

Description

Single pole miniaturised magnetic circuit breakers with unique high-speed operating mechanism and push/pull on/off manual actuation. Fitted with electrically separate excitation and switching circuits, and one pair of auxiliary contacts which close when the main circuit is open. Also suitable for impulse operation. Designed for printed circuit board mounting. Low temperature sensitivity.

Typical applications

Printed circuit boards and components, safety and control systems.

Ordering information

Type No.

808	fast-acting
	Manual release
01	press-to-reset button, blue
B	manual release facility, blue (Standard)
	Current ratings
0.01...5 A	

808 - B - 5 A ordering example

Standard current ratings and typical internal resistance values

Current rating (A)	Internal resistance (Ω)	Current rating (A)	Internal resistance (Ω)
0.01	625	0.8	0.096
0.02	170	0.9	0.085
0.03	77	1	0.073
0.04	47	1.2	0.050
0.05	29.2	1.5	0.031
0.08	10.3	2	≤ 0.02
0.1	5.6	2.5	≤ 0.02
0.2	1.65	3	≤ 0.02
0.3	0.89	3.25	≤ 0.02
0.4	0.39	4	≤ 0.02
0.5	0.28	4.5	≤ 0.02
0.6	0.198	5	≤ 0.02
0.7	0.143		

Approvals

Authority	Voltage ratings	Current ratings
CSA	AC 120 V; DC 60 V	0.01...5 A
UL	DC 60 V AC 120 V	0.01...5 A 0.01...5 A



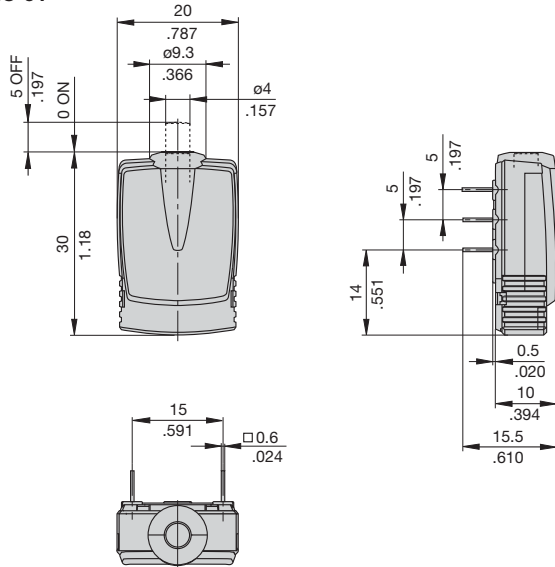
808

Technical data

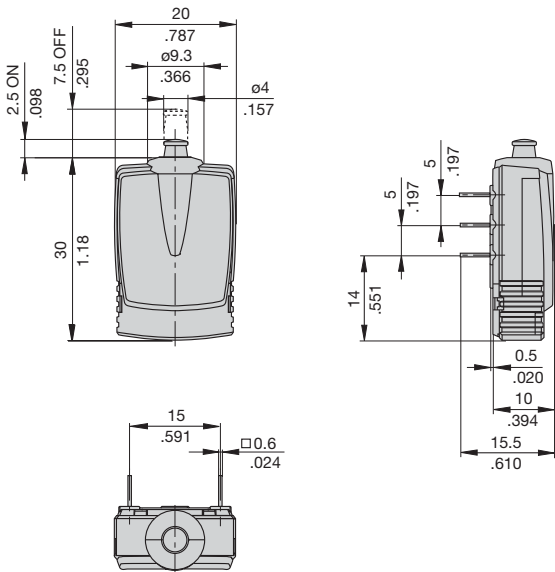
Voltage rating	DC 24 V (higher voltages to special order) UL: AC 120 V; DC 60 V	
Current ratings	0.01...5 A (higher current ratings to special order)	
Max. continuous load excitation circuit (2-3)	2.65 x I _N	
Max. continuous load switching circuit 6-7 auxiliary circuit 4-5	5 A	
Typical life	6,000 operations at 5 A for switching circuit	
Ambient temperature	-30...+70 °C (-22...+158 °F)	
Insulation co-ordination (IEC 60664-1)	rated impulse withstand voltage 1.5 kV	pollution degree 2
Dielectric strength (UL 1077)	test voltage AC 1,240 V	
operating area excitation to switching circuit	AC 1,240 V	
excitation to auxiliary circuit	AC 1,240 V	
Insulation resistance	> 100 MΩ (DC 500 V)	
Interrupting capacity (o-o-o)	100 A	
Interrupting capacity (UL 1077)	2,000 A AC 120 V 1,000 A DC 60 V	
Degree of protection (IEC 60529/DIN 40050)	operating area IP30 terminal area IP00	
Vibration	3 g (57-500 Hz), ± 0.23 mm (10-57 Hz), to IEC 60068-2-6, test Fc 10 frequency cycles/axis	
Shock	25 g (11 ms) to IEC 60068-2-27, test Ea	
Corrosion	48 hours at 5 % salt mist, to IEC 60068-2-11, test Ka	
Humidity	240 hours at 95 % RH to IEC 60068-2-78, test Cab	
Mass	approx. 10 g	

Dimensions

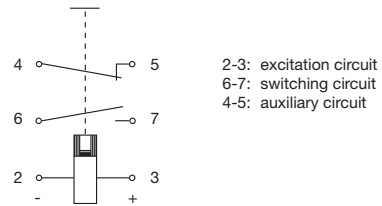
808-01



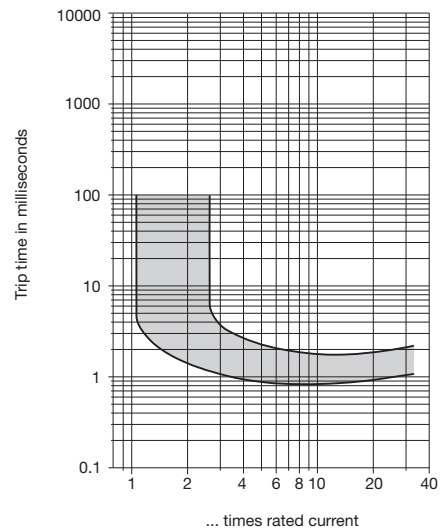
808-B



Internal connection diagram



Typical time/current characteristics at +23 °C/+73.4 °F



This is a metric design and millimeter dimensions take precedence ($\frac{\text{mm}}{\text{inch}}$)

All dimensions without tolerances are for reference only. In the interest of improved design, performance and cost effectiveness the right to make changes in these specifications without notice is reserved. Product markings may not be exactly as the ordering codes. Errors and omissions excepted.

Description

Single, two and three pole magnetic circuit breakers with trip-free mechanism and push/pull on/off manual actuation. A choice of fast magnetic only or hydraulically delayed switching characteristics (S-type MO or HM CBE to EN 60934) ensures suitability for a wide range of applications. Convenient threadneck panel or plug-in mounting, and with a white push button indicator band showing clearly the tripped/off position. Available with auxiliary contacts (1 x N/O, 1 x N/C) for status signalling and fitted with an unprotected shunt tap terminal as standard. Approved to CBE standard EN 60934 (IEC 60934).

Typical application

Control equipment, communications systems, power semiconductors.

Standard current ratings and typical internal resistance values

Current rating (A)	Internal resistance (Ω) per pole		
	curve -F4/F5	curves -E1/H1/R1	curves -E2/H2/R2
0.02	583	2441	2449
0.05	94	376	365
0.08	35.8	148	144
0.1	23	94	84
0.15	9.9	39	38
0.2	5	30.5	22.4
0.3	2.44	9.9	9.7
0.5	0.79	3.16	3.1
0.75	0.39	1.55	1.51
1	0.25	0.79	0.77
1.25	0.15	0.58	0.56
1.5	0.10	0.37	0.36
1.75	0.083	0.30	0.29
2	0.059	0.20	0.24
2.5	0.044	0.146	0.138
3	0.028	0.10	0.099
4	< 0.02	0.059	0.057
5	< 0.02	0.040	0.038
6	< 0.02	0.026	0.026
8	< 0.02	< 0.02	< 0.02
10	< 0.02	< 0.02	< 0.02
12	< 0.02	< 0.02	< 0.02
15	< 0.02	< 0.02	< 0.02
16	< 0.02	< 0.02	< 0.02
20	< 0.02	< 0.02	< 0.02
25	< 0.02*	< 0.02	< 0.02
30	< 0.02*	< 0.02	< 0.02
40		< 0.02	
50		< 0.02	

* 50 % ON duty / 60 min.

Approvals

Authority	Voltage ratings	Current ratings
VDE (EN 60934)	3 AC 415 V; AC 240 V; DC 80 V	0.02...30 A 0.02...50 A 1-pole
UL 1077, CSA	DC 80 V 3 AC 250 V; AC 250 V	0.02...50 A 1, 2-pole 0.02...30 A 1,2,3-pole
UL 489 A	DC 80 V	0.05...30 A 1, 2-pole
CCC	3 AC 415 V; AC 240 V; DC 80 V	0.02...30 A 0.02...50 A 1, 2-pole



Technical data

For further details please see chapter: Technical Information

Voltage rating	3 AC 415 V; AC 240 V, 50/60 Hz; DC 80 V		
Current ratings	0.02...50 A single pole (40+50 A DC only) 0.02...30 A multipole		
Auxiliary circuit	1 A, AC 240 V/DC 65 V 0.5 A, DC 80 V		
Typical life			
3 AC 415 V, AC 240 V:			
0.02...30 A	6,000 operations at 1 x I _N , inductive 10,000 operations at 1 x I _N , resistive		
DC 80 V: 0.02...25 A	6,000 operations at 1 x I _N , inductive		
0.02...30 A	10,000 operations at 1 x I _N , resistive		
40 + 50 A	5,000 operations at 1 x I _N , resistive		
Ambient temperature	-40...+85 °C (-40...+185 °F)		
Insulation co-ordination (IEC 60664 and 60664A)	rated impulse withstand voltage 2.5 kV reinforced insulation in operating area	pollution degree 2	
Dielectric strength (IEC 60664 and 60664A)	test voltage		
operating area	AC 3,000 V		
pole to pole (2 + 3-pole)	AC 1,500 V		
main to auxiliary circuit	AC 1,500 V		
aux. circuit 11-12/23-24	AC 1,000 V		
switching to trip circuit (-X)	AC 1,500 V		
Insulation resistance	> 100 MΩ (DC 500 V)		
Interrupting capacity I _{cn}	1,200 A at AC; 2,000 A at DC		
Interrupting capacity (UL 1077)	I _N	0.02...20 A	25...30 A
AC:	1-pole	AC 250 V/3,500A	AC 250 V/3,500A
	2-pole	AC 250 V/3,500A	AC 250 V/5,000A
	3-pole	3AC 250V/3,500A	3AC250V/5,000A
	DC:		
	1-pole	0.02...50 A	DC 80 V/3,500 A
	2-pole	0.02...30 A	DC 80 V/3500 A
Interrupting capacity (UL 489A)	2,000 A		
Degree of protection (IEC 60529/DIN 40050)	operating area IP40 terminal area IP00		

Vibration	with button down: 10 g (57-2000 Hz), $\pm$ 0.76 mm (10-57 Hz) at 0.9 x I_N other mounting planes: 10 g (57-2000 Hz) at I_N to IEC 60068-2-6, test Fc 10 frequency cycles/axis
Shock	100 g (11 ms) at 1 x I_N , directions 1,2,3,4,5 100 g (11 ms) at 0.8 x I_N , direction 6 to IEC 60068-2-27, test Ea
Corrosion	96 hours at 5 % salt mist, to IEC 60068-2-11, test Ka
Humidity	240 hours at 95 % RH to IEC 60068-2-78, test Cab
Mass	approx. 70 g per pole

Ordering information

Type No.

8340 Magnetic push/pull circuit breaker

Mounting

G threadneck panel mounting

Threadneck design

2 M12x1

Number of poles (main current paths)

- 0 single pole, switch only
- 1 single pole, protected
- 2 two pole, protected
- 3 three pole, protected
- 5 two pole, protected on one pole only

Panel hardware

- 0 without panel hardware
- 1 with hex nut M12x1 and washer 12/15

Terminal design

P1 blade terminals A6.3-0.8 mm (QC.250)

K3 screw terminals M4 recommended for $I_N > 20$ A

K4 screw terminals M5 recommended for $I_N > 40$ A

R1 round connectors $\phi 6$

X1 blade terminals A6.3-0.8 mm (QC.250), separate switching and trip circuit

Characteristic curve

F4 instantaneous trip: magn. $1.5-2.2 I_N$ DC ($I_N \leq 30$ A)

F5 magn. $1.2-1.7 I_N$ AC 50/60 Hz ($I_N \leq 30$ A)

E1 short delay: magn.-hydr. $1.01-1.4 I_N$, DC

E2 short delay: magn.-hydr. $1.01-1.4 I_N$, AC 50/60 Hz

H1 medium delay: magn.-hydr. $1.01-1.4 I_N$, DC

H2 medium delay: magn.-hydr. $1.01-1.4 I_N$, AC 50/60 Hz

R1 long delay: magn.-hydr. $1.01-1.5 I_N$, DC

R2 long delay: magn.-hydr. $1.01-1.5 I_N$, AC 50/60 Hz

Actuator colour

A black with white trip indicator band

Actuator marking

- 0 without marking
- 4 rated current (legible with location pin above) standard
- 7 rated current (legible with location pin below)

Auxiliary contacts

- H0 without auxiliary contacts
- H1 with auxiliary contacts
- H2 with auxiliary contacts on pole 1 only (2 and 3-pole types)
- H3 with auxiliary contacts on poles 1 and 3 (3-pole type)

Auxiliary contact function

- 1 one each N/O and N/C
- 2 1 pair N/O (23/24)
- 3 1 pair N/C (11/12)

Auxiliary contact terminal design

1 blade terminals A6.3-0.8 mm

Current ratings (optional)

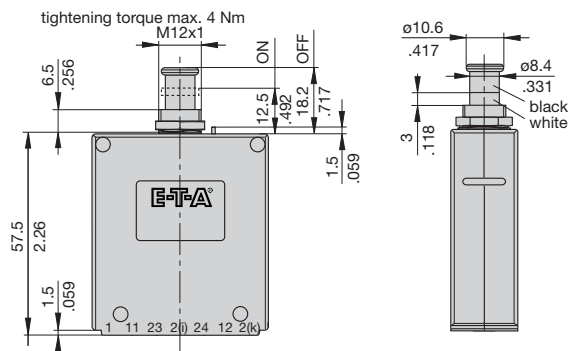
0.02...50 A

Approval (optional)

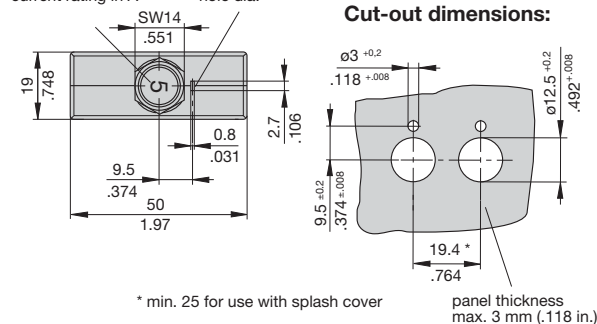
U UL 489 A

8340 - G 2 1 1 - P1 F4 - A 4 H1 1 1 - 8 A - U ordering example

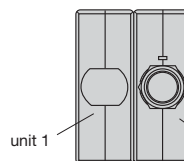
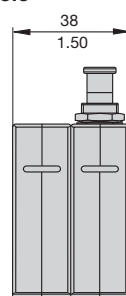
Dimensions (1-pole)



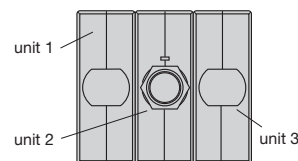
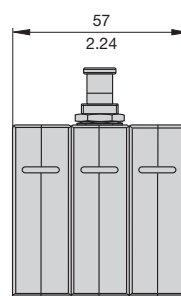
current rating in A location pin for 3mm (.118 in.) hole dia.



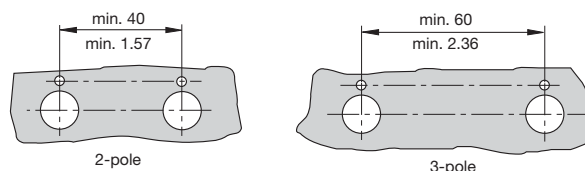
2-pole



3-pole



Cut-out dimensions:

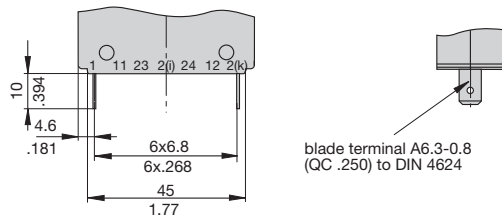


panel thickness max. 3 mm (.118 in.)

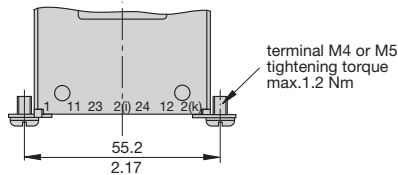
This is a metric design and millimeter dimensions take precedence (mm)

Terminal design

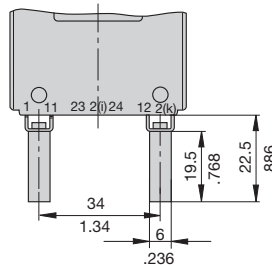
Terminal design -P1



Terminal design -K3/-K4

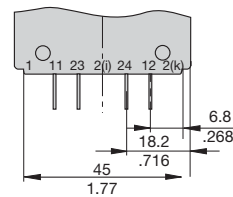


Terminal design -R

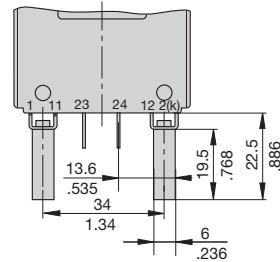


Auxiliary contact terminal design

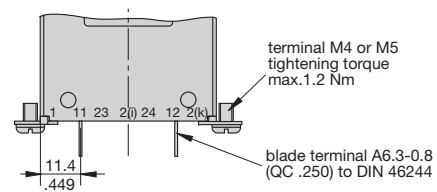
1 N/O, 1 N/C



1 N/O

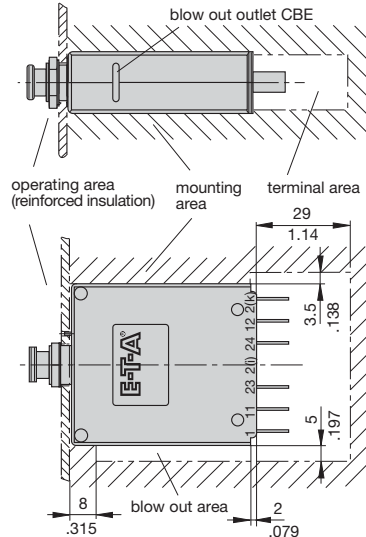


1 N/C

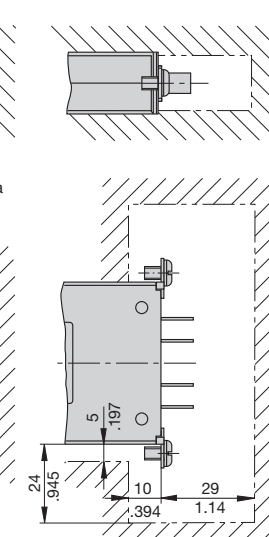


Installation drawings

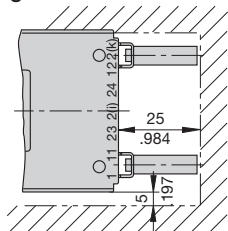
Terminal design -P



Terminal design -K

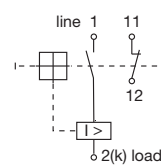


Terminal design -R

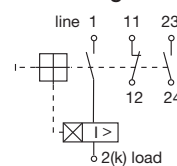


Internal connection diagrams

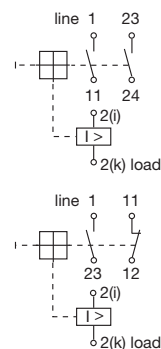
1-pole, protected magnetically



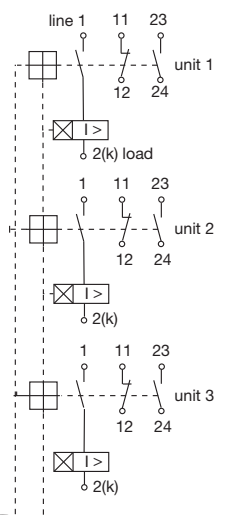
1-pole, protected hydraulic-magnetically



