

# VAL-MS-T1/T2 48/12.5/O - Lightning/surge arrester type 1/2



2906281

<https://www.phoenixcontact.com/gb/products/2906281>

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Universal varistor-based plug-in lightning/surge arrester for 1-phase power supply networks with common N and PE (2-conductor system: L1, PEN), with remote indication contact.

## Your advantages

- Rack-mount 2U panel applications
- Plug-in direction parallel to the conductor axis
- Versions with and without floating remote indication contact
- DIN rail mounting
- Accepts Type 1 and Type 2 VAL-MS plugs
- Coding when protective plug is inserted for the first time

## Commercial data

Item number	2906281
Packing unit	12 pc
Minimum order quantity	12 pc
Note	Made to order (non-returnable)
Sales key	CL1151
Product key	CL1151
GTIN	4055626063065
Weight per piece (including packing)	149.52 g
Weight per piece (excluding packing)	149 g
Customs tariff number	85363090
Country of origin	DE

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## Technical data

### Product properties

Product type	Arrester combination
Product family	VALVETRAB MS
IEC test classification	I / II
	T1 / T2
	I
EN type	T1 / T2
IEC power supply system	DC
Type	DIN rail module, two-section, divisible
Number of positions	1
Surge protection fault message	Optical, remote indicator contact
Number of ports	One

### Insulation characteristics

Pollution degree	2
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### 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	4.5 Nm
	30 lb <sub>f</sub> -in. (UL)
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
	10 ... 2 (UL)

### Dimensions

Dimensional drawing	
Width	17.5 mm
Height	77.1 mm
Depth	89.2 mm
Horizontal pitch	1 Div.

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## Material specifications

Color	black (RAL 9005)
Flammability rating according to UL 94	V0
Housing material	PBT

## Mechanical properties

### Mechanical data

Open side panel	No
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## Protective circuit

Mode of protection	L-PEN
	(L+) - (L-)
	(L-) - PE
	(L+) - PE
Direction of action	L-N / L-PEN
Nominal voltage $U_N$	-48 V DC (RRH)
	60 V DC
Nominal frequency $f_N$	50 Hz (60 Hz)
Maximum continuous operating voltage $U_C$	75 V AC
	100 V DC
Rated load current $I_L$	80 A
	80 A
Protective conductor current $I_{PE}$	$\leq 0.6$ mA
	$\leq 0.6$ mA
Standby power consumption $P_C$	$\leq 45$ mVA
	$\leq 45$ mVA
Nominal discharge current $I_n$ (8/20) $\mu$ s	12.5 kA
Maximum discharge current $I_{max}$ (8/20) $\mu$ s	30 kA
Impulse discharge current (10/350) $\mu$ s, charge	6.25 As
Impulse discharge current (10/350) $\mu$ s, specific energy	39 kJ/ $\Omega$
Impulse discharge current (10/350) $\mu$ s, peak value $I_{imp}$	12.5 kA
	12.5 kA
Impulse discharge current (10/350) $\mu$ s (L-N), charge	6.25 As
	6.25 As
Impulse discharge current (10/350) $\mu$ s (L-N), specific energy	39 kJ/ $\Omega$
	39 kJ/ $\Omega$
Impulse discharge current (10/350) $\mu$ s (L-N), peak current value $I_{imp}$	12.5 kA
	12.5 kA
Short-circuit current rating $I_{SCCR}$	25 kA
Voltage protection level $U_p$	$\leq 0.4$ kV
Voltage protection level $U_p$ (L-N)	$\leq 0.4$ kV
Voltage protection level $U_p$ (L-PEN)	$\leq 0.4$ kV
	$\leq 0.4$ kV (at $I_n$ )

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Residual voltage $U_{res}$	$\leq 0.35$ kV (at 10 kA)
	$\leq 0.3$ kV (at 5 kA)
	$\leq 0.275$ kV (at 4 kA)
	$\leq 0.25$ kV (at 3 kA)
TOV behavior at $U_T$	100 V AC (5 s / withstand mode)
	130 V DC (5 s / withstand mode)
Response time $t_A$	$\leq 25$ ns
Response time $t_A$ (L-N)	$\leq 25$ ns
Response time $t_A$ (L-PEN)	$\leq 25$ ns
Max. backup fuse with V-type through wiring	80 A AC (gG - 16 mm <sup>2</sup> )
	80 A AC (gG - 16 mm <sup>2</sup> )
Max. backup fuse with branch wiring	160 A AC (gG)
	160 A AC (gG)

