

# Lightning/surge arrester type 1/2 - VAL-MS-T1/T2 175/12.5/1+1-FM - 2800674

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Universal varistor-based plug-in lightning/surge arrester for 1-phase power supply networks with separate N and PE (3-conductor system: L1, N, PE), with remote indication contact.

## Your advantages

- ✓ Plugs can be checked with CHECKMASTER
- ✓ With floating remote indication contact
- ✓ Secure hold of plugs in the event of high lightning current loads and strong vibrations thanks to new latching
- ✓ Mechanical coding of all slots
- ✓ Optical, mechanical status indication for the individual arresters
- ✓ Pluggable
- ✓ Thermal disconnect device for each individual plug



## Key Commercial Data

Packing unit	1 pc
GTIN	 4 046356 624336
GTIN	4046356624336

## Technical data

### Dimensions

Height	96.8 mm
Width	35.6 mm
Depth	77.5 mm (incl. DIN rail 7.5 mm)
Horizontal pitch	2 Div.

### Ambient conditions

Degree of protection	IP20 (only when all terminal points are used)
Ambient temperature (operation)	-40 °C ... 80 °C

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### Ambient conditions

Ambient temperature (storage/transport)	-40 °C ... 80 °C
Altitude	≤ 2000 m (amsl (above mean sea level))
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)

### General

IEC test classification	I / II
	I
	T1 / T2
	T1
EN type	T1 / T2
	T1
IEC power supply system	TT
	TN-C
	TN-S
Mode of protection	L-N
	L-PE
	N-PE
Mounting type	DIN rail: 35 mm
Color	jet black RAL 9005
Housing material	PA 6.6
	PBT
Degree of pollution	2
Flammability rating according to UL 94	V-0
Type	DIN rail module, two-section, divisible
Surge protection fault message	Optical, remote indicator contact

### Additional descriptions

Note	Nominal voltage UN = 120 V AC/240 V AC split-phase (separate GND)
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### Protective circuit

Nominal voltage $U_N$	120 V AC (TN-S)
	120 V AC (TT)
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 voltage $U_C$ (N-PE)	264 V AC
Rated load current $I_L$	80 A
Residual current $I_{PE}$	≤ 5 μA
Standby power consumption $P_C$	≤ 140 mVA

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### Protective circuit

Nominal discharge current $I_n$ (8/20) $\mu\text{s}$ (L-N)	12.5 kA
Nominal discharge current $I_n$ (8/20) $\mu\text{s}$ (L-PE)	12.5 kA
Nominal discharge current $I_n$ (8/20) $\mu\text{s}$ (N-PE)	50 kA
Maximum discharge current $I_{\text{max}}$ (8/20) $\mu\text{s}$	50 kA
Impulse discharge current (10/350) $\mu\text{s}$ (L-N), charge	6.25 As
Impulse discharge current (10/350) $\mu\text{s}$ (L-N), specific energy	39 kJ/ $\Omega$
Impulse discharge current (10/350) $\mu\text{s}$ (L-N), peak current value $I_{\text{imp}}$	12.5 kA
Impulse discharge current (10/350) $\mu\text{s}$ (L-PE), charge	6.25 As
Impulse discharge current (10/350) $\mu\text{s}$ (L-PE), specific energy	39 kJ/ $\Omega$
Impulse discharge current (10/350) $\mu\text{s}$ (L-PE), peak current value $I_{\text{imp}}$	12.5 kA
Impulse discharge current (10/350) $\mu\text{s}$ (N-PE), charge	25 As
Impulse discharge current (10/350) $\mu\text{s}$ (N-PE), specific energy	625 kJ/ $\Omega$
Impulse discharge current (10/350) $\mu\text{s}$ (N-PE), peak current value $I_{\text{imp}}$	50 kA
Total discharge current $I_{\text{total}}$ (8/20) $\mu\text{s}$	50 kA
Total discharge current $I_{\text{total}}$ (10/350) $\mu\text{s}$	25 kA
Follow current interrupt rating $I_{\text{fi}}$ (N-PE)	100 A
Short-circuit current rating $I_{\text{SCCR}}$	25 kA
Voltage protection level $U_p$ (L-N)	$\leq 0.8$ kV
Voltage protection level $U_p$ (L-PE)	$\leq 2$ kV
Voltage protection level $U_p$ (N-PE)	$\leq 1.7$ kV
Residual voltage $U_{\text{res}}$ (L-N)	$\leq 0.8$ kV (at $I_n$ )
	$\leq 0.65$ kV (at 10 kA)
	$\leq 0.6$ kV (at 5 kA)
	$\leq 0.5$ kV (at 3 kA)
Residual voltage $U_{\text{res}}$ (L-PE)	$\leq 2$ kV (at $I_n$ )
	$\leq 1.5$ kV (at 10 kA)
	$\leq 1.4$ kV (at 5 kA)
	$\leq 1.3$ kV (at 3 kA)
Residual voltage $U_{\text{res}}$ (N-PE)	$\leq 0.6$ kV (at $I_n$ )
	$\leq 0.5$ kV (at 10 kA)
	$\leq 0.5$ kV (at 5 kA)
	$\leq 0.4$ kV (at 3 kA)
TOV behavior at $U_T$ (L-N)	208 V AC (5 s / withstand mode)
	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)	$\leq 25$ ns
Response time $t_A$ (L-PE)	$\leq 100$ ns
Response time $t_A$ (N-PE)	$\leq 100$ ns

