

Power entry module CG

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1 General Description

General :

Area of use : EMC sensitive equipment

Advantage : Full EMC screening from inlet to filter.

The power entry module with mains-filter type CG meets IEC / EN 60950.

It consists of the following parts :

Appliance inlet :

For a pin temperature of max. 70° C.

The appliance inlet meets the following standards :

- IEC / EN 60320-1 / C14

- UL 498

- CSA 22.2 no. 42

Protection class I (L / N / PE) to IEC 61140.

Fuse-holder :

Fuse-holder 1-pole or 2-pole with interchangeable fuse-drawer for fuse-links 5x20mm or 6.3x32mm.

The fuse-drawer "Fingergrip" can be removed by hand.

For added safety "Extra-Safe" fuse-drawer are available that only can be extracted with the aid of a tool.

"Extra-Safe" fuse-drawer satisfy international standards for medical equipment.

The fuse-holder is accessible from the equipment front.

The live parts cannot be touched with the standard test-finger according to IEC 60529 in the following conditions :

- during operating, i.e. with inserted fuse-drawer.
- during opening, i.e. with open fuse-drawer.
- during replacing the fuse-link held by the fuse-drawer.

The fuse-holder meets the following standards :

- IEC 60127-6

- IEC 60601-1

- BS 5724 part 1

- DIN/VDE 0750 part 1

Voltage-selector :

Voltage selector with series-parallel connections, with 4, 3 or 2 switch positions, or usable as a 2-pole change-over switch.

The voltage selector can be ordered alternatively for transformers with two windings, two windings and one tap or with three separate windings.

Line switch :

Integral switch :

2-poles illuminated or non-illuminated ON- / OFF-switch.

The rocker-switch meets the following standards:

- IEC / EN 61058-1

- UL 61058-1

- CSA 22.2 no. 61058-1

The switch is marked by 0 and I.

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Remote switch:

2-poles non-illuminated ON- / OFF-switch with Bowden cable actuation.

The line-switch meets the following standards:

- IEC / EN 61058-1
- UL 1054
- CSA 22.2-55

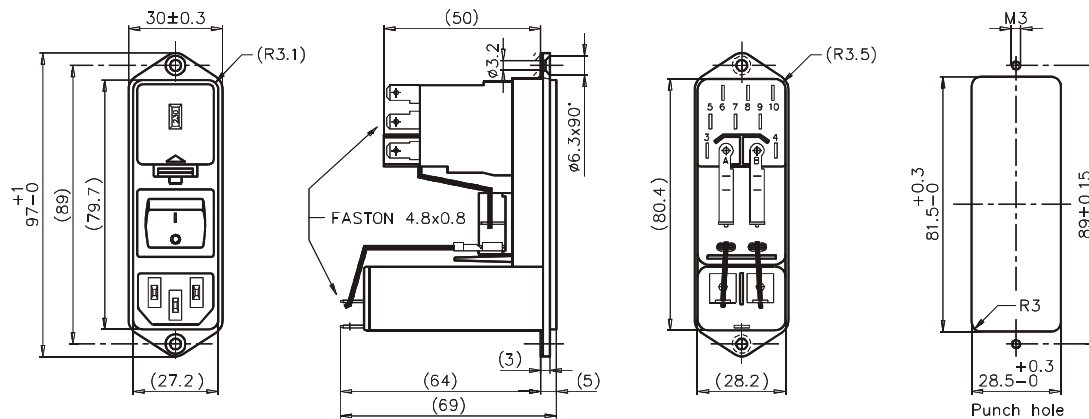
Mains-filter :

1-stage mains-filter for standard or medical application.

