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VAL-SQ SI...

25 and 40 kA Surge Protective Device for small installation protection



TRABTECH

Data Sheet
2532_en_A

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1 Description

The VAL-SQ SI... Surge Protective Device (SPD) provides surge protection in a compact, affordable package.

A high-energy suppression circuit provides 25 or 40 kA (depending upon the model) of surge current rating per phase. Each surge suppression mode in the VAL-SQ SI... is individually fused.

The VAL-SQ SI... SPD uses a sealed, NEMA 4X housing, allowing installation in harsh environments with limited space. Operating status lights are easily observed and provide verification of protection.

2 Features

- Compact design for flexible mounting locations
- 25 or 40 kA surge current capacity per phase (L-N and N-G) protects against high-energy lightning strikes and transient voltages
- NEMA Type 4X enclosure
- LEDs provide continuous feedback on the status of each phase
- UL/cUL listed; meets UL 1449 2nd edition February 2007 requirements



DANGER:

Risk of electric shock. Disconnect power before installing or servicing. Service to be performed by qualified personnel only.



Make sure you always use the latest documentation.
It can be downloaded at www.download.phoenixcontact.com.

A conversion table is available on the Internet at
www.download.phoenixcontact.com/general/7000_en_00.pdf.



This data sheet is valid for all products listed on the following page:

3 Ordering Data

Products

Description	Type	Part No.	Pcs./Pkt.
Surge protective device, 25 kA, 2-phase, 2-wire + ground for 120 V (L-N) applications with common GND-N	VAL-SQ SI 25-2C-120	2800003	1
Surge protective device, 40 kA, 2-phase, 2-wire + ground + neutral for 120 V (L-N) applications with separate GND and N	VAL-SQ SI 40-2S-120	2800005	1
Surge protective device, 40 kA, 2-phase, 2-wire + ground + neutral for 240 V (L-N) applications with separate GND and N	VAL-SQ SI 40-2S-240	2800006	1
Surge protective device, 40 kA, 3-phase, 3-wire + ground for up to 600 V (L-N) applications with common GND-N	VAL-SQ SI 40-3C-600	2800007	1

4 Technical Data

Surge Protection Data	2800003	2800005	2800006	2800007
Maximum surge current per phase	25 kA	40 kA	40 kA	40 kA
Short circuit current rating (SCCR)	22 kA	25 kA	10kA	200 kA
Nominal voltage	120 V	120 V	240 V	600 V ¹
Circuit type	MOV technology			
UL Class	Type 1 + 2 (Surge arrester & TVSS)	Type 2 (TVSS)	Type 2 (TVSS)	Type 1 + 2 (Surge arrester & TVSS)

¹ Up to 600 V

Part No.	Type	MCOV	Surge Voltage Rating (SVR)		
			L-N	N-G	L-L
2800003	VAL-SQ SI 25-2C-120	150	500	–	900
2800005	VAL-SQ SI 40-2S-120	150	500	800	–
2800006	VAL-SQ SI 40-2S-240	320	900	900	–
2800007	VAL-SQ SI 40-3C-600	650	1800	2000	–

General Data	2800003	2800005	2800006	2800007
Dimensions (WxHxD)	2.24 x 2.08 x 2.25 in. (56.9 x 52.8 x 56.9 mm)	3.00 x 2.73 x 3.60 in. (76.2 x 69.3 x 91.4 mm)	3.00 x 2.73 x 3.60 in. (76.2 x 69.3 x 91.4 mm)	3.60 x 2.73 x 3.00 in. (91.4 x 69.3 x 76.2 mm)
Weight	0.53 lb. (0.24 kg)	1.2 lb. (0.54 kg)	1.2 lb. (0.54 kg)	1.0 lb. (0.45 kg)
Enclosure material	Non-metallic	Non-metallic	Non-metallic	Non-metallic
Housing rating	NEMA 4X	NEMA 4X	NEMA 4X	NEMA 4X
Phase connection	Parallel #14 AWG	Parallel #10 AWG	Parallel #10 AWG	Parallel #12 AWG
Conduit connector	1/2-in. NPT			
Operating frequency	50/60 Hz			
Operating temperature	-40 to 70°C (-40 to 160°F)			
Operating altitude	0 to 12,000 ft. (3,658 m)			

Approvals

UL/cUL	1449 2 nd edition, February 2007 requirements 1283
CSA	C22.2 No. 8-M1986
IEEE	C62.41.1-2002 C62.41.2-2002 C62.45-2002

