

Description

Single pole thermal circuit breaker in miniaturised design. A positively trip-free snap action mechanism ensures a reliable switching behaviour. They meet the requirements of the circuit breaker standard EN 60934 (IEC 60934): R-Type, TO. For higher current ratings in a similar design please see our 1140 version. The 106 version combined with a C14 appliance inlet is also available as a ready-for-use power entry module (optionally with or without line filter).

Typical applications

Hand tools, domestic appliances, overcurrent protection of PCB conductor paths, marine vehicles, mobile homes

Approvals

Approval authority	Standard	Rated voltage	Current rating range
VDE	EN 60934	AC 240 V DC 48 V	0.05 A ... 8 A 0.05 A ... 10 A
UL	UL1077	AC 250 V DC 48 V	0.05 A...10 A 0.05 A...10 A
CSA	C22.2 No 235	AC 250 V DC 48 V	0.05 A...10 A 0.05 A...10 A
CQC	GB 17701	AC 240 V DC 48 V	0.05 A...8 A 0.05 A...10 A

Compliance



Preferred types

Preferred types	Preferred ratings (A)											
	0.5	0.8	1	1.2	1.5	2	3	4	5	6	8	10
106-P10-	x	x	x	x	x	x	x	x	x	x	x	x
106-P30-	x	x	x	x	x	x	x	x	x	x	x	x



Technical data

For detailed technical information please see www.e-t-a.de/ti_en

Rated voltage	AC 240 V, DC 48 V		
Current rating range	0.05 ... 10 A		
Typical life	0.05 ... 5 A	1,000 cycles at 2 x I _N , inductive DC 28 V; 3,000 cycles at 2 x I _N , inductive	
	6 ... 8 A 10 A	500 cycles at 2 x I _N , inductive 50 cycles at 2 x I _N , inductive	
Ambient temperature	-20 ... 60 °C (T 60)		
Insulation coordination (IEC 60664)	2.5 kV /2 reinforced insulation at operating area		
Dielectric strength	Actuating area Test voltage AC 3,000 V		
Insulation resistance	> 100 MΩ (DC 500 V)		
Interrupting capacity I _{cn}	0.05 ... 8 A 0.05 ... 10 A	6 x I _N (AC) 6 x I _N (DC)	
Rupture capacity (UL 1077)	I_N	U_N	S.C.
	0.05 ... 10 A	AC 250 V	2000 A, C1
	0.05 ... 10 A	DC 48 V	200 A, C1
Degree of protection (IEC 60529)	Operating area IP40 IP00 terminal area		
Vibration	10 g (57-500 Hz), ± 0.76 mm (10-57 Hz), Test to IEC 60068-2-6, test Fc 10 frequency cycles/axis		
Shock resistance	25 g (11 ms) Test to IEC 60068-2-27, test Ea		
Corrosion	96 hours at 5 % salt mist, Test to IEC 60068-2-11, test Ka		
Humidity	240 hrs 95 % RH, test acc. to IEC 60068-2-78, Test Cab		
Mass	approx. 10 g		

Ordering number code

Type No.

- 104** PCB mounting type (-PR)
or mounting type (-P30/-P10)
- 105** Snap-in panel mounting
- 106** Threadneck mounting with screw-in hexagonal
and plastic knurled nut⁽¹⁾
- 106-M2** Threadneck mounting with large lug and screw-in
hexagonal and plastic knurled nut

Terminal design

P10 Blade terminal 6.3 x 0.8 mm (IEC 61210)

P30 Blade terminal 2.8 x 0.8 mm (IEC 61210)

PR Soldering pins for vertical PCB mounting
(104 version only)

PR3 Lötstifte für Leiterplattenmontage vertikal
(nur Typ 104)

Current rating range

0.05 ... 10 A

106 - P30 - 5 A Ordering example

⁽¹⁾ Use this version for configuration with XR38 power entry module

Please observe our minimum ordering quantities.

