

# VAL-MS 1500DC-PV/2+V-FM/40 - Type 2 surge arrester



1099548

<https://www.phoenixcontact.com/us/products/1099548>

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Surge protective device for 2-pos. isolated and grounded 1,500 V DC PV systems, for DIN rail mounting, 3-pos. base element with remote indication contact, three pluggable temperature-monitored protective elements, status message on each plug.

## 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
- Wide range of applications due to various nominal voltages
- High degree of modularity provides individual solutions for every application

## Commercial data

Item number	1099548
Packing unit	40 pc
Minimum order quantity	40 pc
Product key	CL1324
GTIN	4055626949406
Weight per piece (including packing)	358.58 g
Weight per piece (excluding packing)	353 g
Country of origin	DE

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## Technical data

### Notes

#### General

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.
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### Product properties

Product type	PV arrester
Product family	VALVETRAB MS
IEC test classification	PV II PV T2
EN type	T2
IEC power supply system	DC
Type	DIN rail module, two-section, divisible
Distance between live and grounded parts	8 mm
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

Overvoltage category	III
Pollution degree	2

### Electrical properties

#### Indicator/remote signaling

Connection name	Remote fault indicator contact
Switching function	Changeover contact
Operating voltage	30 V AC 30 V DC
Operating current	1 A AC 1 A 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

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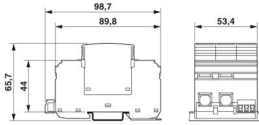
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Conductor cross-section flexible	1.5 mm <sup>2</sup> ... 25 mm <sup>2</sup>
Conductor cross-section rigid	1.5 mm <sup>2</sup> ... 35 mm <sup>2</sup>
Conductor cross-section AWG	15 ... 2
Connection method	Fork-type cable lug
Conductor cross-section 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
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	53.4 mm
Height	98.7 mm
Depth	65.7 mm
Horizontal pitch	3 Div.

## Material specifications

Color	black (RAL 9005)
Flammability rating according to UL 94	V-0
CTI value of material	600
Insulating material	PA 6.6-FR PBT-FR
Material group	I
Housing material	PA 6.6-FR PBT-FR

## Mechanical properties

### Mechanical data

Open side panel	No
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## Protective circuit

Mode of protection	(L+) - (L-)
	(L+) - PE
	(L-) - PE

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Direction of action	(L+)-PE & (L-)-PE & (L+)-(L-)
Rated load current $I_L$	80 A
Protective conductor current $I_{PE}$	$\leq 350 \mu\text{A DC}$
	$\leq 600 \mu\text{A AC}$
Standby power consumption $P_C$	$\leq 250 \text{ mVA}$
Nominal discharge current $I_n (8/20) \mu\text{s}$	15 kA
Maximum discharge current $I_{\text{max}} (8/20) \mu\text{s}$	30 kA
Total discharge current $I_{\text{Total}} (8/20) \mu\text{s}$	30 kA
Voltage protection level $U_p$	$\leq 5 \text{ kV}$
Residual voltage $U_{\text{res}}$	$\leq 3.8 \text{ kV (at 3 kA)}$
	$\leq 4.1 \text{ kV (at 5 kA)}$
	$\leq 4.4 \text{ kV (at 10 kA)}$
	$\leq 5 \text{ kV (at 15 kA)}$
	$\leq 5.3 \text{ kV (at 20 kA)}$
	$\leq 5.7 \text{ kV (at 30 kA)}$
	$\leq 6 \text{ kV (at 40 kA)}$
Response time $t_A$	$\leq 25 \text{ ns}$

## 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 $U_{\text{OCSTC}}$	$\leq 1250 \text{ V DC}$
Maximum discharge current $I_{\text{max}} (8/20) \mu\text{s}$	30 kA
Response time $t_A$	$\leq 25 \text{ ns}$
Total discharge current $I_{\text{Total}} (8/20) \mu\text{s}$	30 kA
Nominal discharge current $I_n (8/20) \mu\text{s}$	15 kA
Rated load current $I_L$	80 A
Continuous operating current $I_{\text{CPV}}$	$< 350 \mu\text{A}$
Maximum continuous operating voltage $U_{\text{CPV}}$	1500 V DC
Short-circuit current rating $I_{\text{SCPV}}$	2000 A
Residual voltage $U_{\text{res}}$	$\leq 3.8 \text{ kV (at 3 kA)}$
	$\leq 4.1 \text{ kV (at 5 kA)}$
	$\leq 4.4 \text{ kV (at 10 kA)}$
	$\leq 5 \text{ kV (at 15 kA)}$
	$\leq 5.3 \text{ kV (at 20 kA)}$
	$\leq 5.7 \text{ kV (at 30 kA)}$
	$\leq 6 \text{ kV (at 40 kA)}$
Protective conductor current $I_{PE}$	$\leq 350 \mu\text{A DC}$
	$\leq 600 \mu\text{A AC}$
Voltage protection level $U_p$	$\leq 5 \text{ kV}$
Standby power consumption $P_C$	$\leq 250 \text{ mVA}$

