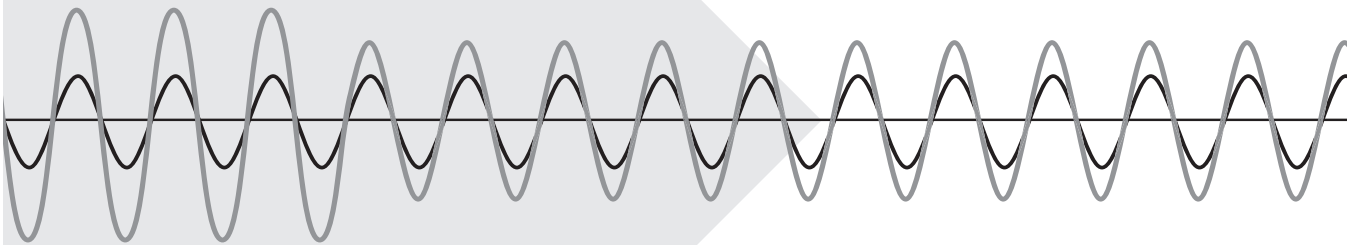


Installation, Operation and Maintenance Manual

750-0098-006 A00



Surge Protective Devices
CurrentGuardTM
Flush Mount

Table of Contents

Guide to Installation and Assistance	3
Pre-Installation Checklist	4
Service Configurations	5
Conductor Sizing & Routing	6
Upstream Overcurrent Protection Device	7
Mounting.	7
Indoor vs Outdoor Installations	7
Conduit Openings	7
Enclosure Dimensions	8
Electrical Connections	8
Connecting Form “C” Dry Contacts	9
Verification and Power Up	10
Troubleshooting	11
Installation Assistance	11
Standards and Listings.	11
Returns and Warranty Procedures	11
Warranty Statement	12

Guide to Installation and Assistance

Thank you for choosing the Current Technology® CurrentGuard™ series Surge Protective Device (SPD). We look forward to fulfilling your facility-wide surge protection needs.

Should you have questions about installing the CGF please call Current Technology® Technical Support at 800.238.5000 or 804.236.3300, Monday through Friday, 8:00 a.m. to 5:00 p.m. (EST). Or, email us at currenttechnology@tnbpowersolutions.com

This manual provides guidelines for the proper installation of the CurrentGuard family of devices. Proper product selection and compliance with these guidelines will help your new suppression system provide years of reliable service. If installers are unsure about the facility electrical configuration or have other installation-related questions, it is recommended they consult with a master electrician or other qualified electrical professional.

When shortcuts are taken or installation procedures are not followed, the CurrentGuard system may be damaged or may not provide adequate protection. It is extremely important to follow these installation procedures carefully.



△ W A R N I N G !

The CurrentGuard 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.

△ W A R N I N G !

HAZARDOUS VOLTAGES PRESENT: Improper installation or misapplication may result in serious personal injury or damage to electrical system. Read the complete installation instructions before proceeding with installation. Remove all power to the electrical panel before installing or servicing the surge protective device (SPD).

IMPORTANT SAFETY INSTRUCTIONS: All work must be performed by licensed and qualified personnel. The electrical system must be properly grounded in accordance with the U.S. National Electrical Code, state and local codes or other applicable codes for this SPD to function properly. This device is suitable for installation where the available short circuit current is 200,000 rms symmetrical amperes up to 600VAC or less. For countries outside of the US follow applicable electrical specifications for the country the unit is being used in.

△ W A R N I N G !

Check to ensure that a proper bond is installed between neutral and ground at the transformer upstream from all 3-Phase Wye, 3-Phase High-Leg Delta or Split-Phase CurrentGuard devices (See NEC Article 250). If the transformer is not accessible, check the main service disconnect/panel for the N-G bond. Lack of a proper bond will damage CurrentGuard and void the warranty.

△ W A R N I N G !

Do not HIPOT the CurrentGuard unit or the electrical system that the CurrentGuard unit is connected to without disconnecting the CurrentGuard conductors including phases, neutral and ground.