Circuit variants 1-pole



multipole



8340-G211-X1F4-A4H121-...A
 1 - 11 switching circuit
 2(i) - 2(k) magnetic trip circuit
 23 - 24 auxiliary circuit (N/O)

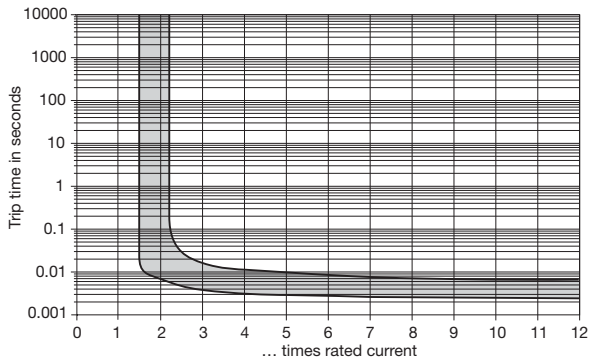
8340-G211-X1F4-A4H131-...A
 1 - 23 switching circuit
 2(i) - 2(k) magnetic trip circuit
 11 - 12 auxiliary circuit (N/C)

This is a metric design and millimeter dimensions take precedence (mm)
 inch

Typical time/current characteristics

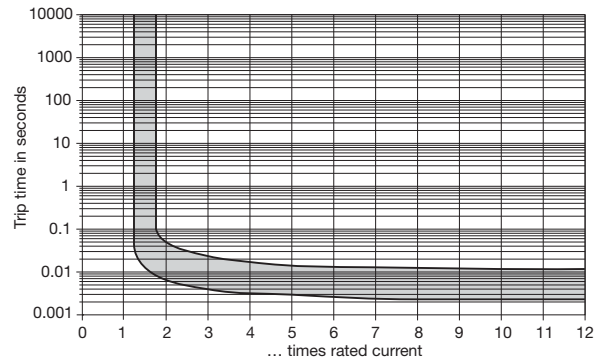
Curve F4 for DC, magnetic (undelayed)

($I_N > 20$ A, 50% ON period, 60 min.) at +23 °C / +73.4 °F

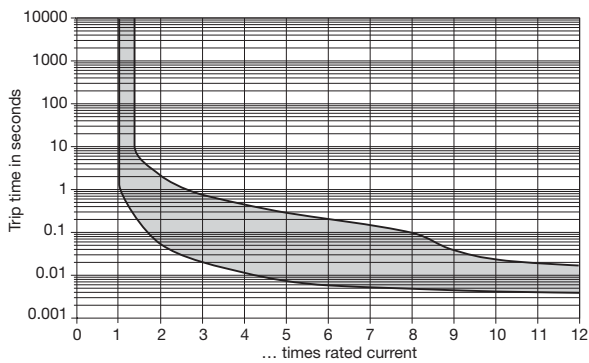


Curve F5 for AC 50/60 Hz, magnetic (undelayed)

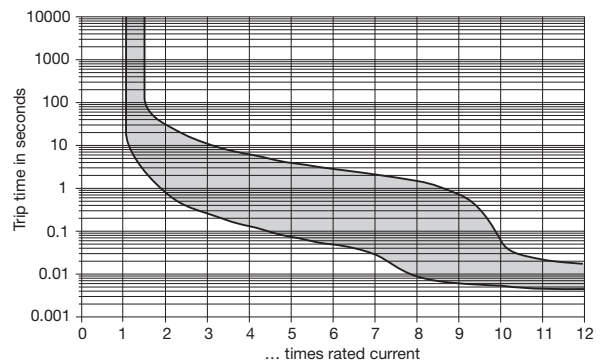
($I_N > 20$ A, 50% ON period, 60 min.) at +23 °C / +73.4 °F



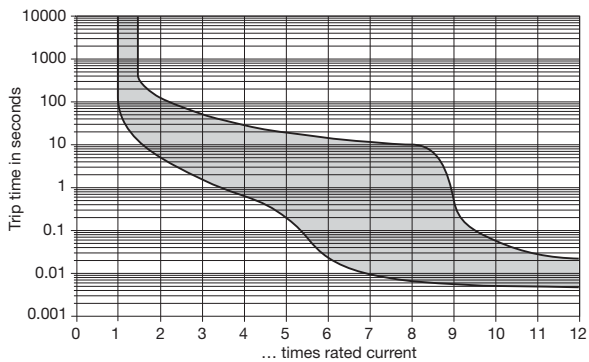
Short delay curves E1 for DC and E2 for AC 50/60 Hz, hydraulic-magnetic



Medium delay curves H1 for DC and H2 for AC 50/60 Hz, hydraulic-magnetic



Long delay curves R1 for DC and R2 for AC 50/60 Hz, hydraulic-magnetic



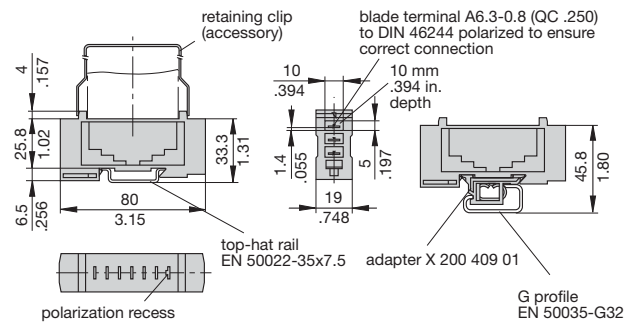
N.B. Curves E1, E2, H1, H2, R1 and R2 will only be maintained if the escutcheon is mounted on a vertical surface.

Other curves upon request (e. g. impulse delay).

Accessories

Socket 18-P10-Si

(for ratings >16 A please contact E-T-A)



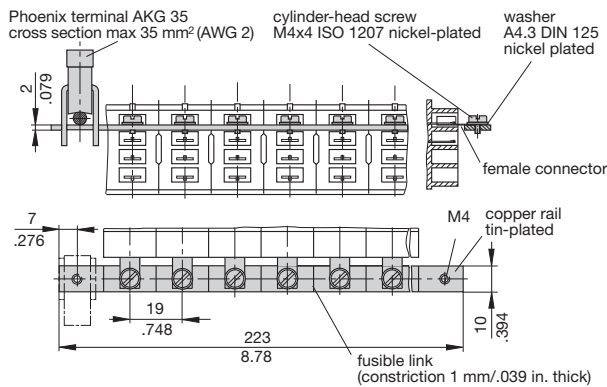
Bus bar (10-way) (supplied as a complete package)

for type 18 socket

(for max. 100 A continuous load),
more positions available on request

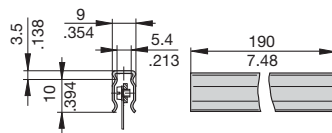
X 211 158 01 with terminal

X 211 158 02 without terminal



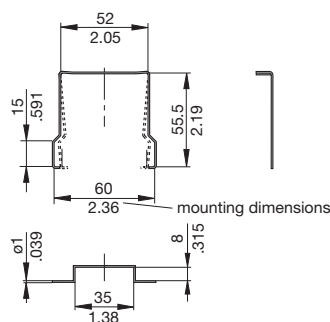
Insulated sleeving for bus bars

Y 303 824 11



Retaining clip for socket 18-P10-Si

Y 300 579 11



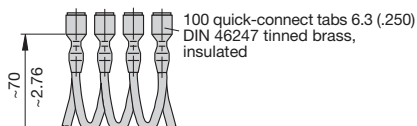
Connector bus link -P10

X 210 588 01/1.5 mm² (AWG 16), brown (up to 13 A max. load)

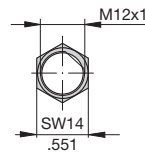
X 210 588 02/2.5 mm² (AWG 14), black (up to 20 A max. load)

X 210 588 03/2.5 mm² (AWG 14), red (up to 20 A max. load)

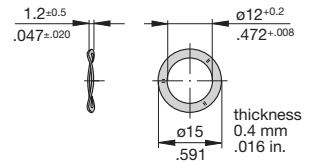
X 210 588 04/2.5 mm² (AWG 14), blue (up to 20 A max. load)



Hex nut Y 300 116 02



Spring washer Y 300 118 03

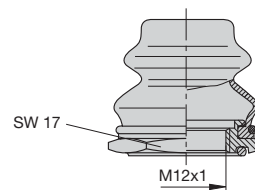


Accessories for push button

Splash cover with hex nut and O ring (IP66 and IP67)

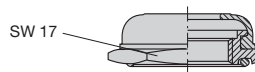
X 200 801 08 (nickel plated hex nut M12x1, splash cover transparent)

X 200 801 03 (black finish hex nut M12x1, splash cover black)



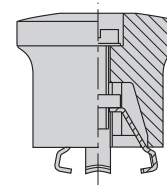
Splash seal, black, hex nut and O ring (IP54)

X 200 802 01 (nickel plated hex nut M12x1, splash seal black)

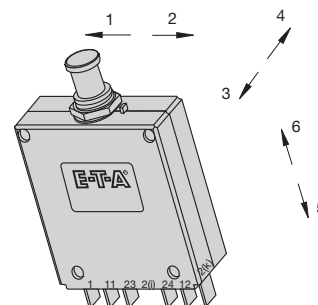


Actuator extension

X 200 803 01 (black button)



Shock directions / Mounting attitudes



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Description

Single and two pole magnetic circuit breakers with trip-free mechanism and push/pull on/off manual actuation. A choice of fast magnetic only or hydraulically delayed switching characteristics (S-type MO or HM CBE to EN 60934) ensures suitability for a wide range of applications. Convenient threadneck panel or plug-in mounting, and with a white push button indicator band showing clearly the tripped/off position. Available with auxiliary contacts (1 x N/O, 1 x N/C) for status signalling and fitted with an unprotected shunt tap terminal as standard. Reliable tripping with even the smallest overcurrents. Approved to CBE standard EN 60934 (IEC 60934).

Typical application

Railway vehicles, telecommunications, process control.

Standard current ratings and typical internal resistance values

Current rating (A)	Internal resistance (Ω) per pole	
	curve -F4	curves -E1/H1/R1
0.02	583	2441
0.05	94	376
0.08	34	148
0.1	23	94
0.15	25.1	39
0.2	14.6	30.5
0.3	6.32	9.9
0.5	0.79	3.16
0.75	0.39	1.55
1	0.25	0.79
1.5	0.27	0.37
2	0.059	0.20
2.5	0.044	0.146
3	0.028	0.10
4	0.04	0.059
5	< 0.02	0.040
6	< 0.02	0.026
8	< 0.02	< 0.02
10	< 0.02	< 0.02
12	< 0.02	< 0.02
15	< 0.02	< 0.02
16	< 0.02	< 0.02
20	< 0.02	< 0.02
25	< 0.02*	< 0.02
30	< 0.02*	< 0.02
40		< 0.02
50		< 0.02

* 50 % ON duty / 60 min.



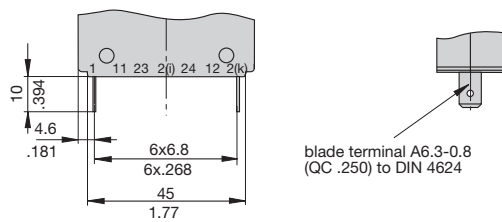
Technical data

For further details please see chapter: Technical Information

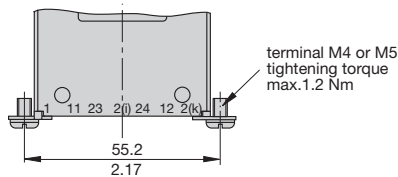
Voltage rating	DC 110 V $\pm$ 25 %	
Current ratings	0.02...50 A single pole 0.02...30 A 2-pole	
Auxiliary circuit	AC 240 V/DC 65 V 1 A DC 110 V $\pm$ 25 % 0,3 A	
Typical life	DC 110 V: 0.02...35 A 10,000 operations at 1 x I_N 40 + 50 A 3,000 operations at 1 x I_N 0.02...30 A 5,000 operations at 2 x I_N	
Ambient temperature	-40...+85 °C (-40...+185 °F)	
Insulation co-ordination (IEC 60664 and 60664A)	rated impulse withstand voltage 2.5 kV	pollution degree 2 reinforced insulation in operating area
Dielectric strength (IEC 60664 and 60664A)	test voltage	
	operating area	AC 3,000 V
	pole to pole (2-pole)	AC 1,500 V
	main to auxiliary circuit	AC 1,500 V
	aux. circuit 11-12/23-24	AC 1,000 V
	switching to trip circuit (-X)	AC 1,500 V
Insulation resistance	> 100 M Ω (DC 500 V)	
Interrupting capacity I_{cn}	1,000 A	
Degree of protection (IEC 60529/DIN 40050)	operating area IP40 terminal area IP00	
Vibration		
	with button down:	10 g (57-2000 Hz), $\pm$ 0.76 mm (10-57 Hz) at 0.9 x I_N
	other mounting planes:	10 g (57-2000 Hz) at I_N to IEC 60068-2-6, test Fc 10 frequency cycles/axis
Shock	100 g (11 ms) at 1 x I_N , directions 1,2,3,4,5 100 g (11 ms) at 0.8 x I_N , direction 6 to IEC 60068-2-27, test Ea	
Corrosion	96 hours at 5 % salt mist, to IEC 60068-2-11, test Ka	
Humidity	240 hours at 95 % RH to IEC 60068-2-78, test Cab	
Mass	approx. 70 g per pole	

Terminal design

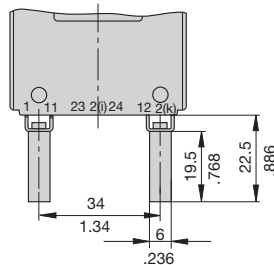
Terminal design -P1



Terminal design -K3/-K4

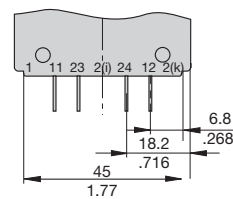


Terminal design -R

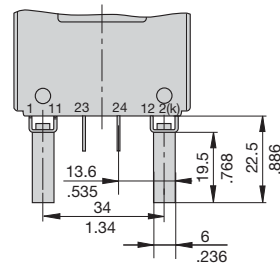


Auxiliary contact terminal design

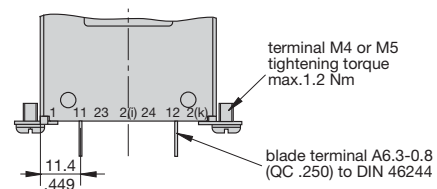
1 N/O, 1 N/C



1 N/O

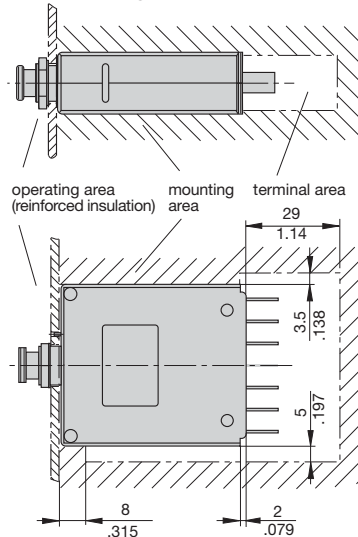


1 N/C

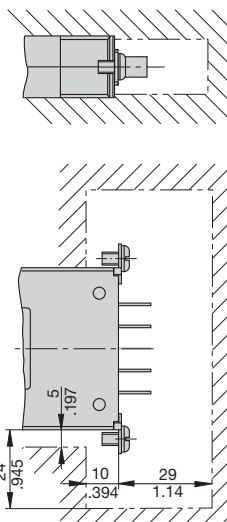


Installation drawings

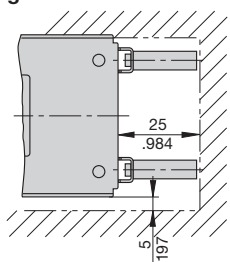
Terminal design -P



Terminal design -K

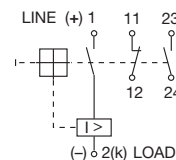


Terminal design -R

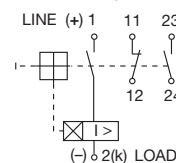


Internal connection diagrams

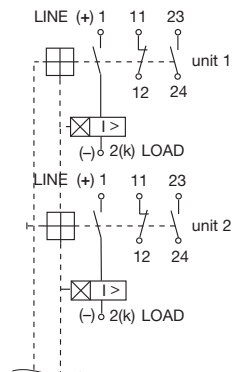
1-pole, protected magnetically



1-pole, protected hydraulic-magnetically



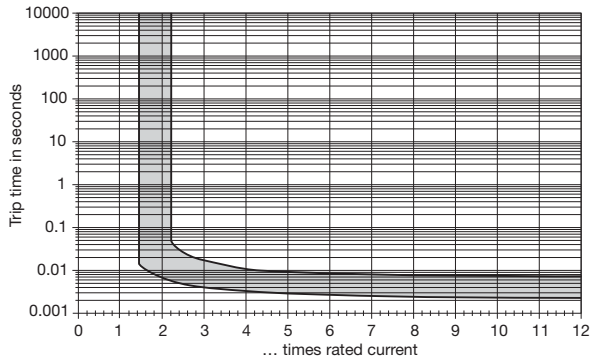
2-pole



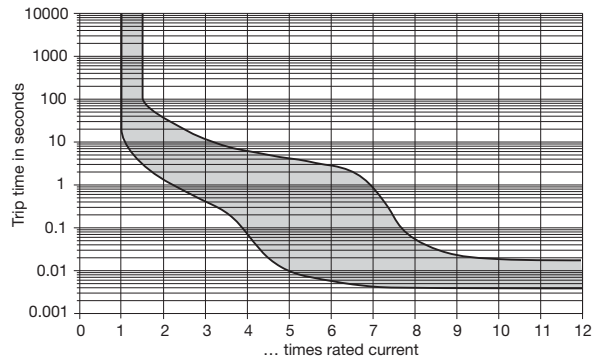
This is a metric design and millimeter dimensions take precedence (mm) inch

Typical time/current characteristics

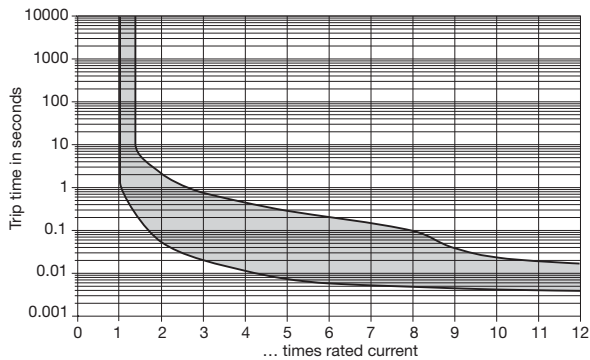
Curve F4, magnetic (undelayed)
at +23 °C / +73.4 °F



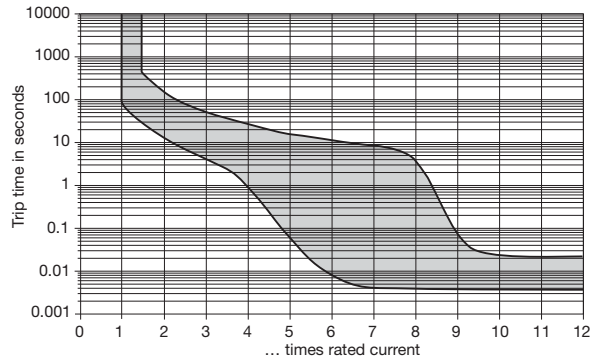
Medium delay curve H1, hydraulic-magnetic



Short delay curve E1, hydraulic-magnetic



Long delay curve R1, hydraulic-magnetic



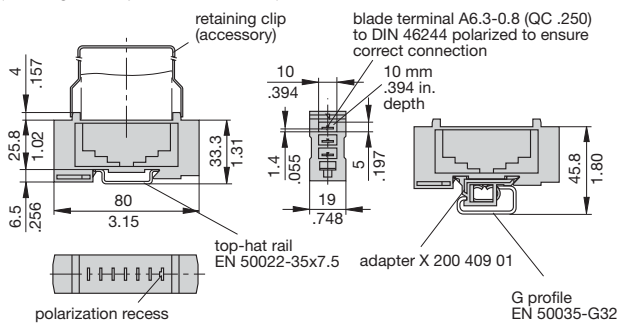
N.B. Curves E1, H1 and R1 will only be maintained if the escutcheon is mounted on a vertical surface.