The mains-filter meets the following standards :

- IEC 60939
- EN 133200
- UL 1283
- CSA 22.2 No.8

2 Dimensions



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3 Electrical Data

3.1 General :

Rated voltage Un	125 / 250 V AC	50 / 60 Hz
Rated current In	1, 2, 4, 6, 10 A	@ Ta 40 °C
Insulation resistance (500 V DC ; 1 min.)	> 10 ³ MΩ	between live parts of different potentials. (without bleed resistor)
	> 10 ³ MΩ	between protective conductor PE and live parts.
Dielectric strength (DC ; 1 min.)	> 1.7 kV	between live parts of different potentials. (without bleed resistor)
	> 2.7 kV	between protective conductor PE and live parts.
Test voltage (2sec.) Fabrication test	1075 V DC	between live parts of different potentials.
	2250 V DC	between protective conductor PE and live parts.
Impulse withstand voltage Û 1.2/50µs	> 2.5 kV	between live parts of different potentials
	> 5 kV	between protective conductor PE and live parts
Overvoltage category	I - III	according to IEC 60664-1
Clearance and creepage distances	> 3 mm	between live parts of different potentials.
	> 4 mm	between protective conductor PE and live parts.
Pollution degree	1 - 3	according to IEC60664-1
Protection class (Protection against electric shock)	Suitable for appliances of protection class I, acc. to IEC 61140 respectively acc. to VDE 0106 / part 1	

3.2 Appliance inlet :

Dimensions acc. to IEC / EN 60320-1	C 14 for protection class I (L / N / PE)
Pin temperature	max. 70° C

3.3 Line-switch :

Rocker-switch :

Rated voltage Un	250 VAC	according to VDE, UL, CSA
Rated current In	12 A 15 A	according to VDE according to UL, CSA
Contact rating (for non-illuminated switch)	16 (16) A 250 VAC 12 (12) A 250 VAC () = inductive load, cos φ = 0.6	10000 switch operations 50000 switch operations
Contact rating (for illuminated switch)	12 (4) A 250 VAC 8 (8) A 250 VAC () = inductive load, cos φ = 0.6	10000 switch operations 50000 switch operations

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Making capacity	Capacitive inrush current max. 70 A 3-4 ms, Continuous current 5 A, 10000 switch operations.
Contact opening width	> 3 mm
Manufacturer	Marquardt GmbH, D-78604 Rietheim-Weilheim
Type designation	01802.1702-03 non-illuminated 01805.71xx-0x illuminated
Approvals	VDE, UL, CSA

Line-switch with Bowden cable actuation:

Rated voltage Un	250 VAC 125 VAC up to 250 VAC	according to VDE according to UL, CSA
Rated current In	6 A (4 A) 8 A () = inductive load, $\cos \phi = 0.6$	according to VDE according to UL, CSA
Inrush current max. AC : followed by continuous current	36 A < 5 ms 6 A	
Operating life at max. load and max. inrush current :	≥ 10000 switching operation ≥ 6000 switching operation	according to VDE according to UL, CSA
Dielectric strength : 50Hz, 1 Min.	2000V	
Ambient temperature :	-20°C to +70°C	
Manufacturer :	ITT Canon	
Type designation :	NE 18 non-illuminated	
Approvals :		
UL File-no. :	E42153	
CSA Certificate no. :	167704-2500012749	
VDE Marks Licence no. :	126088	

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3.4 Fuse-holder :

Rated voltage Un	250 V AC		
Rated current In	10 A according to IEC 60127-6, UL 512 and CSA 22.2-39		
Rated admissible power acceptance at Ta = 23°C	5 x 20	1-pole : 2.5 W	2-pole : 2 W (per pole)
	6.3 x 32	1-pole : 3.15 W	2-pole : 2.5 W (per pole)
Contact resistance	≤ 5 mΩ according to IEC 60127-6		
Protection against electrical shock	Category PC2 according to IEC 60127-6 If the power entry module is installed as normal, it is not possible To touch any live parts with the test-finger according to IEC60529.		

