

# Eaton Innovative Technology Equalizer 2 Series surge protective device quick start guide

## 1. Introduction

This Quick Start Guide is for the installation, wiring, and operation of Eaton's Innovative Technology Equalizer 2 Series surge protective device (SPD). Only qualified personnel should perform this installation. For additional information regarding installation, wiring and operation of this device, refer to the appropriate document listed in Table 2. If you require further information regarding a particular installation, application, or maintenance activity, please contact your Innovative Technology Master Distributor or Eaton's Technical Resource Center at [spd@eaton.com](mailto:spd@eaton.com) or 1-800-647-8877. This Quick Start Guide is not intended to cover all details, variations or combinations of the device's storage, delivery, installation, operation or maintenance.

### 1.1 Safety precautions

#### **⚠ WARNING**

**WARNING – SHOCK HAZARD – DO NOT OPEN.**  
**AVERTISSEMENT – RISQUE DE CHOC – NE PAS OUVRIR.**

**WARNING NO SERVICEABLE PARTS.**  
**ATTENTION : AUCUNE PIÈCE REMPLACABLE OU RÉPARABLE.**

**A LICENSED/QUALIFIED ELECTRICIAN MUST COMPLETE ALL INSTRUCTIONS IN THIS GUIDE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE (NEC), CANADIAN ELECTRIC CODE (CEC), STATE, COUNTY AND LOCAL SAFETY RATINGS, OR OTHER APPLICABLE COUNTRY CODES. ALL APPLICABLE LOCAL ELECTRICAL CODES SUPERSEDE THESE INSTRUCTIONS.**

**IMPROPER WIRING COULD CAUSE DEATH, INJURY AND/OR EQUIPMENT DAMAGE. ONLY LICENSED/QUALIFIED ELECTRICIANS WHO ARE TRAINED IN THE INSTALLATION AND SERVICE OF ELECTRICAL SERVICES ARE TO INSTALL AND SERVICE THIS EQUIPMENT.**

**CHECK THE VOLTAGE-RATING LABEL LOCATED ON THE SIDE OF THE SPD TO VERIFY THAT THE ELECTRICAL SYSTEM'S VOLTAGE AND WIRING CONFIGURATION ARE THE SAME AS THE SPD.**

**CONDUCTING DIELECTRIC, MEGGAR, OR HI-POTENTIAL TESTING WITH THE SPD INSTALLED WILL CAUSE INTERNAL DAMAGE TO THE SPD. THE SPD WILL CAUSE THE TEST TO FAIL.**

**IMPROPER INSTALLATION COULD CAUSE DEATH, INJURY AND EQUIPMENT DAMAGE. FOLLOW ALL WARNINGS AND CAUTIONS. COMPLETELY READ AND UNDERSTAND THE INFORMATION IN THIS GUIDE BEFORE ATTEMPTING TO INSTALL OR OPERATE THIS EQUIPMENT.**

**ARC FLASH DURING INSTALLATION COULD CAUSE INJURY OR DEATH. USE APPROPRIATE SAFETY PRECAUTIONS AND PERSONAL PROTECTION EQUIPMENT FOR ARC FLASH PROTECTION.**

**CHECK THE FACILITY'S GROUNDING SYSTEM. ALL GROUNDING, BONDING AND EARTHING PRACTICES MUST MEET NEC, CEC AND LOCAL APPROVED PRACTICES. A POOR GROUND, OR A GROUNDING / BONDING VIOLATION WILL SERIOUSLY AFFECT THE SPD'S ABILITY TO FUNCTION AS SPECIFIED.**

**INSTALLING AN SPD THAT IS IMPROPERLY RATED FOR THE ELECTRICAL SYSTEM VOLTAGE COULD CREATE A POTENTIALLY HAZARDOUS CONDITION, RESULTING IN INJURY OR EQUIPMENT DAMAGE.**

**WHEN MOUNTING THE SPD OUTDOORS, USE WEATHERPROOF CONDUIT AND FITTINGS TO MAINTAIN THE ENCLOSURE'S NEMA RATING.**

**FOR USE ON CIRCUITS DELIVERING UP TO 5000 RMS AMPS.**  
**CONVIENT À DES CIRCUITS PRODUISANT AU PLUS 5000 A EFF.**

### 1.2 Enclosure dimensions

Refer to the appropriate document listed in Table 2 for unit size and dimensions.

