



**PG 4000 - 4500 - 5000 Series**

**INSTALLATION INSTRUCTIONS**  
and  
**OPERATIONS MANUAL**

## **HARDWIRED SURGE PROTECTION DEVICES**

**CAUTION:** **TURN OFF POWER TO THE ELECTRIC SERVICE OR PANEL AND TO EQUIPMENT TO BE PROTECTED BEFORE INSTALLING ANY SURGE PROTECTION DEVICE. ALL WIRING SHOULD COMPLY WITH THE NATIONAL ELECTRIC CODE AND LOCAL ELECTRIC CODES.**

### **INSTALLATION**

1. TEST and verify system voltage to assure proper selection of the Surge Protection Device (SPD) in accordance with the wiring diagrams shown on page 2. Turn **OFF** the electric power to the panel.
2. CONFIRM that the Surge Protection Device is the proper voltage configuration for this installation. Refer to the installation diagrams for additional information.
3. SELECT a location to mount the SPD cabinet. Mount as close as possible to the electric panel or individual piece of equipment to be protected. The SPD should be mounted on a flat vertical surface that can support the weight of the device. Consideration should be given to the available knockout positions in the panel when deciding where to locate the SPD. All wire leads should be kept as short as possible to insure optimum operation.
4. The integral disconnect switch and internal Ferraz Shawmut VSP fuses are the prime current protection devices for this SPD; therefore, lead wires may be connected to either a bus bar or a multi-pole breaker. If connected to a breaker, use a 60 to 100 amp breaker with the appropriate number of poles. Panel breakers will not trip from surge activity due to their inherent slow response.

**NOTE:** For installations connecting directly to bus bar, the PG Series must be less than ten feet (10') wire distance from the bus bar to qualify the internal disconnect switch and fuses as the primary overcurrent device in accordance with the NEC 10 foot rule 240-21(b).

### **MOUNTING**

1. Attach the upper and lower mounting rails to the PG Series Cabinet using the screws provided.
2. Pre-drill holes in the surface on which the PG Series will be mounted. Use at least four (4) appropriate size mounting screws or bolts.
3. Open the hinged cover on the PG Series unit by placing the Disconnect Switch handle in the **OFF** position and unscrewing the locking bolts in the cover.
4. Remove the deadfront panel.
5. Select and remove the proper size knockout from the PG Series cabinet. Install conduit, sealtite or other proper wire protection between the panel and the SPD.

### **WIRING**

1. Refer to the chart on page 2 for the proper wire size.
2. Measure and cut all leads to proper length, keeping in mind that leads should be as short and straight as possible.
3. Tie wrap or tape all wires together to minimize inductive coupling.
4. Route the wire lead bundle through the conduit to the panel.
5. Connect the GROUND (green) lead to the ground bus in both the PG Series and the electric panel.
6. If used, connect the NEUTRAL (white) to the neutral terminal in the PG Series and the neutral bus in the electric panel. If installing at the main distribution panel, the neutral and ground leads could terminate at a common bus bar in the panel.
7. Connect the phase leads to the disconnect switch in the PG Series. Then connect them to the appropriate breaker or bus connections in the electric panel. NOTE: For HIGH LEG DELTA, make certain that the high leg is connected to the center switch position in the PG Series.(Refer to Figure 3)
8. Connect wires to the alarm relay leads. Alarm wires should be routed through a knockout that is separate from the power leads. (Refer to alarm wiring drawings on page 2)
9. CHECK all connections for tightness.
10. REPLACE Dead-front panel.
11. Close and secure the hinged front cover, remembering to replace all of the locking bolts.
12. Rotate the Disconnect Switch handle to the **ON** position.
13. Turn power to the unit **ON** if an exterior switch or breaker is used.

# WIRING DIAGRAMS

## 120/240 VAC Single Phase

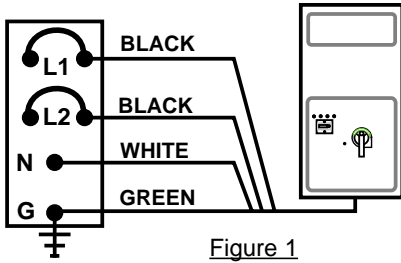


Figure 1

MODELS:

