

# Installation Instructions for Eaton Surge Protective Device XXCFXXX30-RJ



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Powering Business Worldwide

**⚠ WARNING**

**HAZARDOUS VOLTAGES PRESENT**

**IMPROPER INSTALLATION OR MISAPPLICATION OF THESE DEVICES MAY RESULT IN SERIOUS INJURY TO INSTALLER AND/OR DAMAGE TO ELECTRICAL SYSTEM OR RELATED EQUIPMENT. READ AND UNDERSTAND ALL INSTRUCTIONS BEFORE BEGINNING INSTALLATION. PROTECTIVE EYEWEAR SHOULD BE WORN WHENEVER WORKING AROUND HAZARDOUS VOLTAGES.**

**NOTICE**

**ALL INSTRUCTIONS AND MEASUREMENTS MUST BE COMPLETED BY A LICENSED/QUALIFIED ELECTRICIAN IN ACCORDANCE WITH THE U.S. NATIONAL ELECTRICAL CODE, STATE AND LOCAL CODES OR OTHER APPLICABLE COUNTRY CODES. THE U.S. NATIONAL ELECTRICAL CODE AND STATE AND LOCAL REQUIREMENTS (OR OTHER APPLICABLE COUNTRY CODES) SUPERSEDE THIS INSTRUCTION.**

Catalog Number	Voltage Range	Mode	VPR	MCOV	In	SCCR	Peak Surge Current
XXCF12030-RJ <sup>2</sup>	48 - 149 Vdc <sup>1</sup> 100 - 127 Vac	L-N	500	150	5kA	10kA	80kA
		L-G	500	150			
		N-G	500	150			
XXCF23030-RJ <sup>2</sup>	150 - 300 Vdc <sup>1</sup> 128 - 230 Vac	L-N,	800	275	3kA	10kA	80kA
		L-G,	800	275			
		N-G	800	275			

<sup>1</sup> UL 1449 4rd Edition does not list SPD products rated less than 110 Vac or DC voltages.

<sup>2</sup> UL 1449 4th Edition, UL 1283 7th Edition

**1.0 Setup**

Verify that system voltages do not exceed those listed in Section 1.5, Specifications.

- All AC measurements should be completed with an RMS voltmeter.
- All DC measurements should be completed with a DC voltmeter.
- **DO NOT INSTALL FILTER IF MEASURED VOLTAGE EXCEEDS MAXIMUM OPERATING LIMITS.**

Choose location for filter installation so that maximum separation can be maintained between input leads, output leads and ground leads.

**1.1 Before Installation**

**REMOVE POWER FROM ELECTRICAL SYSTEM BEFORE MOUNTING FILTER.**

- Filter MUST be mounted within enclosure to assure personnel safety from exposed terminals.

**IMPORTANT:**

**FILTER SHOULD BE LOCATED SO THAT THE SHORTEST POSSIBLE CONDUCTOR LENGTH MAY BE USED.**

- Filter should be mounted to allow maximum separation between input and output wiring.
- Filter contains no position-oriented components and can be mounted upside down or sideways.
- Filter should be placed in electrical circuit so that it is the last device in the circuit before equipment to be protected.

**1.2 Installation**

**FILTER MUST BE CONNECTED TO ELECTRICAL SYSTEM WITH A CIRCUIT BREAKER:**

For AC Applications

- 1 – Single Pole / Single Throw 40A circuit breaker(s). The Interrupting Rating of the Circuit Breaker Shall Not Be Less

Than the Available Fault Current. Circuit Breaker Ratings of 40A, 240V/415V, 10kA Min. AIC Rating.

**Note:** Pre-existing breaker(s) of the rated load size may be utilized if provision for multi-conductor connections are made according to N.E.C. 110-14A.

- If Neutral wire is to be utilized as L2/NEU then circuit breaker should be provided for that phase.

