

# VAL-MS 385/80/3+0 - Type 2 surge arrester



2921093

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Type 2 surge protective device for 4-conductor power supply systems (L1, L2, L3, PEN), with plug latching.

## Commercial data

Item number	2921093
Packing unit	1 pc
Minimum order quantity	1 pc
Note	Made to order (non-returnable)
Product key	CL1322
GTIN	4046356290852
Weight per piece (including packing)	480.9 g
Weight per piece (excluding packing)	480.9 g
Country of origin	DE

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## Technical data

### Product properties

Product type	Surge arrester
Product family	VALVETRAB MS
IEC test classification	II T2
EN type	T2
IEC power supply system	TN-C
Type	DIN rail module, two-section, divisible
Surge protection fault message	optical
Number of ports	One

### Insulation characteristics

Overvoltage category	III
Pollution degree	2

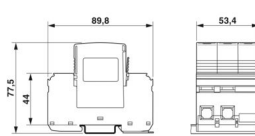
### Electrical properties

Nominal frequency $f_N$	50 Hz (60 Hz)
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### Connection data

Connection method	Screw connection
Screw thread	M5
Tightening torque	3 Nm (1.5 mm <sup>2</sup> ... 16 mm <sup>2</sup> ) 4.5 Nm (25 mm <sup>2</sup> ... 35 mm <sup>2</sup> )
Stripping length	16 mm
Conductor cross-section flexible	1.5 mm <sup>2</sup> ... 25 mm <sup>2</sup>
Conductor cross-section rigid	1.5 mm <sup>2</sup> ... 35 mm <sup>2</sup>
Conductor cross-section AWG	15 ... 2
Connection method	Fork-type cable lug
Conductor cross-section flexible	1.5 mm <sup>2</sup> ... 16 mm <sup>2</sup>

### Dimensions

Dimensional drawing	
Width	53.4 mm
Height	89.8 mm
Depth	77.5 mm (incl. DIN rail 7.5 mm)
Horizontal pitch	3 Div.

### Material specifications

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Flammability rating according to UL 94	V-0
CTI value of material	600
Insulating material	PA 6.6/PBT
Material group	I
Housing material	PA 6.6 PBT

## Protective circuit

Mode of protection	L-PEN
Direction of action	3L-PEN
Nominal voltage $U_N$	240/415 V AC (TN-C)
Nominal frequency $f_N$	50 Hz (60 Hz)
Maximum continuous operating voltage $U_C$	385 V AC
Rated load current $I_L$	80 A
Protective conductor current $I_{PE}$	$\leq 1800 \mu\text{A}$
Standby power consumption $P_C$	$\leq 690 \text{ mVA}$
Nominal discharge current $I_n$ (8/20) $\mu\text{s}$	40 kA
Maximum discharge current $I_{\text{max}}$ (8/20) $\mu\text{s}$	80 kA
Impulse discharge current (10/350) $\mu\text{s}$ , charge	1.25 As
Impulse discharge current (10/350) $\mu\text{s}$ , specific energy	1.56 kJ/ $\Omega$
Impulse discharge current (10/350) $\mu\text{s}$ , peak value $I_{\text{imp}}$	2.5 kA
Total discharge current $I_{\text{Total}}$ (8/20) $\mu\text{s}$	200 kA
Total discharge current $I_{\text{Total}}$ (10/350) $\mu\text{s}$	7.5 kA
Short-circuit current rating $I_{\text{SCCR}}$	25 kA
Voltage protection level $U_p$	$\leq 2 \text{ kV}$
Residual voltage $U_{\text{res}}$	$\leq 2 \text{ kV}$ (at $I_n$ ) $\leq 1.3 \text{ kV}$ (at 10 kA) $\leq 1.2 \text{ kV}$ (at 5 kA) $\leq 1.15 \text{ kV}$ (at 3 kA)
TOV behavior at $U_T$	480 V AC (5 s / withstand mode) 457 V AC (120 min / withstand mode)
Response time $t_A$	$\leq 25 \text{ ns}$
Max. backup fuse with V-type through wiring	80 A (gG - 16 mm <sup>2</sup> )
Max. backup fuse with branch wiring	250 A (gG)