Current ratings and internal resistance values

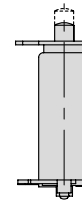
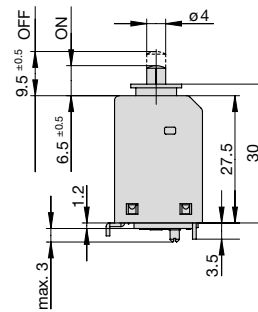
Current rating (A)	Internal resistance (Ω)	Current rating (A)	Internal resistance (Ω)
0.05	285	1.8	0.28
0.08	134	2	0.25
0.1	81	2.5	0.18
0.2	22	3	0.11
0.3	8.7	3.5	0.076
0.4	5.5	4	0.067
0.5	3.3	4.5	0.051
0.6	2.45	5	≤ 0.05
0.7	1.6	6	≤ 0.05
0.8	1.45	7	≤ 0.05
1	0.9	8	≤ 0.05
1.2	0.6	10	≤ 0.05
1.5	0.4		

Dimensions

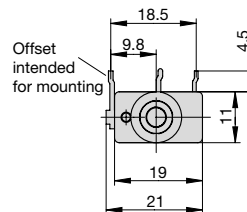
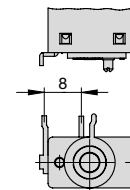
104-PR

Dimensions

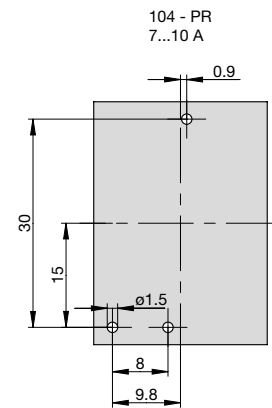
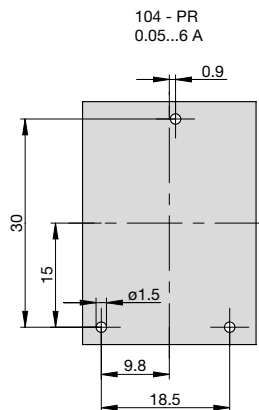
104 - PR
0.05...6 A



