

Instruction
Bulletin

Boletín de
instrucciones

Directives
d'utilisation

30072-013-90B
9/01
Raleigh, NC, USA

SURGELOGIC™
Surge Protective Device



**XGA Modular Transient Voltage Surge
Suppressor (TVSS)**

**Supresor de sobretensiones transitorias
(TVSS) modular XGA**

**Suppresseur de surtensions transitoires
(TVSS) modulaire XGA**

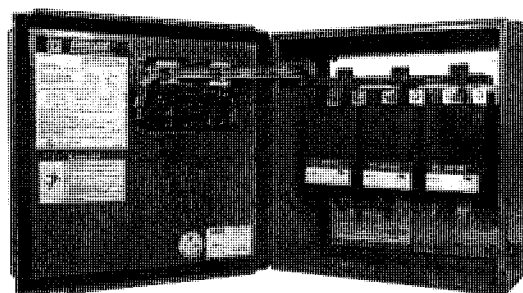
Class/Clase/Classe 1310

Retain for future use. / Conservar para uso futuro. / À conserver pour
usage ultérieur.

E
N
G
L
I
S
H

E
S
P
A
Ñ
O
L

F
R
A
N
C
A
I
S



SQUARE D

⚠ DANGER**HAZARDOUS VOLTAGE**

- This equipment must be installed and serviced only by qualified electrical personnel.
- This equipment must be effectively grounded per all applicable codes. Use an equipment-grounding conductor to connect this equipment to the power system ground.
- Disconnect all power supplying this equipment before working on or inside it.
- Always use a properly rated voltage sensing device to confirm power is off.
- Replace the barrier and the door/cover before energizing.

Failure to follow these instructions will result in death or serious injury.

⚠ CAUTION**LOSS OF BRANCH CIRCUIT POWER/LOSS OF SURGE PROTECTION**

In the event that the surge protective elements of the SURGELOGIC™ TVSS have been damaged (i.e. excessive surge energy, power system anomaly, etc.), the surge protective elements can lose their ability to block power system voltage and attempt to draw excessive current from the line. This TVSS is equipped with overcurrent and overtemperature protection that will automatically disconnect the surge protective elements from the mains should the surge protective elements be damaged.

The effects of damaged surge protective elements and the subsequent operation of the automatic overcurrent and overtemperature protection must be considered when applying a TVSS, particularly when critical loads requiring continuity of power or continuity of surge protection are present on the power system. The following items should be considered when applying a TVSS:

- Tripping of the branch circuit breaker feeding the TVSS can occur when the surge protective elements are damaged. Do not connect the TVSS to a branch circuit feeding a load requiring continuity of power (i.e. central computer or control systems, safety-critical equipment, critical processes or systems, etc.) unless the branch circuit breaker trip characteristic has been coordinated with the overcurrent protection inside the TVSS. For the purposes of coordination, the TVSS is equipped with overcurrent protection that will limit the per phase I^2t , I_{apparent} , I_p , and I_{th} values to 20 kA² seconds, 7000 A rms, 16,000 A peak, and 30 A rms respectively, when connected to a power system with a short-circuit current rating not exceeding 200,000 A.
- Periodic inspection of the state of the status indicator lights on the TVSS should be made as part of the preventive maintenance schedule. The TVSS should be promptly serviced when an alarm state exists.
- For unmanned, inaccessible, or critical installations, the optional alarm contact option should be used to signal an alarm state to the central supervisory system.
- In addition to the preceding items, the use of multiple TVSS devices to achieve redundancy should be considered for critical applications.

Failure to follow these instructions can result in loss of power or loss of surge protection that can cause injury or equipment damage.

CAUTION**LOSS OF SURGE PROTECTION**

- During installation into an electrical system, TVSS devices must not be energized until the electrical system is completely installed, inspected, and tested. All conductors must be connected and functional, including the neutral. The voltage rating of the device and system must always be verified before energizing the surge protective device.
- Any factory or on-site testing of power distribution equipment that exceeds the normal operating voltage, such as high-potential insulation testing, or any other tests where the suppression components will be subjected to voltages higher than their rated turn-on voltage must be performed with the suppressor disconnected from the power source. The neutral connection at the TVSS device must also be disconnected prior to performing high-potential testing and then reconnected upon completion of the test.

Failure to follow these instructions can result in equipment damage.

INTRODUCTION	5
UNPACKING AND PRELIMINARY INSPECTION	5
STORAGE	5
IDENTIFICATION NAMEPLATE	6
SAFETY LABELS	6
TVSS LOCATION CONSIDERATIONS	6
Environment	6
Audible Noise	6
Mounting	6
Service Clearance	6
Equipment Performance	6
ELECTRICAL	7
Voltage Rating	7
Terminals, Wire Size, and Installation Torque	7
Disconnect Means	7
Circuit Isolator	8
Location of TVSS	8
SYSTEM GROUNDING	8
INSTALLATION	9
Conduit Location and Recommendations	9
Activating the Surge Counter Battery	9
Special Enclosure Considerations	10
Removing and Reconnecting the Ribbon Cables	10
NEMA Type 4X Enclosure	10
Optional Flush Mounting	10
WIRING	11
Wiring Diagrams without Circuit Isolator	12
Wiring Diagrams with Circuit Isolator	13
OPERATION	15
LED Status Indicators	15
Audible Alarm	16
Surge Counter Option	16
Remote Monitor Option	17
Dry Contacts Option	17
MAINTENANCE AND TROUBLESHOOTING	18
Preventive Maintenance	18
Troubleshooting	18
Replacement Parts	19
Replacing the Lithium Battery	19



INTRODUCTION

⚠ DANGER

HAZARDOUS VOLTAGE

- This equipment must be installed and serviced only by qualified electrical personnel.
- This equipment must be effectively grounded per all applicable codes. Use an equipment-grounding conductor to connect this equipment to the power system ground.
- Disconnect all power supplying this equipment before working on or inside it.
- Always use a properly rated voltage sensing device to confirm power is off.
- Replace the barrier and the door/cover before energizing.

