

Installation Manual

APEX Series

Silicon and MOV Panel Protection



APEX Series

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Table of Contents

Mechanical Installation	3
Table One - Application Rating	3
Figure 1 - Mounting Details	4
Electrical Installation	5
Figure 2 - 120T Configuration	5
Figure 3 - 120S Configuration	5
Figure 4 - 240S Configuration	6
Figure 5 - 120W, 240W Configuration	6
Figure 6 - 240D Configuration	6
Figure 7 - Card Installation	9

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WARNING: Wiring conductors utilized to attach Phases L1, L2, L3, the Neutral and Safety Ground from the AC power source to the APEX Series should be color-coded to conform with appropriate electrical codes and/or accepted wiring practices. It is very important to make no assumptions that wiring colors on existing electrical installations correspond to proper phase, neutral, or ground connections.

WARNING: The disconnect utilized in the current path from the electrical distribution and the APEX Series must be coordinated to operate properly in conjunction with all other disconnects contained within the same electrical distribution.

WARNING: Proper electrical connections must be accomplished in accordance with applicable International, National, and/or Local electrical code requirements.

APEX Series Installation

The APEX Series surge suppressor models are designed specifically to operate on the following configurations:

Configurations	
120V 1Ø	240V 3Ø Delta
120/240Split1Ø	220/3803ØWye
120/2083ØWye	230/4003ØWye
240V 1Ø	240/415 3ØWye

Suppression is accomplished in parallel between phase conductors and/or between phase and the neutral conductors, depending upon the voltage configuration. Once activated, the suppressor remains operative until excess transient energy is dissipated and instantaneous peak line voltage falls below the approximate 120% overvoltage threshold. At that time the suppressor automatically deactivates, resets to a “ready” state, and awaits further transient activity.

Please take a moment to read and understand the installation instructions included with this product. If any questions should arise concerning the proper installation of this product, please contact us.

Mechanical Installation

Step 1:

Select a location along the electrical distribution system as physically close to critical equipment loads as practical to install the surge suppressor. The suppressor can be installed at distribution panels, at equipment AC power inputs, or at the secondary windings of isolation transformers. The suppressor must be positioned within four (4) feet (122 cm) of the AC power source. It is recommended that the suppressor be installed within two (2) feet (61 cm) of the AC power source, if possible.

CAUTION: Increasing electrical impedance values to the inputs of any transient suppressor, regardless of manufacturer, can increase the device’s voltage limiting levels. Suppressors should be installed as physically close to the protected electrical distribution panel or critical load as possible using the largest size wiring/conductors as practical.

Step 2:

Verify that the maximum current rating of the electrical service to be protected does not exceed specified amperage rating of the suppressor model to be installed.

Table One: Application Rating

APEX II	225 Amps and below
APEX III	400 Amps and below
APEX IV	1000Amps and below

CAUTION: Transtector's Applications Engineering Department must be contacted prior to installing the APEX Series suppressor when the maximum current rating of the electrical service to be protected exceeds the specified amperage rating of the surge suppressor.

Step 3:

Unpack the surge suppressor from its shipping container and visually inspect for shipping related damage. Open the suppressor door and verify that all components, lights, displays, and electrical connections are secure.

Step 4:

Refer to the APEX Series enclosure diagram (Figure 1). Note the suggested locations on either the bottom or the left side of the suppressor enclosure to drill holes to route conduit from the AC power source to the suppressor assembly. Apertures intended to provide a path for AC wiring conductors can be bored anywhere into the suppressor enclosure as long as suppression components are not damaged or obstructed in the process.

Step 5:

Refer to the mounting illustration (Figure 1) for the APEX Series suppressor. Drill four (4) mounting holes anywhere on the mounting surface. Insure mounting holes are spaced 8" (20.38 cm) apart from each other horizontally and are separated 13" (33 cm) vertically.

Step 6:

Physically position the surge suppressor as close as possible to the AC power source and securely mount it to any surface capable of permanently supporting 20 pounds (9.1 Kg) of weight. (Mounting hardware is not included).

WARNING: Serious and/or fatal electrical shock hazards exist if extreme care is not exercised during all phases of mechanical and electrical installation procedures.