104 - PR
7...10 A



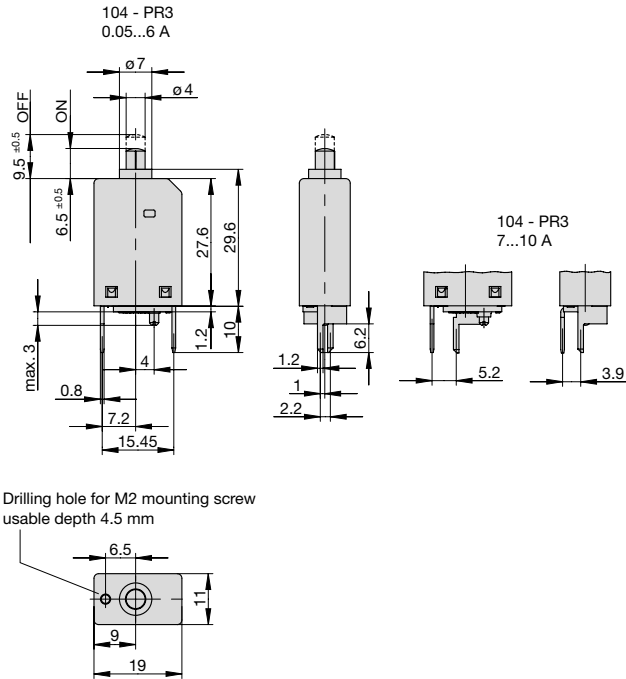
PCB drilling hole diagram



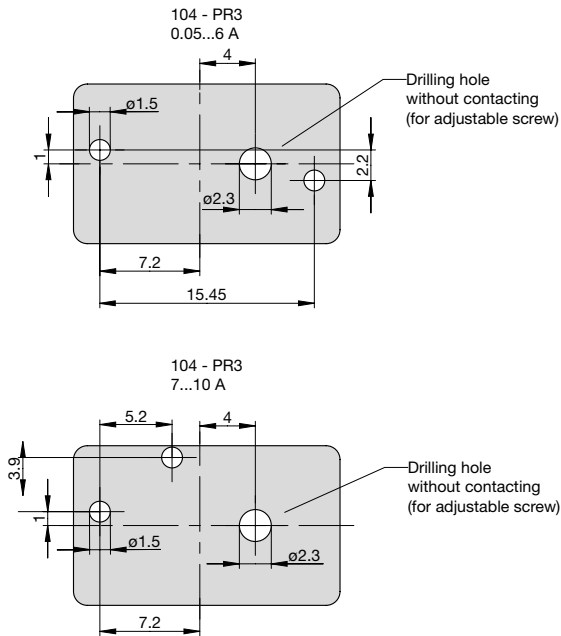
Dimensions

104-PR3

Dimensions



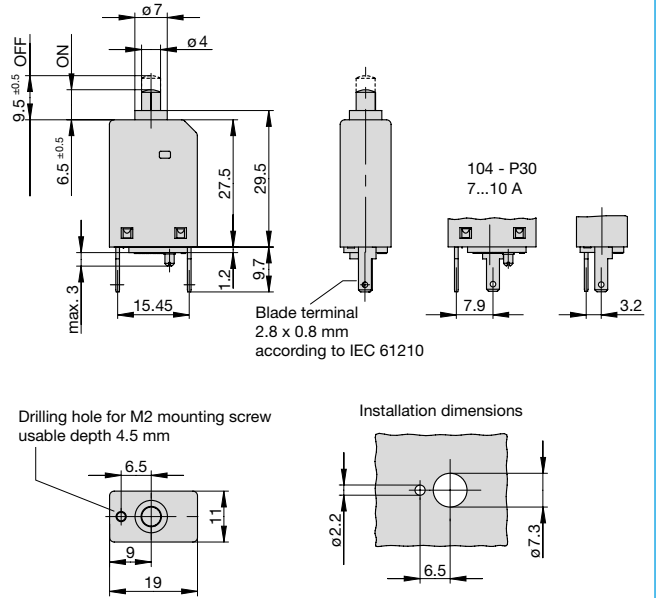
PCB drilling hole diagram



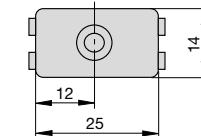
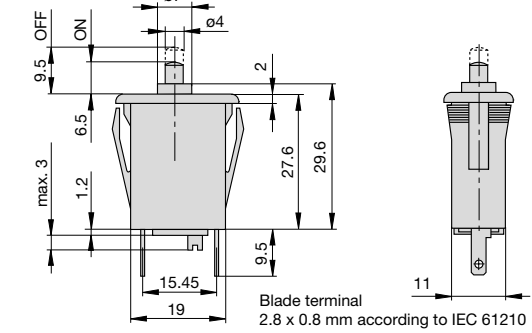
Dimensions

104-P30

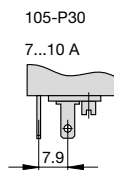
104 - P30
0.05...6 A



105-P30



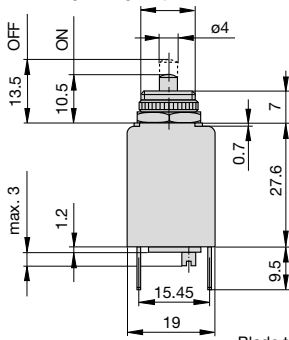
d	a	b
0.8	21.9	11.3 ^{+0.3}
1.0	22	
1.5	22.1	
2-3	22.2	



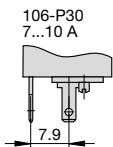
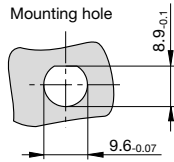
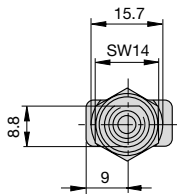
Dimensions

