SOLA HD

Surge Protective Devices

STV100K Series

Instruction Manual

Contents

1.0 Installation

The SolaHD STV100K Series Surge Protective Device is a high-quality, high-energy surge current diversion system designed to protect sensitive equipment from damaging transient voltage surges resulting from load switching, lightning strikes, and other sources.

The installer should perform the following steps to ensure a quality installation. Please read all instructions before starting the installation of this product. These instructions do not replace national or local electrical codes. Check applicable codes to ensure compliance.

⚠ **DANGER! Only qualified personnel should install or service this system. Electrical safety precautions must be followed when installing or servicing this equipment. To prevent risk of electrical shock, turn off and lock out all power sources to the unit before making electrical connections or servicing.**

1.1 Environment

The unit is designed for operation indoors in an ambient temperature range of -40°C to +60°C (-40°F to +140°F), with a relative humidity of 0% to 95% non-condensing.

The unit is provided in a metallic industrial enclosure. Do not install in areas with excessive dust, corrosive vapors, flammable materials, or explosive atmospheres.

1.2 Mounting

Mount the unit as close as possible to the service panel. For best performance, the unit should be positioned so that the length of the wiring to the surge protective device (SPD) is minimized.

1.3 Proper Connection of SPDs

Type 2 SPDs shall be installed as defined in the National Electric Code (NEC) 2011 Edition as follows:

285.24 Type 2 SPDs (TVSSs)

Type 2 SPDs (TVSSs) shall be installed in accordance with 285.24 (A) through (C).

(A) Service-Supplied Building or Structure. Type 2 SPDs (TVSSs) shall be connected anywhere on the load side of a service disconnect overcurrent device required in 230.91, unless installed in accordance with 230.82(8).

(B) Feeder-Supplied Building or Structure. Type 2 SPDs (TVSSs) shall be connected at the building or structure anywhere on the load side of the first overcurrent device at the building or structure.

(C) Separately Derived System. The SPD (TVSS) shall be connected on the load side of the first overcurrent device in a separately derived system.

1.4 Mechanical Dimensions

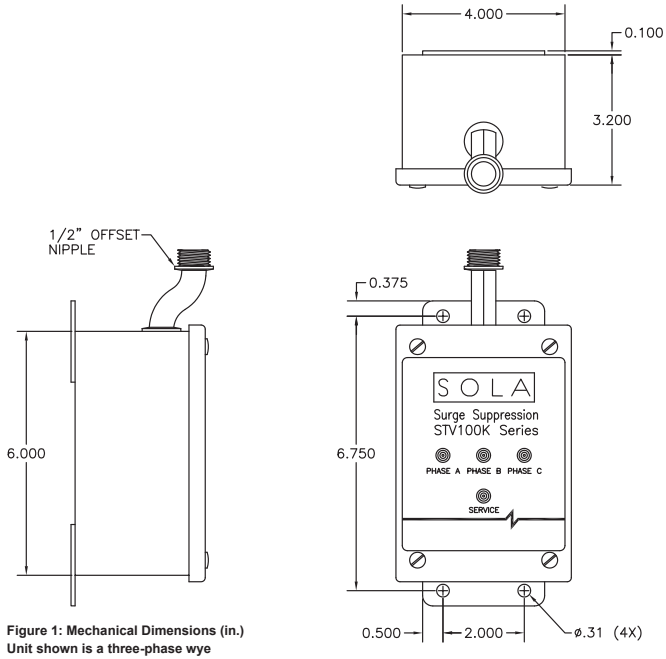


Figure 1: Mechanical Dimensions (in.)
Unit shown is a three-phase wye

1.5 Voltage Protection Ratings (VPRs)

To maintain the voltage protection ratings marked on these products, as obtained by Underwriters Laboratories, Inc. in accordance with ANSI/UL 1449, 3rd edition, the Standard for Safety, Surge Protective Devices (SPDs), #12 AWG wire must be utilized to connect the STV100K Series to your facility's power grid. Connections made with conductors other that #12 AWG may result in different VPRs.