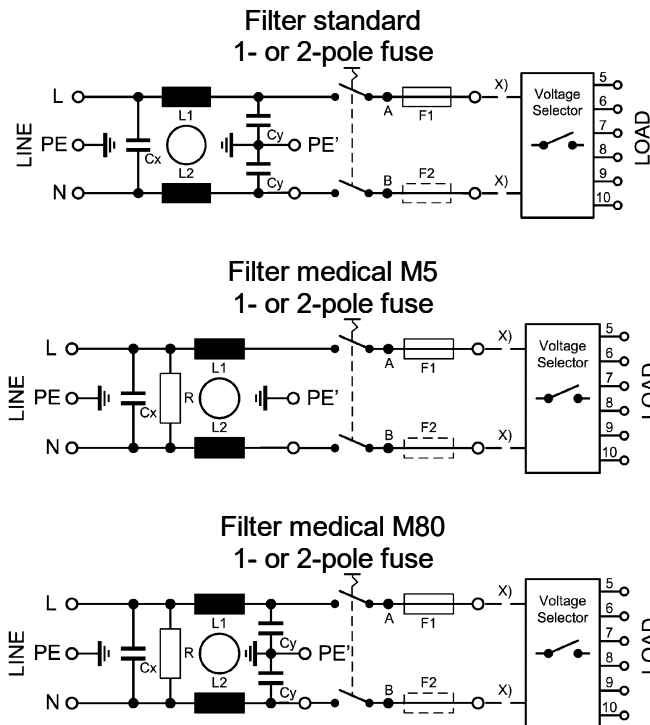
3.5 Mains-filter :

Rated voltage Un	125 / 250 VAC 50 / 60 Hz		
Rated current In	1, 2, 4, 6, 10 A @ Ta 40° C		
Max. leakage current	mains-filter standard	max. 0.5 mA (250V / 60Hz)	
	mains-filter medical M5	max. 5 µA (250V / 60Hz)	
	mains-filter medical M80	max. 80 µA (250V / 60Hz)	

The mains-filter for standard or medical applications meets	IEC 60939 / EN 133200 / UL 1283 / CSA C22.2 no. 8
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3.6 Diagrams



x) External connections to be made by the customer.

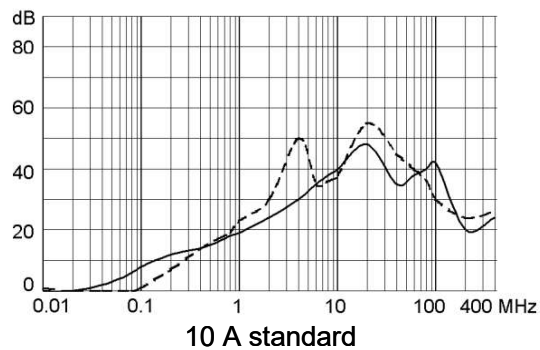
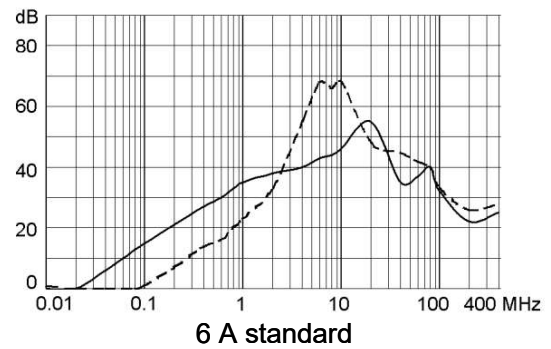
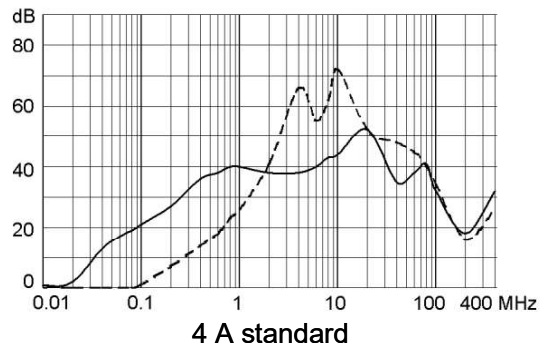
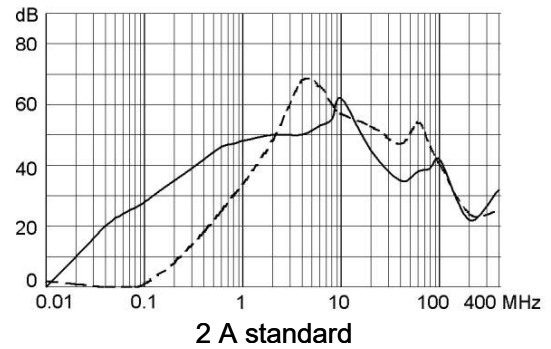
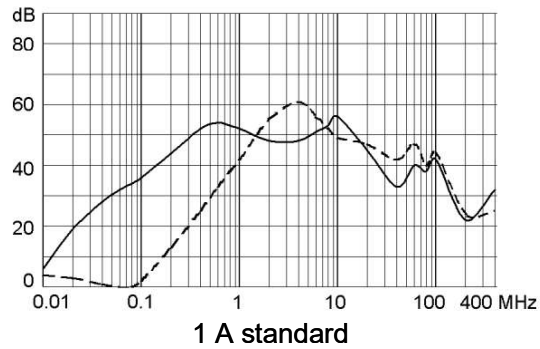
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3.7 Components data