For DC Applications

- DC units to be installed after an overcurrent protective device that is rated not to exceed 100% of the current rating of the unit.
- Form C contacts are rated at 0.5 Amps at 125 VAC or 1.0 Amps at 30 VDC. These connections are to be used for alarm hook up.

**Table 1. Relay state when energized.**

Catalog Part Number	Normally Closed	Normally Open
XXCFXXX30-RJ	Open	Closed

**REMOVE POWER FROM ELECTRICAL SYSTEM BEFORE INSTALLING FILTER.**

Mechanically mount filter.

- Mount filter using mounting flange holes or optional DIN bracket listed below.
- Filter should be mounted to allow maximum separation between input and output wiring.
- Filter contains no position oriented components and can be mounted upside down or sideways.
- Filter should be placed in electrical circuit so that it is the last device in circuit before equipment to be protected.

**1.2.1 DIN Rail Kits**

Mounting bracket and foot adaptable to DIN Rail systems DIN EN 50022, DIN EN 50035 and DIN EN 50045 are available through Eaton Order Center and can be ordered separately.

- Eaton Cat# DINRAILKIT-30ACF
- Eaton Innovative Technology Cat# DINRAILKIT-30ITCF

**1.3 Wiring**

**NOTICE**

**AN INSULATED GROUNDING CONDUCTOR THAT IS IDENTICAL IN SIZE AND INSULATION MATERIAL AND THICKNESS TO THE GROUNDED AND UNGROUNDED CIRCUIT SUPPLY CONDUCTORS, EXCEPT THAT IT IS GREEN WITH OR WITHOUT ONE OR MORE YELLOW STRIPES, IS TO BE INSTALLED AS PART OF THE CIRCUIT THAT SUPPLIES THE FILTER. SEE TABLE 250-122 OF THE NATIONAL ELECTRIC CODE (NEC) REGARDING THE APPROPRIATE SIZE OF THE GROUNDING CONDUCTOR.**

**THE GROUNDING CONDUCTOR IS TO BE GROUNDED TO EARTH AT THE SERVICE EQUIPMENT OR OTHER ACCEPTABLE BUILDING EARTH GROUND SUCH AS THE BUILDING FRAME IN THE CASE OF HIGH-RISE STEEL FRAME STRUCTURE.**

**ANY ATTACHMENT-PLUG RECEPTACLES IN THE VICINITY OF THE FILTER ARE TO BE GROUNDING TYPE, AND THE GROUNDING CONDUCTORS SERVING THESE RECEPTACLES ARE TO BE CONNECTED TO EARTH GROUND AT THE SERVICE EQUIPMENT OR OTHER ACCEPTABLE BUILDING EARTH GROUND SUCH AS THE BUILDING FRAME IN THE CASE OF HIGH-RISE STEEL FRAME STRUCTURE.**

**PRESSURE TERMINAL OR PRESSURE SPLICING CONNECTORS AND SOLDERING LUGS USED IN THE INSTALLATION OF THE FILTER SHALL BE IDENTIFIED AS BEING SUITABLE FOR THE MATERIAL OF THE CONDUCTORS. CONDUCTORS OF DISSIMILAR METALS SHALL NOT BE INTERMIXED IN A TERMINAL OR SPLICING CONNECTOR WHERE PHYSICAL CONTACT OCCURS BETWEEN DISSIMILAR CONDUCTORS UNLESS THE DEVICE IS IDENTIFIED FOR THE PURPOSE AND CONDITIONS OF USE.**

**CONDUCTORS SHOULD BE TWISTED TOGETHER TO REDUCE IMPEDANCE FACTOR. EXCESSIVE WIRE LENGTH AND SHARP BENDS DEGRADE FILTER PERFORMANCE; THEREFORE, AVOID EXCESSIVE WIRE LENGTH AND SHARP BENDS.**

Table of Maximum Suggested Operating Units								
Model Number	Power Protection				Data Protection			
	Line to Neutral (MCOV)	Line to Ground (MCOV)	Neutral to Ground* (MCOV)	Maximum All Modes (@60 Hz) Amps	Pins	Peak Voltage L-L, L-G	Max. Continuous Operating Current (mA)	Max. Data Rate (Mbps)
XXCF12030-RJ	150	150	150	40	1-4, 2-3	134	100	1
XXCF23030-RJ	275	275	275	40				

\*Note: If Neutral to Ground voltage is greater than 5 VAC then a problem may exist in electrical system. Filter may be installed; however, a qualified person should be consulted to correct problem.