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## Additional technical data

Maximum discharge current $I_{max}$ (8/20) $\mu$ s	40 kA
Nominal discharge current $I_n$ (8/20) $\mu$ s	20 kA (4x (5x $I_n$   120 s)   30 min))

## Environmental and real-life conditions

### Ambient conditions

Degree of protection	IP20 (only when all terminal points are used)
Ambient temperature (operation)	-40 °C ... 85 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Altitude	≤ 3000 m (amsl)
Permissible humidity (operation)	5 % ... 95 %
Shock (operation)	30g (Half-sine / 11 ms / 3x $\pm$ X, $\pm$ Y, $\pm$ Z)
Vibration (operation)	5g (5-500 Hz/2.5 h/XYZ)

## Approvals

### UL specifications

Maximum continuous operating voltage MCOV	1500 V DC
Short-circuit current rating (SCCR)	50 kA
Voltage protection rating VPR	4 kV
Nominal discharge current $I_n$	10 kA
Mode of protection	(DC+) - (DC-) (DC+) - G (DC-) - G
Nominal voltage	1500 V DC
Power distribution system	DC PV
SPD Type	1CA

### UL indicator/remote signaling

Operating voltage	30 V AC
DC operating voltage	30 V DC
AC operating current	1 A AC
DC operating current	1 A DC

### UL connection data

Tightening torque	30 lb <sub>F</sub> -in.
Conductor cross-section AWG	14 ... 2

## Standards and regulations

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

## Mounting

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Mounting type

DIN rail: 35 mm

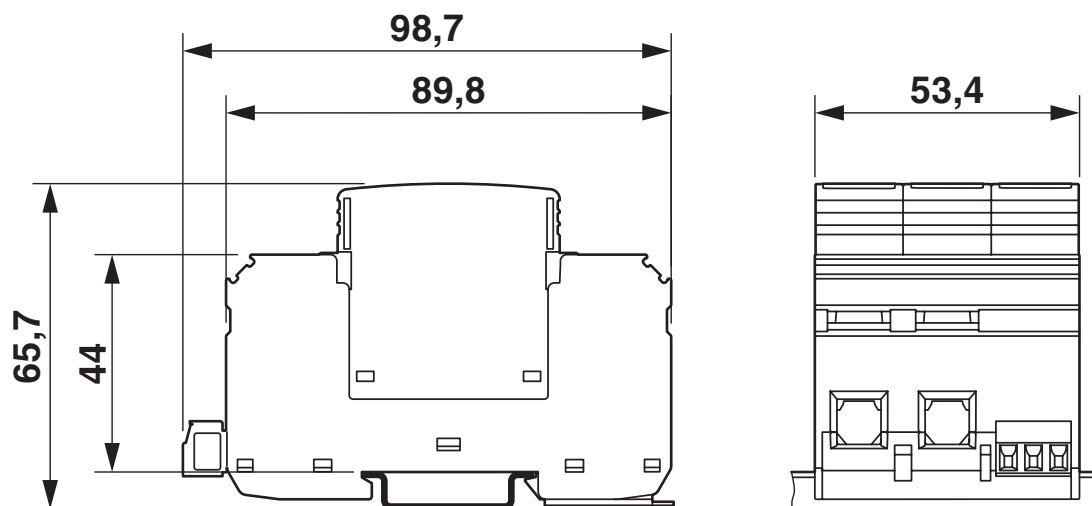
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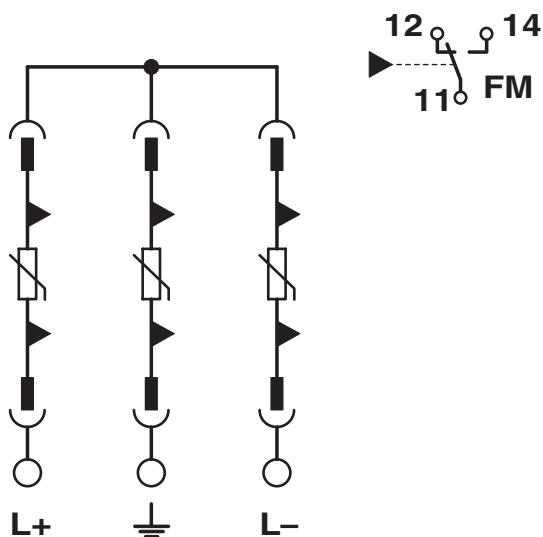
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## Drawings

Dimensional drawing



Circuit diagram



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## Approvals

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### UAE-RoHS

Approval ID: 22-09-51250

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## Classifications

### ECLASS

ECLASS-13.0

27171402

### ETIM

ETIM 9.0

EC000941

### UNSPSC

UNSPSC 21.0

39121620

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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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