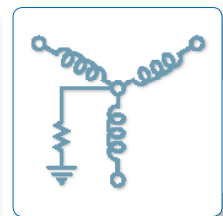
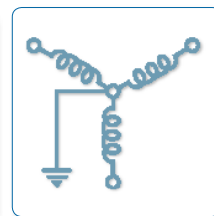
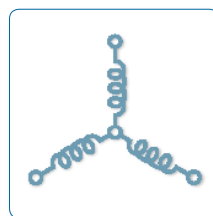
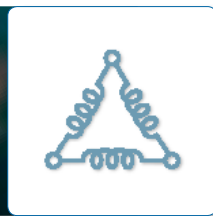
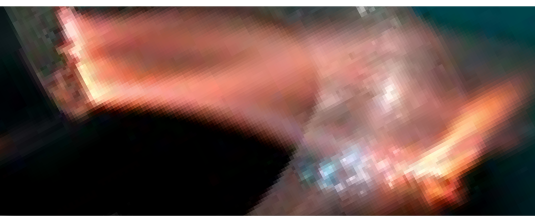


## GPD, GPFJ, GPAD & GPAFJ

GROUND FAULT PROTECTION  
GROUND FAULT PROTECTION



## ABOUT I-GARD

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I-Gard's commitment to electrical safety provides both industrial and commercial customers with the products needed to protect their electrical equipment and the people that operate them.

As the only electrical-safety focused company whose product portfolio includes neutral grounding resistors, high-resistance grounding systems and optical arc mitigation, we take pride in our technologies that reduce the frequency and impact of electrical hazards, such as arc flash and ground faults.

For those customers who have purchased from us over the last 30 years, you know us for the quality and robustness of our products, our focus on customer service and technical leadership. We build on this foundation by investing in developing new products in electrical safety education - including EFC scholarship program - by actively participating in the IEEE community programs on technical and electrical safety standard, and working with local universities at discovering new technologies. We remain unrelenting in our goal of improving electrical safety in the workplace.

Our commitment to excellence is validated by long-standing relationships with industry leaders in fields as diverse as petroleum and gas, hospitals, automotive, data centers, food processing, aerospace, water and waste water plants, and telecommunications. We provide our customers with the product and application support required to ensure that their electrical distribution system is safe and reliable.

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The I-Gard Ground Fault Protection Panels are designed to prevent shock hazards, to protect equipment and personnel as they trip when the ground leakage current on the load side exceeds a safe level.

The use of these panels is recommended for areas which could present shock hazard to personnel or livestock. The panels are suitable for any type of single and 3-phase applications, particularly those feeding pump motors for decorative pools, irrigation systems water fountains, pipe lines or any motor, heater or similar load, located in damp or wet areas such as marinas, shipyards, dairies, food processing plants and breweries.

| <b>DANGER</b>  |  |
|--|--|
| Hazard of Electrical Shock, Burn or Explosion  |  |
| Do not attempt to install or perform maintenance on equipment while it is energized. Verify that no voltage is present before proceeding with the task. Follow accepted safety procedures.   |  |
| I-Gard Corporation is not liable for the improper application or installation of its products.   |  |
| Observe all recommendations, warnings and cautions concerning the safety laws, codes and procedures.   |  |
| The recommendations and information in this bulletin are based on I-Gard Corporation experience and judgement. However, they cannot cover every application or circumstance that may arise. If you have any questions or need further information or instructions, please contact I-Gard Corporation |  |
| Failure to observe these precautions may result in death or severe personal injury.  |  |

## 1. GENERAL DESCRIPTION

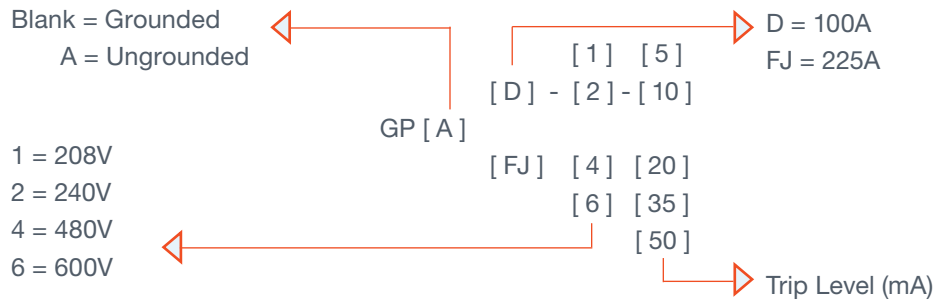
The GPD, GPFJ, GPAD and GPAFJ Ground Fault Protection panels were developed to provide sensitive ground leakage trip for personnel protection.

There are two basic panels, the 100 amperes (Types GPD/GPAD) and the 225 amperes (Types GPFJ/GPAFJ). Both panels are equipped with a non-automatic switch with corresponding current capacities. The switch thus operates as an interrupter (without over-current protection). Automatic breakers are available by special order only; please consult I-Gard.