Failure to follow these instructions will result in death or serious injury.

Proper installation is imperative to maximize the XGA modular transient voltage surge suppressor (TVSS) device's effectiveness and performance. The installer should follow the steps outlined in this instruction bulletin to ensure proper installation. Read the entire instruction bulletin before beginning the installation. These instructions are not intended to replace national or local electrical codes. Check all applicable electrical codes to verify compliance. Installation of modular surge suppressors should only be performed by qualified electrical personnel.

In addition to this bulletin, refer to instruction bulletins provided with equipment manufactured by Square D Company that have factory-installed TVSS devices.

NOTE: TVSS devices are designed for use on the load side of the service entrance disconnect only.

UNPACKING AND PRELIMINARY INSPECTION

Inspect the entire shipping container for damage or signs of mishandling before unpacking the device. Remove the packing material and further inspect the device for any obvious shipping damage. If any damage is found and is a result of shipping or handling, immediately file a claim with the shipping company.

STORAGE

The device should be stored in a clean, dry environment. Storage temperature is -20 to +65 °C (-4 to +149 °F). All of the packaging materials should be left intact until the device is ready for installation.

IDENTIFICATION NAMEPLATE

The identification nameplate (see Figure 1) is located on the inside of the door/cover.

ENGLISH

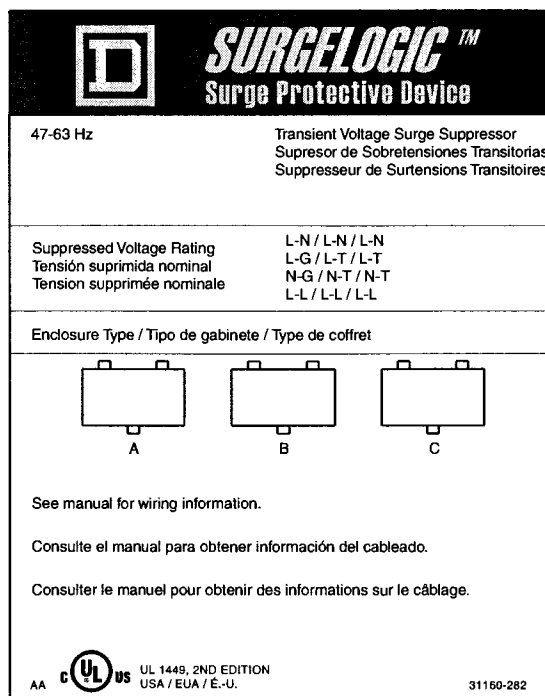


Figure 1: TVSS Device Nameplate Example

SAFETY LABELS

English/Spanish versions of all safety labels (danger, warning, caution) are provided to place over the English/French version, if desired.

TVSS LOCATION CONSIDERATIONS

Environment

The device is designed to operate in an ambient temperature range of 0 to +50 °C (+32 to +122 °F) with a relative humidity of 0 to 95% non-condensing. Refer to the product catalog for further details on enclosures. All XGA devices and options operate normally without reduction in performance when subjected to shock and vibrations described in IEC 60721-3-3, Class 3M4.

Audible Noise

The device background noise is negligible and does not restrict the location of the installation.

Mounting

The device is designed to be surface or flush mounted. Refer to the device submittal drawings or the product catalog for typical mounting dimensions and weight. Install the XGA TVSS device in a restricted access area.

Service Clearance

The service clearance should meet all applicable code requirements.

Equipment Performance

To obtain the maximum system performance, locate the device as close to the circuit being protected as possible to minimize the interconnecting wiring length. For every foot of wire length, approximately 175 volts (6 kV / 3 kA, 8/20 microsecond) is added to the suppressed voltage. The suppressed voltage rating is located on the device nameplate and is measured 6 inches from the device terminals, according to UL® 1449.



ELECTRICAL

Voltage Rating

Prior to mounting the TVSS device, verify that the device has the same voltage rating as the power distribution system in which it is installed by comparing the nameplate voltage or model number on the TVSS with the nameplate of the electrical distribution equipment.

The specifier or user of the device should be familiar with the configuration and arrangement of the power distribution system in which any TVSS is to be installed. The system configuration of any power distribution system is based strictly on how the secondary windings of the transformer supplying the service entrance main or load are configured. This includes whether or not the transformer windings are referenced to earth via a grounding conductor. The system configuration is not based on how any specific load or equipment is connected to a particular power distribution system. See Table 1 for the service voltage of each TVSS.

Table 1: Voltage Ratings

Service Voltage	Peak Surge Current Rating Per Phase	Catalog Number ^[1]
120/240 V, 1 phase, 3 wire	120 kA	TVS1XGA12*_
	160 kA	TVS1XGA16*_
	240 kA	TVS1XGA24*_
208Y/120 V, 3 phase, 3-4 wire	120 kA	TVS2XGA12*_
	160 kA	TVS2XGA16*_
	240 kA	TVS2XGA24*_
240/120 V, 3 phase, 3-4 wire (high-leg delta)	120 kA	TVS3XGA12*_
	160 kA	TVS3XGA16*_
	240 kA	TVS3XGA24*_
480Y/277 V, 3 phase, 3-4 wire	120 kA	TVS4XGA12*_
	160 kA	TVS4XGA16*_
	240 kA	TVS4XGA24*_
600Y/347 V, 3 phase, 3-4 wire	120 kA	TVS8XGA12*_
	160 kA	TVS8XGA16*_
	240 kA	TVS8XGA24*_

^[1] * = enclosure option, _ = any other options

Terminals, Wire Size, and Installation Torque

Terminals are provided for phase (line), neutral, and equipment ground connections. The XGA terminals accept a range of #12 to #6 AWG (15 mm²) copper wire for phase, neutral, and ground connectors. Torque connections to 50 lb-in. (6 N•m) for devices without a circuit isolator and 15 lb-in. (2 N•m) for devices with a circuit isolator.