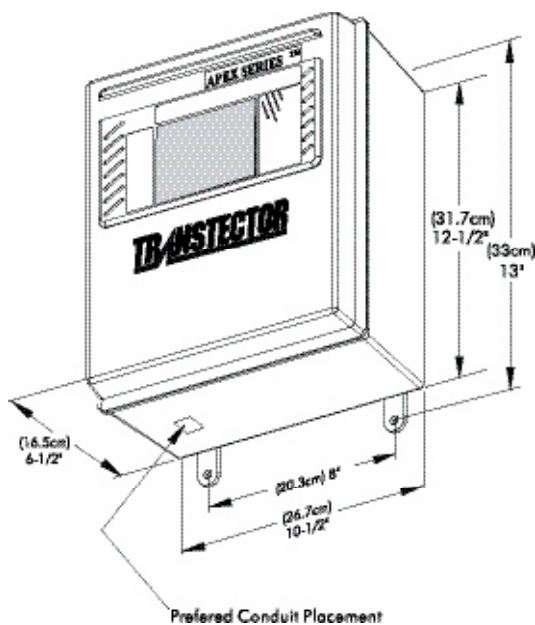


Figure 1 - Mounting Details

Electrical Installation

NOTE: These instructions are intended to guide the equipment installer through a step-by-step procedure resulting with the surge suppressor being electrically connected in parallel with its AC power source.

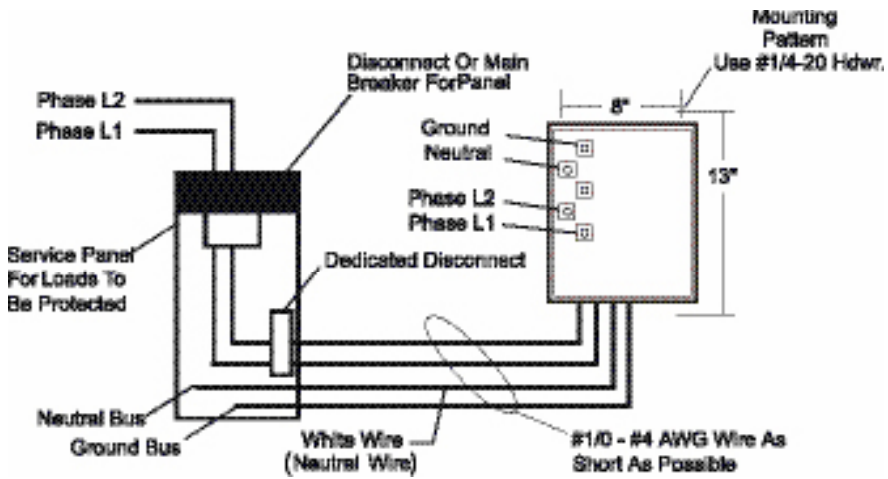


Figure 2 - 120T configuration - typical installation consists of two phase conductors with one neutral

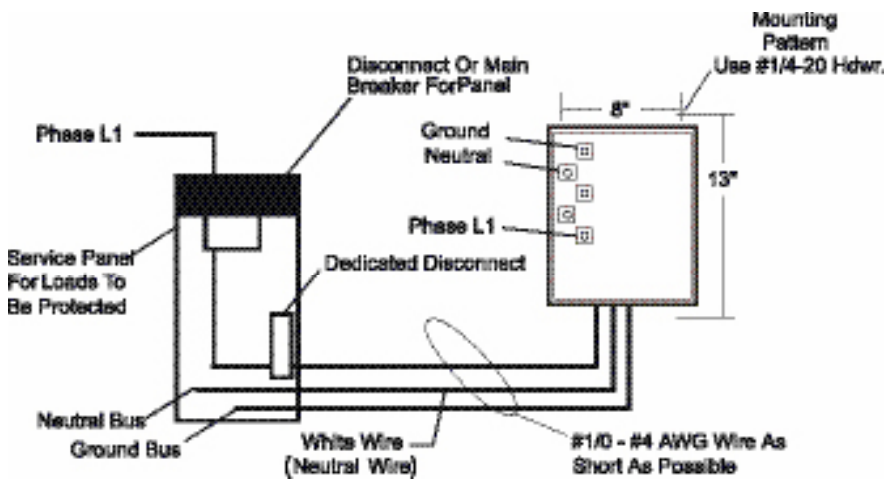


Figure 3 - 120S configuration - typical installation consists of one phase conductor with one neutral