## Additional technical data

Maximum discharge current $I_{max}$ (8/20) $\mu$ s	65 kA
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## 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	max. 2000 m
Permissible humidity (operation)	5 % ... 95 %
Shock (operation)	25g (Half-sine / 11 ms / 3x $\pm$ X, $\pm$ Y, $\pm$ Z)
Vibration (operation)	5g (10 ... 500 Hz / 2.5 h / X, Y, Z)

## Approvals

### UL specifications

Maximum continuous operating voltage MCOV	75 V AC
Maximum continuous operating voltage MCOV (L-N)	75 V AC
Maximum continuous operating voltage MCOV (L-G)	75 V AC
Maximum continuous operating voltage MCOV (L+) - (L-)	100 V DC
Maximum continuous operating voltage MCOV (L+/L-) - G	100 V DC
Voltage protection rating VPR	400 V
Voltage protection rating VPR (L-N)	400 V
Nominal discharge current $I_n$	20 kA
Nominal discharge current $I_n$ (L-G)	20 kA
Nominal discharge current $I_n$ (L+) - (L-)	20 kA
Mode of protection	L-L
	L-G
	(L+) - (L-)
	(L+) - G
	(L-) - G

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Nominal voltage	60 V DC
Power distribution system	Single phase
Measured limiting voltage MLV	1240 V
Measured limiting voltage MLV (L-G)	1240 V
Measured limiting voltage MLV (L+) - (L-)	1230 V
SPD Type	1CA

## UL connection data

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

## Standards and regulations

### Air clearances and creepage distances

Standards/regulations	EN 61643-11 / UL 840
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## Mounting

Mounting type	DIN rail: 35 mm
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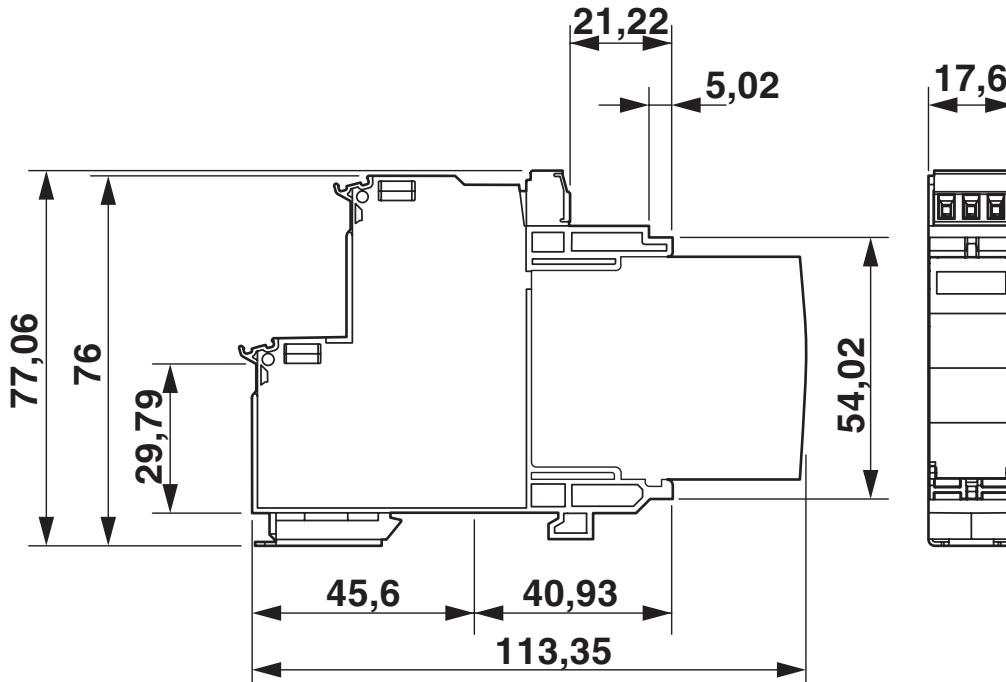
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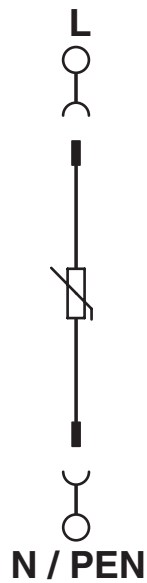
## Drawings

Dimensional drawing



FM version shown

Circuit diagram



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## Classifications

### ECLASS

ECLASS-13.0

27171201

### ETIM

ETIM 9.0

EC000381

### UNSPSC

UNSPSC 21.0

39121600

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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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