
	16	15 poles	546302	10	
	DIN-rail (EN 50022)	Length 1000mm - Height 7mm	564092	10	

Metal enclosures

- F.2 Surface mounting - **Fix-o-Rail Senior**
- F.4 Surface and flush mounting - **Fix-o-Rail 144**

Insulated plastic enclosures

- F.8 Surface mounting - **Fix-o-Rail Covers**
- F.10 Surface mounting - **Fix-o-Rail Classic**
- F.14 Surface mounting - **Fix-o-Rail Junior**
- F.16 Surface mounting - **Consumer unit**
- F.22 Surface mounting - **Abaco S**
- F.24 Surface mounting - **Aquaria**
- F.26 Surface mounting - **Fix-o-Rail 150**
- F.30 Surface mounting - **Fix-o-Rail 55**
- F.32 Surface mounting - **Europe Line**
- F.36 Flush mounting - **Abaco F**
- F.38 Flush mounting - **Fix-o-Rail 150-F4**
- F.40 Junction boxes - **Flex-o-Box**
- F.42 Junction boxes - **Series 55**
- F.46 Dimensional drawings

Circuit Protection

A

People Protection

B

Add-on Devices

C

Comfort Functions

D

Busbars

E

Enclosures

F

MCCBs Record Plus

G

Numerical Index

X



Metal enclosures Surface mounting

Fix-o-Rail Senior

□ IP43

Features

- **Secure: total insulation** □
Double wall: a steel outer wall plus an inner insulated extruded wall
- Protection degree: IP43-IP08 (plain door)
- Universal: for DIN-rail equipment up to 92.5 mm
- Installation friendly: ample wiring room and a removable mounting frame
- Flexible cable entries, integrated in the base

Components

The Fix-o-Rail Senior enclosure includes:

- base in RAL 9002
- mounting frame
- labels for circuit indication
- coverplates
- a transparent or grey door in RAL 9002
- closed by handle without lock
- padlocking option



Approvals / Marking



Applications



As an elegant insulated enclosure in:

- restaurants and hotels
- workshops
- hospitals
- shopping centers
- offices
- commercial buildings
- leisure and sport locations

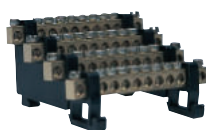


Fix-o-Rail Senior

	H x W x D (mm)	Number of modules	Number of rows	Ref. No.	Pack.
	Plain door				
	650 x 300 x 210	48	4	610239	1
	800 x 300 x 210	60	5	610248	1
	650 x 550 x 210	96	4	610240	1
	800 x 550 x 210	120	5	610249	1
	950 x 550 x 210	144	6	610257	1
	1100 x 550 x 210	168	7	610241	1
	1250 x 550 x 210	192	8	610242	1
	1100 x 800 x 210	252	7	610243	1
	1250 x 800 x 210	288	8	610244	1
	Transparent door				
	650 x 300 x 210	48	4	610328	1
	800 x 300 x 210	60	5	610330	1
	650 x 550 x 210	96	4	610329	1
	800 x 550 x 210	120	5	610331	1
	950 x 550 x 210	144	6	610332	1

Dimensions ● pg F.51

Accessories



4 pole terminals

610022 18

63A

Connection range 4 x (10 x 16 mm²)

Cu section 6,5 x 9 mm



617992 5

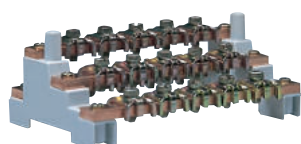
160 A

with cover

4 x (1 x 10 to 50 mm² incoming

+ 3 x 6 to 35 mm² + 8 x 2,5 to 16 mm² outgoing)

Cu section 12 x 10 mm

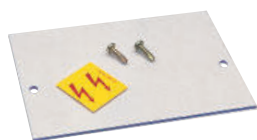


610020 1

160A

connection range 4 x (10 x 10 mm²)

Cu section 12 x 5 mm



Protective shroud

610021 1

For 160A terminal (ref. 610020)



Earth bar

828152 1

For enclosure width 300 mm - length 190 mm



828153 1

For enclosure width 550 mm - length 437 mm

828149 1

For enclosure width 800 mm - length 684 mm



Cover strip

828056 1

For cut out of 45 mm

Standard plates

815094 1



Pre-drilled plates

815093 5

17 x PG13.5

815092 5

1 x PG21 - PG48 / 2 x PG13.5

2 x PG29 / 4 x PG13.5



Label for circuit indication

610232 10

For enclosure width 300 mm

610233 10

For enclosure width 550 mm

610238 10

For enclosure width 800 mm

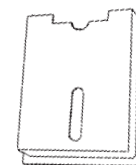


Pocket for drawings

832000 1

Self adhesive

To be fitted on the inside of the door
W x H = 155 x 225



Non standard lock

487/089000-016 815105 1

Adaptor kit



451/070152-061 811327 1

Insert 3 mm double bit key

451/070152-051 811326 1

Insert 8 mm triangle key

451/070152-041 811325 1

Insert 8 mm square key

451/070158-011 811331 1

Cylinder with 2 keys V2432-E

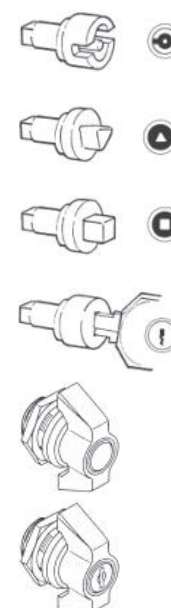
485/087000-014 813146 1

Neutral handle

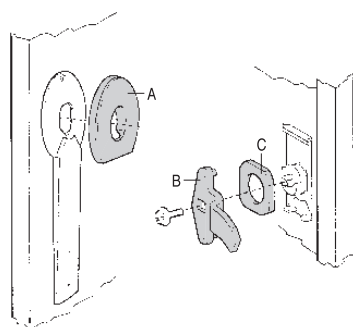
485/087000-023 813156 1

Handle with key V2432-E

The standard handle can be replaced by
adaptor kit + insert or handle



Adaptor kit = A + B + C





Metal enclosures

Fix-o-Rail 144 F (flush mounting)

Fix-o-Rail 144 S (surface mounting)

IP40

Features

- In accordance with EN 60439-1 and IEC 60439-1
- 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: 150 mm
- Flush mounting depth: 105 mm
- Can be equipped with the Record Plus 160A D-frame
- Colour: RAL 7035

Electrical properties

- Designated voltage: 415V AC
- Designated current: 160A

Masking frame and door

- Rodged masking frame
- Manufactured in quality mild steel of 1 mm thick, cold reduced
- Pre-treated prior to electrostatic powder coating in RAL 7035 (light grey)
- Transparent or plain door

Protection plate

- Made from PVC
- Easy fixations with 1/4 screws

Base

- Ridged base (mono-block)
- Manufactured in sendzimir zinc plated steel of 1 mm thick (F.O.R 144F)
- Sidewalls foreseen with position lugs (F.O.R 144F)
- Pre-treated prior to electrostatic powder coating in RAL 7035, light grey (F.O.R 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 (± 20 mm) (F.O.R 144F)
- Adjustable left or right (± 10 mm) (F.O.R 144F)
- Distance between two DIN-rails: 150 mm

Door

- Transparent or plain door, security lock included

Earth bar (L = 380 mm)

- Copper bar, 12x5 mm, 18 x M5 threaded holes + connectors and screws

Advantages

- Suitable for DIN-rail mounting devices up to 70 mm 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 105 mm
- Can be equipped with wiring trunks (W x H): 15x40 mm, 25x40 mm, 40x40 mm, 60x40 mm

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



Fix-o-Rail 144-F - Flush mounting enclosures without door ⁽¹⁾

Included ref. 617965 = an earth terminal: copper bar 12 x 5 mm, 18 threaded holes M 5, connectors and screws



H x W x D (mm)	Number of modules	Number of rows	Power dissipation (W)		Ref. No.	Pack.
			Without door	With door		
650 x 740 x 140 ⁽¹⁾ 560 x 610 x 105 ⁽²⁾	72	3	140	83	617934	1



800 x 740 x 140 ⁽¹⁾ 710 x 610 x 105 ⁽²⁾	96	4	152	95	617935	1
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950 x 740 x 140 ⁽¹⁾ 860 x 610 x 105 ⁽²⁾	120	5	164	110	617936	1
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1100 x 740 x 140 ⁽¹⁾ 1010 x 610 x 105 ⁽²⁾	144	6	176	116	617937	1
--	-----	---	-----	-----	--------	---



Equipped with function for Record Plus 160A D-frame

1100 x 740 x 140 ⁽¹⁾ 1010 x 610 x 105 ⁽²⁾	120	5	176	116	617938	1
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Transparent and plain doors



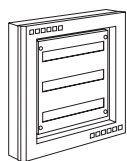
For enclosure	Number of modules	Number of rows	Transparent door	Plain door	Pack.
			Ref. No.	Ref. No.	
617934	72	3	617939	617943	1
617935	96	4	617940	617944	1
617936	120	5	617941	617945	1
617937	144	6	617942	617946	1
617938	120	5	617942	617946	1

(1) External dimensions

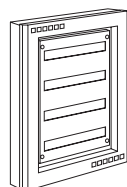
(2) Internal dimensions

Fix-o-Rail 144-S - Surface mounting enclosures without door

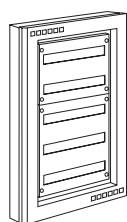
Included ref. 617965 = an earth terminal: copper bar 12 x 5 mm, 18 threaded holes M 5, connectors and screws



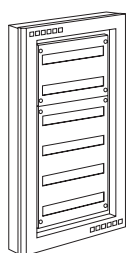
Dimensions H x W x D (mm)	Number of modules	Number of rows	Power dissipation (W)		Ref. No.	Pack.
			Without door	With door		
650 x 740 x 140	72	3	160	88	617966	1



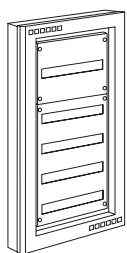
800 x 740 x 140	96	4	175	100	617967	1
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950 x 740 x 140	120	5	187	115	617968	1
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1100 x 740 x 140	144	6	195	125	617969	1
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Equipped with function
for Record Plus
160A D-frame

1100 x 740 x 140	120	5	195	125	617970	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	617939	617943	1
617967	96	4	617940	617944	1
617968	120	5	617941	617945	1
617969	144	6	617942	617946	1
617970	120	5			

Accessories



4 pole terminals

617992 5

160 A

with cover

4x (1 x 10 to 50 mm² incoming

+ 3 x 6 to 35 mm²

+ 8 x 2.5 to 16 mm² outgoing)

Cu section 12 x 10 mm

Function for Record Plus 125A

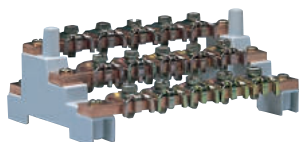
D-frame

Fix-o-Rail 144 F/S 617018 1

VP-System

617964 1

height = 300 mm



610020 1

160A

connection range 4 x (10 x 10 mm²)

Cu section 12 x 5 mm

Depth adapter & support

617947 1

PVC profile: length 355 mm

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 550 mm



Cover strip

828056 1

For cut out of 45 mm

Support for wiring-trunking

617949 1



Blank plate

610142 4

610484 500

Length: 72 mm

Cut-out width: 45 mm

Can be cut into 9 mm lengths

RAL 7035

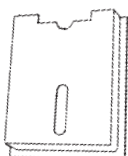
Wiring supports

828145 1

Cable-tray support (20 pieces)

828146 1

Cable-tray (10 pieces)



Pocket for drawings

832000 1

Self adhesive - format A4

To be fitted on the inside of the door

W x H = 155 x 225





*Insulated enclosures
Surface mounting*

Fix-o-Rail Covers

IP30

Applications



Marking



Features

- Protection degree: IP30
- Made from high resistance ABS
- Flame resistance: self extinguishing material, resist the 960°C
- Colour: Grey RAL 7035
- Installation temperature: -15°C up to +60°C



Fix-o-Rail Covers - Without door



H x W x D (mm)	No. of modules	No. of rows	Ref. No.	Pack
139 x 51 x 61	2	1	610090	50
139 x 88 x 61	4	1	610091	60
140 x 165 x 72	6	1	610354	28
198 x 200 x 72	8	1	610355	18

A

B

C

D

E

F

G

X



Insulated enclosures Surface mounting

Fix-o-Rail Classic

IP30 / IP40

Approvals / Marking



Standards

EN 60439-3

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.

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
- ABS 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

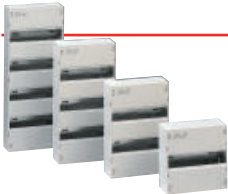
The Fix-o-Rail Classic B packaging includes:

- A mounting frame
- A protective cover
- Labels for circuit identification
- Installation guidelines

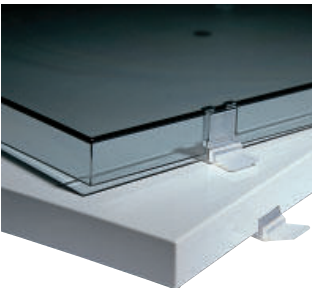
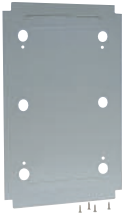
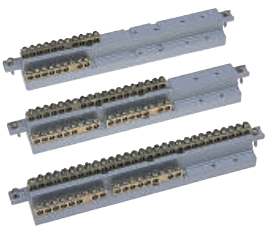
Advantages

- Two DIN-rail positions: 47 and 55 mm
- Generous wiring room 30 mm behind the mounting frame
- 13 modules on each row
- 125 mm 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

Fix-o-Rail Classic

	Classic A	H x W x D (mm)	Equipment	Number of rows	Number of modules	Ref. No.	Pack.
		250 x 250 x 94	Earth bar: connection 8 x 16 mm ² Neutral bar: connection 10 x 16 mm ²	1	13	619200	1
		375 x 250 x 94	Earth bar: connection 18 x 16 mm ² Neutral bar: connection 2(8 x 16 mm ²)	2	26	619201	1
		500 x 250 x 94	Earth bar: connection 27 x 16 mm ² Neutral bar: connection 2(8 x 16 mm ²)	3	39	619202	1
		625 x 250 x 94	Earth bar: connection 27 x 16 mm ² Neutral bar: connection 2(8 x 16 mm ²)	4	52	618116	1
	Classic B	H x W x D (mm)	Equipment	Number of rows	Number of modules	Ref. No.	Pack.
		250 x 250 x 94		1	13	619203	1
		375 x 250 x 94		2	26	619204	1
		500 x 250 x 94		3	39	619205	1
		625 x 250 x 94		4	52	618117	1

Accessories

	Transparent door + hinges						
		618503	1				
	1 row	618509	1				
	2 rows	618515	1				
	3 rows	617961	1				
	4 rows*						
	Plain white door + hinges						
		619206	1				
	1 row	619207	1				
	2 rows	619208	1				
	3 rows	617962	1				
	4 rows*						
	Insulated backplate + screws						
	Protects the cables and devices when the cover is mounted on a moist or aggressive surface						
		618505	1				
	For Classic B - 1 row	618511	1				
	For Classic B - 2 rows	618517	1				
	For Classic B - 3 rows	619411	1				
	For Classic B - 4 rows						
	Equipped insulated support						
		618506	1				
	For Classic B - 1 row	E: 8 x 16 mm ² and N: 10 x 16 mm ²					
		618512	1				
	For Classic B - 2 rows	E: 18 x 16 mm ² and N: 2 (8 x 16 mm ²)					
		618518	1				
	For Classic B - 3 rows	E: 27 x 16 mm ² and N: 2 (8 x 16 mm ²)					
Insulated support for earth and neutral terminals							
				618530	1		
Can be fixed on a mounting frame easily							
Can be equipped with below mentioned earth or neutral terminals							
	1x	2x	3x	Combination			
	8 x 16 mm ²	8 x 16 mm ²	8 x 16 mm ²	1 (8 x 16 mm ²) + 1 (10 x 16 mm ²)			
	10 x 16 mm ²	10 x 16 mm ²		1 (8 x 16 mm ²) + 1 (14 x 16 mm ²)			
	14 x 16 mm ²			1 (8 x 16 mm ²) + 1 (18 x 16 mm ²)			
	18 x 16 mm ²			1 (10 x 16 mm ²) + 1 (14 x 16 mm ²)			
	27 x 16 mm ²						
Equipped insulated support 3P+N + earth assembly							
				618529	1		
5 (8 x 16 mm ²)							
Earth or neutral terminals							
				618519	4		
8 x 16 mm ²							
				618520	4		
10 x 16 mm ²							
				618521	4		
14 x 16 mm ²							
				618522	4		
18 x 16 mm ²							
				618523	4		
27 x 16 mm ²							

E = earth connection
N = neutral connection

* in metal

Accessories Fix-o-Rail Classic (continued)



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: 11 x PG 13.5 + 1 x PG 21/29



Metal support for connection terminals

618524	1
--------	---

Blank plate 4 modules

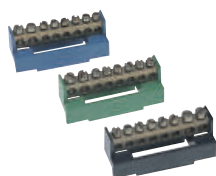
610382	4
--------	---

Length: 72 mm

Cut out width: 45 mm

Can be cut into 9 mm length

RAL 9010



Connection terminals

610185	4
--------	---

Phase terminal 6 x 10 mm² + 2 x 16 mm²

610186	4
--------	---

Earth terminal 6 x 10 mm² + 2 x 16 mm²

610187	4
--------	---

Neutral terminal 6 x 10 mm² + 2 x 16 mm²

Coupling

618528	2
--------	---



Sealing bracket

618527	2
--------	---





Insulated enclosures Surface mounting

Fix-o-Rail Junior

IP40



Approvals / Marking



Standards

EN 60439-3

Applications



For new buildings, replacing old units and adding add-on devices.

Features

- High resistance material
- Modern design
- Compact construction
- High protection degree IP40
- Total insulation □
- Total security
- Transparent cover allowing visibility of devices
- For all modular equipment
- Available in 4 and 8 modules
- Colour: RAL 7035
- ABS for the base
- Flame resistance: self extinguishing material, resist the 650 °C
- Polycarbonate for the lid
- Flame resistance: self extinguishing material, resist the 960 °C

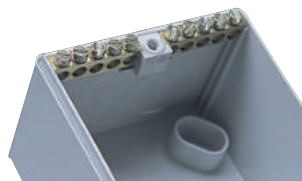
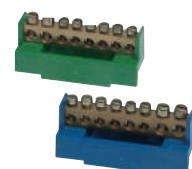


Dimensions ● pg F.46

Fix-o-Rail Junior

	H x W x D (mm)	Equipment	No. of modules	Ref. No.	Pack.
	170 x 90 x 100 Max. depth of the devices: 70 mm Entries: 2 x PG29, 4 x PG21	Earth terminal: connection 5 x 16 mm ² Neutral terminal: connection 5 x 16 mm ²	4	610344	1/15
	170 x 175 x 120 Max. depth of the devices: 92.5 mm Entries: 2 x PG21, 4 x PG21, 4 x PG16	Earth terminal: connection 6 x 10 + 2 x 16 mm ² Neutral terminal: connection 6 x 10 + 2 x 16 mm ²	8	610345	1/8

Accessories

	Earth/neutral terminals For Junior 4 modules <table><tr><td>610141</td><td>2</td></tr></table> Connection range 5 x 16 mm²	610141	2	Sealing bracket <table><tr><td>610140</td><td>2</td></tr></table>	610140	2					
610141	2										
610140	2										
	Earth/neutral terminals For Junior 8 modules <table><tr><td>610186</td><td>4</td></tr></table> Earth connection range 6 x 10 mm² + 2 x 16 mm² <table><tr><td>610187</td><td>4</td></tr></table> Neutral connection range 6 x 10 mm² + 2 x 16 mm²	610186	4	610187	4	Blank plate 4 modules <table><tr><td>610142</td><td>4</td></tr><tr><td>610484</td><td>500</td></tr></table> length: 72 mm cut out width: 45 mm can be cut into 9 mm length RAL 7035	610142	4	610484	500	
610186	4										
610187	4										
610142	4										
610484	500										
	Grommets <table><tr><td>610130</td><td>25</td></tr></table> PG16 <table><tr><td>610132</td><td>25</td></tr></table> PG21 <table><tr><td>610133</td><td>25</td></tr></table> PG29	610130	25	610132	25	610133	25				
610130	25										
610132	25										
610133	25										

Consumer Unit

BS EN60439-3

IP40



Applications



Standard

BS EN 60439-3

Marking



Performance

Voltage	240V 50Hz
Rating main switch	100A/63A
Rating RCCB	63A, 80A and 100A
IP rating	IP40
Poles	1P+N
Terminal capacity	25mm ² + 16mm ²

Dimensions Insulated

Dimension code	Height	Width	Depth
A (4 module)	245	198	120
B (10 module)	245	306	120
C (14 module)	245	378	120
D (18 module)	245	468	120

Dimensions Metal

Dimension code	Height	Width	Depth
A (4 module)	175	112	90
B (10 module)	208	218	108
C (14 module)	208	292	108
D (18 module)	208	370	108

Insulated main switch up to 100A



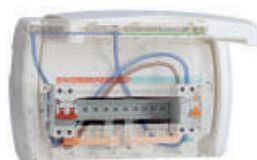
MCB ways	Rating (A)	HxWxD code	Cat. No.	Ref. No.	Pack.
1 ⁽¹⁾	63A	A	MS1	662100	1
2 ⁽¹⁾	63A	A	MS2	662101	1
4	100A	B	MS4	662102	1
6	100A	B	MS6	662103	1
8	100A	B	MS8	662104	1
11	100A	C	MS11	662105	1
16	100A	D	MS16	662106	1

Insulated RCCB main switch up to 80A



MCB ways	Rating (A)	Sensitivity (mA)	HxWxD code	Cat. No.	Ref. No.	Pack.
1 ⁽²⁾	63A	30mA	A	RM1	662108	1
2 ⁽²⁾	63A	30mA	A	RM2	662109	1
4	80A	30mA	B	RM4	662110	1
6	80A	30mA	B	RM6	662111	1
8	80A	30mA	B	RM8	662112	1
11	80A	30mA	C	RM11	662113	1
13	80A	30mA	D	RM14SPD	662115	1
16	80A	30mA	D	RM16	662114	1

Insulated split load 100A main switch and 80A 30mA RCCB



MCB ways	Split		HxWxD code	Cat. No.	Ref. No.	Pack.
	Iso	RCCB				
Pre-configured						
6	3	3	B	SL33	662119	1
10	5	5	C	SL55	662120	1
10	6	4	C	SL64	662121	1
12	6	6	D	SL66	662122	1
14	7	7	D	SL77	662123	1
Flexible busbar						
10	3/7	7/3	D	FSL10	662125	1
14	5/9	9/5	D	FSL14	662126	1

Insulated time delayed RCCB split load - 100A 100mA TD RCCB and 80A 30mA RCCB



MCB ways	Split		HxWxD code	Cat. No.	Ref. No.	Pack.
	Iso	RCCB				
10	5	5	C	SLTD55	662129	1

(1) Main switch rated at 63A
(2) RCD main switch rated at 63A

Insulated split load 100A main switch and Dual 80A 30mA RCCB



No. of ways	Split			HxWxD code*	Cat. No.	Ref. No.	Pack.
	Iso	RCCB	RCCB				
Pre-configured							
6	2	2	2	C	TSL222	662152	1
10	3	4	5	D	TSL345	662153	1
10	4	4	2	D	TSL442	662154	1
12	2	5	5	D	TSL255	662155	1
12	4	5	5	D	TSL444	662156	1
Flexible busbar							
12	3/4/5	5/4/3		D	FTSL12	662161	1

Insulated split load 100A main switch and 80A 30mA RCCB



No. of ways	Split		HxWxD code*	Cat. No.	Ref. No.	Pack.
	RCCB	RCCB				
Pre-configured						
10	4	4	C	DSL44	662157	1
10	6	4	D	DSL64	662158	1
10	5	5	D	DSL55	662159	1
12	6	6	D	DSL66	662160	1
Flexible busbar						
12	5/7	7/5	D	DFSL12	662163	1

Garage and Shower



Description	RCCB Rating (A)	HxWxD code	Cat. No.	Ref. No.	Pack.
Garage unit 16A+6A	40A	A	GA40	662116	1
Shower unit 40A MCB	63A	A	SH40	662117	1
Shower unit 50A MCB	63A	A	SH50	662118	1

Metal main switch up to 100A



MCB ways	Rating (A)	HxWxD code	Cat. No.	Ref. No.	Pack.
2 ⁽¹⁾	63A	A	VCM2	618401	1
4	100A	B	VCM4	618402	1
6	100A	B	VCM6	618403	1
9	100A	C	VCM9	618404	1
13	100A	D	VCM13	618405	1

Metal RCCB main switch up to 80A



MCB ways	Rating (A)	Sensitivity (mA)	HxWxD code	Cat. No.	Ref. No.	Pack.
2 ⁽²⁾	63A	30mA	A	VCMA2	618406	1
4	80A	30mA	B	VCMA4	618407	1
6	80A	30mA	B	VCMA6	618409	1
9	80A	30mA	C	VCMA9	618411	1
13	80A	30mA	D	VCMA13	618413	1

Metal split load 100A main switch and 80A 30mA RCCB



MCB ways	Split		HxWxD code	Cat. No.	Ref. No.	Pack.
	Iso	RCCB				
Pre-configured						
6	3	3	C	VCM3A3	618416	1
8	4	4	D	VCM4A4	618419	1
10	5	5	D	VCM5A5	618423	1
14	7	7	D	VCM7A7	618489	1

(1) Main switch rated at 63A
(2) RCD main switch rated at 63A

NOTES:

- a) Metal consumer unit also required.
- b) Flush frame supplied separately for fitting by the installer.
- c) Image shows frame and consumer unit assembled
- d) To select the correct frame, match the frame and consumer unit dimension code.

Fix-o-Rail Cover – IP30 insulated enclosure



Modules	Cat. No.	Ref. No.	Pack.
2	E2	610090	1
4	E4	610091	1

Fix-o-Rail Junior – IP40 insulated enclosure



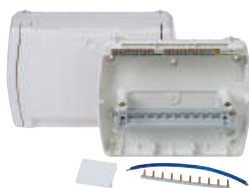
Modules	Cat. No.	Ref. No.	Pack.
4	EC4E+N	610151	1
8	EC8E+N	610345	1

Fix-o-Rail Metal – IP30 metal enclosure



Modules	Cat. No.	Ref. No.	Pack.
4	FOR4	618910	1

Insulated design enclosures



Modules	Busbar ways	HxWxD code	Cat. No.	Ref. No.	Pack.
4	3	A	CU4BN	662131	1
10	9	B	CU10BN	662132	1
14	13	C	CU14BN	662133	1
18	17	D	CU18BN	662134	1

Insulated enclosures supplied with busbar and neutral link cable

Metal design enclosures



Modules	HxWxD code	Cat. No.	Ref. No.	Pack.
10	B	EDU10E+N	618791	1
14	C	EDU14E+N	618792	1
18	D	EDU18E+N	618793	1

Half DIN rail adaptor (metal consumer units only)

Description	Modules	Cat. No.	Ref. No.	Pack
Half DIN rail adaptor	2	HDIN2	618794	1

Blanks, shrouds and locks

Description	Modules	Cat. No.	Ref. No.	Pack
Cover blanking plate	4	BLANK4	610382	4
Busbar shroud	3	SHR3	619018	10
Consumer unit door lock	-	CKEY	662137	1
Device padlock bracket	-	KS	624929	2

Transparent consumer unit doors

Description	Modules	Cat. No.	Ref. No.	Pack.
Transparent door	4	CD4	662139	1
Transparent door	10	CD10	662140	1
Transparent door	14	CD14	662141	1
Transparent door	18	CD18	662142	1

Connection cables and linking pins

Description	Cat. No.	Ref. No.	Pack.
Split load cable kit 10/14 modules	CSLKIT14	662136	1
Split load cable kit 18 modules	CSLKIT18	662138	1
Live link cable	LLINK1	409000	1
Neutral link cable	NLINK1	594009	1



Insulated enclosures Surface mounting

Abaco S

IP40

Marking



Standards

EN/IEC 695-2-1, CEI 670, CEI 23-48

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 7030 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.
- Chemical resistance against water, salt solution, acid rain.
- 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.

Abaco S - Transparent door



Colour	H x W x D (mm)	Modules 17.5 mm	Number of rows	Ref. No.	Pack.
Grey: RAL 7030	230 x 200 x 110	8/10	1	619375	14
White: RAL 9010	230 x 200 x 110	8/10	1	619376	14
Grey: RAL 7030	300 x 200 x 110	12/14	1	619369	10
White: RAL 9010	300 x 200 x 110	12/14	1	619372	10
Grey: RAL 7030	315 x 400 x 110	24/26	2	619370	1
White: RAL 9010	315 x 400 x 110	24/26	2	619373	1
Grey: RAL 7030	315 x 525 x 110	36/39	3	619371	1
White: RAL 9010	315 x 525 x 110	36/39	3	619374	1

Accessories

Insulated support for earth and neutral 619319 120 for enclosure 6/10 modules connection range $2 \times 16 \text{ mm}^2 + 8 \times 10 \text{ mm}^2$ 619320 120 for enclosure 10/14 modules connection range $2 \times 16 \text{ mm}^2 + 12 \times 10 \text{ mm}^2$ 619321 60 for enclosure 24/36 modules connection range $2 \times 16 \text{ mm}^2 + 12 \times 10 \text{ mm}^2$	Blank plate 619323 150 Grey, 5 modules 619338 150 White, 5 modules 619339 1 Metallised black, 5 modules	
	Security lock 619350 1 24 and 36 modules	

Abaco S

A

B

C

D

E

F

G

X



Waterproof enclosures Surface mounting

Aquaria

IP65

Approval / Marking



Standards

EN 60439-1, IEC 695-2-1,
CEI 23-48, CEI 23-49

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..

