

Data Sheet

EF12 Power Entry Modules

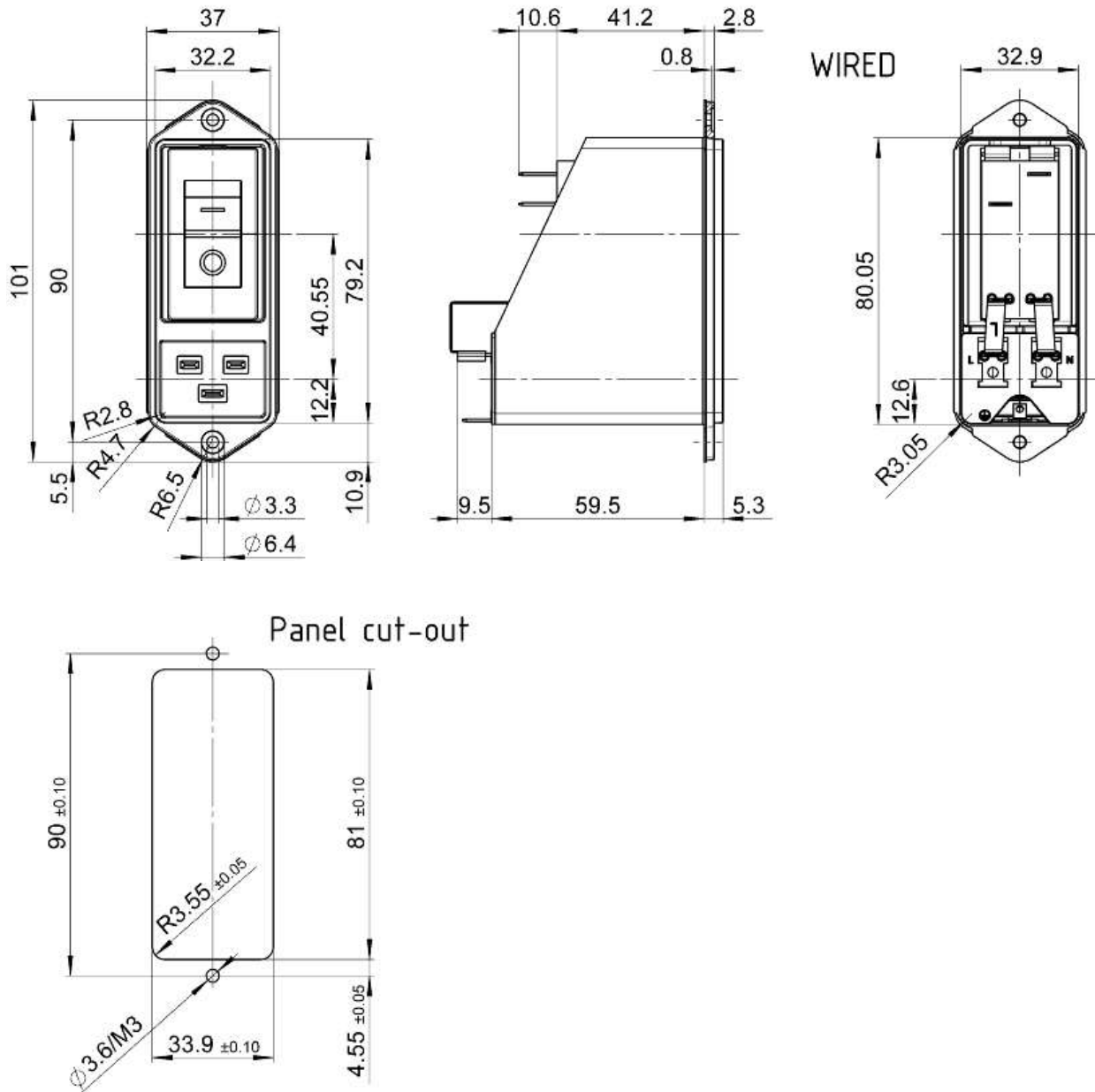
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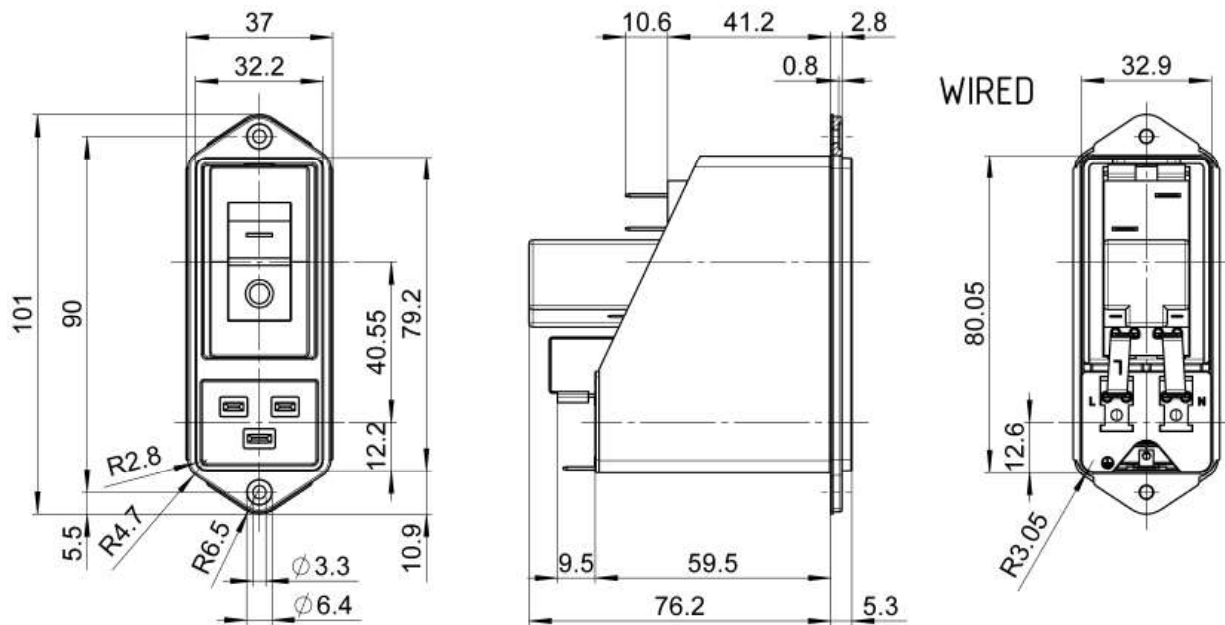
1 Dimensions