Pre-Installation Checklist

- Confirm that the voltage(s) and service configuration shown on the CurrentGuard Flush Mount product label are consistent with the voltage and service configuration of the facility. A model number is on the right side of the CurrentGuard unit. Each model number corresponds to the configurations printed in the Table 1:

Sample Model Number Scheme:

CGF60-120/208-3GY-S

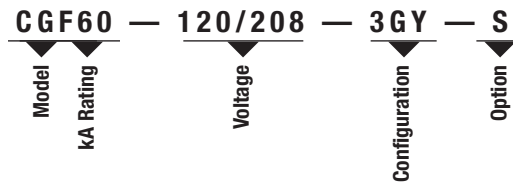


Table 1: Configuration Table

MODEL	NOMINAL VOLTAGE	L-N VOLTAGE RANGE	L-L VOLTAGE RANGE	CONFIGURATION
CGFxx-220-1G	220	193-242	NA	1-Phase, 2-Wire + Ground
CGFxx-230-1G	230	207-253	NA	1-Phase, 2-Wire + Ground
CGFxx-240-1G	240	216-264	NA	1-Phase, 2-Wire + Ground
CGFxx-120/240-2G	120/240	108-132	216-264	Split-Phase 3-Wire + Ground
CGFxx-120/208-3GY	120/208	108-132	187-229	3-Phase Wye 4-Wire + Ground
CGFxx-220/380-3GY	220/380	198-242	342-418	3-Phase Wye 4-Wire + Ground
CGFxx-230/400-3GY	230/400	207-253	360-440	3-Phase Wye, 4-Wire + Ground
CGFxx-277/480-3GY	277/480	249-305	432-528	3-Phase Wye 4-Wire + Ground
CGFxx-347/600-3GY	347/600	312-382	540-660	3-Phase Wye 4-Wire + Ground
CGFxx-120/240-3GHD	120/240	108-132 (A & C Phases) 187-229 (B Phases)	216-264	3-Phase High-Leg Delta 4-Wire+ground
CGFxx-240-3DG	240	NA	216-264	3-Phase Delta 3-Wire + Ground
CGFxx-380-3DG	380	NA	342-418	3-Phase Delta 3-Wire + Ground
CGFxx-480-3DG	480	NA	432-528	3-Phase Delta 3-Wire + Ground
CGFxx-600-3DG	600	NA	540-660	3-Phase Delta 3-Wire + Ground

NOTES/OPTIONS:

- xx denotes surge rating per mode (40, 60, or 80)
- S for Stainless Steel Enclosure
- The Power System Operation Frequency is between 47–63Hz

- Confirm that the environmental conditions are consistent with the following ranges:
- Ambient Temperatures: Between -40° and +158°F (-40° to 70°C).
 - Relative Humidity: Between 5% and 95% non-condensing.
 - Altitude: Less than 13,000 feet (4,000 m).

Service Configurations

Figures 1–5 show the electrical relationship between CurrentGuard and these four basic service configurations: Single-Phase, 2-Wire; Split-Phase, 3-Wire; 3-Phase, 4-Wire Wye; 3-Phase, 3-Wire Delta and 3-Phase, 4-Wire High-Leg Delta.

