

## Surge protection device - TT-ST-2-PE/S2-24DC - 2801458


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Double-level modular terminal block with two-stage surge protection for one two-wire impedance-sensitive signal circuit, separate ground connection, nominal voltage: 24 V DC.



### Key Commercial Data

Packing unit	10 pc
GTIN	 4 046356 769204
GTIN	4046356769204
Weight per Piece (excluding packing)	26.260 g
Custom tariff number	85365019
Country of origin	Germany
Note	Made to Order (non-returnable)

### Technical data

#### Dimensions

Height	100 mm
Width	6.2 mm
Depth	63.5 mm (incl. DIN rail 7.5 mm)

#### Ambient conditions

Ambient temperature (operation)	-40 °C ... 80 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Altitude	≤ 2000 m
Degree of protection	IP20

#### General

Housing material	PA 6.6
Flammability rating according to UL 94	V-0

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## Technical data

### General

Color	black
Standards for clearances and creepage distances	IEC 60664-1
Mounting type	DIN rail: 35 mm
Type	Double-level terminal block
Number of positions	2
Direction of action	Line-Line & Line-Earth Ground

### Protective circuit

IEC test classification	C1
	C2
	C3
	D1
VDE requirement class	C1
	C2
	C3
	D1
Nominal voltage $U_N$	24 V DC
Maximum continuous voltage $U_C$	30 V DC
	21 V AC
Rated current	6 A (40 °C)
Operating effective current $I_C$ at $U_C$	$\leq 1 \mu\text{A}$
Residual current $I_{PE}$	$\leq 1 \mu\text{A}$
Nominal discharge current $I_n$ (8/20) $\mu\text{s}$ (line-line)	300 A
Nominal discharge current $I_n$ (8/20) $\mu\text{s}$ (line-earth)	5 kA
Pulse discharge current $I_{imp}$ (10/350) $\mu\text{s}$	500 A (per path)
Total discharge current $I_{total}$ (8/20) $\mu\text{s}$	5 kA
Nominal pulse current $I_{an}$ (10/1000) $\mu\text{s}$ (line-line)	25 A
Nominal pulse current $I_{an}$ (10/1000) $\mu\text{s}$ (line-earth)	50 A
Output voltage limitation at 1 kV/ $\mu\text{s}$ (line-line) spike	$\leq 45 \text{ V}$
Output voltage limitation at 1 kV/ $\mu\text{s}$ (line-earth) spike	$\leq 800 \text{ V}$
Output voltage limitation at (8/20) $\mu\text{s}$ (line-line)	$\leq 50 \text{ V}$ (at 300 A)
Output voltage limitation at (8/20) $\mu\text{s}$ (line-earth)	$\leq 750 \text{ V}$ (at 500 A)
	$\leq 1.25 \text{ kV}$ (at 5 kA)
Residual voltage at $I_n$ (line-line)	$\leq 50 \text{ V}$ (at 300 A)
Residual voltage at $I_n$ (line-earth)	$\leq 750 \text{ V}$ (at 500 A)
	$\leq 1.25 \text{ kV}$ (at 5 kA)
Residual voltage with $I_{an}$ (10/1000) $\mu\text{s}$ (line-line)	$\leq 45 \text{ V}$ (at 25 A)
Residual voltage with $I_{an}$ (10/1000) $\mu\text{s}$ (line-earth)	$\leq 1.1 \text{ kV}$ (at 50 A)
Voltage protection level $U_p$ (line-line)	$\leq 50 \text{ V}$ (C1 - 0,6 kV / 300 A)
	$\leq 45 \text{ V}$ (C3 - 25 A)
	$\leq 45 \text{ V}$ (1 kV/ $\mu\text{s}$ )

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### Technical data

#### Protective circuit

Voltage protection level $U_p$ (line-earth)	$\leq 1.25$ kV (C2 - 10 kV / 5 kA)
	$\leq 1.1$ kV (C3 - 50 A)
	$\leq 750$ V (C1 - 1 kV/500 A)
	$\leq 800$ V (1 kV/ $\mu$ s)
Response time $t_A$ (line-line)	$\leq 1$ ns
Response time $t_A$ (line-earth)	$\leq 100$ ns
Input attenuation aE, sym.	typ. 0.3 dB (330 kHz/150 $\Omega$ )
	typ. 0.3 dB (1.1 kHz / 50 $\Omega$ )
Cut-off frequency $f_g$ (3 dB), sym. in 50 Ohm system	typ. 3.3 MHz
Cut-off frequency $f_g$ (3 dB), sym. in 150 Ohm system	typ. 1 MHz
Capacity (line-line)	$\leq 2$ nF
Surge protection fault message	none
Max. required back-up fuse	6.3 A (T/IEC 60127-2/3)
Impulse durability (line-line)	C1 - 0.6 kV / 300 A
	C3 - 25 A
Impulse durability (line-earth)	C2 - 10 kV / 5 kA
	D1 - 500 A
	C1 - 1 kV / 500 A
	C3 - 50 A
Pulse reset time (line-earth)	$\leq 700$ ms, at $U_c$ and 10 A
Overload failure mode (line-line)	Mode 2

