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			
	F1	F2	K1, M1, T1	K2, M2, T2
0,05	---	---	531	542
0,1	---	---	129	127
1	0,578	0,347	1,10	1,08
2	0,144	0,0959	0,295	0,291
3	0,0644	0,0477	0,121	0,118
5	0,0250	0,0192	0,0437	0,0449
10	0,00901	0,00714	0,0147	0,0133
15	0,00597	0,00483	0,00794	0,00794
20	0,00468	0,00410	0,00597	0,00597
25	0,00410	0,00385	0,00456	0,00456
30	0,00385	0,00371	0,00458	0,00458
40	0,00371	0,00371	0,00373	0,00373
50	0,00358	0,00358	0,00335	0,00335
60	---	---	0,00333	0,00333
80	---	---	0,00325	0,00325
100	---	---	0,00316	0,00316
125	---	---	0,00314	0,00314

Approvals

Compliance

8345

1-pole 2-pole

Technical data

For further details please see: http://www.e-t-a.de/ti_e	
Voltage rating	3 AC 415 V; AC 277/480 V; AC 120/240 V; AC 240 V; DC 80 V (higher DC voltages to special order)
Current rating range	0.02...125 A single and multipole 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 operating area Line to Load pole to pole (2- and 3-pole) main to auxiliary circuit switching to trip circuit (version -X)	 test voltage AC 3,000 V test voltage AC 1,500 V test voltage AC 1,500 V test voltage AC 3,000 V test voltage AC 1,500 V
Insulation resistance	> 100 MΩ (DC 500 V)
Degree of protection (IEC 60529)	operating area IP40 terminal area IP00
Vibration positions:	10 g (57...2000 Hz) ± 0.76 mm (10...57 Hz) at I_N 5 g mounting position toggle down at 0.9 I_N 5 g mounting position toggle up at I_N trip curve F1, F2, all mounting 10 g at 0.8 x I_N test 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
Humidity	240 hours at 95 % RH, to IEC 60068-2-78, test Cab
Mass	approx. 90 - 120 g per pole depending on version

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
- **F** flange mounting, with round aperture with mounting nut M3

Configuration
- **0** without barrier
- **1** with small barrier
- **2** with large barrier (requested for multipole AC applications)

Number of poles
- **1** single pole protected
- **2** two pole protected
- **3** three pole protected
- **4** four pole protected

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

Terminal design
- **P** blade terminals ≤ 35 A
- **R** round connectors 6 mm
- **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

Characteristic curve *)

Characteristic curve, instantaneous:
- **F1** DC (limited to ratings of 1 A to 50 A)
- **F2** AC 60/50 Hz (limited to ratings of 1 A to 50 A)

Short delay:
- **K1** DC
- **K2** AC

Medium delay:
- **M1** DC
- **M2** AC 60/50 Hz

Long delay:
- **T1** DC
- **T2** AC 60/50 Hz

Version
- **D** standard

Colour configuration
- **B1** black actuator

Marking

	front plate	actuator base
B1	without	ON-OFF
B2	I_N	ON-OFF
B3	I_N, characteristic curves	ON-OFF

Rated voltage
- **B** AC or ≤ 80 V DC

Current ratings
- 0.02...125 A
- higher current ratings upon request

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

Please be informed that we have minimum ordering quantities to be observed.

Remote trip coil available to special order.

***) Other characteristic curves upon request** (e.g. pulse delayed, for high inrush currents or capacitive loads)

Note:
Move actuator of multipole devices slowly and smoothly into ON position to ensure reliable latch-on behaviour of all poles.

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

Auxiliary contact version
- **K** auxiliary contacts (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

Approvals

Authority	Standard	Rated voltage	Current ratings
VDE	IEC / EN 60934	AC 240/415 V AC 240 V DC 80 V	0.016 A...80 A 0.016 A...80 A 0.02 A...125 A
UL/CSA	UL 1077 CSA C22.2 No. 235	AC 277/480 V AC 277 V DC 80 V	0.02 A...70 A 0.02 A...70 A 0.02 A...125 A
CQC	GB 17701	AC 240/415 V AC 240 V DC 80 V	0.02 A...80 A (3 pole) 0.02 A...80 A (1 + 2 pole) 0.02 A...125 A (1 + 2 pole)