TA45 basic type

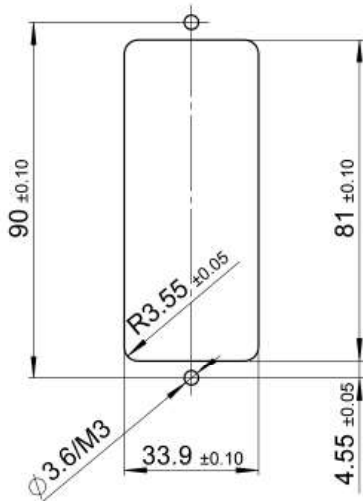


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TA45 with undervoltage release

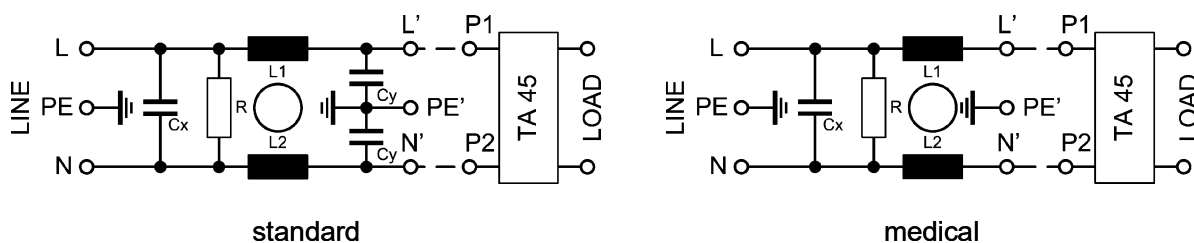


Panel cut-out



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2 Diagrams



3 Components data

Rated current [A]	Filter type	Inductors L1 / L2 [mH]	CX2 [nF]	CY2 [nF]	R [MΩ]	DC-resistance @ 25°C [mΩ]	Number of turns	Wire gauge [mm]
12	standard	0.8	100	2x 2.2	1	7.5	2 x 13	1.25
16		0.6			1	5	2 x 11	1.5
20		0.3			1	3.5	2 x 8	1.5
12	medical	0.8	100		1	7.5	2 x 13	1.25
16		0.6			1	5	2 x 11	1.5
20		0.3			1	3.5	2 x 8	1.5

4 Description

General :

Area of use : EMC sensitive equipment (in the range especially from 10 to 20 A).
 Advantage : Full EMC screening from inlet to filter.