Other curves upon request (e.g. impulse delay).

Accessories

**Socket
18-P10-Si**

(for ratings >16 A please contact E-T-A)



Bus bar (10-way) (supplied as a complete package)
for type 18 socket

(for max. 100 A continuous load),
more positions available on request

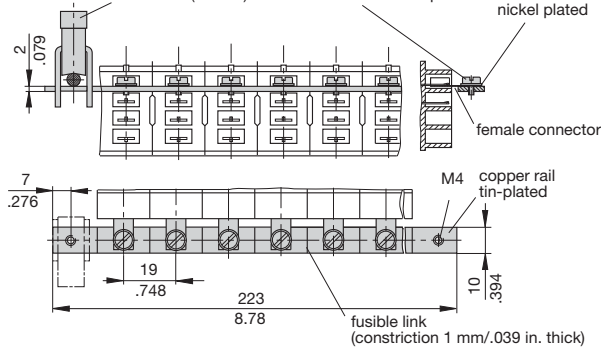
X 211 158 01 with terminal

X 211 158 02 without terminal

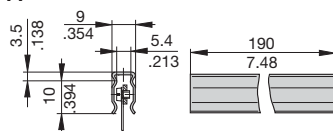
Phoenix terminal AKG 35
cross section max 35 mm² (AWG 2)

cylinder-head screw
M4x4 ISO 1207 nickel-plated

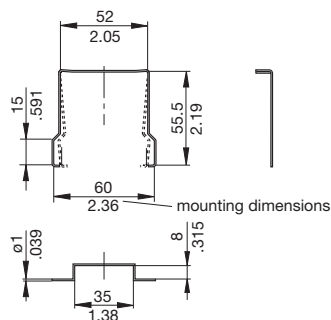
washer
A4.3 DIN 125
nickel plated



Insulated sleeving for bus bars
Y 303 824 11



Retaining clip for socket 18-P10-Si
Y 300 579 11



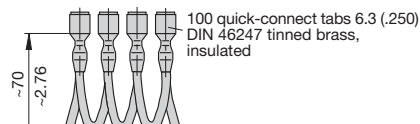
Connector bus link -P10

X 210 588 01/1.5 mm² (AWG 16), brown (up to 13 A max. load)

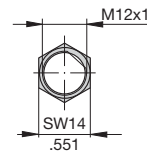
X 210 588 02/2.5 mm² (AWG 14), black (up to 20 A max. load)

X 210 588 03/2.5 mm² (AWG 14), red (up to 20 A max. load)

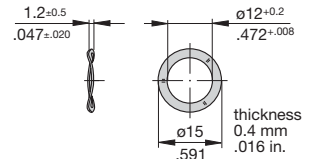
X 210 588 04/2.5 mm² (AWG 14), blue (up to 20 A max. load)



Hex nut
Y 300 116 02



Spring washer
Y 300 118 03

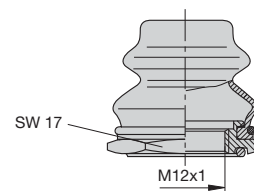


Accessories for push button

Splash cover with hex nut and O ring (IP66 and IP67)

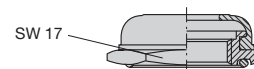
X 200 801 08 (nickel plated hex nut M12x1,
splash cover transparent)

X 200 801 03 splash cover, transparent
(black finish hex nut M12x1,
splash cover black)



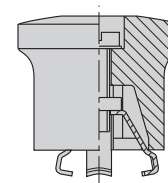
Splash seal, black, hex nut and O ring (IP54)

X 200 802 01 (nickel plated hex nut M12x1,
splash seal black)

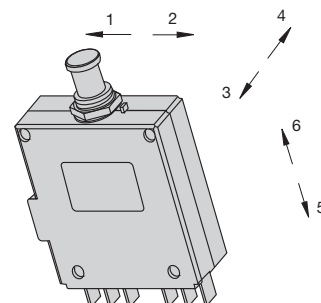


Actuator extension

X 200 803 01 (black button)



Shock directions / Mounting attitudes



This is a metric design and millimeter dimensions take precedence ($\frac{\text{mm}}{\text{inch}}$)

All dimensions without tolerances are for reference only. In the interest of improved design, performance and cost effectiveness the right to make changes in these specifications without notice is reserved. Product markings may not be exactly as the ordering codes. Errors and omissions excepted.

Description

Single and multipole magnetic circuit breakers with trip-free mechanism and toggle actuation. A choice of fast magnetic only or hydraulically delayed switching characteristics (S-type MO or HM CBE to EN 60934) ensures suitability for a wide range of applications. Industry standard dimensions and panel mounting. Options include auxiliary changeover contacts, or relay trip function. Low temperature sensitivity at rated load. Approved to CBE standard EN 60934 (IEC 60934).

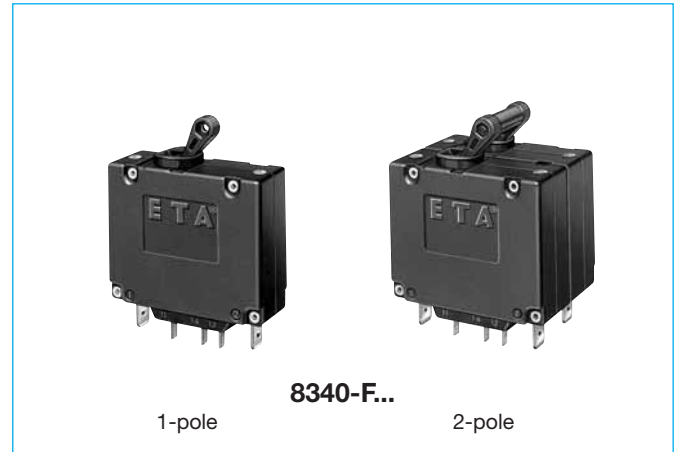
Typical applications

Control equipment, communications systems, transportation, power supplies.

Standard current ratings and typical internal resistance values

Current rating (A)	Curves and internal resistance per pole (Ω)			
	F1	F2	K1, M1, T1, K2, M2, T2	
0.02	1493	953	2669	2457
0.05	276	152	452	376
0.1	58	37	100	94
0.25	8.2	6.0	15.5	14.7
0.5	2.3	1.47	3.9	3.2
0.75	0.98	0.63	1.65	1.56
1	0.58	0.35	0.95	0.90
2	0.145	0.096	0.26	0.20
2.5	0.096	0.061	0.15	0.15
3	0.065	0.048	0.10	0.10
5	0.025	< 0.02	0.042	0.040
6	< 0.02	< 0.02	0.029	0.028
8	< 0.02	< 0.02	< 0.02	< 0.02
10	< 0.02	< 0.02	< 0.02	< 0.02
12	< 0.02	< 0.02	< 0.02	< 0.02
15	< 0.02	< 0.02	< 0.02	< 0.02
16	< 0.02	< 0.02	< 0.02	< 0.02
20	< 0.02	< 0.02	< 0.02	< 0.02
25	< 0.02	< 0.02	< 0.02	< 0.02
30	< 0.02	< 0.02	< 0.02	< 0.02
40	≤ 0.01	-	≤ 0.01	-
50	≤ 0.01	-	≤ 0.01	-

Corrosion	96 hours at 5 % salt mist to IEC 60068-2-11, test Ka
Humidity	240 hours at 95 % RH to IEC 60068-2-78, test Cab
Mass	approx. 65 g per pole



Technical data

For further details please see chapter: Technical Information

Voltage rating	3 AC 415 V; AC 240 V, 50/60 Hz; DC 80 V (higher DC ratings to special order)		
Current ratings	0.02...50 A 1-pole (40 + 50 A DC only) 0.02...30 A multipole		
Auxiliary circuit	6 A, AC 240 V 3 A, DC 28 V 1 A, DC 65 V 0.5 A, DC 80 V		
Typical life	3 AC 415 V, AC 240 V: 0.02...30 A 6,000 operations at 1 x I _N , inductive 10,000 operations at 1 x I _N , resistive DC 80 V: 0.02...25 A 6,000 operations at 1 x I _N , inductive 0.02...30 A 10,000 operations at 1 x I _N , resistive 40 + 50 A 6,000 operations at 1 x I _N , resistive		
Ambient temperature	-40...+85 °C (-40...+185 °F)		
Insulation co-ordination (IEC 60664 and 60664A)	rated impulse withstand voltage 2.5 kV	pollution degree 2 reinforced insulation in operating area	
Dielectric strength (IEC 60664 and 60664A)	test voltage	operating area AC 3,000 V pole to pole (2- and 3-pole) AC 1,500 V main to auxiliary circuit AC 3,000 V switching to trip circuit AC 1,500 V (version -X)	
Insulation resistance	> 100 MΩ (DC 500 V)		
Interrupting capacity I _{cn}	1,200 A at AC – 2,000 A at DC		
Interrupting capacity (UL 1077)	I _N	0.02...20 A	25...30 A
	AC:	1-pole AC 250 V/3,500A	AC 250 V/3,500A
		2-pole AC 250 V/3,500A	AC 250 V/5,000A
		3-pole 3AC 250V/3,500A	3AC250V/5,000A
	DC:	1-pole 0.02...50 A	DC 80 V/3,500 A
		2-pole 0.02...30 A	DC 80 V/3500 A
Interrupting capacity (UL 489A)	2,000 A		
Degree of protection (IEC 60529/DIN 40050)	operating area IP40 terminal area IP00		
Vibration	with toggle down: 10 g (57-2000Hz) ± 0.76 mm (10-57 Hz) at 0.9 x I _N directions 1, 2, 3, 4, 5: 10 g (57-2000 Hz) at 1 x I _N . with curves F1, F2 in all planes: 10 g (57-2000 Hz) ± 0.76 mm (10-57 Hz) at 0.8 x I _N , to IEC 60068-2-6, test Fc 10 frequency cycles/axis		
Shock	100 g (11 ms) at 1 x I _N , directions 1,2,3,4,5 100 g (11 ms) at 0.8 x I _N , direction 6. with curves F1, F2: 100 g (11 ms) at 0.8 x I _N to IEC 60068-2-27, test Ea		

Ordering information

Type No.

8340 magnetic circuit breaker with toggle actuator

Mounting

F flange mounting

Configuration

1 with mounting nuts 6-32 UNC

4 with mounting nuts M3

9 snap-in frame

Number of poles

0 single pole, switch only

1 single pole protected

2 two pole protected

3 three pole protected

4 four pole protected

5 two pole, protected on one pole only

6 four pole, protected on poles 1, 2 and 3 only

7 two pole, switch only

Panel hardware

0 without panel hardware

Terminal design (main contact)

K3 screw terminals with metric thread, M4 (recommended for $I_N \geq 20$ A)

K4 screw terminals with metric thread, M5 ($I_N = 40$ A)

P1 blade terminals

X1 blade terminals with separate switching and relay circuit

Characteristic curves

Characteristic curve F, instantaneous trip:

F1 DC trip at $1.01-1.5 \times I_N$

F2 AC 60/50Hz trip at $1.01-1.5 \times I_N$

Characteristic curve K, short delay:

K1 DC trip time at $2 \times I_N$: 0.16-1.2 s

K2 AC 60/50Hz trip time at $2 \times I_N$: 0.13-1.6 s

Characteristic curve M, medium delay:

M1 DC trip time at $2 \times I_N$: 0.6-7.5 s

M2 AC 60/50Hz trip time at $2 \times I_N$: 2.2-20 s

Without characteristic curve:

Q0 switch only

Characteristic curve T, long delay:

T1 DC trip time at $2 \times I_N$: 10-70 s

T2 AC 60/50Hz trip time at $2 \times I_N$: 15-150 s

Relay trip X:

X1 voltage trip at DC, instantaneous trip

X2 voltage trip at AC, instantaneous trip

Other curves to special order (e.g. pulse delayed, high inrush currents, capacitive loads)

Actuator colour / design

A black, long toggle

B white, long toggle

C blue, long toggle

K black, short toggle

L white, short toggle

M blue, short toggle

Z black, without toggle, with slot

Other colours to special order

Marking on actuator

0 without marking

L I-O; ON-OFF

N I-O; ON-OFF (I_N on housing top)

Auxiliary contacts

H0 without auxiliary contacts

H1 with auxiliary contacts, gold-flashed

H2 auxiliary contacts, gold-flashed on one pole only (multipole)

H3 auxiliary contacts, gold-flashed on poles 1 and 3 (3 and 4-pole)

Auxiliary contact function

4 1 change over contact

Auxiliary contact terminal design

2 blade terminal 2.8-0.5 mm

Current ratings

0.02...50 A

8340 - F 1 1 0 - P1 M1 - A L H1 4 2 - 30 A

8340 - F 1 1 0 - P1 M1 - A L H1 4 2 - 30 A

Voltage rating

only curves X1, X2

DC 5, 8, 12, 24 V

AC 110, 220, 240 V

Options

H higher flammability rating
Approvals upon request

Approval (optional)

U UL 489 A

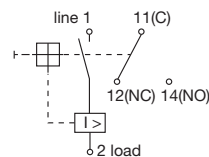
8340 - F 1 1 0 - P1 M1 - A L H1 4 2 - 30 A - ... - ... - U ordering example

Approvals

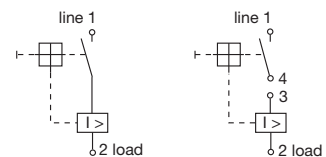
Authority	Voltage ratings	Current ratings
VDE (EN 60934)	3 AC 415 V; AC 240 V; DC 80 V DC 80 V	0.02...30 A 1 to 6-pole 0.02...50 A 1-pole
UL 1077, CSA	DC 80 V 3 AC 250 V; AC 250 V	0.02...50 A 1 to 6-pole 0.02...30 A 1 to 6-pole
UL 489 A	DC 80 V	0.05...30 A 1, 2-pole
QPL (Sweden)	AC 240 V; DC 50 V	1...30 A
CCC	3 AC 415 V; AC 240 V DC 80 V	0.02...30 A 0.02...50 A 1, 2-pole

Internal connection diagrams

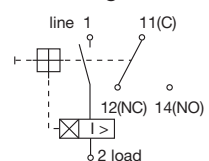
1-pole protected magnetically



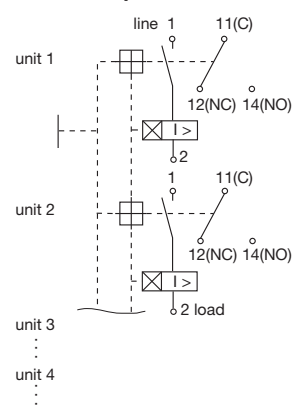
with separate switching and relay circuit



1-pole protected hydraulic-magnetic



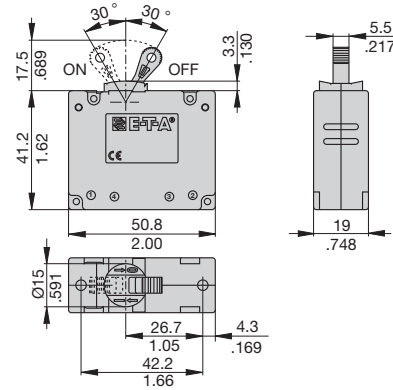
multipole



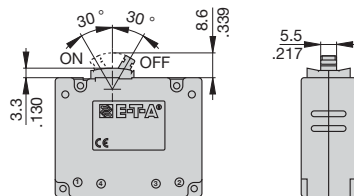
Dimensions

Flange mounting Configuration: F1/F4

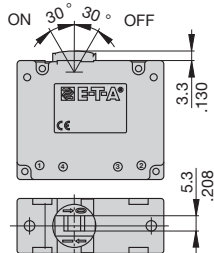
Actuator: long toggle



Actuator: short toggle

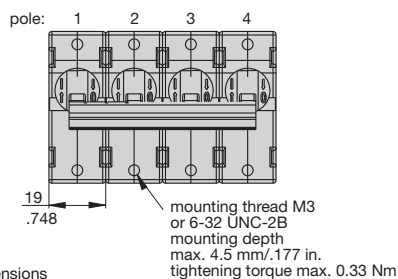


Actuator: without toggle, with slot



Applicable for nominal dimensions without direct tolerance indication:
DIN ISO 286 ± IT13

number of poles: 1-4



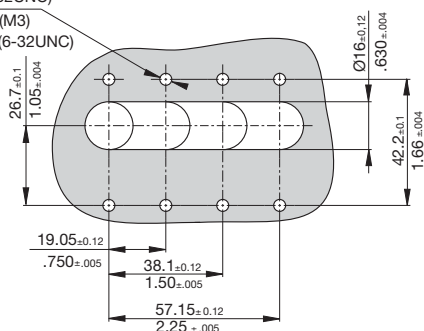
Cut-out dimensions
max. panel thickness: 3 mm

3.5^{+0.1}_{-0.15} (M3)

4^{+0.1}_{-0.15} (6-32UNC)

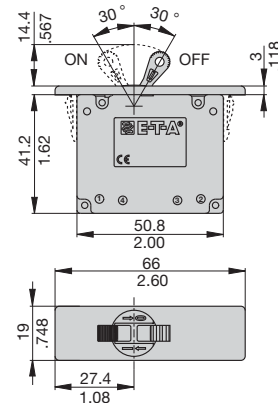
.138^{+0.004}_{-0.008} (M3)

.157^{+0.004}_{-0.008} (6-32UNC)

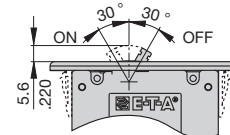


Configuration: F9

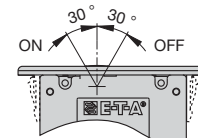
Actuator: long toggle



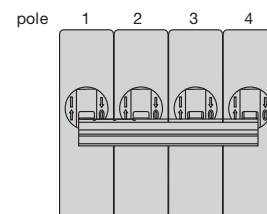
Actuator: short toggle



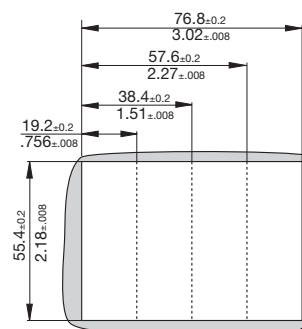
Actuator: without toggle, with slot



number of poles: 1-4



Cut-out dimensions
max. panel thickness: 2 ± 0,5 mm

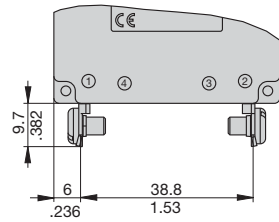


Applicable for nominal dimensions without direct tolerance indication:
DIN ISO 286 ± IT13

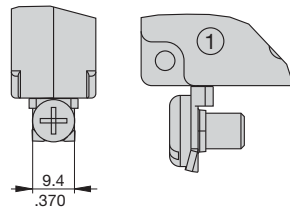
This is a metric design and millimeter dimensions take precedence (mm)
inch

Terminal design / Dimensions

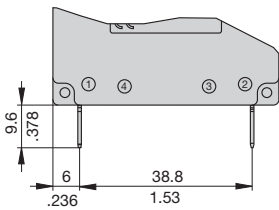
K 3/4 screw terminals tightening torque max. 1.2 Nm



K3 screw terminals M4 K4 screw terminals M5

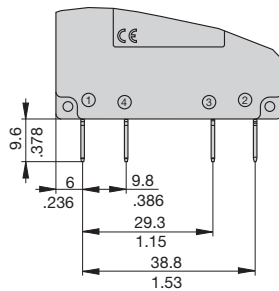


P1 blade terminals



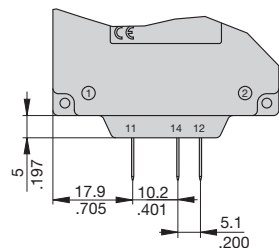
blade terminals
DIN 46244-A6,3-0,8

X1 blade terminals with separate switching and relay circuit



blade terminals
DIN 46244-A6,3-0,8

Auxiliary contacts version H (standard, asymmetrical gold-flushed terminals, silver contacts)