Interrupting capacity to EN 60934, CCC, UL 1077

IEC 60934 / CCC (3-pole) – 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 – 4	0.016...80	6 x I_N
AC 240 V	1	0.016...20	5 000

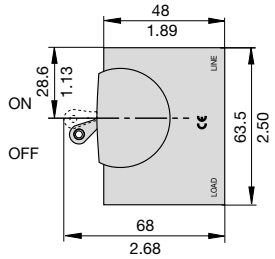
UL 1077:

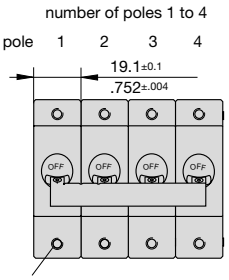
voltage	number of poles	I_N max. (A)	I_{cn} (A)
DC 80 V	1 + 2	0.02...125	10 000
AC 277/480 V	1 – 4	0.02...70	5 000

Dimensions

Mounting version B/C

Flange mounting rectangular aperture

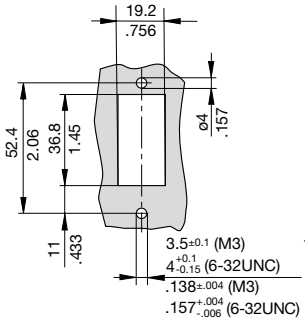




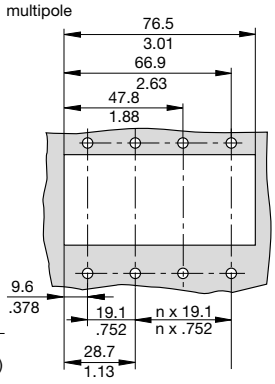
mounting thread M3 or 6-32
all dimensions referred to the top edge
mounting depth 4.2 mm/.165 in.
max. insertion depth 5.5 mm
max. tightening torque 0.33 Nm

Cut-out dimensions:

1-pole

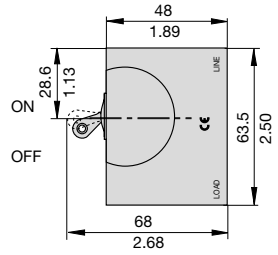


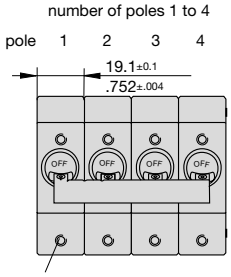
multipole



Mounting version F

Flange mounting round aperture

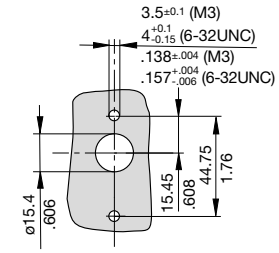




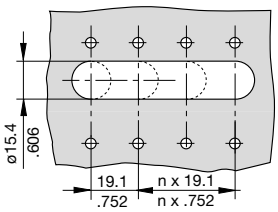
mounting thread M3 or 6-32
all dimensions referred to the top edge
mounting depth 4.2 mm/.165 in.
max. insertion depth 5.5 mm
max. tightening torque 0.33 Nm

Cut-out dimensions:

1-pole

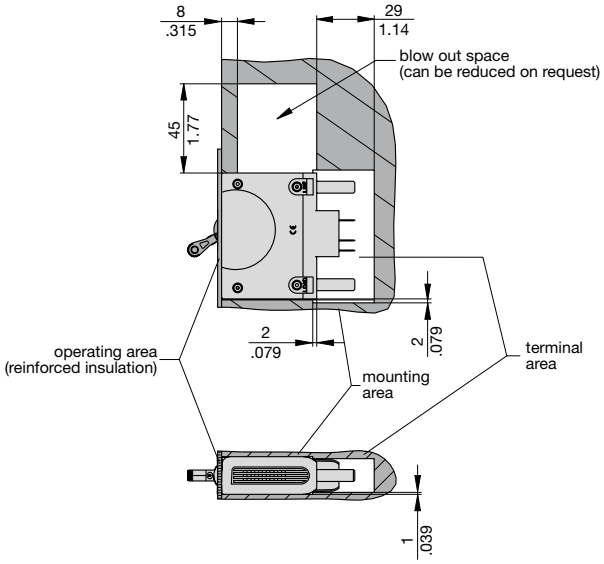


4-pole



max. panel thickness: 3 mm

Installation drawing

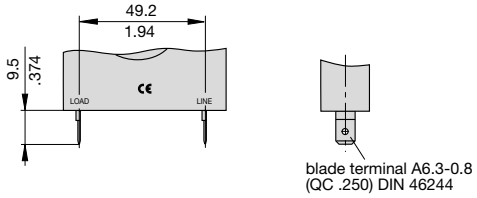


1

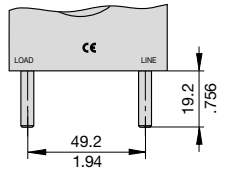
This is a metric design and millimeter dimensions take precedence (mm / inch)

