

# MCG Surge Protection

## Models 202XT & 402XT Installation Instructions

### Important Warranty Information

*MCG surge protectors are designed to work at specific voltages and configurations, for example, at 120/208VAC, wye. Installation of the surge protector improperly on a power system will automatically void the warranty.*

### 1. Confirm Model with Power Service.

Measure  $\emptyset$ -N,  $\emptyset$ - $\emptyset$ ,  $\emptyset$ -Gnd with voltmeter to confirm application voltage prior to installation.

<b>202XT, 402XT</b>	<b>Power Service</b>	<b>Description</b>	<b>Wiring Diagram (pg. 2)</b>
120T	120/240 VAC	1 ph, 3w + gnd, split phase	1
120Y	120/208 VAC	3 ph, 4w + gnd, Wye	2
220Y	220/380 VAC	3 ph, 4w + gnd, Wye	2
240Y	240/415 VAC	3 ph, 4w + gnd, Wye	2
240DCT	240/120/120 VAC	3 ph, 4w + gnd, High-leg Delta	3
277Y	277/480 VAC	3 ph, 4w + gnd, Wye	2
347Y	347/600VAC	3 ph, 4w + gnd, Wye	2
240D	240 VAC	3 ph, 3w + gnd, Delta	4
480D	480 VAC	3 ph, 3w + gnd, Delta	4
600D	600 VAC	3 ph, 3w + gnd, Delta	4

### 2. Disconnect Power before Installation.

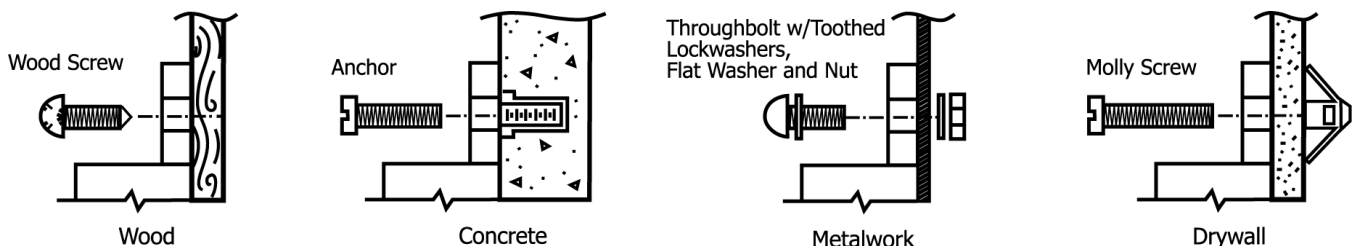
All wiring to be done in accordance with National Electric Code and local codes by qualified electricians.

Note: This device features internal protection that will disconnect the surge protective component at the end of its useful life but will maintain power to the load - now unprotected. If this situation is undesirable for the application, follow the instructions for servicing the device.

### 3. Mounting.

For best performance, mount protector as close to service panel as possible. Secure unit to mounting surface.

Use proper fasteners as indicated. (Fasteners not supplied.)



**4. Wiring and Circuit Breaker Recommendations.**

Cut the pre-installed 10 AWG power cable back as short as possible. **Electrician Note:** Use a dedicated 30A, UL489 Listed circuit breaker to connect the protector. Circuit breaker voltage and interrupt rating must be suitable for the service.