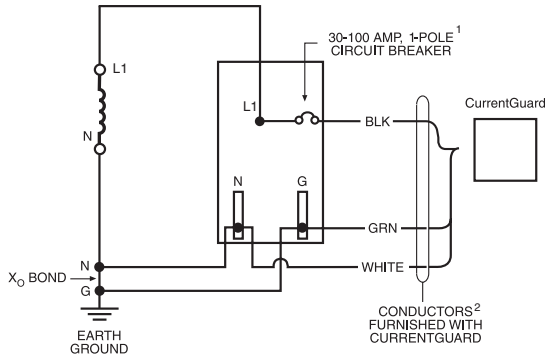


Figure 1
Single-Phase, 2-Wire

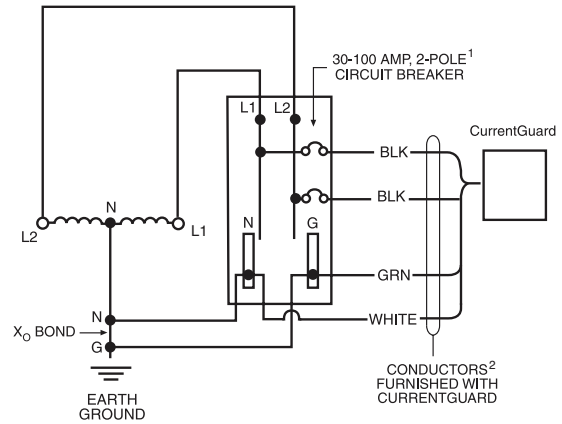


Figure 2
Split-Phase, 3-Wire

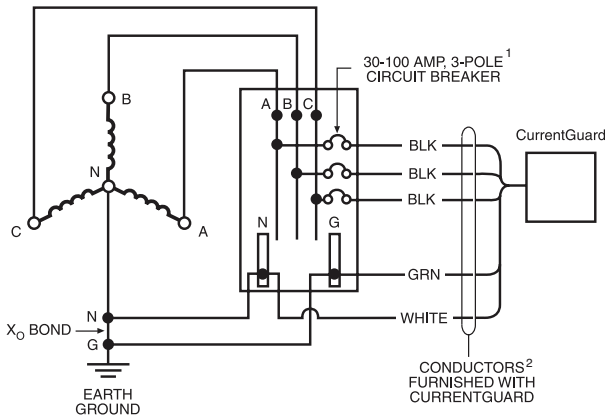


Figure 3
3-Phase, 4-Wire Wye

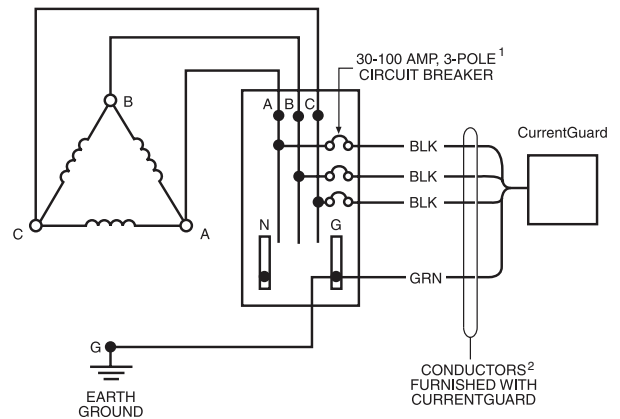
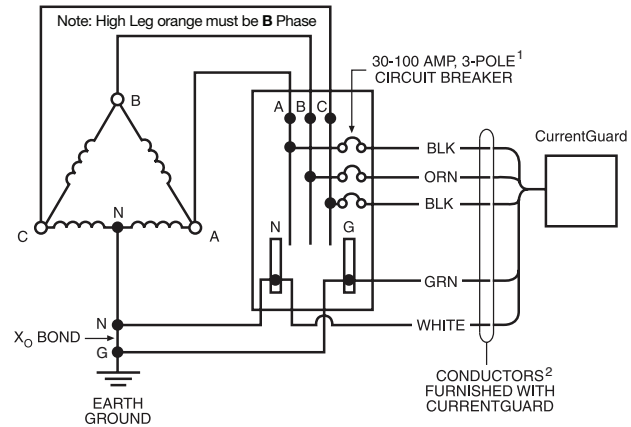


Figure 4
3-Phase, 3-Wire Delta

Figure 5
3-Phase, 4-Wire High-Leg Delta



¹ All CurrentGuard Flush Mount units can be connected without an upstream breaker/fuse.

² All products furnished with #10AWG conductors.

Conductor Sizing & Routing

△ CAUTION: CurrentGuard's performance will be limited severely if the conductors are (a) too long, (b) are of too small a wire gauge, (c) have too many bends or (d) have sharp bends.

