

## Surge protection plug - PT 2X2-24DC-ST - 2838228

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PT protective connector with protective circuit for two 2-wire floating signal circuits. 24 V DC nominal voltage. HART-compatible.

The illustration shows version PT 2x2- 5DC-ST

### Product Features

- Plugs can be checked with CHECKMASTER
- Installed in conjunction with the PT 2x2...-BE base element
- Maximum ease of maintenance thanks to the two-piece design
- Base element remains an integral part of the installation
- Consistent plug-in signal circuit protection
- Protection for two separate floating signal circuits
- Impedance-neutral disconnection of plug for test and maintenance purposes



### Key Commercial Data

Packing unit	1 pc
Weight per Piece (excluding packing)	25.11 g
Country of origin	Germany

### Technical data

#### Dimensions

Height	45 mm
Width	17.7 mm
Depth	52 mm
Horizontal pitch	1 Div.
Complete module height	90 mm

# Surge protection plug - PT 2X2-24DC-ST - 2838228

## Technical data

### Dimensions

Complete module width	17.7 mm
Complete module depth	65.5 mm

### Ambient conditions

Ambient temperature (operation)	-40 °C ... 85 °C
Degree of protection	IP20

### General

Housing material	PA 6.6
Flammability rating according to UL 94	V-0
Color	black
Standards for clearances and creepage distances	EN 60664-1
	IEC 60664-1
Overvoltage category	2
Degree of pollution	III
Mounting type	On base element
Type	DIN rail module, two-section, divisible
Direction of action	Line-Line & Line-Signal Ground/Shield & optional Signal Ground/Shield-Earth Ground
Arrester can be tested with CHECKMASTER from software version:	From SW rev. 1.00

### 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 $U_C$	28 V DC
	20 V AC
Rated current	450 mA (45°C)
Operating effective current $I_C$ at $U_C$	$\leq 5 \mu A$
Residual current $I_{PE}$	$\leq 1 \mu A$ (BE: 2x2+F)
	$\leq 4 \mu A$
Nominal discharge current $I_n$ (8/20) $\mu s$ (Core-Core)	10 kA
Nominal discharge current $I_n$ (8/20) $\mu s$ (Core-Earth)	10 kA

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### Technical data

#### Protective circuit

Pulse discharge current $I_{imp}$ (10/350) $\mu$ s	2.5 kA (per path)
Max. discharge current $I_{max}$ (8/20) $\mu$ s maximum (Core-Core)	10 kA
Max. discharge current $I_{max}$ (8/20) $\mu$ s maximum (Core-Earth)	10 kA
Output voltage limitation at 1 kV/ $\mu$ s (Core-Core) spike	$\leq 45$ V
Output voltage limitation at 1 kV/ $\mu$ s (Core-Earth) spike	$\leq 450$ V
	$\leq 1$ kV (BE: 1x2+F)
Output voltage limitation at 1 kV/ $\mu$ s (Core-Core) static	$\leq 40$ V
Residual voltage at $I_n$ (conductor-conductor)	$\leq 40$ V
Residual voltage at $I_n$ (conductor-GND)	$\leq 450$ V
Residual voltage with $I_{an}$ (10/1000) $\mu$ s (conductor-conductor)	$\leq 50$ V
Voltage protection level $U_p$ (core-core)	$\leq 70$ V (C1 - 1 kV/500 A)
	$\leq 50$ V (C3 - 25 A)
	$\leq 70$ V (C2 - 10 kV / 5 kA)
	$\leq 60$ V (6 kV/3 kA)
Voltage protection level $U_p$ (core-ground)	$\leq 450$ V (C1 - 1 kV/500 A)
	$\leq 550$ V (C2 - 10 kV / 5 kA)
	$\leq 500$ V (6 kV/3 kA)
Response time $t_A$ (Core-Core)	$\leq 1$ ns
Response time $t_A$ (Core-Earth)	$\leq 100$ ns
Input attenuation aE, sym.	0.5 dB ( $\leq 1$ MHz)
	0.5 dB ( $\leq 1$ MHz / 50 $\Omega$ )
	0.25 dB ( $\leq 400$ kHz / 150 $\Omega$ )
Cut-off frequency $f_g$ (3 dB), sym. in 50 Ohm system	typ. 4.5 MHz
Cut-off frequency $f_g$ (3 dB), sym. in 150 Ohm system	typ. 1.5 MHz
Capacity (Core-Core)	typ. 1.4 nF
Resistance in series	2.2 $\Omega$ #10 %
Surge protection fault message	None
Max. required back-up fuse	500 mA (e.g. T ( IEC 127-2/III))
Impulse durability (conductor-conductor)	C2 - 10 kV/5 kA
	C3 - 25 A
	C1 - 1 kV/500 A
Impulse durability (conductor-ground)	C2 - 10 kV/5 kA
	D1 - 2,5 kA
	C1 - 1 kV/500 A

#### Connection data

Connection method	Screw connection (in connection with the base element)
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## Surge protection plug - PT 2X2-24DC-ST - 2838228

### Technical data

#### Connection data

Connection type IN	PLUGTRAB plug-in system
Connection type OUT	PLUGTRAB plug-in system
Screw thread	M3
Tightening torque	0.8 Nm
Stripping length	8 mm
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

Stripping length	8 mm
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

### Classifications

#### eCl@ss

eCl@ss 4.0	27140201
eCl@ss 4.1	27130801
eCl@ss 5.0	27130801
eCl@ss 5.1	27130801
eCl@ss 6.0	27130807
eCl@ss 7.0	27130807
eCl@ss 8.0	27130807
eCl@ss 9.0	27130807