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## Technical data

### Protective circuit

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)

### Indicator/remote signaling

Switching function	PDT 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 method	Plug-in/screw connection via COMBICON
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 solid	0.14 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross section AWG	28 ... 16

### 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 solid	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>

### UL specifications

SPD Type	4CA
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
Nom. voltage	120 V AC
Mode of protection	L-N
	L-G
	N-G
Power distribution system	Single phase
Nominal frequency	50/60 Hz
Measured limiting voltage MLV (L-N)	2200 V

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## Technical data

### UL specifications

Measured limiting voltage MLV (L-G)	3160 V
Measured limiting voltage MLV (N-G)	2600 V
Nominal discharge current I <sub>n</sub> (L-N)	20 kA
Nominal discharge current I <sub>n</sub> (L-G)	20 kA
Nominal discharge current I <sub>n</sub> (N-G)	20 kA

### UL indicator/remote signaling

Operating voltage	125 V AC
Operating current	1 A AC
Tightening torque	4 lb <sub>F</sub> -in.
Conductor cross section AWG	30 ... 14

### UL connection data

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

### Standards and Regulations

Standards/regulations	IEC 61643-11 2011
	EN 61643-11 2012

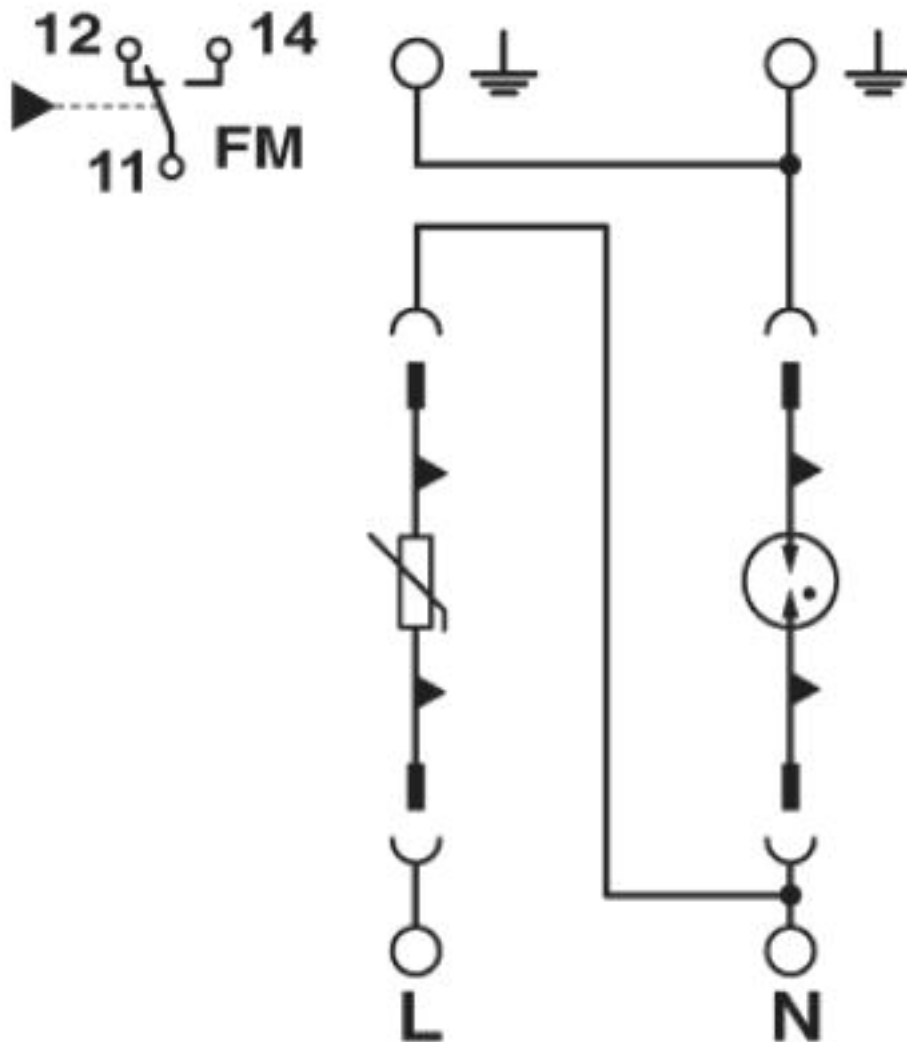
### Environmental Product Compliance

China RoHS	Environmentally Friendly Use Period = 50
	For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration"

## Drawings

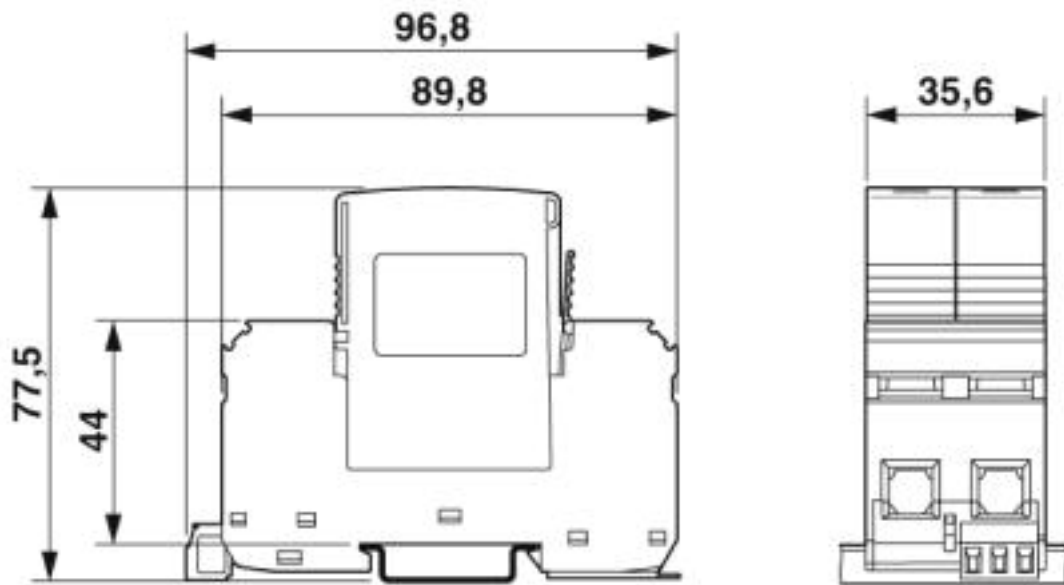
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Circuit diagram



# Lightning/surge arrester type 1/2 - VAL-MS-T1/T2 175/12.5/1+1-FM - 2800674

Dimensional drawing



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