PG4001-240-2S  
PG4501-240-2S  
PG5001-240-2S

## 277/480 VAC Three Phase Wye

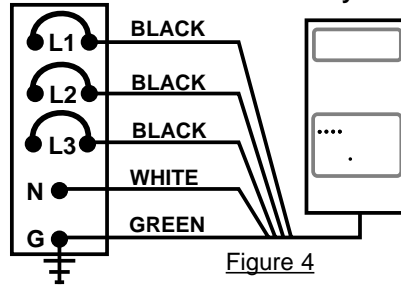


Figure 4

MODELS:

PG4001-480-3Y  
PG4501-480-3Y  
PG5001-480-3Y

## 120/208 VAC Three Phase Wye

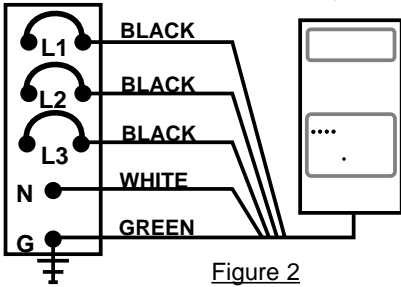


Figure 2

MODELS:

PG4001-208-3Y  
PG4501-208-3Y  
PG5001-208-3Y

## 480 VAC Three Phase Delta

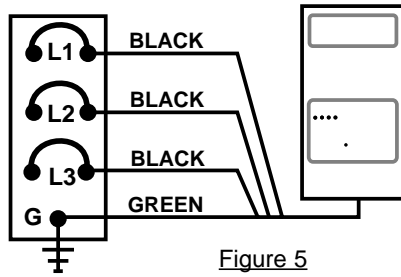


Figure 5

MODELS:

PG4001-480-3D  
PG4501-480-3D  
PG5001-480-3D

## 120/240 VAC Three Phase High Leg Delta

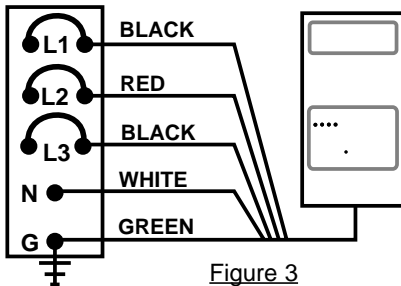


Figure 3

MODELS:

PG4001-240-3HLD  
PG4501-240-3HLD  
PG5001-240-3HLD

## 347/600 VAC Three Phase Wye

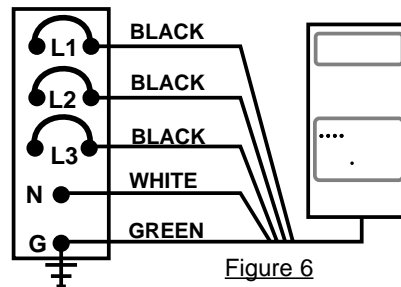


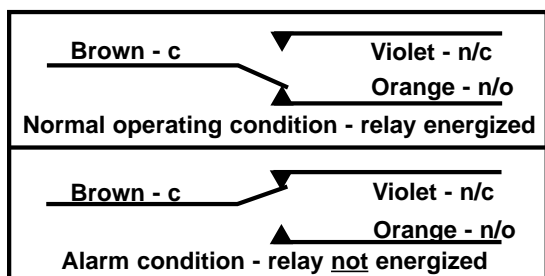
Figure 6

MODELS:

PG4001-600-3Y  
PG4501-600-3Y  
PG5001-600-3Y

## ALARM RELAY OUTPUT CONNECTIONS

- Two Wire Closed Loop: Connect feed wire to the Common (C) wire and return wire to the Normally Opened (N/O) wire. During normal operation, the contact will be closed between C and N/O. The contact will open during an alarm condition.
- Two Wire Opened Loop: Connect the feed wire to the Common (C) wire and return wire to the Normally Closed (N/C) wire. During normal operation, the contact will be opened between C and N/C. The contact will close during an alarm condition.
- Three Wire Supervised Loop: Connect feed wire to the Common (C) wire, one return wire to the Normally Opened (N/O) wire and the second return wire to the Normally Closed (N/C) wire. During normal operation, the contact will be closed between C and N/O and opened between C and N/C. An alarm condition will reverse the condition.
- Consult the instructions for your specific monitoring system for additional information.