#### ETIM

ETIM 2.0	EC000943
ETIM 3.0	EC000943
ETIM 4.0	EC000943
ETIM 5.0	EC000943

#### UNSPSC

UNSPSC 6.01	30212010
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# Surge protection plug - PT 2X2-24DC-ST - 2838228

## Classifications

### UNSPSC

UNSPSC 7.0901	39121610
UNSPSC 11	39121610
UNSPSC 12.01	39121610
UNSPSC 13.2	39121620

## Approvals

### Approvals

Approvals


UL Listed / GL / EAC / EAC

Ex Approvals

UL Listed / cUL Listed / ATEX / cULus Listed

Approvals submitted

### Approval details

UL Listed 	
Nominal current $I_N$	0.45 A
Nominal voltage $U_N$	24 V

GL

EAC

EAC

## Accessories

Accessories

Device marking

## Surge protection plug - PT 2X2-24DC-ST - 2838228

### Accessories

Zack marker strip - ZBN 18:UNBEDRUCKT - 2809128



Zack marker strip, Strip, white, unlabeled, can be labeled with: Plotter, Mounting type: Snap into tall marker groove, for terminal block width: 18 mm, Lettering field: 18 x 5 mm

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### Labeled terminal marker

Zack Marker strip, flat - ZBF 5,LGS:FORTL.ZAHLEN - 0808671



Zack Marker strip, flat, Strip, white, labeled, Printed horizontally: Consecutive numbers 1 - 10, 11 - 20, etc. up to 491 - 500, Mounting type: Snap into flat marker groove, for terminal block width: 5 mm, Lettering field: 5.15 x 5.15 mm

Zack Marker strip, flat - ZBF 5,LGS:GERADE ZAHLEN - 0810821



Zack Marker strip, flat, Strip, white, labeled, Printed horizontally: Consecutive numbers 2 - 20, 22 - 40, etc. up to 82 - 100, Mounting type: Snap into flat marker groove, for terminal block width: 5 mm, Lettering field: 5.15 x 5.15 mm

Zack Marker strip, flat - ZBF 5,LGS:UNGERADE ZAHLEN - 0810863



Zack Marker strip, flat, Strip, white, labeled, Printed horizontally: Odd numbers 1 - 19, 21 - 39, etc. up to 81 - 99, Mounting type: Snap into flat marker groove, for terminal block width: 5 mm, Lettering field: 5.15 x 5.15 mm

Zack Marker strip, flat - ZBF 5,QR:FORTL.ZAHLEN - 0808697



Zack Marker strip, flat, Strip, white, labeled, Printed vertically: Consecutive numbers 1 - 10, 11 - 20, etc. up to 91 - 100, Mounting type: Snap into flat marker groove, for terminal block width: 5 mm, Lettering field: 5.15 x 5.15 mm

## Surge protection plug - PT 2X2-24DC-ST - 2838228

### Accessories

#### Marker pen

Marker pen - X-PEN 0,35 - 0811228



Marker pen without ink cartridge, for manual labeling of markers, labeling extremely wipe-proof, line thickness 0.35 mm

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#### Terminal marking

Zack Marker strip, flat - ZBF 5:UNBEDRUCKT - 0808642



Zack Marker strip, flat, Strip, white, unlabeled, can be labeled with: Plotter, Mounting type: Snap into flat marker groove, for terminal block width: 5 mm, Lettering field: 5.1 x 5.2 mm

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Zack Marker strip, flat - ZBF 5/WH-100:UNBEDRUCKT - 0808668



Zack Marker strip, flat, Strip, white, unlabeled, can be labeled with: Plotter, Mounting type: Snap into flat marker groove, for terminal block width: 5 mm, Lettering field: 5.15 x 5.15 mm

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#### Required add-on products

Surge protection base element - PT 2X2-BE - 2839208



Base element for protective plug PT with protective circuit for two 2-wire floating signal circuit, bridge between the connections 3-4 (GND) and 9-10, for mounting on NS 35/7.5 and NS 35/15, housing width: 17.5 mm

# Surge protection plug - PT 2X2-24DC-ST - 2838228

## Accessories

Surge protection base element - PT 2X2+F-BE - 2839224



Base element for protective plug PT with protective circuit for two 2-wire floating signal circuit, gas-filled surge arrester between the connections 3-4 (GND) and 9-10, for mounting on NS 35/7.5 and NS 35/15, housing width: 17.5 mm

## Additional products

Shield connection - SSA 3-6 - 2839295



shield fast connections for conductor diameter 3 - 6 mm. Potential connection cable: 200 mm, black

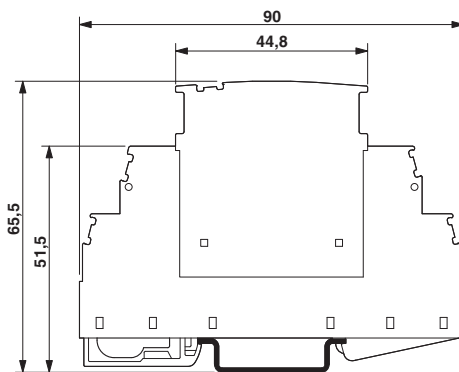
Shield connection - SSA 5-10 - 2839512



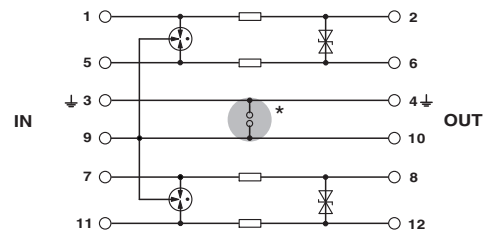
Shield fast connection for conductor diameters 5 - 10 mm. Potential connection cable: 200 mm, black

## Drawings

Dimensional drawing



Circuit diagram



The figure shows the complete module consisting of a base element and connector