Fig. 1

**Single Phase**

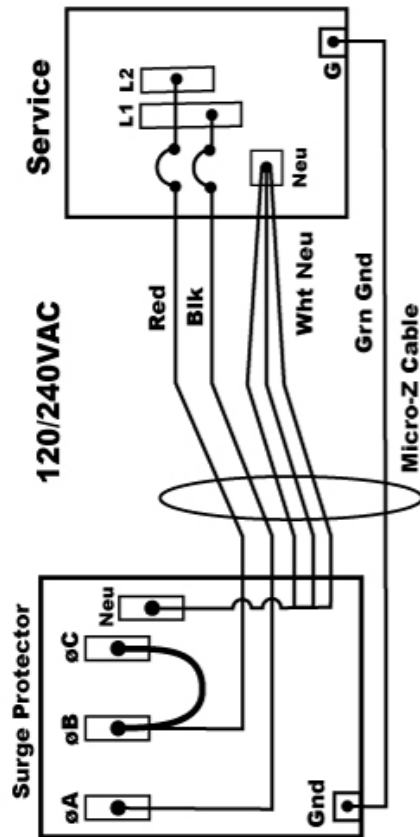


Fig. 2

**Three Phase, Wye**

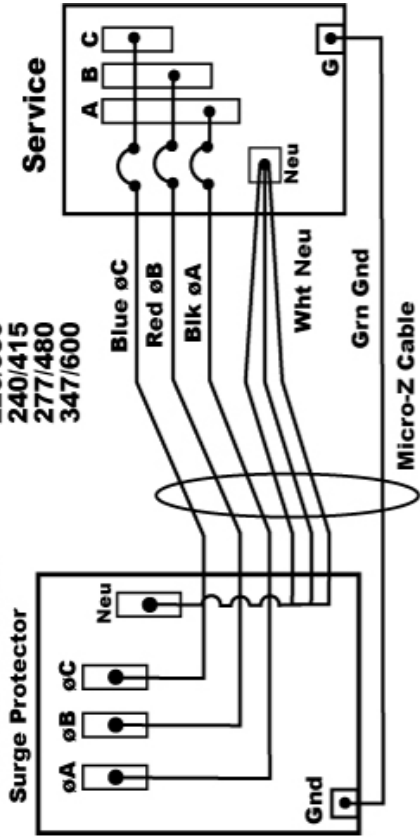
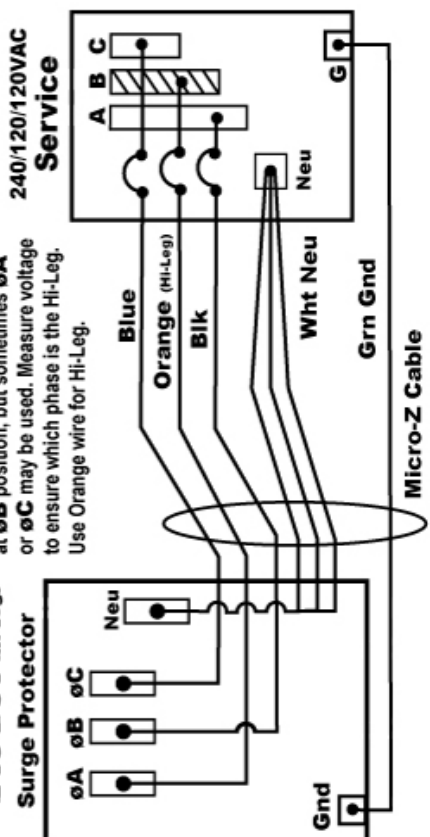


Fig. 3

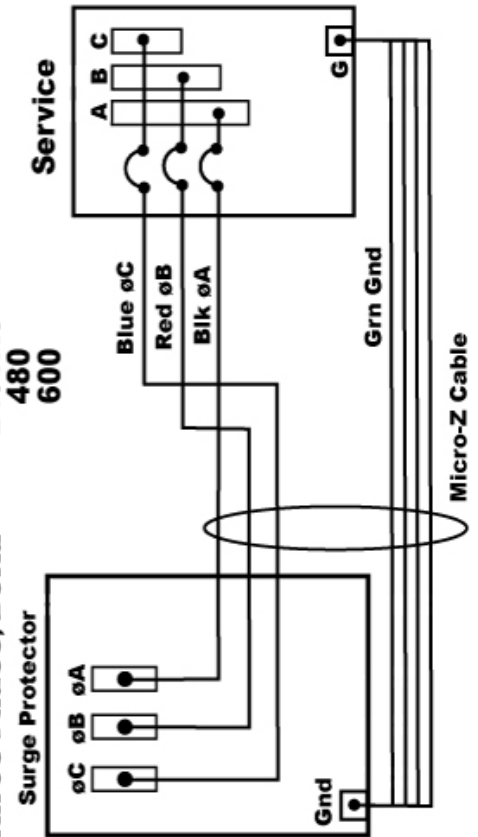
**-240 DCT (Hi-Leg)**



Hi-Leg (208VAC L-N) is connected at øB position, but sometimes øA or øC may be used. Measure voltage to ensure which phase is the Hi-Leg. Use Orange wire for Hi-Leg.