#### Connection data

Connection method	Spring-cage connection
Connection method IN	Spring-cage
Connection method OUT	Spring-cage
Conductor cross section flexible	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross section solid	0.2 mm <sup>2</sup> ... 4 mm <sup>2</sup>
Conductor cross section AWG	24 ... 12

#### Connection, equipotential bonding

Connection method	Spring-cage connection
Conductor cross section flexible min.	0.2 mm <sup>2</sup>
Conductor cross section flexible max.	2.5 mm <sup>2</sup>
Conductor cross section solid min.	0.2 mm <sup>2</sup>
Conductor cross section solid max.	4 mm <sup>2</sup>
Conductor cross section AWG min.	24
Conductor cross section AWG max.	12

#### Standards and Regulations

Standards/specifications	IEC 61643-21/A1 2008
	EN 61643-21/A1 2009

# Surge protection device - TT-ST-2-PE/S2-24DC - 2801458

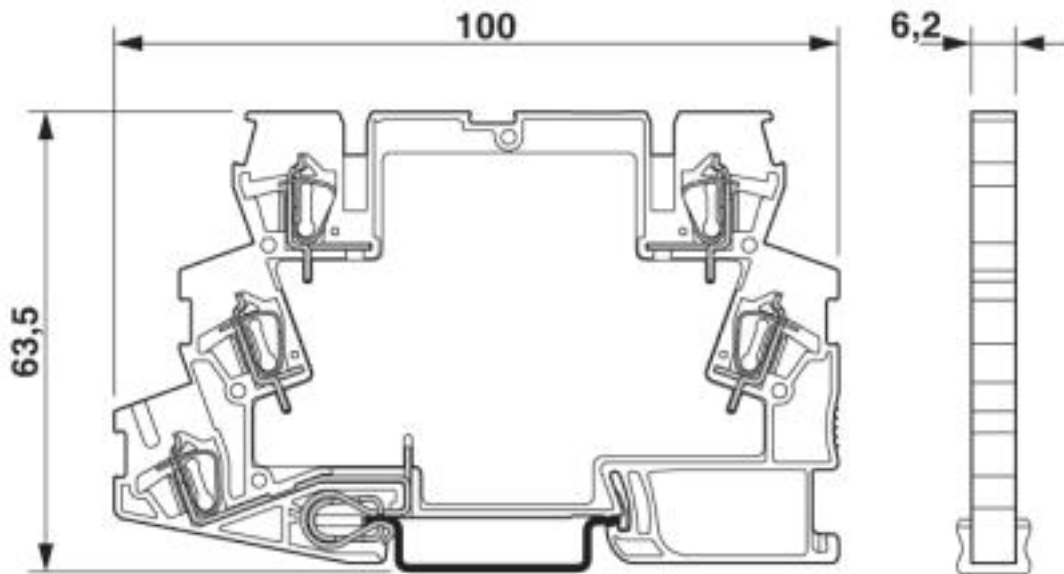
## Technical data

### Environmental Product Compliance

	Lead 7439-92-1
China RoHS	Environmentally friendly use period: unlimited = EFUP-e
	No hazardous substances above threshold values