The power entry module with mains-filter type **EF12** 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 / C20
 - UL 498
 - CSA 22.2 no. 42
 Protection class I (L / N / PE) acc. to IEC 61140.

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Circuit breaker TA45 :

Circuit breaker for equipment **TA45** meets the following standards :

- IEC / EN 60934
 - UL 1077
 - CSA C22.2 no. 235
- (detail information see catalogue "CIRCUIT BREAKERS FOR EQUIPMENT")

Variants : 2-pole, with 1-pole thermal overload protection
 2-pole, with 2-pole thermal overload protection

Available options : Undervoltage release
 Remote trip release

Mains-filter :

The mains-filter meets the following standards :

- IEC 60939
- UL 1283
- CSA 22.2 no. 8

Mounting :

The power entry module type EF12 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.

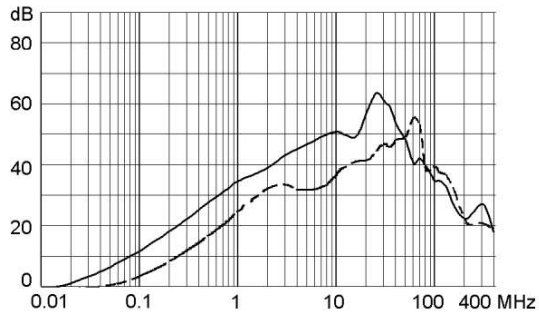
Note : For connection of the earth (ground) line to the housing in accordance with regulations, either an additional connection is to be made or the screw fixing made with a spring element (IEC / EN 60950).

Connection takes place either with quick-connect terminals 6.3x0.8mm (tinned brass).

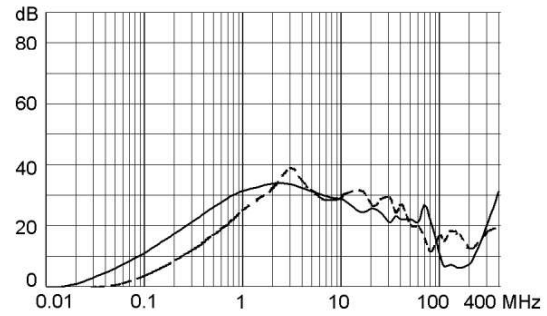
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5 Attenuation loss standard und medical