Disconnect Means

The use of fusible disconnects requires a fuse with a melting characteristic greater than the per phase (Clearing) I²t of the TVSS device to prevent nuisance operation of the disconnect fuses during a surge. (Refer to caution statement "LOSS OF BRANCH CIRCUIT POWER/LOSS OF SURGE PROTECTION" on page 2 for further information.)

⚠ WARNING

UNDERSIZED WIRING (USE ONLY CONDUCTORS RATED 30 A OR GREATER)

- The XGA series TVSS is designed for connection to a 30 A (or greater) circuit breaker.
- The circuit breaker is the intended disconnect means and provides short circuit protection to the connecting conductors.
- The circuit breaker maximum rating should not exceed the rating required to protect the connecting conductors.
- Use conductors rated 30 A (or greater) for the application.

Failure to follow these instructions can result in death or serious injury.

Circuit Isolator

⚠ DANGER

HAZARDOUS VOLTAGE

Do not operate the circuit isolator with power present.

Failure to follow this instruction will result in death or serious injury.

Location of TVSS

The internal circuit isolator is a mechanical means for qualified maintenance personnel to isolate the entire surge suppressor to service the device's components. The isolator opens the phase and neutral connections to the TVSS device.

Before operating the isolator, remove any voltage from the TVSS. After opening the isolator, power may be restored to the circuit; however, the circuit will not be protected from surges. Maintenance may now be performed on the MA modules and associated parts. Upon completion of repairs, power must once again be removed before closing the circuit isolator.

Install TVSS devices on the load side of the main overcurrent protection to comply with UL 1449. The TVSS may be installed on a separate breaker circuit or paralleled with an existing branch circuit provided that the requirements of the disconnecting means are met (see the "Disconnecting Means" section on page 7 and the caution statement "LOSS OF BRANCH CIRCUIT POWER/LOSS OF SURGE PROTECTION" on page 2).

Locate the TVSS device as close as possible to the circuit being protected to minimize the wire length and optimize TVSS performance. Avoid long wire runs so that the device will perform as intended. To reduce the impedance that the wire displays to surge currents, the phase, neutral, and ground conductors must be routed within the same conduit and tightly bundled or twisted together to optimize device performance. Avoid sharp bends in the conductors. See Figure 2.

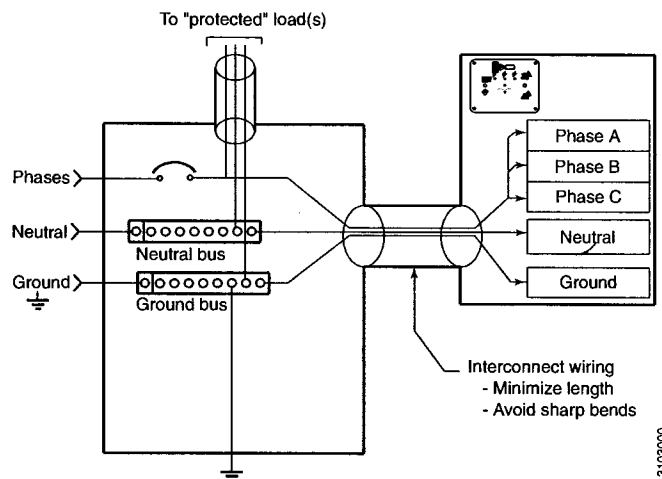


Figure 2: TVSS Wiring Practice

SYSTEM GROUNDING

CAUTION

LOSS OF SURGE PROTECTION

- Verify that the service entrance equipment is bonded to ground in accordance with all applicable codes.
- Verify that the neutral terminals are grounded to system ground in accordance with all applicable codes.

Failure to follow these instructions can result in equipment damage.

An equipment ground conductor must be used on all electrical circuits connected to the TVSS device. For the best performance, use a single-point



ground system where the service entrance grounding electrode system is connected to and bonded to all other available electrodes, building steel, metal water pipes, driven rods, etc. (for reference, see IEEE STD 142-1991). The ground impedance measurement of the electrical system should be as low as possible, and in compliance with all applicable codes, for sensitive electronics and computer systems.

When metallic raceway is used as an additional grounding conductor, an insulated grounding conductor should be run inside the raceway and sized in accordance with all applicable codes.

⚠ WARNING

INADEQUATE RACEWAY ELECTRICAL CONTINUITY

- Ground impedance must be as low as possible and in compliance with all applicable codes for sensitive electronic and computer systems.
- Install an insulated grounding conductor inside a metallic raceway when the raceway is used as an additional grounding conductor. Size the conductor in accordance with all applicable codes.
- Maintain adequate electrical continuity at all raceway connections.
- Do not use isolating bushings to interrupt a metallic raceway run.
- Do not use a separate isolated ground for the TVSS.
- Verify proper equipment connections to the grounding system.
- Verify ground grid continuity by inspections and testing as part of a comprehensive electrical maintenance program.

Failure to follow these instructions can result in death or serious injury.

INSTALLATION

⚠ DANGER

HAZARDOUS VOLTAGE

- This equipment must be installed and serviced only by qualified electrical personnel.
- This equipment must be effectively grounded per all applicable codes. Use an equipment-grounding conductor to connect this equipment to the power system ground.
- Disconnect all power supplying this equipment before working on or inside it.
- Always use a properly rated voltage sensing device to confirm power is off.
- Replace the barrier and the door/cover before energizing.

Failure to follow these instructions will result in death or serious injury.

Conduit Location and Recommendations

The recommended conduit entry is at the bottom of the device enclosure. Use a conduit seal that is appropriate for the enclosure rating.

Activating the Surge Counter Battery

For devices with the optional surge counter (see page 16), remove the insulating tab from the battery socket to activate the battery. In the event of a power loss to the TVSS device, the battery will continue to power the surge counter.

Special Enclosure Considerations

Removing and Reconnecting the Ribbon Cables

The ribbon cables are marked with matching phase connections. If any of the cables are removed, reconnect the cables as marked.