1.6 Circuit Ampacity Limitations

This device has been investigated by Underwriters Laboratories, Inc. to withstand, without exposing live circuits or components on power sources, a voltage of two times (2x) the device's ratings, and fault currents of up to 65,000 AIC, as described in ANSI/UL 1449, 3rd edition, the Standard for Safety, Surge Protective Devices (SPDs).

1.7 Wire Sizing/Routing

Phase, N, and GND wires are #12 AWG. NO, NC, and COM wires are #18 AWG. To reduce the wiring impedance to surge currents, we recommend the phase, neutral (if required), and ground conductors to be twisted together and routed in the same raceway (conduit). Avoid any sharp bends in the conductors. All wiring must comply with the National Electrical Code (NEC) and applicable local codes.

1.8 Wiring Connections

Before making connections to the unit, verify that the unit model number and nameplate voltage rating are appropriate for connection to the intended power source. See **Table 1** for voltage rating applications with typical power source configurations.

1. Connect the black phase wires to the corresponding phase on the service panel. For delta high leg units, ensure the high leg is connected to Phase B of the SPD.
2. Connect the white neutral wire of the SPD (if provided) to the neutral of the supply. Connect the green ground wire of the SPD to source ground.
3. If you are not using the relay contacts for remote sensing, cut and dress the orange COM wire, the blue NC wire, and the yellow NO wire in the conduit.

   For remote sensing, wires are connected to COM, NC, and NO respectively. (125 V ac, 5 A max.)

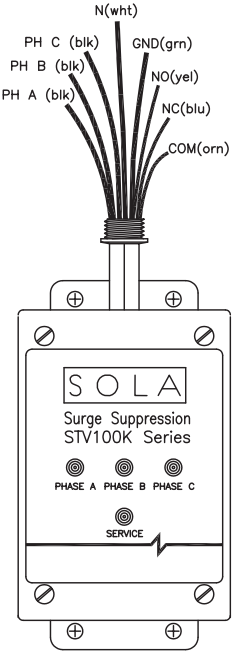


Figure 2: Wiring connections

⚠ DANGER! For proper and safe operation, neutral and ground MUST be reliably connected. Failure to operate this unit from a solidly grounded power source of the proper configuration will reduce or impede operation and may result in unit failure.

NOTES:

- Figure 2 is a three-phase wye. A three-phase delta will have no neutral wire. For a three-phase delta high leg, Phase B will be the high leg. A split phase unit will have no Phase C and can be labeled Line 1 and Line 2.
- A single-phase L-N unit will have one black phase wire, a white neutral wire, and a green ground wire. A single-phase L-L unit will have two black phase wires and the green ground wire.
- Summary alarm Form C (1 NO and 1 NC) relay contacts may be provided for remote indication of an SPD failure. This indication may also consist of a phase loss or undervoltage condition.
- Summary alarm Form C relay contacts are rated 5 A at 250 V ac maximum with a power factor of 1.0. For units with Summary Alarm Contacts, access to the contacts are provided via #18 AWG wires (yellow NO, orange COM, and blue NC).

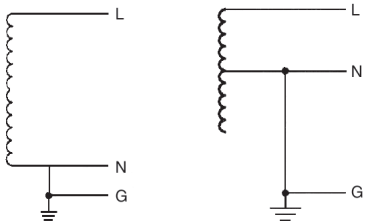
1.9 Applying Power

Apply power to the SPD and ensure status indications are normal. Under normal conditions, the green LEDs are illuminated and the red “Service” LED is extinguished. If normal status indication does not exist, see “2.0 Troubleshooting”.

Table 1: Voltage Ratings & Power Source Configurations

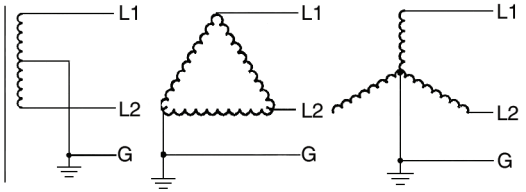
Model: STV100K-10N
Nominal Voltage: 120 V

Single-phase, 2W + G



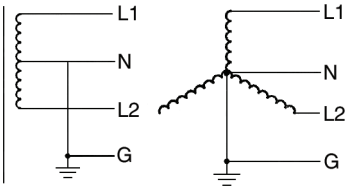
Model: STV100K-24L
Nominal Voltage: 240 V

