

Installation Instructions for Eaton Surge Protective Device XXCF12060-RJ



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⚠ 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 Phase
XXCF12060-RJ ²	48 - 200 Vdc ¹	L-N	500	150	5kA	10kA	80kA
	100 - 127 Vac	L-G	500	150			
		N-G	500	150			

¹ UL 1449 4th Edition does not list SPD products rated less than 110 Vac or DC voltages.

² 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 voltage and current measurements should be completed with an RMS meter.
- **DO NOT INSTALL FILTER IF MEASURED VOLTAGE EXCEEDS MAXIMUM OPERATION LIMITS.**

Choose filter installation location 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 100A circuit breaker(s). The Interrupting Rating of the Circuit Breaker Shall Not Be Less Than the Available Fault Current. Circuit Breaker Ratings of 100A, 480V, 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.
- **XXCF12060-RJ Models** – The device is equipped with Form C contacts. One labeled N/O is normally open and the other labeled N/C is normally closed without power applied. The contacts are rated at 5 Amps at 250 VAC or 5 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
XXCF12060-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-60ACF
- Eaton Innovative Technology Cat# DINRAILKIT-60ITCF

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)	Maximum Data Rate (Mbps)
XXCF12060-RJ	150	150	150	100	1-4, 2-3	134	100	1

*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.

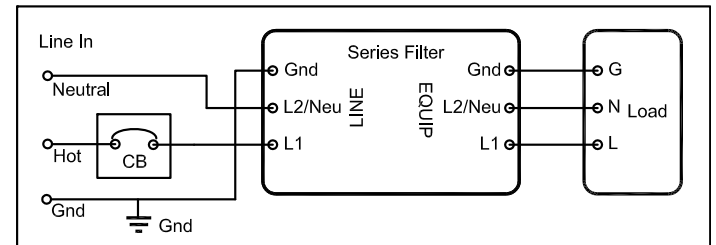


Figure 1. Single Phase Series AC Application

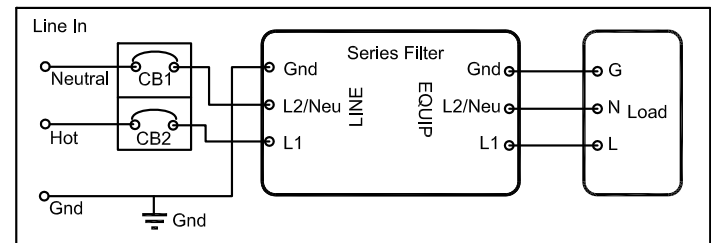


Figure 2. Split Phase Series AC Application (shown with Neutral utilized as L2/NEU)

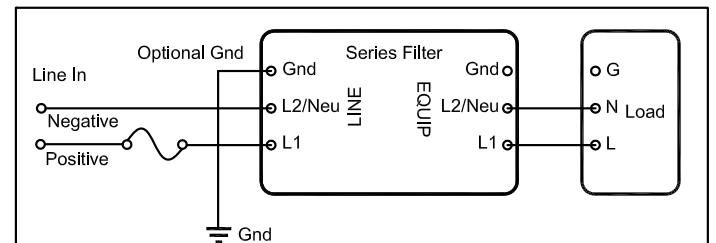


Figure 3. Series DC Application

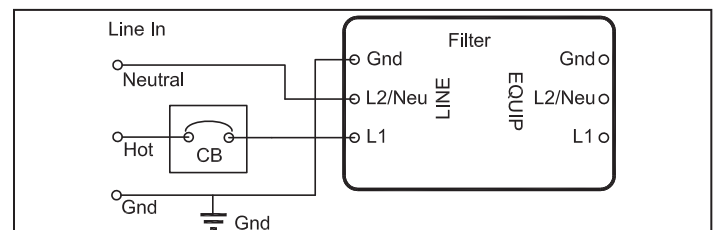
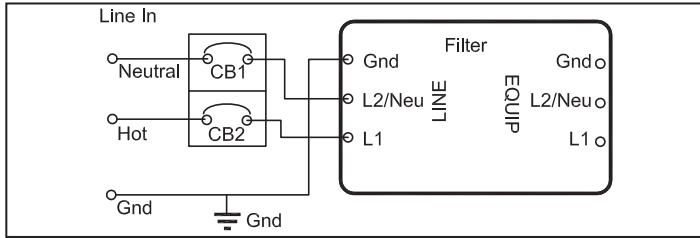


Figure 4. Single Phase Parallel AC Application



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

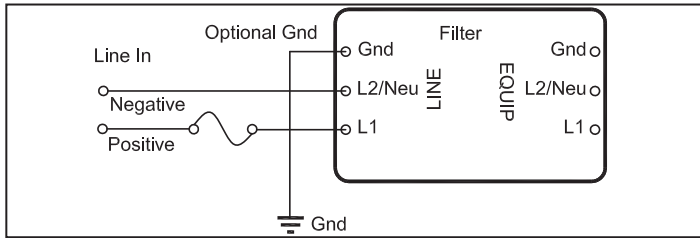


Figure 6. Parallel DC Application

1.5 Specifications

Description	Ratings
Agency Approvals XXCF12060-RJ	UL1449 4th Edition, UL1283 7th Edition Type 2 SPD
Terminal Connection	Stud lug terminals. Torque 60 lb-in
Operating Temperature	-40F (-40C) to +140F (+60C)
System voltages	
DC	48 - 149 Vdc
AC	100 - 127 Vac
Amps*	60A
Circuit Breaker	100A, 480V, 10kA Min. AIC Rating (Eaton P/N:EGC3100FFG)
Input Power Frequency	50/60 Hz
Warranty	5 Years, 10 Years if registered on www.eaton.com/spd
RoHS Compliant	Yes

* Amp rating only applies to series connections.

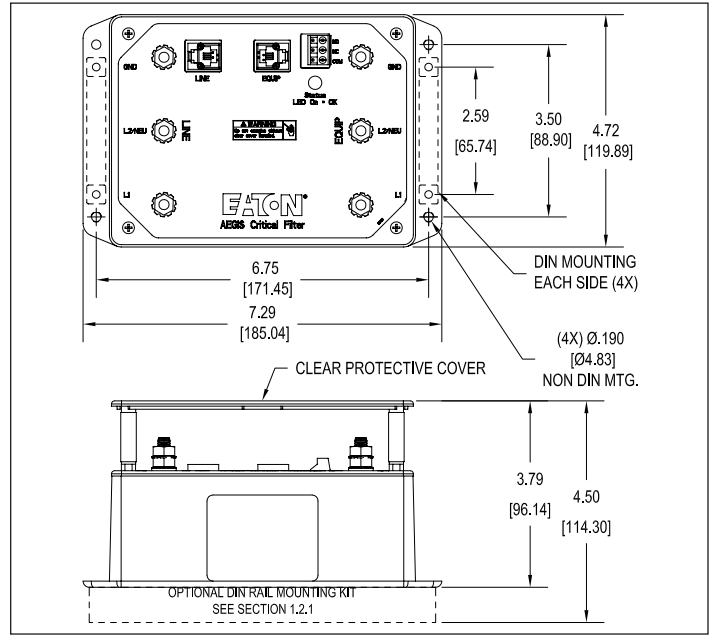


Figure 7. XXCF12060-RJ Product Dimensions.

1.6 Warranty

Eaton warrants these products for a period of 5 years from the date of delivery to the purchaser, 10 years if registered on 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.

Eaton
Electrical Sector
1000 Eaton Boulevard
Cleveland, OH 44122
United States
877-ETN-CARE (877-386-2273)
Eaton.com

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