106-P30

3/8-27UNS-2A
tightening torque max. 0.8 Nm

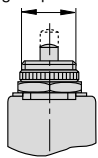


Blade terminals 2.8 x 0.8 mm according to IEC 61210

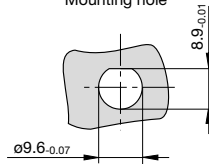


106-M2

3/8-27UNS-2A
tightening torque max. 0.8 Nm

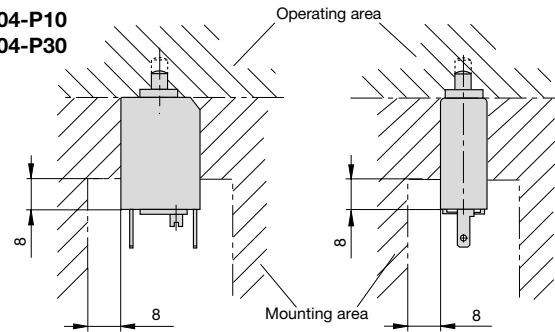


Mounting hole

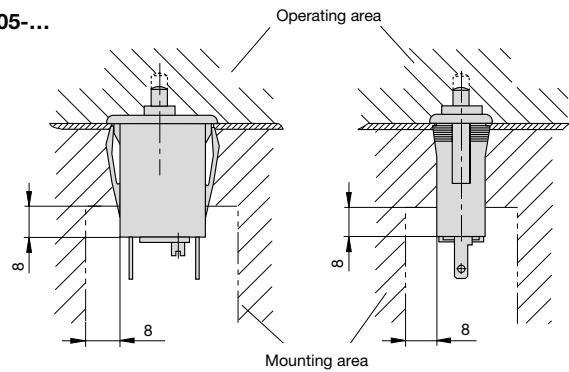


Installation drawing

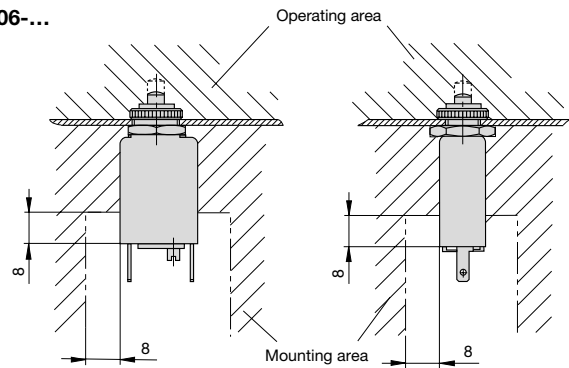
**104-P10
104-P30**



105-...



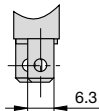
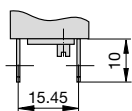
106-...



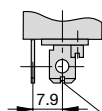
Terminal types

104/105/106-P10

0.05...6 A



7...10 A

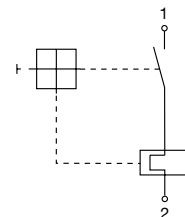


Blade terminal 6.3 x 0.8 mm according to IEC 61210

Polarizing tooth

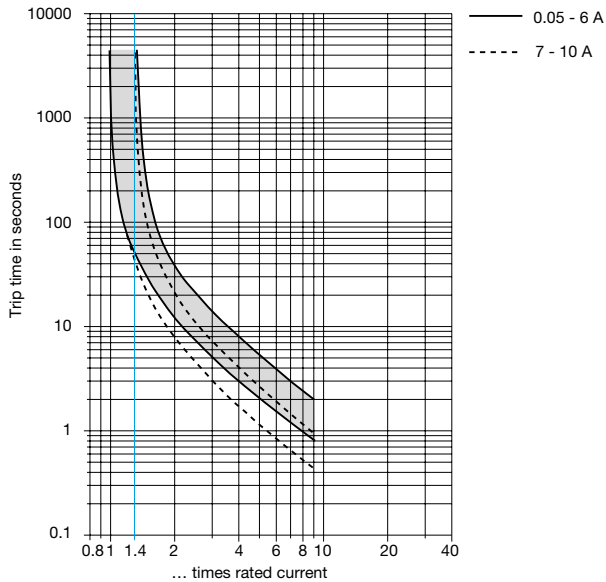
Schematic diagrams

**Types 104
105
106**



Time/current characteristics

Ambient temperature 23 °C

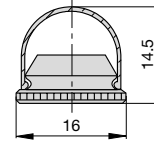


The time/current characteristic depends on the ambient temperature. In order to eliminate nuisance tripping, please multiply the current rating with a temperature factor (see Technical Information chapter)

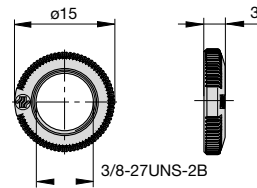
Ambient temperature [°C]	-20	-10	0	+23	+40	+50	+60
Temperature factor	0.76	0.84	0.92	1	1.08	1.16	1.24

Accessories

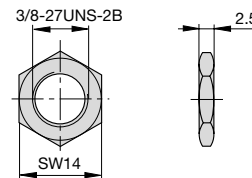
**Water splash cover (transparent)/
knurled nut assembly (type 106-... only)**
X 201 285 01 (IP64)



Knurled nut 3/8", plastic (standard)
Y 307 117 02



Hex nut 3/8", nickel-plated brass
Y 300 192 01



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Description

The XR38 power entry module for circuit breakers with 3/8" threadneck combines up to 3 functions in one component. A C14 appliance inlet, a resettable overcurrent protection and a line filter. Appropriate line filters can be selected for the use of the power entry module in medical equipment applications according to IEC/EN60601-1. You can choose between two standard versions: version C without actuator guard (reset button protrudes from the module) and version D with actuator guard (reset button completely recessed). Screw-type mounting from the front or from the rear.

