

# Lightning/surge arrester type 1/2 - VAL-MS-T1/T2 600DC-PV/2+V - 2801163

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Lightning/surge arrester for 2-pos. isolated 600 V DC voltage systems, for DIN rail mounting, 3-pos. base element, three plug-in temperature-monitored protective elements, status message on each plug.

## Your advantages

- ✓ Increased safety, thanks to compliance with standard EN 50539-11
- ✓ Reliable contact, thanks to integrated rotating latch
- ✓ Easy replacement, thanks to plug-in arresters
- ✓ Optimum inverter protection, thanks to low protection level
- ✓ Efficient replacement of defective plugs, thanks to visual status indicator
- ✓ Protection against mismatching, thanks to keyed plugs and base elements
- ✓ Always the right arrester, thanks to universal type 1/type 2 protective components



## Key Commercial Data

|              |                                                                                                         |
|--------------|---------------------------------------------------------------------------------------------------------|
| Packing unit | 1 pc                                                                                                    |
| GTIN         | <br>4 046356 714303 |
| GTIN         | 4046356714303                                                                                           |

## Technical data

### Dimensions

|                  |                                 |
|------------------|---------------------------------|
| Height           | 89.8 mm                         |
| Width            | 53.4 mm                         |
| Depth            | 65.7 mm (incl. DIN rail 7.5 mm) |
| Horizontal pitch | 3 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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## Technical data

### 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)                       | 60g (Half-sine / 11 ms / 3x ±X, ±Y, ±Z) |
| Vibration (operation)                   | 7.5g (5-500 Hz/2.5 h/XYZ)               |

### General

|                                                |                                         |
|------------------------------------------------|-----------------------------------------|
| IEC test classification                        | PV I / II                               |
|                                                | PV T1 / T2                              |
| EN type                                        | T1 / T2                                 |
| SPD failure behavior                           | OCM (Open-circuit mode)                 |
| Connection configuration                       | Y configuration                         |
| Installation location                          | Interior                                |
| Accessibility                                  | Accessible                              |
| Installation location of the disconnect device | Internal                                |
| Mode of protection                             | (L+) - (L-)                             |
|                                                | (L+) - PE                               |
|                                                | (L-) - PE                               |
| Mounting type                                  | DIN rail: 35 mm                         |
| Color                                          | jet black RAL 9005                      |
| Housing material                               | PA 6.6-FR                               |
|                                                | PBT-FR                                  |
| Degree of pollution                            | 2                                       |
| Distance between live and grounded parts       | 8 mm                                    |
| Flammability rating according to UL 94         | V-0                                     |
| Type                                           | DIN rail module, two-section, divisible |
| Surge protection fault message                 | optical                                 |

### Additional descriptions

|      |                                                                                                                                                                             |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Note | The device is intended for touch proof installation in a housing. Ensure that there is a gap of at least 8 mm between the active and grounded parts in the connection area. |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Protective circuit DC voltage side (DC)

|                                                |             |
|------------------------------------------------|-------------|
| Maximum continuous operating voltage $U_{CPV}$ | 720 V DC    |
| Short-circuit current rating $I_{SCPV}$        | 2000 A      |
| Continuous operating current $I_{CPV}$         | < 20 µA     |
| Rated load current $I_L$                       | 80 A        |
| Residual current $I_{PE}$                      | ≤ 20 µA DC  |
|                                                | ≤ 350 µA AC |
| Standby power consumption $P_C$                | ≤ 25 mVA    |

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## Technical data

### Protective circuit DC voltage side (DC)

|                                                                                |                                |
|--------------------------------------------------------------------------------|--------------------------------|
| Nominal discharge current (8/20) $\mu\text{s}$                                 | 15 kA                          |
| Maximum discharge current $I_{\text{max}}$ (8/20) $\mu\text{s}$                | 40 kA                          |
| Impulse discharge current (10/350) $\mu\text{s}$ , charge                      | 2.5 As                         |
| Impulse discharge current (10/350) $\mu\text{s}$ , specific energy             | 6.25 kJ/ $\Omega$              |
| Impulse discharge current (10/350) $\mu\text{s}$ , peak value $I_{\text{imp}}$ | 5 kA                           |
| Total discharge current $I_{\text{total}}$ (8/20) $\mu\text{s}$                | 40 kA                          |
| Total discharge current $I_{\text{total}}$ (10/350) $\mu\text{s}$              | 7 kA                           |
| Voltage protection level $U_p$                                                 | $\leq 2.6$ kV                  |
| Residual voltage $U_{\text{res}}$                                              | $\leq 2.6$ kV (at $I_n$ )      |
|                                                                                | $\leq 2$ kV (at 5 kA)          |
|                                                                                | $\leq 2.3$ kV (at 10 kA)       |
|                                                                                | $\leq 2.8$ kV (at 20 kA)       |
|                                                                                | $\leq 3.1$ kV (at 30 kA)       |
|                                                                                | $\leq 3.6$ kV (at 40 kA)       |
| Response time $t_A$                                                            | $\leq 25$ ns                   |
| Insulation resistance $R_{\text{iso}}$                                         | $> 5$ G $\Omega$ (at 500 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 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                                  | 1           |
| Maximum continuous operating voltage MCOV | 800 V DC    |
| Nominal voltage                           | 800 V DC    |
| Mode of protection                        | (L+) - (L-) |
|                                           | (L+) - G    |
|                                           | (L-) - G    |
| Power distribution system                 | DC PV       |
| Voltage protection rating VPR             | 2 kV        |
| Nominal discharge current $I_n$           | 20 kA       |
| Short-circuit current rating (SCCR)       | 50 kA       |