NEMA Type 4X Enclosure

The NEMA Type 4X enclosure is shipped with its mounting brackets and installation screws packaged inside it. Use the enclosed 1/4-20 x 1/2 in. slotted screws to secure the brackets to the enclosure before installing the XGA TVSS device. Torque these screws to a maximum of 50 lb-in. (6 N•m). When installing the cover for the NEMA Type 4X enclosure, torque the cover screws to a maximum of 25 lb-in. (3 N•m).

Remove the display panel and barrier before making any electrical connections. Replace the barrier and display panel before energizing the device.

The XGA TVSS device is approximately 5.25 in. (133 mm) deep. The TVSS will not flush mount unless there is at least 5.25 in. (133 mm) of clearance. The XGA TVSS is not designed to flush mount on a typical 2 x 4 stud wall.

Follow steps 1-5 to flush mount the TVSS device.

1. Before removing the trim, disconnect the ribbon cables and ground wire from the modules.
2. Mount the device as close as possible to the panel being protected. Create a wall opening slightly larger than 12 in. high by 12 in. wide (305 mm high by 305 mm wide). See Figure 3.
3. Install a backing plate inside the wall cavity 5.25 in. (133 mm) from the wall face such that the TVSS device will be supported from its back. See Figure 4. Note the mounting holes on the back of the enclosure. Also note that the TVSS device weighs 35 lb (16 kg) maximum.
4. Configure the electrical conductor and conduit connections consistent with the wiring instructions beginning on page 11.
5. Carefully reattach the ribbon cables and the ground wire to the modules and reattach the display panel/cover before energizing and testing the device.

Optional Flush Mounting

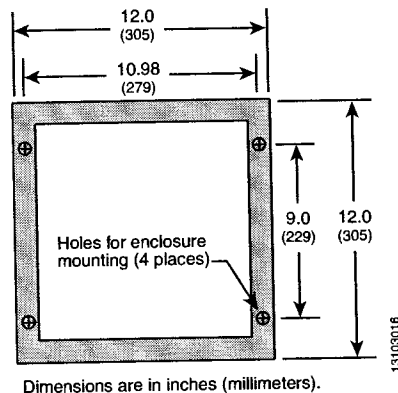


Figure 3: Wall Opening Dimensions

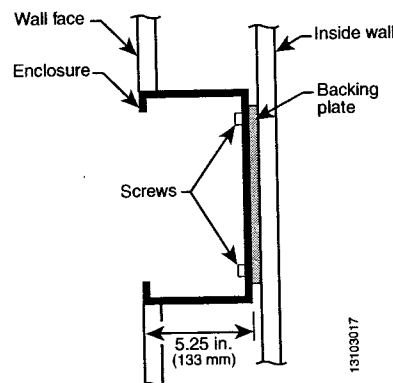


Figure 4: Flush Mounting the TVSS Device



WIRING

DANGER

HAZARDOUS VOLTAGE

- This equipment must be installed and serviced only by qualified electrical personnel.
- This equipment must be effectively grounded per all applicable codes. Use an equipment-grounding conductor to connect this equipment to the power system ground.
- Disconnect all power supplying this equipment before working on or inside it.
- Always use a properly rated voltage sensing device to confirm power is off.
- Replace the barrier and the door/cover before energizing.

Failure to follow these instructions will result in death or serious injury.

Follow steps 1–5 to make wiring connections.

1. Use an AC voltmeter to check all voltages and ensure that normal operating voltages of the power system match the voltage rating on the TVSS device nameplate.
2. Mount the device as close as possible to the equipment being protected.
3. Disconnect all power supplying the equipment before working on or inside it.
4. Connect the device to the equipment using an approved wiring method. The connecting wires should be twisted together and kept as short as possible to enhance the performance of the device. See page 7 for the recommended wire size and installation torque. For the steps below, see the appropriate figure as listed in Table 2.
 - a. Connect the wire to the ground bus of the distribution panel and to the ground connection of the TVSS device.
 - b. Connect the wire to the NEUTRAL bus of the panel and to the NEUTRAL connection of the TVSS device.
 - c. Be sure the circuit breaker is open (OFF) prior to making any connections of any kind. If a circuit breaker or circuit breaker space is not available, connect to an existing circuit breaker by using a circuit isolator. Circuit isolators are available from Square D as an option. Be sure the circuit isolator is open (OFF) and the circuit is de-energized before making any connections. Connect a wire (in conduit) to each phase (HOT) terminal on the LOAD side of a circuit breaker. Refer to the appropriate figure as listed in Table 2 as well as the markings on the device when connecting the phase, neutral, and ground conductors. Fuses are not recommended for protection unless the fuses are specifically designed for use in a TVSS application.
5. After all connections have been made, reinstall any barriers that have been removed, close the door or replace the cover, and restore power to the equipment as required. If the TVSS device is properly installed and functioning, the green LED indicators on the display will be lit.

NOTE: On a high-leg delta installation, the high-leg of the power system must be connected to phase B of the TVSS.

If you have any questions pertaining to the installation, contact your Square D representative.

NOTE: Always install the TVSS on the LOAD side of the main disconnect.

Table 2: Wiring Diagram Location

Wiring for	Figure and Page
Single-phase, 3-wire, grounded installation	Figure 5 on page 12
Single-phase, 3-wire, grounded installation with circuit isolator	Figure 8 on page 13
Three-phase, 3- or 4-wire, grounded wye installation	Figure 6 on page 12
Three-phase, 3- or 4-wire, grounded wye installation with circuit isolator	Figure 9 on page 14
Three-phase, 3- or 4-wire, high-leg delta installation	Figure 7 on page 13
Three-phase, 3- or 4-wire, high-leg delta installation with circuit isolator	Figure 10 on page 14