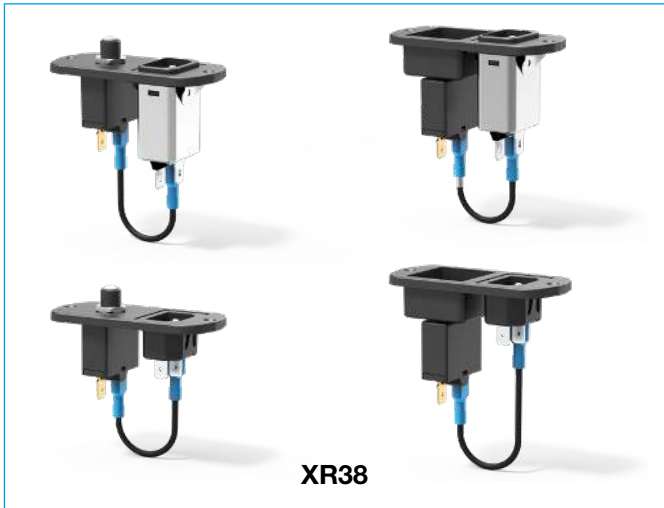
Combination of XR38 with 1658 only available in the USA.

Typical applications

Medical apparatus, laboratory equipment, professional kitchen equipment, 3D printers etc.

Technical data

Rated voltage	AC 250 V
Current rating (C14 appliance inlet with/ without filter)	10 A (IEC/EN) 15 A (UL/CSA)
Operating temperature	-25 °C ... +60 °C
Number of poles	L, N, + protective conductor
Degree of protection	I
Mounting method	Screw-type mounting (from the front or from the rear)
Terminals	C14 and circuit breaker: Blade terminals 6.3 x 0.8 mm
Enclosure material support plate	Thermoplastics, black, UL94V-0
Appliance inlet	C14
Circuit breaker for equipment protection	106, 1140, 1658, 2-5700



Ordering information

Type no.	XR38 Power entry module for 106, 1140, 1658, 2-5700 ⁽¹⁾
Module	C Push button protruding D Push button recessed
Mounting method	04 Screw-type mounting
Filters	00 Without 01 Standard line filter 03 Standard line filter for medical equipment 06 High performance line filter for medical equipment
Filter rating (for version with filter only) ⁽²⁾	01 1 A 03 3 A 06 6 A 08 8 A 10 10 A 12 12 A 15 15 A
Version	11 Wired ⁽³⁾
Supply status	M Module supplied with circuit breaker mounted
Ordering example	XR38 C 04 01 03 11 M

(1) Only the following versions are available with 3/8" threadneck and blade terminals 6.3 x 0.8mm.

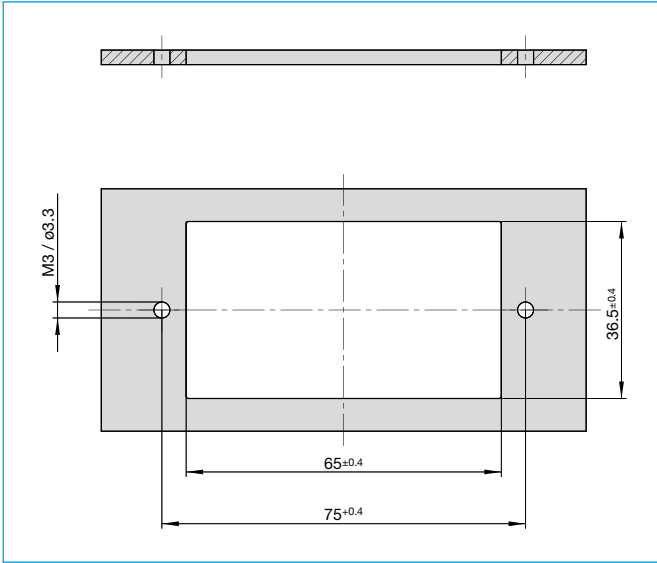
- 106-P10...
- 1140-G0-...-P1/P7
- 1658-G21-00-P10
- 2-5700-iG1-P10-...

(2) For the selection of the filter current rating refer to the table in the data sheet. The current rating of the circuit breaker must not be higher than the filter current rating.

(3) For single pole circuit breakers, only one wire is routed from the circuit breaker to the C14 appliance inlet when ordered as "wired".

Accessories such as water splash cover upon request.

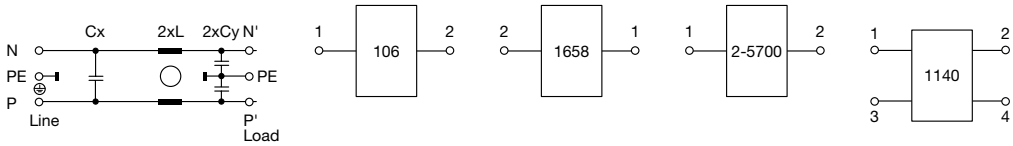
Mounting cut-out



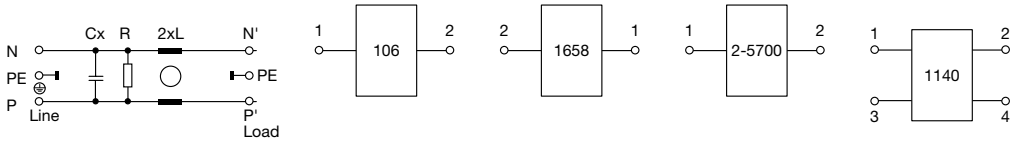
1

Schematic diagrams

Standard filter (C0401, D0401)