Fig. 4

**Three Phase, Delta**



## 5. Powering up the Protector.

To prevent possible electrical hazard, door on protector MUST be closed before applying power. Upon power up, the front panel will show the following:

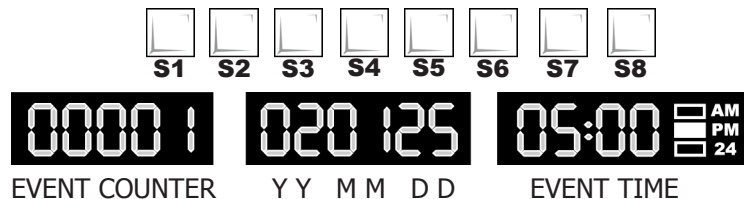
- Bar graphs should indicate 100% protection (Note: Delta models have three bar graphs - one per phase).
- Green NORMAL light should be illuminated
- Red FAULT light should be off.
- If counter indicates a non-zero value, reset it by pressing S1. See *Step 9*.



## 6. Setting the Date and Time. Refer to Step 6, Diagram on Page 5.

Procedure:

- Loosen cover clamps and open door.  
DO NOT TOUCH ANYTHING - HIGH VOLTAGE PRESENT.
- Locate on the back of the door eight switches labeled (S1, S2, S3...S8).
- Press S3 to enter Time Set mode. Note: Counter field will extinguish when in Time Set mode.
- Press S4 to advance year (last two digits only, i.e. 10).
- Press S5 to advance month.
- Press S6 to advance day.
- Press S7 to advance hour.  
Note: This switch is also used to set the AM/PM/24 Hr. indicator.  
Hours will cycle as follows and the AM/PM/24 Hr. indicators will light accordingly:  
12AM 1AM 2AM...11AM 12PM 1PM 2PM...11PM  
00 24Hr. 01 24Hr. 02 24Hr. 03 24Hr....22 24Hr. 23 24Hr., and back to 12AM.
- Press S8 to advance minute.
- Press S3 to return to Normal Display Mode. Note: Counter field will reappear. Note: The date and time that was just entered will not appear on the display. This is normal, as only a transient (surge) event will trigger the event, date, and time field.
  - When in time set mode, if you don't pres any buttons in 4 minutes (elapsed time), the display will return to Normal Display/Time Not Changed.
  - When in time set mode, S2 returns to Normal Display without changing Date/Time ("cancel").
- Close door and secure clamps.

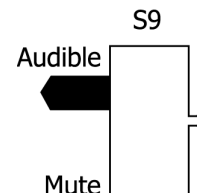


## 7. Beeper Mute Feature. Refer to Step 7, Diagram on Page 5.

The audible alarm sounds every 30 seconds if a fault condition exists. Alarm can be disabled if desired.

To access the mute switch:

- Loosen clamps and open door.  
DO NOT TOUCH ANYTHING - HIGH VOLTAGE PRESENT.
- Observe circuit board mounted on back of door.
- Locate slide switch at lower left of circuit board marked S9 (Audible/Mute).
- Move switch to desired position. Switch is factory set to AUDIBLE position.
- Close door, secure clamps.

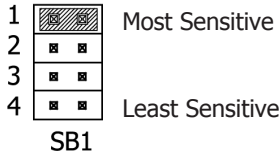


### 8. Counter Trigger Sensitivity. Refer to Step 8, Diagram on Page 5.

The counter sensitivity is preset at the factory at its most sensitive position. If you get too many counts on the display, you can reduce the sensitivity of the counter. Protection is not affected.

To access the counter trigger sensitivity adjustment:

- a. Loosen clamps and open door - DO NOT TOUCH ANYTHING - HIGH VOLTAGE PRESENT.
- b. Observe circuit board mounted on back of door.
- c. Locate shorting block labeled SB1 at top right of board.  
Note: The shorting block is a small black jumper that connects two pins together electrically. You can remove it by simply pulling it straight out.
- d. For highest sensitivity, move the shorting block to the top-most position - Position 1.
- e. For lowest sensitivity, move the shorting block to the bottom-most position - Position 4.
- f. Close door. Secure clamps. Turn switch to ON position.



### 9. Counter Reset Feature. Refer to Step 9, Diagram on Page 5.

This feature sets the front panel event count back to zero. The counter reset capability is generally only exercised at time of installation, where power up may have caused an event. A monthly log is recommended to keep track of transient occurrences.