Wiring Diagrams without Circuit Isolator

ENGLISH

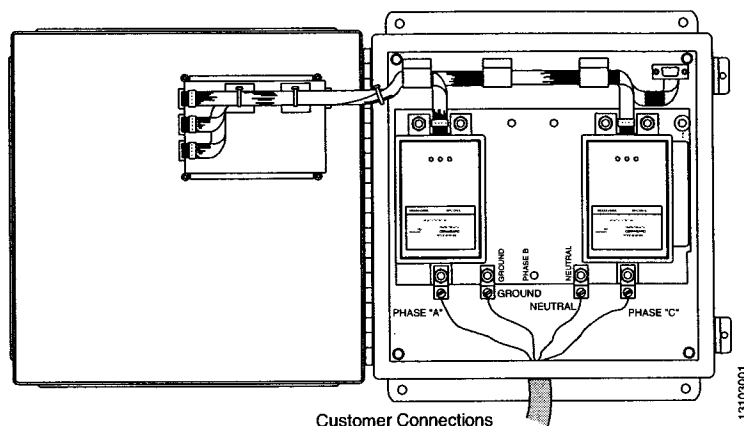
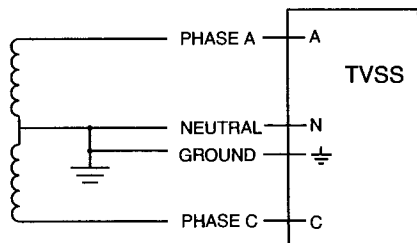


Figure 5: Single-Phase, 3-Wire, Grounded Installation

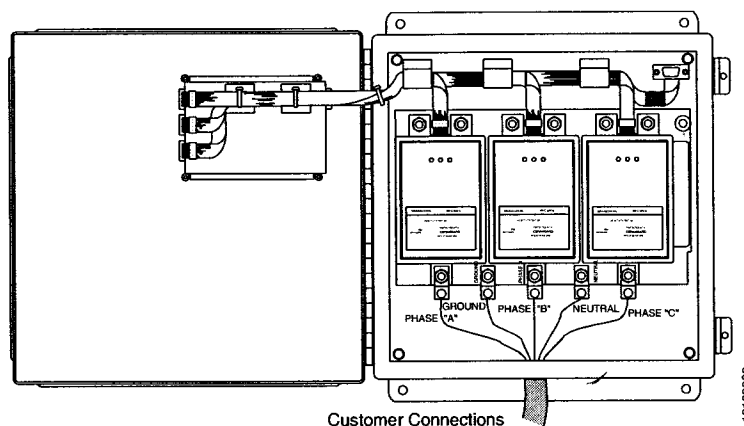
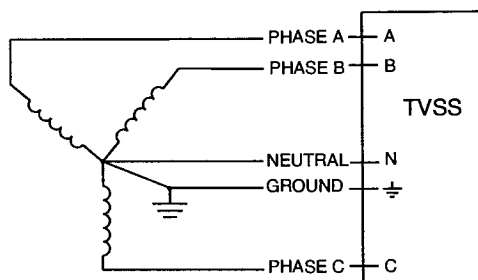


Figure 6: Three-Phase, 3- or 4-Wire, Grounded Wye Installation

NOTE: The neutral conductor is not present on 3-wire, grounded neutral power systems. For these systems, leave neutral terminal of TVSS unconnected.

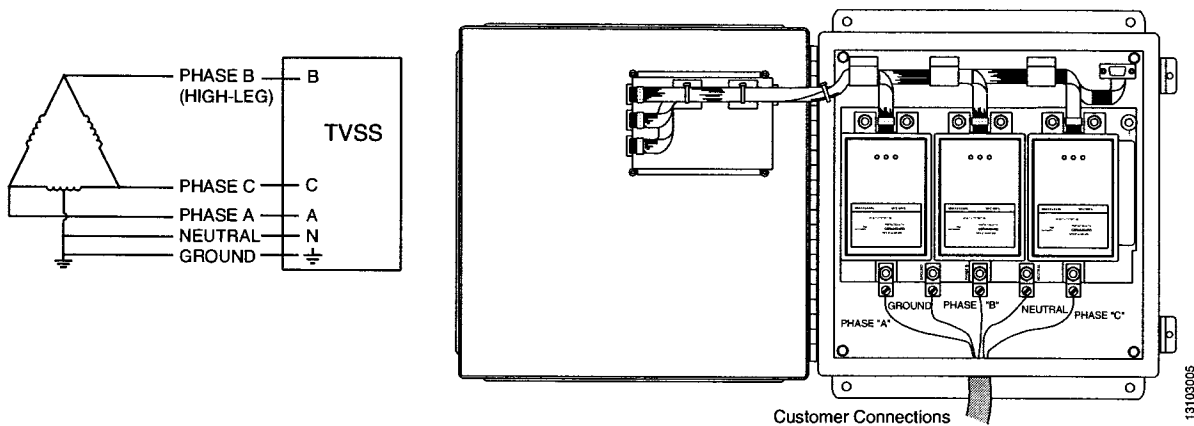


Figure 7: Three-Phase, 3- or 4-Wire, High-Leg Delta Installation

NOTES: The high-leg of the power system must connect to phase B of the TVSS. The neutral conductor is not present on 3-wire, grounded neutral power systems. For these systems, leave neutral terminal of TVSS unconnected.