Filter for medical equipment (C0403, C0406, D0403, D0406)



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Approvals

C14 Appliance Inlet			
Approval authority	Standard	Rated voltage	Max. current rating
ENEC	IEC/EN 60320-1	AC 250 V	10 A
UL	UL 60320-1	AC 250 V	15 A
CSA	C22.2 no. 60320- 1	AC 250 V	15 A

Complete modules XR38-C0400 and XR38-D0400 also available with approval according to UL 60320-1 at max. current of 15 A.

C14 Line Filter			
Approval authority	Standard	Rated voltage	Max. current rating
ENEC	IEC/EN 60939	AC 250 V	10 A
UL	UL 1283	AC 250 V	15 A
CSA	CSA C22.2 No. 8	AC 250 V	15 A

Circuit breakers

See main data sheet of the circuit breaker

Please note: the current rating of the circuit breaker must not exceed the max. current of the appliance inlet / line filter, depending on the approval.

Selection of filter current rating

The thermal circuit breaker protects the filter in the event of an overload. The current rating of the circuit breaker must not be higher than the filter current rating. For best attenuation a filter with the

smallest possible current rating should be selected. Depending on the IEC/EN or UL/CSA approval, other maximum values are permissible for the appliance inlet. The following tables serve as orientation.

Circuit breaker type 106	
Current rating of circuit breaker	Min. rating of filter
0.05-1 A	1 A
1.2-3 A	3 A
3.5-6 A	6 A
7-8 A	8 A
10 A	10 A

Circuit breaker type 1140	
Current rating of circuit breaker	Min. rating of filter
0.05-1 A	1 A
1.2-3 A	3 A
3.5-6 A	6 A
7-8 A	8 A
9-10 A	10 A
11-12 A	12 A
13-15 A	15 A

Circuit breaker type 1658	
Current rating of circuit breaker	Min. rating of filter
5-6 A	6 A
7-8 A	8 A
9-10 A	10 A
11-12 A	12 A
15 A	15 A

Circuit breaker type 2- 5700	
Current rating of circuit breaker	Min. rating of filter
0.05-1 A	1 A
1.2-3 A	3 A
3.5-6 A	6 A
7-8 A	8 A
10 A	10 A
12 A	12 A
13-15 A	15 A



Dimensions

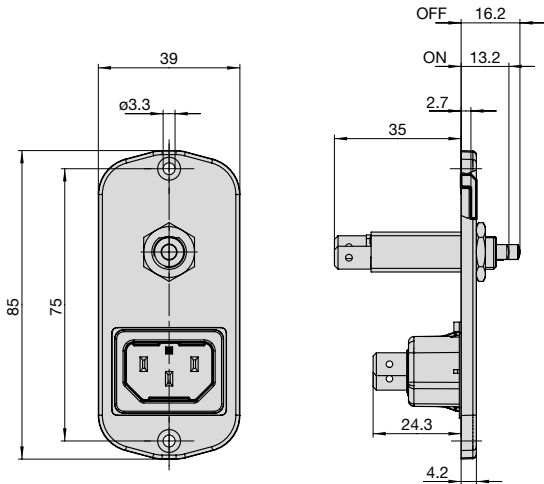
Note:

- Drawings are exemplary with circuit breakers type 106/2-5700. For combinations with 1140/1658 circuit breakers please refer to their data sheets.
- Modules are shown without wiring, to determine the necessary installation space due to the wiring see the corresponding section in this datasheet.

Type C

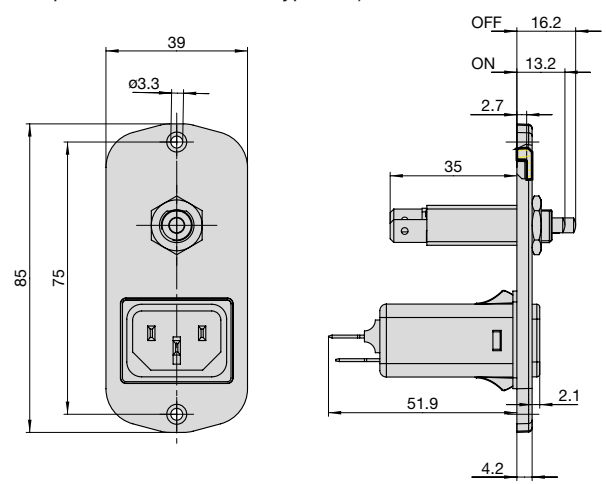
C0400 type

(Push-button protruding, example with circuit breaker type 106)