5 Dimensions

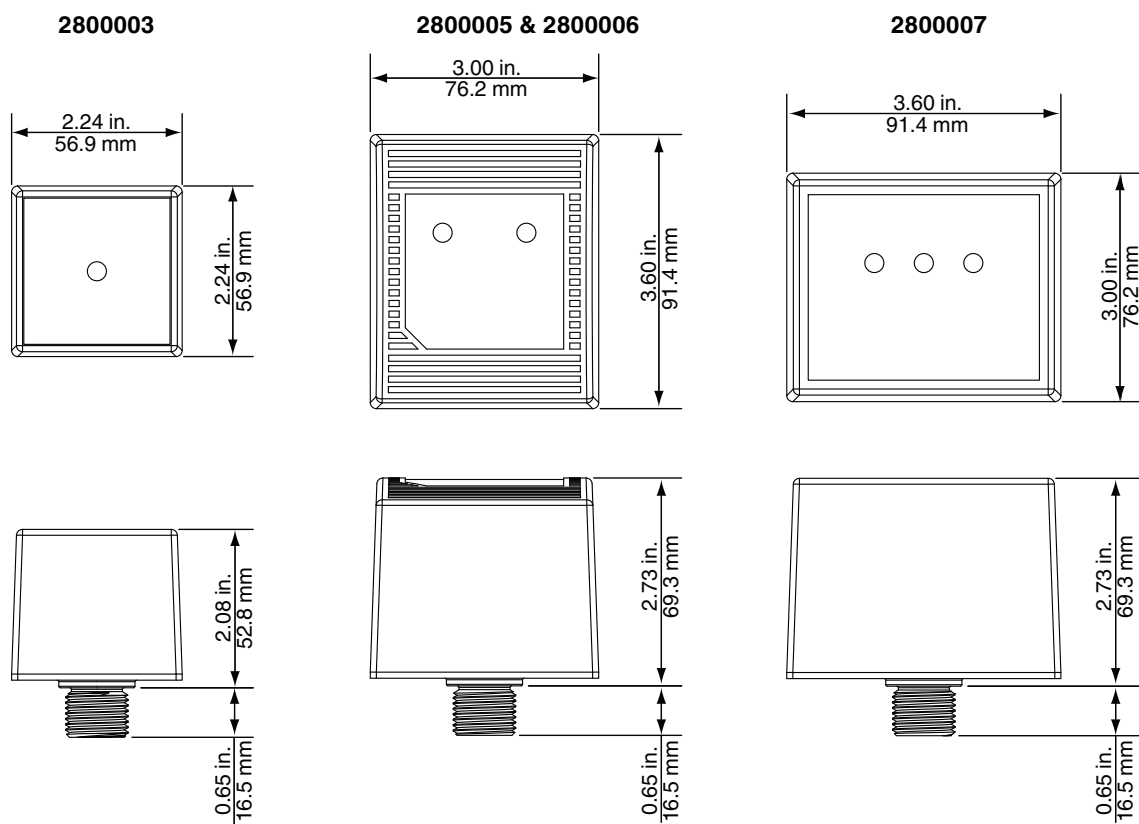


Figure 1 Dimensions

6 Installation



DANGER:

Turn off all power supplying this equipment before working on or inside equipment.
Always follow federal and local regulations during installation. Apply appropriate personal protective equipment (PPE) and follow electrical work practices.
Only qualified electrical personnel may install and service this equipment.
Never open SPD. No serviceable parts are inside.



WARNING:

This equipment depends upon an effective ground. Failure to obtain a quality ground connection may result in explosion or arc flash.



NOTE:

Megger® or hi-potential tests will damage this surge protective device. Turn off all power supplying the equipment and isolate the surge protective device before testing.

6.1 Mounting and connection

- Position the VAL-SQ SI... so the LEDs are visible and the wires are as short and straight as possible.
The SPD can be mounted in any orientation. It attaches through any side of the enclosure being protected using 1/2-NPT threaded nipple.



NOTE:

Cover or remove components inside any enclosure before drilling to prevent shavings from causing short-circuits across terminals and races.

- Create a hole in the enclosure, 2, for 1/2-in. conduit attachment, approximately 7/8 in. (22 mm) diameter.
- Route the wires and nipple through the hole and secure the VAL-SQ SI... to the enclosure with the strain relief nut, 3.