Wiring Diagrams with Circuit Isolator

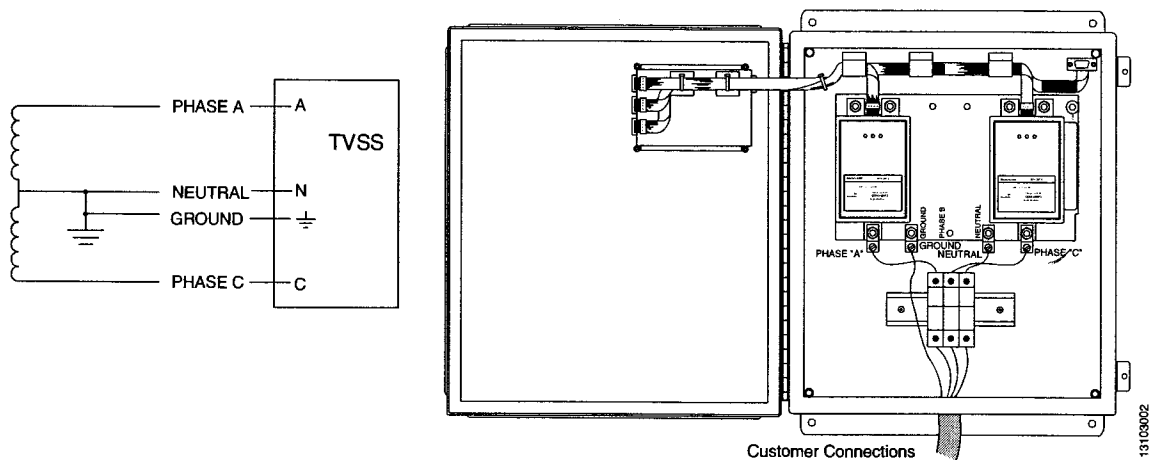


Figure 8: Single-Phase, 3-Wire, Grounded Installation with Circuit Isolator

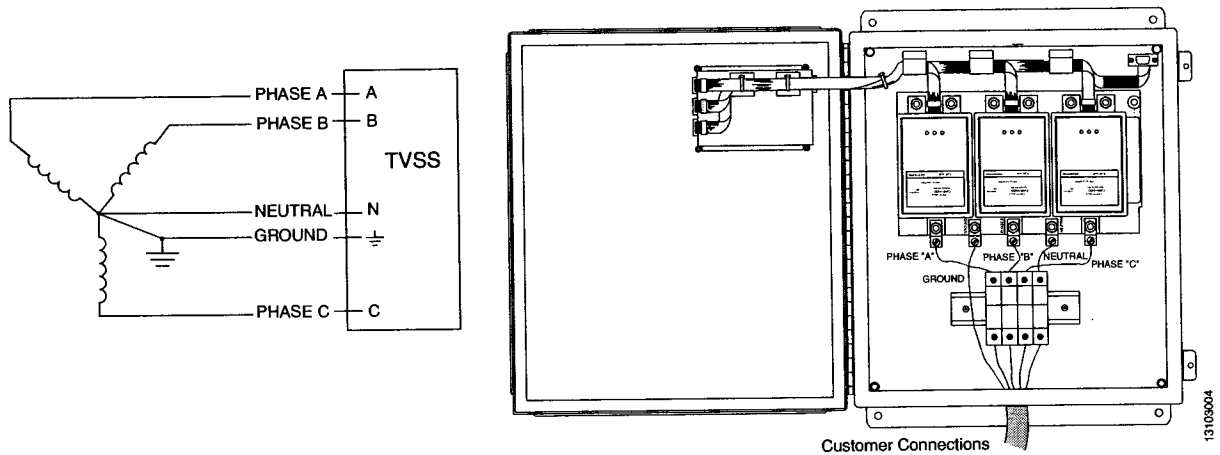


Figure 9: Three-Phase, 3- or 4-Wire, Grounded Wye Installation with Circuit Isolator

NOTE: The neutral conductor is not present on 3-wire, grounded neutral power systems. For these systems, leave neutral terminal of TVSS unconnected.

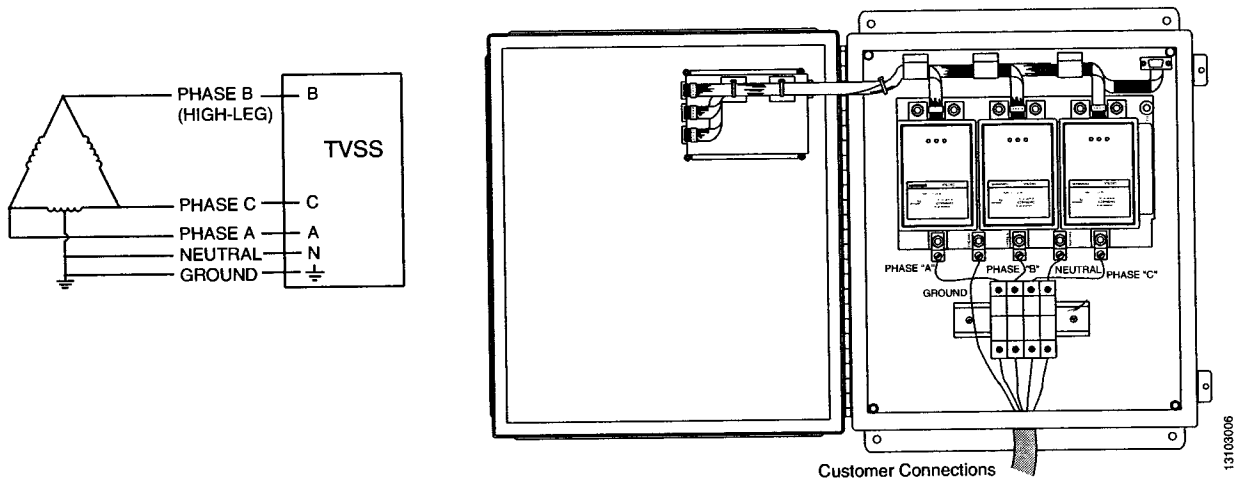


Figure 10: Three-Phase, 3- or 4-Wire, High-Leg Delta Installation with Circuit Isolator

NOTES: The high-leg of the power system must connect to phase B of the TVSS. The neutral conductor is not present on 3-wire, grounded neutral power systems. For these systems, leave neutral terminal of TVSS unconnected.



OPERATION

LED Status Indicators

⚠ DANGER

HAZARDOUS VOLTAGE

- This equipment must be installed and serviced only by qualified electrical personnel.
- This equipment must be effectively grounded per all applicable codes. Use an equipment-grounding conductor to connect this equipment to the power system ground.
- Disconnect all power supplying this equipment before working on or inside it.
- Always use a properly rated voltage sensing device to confirm power is off.
- Replace the barrier and the door/cover before energizing.

Failure to follow these instructions will result in death or serious injury.

E
N
G
L
I
S
H

LEDs and controls are located on the display panel of the XGA TVSS device (see Figures 12 and 13), and LEDs are also located on the MA modules. When the status is normal, all three phase LEDs on the display panel are green. When the center green LED on each of the MA modules is lit, the module is on line and energized.