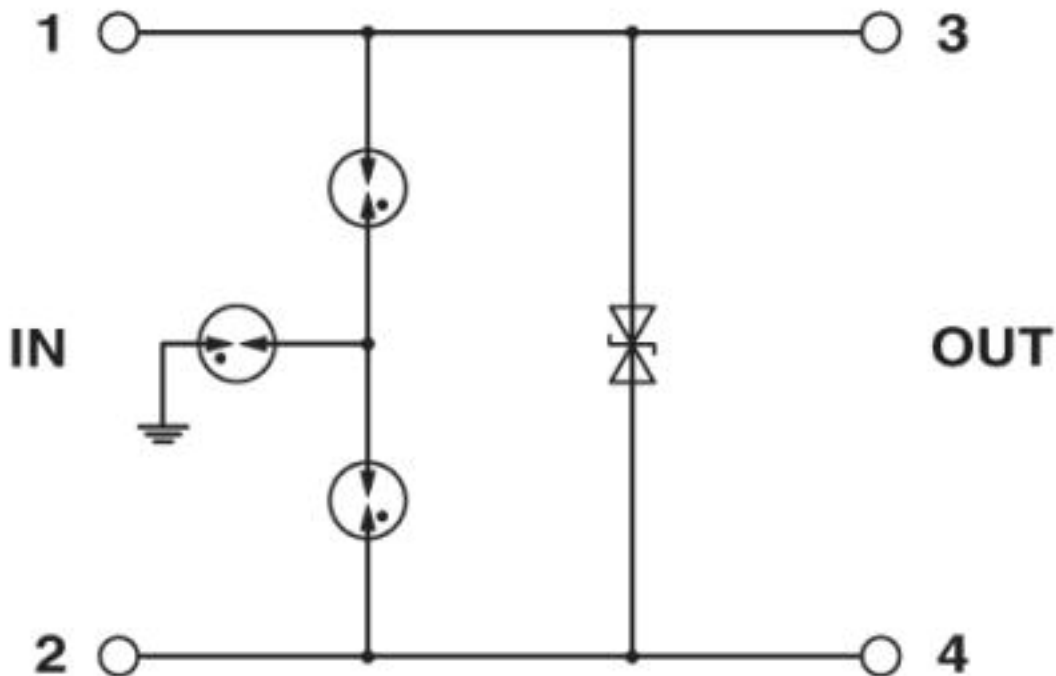
## Drawings

Dimensional drawing



# Surge protection device - TT-ST-2-PE/S2-24DC - 2801458

Circuit diagram



## Classifications

eCl@ss

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	27130807
eCl@ss 8.0	27130807
eCl@ss 9.0	27130807

ETIM

ETIM 3.0	EC000943
ETIM 4.0	EC000943
ETIM 5.0	EC000943
ETIM 6.0	EC000943
ETIM 7.0	EC000943

UNSPSC

UNSPSC 6.01	30212010
UNSPSC 7.0901	39121610
UNSPSC 11	39121610

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## Classifications

### UNSPSC

UNSPSC 12.01	39121610
UNSPSC 13.2	39121620
UNSPSC 18.0	39121620
UNSPSC 19.0	39121620
UNSPSC 20.0	39121620
UNSPSC 21.0	39121620

## Approvals

### Approvals

Approvals

DNV GL / UL Listed

Ex Approvals

### Approval details

DNV GL		<a href="https://approvalfinder.dnvgl.com/">https://approvalfinder.dnvgl.com/</a>	TAE00001N7
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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 138168
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## Accessories

### Accessories

#### End cover

End cover - TT-D-STTCO-BK - 2858894



End cover for TERMITRAB TT-ST-..., width: 2.2 mm, color: Black

### Labeled terminal marker

## Surge protection device - TT-ST-2-PE/S2-24DC - 2801458

### Accessories

Zack Marker strip, flat - ZBF 6,LGS:FORTL.ZAHLEN - 0808749



Zack Marker strip, flat, Strip, white, labeled, printed horizontally: consecutive numbers 1 ... 10, 11 ... 20, etc. up to 91 ... 100, mounting type: snap into flat marker groove, for terminal block width: 6.2 mm, lettering field size: 5.15 x 6.15 mm, Number of individual labels: 10

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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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### Terminal marking

Zack Marker strip, flat - ZBF 6:UNBEDRUCKT - 0808710



Zack Marker strip, flat, Strip, white, unlabeled, can be labeled with: PLOTMARK, CMS-P1-PLOTTER, mounting type: snap into flat marker groove, for terminal block width: 6.2 mm, lettering field size: 5.15 x 6.15 mm, Number of individual labels: 10

Zack Marker strip, flat - ZBF 6/WH-100:UNBEDRUCKT - 0808736



Zack Marker strip, flat, Strip, white, unlabeled, can be labeled with: PLOTMARK, CMS-P1-PLOTTER, mounting type: snap into flat marker groove, for terminal block width: 6.2 mm, lettering field size: 5.15 x 6.15 mm, Number of individual labels: 10

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### Additional products

Shield connection - SSA 3-6 - 2839295



Shield fast connection for 3 ... 6 mm cable diameter. Potential connecting cable: 200 mm, 1 mm<sup>2</sup>, color: black

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### Accessories

Shield connection - SSA 5-10 - 2839512



Shield fast connection for 5 ... 10 mm cable diameter. Potential connecting cable: 200 mm, 1 mm<sup>2</sup>, color: black

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