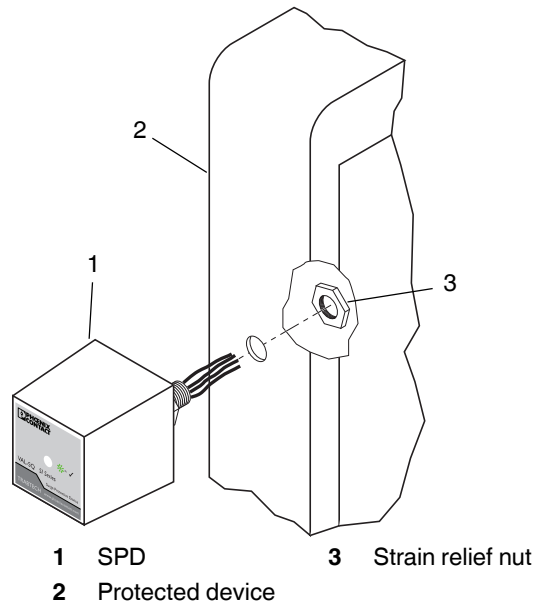


Figure 2 Mounting the SPD

- Connect the VAL-SQ SI... to the appropriate phases and ground lines as shown on the following illustrations. Wires are color coded as shown. If equipped with a green wire, it must be connected to ground.