The factors listed above should be addressed during the design of an installation to reserve a suitable place for CurrentGuard next to its point of connection to the electrical system. The selected mounting location should allow for the shortest possible conductor runs and a direct route with a minimum of bends. If bends are required, they should be *sweeping* bends. Do not make sharp 90° bends for appearance purposes because they will severely decrease the effectiveness of CurrentGuard.

Binding or twisting conductors together using tie-wraps or electrical tape increases the protection performance of the device.

The conductor length should be as short as possible to ensure the maximum level of protection. Wires are marked with (Phase A, B, C, Line 1, Line 2, Neutral or Ground) depending on the model.

Upstream Overcurrent Protection Device

The CurrentGuard series units are a Type 1 SPD which is suitable for use in both Type 1 and Type 2 SPD applications. The CurrentGuard series is a one-port SPD and is to be connected in parallel with the electrical system. It may be connected via a circuit breaker, molded case switch, fused switch, or connected directly to the bus of the panelboard or switchboard it is protecting. If direct bus connection is used, Current Technology® recommends installing the CurrentGuard Series behind a disconnect switch or other disconnecting means for ease of serviceability.

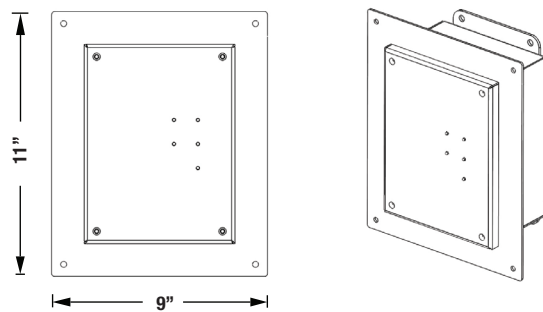
If the SPD is connected to a dedicated overcurrent protection device (OCPD), a 60A breaker is recommended (30A minimum, 200A maximum).

Mounting

Mount the CurrentGuard to the building structure using construction methods and hardware appropriate for your site.

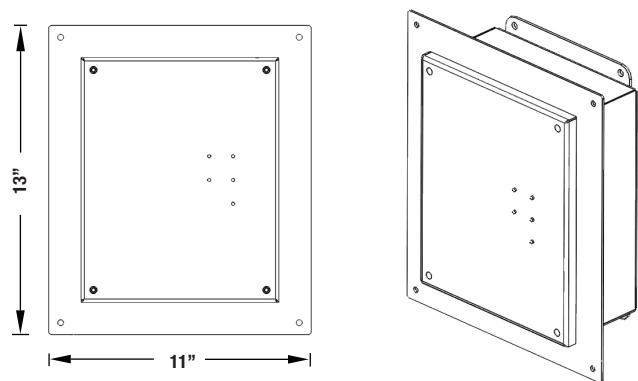
Install Flush Mounting Plate (FMP) by first removing the CGF enclosure lid. Place the FMP over enclosure body. Attach the FMP to the wall using the included hardware kit. Mount the CGF into the wall. Suggestions include using standard hardware (screws, anchors) to attach the CGF mounting feet to the inner (back) wall, using an industrial grade mastic (Liquid Nails®-Heavy Duty, Loctite Power Grab-Heavy Duty, etc) to adhere the CGF to the inner wall, or create appropriate mounting brackets sturdy enough to support the CGF (such as L-channel or Flat-channel). Note the weights of the two CGF sizes.

Figure 6
CGF 40 Mounting Plate



CGF 40 Weight: 20 lbs. (9.1 kg)