Single-phase, 2W + G



Model: STV100K-10S
Nominal Voltage: 120/208–240 V

Single-phase, 3W + G

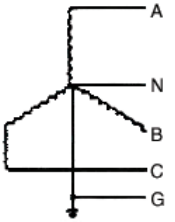


Model: STV100K-10Y
Nominal Voltage: 120/208 V

Model: STV100K-23Y
Nominal Voltage: 230/400 V

Model: STV100K-27Y
Nominal Voltage: 277/480 V

Three-phase wye, 4W + G



Model: STV100K-10X*
Nominal Voltage: 120/208 V

Model: STV100K-23X*
Nominal Voltage: 230/400 V

Model: STV100K-27X*
Nominal Voltage: 277/480 V

*Not UL Listed. Contact SolaHD Technical Support for details.

Three-phase wye, 3W + G

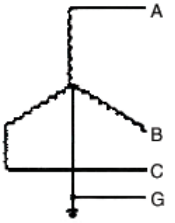
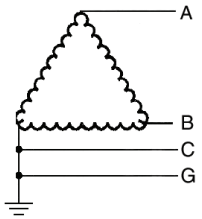
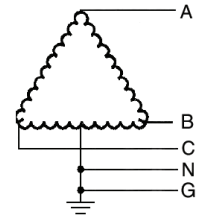


Table 1: Voltage Ratings & Power Source Configurations	
Model: STV100K-20D* **Nominal Voltage:** 208 V **Model:** STV100K-24D **Nominal Voltage:** 240 V **Model:** STV 100K-48D **Nominal Voltage:** 480 V *Not UL Listed. Contact SolaHD Technical Support for details.	**Three-phase delta, 3W + G** 
Model: STV 100K-10D4 **Nominal Voltage:** 120/240 V **Model:** STV 100K-24D4 **Nominal Voltage:** 240/480 V	**Three-phase delta high leg, 4W + G** 

2.0 Troubleshooting

If any of the diagnostic indicators indicate a problem (e.g. red “Service” LED on and/or green LEDs off), check all connections and voltages to the unit. If all connections are made and reliable, and proper voltages are supplied to the unit, contact SolaHD Technical Support at (800) 377-4384/(847) 268-6651 or by e-mail at solahd.technicalservices@emerson.com.

3.0 Registration & Warranty

3.1 Product Registration

To register your product for updates and information on service and support, visit our Web site at: http://www.solahd.com/support/registration.htm.

3.2 Warranty Information

Please see the “Terms & Conditions of Sale”.

4.0 Specifications

Table 2: Technical Specifications					
Parameters	**Model**				
	STV100K-10N	**STV100K-24L**	**STV100K-10S**	**STV100K-10Y**	**STV100K-23Y**
Nominal Input Voltage	120 V	240 V	120/208–240 V	120/208 V	230/400 V
System Configuration	1-phase 2W + G	1-phase 2W + G	1-phase 3W + G	3-phase wye 4W + G	3-phase wye 4W + G
Maximum Continuous Operating Voltage (MCOV)	125% of the nominal level for 120 V; 115% for all other voltages				
Line Frequency	47–63 Hz				
Response Time	<0.5 ns				
A/C Rating	65 kAIC				
Fusing	Thermal and fault current				
Nominal Discharge Current Rating	3 kA				
Modes of Protection	All Modes: L–N, L–L, L–G, N–G				
Operating Temperature	-40°C to +60°C (-40°F to +140°F)				
Operating Humidity	0 to 95% non-condensing				
Noise Attenuation	40 dBA maximum				
Dimensions, W x D x H	6.00 in. x 4.00 in. x 3.20 in. (152.4 mm x 101.6 mm x 81.28 mm)				
Net Weight	8.0 lb. (3.63 kg)				
Enclosure	Metal, NEMA 12 enclosure				
Connection/Mounting Type	Parallel/Flange				
Status Indication	Red and green LED status indicators, audible alarm, Form C contacts				
Safety Approvals	UL 1449 3rd edition, cULus Listed				
Warranty	10 years				
UL 1449 3rd Edition, Type 2 Voltage Protection Ratings					
Line to Neutral	600 V	N/A	600 V	600 V	1200 V
Line to Line	N/A	1000 V	1000 V	1000 V	2000 V
Line to Ground	700 V	1200 V	700 V	700 V	1200 V
Neutral to Ground	700 V	N/A	700 V	700 V	1200 V
High Leg to Neutral	N/A	N/A	N/A	N/A	N/A
High Leg to Line	N/A	N/A	N/A	N/A	N/A
High Leg to Ground	N/A	N/A	N/A	N/A	N/A
Peak Surge Current Capability					
Per Phase	100 kA	100 kA	100 kA	100 kA	100 kA
Line to Neutral	50 kA	N/A	50 kA	50 kA	50 kA
Line to Line	N/A	50 kA	50 kA	50 kA	50 kA
Line to Ground	50 kA	50 kA	50 kA	50 kA	50 kA
Neutral to Ground	50 kA	N/A	50 kA	50 kA	50 kA