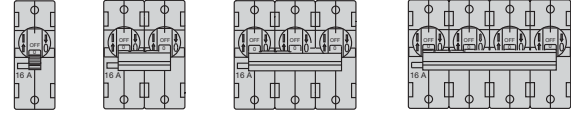
blade terminals

Actuator configuration

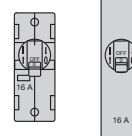
Actuator design

number of poles: 1 - 4
Configuration: F1 / F4

Actuator long

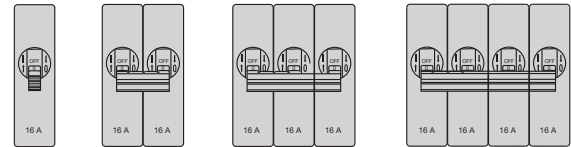


Actuator short



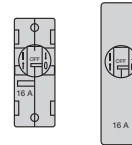
number of poles: 1 - 4
Configuration: F9

Actuator long



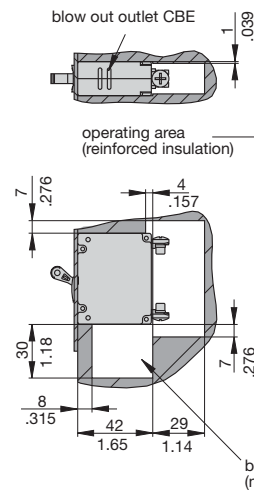
number of poles: 1
Configuration: F1 / F4 / F9

Actuator: Z (black, without toggle, with slot)

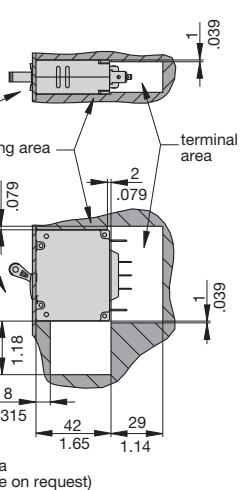


Installation drawing

Terminal design K



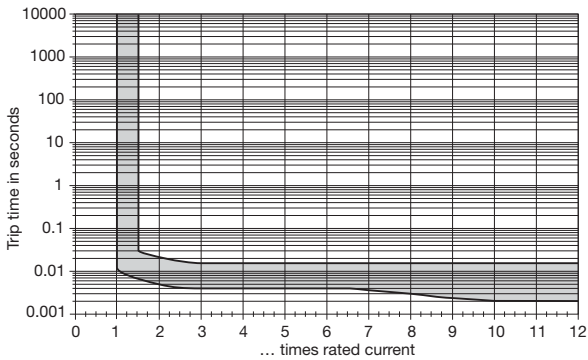
Terminal design P



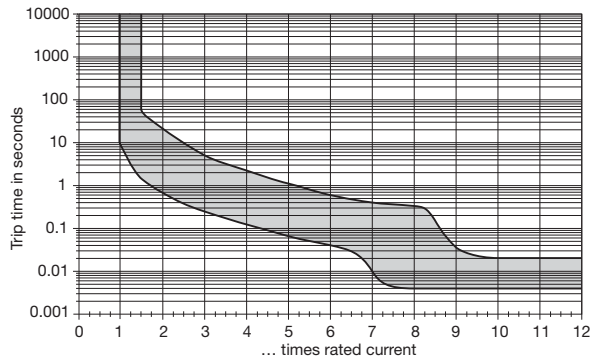
Trip time values indicated for front mounting on a vertical even surface

Typical time/current characteristics at 23 °C / +73.4 °F

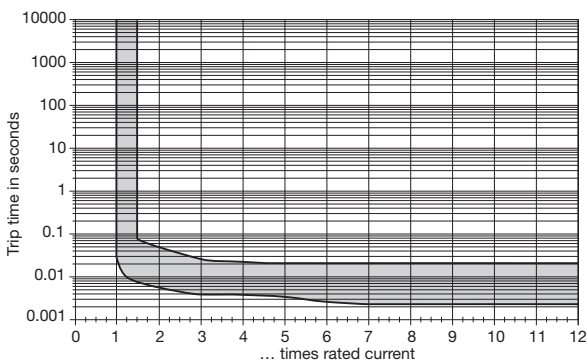
Curve F1 (instantaneous) for DC



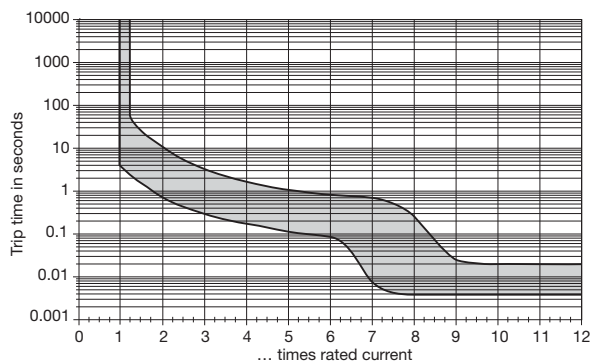
Curve M0 (medium delay) for AC/DC



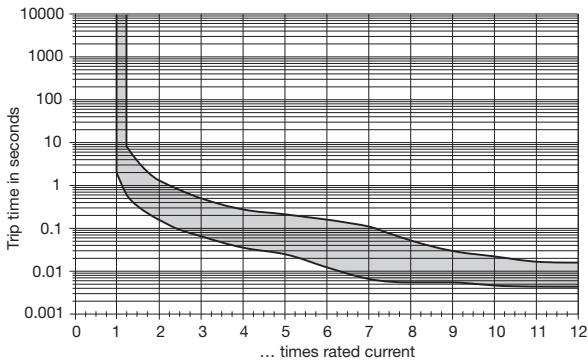
Curve F2 (instantaneous) for AC 50/60 Hz



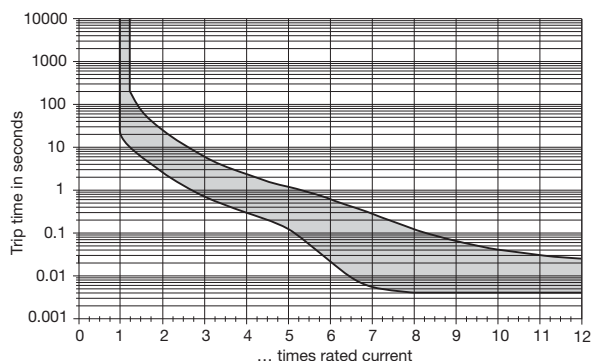
Curve M1 (medium delay) for DC



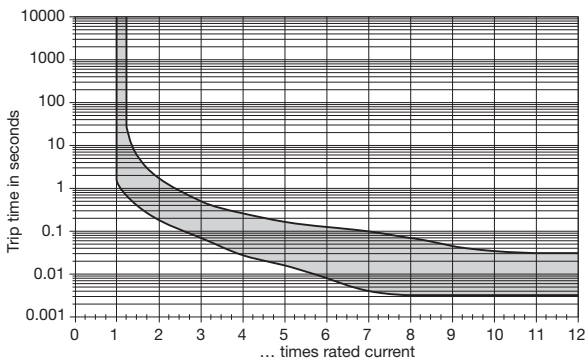
Curve K1 (short delay) for DC



Curve M2 (medium delay) for AC 50/60 Hz



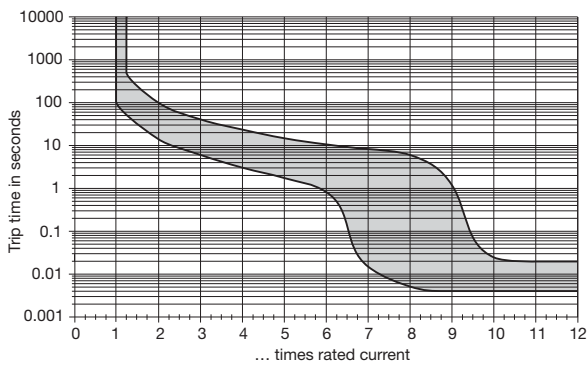
Curve K2 (short delay) for AC 50/60 Hz



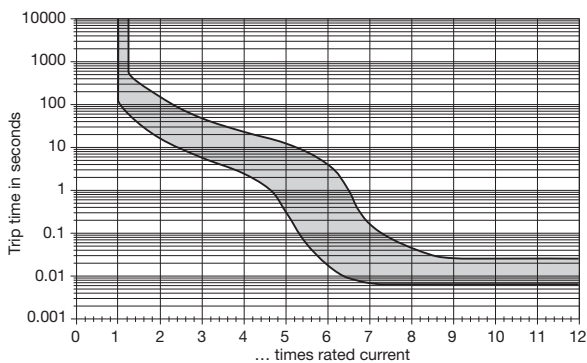
N.B. All curves will only be maintained if the escutcheon is mounted on a vertical surface.
Other characteristic curves to special order (e. g. with impulse delay for inrush peaks).

Typical time/current characteristics at 23 °C / +73.4 °F

Curve T1 (long delay) for DC



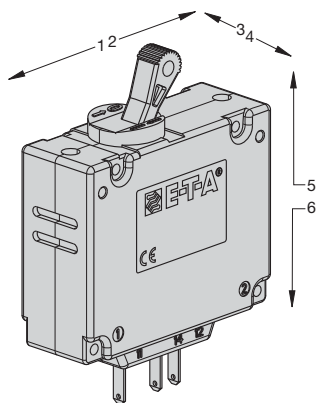
Curve T2 (long delay) for AC 50/60 Hz



N.B. All curves will only be maintained if the escutcheon is mounted on a vertical surface.

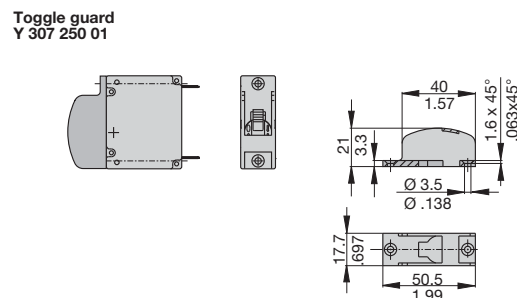
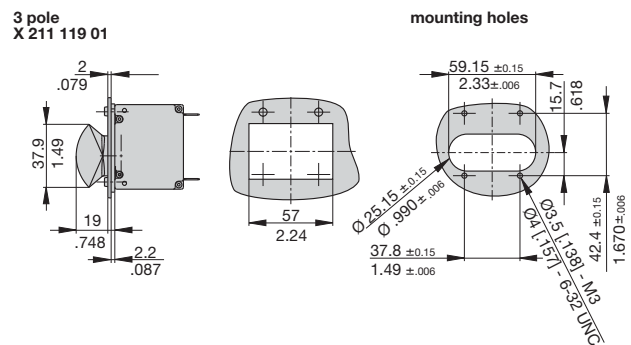
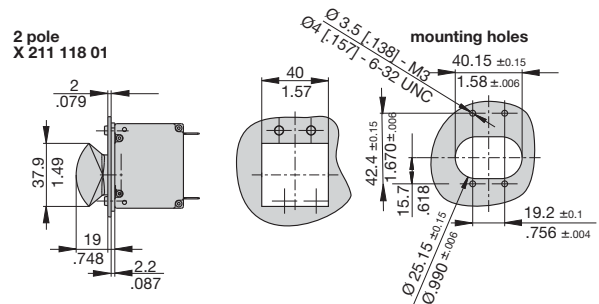
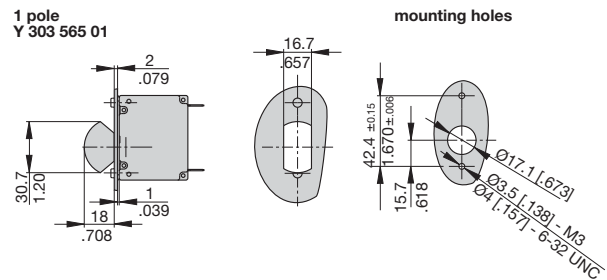
Other characteristic curves to special order (e. g. with impulse delay for inrush peaks).

Shock directions / Mounting attitudes



Accessories

Splash cover with mounting plate and screws



This is a metric design and millimeter dimensions take precedence ($\frac{\text{mm}}{\text{inch}}$)

All dimensions without tolerances are for reference only. In the interest of improved design, performance and cost effectiveness the right to make changes in these specifications without notice is reserved. Product markings may not be exactly as the ordering codes. Errors and omissions excepted.

Description

Single, two, three and four pole magnetic and hydraulic-magnetic circuit breakers with trip-free mechanism and toggle actuation. A choice of fast magnetic only or hydraulically delayed switching characteristics (S-type MO or HM CBE to EN 60934) ensures suitability for a wide range of applications. Featuring a combi-foot design for symmetric and asymmetric rail mounting. Low temperature sensitivity at rated load. Approved to CBE standard EN 60934 (IEC 60934).

Typical applications

Power supplies, control equipment, communication systems, EDP systems.

Standard current ratings and typical internal resistance values

Current rating (A)	Curves and internal resistance per pole (Ω)			
	F1	F2	K1, M1, T1	K2, M2, T2
0.02	1493	953	2669	2457
0.05	276	152	452	376
0.1	58	37	100	94
0.25	8.2	6.0	15.5	14.7
0.5	2.3	1.47	3.9	3.2
0.75	0.98	0.63	1.65	1.56
1	0.58	0.35	0.95	0.90
2	0.145	0.096	0.26	0.20
2.5	0.096	0.061	0.15	0.15
3	0.065	0.048	0.10	0.10
5	0.025	< 0.02	0.042	0.040
6	< 0.02	< 0.02	0.029	0.028
8	< 0.02	< 0.02	< 0.02	< 0.02
10	< 0.02	< 0.02	< 0.02	< 0.02
12	< 0.02	< 0.02	< 0.02	< 0.02
15	< 0.02	< 0.02	< 0.02	< 0.02
16	< 0.02	< 0.02	< 0.02	< 0.02
20	< 0.02	< 0.02	< 0.02	< 0.02
25	< 0.02	< 0.02	< 0.02	< 0.02
30	< 0.02	< 0.02	< 0.02	< 0.02
40	≤ 0.01	-	≤ 0.01	-
50	≤ 0.01	-	≤ 0.01	-

Approvals

Authority	Voltage ratings	Current ratings
VDE (EN 60934)	3 AC 415 V; AC 240 V; DC 80 V	0.02...30 A 1 to 6-pole 0.02...50 A 1-pole
UL1077, CSA	DC 80 V 3 AC 250 V; AC 250 V	0.02...50 A 1 to 6-pole 0.02...30 A 1 to 6-pole
UL 489 A	DC 80 V	0.05...30 A 1, 2-pole
CCC	3 AC 415 V; AC 240 V DC 80 V	0.02...30 A 0.02...50 A 1, 2-pole

Humidity	240 hours at 95 % RH, to IEC 60068-2-78, test Cab
Mass	approx. 98 g per pole



single pole

8340-T...

three pole

Technical data

For further details please see chapter: Technical Information

Voltage rating	3 AC 415V; AC 240V (50/60Hz); DC 80V (higher DC voltages to special order)		
Current rating range	0.02...50 A single pole (40 + 50 A DC only) 0.02...30 A multipole		
Auxiliary circuit	1 A, AC 240 V/DC 65 V; 0.5 A DC 80 V		
Typical life	3 AC 415 V AC 240 V: 0.02...30 A 6,000 operations at 1 x I _N , inductive 10,000 operations at 1 x I _N , resistive DC 80 V: 0.02...25 A 6,000 operations at 1 x I _N , inductive 0.02...30 A 10,000 operations at 1 x I _N , resistive 40 + 50 A 6,000 operations at 1 x I _N , resistive		
Ambient temperature	-40...+85 °C (-40...+185 °F)		
Insulation co-ordination (IEC 60664 and 60664A)	rated impulse withstand voltage 2.5 kV reinforced insulation in operating area	pollution degree 2	
Dielectric strength (IEC 60664 and 60664A) operating area pole to pole main to aux. circuit	test voltage AC 3,000 V AC 1,500 V AC 1,500 V		
Insulation resistance	> 100 MΩ (DC 500 V)		
Interrupting capacity I _{cn}	1,200 A at AC 2,000 A at DC		
Interrupting capacity (UL 1077)	AC:	I _N 0.02...20 A 1-pole AC 250 V/3,500A 2-pole AC 250 V/3,500A 3-pole 3AC 250V/3,500A	25...30 A AC 250 V/3,500A AC 250 V/5,000A 3AC250V/5,000A
	DC:	1-pole 0.02...50 A 2-pole 0.02...30 A	DC 80 V/3,500 A DC 80 V/3500 A
Interrupting capacity (UL 489A)	2,000 A		
Degree of protection (IEC 60529/DIN 40050)	operating area IP40 terminal area IP20		
Vibration	with toggle down: directions 1, 2, 3, 4, 5: with curves F1, F2:		
	10 g at 0.9 I _N 10 g at 1 x I _N 10 g at 0.8 x I _N in all planes. (57-2000 Hz) ± 0.76 mm (10-57 Hz) to IEC 60068-2-6, test Fc 10 frequency cycles/axis		
Shock	directions 1, 2, 3, 4, 5: direction 6: with curves F1, F2:		
	100 g (11 ms) at 1 x I _N 100 g (11 ms) at 0.8 x I _N 100 g (11 ms) at 0.8 x I _N to IEC 60068-2-27, test Ea		
Corrosion	96 hours at 5 % salt mist, to IEC 60068-2-11, test Ka		

Ordering information

Type No.

8340 circuit breaker with toggle actuator

Mounting

T rail mounting

Configuration

1 snap-on installation

Number of poles

- | | | |
|---|---|-----------------------------------|
| 0 | single pole, switch only | } magnetic,
hydraulic-magnetic |
| 1 | single pole protected | |
| 2 | two pole protected | |
| 3 | three pole protected | |
| 4 | four pole protected | |
| 5 | two pole, protected on one pole only | |
| 6 | four pole, protected on poles 1, 2 and 3 only | |
| 7 | two pole, switch only | |

Panel hardware

0 without panel hardware

Terminal design (main contact)

K1 recessed screw/pressure plates M4

Characteristic curve

Curve F, instantaneous trip:

- | | | |
|----|-------------|-------------------------------|
| F1 | DC | trip at $1.01-1.5 \times I_N$ |
| F2 | AC 60/50 Hz | trip at $1.01-1.5 \times I_N$ |

Curve K, short delay:

- | | | | |
|----|-------------|------------------------|------------|
| K1 | DC | trip at $2 \times I_N$ | 0.16-1.2 s |
| K2 | AC 60/50 Hz | trip at $2 \times I_N$ | 0.13-1.6 s |

Curve M, medium delay:

- | | | | |
|----|-------------|------------------------|-----------|
| M1 | DC | trip at $2 \times I_N$ | 0.6-7.5 s |
| M2 | AC 60/50 Hz | trip at $2 \times I_N$ | 2.2-20 s |

Without characteristic curve

Q0 switch only

Curve T, long delay:

- | | | | |
|----|-------------|------------------------|----------|
| T1 | DC | trip at $2 \times I_N$ | 10-70 s |
| T2 | AC 60/50 Hz | trip at $2 \times I_N$ | 15-150 s |

Other characteristic curves to special order

(e.g. pulse-delayed, high inrush currents, capacitive loads)

Actuator colour / design

- A black, long toggle
- B white, long toggle
- C blue, long toggle
- K black, short toggle
- L white, short toggle
- M blue, short toggle

Other colours to special order

Marking on actuator

- 0 without marking
- L I-O; ON-OFF
- M I-O; ON-OFF (I_N , U_N , trip curve, schematic diagram on housing top)
- N I-O; ON-OFF (I_N , on housing top)

Auxiliary contacts

- H0 without auxiliary contacts
- H1 with auxiliary contact
- H2 with auxiliary contact on one pole only (multipole)

Auxiliary contact function

(see internal connection diagrams)

- 2 1 N/O contact
- 3 1 N/C contact

Auxiliary contact terminal design

6 screw/pressure plate M3

Current ratings

0.02...50 A

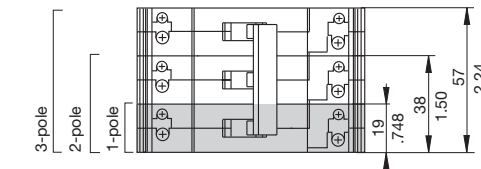
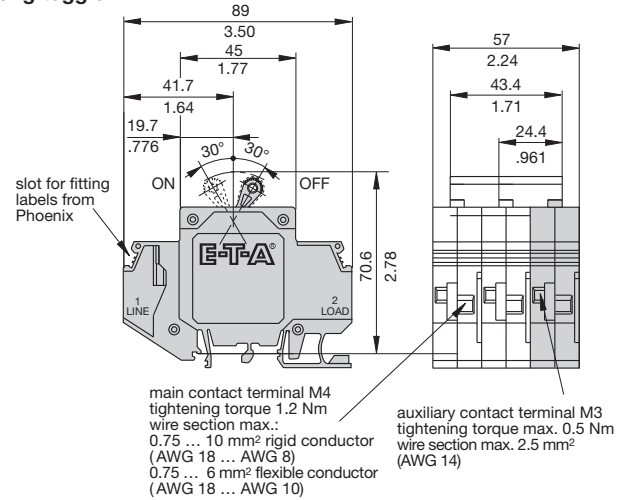
Approval (optional)