Features

- Total insulation ☐
- Protection degree IP65 - IK08
- Colour: RAL 7035
- Transparent lid or hinged door (3 rows)
- For DIN-rail equipment up to 92.5 mm
- 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	597956	8
1 row	8	597957	11
1 row	12	597958	17
1 row	12	597959	20
2 rows	24	597960	30
3 rows	48	597961	45

Aquaria - Waterproof enclosures surface mounting IP65

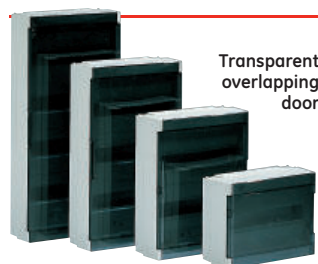

Colour	Dimensions mm (H x L x W)	Modules 17,5mm	# rows	Art. No.	ENCLOSURE		EARTH BAR	
					Ref. No.	Pack	Ref. No.	Pack
Gray RAL 7035	120 x 160 x 90	3/5	1	AQA005PG	597956	1/40/840	597962	1/20/120
Gray RAL 7035	200 x 160 x 90	4/8	1	AQA008PG	597957	1/26/546	597963	1/20/120
Gray RAL 7035	225 x 200 x 110	6/12	1	AQA012PG	597958	1/14/294	619320	1/20/120
Gray RAL 7035	250 x 250 x 145	6/12	1	AQA912PG	597959	1/1/152	619320	1/20/120
Gray RAL 7035	375 x 250 x 145	24	2	AQA024PG	597960	1/1/108	619320	1/20/120
Gray RAL 7035	550 x 350 x 145	48	3	AQA048PG	597961	1/1/44	619321	1/10/60

Accessories - Earth bars⁽¹⁾

Connection	# earth bars	Ref. No.	Pack
2 x 16 mm ² + 5 x 10 mm ²	1	597962	1/20/120
2 x 16 mm ² + 8 x 10 mm ²	2	597963	1/20/120
2 x 16 mm ² + 12 x 10 mm ²	2	619320	1/20/120
2 x 16 mm ² + 12 x 10 mm ²	4	619321	1/10/60

(1) To be ordered separately

Fix-o-Rail 150



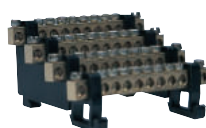
Transparent overlapping door



Plain overlapping door

H x W x D (mm)	Equipment	No. of modules	No of rows	Ref. No.	Pack.
270 x 355 x 150	Earth bar screwless: connection 6x16 mm ² and 21x4 mm ² In 80A	18	1	610275	1
450 x 355 x 150	Earth bar screwless: connection 6x16 mm ² and 21x4 mm ² In 80A	36	2	610285	1
600 x 355 x 150	Earth bar screwless: connection 6x16 mm ² and 21x4 mm ² In 100A	54	3	610295	1
750 x 355 x 150	Earth bar screwless: connection 6x16 mm ² and 21x4 mm ² In 100A	72	4	610303	1
270 x 355 x 150	Earth bar screwless: connection 6x16 mm ² and 21x4 mm ² In 80A	18	1	610276	1
450 x 355 x 150	Earth bar screwless: connection 6x16 mm ² and 21x4 mm ² In 80A	36	2	610286	1
600 x 355 x 150	Earth bar screwless: connection 6x16 mm ² and 21x4 mm ² In 100A	54	3	610296	1
750 x 355 x 150	Earth bar screwless: connection 6x16 mm ² and 21x4 mm ² In 100A	72	4	610304	1
Neutral terminal is optional; order the ref nrs 610386 for the 1 and 2 rows					
Neutral terminal is optional; order the ref nrs 610385 for the 3 and 4 rows					

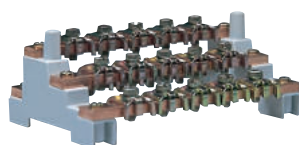
Accessories



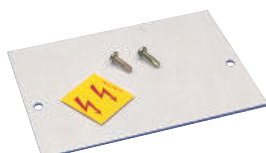
4 pole terminals	
610022	18
63A	
Connection range	
4 x (10 x 16 mm ²)	
Cu section 6,5 x 9 mm	



160A	
617992	5
with cover 4x (1 x 10 to 50 mm ² incoming + 3 x 6 to 35 mm ² + 8 x 2.5 to 16 mm ² outgoing)	
Cu section 12 x 10 mm	



160A	
610020	1
Connection range 4 x (10 x 10 mm ²)	
Cu section 12 x 5 mm	



Protective shroud	
610021	1
For 160A terminal (ref. 610020)	



Support with screwless earthbar	
610396	1
Connection: 6x16 mm ² and 21x4 mm ²	
Included with all enclosures	

Support with earth or neutral terminals

610386	4
Cable section: 14 x 16 mm ²	
Delivered with 1 and 2 rows enclosure	
610385	4
Cable section: 18 x 16 mm ²	
Delivered with 3 and 4 rows enclosure	



Support with terminal bars

610532	4
Cable section: 2 (17 x 16 mm ²)	



Support with terminal bars

L1-L2-L3-N	
610387	4
Cable section: 4 (5 x 16 mm ²)	



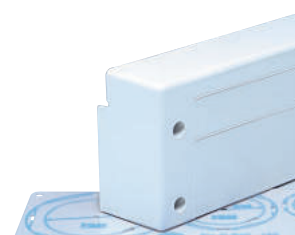
Universal entry plate

610264	2
For a sound and safe quality of finish. Increases the dust protection. With moulded-in marks for conduits.	

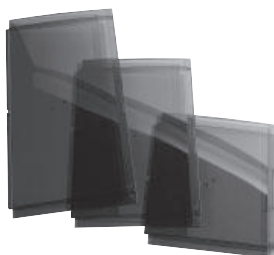


Universal entry cap

610272	1
Width: 355 mm	
Can be mounted at the bottom or at the top of the enclosure. Easy to fix.	
Usefull for the installation of cable glands or universal cable entries	



Accessories Fix-o-Rail 150 (continued)



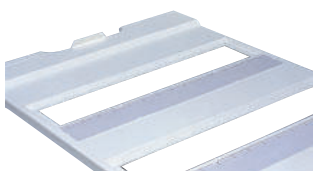
Transparent replacement door	
610277	1
For enclosure 610275	
610287	1
For enclosure 610285	
610297	1
For enclosure 610295	
610305	1
For enclosure 610303	



Plain replacement door	
610281	1
For enclosure 610276	
610291	1
For enclosure 610286	
610301	1
For enclosure 610296	
610306	1
For enclosure 610304	



Adhesive pictograms	
610380	1
For clear and permanent identification of circuits	
Set of 50 pieces	

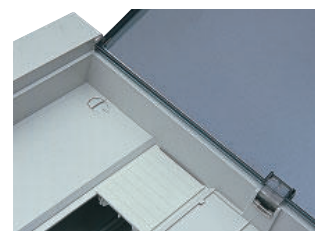


Labels and labelholders	
610383	1
Set of 50 pieces	

Security lock	
610170	1
With 2 keys	



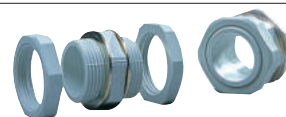
Blank plate	
610142	4
610484	500
Length: 72 mm	
Cut-out width: 45 mm	
Can be cut into 9 mm lengths	
RAL 7035	



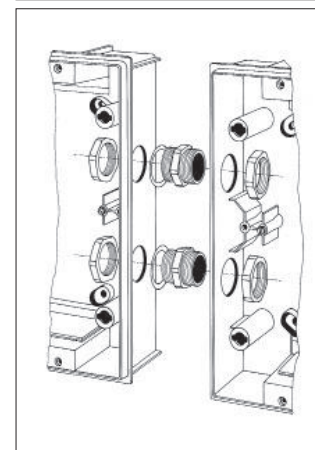
Drawing pocket	
610265	1
To be fixed at the bottom or at the top of the protective cover	



Coupling - 2 x PG21	
Allows the facility to couple several Fix-o-Rail enclosures laterally, top and bottom	



610327	1
--------	---



Insulated enclosures Surface mounting

Fix-o-Rail 55

IP55



Approvals / Marking



Standards

EN 60439-3

Applications



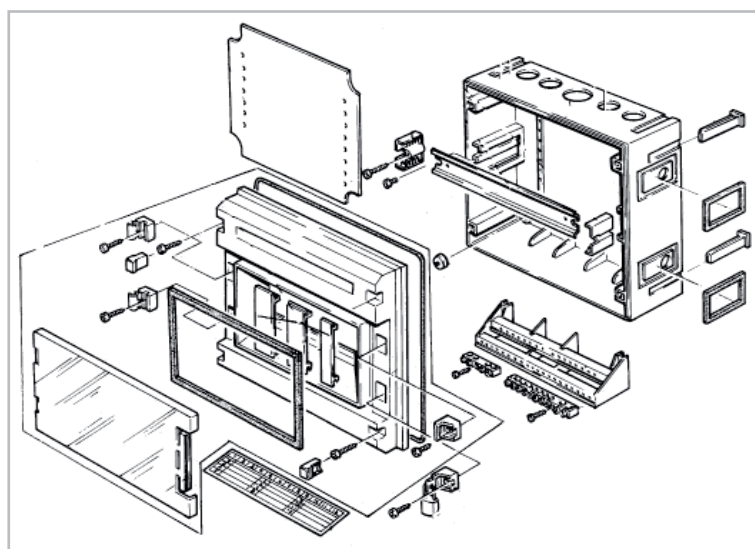
The Fix-o-Rail 55 enclosures are designed for power distribution in environments requiring a high protection degree.

Components

- Rigid base and protection cover, colour RAL 7035
- Transparent door
- DIN-rails, the centre distance between two DIN-rail is 125 mm
- Labeling facilities
- With earth bar for the 12, 24 and 36 modules

Features

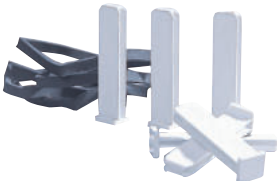
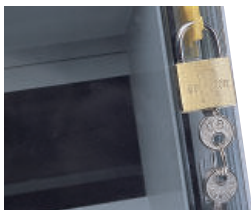
- Total insulation
- Protection degree IP55-IK07
- Can be coupled
- Transparent door
- Adjustable DIN-rails, according the height of the DIN equipment
- For equipment up to 92.5 mm
- Padlocking option
- The transparent door can be opened to the left and the right
- Base:
 - ABS for the 3 up to 8 modules
 - Polystyreen for the 12 up to 36 modules
- Flame resistance: self extinguishing material, resist the 650°C
- Polycarbonate for the transparent door
- Halogene free



Fix-o-Rail 55

	H x W x D (mm)	Equipment	Number of modules	Number of rows	Ref. No.	Pack.
	175 x 83 x 106	Without earth bar	3	1	600573	12
	175 x 125 x 114	Without earth bar	5	1	600574	20
	175 x 215 x 114	Without earth bar	8	1	600575	12
	250 x 285 x 136	Earth bar, connection range: 2x16mm ² and 6x10mm ²	12	1	610316	1
	375 x 285 x 136	Earth bar, connection range: 2x16mm ² and 8x16mm ²	24	2	610317	1
	500 x 285 x 136	Earth bar, connection range: 2x16mm ² and 12x16mm ²	36	3	610318	1

Accessories

	Terminal Additional busbar for earth and neutral connections	Locking device Allows the enclosure to be fitted with a padlocking device	
	Cable section: 2 x 16mm ² and 6 x 6mm ² 610314 1	610313 1	
	Coupling set To couple two enclosures in a simple way		
	610315 1		



Insulated enclosures Surface mounting

Europe Line

IP30

Standards

DIN 43871
DIN VDE 0603 Part 1

Features

- Masking frame, base and protective cover made from high resistance material
- Metal door, powder coated, opens through 180°
- Cable entry from top, below, from side and from rear side
- Cable entry plate (top, bottom) removable for easy cable mounting from front side
- Clamp relief possibility
- Sealing possible
- Label for circuit indication
- Rated voltage up to 400V/50Hz
- Rated current up to 63A
- Protection class II (total isolation)

Europe Line - dimensions

	Type	Dimensions H x W (mm)	Surface depth (mm)
Distribution boards surface mounting without door	KV AP12	245 x 300	103.5
	KV AP24	370 x 300	103.5
	KV AP36	495 x 300	103.5
	KV AP48	620 x 300	103.5
Metal door for surface mounting enclosures	T AP12	189 x 300	8.5
	T AP24	314 x 300	8.5
	T AP36	439 x 300	8.5
	T AP48	564 x 300	8.5

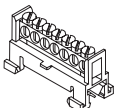
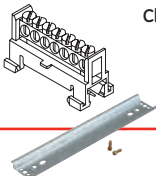
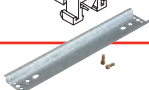
Europe Line - distribution boards

	No. of rows	No. of modules	Cat. No.	Ref. No.	Pack
 Surface mounting distribution board without door	1	12	KV AP12	564538	1
	2	24	KV AP24	564539	1
	3	36	KV AP36	564540	1
	4	48	KV AP48	564541	1
Versions with screwless earth (PE/N) bar					
	1	12	-	619413	1
	2	24	-	619414	1
	3	36	-	619415	1
	4	48	-	619416	1

Europe Line - Accessories

	No. of rows	Cat. No.	Ref. No.	Pack
 Plain metal door	1	TAP12	564533	1
	2	TAP24	564546	1
	3	TAP36	564547	1
	4	TAP48	564548	1
 Metal door with clear window for surface mounting distribution boards	1	AAZTS12A	564061	1
	2	AAZTS24A	564062	1
	3	AAZTS36A	564063	1
	4	AAZTS48A	564064	1
Mounting plate	2	AAZM2	564066	1
	3	AAZM3	564067	1
	4	AAZM4	564068	1
Door security lock	Description	Cat. No.	Ref. No.	Pack.
	Surface mounting, different keys	AAZTA2	564350	1
	Surface mounting, same keys	AAZTA1	564056	1
 PE / N bar without support	12-pole	AAZK12	564050	1
	16-pole	AAZK16	564051	1
	33-pole	AAZK33	564052	1
Busbars	Screwless terminal PE 1-16 / N 1-16	AAZFPN16	619393	20
	Screwless terminal N 1-26	AAZFN1-26	619394	20
	Screwless terminal PE 1-26	AAZFPE1-26	619395	20
 Support	PE terminal	AAZPN16	564047	1
	PE / N terminal	AAZP33	564048	1
	PE / N terminal	AAZN33	564049	1
	N terminal	AAZPN12	564046	1

Europe Line - Accessories (continued)

	Description	Cat. No.	Ref. No.	Pack.	
	Partition vertical				
	2 rows	AAZA2	564043	1	
	4 rows	AAZA4	564045	1	
	Partition horizontal	AAZA10	564041	1	
	RCCB-Clamps	AAZN3	564053	1	
	Mounting rail with reduced hight	AAZG1	564054	1	
Label for circuit indification	1, 2 rows	AAZP11	564352	1	
	3, 4 rows	AAZP12	564353	1	
	Clamps for neutral conductor	LK/N7	546297	10	
		LK/N12	546298	10	
		LK/N15	546299	10	
	Clamps for protective conductor	SKU 16/5	546300	10	
		SKU 35/5	546301	10	
	DIN-rail	EN 50022 - 1000 mm long	PS	564092	10
	Filling piece	8,75 mm to disperse the heat for DIN-rail EN 50022/05.78	FST	546331	25

Insulated enclosures Flush mounting

Abaco F

IP40



Marking



Standards

EN/IEC 695-2-1, CEI 670, CEI 23-48

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 7030, 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
- 20 mm clearance behind the mounting frame
- Colours:
 - Grey: RAL 7035
 - White: RAL 9010
 - Metallised black

Abaco F - Enclosure base with transparent door

	Colour	H x W x D (mm)	Modules 17.5 mm	Number of rows	Ref. No.	Pack.
	Grey	120 x 200 x 73	2/4	1	619300	12
	Metallised black	120 x 200 x 73	2/4	1	619362	12
	Grey	180 x 200 x 73	4/7	1	619301	24
	White	180 x 200 x 73	4/7	1	619325	24
	Metallised black	180 x 200 x 73	4/7	1	619331	24
	Grey	230 x 200 x 73	6/10	1	619302	14
	White	230 x 200 x 73	6/10	1	619326	14
	Metallised black	230 x 200 x 73	6/10	1	619332	14
	Grey	300 x 200 x 73	10/14	1	619303	12
	White	300 x 200 x 73	10/14	1	619327	12
	Metallised black	300 x 200 x 73	10/14	1	619333	12
	Grey	315 x 400 x 80	24/26	2	619304	1
	White	315 x 400 x 80	24/26	2	619328	1
	Metallised black	315 x 400 x 80	24/26	2	619334	1
	Grey	315 x 525 x 80	36/39	3	619305	1
	White	315 x 525 x 80	36/39	3	619329	1
	Metallised black	315 x 525 x 80	36/39	3	619335	1

Accessories

	Coupling					
		619322	10/100/600			
	2/4 and 10/14 modules					
	Blank plate					
		619323	150/450			
	Grey, 5 modules					
		619338	150/450			
	White, 5 modules					
		619339	1/450			
	Security lock					
		619323	1			
	24 and 36 modules					
	Transparent lid					
		619340	1			
	2/4 modules					
		619341	1			
	4/7 modules					
		619342	1			
	6/10 modules					
		619343	1			
	10/14 modules					
		619344	1			
	24/26 modules					
		619345	1			
	36/39 modules					
	Insulated support for earth or neutral					
		619337	1/30/180			
	for enclosure 4/7 modules connection range 7 x 10 mm ²					
		619319	1/20/120			
	for enclosure 6/10 modules connection range 2 x 16 mm ² + 8 x 10 mm ²					
		619320	1/20/210			
	for enclosure 10/14 modules connection range 2 x 16 mm ² + 12 x 10 mm ²					
		619321	1/10/60			
	for enclosure 24/36 modules connection range 2 x 16 mm ² + 12 x 10 mm ²					

Abaco F

A

B

C

D

E

F

G

X



Insulated enclosures Flush mounting

Fix-o-Rail 150-F4

IP40



Total safety



Complete



Important time saving features



High quality



Great design

Approvals / Marking



Standards

EN 60439-3

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.

Features

- High protection degree: IP40-IK07
- **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 studded walls
- Transparent or plain door
- Universal for all modular equipment with a shoulder height of 47 mm and a max. depth of 70 mm
- Wiring space:
 - 20 mm behind the mounting frame
 - 150 mm 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
- ABS for the base and cover
- Flame resistance: self extinguishing material, resist the 850°C
- The **door and the masking frame** are in **sheet steel**, coated with a white epoxy powder (colour RAL 9010)
- In accordance with EN 60439-3
- 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
- neutral bar
- adhesive pictograms
- labels for circuit identification
- protective plate on the base (against dust and plaster)
- label holders
- installation guidelines
- a blank plate

Fix-o-Rail 150-F4 - Base and door included

	H x W x D (mm)	Equipment	No. of modules	No. of rows	Ref. No.	Pack.
Transparent door	350 x 375 x 108	Earth bar: connection 14 x 16 mm ² Neutral bar: connection 14 x 16 mm ² In 50A	14	1	610368	1
	525 x 375 x 108	Earth bar: connection 14 x 16 mm ² Neutral bar: connection 14 x 16 mm ² In 63A	28	2	610369	1
	675 x 375 x 108	Earth bar: connection 18 x 16 mm ² Neutral bar: connection 18 x 16 mm ² In 80A	42	3	610370	1
	825 x 375 x 108	Earth bar: connection 18 x 16 mm ² Neutral bar: connection 18 x 16 mm ² In 100A	56	4	610371	1
Plain door	350 x 375 x 108	Earth bar: connection 14 x 16 mm ² Neutral bar: connection 14 x 16 mm ² In 50A	14	1	610372	1
	525 x 375 x 108	Earth bar: connection 14 x 16 mm ² Neutral bar: connection 14 x 16 mm ² In 63A	28	2	610373	1
	675 x 375 x 108	Earth bar: connection 18 x 16 mm ² Neutral bar: connection 18 x 16 mm ² In 80A	42	3	610374	1
	825 x 375 x 108	Earth bar: connection 18 x 16 mm ² Neutral bar: connection 18 x 16 mm ² In 100A	56	4	610375	1

Accessories

	Half-inset frame (RAL 9010)					
		610376	1			
	For 1 row enclosure					
		610377	1			
	For 2 rows enclosure					
		610378	1			
	For 3 rows enclosure					
		610379	1			
	For 4 rows enclosure					
	Blank plate					
		610382	500			
	Length = 72 mm					
	Cut-out width = 45 mm					
	Section of 9 mm					
	Colour RAL 9010					
	Labels and label holders					
		610383	1			
	Set of 50 pieces					
	Adhesive pictograms					
		610380	1			
	For clear and permanent identification of circuits					
	Set of 50 pieces					
	Grips					
	For building into studded walls					
		610381	1			



Junction boxes

Flex-o-Box

IP65

Approvals / Marking



Features

Flex-o-Box Junior

Technical data

- Suitable for surface mounting
- 2.5 mm² - 500V
- IP65 protection degree
- IK04
- Standards and approvals
CEBEC: NBN C 68-685-2-0
NBN EN 60998-1
KEMA: IEC 60670
- Colour: RAL 7035
- Material: resists the 650°C incandescent wire test
- Halogen-free
- 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 20
- Suitable for tubes Ø 16 and Ø 20



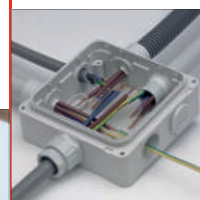
Flex-o-Box JB⁶

Technical data

- Suitable for surface mounting
- 6 mm² - 500V
- IP65 protection degree
- IK04
- Standards and approvals:
CEBEC: NBN C68-685-2-0
NBN EN 60998-1
KEMA: IEC 60670
- Colour: RAL 7035
- Material: resists the 650°C incandescent wire test
- Halogen-free
- Operating temperature: -5°C to +60°C
- Total insulation: □

Nine flexible entries

- 7 x M20 in the side wall
- 2 x Ø 20 mm max. entries in the back of the base
- Suitable for cable max. Ø 18
- Suitable for tubes Ø 16 and Ø 20
- Suitable for cable seals M20 (10 mm min. thread length)



Dimensions ● pg F.53

Flex-o-Box

IP65-IP04



Junior

Junction box 2.5 mm²
Junction box 2.5 mm² (40 pieces in a red polybox basket)



Ref. No. Pack.

600656 10/100
600311 1



JB⁶

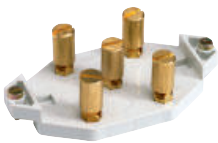
Junction box 6 mm²
Junction box 6 mm² (24 pieces in a grey polybox basket)



600651 10/100
600310 1

Accessories

Flex-o-Box



for Junior and JB⁶

Terminal block

600950 30

6 mm² - 500V - pin-type
5-terminal blocks
Possible connections per terminal:
6 x 1.5 mm² 2 x 6 mm²
4 x 2.5 mm² 2 x 10 mm²
3 x 4 mm²
grey

only for JB⁶

Cable seal M20

851652 50

IP68 - RAL 7035

Cable seal M20

851660 50

IP54 - RAL 7035



Terminal strip

600650 20

6 mm² - 500V - hole-type
5-terminal strips
Possible connections per terminal:
6 x 1.5 mm² 3 x 4 mm²
4 x 2.5 mm² 2 x 6 mm²
grey

Entry socket for tube M20

600346 25

For tube Ø16 and Ø20 - RAL7035



Insulated cap M20

851674 100

IP54 - RAL7035

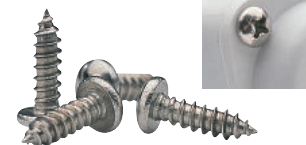


Screws

For cover fastening

600642 40

Stainless steel



A

B

C

D

E

F

G

X

Junction boxes

Series 55

IP66



Approval



Applications

- As an empty box
- As a junction box (10/16/25 mm²)
- Coupled

Features

- Standard: EN/IEC 529
- Material: thermoplastic high impact polyphenylene oxide
- Total insulation: □

Dimensions

Three sizes - three types

55100 - 125 x 125 x 75 mm

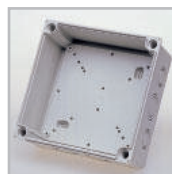
55200 - 175 x 175 x 95 mm

55300 - 225 x 175 x 95 mm

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.



All the boxes are sealable.

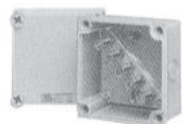
Dimensions ● pg F.53

Series 55100 - 10 mm²

☐ IP66 - IK07



Cover	Entries	Characteristics	Ref. No.	Pack.
grey	5 x PG 16/21	Empty. Can be equipped with terminal blocks 600516	600514	16
grey	5 x PG 16/21	Equipped with terminal blocks 600516: 5 clamps with maximum capacity: 5 x 4 mm ² / 4 x 6 mm ² / 3 x 10 mm ²	600515	16

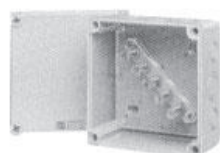


Series 55200 - 16 mm²

☐ 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	600517	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 ² / 4 x 10 mm ² / 3 x 16 mm ²	600524	9
transparent	6 x PG 16/21 5 x PG 21/29	Empty	600523	9

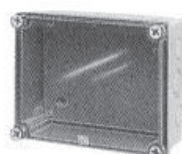
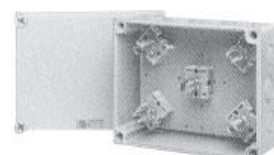


Series 55300 - 25 mm²

☐ 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)	600532	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 ² / 3 x 25 mm ² / 2 x 35 mm ²	600543	9
transparent	8 x PG 21 6 x PG 21/29	Empty	600539	9



Series 55

A

B

C

D

E

F

G

X

Accessories Series 55



Terminal blocks 500V 10 mm²

600516	6
--------	---

Set terminal blocks with two fixation screws. With five clamps suitable for Al or Cu connection.

Maximum cable section per clamp:
5 x 4 mm² / 5 x 4 mm² / 5 x 4 mm².

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 16 mm²

600525	6
--------	---

With five clamps, suitable for Al or Cu connection.

Maximum cable section per clamp:
5 x 6 mm² / 4 x 10 mm² / 3 x 16 mm².

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 16 mm²

600526	24
--------	----

With one clamp/nut (with nut), suitable for Al or Cu connection.

Maximum cable section per clamp:
5 x 6 mm² / 4 x 10 mm² / 3 x 16 mm².

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 25 mm²

600544	24
--------	----

With one clamp/nut (with nut), suitable for Al or Cu connection.

Maximum cable section per clamp:
4 x 16 mm² / 3 x 25 mm² / 2 x 35 mm².

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 25 mm²

600545	24
--------	----

With one clamp/nut (double nut), suitable for Al or Cu connection.

Maximum cable section per clamp:
4 x 16 mm² / 3 x 25 mm² / 2 x 35 mm².

Can be fitted in types 55200 and 55300.

Universal entries (grey)

610130	25
--------	----

Cable max. 18 mm, drill 23 mm, PG16

610132	25
--------	----

Cable max. 24 mm, drill 29 mm, PG21

610133	25
--------	----

Cable max. 32 mm, drill 38 mm, PG29.



Insulated cap

890838	48
--------	----

Suitable for terminal blocks

600526

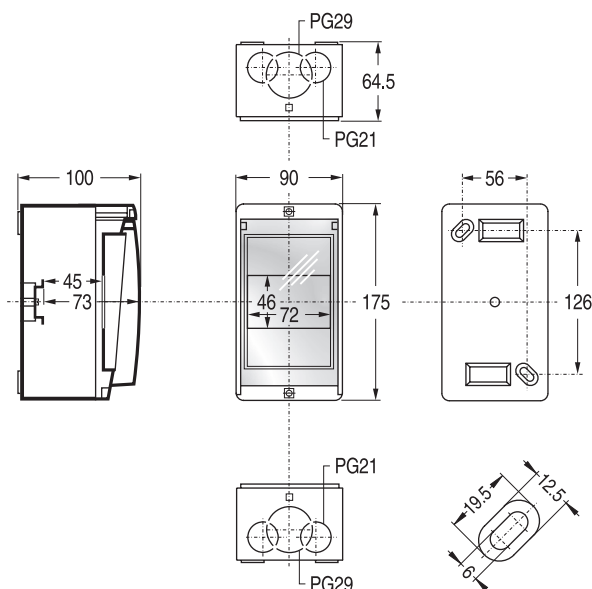
600544

600545

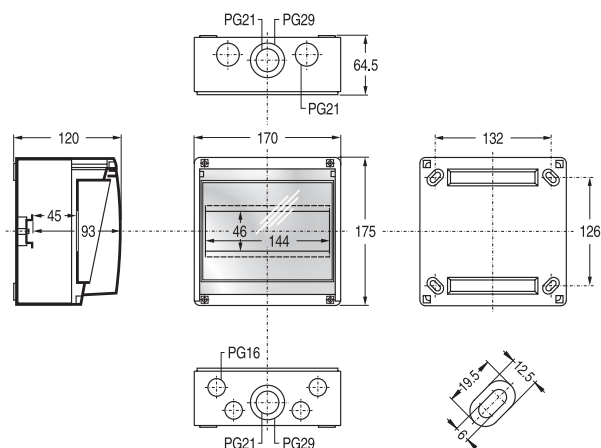
Dimensional drawings

Fix-o-Rail Junior - Surface mounting

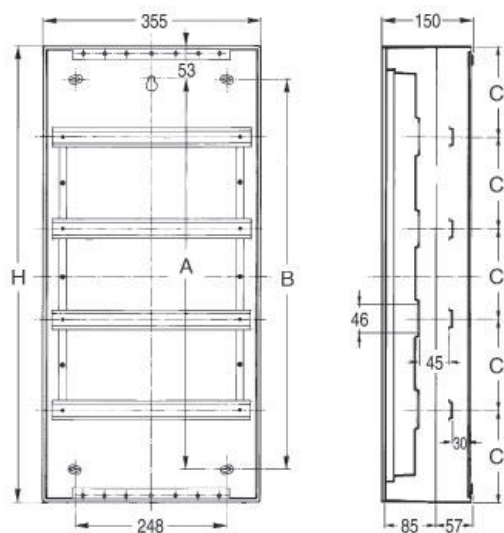
4 modules



8 modules

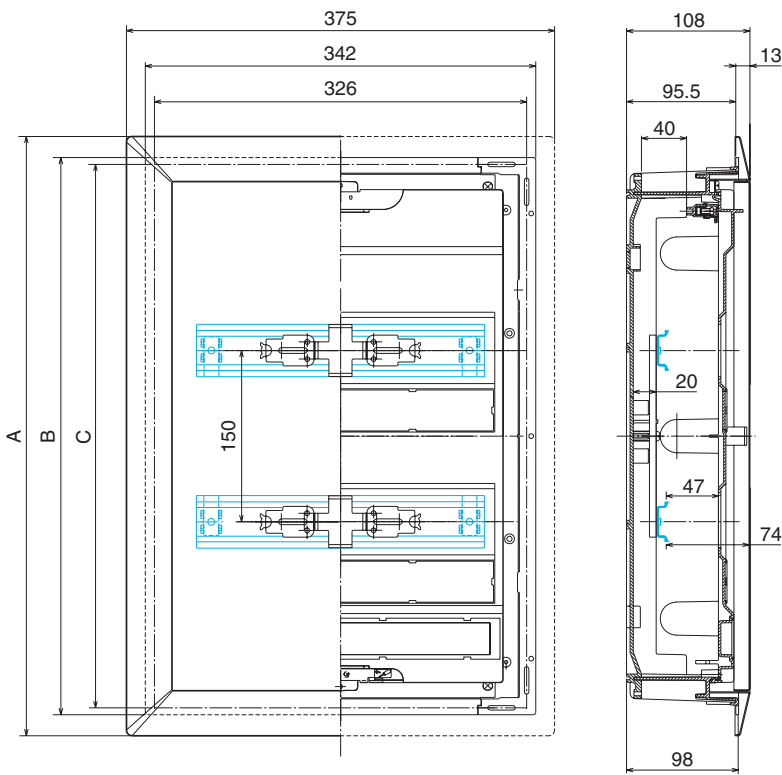


Fix-o-Rail 150 - Surface mounting

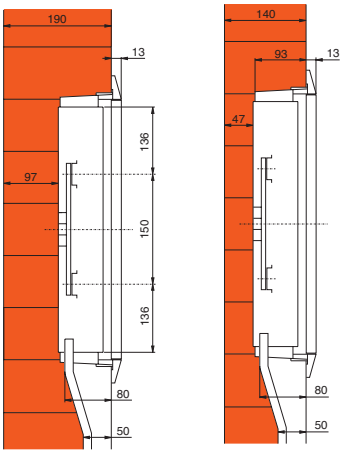


Dimensions (mm)				
Type	H	A	B	C
1 row - 18 mod.	270	163	162	135
2 rows - 36 mod.	450	343	342	150
3 rows - 54 mod.	600	493	492	150
4 rows - 72 mod.	750	643	642	150

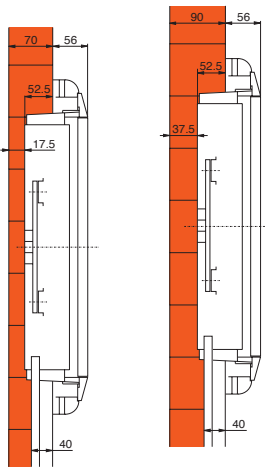
Fix-o-Rail 150-F4 - Flush mounting



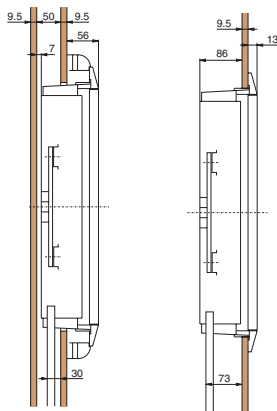
Dimensions (mm)			
Type	A	B	C
1 row - 14 mod.	350	313	301
2 rows - 28 mod.	525	488	476
3 rows - 42 mod.	675	638	626
4 rows - 56 mod.	825	788	776