### 1.3.1 Series Wiring Applications

- Connect incoming system **GROUND** wire to terminal labeled **GND** on unprotected end (labeled as **LINE**).
- Connect load side **GROUND** wire to terminal labeled **GND** on protected end (labeled as **EQUIP**).

#### For AC Applications

- Connect incoming system **NEUTRAL** wire to terminal labeled **L2/NEU** on unprotected end (labeled as **LINE**).
- Connect load side **NEUTRAL** wire to terminal labeled as **L2/NEU** on protected end (labeled as **EQUIP**).
- Connect incoming system **HOT** wire to terminal labeled **L1** on unprotected end (labeled as **LINE**).
- Connect load side **HOT** wire to terminal labeled as **L1** on protected end (labeled as **EQUIP**).

#### For DC Applications

- Connect incoming system **NEGATIVE** wire to terminal labeled **L2/NEU** on unprotected end (labeled as **LINE**).
- Connect incoming system **POSITIVE** wire to terminal labeled **L1** on unprotected end (labeled as **LINE**).

### 1.3.2 Parallel Wiring Applications

#### IMPORTANT:

**FILTER SHOULD BE LOCATED SO THAT THE SHORTEST POSSIBLE CONDUCTOR LENGTH MAY BE USED. CONDUCTORS SHOULD BE TWISTED TOGETHER TO REDUCE IMPEDANCE FACTOR. EXCESSIVE WIRE LENGTH AND SHARP BENDS DEGRADE FILTER PERFORMANCE; THEREFORE, AVOID EXCESSIVE WIRE LENGTH AND SHARP BENDS.**

- Connect incoming system **GROUND** wire to terminal labeled **GND** on unprotected end (labeled as **LINE**).

#### For AC Applications

- Connect incoming system **NEUTRAL** wire to terminal labeled **L2/NEU** on unprotected end (labeled as **LINE**).
- Connect incoming system **HOT** wire to terminal labeled **L1** on unprotected end (labeled as **LINE**).

#### For DC Applications

- Connect incoming system **NEGATIVE** wire to terminal labeled **L2/NEU** on unprotected end (labeled as **LINE**).
- Connect incoming system **POSITIVE** wire to terminal labeled **L1** on unprotected end (labeled as **LINE**).

Note: For grounded or isolated control transformer secondary, DO NOT CONNECT Ground terminal on either LINE or EQUIP side.

### 1.3.3 Dry Contact Wiring

Connect ALARM leads to Normally Open (N/O) or Normally Closed (N/C) terminals as required.

### 1.3.4 Telephone Line Protection

Connecting telephone line to protection.

- Assemble RJ-14 modular plugs to **LINE** and **EQUIP** telephone cables.
- Connect circuit as follows: Circuit 1 = Pins 2 and 3; Circuit 2 = Pins 1 and 4.
- Insert modular plugs into **LINE** and **EQUIP** modular jacks.
- Assure that telephone circuits are operational.

Note: For ungrounded or isolated control transformer secondary, DO NOT CONNECT Ground terminal on either **LINE** or **EQUIP** side.

### 1.4 Apply Power

Apply power to system. Indicator light(s) should glow and alarm contacts should move to normal state. If the light(s) does not glow, remove power and contact supplier.