Figure 7
CGF 60–80 Mounting Plate



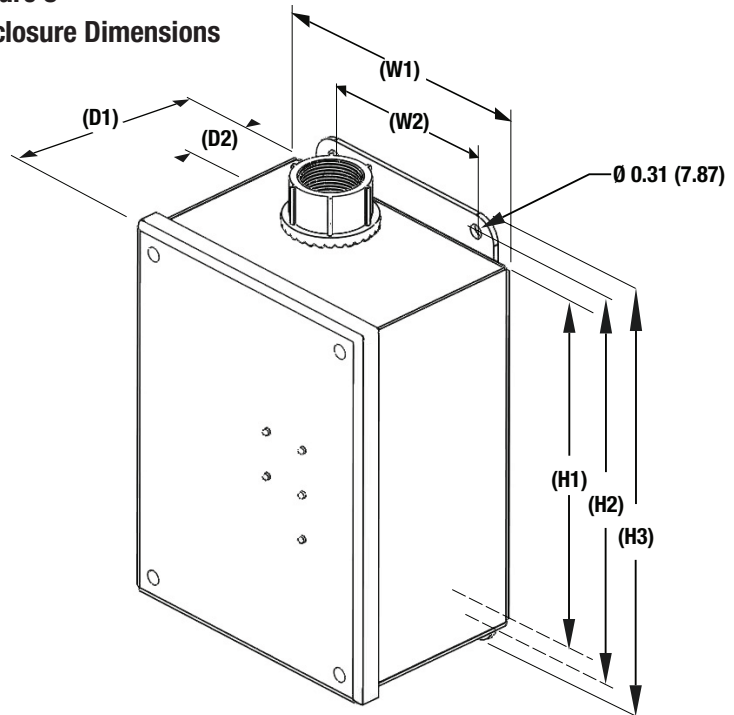
CGF 60–80 Weight: 30 lbs. (13.6 kg)

Indoor vs Outdoor Installations

NEMA 12 enclosures are suitable for Indoor use only. NEMA 4 enclosures are suitable for Indoor or Outdoor use. NEMA 4X stainless steel enclosures are suitable for corrosive environments as well. For direct sunlight applications, Current Technology® suggests shading the monitoring components. All conduits and fittings must be rated and properly installed such that the final installation maintains the NEMA rating.

Enclosure Dimensions

Figure 8
Enclosure Dimensions



Dim	CGF40	CGF 60–80
H1	8.00 (203.2)	10.00 (254.0)
H2	8.75 (222.3)	10.75 (273.1)
H3	9.50 (241.3)	11.50 (292.1)
W1	6.75 (171.5)	8.00 (203.2)
W2	4.75 (120.7)	6.00 (152.4)
D1	4.20 (106.9)	4.20 (106.9)
D2	2.00 (50.8)	2.00 (50.8)
Weight	20 (9.1)	30 (13.6)

All measurements in inches (mm) and pounds (kg)

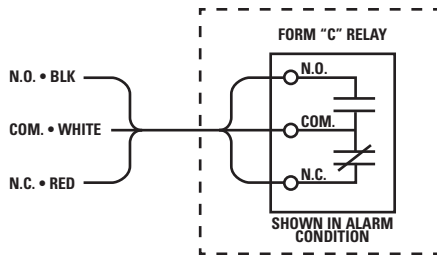
Electrical Connections

CAUTION: Prior to installation ensure the system configuration and voltage is equivalent to the CurrentGuard unit being installed.

Following all applicable National Electrical Code standards as well as state and local codes, connect phase, neutral* and ground. All units come with 36 inches of #10AWG conductors. Each phase conductor is marked Phase A, B or C, neutral is white, ground is green with yellow stripe. Ensure that the conductor lengths are kept as short and straight as possible. On all high-leg Delta systems, the high-leg (208V L-N) must be connected to the Phase B of the SPD (color-coded orange according to the NEC).

**The 3-Wire plus ground Delta CurrentGuard does not have a neutral conductor.*

Connecting Form “C” Dry Contacts



All CurrentGuard units come standard with one set of Form “C” dry relay contacts for the surge protective device status. These contacts are for connection to a user-provided remote alarm and monitoring circuit. The relay contacts are rated 65VDC/150VAC with maximum switching power of 30WDC/60VA AC. The Form “C” contacts come pre-wired with 36" of #20AWG conductors.