Flush mounting
into brickwork



Flush mounting and semi flush
mounting into brickwork



Semi flush mounting
into studed walls

Dimenions

A

B

C

D

E

F

G

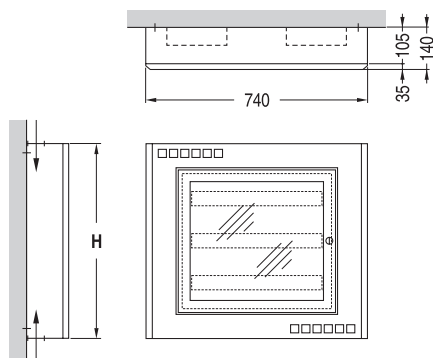
X



Dimensional drawings

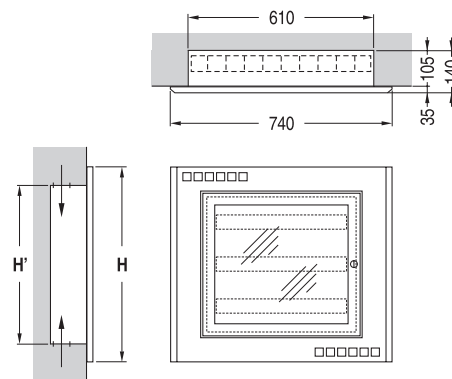
Fix-o-Rail 144

Fix-o-Rail 144 S
 Surface mounting

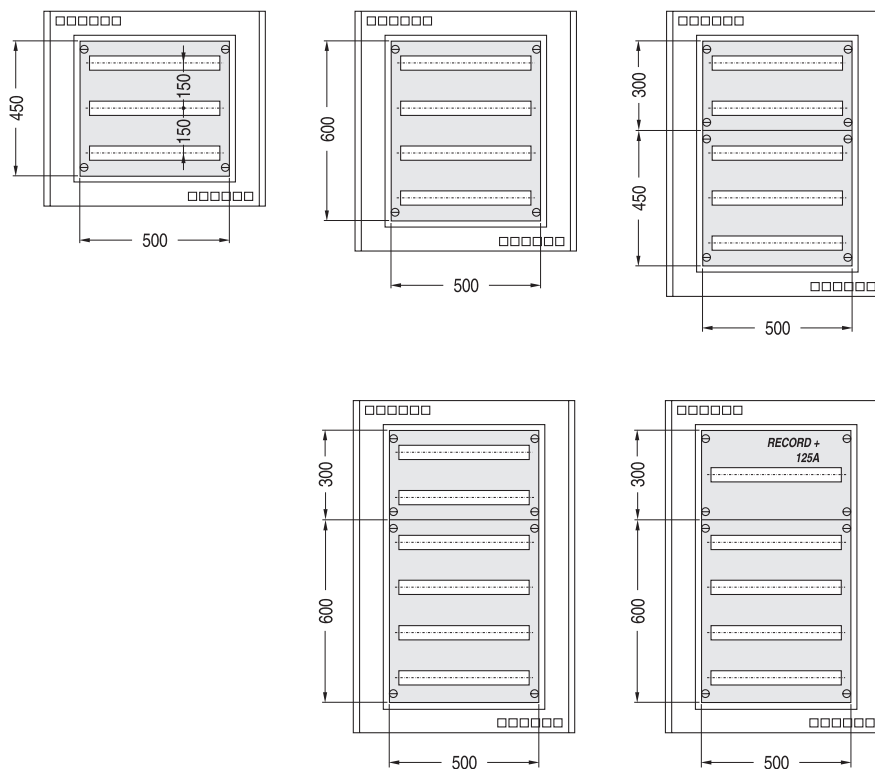


Dimensions (mm)	
	H
3 rows - 72 mod.	650
4 rows - 96 mod.	800
5 rows - 120 mod.	950
6 rows - 144 mod.	1100
4 rows+Record - 120 mod.	1100

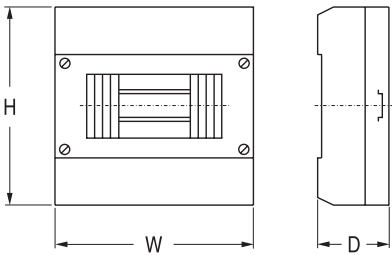
Fix-o-Rail 144 F
 Flush mounting



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

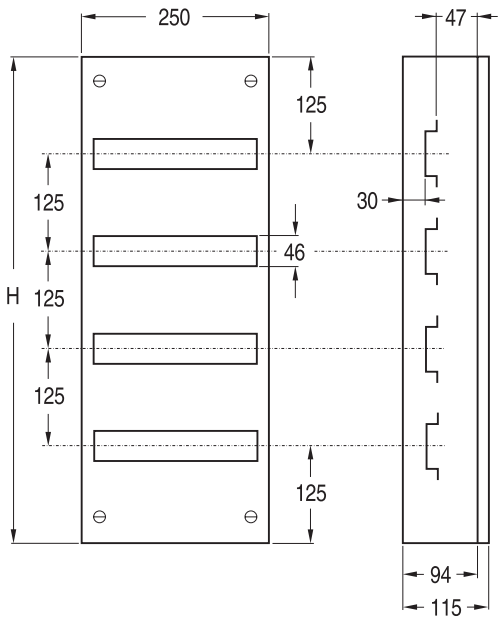


Fix-o-Rail Covers - Surface mounting



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

Fix-o-Rail Classic - Surface mounting



Dimensions (mm)	
Type	H
1 row - 13 mod.	250
2 rows - 26 mod.	375
3 rows - 39 mod.	500
4 rows - 52 mod.	625

Dimenions

A

B

C

D

E

F

G

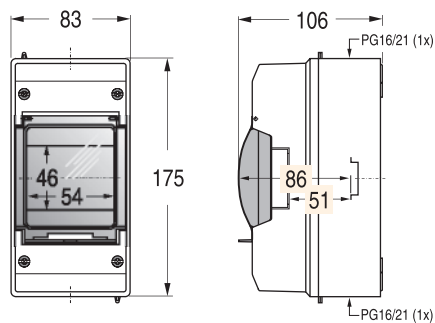
X



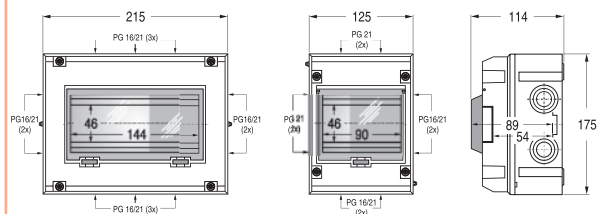
Dimensional drawings

Fix-o-Rail 55 - Surface mounting

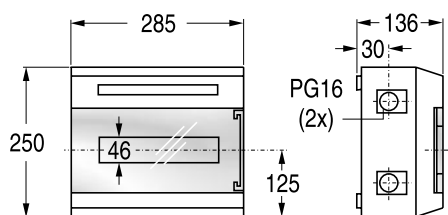
3 modules



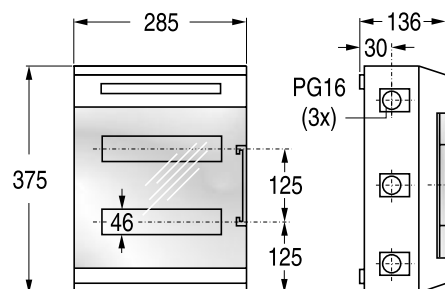
5-8 modules



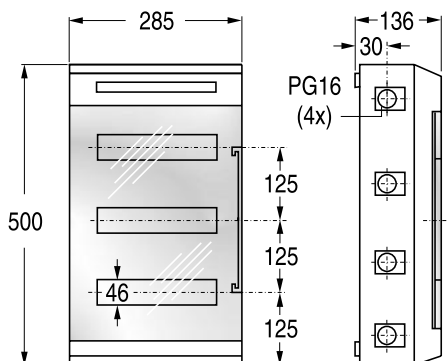
12 modules



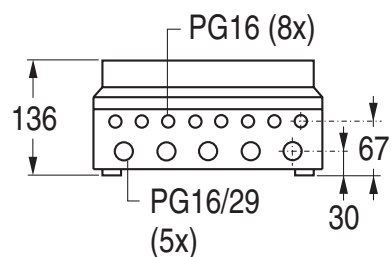
24 modules



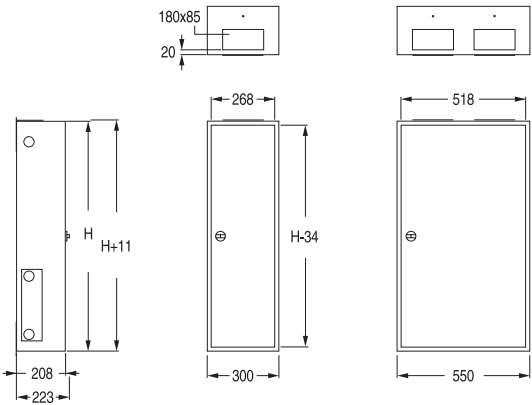
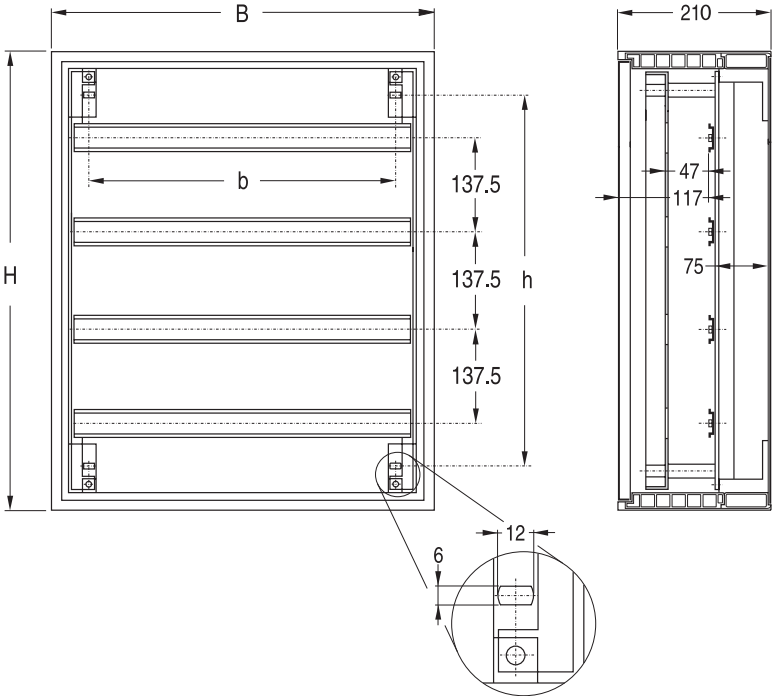
36 modules



Top/bottom view



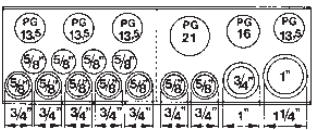
Fix-o-Rail Senior - Surface mounting



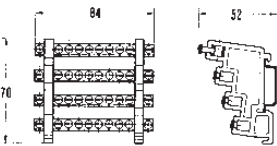
Dimensions (mm)				
Type	B	b	H	Ha
4 rows - 48 mod.	300	191	650	401
5 rows - 60 mod.	300	191	800	551
4 rows - 96 mod.	550	441	650	401
5 rows - 120 mod.	550	441	800	551
6 rows - 144 mod.	550	441	950	701
7 rows - 168 mod.	550	441	1100	851
7 rows - 252 mod.	550	441	1250	1001
8 rows - 192 mod.	800	691	1100	851
8 rows - 288 mod.	800	691	1250	1001

Accessories distribution boards

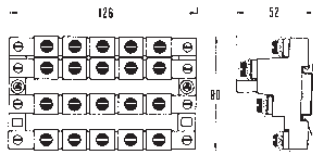
Gland plate



4P terminal 63A



4P terminal 160A



Dimenions

A

B

C

D

E

F

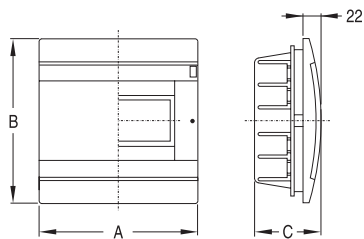
G

X

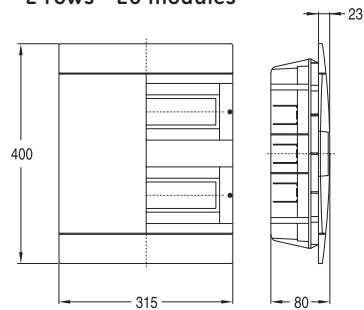
Dimensional drawings

Abaco F - Flush mounting

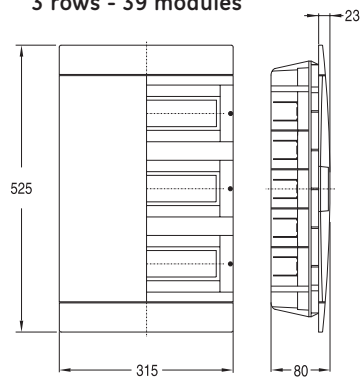
1 row - 14 modules



2 rows - 26 modules

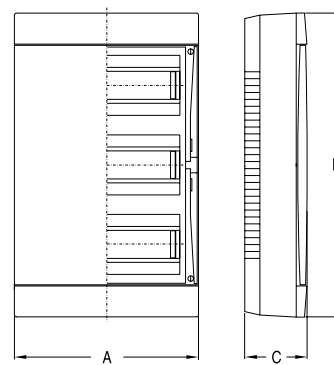
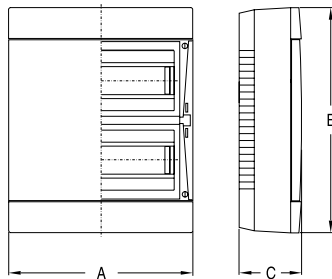
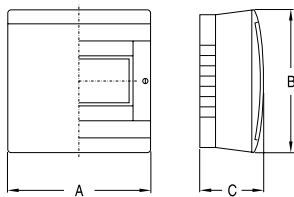


3 rows - 39 modules



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

Abaco S - Surface mounting

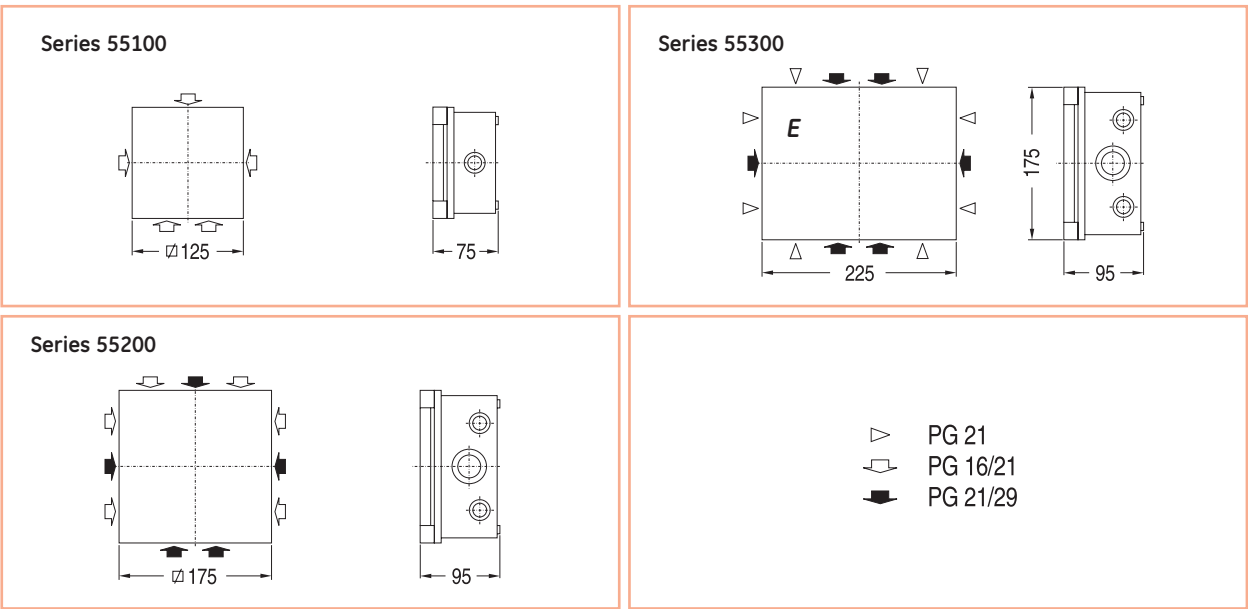


Dimensions (mm)			
Type	A	B	C
1 row - 8/10 mod.	230	200	110
1 row - 12/14 mod.	300	200	110
2 rows - 24/26 mod.	315	400	110
3 rows - 36/39 mod.	315	525	110

Flex-o-Box - Junction box



Series 55 - Junction box



Dimenions

A

B

C

D

E

F

G

X





Notes

Distribution boards

A

B

C

D

E

F

G

X



	Record Plus
G.2	FD frame 160A
G.3	FD - Complete Circuit Breaker - Residual Current Devices
G.4	FD - Internal Accessories - Operators
G.5	FD - Installation Accessories - Connections: Optional
G.6	Dimensional Drawings

Circuit Protection	A
People Protection	B
Add-on Devices	C
Comfort Functions	D
Busbars	E
Enclosures	F
MCCBs Record Plus	G
Numerical Index	X





Moulded Case Circuit Breakers

FD frame 160A

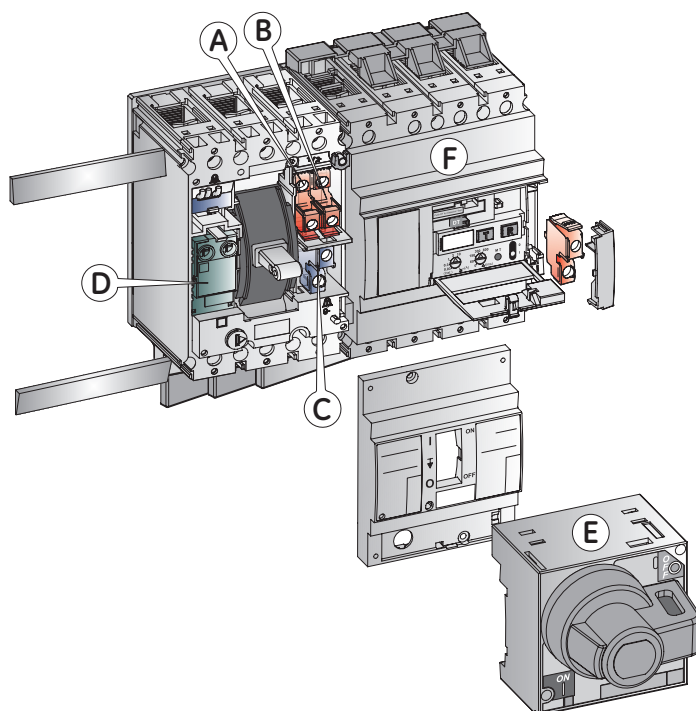
Circuit breaker type	FD63/160E	
EN/IEC 60947-2		
Poles	Number of	3, 4
Rated insulation voltage	Ui (V)	750
Rated impulse withstand voltage	Uimp (kV)	8
Rated operational voltage Ue	Volts AC	690
Line Protection Device		
Category of use		A
Suitable for use as a isolator	Positive ON & OFF	yes
Rated current Ith=Ie	A at 40°C	160
Ultimate breaking capacity Icu (kA)	230V AC	40
	400/415V AC	25
	440V AC	14
	500V AC	12
	690V AC	4.5
Service breaking capacity Ics (%Icu)	≤ 500V	75%
Single phase breaking capacity Itr (kA)	230V AC	25
	400/415V AC	4.5
Endurance (CO operations)	Mechanical	10000
	Electrical at In	5000
	Electrical at In/2	10000
Endurance (ON-tripped operations)	Mechanical	4000

Installation

Mounting	On symmetrical DIN-rail	yes
	Fixed	yes
Connection	Front	yes
	Rear	yes
Dimensions (W x H x D) mm	3pole, fixed front connection	81x130x85
	4pole, fixed front connection	108x130x85
Weights (kg)	3pole, fixed front connection	0.9
	4pole, fixed front connection	1.3

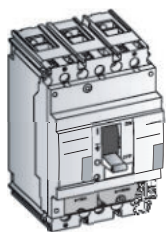
- (A) Auxiliary contact left mounted (NO or NC)
- (B) Auxiliary contact right mounted (NO or NC)
- (C) Bell alarm trip unit (NO or NC)
- (D) Shunt or undervoltage release
- (E) Operator Rotary handle
- (F) Side mounted RCD ⁽¹⁾

(1) Bottom mounted version is also available (below trip unit)



Dimensions ● pg G.6

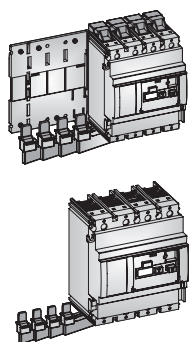
FD 63/160 - Complete Circuit Breaker



Line Thermal Magnetic LTM (adjustable thermals)

	In (A)	3 pole 3 trips		4 pole 4 trips ⁽¹⁾	
		Cat. No.	Ref. No.	Cat. No.	Ref. No.
25 kA FDE	16	FDE36TE016ED	433649	FDE46TE016ED	433697
	20	FDE36TE020ED	433651	FDE46TE020ED	433699
	25	FDE36TE025ED	433653	FDE46TE025ED	433701
	32	FDE36TE032ED	433655	FDE46TE032ED	433703
	40	FDE36TE040ED	433657	FDE46TE040ED	433705
	50	FDE36TE050ED	433659	FDE46TE050ED	433707
	63	FDE36TE063ED	433661	FDE46TE063ED	433709
	80	FDE36TE080GD	433663	FDE46TE080GD	433711
	100	FDE36TE100GD	433665	FDE46TE100GD	433713
	125	FDE36TE125GD	433667	FDE46TE125GD	433715
	160	FDE36TE160GD	433669	FDE46TE160GD	433717
One code covers a standard, fixed front connection breaker with fixation hardware and DIN rail mounting kit. Bell alarm mechanism and motor drive accessories can not be used with the FDE type.					

FD - Residual current devices



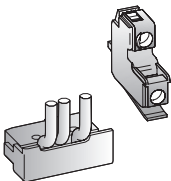
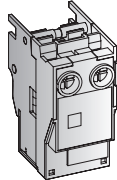
RCD Side Mounted

	Standard	3 pole		4 pole	
		Cat. No.	Ref. No.	Cat. No.	Ref. No.
a	Voltage 220/440V AC	(a) FDQDS3M/6	431095	FDQDS4M/6	431103
	Voltage 400/690V AC	(a) FDQDS3H/6	431090	FDQDS4H/6	431101
One code covers an RCD with: din-rail mounting kit and multidirectional supply kit.					
b	Side connected only				
		Cat. No.	Ref. No.	Cat. No.	Ref. No.
b	Voltage 220/440V AC	(b) FDQDI3M/6	431086	FDQDI4M/6	431088
	One code covers an RCD with: DIN-rail mounting kit and interconnection kit.				

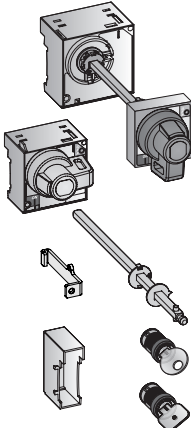
(1) Neutral on the left.

For complete range of
Record Plus MCCBs
up to 1250A
ask for special catalogue

FD - Internal Accessories

Contacts		Normally open		Normally closed		Cat. No.	Ref. No.
		Cat. No.	Ref. No.	Cat. No.	Ref. No.		
	Aux. switch right mounted	FAS10R	430837	FAS01R	430831		
	Aux. switch left mounted	FAS10L	430834	FAS01L	430828		
	Bell alarm trip unit	FABAT10	430818	FABAT01	430815		
	Bell alarm RCD device	FABAT10	430818	FABAT01	430815		
Releases		Shunt		Undervoltage		Delayed undervoltage	
		Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.
	12V AC/DC	FASHTB	430840				
	24V AC/DC	FASHTD	430843	FAUVRD	430861		
	48V AC/DC	FASHTF	430846	FAUVRF	430864		
	60V AC/DC	FASHTH	435118	FAUVRH	435120		
	110V AC/DC	FASHTJ	430849	FAUVRJ	430867		
	220/240V AC/DC	FASHTN	430852	FAUVRN	430870	FAUVDN	430858
	400/415V AC	FASHTU	430855	FAUVR8	436472		
	440/480V AC			FAUVRU	430873		

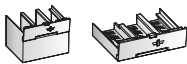
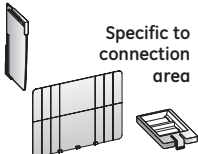
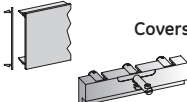
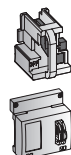
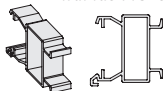
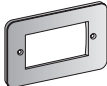
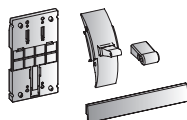
FD - Operators

Rotary Handles		Direct on unit device		Rotary handle for use through door or cover plate ⁽²⁾		Panel or door mounted	
		Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.
	Grey (max. 350mm)	FDNRF/5	436478	FDNRC/5	436474	FDNRD/5	436476
	Red (max. 350mm)	FDNRFV/5	436479	FDNRCV/5	436475	FDNRDV/5	436477
	Grey + auxiliary contacts 2xNO			FDNRV/5	436487	FDNRZ/5	436489
	Red + auxiliary contacts 2xNO			FDNRV/5	436488	FDNRZV/5	436490
	Flex operator adaptor push to trip	FDNFT	430968				
	Extension shaft kit (max. 600mm)	FDNRE	430986				
	Side-by-side installation adaptor kit	FDNR4	430971				
	Ronis Key lock 1 ⁽¹⁾	FA1BR1	430088				
	Ronis Key lock 2 ⁽¹⁾	FA1BR2	430089				
	Ronis Key lock 3 ⁽¹⁾	FA1BR3	430504				
	Ronis Key lock 4 ⁽¹⁾	FA1BR4	430505				
	Ronis Key lock 5 ⁽¹⁾	FA1BR5	430506				
	Ronis Key lock 6 ⁽¹⁾	FA1BR6	430507				
	Ronis Key lock ⁽¹⁾	FA1BRH	430068				
	Profalux Key lock ⁽¹⁾	FA1BPH	430813				

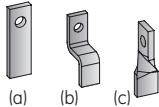
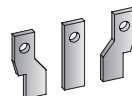
(1) Key included

(2) Add door flange FDFH to allow use of the door interlock options

FD - Installation Accessories

Terminal shields (with finishing covers)		Cat. No.	Ref. No.
	Long 3pole, set of 2 pcs.	FDJL3	430951
	Long 4pole, set of 2 pcs.	FDJL4	430954
	Short 3pole, set of 2 pcs.	FDJS3	430960
	Short 4pole, set of 2 pcs.	FDJS4	430963
	Phase separators, set of 12 pcs.	FDJP	430957
	Back plate set of 2 pcs. (3 or 4 pole)	FDJB	430945
	Finger protection IPXXB (set of 12 pcs.)	FDJK	430069
	Cutout adaptor, breaker + T.U. 3 pole	FDUF3	430830
	Cutout adaptor, breaker + T.U. 4 pole	FDUF4	430832
	Cutout filler length 1.2 meter 64mm	FBF6	883970
	Padlocking removable	FD1PR	430879
	Padlocking fixed	FD1PF	430878
	Set of 20 blank labels	FAC	430821
	Length 354 mm	FDKE	617947
	Breaker front face 3 pole and RCD bottom mounted	FDF3	430941
	Breaker front face 4 pole	FDF4	430942
	Rotary handle (through cover plate model)	FDFH	430829
	Electrical operator	FDFE	432010
	DIN-rail adaptor kit 3pole ⁽²⁾	FDKD3	430966
	DIN-rail adaptor kit 4pole ⁽²⁾	FDKD4	430967
	Spare toggle (set of 5 pieces)	FDUT	433539
	Finishing covers 3pole, set of 2 pcs ⁽²⁾	FDUA3	431025
	Finishing covers 4pole, set of 2 pcs ⁽²⁾	FDUA4	431026

FD - Connections: Optional

	Extenders ⁽³⁾			
	Standard 3pole	(a)	FDBES3	430887
	Standard 4pole		FDBES4	430888
	Heightened 3pole	(b)	FDBEH3	430885
	Heightened 4 pole		FDBEH4	430886
	Twisted 90° 3pole	(c)	FDBEA3	430883
	Spreader Flat ⁽³⁾			
	Pole spacing 35 mm, 3pole		FDBSS3	430891
	Pole spacing 35 mm, 4pole		FDBSS4	430892
	External Box Clamps ⁽³⁾			
	Box clamp Cu/Al 95 mm ² , set 3pole ⁽⁴⁾		FDTC1316	433400
	Box clamp Cu/Al 95 mm ² , set 4pole ⁽⁴⁾		FDTC1416	433401

(1) Padlocks not included

(2) Supplied with breakers, not with FDE type

(3) Set for equipping the line OR load side of breaker

(4) External lugs are always delivered with standard extender





- X.2 Numerical index by reference number
- X.16 Numerical index by catalogue number
- X.28 e-catalogue

Circuit Protection	A
People Protection	B
Add-on Devices	C
Comfort Functions	D
Busbars	E
Enclosures	F
MCCBs Record Plus	G
Numerical Index	X