### 1.3 Directly mounted to electrical panel – preferred method

The preferred installation of the SPD is to mount it directly to the electrical panel. For Type 4X applications, use the supplied mounting feet to secure the device.

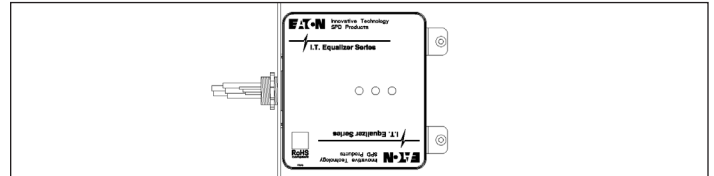


Figure 1. Preferred Installation.

### 1.4 Directly mounted to electrical panel with conduit – alternate method

An alternate installation method is to install the SPD with a piece of short, straight conduit. Avoid using 90° conduit elbows and keep the conduit run as short and straight as possible. In this application, install the SPD as close as possible to the electrical panel. For Type 4X applications, use the supplied mounting feet to secure the device.

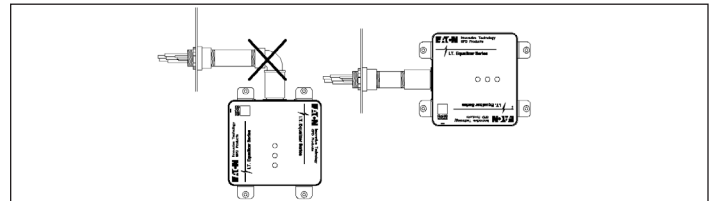


Figure 2. Alternate Installation.

## 2. Wiring installation

Locate the electrical system's applicable wiring schematic from Section 3. Wiring diagrams and refer to it while wiring the SPD.

TURN OFF power to the electrical equipment being connected to the SPD in accordance with NEC, CEC, state, county and local codes for all safety ratings.

Eaton Innovative Technology SPD's covered in this guide are designed with internal overcurrent protection and do not require an external overcurrent protection device (OCPD) unless otherwise required by NEC, UL, and local electrical requirements to protect electrical conductors. NEC Article 310.15 (B) (16) defines the maximum rating of the OCPD required to protect the electrical conductors. NEC shows #10 AWG conductors at 60°C typically requiring a 1-pole (for single phase systems), 2-pole (for split-phase systems) or 3 pole (for 3-phase systems) 30A branch circuit breaker to protect SPD conductors.

Twist and bind the wires of the SPD tightly together. Minimize over-all lead length to optimize SPD performance. To maximize the SPD's performance, phase wire length should be less than 14" (35cm) twisted and bound together. For wire lengths longer than four inches, phase wires should be twisted once for each four inches of wire length to maximize performance.

If the SPD is configured for remote monitoring (not available on all models), connect the Form C relay contact wiring to an alarm or building monitoring system. Refer to the appropriate document listed in Table 2 for Form C relay ratings.

**Note:** Utilization of Form C contacts is optional. Connection of Form C wires is not required for the proper operation of the SPD.

Tighten and recheck all connections and mounting before proceeding to Section 4. Operation.

### 3. Wiring diagrams

Table 1. Equalizer 2 Series Phase Wire Color Code

PHASE WIRE COLOR CODE	
PHASE WIRE	COLOR
L1 (Phase A)	Black
L2 (Phase B)	Black
L2 (Phase B) High Leg Delta	Orange
L3 (Phase C)	Black
Neutral	White
Ground / Protected Earth	Green w/ Yellow Stripe

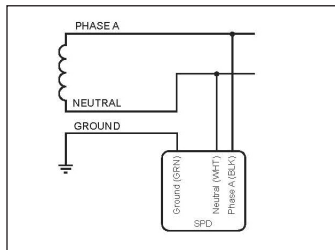


Figure 3. Single Phase (2W+G).