## 600 VAC Three Phase Delta

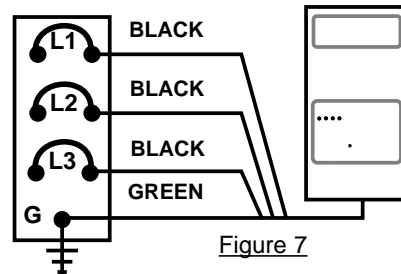


Figure 7

MODELS:

PG4001-600-3D  
PG4501-600-3D  
PG5001-600-3D

## SUGGESTED WIRE SIZES

SERIES	UNDER 3'	UNDER 6'	OVER 6'
PG4000	8 AWG	6 AWG	4 AWG
PG4500	6 AWG	4 AWG	2 AWG
PG5000	4 AWG	2 AWG	2 AWG

**NOTE:** For convenience and working safety, these wiring diagrams show installation on the load side of a breaker. PG Series 4000, 4500 and 5000 systems may be installed without an external breaker. Refer to installation instruction number 4 on page 1.

## **FINAL CHECKOUT PROCEDURE**

1. Make sure that the Dead-front panel has been replaced and properly secured by replacing all bolts.
2. Make sure that the cover is closed and secured by all bolts.
3. Place alarm Alarm Switch in the NORMAL position.
4. Turn the PG Series disconnect switch to ON position.
5. RESTORE electric power to the PG Series circuit or equipment circuit.
6. Check all PROTECTION STATUS Line indicator lights for proper illumination.
7. Confirm that the PROTECTION STATUS Alarm indicator is OFF.
8. Check output continuity for the alarm relay. (a) Common to Normally Open = 0 ohms; (b) Common to Normally Closed = greater than 10 M ohms.
9. Audible Alarm should be silent.
10. Place Alarm Switch in SILENCE position: Audible alarm should sound. Return Alarm Switch to normal position.
11. Place and hold Alarm Switch in TEST position. Audible alarm should sound and the alarm relay outputs should reverse state. Release the switch and allow it to return to the NORMAL position.

## **OPERATION**

1. The ALARM SWITCH should be in the NORMAL position for standard operating conditions.
2. The cabinet door must be closed and all bolts secured to prevent access by unauthorized personnel.
3. The PROTECTION STATUS Line indicator lights should be ON.
4. The PROTECTION STATUS Alarm indicator light should be OFF.
5. Periodic functional checks of the system as required by local codes or procedures are conducted by performing steps 10 and 11 of the FINAL CHECKOUT PROCEDURE.

## **ALARM CONDITIONS**

### **Alarm sounding and relay in “alarm state”**

1. The audible alarm will sound and the alarm relay output will reverse state upon the loss of one or more protection components.
2. Move the Alarm Switch to the SILENCE position. The local audible alarm will silence but the alarm relay output will remain in the alarm condition until the unit is returned to normal operating condition.
3. Determine the cause of the alarm. One or more of the PROTECTION STATUS indicator lights may be off. Turn the PG Series disconnect switch to the OFF position and open the cabinet door by removing the locking bolts.
4. Remove the deadfront panel and verify that the wiring is correct and secure. CAUTION: LINE VOLTAGE MAY BE PRESENT AT THE INPUT SIDE OF THE DISCONNECT SWITCH.
5. Verify that the proper line voltage is present at the input side of the disconnect switch and the neutral and ground busses.
6. Replace the deadfront panel and close and secure the cabinet door.
7. Turn the disconnect switch to the ON position. If the alarm condition does not clear, contact Intermatic Technical Assistance for help.

### **Alarm not sounding but relay in “alarm state”**

1. The alarm relay output will change state but the audible alarm will not sound under the following conditions:
  - loss of power to the PG Series unit
  - The disconnect switch is turned to the OFF position
  - fault in the remote monitor system
2. Check for PROTECTION STATUS indicator light illumination. If all of the Line indicator lights are ON and the Alarm indicator light is OFF, consult directions for trouble shooting the remote monitoring system.

## **TECHNICAL ASSISTANCE**

For application or technical assistance contact Intermatic at **1-800-391-4555** or on the web at **[www.intermatic.com](http://www.intermatic.com)**.

