

STABILINE®

Surge Protective Devices

PT1 Series – Type 2 SPD

Installation, Operation and Maintenance Manual



Congratulations

Thank you for purchasing the PT1 Series STABILINE® Surge Protective Device . . . another Superior product!

Expect exceptional performance. The unit is built to the highest standards for your complete satisfaction.

To assure many years of uninterrupted service, please read this Owners Manual to familiarize yourself with the operation and proper installation of the PT1 Series unit.



Superior Electric

* Subject to change without notice.

Your Guide to Installation of the PT1 Series Surge Protective Device

Today's sophisticated electronic equipment requires superior suppression filter systems. By selecting PT1 Series STABILINE Surge Protective Devices, you have taken a critical step toward decreasing downtime and ensuring longer product life for your equipment.

A PT1 Series unit is designed to protect facilities and sensitive electrical and electronic equipment against the harmful effects of lightning strikes and internally generated electrical transients.

A PT1 Series unit combines easy installation with many special features to deliver more performance than any other SPD device in its class.

A PT1 Series is conveniently pre-wired with 24-inch, stranded #10 AWG pigtail conductors. To ensure optimum product performance, install your PT1 system in a location that minimizes wire lengths and wire bends. This positioning maximizes surge suppression and filtering while providing added protection for the connected loads. The PT1 leads must be protected with a circuit breaker rated at 20 amps. Use a 3-pole breaker for 3-phase units or a 2-pole breaker for single-phase units. The PT1 unit contains no user-serviceable parts.

Thank you for choosing a PT1 Series STABILINE Surge Protective Device. We look forward to fulfilling your facility-wide Power Quality requirements.

Installation Assistance

Monday through Friday, 8:00 a.m. to 5:00 p.m. (EST): 800-787-3532 or 860-507-2025.

5 Year Limited Warranty

PT1 Series products are warranted for a period of five years from date of purchase.

Purpose and Applications of PT1 Series Products

The versatile PT1 Series product family is designed for facility-wide installation. Units use proven Metal Oxide Varistors (MOVs) and an efficient capacitive filter system to reduce or eliminate transients, impulses, and high-frequency noise within a building's electrical system.

The Importance of Correct Installation

This manual provides guidelines for the proper installation of PT1 Series units. Proper product selection and compliance with these guidelines will help your new suppression system provide years of reliable service. If installer's are unsure about the facility's electrical configuration or have other installation-related questions, we recommend they consult with a master electrician or other qualified electrical professional.

When shortcuts are taken or installation procedures are not followed, the PT1 unit may be damaged or may not provide adequate protection. Improper installation may also void the warranty. It is extremely important to follow these installation procedures carefully.

This manual is designed to step you through the easy installation procedures. However, should you have question about installing PT1 Series units, please call Superior Electric Technical Support at 860-507-2025, Ext. 72058, Toll free in USA and Canada at 1-800-787-3532, Ext. 72058.

WARNING! The PT1 Series Warranty is voided if the unit is damaged as a result of improper installation or the installer's failure to verify the following conditions prior to installation.

Pre-Installation Checklist

- Confirm that the voltage(s) and power configurations shown on the PT1 unit label are consistent with the voltage and service configuration at the PT1 installation site. One of the following voltage and service configurations is printed on the label affixed to the PT1:

System Product Label Designation

PT1-xxx-120/240-2G-L1
PT1-xxx-120/208-3GY-L1
PT1-xxx-220/380-3GY-L1
PT1-xxx-277/480-3GY-L1
PT1-xxx-120/240-3GHD-L1

PT1-xxx-240-3DG-L1
PT1-xxx-380-3DG-L1
PT1-xxx-480-3DG-L1

System Voltage, Service Configuration

120/240 VAC, 1 ϕ 3-wire SPLIT-PHASE, w/ground
208Y/120 VAC, 3 ϕ 4-wire WYE, w/ground
380Y/220 VAC, 3 ϕ 4-wire WYE, w/ground
480Y/277 VAC, 3 ϕ 4-wire WYE, w/ground
120/240 VAC, 3 ϕ , high-leg DELTA, w/ground
(B phase must be 208V)
240 VAC, 3 ϕ , 3-wire DELTA, w/ground
380 VAC, 3 ϕ , 3-wire DELTA, w/ground
480 VAC, 3 ϕ , 3-wire DELTA, w/ground

xxx - denotes product's surge current rating (25, 50, 80 or 100kA per mode)