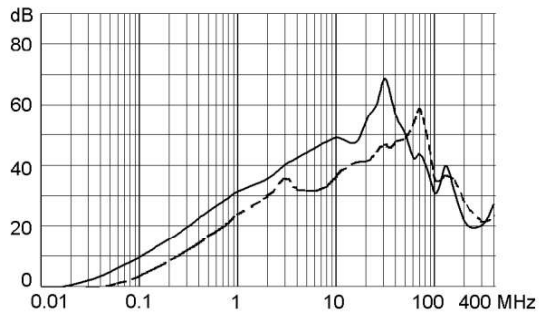
12A standard



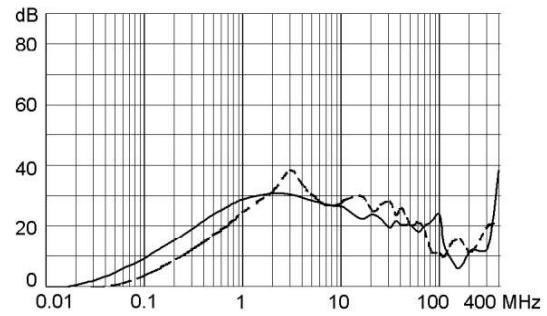
12A medical



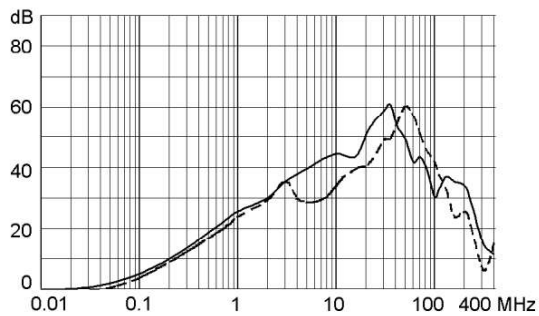
16A standard



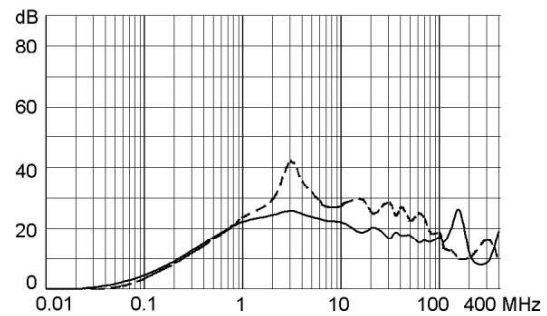
16A medical



20A standard



20A medical



— asymmetric measurement:
- - - symmetric measurement:

L + N ↔ PE, 50/50 Ω according to CISPR17
L ↔ N, 50/50 Ω according to CISPR

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6 Technical Data

General :

Rated voltage U_n	125 / 250 V AC	50 / 60 Hz
Rated current I_n	16 A @ Ta 40° C according to IEC / EN	20 A @ Ta 40° C according to UL / CSA
Insulation resistance (500 V DC ; 1 min.)	> 3x 10 ³ MΩ	between live parts of different potentials. (without bleed resistor)
	> 3x 10 ³ MΩ	between protective 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.
	1500 V AC	between protective conductor PE and live parts.
Impulse withstand voltage $\hat{U}$ 1.2/50	> 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
Crearence and creepage distances	> 3 mm between live parts of different potentials. > 4 mm between protective conductor PE and live parts.	
Pollution degree acc. IEC 60664-1	1 - 3	
Protection class (Protection against electric shock)	Suitable for appliances of protection class I , acc. to IEC 61140 respectively acc. to VDE 0106 / part 1	
Degree of protection	IP40 acc. to IEC 60529 respectively acc. to DIN 40050	
Climatic category	25 / 085 / 21 acc. to IEC 60068-1 for mains filter 10 / 055 / 21 acc. to IEC 60068-1 for TA45	
Operating temperature	- 25°C up to + 85° C for mains filter - 10°C up to + 55° C for TA45	
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 0.75 mm > 60 Hz constant acceleration of 10 g	

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Terminals :

Mains-filter	L / N and PE QC terminal 6.3x0.8 mm acc. to IEC 61210 Connection Inlet to CBE (wired)	tin-plated (Sn) nickel-plated (Ni)
Circuit breaker TA45	QC terminal 6.3x0.8 mm acc. to IEC 61210 External release terminals 2.8x0.8 mm	non-plated tin-plated

Materials : (without CBE-specification)

- Thermoplastic :	Socket	Filter-cover
Type :	PBT	PA6
Flame classe UL94 :	V-0 / 0.71 mm	V-0 / 0.75 mm
Comparative tracking index CTI :	3	600 V
Temp.-index RTI, electr. :	120° C	125° C
Index oxygen LOI :	30 %	30 %
UL File-no. :	E207780	E86034
- EMC-shield :	AL 99.5 %	
- Live parts :	Copper alloy, protected against corrosion	
- Casting compound :	Polyurethane PU UL94 V-0	

Original packing :

	16 pcs.		
	wired	unwired	
Net weight gr. per 1 pcs.	148	144	TA45 basic type
	165	161	TA45 with undervoltage release

Appliance inlet :

Dimensions acc. to IEC/	C 20 for protection class I (L / N / PE)
EN 60320-1	
Pin temperature	max. 70° C

Circuit breaker for equipment TA45, 2-pole rocker :