If an inoperative condition occurs, the audible alarm sounds and the red SERVICE LED on the display becomes illuminated, indicating the device needs service by qualified electrical personnel. The audible alarm can be silenced until a qualified person is able to evaluate and service the TVSS device by setting the display panel alarm switch to the DISABLE position. The red SERVICE LED will continue to be illuminated until the inoperative condition has been cleared. Open the door to access the display panel to silence the alarm on NEMA Type 3R/12, 4, and 4X enclosures.

On an MA module (see Figure 11), the left red LED, when lit, indicates a loss of surge suppression from line-to-ground for that phase. The right red LED, when lit, indicates loss of surge suppression from line-to-neutral for that phase. If both red LEDs are lit and the green LED is not lit, power has been lost to that phase. (This only occurs if the MA module is connected to the display panel and the display panel has power.) The TVSS display panel also shows the status of each MA module with diagnostically controlled green/amber/red LEDs. Any phase LED on the display panel that is amber indicates reduced surge suppression for that phase. Any phase LED that is red indicates a loss of power or surge suppression for that phase.

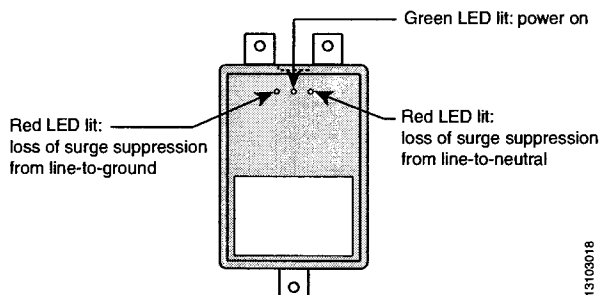


Figure 11: MA Module LEDs

13103018

Audible Alarm

When power is applied to the TVSS device and the display LEDs indicate a loss of surge capacity, the MA module should be replaced. Refer to "Maintenance and Troubleshooting" on page 18 for proper troubleshooting procedures.

If the display panel does not have the surge counter option, push the alarm button on the left of the display panel to momentarily sound the alarm. Toggle the alarm switch on the right side of the display panel to enable and disable the alarm.

If the display panel has the surge counter option, set the alarm switch on the left side of the display panel to the up, or TEST, position to momentarily sound the alarm. Disable the alarm by setting the alarm switch to the center, or DISABLE, position. Enable the alarm by setting the alarm switch to the down, or ENABLE, position.

Surge Counter Option

The optional surge counter displays the number of transient voltage surges since the counter was last reset. The counter is battery powered to retain memory in the event of a power loss to the XGA module.

Test the surge counter by moving the RESET/TEST toggle switch located on the right side of the display panel to the down, or TEST, position. The surge counter advances by one. The switch will automatically return to the center, or ON, position. Reset the surge counter to zero by moving the switch to the up, or RESET, position. The switch will automatically return to the center, or ON, position.

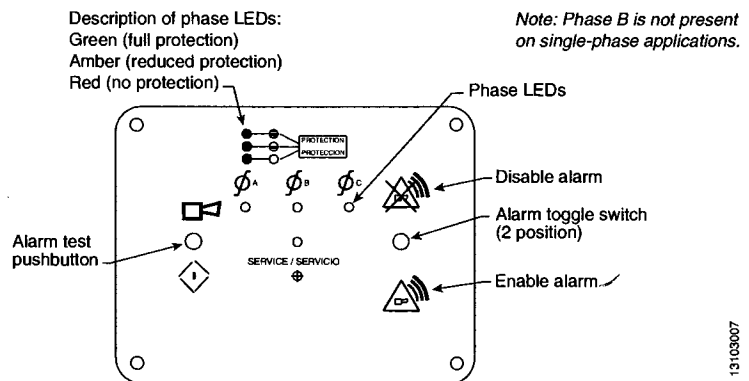


Figure 12: Three-Phase Display Panel without Surge Counter Option

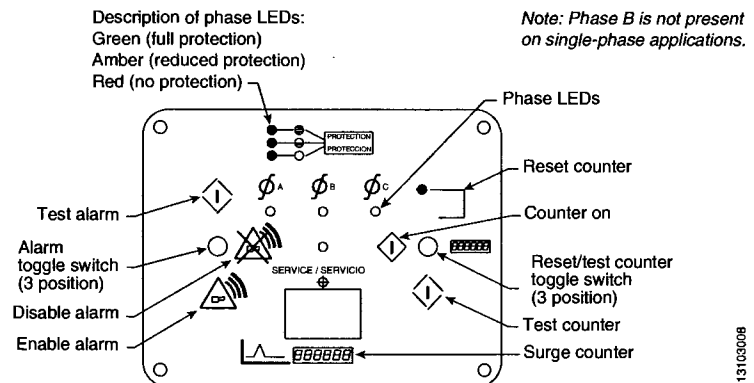


Figure 13: Three-Phase Display Panel with Surge Counter Option



Remote Monitor Option

The optional remote monitor provides TVSS status up to 1000 feet away from the device. When the remote monitor option is ordered, the dry contacts option is not available.

The option has up to three dual color (red/green) LEDs and a built-in audible alarm. If protection on any part of a phase is lost, all of the green LEDs turn red and an alarm sounds. Normal status is all green LEDs and no audible alarms. The remote monitor includes a 120 Vac to 9 Vdc adapter with a six-foot power cord. If an alarm condition occurs, the device can be silenced by unplugging the external power source. After service is complete, return power to the remote monitor. Connections are made with DB-9 connectors (provided) and the appropriate length of 26 gauge 9-conductor cable (not provided).