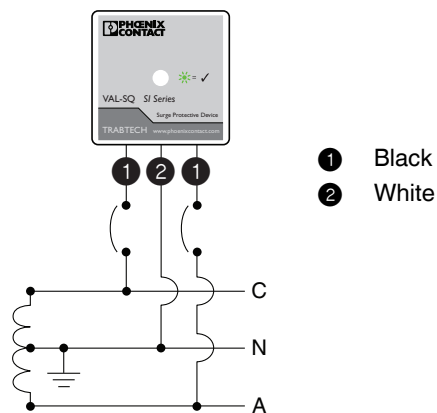


Figure 3 Single-phase, 3-wire, 120/240 V AC VAL-SQ SI 25-2C-120 connection

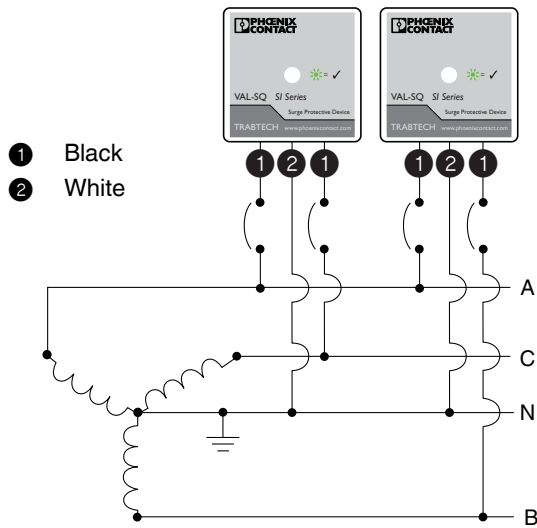


Figure 4 3-phase Wye, 208 V AC
VAL-SQ SI 25-2C-120 connection

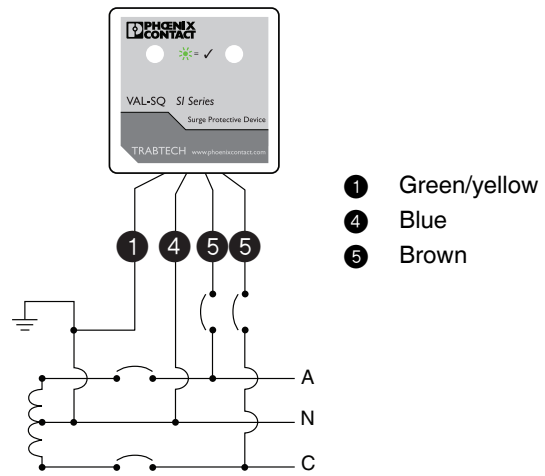


Figure 6 1- or 2-phase, 240 V AC
VAL-SQ SI 40-2S-240 connection

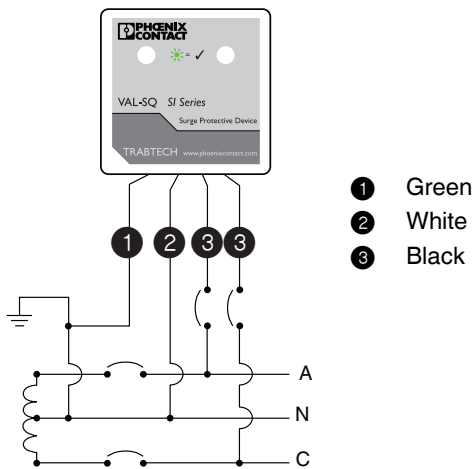


Figure 5 1- or 2-phase, 120 V AC
VAL-SQ SI 40-2S-120 connection

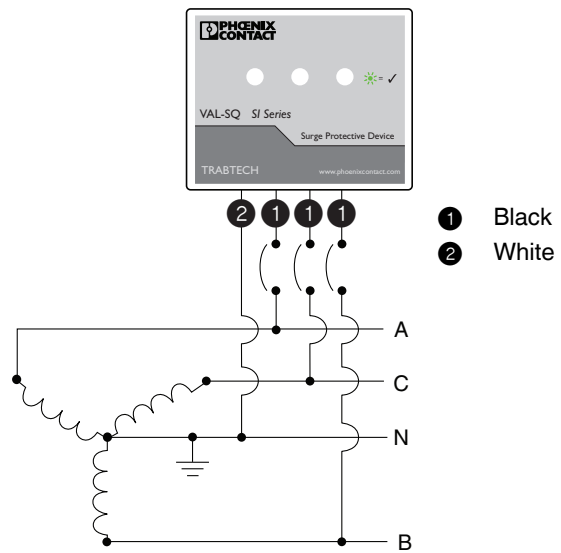


Figure 7 3-phase Wye, 208, 480 or 600 V AC
VAL-SQ SI 40-3C-600 connection

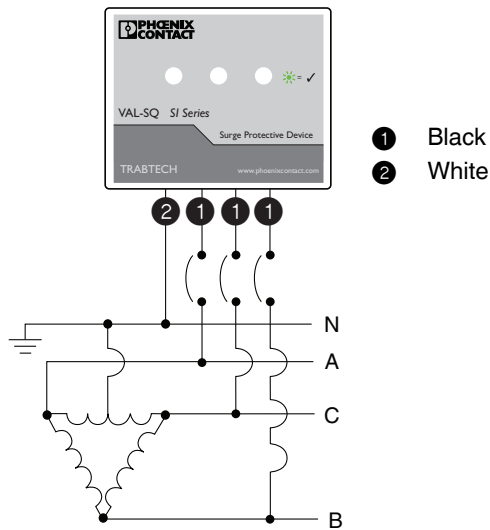


Figure 8 3-phase High-Leg Delta, 120/240 V AC VAL-SQ SI 40-3C-600 connection

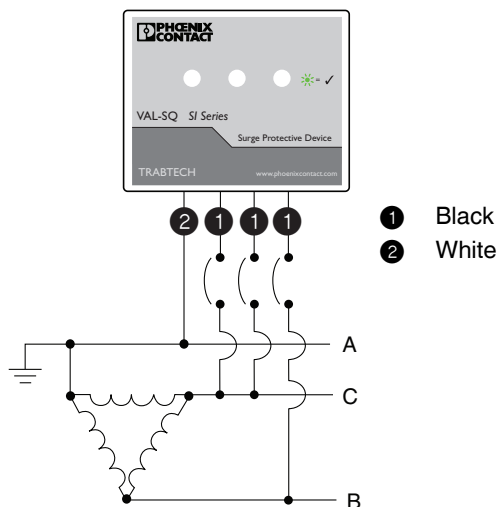


Figure 9 3-phase, Delta, 240, 480, 600 V AC, VAL-SQ SI 40-3C-600 connection

Type 1 (Lightning Arrestor) SPDs can be connected on either side of the service entrance. Type 2 (TVSS) SPDs must be connected on the load side of the service entrance breakers as shown. Disconnects to the SPD are recommended.

All wires must be attached to the appropriate wires; phase, neutral or ground. The SPD must be connected to power through a circuit breaker rated appropriately for the connected wire gauge. Use an appropriate breaker, i.e., 2- or 3-pole, for the electrical configuration.



All wires must be connected for the SPD to function correctly.

The wires between the SPD and protected device should be twisted 1/2 turn every 12 in. (300 mm). Do not loop or coil wire. Excess wire must be removed without applying stress to wires.

7 Operation

LEDs indicate the operating status of the individual phases of the VAL-SQ SI... The LEDs illuminate when the relevant phase is operating correctly.

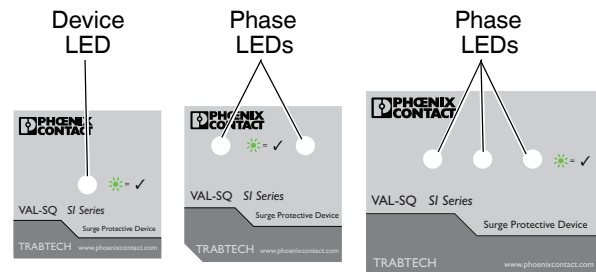


Figure 10 LED location

If a phase is not operating correctly or a fault occurs, the corresponding LED is not lit.

When a phase LED is not lit, verify the correct voltage is present on each phase. If power is present, the VAL-SQ SI... must be replaced. There are no serviceable parts.