

# VAL-MS-T1/T2 48/12.5/1+1V-FM - Lightning/surge arrester type 1/2



2801533

<https://www.phoenixcontact.com/us/products/2801533>

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Universal varistor-based plug-in lightning/surge arrester for 48 V DC applications with grounded return conductor (positive pole), without risk assessment for Lightning Protection Levels III and IV, with remote indication contact.

## Your advantages

- Quality proven millions of times over in the widest range of applications
- Rapid installation with bridges, thanks to industry-standard overall width of 1 HP
- Easy testing and insulation measurement, thanks to pluggable protection modules
- Surge protection for (-) 48 V DC in lightning protection level III and IV due to discharge capacity of 12.5 kA per position
- Vibration-resistant latching ensures the plug remains firmly in place

## Commercial data

Item number	2801533
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	CL18
Product key	CL1151
Catalog page	Page 48 (C-4-2019)
GTIN	4046356811323
Weight per piece (including packing)	283.1 g
Weight per piece (excluding packing)	260.5 g
Customs tariff number	85363030
Country of origin	DE

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## Technical data

### Product properties

IEC test classification	I / II
	T1 / T2
EN type	T1 / T2
IEC power supply system	TN-S
Type	DIN rail module, two-section, divisible
Product type	Arrester combination
Product family	VALVETRAB MS
Number of positions	2
Surge protection fault message	Optical, remote indicator contact

### Insulation characteristics

Overvoltage category	III
Pollution degree	2

### Electrical properties

Nominal frequency $f_N$	50 Hz (60 Hz)
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### Indicator/remote signaling

Connection name	Remote fault indicator contact
Switching function	Changeover contact
Operating voltage	5 V AC ... 250 V AC
	125 V DC (200 mA DC)
Operating current	5 mA AC ... 1.5 A AC
	1 A DC (30 V DC)

### 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>

### Remote fault indicator contact

Connection method	Plug-in/screw connection via COMBICON
Screw thread	M2

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

## Material specifications

Color	black (RAL 9005)
	black (RAL 9005)
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
	(L+) - (L-)
	(L+) - PE
	(L-) - PE
Direction of action	L-L / L-PE
Nominal voltage $U_N$	60 V AC $\pm 10$ % (TN-S)
	60 V DC $\pm 10$ %
	-48 V DC $\pm 10$ % (RRH)

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Nominal frequency $f_N$	50 Hz (60 Hz)
Maximum continuous voltage $U_C$	75 V AC
	100 V DC
Rated load current $I_L$	80 A
Residual current $I_{PE}$	$\leq 0.6$ mA
Standby power consumption $P_C$	$\leq 90.00$ 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
Total discharge current $I_{total}$ (8/20) $\mu$ s	50 kA
Total discharge current $I_{total}$ (10/350) $\mu$ s	12.5 kA
Short-circuit current rating $I_{SCCR}$	25 kA
Voltage protection level $U_p$ (L-N)	$\leq 0.4$ kV
Voltage protection level $U_p$ (L-PE)	$\leq 0.8$ kV
Voltage protection level $U_p$ (N-PE)	$\leq 0.4$ kV
Voltage protection level $U_p$ (L+) - (L-)	$\leq 0.4$ kV
Voltage protection level $U_p$ (L+) - PE	$\leq 0.4$ kV
Voltage protection level $U_p$ (L-) - PE	$\leq 0.8$ kV
Residual voltage $U_{res}$	$\leq 0.4$ kV (at $I_n$ )
	$\leq 0.35$ 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
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)

## 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	$\leq 2000$ m (amsl)
Permissible humidity (operation)	5 % ... 95 %
Shock (operation)	30g (Half-sine / 11 ms / 3x $\pm$ X, $\pm$ Y, $\pm$ Z)

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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-)	100 V DC
Maximum continuous operating voltage MCOV (L+) - G	100 V DC
Maximum continuous operating voltage MCOV (L-) - G	100 V DC
Short-circuit current rating (SCCR)	5 kA
Voltage protection rating VPR (L+) - (L-)	400 V
Voltage protection rating VPR (L+) - G	400 V
Voltage protection rating VPR (L-) - G	600 V
Nominal discharge current $I_n$ (L+) - (L-)	20 kA
Nominal discharge current $I_n$ (L+) - G	20 kA
Nominal discharge current $I_n$ (L-) - G	20 kA
Mode of protection	(L+) - (L-)
	(L+) - G
	(L-) - G
Nominal voltage	60 V DC
SPD Type	1CA

### UL indicator/remote signaling

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	14 ... 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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## Classifications

### ECLASS

ECLASS-11.0	27130802
ECLASS-13.0	27171201

### ETIM

ETIM 9.0	EC000381
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### UNSPSC

UNSPSC 21.0	39121600
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## Environmental product compliance

China RoHS	Environmentally friendly use period: unlimited = EFUP-e
	No hazardous substances above threshold values

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