U UL 489 A

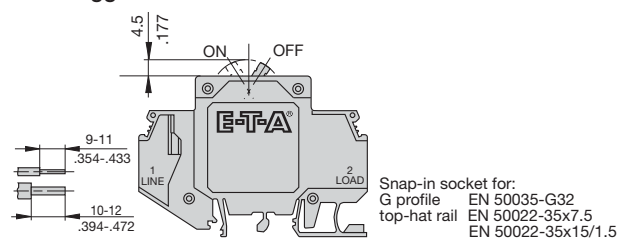
8340 - T 1 1 0 - K1 M1 - A L H1 2 6 - 10 A - U ordering example

Dimensions

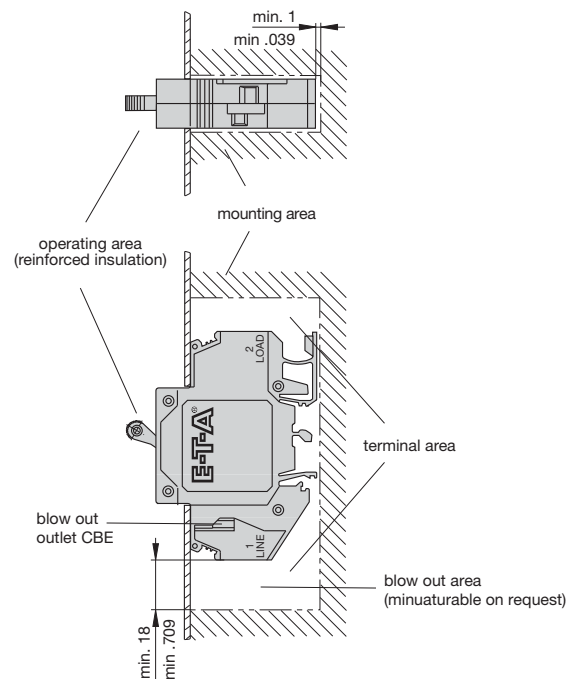
long toggle



short toggle



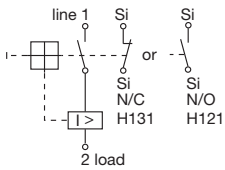
Installation drawing



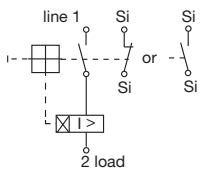
This is a metric design and millimeter dimensions take precedence (mm)
inch

Internal connection diagrams

1-pole protected magnetically

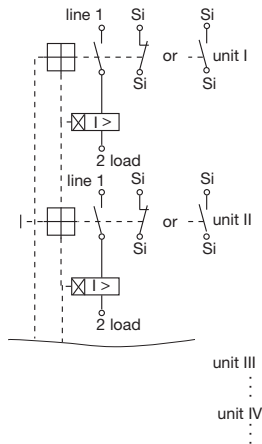


1-pole protected hydraulic-magnetically

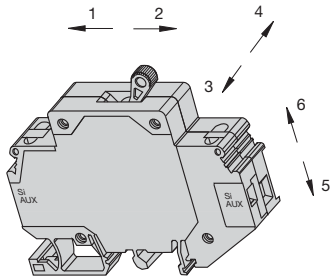


Optional N/C or N/O auxiliary contact (Si)

multipole

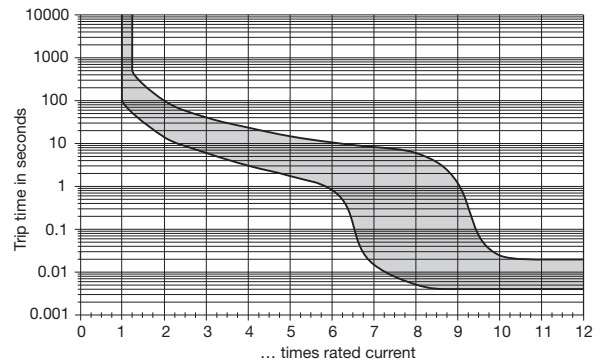


Shock directions

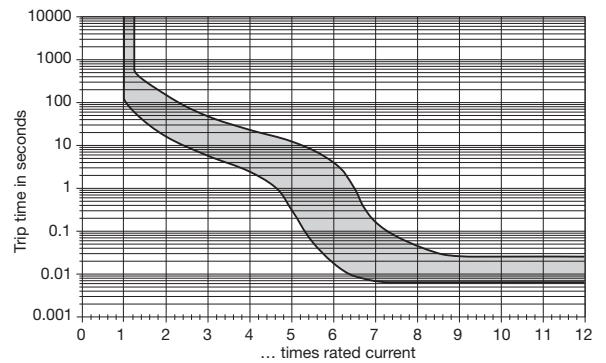


Typical time/current characteristics at 23 °C / +73.4 °F

Curve T1 (long delay) for DC



Curve T2 (long delay) for AC 50/60 Hz

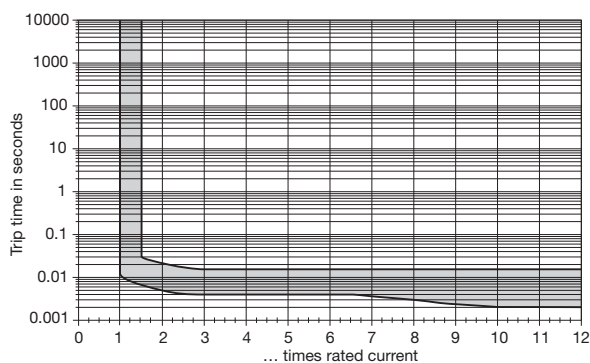


N.B. All curves will only be maintained if the escutcheon is mounted on a vertical surface.

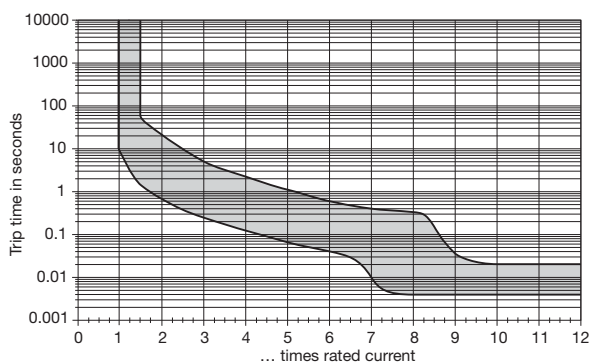
Other characteristic curves to special order (e. g. with impulse delay for inrush peaks).

Typical time/current characteristics at 23 °C / +73.4 °F

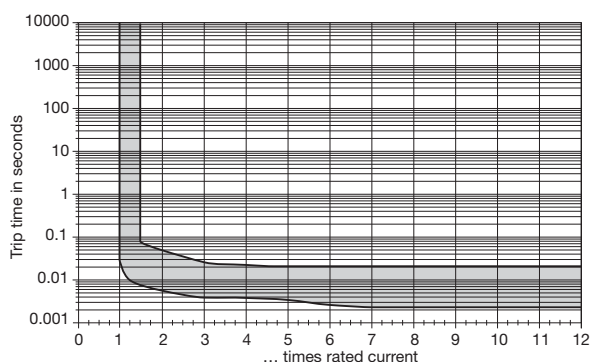
Curve F1 (instantaneous) for DC



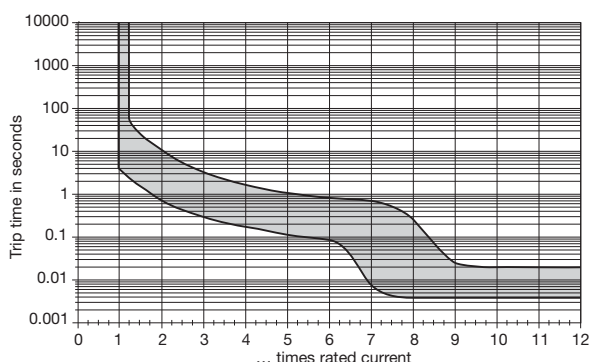
Curve M0 (medium delay) for AC/DC



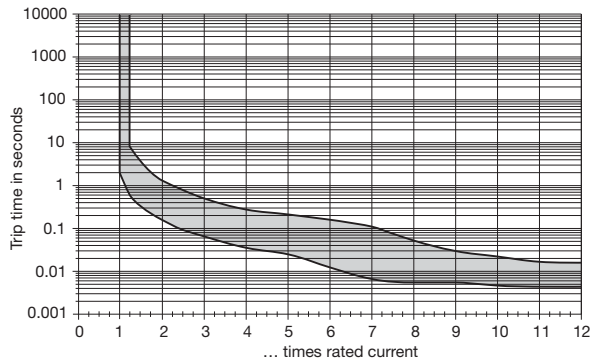
Curve F2 (instantaneous) for AC 50/60 Hz



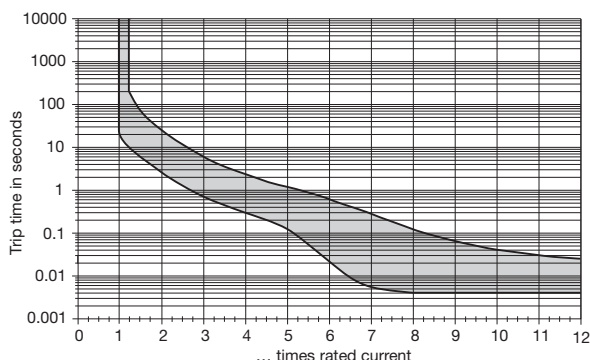
Curve M1 (medium delay) for DC



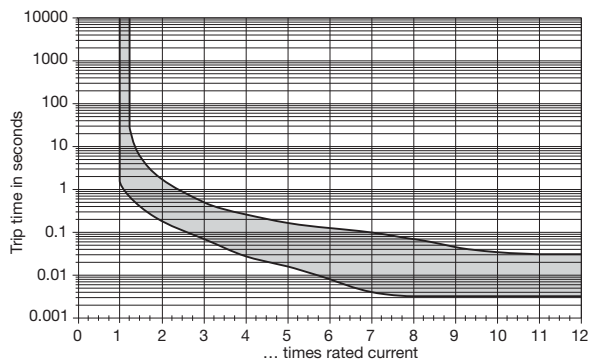
Curve K1 (short delay) for DC



Curve M2 (medium delay) for AC 50/60 Hz



Curve K2 (short delay) for AC 50/60 Hz



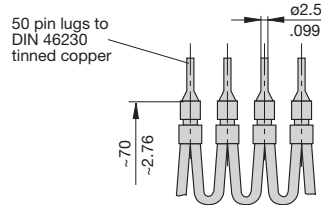
N.B. All curves will only be maintained if the escutcheon is mounted on a vertical surface.

Other characteristic curves to special order (e. g. with impulse delay for inrush peaks).

Accessories

Connector bus links -K10

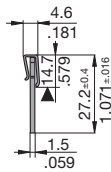
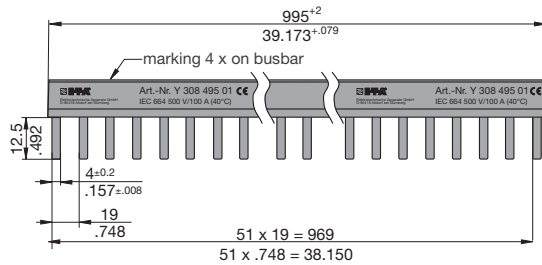
X210 589 01/2.5 mm², (AWG 14) (black) up to 20 A max. load
X210 589 02/1.5 mm², (AWG 16) (brown) up to 13 A max. load



Busbar 1-pole Y 308 495 01

The one metre long busbars can be cut to suitable lengths. Plug-on caps can be fitted on the ends to provide brush contact protection.

I_{max} - busbar 100 A (40°C)

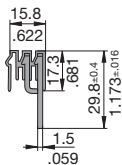
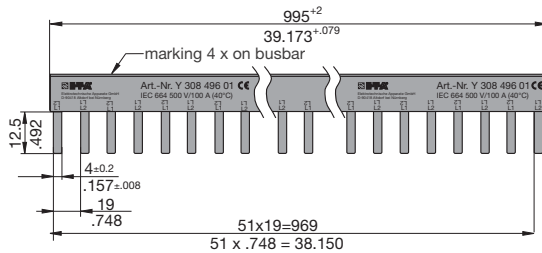


Plug-on cap, 1-pole Y 307 851 01

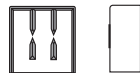


Busbar 2-pole Y 308 496 01

I_{max} - busbar 100 A (40°C)

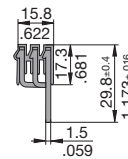
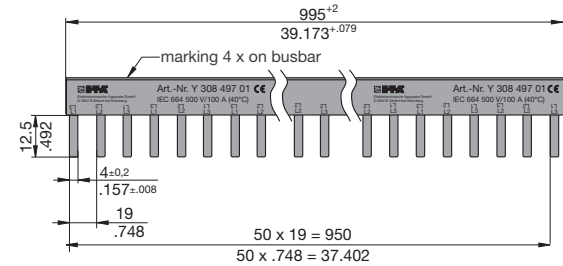


Plug-on cap, busbar 2/3-pole Y 308 506 01



Busbar 3-pole Y 308 497 01

I_{max} - busbar 100 A (40°C)

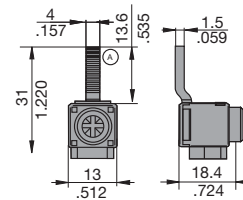


Plug-on cap, busbar 2/3-pole Y 308 506 01



Supply terminal I_{max} 63 A Y 308 504 01

Max. tightening torque of terminal screw 2 Nm
 Max. cable cross section: 25 mm² / single strand
 16 mm² / multistrand with wire end ferrule



Caution:

When using multipole busbars please leave at least one pole's width between two adjacent line entry terminals.

This is a metric design and millimeter dimensions take precedence (mm/inch)

All dimensions without tolerances are for reference only. In the interest of improved design, performance and cost effectiveness the right to make changes in these specifications without notice is reserved. Product markings may not be exactly as the ordering codes. Errors and omissions excepted.

Description

Single or multipole hydraulic-magnetic circuit breakers with trip-free-mechanism and toggle actuation. A choice of switching characteristics ensures suitability for a wide range of applications. Industry standard dimensions and panel mounting. Auxiliary contacts optional. Low temperature sensitivity at rated load. Approved to CBE standard EN 60934 (IEC 60934) S-type HM CBE.

Typical applications

In the business fields Communication and Transport: power supplies, switchgear, instrumentation and process control engineering.

Standard current ratings and typical internal resistance values

Current rating (A)	Trip curves and internal resistance (Ω) per pole	
	K1, M1, T1,	K2, M2, T2
0.05	452	376
0.1	100	94
1	0.95	0.90
2	0.26	0.20
3	0.10	0.10
5	0.042	0.040
10	< 0.02	< 0.02
15	< 0.02	< 0.02
20	< 0.02	< 0.02
25	< 0.02	< 0.02
30	< 0.02	< 0.02
40	< 0.01	< 0.01
50	< 0.01	< 0.01
60	< 0.01	< 0.01
80	< 0.01	< 0.01
100	< 0.01	< 0.01
125	< 0.01	< 0.01

Interrupting capacity to EN 60934, UL 489 and UL 1077

IEC 60934 – test series E

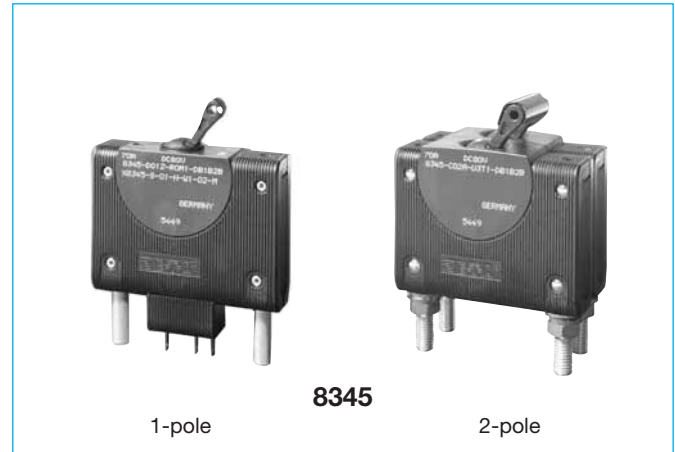
voltage	number of poles	I_N max. (A)	I_{cn} (A)
DC 80 V	1 + 2	0.02...125	10,000
AC 240/415 V	1 - 6	0.02...80	6 x I_N
AC 240 V	1	0.02...20	5,000

UL 489 – test sequence Z

voltage	number of poles	I_N max. (A)	I_{cn} (A)
DC 80 V	1 + 2	0.5...125	10,000
AC 120 V	1	0.5...80	5,000
AC 120/240 V	1	0.5...80	5,000
AC 240 V	1 (2)	0.5...20	5,000

UL 1077

voltage	number of poles	I_N max. (A)	I_{cn} (A)
DC 80 V	1 + 2	0.02...125	10,000
AC 277/480 V	1 - 6	0.02...70	5,000



Technical data

Voltage rating	3 AC 415 V; AC 277/480 V; AC 120/240 V; AC 240 V; DC 80 V,
Current rating range	0.05...125 A single and multipole 150...180 A single pole, two poles connected in parallel higher ratings upon request
Auxiliary circuit	AC 240 V 6 A DC 28 V 3 A DC 65 V 1 A DC 80 V 0.5 A
Typical life	10,000 operations at 1 x I_N
Ambient temperature	-40...+85 °C (-40...+185 °F)
Insulation co-ordination (IEC 60664)	2.5 kV/2 reinforced insulation in operating area
Dielectric strength	test voltage
operating area	AC 3,000 V
pole to pole	AC 1,500 V
main to auxiliary circuit	AC 3,000 V
switching to trip circuit	AC 1,500 V
Insulation resistance	> 100 M Ω (DC 500 V)
Degree of protection (IEC 60529)	operating area IP40 terminal area IP00
Vibration	
upside down:	10 g (57-2000 Hz) $\pm$ 0,76 mm (10-57 Hz) at 0.9 I_N
directions 1, 2, 3, 4, 5:	10 g at 1 x I_N
with curves F1, F2:	10 g at 0.8 x I_N in all planes. (57-2000 Hz) $\pm$ 0.76 mm (10-57 Hz) to IEC 60068-2-6, test Fc 10 frequency cycles/axis
Shock	
directions 1, 2, 3, 4, 5:	100 g (11 ms) at 1 x I_N ,
direction 6:	100 g (11 ms) at 0.8 x I_N ,
with curves F1, F2:	100 g (11 ms) at 0.8 x I_N to IEC 60068-2-27, test Ea
Corrosion	96 hours at 5% salt mist, to IEC 60068-2-11, test Ka
Humidity	240 hours at 95 % RH, to IEC 60068-2-78, test Cab
Mass	approx. 90 - 120 g per pole depending on version

Approvals

VDE (EN 60934)	1- to 6-pole
UL 489	
UL 1077	1- to 6-pole
CCC	1- to 4-pole

Ordering information for EN 60934 and UL 1077

Type No.
8345

Mounting

- B** flange mounting, with rectangular aperture with mounting nut 6-32UNC
- C** flange mounting, with rectangular aperture with mounting nut M3
- E** flange mounting, with round aperture with mounting nut 6-32UNC
- F** flange mounting, with round aperture with mounting nut M3
- X** flange mounting, with rectangular aperture, with 2 mounting brackets

Configuration

- 0** without barrier
- 1** with small barrier
- 2** with large barrier (requested for multipole AC applications with approvals to UL 489, UL 1077, IEC)

Number of poles

- 0** single pole unprotected
- 1** single pole protected
- 2** two pole protected
- 3** three pole protected
- 4** four pole protected
- P** one pole protected, two poles connected in parallel characteristic curves E/H/R upon request
- Q** one pole protected, three poles connected in parallel characteristic curves E/H/R upon request
- R** one pole protected, four poles connected in parallel characteristic curves E/H/R upon request
- S** one pole protected, five poles connected in parallel characteristic curves E/H/R upon request

Actuator configuration

- A** all poles with standard toggle
- B** reduced number of standard toggles
- Z** without actuator

Terminal design

- L** screw terminals M5 ≤ 50 A
- M** solder terminals ≤ 75 A
- P** blade terminals ≤ 35 A
- R** round connectors 6 mm
- S** stud terminals M5 ≤ 60 A
- T** stud terminals 10-32UNF-3A ≤ 60 A
- U** stud terminals M6 ≤ 125 A
- V** stud terminals 1/4-20UNC-3A ≤ 125 A
- W** laminated round terminals ≤ 125 A

Terminal hardware

- 0** without
- 3** with washer and nut
- 6** Phillips screws

Characteristic curve

- K1** short delay DC
- K2** short delay AC
- M0** medium delay AC/DC
- M1** medium delay DC
- M2** medium delay AC
- Q0** switch only
- T1** long delay DC
- T2** long delay AC

Version

- D** standard

Colour configuration

- B1** black actuator
- B2** white actuator
- B3** blue actuator

Marking

- | | | |
|-----------|---|---------------|
| | front plate | actuator base |
| B1 | without | ON-OFF |
| B2 | I _N | ON-OFF |
| B3 | I _N | ON-OFF |
| | characteristic curve | |
| B4 | I _N , characteristic curve, wiring diagram on side | ON-OFF |

Rated voltage

- B** AC or ≤ 80 V DC
- C** DC ≤ 80 V
- AC ≤ 277 V
- (only for configurations 0 and 1 for UL 1077)

8345 - C 0 1 A - U 3 M1 - D B1 B1 B

8345 - C 0 1 A - U 3 M1 - D B1 B1 B

Current ratings

- 0.05...125 A
- higher current ratings upon request

8345 - C 0 1 A - U 3 M1 - D B1 B1 B - 60 A ordering example

Remote trip coil available to special order!