- Check to ensure that a proper X_0 bond is installed between the neutral and ground terminals at the transformer upstream from all 3 ϕ WYE, 3 ϕ high-leg DELTA, or 1 ϕ SPLIT-PHASE PT1 series devices (see NEC article 250.). Lack of a proper bond will damage the PT1 unit and void the warranty.

Pre-Installation Checklist (cont.)

- ☑ Confirm that the environmental conditions are consistent with these ranges:

Ambient Temperature: The PT1 must be installed in an area with a temperature between -40° and 140°F (-40° and $+60^{\circ}\text{C}$).

Humidity: The PT1 must be installed in an area with relative humidity between 5% and 95%, noncondensing.

WARNING! Discontinue installation if (1) your conditions are inconsistent with the guidelines above or (2) your conditions cannot be verified. Call Superior Electric Technical Support at 800-787-3532, Ext. 72058 if you have any questions.

Installation Methods for Common Service Configurations

A PT1 Series unit is to be connected in parallel with the electrical system and its leads must be protected with a circuit breaker rated at 20 amps. Use a 3-pole breaker for 3-phase units or a 2-pole breaker for single-phase units.

Figures 1-4 show the relationship between the PT1 unit and these four basic service configurations: WYE, DELTA, high-leg DELTA and SPLIT-PHASE.

FIG. 1:
3-Phase,
4-Wire WYE

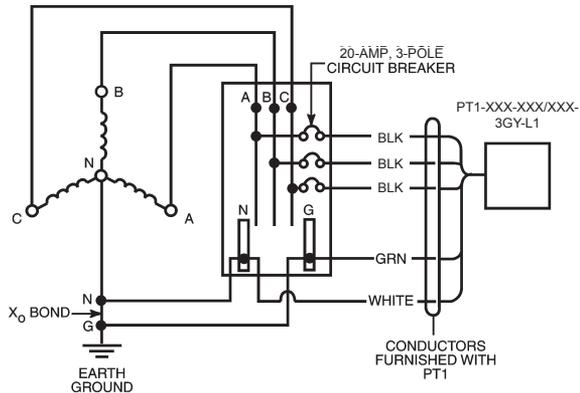
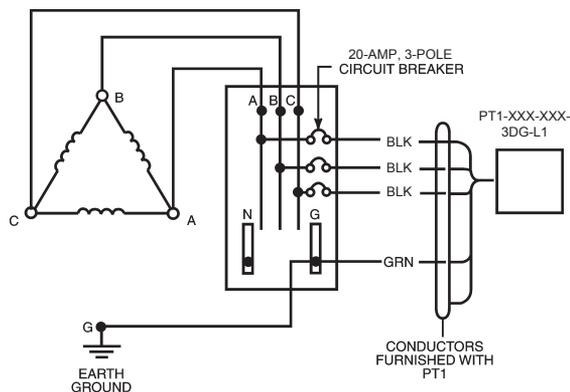
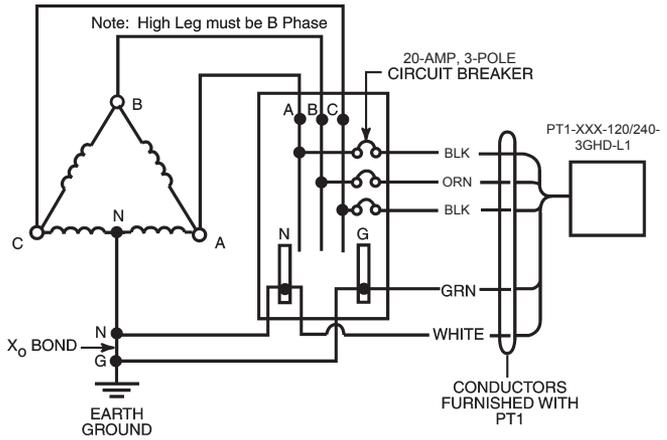


