



## Ground Fault Protection Device

- Simple and Flexible Installation
- Greater Sensitivity
- No Fuses
- Safety Features

In the PV industry, Morningstar's Ground Fault Protection Device (GFPD) sets the standard for ground fault detection and interruption. It's a far more precise and effective solution compared to other devices which rely on fuses, delivering superior sensitivity and isolation while maintaining the bond to earth ground.

**The role of GFPDs in a system:** Ground fault protection in electrical systems prevent current from following any unintended paths during a ground fault condition. In a PV/solar electric system, these can occur when there is a current imbalance between the primary positive and negative PV conductors entering the charge controller or inverter. In this application, the GFPD detects any stray current and interrupts (breaks) the circuit until safe operation can be restored.

Morningstar's GFPD detects a ground-fault condition and breaks the circuit on both the positive and negative legs. By disconnecting both poles, it ensures the interruption of the ground fault current. Other ground fault detection/interruption products simply break the bond to the grounded conductor, which not only compromises the earth bond but can also leave the battery and DC loads ungrounded and floating.\*

Designed and engineered to meet the stringent ground fault protection requirements of the US National Electric Code (NEC) for grounded PV systems, Morningstar's GFPD technology more completely isolates the array from the battery and loads while maintaining the bond to ground, increasing system safety.

Compatible with: TriStar MPPT-600V Controllers and TriStar MPPT Controllers. Also compatible with some brands and models from other suppliers (contact Morningstar for more information).

\*In a negatively grounded system this means that the negative side of the battery and loads can float to negative Voc in relation to ground

## KEY FEATURES AND BENEFITS

### Simple, Flexible Installation

- Works with both positive and negative grounded PV systems
- Accommodates large and small arrays, providing greater design flexibility
- Supports both single controller and multiple controller systems  
Multiple controllers and GFPDs can be added on an as-needed basis
- Side or below flush mounting with coupling hardware included
- DC Powered via the PV system's battery
- Includes pre-wired feedback signal harness and fused battery cable for power

### Greater Sensitivity

- More precise than fused ground fault protection
- Activates starting at 300mA, compared to at 1A (more typical for other types)
- Sensing device provides consistent, accurate measurement

### Superior fuse-less protection

- Uses high quality breakers instead of fuses, which can be easily reset after a ground fault event
- Eliminates the problem of fuse replacement at remote sites

### More effective bond-to-earth grounding

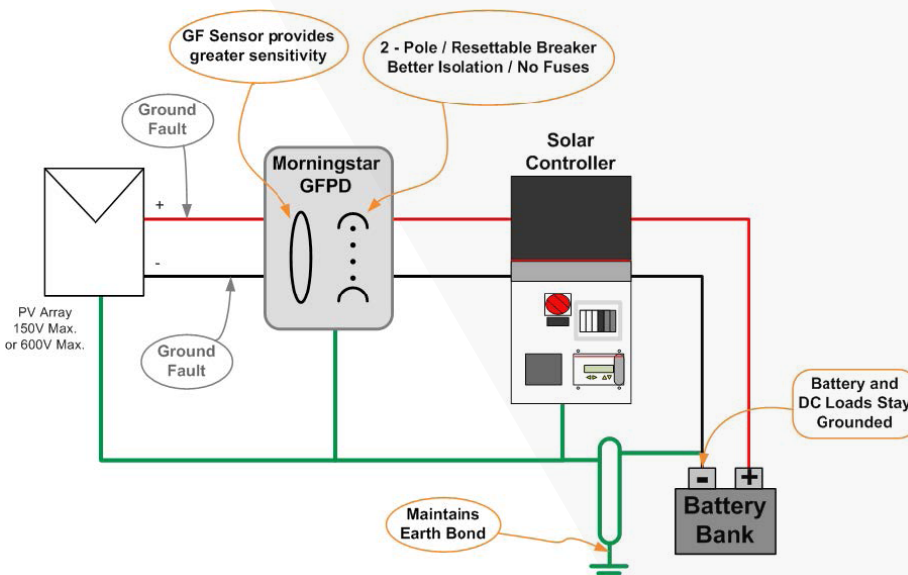
- Normally grounded components (conductors, controller, battery and DC loads) will not be left floating
- Avoids problems of other ground fault protection options, which can allow the battery and load to float to PV array voltages in relation to ground

### Safety Features

- Completely isolates the ground fault from the controller, battery and loads
- Disconnects both the positive and negative conductors and completely isolates PV source circuits during a fault condition, breaking the connection to the array
- Leaves the battery and DC loads grounded under all conditions, compared to other types which require a warning label on the battery to note that "dangerous voltages are present." All loads will continue to operate safely with the battery remaining bonded to the ground
- Features audible and visual alarm indicators
- Includes push-button test circuit

## Technical Specifications

Versions	GFPD-150V	GFPD-600V
<b>Electrical</b>		
Maximum Solar Voltage (Voc)	150V	600V
Maximum Solar Current	85A	50A
Supply Voltage Range	10-72 Vdc	
Self-Consumption	<0.5W	
Ground Fault Threshold Current	300 mA +/- 10%	
Number of Poles	2	
Trip Method	Relay	
Output Trip Signal	12V	
Nominal System Voltage	12, 24, 36 or 48 Vdc	
<b>Mechanical</b>		
Dimensions:	26.9 x 12.8 x 11.2 cm 10.6 x 5.1 x 4.4 in	35.7 x 22.1 x 10.6 cm 14.1 x 8.7 x 4.2 in
Weight	2.0 kg / 4.4 lbs	4.4 kg / 8.9 lbs
Mounting Post	DIN- and Panel-Mount Options	
Terminal	Up to 13 mm <sup>2</sup> / 6 AWG	
<b>Environmental</b>		
Ambient Temperature:	-40°C to +50°C	-40°C to +60°C
Storage Temperature	-55°C to +85°C	-55°C to +85°C
Humidity	Up to 100%, non-condensing	
Tropicalization	PCB Conformal Coating	



### Certifications:

- CE, RoHS and REACH Compliant
- ETL Listed: UL 1741
- CSA C22.2 No. 1071-01 Listed
- GFPD-150V is UL-489 Compliant
- GFPD-600V is UL-1077 Compliant
- FCC Class B Part 15 Compliant
- Meets U.S. NEC requirements for use as a GFDI / GFPD
- Meets EMC Directives (Immunity, Emissions and Safety)
- Manufactured in a Certified ISO 9001 Facility

### Electronic Protections

- Reverse Polarity
- Disconnected Feedback Signal Circuit Detection

### Warranty:

**Five year warranty period.** Contact Morningstar or your authorized distributor for complete terms.