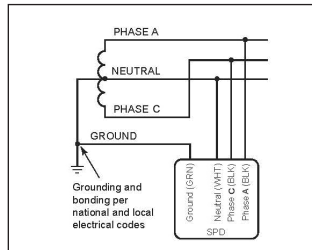


Figure 6. Split Phase (3W+G).

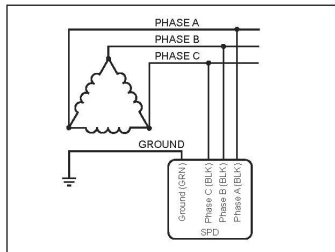


Figure 4. Three Phase Delta (3W+G).

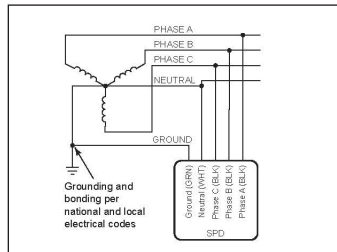


Figure 7. Three Phase Wye (4W+G).

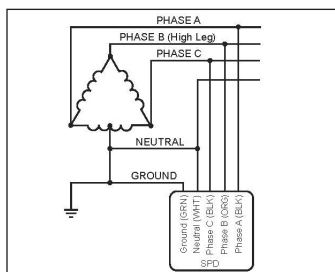


Figure 5. Three Phase Delta High Leg on Phase B (4W+G).

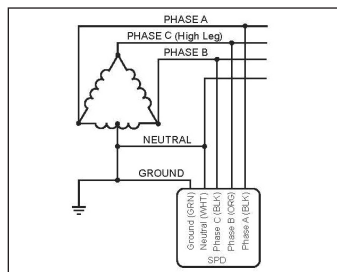


Figure 8. Three Phase Delta High Leg on Phase C (4W+G).

### 4. Operation

#### 4.1 Power up and system checkout

Tighten and recheck all connections and mounting before proceeding. Switch main panel power to ON and then switch SPD branch circuit breaker(s) to ON, if applicable. One LED should light for each phase voltage being monitored. Single phase electrical systems will light only one LED, split phase systems light two LEDs, and three phase systems will light all three LEDs.

If the connected LEDs do not light, remove power, re-check connections, and test again. If the LEDs still do not light, contact your local authorized distributor or the Eaton Technical Resource Center, as the SPD may be damaged.

#### 4.2 LED color states

When properly installed, only green status LED's should be energized. Refer to the appropriate document listed in Table 2 for more information regarding SPD LED color states.

### 5. Maintenance

The Eaton Innovative Technology SPD devices covered in this guide are self-contained devices that do not require maintenance or contain serviceable parts. If any LED changes state, the unit has lost surge protection and must be replaced. Please contact your Innovative Technology Master Distributor or the Eaton Technical Resource Center for additional information and technical assistance, as the SPD may be under warranty.

### 6. Liability

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### 7. Warranty

Refer to the appropriate document listed in Table 2 for specific product warranty details.

### 8. Supplementary manuals

For additional information regarding installation, wiring and operation of this device, refer to the appropriate document listed in Table 2.

Table 2. Eaton Surge Protective Device Instruction Manuals

Eaton series	Web address	Instruction manual - English	Instruction manual - French	Instruction manual - Spanish
Equalizer 2	eaton.com/itvss	IB158009EN	IB158009FR	IB158009ES

If you have any questions or need additional information, please contact your Innovative Technology Master Distributor or the Eaton Technical Resource Center at [spd@eaton.com](mailto:spd@eaton.com) or 1-800-647-8877.

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