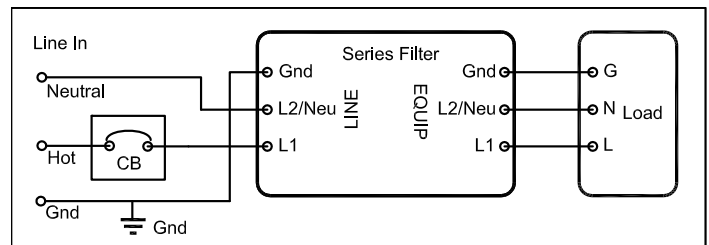


Figure 1. Single Phase Series AC Application

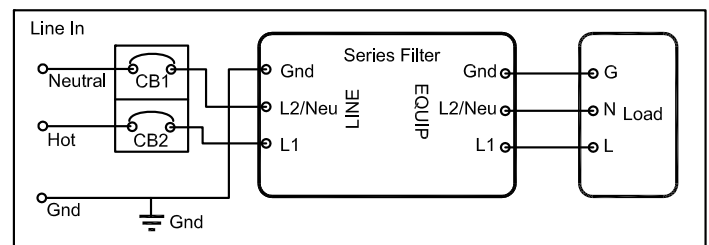


Figure 2. Split Phase Series AC Application (shown with Neutral utilized as L2/NEU)

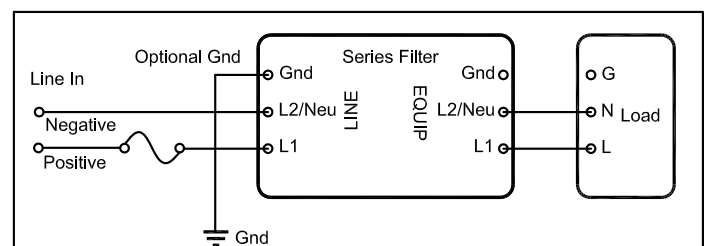


Figure 3. Series DC Application

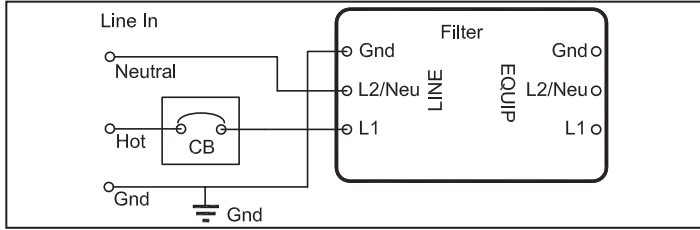


Figure 4. Single Phase Parallel AC Application

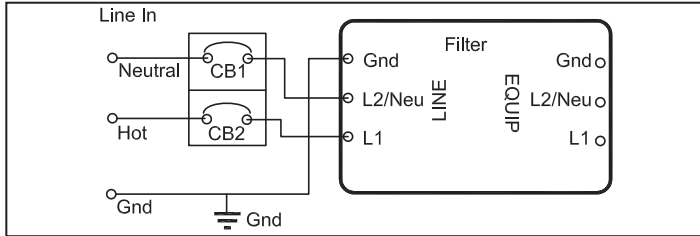


Figure 5. Split Phase Parallel AC Application  
(Shown with Neutral Utilized as L2NEU)

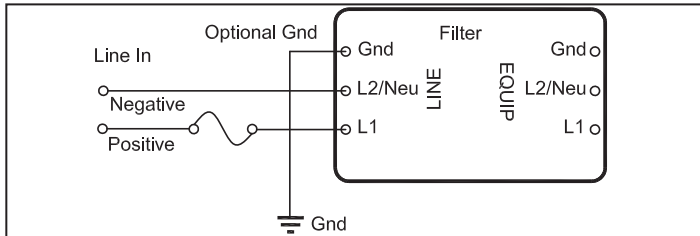


Figure 6. Parallel DC Application

## 1.5 Specifications

Description	Ratings
Agency Approvals XXCFXXX30-RJ	UL1449 4th Edition, UL1283 7th Edition Type 2 SPD
Terminal Connections	Wire clamping terminals, 10-18 AWG (UL), 10-22 AWG (CSA) Torque 12 in-lb
Operating Temperature	-40F(-40C) to +140F(+60C)
System voltages	
DC	48 - 149 Vdc, 150 - 300 Vdc
AC	100 - 127 Vac, 128 - 230 Vac
Circuit Breaker	40A, 240V/415V, 10kA Min. AIC Rating (Eaton P/N:FAZ-C40/1-NA-SP)
Amps*	30
Input Power Frequency	50/60 Hz
Warranty	5 Years, 10 Years if registered on <a href="http://www.eaton.com/spd">www.eaton.com/spd</a>
RoHS Compliant	Yes

\* Amp rating is for series connection only. Parallel connection is not current dependent.

