

# VAL-MS-T1/T2 175/12.5/3+1-FM - Lightning/surge arrester type 1/2



2800670

<https://www.phoenixcontact.com/us/products/2800670>

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Universal varistor-based plug-in lightning/surge arrester for 3-phase power supply networks with separate N and PE (5-conductor system: L1, L2, L3, N, PE), for Lightning Protection Levels III and IV, with remote indication contact.

## Commercial data

Item number	2800670
Packing unit	1 pc
Note	Made to order (non-returnable)
Sales key	CL18
Product key	CL1151
GTIN	4046356624251
Weight per piece (including packing)	580.3 g
Weight per piece (excluding packing)	580.3 g
Customs tariff number	85363030
Country of origin	DE

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## Technical data

### Notes

#### General

Note	Nominal voltage $U_N = 120 \text{ V AC}/240 \text{ V AC}$ split-phase (separate GND)
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### Product properties

Product type	Arrester combination
Product family	VALVETRAB MS
IEC test classification	I / II T1 / T2
EN type	T1 / T2
IEC power supply system	TT TN-C TN-S
Type	DIN rail module, two-section, divisible
Surge protection fault message	Optical, remote indicator contact
Number of ports	One

#### Insulation characteristics

Overvoltage category	III
Pollution degree	2

### Electrical properties

Nominal frequency $f_N$	50 Hz (60 Hz)
Nominal voltage $U_N$	120 V AC

#### Indicator/remote signaling

Connection name	Remote fault indicator contact
Switching function	Changeover contact
Operating voltage	5 V AC ... 250 V AC 30 V DC
Operating current	5 mA AC ... 1.5 A AC 1 A DC

### Connection data

Connection method	Screw connection
Screw thread	M5
Tightening torque	4.5 Nm
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>

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Conductor cross-section AWG	15 ... 2
Remote fault indicator contact	
Connection method	Screw connection
Screw thread	M2
Tightening torque	0.25 Nm
Stripping length	7 mm
Conductor cross-section flexible	0.14 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross-section rigid	0.14 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross-section AWG	28 ... 16

## Dimensions

Dimensional drawing	
Width	71.2 mm
Height	99 mm
Depth	77.5 mm
Horizontal pitch	4 Div.

## Material specifications

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

## Mechanical properties

### Mechanical data

Open side panel	No
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## Protective circuit

Mode of protection	L-N
	L-PE
	N-PE
Direction of action	3L-N & N-PE
Nominal voltage $U_N$	120/208 V AC (TN-S)
	120/208 V AC (TT)