Ref. No.	Cat. No.	Page	Ref. No.	Cat. No.	Page	Ref. No.	Cat. No.	Page	Ref. No.	Cat. No.	Page
290000			433705	FDE46TE040ED	G.3	546262		E.6	597962	AQA005PG	F.25
290234	EP103ULHB05	A.41	433707	FDE46TE050ED	G.3	546263		E.6	597963	AQA008PG	F.25
290237	EP103ULHB13	A.41	433709	FDE46TE063ED	G.3	546264		E.6	600000		
290238	EP103ULHB15	A.41	433711	FDE46TE080GD	G.3	546265		E.4	600310		F.41
290242	EP103ULHB30	A.41	433713	FDE46TE100GD	G.3	546266		E.4	600311		F.41
409000			433715	FDE46TE125GD	G.3	546267		E.4	600346		F.41
409000	LLINK1	F.21	433717	FDE46TE160GD	G.3	546269		E.4	600501		F.44
430000			435000			546270		E.4	600502		F.44
430068	FA1BRH	G.4	435118	FASHTH	G.4	546271		E.7	600504		F.44
430069	FDJK	G.5	435120	FAUVRH	G.4	546272		E.7	600505		F.44
430088	FA1BR1	G.4	436000			546273		E.7	600506		F.44
430089	FA1BR2	G.4	436472	FAUVR8	G.4	546274		E.7	600507		F.44
430504	FA1BR3	G.4	436474	FDNRC/5	G.4	546275		E.7	600509		F.44
430505	FA1BR4	G.4	436475	FDNRCV/5	G.4	546276		E.7	600514		F.43
430506	FA1BR5	G.4	436476	FDNRD/5	G.4	546277		E.4	600515		F.43
430507	FA1BR6	G.4	436477	FDNRDV/5	G.4	546278		E.4	600516		F.44
430813	FA1BPH	G.4	436478	FDNRF/5	G.4	546279		E.7	600517		F.43
430815	FABATO1	G.4	436479	FDNRFV/5	G.4	546280		E.7	600523		F.43
430818	FABAT10	G.4	436487	FDNRY/5	G.4	546281		E.7	600524		F.43
430821	FAC	G.5	436488	FDNRYV/5	G.4	546282		E.5	600525		F.44
430828	FAS01L	G.4	436489	FDNRZ/5	G.4	546283		E.5	600526		F.44
430829	PDFH	G.5	436490	FDNRZV/5	G.4	546284		E.5	600532		F.43
430830	FDUF3	G.5	544000			546285		E.5	600539		F.43
430831	FAS01R	G.4	544172		E.7	546287		E.8	600543		F.43
430832	FDUF4	G.5	544173		E.7	546288		E.8	600544		F.44
430834	FAS10L	G.4	544174		E.7	546289		E.8	600545		F.44
430837	FAS10R	G.4	544175		E.7	546290		E.8	600573		F.31
430840	FASHTB	G.4	544176		E.7	546291		E.8	600574		F.31
430843	FASHTD	G.4	544177		E.7	546295		E.6	600575		F.31
430846	FASHTF	G.4	544178		E.6	546296		E.7	600642		F.41
430849	FASHTJ	G.4	544179		E.7	546297		E.8	600650		F.41
430852	FASHTN	G.4	544180		E.4	546298		E.8	600651		F.41
430855	FASHTU	G.4	544181		E.4	546299		E.8	600656		F.41
430858	FAUVDN	G.4	544182		E.4	546300		E.8	600950		F.41
430861	FAUVRD	G.4	544183		E.5	546301		E.8	605000		
430864	FAUVRF	G.4	544184		E.5	546302		E.8	605030	DME100B06/010	B.29
430867	FAUVRJ	G.4	544185		E.5	546308		E.4	605031	DME100B10/010	B.29
430870	FAUVRN	G.4	544186		E.4	546331	FST	F.34	605032	DME100B16/010	B.29
430873	FAUVRU	G.4	544187		E.5	546341		E.6	605033	DME100B20/010	B.29
430878	FD1PF	G.5	544188		E.6	546396		E.5	605034	DME100B25/010	B.29
430879	FD1PR	G.5	544189		E.6	546397		E.5	605035	DME100B32/010	B.29
430883	FDBEA3	G.5	544191		E.6	546398		E.7	605036	DME100B40/010	B.29
430884	FDBEA4	G.5	544192		E.7	555000			605037	DME100B06/030	B.29
430885	FDBEH3	G.5	544193		E.4	555434		E.5	605038	DME100B10/030	B.29
430886	FDBEH4	G.5	544195		E.5	555435		E.5	605039	DME100B16/030	B.29
430887	FDBES3	G.5	544272		E.6	555609		E.7	605040	DME100B20/030	B.29
430888	FDBES4	G.5	544277		E.6	564000			605041	DME100B25/030	B.29
430891	FDBSS3	G.5	544296		E.6	564041	AAZA10	F.34	605042	DME100B32/030	B.29
430892	FDBSS4	G.5	544327		E.6	564043	AAZA2	F.34	605043	DME100B40/030	B.29
430941	FDFF3	G.5	544344		E.6	564045	AAZA4	F.34	605044	DME100C06/010	B.29
430942	FDFF4	G.5	544346		E.8	564046	AAZPN12	F.33	605045	DME100C10/010	B.29
430945	FDJB	G.5	544347		E.8	564047	AAZPN16	F.33	605046	DME100C16/010	B.29
430951	FDJL3	G.5	546000			564048	AAZP33	F.33	605047	DME100C20/010	B.29
430954	FDJL4	G.5	546125		E.6	564049	AAZN33	F.33	605048	DME100C25/010	B.29
430957	FDJP	G.5	546126		E.4	564050	AAZK12	F.33	605049	DME100C32/010	B.29
430960	FDJS3	G.5	546127		E.7	564051	AAZK16	F.33	605050	DME100C40/010	B.29
430963	FDJS4	G.5	546128		E.5	564052	AAZK33	F.33	605051	DME100C06/030	B.29
430966	FDKD3	G.5	546129		E.7	564053	AAZN3	F.34	605052	DME100C10/030	B.29
430967	FDKD4	G.5	546130		E.5	564054	AAZG1	F.34	605053	DME100C16/030	B.29
430968	FDNFT	G.4	546139		E.4	564056	AAZTA1	F.33	605054	DME100C20/030	B.29
430971	FDNR4	G.4	546142		E.4	564061	AAZTS12A	F.33	605055	DME100C25/030	B.29
430986	FDNRE	G.4	546143		E.4	564062	AAZTS24A	F.33	605056	DME100C32/030	B.29
431000			546152		E.4	564063	AAZTS36A	F.33	605057	DME100C40/030	B.29
431025	FDUA3	G.5	546176		E.7	564064	AAZTS48A	F.33	605060	DME60C06/030	B.29
431026	FDUA4	G.5	546181		E.8	564066	AAZM2	F.33	605061	DME60C10/030	B.29
431086	FDQDI3M/6	G.3	546184		E.8	564067	AAZM3	F.33	605062	DME60C16/030	B.29
431088	FDQDI4M/6	G.3	546187		E.6	564068	AAZM4	F.33	605063	DME60C20/030	B.29
431090	FDQDS3H/6	G.3	546197		E.6	564092		E.8	605064	DME60C25/030	B.29
431095	FDQDS3M/6	G.3	546200		E.8	564350	AAZTA2	F.33	605065	DME60C32/030	B.29
431101	FDQDS4H/6	G.3	546227		E.6	564352	AAZP11	F.34	605066	DME60C40/030	B.29
431103	FDQDS4M/6	G.3	546228		E.7	564353	AAZP12	F.34	605067	DME60C06/100	B.29
432000			546229		E.7	564533	TAP12	F.33	605068	DME60C10/100	B.29
432010	FDFE	G.5	546230		E.7	564538	KV AP12	F.33	605069	DME60C16/100	B.29
433000			546234		E.7	564539	KV AP24	F.33	605070	DME60C20/100	B.29
433400	FDTCA1316	G.5	546237		E.4	564540	KV AP36	F.33	605071	DME60C25/100	B.29
433401	FDTCA1416	G.5	546244		E.8	564541	KV AP48	F.33	605072	DME60C32/100	B.29
433539	FDUT	G.5	546245		E.8	564546	TAP24	F.33	605073	DME60C40/100	B.29
433649	FDE36TE016ED	G.3	546246		E.8	564547	TAP36	F.33	605150	DMEA100B06/010	B.29
433651	FDE36TE020ED	G.3	546247		E.6	564548	TAP48	F.33	605151	DMEA100B10/010	B.29
433653	FDE36TE025ED	G.3	546248		E.6	568000			605152	DMEA100B16/010	B.29
433655	FDE36TE032ED	G.3	546249		E.6	568083		E.8	605153	DMEA100B20/010	B.29
433657	FDE36TE040ED	G.3	546250		E.6	568084		E.8	605154	DMEA100B25/010	B.29
433659	FDE36TE050ED	G.3	546251		E.6	568106		E.6	605155	DMEA100B32/010	B.29
433661	FDE36TE063ED	G.3	546252		E.6	594000			605156	DMEA100B40/010	B.29
433663	FDE36TE080GD	G.3	546253		E.4	594009	NLINK1	F.21	605157	DMEA100B06/030	B.29
433665	FDE36TE100GD	G.3	546254		E.4	597000			605158	DMEA100B10/030	B.29
433667	FDE36TE125GD	G.3	546255		E.4	597956		F.24	605159	DMEA100B16/030	B.29
433669	FDE36TE160GD	G.3	546256		E.4	597957		F.24	605160	DMEA100B20/030	B.29
433697	FDE46TE016ED	G.3	546257		E.4	597958		F.24	605161	DMEA100B25/030	B.29
433699	FDE46TE020ED	G.3	546259		E.6	597959		F.24	605162	DMEA100B32/030	B.29
433701	FDE46TE025ED	G.3	546260		E.6	597960		F.24	605163	DMEA100B40/030	B.29
433703	FDE46TE032ED	G.3	546261		E.6	597961		F.24	605164	DMEA100C06/010	B.29



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605166	DMEA100C16/010	B.29	606160	BPC263/1000	B.21	606350	BPAi425/300	B.21	606819	DPC60C16/010	B.11
605167	DMEA100C20/010	B.29	606161	BPC280/1000	B.21	606351	BPAi440/300	B.21	606820	DPC60C06/030	B.11
605168	DMEA100C25/010	B.29	606162	BPC2100/1000	B.21	606352	BPAi463/300	B.21	606821	DPC60C10/030	B.11
605169	DMEA100C32/010	B.29	606163	BPA425/030	B.21	606505	DMEA100D06/010	B.29	606822	DPC60C13/030	B.11
605170	DMEA100C40/010	B.29	606164	BPA440/030	B.21	606506	DMEA100D10/010	B.29	606823	DPC60C16/030	B.11
605171	DMEA100C06/030	B.29	606165	BPA463/030	B.21	606507	DMEA100D16/010	B.29	606824	DPC60C20/030	B.11
605172	DMEA100C10/030	B.29	606166	BPA480/030	B.21	606508	DMEA100D20/010	B.29	606825	DPC60C25/030	B.11
605173	DMEA100C16/030	B.29	606167	BPA4100/030	B.21	606509	DMEA100D25/010	B.29	606826	DPC60C32/030	B.11
605174	DMEA100C20/030	B.29	606168	BPA425/100	B.21	606510	DMEA100D32/010	B.29	606827	DPC60C40/030	B.11
605175	DMEA100C25/030	B.29	606169	BPA440/100	B.21	606511	DMEA100D40/010	B.29	606828	DPC60C06/300	B.11
605176	DMEA100C32/030	B.29	606170	BPA463/100	B.21	606512	DMEA100D06/030	B.29	606829	DPC60C10/300	B.11
605177	DMEA100C40/030	B.29	606171	BPA480/100	B.21	606513	DMEA100D10/030	B.29	606830	DPC60C13/300	B.11
605240	DME100C06/100	B.29	606172	BPA4100/100	B.21	606514	DMEA100D16/030	B.29	606831	DPC60C16/300	B.11
605241	DME100C10/100	B.29	606173	BPS425/100	B.21	606515	DMEA100D20/030	B.29	606832	DPC60C20/300	B.11
605242	DME100C16/100	B.29	606174	BPS440/100	B.21	606516	DMEA100D25/030	B.29	606833	DPC60C25/300	B.11
605243	DME100C20/100	B.29	606175	BPS463/100	B.21	606517	DMEA100D32/030	B.29	606834	DPC60C32/300	B.11
605244	DME100C25/100	B.29	606176	BPS480/100	B.21	606518	DMEA100D40/030	B.29	606835	DPC60C40/300	B.11
605245	DME100C32/100	B.29	606177	BPS4100/100	B.21	606519	DME100D06/100	B.29	606836	DPCA60C10/010	B.11
605246	DME100C40/100	B.29	606178	BPA425/300	B.21	606520	DME100D10/100	B.29	606837	DPCA60C16/010	B.11
605260	DME100B06/100	B.29	606179	BPA440/300	B.21	606521	DME100D16/100	B.29	606838	DPCA60C06/030	B.11
605261	DME100B10/100	B.29	606180	BPA463/300	B.21	606522	DME100D20/100	B.29	606839	DPCA60C10/030	B.11
605262	DME100B16/100	B.29	606181	BPA480/300	B.21	606523	DME100D25/100	B.29	606840	DPCA60C13/030	B.11
605263	DME100B20/100	B.29	606182	BPA4100/300	B.21	606524	DME100D32/100	B.29	606841	DPCA60C16/030	B.11
605264	DME100B25/100	B.29	606183	BPS425/300	B.21	606525	DME100D40/100	B.29	606842	DPCA60C20/030	B.11
605265	DME100B32/100	B.29	606184	BPS440/300	B.21	606526	DMEA100C06/100	B.29	606843	DPCA60C25/030	B.11
605266	DME100B40/100	B.29	606185	BPS463/300	B.21	606527	DMEA100C10/100	B.29	606844	DPCA60C32/030	B.11
606000			606186	BPS480/300	B.21	606528	DMEA100C16/100	B.29	606845	DPCA60C40/030	B.11
606085	BPA216/010	B.21	606187	BPS4100/300	B.21	606529	DMEA100C20/100	B.29	606846	DPCA60C06/300	B.11
606086	BPA225/030	B.21	606188	BPA425/500	B.21	606530	DMEA100C25/100	B.29	606847	DPCA60C10/300	B.11
606087	BPA240/030	B.21	606189	BPA440/500	B.21	606531	DMEA100C32/100	B.29	606848	DPCA60C13/300	B.11
606088	BPA263/030	B.21	606190	BPA463/500	B.21	606532	DMEA100C40/100	B.29	606849	DPCA60C16/300	B.11
606089	BPA280/030	B.21	606191	BPA480/500	B.21	606560	DMET100C06/100	B.31	606850	DPCA60C20/300	B.11
606090	BPA2100/030	B.21	606192	BPA4100/500	B.21	606561	DMET100C10/100	B.31	606851	DPCA60C25/300	B.11
606091	BPA225/100	B.21	606193	BPS425/500	B.21	606562	DMET100C16/100	B.31	606852	DPCA60C32/300	B.11
606092	BPA240/100	B.21	606194	BPS440/500	B.21	606563	DMET100C20/100	B.31	606853	DPCA60C40/300	B.11
606093	BPA263/100	B.21	606195	BPS463/500	B.21	606564	DMET100C25/100	B.31	606854	DPCAi60C06/030	B.11
606094	BPA280/100	B.21	606196	BPS480/500	B.21	606565	DMET100C32/100	B.31	606855	DPCAi60C10/030	B.11
606095	BPA2100/100	B.21	606197	BPS4100/500	B.21	606566	DMET100C40/100	B.31	606856	DPCAi60C13/030	B.11
606096	BPS225/100	B.21	606198	BPA425/1000	B.21	606567	DMET100C06/010	B.31	606857	DPCAi60C16/030	B.11
606097	BPS240/100	B.21	606199	BPA440/1000	B.21	606568	DMET100C10/010	B.31	606858	DPCAi60C20/030	B.11
606098	BPS263/100	B.21	606200	BPA463/1000	B.21	606569	DMET100C16/010	B.31	606859	DPCAi60C25/030	B.11
606099	BPS280/100	B.21	606201	BPA480/1000	B.21	606570	DMET100C20/010	B.31	606860	DPCAi60C32/030	B.11
606100	BPS2100/100	B.21	606202	BPA4100/1000	B.21	606571	DMET100C25/010	B.31	606861	DPCAi60C40/030	B.11
606101	BPA225/300	B.21	606203	BPS425/1000	B.21	606572	DMET100C32/010	B.31	606862	DPCAi60C06/300	B.11
606102	BPA240/300	B.21	606204	BPS440/1000	B.21	606573	DMET100C40/010	B.31	606863	DPCAi60C10/300	B.11
606103	BPA263/300	B.21	606205	BPS463/1000	B.21	606574	DMET100C06/030	B.31	606864	DPCAi60C13/300	B.11
606104	BPA280/300	B.21	606206	BPS480/1000	B.21	606575	DMET100C10/030	B.31	606865	DPCAi60C16/300	B.11
606105	BPA2100/300	B.21	606207	BPS4100/1000	B.21	606576	DMET100C16/030	B.31	606866	DPCAi60C20/300	B.11
606106	BPS225/300	B.21	606208	BPC425/030	B.21	606577	DMET100C20/030	B.31	606867	DPCAi60C25/300	B.11
606107	BPS240/300	B.21	606209	BPC440/030	B.21	606578	DMET100C25/030	B.31	606868	DPCAi60C32/300	B.11
606108	BPS263/300	B.21	606210	BPC463/030	B.21	606579	DMET100C32/030	B.31	606869	DPCAi60C40/300	B.11
606109	BPS280/300	B.21	606211	BPC480/030	B.21	606580	DMET100C40/030	B.31	606870	DPCA60B10/010	B.11
606110	BPS2100/300	B.21	606212	BPC4100/030	B.21	606581	DMEA100C40/300	B.31	606871	DPCA60B16/010	B.11
606111	BPA225/500	B.21	606216	BPC425/100	B.21	606588	DMEA100C06/300	B.31	606872	DPCA60B06/030	B.11
606112	BPA240/500	B.21	606217	BPC440/100	B.21	606589	DMEA100C10/300	B.31	606873	DPCA60B10/030	B.11
606113	BPA263/500	B.21	606218	BPC463/100	B.21	606590	DMEA100C16/300	B.31	606874	DPCA60B13/030	B.11
606114	BPA280/500	B.21	606219	BPC480/100	B.21	606591	DMEA100C20/300	B.31	606875	DPCA60B16/030	B.11
606115	BPA2100/500	B.21	606220	BPC4100/100	B.21	606592	DMEA100C25/300	B.31	606876	DPCA60B20/030	B.11
606116	BPS225/500	B.21	606224	BPC425/300	B.21	606593	DMEA100C32/300	B.31	606877	DPCA60B25/030	B.11
606117	BPS240/500	B.21	606225	BPC440/300	B.21	606786	DPC45C06/030	B.9	606878	DPCA60B32/030	B.11
606118	BPS263/500	B.21	606226	BPC463/300	B.21	606787	DPC45C10/030	B.9	606879	DPCA60B40/030	B.11
606119	BPS280/500	B.21	606227	BPC480/300	B.21	606788	DPC45C13/030	B.9	606880	DPCA60B06/300	B.11
606120	BPS2100/500	B.21	606228	BPC4100/300	B.21	606789	DPC45C16/030	B.9	606881	DPCA60B10/300	B.11
606121	BPA225/1000	B.21	606229	BPC425/500	B.21	606790	DPC45C20/030	B.9	606882	DPCA60B13/300	B.11
606122	BPA240/1000	B.21	606230	BPC440/500	B.21	606791	DPC45C25/030	B.9	606883	DPCA60B16/300	B.11
606123	BPA263/1000	B.21	606231	BPC463/500	B.21	606792	DPC45C32/030	B.9	606884	DPCA60B20/300	B.11
606124	BPA280/1000	B.21	606232	BPC480/500	B.21	606793	DPC45C40/030	B.9	606885	DPCA60B25/300	B.11
606125	BPA2100/1000	B.21	606233	BPC4100/500	B.21	606794	DPC45C06/300	B.9	606886	DPCA60B32/300	B.11
606126	BPS225/1000	B.21	606234	BPC425/1000	B.21	606795	DPC45C10/300	B.9	606887	DPCA60B40/300	B.11
606127	BPS240/1000	B.21	606235	BPC440/1000	B.21	606796	DPC45C13/300	B.9	606888	DPCAi60B06/030	B.11
606128	BPS263/1000	B.21	606236	BPC463/1000	B.21	606797	DPC45C16/300	B.9	606889	DPCAi60B10/030	B.11
606129	BPS280/1000										

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606911	DPC100C25/030	B.13	607127	BDC225/300	B.21	607700	DOCS 463/300	B.33	609744	DMA60B20/010	B.23
606912	DPC100C32/030	B.13	607128	BDC240/300	B.21	607701	DOCS 463/500	B.33	609745	DMA60B06/030	B.23
606913	DPC100C40/030	B.13	607285	DMEAT100C10/030	B.31	607702	DOCS 463/1000	B.33	609746	DMA60B10/030	B.23
606914	DPC100C06/300	B.13	607286	DMEAT100C16/030	B.31	607722	DOC 532/030	B.33	609747	DMA60B13/030	B.23
606915	DPC100C10/300	B.13	607287	DMEAT100C20/030	B.31	607723	DOC 532/100	B.33	609748	DMA60B16/030	B.23
606916	DPC100C13/300	B.13	607288	DMEAT100C25/030	B.31	607724	DOC 532/300	B.33	609749	DMA60B20/030	B.23
606917	DPC100C16/300	B.13	607289	DMEAT100C32/030	B.31	607725	DOC 532/500	B.33	609750	DMA60B25/030	B.23
606918	DPC100C20/300	B.13	607427	DMET60C10/030	B.31	607726	DOC 532/1000	B.33	609751	DMA60B32/030	B.23
606919	DPC100C25/300	B.13	607428	DMET60C16/030	B.31	607728	DOC 432/030	B.33	609752	DMA60B40/030	B.23
606920	DPC100C32/300	B.13	607429	DMET60C20/030	B.31	607729	DOC 432/100	B.33	609753	DMA60B06/100	B.23
606921	DPC100C40/300	B.13	607430	DMET60C25/030	B.31	607730	DOC 432/300	B.33	609754	DMA60B10/100	B.23
606922	DPCA100C10/010	B.13	607431	DMET60C32/030	B.31	607731	DOC 432/500	B.33	609755	DMA60B13/100	B.23
606923	DPCA100C13/010	B.13	607500	DOCA 232/030	B.33	607732	DOC 432/1000	B.33	609756	DMA60B16/100	B.23
606924	DPCA100C16/010	B.13	607501	DOCA 232/100	B.33	607734	DOC 463/030	B.33	609757	DMA60B20/100	B.23
606925	DPCA100C06/030	B.13	607502	DOCA 232/300	B.33	607735	DOC 463/100	B.33	609758	DMA60B25/100	B.23
606926	DPCA100C10/030	B.13	607503	DOCA 232/500	B.33	607736	DOC 463/300	B.33	609759	DMA60B32/100	B.23
606927	DPCA100C13/030	B.13	607504	DOCA 232/1000	B.33	607737	DOC 463/500	B.33	609760	DMA60B40/100	B.23
606928	DPCA100C16/030	B.13	607506	DOCA 263/030	B.33	607738	DOC 463/1000	B.33	609761	DMA60B06/300	B.23
606929	DPCA100C20/030	B.13	607507	DOCA 263/100	B.33	608000			609762	DMA60B10/300	B.23
606930	DPCA100C10/030	B.13	607508	DOCA 263/300	B.33	608135	DMEAT60C10/030	B.31	609763	DMA60B13/300	B.23
606931	DPCA100C13/030	B.13	607509	DOCA 263/500	B.33	608136	DMEAT60C16/030	B.31	609764	DMA60B16/300	B.23
606932	DPCA100C16/030	B.13	607510	DOCA 263/1000	B.33	608137	DMEAT60C20/030	B.31	609765	DMA60B20/300	B.23
606933	DPCA100C20/030	B.13	607513	DOCS 232/100	B.33	608138	DMEAT60C25/030	B.31	609766	DMA60B25/300	B.23
606934	DPCA100C25/030	B.13	607514	DOCS 232/300	B.33	608139	DMEAT60C32/030	B.31	609767	DMA60B32/300	B.23
606935	DPCA100C32/030	B.13	607515	DOCS 232/500	B.33	608377	FPAUL 216/010	B.34	609768	DMA60B40/300	B.23
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606937	DPCA100C06/300	B.13	607519	DOCS 263/100	B.33	608379	FPAUL 225/100	B.34	609770	DMA60C06/010	B.23
606938	DPCA100C10/300	B.13	607520	DOCS 263/300	B.33	608380	FPAUL 225/300	B.34	609771	DMA60C10/010	B.23
606939	DPCA100C13/300	B.13	607521	DOCS 263/500	B.33	608381	FPAUL 225/500	B.34	609772	DMA60C13/010	B.23
606940	DPCA100C16/300	B.13	607522	DOCS 263/1000	B.33	608382	FPAUL 240/030	B.34	609773	DMA60C16/010	B.23
606941	DPCA100C20/300	B.13	607536	DOC 232/030	B.33	608383	FPAUL 240/100	B.34	609774	DMA60C20/010	B.23
606942	DPCA100C25/300	B.13	607537	DOC 232/100	B.33	608384	FPAUL 240/300	B.34	609775	DMA60C04/030	B.23
606943	DPCA100C32/300	B.13	607538	DOC 232/300	B.33	608385	FPAUL 240/500	B.34	609776	DMA60C06/030	B.23
606944	DPCA100C40/300	B.13	607539	DOC 232/500	B.33	608386	FPAUL 263/030	B.34	609777	DMA60C10/030	B.23
606945	DPCA100C06/030	B.13	607540	DOC 232/1000	B.33	608387	FPAUL 263/100	B.34	609778	DMA60C13/030	B.23
606946	DPCA100C10/030	B.13	607542	DOC 263/030	B.33	608388	FPAUL 263/300	B.34	609779	DMA60C16/030	B.23
606947	DPCA100C13/030	B.13	607543	DOC 263/100	B.33	608389	FPAUL 425/030	B.34	609780	DMA60C20/030	B.23
606948	DPCA100C16/030	B.13	607544	DOC 263/300	B.33	608390	FPAUL 425/100	B.34	609781	DMA60C25/030	B.23
606949	DPCA100C20/030	B.13	607545	DOC 263/500	B.33	608391	FPAUL 425/300	B.34	609782	DMA60C32/030	B.23
606950	DPCA100C25/030	B.13	607546	DOC 263/1000	B.33	608392	FPAUL 425/500	B.34	609783	DMA60C40/030	B.23
606951	DPCA100C32/030	B.13	607584	DOCA 332/030	B.33	608393	FPAUL 440/030	B.34	609784	DMA60C04/100	B.23
606952	DPCA100C40/030	B.13	607585	DOCA 332/100	B.33	608394	FPAUL 440/100	B.34	609785	DMA60C06/100	B.23
606953	DPCA100C06/300	B.13	607586	DOCA 332/300	B.33	608395	FPAUL 440/300	B.34	609786	DMA60C10/100	B.23
606954	DPCA100C10/300	B.13	607587	DOCA 332/500	B.33	608396	FPAUL 440/500	B.34	609787	DMA60C13/100	B.23
606955	DPCA100C13/300	B.13	607588	DOCA 332/1000	B.33	608397	FPAUL 463/030	B.34	609788	DMA60C16/100	B.23
606956	DPCA100C16/300	B.13	607590	DOCA 363/030	B.33	608398	FPAUL 463/100	B.34	609789	DMA60C20/100	B.23
606957	DPCA100C20/300	B.13	607591	DOCA 363/100	B.33	608399	FPAUL 463/300	B.34	609790	DMA60C25/100	B.23
606958	DPCA100C25/300	B.13	607592	DOCA 363/300	B.33	608400	FPAUL 463/500	B.34	609791	DMA60C32/100	B.23
606959	DPCA100C32/300	B.13	607593	DOCA 363/500	B.33	608401	FPAUL 263/500	B.34	609792	DMA60C40/100	B.23
606960	DPCA100C40/300	B.13	607594	DOCA 363/1000	B.33	608706	DPA100B10/010	B.35	609793	DMA60C04/300	B.23
606961	DPCA100B10/010	B.13	607597	DOCS 332/100	B.33	608707	DPA100B13/010	B.35	609794	DMA60C06/300	B.23
606962	DPCA100B13/010	B.13	607598	DOCS 332/300	B.33	608708	DPA100B16/010	B.35	609795	DMA60C10/300	B.23
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606964	DPCA100B06/030	B.13	607600	DOCS 332/1000	B.33	608712	DPA100B10/030	B.35	609797	DMA60C16/300	B.23
606965	DPCA100B10/030	B.13	607603	DOCS 363/100	B.33	608713	DPA100B13/030	B.35	609798	DMA60C20/300	B.23
606966	DPCA100B13/030	B.13	607604	DOCS 363/300	B.33	608714	DPA100B16/030	B.35	609799	DMA60C25/300	B.23
606967	DPCA100B16/030	B.13	607605	DOCS 363/500	B.33	608715	DPA100B20/030	B.35	609800	DMA60C32/300	B.23
606968	DPCA100B20/030	B.13	607606	DOCS 363/1000	B.33	608716	DPA100B25/030	B.35	609801	DMA60C40/300	B.23
606969	DPCA100B10/030	B.13	607620	DOC 332/030	B.33	608717	DPA100B32/030	B.35	609802	DM60B06/010	B.23
606970	DPCA100B13/030	B.13	607621	DOC 332/100	B.33	608757	DPA100C10/010	B.35	609803	DM60B10/010	B.23
606971	DPCA100B16/030	B.13	607622	DOC 332/300	B.33	608758	DPA100C13/010	B.35	609804	DM60B13/010	B.23
606972	DPCA100B20/030	B.13	607623	DOC 332/500	B.33	608759	DPA100C16/010	B.35	609805	DM60B16/010	B.23
606973	DPCA100B25/030	B.13	607624	DOC 332/1000	B.33	608760	DPA100C20/010	B.35	609806	DM60B20/010	B.23
606974	DPCA100B32/030	B.13	607626	DOC 363/030	B.33	608763	DPA100C10/030	B.35	609807	DM60B06/030	B.23
606975	DPCA100B40/030	B.13	607627	DOC 363/100	B.33	608764	DPA100C13/030	B.35	609808	DM60B10/030	B.23
606976	DPCA100B06/300	B.13	607628	DOC 363/300	B.33	608765	DPA100C16/030	B.35	609809	DM60B13/030	B.23
606977	DPCA100B10/300	B.13	607629	DOC 363/500	B.33	608766	DPA100C20/030	B.35	609810	DM60B16/030	B.23
606978	DPCA100B13/300	B.13	607630	DOC 363/1000	B.33	608767	DPA100C25/030	B.35	609811	DM60B20/030	B.23
606979	DPCA100B16/300	B.13	607668	DOCA 532/030	B.33	608768	DPA100C32/030	B.35	609812	DM60B25/030	B.23
606980	DPCA100B20/300	B.13	607669	DOCA 532/300	B.33	609000			609813	DM60B32/030	B.23
606981	DPCA100B25/300	B.13	607670	DOCA 532/100	B.33	609280	DMT60C04/030	B.23	609814	DM60B40/030	B.23
606982	DPCA100B32/300	B.13	607671	DOCA 53							