Rated current [A]	Filter type	Inductors L1 / L2 [mH]	Number of turns max.	Wire gauge Ø mm	CX [nF]	CY [pF]	R [MΩ]	DC-resistance @ 25°C [mΩ]
1	Standard	10	2 x 55	0.25	X2 68	Y2 2x 2200	-	500
2		4	2 x 36	0.375				180
4		1.5	2 x 22	0.6				44
6		0.8	2 x 16	0.85				16
10		0.3	2 x 8	1.0				6.6
1	Medical M5	10	2 x 55	0.25	X2 68	-	1	500
2		4	2 x 36	0.375				180
4		1.5	2 x 22	0.6				44
6		0.8	2 x 16	0.85				16
10		0.3	2 x 8	1.0				6.6
1	Medical M80	10	2 x 55	0.25	X2 68	Y1 2x 470	1	500
2		4	2 x 36	0.375				180
4		1.5	2 x 22	0.6				44
6		0.8	2 x 16	0.85				16
10		0.3	2 x 8	1.0				6.6

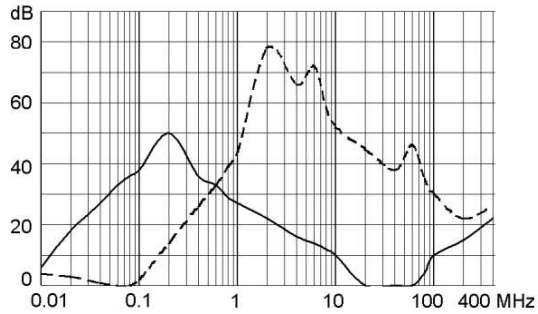
3.8 Attenuation loss :