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### Technical data

#### UL connection data

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

#### Standards and Regulations

|                       |                  |
|-----------------------|------------------|
| Standards/regulations | EN 50539-11 2013 |
|-----------------------|------------------|

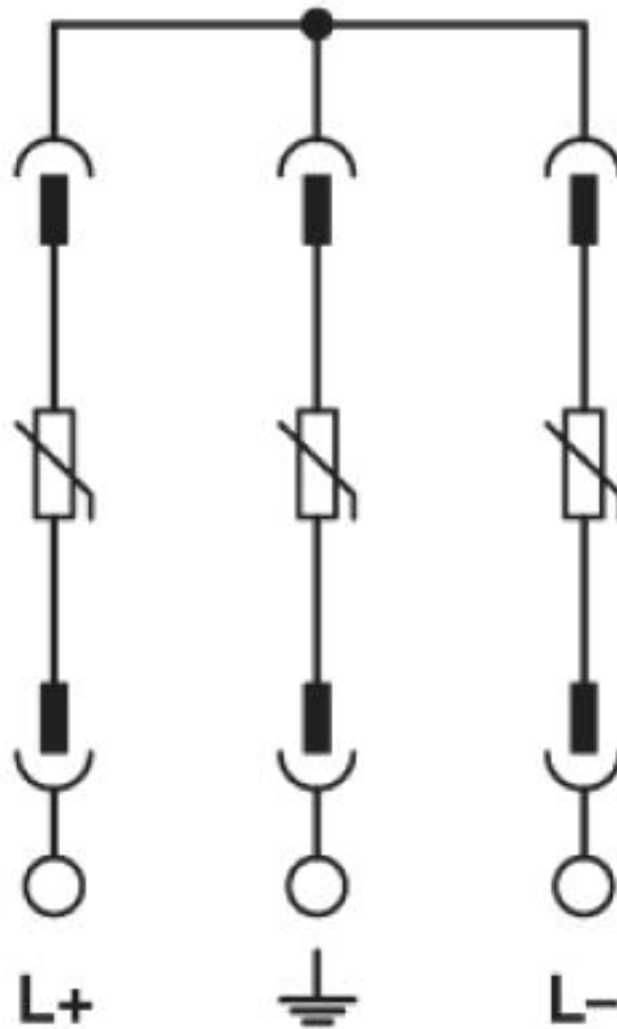
#### Environmental Product Compliance

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

### Drawings

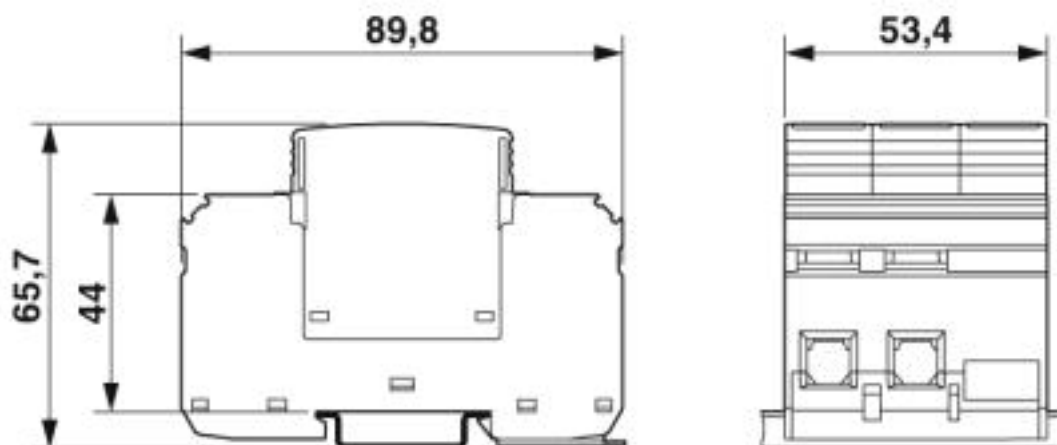
## Lightning/surge arrester type 1/2 - VAL-MS-T1/T2 600DC- PV/2+V - 2801163