Terminal design / Dimensions

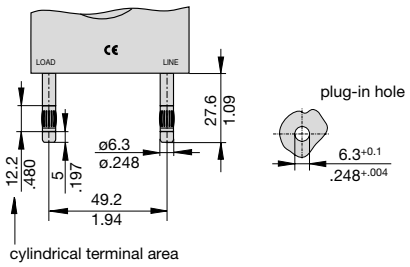
P - with blade terminals



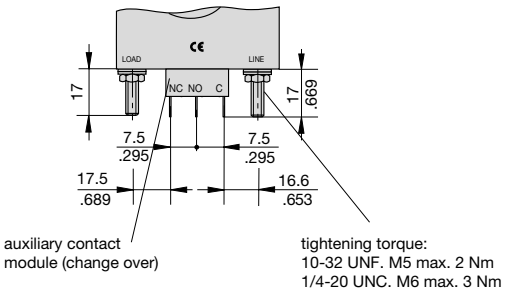
R - round connectors
D = 6 mm



W - laminated round terminals

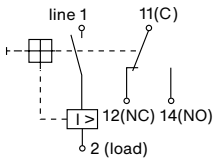


U/V stud terminals with auxiliary contacts

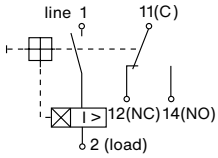


Internal connection diagrams

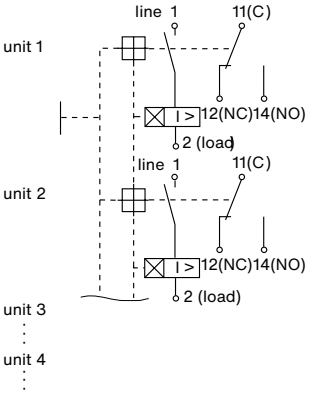
1-pole protected magnetically



1-pole protected hydraulic-magnetically



multipole



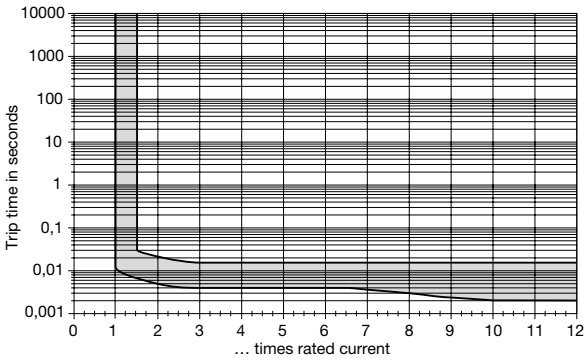
Shown with optional auxiliary contact module

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

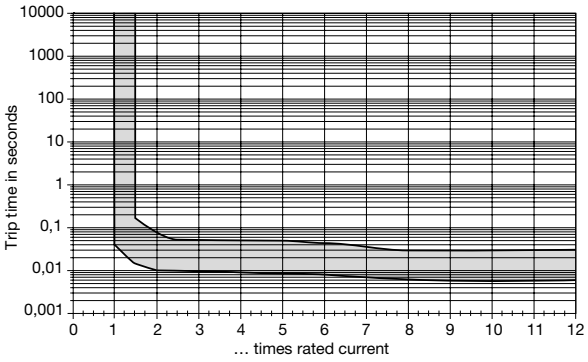
All dimensions without tolerances are for reference only. In the interest of improved design, performance and cost effectiveness the right to make changes in these specifications without notice is reserved. Product markings may not be exactly as the ordering codes. Errors and omissions excepted.

