

**Installation Instruction for
Three Phase Wye configured,
5-wire suppressors with Internal Fusing
(three phases, neutral and ground)**

WARNING - HAZARDOUS VOLTAGES ARE PRESENT. Improper installation may result in serious injury to the installer and/or damage to the electrical system or related equipment. Read all instructions before beginning the installation. Safety equipment must be used as prescribed by OSHA, whenever working around hazardous voltages.

Failure of unit and/or consequential equipment damage due to improper installation or misapplication is not covered by the product warranty.

Voltage measurements and **installation must be completed by a licensed/qualified electrician** in accordance with the National Electric Code, State, and Local codes. The National Electric Code, State and Local Code requirements supersede this instruction.

POWER MUST BE REMOVED FROM THE ELECTRICAL SYSTEM BEFORE INSTALLING THE UNIT.

INSTALLATION MATERIALS REQUIRED

The following is a list of materials that may be needed for proper installation of this surge suppression device. This list is intended to help the installer anticipate materials needed for a successful installation. The installer should become familiar with the scope of work to avoid lost time and improper installation. Failure to use fittings that are UL Listed will void the UL Listing and the Manufacturers warranty.

- Power Wire: 18-24 inches of #10 AWG / TEW stranded wire is provided with non-lug type models.
- Attachment Hardware: For plaster and sheet rock: Use (four ea.) TEK screws or screws & anchor toggle bolts, flat washers and lock washers. For Wood: sheet metal screws, flat washers and lock washers.
- ¾" Meyers Hub (included with most units).
- Conduit: Use ¾" offset nipple.
- Tools: Drill & bits, conduit knockouts, Channel Locks, Torpedo Level, Screwdrivers, Appropriate Safety Equipment.

WIRING DIAGRAM

This device is suitable for use on a circuit capable of delivering not more than 200,000 RMS symmetrical Amperes, for the respective models' (max.) nominal voltage shown in the Table on pg.: 2.

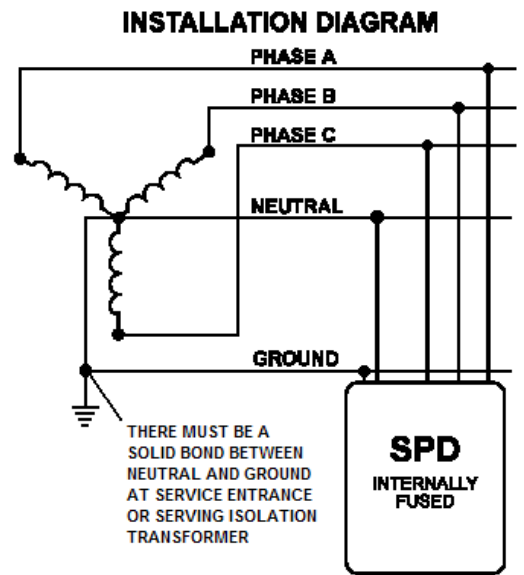
These TVSS devices are equipped with integral fuses. This allows the device to be installed directly to the system bus bars, to the main lugs in a panel or disconnect, or to a high ampacity circuit breaker. Consult NEC, State and Local Codes to assure compliance[†].

In the event that one or more of the integral fuses should operate, the entire device should be returned for warranty replacement. If service of the device is a consideration (ie: removal and replacement), and there is no means to remove power from the TVSS device without removing power from the entire system, the installer may consider incorporating a disconnect device between the TVSS unit and the system connecting point.

The design of these units provides superior protection for sensitive/critical equipment connected to distribution panels, sub-distribution panels or individual equipment disconnects. These units are designed for use at IEEE C62.41 Location Categories A, B, and C. Fixed Clamping type units are designed to be used in 50 to 420 Hz applications. Sinewave tracking units are designed to be used in 50 to 60 Hz applications and should not be used at locations where the voltage-frequency fluctuates (i.e.: variable frequency drives).

When inspecting the panel for installation, make a visual check that there are no Neutral to Ground bonds that violate the NEC.

[†][ex.: NEC '10-foot tap rule' for direct bus tapping].



NOTE FOR ISOLATED GROUND (Metal Enclosures Only)

The Ground wire from the fused unit is bonded to the enclosure internally. If the system utilizes an isolated ground, the fused unit enclosure must be isolated from the panel or load it is being connected to through the use of an insulated conduit fitting or other "Listed" fitting. In this installation, the green ground wire from the fused unit must terminate at the isolated ground bus.

BEFORE INSTALLATION

For proper performance, the fused units must be installed with the shortest lead length possible. Sharp bends should be avoided.

No position-oriented components are used in the units. Devices can be mounted upside down or sideways allowing for shortest possible lead lengths.