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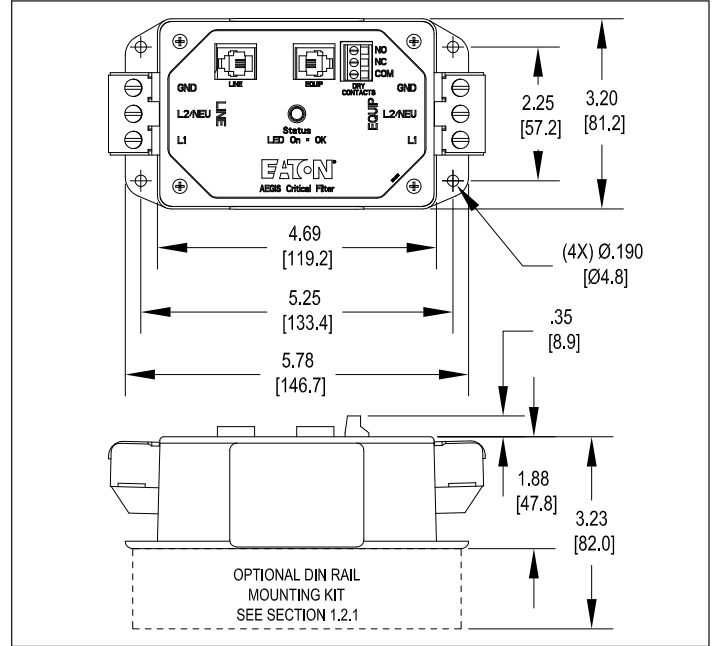


Figure 7. XXCFXXX30-RJ Product Dimensions

## 1.6 Warranty

Eaton warrants these products for a period of 5 years from the date of delivery to the purchaser, 10 years if the product is registered on [www.eaton.com/spd](http://www.eaton.com/spd), to be free from defects in both workmanship and materials. Eaton assumes no risk or liability for results of the use of the products purchased from it, including but without limiting the generality of the foregoing; (1) The use in combination with any electrical or electronic components, circuits, systems, assemblies, or any other materials or substances; (2) Unsuitability of any product for use in any circuit or assembly.

Purchaser's right under the warranty shall consist solely of requiring Eaton to repair, or at Eaton's sole discretion, replace, free of charge, F.O.B. factory, and defective items received at said factory or failure to give any advice or recommendations by Eaton shall not constitute any warranty by or impose any liability upon Eaton. The foregoing constitutes the sole and exclusive liability of Eaton AND IS IN LIEU OF ANY AND ALL OTHER WARRANTIES EXPRESSED, IMPLIED OR STATUTORY AS TO THE MERCHANTABILITY, FITNESS FOR PURPOSE SOLD, DESCRIPTION, QUALITY, PRODUCTIVENESS OR ANY OTHER MATTER.

In no event shall Eaton be liable for special or consequential damages or for delay in performance of the warranty.

This warranty does not apply if the product

has been misused, abused, altered, tampered with, or used in applications other than specified on the nameplate. At the end of the warranty period, Eaton shall be under no further warranty obligation expressed or implied.

The product covered by this warranty certificate can only be repaired or replaced by the factory. For help on troubleshooting the Critical Protection Product, or for warranty information, call 1-800-809-2772, Option 4, sub-option 2. Repair or replacement units will be returned collect. If Eaton finds the return to be a manufacturer's defect, the product will be returned prepaid.