## Environmental and real-life conditions

### Ambient conditions

Degree of protection	IP20 (only when all terminal points are used)
Ambient temperature (operation)	-40 °C ... 80 °C
Ambient temperature (storage/transport)	-40 °C ... 80 °C
Altitude	$\leq 2000 \text{ m}$ (amsl)
Permissible humidity (operation)	5 % ... 95 %
Shock (operation)	30g (Half-sine / 11 ms / 3x $\pm X$ , $\pm Y$ , $\pm Z$ )
Vibration (operation)	7.5g (10 ... 500 Hz / 2.5 h / X, Y, Z)

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## Approvals

### UL specifications

Maximum continuous operating voltage MCOV (L-L)	385 V AC
Maximum continuous operating voltage MCOV (L-G)	385 V AC
Nominal discharge current $I_n$ (L-L)	20 kA
Nominal discharge current $I_n$ (L-G)	20 kA
Mode of protection	L-L
	L-G
Nominal voltage	240 V AC
Power distribution system	Delta
Nominal frequency	50/60 Hz
Measured limiting voltage MLV (L-L)	3860 V
Measured limiting voltage MLV (L-G)	2710 V
SPD Type	4CA

### UL connection data

Tightening torque	30 lb <sub>F</sub> -in.
Conductor cross-section AWG	10 ... 2

## Standards and regulations

Standards/specifications	IEC 61643-11
Note	2011
Standards/specifications	EN 61643-11
Note	2012

## Mounting

Mounting type	DIN rail: 35 mm
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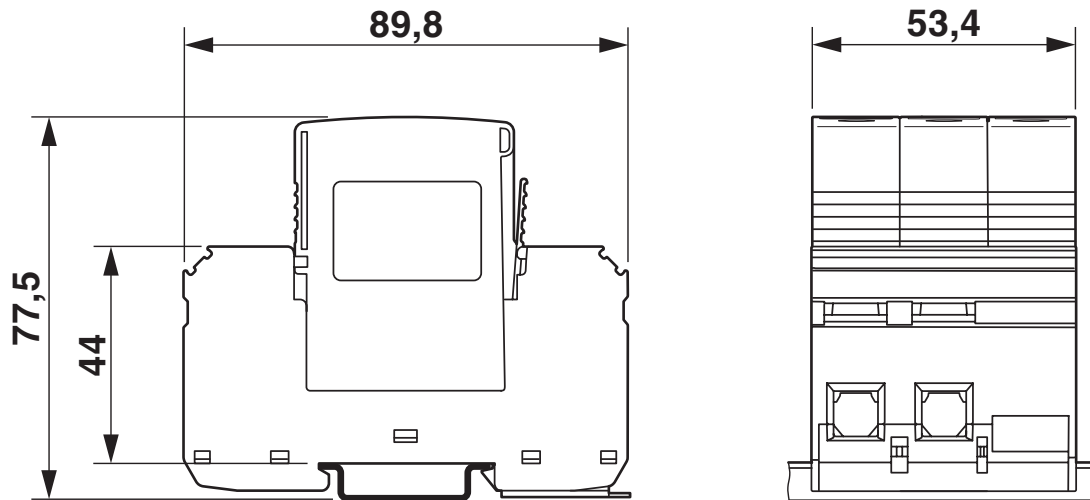
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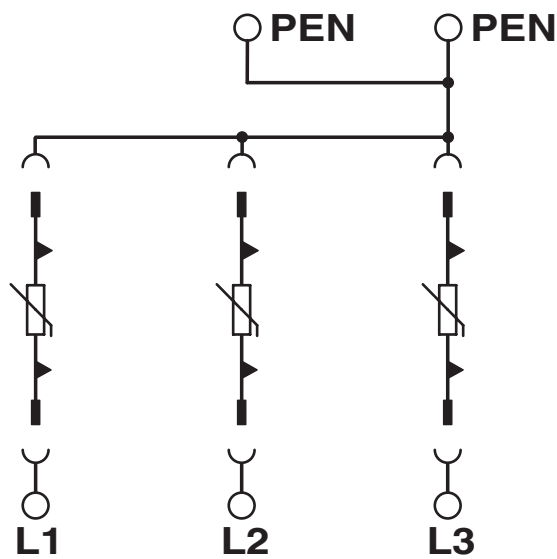
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## Drawings

Dimensional drawing



Circuit diagram



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## Environmental product compliance

### EU RoHS

Fulfills EU RoHS substance requirements	Yes, No exemptions
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### China RoHS

Environment friendly use period (EFUP)	EFUP-E
	No hazardous substances above the limits

### EU REACH SVHC

REACH candidate substance (CAS No.)	No substance above 0.1 wt%
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