The two basic panels may be supplied for grounded or ungrounded systems. Types GPD and GPFJ are designed for grounded or resistance grounded systems while types GPAD and GPAFJ are designed for ungrounded systems. The ground leakage trip levels available are 5, 10, 20, 35 and 50 mA. The trip level is set at the factory and is not field adjustable, thus guaranteeing protection at the leakage current setting.

The panels are designed for 208, 240, 480 and 600V systems.

The catalog number of each panel indicates which options are supplied. In general the part number describes the following:



The panels are designed and built to trip when the ground leakage current on the load side of the sensor in the panel reaches or exceeds the trip level. The panels are used to feed lighting and power distribution panels. Use of these panels is recommended for areas where personnel may be exposed to electrical shock.

## 2. OPERATION

All the lines or active conductor wires (3 phases and the neutral, if used) of the system being protected are passed through the window of the sensing unit. With load currents flowing in a normal circuit, the magnetic flux created in the sensing circuit is balanced. When insulation fails and a leak to ground occurs on the load side of the panel, an unbalanced field in the sensor produces a signal to the trigger unit, causing the switch to be opened.

Panels for three phase (3Ø, 3W), ungrounded systems include a fused artificial neutral that allows a maximum of 50mA to flow if a bolted fault occurs on one phase. This neutral current adds to the system capacitive current at the fault to provide a trip on first fault. When a fault occurs on the load side of the panel with a resulting net ground fault current higher than the leakage current trip level setting, the sensor trips and the switch opens.

## 3. WIRING CONNECTIONS

1. The three phase line side wires are to be connected to the input (up stream) terminals of the interrupter (switch). The neutral line must be connected to the neutral block in the cable. Entry may be from the top or from the bottom of the panel, in the GPD and GPFJ grounded system panels. In the case of GAPD or GFAFJ for ungrounded systems, the line connections must be from the top of the panel only, because the artificial neutral must be connected on the line side of the current sensor in order to be effective in providing the sufficient first-fault ground fault current. All the wiring must be performed in compliance with the local code requirements regarding wire gauge, temperature rating and suitability for the application (See Connections, Figure 2.)

2. The three wires from the load side of the interrupter along with the neutral from the neutral block must pass through the centre of the window of the sensor to the load. The wires should be bundled together as tight as possible, as they go through the sensor.

For 3Ø, 4W grounded systems; the neutral wire should only be grounded at the source, or on the line side of the interrupter. The neutral wire on the load side of the interrupter must NOT be grounded.

## 4. SPECIFICATIONS

### A. Maximum Ratings:

Voltage:

Rated voltage +10%

Current:

Max. Ground Fault Current 15,000A

### B. Performance:

Trip Level Accuracy:

±10%

Delay:

Inverse: See Figure 3.

### C. Temperature:

Operating Range:

-35°C to + 60°C

Storage Range:

-40°C to + 100°C

### D. Humidity:

Operating Range:

10% to 95% R.H.

### E. Dielectric Strength

Line to Ground

2200V AC rms for 1 minute

### G. Endurance

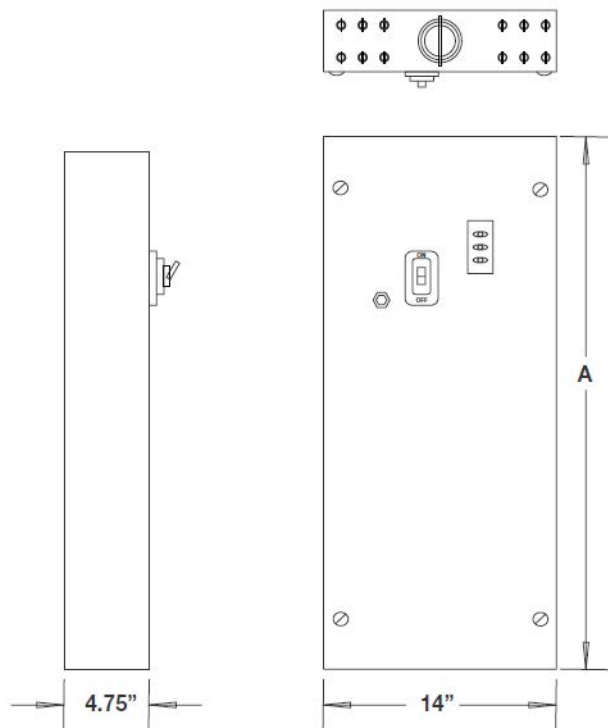
Interrupter (min)

10,000 operations

### Standards

|     |      |   |
|-----|------|---|
| CSA | File | LR65287   |
| UL  | File | E23271  |
| UL  | File | E107725, type GPD and GPFJ<br>(10 mA sensitivity and above)   |
| UL  | File | E232710, type GPAD and GPAFJ<br>(10 mA sensitivity and above) |