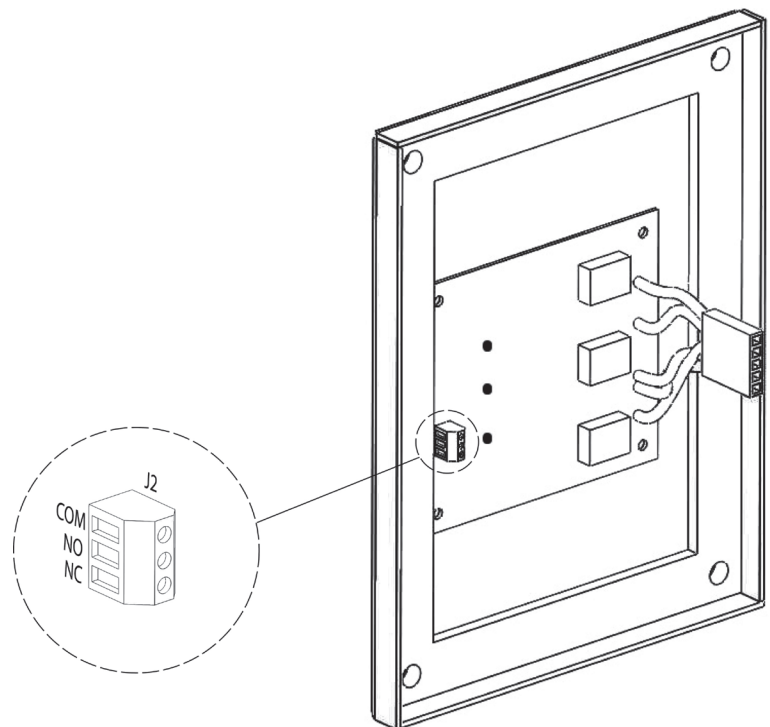
When input power is present on all phases, terminals “NO” (normally open) and “COM” (common) are an open circuit and terminals “NC” (normally closed) and “COM” are a closed circuit. The contacts change state when the unit has encountered failure to one or more phases.

The installer must provide the appropriate raceway and wiring for the monitoring circuit, observing the restrictions and conduit openings illustrated in an earlier section of this manual.

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 CGF and the panelboard to connect Form “C” leads to user’s monitoring circuits. If the Form “C” contacts are not used, user has the option of either cutting off the leads or coiling up the leads and saving them for potential future use. Consult applicable local codes to ensure proper installation.

Figure 9 Remote Monitoring Terminal Block

Contacts shown in energized normal state (no fault condition).



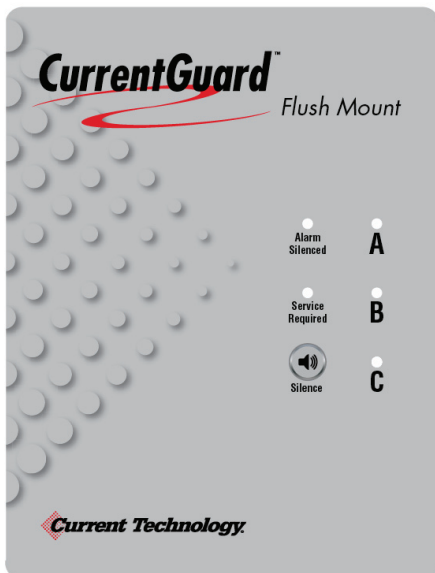
COVER REAR VIEW

Verification and Power Up

△ W A R N I N G ! It is recommended that the cover of the CurrentGuard unit along with its associated cabling be installed prior to applying power. The monitoring harness, which exits the epoxy and connects to the input connector on the monitor board, contains line voltage when power is applied to the unit.

Apply power to CurrentGuard by closing the overcurrent protection device or switch feeding the suppressor.

Figure 10 CurrentGuard Diagnostics



Verify that all “Phase Protection Status” indicating lights are illuminated. The “Service Required” indicating light illuminates only upon failure of one or more phases (indicating an alarm condition). Audible alarm should not operate under normal conditions. The audible alarm can be “muted” by pressing the “ALARM SILENCE” button, which subsequently will illuminate the “ALARM SILENCED” light. Pressing the “ALARM SILENCE” button again will enable the alarm.

Troubleshooting

Your CurrentGuard system does not require scheduled maintenance. The unit's heavy-duty construction is designed to provide years of uninterrupted service. The unit contains no serviceable parts.