# TEN YEAR LIMITED PRODUCT WARRANTY

For

## Intermatic PG Series SURGE PROTECTION DEVICES

### **(1) What Is Covered By This Limited Warranty**

#### **Repair or Replacement of Product**

Intermatic Incorporated ("Intermatic") warrants to the original purchaser only, the Intermatic model PG4001-240-2S, PG4001-208-3Y, PG4001-240-3HLD, PG4001-480-3Y, PG4001-480-3D, PG4001-600-3Y, PG4001-600-3D, PG4501-240-2S, PG4501-208-3Y, PG4501-240-3HLD, PG4501-480-3Y, PG4501-480-3D, PG4501-600-3Y, PG4501-600-3D, PG5001-240-2S, PG5001-208-3Y, PG5001-240-3HLD, PG5001-480-3Y, PG5001-480-3D, PG5001-600-3Y and PG5001-600-3D PanelGuard™ Surge Protection Devices (each a "Product") shall be free from defects in material or workmanship for a period of ten years (120 months) from date of purchase or 126 months from date of manufacture. If the purchaser discovers a defect in material or workmanship, the purchaser must promptly submit a warranty claim. Upon a determination by Intermatic that the Product is defective, Intermatic shall correct any defect in material or workmanship by, at Intermatic's option, either repairing or replacing the Defective Product. Any repair, including both parts and labor, shall be at Intermatic's expense. The foregoing remedies are the purchaser's exclusive remedies for a breach of warranty.

For purposes of this Limited Warranty, a Power Transient shall mean over-voltage resulting from momentary voltage spikes or surges on an AC power line of magnitude that the Product, according to its specifications, is designed to stop before such spikes or surges affect downstream equipment.

The Product must be installed in the appropriate application in complete accordance with the installation instructions. All building wiring and other connections to the Product must conform to all applicable national, state and local electrical codes; the Product must not be opened, modified, exposed to extreme heat or cold, submerged or subjected to abnormal use or service. All products must be used in accordance with the instructions provided with the Product and the purchaser shall be solely responsible for selecting a Product model with specifications appropriate for the equipment to be protected. Intermatic shall determine, in its sole discretion, whether any Product returned by a purchaser has been used in accordance with its instructions, is an appropriate model for the purchaser's use thereof, and whether the Product is defective.

### **(2) What Is Not Covered By This Warranty**

Intermatic does not warrant (a) defects in the Product or damage to any equipment caused by the failure to properly install the Product, (b) damage caused by use of the Product for purposes other than those for which it was designed, (c) damage caused by disaster such as fire, flood and wind, (d) damage caused by unauthorized attachments or modification of the Product, (e) damage to the Product occurring during shipment, or (f) damage caused by electrical disturbances exceeding published product specifications, (g) damage to the Product caused by any other abuse or misuse by the purchaser.

### **(3) Disclaimer of Warranty**

THE FOREGOING WARRANTIES ARE IN LIEU OF ALL OTHER EXPRESSED WARRANTIES. TO THE EXTENT ALLOWED BY LAW, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED IN DURATION TO THE DURATION OF THIS LIMITED WARRANTY.

### **(4) Limitation of Remedies**

**IN NO CASE SHALL INTERMATIC BE LIABLE FOR ANY SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES BASED UPON BREACH OF WARRANTY, BREACH OF CONTRACT, NEGLIGENCE, STRICT TORT, OR ANY OTHER LEGAL THEORY. SUCH EXCLUDED DAMAGES INCLUDE, BUT ARE NOT LIMITED TO, DAMAGE TO SOFTWARE, LOSS OF DATA, LOSS OF PROFITS, LOSS OF SAVINGS OR REVENUE, LOSS OF USE OF THE PRODUCT OR ANY ASSOCIATED EQUIPMENT, COST OF CAPITAL, COST OF ANY SUBSTITUTE EQUIPMENT, FACILITIES OR SERVICES, DOWNTIME, THE CLAIMS OF THIRD PARTIES INCLUDING CUSTOMERS, DAMAGE TO PROPERTY AND PERSONAL INJURY. SOME STATES DO NOT ALLOW LIMITS ON WARRANTIES OR ON REMEDIES FOR BREACH IN CERTAIN TRANSACTIONS. IN SUCH STATES, THE LIMITS IN THIS PARAGRAPH AND IN PARAGRAPH (3) MAY NOT APPLY.**

### **(5) Time Limit for Bringing Suit**

No action arising out of any claimed breach of warranty may be brought more than one year after the cause of action has occurred.

### **(6) No Other Warranties**

Unless modified in writing signed by both parties, this agreement is understood to be the complete and exclusive agreement between the parties, superseding all prior agreements, oral or written, and all other communications between the parties relating to the subject matter of this agreement. No employee of Intermatic or any other party is authorized to make any warranty in addition to those made in this agreement.

**INTERMATIC INCORPORATED**

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