Ordering information for auxiliary contact module

Type number

X8345

Module

- S** auxiliary contact module

Auxiliary contacts

- 01** in all poles
- 02** in pole 1 only
- 03** in poles 1+ 3 only
- 04** in pole 2 only

Auxiliary contact version

- H** auxiliary contacts standard, gold-flushed (asymmetrical terminals)
- K** auxiliary contacts, tin-plated (symmetrical terminals)

Auxiliary contact function

- W1** 1 changeover
- W2** 2 changeover

Terminal design

- 02** microswitch with blade terminals DIN 46244-A2.8-0.5
- M** mounted to base unit

X8345 - S 01 H W1 02 M ordering example

Ordering information for UL 489

Type No.
8345

Mounting

- B** flange mounting, with rectangular aperture with mounting nut 6-32UNC
- C** flange mounting, with rectangular aperture with mounting nut M3
- E** flange mounting, with round aperture with mounting nut 6-32UNC
- F** flange mounting, with round aperture with mounting nut M3
- X** flange mounting, with rectangular aperture, with 2 mounting brackets

Configuration

- 0** without barrier for DC
- 1** with small barrier for DC (optional)
- 2** with large barrier for AC

Number of poles

- 1** single pole protected
- 2** two pole protected

Actuator configuration

- A** all poles with standard toggle
- B** reduced number of standard toggles
- Z** without actuator

Terminal design

- L** screw terminals $M5 \leq 50$ A
- M** solder terminals ≤ 75 A
- P** blade terminals ≤ 35 A
- R** round connectors 6 mm
- S** stud terminals $M5 \leq 60$ A
- T** stud terminals 10-32UNF-3A ≤ 60 A
- U** stud terminals $M6 \leq 125$ A
- V** stud terminals 1/4-20UNC-3A ≤ 125 A
- W** laminated round terminals ≤ 125 A

Terminal hardware

- 0** without
- 3** with washer and nut
- 6** Phillips screws

Characteristic curve

- K1** short delay DC
- K2** short delay AC
- M1** medium delay DC
- M2** medium delay AC
- T1** long delay DC
- T2** long delay AC

Version

- D** standard

Colour configuration

- B1** black actuator
- B2** white actuator
- B3** blue actuator

Marking

- | | |
|--|---------------|
| front plate | actuator base |
| B1 without | ON-OFF |
| B2 I_N | ON-OFF |
| B3 I_N characteristic curve | ON-OFF |
| B4 I_N , characteristic curve, wiring diagram on side | ON-OFF |

Rated voltage

- B** AC or ≤ 80 V DC

Current ratings

- 0.05...125 A for DC
- 0.05...20 A for AC
- higher current ratings upon request

Approvals (optional)

- V** UL 489

8345 - C 0 1 A - U 3 M1 - D B1 B1 B - 60 A - . ordering example

Remote trip coil available to special order!

Ordering information for auxiliary contact module

Type number
X8345

Module

- S** auxiliary contact module

Auxiliary contacts

- 01** in all poles
- 02** in pole 1 only
- 04** in pole 2 only

Auxiliary contact version

- K** auxiliary contacts, tin-plated (symmetrical terminals)

Auxiliary contact function

- W1** 1 changeover

Terminal design

- 02** microswitch with blade terminals
DIN 46244-A2.8-0.5

- M** mounted to base unit

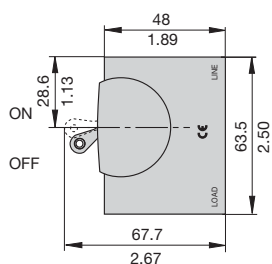
X8345 - S 01 K W1 02 M ordering example

Dimensions

Mounting version B/C

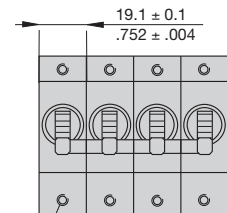
Mounting version B/C

Flange mounting rectangular aperture



number of poles 1 to 4

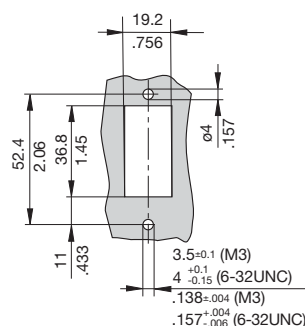
pole	1	2	3	4
------	---	---	---	---



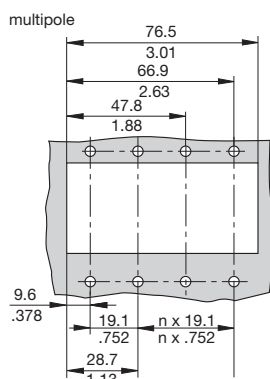
mounting thread M3 or 6-32
all dimensions referred to the top edge
mounting depth 4.2 mm/.165 in.
max. insertion depth 5.5 mm
max. tightening torque 0.33 Nm

Cut-out dimensions:

1-pole

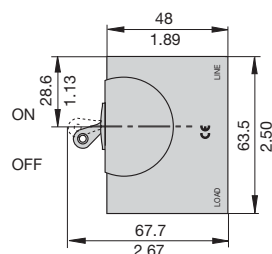


multipole



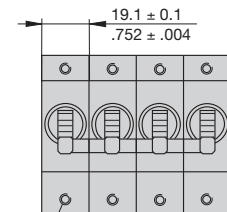
Mounting version E/F

Flange mounting round aperture



number of poles 1 to 4

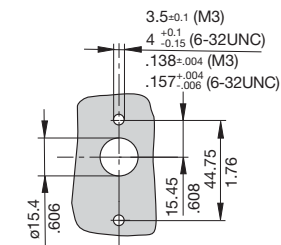
	number of poles p to			
pole	1	2	3	4



mounting thread M3 or 6-32
all dimensions referred to the top edge
mounting depth 4.2 mm/.165 in.
max. insertion depth 5.5 mm
max. tightening torque 0.33 Nm

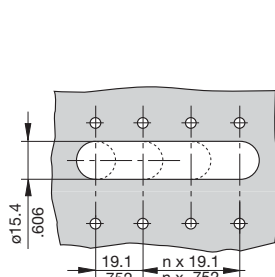
Cut-out dimensions:

1-pole



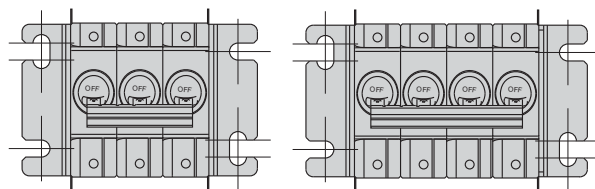
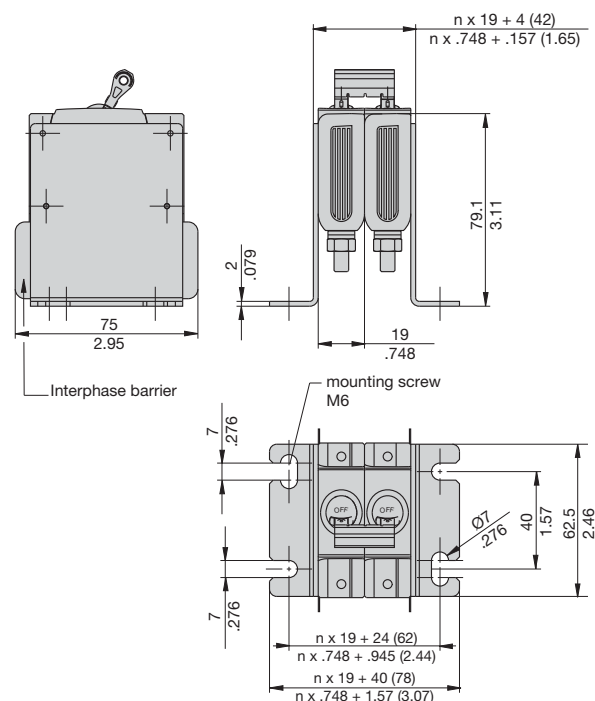
max. panel thickness: 3 mm

4-pole

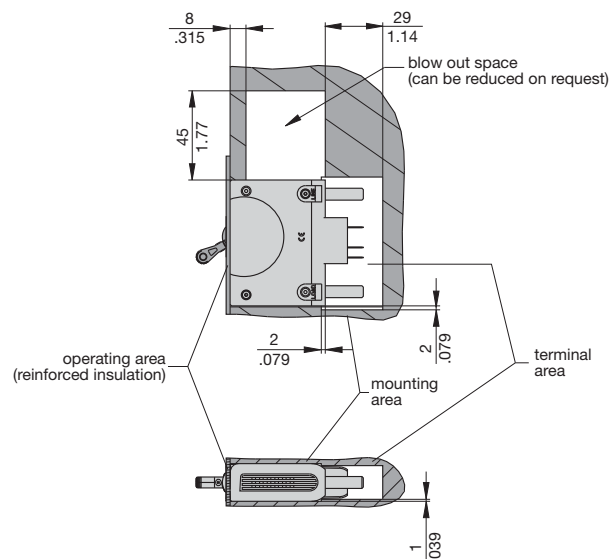


Mounting version X

Flange mounting, with rectangular aperture, with 2 mounting brackets



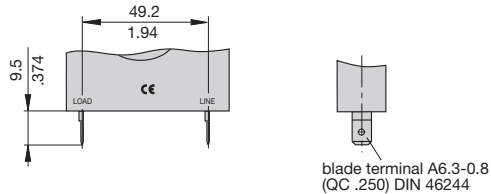
Installation drawing



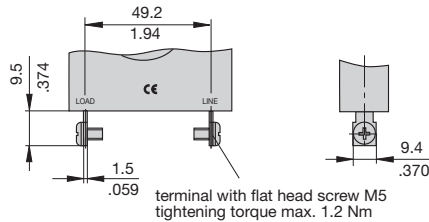
This is a metric design and millimeter dimensions take precedence ($\frac{\text{mm}}{\text{inch}}$)

Terminal design / Dimensions

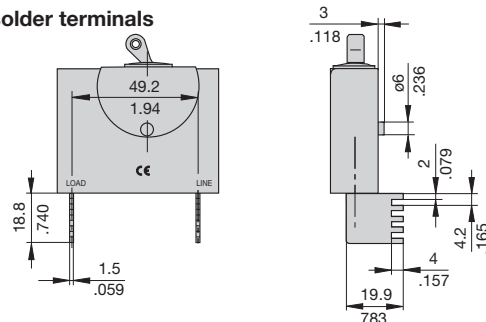
P - with blade terminals



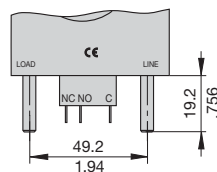
L - with screw terminals



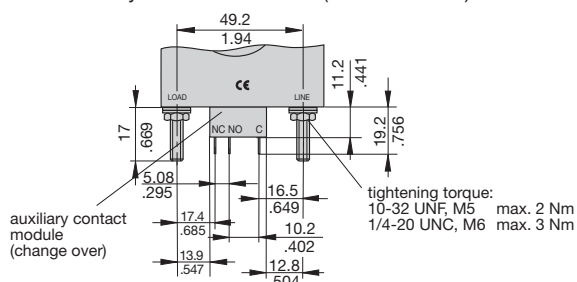
M - with solder terminals



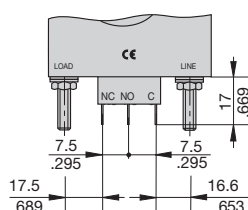
R - round connectors D=6 mm (dia .236) (version H) asymmetrical terminals (not for UL 489)



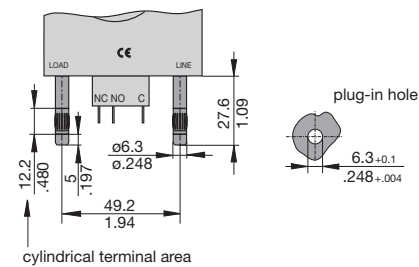
S/U/T/V - with auxiliary contacts (version H) asymmetrical terminals (not for UL 489)



auxiliary contacts version K symmetrical terminals

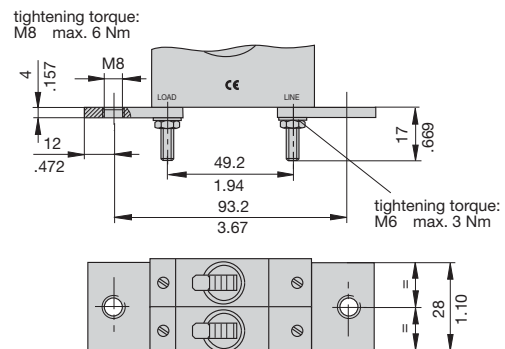


W - laminated round terminals



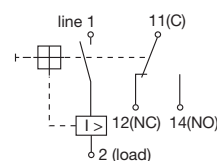
Number of poles / Dimensions

P 1-pole protected, 2-poles connected in parallel for rating currents from 150 to 180 A

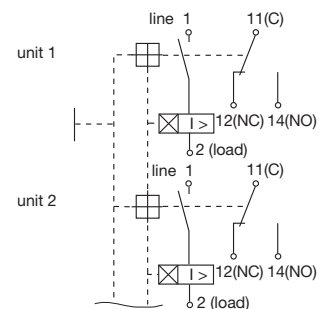


Internal connection diagrams

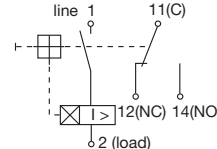
1-pole protected magnetically



multipole



1-pole protected hydraulic-magnetically

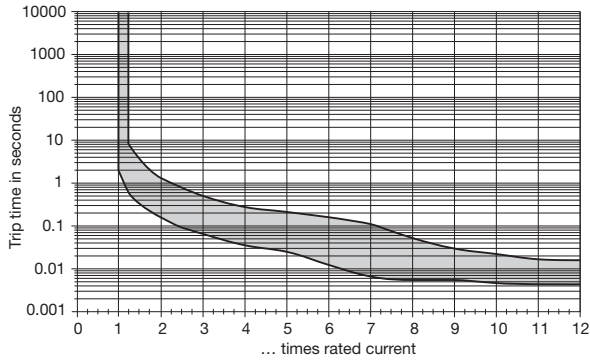


This is a metric design and millimeter dimensions take precedence ($\frac{\text{mm}}{\text{inch}}$)

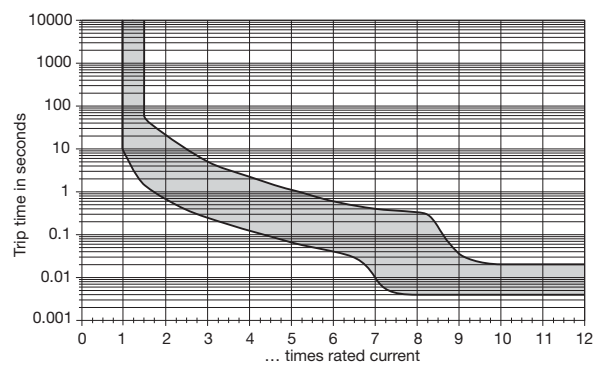
Typical time/current characteristics at +23 °C / +73.4 °F

(trip time at rated current and all poles symmetrically loaded)

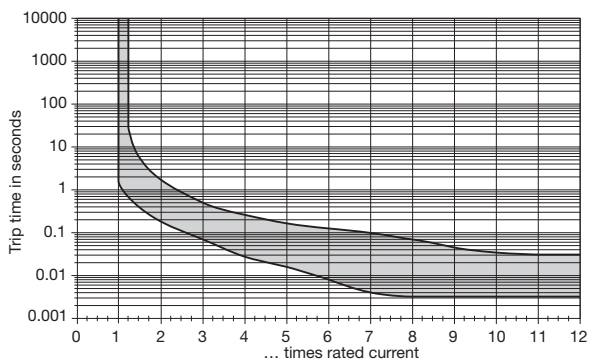
Curve K1 (short delay) for DC



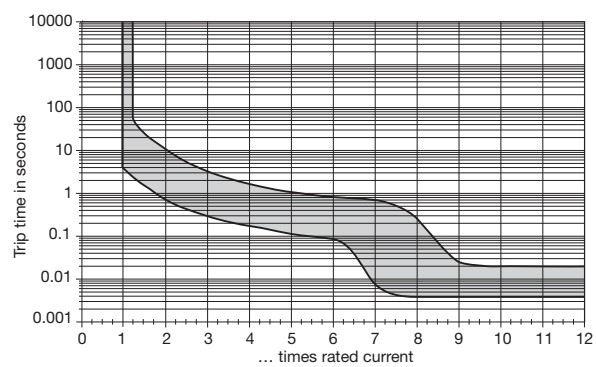
Curve M0 (medium delay) for AC/DC



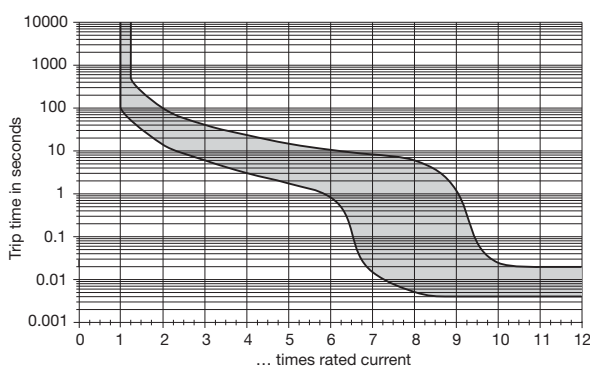
Curve K2 (short delay) for AC 50/60 Hz



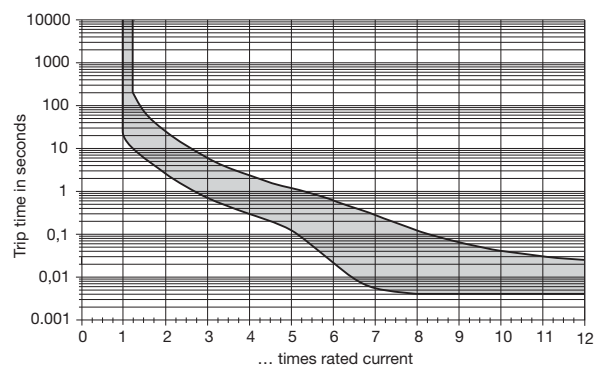
Curve M1 (medium delay) for DC



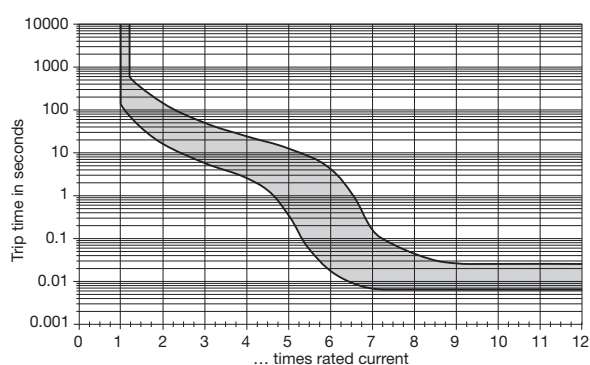
Curve T1 (long delay) for DC



Curve M2 (medium delay) for AC 50/60 Hz



Curve T2 (long delay) for AC 50/60 Hz

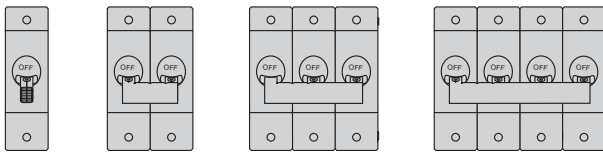


All curves will only be maintained if the escutcheon is mounted on a vertical surface.