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

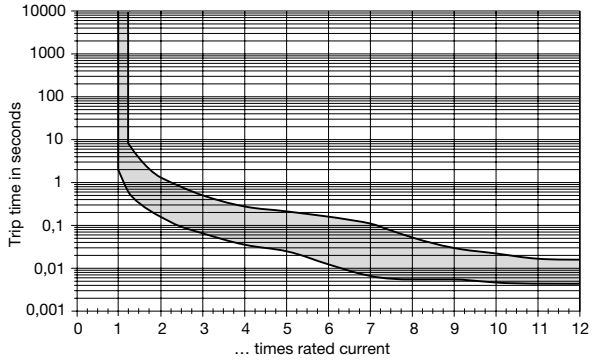
Curve F1 (instantaneous) for DC



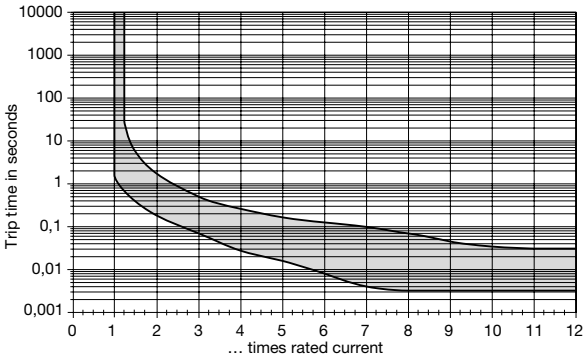
Curve F2 (instantaneous) for AC



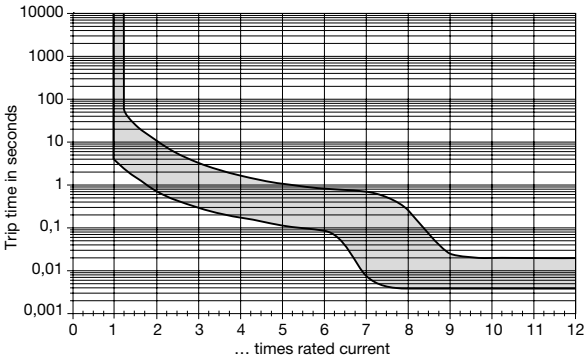
Curve K1 (short delay) for DC



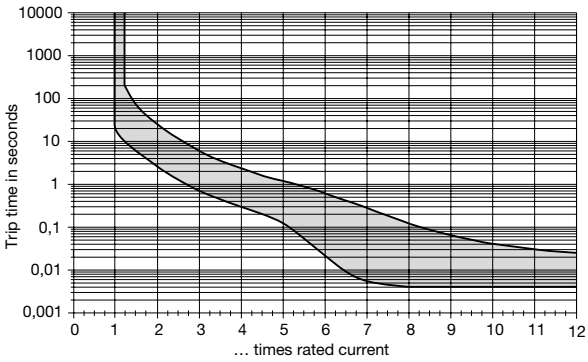
Curve K2 (short delay) for AC 50/60 Hz



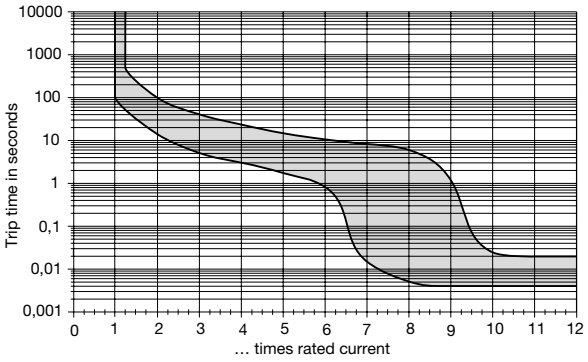
Curve M1 (medium delay) for DC



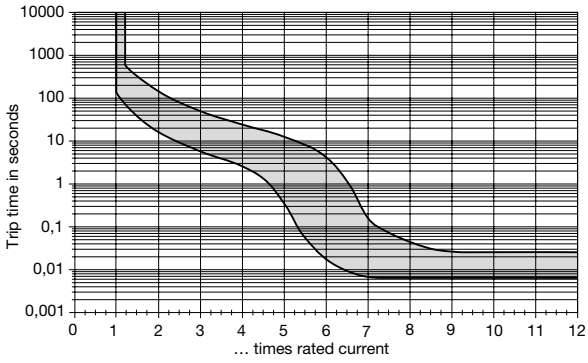
Curve M2 (medium delay) for AC 50/60 Hz



Curve T1 (long delay) for DC



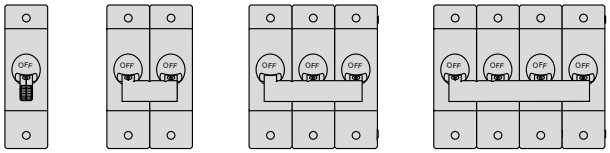
Curve T2 (long delay) for AC 50/60 Hz



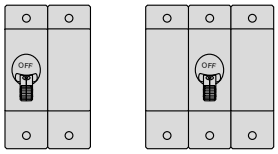
N.B. All curves will only be maintained if the escutcheon is mounted on a vertical surface.
Ambient temperature or mounting side-by-side does not influence the trip curve, derating is not required.