Table of Maximum Suggested Operating Voltages and Model Wire Colors

3-Phase WYE Nominal System Voltage	3Yx Model Voltage Code	Phase To Neutral	Phase To Phase	Phase To Ground	*Neutral To Ground	Phase A	Phase B	Phase C	Neutral	Ground
120/208	3Y1	132 V	264 V	132 V	< 132 V	Black	Black	Black	White	Green
220/380	3Y22	242 V	418 V	242 V	< 242 V	Black	Black	Black	White	Green
230/400	3Y23	253 V	440 V	253 V	< 253 V	Black	Black	Black	White	Green
240/415	3Y24	264 V	457 V	264 V	< 264 V	Black	Black	Black	White	Green
255/440	3Y25	281 V	484 V	281 V	< 281 V	Black	Black	Black	White	Green
277/480	3Y2	305 V	528 V	305 V	< 305 V	Black	Black	Black	White	Green
347/600	3Y3	382 V	660 V	382 V	< 382 V	Black	Black	Black	White	Green

*NOTE: If Neutral to Ground voltage is greater than 5 VAC, a problem may exist in the electrical system. The fused unit may be installed; however, a qualified electrician or Power Quality Engineer should be consulted to correct the problem. The (N-G) voltage listed above is a requirement by UL. (Other WYE Model Voltage/Configurations available upon special order or request- Contact SSI for specific details.)

INSTALLATION STEPS

STEP 1: Check Voltages

- Confirm that the nominal system voltage does not exceed the maximum suggested operating voltage for the model to be installed according to the Table above. All voltage measurements should be completed with a RMS voltmeter. **DO NOT INSTALL THE FUSED UNIT IF THE MEASURED VOLTAGE EXCEEDS THE MAXIMUM SUGGESTED OPERATING VOLTAGE OF THE DEVICE.**

CAUTION: Do not proceed further until power has been removed from the electrical system.

STEP 2: Mounting the Unit

Non-lug type models are provided with 18-24 inches of #10 AWG / TEW Stranded wire or a power terminal block. For best performance, mount the unit so that all wires can be cut and connected in the shortest and most direct path possible. For every inch of conductor added to the installation, you increase the let-through voltage of the surge suppressor by about 10 volts for an ANSI/IEEE Category B3/C1 impulse.

- Visually determine the minimum lead length (shortest wire length) from the system bus to the casing of the device. No sharp bends should be made in the installation. If bends are unavoidable, make them smooth and flowing. ALL CONDUCTORS should be routed & connected in a manner keeping them as short, straight and of similar (symmetrical) lengths as possible. This includes both NEUTRALS AND GROUNDS.
- If the Myers Hub is not pre-installed, punch or drill a 3/4" hole through unit enclosure to ensure shortest wire leads. Be careful not to disturb or damage internal components or encapsulant, and to remove any metal shavings from the inside of the unit. Mount the 3/4" Myers Hub to the unit.
- Mechanically mount the unit. Use an offset nipple so that it can be rotated and line up with concentric knockouts or installer penetrations on the panel, keeping the suppressor flush to the wall. Secure the suppressor with screws, using the mounting feet of the enclosure.

STEP 3: Connecting "Form C" Dry Relay Contacts (Contact Optioned Models Only)

- Make sure power is removed from surge suppressor.
- Open surge suppressor lid and note encapsulant height prior to drilling or punching enclosure. (Allow internal clearance for locknuts).
- Drill 0.5" diameter clearance hole through side, top or bottom of unit and install a watertight strain relief (i.e.: Altech #225-A00).
- **NOTE:** Surge suppressor is equipped with two sets of contacts. The first set (labeled 1 & 2, N/O) is normally open and the other set (labeled 3 & 4, N/C) is normally closed with power applied. The DRC terminal header block is located on the inside of the suppressor cover lid.
- Contacts are rated at 60 W (from 30VDC @ 2A to 150VDC @ 0.4A) or 100 VA (from 50VAC @ 2A to 220VAC @ 0.45A).
- Alarm contacts accept AWG #26 (0.14mm²) to AWG #16 (1.5mm²) wire. Wire size must be in compliance with NEC, State or Local codes for power on circuit. Follow rules for the class of wiring used when routing alarm leads. To maintain NEMA-4 (IP66) rating use appropriate cable and watertight strain relief.
- Connect alarm circuit(s) to Normally Open (N/O) or Normally Closed (N/C) terminals as needed & the alarm contact wires to alarm control panel.

STEP 4: Wire the Suppressor into the Electrical System

- Carefully layout the wires keeping them as short and straight as possible. (Wires may be slow-twisted together thereby reducing RF-impedance.) After a satisfactory layout has been made to the appropriate termination points as described below, cut the wires and connect them as instructed.
- Connect the GREEN ground wire from/to the surge suppressor to the system Ground bus bar. *Refer to earlier sections for systems utilizing an isolated ground.* Connect the WHITE neutral wire from/to the surge suppressor to the system Neutral bus bar.
- Connect the power wires or "hot" wires (see table above for wire colors) from/to the surge suppressor to the Phase conductors or buses of the electrical systems through any required circuit interrupts (fuses or breakers) described above. Note that the units have internal fusing and do not require external circuit interrupts (external fuses or breakers). They may be directly connected to the phase conductors or busses after the main disconnect. (Disconnect optioned models are provided with power lead terminal blocks instead of wires.)
- Upon replacing front cover of suppressor, certain models allow various lid rotations (90° to 180°) for improved label orientation. (model specific)

Before energizing, measure the voltage again to insure it is within the levels in the table above. Immediate failure of the surge suppressor will occur if installed on voltages higher than these.

STEP 5: Apply Power to the Surge Suppressor

- Indicator LEDs should be illuminated. If not, remove power to the suppressor and contact us at 817.483.8497 or your local distributor.