

# VAL-MB-T1/T2 1500DC-PV/2+V-FM - Lightning/surge arrester type 1/2



2905640

<https://www.phoenixcontact.com/us/products/2905640>

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Lightning current arrester/surge protective device for 2-pos. isolated and grounded 1,500 V DC PV systems, for DIN rail mounting, with remote indication contact, temperature-monitored protective elements, status message on the module.

## Your advantages

- Space-saving installation, thanks to the compact design
- Double terminal block for safe and easy equipotential bonding connection
- Screw shafts with raised domes to ensure safe working
- Main connections with extended insertion funnels for increased resistance to creepage
- Visual display for checking the status directly on the device
- Plug-in signal connection for remote status signaling

## Commercial data

Item number	2905640
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	CL01
Product key	CL1231
GTIN	4046356984423
Weight per piece (including packing)	531.1 g
Weight per piece (excluding packing)	531.1 g
Customs tariff number	85354000
Country of origin	IN

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## Technical data

### Notes

#### General

Note	The product is also suitable for use in photovoltaic systems with max. short-circuit current $I_{SCPV} = 15 \text{ kA}$ (in accordance with EN 50539-11: 2013).
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### Product properties

Product type	PV arrester
Product family	VALVETRAB MB
IEC test classification	PV I / II PV T1 / T2
EN type	T1 / T2
IEC power supply system	DC
Type	DIN rail module, one-piece
Number of positions	2
Environment	Indoor
Installation location of the disconnect device	Internal
Accessibility	Accessible
Connection configuration	Y configuration
End-of-life mode	OCFM (Open-Circuit Failure Mode)
Surge protection fault message	Optical, remote indicator contact
Number of ports	One

#### Insulation characteristics

Pollution degree	2
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### Electrical properties

#### Indicator/remote signaling

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

### Connection data

Connection method	Screw connection
Screw thread	M5
Tightening torque	3 Nm
Stripping length	16 mm

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Conductor cross-section flexible	2.5 mm <sup>2</sup> ... 35 mm <sup>2</sup>
Conductor cross-section AWG	14 ... 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	120 mm
Depth	65.5 mm (incl. DIN rail 7.5 mm)
Horizontal pitch	4 Div.

## Material specifications

Color	gray (RAL 7042)
	gray (RAL 7042)
Flammability rating according to UL 94	V-0
Insulating material	PA 6.6
	PBT
Housing material	PA 6.6

## Mechanical properties

### Mechanical data

Open side panel	No
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## Protective circuit

Mode of protection	(L+) - (L-)
	(L+) - PE
	(L-) - PE
Direction of action	(L+)-PE & (L-)-PE & (L+)-(L-)
Rated load current $I_L$	50 A
Protective conductor current $I_{PE}$	$\leq 100 \mu\text{A DC}$
	$\leq 540 \mu\text{A AC}$
Standby power consumption $P_C$	$\leq 150 \text{ mVA}$

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Nominal discharge current $I_n$ (8/20) $\mu\text{s}$	20 kA
Maximum discharge current $I_{\text{max}}$ (8/20) $\mu\text{s}$	40 kA
Impulse discharge current (10/350) $\mu\text{s}$ , charge	3.125 As
Impulse discharge current (10/350) $\mu\text{s}$ , specific energy	9.77 kJ/ $\Omega$
Impulse discharge current (10/350) $\mu\text{s}$ , peak value $I_{\text{imp}}$	6.25 kA
Total discharge current $I_{\text{Total}}$ (8/20) $\mu\text{s}$	40 kA
Total discharge current $I_{\text{Total}}$ (10/350) $\mu\text{s}$	12.5 kA
Voltage protection level $U_p$	$\leq 4.5$ kV
Residual voltage $U_{\text{res}}$	$\leq 4.5$ kV (at $I_n$ )
	$\leq 3.3$ kV (at 3 kA)
	$\leq 3.6$ kV (at 6.25 kA)
	$\leq 3.8$ kV (at 10 kA)
	$\leq 4.2$ kV (at 15 kA)
	$\leq 5.4$ kV (at 40 kA)
Response time $t_A$	$\leq 25$ ns

## PV protective circuit

Connection configuration	Y configuration
End-of-life mode	OCFM (Open-Circuit Failure Mode)