To reset event counter:

- a. Loosen clamps and open door - DO NOT TOUCH ANYTHING - HIGH VOLTAGE PRESENT.
- b. Observe circuit board mounted on back of door.
- c. Locate switch on bottom of board labeled "S1".
- d. Press S1 to reset counter back to zero.
- e. Close door. Secure clamps.



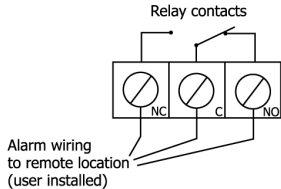
### 10. Remote Relay Feature. Refer to Step 10, Diagram on Page 5.

This feature enables you to operate a remote beeper/indicator light for monitoring the surge protector status from a remote location.

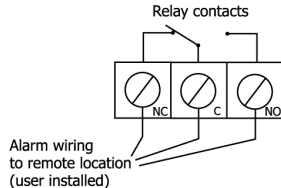
To access remote relay terminal block:

- a. Loosen clamps and open door.  
DO NOT TOUCH ANYTHING - HIGH VOLTAGE PRESENT.
- b. Observe circuit board mounted on back of door.
- c. Locate TB1 at left bottom of circuit board.
- d. There are three terminals labeled NC (Normally Closed), C (Common) and NO (Normally Open). These are 1 Form C contacts rated 1A, 30VDC. Maximum switched power: 30W/60VA.
- e. Connect remote monitoring circuit (user supplied) to the appropriate terminals.
- f. Close door. Secure clamps.

Normal Operation (100% Protection)

