

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



2905641

<https://www.phoenixcontact.com/us/products/2905641>

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Lightning current arrester/surge protective device for 2-pos. isolated and grounded 1500 V DC PV systems, for DIN rail mounting, 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

## Commercial data

|                                      |                    |
|--------------------------------------|--------------------|
| Item number                          | 2905641            |
| Packing unit                         | 1 pc               |
| Minimum order quantity               | 1 pc               |
| Sales key                            | CL01               |
| Product key                          | CL1231             |
| Catalog page                         | Page 51 (C-4-2019) |
| GTIN                                 | 4046356984393      |
| Weight per piece (including packing) | 525.8 g            |
| Weight per piece (excluding packing) | 488.61 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). |
|------|---|

### Product properties

|  |                                  |
|--|----------------------------------|
| IEC test classification                        | PV I / II<br>PV T1 / T2          |
| EN type  | T1 / T2                          |
| IEC power supply system                        | DC                               |
| Type   | DIN rail module, one-piece       |
| Product type                                   | PV arrester                      |
| Product family                                 | VALVETRAB MB                     |
| Installation location                          | Interior                         |
| Installation location of the disconnect device | Internal                         |
| Accessibility                                  | Accessible                       |
| Connection configuration                       | Y configuration                  |
| SPD failure behavior                           | OCFM (Open-Circuit Failure Mode) |
| Surge protection fault message                 | optical                          |

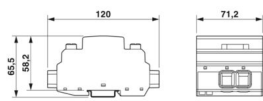
#### Insulation characteristics

|                  |   |
|------------------|---|
| Pollution degree | 2 |
|------------------|---|

### Connection data

|                                  |  |
|----------------------------------|--|
| Connection method                | Screw connection                           |
| Screw thread                     | M5   |
| Tightening torque                | 3 Nm                                       |
| Stripping length                 | 16 mm                                      |
| Conductor cross section flexible | 2.5 mm <sup>2</sup> ... 35 mm <sup>2</sup> |
| Conductor cross section AWG      | 14 ... 2                                   |

### Dimensions

|                     |  |
|---------------------|--|
| Dimensional drawing |  |
| Width               | 71.2 mm  |
| Height              | 120 mm   |
| Depth               | 65.5 mm (incl. DIN rail 7.5 mm)  |

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|                  |        |
|------------------|--------|
| 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 |
|-----------------|----|

## 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                               |
| Residual current $I_{PE}$   | $\leq 100 \mu\text{A DC}$          |
|   | $\leq 540 \mu\text{A AC}$          |
| Standby power consumption $P_C$   | $\leq 150.00 \text{ mVA}$          |
| Nominal discharge current $I_n$ (8/20) $\mu\text{s}$                    | 20 kA                              |
| Maximum discharge current $I_{max}$ (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 $I_{imp}$ | 6.25 kA                            |
| Total discharge current $I_{total}$ (8/20) $\mu\text{s}$                | 40 kA                              |
| Total discharge current $I_{total}$ (10/350) $\mu\text{s}$              | 12.5 kA                            |
| Voltage protection level $U_p$  | $\leq 4.5 \text{ kV}$              |
| Residual voltage $U_{res}$  | $\leq 4.5 \text{ kV}$ (at $I_n$ )  |
|   | $\leq 3.3 \text{ kV}$ (at 3 kA)    |
|   | $\leq 3.6 \text{ kV}$ (at 6.25 kA) |
|   | $\leq 3.8 \text{ kV}$ (at 10 kA)   |
|   | $\leq 4.2 \text{ kV}$ (at 15 kA)   |
|   | $\leq 5.4 \text{ kV}$ (at 40 kA)   |
| Response time $t_A$   | $\leq 25 \text{ ns}$               |

### PV protective circuit

|                          |                                  |
|--------------------------|----------------------------------|
| Connection configuration | Y configuration                  |
| SPD failure behavior     | OCFM (Open-Circuit Failure Mode) |

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## Protective circuit DC voltage side (DC)

|   |                                |
|---|--------------------------------|
| Open circuit voltage $U_{OCSTC}$                                  | $\leq 1250$ V DC               |
| Maximum discharge current $I_{max}$ (8/20) $\mu s$                | 40 kA                          |
| Response time $t_A$   | $\leq 25$ ns                   |
| Impulse discharge current (10/350) $\mu s$ , charge               | 3.125 As                       |
| Impulse discharge current (10/350) $\mu s$ , specific energy      | 9.77 kJ/ $\Omega$              |
| Impulse discharge current (10/350) $\mu s$ , peak value $I_{imp}$ | 6.25 kA                        |
| Total discharge current $I_{total}$ (8/20) $\mu s$                | 40 kA                          |
| Total discharge current $I_{total}$ (10/350) $\mu s$              | 12.5 kA                        |
| Insulation resistance $R_{iso}$                                   | $> 5$ G $\Omega$ (at 500 V DC) |
| Nominal discharge current $I_n$ (8/20) $\mu s$                    | 20 kA                          |
| Rated load current $I_L$  | 50 A                           |
| Continuous operating current $I_{CPV}$                            | $< 100$ $\mu A$                |
| Maximum continuous operating voltage $U_{CPV}$                    | 1500 V DC                      |
| Short-circuit current rating $I_{SCPV}$                           | 2000 A                         |
| Residual voltage $U_{res}$  | $\leq 4.5$ 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)       |
| Residual current $I_{PE}$   | $\leq 100$ $\mu A$ DC          |
|   | $\leq 540$ $\mu A$ AC          |
| Voltage protection level $U_p$                                    | $\leq 4.5$ kV                  |
| Standby power consumption $P_C$                                   | $\leq 150.00$ 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                                | $\leq 6000$ 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         |

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## Mounting

|               |                 |
|---------------|-----------------|
| Mounting type | DIN rail: 35 mm |
|---------------|-----------------|

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-11.0 | 27130802 |
| ECLASS-13.0 | 27171401 |

### ETIM

|          |          |
|----------|----------|
| ETIM 9.0 | EC000381 |
|----------|----------|

### 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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