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Nominal frequency $f_N$	50 Hz (60 Hz)
Maximum continuous operating voltage $U_C$ (L-N)	175 V AC
Maximum continuous operating voltage $U_C$ (L-PE)	175 V AC
Maximum continuous operating voltage $U_C$ (N-PE)	264 V AC
Rated load current $I_L$	80 A
Protective conductor current $I_{PE}$	$\leq 5 \mu A$
Standby power consumption $P_C$	$\leq 420 \text{ mVA}$
Nominal discharge current $I_n$ (8/20) $\mu s$ (L-N)	12.5 kA
Nominal discharge current $I_n$ (8/20) $\mu s$ (L-PE)	12.5 kA
Nominal discharge current $I_n$ (8/20) $\mu s$ (N-PE)	50 kA
Maximum discharge current $I_{max}$ (8/20) $\mu s$	50 kA
Impulse discharge current (10/350) $\mu s$ (L-N), charge	6.25 As
Impulse discharge current (10/350) $\mu s$ (L-N), specific energy	39 kJ/ $\Omega$
Impulse discharge current (10/350) $\mu s$ (L-N), peak current value $I_{imp}$	12.5 kA
Impulse discharge current (10/350) $\mu s$ (L-PE), charge	6.25 As
Impulse discharge current (10/350) $\mu s$ (L-PE), specific energy	39 kJ/ $\Omega$
Impulse discharge current (10/350) $\mu s$ (L-PE), peak current value $I_{imp}$	12.5 kA
Impulse discharge current (10/350) $\mu s$ (N-PE), charge	25 As
Impulse discharge current (10/350) $\mu s$ (N-PE), specific energy	625 kJ/ $\Omega$
Impulse discharge current (10/350) $\mu s$ (N-PE), peak current value $I_{imp}$	50 kA
Total discharge current $I_{Total}$ (8/20) $\mu s$	50 kA
Total discharge current $I_{Total}$ (10/350) $\mu s$	50 kA
Follow current interrupt rating $I_{fi}$ (N-PE)	100 A (264 V AC)
Short-circuit current rating $I_{SCCR}$	25 kA
Voltage protection level $U_p$ (L-N)	$\leq 0.8 \text{ kV}$
Voltage protection level $U_p$ (L-PE)	$\leq 2 \text{ kV}$
Voltage protection level $U_p$ (N-PE)	$\leq 1.7 \text{ kV}$
Residual voltage $U_{res}$ (L-N)	$\leq 0.8 \text{ kV}$ (at $I_n$ ) $\leq 0.75 \text{ kV}$ (at 10 kA) $\leq 0.65 \text{ kV}$ (at 5 kA) $\leq 0.6 \text{ kV}$ (at 3 kA)
Residual voltage $U_{res}$ (L-PE)	$\leq 2 \text{ kV}$ (at $I_n$ ) $\leq 1.5 \text{ kV}$ (at 10 kA) $\leq 1.4 \text{ kV}$ (at 5 kA) $\leq 1.3 \text{ kV}$ (at 3 kA)
Residual voltage $U_{res}$ (N-PE)	$\leq 0.6 \text{ kV}$ (at $I_n$ ) $\leq 0.5 \text{ kV}$ (at 10 kA) $\leq 0.5 \text{ kV}$ (at 5 kA) $\leq 0.4 \text{ kV}$ (at 3 kA)
TOV behavior at $U_T$ (L-N)	208 V AC (5 s / withstand mode)

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	229 V AC (120 min / withstand mode)
TOV behavior at $U_T$ (N-PE)	1200 V AC (200 ms / withstand mode)
Response time $t_A$ (L-N)	≤ 25 ns
Response time $t_A$ (L-PE)	≤ 100 ns
Response time $t_A$ (N-PE)	≤ 100 ns
Max. backup fuse with V-type through wiring	80 A (gG - 16 mm <sup>2</sup> )
Max. backup fuse with branch wiring	160 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	≤ 2000 m (amsl)
Permissible humidity (operation)	5 % ... 95 %
Shock (operation)	30g (Half-sine / 11 ms / 3x ±X, ±Y, ±Z)
Vibration (operation)	7.5g (10 ... 500 Hz / 2.5 h / X, Y, Z)

## Approvals

### UL specifications

Maximum continuous operating voltage MCOV (L-L)	350 V AC
Maximum continuous operating voltage MCOV (L-N)	175 V AC
Maximum continuous operating voltage MCOV (L-G)	175 V AC
Maximum continuous operating voltage MCOV (N-G)	264 V AC
Nominal discharge current $I_n$ (L-L)	20 kA
Nominal discharge current $I_n$ (L-N)	20 kA
Nominal discharge current $I_n$ (L-G)	20 kA
Nominal discharge current $I_n$ (N-G)	20 kA
Mode of protection	L-L L-N L-G N-G
Nominal voltage	120/208 V AC
Power distribution system	Wye
Nominal frequency	50/60 Hz
Measured limiting voltage MLV (L-L)	2800 V
Measured limiting voltage MLV (L-N)	2200 V
Measured limiting voltage MLV (L-G)	3160 V
Measured limiting voltage MLV (N-G)	2600 V
SPD Type	4CA

UL indicator/remote signaling

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Operating voltage	125 V AC
AC operating current	1 A AC