## Protective circuit DC voltage side (DC)

Maximum continuous operating voltage $U_{\text{CPV}}$	1500 V DC
Short-circuit current rating $I_{\text{SCPV}}$	2000 A
Open-circuit voltage $U_{\text{OCSTC}}$	$\leq 1250$ V DC
Maximum discharge current $I_{\text{max}}$ (8/20) $\mu\text{s}$	40 kA
Response time $t_A$	$\leq 25$ ns
Impulse discharge current (10/350) $\mu\text{s}$ , charge	3.125 As
Impulse discharge current (10/350) $\mu\text{s}$ , specific energy	9.77 kJ/ $\Omega$
Impulse discharge current (10/350) $\mu\text{s}$ , peak value $I_{\text{imp}}$	6.25 kA
Total discharge current $I_{\text{Total}}$ (8/20) $\mu\text{s}$	40 kA
Total discharge current $I_{\text{Total}}$ (10/350) $\mu\text{s}$	12.5 kA
Insulation resistance $R_{\text{iso}}$	$> 5$ G $\Omega$ (at 500 V DC)
Nominal discharge current $I_n$ (8/20) $\mu\text{s}$	20 kA
Rated load current $I_L$	50 A
Continuous operating current $I_{\text{CPV}}$	$< 100$ $\mu\text{A}$
Maximum continuous operating voltage $U_{\text{CPV}}$	1500 V DC
Short-circuit current rating $I_{\text{SCPV}}$	2000 A
Residual voltage $U_{\text{res}}$	$\leq 4.5$ kV (at $I_n$ )
	$\leq 3.3$ kV (at 3 kA)
	$\leq 3.6$ kV (at 6.25 kA)
	$\leq 3.8$ kV (at 10 kA)
	$\leq 4.2$ kV (at 15 kA)
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Protective conductor current $I_{PE}$	$\leq 100 \mu\text{A DC}$ $\leq 540 \mu\text{A AC}$
Voltage protection level $U_p$	$\leq 4.5 \text{ kV}$
Standby power consumption $P_C$	$\leq 150 \text{ mVA}$

## 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	$\leq 6000 \text{ m (amsl)}$
Permissible humidity (operation)	5 % ... 95 %
Shock (operation)	50g (Half-sine / 11 ms / 3x $\pm X$ , $\pm Y$ , $\pm Z$ )
Vibration (operation)	5g (5 - 500 Hz/2.5 h/X, Y, Z)

## Standards and regulations

Standards/specifications	EN 61643-31
Note	2019
Standards/specifications	IEC 61643-31
Note	2018

## Mounting

Mounting type	DIN rail: 35 mm
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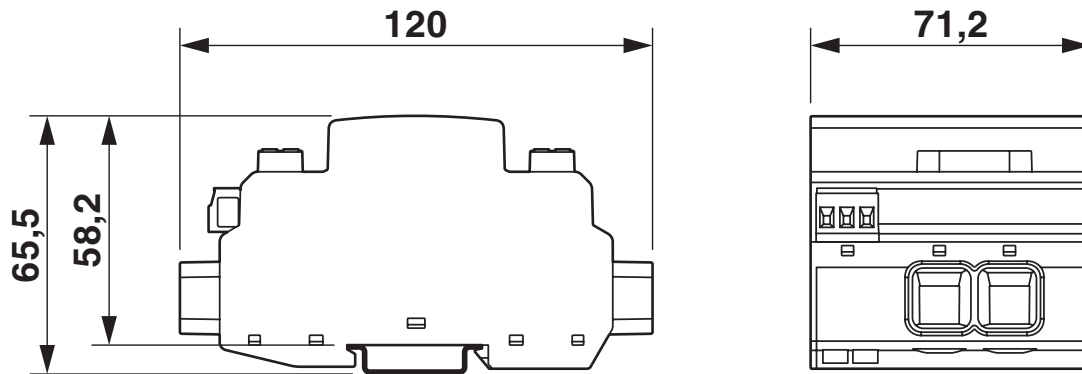