C040x type

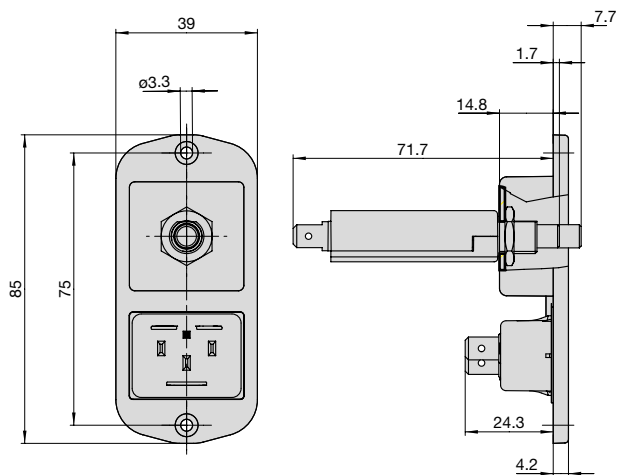
(Push-button protruding, with line filter, example with circuit breaker type 106)



Type D

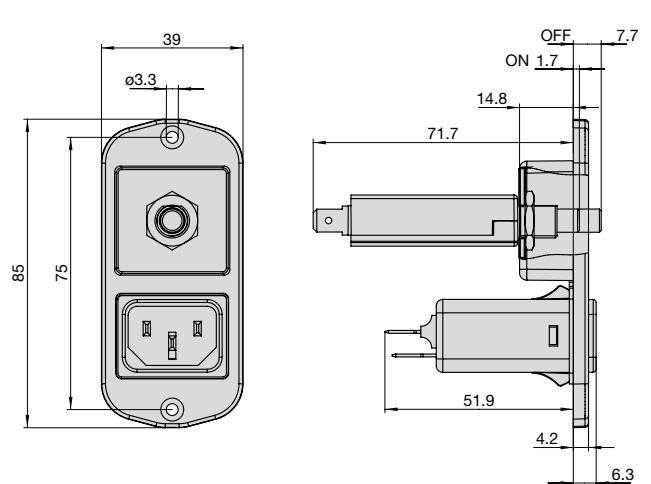
D0400 type

(Push-button is recessed, example with circuit breaker type 2-5700)



D040x type

(Push-button is recessed, with line filter, example with circuit breaker type 2-5700)

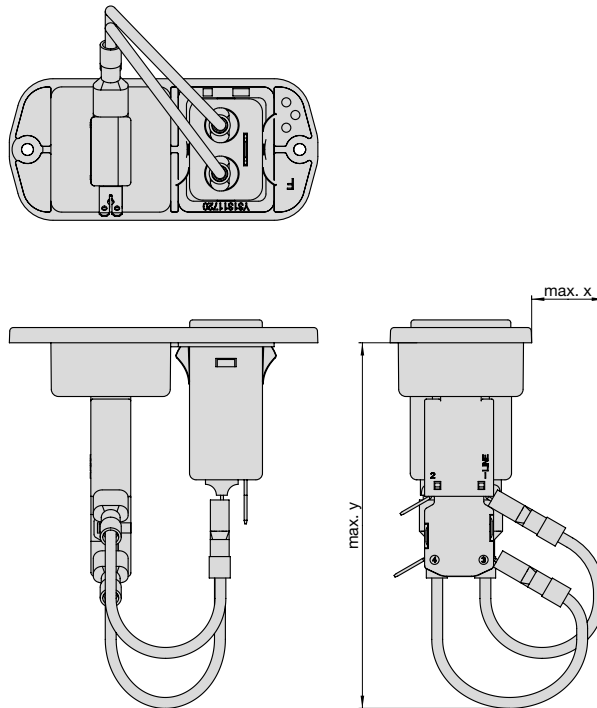


Dimensions

Installation space for wiring (approximate indication):

Circuit breakers	x				y			
	C00400	C040x	D0400	D040x	C0400	C040x	D0400	D040x
106					65	80	80	90
1140 (2-pole)	30	30	30	30	85	90	95	95
1658					70	80	80	90
2-5700					90	100	100	95

Specifications in mm.