Filter standard

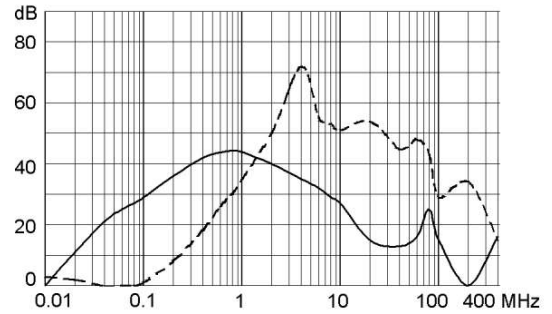


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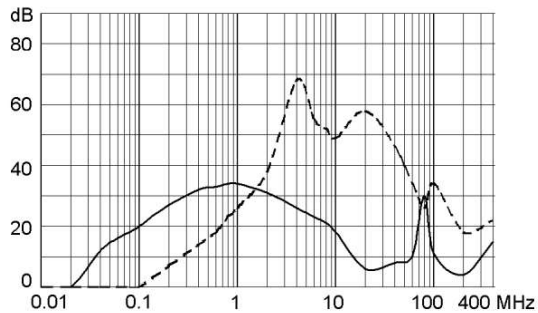
Filter medical M5



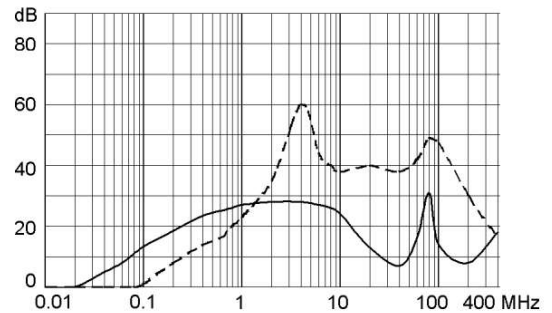
1 A medical M5



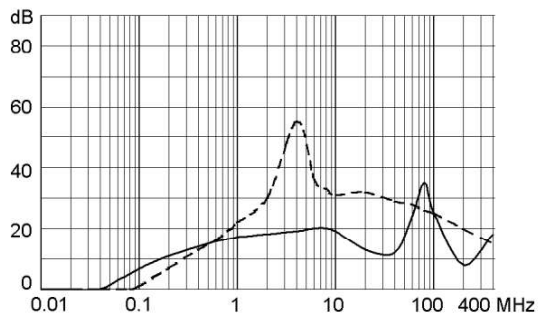
2 A medical M5



4 A medical M5



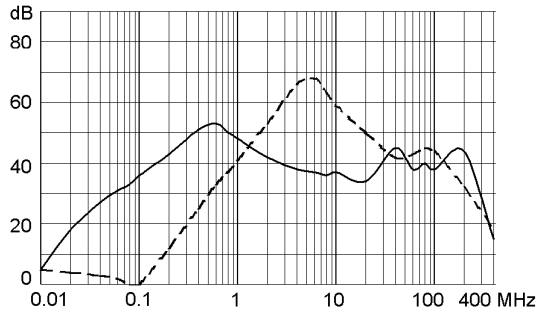
6 A medical M5



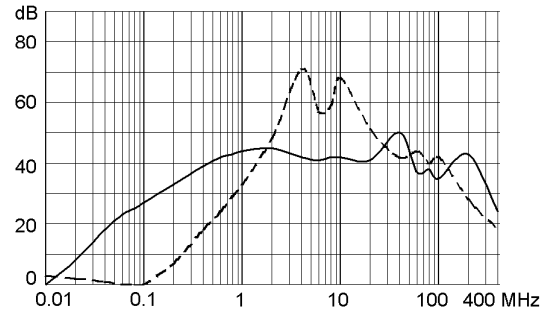
10 A medical M5

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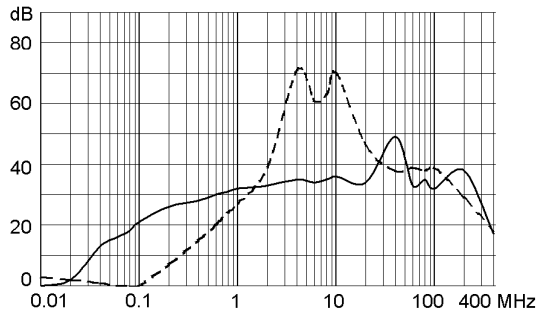
Filter medical M80