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## Drawings

Dimensional drawing

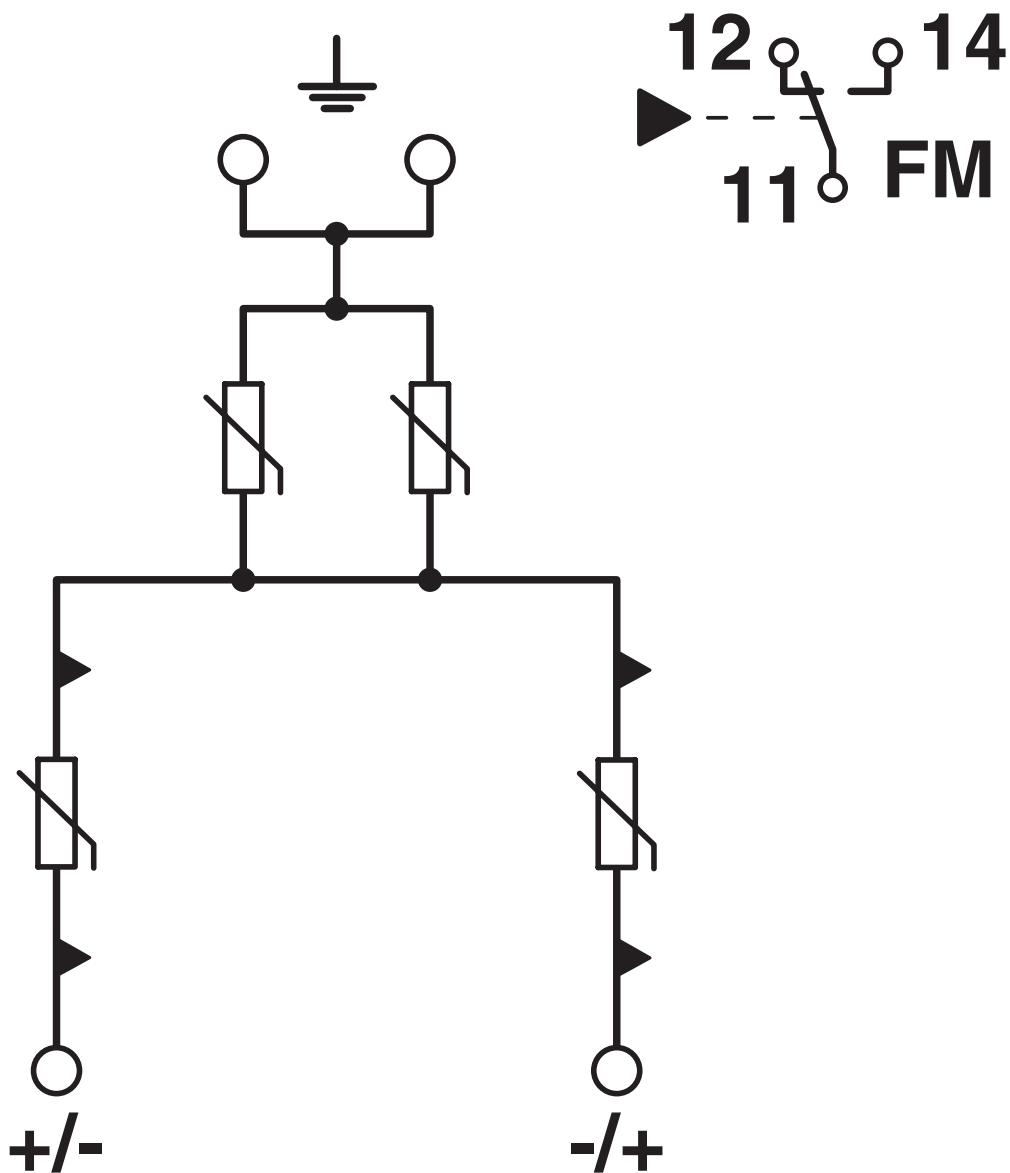


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Circuit diagram



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## Approvals

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**IECEE CB Scheme**

Approval ID: NL-81007

**CCA**

Approval ID: NTR-NL 7938



**KEMA-KEUR**

Approval ID: 71-127691

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## Classifications

### ECLASS

ECLASS-13.0	27171401
ECLASS-15.0	27171401

### ETIM

ETIM 10.0	EC000381
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### 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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