The breakers may trip in the event of current peaks < 0.003 sec. For these applications we offer a mechanical pulse delay – please enquire.
Other characteristic curves upon request (e.g. pulse delayed, for high inrush currents or capacitive loads).

Actuator configuration

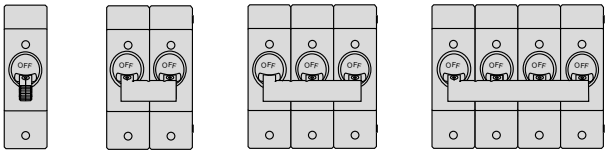
A 1 toggle per pole, mounting version B/C



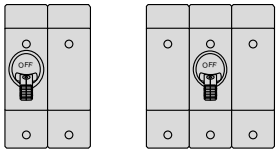
B reduced number of toggles per unit, mounting version B/C



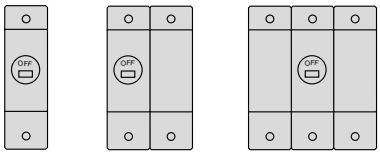
A 1 toggle per pole, mounting version F



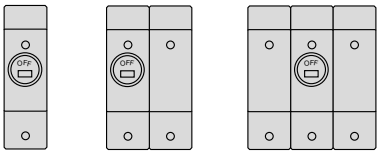
B reduced number of toggles per unit, mounting version F



Z without toggles version B/C



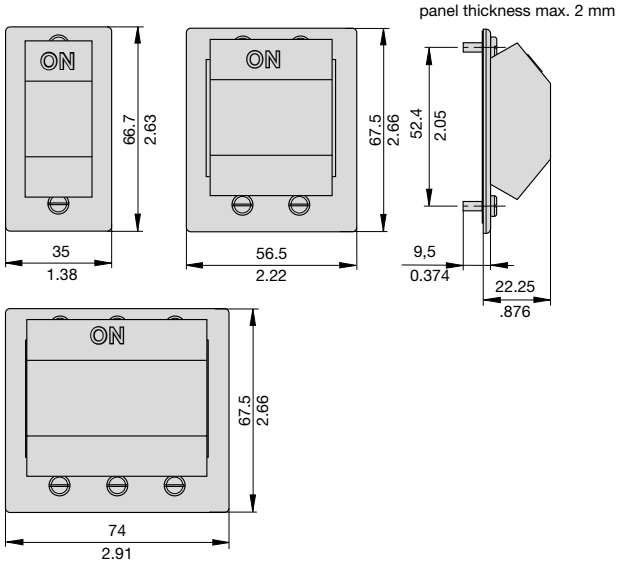
Z without toggles, mounting version F



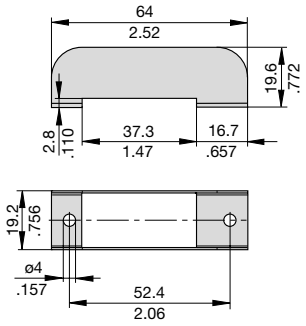
Accessories

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



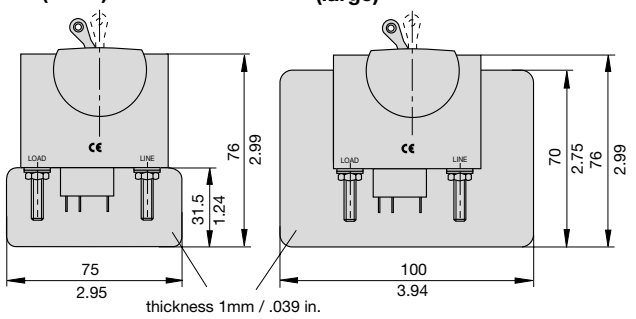
Toggle guard (only for mounting version B/C)
Y 307 381 01