Effect of ambient temperature

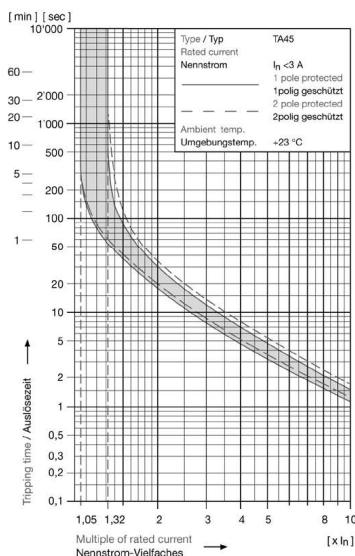
The unit is calibrated for an ambient temperature of + 23° C. To determine the rated current for lower or higher ambient temperature, use a correction factor from the table below :

Example :

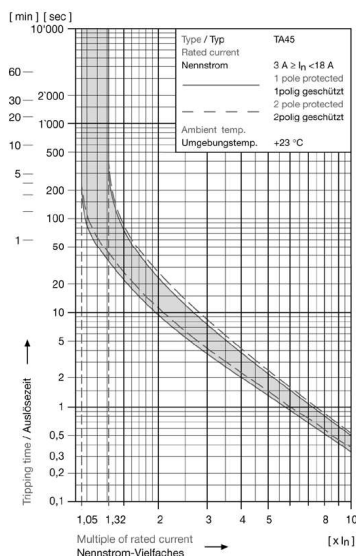
Rated current at + 23° C	5.0 A
Ambient temperature	+ 40° C
Correction factor	1.08
Chosen rated current at +40° C	5.5 A

Ambient temperature (°C)	Correction factor
- 10	0.89
- 5	0.91
0	0.92
+ 23	1.00
+ 30	1.03
+ 40	1.08
+ 55	1.16

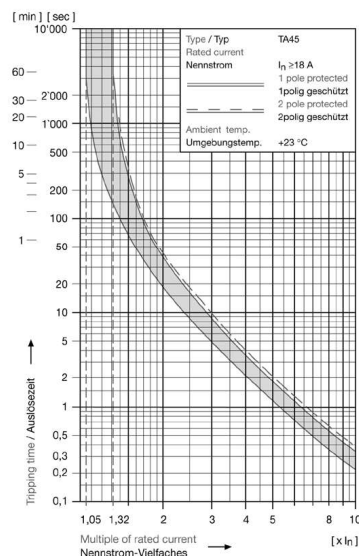
Tripping characteristic



multiple of rated current ($\times I_n$)



multiple of rated current ($\times I_n$)



multiple of rated current ($\times I_n$)

Technical data of the CBE

Short circuit capacity I_{cn} (3 cycles)

240 V AC with $I_n < 3 \text{ A}$ 10 I_n
240 V AC with $I_n = 3 \text{ A}$ 300 A

Endurance (240 V AC)

at I_n 50'000 cycles
at $6 \times I_n$ 40 cycles

Under voltage release, technical data

Max. operating voltage 1.1 U_e

Rated operating voltage U_e	5 V	12 V	24 V	48 V	120 V	240 V
Current consumption ($\pm 10\%$)	10.5 mA	16.5 mA	17 mA	3.2 mA	3.7 mA	3.1 mA

reset level $< 0.85 U_e$
trip level $> 0.2 U_e$
Trip delay 20 ms50 ms

Contact opening width 3 mm

Standards IEC / EN 60934 / UL 1077 / CSA 22.2 no. 235

Materials :

- Case :	PA 66	UL94 V-0
- Carrier :	UP	UL94 V-0
- Rocker :	PC	UL94 HB
- Live parts :	Copper alloy	

Approvals :

- UL File-no. :	E71572
- CSA File-no. :	LR 37712
- VDE File-no. :	103223

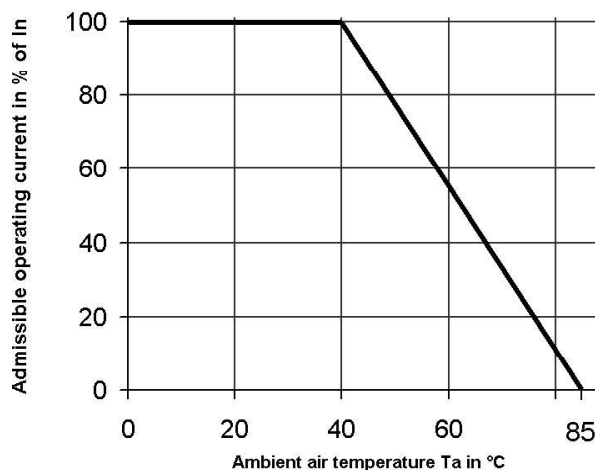
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Mains-filter :