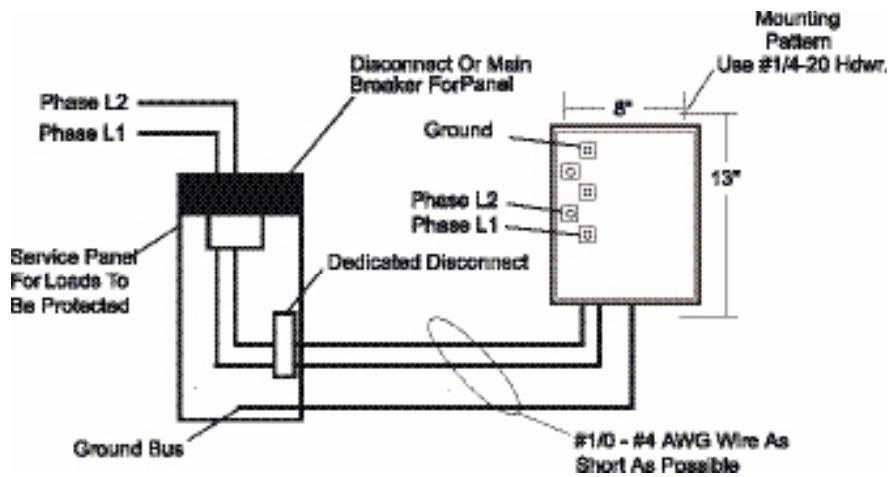


Figure 4 - 240S configuration - typical Installation consists of two phase conductors with no neutral
 NOTE: Phase L, or Phase L2 can be substituted for neutral in international applications.

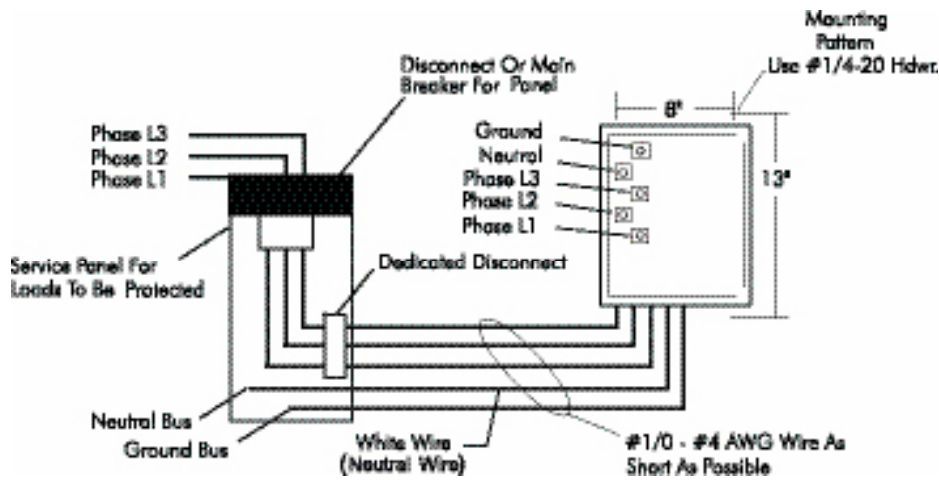


Figure 5 - 120W, 240W configuration - international installation consists of voltages ranging from 380 to 415 between phase conductors; and ranging from 220 to 240 between phase conductors and neutral