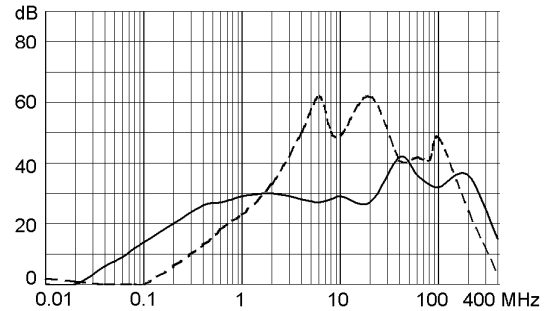
1 A medical M80



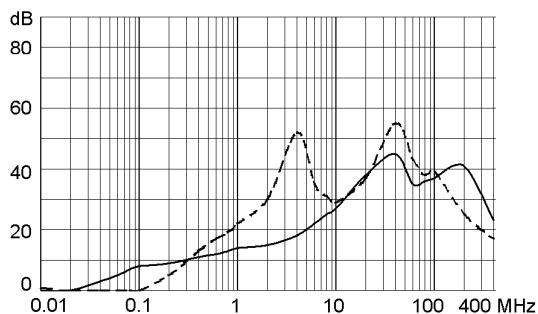
2 A medical M80



4 A medical M80



6 A medical M80



10 A medical M80

— asymmetric measurement: L + N - PE, 50/50 Ohm according to CISPR17
 --- symmetric measurement: L - N, 50/50 Ohm according to CISPR17

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4 Mechanical Data

4.1 Mounting :

The power entry module with mains-filter type CG is suitable for panel mounting from the front side. Fixing takes place with two screws whereby the filter housing is connected to the equipment housing, metal to metal.

Note : For connection of the earth (ground) line to the housing in accordance with regulations, either an additional connection is to be made or the screw fixing made with a spring element (IEC / EN 60950).

Connection takes place either with quick-connect terminals 4.8x0.8mm.

4.2 Terminals :

L / N and protective conductor PE Quick-connect terminals 4.8x0.8mm, acc. to IEC 61210
L / N and protective conductor PE, tin-plated

Solderability
Quick-connect terminals 350° C / 2s acc. to IEC 60068-2-20, test Ta method 2

Resistance to soldering heat
Quick-connect terminals 350°C / 10s acc. to IEC 60068-2-20, test Tb method 2

4.3 Packing and weight :

Original packing 10 pcs.

Net weight gr. per 1 pcs. 93

5 Materials

Socket PETP thermoplastic
Flame class UL94 V-0 (1mm thick)
Comparative tracking index CTI 250 V
Temp.-index RTI, electr. 150° C
Index oxygen LO I 33 %
UL File-no . E 69578

Fuse drawer PBTP thermoplastic
Flame class UL94 V-0 (1mm thick)
Comparative tracking index CTI 200 V
Temp.-index RTI, electr. 125° C
Index oxygen LO I 33 %
UL File-no . E 45329

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Voltage selector insert in fuse drawer	PBT thermoplastic Flame class UL94 V-0 (1mm thick) Comparative tracking index CTI 200 V Temp.-index RTI, electr. 125° C Index oxygen LO I 33 % UL File-no . E 45329
EMC-shield	AL 99.5%
Live parts	Copper alloy, protected against corrosion.
Casting compound	Type PU polyurethane, UL94 V-0 UL File-no. E 107855
Line-switch	Type PA 6 polyamide, UL94 V-0