## 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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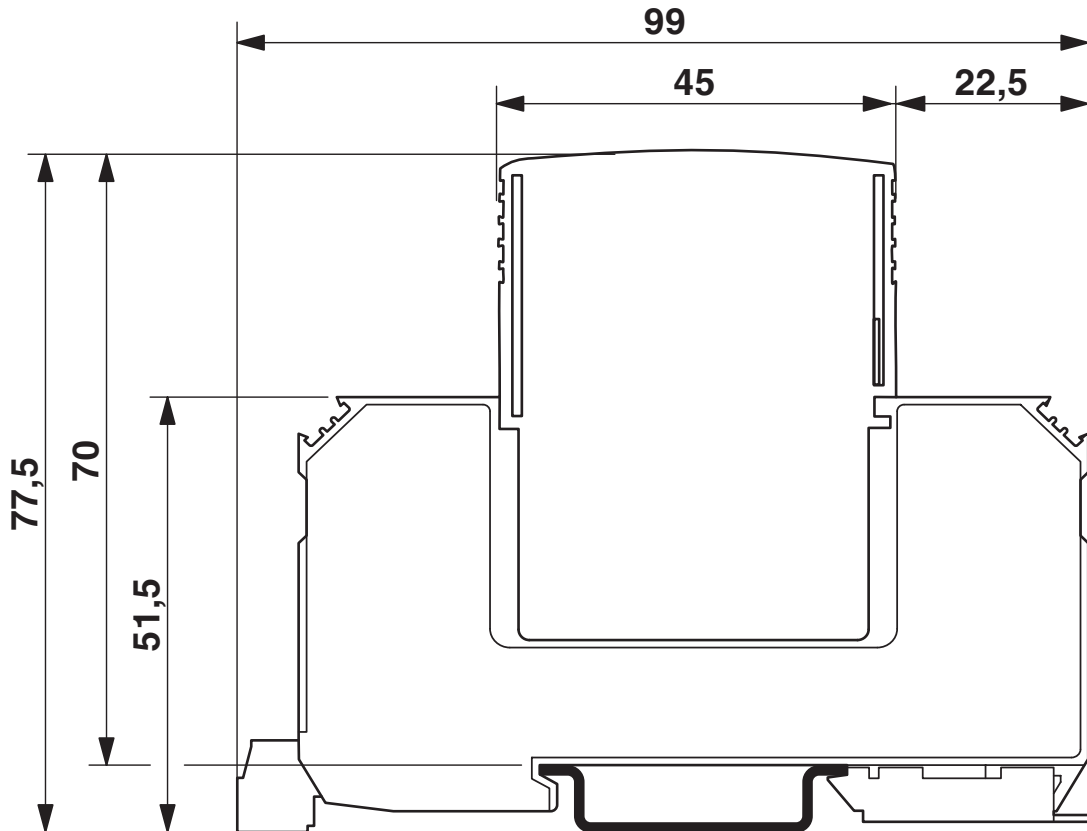
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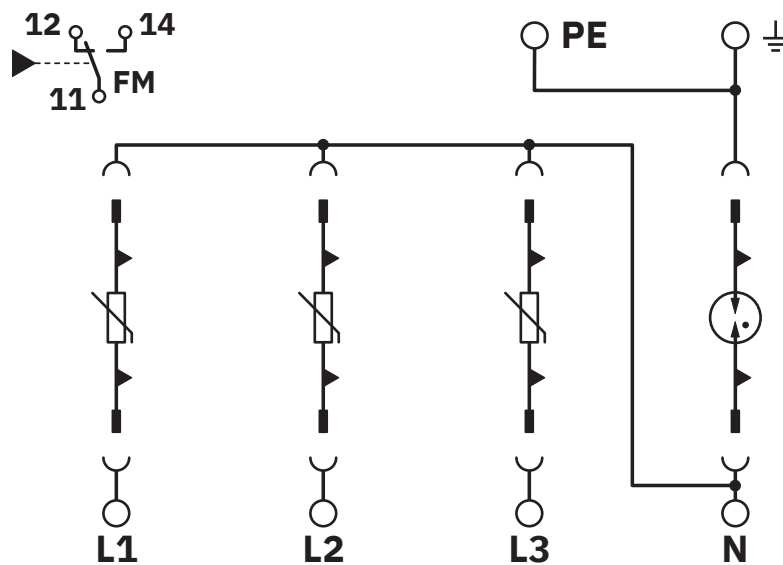
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## Drawings

Dimensional drawing



Circuit diagram



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## Environmental product compliance

### 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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