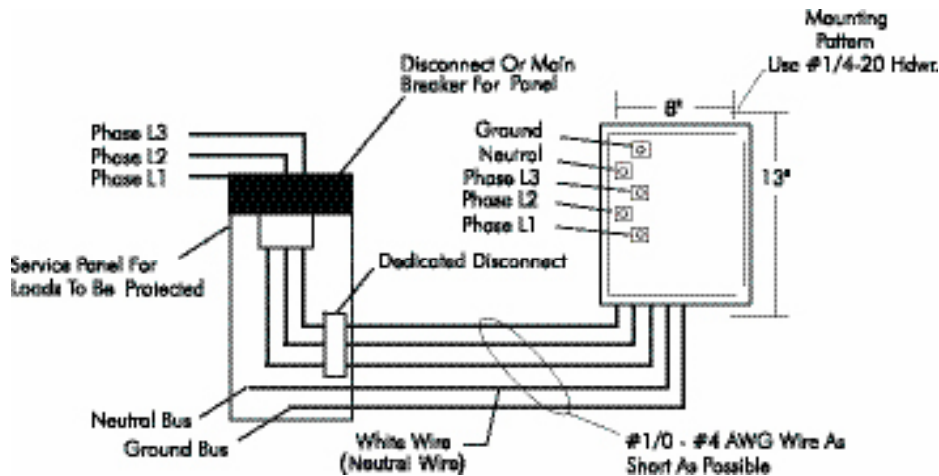


Figure 6 - 240D configuration - typical installation

WARNING: All international, national, local, and other applicable electrical codes must be followed and adhered to during all phases of the electrical installation. If any of the following electrical installation procedures conflict with applicable electrical codes, the suppressor installation must be discontinued and Transtector System's Applications Engineering department must be contacted for further instructions.

Step 1:

Ensure that the electrical installation is accomplished by qualified personnel that are certified and/or licensed to service and install equipment upon the appropriate electrical services.

Step 2:

Verify at the AC power source, at the point where the surge suppressor will be electrically attached, that the surge suppressor is designed to protect upon that specified voltage configuration.

Step 3:

Verify that the maximum current rating of the electrical service to be protected does not exceed the specified amperage of the surge suppressor.

Step 4:

Measure AC voltages between phase(s) and neutral and/or between phases as appropriate using an AC voltmeter. Verify that the measured RMS voltages between the fore mentioned conductors complies to the nominal values appropriate for the electrical distribution.

WARNING: AC Power to the surge suppressor, at the surge suppressor, and in the vicinity of the surge suppressor **MUST** be disconnected prior to performing the following mechanical and electrical installation procedure.

Step 5:

Disconnect power at the AC power source at the point where the APEX Series will be connected. Verify that AC power is disabled.

NOTE: The mechanical and electrical installation illustrations are referenced in Figures 1 through 6 and are applicable with the remaining electrical installation procedural steps.

WARNING: Wiring conductors utilized to attach Phases L1, L2, L3, the Neutral and Safety Ground from the AC power source to the APEX Series should be color-coded to conform with appropriate electrical codes and/or accepted wiring practices. It is very important to make no assumptions that wiring colors on existing electrical installations correspond to proper phase, neutral, or ground connections.

Identify and verify each specific phase, neutral, and ground references at the AC power source prior to proceeding with these electrical installation procedures.

WARNING: The disconnect utilized in the current path from the electrical distribution and the APEX Series must be coordinated to operate properly in conjunction with all other disconnects contained within the same electrical distribution.

WARNING: Proper electrical connections must be accomplished in accordance with applicable International, National, and/or Local electrical code requirements.

Step 6:

Tap into the three (3) phase conductors via an approved disconnect, i.e. circuit breaker that is sized appropriately (typically 60 Amps) on the load side of the main circuit breaker of the AC power service requiring surge suppression. If neutral is required for the system, tap into the neutral/bus wire. These

wiring conductors must be sized accordingly dependent upon the following parameters:

If the APEX Series suppressor is positioned within two (2) feet (61 cm.) from the AC power source, then a minimum of #6 (4.1 mm.) sized wiring conductors are recommended.

If the APEX Series suppressor is positioned within four (4) feet (122 cm.) from the AC power source, then a minimum of #4 (5.2 mm.) sized wiring conductors are recommended.

CAUTION: Contact Transtector's Application Engineering Department before proceeding with the installation if the suppressor cannot be installed within four (4) feet of the AC power source requiring protection from transient overvoltages.