## 5. OUTLINE DIMENSIONS



### Notes:

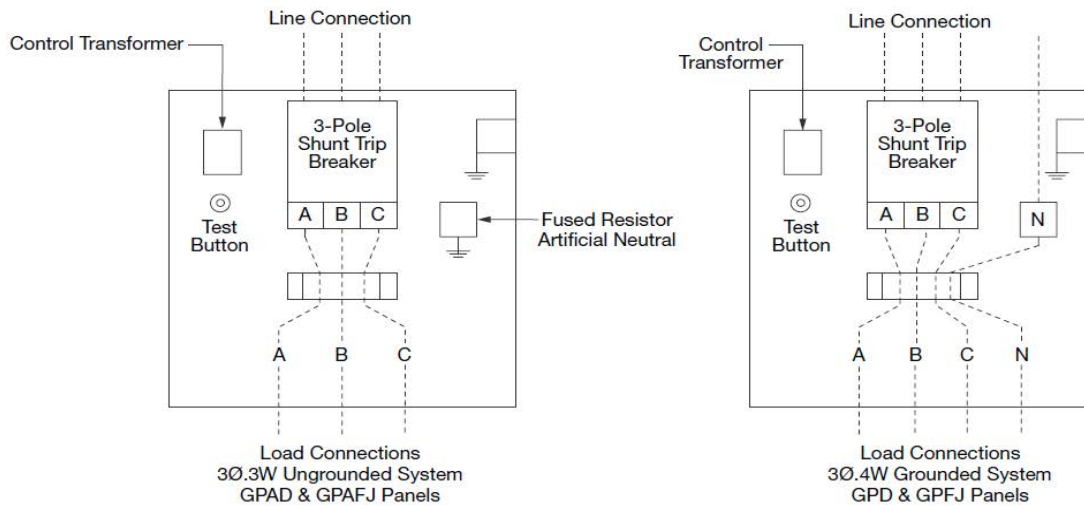
1. Box is fabricated from code gauge steel.
2. Protected circuit is complete with a test button, power supply transformer and non-automatic breaker.
3. GPAD & GPAFJ panels have a fused artificial neutral.
4. Canadian Electrical Code Warning sign included with each panel.
5. Available for 208, 240, 480 or 600V systems.

Figure 1: Outline Dimensions

Table 2

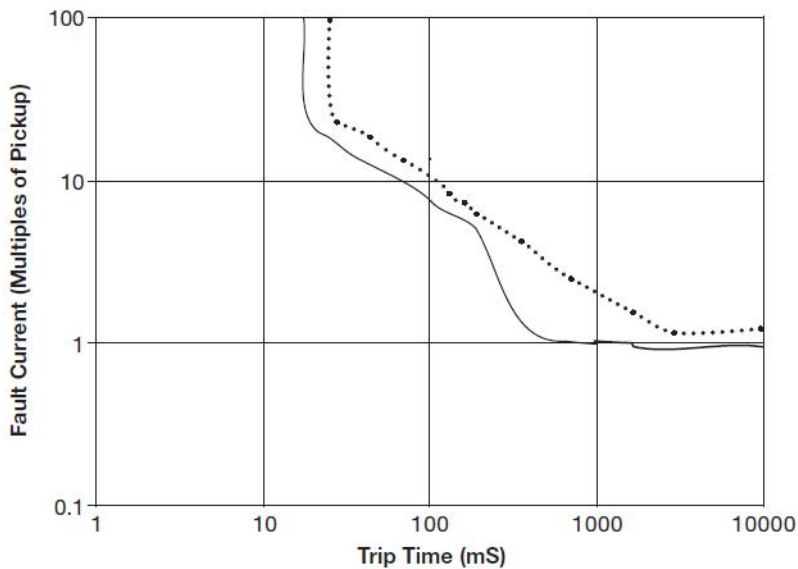
| PANEL | HEIGHT |       | BREAKER |
|-------|--------|-------|---------|
|       | IN     | CM    |         |
| GPD   | 22     | 57.20 | 100 AMP |
| GPAD  | 22     | 57.20 | 100 AMP |
| GPFJ  | 31     | 78.74 | 225 AMP |
| GPAFJ | 31     | 78.74 | 225 AMP |

## 6. CONNECTIONS



NOTE: Dotted lines indicate customer's connections

Figure 2: Connection Diagrams



**Notes:**

1. For GPD & GPAD 100A panels, phase wires (maximum #3, copper cable only) should be fed through sensor window.
2. For GPFJ and GPAFJ 225A panel, phase wires (maximum 4/0, copper cable only) should be fed through sensor window.
3. Solid line represents class A curve.
4. Class A curve applies to 5mA versions only.
5. Dotted line indicates CSA maximum limits.

Figure 3: Typical Clearing Time Characteristics of GPD/GPFJ



**GARD**

*Unparalleled Protection*

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