Interphase barriers / Dimensions

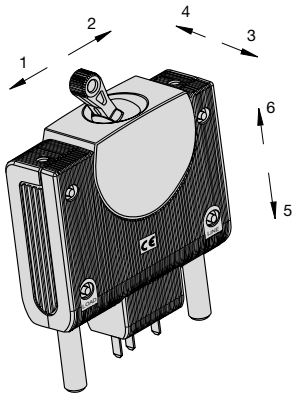
1 - Interphase barrier (small)

2 - Interphase barrier (large)



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

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						
		Remote trip version					
		X1 DC					
			Voltage rating				
			12 12 V				
			24 24 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

Preferred types

Preferred types remote trip module:
X8345-F-01-X1-12-02-M
X8345-F-01-X1-24-02-M

Voltage ratings and typical internal resistance values

Voltage rating	Internal resistance (Ω)
DC 12 V	3.2
DC 24 V	14.6

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

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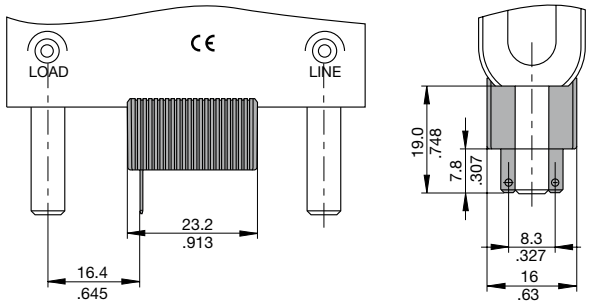
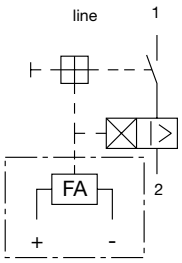
Dimensions

Additional remote trip module



Internal connection diagram

1-pole protected hydraulic-magnetically with additional remote trip coil



Technical data

Voltage ratings	DC 12 V; DC 24 V
Power consumption	approx. 40 W
Pulse operation multipole	20 ms < t_{ON} < 100 ms/t_{OFF} > 10 sec (Continuous duty possible for 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 MΩ (DC 500 V)
Vibration	6 g (57-2000 Hz) ± 0.46 mm (10-57 Hz) shock direction 1/2 4 g (57-2000 Hz) ± 0.30 mm (10-57 Hz) shock direction 3/4 3 g (57-2000 Hz) ± 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)

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). 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.

US patent number: US 7,532,095 B2

X8345-R

Ordering information

Type number	
X8345	Module for type 8345, 1, 2 pole 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)
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 0001 M	ordering example

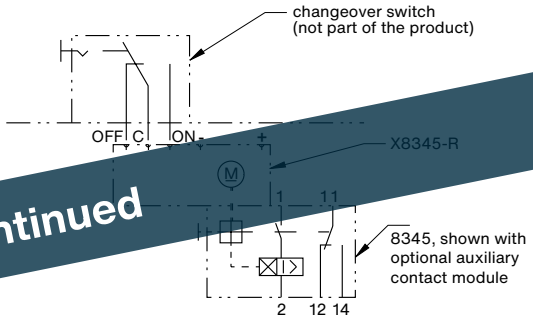
discontinued

Technical data

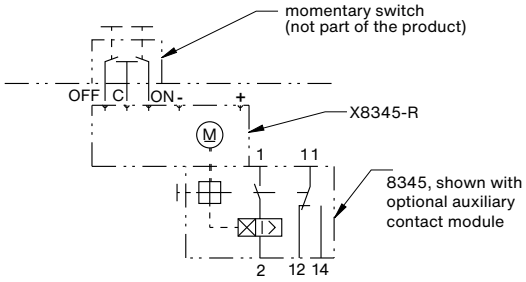
Voltage rating	DC 24 V (16...32 V)
ON duty	50 % / 60 sec
Trip time	< 2 sec
Blocking current	< 1.5 A
Control current	< 3 mA
Typical life	10,000 operations (ON/OFF)
Ambient temperature	-25...70 °C (-13...158 °F)
Insulation co-ordination (IEC 60664)	2.5 kV/2 (EN 60934)
Dielectric strength pole to module	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 Ea	100 g (11 ms) to IEC 60068-2-27, test
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)