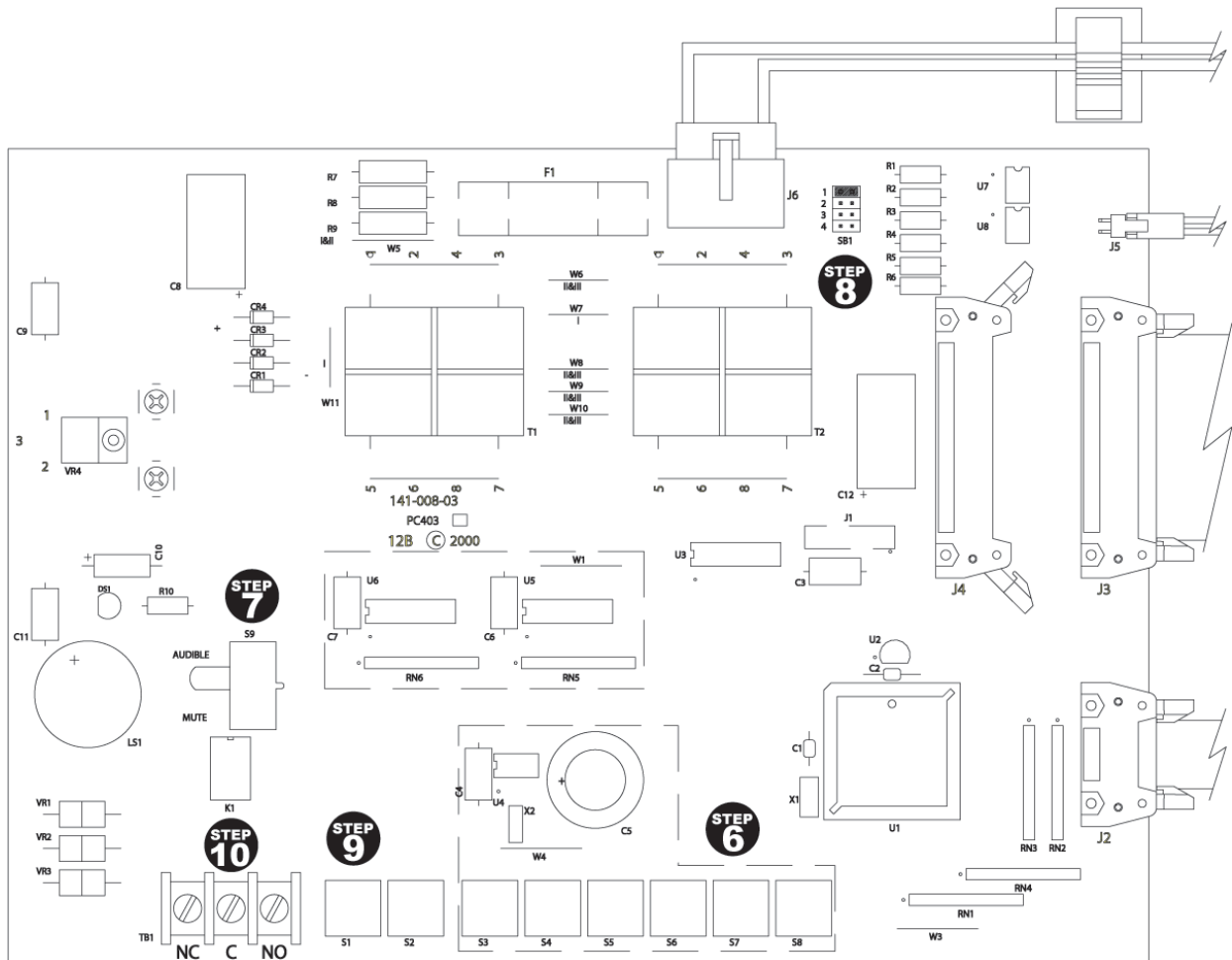


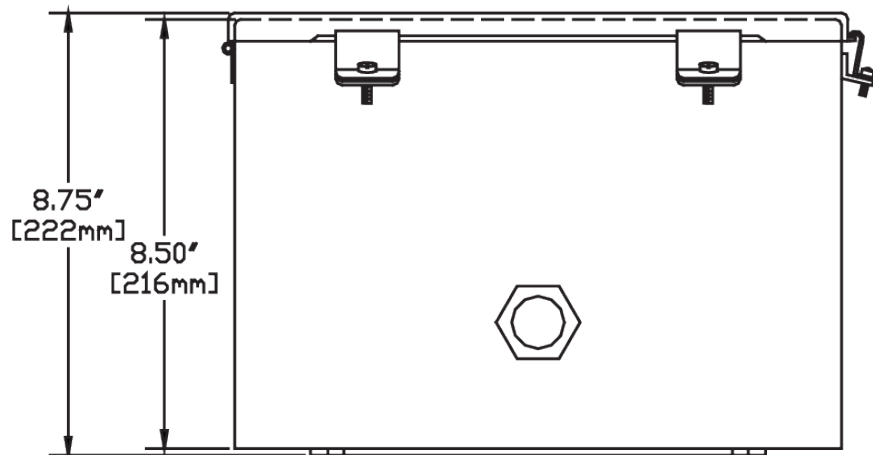
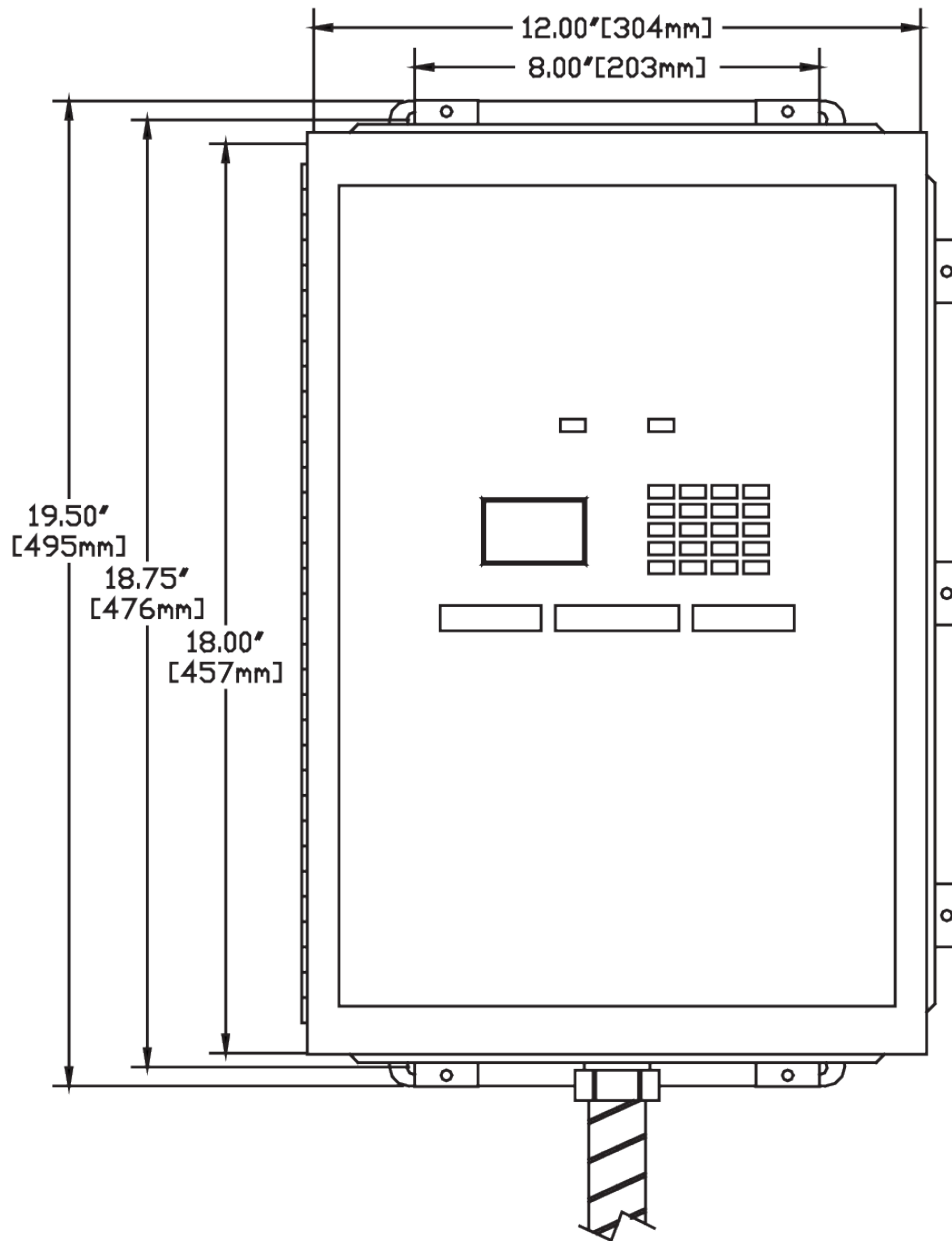
Reduced Protection (or Power Off)