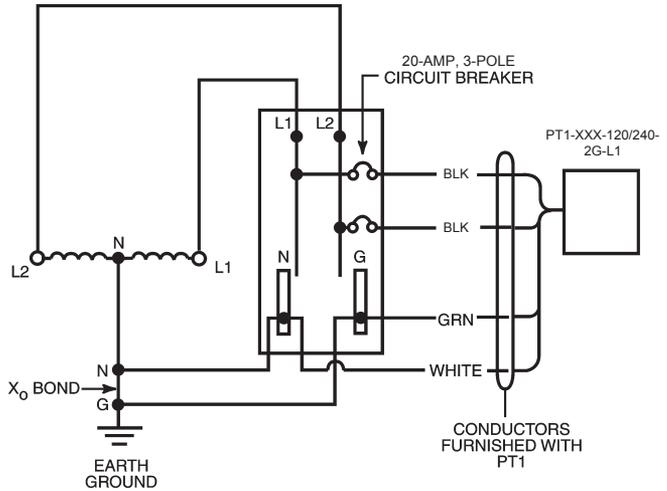
FIG. 2:
3-Phase,
3-Wire DELTA



**FIG. 3:
3-Phase,
4-Wire,
high-leg
DELTA**



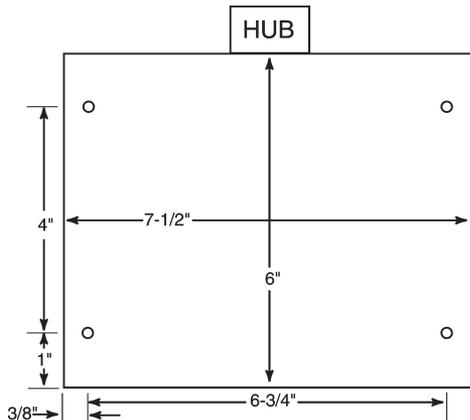
**FIG. 4:
1-Phase,
3-Wire
SPLIT-PHASE**



MOUNTING

Four 5/16-inch holes are provided for mounting the PT1.

**FIG. 5:
Mounting Hole
Detail**



WARNING! Be sure power is off before terminating the PT1 leads.

Electrical Connections

Raceway: To route PT1 conductors to the panel being protected, choose from any of these materials: (1) non-metallic flexible conduit, (2) metallic flexible conduit, (3) rigid conduit or (4) a nipple. The PT1 enclosure is provided standard with a 3/4-inch hub which will accept rigid or IMC conduit. A plastic flexible conduit with fitting and a 3-inch nipple are available as options.

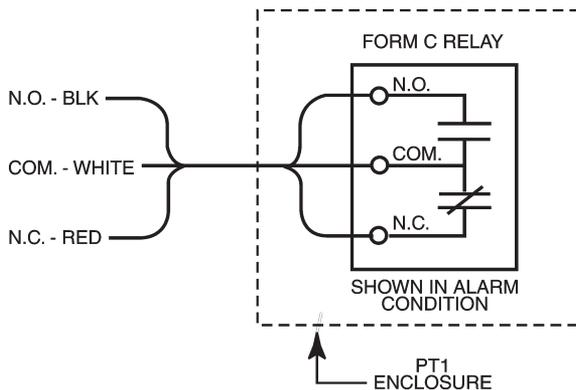
Wire length and color: Use the supplied 24-inch, #10 AWG leads. Trim leads to suit the application but do NOT splice to add length to the leads. Except for 3 Phase, 4 Wire, high-leg DELTA models, all the phase conductors are black wires. The phase conductors for high-leg DELTA models are black, orange, and black; and the orange must be connected to the high leg. Refer to Figures 1 through 4 for the color code of the PT1 leads. Terminate the leads as shown. (Note: For optimum performance, keep leads as short as possible and avoid sharp bends).