Table 2: Technical Specifications					
Parameters	**Model**				
	STV100K-27Y	**STV100K-24D**	**STV100K-48D**	**STV100K-10D4**	**STV100K-24D4**
Nominal Input Voltage	277/480 V	240 V	480 V	120/240 V	240/480 V
System Configuration	3-phase wye 4W + G	3-phase delta 3W + G	3-phase delta 3W + G	3-phase delta high leg 4W + G	3-phase delta high leg 4W + G
Maximum Continuous Operating Voltage (MCOV)	125% of the nominal level for 120 V; 115% for all other voltages				
Line Frequency	47–63 Hz				
Response Time	<0.5 ns				
A/C Rating	65 kAIC				
Fusing	Thermal and fault current				
Nominal Discharge Current Rating	3 kA				
Modes of Protection	All Modes: L–N, L–L, L–G, N–G				
Operating Temperature	-40°C to +60°C				
Operating Humidity	0 to 95% non-condensing				
Noise Attenuation	40 dBA maximum				
Dimensions, W x D x H	6.00 in. x 4.00 in. x 3.20 in. (152.4 mm x 101.6 mm x 81.28 mm)				
Net Weight	8.0 lb. (3.63 kg)				
Enclosure	Metal, NEMA 12 enclosure				
Connection/Mounting Type	Parallel/Flange				
Status Indication	Red and green LED status indicators, audible alarm, Form C contacts				
Safety Approvals	UL 1449 3rd edition, cULus Listed				
Warranty	10 years				
UL 1449 3rd Edition, Type 2 Voltage Protection Ratings					
Line to Neutral	1200 V	N/A	N/A	600 V	1200 V
Line to Line	2000 V	2000 V	2000 V	1000 V	2000 V
Line to Ground	1200 V	1200 V	2000 V	700 V	1200 V
Neutral to Ground	1200 V	N/A	N/A	700 V	1200 V
High Leg to Neutral	N/A	N/A	N/A	1200 V	2000 V
High Leg to Line	N/A	N/A	N/A	1500 V	2500 V
High Leg to Ground	N/A	N/A	N/A	1200 V	2000 V
Peak Surge Current Capability					
Per Phase	100 kA	100 kA	100 kA	100 kA	100 kA
Line to Neutral	50 kA	N/A	N/A	50 kA	50 kA
Line to Line	50 kA	50 kA	50 kA	50 kA	50 kA
Line to Ground	50 kA	50 kA	50 kA	50 kA	50 kA
Neutral to Ground	50 kA	N/A	N/A	50 kA	50 kA

SOLAHD

www.solahd.com
(800) 377-4384 • (847) 268-6651
solahd.technicalservices@emerson.com

EMERSON
Industrial Automation

Part Number: 80927 Rev 2
January 2011

Общество с ограниченной ответственностью «МосЧип» ИНН 7719860671 / КПП 771901001
Адрес: 105318, г.Москва, ул.Щербаковская д.3, офис 1107

Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

http://moschip.ru/get-element

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:
moschip.ru
moschip.ru_4
moschip.ru_6
moschip.ru_9