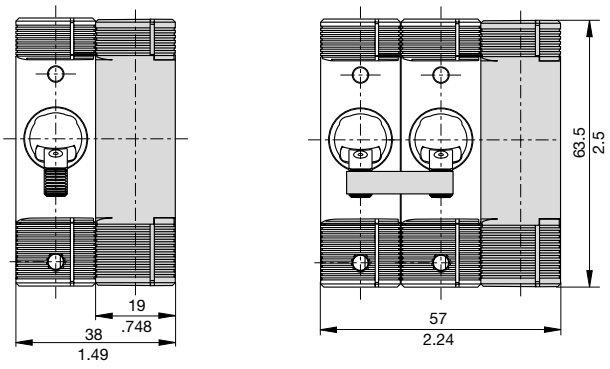


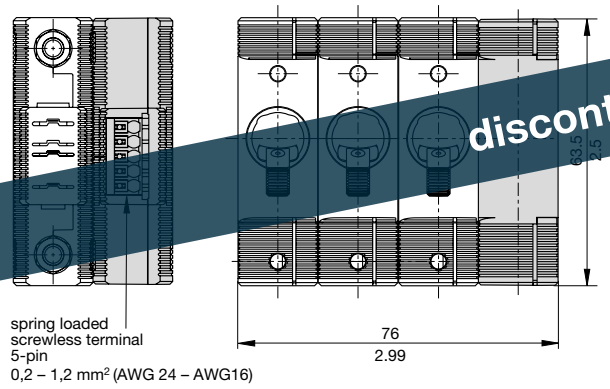
Typical applications

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

Caution:
During actuation of the remote control, free travel of the toggle must be ensured.

Dimensions





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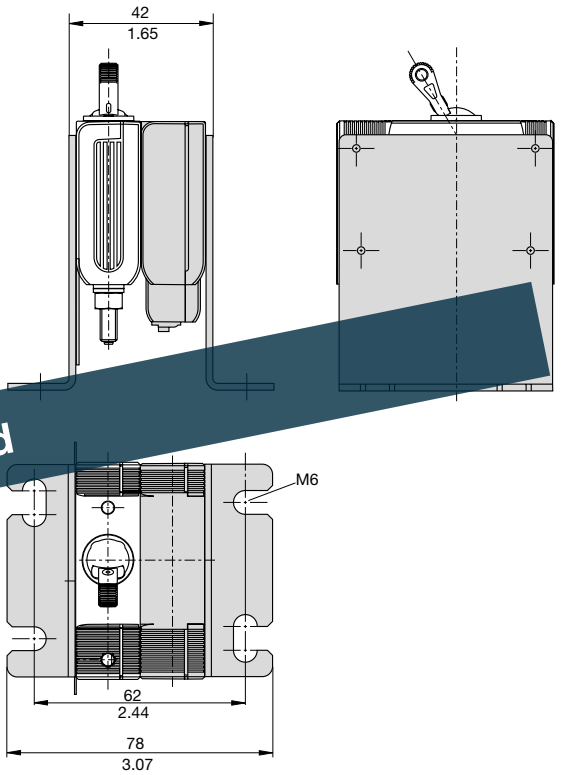
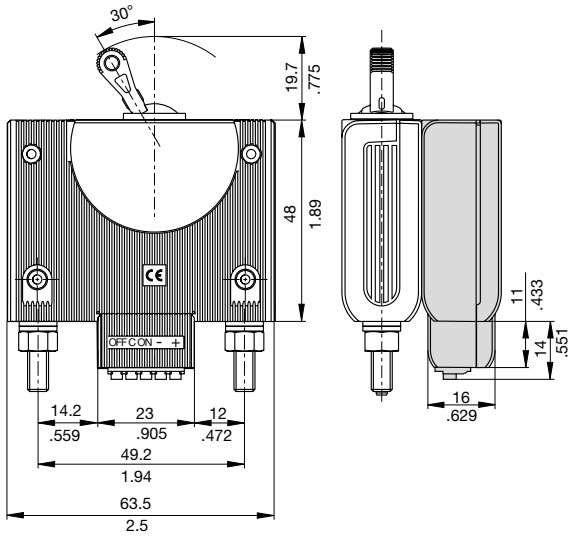
X8345-R-24-01-02-01-M



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



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