6 Environmental Condition

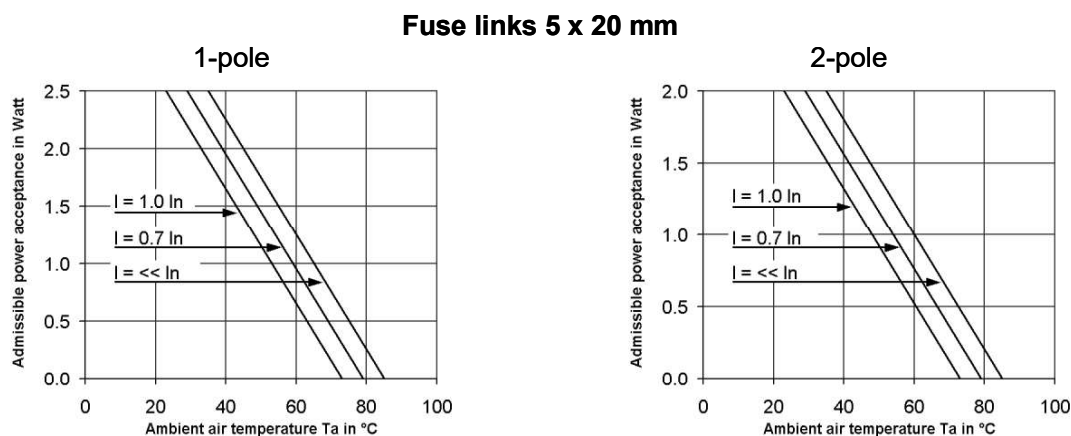
6.1 Temperatures

Storage temperature:	- 40°C up to + 85°C
Operating temperature:	- 25°C up to + 85°C
Climatic category:	25 / 085 / 21 according to IEC 60068-1

Derating curve :

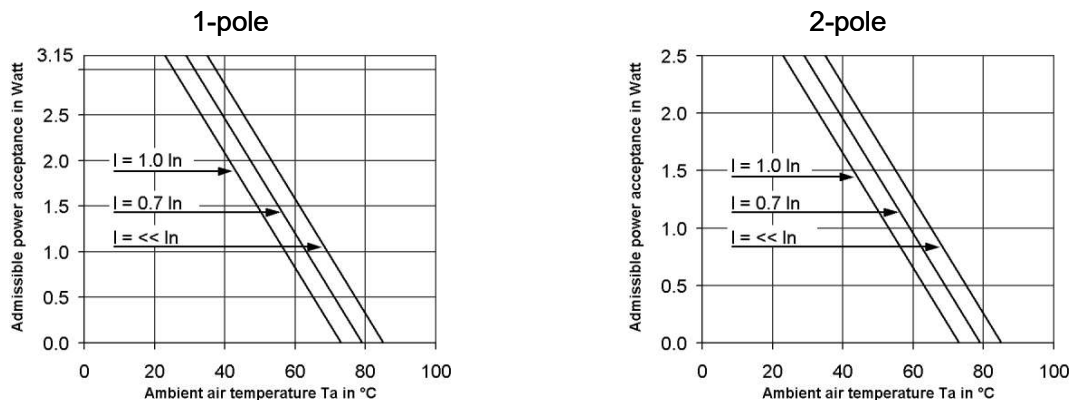
Fuse-holder

Table 1 : Admissible power acceptance versus ambient air temperature Ta



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Fuse links 6.3 x 32 mm

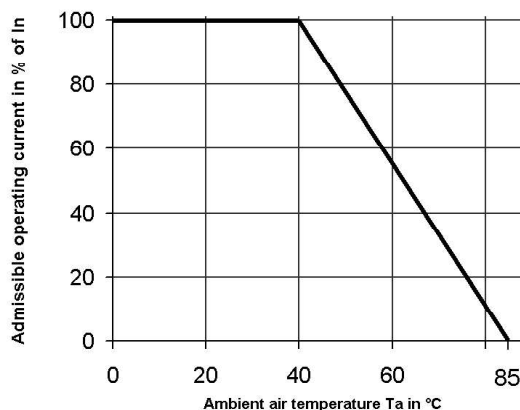


Remark

The admissible power acceptance of the fuseholder is determined by a standardized testing procedure at rated current and at an ambient air temperature of 23° C, whereby the maximum permissible temperatures at the fuseholder must not be exceeded. Application and mounting method, especially for closed fuseholder, can influence the heating situation considerably. Therefore the heating situation has to be tested at the working condition of the fuseholder at maximum current and maximum ambient air temperature.