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609835	DM60C16/010	B.23	609927	DM100B10/010	B.25	610272		F.27	618406	VCMA2	F.19
609836	DM60C20/010	B.23	609928	DM100B13/010	B.25	610275		F.27	618407	VCMA4	F.19
609837	DM60C04/030	B.23	609929	DM100B16/010	B.25	610276		F.27	618409	VCMA6	F.19
609838	DM60C06/030	B.23	609930	DM100B20/010	B.25	610277		F.28	618411	VCMA9	F.19
609839	DM60C10/030	B.23	609931	DM100B06/030	B.25	610281		F.28	618413	VCMA13	F.19
609840	DM60C13/030	B.23	609932	DM100B10/030	B.25	610285		F.27	618416	VCM3A3	F.19
609841	DM60C16/030	B.23	609933	DM100B13/030	B.25	610286		F.27	618419	VCM4A4	F.19
609842	DM60C20/030	B.23	609934	DM100B16/030	B.25	610287		F.28	618423	VCM5A5	F.19
609843	DM60C25/030	B.23	609935	DM100B20/030	B.25	610291		F.28	618489	VCM7A7	F.19
609844	DM60C32/030	B.23	609936	DM100B25/030	B.25	610295		F.27	618505		F.11
609845	DM60C40/030	B.23	609937	DM100B32/030	B.25	610296		F.27	618506		F.11
609846	DM60C04/100	B.23	609938	DM100B40/030	B.25	610297		F.28	618511		F.11
609847	DM60C06/100	B.23	609939	DM100B06/100	B.25	610301		F.28	618512		F.11
609848	DM60C10/100	B.23	609940	DM100B10/100	B.25	610303		F.27	618517		F.11
609849	DM60C13/100	B.23	609941	DM100B13/100	B.25	610304		F.27	618518		F.11
609850	DM60C16/100	B.23	609942	DM100B16/100	B.25	610305		F.28	618519		F.11
609851	DM60C20/100	B.23	609943	DM100B20/100	B.25	610306		F.28	618520		F.11
609852	DM60C25/100	B.23	609944	DM100B25/100	B.25	610313		F.31	618521		F.11
609853	DM60C32/100	B.23	609945	DM100B32/100	B.25	610314		F.31	618522		F.11
609854	DM60C40/100	B.23	609946	DM100B40/100	B.25	610315		F.31	618523		F.11
609855	DM60C04/300	B.23	609947	DM100B06/300	B.25	610316		F.31	618524		F.12
609856	DM60C06/300	B.23	609948	DM100B10/300	B.25	610317		F.31	618527		F.12
609857	DM60C10/300	B.23	609949	DM100B13/300	B.25	610318		F.31	618528		F.12
609858	DM60C13/300	B.23	609950	DM100B16/300	B.25	610327		F.28	618529		F.11
609859	DM60C16/300	B.23	609951	DM100B20/300	B.25	610328		F.2	618530		F.11
609860	DM60C20/300	B.23	609952	DM100B25/300	B.25	610329		F.2	618531		F.12
609861	DM60C25/300	B.23	609953	DM100B32/300	B.25	610330		F.2	618791	EDU10E+N	F.20
609862	DM60C32/300	B.23	609954	DM100B40/300	B.25	610331		F.2	618792	EDU14E+N	F.20
609863	DM60C40/300	B.23	609955	DM100C04/010	B.25	610332		F.2	618793	EDU18E+N	F.20
609864	DMA100B06/010	B.25	609956	DM100C06/010	B.25	610344		F.15	618794	HDIN2	F.21
609865	DMA100B10/010	B.25	609957	DM100C10/010	B.25	610345		F.15	618910	FOR4	F.20
609866	DMA100B13/010	B.25	609958	DM100C13/010	B.25	610354		F.9	619000		
609867	DMA100B16/010	B.25	609959	DM100C16/010	B.25	610355		F.9	619018	SHR3	F.21
609868	DMA100B20/010	B.25	609960	DM100C20/010	B.25	610368		F.39	619084		F.12
609869	DMA100B06/030	B.25	609961	DM100C04/030	B.25	610369		F.39	619200		F.11
609870	DMA100B10/030	B.25	609962	DM100C06/030	B.25	610370		F.39	619201		F.11
609871	DMA100B13/030	B.25	609963	DM100C10/030	B.25	610371		F.39	619202		F.11
609872	DMA100B16/030	B.25	609964	DM100C13/030	B.25	610372		F.39	619203		F.11
609873	DMA100B20/030	B.25	609965	DM100C16/030	B.25	610373		F.39	619204		F.11
609874	DMA100B25/030	B.25	609966	DM100C20/030	B.25	610374		F.39	619205		F.11
609875	DMA100B32/030	B.25	609967	DM100C25/030	B.25	610375		F.39	619300		F.37
609876	DMA100B40/030	B.25	609968	DM100C32/030	B.25	610376		F.39	619301		F.37
609877	DMA100B06/100	B.25	609969	DM100C40/030	B.25	610377		F.39	619302		F.37
609878	DMA100B10/100	B.25	609970	DM100C04/100	B.25	610378		F.39	619303		F.37
609879	DMA100B13/100	B.25	609971	DM100C06/100	B.25	610379		F.39	619304		F.37
609880	DMA100B16/100	B.25	609972	DM100C10/100	B.25	610380		F.28	619305		F.37
609881	DMA100B20/100	B.25	609973	DM100C13/100	B.25	610381		F.39	619319		F.23
609882	DMA100B25/100	B.25	609974	DM100C16/100	B.25	610382		F.12	619320		F.23
609883	DMA100B32/100	B.25	609975	DM100C20/100	B.25	610383		F.28	619321		F.23
609884	DMA100B40/100	B.25	609976	DM100C25/100	B.25	610384		F.39	619322		F.37
609885	DMA100B06/300	B.25	609977	DM100C32/100	B.25	610385		F.27	619323		F.23
609886	DMA100B10/300	B.25	609978	DM100C40/100	B.25	610386		F.27	619325		F.37
609887	DMA100B13/300	B.25	609979	DM100C04/300	B.25	610387		F.27	619326		F.37
609888	DMA100B16/300	B.25	609980	DM100C06/300	B.25	610396		F.27	619327		F.37
609889	DMA100B20/300	B.25	609981	DM100C10/300	B.25	610484		F.7	619328		F.37
609890	DMA100B25/300	B.25	609982	DM100C13/300	B.25	610532		F.27	619329		F.37
609891	DMA100B32/300	B.25	609983	DM100C16/300	B.25	617000			619331		F.37
609892	DMA100B40/300	B.25	609984	DM100C20/300	B.25	617018		F.7	619332		F.37
609893	DMA100C04/010	B.25	609985	DM100C25/300	B.25	617934		F.5	619333		F.37
609894	DMA100C06/010	B.25	609986	DM100C32/300	B.25	617935		F.5	619334		F.37
609895	DMA100C10/010	B.25	609987	DM100C40/300	B.25	617936		F.5	619335		F.37
609896	DMA100C13/010	B.25	610000			617937		F.5	619337		F.37
609897	DMA100C16/010	B.25	610020		F.3	617938		F.5	619338		F.23
609898	DMA100C20/010	B.25	610021		F.3	617939		F.5	619339		F.23
609899	DMA100C04/030	B.25	610022		F.3	617940		F.5	619340		F.37
609900	DMA100C06/030	B.25	610090		F.9	617941		F.5	619341		F.37
609901	DMA100C10/030	B.25	610091		F.9	617942		F.5	619342		F.37
609902	DMA100C13/030	B.25	610130		F.15	617943		F.5	619343		F.37
609903	DMA100C16/030	B.25	610132		F.15	617944		F.5	619344		F.37
609904	DMA100C20/030	B.25	610133		F.15	617945		F.5	619345		F.37
609905	DMA100C25/030	B.25	610140		F.15	617946		F.5	619350		F.23
609906	DMA100C32/030	B.25	610141		F.15	617947		F.7	619362		F.37
609907	DMA100C40/030	B.25	610142		F.7	617948		F.7	619369		F.23
609908	DMA100C04/100	B.25	610151	EC4E+N	F.20	617949		F.7	619370		F.23
609909	DMA100C06/100	B.25	610170		F.28	617964		F.7	619371		F.23
609910	DMA100C10/100	B.25	610185		F.12	617965		F.7	619372		F.23
609911	DMA100C13/100	B.25	610186		F.12	617966		F.6	619373		F.23
609912	DMA100C16/100	B.25	610187		F.12	617967		F.6	619374		F.23
609913	DMA100C20/100	B.25	610232		F.3	617968		F.6	619375		F.23
609914	DMA100C25/100	B.25	610233		F.3	617969		F.6	619376		F.23
609915	DMA100C32/100	B.25	610238		F.3	617970		F.6	619393	AAZFPN16	F.33
609916	DMA100C40/100	B.25	610239		F.2	617992		F.3	619394	AAZFN1-26	F.33
609917	DMA100C04/300	B.25	610240		F.2	618000			619395	AAZFPF1-26	F.33
609918	DMA100C06/300	B.25	610241		F.2	618116		F.11	619411		F.11
609919	DMA100C10/300	B.25	610242		F.2	618117		F.11	619413		F.33
609920	DMA100C13/300	B.25	610243		F.2	618293		E.7	619414		F.33
609921	DMA100C16/300	B.25	610244		F.2	618294		E.4	619415		F.33
609922	DMA100C20/300	B.25	610248		F.2	618401	VCM2	F.19	619416		F.33
609923	DMA100C25/300	B.25	610249		F.2	618402	VCM4	F.19	624000		
609924	DMA100C32/300	B.25	610257		F.2	618403	VCM6	F.19	624795		E.8
609925	DMA100C40/300	B.25	610264		F.27	618404	VCM9	F.19	624796		E.5
609926	DM100B06/010	B.25	610265		F.28	618405	VCM13	F.19	624797		E.5

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624798		E.5	660140	SAP2 I+II 12.5 TT C	D.48	662131	CU4BN	F.20	665372	MT+CT100	D.37
624799		E.7	660143	SAP2 I+II 12.5 TNS	D.48	662132	CU10BN	F.20	665373	MT+CT150	D.37
624800		E.5	660144	SAP2 I+II 12.5 TNS C	D.48	662133	CU14BN	F.20	665374	MT+CT200	D.37
624805		E.4	660147	SAP3 I+II 12.5 TNC	D.48	662134	CU18BN	F.20	665375	MT+CT250	D.37
624807		E.5	660148	SAP3 I+II 12.5 TNC C	D.48	662136	CSLKIT14	F.21	665376	MT+CT300	D.37
624839		E.4	660150	SAP4 I+II 12.5 TT	D.48	662137	CKEY	F.21	665377	MT+CT400	D.37
624892		E.5	660151	SAP4 I+II 12.5 TT C	D.48	662138	CSLKIT18	F.21	665378	MT+CT500	D.37
624893		E.5	660152	SAP4 I+II 12.5 TNS	D.48	662139	CD4	F.21	665379	MT+CT600	D.37
624929	KS	A.41	660156	SAP4 I+II 12.5 TNS C	D.48	662140	CD10	F.21	665380	MT+CT800	D.37
624945	TELE L 110	A.35	660158	SAP1 II 40/230	D.49	662141	CD14	F.21	665381	MT+CT1000	D.37
624946	TELE L 24	A.35	660159	SAP1 II 40/400	D.49	662142	CD18	F.21	665382	MT+CT1200	D.37
624957		E.7	660160	SAP1 II 40/230 C	D.49	662152	TSL222	F.18	665383	MT+CT1500	D.37
624958		E.7	660162	SAP1 II 40/400 C	D.49	662153	TSL345	F.18	665384	MT+CT2000	D.37
624959		E.4	660163	SAP1 II 40N	D.49	662154	TSL442	F.18	665385	MT+S4 3M	D.35
624960		E.4	660164	SAP1 II 20/230	D.49	662155	TSL255	F.18	665386	MT+S7 3M	D.35
624961		E.4	660165	SAP1 II 20/400	D.49	662156	TSL444	F.18	665387	MT+D DV500 DA5 F 4M	D.33
624962		E.4	660166	SAP1 II 20/230 C	D.49	662157	DSL44	F.18	665389	MT+RS485/Ethernet	D.31
624963		E.4	660167	SAP1 II 20/400 C	D.49	662158	DSL64	F.18	665390	MT+RSC TOP	D.31
624964		E.4	660169	SAP1 II 20N	D.49	662159	DSL55	F.18	665391	MT+D TOPI 4M	D.33
624965		E.4	660171	SAP2 II 40/230 TT	D.49	662160	DSL66	F.18	665392	MT+D TOPIRS485 4M	D.33
624966		E.4	660172	SAP2 II 40/230 TTC	D.49	662161	FTSL12	F.18	665393	MT+D BASIC 4M	D.33
624967		E.4	660173	SAP2 II 20/230 TT	D.49	662163	DFSL12	F.18	665394	GRDT+TOP	B.39
624968		E.4	660174	SAP2 II 20/230 TTC	D.49	665000			665395	MT+D PRI BASIC 2M	D.33
624969		E.4	660175	SAP2 II 40/230 TNS	D.49	665010	MTDIN1	D.39	665396	MT+ AP 3F 2M	D.33
624970		E.4	660176	SAP2 II 40/230 TNSC	D.49	665011	MTDIN2	D.39	665900	TR+ B 5	D.29
624971		E.4	660177	SAP2 II 20/230 TNS	D.49	665012	MTDIN1HARCOM	D.39	665901	TR+B 8	D.29
624972		E.4	660178	SAP2 II 20/230 TNSC	D.49	665155	MTDIN2COM	D.39	665902	TR+B10	D.29
624973		E.4	660179	SAP3 II 40/400 TNC	D.49	665190	MT961	D.41	665903	TR+B15	D.29
624974		E.4	660180	SAP3 II 40/400 TNCC	D.49	665191	MT962	D.41	665904	TR+B16	D.29
624975		E.6	660181	SAP3 II 20/400 TNC	D.49	665192	MT962COM	D.41	665905	TR+B30	D.29
624976		E.6	660182	SAP3 II 20/400 TNCC	D.49	665193	MT961HARCOM	D.41	665909	TR+S15	D.29
624977		E.6	660183	SAP4 II 40/400 TT	D.49	665194	MT144UMD	D.43	665910	TR+S25	D.29
624978		E.6	660184	SAP4 II 40/400 TTC	D.49	665195	MT144UM	D.43	665911	TR+S40	D.29
624979		E.6	660185	SAP4 II 20/400 TT	D.49	665196	MT144UD	D.43	665912	TR+S63	D.29
624980		E.6	660186	SAP4 II 20/400 TTC	D.49	665197	MT8180	D.43	665917	TOR+110	B.39
624981		E.6	660187	SAP4 II 40/400 TNS	D.49	665198	MT8140	D.43	665918	TR&KT+C3MOD	D.29
624982		E.6	660188	SAP4 II 40/400 TNSC	D.49	665199	MT8140R	D.43	665919	TR&KT+C6MOD	D.29
624983		E.6	660189	SAP4 II 20/400 TNS	D.49	665239	MTMBUS	D.43	665920	BE+230	D.29
624984		E.6	660190	SAP4 II 20/400 TNSC	D.49	665240	MTSDMEM	D.43	665921	BU+230	D.29
624985		E.6	660191	SAPV I+II 12.5/600	D.51	665243	MTPBUS	D.43	665922	BE+12	D.29
624986		E.6	660192	SAPV I+II 12.5/600 C	D.51	665244	MTAdapt	D.39	665923	BU+12	D.29
624987		E.6	660193	SAPV I+II 12.5/1000	D.51	665245	MT485Enet	D.43	665924	MT+CT2500	D.37
624988		E.6	660194	SAPV I+II 12.5/1000 C	D.51	665246	MTUSB485	D.43	665925	MT+CT3200	D.37
624989		E.6	660195	SAPV II 40/600	D.51	665248	MT+D1i 32 1M	D.31	665926	MT+CT4000	D.37
624990		E.6	660196	SAPV II 40/600C	D.51	665249	MT+D1i 32 1M MID	D.31	666000		
624991		E.4	660197	SAPV II 40/1000	D.51	665250	MT+D1i 63 2M	D.31	666100	SMS 1	D.21
624992		E.8	660198	SAPV II 40/1000C	D.51	665251	MT+D1i 63 2M MID	D.31	666101	SMS 3	D.21
624993		E.6	660199	SAM I+II 25/230	D.48	665252	MT+D1485 63 2M	D.31	666102	SMS 6	D.21
624994		E.4	660257	SAM I+II 25/400	D.48	665253	MT+D1485 63 2M MID	D.31	666103	CLS Q 62 DD	D.21
624995		E.5	660274	SAM I+II 50N	D.48	665254	MT+D3Ni 63 4M	D.31	666104	CLS Q 31 D	D.21
624996		E.5	660294	SAM I+II 12.5/230	D.48	665255	MT+D3Ni 63 4M MID	D.31	666105	CLS Q 11 D	D.21
629000			660295	SAM I+II 12.5/400	D.48	665256	MT+D3N485 63 4M	D.31	666108	CLS Q 62 DW	D.21
629867		E.8	660296	SAM I+II 25N	D.48	665257	MT+D3N485 63 4MMID	D.31	666109	CLS Q 31 W	D.21
644000			660297	SAM II 20/230	D.49	665258	MT+D3Ni x/5 4M	D.31	666111	CLS S 11 D	D.21
644873		E.6	660298	SAM II 20/400	D.49	665259	MT+D3Ni x/5 4M MID	D.31	666112	CLS S 31 D	D.21
644875		E.6	660299	SAM II 20N	D.49	665260	MT+D3N485 x/5 4M	D.31	666114	CLS S 31 W	D.21
644876		E.6	660373	SAM II 40/230	D.49	665261	MT+D3N485 x/54MMID	D.31	666126	CTX 20 11 230 A	D.7
644877		E.6	660374	SAM II 40/400	D.49	665262	MT+ImpCon	D.31	666127	CTX 20 11 024 A	D.7
644879		E.6	660375	SAM II 40N	D.49	665264	MT+AA 4M	D.35	666128	CTX 20 02 230 A	D.7
644880		E.6	660376	SAM I+II 12.5/600PV	D.51	665265	MT+AA5 4M	D.35	666129	CTX 20 02 024 A	D.7
644881		E.6	660377	SAM I+II 12.5/1000PV	D.51	665266	MT+AA10 4M	D.35	666130	CTX 20 20 012 A	D.7
644882		E.6	660378	SAM II 40/600PV	D.51	665267	MT+AA15 4M	D.35	666131	CTX 20 20 230 A	D.7
644884		E.7	660379	SAM II 40/1000PV	D.51	665268	MT+AA20 4M	D.35	666132	CTX 20 20 240 A	D.7
644885		E.7	660391	SAP1 I+II 100N	D.48	665269	MT+AA25 4M	D.35	666133	CTX 20 20 024 A	D.7
644886		E.7	660393	SAM I+II 100N	D.48	665270	MT+AA30 4M	D.35	666134	CTX 20 20 048 A	D.7
644890		E.6	662000			665271	MT+AV300 4M	D.35	666135	CTX 24 22 230 U	D.7
644891		E.8	662100	MS1	F.17	665272	MT+AV500 4M	D.35	666136	CTX 24 22 024 U	D.7
644893		E.6	662101	MS2	F.17	665273	MT+AF 4M	D.35	666137	CTX 24 30 230 U	D.7
644897		E.6	662102	MS4	F.17	665274	MT+AH110 2M	D.35	666138	CTX 24 30 024 U	D.7
646000			662103	MS6	F.17	665275	MT+AH230 2M	D.35	666139	CTX 24 04 230 U	D.7
646083		E.7	662104	MS8	F.17	665276	MT+AH24 2M	D.35	666140	CTX 24 04 024 U	D.7
646084		E.7	662105	MS11	F.17	665283	MT+SP40	D.35	666141	CTX 24 40 012 U	D.7
646091		E.5	662106	MS16	F.17	665284	MT+SP50	D.35	666142	CTX 24 40 230 U	D.7
646092		E.5	662108	RM1	F.17	665285	MT+SP60	D.35	666143	CTX 24 40 240 U	D.7
650000			662109	RM2	F.17	665286	MT+SP80	D.35	666144	CTX 24 40 024 U	D.7
650152		E.6	662110	RM4	F.17	665287	MT+SP100	D.35	666145	CTX 24 40 048 U	D.7
650153		E.7	662111	RM6	F.17	665288	MT+SP150	D.35	666146	CTX 40 20 230 U	D.7
650154		E.7	662112	RM8	F.17	665289	MT+SP200	D.35	666147	CTX 40 20 024 U	D.7
650156		E.4	662113	RM11	F.17	665290	MT+SP250	D.35	666148	CTX 40 30 230 U	D.7
650164		E.6	662114	RM16	F.17	665291	MT+SP300	D.35	666149	CTX 40 30 024 U	D.7
660000			662115	RM14SPD	F.17	665292	MT+SP400	D.35	666150	CTX 40 40 012 U	D.7
660125	SAP1 I+II 25/230	D.48	662116	GA40	F.18	665293	MT+SP500	D.35	666151	CTX 40 40 230 U	D.7
660126	SAP1 I+II 25/400	D.48	662117	SH40	F.18	665294	MT+SP600	D.35	666152	CTX 40 40 240 U	D.7
660127	SAP1 I+II 25/230 C	D.48	662118	SH50	F.18	665295	MT+SP800	D.35	666153	CTX 40 40 024 U	D.7
660128	SAP1 I+II 25/400 C	D.48	662119	SL33	F.17	665296	MT+SP1000	D.35	666154	CTX 40 40 048 U	D.7
660130	SAP1 I+II 50N	D.48	662120	SL55	F.17	665297	TOR+28	B.39	666155	CTX 63 20 230 U	D.7
660131	SAP1 I+II 12.5/230	D.48	662121	SL64	F.17	665298	TOR+35	B.39	666156	CTX 63 40 230 U	D.7
660132	SAP1 I+II 12.5/400	D.48	662122	SL66	F.17	665299	TOR+60	B.39	666157	CTX 63 40 240 U	D.7
660135	SAP1 I+II 12.5/230 C	D.48	662123	SL77	F.17	665368	MT+CT40	D.37	666158	CTX 63 40 024 U	D.7
660136	SAP1 I+II 12.5/400 C	D.48	662125	FSL10	F.17	665369	MT+CT50	D.37	666159	CTX TS 3	D.7
660138	SAP1 I+II 25N	D.48	662126	FSL14	F.17	665370	MT+CT60	D.37	666160	CTX TS 2	D.7
660139	SAP2 I+II 12.5 TT	D.48	662129	SLTD55	F.17	665371	MT+CT80	D.37	666162	CTX 06 11	D.7



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666163	CTX 06 20	D.7	666607	AST SZ 16 2	D.3	671574	DOC 2125/030	A.34	672973	CA UN S/H	C.6
666164	CTX DN 20 20 230 A	D.7	666608	AST SZ 32 1	D.3	671576	DOC 2125/300	A.34	672974	CA UN S/H G	C.6
666165	CTX DN 24 30 230 U	D.7	666609	AST SZ 32 2	D.3	671581	DOCA 3125/030	A.34	673000		
666166	CTX DN 24 40 230 U	D.7	666614	AST M 40 10	D.3	671582	DOC 3125/030	A.34	673267	EP101UCRK0,5	A.45
666167	CTX DN 40 20 230 U	D.7	666615	AST M 40 20	D.3	671583	DOCA 3125/300	A.34	673268	EP101UCRK01	A.45
666168	CTX DN 40 30 230 U	D.7	666616	AST M 40 30	D.3	671584	DOC 3125/300	A.34	673269	EP101UCRK1,6	A.45
666169	CTX DN 40 40 230 U	D.7	666617	AST M 40 40	D.3	671585	DOCS 3125/300	A.34	673270	EP101UCRK02	A.45
666170	CTX 40 02 230 U	D.7	666874	AST LA 230V	D.5	671589	DOCA 4125/030	A.34	673271	EP101UCRK03	A.45
666175	CLS72S41W	D.25	666875	AST LB 230V	D.5	671590	DOC 4125/030	A.34	673272	EP101UCRK04	A.45
666176	CLS72Q41W	D.25	666876	AST LG 230V	D.5	671591	DOCA 4125/300	A.34	673273	EP101UCRK06	A.45
666178	CLS72Q41D	D.25	666877	AST LR 230V	D.5	671592	DOC 4125/300	A.34	673274	EP101UCRK08	A.45
666179	GLX72Q41DW	D.25	666878	AST LW 230V	D.5	671593	DOCS 4125/300	A.34	673275	EP101UCRK10	A.45
666181	GLX DCF	D.23	667000			671597	Hti H	A.35	673276	EP101UCRK13	A.45
666311	PLTS + TD	D.16	667247	EP104TB16	A.47	671598	Hti S	A.35	673277	EP101UCRK16	A.45
666312	GLX Q 21 W 70	D.23	667248	EP101TC25	A.47	671599	Hti H/S	A.35	673278	EP101UCRK20	A.45
666313	GLX Q 22 W 70	D.23	667249	CBT H NO-NC	C.10	671600	Hti HH/HS	A.35	673279	EP101UCRK25	A.45
666314	GLX Q 21 W 100C	D.23	667250	CBT H 2NC	C.10	671602	Hti HSR	A.35	673280	EP101UCRK32	A.45
666315	GLX Q 22 W 100C	D.23	667251	CBT H 2NO	C.10	672000			673281	EP101UCRK40	A.45
666340	AST B 12	D.5	667252	TELE LT-1	C.11	672402	EP101K0,5	A.25	673282	EP101UCRK50	A.45
666341	AST B 230	D.5	667253	TELE LT-2	C.11	672403	EP101K01	A.25	673283	EP101UCRK63	A.45
666342	AST B 24	D.5	667470	SA BLOCK I 35	D.50	672404	EP101K02	A.25	673284	EP102UCRK0,5	A.45
666343	AST L CL	D.5	667471	SA BLOCK I 100 N	D.50	672405	EP101K03	A.25	673285	EP102UCRK01	A.45
666344	AST L GN	D.5	667472	SA BLOCK I PC	D.50	672406	EP101K04	A.25	673286	EP102UCRK1,6	A.45
666345	AST L OR	D.5	667473	SA BLOCK II 15/230	D.50	672407	EP101K06	A.25	673287	EP102UCRK02	A.45
666346	AST L RD	D.5	667474	SA BLOCK II 15/400	D.50	672408	EP101K08	A.25	673288	EP102UCRK03	A.45
666347	AST B	D.5	667475	SA BLOCK II 15/230 C	D.50	672409	EP101K10	A.25	673289	EP102UCRK04	A.45
666348	GLX Q 21 70 ASTRO	D.23	667476	SA BLOCK II 15/400 C	D.50	672411	EP101K16	A.25	673290	EP102UCRK06	A.45
666349	GLX Q 22 70 ASTRO	D.23	667477	SA BLOCK II 40/230	D.50	672412	EP101K20	A.25	673291	EP102UCRK08	A.45
666351	GLX Q 32 Y 800	D.23	667478	SA BLOCK II 40/400	D.50	672413	EP101K25	A.25	673292	EP102UCRK10	A.45
666352	GLX 22 CE	D.23	667479	SA BLOCK II 40/230 C	D.50	672414	EP101K32	A.25	673293	EP102UCRK13	A.45
666353	GLX 30 LAN	D.23	667480	SA BLOCK II 40/400 C	D.50	672415	EP101K40	A.25	673294	EP102UCRK16	A.45
666354	GLX PRG	D.23	667481	SA BLOCK II 15N	D.50	672416	EP101K50	A.25	673295	EP102UCRK20	A.45
666358	LSS LDR	D.27	667482	SA BLOCK II 40N	D.50	672417	EP101K63	A.25	673296	EP102UCRK25	A.45
666361	LSS 11	D.27	667483	SA BLOCK II 15LN	D.50	672434	EP102K0,5	A.25	673297	EP102UCRK32	A.45
666362	LSS 32	D.27	667484	SA BLOCK ADSL	D.50	672435	EP102K01	A.25	673298	EP102UCRK40	A.45
666364	LSS W	D.27	667485	TELE OV 230	D.51	672436	EP102K02	A.25	673299	EP102UCRK50	A.45
666365	LSS 31 LS 1(1)	D.27	667486	SA BLOCK I and II 100	D.50	672437	EP102K03	A.25	673300	EP102UCRK63	A.45
666499	MSC SE	D.5	667487	SA BLOCK I and II 100N	D.50	672438	EP102K04	A.25	673333	EP101UCB06	A.31
666501	MSC SEP	D.5	667488	SA BLOCK II 15/230 LNE	D.50	672439	EP102K06	A.25	673334	EP101UCB10	A.31
666502	MSC SPP	D.5	667489	SA BLOCK II 15/230 LLE	D.50	672440	EP102K08	A.25	673335	EP101UCB16	A.31
666555	AST R ES E	D.3	667490	SA BLOCK II 40/230 LNE	D.50	672441	EP102K10	A.25	673336	EP101UCB20	A.31
666556	AST R ES S	D.3	667491	SA BLOCK II 40/230 LLE	D.50	672443	EP102K16	A.25	673337	EP101UCB25	A.31
666557	AST R TS	D.3	667493	TELE OV 400	D.51	672444	EP102K20	A.25	673338	EP101UCB32	A.31
666558	AST M 100 10	D.3	667494	SA BLOCK II 15/400 3L+NE	D.50	672445	EP102K25	A.25	673339	EP101UCB40	A.31
666559	AST M 100 20	D.3	667495	SA BLOCK II 15/400 4L/NE	D.50	672446	EP102K32	A.25	673340	EP101UCB50	A.31
666560	AST M 100 30	D.3	667496	SA BLOCK II 40/400 3L+NE	D.50	672447	EP102K40	A.25	673341	EP101UCB63	A.31
666561	AST M 100 40	D.3	667497	SA BLOCK II 40/400 4L/NE	D.50	672448	EP102K50	A.25	673342	EP102UCB06	A.31
666562	AST M 63 10	D.3	667498	SA BLOCK II 40/400 4L/NE C	D.50	672449	EP102K63	A.25	673343	EP102UCB10	A.31
666563	AST M 63 20	D.3	667508	SA PHOT 600V	D.51	672450	EP103K0,5	A.25	673344	EP102UCB16	A.31
666564	AST M 63 30	D.3	667509	SA PHOT 1000V	D.51	672451	EP103K01	A.25	673345	EP102UCB20	A.31
666565	AST M 63 40	D.3	667510	SA TV	D.50	672452	EP103K02	A.25	673346	EP102UCB25	A.31
666566	AST M 80 10	D.3	667517	SA BLOCK I and II 65	D.50	672453	EP103K03	A.25	673347	EP102UCB32	A.31
666567	AST M 80 20	D.3	667518	SA BLOCK I and II 65N	D.50	672454	EP103K04	A.25	673348	EP102UCB40	A.31
666568	AST M 80 30	D.3	669000			672455	EP103K06	A.25	673349	EP102UCB50	A.31
666569	AST M 80 40	D.3	669486	EPP	A.50	672456	EP103K08	A.25	673350	EP102UCB63	A.31
666570	AST P 16 01	D.3	671000			672457	EP103K10	A.25	674000		
666571	AST P 16 10	D.3	671504	Hti 101 B080	A.33	672459	EP103K16	A.25	674381	G31C02	A.15
666572	AST P 16 11	D.3	671505	Hti 101 B100	A.33	672460	EP103K20	A.25	674383	G31C04	A.15
666573	AST PL 16 10	D.3	671506	Hti 101 B125	A.33	672461	EP103K25	A.25	674384	G31C06	A.15
666574	AST R 32 20	D.3	671510	Hti 102 B080	A.33	672462	EP103K32	A.25	674386	G31C10	A.15
666575	AST R 32 30	D.3	671511	Hti 102 B100	A.33	672463	EP103K40	A.25	674388	G31C16	A.15
666576	AST R 32 3N	D.3	671512	Hti 102 B125	A.33	672464	EP103K50	A.25	674389	G31C20	A.15
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666579	AST R 40 30	D.3	671518	Hti 103 B125	A.33	672467	EP104K01	A.25	674392	G31C40	A.15
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666583	AST R 63 30	D.3	671528	Hti 101 C080	A.33	672471	EP104K06	A.25	674402	G32C10	A.15
666584	AST R 63 3N	D.3	671529	Hti 101 C100	A.33	672472	EP104K08	A.25	674404	G32C16	A.15
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666597	AST S 32 20	D.3	671554	Hti 101 D125	A.33	672571	CB SH/HH-L	C.5	674424	G33C40	A.15
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666602	AST SL 16 10	D.3	671565	Hti 103 D100	A.33	672576	TELE U-12	C.9	674436	G34C16	A.15
666603	AST SL 16 20	D.3	671566	Hti 103 D125	A.33	672577	TELE U-24	C.9	674437	G34C20	A.15
666604	AST SL 32 10	D.3	671570	Hti 104 D080	A.33	672578	TELE U-48	C.9	674438	G34C25	A.15
666605	AST SL 32 20	D.3	671571	Hti 104 D100	A.33	672580	TELE MP	C.7	674439	G34C32	A.15
666606	AST SZ 16 1	D.3	671572	Hti 104 D125	A.33	672972	CA UN H	C.6	674440	G34C40	A.15