**Note 1: Class 2 Wiring Only. 14-22 AWG.**  
**Note 2: Recommended screw torque: 9 in-lbs.**

# Circuit Board Located on Back of Door.





## 11. Troubleshooting and Maintenance.

MCG surge protectors do not require any periodic maintenance. However, if the red FAULT light is illuminated on the front panel, a fault condition exists and the beeper will sound every 30 seconds. When this occurs, follow the procedure below:

- a. Observe front panel and note which bar graph(s) are indicating a protection percentage less than 100%. Loosen clamps and open door. **DO NOT TOUCH ANYTHING.**
- b. Remove power from protector by performing step 1 or 2 below:
  1. The circuit breaker (or disconnect switch), which feeds the protector, should be turned off prior to disconnect.
  2. If an upstream disconnect switch is not present, then the internal disconnect may be used. Only **qualified personnel** should attempt to service protector, as high voltage is present at the input of the internal disconnect switch, even when the internal switch is pulled out. The disconnect switch is located at the bottom of the protector. It is white with a black handle. Grab the handle and pull straight out to remove power. Do not touch anything else, especially the input contacts to the switch.
- c. Locate the module(s) that need to be replaced. See diagram on page 9 to locate the module(s). The bar graph will indicate which module(s) need to be replaced (for Example, Phase A).
- d. Unplug the small ribbon cable from module requiring replacement. In the 402XT, the modules should be replaced in pairs (except the N-G as a single module is employed) when servicing.
- e. Unscrew the three mounting bolts (5/16" hex), which secure module. For the 402XT, a 3/8" hex driver may also be required for the standoffs.
- f. Make sure the replacement module is the same voltage and type as the original one. This is verified by matching the part numbers on the label (i.e. 169-xxx-xx).
- g. Plug in the ribbon cable and mount module securely. Note: the ribbon cable connector is polarized so it will only plug in one way. Do not force the connector as the mating connector may be damaged.
- h. If the internal disconnect switch was used, line up contacts with fuse clips on the base. Push to seat switch. Power is now restored.
- k. Close door and secure clamps.
- j. Apply power by turning circuit breaker back on, where applicable.
- l. Observe 100% protection.

## 12. Event Counter Discrepancies.

In the event that the counter reads the following:

**Ennnn**

(where "nnnn" is a four-digit number, e.g. "E4321"),  
 remove power from protector, then reapply power to restore event count.  
 If the counter fails to respond, contact factory for assistance.

Note: Protection is still present even though the error code is displayed.