Mains-filter

Table 2 : correlation between max. operating current I and the ambient air temperature Ta (Appliance inlet : pin temperature max. 70° C)



To calculate the exact permissible current at ambient temperature use the following formula :

$$I = I_n \sqrt{\frac{T_{\max} - T_a}{T_{\max} - T_n}}$$

I = permissible current at operating temperature
 I_n = Rated current
 $T_{\max}$ = maximal permissible temperature (85° C)
 T_a = ambient temperature
 T_n = temperature concerning I_n (40° C)

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6.2 Vibration and shock resistance :

Resistance to vibration
according to IEC 60068-2-6

Test Fc ; Frequency range 10 - 500 Hz,
cross-over frequency 60 Hz
< 60 Hz constant amplitude of 0.75mm
> 60 Hz constant acceleration of 10 g

6.3 Degree of protection :

Degree of protection

IP40 according to IEC 60529
Front face of filter, with insert fuse-holder.

7 Approvals

Country	Certification Body	Type	Mark	File no.
Europe	VDE	ENEC Mark		40004665
U.S.A. / Canada	UL	Certification / Recognition		E72928

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8 Configuration Code

CG - X X X X X - X X X X - X X X X - X 00

Switch

- 1 = Non-illuminated O I (0041.1640)
- 2 = Illuminated red (0041.1656)
- 3 = Illuminated green (0041.1657)
- 4 = for remote control (BZ) (0041.4203)
- 5 = for remote control (0041.4208)

Locking System

- 0 = Without
- 1 = V-Lock (rework) 1)

Mounting

- 1 = Screw (front side)

PE-Choke

- 0 = Without

Resistor

- 0 = Without
- 1 = 1MΩ

Y-Capacitor

- 0 = Without
- 1 = Y2, 2.2nF
- 2 = Y1, 470pF

X-Capacitor

- 1 = X2, 68nF

Terminal SiHa and VS

- 1 = Quick Connect 4.8x0.8 (A/B Connection)

Terminal Switch

- 1 = L, Connection ; N, Quick Connect 4.8x0.8
- 2 = L, Connection ; N, Connection

Terminal PE ; Filter

- 1 = Quick Connect 4.8x0.8

Terminal N ; Filter

- 1 = Quick Connect 4.8x0.8 1)
- 2 = Connection

Terminal L ; Filter

- 1 = Quick Connect 4.8x0.8 1)
- 2 = Connection

Rated current

- 1 = 1A
- 2 = 2A
- 4 = 4A
- 5 = 6A
- 7 = 10A

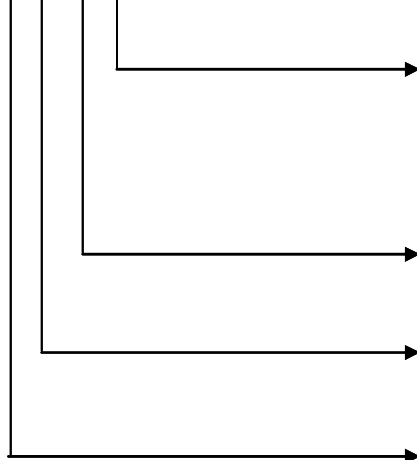
Fuse drawer types

- 1 = 1-pole (FKSA)
- 2 = 2-pole (FKSB)

1) only on request

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FD1 - X X - X X



Contact version position N

- 0 = without
- 1 = with contact for 5x20 fuse
- 2 = with contact for 6.3x32 fuse
- 3 = with short-circuit springs
- 4 = for back-up fuse

Contact version position L

- 1 = with contact for 5x20 fuse
- 2 = with contact for 6.3x32 fuse

Fingergrip

- 1 = Extra Safe

Colour

- 0 = black

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