GFM600 Quick Start Guide

Thank you for purchasing the Raptor Ground Fault Monitor (GFM600-2). This guide describes how to install the GFM600-2.

The Ground Fault Monitor keeps track of a battery's plus and minus bus in relationship to the potential for approaching a grounded condition. Through its local annunciation and relay interface, the GFM600-2 provides the necessary signals to keep users informed about the condition of the battery bus relative to chassis ground.

If you need further assistance, contact RLE Technologies on our website at **http://www.rletech.com/** (go to the **Support Link**) or by calling **970.484.6510, Option 2**.

Raptor

RLE Technologies

1 Pre-Installation

1 Connect the ground fault circuit to a floating battery for proper operation.

IMPORTANT If the battery is not floating by design, contact the manufacturer for assistance.

2 Test the battery bus to ensure that a ground fault does not already exist. To perform this test:

- a Use a voltmeter to determine the voltage potential between the (+) terminal and the frame. Perform the same procedure between the (–) terminal and the frame.
- b If no voltage is present, proceed with installation.
- c If voltage is present, a ground fault exists. Correct the problem before continuing with the installation.

2 Installation

1 Mount the GFM600-2 in the top of the battery cabinet, to the side of the battery disconnect switch, or in any other convenient location, in close proximity to the battery bus terminals.

Note: The GFM600-2 is designed for vertical mount only.

2 Connect the 120VAC power supply to the terminal block marked **120VAC line**, **Ground**, and **120 Neutral**. Torque to 8 lbs (3.62 kg).

3 Connect the battery plus bus to the terminal marked **Bat+**. Connect the battery minus bus to the terminal marked **Bat–**. Torque the (+) and (–) bus wires to 20 lbs (9.07 kg).

4 Connect relay outputs to remote monitoring system (see descriptions that follow). Torque to 8 lbs (3.62 kg).

Note: The terminals connecting the battery bus to the fuse box have a "knife-blade disconnect" that allows the battery bus to be disconnected from the GFM600-2 to allow servicing of the GFM600-2. Before servicing, 120VAC power input must also be disconnected from the GFM600-2.

3 Alarm Threshold Adjustment

The GFM600-2's ground fault current potential alarm threshold can be adjusted to user-defined limits. The thresholds can be set from 1K ohm resistance to 99K ohms of resistance. A battery bus in optimal condition with no leakage current to ground will have high resistance, a battery with leakage current to ground will have low resistance. Although the factory sets the alarm threshold at 99K ohms, it is recommended that this alarm threshold be set by the user based on the specific application.

To adjust the alarm threshold:

1 Locate the two rotary switches on the top of the PC board, which is mounted on the inside of the front panel.

The position of the left rotary switch indicates the "tens" units of resistance. The right rotary switch indicates the "ones" units of resistance.

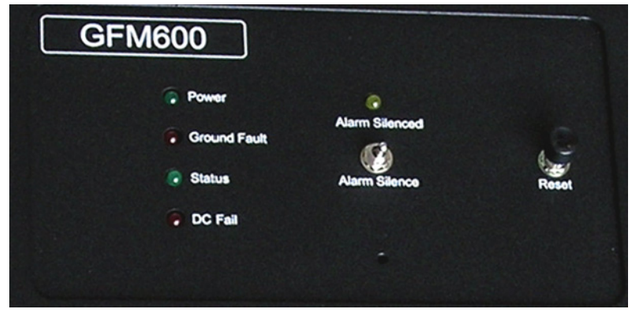
2 Rotate each switch to the desired setting.

Example:

If the desired alarm limit is 87K ohms, set the left switch to "8," and the right switch to "7." When the alarm threshold is set to 87K ohms and the resistance falls below 87K ohms (the potential for ground fault leakage current increases), the GFM600-2 enters an alarm state.

480 VDC Battery Bus: System alarms at 87K ohms
480 VDC/87,000 ohms = 0.0055A = 5.5 mA,
(which is the potential ground fault current)

4 Front Panel Display

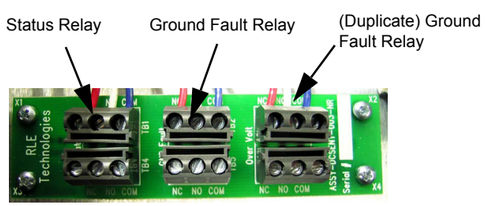


Power LED	Illuminates when 115/230 VAC is connected, and the power switch is in the "on" position.
Ground Fault LED	Illuminates when the preset ground potential alarm limit is exceeded.
Status LED	Illuminates when the GFM600-2 system is okay or not in alarm.
DC Fail LED	Illuminates when the battery wires are disconnected. Will flash when the + and – wires are installed incorrectly (reversed).
Alarm Silence Switch	Disables the audible alert when in the "up" position.
Alarm Silence LED	Illuminates when the audible alarm is disabled.
Reset Button	Resets the GFM600-2. If the reset button is depressed while a ground fault condition still exists, the GFM600-2 will still remain in alarm. If a ground fault condition occurs, and then stops, the GFM600-2 will remain in alarm until the reset button is depressed (the GFM600-2 uses a latching circuit).

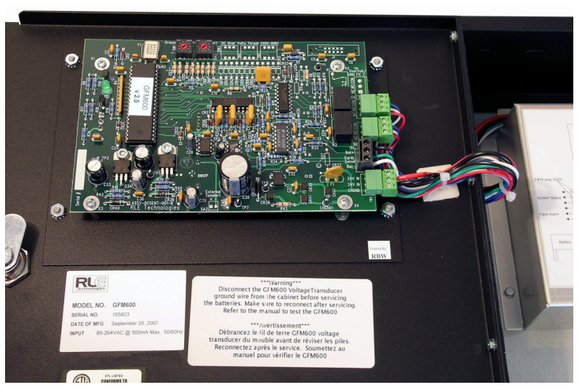
5 Relay Outputs

Status	Relay output is a Form C Relay (NO/NC). The state of this relay changes when an internal fault is detected, or power is removed from the GFM600-2.
Ground Fault	Relay output is a Form C Relay (NO/NC). This relay will change state upon ground fault alarm. The GFM600-2 has two ground fault relay outputs.

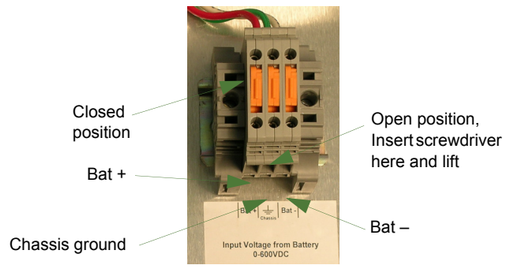
Note: These relays are “picked” relays; they are energized under normal operating conditions.



Relay Output Terminal Blocks



Inside the Front Cover



Battery Bus Disconnect Terminal

Note: All three positions must be open to disconnect high voltage.

6 Ground Fault Test

1. Rotate the two rotary switches to a setting of 00.
2. Verify that the Ground Fault LED is on, the audible alarm is on, the Status LED is off, and the Status and Ground Fault relay contacts have been transferred.
3. Return the two rotary switches to their original settings.

Note: The Reset switch must be pressed each time the system alarms to restore it to normal operation.

WARNING

Please use caution. High voltage is used in the GFM600-2. A dedicated circuit breaker must be provided in the building within close proximity to the GFM600-2 and be clearly marked as the disconnecting device for the GFM600-2. Use copper wire with an insulation rating of 600V only.

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