Step 7:

If a breaker cannot be supplied in the protected panelboard, install either three (3) external fuses or an external three pole thermal/magnetic circuit breaker to be used as a disconnect in series with the surge suppressor and the AC power source. Fuses should be rated at ten (10) AMPs less than the service disconnect to a maximum of 100 AMPS (Typically BUSSMAN LPN Series fuse). A 60 AMP circuit breaker can be used in conjunction with #6 AWG. (4.1 mm.) sized wire if the surge suppressor is installed within two (2) feet (61 cm.) of the AC power source. Ensure that the disconnect is installed initially in its "OPEN" state so that AC power cannot pass through it until it is reset.

CAUTION: The disconnect addressed in the above procedural step serves a dual purpose. It provides a means for maintenance personnel to de-energize AC power supplied to the APEX Series suppressor to allow for servicing the device. It also allows the suppressor to be electrically removed from the AC power source in the event of catastrophic failure modes without disrupting AC power to critical loads. Its current rating must be rated lower than that of the main disconnect supplying power to the protected electrical loads.

Step 8:

Route wiring conductors through metal conduit from the disconnect installed in the previous step at the AC power source to the suppressor enclosure. Mate the conduit to the suppressor enclosure at the hole bored in Step 4 of the Mechanical Installation procedures on page 3. Ensure that the conduit is properly grounded at the AC power source.

WARNING: Adequate and proper grounding practices must be heeded to insure that human safety is accomplished during electrical fault conditions.

Step 9:

Open the front door of the suppressor enclosure and insure that conduit and/or external grounding conductors are securely fastened to Ground lug designated with the letter G on the terminal block at the left side of the backpanel assembly where the three suppressor modules attach. Locate the labeled terminal block providing the means to attach the electrical wiring conductors from the AC power source the APEX Series suppressor. The designated labels on the terminal block correspond to specific Phase and/or Neutral conductors from the AC power wiring positions on the terminal block.

WARNING: In Wye configurations verify that the neutral conductor from the AC power source is connected properly to the "N" designated position on the terminal block identified in Step 9. If any phase conductor should accidentally be connected to that "N" designated connection point severe suppressor damage will result and human safety will be compromised as AC power is applied to the APEX Series suppressor.

Step 10:

After electrical wiring hook-up is complete and prior to energizing electrical power, each suppressor card must be firmly inserted into it's respective backpanel slot. Refer to the installation instruction sheet

located inside of the enclosure door and note the phase labeling on each card.

Proper slot placement will align the cards with labels on the outside of the door. Cards must be inserted into their respective slots, with the card fingers engaging the electrical stab-down contacts, and pressed completely into place. Figure 7 depicts the card finger alignment into the slots. Press adjacent cards together sideways to snap the interlock pins on the top and bottom for added stability.

WARNING: the card interlock pins must be separated before removing individual cards for services.

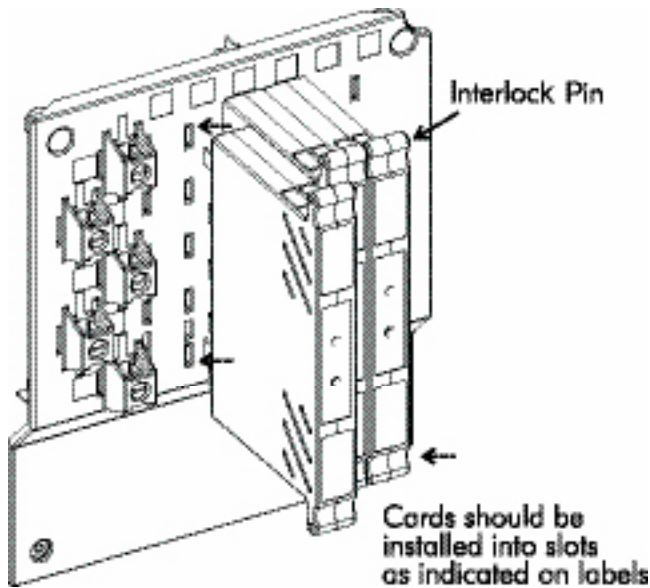


Figure 7 - card installation

NOTE: Depending on the configuration of your Apex Series suppressor, this unit could have between 1 and 6 cards to install.