

# Radian Series Inverter/Charger Installation Manual Firmware Addendum

## Purpose

This document provides instructions for download and installation of grid support firmware for Radian (GS) series inverters.



### IMPORTANT:

When upgrading to Revision 001.006.063 or higher, the MATE3s system display must contain revision 001.001.000 firmware or greater.

## Instructions

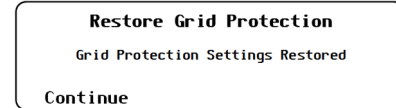
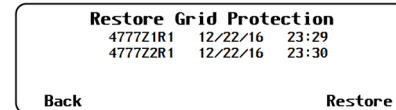
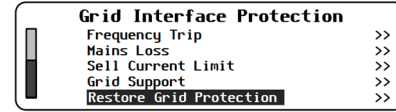
### To download and install firmware:

1. Remove the SD card from the MATE3s system display.
2. Remove all existing files on the SD card.
3. On the website **www.outbackpower.com** under the **Firmware Update** page, download the latest compressed (.ZIP) file for the specific Radian model under **Radian Series**. This includes firmware revisions, instructions, and release notes.
4. Extract and download all files in the compressed folder.  
**NOTE:** Make certain to extract (unzip) all the files before loading all of the contents onto the card. If the files are loaded to the card in compressed form, they will be unusable.
5. Insert the SD card into the MATE3s system display. Press the **LOCK** navigation key on the system display. Enter the 3-digit password **141** by using the control wheel. Press the center button to proceed.
6. Choose **Firmware Update** from the menu and then **MATE3s**. Firmware revision 001.001.000 (or greater) should appear. Press **Update** and allow the system display to update itself. This may take up to one minute. The system display then returns to **Main Menu**.
7. Press the **LOCK** key and then the **UP** key to access the **Installer Password** field. A qualified person must take responsibility for the system by assigning a unique installer password before grid protection parameters are accessible. If this password has already been changed from the default password of **1732**, then enter the new password and proceed to step 8. Otherwise enter **1732** and press the center button, then proceed to assign a unique, secure installer password.

### NOTES

- **To Change the Installer Password:**
  - ~ Press **Settings**, then **System**, and then **Installer Settings**.
  - ~ Within this menu, select **Change Installer Password**.
  - ~ Choose a password that is different from **1732** by using the control wheel and center button. Make sure to record the unique password in a location that is safe but accessible for later use.
  - ~ Press the **UP** key three times to return to **Main Menu**.
- If password **1732** does not work and the installer password cannot be recalled or changed, contact the OutBack system installer or dealer.

8. Choose **Firmware Update** from the menu and then **GS Inverter**. The display will show that a new firmware revision is present. (The revision should be 001.006.063 or greater.) Press **Update** to download this firmware into the Radian inverter. This can take up to five minutes.
9. Press the **<Back>** soft key and then the **UP** key to return to the **Main Menu**. Select **Settings** followed by **Inverter**. Scroll to **Grid Interface Protection** and press the center button. Press **Continue** to enter the menu for protected settings.
10. A new setting, **Upload Grid Protection**, is present. Scroll to this setting and select it with the center button. There are different files for different regions. Options for Hawai'i, Australia, and other locations are available.
11. In the **Upload Grid Protection** screen, scroll to the .GIP file that is required by the utility. See the **Grid Support ReadMe** text file and **GIP settings file** (in the download folder) to identify the correct .GIP file to be loaded. The values included in each .GIP file are shown in the GIP settings file.
12. Press the **<Restore>** soft key to install the selected settings.  
**The update and settings are now complete.**  
 Press **<Continue>** to exit this menu.

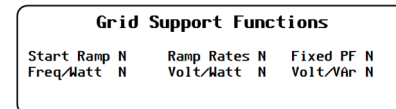
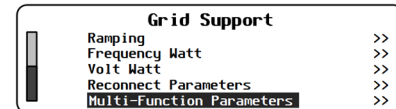
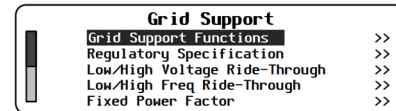


For verification of the settings, scroll to **Grid Support** and press the center button to enter it. All items on this screen lead to their own screens. The **Grid Support Functions** screen shows whether Grid Support itself has been activated and which of its functions are activated.

**NOTE:** The Grid Support functions are only active when the inverter's AC input mode is set to **Grid Tied** or **GridZero**.