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675034	G101ND02	A.23	675148	GT103C04	A.27	675248	GT102D32	A.27	675356	GT251B40	A.29
675035	G101ND03	A.23	675149	GT103C06	A.27	675249	GT102D40	A.27	675357	GT251B50	A.29
675036	G101ND04	A.23	675151	GT103C10	A.27	675250	GT102D50	A.27	675358	GT251B63	A.29
675037	G101ND06	A.23	675152	GT103C13	A.27	675251	GT102D63	A.27	675359	GT252B06	A.29
675039	G101ND10	A.23	675153	GT103C16	A.27	675252	GT103D0.5	A.27	675361	GT252B10	A.29
675040	G101ND13	A.23	675154	GT103C20	A.27	675253	GT103D01	A.27	675363	GT252B16	A.29
675041	G101ND16	A.23	675155	GT103C25	A.27	675254	GT103D02	A.27	675364	GT252B20	A.29
675042	G101ND20	A.23	675156	GT103C32	A.27	675255	GT103D03	A.27	675365	GT252B25	A.29
675043	G101ND25	A.23	675157	GT103C40	A.27	675256	GT103D04	A.27	675366	GT252B32	A.29
675044	G101ND32	A.23	675158	GT103C50	A.27	675257	GT103D06	A.27	675367	GT252B40	A.29
675045	G101ND40	A.23	675159	GT103C63	A.27	675259	GT103D10	A.27	675368	GT252B50	A.29
675046	G101ND50	A.23	675160	GT104C0.5	A.27	675260	GT103D13	A.27	675369	GT252B63	A.29
675047	G101ND63	A.23	675161	GT104C01	A.27	675261	GT103D16	A.27	675370	GT253B06	A.29
675048	G102D0.5	A.23	675162	GT104C02	A.27	675262	GT103D20	A.27	675372	GT253B10	A.29
675049	G102D01	A.23	675163	GT104C03	A.27	675263	GT103D25	A.27	675374	GT253B16	A.29
675050	G102D02	A.23	675164	GT104C04	A.27	675264	GT103D32	A.27	675375	GT253B20	A.29
675051	G102D03	A.23	675165	GT104C06	A.27	675265	GT103D40	A.27	675376	GT253B25	A.29
675052	G102D04	A.23	675167	GT104C10	A.27	675266	GT103D50	A.27	675377	GT253B32	A.29
675053	G102D06	A.23	675168	GT104C13	A.27	675267	GT103D63	A.27	675378	GT253B40	A.29
675055	G102D10	A.23	675169	GT104C16	A.27	675268	GT104D0.5	A.27	675379	GT253B50	A.29
675056	G102D13	A.23	675170	GT104C20	A.27	675269	GT104D01	A.27	675380	GT253B63	A.29
675057	G102D16	A.23	675171	GT104C25	A.27	675270	GT104D02	A.27	675381	GT254B06	A.29
675058	G102D20	A.23	675172	GT104C32	A.27	675271	GT104D03	A.27	675383	GT254B10	A.29
675059	G102D25	A.23	675173	GT104C40	A.27	675272	GT104D04	A.27	675385	GT254B16	A.29
675060	G102D32	A.23	675174	GT104C50	A.27	675273	GT104D06	A.27	675386	GT254B20	A.29
675061	G102D40	A.23	675175	GT104C63	A.27	675275	GT104D10	A.27	675387	GT254B25	A.29
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675063	G102D63	A.23	675178	GT101B10	A.27	675277	GT104D16	A.27	675389	GT254B40	A.29
675064	G103D0.5	A.23	675179	GT101B13	A.27	675278	GT104D20	A.27	675390	GT254B50	A.29
675065	G103D01	A.23	675180	GT101B16	A.27	675279	GT104D25	A.27	675391	GT254B63	A.29
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675068	G103D04	A.23	675183	GT101B32	A.27	675282	GT104D50	A.27	675394	GT251D02	A.29
675069	G103D06	A.23	675184	GT101B40	A.27	675283	GT104D63	A.27	675396	GT251D04	A.29
675071	G103D10	A.23	675185	GT101B50	A.27	675284	GT251C0.5	A.29	675397	GT251D06	A.29
675072	G103D13	A.23	675186	GT101B63	A.27	675285	GT251C01	A.29	675399	GT251D10	A.29
675073	G103D16	A.23	675187	GT102B06	A.27	675286	GT251C02	A.29	675401	GT251D16	A.29
675074	G103D20	A.23	675189	GT102B10	A.27	675288	GT251C04	A.29	675402	GT251D20	A.29
675075	G103D25	A.23	675190	GT102B13	A.27	675289	GT251C06	A.29	675403	GT251D25	A.29
675076	G103D32	A.23	675191	GT102B16	A.27	675291	GT251C10	A.29	675404	GT251D32	A.29
675077	G103D40	A.23	675192	GT102B20	A.27	675293	GT251C16	A.29	675405	GT251D40	A.29
675078	G103D50	A.23	675193	GT102B25	A.27	675294	GT251C20	A.29	675406	GT251D50	A.29
675079	G103D63	A.23	675194	GT102B32	A.27	675295	GT251C25	A.29	675407	GT251D63	A.29
675080	G104D0.5	A.23	675195	GT102B40	A.27	675296	GT251C32	A.29	675408	GT252D0.5	A.29
675081	G104D01	A.23	675196	GT102B50	A.27	675297	GT251C40	A.29	675409	GT252D01	A.29
675082	G104D02	A.23	675197	GT102B63	A.27	675298	GT251C50	A.29	675410	GT252D02	A.29
675083	G104D03	A.23	675198	GT103B06	A.27	675299	GT251C63	A.29	675412	GT252D04	A.29
675084	G104D04	A.23	675200	GT103B10	A.27	675300	GT252C0.5	A.29	675413	GT252D06	A.29
675085	G104D06	A.23	675201	GT103B13	A.27	675301	GT252C01	A.29	675415	GT252D10	A.29
675087	G104D10	A.23	675202	GT103B16	A.27	675302	GT252C02	A.29	675417	GT252D16	A.29
675088	G104D13	A.23	675203	GT103B20	A.27	675304	GT252C04	A.29	675418	GT252D20	A.29
675089	G104D16	A.23	675204	GT103B25	A.27	675305	GT252C06	A.29	675419	GT252D25	A.29
675090	G104D20	A.23	675205	GT103B32	A.27	675307	GT252C10	A.29	675420	GT252D32	A.29
675091	G104D25	A.23	675206	GT103B40	A.27	675309	GT252C16	A.29	675421	GT252D40	A.29
675092	G104D32	A.23	675207	GT103B50	A.27	675310	GT252C20	A.29	675422	GT252D50	A.29
675093	G104D40	A.23	675208	GT103B63	A.27	675311	GT252C25	A.29	675423	GT252D63	A.29
675094	G104D50	A.23	675209	GT104B06	A.27	675312	GT252C32	A.29	675424	GT253D0.5	A.29
675095	G104D63	A.23	675211	GT104B10	A.27	675313	GT252C40	A.29	675425	GT253D01	A.29
675112	GT101C0.5	A.27	675212	GT104B13	A.27	675314	GT252C50	A.29	675426	GT253D02	A.29
675113	GT101C01	A.27	675213	GT104B16	A.27	675315	GT252C63	A.29	675428	GT253D04	A.29
675114	GT101C02	A.27	675214	GT104B20	A.27	675316	GT253C0.5	A.29	675429	GT253D06	A.29
675115	GT101C03	A.27	675215	GT104B25	A.27	675317	GT253C01	A.29	675431	GT253D10	A.29
675116	GT101C04	A.27	675216	GT104B32	A.27	675318	GT253C02	A.29	675433	GT253D16	A.29
675117	GT101C06	A.27	675217	GT104B40	A.27	675320	GT253C04	A.29	675434	GT253D20	A.29
675119	GT101C10	A.27	675218	GT104B50	A.27	675321	GT253C06	A.29	675435	GT253D25	A.29
675120	GT101C13	A.27	675219	GT104B63	A.27	675323	GT253C10	A.29	675436	GT253D32	A.29
675121	GT101C16	A.27	675220	GT101D0.5	A.27	675325	GT253C16	A.29	675437	GT253D40	A.29
675122	GT101C20	A.27	675221	GT101D01	A.27	675326	GT253C20	A.29	675438	GT253D50	A.29
675123	GT101C25	A.27	675222	GT101D02	A.27	675327	GT253C25	A.29	675439	GT253D63	A.29
675124	GT101C32	A.27	675223	GT101D03	A.27	675328	GT253C32	A.29	675440	GT254D0.5	A.29
675125	GT101C40	A.27	675224	GT101D04	A.27	675329	GT253C40	A.29	675441	GT254D01	A.29

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675444	GT254D04	A.29	677195	REC TOP EP104 B16	B.47	678246	EPP63C20	A.77	678338	EPP103NC32	A.79
675445	GT254D06	A.29	677196	REC TOP EP104 B20	B.47	678247	EPP63C25	A.77	678339	EPP103NC40	A.79
675447	GT254D10	A.29	677197	REC TOP EP104 B25	B.47	678248	EPP63C32	A.77	678340	EPP103NC50	A.79
675449	GT254D16	A.29	677198	REC TOP EP104 B32	B.47	678249	EPP63C40	A.77	678341	EPP103NC63	A.79
675450	GT254D20	A.29	677199	REC TOP EP104 B40	B.47	678250	EPP63C50	A.77	678359	FPPA225/030	B.36
675451	GT254D25	A.29	678000			678251	EPP63C63	A.77	678360	FPPA240/030	B.36
675452	GT254D32	A.29	678026	REC TOP EP104 B50	B.47	678252	EPP63NC06	A.77	678361	FPPA263/030	B.36
675453	GT254D40	A.29	678027	REC TOP EP104 B63	B.47	678253	EPP63NC10	A.77	678362	FPPA425/030	B.36
675454	GT254D50	A.29	678028	REC TOP EP104 C10	B.47	678254	EPP63NC13	A.77	678363	FPPA440/030	B.36
675455	GT254D63	A.29	678029	REC TOP EP104 C16	B.47	678255	EPP63NC16	A.77	678364	FPPA463/030	B.36
676000			678030	REC TOP EP104 C20	B.47	678256	EPP63NC20	A.77	678365	FPPA225/100	B.36
676986	REC2 A 225/30	B.43	678031	REC TOP EP104 C25	B.47	678257	EPP63NC25	A.77	678366	FPPA240/100	B.36
676987	REC2 A 240/30	B.43	678032	REC TOP EP104 C32	B.47	678258	EPP63NC32	A.77	678367	FPPA263/100	B.36
676988	REC2 A 263/30	B.43	678033	REC TOP EP104 C40	B.47	678259	EPP63NC40	A.77	678368	FPPA425/100	B.36
676989	REC2 A 280/30	B.43	678034	REC TOP EP104 C50	B.47	678260	EPP63NC50	A.77	678369	FPPA440/100	B.36
676990	REC2 A 2100/30	B.43	678035	REC TOP EP104 C63	B.47	678261	EPP63NC63	A.77	678370	FPPA463/100	B.36
676991	REC2 Ai 225/30	B.43	678036	REC TOP TT 25	B.47	678262	EPP101B06	A.79	678371	FPPA225/300	B.36
676992	REC2 Ai 240/30	B.43	678037	REC TOP TT 35	B.47	678263	EPP101B10	A.79	678372	FPPA240/300	B.36
676993	REC2 Ai 263/30	B.43	678172	EPP61B06	A.77	678264	EPP101B13	A.79	678373	FPPA263/300	B.36
676994	REC2 A 225/300	B.43	678173	EPP61B10	A.77	678265	EPP101B16	A.79	678374	FPPA425/300	B.36
676995	REC2 A 240/300	B.43	678174	EPP61B13	A.77	678266	EPP101B20	A.79	678375	FPPA440/300	B.36
676996	REC2 A 263/300	B.43	678175	EPP61B16	A.77	678267	EPP101B25	A.79	678376	FPPA463/300	B.36
676997	REC2 A 280/300	B.43	678176	EPP61B20	A.77	678268	EPP101B32	A.79	678377	FPPS240/300	B.36
676998	REC2 A 2100/300	B.43	678177	EPP61B25	A.77	678269	EPP101B40	A.79	678378	FPPS263/300	B.36
676999	REC2 S 240/300	B.43	678178	EPP61B32	A.77	678270	EPP101B50	A.79	678379	FPPS440/300	B.36
677000			678179	EPP61B40	A.77	678271	EPP101B63	A.79	678380	FPPS463/300	B.36
677039	REC2 S 263/300	B.43	678180	EPP61B50	A.77	678272	EPP102B06	A.79	678705	EPP64B06	A.77
677040	REC2 S 280/300	B.43	678181	EPP61B63	A.77	678273	EPP102B10	A.79	678706	EPP64B10	A.77
677041	REC2 S 2100/300	B.43	678182	EPP62B06	A.77	678274	EPP102B13	A.79	678707	EPP64B13	A.77
677042	REC2 A 425/30	B.43	678183	EPP62B10	A.77	678275	EPP102B16	A.79	678708	EPP64B16	A.77
677043	REC2 A 440/30	B.43	678184	EPP62B13	A.77	678276	EPP102B20	A.79	678709	EPP64B20	A.77
677044	REC2 A 463/30	B.43	678185	EPP62B16	A.77	678277	EPP102B25	A.79	678710	EPP64B25	A.77
677045	REC2 A 480/30	B.43	678186	EPP62B20	A.77	678278	EPP102B32	A.79	678711	EPP64B32	A.77
677046	REC2 A 4100/30	B.43	678187	EPP62B25	A.77	678279	EPP102B40	A.79	678712	EPP64B40	A.77
677047	REC2 Ai 425/30	B.43	678188	EPP62B32	A.77	678280	EPP102B50	A.79	678713	EPP64B50	A.77
677048	REC2 Ai 440/30	B.43	678189	EPP62B40	A.77	678281	EPP102B63	A.79	678714	EPP64B63	A.77
677049	REC2 Ai 463/30	B.43	678190	EPP62B50	A.77	678282	EPP103B06	A.79	678715	EPP64C06	A.77
677050	REC2 A 425/300	B.43	678191	EPP62B63	A.77	678283	EPP103B10	A.79	678716	EPP64C10	A.77
677071	REC2 A 440/300	B.43	678192	EPP63B06	A.77	678284	EPP103B13	A.79	678717	EPP64C13	A.77
677072	REC2 A 463/300	B.43	678193	EPP63B10	A.77	678285	EPP103B16	A.79	678718	EPP64C16	A.77
677073	REC2 A 480/300	B.43	678194	EPP63B13	A.77	678286	EPP103B20	A.79	678719	EPP64C20	A.77
677074	REC2 A 4100/300	B.43	678195	EPP63B16	A.77	678287	EPP103B25	A.79	678720	EPP64C25	A.77
677075	REC2 S 440/300	B.43	678196	EPP63B20	A.77	678288	EPP103B32	A.79	678721	EPP64C32	A.77
677076	REC2 S 463/300	B.43	678197	EPP63B25	A.77	678289	EPP103B40	A.79	678722	EPP64C40	A.77
677077	REC2 S 480/300	B.43	678198	EPP63B32	A.77	678290	EPP103B50	A.79	678723	EPP64C50	A.77
677098	REC2 S 4100/300	B.43	678199	EPP63B40	A.77	678291	EPP103B63	A.79	678724	EPP64C63	A.77
677132	Tele REC PLUS Motor	B.48	678200	EPP63B50	A.77	678292	EPP103NB06	A.79	678725	EPP104B06	A.79
677150	REC2 DPCA100C10/030	B.45	678201	EPP63B63	A.77	678293	EPP103NB10	A.79	678726	EPP104B10	A.79
677151	REC2 DPCA100C16/030	B.45	678202	EPP63NB06	A.77	678294	EPP103NB13	A.79	678727	EPP104B13	A.79
677152	REC2 DPCA100C20/030	B.45	678203	EPP63NB10	A.77	678295	EPP103NB16	A.79	678728	EPP104B16	A.79
677153	REC2 DPCA100C25/030	B.45	678204	EPP63NB13	A.77	678296	EPP103NB20	A.79	678729	EPP104B20	A.79
677154	REC2 DPCA100C32/030	B.45	678205	EPP63NB16	A.77	678297	EPP103NB25	A.79	678730	EPP104B25	A.79
677155	REC2 DPCA100C40/030	B.45	678206	EPP63NB20	A.77	678298	EPP103NB32	A.79	678731	EPP104B32	A.79
677156	REC2 DPCA100C10/300	B.45	678207	EPP63NB25	A.77	678299	EPP103NB40	A.79	678732	EPP104B40	A.79
677157	REC2 DPCA100C16/300	B.45	678208	EPP63NB32	A.77	678300	EPP103NB50	A.79	678733	EPP104B50	A.79
677158	REC2 DPCA100C20/300	B.45	678209	EPP63NB40	A.77	678301	EPP103NB63	A.79	678734	EPP104B63	A.79
677159	REC2 DPCA100C25/300	B.45	678210	EPP63NB50	A.77	678302	EPP101C06	A.79	678735	EPP104C06	A.79
677160	REC2 DPCA100C32/300	B.45	678211	EPP63NB63	A.77	678303	EPP101C10	A.79	678736	EPP104C10	A.79
677161	REC2 DPCA100C40/300	B.45	678212	EPP61C06	A.77	678304	EPP101C13	A.79	678737	EPP104C13	A.79
677162	REC2 DPCA100C10/030	B.45	678213	EPP61C10	A.77	678305	EPP101C16	A.79	678738	EPP104C16	A.79
677163	REC2 DPCA100C16/030	B.45	678214	EPP61C13	A.77	678306	EPP101C20	A.79	678739	EPP104C20	A.79
677164	REC2 DPCA100C20/030	B.45	678215	EPP61C16	A.77	678307	EPP101C25	A.79	678740	EPP104C25	A.79
677165	REC2 DPCA100C32/030	B.45	678216	EPP61C20	A.77	678308	EPP101C32	A.79	678741	EPP104C32	A.79
677166	REC2 DPCA100C32/030	B.45	678217	EPP61C25	A.77	678309	EPP101C40	A.79	678742	EPP104C40	A.79
677167	REC2 DPCA100C40/030	B.45	678218	EPP61C32	A.77	678310	EPP101C50	A.79	678743	EPP104C50	A.79
677168	REC2 DPCA100C10/300	B.45	678219	EPP61C40	A.77	678311	EPP101C63	A.79	678744	EPP104C63	A.79
677169	REC2 DPCA100C16/300	B.45	678220	EPP61C50	A.77	678312	EPP102C06	A.79	680000		
677170	REC2 DPCA100C20/300	B.45	678221	EPP61C63	A.77	678313	EPP102C10	A.79	680565	EP102UCRC0,5	A.45
677171	REC2 DPCA100C25/300	B.45	678222	EPP61NC06	A.77	678314	EPP102C13	A.79	680566	EP102UCRC01	A.45
677172	REC2 DPCA100C32/300	B.45	678223	EPP61NC10	A.77	678315	EPP102C16	A.79	680567	EP102UCRC02	A.45
677173	REC2 DPCA100C40/300	B.45	678224	EPP61NC13	A.77	678316	EPP102C20	A.79	680568	EP102UCRC04	A.45
677174	REC2 DPCA100B10/030	B.45	678225	EPP61NC16	A.77	678317	EPP102C25	A.79	680569	EP102UCRC06	A.45
677175	REC2 DPCA100B16/030	B.45	678226	EPP61NC20	A.77	678318	EPP102C32	A.79	680570	EP102UCRC10	A.45
677176	REC2 DPCA100B20/030	B.45	678227	EPP61NC25	A.77	678319	EPP102C40	A.79	680571	EP102UCRC16	A.45
677177	REC2 DPCA100B25/030	B.45	678228	EPP61NC32	A.77	678320	EPP102C50	A.79	680572	EP102UCRC20	A.45
677178	REC2 DPCA100B32/030	B.45	678229	EPP61NC40	A.77	678321	EPP102C63	A.79	680573	EP102UCRC25	A.45
677179	REC2 DPCA100B40/030	B.45	678230	EPP61NC50	A.77	678322	EPP103C06	A.79	680574	EP102UCRC32	A.45
677180	REC2 DPCA100B10/300										

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681462	EP103C01RAIL	A.43	681631	EP62K63	A.21	686062	CTX + R 16 40 048 A	D.11	686154	PLS + C 16 3 230 A	D.15
681463	EP103C02RAIL	A.43	681632	EP63K0.5	A.21	686063	CTX + R 16 40 23060	D.11	686155	PLS + C 16 3 240 A	D.15
681464	EP103C03RAIL	A.43	681633	EP63K01	A.21	686064	CTX + R 16 40 230 A	D.11	686156	PLS + C 32 10 008 A	D.15
681465	EP103C04RAIL	A.43	681634	EP63K1.6	A.21	686065	CTX + R 16 40 240 A	D.11	686157	PLS + C 32 10 012 A	D.15
681466	EP103C06RAIL	A.43	681635	EP63K02	A.21	686066	CTX + R 5 02	D.15	686158	PLS + C 32 10 024 A	D.15
681467	EP103C10RAIL	A.43	681636	EP63K03	A.21	686067	CTX + R 5 11	D.15	686159	PLS + C 32 10 048 A	D.15
681468	EP103C16RAIL	A.43	681637	EP63K04	A.21	686068	CTX + R 5 20	D.15	686160	PLS + C 32 10 230 A	D.15
681469	EP103C20RAIL	A.43	681638	EP63K06	A.21	686069	PLS / CTX SP	A.50	686161	PLS + C 32 10 240 A	D.15
681470	EP103C25RAIL	A.43	681639	EP63K08	A.21	686070	PLS + / CTX + TS 1	D.15	686162	PLS + C 32 20 008 A	D.15
681471	EP103C32RAIL	A.43	681640	EP63K10	A.21	686071	PLS + 16 1 008 A	D.14	686163	PLS + C 32 20 012 A	D.15
681472	EP103C40RAIL	A.43	681641	EP63K16	A.21	686072	PLS + 16 1 012 A	D.14	686164	PLS + C 32 20 024 A	D.15
681473	EP103C50RAIL	A.43	681642	EP63K20	A.21	686073	PLS + 16 1 024 A	D.14	686165	PLS + C 32 20 048 A	D.15
681474	EP103C63RAIL	A.43	681643	EP63K25	A.21	686074	PLS + 16 1 048 A	D.14	686166	PLS + C 32 20 230 A	D.15
681475	EP101RucB06	A.45	681644	EP63K32	A.21	686075	PLS + 16 1 115 A	D.14	686167	PLS + C 32 20 240 A	D.15
681476	EP101RucB10	A.45	681645	EP63K40	A.21	686076	PLS + 16 1 230 A	D.14	686168	PLS + C 32 30 008 A	D.15
681477	EP101RucB16	A.45	681646	EP63K50	A.21	686077	PLS + 16 1 240 A	D.14	686169	PLS + C 32 30 012 A	D.15
681478	EP101RucB20	A.45	681647	EP63K63	A.21	686078	PLS + 16 10 008 A	D.14	686170	PLS + C 32 30 024 A	D.15
681479	EP101RucB25	A.45	681648	EP64K0.5	A.21	686079	PLS + 16 10 012 A	D.14	686171	PLS + C 32 30 048 A	D.15
681480	EP101RucB32	A.45	681649	EP64K01	A.21	686080	PLS + 16 10 024 A	D.14	686172	PLS + C 32 30 230 A	D.15
681481	EP101RucB40	A.45	681650	EP64K1.6	A.21	686081	PLS + 16 10 048 A	D.14	686173	PLS + C 32 30 240 A	D.15
681482	EP101RucB50	A.45	681651	EP64K02	A.21	686082	PLS + 16 10 115 A	D.14	686174	PLS + CAP	D.15
681483	EP101RucB63	A.45	681652	EP64K03	A.21	686083	PLS + 16 10 230 A	D.14	686175	PLS + M	D.15
681484	EP102RucB06	A.45	681653	EP64K04	A.21	686084	PLS + 16 10 240 A	D.14	686176	PLS + PU 16 2 024 A	D.15
681485	EP102RucB10	A.45	681654	EP64K06	A.21	686085	PLS + 16 11	D.14	686177	PLS + PU 16 2 230 A	D.15
681486	EP102RucB16	A.45	681655	EP64K08	A.21	686086	PLS + 16 11 008 A	D.14	686178	PLS + PU 16 20 024 A	D.15
681487	EP102RucB20	A.45	681656	EP64K10	A.21	686087	PLS + 16 11 012 A	D.14	686179	PLS + PU 16 20 230 A	D.15
681488	EP102RucB25	A.45	681657	EP64K16	A.21	686088	PLS + 16 11 024 A	D.14	686180	PLS + PU 16 40 024 A	D.15
681489	EP102RucB32	A.45	681658	EP64K20	A.21	686089	PLS + 16 11 048 A	D.14	686181	PLS + PU 16 40 230 A	D.15
681490	EP102RucB40	A.45	681659	EP64K25	A.21	686090	PLS + 16 11 115 A	D.14	686182	PLS + SA 16 20 012 A	D.14
681491	EP102RucB50	A.45	681660	EP64K32	A.21	686091	PLS + 16 11 230 A	D.14	686183	PLS + SA 16 20 024 A	D.14
681492	EP102RucB63	A.45	681661	EP64K40	A.21	686092	PLS + 16 11 240 A	D.14	686184	PLS + SA 16 20 048 A	D.14
681493	EP101RucC0.5	A.45	681662	EP64K50	A.21	686093	PLS + 16 2 008 A	D.14	686185	PLS + SA 16 20 230 A	D.14
681494	EP101RucC01	A.45	681663	EP64K63	A.21	686094	PLS + 16 2 012 A	D.14	686186	PLS + SA 16 20 240 A	D.14
681495	EP101RucC02	A.45	686000			686095	PLS + 16 2 024 A	D.14	686187	PLS + SB 16 20 012 A	D.14
681496	EP101RucC04	A.45	686000	CTX + R 16 1 008 A	D.11	686096	PLS + 16 2 048 A	D.14	686188	PLS + SB 16 20 024 A	D.14
681497	EP101RucC06	A.45	686001	CTX + R 16 1 012 A	D.11	686097	PLS + 16 2 115 A	D.14	686189	PLS + SB 16 20 048 A	D.14
681498	EP101RucC10	A.45	686002	CTX + R 16 1 024 A	D.11	686098	PLS + 16 2 230 A	D.14	686190	PLS + SB 16 20 230 A	D.14
681499	EP101RucC16	A.45	686003	CTX + R 16 1 048 A	D.11	686099	PLS + 16 2 240 A	D.14	686191	PLS + SB 16 20 240 A	D.14
681500	EP101RucC20	A.45	686004	CTX + R 16 1 115 A	D.11	686100	PLS + 16 20	D.14	686192	PLS + SG	D.15
681501	EP101RucC25	A.45	686005	CTX + R 16 1 230 A	D.11	686101	PLS + 16 2	D.14	686195	PLT + AS 230A	D.19
681502	EP101RucC32	A.45	686006	CTX + R 16 1 240 A	D.11	686102	PLS + 16 20 008 A	D.14	686196	PLT + IG 024U	D.19
681503	EP101RucC40	A.45	686007	CTX + R 16 10 008 A	D.11	686103	PLS + 16 20 012 A	D.14	686197	PLT + IG 230A	D.19
681504	EP101RucC50	A.45	686008	CTX + R 16 10 012 A	D.11	686104	PLS + 16 20 024 A	D.14	686198	PLT + MF 024U 0.1S-60M	D.19
681505	EP101RucC63	A.45	686009	CTX + R 16 10 024 A	D.11	686105	PLS + 16 20 048 A	D.14	686199	PLT + MF 024U 30S-20H	D.19
681506	EP102RucC0.5	A.45	686010	CTX + R 16 10 048 A	D.11	686106	PLS + 16 20 115 A	D.14	686200	PLT + MF 230A 0.1S-60M	D.19
681507	EP102RucC01	A.45	686011	CTX + R 16 10 115 A	D.11	686107	PLS + 16 20 23060	D.14	686201	PLT + MF 230A 30S-20H	D.19
681508	EP102RucC02	A.45	686012	CTX + R 16 10 23060	D.11	686108	PLS + 16 20 230 A	D.14	686202	PLT + OF 024U 1-60M	D.19
681509	EP102RucC04	A.45	686013	CTX + R 16 10 230 A	D.11	686109	PLS + 16 20 240 A	D.14	686203	PLT + OF 024U 1-60S	D.19
681510	EP102RucC06	A.45	686014	CTX + R 16 10 240 A	D.11	686110	PLS + 32 10 008 A	D.14	686204	PLT + OF 230A 1-60M	D.19
681511	EP102RucC10	A.45	686015	CTX + R 16 11 008 A	D.11	686111	PLS + 32 10 012 A	D.14	686205	PLT + OF 230A 1-60S	D.19
681512	EP102RucC16	A.45	686016	CTX + R 16 11 012 A	D.11	686112	PLS + 32 10 024 A	D.14	686206	PLT + ON 024U 1-60M	D.19
681513	EP102RucC20	A.45	686017	CTX + R 16 11 024 A	D.11	686113	PLS + 32 10 048 A	D.14	686207	PLT + ON 024U 1-60S	D.19
681514	EP102RucC25	A.45	686018	CTX + R 16 11 048 A	D.11	686114	PLS + 32 10 115 A	D.14	686208	PLT + ON 230A 1-60M	D.19
681515	EP102RucC32	A.45	686019	CTX + R 16 11 115 A	D.11	686115	PLS + 32 10 230 A	D.14	686209	PLT + ON 230A 1-60S	D.19
681516	EP102RucC40	A.45	686020	CTX + R 16 11 23060	D.11	686116	PLS + 32 10 240 A	D.14	686210	PLT + PS 024U 1-60M	D.19
681517	EP102RucC50	A.45	686021	CTX + R 16 11 230 A	D.11	686117	PLS + 32 20	D.14	686211	PLT + PS 024U 1-60S	D.19
681518	EP102RucC63	A.45	686022	CTX + R 16 11 240 A	D.11	686118	PLS + 32 20 008 A	D.14	686212	PLT + PS 230A 1-60M	D.19
681588	EP101K1.6	A.25	686023	CTX + R 16 2 008 A	D.11	686119	PLS + 32 20 012 A	D.14	686213	PLT + PS 230A 1-60S	D.19
681591	EP102K1.6	A.25	686024	CTX + R 16 2 012 A	D.11	686120	PLS + 32 20 024 A	D.14	686214	PLTS + D	D.16
681594	EP103K1.6	A.25	686025	CTX + R 16 40 008 A	D.11	686121	PLS + 32 20 048 A	D.14	686216	PLTS + M	D.16
681597	EP104K1.6	A.25	686026	CTX + R 16 2 024 A	D.11	686122	PLS + 32 20 115 A	D.14	686218	PLT + SS 024U	D.19
681600	EP61K0.5	A.21	686027	CTX + R 16 22 008 A	D.11	686123	PLS + 32 20 230 A	D.14	686219	PLT + SS 230A	D.19
681601	EP61K01	A.21	686028	CTX + R 16 2 048 A	D.11	686124	PLS + 32 20 240 A	D.14	686284	PLS + 16 10 23060	D.14
681602	EP61K1.6	A.21	686030	CTX + R 16 2 115 A	D.11	686125	PLS + C	D.15	686285	PLS + 16 11 23060	D.14
681603	EP61K02	A.21	686032	CTX + R 16 2 230 A	D.11	686126	PLS + C 16 1 008 A	D.15	686601	EP61ULB06	A.37
681604	EP61K03	A.21	686034	CTX + R 16 2 240 A	D.11	686127	PLS + C 16 1 012 A	D.15	686602	EP61ULB10	A.37
681605	EP61K04	A.21	686036	CTX + R 16 20 008 A	D.11	686128	PLS + C 16 1 024 A	D.15	686605	EP61ULB16	A.37
681606	EP61K06	A.21	686037	CTX + R 16 20 012 A	D.11	686129	PLS + C 16 1 048 A	D.15	686606	EP61ULB20	A.37
681607	EP61K08	A.21	686038	CTX + R 16 20 024 A	D.11	686130	PLS + C 16 1 230 A	D.15	686607	EP61ULB25	A.37
681608	EP61K10	A.21	686039	CTX + R 16 20 048 A	D.11	686131	PLS + C 16 1 24				