Standard filter C/D0401 and C/D0403

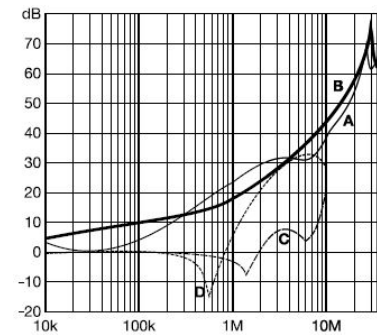
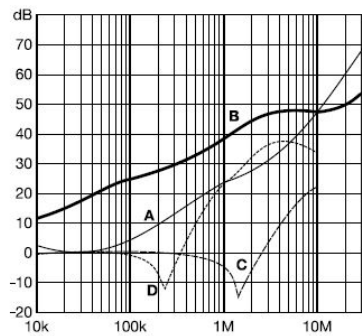
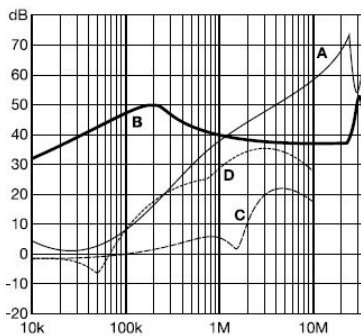
Typical filter attenuation: to CISPR 17

A = 50 Ω / 50 Ω sym; B = 50 Ω / 50 Ω asym; C = 0.1 Ω / 100 Ω sym; D = 100 Ω / 0.1 Ω sym

1 and 3 A models

6 – 10 A models

12 and 15 A models



High-performance filter C/D0406

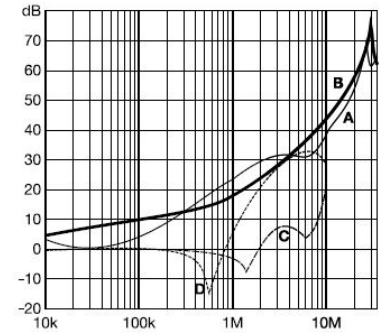
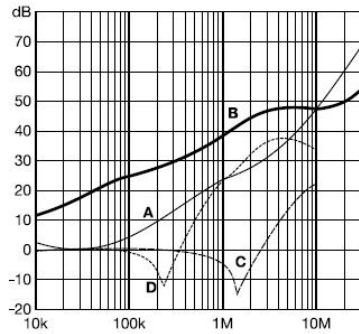
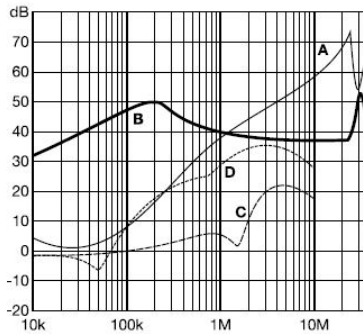
Typical filter attenuation: to CISPR 17

A = 50 Ω / 50 Ω sym; B = 50 Ω / 50 Ω asym; C = 0.1 Ω / 100 Ω sym; D = 100 Ω / 0.1 Ω sym

1 and 3 A models

6 – 10 A models

12 and 15 A models



Filter selection table

Filters	Current rating 50 °C (25 °C) A	Leakage current 250VAC/50Hz μA	Inductance L mH	Capacity Cx μF	Capacity Cy nF	Resistance R kΩ
Type 01 Standard line filter	1 (1.2)	373	12	0.1	2.2	
	3 (3.5)	373	2.5	0.1	2.2	
	6 (7.2)	373	0.78	0.1	2.2	
	8 (10.6)	373	0.5	0.1	2.2	
	10 (11.6)	373	0.225	0.1	2.2	
	12 (12)	373	0.11	0.1	2.2	
	15 (15)	373	0.075	0.1	2.2	
Type 03 Standard line filter for medical equipment	1 (1.2)	2	12	0.1		1000
	3 (3.5)	2	2.5	0.1		1000
	6 (7.2)	2	0.78	0.1		1000
	8 (10.6)	2	0.5	0.1		1000
	10 (11.6)	2	0.225	0.1		1000
	12 (12)	2	0.11	0.1		1000
	15 (15)	2	0.075	0.1		1000
Type 06 High-performance line filter for medical equipment	1 (1.2)	2	59.53	0.1		1000
	3 (3.5)	2	13.45	0.1		1000
	6 (7.2)	2	4.1	0.1		1000
	8 (10.6)	2	2.3	0.1		1000
	10 (11.6)	2	1.02	0.1		1000
	12 (12)	2	0.58	0.1		1000
	15 (15)	2	0.4	0.1		1000