INDICATION	PROCEDURE
One or more phase protection status indicating lights are off, and Form "C" alarm contacts have changed state	Verify that the input power feeding CurrentGuard is energized using a voltage tester. If power is present, contact factory for assistance: 800.238.5000

Installation Assistance

Our staff is available to support you.

**Monday through Friday, 8:00 a.m to 5:00 p.m. (EST):
800.238.5000 or 804.236.3300.
currenttechnology@tnbpowersolutions.com**

Standards and Listings

The following standards and listings apply to the CGF product line:

- Listed by UL to UL 1449 3rd Edition (2009 Revision) for Type 1 and Type 2 SPD applications, cUL, and UL 1283
- Meets Requirements for UL 96A
- Compliant to IEEE C62.41.1-2002, C62.41.2-2002 and C62.45-2002
- NFPA 70 [NEC], Article 285
- RoHS Compliant
- CE, IEC 61643-11-2011
- EMC Directive 2004/108/EC
- Low Voltage Directive 2006/95/EC

Returns and Warranty Procedures

A Return Material Authorization (RMA) number must be obtained from T&B Power Solutions Customer Service department before replacement products can be shipped. Go to www.tnbpowersolutions.com/ct_rma_form to complete an online return material authorization request form. We will immediately ship a replacement for the defective parts free of charge (installation labor and site preparation excluded). Return the defective parts to Current Technology within 30 days of receiving the replacement. Failure to return the defective parts will result in billing for the replacement parts. To help expedite the return procedures, please have the following information at hand when you contact Current Technology:

INFORMATION	EXAMPLE
Model Number	CGF80-277/480-3GY
Serial Number	15478-0113-001
Date of Purchase	January 2, 2013
Description of Failure	"Service Required" indicating light
Desired Action from Current Technology	Replace

Warranty Statement

Thomas & Betts Power Solutions, LLC / Current Technology® warrants that CurrentGuard™ Flush Mount suppression filter systems (the “Product”), shall meet applicable industry standards and specifications and be free from defects in materials and/or workmanship. Should any failure of the Product to conform to this warranty appear within ten (10) years from the date of the purchase of the Product, Thomas & Betts Power Solutions shall either repair or replace the defective Product, or part thereof, upon return to Thomas & Betts Power Solutions’ manufacturing facility in Richmond, Virginia with transportation charges prepaid.

Thomas & Betts Power Solutions shall have no liability under this warranty for any problems or defects directly or indirectly caused by misuse of the Product, alteration of the Product (including removal of any warning labels), accident, neglect or improper installation, application, operation, or repair of the Product.

THE WARRANTY STATED HEREIN IS THE SOLE AND EXCLUSIVE WARRANTY FOR CURRENT TECHNOLOGY® PRODUCTS, AND IS IN LIEU OF ALL OTHER EXPRESS AND IMPLIED WARRANTIES. THOMAS & BETTS POWER SOLUTIONS SPECIFICALLY DISCLAIMS ALL OTHER EXPRESS AND IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Installation, operation, or use of the Product for which this warranty is issued shall constitute acceptance of the terms hereof.

The liability of Thomas & Betts Power Solutions under this warranty is expressly limited to the replacement or repair of the defective Product or the defective part thereof, at Thomas & Betts Power Solutions’ sole option.

IN NO EVENT SHALL THOMAS & BETTS POWER SOLUTIONS BE LIABLE FOR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OF ANY KIND OR CHARACTER. IN NO EVENT WILL THOMAS & BETTS POWER SOLUTIONS’ LIABILITY EVER EXCEED THE PURCHASE PRICE PAID FOR SUCH DEFECTIVE PRODUCT.

This warranty is not transferable and may only be enforced by the purchaser. Claims under this warranty must be submitted to Current Technology® within thirty (30) days of discovery of any CurrentGuard™ Flush Mount product defect.

Model #

Date of Purchase

Date Installed

Installer

Warranty Period

CurrentGuard™ Flush Mount™ 10 Years from original date of purchase



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