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686644	EP64ULB10	A.37	686780	EP63ULD16	A.37	686917	EP103ULC40	A.39	690230	EP102ULHB20	A.41
686647	EP64ULB16	A.37	686781	EP63ULD20	A.37	686918	EP103ULC50	A.39	690231	EP102ULHB25	A.41
686648	EP64ULB20	A.37	686782	EP63ULD25	A.37	686920	EP103ULC63	A.39	690232	EP102ULHB30	A.41
686649	EP64ULB25	A.37	686784	EP63ULD32	A.37	686921	EP104ULC0.5	A.39	690233	EP102ULHB32	A.41
686651	EP64ULB32	A.37	686785	EP63ULD40	A.37	686922	EP104ULC01	A.39	690235	EP103ULHB06	A.41
686652	EP64ULB40	A.37	686786	EP63ULD50	A.37	686923	EP104ULC02	A.39	690236	EP103ULHB10	A.41
686653	EP64ULB50	A.37	686788	EP63ULD63	A.37	686925	EP104ULC04	A.39	690239	EP103ULHB16	A.41
686655	EP64ULB63	A.37	686789	EP64ULD0.5	A.37	686927	EP104ULC06	A.39	690240	EP103ULHB20	A.41
686656	EP61ULC0.5	A.37	686790	EP64ULD01	A.37	686928	EP104ULC10	A.39	690241	EP103ULHB25	A.41
686657	EP61ULC01	A.37	686791	EP64ULD02	A.37	686931	EP104ULC16	A.39	690243	EP103ULHB32	A.41
686658	EP61ULC02	A.37	686793	EP64ULD04	A.37	686932	EP104ULC20	A.39	690244	WUL	A.41
686660	EP61ULC04	A.37	686795	EP64ULD06	A.37	686933	EP104ULC25	A.39	690265	EP101ULHC0.5	A.41
686662	EP61ULC06	A.37	686796	EP64ULD10	A.37	686935	EP104ULC32	A.39	690266	EP101ULHC01	A.41
686663	EP61ULC10	A.37	686799	EP64ULD16	A.37	686936	EP104ULC40	A.39	690267	EP101ULHC02	A.41
686666	EP61ULC16	A.37	686800	EP64ULD20	A.37	686937	EP104ULC50	A.39	690269	EP101ULHC04	A.41
686667	EP61ULC20	A.37	686801	EP64ULD25	A.37	686939	EP104ULC63	A.39	690270	EP101ULHC05	A.41
686668	EP61ULC25	A.37	686803	EP64ULD32	A.37	686940	EP101ULD0.5	A.39	690271	EP101ULHC06	A.41
686670	EP61ULC32	A.37	686804	EP64ULD40	A.37	686941	EP101ULD01	A.39	690273	EP101ULHC10	A.41
686671	EP61ULC40	A.37	686805	EP64ULD50	A.37	686942	EP101ULD02	A.39	690274	EP101ULHC13	A.41
686672	EP61ULC50	A.37	686807	EP64ULD63	A.37	686944	EP101ULD04	A.39	690275	EP101ULHC15	A.41
686674	EP61ULC63	A.37	686809	EP101ULB06	A.39	686946	EP101ULD06	A.39	690276	EP101ULHC16	A.41
686675	EP62ULC0.5	A.37	686810	EP101ULB10	A.39	686947	EP101ULD10	A.39	690277	EP101ULHC20	A.41
686676	EP62ULC01	A.37	686813	EP101ULB16	A.39	686950	EP101ULD16	A.39	690278	EP101ULHC25	A.41
686677	EP62ULC02	A.37	686814	EP101ULB20	A.39	686951	EP101ULD20	A.39	690279	EP101ULHC30	A.41
686679	EP62ULC04	A.37	686815	EP101ULB25	A.39	686952	EP101ULD25	A.39	690280	EP101ULHC32	A.41
686681	EP62ULC06	A.37	686817	EP101ULB32	A.39	686954	EP101ULD32	A.39	690281	EP102ULHC0.5	A.41
686682	EP62ULC10	A.37	686818	EP101ULB40	A.39	686955	EP101ULD40	A.39	690282	EP102ULHC01	A.41
686685	EP62ULC16	A.37	686819	EP101ULB50	A.39	686956	EP101ULD50	A.39	690283	EP102ULHC02	A.41
686686	EP62ULC20	A.37	686821	EP101ULB63	A.39	686958	EP101ULD63	A.39	690285	EP102ULHC04	A.41
686687	EP62ULC25	A.37	686823	EP102ULB06	A.39	686959	EP102ULD0.5	A.39	690286	EP102ULHC05	A.41
686689	EP62ULC32	A.37	686824	EP102ULB10	A.39	686960	EP102ULD01	A.39	690287	EP102ULHC06	A.41
686690	EP62ULC40	A.37	686827	EP102ULB16	A.39	686961	EP102ULD02	A.39	690289	EP102ULHC10	A.41
686691	EP62ULC50	A.37	686828	EP102ULB20	A.39	686963	EP102ULD04	A.39	690290	EP102ULHC13	A.41
686693	EP62ULC63	A.37	686829	EP102ULB25	A.39	686965	EP102ULD06	A.39	690291	EP102ULHC15	A.41
686694	EP63ULC0.5	A.37	686831	EP102ULB32	A.39	686966	EP102ULD10	A.39	690292	EP102ULHC16	A.41
686695	EP63ULC01	A.37	686832	EP102ULB40	A.39	686969	EP102ULD16	A.39	690293	EP102ULHC20	A.41
686696	EP63ULC02	A.37	686833	EP102ULB50	A.39	686970	EP102ULD20	A.39	690294	EP102ULHC25	A.41
686698	EP63ULC04	A.37	686835	EP102ULB63	A.39	686971	EP102ULD25	A.39	690295	EP102ULHC30	A.41
686700	EP63ULC06	A.37	686837	EP103ULB06	A.39	686973	EP102ULD32	A.39	690296	EP102ULHC32	A.41
686701	EP63ULC10	A.37	686838	EP103ULB10	A.39	686974	EP102ULD40	A.39	690297	EP103ULHC0.5	A.41
686704	EP63ULC16	A.37	686841	EP103ULB16	A.39	686975	EP102ULD50	A.39	690298	EP103ULHC01	A.41
686705	EP63ULC20	A.37	686842	EP103ULB20	A.39	686977	EP102ULD63	A.39	690299	EP103ULHC02	A.41
686706	EP63ULC25	A.37	686843	EP103ULB25	A.39	686978	EP103ULD0.5	A.39	690301	EP103ULHC04	A.41
686708	EP63ULC32	A.37	686845	EP103ULB32	A.39	686979	EP103ULD01	A.39	690302	EP103ULHC05	A.41
686709	EP63ULC40	A.37	686846	EP103ULB40	A.39	686980	EP103ULD02	A.39	690303	EP103ULHC06	A.41
686710	EP63ULC50	A.37	686847	EP103ULB50	A.39	686982	EP103ULD04	A.39	690305	EP103ULHC10	A.41
686712	EP63ULC63	A.37	686849	EP103ULB63	A.39	686984	EP103ULD06	A.39	690306	EP103ULHC13	A.41
686713	EP64ULC0.5	A.37	686851	EP104ULB06	A.39	686985	EP103ULD10	A.39	690307	EP103ULHC15	A.41
686714	EP64ULC01	A.37	686852	EP104ULB10	A.39	686988	EP103ULD16	A.39	690308	EP103ULHC16	A.41
686715	EP64ULC02	A.37	686855	EP104ULB16	A.39	686989	EP103ULD20	A.39	690309	EP103ULHC20	A.41
686717	EP64ULC04	A.37	686856	EP104ULB20	A.39	686990	EP103ULD25	A.39	690310	EP103ULHC25	A.41
686719	EP64ULC06	A.37	686857	EP104ULB25	A.39	686992	EP103ULD32	A.39	690311	EP103ULHC30	A.41
686720	EP64ULC10	A.37	686859	EP104ULB32	A.39	686993	EP103ULD40	A.39	690312	EP103ULHC32	A.41
686723	EP64ULC16	A.37	686860	EP104ULB40	A.39	686994	EP103ULD50	A.39	690313	EP101ULHD0.5	A.41
686724	EP64ULC20	A.37	686861	EP104ULB50	A.39	686996	EP103ULD63	A.39	690314	EP101ULHD01	A.41
686725	EP64ULC25	A.37	686863	EP104ULB63	A.39	686997	EP104ULD0.5	A.39	690315	EP101ULHD02	A.41
686727	EP64ULC32	A.37	686864	EP101ULC0.5	A.39	686998	EP104ULD01	A.39	690317	EP101ULHD04	A.41
686728	EP64ULC40	A.37	686865	EP101ULC01	A.39	686999	EP104ULD02	A.39	690318	EP101ULHD05	A.41
686729	EP64ULC50	A.37	686866	EP101ULC02	A.39	687000			690320	EP101ULHD06	A.41
686731	EP64ULC63	A.37	686868	EP101ULC04	A.39	687001	EP104ULD04	A.39	690321	EP101ULHD10	A.41
686732	EP61ULD0.5	A.37	686870	EP101ULC06	A.39	687003	EP104ULD06	A.39	690322	EP101ULHD13	A.41
686733	EP61ULD01	A.37	686871	EP101ULC10	A.39	687004	EP104ULD10	A.39	690323	EP101ULHD15	A.41
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686736	EP61ULD04	A.37	686875	EP101ULC20	A.39	687008	EP104ULD20	A.39	690325	EP101ULHD20	A.41
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692790	EPC 451N C40	A.60	828056		F.3			
692791	EPC 61N C02	A.61	828145		F.7			
692792	EPC 61N C04	A.61	828146		F.7			
692793	EPC 61N C06	A.61	828149		F.3			



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4...			AST S 16 30 2	666591	D.3	BPC2100/500	606157	B.21	BU+230	665921	D.29
451/070152-041	811325	F.3	AST S 16 40	666593	D.3	BPC216/010	606131	B.21	C...		
451/070152-051	811326	F.3	AST S 16 40 2	666592	D.3	BPC225/100	606140	B.21	CA H	672567	C.4
451/070152-061	811327	F.3	AST S 32 1	666594	D.3	BPC225/1000	606158	B.21	CA S/H	672568	C.4
451/070158-011	811331	F.3	AST S 32 10	666595	D.3	BPC225/500	606153	B.21	CA S/H G	672569	C.4
485/087000-014	813146	F.3	AST S 32 2	666596	D.3	BPC240/100	606141	B.21	CA UN H	672972	C.6
485/087000-023	813156	F.3	AST S 32 20	666597	D.3	BPC240/1000	606159	B.21	CA UN S/H	672973	C.6
487/089000-016	815105	F.3	AST S 32 30	666599	D.3	BPC240/500	606154	B.21	CA UN S/H G	672974	C.6
A...			AST S 32 30 2	666598	D.3	BPC263/030	606134	B.21	CB SH/HH-L	672571	C.5
AAZA10	564041	F.34	AST S 32 40	666600	D.3	BPC263/100	606142	B.21	CB SH/HH-R	672570	C.5
AAZA2	564043	F.34	AST S 32 40 2	666601	D.3	BPC263/1000	606160	B.21	CBT H 2NC	667250	C.10
AAZA4	564045	F.34	AST SL 16 10	666602	D.3	BPC263/300	606150	B.21	CBT H 2NO	667251	C.10
AAZFN1-26	619394	F.33	AST SL 16 20	666603	D.3	BPC263/500	606155	B.21	CBT H NO-NC	667249	C.10
AAZFPE1-26	619395	F.33	AST SL 32 10	666604	D.3	BPC280/030	606135	B.21	CD10	662140	F.21
AAZFPN16	619393	F.33	AST SL 32 20	666605	D.3	BPC280/100	606143	B.21	CD14	662141	F.21
AAZG1	564054	F.34	AST SZ 16 1	666606	D.3	BPC280/1000	606161	B.21	CD18	662142	F.21
AAZK12	564050	F.33	AST SZ 16 2	666607	D.3	BPC280/300	606151	B.21	CD4	662139	F.21
AAZK16	564051	F.33	AST SZ 32 1	666608	D.3	BPC280/500	606156	B.21	CKEY	662137	F.21
AAZK33	564052	F.33	AST SZ 32 2	666609	D.3	BPC4100/030	606212	B.21	CLS Q 11 D	666105	D.21
AAZM2	564066	F.33	B...			BPC4100/100	606220	B.21	CLS Q 31 D	666104	D.21
AAZM3	564067	F.33	BDC225/030	607125	B.21	BPC4100/1000	606238	B.21	CLS Q 31 W	666109	D.21
AAZM4	564068	F.33	BDC225/300	607127	B.21	BPC4100/300	606228	B.21	CLS Q 62 DD	666103	D.21
AAZN3	564053	F.34	BDC240/030	607126	B.21	BPC4100/500	606233	B.21	CLS Q 62 DW	666108	D.21
AAZN33	564049	F.33	BDC240/300	607128	B.21	BPC425/030	606208	B.21	CLS S 11 D	666111	D.21
AAZP11	564352	F.34	BE+12	665922	D.29	BPC425/100	606216	B.21	CLS S 31 D	666112	D.21
AAZP12	564353	F.34	BE+230	665920	D.29	BPC425/1000	606234	B.21	CLS S 31 W	666114	D.21
AAZP33	564048	F.33	BLANK4	610382	F.21	BPC425/300	606224	B.21	CLS72Q41D	666178	D.25
AAZPN12	564046	F.33	BPA2100/030	606090	B.21	BPC425/500	606229	B.21	CLS72Q41W	666176	D.25
AAZPN16	564047	F.33	BPA2100/100	606095	B.21	BPC440/030	606209	B.21	CLS72S41W	666175	D.25
AAZTA1	564056	F.33	BPA2100/1000	606125	B.21	BPC440/100	606217	B.21	CSLKIT14	662136	F.21
AAZTA2	564350	F.33	BPA2100/300	606105	B.21	BPC440/1000	606235	B.21	CSLKIT18	662138	F.21
AAZTS12A	564061	F.33	BPA2100/500	606115	B.21	BPC440/300	606225	B.21	CTX + R 16 1 008 A	686000	D.11
AAZTS24A	564062	F.33	BPA216/010	606085	B.21	BPC440/500	606230	B.21	CTX + R 16 1 012 A	686001	D.11
AAZTS36A	564063	F.33	BPA225/030	606086	B.21	BPC463/030	606210	B.21	CTX + R 16 1 024 A	686002	D.11
AAZTS48A	564064	F.33	BPA225/100	606091	B.21	BPC463/100	606218	B.21	CTX + R 16 1 048 A	686003	D.11
AQA005PG	597956	F.25	BPA225/1000	606121	B.21	BPC463/1000	606236	B.21	CTX + R 16 1 115 A	686004	D.11
AQA008PG	597957	F.25	BPA225/300	606101	B.21	BPC463/300	606226	B.21	CTX + R 16 1 230 A	686005	D.11
AQA012PG	597958	F.25	BPA225/500	606111	B.21	BPC463/500	606231	B.21	CTX + R 16 1 240 A	686006	D.11
AQA024PG	597960	F.25	BPA240/030	606087	B.21	BPC480/030	606211	B.21	CTX + R 16 10 008 A	686007	D.11
AQA048PG	597961	F.25	BPA240/100	606092	B.21	BPC480/100	606219	B.21	CTX + R 16 10 012 A	686008	D.11
AQA912PG	597959	F.25	BPA240/1000	606122	B.21	BPC480/1000	606237	B.21	CTX + R 16 10 024 A	686009	D.11
AST B	666347	D.5	BPA240/300	606102	B.21	BPC480/300	606227	B.21	CTX + R 16 10 048 A	686010	D.11
AST B 12	666340	D.5	BPA240/500	606112	B.21	BPC480/500	606232	B.21	CTX + R 16 10 115 A	686011	D.11
AST B 230	666341	D.5	BPA263/030	606088	B.21	BPS2100/100	606100	B.21	CTX + R 16 10 230 A	686013	D.11
AST B 24	666342	D.5	BPA263/100	606093	B.21	BPS2100/1000	606130	B.21	CTX + R 16 10 23060	686012	D.11
AST L CL	666343	D.5	BPA263/1000	606123	B.21	BPS2100/300	606110	B.21	CTX + R 16 10 240 A	686014	D.11
AST L GN	666344	D.5	BPA263/300	606103	B.21	BPS2100/500	606120	B.21	CTX + R 16 11 008 A	686015	D.11
AST L OR	666345	D.5	BPA263/500	606113	B.21	BPS225/100	606096	B.21	CTX + R 16 11 012 A	686016	D.11
AST L RD	666346	D.5	BPA280/030	606089	B.21	BPS225/1000	606126	B.21	CTX + R 16 11 024 A	686017	D.11
AST LA 230V	666874	D.5	BPA280/100	606094	B.21	BPS225/300	606106	B.21	CTX + R 16 11 048 A	686018	D.11
AST LB 230V	666875	D.5	BPA280/1000	606124	B.21	BPS225/500	606116	B.21	CTX + R 16 11 115 A	686019	D.11
AST LG 230V	666876	D.5	BPA280/300	606104	B.21	BPS240/100	606097	B.21	CTX + R 16 11 230 A	686021	D.11
AST LR 230V	666877	D.5	BPA280/500	606114	B.21	BPS240/1000	606127	B.21	CTX + R 16 11 23060	686020	D.11
AST LW 230V	666878	D.5	BPA4100/030	606167	B.21	BPS240/300	606107	B.21	CTX + R 16 11 240 A	686022	D.11
AST M 100 10	666558	D.3	BPA4100/100	606172	B.21	BPS240/500	606117	B.21	CTX + R 16 2 008 A	686023	D.11
AST M 100 20	666559	D.3	BPA4100/1000	606202	B.21	BPS263/100	606098	B.21	CTX + R 16 2 012 A	686024	D.11
AST M 100 30	666560	D.3	BPA4100/300	606182	B.21	BPS263/1000	606128	B.21	CTX + R 16 2 024 A	686026	D.11
AST M 100 40	666561	D.3	BPA4100/500	606192	B.21	BPS263/300	606108	B.21	CTX + R 16 2 048 A	686028	D.11
AST M 40 10	666614	D.3	BPA425/030	606163	B.21	BPS263/500	606118	B.21	CTX + R 16 2 115 A	686030	D.11
AST M 40 20	666615	D.3	BPA425/100	606168	B.21	BPS280/100	606099	B.21	CTX + R 16 2 230 A	686032	D.11
AST M 40 30	666616	D.3	BPA425/1000	606198	B.21	BPS280/1000	606129	B.21	CTX + R 16 2 240 A	686034	D.11
AST M 40 40	666617	D.3	BPA425/300	606178	B.21	BPS280/300	606109	B.21	CTX + R 16 20 008 A	686036	D.11
AST M 63 10	666562	D.3	BPA425/500	606188	B.21	BPS280/500	606119	B.21	CTX + R 16 20 012 A	686037	D.11
AST M 63 20	666563	D.3	BPA440/030	606164	B.21	BPS4100/100	606177	B.21	CTX + R 16 20 024 A	686038	D.11
AST M 63 30	666564	D.3	BPA440/100	606169	B.21	BPS4100/1000	606207	B.21	CTX + R 16 20 048 A	686039	D.11
AST M 63 40	666565	D.3	BPA440/1000	606199	B.21	BPS4100/300	606187	B.21	CTX + R 16 20 115 A	686040	D.11
AST M 80 10	666566	D.3	BPA440/300	606179	B.21	BPS4100/500	606197	B.21	CTX + R 16 20 230 A	686042	D.11
AST M 80 20	666567	D.3	BPA440/500	606189	B.21	BPS425/100	606173	B.21	CTX + R 16 20 23060	686041	D.11
AST M 80 30	666568	D.3	BPA463/030	606165	B.21	BPS425/1000	606203	B.21	CTX + R 16 20 240 A	686043	D.11
AST M 80 40	666569	D.3	BPA463/100	606170	B.21	BPS425/300	606183	B.21	CTX + R 16 22 008 A	686027	D.11
AST P 16 01	666570	D.3	BPA463/1000	606200	B.21	BPS425/500	606193	B.21	CTX + R 16 22 012 A	686044	D.11
AST P 16 10	666571	D.3	BPA463/300	606180	B.21	BPS440/100	606174	B.21	CTX + R 16 22 024 A	686045	D.11
AST P 16 11	666572	D.3	BPA463/500	606190	B.21	BPS440/1000	606204	B.21	CTX + R 16 22 048 A	686046	D.11
AST PL 16 10	666573	D.3	BPA480/030	606166	B.21	BPS440/300	606184	B.21	CTX + R 16 22 230 A	686048	D.11
AST R 32 20	666574	D.3	BPA480/100	606171	B.21	BPS440/500	606194	B.21	CTX + R 16 22 23060	686047	D.11
AST R 32 30	666575	D.3	BPA480/1000	606201	B.21	BPS463/100	606175	B.21	CTX + R 16 22 240 A	686049	D.11
AST R 32 3N	666576	D.3	BPA480/300	606181	B.21	BPS463/1000	606205	B.21	CTX + R 16 30 012 A	686050	D.11
AST R 32 40	666577	D.3	BPA480/500	606191	B.21	BPS463/300	606185	B.21	CTX + R 16 30 024 A	686051	D.11

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CTX + R 5 11	686067	D.15	DM100B20/100	609943	B.25	DM60C20/030	609842	B.23	DMA60B25/030	609750	B.23
CTX + R 5 20	686068	D.15	DM100B20/300	609951	B.25	DM60C20/100	609851	B.23	DMA60B25/100	609758	B.23
CTX 06 11	666162	D.7	DM100B25/030	609936	B.25	DM60C20/300	609860	B.23	DMA60B25/300	609766	B.23
CTX 06 20	666163	D.7	DM100B25/100	609944	B.25	DM60C25/030	609843	B.23	DMA60B32/030	609751	B.23
CTX 20 02 024 A	666129	D.7	DM100B25/300	609952	B.25	DM60C25/100	609852	B.23	DMA60B32/100	609759	B.23
CTX 20 02 230 A	666128	D.7	DM100B32/030	609937	B.25	DM60C25/300	609861	B.23	DMA60B32/300	609767	B.23
CTX 20 11 024 A	666127	D.7	DM100B32/100	609945	B.25	DM60C32/030	609844	B.23	DMA60B40/030	609752	B.23
CTX 20 11 230 A	666126	D.7	DM100B32/300	609953	B.25	DM60C32/100	609853	B.23	DMA60B40/100	609760	B.23
CTX 20 20 012 A	666130	D.7	DM100B40/030	609938	B.25	DM60C32/300	609862	B.23	DMA60B40/300	609768	B.23
CTX 20 20 024 A	666133	D.7	DM100B40/100	609946	B.25	DM60C40/030	609845	B.23	DMA60C04/010	609769	B.23
CTX 20 20 048 A	666134	D.7	DM100B40/300	609954	B.25	DM60C40/100	609854	B.23	DMA60C04/030	609775	B.23
CTX 20 20 230 A	666131	D.7	DM100C04/010	609955	B.25	DM60C40/300	609863	B.23	DMA60C04/100	609784	B.23
CTX 20 20 240 A	666132	D.7	DM100C04/030	609961	B.25	DMA100B06/010	609864	B.25	DMA60C04/300	609793	B.23
CTX 24 04 024 U	666140	D.7	DM100C04/100	609970	B.25	DMA100B06/030	609869	B.25	DMA60C06/010	609770	B.23
CTX 24 04 230 U	666139	D.7	DM100C04/300	609979	B.25	DMA100B06/100	609877	B.25	DMA60C06/030	609776	B.23
CTX 24 22 024 U	666136	D.7	DM100C06/010	609956	B.25	DMA100B06/300	609885	B.25	DMA60C06/100	609785	B.23
CTX 24 22 230 U	666135	D.7	DM100C06/030	609962	B.25	DMA100B10/010	609865	B.25	DMA60C06/300	609794	B.23
CTX 24 30 024 U	666138	D.7	DM100C06/100	609971	B.25	DMA100B10/030	609870	B.25	DMA60C10/010	609771	B.23
CTX 24 30 230 U	666137	D.7	DM100C06/300	609980	B.25	DMA100B10/100	609878	B.25	DMA60C10/030	609777	B.23
CTX 24 40 012 U	666141	D.7	DM100C10/010	609957	B.25	DMA100B10/300	609886	B.25	DMA60C10/100	609786	B.23
CTX 24 40 024 U	666144	D.7	DM100C10/030	609963	B.25	DMA100B13/010	609866	B.25	DMA60C10/300	609795	B.23
CTX 24 40 048 U	666145	D.7	DM100C10/100	609972	B.25	DMA100B13/030	609871	B.25	DMA60C13/010	609772	B.23
CTX 24 40 230 U	666142	D.7	DM100C10/300	609981	B.25	DMA100B13/100	609879	B.25	DMA60C13/030	609778	B.23
CTX 24 40 240 U	666143	D.7	DM100C13/010	609958	B.25	DMA100B13/300	609887	B.25	DMA60C13/100	609787	B.23
CTX 40 02 230 U	666170	D.7	DM100C13/030	609964	B.25	DMA100B16/010	609867	B.25	DMA60C13/300	609796	B.23
CTX 40 20 024 U	666147	D.7	DM100C13/100	609973	B.25	DMA100B16/030	609872	B.25	DMA60C16/010	609773	B.23
CTX 40 20 230 U	666146	D.7	DM100C13/300	609982	B.25	DMA100B16/100	609880	B.25	DMA60C16/030	609779	B.23
CTX 40 30 024 U	666149	D.7	DM100C16/010	609959	B.25	DMA100B16/300	609888	B.25	DMA60C16/100	609788	B.23
CTX 40 30 230 U	666148	D.7	DM100C16/030	609965	B.25	DMA100B20/010	609868	B.25	DMA60C16/300	609797	B.23
CTX 40 40 012 U	666150	D.7	DM100C16/100	609974	B.25	DMA100B20/030	609873	B.25	DMA60C20/010	609774	B.23
CTX 40 40 024 U	666153	D.7	DM100C16/300	609983	B.25	DMA100B20/100	609881	B.25	DMA60C20/030	609780	B.23
CTX 40 40 048 U	666154	D.7	DM100C20/010	609960	B.25	DMA100B20/300	609889	B.25	DMA60C20/100	609789	B.23
CTX 40 40 230 U	666151	D.7	DM100C20/030	609966	B.25	DMA100B25/030	609874	B.25	DMA60C20/300	609798	B.23
CTX 40 40 240 U	666152	D.7	DM100C20/100	609975	B.25	DMA100B25/100	609882	B.25	DMA60C25/030	609781	B.23
CTX 63 20 230 U	666155	D.7	DM100C20/300	609984	B.25	DMA100B25/300	609890	B.25	DMA60C25/100	609790	B.23
CTX 63 40 024 U	666158	D.7	DM100C25/030	609967	B.25	DMA100B32/030	609875	B.25	DMA60C25/300	609799	B.23
CTX 63 40 230 U	666156	D.7	DM100C25/100	609976	B.25	DMA100B32/100	609883	B.25	DMA60C32/030	609782	B.23
CTX 63 40 240 U	666157	D.7	DM100C25/300	609985	B.25	DMA100B32/300	609891	B.25	DMA60C32/100	609791	B.23
CTX DN 20 20 230 A	666164	D.7	DM100C32/030	609968	B.25	DMA100B40/030	609876	B.25	DMA60C32/300	609800	B.23
CTX DN 24 30 230 U	666165	D.7	DM100C32/100	609977	B.25	DMA100B40/100	609884	B.25	DMA60C40/030	609783	B.23
CTX DN 24 40 230 U	666166	D.7	DM100C32/300	609986	B.25	DMA100B40/300	609892	B.25	DMA60C40/100	609792	B.23
CTX DN 40 20 230 U	666167	D.7	DM100C40/030	609969	B.25	DMA100C04/010	609893	B.25	DMA60C40/300	609801	B.23
CTX DN 40 30 230 U	666168	D.7	DM100C40/100	609978	B.25	DMA100C04/030	609899	B.25	DMCE60B06/030	694014	B.27
CTX DN 40 40 230 U	666169	D.7	DM100C40/300	609987	B.25	DMA100C04/100	609908	B.25	DMCE60B10/030	694015	B.27
CTX TS 2	666160	D.7	DM60B06/010	609802	B.23	DMA100C04/300	609917	B.25	DMCE60B16/030	694016	B.27
CTX TS 3	666159	D.7	DM60B06/030	609807	B.23	DMA100C06/010	609894	B.25	DMCE60B20/030	694017	B.27
CU10BN	662132	F.20	DM60B06/100	609815	B.23	DMA100C06/030	609900	B.25	DMCE60B25/030	694018	B.27
CU14BN	662133	F.20	DM60B06/300	609823	B.23	DMA100C06/100	609909	B.25	DMCE60B32/030	694019	B.27
CU18BN	662134	F.20	DM60B10/010	609803	B.23	DMA100C06/300	609918	B.25	DMCE60C06/030	694000	B.27
CU4BN	662131	F.20	DM60B10/030	609808	B.23	DMA100C10/010	609895	B.25	DMCE60C10/030	694001	B.27
D...			DM60B10/100	609816	B.23	DMA100C10/030	609901	B.25	DMCE60C16/030	694002	B.27
DFSL12	662163	F.18	DM60B10/300	609824	B.23	DMA100C10/100	609910	B.25	DMCE60C20/030	694003	B.27
DICE60B06/030	694042	B.27	DM60B13/010	609804	B.23	DMA100C10/300	609919	B.25	DMCE60C25/030	694004	B.27
DICE60B10/030	694043	B.27	DM60B13/030	609809	B.23	DMA100C13/010	609896	B.25	DMCE60C32/030	694005	B.27
DICE60B16/030	694044	B.27	DM60B13/100	609817	B.23	DMA100C13/030	609902	B.25	DMCEA60B06/030	694021	B.27
DICE60B20/030	694045	B.27	DM60B13/300	609825	B.23	DMA100C13/100	609911	B.25	DMCEA60B10/030	694022	B.27
DICE60B25/030	694046	B.27	DM60B16/010	609805	B.23	DMA100C13/300	609920	B.25	DMCEA60B16/030	694023	B.27
DICE60B32/030	694047	B.27	DM60B16/030	609810	B.23	DMA100C16/010	609897	B.25	DMCEA60B20/030	694024	B.27
DICE60C06/030	694028	B.27	DM60B16/100	609818	B.23	DMA100C16/030	609903	B.25	DMCEA60B25/030	694025	B.27
DICE60C10/030	694029	B.27	DM60B16/300	609826	B.23	DMA100C16/100	609912	B.25	DMCEA60B32/030	694026	B.27
DICE60C16/030	694030	B.27	DM60B20/010	609806	B.23	DMA100C16/300	609921	B.25	DMCEA60C06/030	694007	B.27
DICE60C20/030	694031	B.27	DM60B20/030	609811	B.23	DMA100C20/010	609898	B.25	DMCEA60C10/030	694008	B.27
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DICEA60B32/030	694054	B.27	DM60B32/300	609829	B.23	DMA100C32/100	609915	B.25	DME100B10/010	605031	B.29
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DME100C20/010	605047	B.29	DMEAT60C16/030	608136	B.31	DOCA 263/100	607507	B.33	DPC100C25/030	606911	B.13
DME100C20/030	605054	B.29	DMEAT60C20/030	608137	B.31	DOCA 263/1000	607510	B.33	DPC100C25/300	606919	B.13
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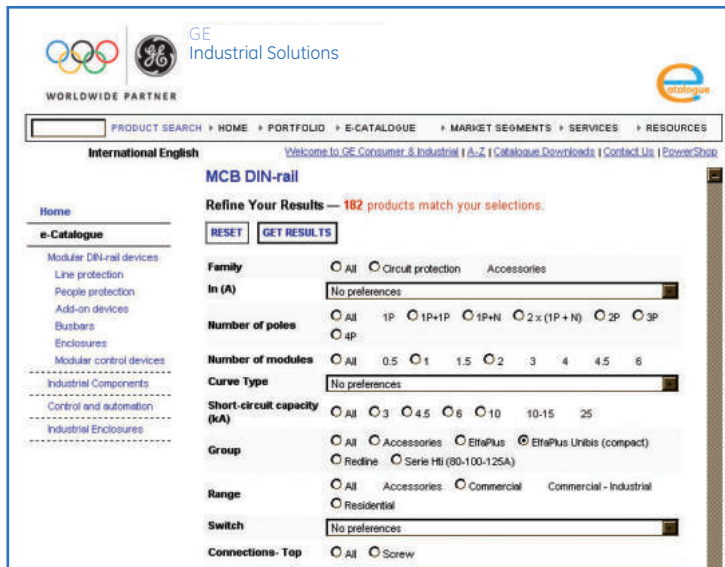
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FDE36TE025ED	433653	G.3	FPPA263/300	678373	B.36	G101ND40	675045	A.23	G104C01	674919	A.23
FDE36TE032ED	433655	G.3	FPPA425/030	678362	B.36	G101ND50	675046	A.23	G104C02	674920	A.23
FDE36TE040ED	433657	G.3	FPPA425/100	678368	B.36	G101ND63	675047	A.23	G104C03	674921	A.23
FDE36TE050ED	433659	G.3	FPPA425/300	678374	B.36	G102B06	674972	A.23	G104C04	674922	A.23
FDE36TE063ED	433661	G.3	FPPA440/030	678363	B.36	G102B10	674974	A.23	G104C06	674923	A.23
FDE36TE080GD	433663	G.3	FPPA440/100	678369	B.36	G102B13	674975	A.23	G104C10	674925	A.23
FDE36TE100GD	433665	G.3	FPPA440/300	678375	B.36	G102B16	674976	A.23	G104C13	674926	A.23
FDE36TE125GD	433667	G.3	FPPA463/030	678364	B.36	G102B20	674977	A.23	G104C16	674927	A.23
FDE36TE160GD	433669	G.3	FPPA463/100	678370	B.36	G102B25	674978	A.23	G104C20	674928	A.23
FDE46TE016ED	433697	G.3	FPPA463/300	678376	B.36	G102B32	674979	A.23	G104C25	674929	A.23
FDE46TE020ED	433699	G.3	FPPS240/300	678377	B.36	G102B40	674980	A.23	G104C32	674930	A.23
FDE46TE025ED	433701	G.3	FPPS263/300	678378	B.36	G102B50	674981	A.23	G104C40	674931	A.23
FDE46TE032ED	433703	G.3	FPPS440/300	678379	B.36	G102B63	674982	A.23	G104C50	674932	A.23
FDE46TE040ED	433705	G.3	FPPS463/300	678380	B.36	G102C0.5	674886	A.23	G104C63	674933	A.23
FDE46TE050ED	433707	G.3	FSL10	662125	F.17	G102C01	674887	A.23	G104D0.5	675080	A.23
FDE46TE063ED	433709	G.3	FSL14	662126	F.17	G102C02	674888	A.23	G104D01	675081	A.23
FDE46TE080GD	433711	G.3	FST	546331	F.34	G102C03	674889	A.23	G104D02	675082	A.23
FDE46TE100GD	433713	G.3	FTSL12	662161	F.18	G102C04	674890	A.23	G104D03	675083	A.23
FDE46TE125GD	433715	G.3	G...			G102C06	674891	A.23	G104D04	675084	A.23
FDE46TE160GD	433717	G.3	G101B06	674950	A.23	G102C10	674893	A.23	G104D06	675085	A.23
FDFF	432010	G.5	G101B10	674952	A.23	G102C13	674894	A.23	G104D10	675087	A.23
FDFF3	430941	G.5	G101B13	674953	A.23	G102C16	674895	A.23	G104D13	675088	A.23
FDFF4	430942	G.5	G101B16	674954	A.23	G102C20	674896	A.23	G104D16	675089	A.23
FDFFH	430829	G.5	G101B20	674955	A.23	G102C25	674897	A.23	G104D20	675090	A.23
FDJB	430945	G.5	G101B25	674956	A.23	G102C32	674898	A.23	G104D25	675091	A.23
FDJK	430069	G.5	G101B32	674957	A.23	G102C40	674899	A.23	G104D32	675092	A.23
FDJL3	430951	G.5	G101B40	674958	A.23	G102C50	674900	A.23	G104D40	675093	A.23
FDJL4	430954	G.5	G101B50	674959	A.23	G102C63	674901	A.23	G104D50	675094	A.23
FDJP	430957	G.5	G101B63	674960	A.23	G102D0.5	675048	A.23	G104D63	675095	A.23
FDJS3	430960	G.5	G101C0.5	674854	A.23	G102D01	675049	A.23	G31B06	674443	A.15
FDJS4	430963	G.5	G101C01	674855	A.23	G102D02	675050	A.23	G31B10	674445	A.15
FDKD3	430966	G.5	G101C02	674856	A.23	G102D03	675051	A.23	G31B16	674447	A.15
FDK04	430967	G.5	G101C03	674857	A.23	G102D04	675052	A.23	G31B20	674448	A.15
FDKE	617947	G.5	G101C04	674858	A.23	G102D06	675053	A.23	G31B25	674449	A.15
FDNFT	430968	G.4	G101C06	674859	A.23	G102D10	675055	A.23	G31B32	674450	A.15
FDNR4	430971	G.4	G101C10	674861	A.23	G102D13	675056	A.23	G31B40	674451	A.15
FDNRC/5	436474	G.4	G101C13	674862	A.23	G102D16	675057	A.23	G31C02	674381	A.15
FDNRCV/5	436475	G.4	G101C16	674863	A.23	G102D20	675058	A.23	G31C04	674383	A.15
FDNRD/5	436476	G.4	G101C20	674864	A.23	G102D25	675059	A.23	G31C06	674384	A.15
FDNRDV/5	436477	G.4	G101C25	674865	A.23	G102D32	675060	A.23	G31C10	674386	A.15
FDNRE	430986	G.4	G101C32	674866	A.23	G102D40	675061	A.23	G31C16	674388	A.15
FDNRF/5	436478	G.4	G101C40	674867	A.23	G102D50	675062	A.23	G31C20	674389	A.15
FDNRFV/5	436479	G.4	G101C50	674868	A.23	G102D63	675063	A.23	G31C25	674390	A.15
FDNRY/5	436487	G.4	G101C63	674869	A.23	G103B06	674983	A.23	G31C32	674391	A.15
FDNRYV/5	436488	G.4	G101D0.5	675016	A.23	G103B10	674985	A.23	G31C40	674392	A.15
FDNRZ/5	436489	G.4	G101D01	675017	A.23	G103B13	674986	A.23	G32B06	674454	A.15
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FDQDS4H/6	431101	G.3	G101D13	675024	A.23	G103B50	674992	A.23	G32B40	674462	A.15
FDQDS4M/6	431103	G.3	G101D16	675025	A.23	G103B63	674993	A.23	G32C02	674397	A.15
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FDTCA1416	433401	G.5	G101D25	675027	A.23	G103C01	674903	A.23	G32C06	674400	A.15
FDU43	431025	G.5	G101D32	675028	A.23	G103C02	674904	A.23	G32C10	674402	A.15
FDU44	431026	G.5	G101D40	675029	A.23	G103C03	674905	A.23	G32C16	674404	A.15
FDFU3	430830	G.5	G101D50	675030	A.23	G103C04	674906	A.23	G32C20	674405	A.15
FDFU4	430832	G.5	G101D63	675031	A.23	G103C06	674907	A.23	G32C25	674406	A.15
FDUT	433539	G.5	G101NB06	674961	A.23	G103C10	674909	A.23	G32C32	674407	A.15
FOR4	618910	F.20	G101NB10	674963	A.23	G103C13	674910	A.23	G32C40	674408	A.15
FPAUL 216/010	608377	B.34	G101NB13	674964	A.23	G103C16	674911	A.23	G33B06	674466	A.15
FPAUL 225/030	608378	B.34	G101NB16	674965	A.23	G103C20	674912	A.23	G33B10	674468	A.15
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FPAUL 225/300	608380	B.34	G101NB25	674967	A.23	G103C32	674914	A.23	G33B20	674471	A.15
FPAUL 225/500	608381	B.34	G101NB32	674968	A.23	G103C40	674915	A.23	G33B25	674472	A.15
FPAUL 240/030	608382	B.34	G101NB40	674969	A.23	G103C50	674916	A.23	G33B32	674473	A.15
FPAUL 240/100	608383	B.34	G101NB50	674970	A.23	G103C63	674917	A.23	G33B40	674474	A.15
FPAUL 240/300	608384	B.34	G101NB63	674971	A.23	G103D0.5	675064	A.23	G33C02	674413	A.15
FPAUL 240/500	608385	B.34	G101NC02	674872	A.23	G103D01	675065	A.23	G33C04	674415	A.15
FPAUL 263/030	608386	B.34	G101NC03	674873	A.23	G103D02	675066	A.23	G33C06	674416	A.15
FPAUL 263/100	608387	B.34	G101NC04	674874	A.23	G103D03	675067	A.23	G33C10	674418	A.15
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FPAUL 263/500	608401	B.34	G101NC10	674877	A.23	G103D06	675069	A.23	G33C20	674421	A.15
FPAUL 425/030	608389	B.34	G101NC13	674878	A.23	G103D10	675071	A.23	G33C25	674422	A.15
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FPAUL 425/300	608391	B.34	G101NC20	674880	A.23	G103D16	675073	A.23	G33C40	674424	A.15
FPAUL 425/500	608392	B.34	G101NC25	674881	A.23	G103D20	675074	A.23	G34B06	674477	A.15
FPAUL 440/030	608393	B.34	G101NC32	674882	A.23	G103D25	675075	A.23	G34B10	674479	A.15
FPAUL 440/100	608394	B.34	G101NC40	674883	A.23	G103D32	675076	A.23	G34B16	674481	A.15
FPAUL 440/300	608395	B.34	G101NC50	674884	A.23	G103D40	675077	A.23	G34B20	674482	A.15
FPAUL 440/500	608396	B.34	G101NC63	674885	A.23	G103D50	675078	A.23	G34B25	674483	A.15
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FPAUL 463/100	608398	B.34	G101ND01	675033	A.23	G104B06	674994	A.23	G34B40	674485	A.15
FPAUL 463/300	608399	B.34	G101ND02	675034	A.23	G104B10	674996	A.23	G34C02	674429	A.15
FPAUL 463/500	608400	B.34	G101ND03	675035	A.23	G104B13	674997	A.23	G34C04	674431	A.15
FPPA225/030	678359	B.36	G101ND04	675036	A.23	G104B16	674998	A.23	G34C06	674432	A.15
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FPPA225/300	678371	B.36	G101ND10	675039	A.23	G104B25	675000	A.23	G34C16	674436	A.15