Overcurrent protection: The PT1 leads must be protected with a circuit breaker rated at 20 amps. Use a 3-pole breaker for 3-phase units or a 2-pole breaker for single-phase units.

Dry Contacts: All PT1 units are supplied with Form “C” dry contacts for remote alarm monitoring. Use butt splices within the panelboard to connect the Form “C” leads to the user’s monitoring circuits. Alternatively, install a junction box between the PT1 and the panelboard to connect Form “C” leads to user’s monitoring circuits. Consult applicable local codes to ensure proper installation.

FIG. 6
Detail of Form “C” contacts

Note: The contacts are rated at 110VDC / 125VAC with maximum switching power of 30W DC / 62.5VA AC.



Before Applying Power: Checklist

- Measure the line to line voltage at the panel to be protected and be sure it is within $\pm 10\%$ of rated line to line voltage of the PT1. Use the following table to determine the range of acceptable voltages for each model of PT1.

Before Applying Power: Checklist (cont.)

Acceptable Voltage Ranges for All PT1 Models

PT1 Model	Nominal L-L Voltage	-10% to +10% L-L Voltage
PT1-XXX-120/240-2G-L1	240	216 to 264
PT1-XXX-120/208-3GY-L1	208	188 to 228
PT1-XXX-220/380-3GY-L1	380	342 to 418
PT1-XXX-277/480-3GY-L1	480	432 to 528
PT1-XXX-120/240-3GHD-L1	240	216 to 264
PT1-XXX-240-3DG-L1	240	216 to 264
PT1-XXX-380-3DG-L1	380	342 to 418
PT1-XXX-480-3DG-L1	480	432 to 528

WARNING! Do not apply power if the measured voltage is not within the range specified for the PT1 model being installed. Do not hipot the electrical system that the PT1 Series unit is connected to without disconnecting all PT1 conductors including phases, neutral and ground.

- Apply power to unit by closing the circuit breaker.
- Check PT1 lights. Protection is active when all lights are illuminated

Troubleshooting

Call Superior Electric Technical Support if you experience either of these conditions:

- Circuit breaker trips and cannot be reset
- One or more lights on PT1 are not illuminated

Our staff is available to support you, call:

Monday through Friday, 8:00 am to 5:00 pm (EST), call 1-800-787-3532 or 860-507-2025.

Options

Two conduit installation kits are available:

- PT1-INSTALLKIT-A - 3/4-inch x 3-inch metallic nipple that connects to the provided 3/4-inch hub.
- PT1-INSTALLKIT-B - provides for 18 inches of 3/4-inch nonmetallic flexible conduit and a fitting that connects to the provided 3/4-inch hub.

Operation/Maintenance

The only operational verification necessary on the PT1 is to observe that the lights are illuminated. There is no maintenance to be performed on the PT1 nor does the PT1 contain any user-serviceable parts.

Available Coast-to-Coast and Internationally

Voltage Control Components

- VOLT-PAC®** Variable Transformers
- POWERSTAT®** Variable Transformers
- LUXTROL®** Lighting Controls
- 5-WAY®** Binding Posts
- SUPERCON®** Electrical Connectors

Voltage Control Components are available worldwide through an extensive Authorized Stocking Distributor network. These Distributors offer literature, technical assistance and a wide range of models off the shelf for fastest possible delivery and service.

Power Quality Solutions

- STABILINE®** Automatic Voltage Regulators
- STABILINE®** Surge Protective Devices
- STABILINE®** Uninterruptible Power Supplies
- STABILINE®** Power Conditioners

STABILINE Power Quality Solutions are available worldwide through an extensive Authorized Distributor and Reseller network which offer literature, technical assistance and a select range of models off-the-shelf for fastest possible delivery and service.

In addition, Superior Electric Manufacturer's Representatives are available to provide prompt attention to customer needs. Call or Fax for ordering and application information or for the address of the closest Manufacturer's Representative, Authorized Distributor or Reseller.



Superior Electric

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