Rated voltage U_N	125 / 250 V AC 50 / 60 Hz
Rated current I_N	12 A / 16 @ Ta 40° C ; acc. to IEC / EN, UL, CSA 20 A @ Ta 40° C ; acc. to UL, CSA
Max. leakage current	mains-filter standard max. 0.5 mA (250 V / 60 Hz) mains-filter medical max. 5 µA (250 V / 60 Hz)
The mains filter for standard or medical applications meets	IEC 60939 / UL 1283 / CSA C22.2 no. 8

Derating curve :

Table 1, correlation between max. operating current I and the ambient air temperature T_a
(Appliance inlet : pin temperature max. 70° C)



7 Approvals

Country	Certification Body	Type	Mark	File no.
Europe	VDE	ENEC Mark		40001520
U.S.A. / Canada	UL	Certification / Recognition		E72928

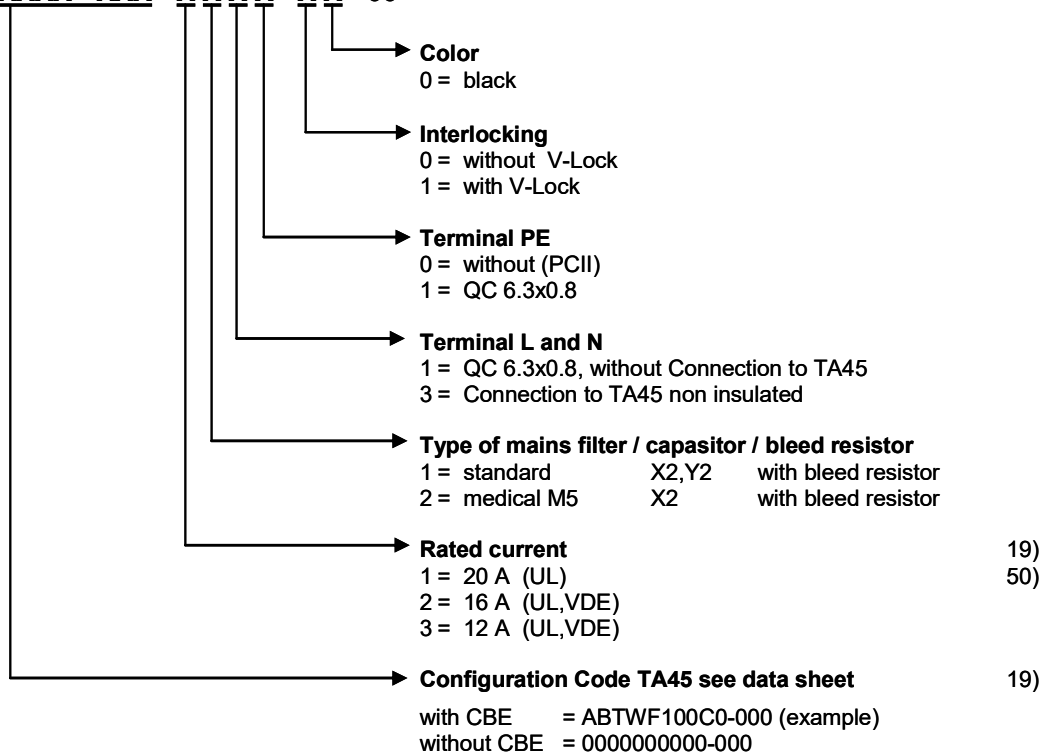
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8 Technical File

Power entry modul see 0106.0138
TA45 see 0106.0126

9 Configuration Code

EF12 - XXXXXXXXXXXX - XXX - XXXX - XX - 00



Remarks:

- 19) the rated filter current must not be exceeded in the application
50) UL approval only

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