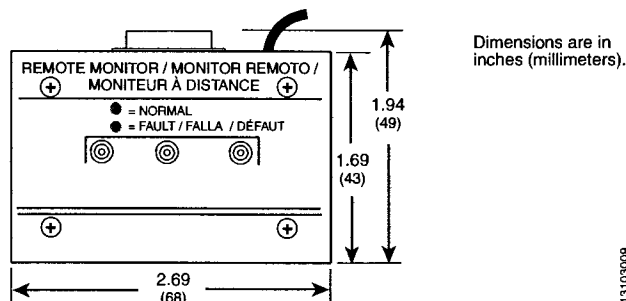


Figure 14: Remote Monitor Option

Dry Contacts Option

The XGA series TVSS device is available with optional dry contacts. The connection for the dry contacts option is located in the upper right hand corner above the phase C MA module. This option provides 2 normally-open and 2 normally-closed relay contacts through a DB-9 connector. These contacts can be used for remote indication of the TVSS device's operating status to a computer interface board or emergency management system, for example.

NOTE: The dry contacts option is not available if the remote monitor option is ordered.

The contacts are designed for low voltage or control signals only. Maximum voltage is 24 Vac or 24 Vdc and maximum current is 1 A. Higher energy applications may require additional relay implementation outside the TVSS. Damage to the TVSS device's relay caused by use with energy levels in excess of those discussed in this instruction bulletin are not covered by warranty. For application questions, contact your Square D representative.

Table 3: DB-9 Connector Pin Configuration ▲

Pin Numbers	Contact Type
1	Normally closed 1
2	Common 1
3	Normally open 1
4, 7	Normally closed 2
5, 8	Common 2
6, 9	Normally open 2

▲ Pin pairs 4 and 7, 5 and 8, and 6 and 9 are connected internally. The combined current of each pin pair may not exceed 1 A.

MAINTENANCE AND TROUBLESHOOTING

ENGLISH

⚠ DANGER

HAZARDOUS VOLTAGE

- This equipment must be installed and serviced only by qualified electrical personnel.
- This equipment must be effectively grounded per all applicable codes. Use an equipment-grounding conductor to connect this equipment to the power system ground.
- Disconnect all power supplying this equipment before working on or inside it.
- Always use a properly rated voltage sensing device to confirm power is off.
- Replace the barrier and the door/cover before energizing.

Failure to follow these instructions will result in death or serious injury.

Preventive Maintenance

Inspect the TVSS device periodically to maintain reliable system performance and continued transient voltage surge protection. Periodically check the state of the display LED status indicators. Routinely use the built-in diagnostics to inspect for inoperative modules.

Troubleshooting

Refer to Figure 15 below for troubleshooting procedures.

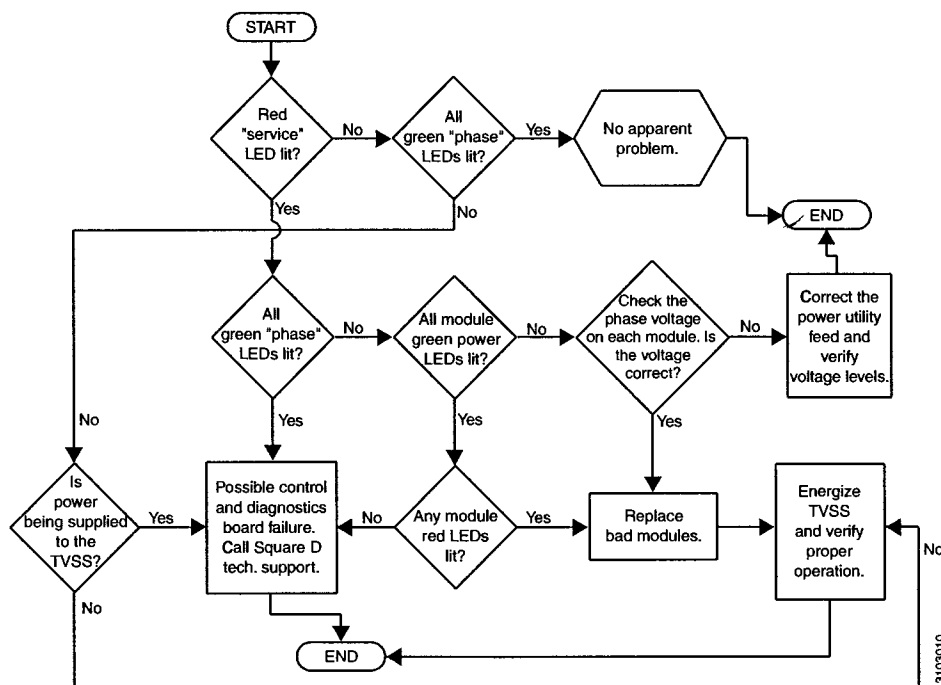


Figure 15: Troubleshooting Flowchart

Replacement Parts

The following replacement parts are available. For ordering information refer to the product catalog.

- MA modules. Replacement instructions are included with the replacement parts.
- 3 Vdc lithium battery, Panasonic part number CR2032 or equivalent. See replacement instructions below.

Replacing the Lithium Battery

⚠ CAUTION

FIRE OR CHEMICAL HAZARD

The lithium batteries used in this device may present a risk of fire or chemical burn if not handled properly.

- Do not recharge, disassemble, heat above 100 °C (212 °F), or incinerate.
- Replace batteries with Panasonic CR2032 only. Use of another battery may present a risk of fire or explosion.

Failure to follow these instructions can result in injury or equipment damage.

1. Disassemble the device to expose the back of the display.
2. Lift the clip and remove all batteries.
3. Install the new batteries. The positive side must touch the clip.
4. Reassemble the device.
5. Properly dispose of the used batteries. Keep them away from children. Do not disassemble the batteries and do not dispose of them in fire.

XGA Modular Transient Voltage Surge Suppressor (TVSS)

E
N
G
L
I
S
H

Square D Company
8001 Highway 64 East
Knightdale, NC 27545
1-888-Square D
(1-888-778-2733)
www.SquareD.com

Electrical equipment should be serviced only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material. This document is not intended as an instruction manual for untrained persons.

Bulletin No. 30072-013-90B 9/01 Replaces 30072-013-90A dated 12/00.
© 1999–2001 Schneider Electric All Rights Reserved.