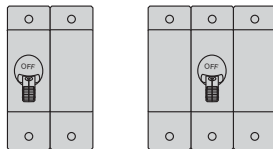
Other characteristic curves to special order (e. g. pulse delayed, for high inrush currents or capacitive loads).

Actuator configuration

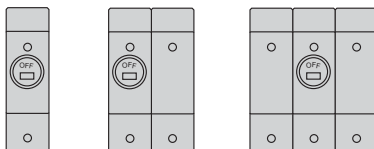
A 1 toggle per pole, mounting version B/C



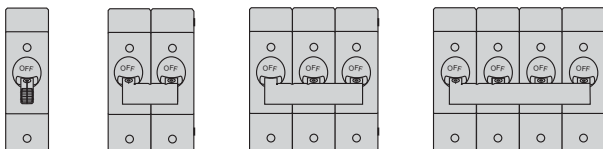
B reduced number of toggles per unit, mounting version B/C



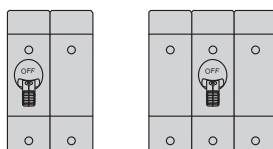
Z without toggles



A 1 toggle per pole, mounting version E/F

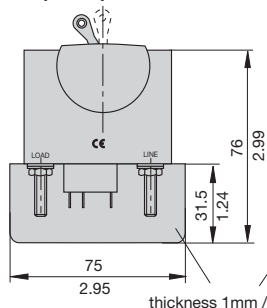


B reduced number of toggles per unit, mounting version E/F

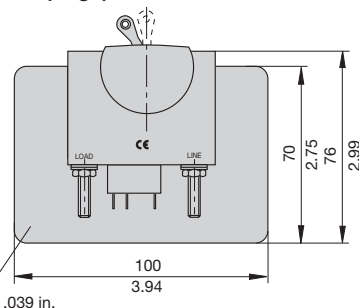


Interphase barriers / Dimensions

1 - Interphase barrier (small)



2 - Interphase barrier (large)



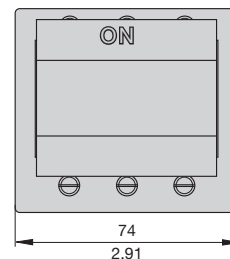
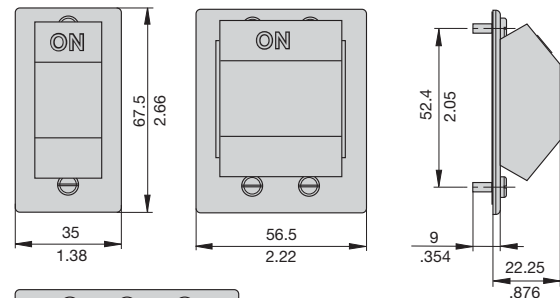
This is a metric design and millimeter dimensions take precedence ($\frac{\text{mm}}{\text{inch}}$)

All dimensions without tolerances are for reference only. In the interest of improved design, performance and cost effectiveness the right to make changes in these specifications without notice is reserved. Product markings may not be exactly as the ordering codes. Errors and omissions excepted.

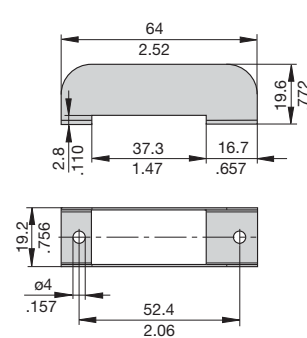
Accessories

Splash cover (IP65) for 1-, 2-, 3-pole (only for mounting version B/C)

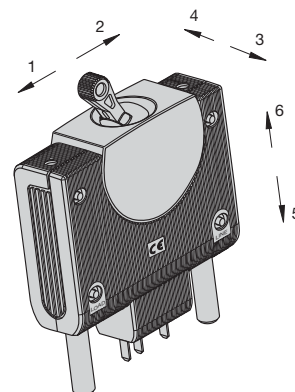
	number of poles	mounting version	actuator configuration
X 222 444 01	1-pole	B	1
X 222 444 02	1-pole	C	1
X 222 444 11	2-pole	B	2
X 222 444 12	2-pole	C	2
X 222 444 21	3-pole	B	3
X 222 444 22	3-pole	C	3



Toggle guard (only for mounting version B/C)



Shock directions



Description

A module which adds remote trip capability to all versions of type 8345. A voltage applied across the coil, by means of an external sensor for example, will cause disconnection of the main switch/circuit breaker mechanism.

Typical applications

Electrical monitoring of safety systems, remote trip.

Ordering information

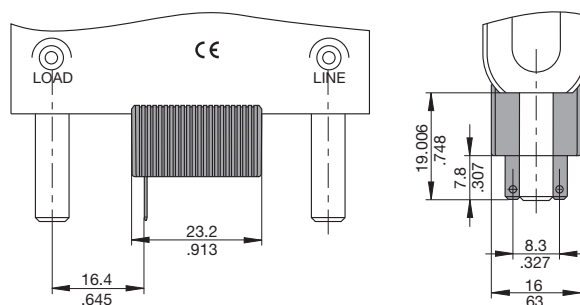
Type No.	
X8345	Module for type 8345
Module	
F	remote trip module
Assembly version	
01	only in pole 1
02	only in pole 2
03	only in pole 3
04	only in pole 4
Remote trip version	
X1	DC
Voltage rating	
12	12 V
24	24 V
48	48 V
Terminal design	
02	blade terminals DIN 4644-A2.8-0.5
M	module mounted to circuit breaker
X8345 - F 01 X1 12 02 M	ordering example

Voltage ratings and typical internal resistance values

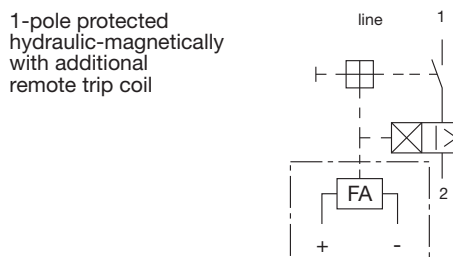
Voltage ratings	Internal resistance (Ω)
DC 12 V	3.4
DC 24 V	13.9
DC 48 V	64.3

Dimensions

Additional remote trip module



Internal connection diagram



Technical data

Voltage ratings	DC 12 V; DC 24 V; DC 48 V
Power consumption	approx. 40 W
Pulse operation	20 ms < t_{ON} < 100 ms / t_{OFF} > 10 sec (Continuous duty possible for multipole devices upon request)
Typical life	10,000 operations at U_N
Ambient temperature	-40...+85 °C (-40...+185 °F)
Insulation co-ordination (IEC 60664)	2.5 kV/2 (EN 60934)
Dielectric strength between main circuit and trip coil circuit	test voltage AC 3,000 V (EN 60934)
Insulation resistance	> 100 M Ω (DC 500 V)
Vibration	6 g (57-2000 Hz) $\pm$ 0.46 mm (10-57 Hz) shock direction 1/2 4 g (57-2000 Hz) $\pm$ 0.30 mm (10-57 Hz) shock direction 3/4 3 g (57-2000 Hz) $\pm$ 0.23 mm (10-57 Hz) shock direction 5/6 to IEC 60068-2-6, test Fc 10 frequency cycles/axis
Shock	100 g (11 ms) (not when mounted upside down) to IEC 60068-2-27, test Ea
Corrosion	96 hours at 5 % salt mist, to IEC 60068-2-11, test Ka
Humidity	240 hours at 95 % RH to IEC 60068-2-78, test Cab
Mass	approx. 8.5 g (without base unit)

This is a metric design and millimeter dimensions take precedence ($\frac{\text{mm}}{\text{inch}}$)

All dimensions without tolerances are for reference only. In the interest of improved design, performance and cost effectiveness the right to make changes in these specifications without notice is reserved. Product markings may not be exactly as the ordering codes. Errors and omissions excepted.

Description

The X8345-R is an additional module which provides remotely controlled ON and OFF functionality for the E-T-A series 8345 magnetic circuit breaker range. The module actuator, which is motor driven, is factory fitted adjacent to the circuit breaker(s) which it is controlling. The module can be operated by a suitable external changeover switch, momentary switches (one ON, one OFF) or logic system (not part of our product). The status of the actuator will follow the position of the external switch, i.e. if the circuit breaker trips electrically or is operated manually, the actuator will not change.

A single module will control a single pole breaker or multipole circuit breakers up to 3 poles. In the application it has to be ensured that the supply voltage is maintained at all times.

When switching the circuit breaker OFF manually the module has also to be switched off by means of the changeover switch before switching the breaker on again. The same is true for normal switch-on of the breaker.



X8345-R

Ordering information

Type number	
X8345	Module for type 8345, 1, 2 and 3 pole
Module	
R	remote ON/OFF actuation
Operating voltage	
24	DC 24 V
Add-on version	
01	mounted on right side
Mounting method	
00	front panel mounting (standard)
01	single bracket: module fitted
02	2-bracket: module and circuit breaker fitted
Terminal design	
01	spring loaded screwless terminal 5-pin
Supply status	
M	module mounted to the base unit
X8345 - R 24 01 00 01 M ordering example	

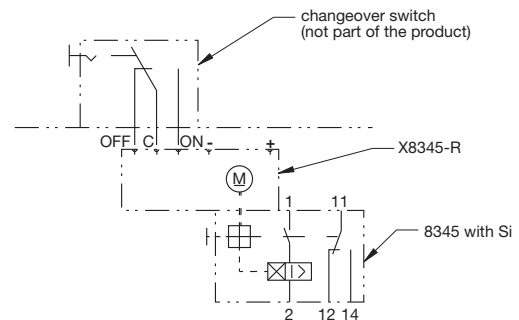
Note: Bold-type, blue configurations are standard versions which are presently available.

Technical data

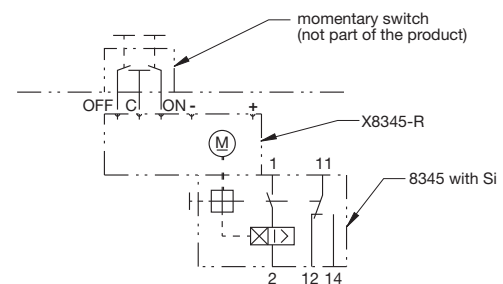
Voltage rating	DC 24 V (16...32 V)
ON duty	50 %
Trip time	< 2 sec
Blocking current	< 1.5 A
Control current	< 3 mA
Typical life	10,000 operations (ON/OFF)
Ambient temperature	-25...70 °C (-13...158 °F)
Insulation co-ordination (IEC 60664)	2.5 kV/2 (EN 60934)
Dielectric strength pole to module	test voltage AC 1,500 V (EN 60934)
Insulation resistance	> 100 MΩ (DC 500 V)
Vibration	10 g (57-2000 Hz), ± 0,76 mm (10-57 Hz) to IEC 60068-2-6, test Fc, 10 frequency cycles/axis
Shock	100 g (11 ms) to IEC 60068-2-27, test Ea
Corrosion	96 hours at 5% salt mist, to IEC 60068-2-11, test Ka
Humidity	240 hours at 95 % RH, to IEC 60068-2-78, test Cab
Mass	approx. 65 g (without base unit)

Internal connection diagrams

single pole, hydraulic-magnetic protection, with remote ON/OFF actuation (operated by changeover switch)



single pole, hydraulic-magnetic protection, with remote ON/OFF actuation (actuated by two momentary switches)

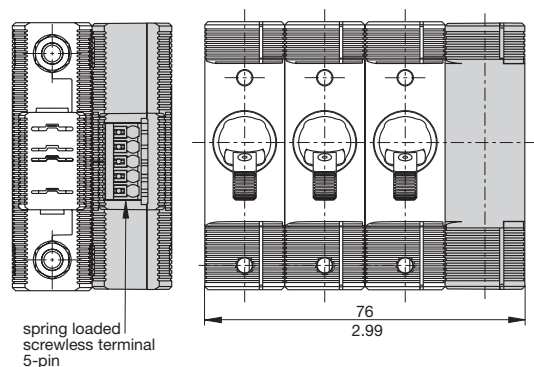
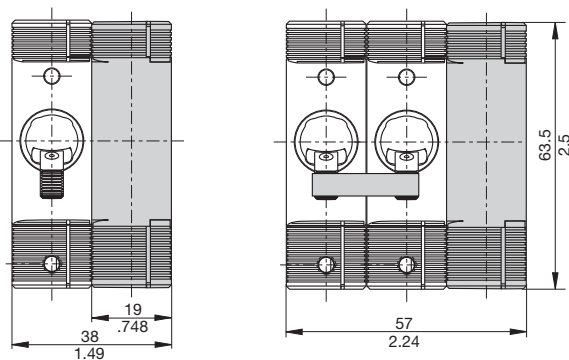


Typical applications

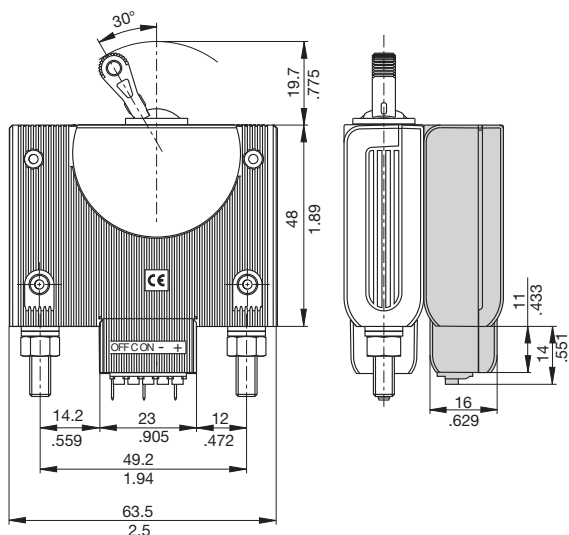
Remote circuit breaker control (ON/OFF) for communication systems, marine installations, automation equipment and similar requirements.

Dimensions

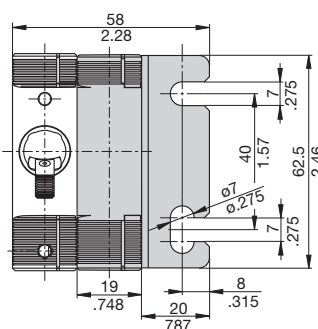
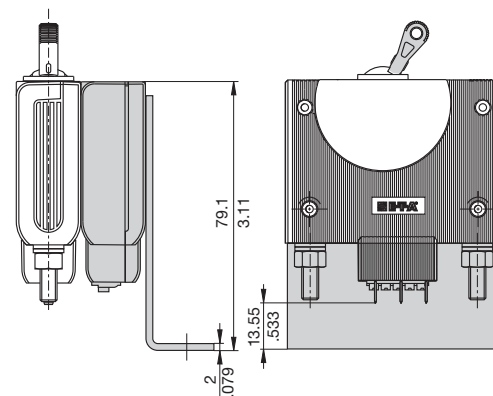
3



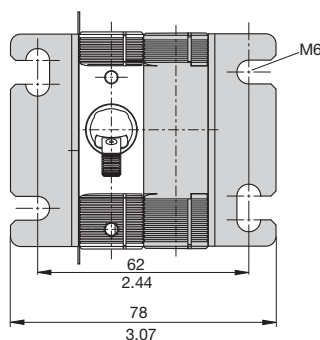
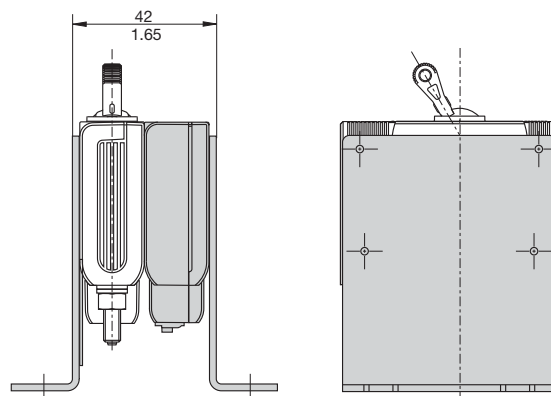
X8345-R-24-01-00-01-M



X8345-R-24-01-01-01-M



X8345-R-24-01-02-01-M



All dimensions without tolerances are for reference only. In the interest of improved design, performance and cost effectiveness the right to make changes in these specifications without notice is reserved. Product markings may not be exactly as the ordering codes. Errors and omissions excepted.

This is a metric design and millimeter dimensions take precedence (mm/inch)

Description

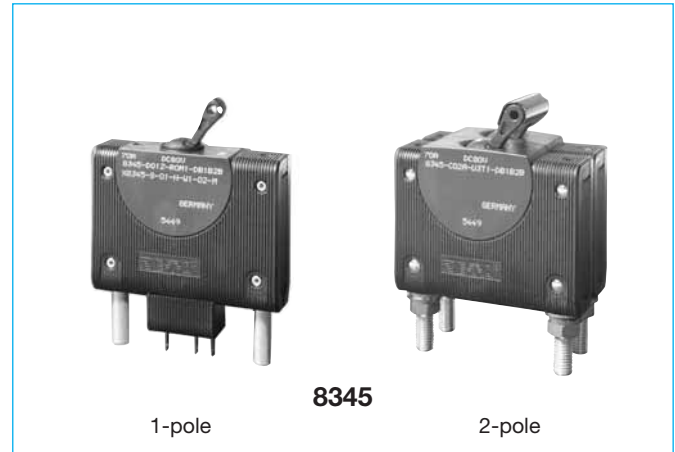
Single and double pole hydraulic-magnetic circuit breakers with trip-free mechanism and toggle actuation. A choice of switching characteristics ensures suitability for a wide range of applications. Industry standard dimensions and panel mounting. Auxiliary contacts optional. Low temperature sensitivity at rated load. Complies with CBE standard EN 60934 (IEC 60934) S-type HM CBE.

Typical applications

Railway vehicles.
In the business fields Communication and Transport: power supplies, switchgear, instrumentation and process control engineering.