Circuit diagram



## Lightning/surge arrester type 1/2 - VAL-MS-T1/T2 600DC-PV/2+V - 2801163

Dimensional drawing



### Classifications

#### eCl@ss

|               |          |
|---------------|----------|
| eCl@ss 10.0.1 | 27130802 |
| eCl@ss 4.0    | 27130800 |
| eCl@ss 4.1    | 27130800 |
| eCl@ss 5.0    | 27130800 |
| eCl@ss 5.1    | 27130800 |
| eCl@ss 6.0    | 27130800 |
| eCl@ss 7.0    | 27130802 |
| eCl@ss 8.0    | 27130802 |
| eCl@ss 9.0    | 27130802 |

#### ETIM

|          |          |
|----------|----------|
| ETIM 3.0 | EC000941 |
| ETIM 4.0 | EC000381 |
| ETIM 5.0 | EC000381 |
| ETIM 6.0 | EC000381 |
| ETIM 7.0 | EC000381 |

#### UNSPSC

|               |          |
|---------------|----------|
| UNSPSC 6.01   | 30212010 |
| UNSPSC 7.0901 | 39121610 |
| UNSPSC 11     | 39121610 |
| UNSPSC 12.01  | 39121610 |
| UNSPSC 13.2   | 39121620 |
| UNSPSC 18.0   | 39121620 |
| UNSPSC 19.0   | 39121620 |

## Lightning/surge arrester type 1/2 - VAL-MS-T1/T2 600DC-PV/2+V - 2801163

### Classifications

#### UNSPSC

|             |          |
|-------------|----------|
| UNSPSC 20.0 | 39121620 |
| UNSPSC 21.0 | 39121620 |

### Approvals

#### Approvals

#### Approvals

KEMA-KEUR / EAC / UL Listed / cUL Listed / cULus Listed

#### Ex Approvals

#### Approval details

|           |                                                                                     |                                                                                     |           |
|-----------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------|
| KEMA-KEUR |  | <a href="http://www.dekra-certification.com">http://www.dekra-certification.com</a> | 71-102960 |
|-----------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------|

|     |                                                                                     |  |                         |
|-----|-------------------------------------------------------------------------------------|--|-------------------------|
| EAC |  |  | RU C-<br>DE.A*30.B01561 |
|-----|-------------------------------------------------------------------------------------|--|-------------------------|

|           |                                                                                     |                                                                                                                                                       |               |
|-----------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| UL Listed |  | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | FILE E 330181 |
|-----------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|

|            |                                                                                     |                                                                                                                                                       |               |
|------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| cUL Listed |  | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | FILE E 330181 |
|------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|

|              |                                                                                     |  |  |
|--------------|-------------------------------------------------------------------------------------|--|--|
| cULus Listed |  |  |  |
|--------------|-------------------------------------------------------------------------------------|--|--|

### Accessories

#### Accessories

#### Device marking

## Lightning/surge arrester type 1/2 - VAL-MS-T1/T2 600DC-PV/2+V - 2801163

### Accessories

Zack marker strip - ZBN 18:UNBEDRUCKT - 2809128



Zack marker strip, Strip, white, unlabeled, can be labeled with: CMS-P1-PLOTTER, PLOTMARK, mounting type: snap into tall marker groove, for terminal block width: 18 mm, lettering field size: 18 x 5 mm, Number of individual labels: 5

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### Labeled device marker

Marker for terminal blocks - ZBN 18,LGS:ERDE - 2749589



Marker for terminal blocks, Strip, white, labeled, Horizontal: Grounding symbol, mounting type: snap into tall marker groove, for terminal block width: 18 mm, lettering field size: 18 x 5 mm, Number of individual labels: 5

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Marker for terminal blocks - ZBN 18,LGS:L1-N,ERDE - 2749576



Marker for terminal blocks, Strip, white, labeled, Horizontal: L1, L2, L3, N, GND, mounting type: snap into tall marker groove, for terminal block width: 18 mm, lettering field size: 18 x 5 mm, Number of individual labels: 5

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### Marker pen

Marker pen - B-STIFT - 1051993



Marker pen, for manual labeling of unprinted Zack strips, smear-proof and waterproof, line thickness 0.5 mm

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### Spare parts

Type 1/2 surge protection plug - VAL-MS-T1/T2 600DC-PV-ST - 2801165



Replacement plug for PV arrester combinations from the VAL-MS-T1/T2 600DC-PV-... product range

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