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G43B16	674578	A.17	G62B20	674719	A.19	GLX PRG	666354	D.23	GT103B25	675204	A.27
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G43B32	674581	A.17	G62B40	674722	A.19	GLX Q 21 W 70	666312	D.23	GT103B50	675207	A.27
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G44B40	674593	A.17	G62D10	674797	A.19	GT101C0.5	675112	A.27	GT103D0.5	675252	A.27
G44C02	674538	A.17	G62D16	674799	A.19	GT101C01	675113	A.27	GT103D01	675253	A.27
G44C04	674540	A.17	G62D20	674800	A.19	GT101C02	675114	A.27	GT103D02	675254	A.27
G44C06	674541	A.17	G62D25	674801	A.19	GT101C03	675115	A.27	GT103D03	675255	A.27
G44C10	674543	A.17	G62D32	674802	A.19	GT101C04	675116	A.27	GT103D04	675256	A.27
G44C16	674545	A.17	G62D40	674803	A.19	GT101C06	675117	A.27	GT103D06	675257	A.27
G44C20	674546	A.17	G62D50	674804	A.19	GT101C10	675119	A.27	GT103D10	675259	A.27
G44C25	674547	A.17	G62D63	674805	A.19	GT101C13	675120	A.27	GT103D13	675260	A.27
G44C32	674548	A.17	G63B06	674725	A.19	GT101C16	675121	A.27	GT103D16	675261	A.27
G44C40	674549	A.17	G63B10	674727	A.19	GT101C20	675122	A.27	GT103D20	675262	A.27
G61B06	674692	A.19	G63B16	674729	A.19	GT101C25	675123	A.27	GT103D25	675263	A.27
G61B10	674694	A.19	G63B20	674730	A.19	GT101C32	675124	A.27	GT103D32	675264	A.27
G61B16	674696	A.19	G63B25	674731	A.19	GT101C40	675125	A.27	GT103D40	675265	A.27
G61B20	674697	A.19	G63B32	674732	A.19	GT101C50	675126	A.27	GT103D50	675266	A.27
G61B25	674698	A.19	G63B40	674733	A.19	GT101C63	675127	A.27	GT103D63	675267	A.27
G61B32	674699	A.19	G63B50	674734	A.19	GT101D0.5	675220	A.27	GT104B06	675209	A.27
G61B40	674700	A.19	G63B63	674735	A.19	GT101D01	675221	A.27	GT104B10	675211	A.27
G61B50	674701	A.19	G63C02	674646	A.19	GT101D02	675222	A.27	GT104B13	675212	A.27
G61B63	674702	A.19	G63C04	674648	A.19	GT101D03	675223	A.27	GT104B16	675213	A.27
G61C02	674598	A.19	G63C06	674649	A.19	GT101D04	675224	A.27	GT104B20	675214	A.27
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G61C10	674603	A.19	G63C20	674654	A.19	GT101D13	675228	A.27	GT104B40	675217	A.27
G61C16	674605	A.19	G63C25	674655	A.19	GT101D16	675229	A.27	GT104B50	675218	A.27
G61C20	674606	A.19	G63C32	674656	A.19	GT101D20	675230	A.27	GT104B63	675219	A.27
G61C25	674607	A.19	G6								

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GT104C50	675174	A.27	GT253B63	675380	A.29	MT+S7 100	671547	A.33	MT+SP100	665287	D.35
GT104C63	675175	A.27	GT253C0.5	675316	A.29	Hti 104 C125	671548	A.33	MT+SP1000	665296	D.35
GT104D0.5	675268	A.27	GT253C01	675317	A.29	Hti 104 D080	671570	A.33	MT+SP150	665288	D.35
GT104D01	675269	A.27	GT253C02	675318	A.29	Hti 104 D100	671571	A.33	MT+SP200	665289	D.35
GT104D02	675270	A.27	GT253C04	675320	A.29	Hti 104 D125	671572	A.33	MT+SP250	665290	D.35
GT104D03	675271	A.27	GT253C06	675321	A.29	Hti H	671597	A.35	MT+SP300	665291	D.35
GT104D04	675272	A.27	GT253C10	675323	A.29	Hti H/S	671599	A.35	MT+SP40	665283	D.35
GT104D06	675273	A.27	GT253C16	675325	A.29	Hti HH/HS	671600	A.35	MT+SP400	665292	D.35
GT104D10	675275	A.27	GT253C20	675326	A.29	Hti HSR	671602	A.35	MT+SP50	665284	D.35
GT104D13	675276	A.27	GT253C25	675327	A.29	Hti S	671598	A.35	MT+SP500	665293	D.35
GT104D16	675277	A.27	GT253C32	675328	A.29	K....			MT+SP60	665285	D.35
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GT104D25	675279	A.27	GT253C50	675330	A.29	KV AP12	564538	F.33	MT+SP80	665286	D.35
GT104D32	675280	A.27	GT253C63	675331	A.29	KV AP24	564539	F.33	MT+SP800	665295	D.35
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GT104D63	675283	A.27	GT253D02	675426	A.29	L....			MT144UMD	665194	D.43
GT251B06	675348	A.29	GT253D04	675428	A.29	LK/N12	546298	F.34	MT485enet	665245	D.43
GT251B10	675350	A.29	GT253D06	675429	A.29	LK/N15	546299	F.34	MT8140	665198	D.43
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GT251B40	675356	A.29	GT253D32	675436	A.29	LSS 32	666362	D.27	MT962	665191	D.41
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GT251C02	675286	A.29	GT254B10	675383	A.29	MS11	662105	F.17	MTDIN2	665011	D.39
GT251C04	675288	A.29	GT254B16	675385	A.29	MS16	662106	F.17	MTDIN2COM	665155	D.39
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GT251C20	675294	A.29	GT254B40	675389	A.29	MS8	662104	F.17	MTUSB485	665246	D.43
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GT251C40	675297	A.29	GT254C0.5	675332	A.29	MSC SPP	666502	D.5	P....		
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GT251D01	675393	A.29	GT254C06	675337	A.29	MT+AA15 4M	665267	D.35	PLS + / CTX + TS 1	686070	D.15
GT251D02	675394	A.29	GT254C10	675339	A.29	MT+AA20 4M	665268	D.35	PLS + 16 1 008 A	686071	D.14
GT251D04	675396	A.29	GT254C16	675341	A.29	MT+AA25 4M	665269	D.35	PLS + 16 1 012 A	686072	D.14
GT251D06	675397	A.29	GT254C20	675342	A.29	MT+AA30 4M	665270	D.35	PLS + 16 1 024 A	686073	D.14
GT251D10	675399	A.29	GT254C25	675343	A.29	MT+AA5 4M	665265	D.35	PLS + 16 1 048 A	686074	D.14
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GT251D40	675405	A.29	GT254D0.5	675440	A.29	MT+AV300 4M	665271	D.35	PLS + 16 10 012 A	686079	D.14
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GT252C04	675304	A.29	H....			MT+CT4000	665926	D.37	PLS + 16 11 240 A	686092	D.14
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GT252C40	675313	A.29	Hti 101 D080	671552	A.33	MT+D BASIC 4M	665393	D.33	PLS + 16 2 230 A	686098	D.14
GT252C50	675314	A.29	Hti 101 D100	671553	A.33	MT+D DV500 DA5 F 4M	665387	D.33	PLS + 16 2 240 A	686099	D.14
GT252C63	675315	A.29	Hti 101 D125	671554	A.33	MT+D PRI BASIC 2M	665395	D.33	PLS + 16 20	686100	D.14
GT252D0.5	675408	A.29	Hti 102 B080	671510	A.33	MT+D TOPI 4M	665391	D.33	PLS + 16 20 008 A	686102	D.14
GT252D01	675409	A.29	Hti 102 B100	671511	A.33	MT+D TOPIRS485 4M	665392	D.33	PLS + 16 20 012 A	686103	D.14
GT252D02	675410	A.29	Hti 102 B125	671512	A.33	MT+D1485 63 2M	665252	D.31	PLS + 16 20 024 A	686104	D.14
GT252D04	675412	A.29	Hti 102 C080	671534	A.33	MT+D1485 63 2M MID	665253	D.31	PLS + 16 20 048 A	686105	D.14
GT252D06	675413	A.29	Hti 102 C100	671535	A.33	MT+D11 32 1M	665248	D.31	PLS + 16 20 115 A	686106	D.14
GT252D10	675415	A.29	Hti 102 C125	671536	A.33	MT+D11 32 1M MID	665249	D.31	PLS + 16 20 230 A	686108	D.14
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GT252D20	675418	A.29	Hti 102 D100	671559	A.33	MT+D11 63 2M MID	665251	D.31	PLS + 16 20 240 A	686109	D.14
GT252D25	675419	A.29	Hti 103 B080	671560	A.33	MT+D3N485 63 4M	665256	D.31	PLS + 32 10 008 A	686110	D.14
GT252D32	675420	A.29	Hti 103 B100	671517	A.33	MT+D3N485 63 4MMID	665257	D.31	PLS + 32 10 012 A	686111	D.14
GT252D40	675421	A.29	Hti 103 B125	671518	A.33	MT+D3N485 x/5 4M	665260	D.31	PLS + 32 10 024 A	686112	D.14
GT252D50	675422	A.29	Hti 103 C080	671540	A.33	MT+D3N485 x/54MMID	665261	D.31	PLS + 32 10 048 A	686113	D.14
GT252D63	675423	A.29	Hti 103 C100	671541	A.33	MT+D3Ni 63 4M	665254	D.31	PLS + 32 10 115 A	686114	D.14
GT253B06	675370	A.29	Hti 103 C125	671542	A.33	MT+D3Ni 63 4M MID	665255	D.31	PLS + 32 10 230 A	686115	D.14
GT253B10	675372	A.29	Hti 103 D080	671564	A.33	MT+D3Ni x/5 4M	665258	D.31	PLS + 32 10 240 A	686116	D.14
GT253B16	675374	A.29	Hti 103 D100	671565	A.33	MT+D3Ni x/5 4M MID	665259	D.31	PLS + 32 20	686117	D.14
GT253B20	675375	A.29	Hti 103 D125	671566	A.33	MT+ImpCon	665262	D.31	PLS + 32 20 008 A	686118	D.14
GT253B25	675376	A.29	Hti 104 B100	671523	A.33	MT+RS485/Ethernet	665389	D.31	PLS + 32 20 012 A	686119	D.14
GT253B32	675377	A.29	Hti 104								

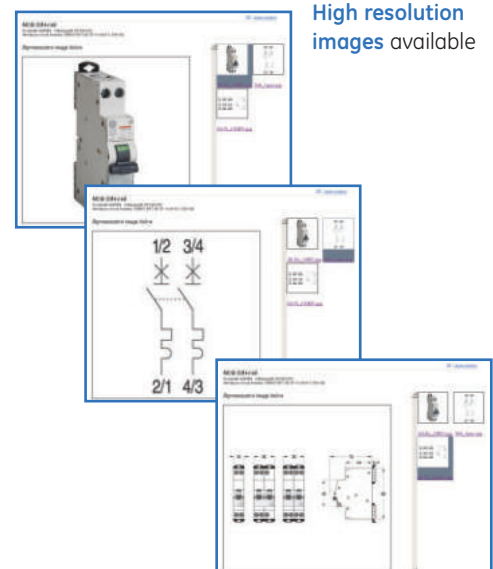
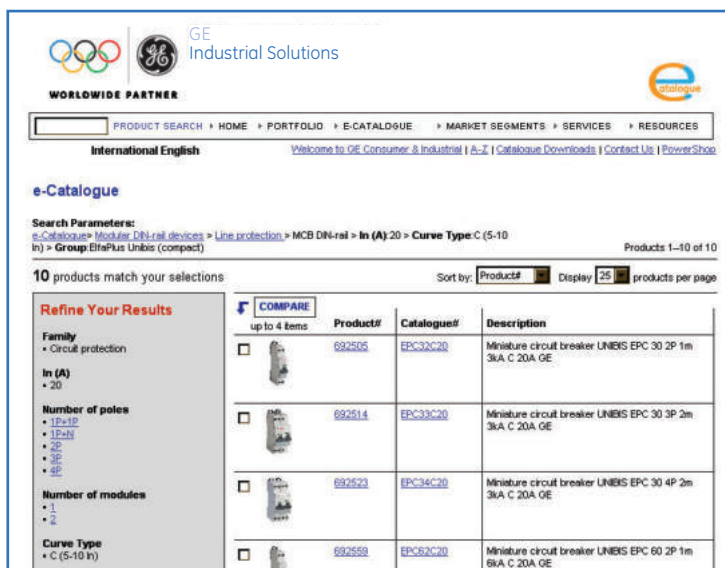
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PLS + 32 20 230 A	686123	D.14	R...			REC2 S 463/300	677076	B.43	SAP3 II 20/400 TNCC	660182	D.49
PLS + 32 20 240 A	686124	D.14	REC TOP EP102 C10	677186	B.47	REC2 S 480/300	677077	B.43	SAP3 II 40/400 TNC	660179	D.49
PLS + C	686125	D.15	REC TOP EP102 C16	677187	B.47	RM1	662108	F.17	SAP3 II 40/400 TNCC	660180	D.49
PLS + C 16 1 008 A	686126	D.15	REC TOP EP102 C20	677188	B.47	RM11	662113	F.17	SAP4 I+II 12.5 TNS	660152	D.48
PLS + C 16 1 012 A	686127	D.15	REC TOP EP102 C25	677189	B.47	RM14SPD	662115	F.17	SAP4 I+II 12.5 TNS C	660156	D.48
PLS + C 16 1 024 A	686128	D.15	REC TOP EP102 C32	677190	B.47	RM16	662114	F.17	SAP4 I+II 12.5 TT	660150	D.48
PLS + C 16 1 048 A	686129	D.15	REC TOP EP102 C40	677191	B.47	RM2	662109	F.17	SAP4 I+II 12.5 TT C	660151	D.48
PLS + C 16 1 230 A	686130	D.15	REC TOP EP102 C50	677192	B.47	RM4	662110	F.17	SAP4 II 20/400 TNS	660189	D.49
PLS + C 16 1 240 A	686131	D.15	REC TOP EP102 C63	677193	B.47	RM6	662111	F.17	SAP4 II 20/400 TNCS	660190	D.49
PLS + C 16 10 008 A	686132	D.14	REC TOP EP104 B10	677194	B.47	RM8	662112	F.17	SAP4 II 20/400 TT	660185	D.49
PLS + C 16 10 012 A	686133	D.14	REC TOP EP104 B16	677195	B.47	S...			SAP4 II 20/400 TTC	660186	D.49
PLS + C 16 10 024 A	686134	D.14	REC TOP EP104 B20	677196	B.47	SA BLOCK ADSL	667484	D.50	SAP4 II 40/400 TNS	660187	D.49
PLS + C 16 10 048 A	686135	D.14	REC TOP EP104 B25	677197	B.47	SA BLOCK I 100 N	667471	D.50	SAP4 II 40/400 TNCS	660188	D.49
PLS + C 16 10 230 A	686136	D.14	REC TOP EP104 B32	677198	B.47	SA BLOCK I 35	667470	D.50	SAP4 II 40/400 TT	660183	D.49
PLS + C 16 10 240 A	686137	D.14	REC TOP EP104 B40	677199	B.47	SA BLOCK I and II 100	667486	D.50	SAP4 II 40/400 TTC	660184	D.49
PLS + C 16 2 008 A	686138	D.15	REC TOP EP104 B50	678026	B.47	SA BLOCK I and II 100N	667487	D.50	SAPV I+II 12.5/1000	660193	D.51
PLS + C 16 2 012 A	686139	D.15	REC TOP EP104 B63	678027	B.47	SA BLOCK I and II 65	667517	D.50	SAPV I+II 12.5/1000 C	660194	D.51
PLS + C 16 2 024 A	686140	D.15	REC TOP EP104 C10	678028	B.47	SA BLOCK I and II 65N	667518	D.50	SAPV I+II 12.5/600	660191	D.51
PLS + C 16 2 048 A	686141	D.15	REC TOP EP104 C16	678029	B.47	SA BLOCK I PC	667472	D.50	SAPV I+II 12.5/600 C	660192	D.51
PLS + C 16 2 230 A	686142	D.15	REC TOP EP104 C20	678030	B.47	SA BLOCK II 15/230	667473	D.50	SAPV II 40/1000	660197	D.51
PLS + C 16 2 240 A	686143	D.15	REC TOP EP104 C25	678031	B.47	SA BLOCK II 15/230 C	667475	D.50	SAPV II 40/1000C	660198	D.51
PLS + C 16 20 008 A	686144	D.15	REC TOP EP104 C32	678032	B.47	SA BLOCK II 15/230 LLE	667489	D.50	SAPV II 40/600	660195	D.51
PLS + C 16 20 012 A	686145	D.15	REC TOP EP104 C40	678033	B.47	SA BLOCK II 15/230 LNE	667488	D.50	SAPV II 40/600C	660196	D.51
PLS + C 16 20 024 A	686146	D.15	REC TOP EP104 C50	678034	B.47	SA BLOCK II 15/400	667474	D.50	SH40	662117	F.18
PLS + C 16 20 048 A	686147	D.15	REC TOP EP104 C63	678035	B.47	SA BLOCK II 15/400 3L+NE	667494	D.50	SH50	662118	F.18
PLS + C 16 20 230 A	686148	D.15	REC TOP TT 25	678036	B.47	SA BLOCK II 15/400 4L/NE	667495	D.50	SHR3	619018	F.21
PLS + C 16 20 240 A	686149	D.15	REC TOP TT 35	678037	B.47	SA BLOCK II 15/400 C	667476	D.50	SKU 16/5	546300	F.34
PLS + C 16 3 008 A	686150	D.15	REC2 A 2100/30	676990	B.43	SA BLOCK II 15LN	667483	D.50	SKU 35/5	546301	F.34
PLS + C 16 3 012 A	686151	D.15	REC2 A 2100/300	676998	B.43	SA BLOCK II 15N	667481	D.50	SL33	662119	F.17
PLS + C 16 3 024 A	686152	D.15	REC2 A 225/30	676986	B.43	SA BLOCK II 40/230	667477	D.50	SL55	662120	F.17
PLS + C 16 3 048 A	686153	D.15	REC2 A 225/300	676994	B.43	SA BLOCK II 40/230 C	667479	D.50	SL64	662121	F.17
PLS + C 16 3 230 A	686154	D.15	REC2 A 240/30	676987	B.43	SA BLOCK II 40/230 LLE	667491	D.50	SL66	662122	F.17
PLS + C 16 3 240 A	686155	D.15	REC2 A 240/300	676995	B.43	SA BLOCK II 40/230 LNE	667490	D.50	SL77	662123	F.17
PLS + C 32 10 008 A	686156	D.15	REC2 A 263/30	676988	B.43	SA BLOCK II 40/400	667478	D.50	SLTD55	662129	F.17
PLS + C 32 10 012 A	686157	D.15	REC2 A 263/300	676996	B.43	SA BLOCK II 40/400 3L+NE	667496	D.50	SMS 1	666100	D.21
PLS + C 32 10 024 A	686158	D.15	REC2 A 280/30	676989	B.43	SA BLOCK II 40/400 4L/NE	667497	D.50	SMS 3	666101	D.21
PLS + C 32 10 048 A	686159	D.15	REC2 A 280/300	676997	B.43	SA BLOCK II 40/400 4L/NE C	667498	D.50	SMS 6	666102	D.21
PLS + C 32 10 230 A	686160	D.15	REC2 A 4100/30	677046	B.43	SA BLOCK II 40/400 C	667480	D.50	T...		
PLS + C 32 10 240 A	686161	D.15	REC2 A 4100/300	677074	B.43	SA BLOCK II 40N	667482	D.50	TAP12	564533	F.33
PLS + C 32 20 008 A	686162	D.15	REC2 A 425/30	677042	B.43	SA PHOT 1000V	667509	D.51	TAP24	564546	F.33
PLS + C 32 20 012 A	686163	D.15	REC2 A 425/300	677050	B.43	SA PHOT 600V	667508	D.51	TAP36	564547	F.33
PLS + C 32 20 024 A	686164	D.15	REC2 A 440/30	677043	B.43	SA TV	667510	D.50	TAP48	564548	F.33
PLS + C 32 20 048 A	686165	D.15	REC2 A 440/300	677071	B.43	SAM I+II 100N	660393	D.48	TELE L 110	624945	A.35
PLS + C 32 20 230 A	686166	D.15	REC2 A 463/30	677044	B.43	SAM I+II 12.5/1000PV	660377	D.51	TELE L 24	624946	A.35
PLS + C 32 20 240 A	686167	D.15	REC2 A 463/300	677072	B.43	SAM I+II 12.5/230	660294	D.48	TELE L-1	672573	C.9
PLS + C 32 30 008 A	686168	D.15	REC2 A 480/30	677045	B.43	SAM I+II 12.5/400	660295	D.48	TELE L-2	672574	C.9
PLS + C 32 30 012 A	686169	D.15	REC2 A 480/300	677073	B.43	SAM I+II 12.5/600PV	660376	D.51	TELE LT-1	667252	C.11
PLS + C 32 30 024 A	686170	D.15	REC2 Ai 225/30	676991	B.43	SAM I+II 25/230	660199	D.48	TELE LT-2	667253	C.11
PLS + C 32 30 048 A	686171	D.15	REC2 Ai 240/30	676992	B.43	SAM I+II 25/400	660257	D.48	TELE MP	672580	C.7
PLS + C 32 30 230 A	686172	D.15	REC2 Ai 263/30	676993	B.43	SAM I+II 25N	660296	D.48	TELE OV 230	667485	D.51
PLS + C 32 30 240 A	686173	D.15	REC2 Ai 425/30	677047	B.43	SAM I+II 50N	660274	D.48	TELE OV 400	667493	D.51
PLS + CAP	686174	D.15	REC2 Ai 440/30	677048	B.43	SAM II 20/230	660297	D.49	Tele REC PLUS Motor	677132	B.48
PLS + M	686175	D.15	REC2 Ai 463/30	677049	B.43	SAM II 20/400	660298	D.49	TELE U-12	672576	C.9
PLS + PU 16 2 024 A	686176	D.15	REC2 DPCA100B10/030	677174	B.45	SAM II 20N	660299	D.49	TELE U-230	672575	C.9
PLS + PU 16 2 230 A	686177	D.15	REC2 DPCA100B10/300	677180	B.45	SAM II 40/1000PV	660379	D.51	TELE U-24	672577	C.9
PLS + PU 16 20 024 A	686178	D.15	REC2 DPCA100B16/030	677175	B.45	SAM II 40/230	660373	D.49	TELE U-48	672578	C.9
PLS + PU 16 20 230 A	686179	D.15	REC2 DPCA100B16/300	677181	B.45	SAM II 40/400	660374	D.49	TOR+110	665917	B.39
PLS + PU 16 40 024 A	686180	D.15	REC2 DPCA100B20/030	677176	B.45	SAM II 40/600PV	660378	D.51	TOR+28	665297	B.39
PLS + PU 16 40 230 A	686181	D.15	REC2 DPCA100B20/300	677182	B.45	SAM II 40N	660375	D.49	TOR+35	665298	B.39
PLS + SA 16 20 012 A	686182	D.14	REC2 DPCA100B25/030	677177	B.45	SAP1 I+II 100N	660391	D.48	TOR+60	665299	B.39
PLS + SA 16 20 024 A	686183	D.14	REC2 DPCA100B25/300	677183	B.45	SAP1 I+II 12.5/230	660131	D.48	TR&KT+C3MOD	665918	D.29
PLS + SA 16 20 048 A	686184	D.14	REC2 DPCA100B32/030	677178	B.45	SAP1 I+II 12.5/230 C	660135	D.48	TR&KT+C6MOD	665919	D.29
PLS + SA 16 20 230 A	686185	D.14	REC2 DPCA100B32/300	677184	B.45	SAP1 I+II 12.5/400	660132	D.48	TR+ B 5	665900	D.29
PLS + SA 16 20 240 A	686186	D.14	REC2 DPCA100B40/030	677179	B.45	SAP1 I+II 12.5/400 C	660136	D.48	TR+B 8	665901	D.29
PLS + SB 16 20 012 A	686187	D.14	REC2 DPCA100B40/300	677185	B.45	SAP1 I+II 25/230	660125	D.48	TR+B10	665902	D.29
PLS + SB 16 20 024 A	686188	D.14	REC2 DPCA100C10/030	677150	B.45	SAP1 I+II 25/230 C	660127	D.48	TR+B15	665903	D.29
PLS + SB 16 20 048 A	686189	D.14	REC2 DPCA100C10/300	677156	B.45	SAP1 I+II 25/400	660126	D.48	TR+B16	665904	D.29
PLS + SB 16 20 230 A	686190	D.14	REC2 DPCA100C16/030	677151	B.45	SAP1 I+II 25/400 C	660128	D.48	TR+B30	665905	D.29
PLS + SB 16 20 240 A	686191	D.14	REC2 DPCA100C16/300	677157	B.45	SAP1 I+II 25N	660138	D.48	TR+S15	665909	D.29
PLS + SG	686192	D.15	REC2 DPCA100C20/030	677152	B.45	SAP1 I+II 50N	660130	D.48	TR+S25	665910	D.29
PLT + AS 230A	686195	D.19	REC2 DPCA100C20/300	677158	B.45	SAP1 II 20/230	660164	D.49	TR+S40	665911	D.29
PLT + IG 024U	686196	D.19	REC2 DPCA100C25/030	677153	B.45	SAP1 II 20/230 C	660166				

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