Standard current ratings and typical internal resistance values

Current rating (A)	Trip curves and internal resistance (Ω) per pole	
	K1, M1, T1	F1, F7
0.05	531	275
0.1	58	5
1	1.10	0.578
2	0.295	0.144
3	0.121	0.064
5	0.044	0.025
10	< 0.02	< 0.01
15	< 0.01	< 0.01
20	< 0.01	< 0.01
25	< 0.01	< 0.01
30	< 0.01	< 0.01
40	< 0.01	< 0.01
50	< 0.01	< 0.01
60	< 0.01	–
80	< 0.01	–
100	< 0.01	–
125	< 0.01	–



Technical data

Voltage rating	DC 110 V $\pm$ 25 %
Current rating range	0.05...125 A higher ratings upon request
Auxiliary circuit	AC 240 V 6 A DC 28 V 3 A DC 65 V 1 A DC 80 V 0.5 A
Typical life	5,000 operations at 1 x I_N
Ambient temperature	-40...+85 °C (-40...+185 °F)
Insulation co-ordination (IEC 60664)	2.5 kV/2 reinforced insulation in operating area
Dielectric strength	test voltage
operating area	AC 3,000 V
pole to pole	AC 1,500 V
main to auxiliary circuit	AC 3,000 V
switching to trip circuit	AC 1,500 V
Insulation resistance	> 100 M Ω (DC 500 V)
Interrupting capacity (I_{cn})	0.1...125 A: 5,000 A (resistive load) 0.1...100 A: 3,000 A (inductive load) 125 A: 2,000 A (inductive load)
Degree of protection (IEC 60529)	operating area IP40 terminal area IP00
Vibration	
upside down:	10 g (57-2000 Hz) $\pm$ 0.76 mm (10-57 Hz) at 0.9 I_N
directions 1, 2, 3, 4, 5:	10 g at 1 x I_N
with curve F1:	10 g at 0.8 x I_N in all planes. (57-2000 Hz) $\pm$ 0.76 mm (10-57 Hz) to IEC 60068-2-6, test Fc 10 frequency cycles/axis
Shock	
directions 1, 2, 3, 4, 5:	100 g (11 ms) at 1 x I_N ,
direction 6:	100 g (11 ms) at 0.8 x I_N ,
with curve F1:	100 g (11 ms) at 0.8 x I_N to IEC 60068-2-27, test Ea
Corrosion	96 hours at 5% salt mist, to IEC 60068-2-11, test Ka
Humidity	240 hours at 95 % RH, to IEC 60068-2-78, test Cab
Flammability	Class I1 to NF EN ISO 4589-3 and ISO 4589-1 and -2
Smoke emission visibility	Class F0 to NF X 10-702-2 »smoke chamber«
Mass	approx. 65 g per pole depending on version

Ordering information

Type No.
8345

Mounting

- B** flange mounting, with rectangular aperture with mounting nut 6-32UNC
- C** flange mounting, with rectangular aperture with mounting nut M3
- E** flange mounting, with round aperture with mounting nut 6-32UNC
- F** flange mounting, with round aperture with mounting nut M3
- X** flange mounting, with rectangular aperture, with 2 mounting brackets

Configuration

- 0** without barrier
- 1** with small barrier
- 2** with large barrier

Number of poles

- 0** single pole unprotected
- 1** single pole protected
- 2** two pole protected

Actuator configuration

- A** all poles with standard toggle
- B** reduced number of standard toggles
- Z** without actuator

Terminal design

- L** screw terminals M5 ≤ 50 A
- M** solder terminals ≤ 75 A
- P** blade terminals ≤ 35 A
- R** round connectors 6 mm
- S** stud terminals M5 ≤ 60 A
- T** stud terminals 10-32UNF-3A ≤ 60 A
- U** stud terminals M6 ≤ 125 A
- V** stud terminals 1/4-20UNC-3A ≤ 125 A
- W** laminated round terminals ≤ 125 A

Terminal hardware

- 0** without
- 3** with washer and nut
- 6** Phillips screws

Characteristic curve

- F1** instantaneous trip ≤ 50 A (tripping current 150 %)
- F7** instantaneous trip ≤ 50 A (tripping current 125 %)
- K1** short delay
- M1** medium delay
- Q0** switch only
- T1** long delay

Version

- D** standard

Colour configuration

- B1** black actuator
- B2** white actuator
- B3** blue actuator

Marking

- | | front plate | actuator base |
|-----------|---|---------------|
| A1 | without | without |
| A2 | I _N | without |
| A3 | I _N , characteristic curve | without |
| A4 | I _N , characteristic curve, wiring diagram on side | without |
| B1 | without | ON-OFF |
| B2 | I _N | ON-OFF |
| B3 | I _N | ON-OFF |
| B4 | I _N , characteristic curve, wiring diagram on side | ON-OFF |

Rated voltage

- A** DC 110 V

Current ratings

- 0.05...125 A
- higher current ratings upon request

8345 - C 0 1 A - U 3 M1 - D B1 A1 A - 60 A ordering example

Ordering information for auxiliary contact module

Type number
X8345

Module

- S** auxiliary contact module

Auxiliary contacts

- 01** in all poles
- 02** in pole 1 only
- 04** in pole 2 only

Auxiliary contact version

- H** auxiliary contacts standard, gold-flushed
- K** auxiliary contacts, tin-plated (symmetrical terminals)

Auxiliary contact function

- W1** 1 changeover
- W2** 2 changeover

Terminal design

- 02** microswitch with blade terminals
DIN 46244-A2.8-0.5
- M** mounted to base unit

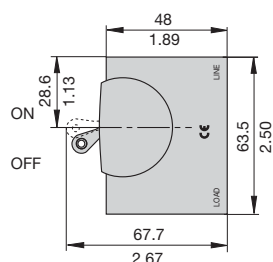
X8345 - S 01 H W1 02 M ordering example

Remote trip coil available to special order!

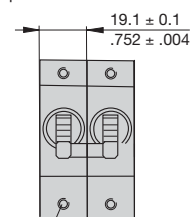
Dimensions

Mounting version B/C

Flange mounting rectangular aperture

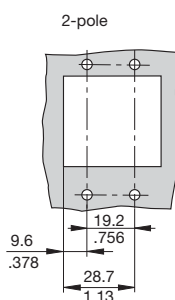
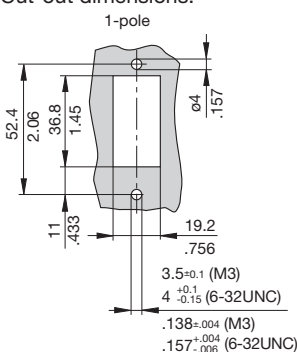


number of poles	1	2
pole	1	2



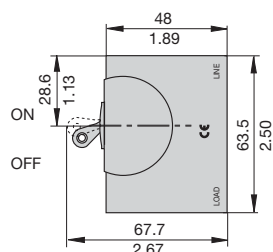
mounting thread M3 or 6-32
all dimensions referred to the top edge
mounting depth 4.2 mm/.165 in.
max. insertion depth 5.5 mm
max. tightening torque 0.33 Nm

Cut-out dimensions:

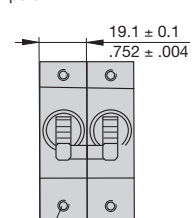


Mounting version E/F

Flange mounting round aperture

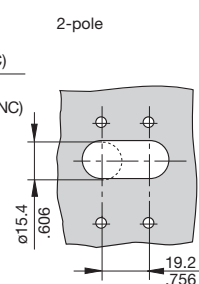
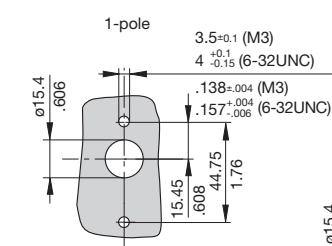


number of poles	1	2
pole	1	2



mounting thread M3 or 6-32
all dimensions referred to the top edge
mounting depth 4.2 mm/.165 in.
max. insertion depth 5.5 mm
max. tightening torque 0.33 Nm

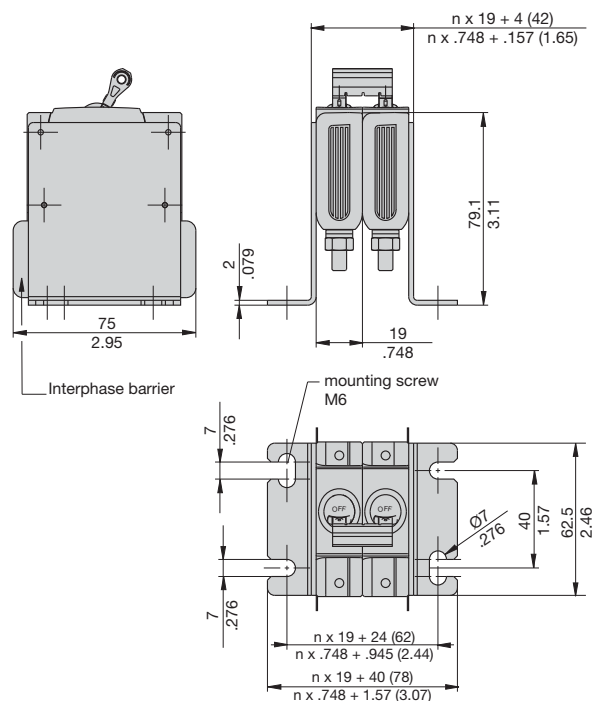
Cut-out dimensions:



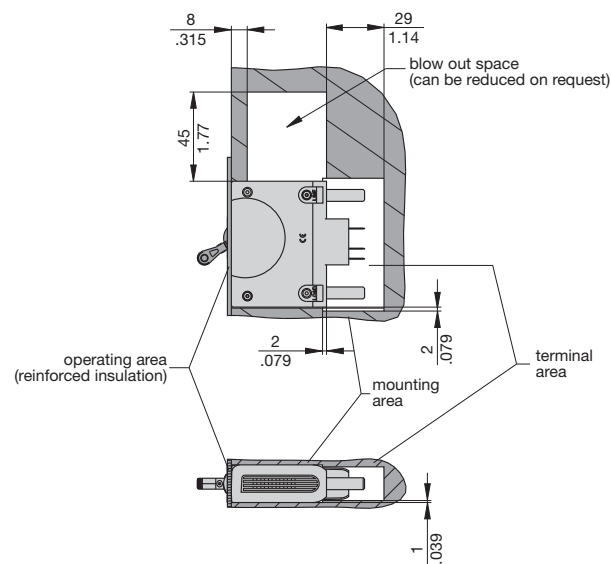
max. panel thickness: 3 mm

Mounting version X

Flange mounting, with rectangular aperture, with 2 mounting brackets



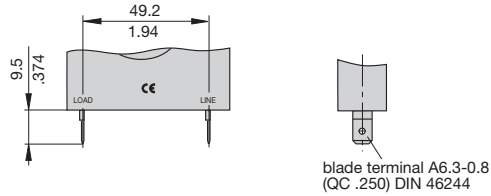
Installation drawing



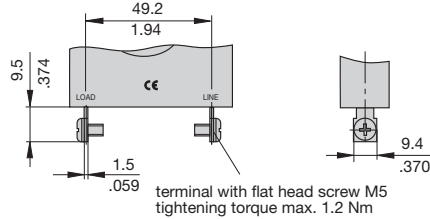
This is a metric design and millimeter dimensions take precedence ($\frac{\text{mm}}{\text{inch}}$)

Terminal design / Dimensions

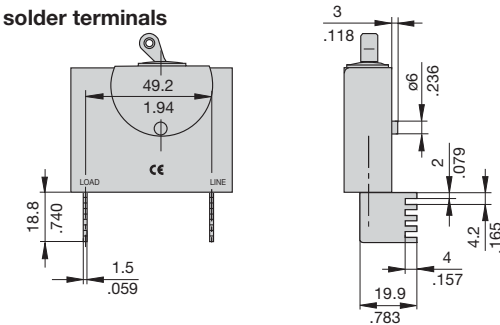
P - with blade terminals



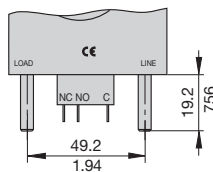
L - with screw terminals



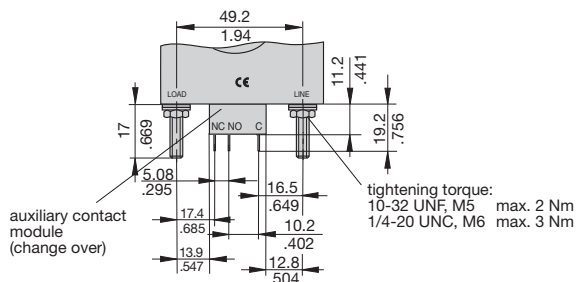
M - with solder terminals



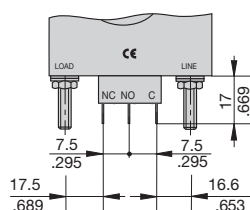
R - round connectors D = 6 mm (dia .236) (version H) asymmetrical terminals (not for UL 489)



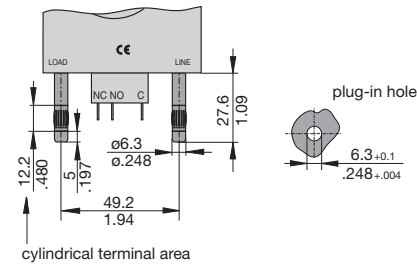
S/U/T/V - with auxiliary contacts (version H) asymmetrical terminals (not for UL 489)



auxiliary contacts version K symmetrical terminals

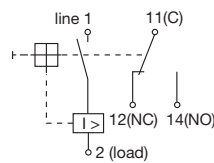


W - laminated round terminals

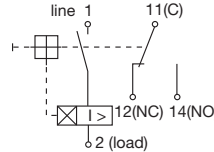


Internal connection diagrams

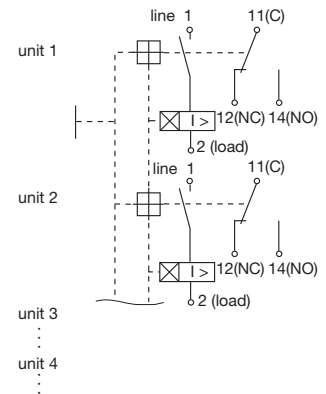
1-pole protected magnetically



1-pole protected hydraulic-magnetically



multipole

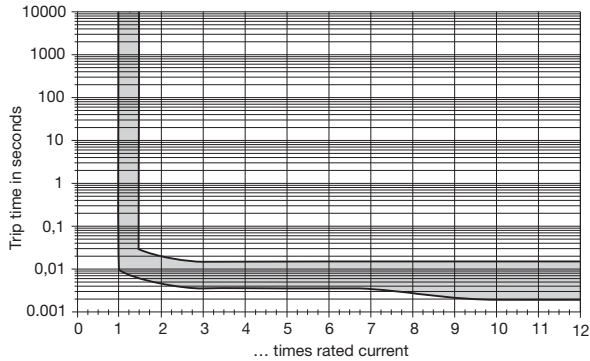


This is a metric design and millimeter dimensions take precedence ($\frac{\text{mm}}{\text{inch}}$)

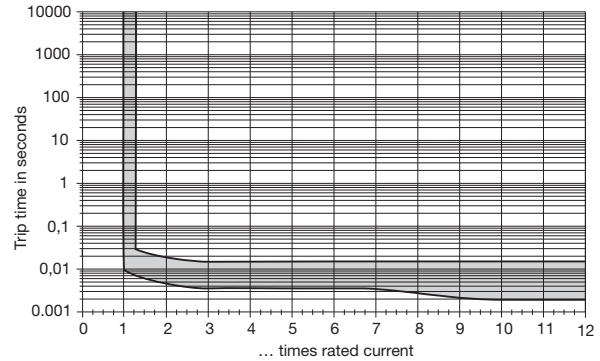
Typical time/current characteristics at +23 °C / +73.4 °F

(trip time at rated current and all poles symmetrically loaded)

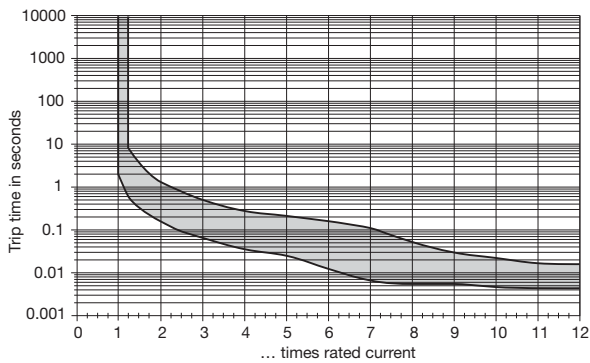
Curve F1 (instantaneous trip) ≤ 50 A



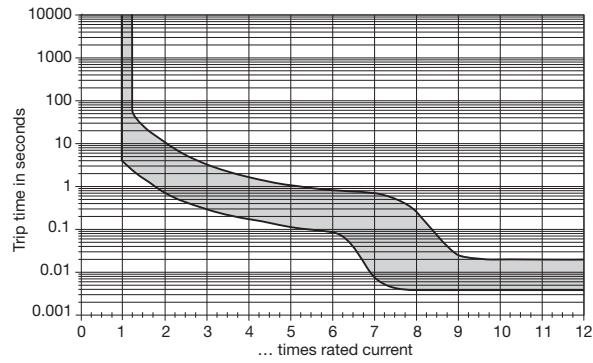
Curve F7 (instantaneous trip) ≤ 50 A



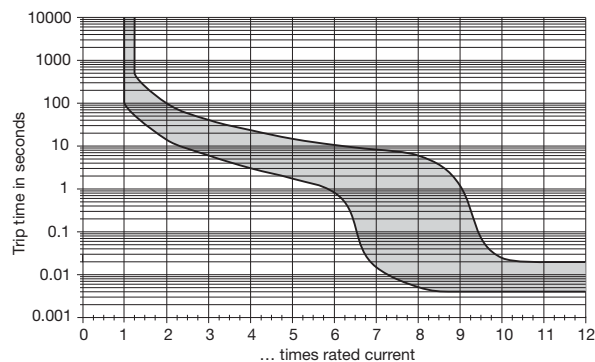
Curve K1 (short delay)



Curve M1 (medium delay)



Curve T1 (long delay)

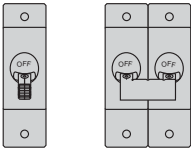


All curves will only be maintained if the escutcheon is mounted on a vertical surface.

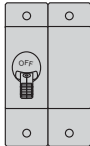
Other characteristic curves to special order (e. g. pulse delayed, for high inrush currents or capacitive loads).

Actuator configuration

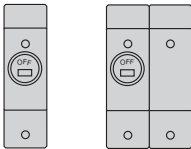
A 1 toggle per pole, mounting version B/C



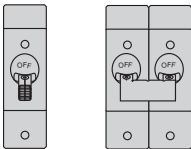
B reduced number of toggles per unit, mounting version B/C



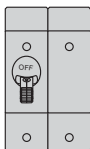
Z without toggles



A 1 toggle per pole, mounting version E/F



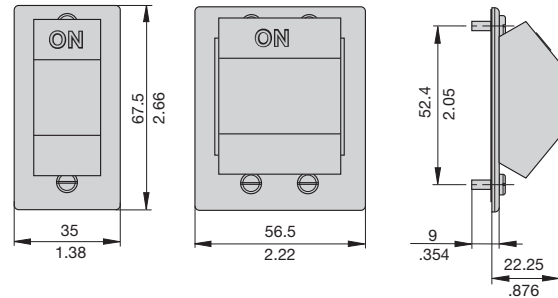
B reduced number of toggles per unit, mounting version E/F



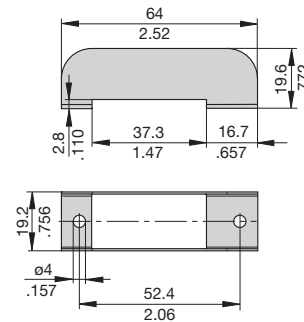
Accessories

Splash cover (IP65) for 1-, 2-pole (only for mounting version B/C)

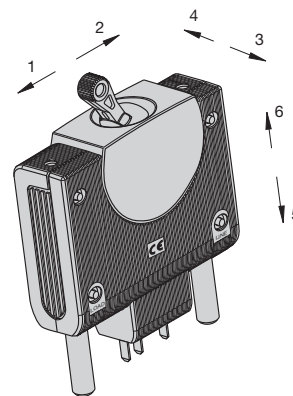
	number of poles	mounting version	actuator configuration
X 222 444 01	1-pole	B	1
X 222 444 02	1-pole	C	1
X 222 444 11	2-pole	B	2
X 222 444 12	2-pole	C	2



Toggle guard (only for mounting version B/C)
Y 307 381 01

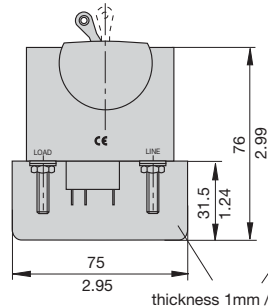


Shock directions

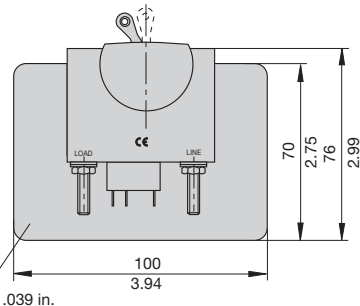


Interphase barriers / Dimensions

1 - Interphase barrier (small)



2 - Interphase barrier (large)



thickness 1mm / .039 in.

This is a metric design and millimeter dimensions take precedence (mm)
inch

All dimensions without tolerances are for reference only. In the interest of improved design, performance and cost effectiveness the right to make changes in these specifications without notice is reserved. Product markings may not be exactly as the ordering codes. Errors and omissions excepted.