The other **Grid Support** screens in the list below show the applicable settings. These settings have been pre-loaded for the programmed region or the utility company requirements.

- **Regulatory Specification**
- **Low/High Voltage Ride-Through**
- **Low/High Frequency Ride-Through**
- **Fixed Power Factor**
- **Ramping**
- **Frequency Watt**
- **Volt Watt**
- **Volt/VAr**
- **Reconnect Parameters**
- **Multi-Function Parameters**



These screens are depicted on the next page with brief descriptions.

# Firmware Instructions

## Regulatory Specification

Standard IEEE 1547

**Regulatory Specification** — the code or utility company regulation which specifies the following preloaded settings.

## Low/High Voltage Ride-Through

OV2 144 VAC Mode Cont. Trip 0.16 S  
OV1 132 VAC Mode Cont. Trip 1 S  
UV1 106 VAC Mode Cont. Trip 2 S  
UV2 60 VAC Mode Cont. Trip 11 S  
UV3 60 VAC Mode Cont. Trip 0.16 S

**Low/High Voltage Ride-Through** — the high or low limit for AC voltage disturbances. If these limits are exceeded for the **Trip** time or longer, the inverter will disconnect from the utility grid. For a lesser duration the inverter is allowed to “ride through” the disturbance and remain connected.

## Low/High Freq Ride-Through

OF2 60.5 Hz Mode Cont. Trip 0.16 S  
OF1 60.5 Hz Mode Cont. Trip 300 S  
UF1 59.3 Hz Mode Cont. Trip 300 S  
UF2 59.3 Hz Mode Cont. Trip 0.16 S

**Low/High Frequency Ride-Through** — the high or low limit for AC frequency disturbances. If these limits are exceeded for the **Trip** time or longer, the inverter will disconnect from the utility grid. For a lesser duration the inverter is allowed to “ride through” the disturbance and remain connected.

## Fixed Power Factor

Set Input PF 1.00  
PF Current Lead

**Fixed Power Factor** — the power factor that will be produced by the inverter when offsetting or selling.

## Ramping

Start Ramp 250 % Amps/min  
Ramp Up/Down 250 % Amps/min

**Ramping** — the rate of power increase when first ramping (**Start Ramp**) and subsequent increases in offsetting or selling (**Ramp Up/Down**).

## Frequency Watt

Start Frequency 60.50 Hz  
F/W Gradient 250 (%Pm/Hz)  
Re-Start Frequency 60.50 Hz  
Re-Start Period 0 minutes

**Frequency Watt** — this consists of two functions.

- The reduction of offsetting or selling when the AC input frequency increases above the nominal value.
- The reduction of charging when the AC input frequency decreases below the nominal value.

## Volt Watt

Start Voltage N/A % Nominal VAC  
V/W Gradient N/A (%P/%V)

**Volt Watt** — has two applications.

- The reduction of offsetting or selling when the AC input voltage increases above the nominal value.
- The reduction of charging when the AC input voltage decreases below the nominal value.

## Volt/VAr

V1 106 VAC V2 114 VAC  
V3 126 kVAr V4 132 VAC  
Source PF at V1 0.80  
Sink PF at V4 0.80

**Volt/VAr** — a function which responds to changes in AC input voltage by supplying or consuming reactive power to affect the power factor.

## Reconnect Parameters

Reconnect Delay 300 S  
High VAC Connect 132 VAC  
Low VAC Connect 106 VAC  
High Freq Connect 60.5 Hz  
Low Freq Connect 59.3 Hz

**Reconnect Parameters** — the AC voltage, frequency, and time limits which must be met before the inverter can connect (or reconnect) to the utility grid.

## Multi-Function Parameters

% of Sell Current Limit 50 %  
% of Charge Current Limit 50 %  
PF Priority

**Multi-Function Parameters** — parameters which affect several inverter functions.

- **% of Sell Current Limit** limits the current sold by the grid-interactive function when certain **Ride-Through** restrictions are in effect.
- **% of Charge Current Limit** limits the current used by the battery charger when certain **Ride-Through** restrictions are in effect.
- **PF Priority** specifies whether watts or VARs will be prioritized during offsetting or selling when the inverter's rated VA output is met.

**NOTE:** Not all Grid Support functions are activated for a given GIP selection.

## Contact Information

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## Date and Revision

February 2018, Revision A

## Part Number

901-0031-01-00 Rev A



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