**Programming Guide**

**MATE3s System Display and Controller**

**Features**

- **A**: TOP Navigation Key
- **B**: UP Navigation Key
- **C**: LOCK Navigation Key
- **D**: PORT Navigation Key
- **E**: Control Wheel
- **F**: Center Button

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**Navigation Keys (buttons)**

Four navigation keys are located on the lower half of the MATE3s. They are protected by the front cover when it is in place. The navigation keys allow the user to move around within the menu structure. They also provide access to the Main Menu programming and the various components connected to the HUB.

- The TOP navigation key (A) returns the operator to the top of the Main Menu for the selected device. From the Main Menu, the TOP or LOCK keys return the operator to the Home screen.
- The UP navigation key (B) returns to the menu item on the previous screen that was used to access the current screen. It moves up, or back, one screen in the menu map for the selected device. See the MATE3s Menu Map.
- The LOCK navigation key (C) locks the access to prevent unauthorized changes to the system settings. It also provides access to the Enter Password screen. (See page 2.)
- The PORT navigation key (D) cycles through each device connected to a port on the HUB Communications Manager. See page 6 for OPTICS RE monitoring with this key.

**Contact Information**

**About OutBack Power Technologies**

OutBack Power Technologies is a leader in advanced energy conversion technology. OutBack products include true sine wave inverter/chargers, maximum power point tracking charge controllers, and system communication components, as well as circuit breakers, batteries, accessories, and assembled systems.

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Menu Navigation

Control Wheel

The control wheel is a touch-sensitive navigation control with a center button. It is used to navigate through the advanced menu structure. It is also used to change set points once selected.

To navigate:
1. Use the control wheel E to scroll forward or backward (up or down) in the menu map. Tracing a clockwise circle scrolls down. A counterclockwise circle scrolls up. The present selection is highlighted black when scrolling.
2. When the desired menu item is highlighted, press the center button F to move forward into that screen. The screens below show an example of scrolling through the Settings menu. See the MATE3s Menu Map.

Access to the Main Menu

Programming the system is done in the Main Menu. A password is required to access the Main Menu screen. This password is 141. It is preprogrammed and cannot be changed.

To access the Main Menu, enter the password as follows:
1. From the home screen H, press the LOCK key C. This brings up the Enter Password screen I. The default entry is 132.
2. Trace a clockwise circle on the control wheel E until the display shows 141 as shown in J.
3. Press the center button F to accept the password.

Ports

If a screen shows a port number in the upper right corner, those settings only apply to that particular device. Other devices can be individually selected by using the PORT key D. Screens with no port designation, such as those shown on this page, are for system-wide changes.

Set Points

A set point is a condition, measurement, or baseline that a user establishes in order for something else to happen (such as when to start or stop a generator). The MATE3 allows a user to view, monitor, and establish all the settings and values that occur while the system is running. Occasionally components may be added or upgraded, electrical loads increase, or patterns of usage may change. These settings and values can be adjusted to match.

On screens with set points, the control wheel E serves two functions: navigation and set point adjustment.
- Set points are adjustable settings for each specific menu item.
- Set points will vary depending on the system configuration.
- When a screen with set points is available, the present selection is identifiable by a black line around the item. To change the setting, follow the instructions below.

To change set points:
1. The black line around an item shows it is in Field Select mode. In this mode, the control wheel E can switch between all selectable fields or items on the screen. A clockwise movement on the control wheel scrolls to the next field. A counterclockwise movement (L) scrolls to the previous field as shown in K.
2. When the desired item is selected, press the center button F. The box around the field should become solid black as shown in M. This shows it is in Adjust Set Point mode. The selectable field becomes an adjustable set point.
3. Use the control wheel E to change the set point value as shown in N.
4. When the set point is correct, press the center button F again to return to Field Select mode.
5. Repeat Steps 1-4 for each set point to be adjusted. The screens below show an example of scrolling through the System Information menu and selecting a different System Type.
Main Menu

All programming is accessed from the Main Menu, which includes the following:

- Settings (System, Inverter, Charge Controller, Battery Monitor, MATE3s) (see below)
- Profile Wizard (W) (see page 40)
- Device Data Logs (D) (see page 45)
- Event Logs (E) (see page 47)
- Firmware Updates (see page 48 and the MATE3s Overview Guide)

Each menu has a set of menu options. Each menu option has a set of menu items.

Recommended Programming Order

It is recommended that programming proceed in the following order.

1) Establish Profile Wizard settings (W-4).
2) Save the Profile (as applicable in either W-1, W-2, or W-3).
3) Program the Profile (as applicable in either W-1, W-2, or W-3).
4) Program any other custom settings.
5) Save the System Configuration (S-2).
6) When restoring settings in the future, restore the System Configuration instead of the Profile Wizard. (See the Profile Wizard on page 40 for more information.)

Settings Menus

This menu accesses additional menus with settings for the system and for individual devices.

- **System Settings (S)** apply to overall system functions (date and time, communication options, etc.). See the System Settings section.
- **Device Settings** are used to program the system components (inverter, charge controller, battery monitor, MATE3s).
  - Inverter Settings (I) are described beginning on page 10. See the inverter literature for details about inverter functions.
  - Battery monitor Settings (B) for the FLEXnet DC are described beginning on page 22. For details about the FLEXnet DC, see the product literature.
  - MATE3s function Settings (M) are for device functions with control logic based in the MATE3s (AGS, HBX, etc.) These are described beginning on page 24.

**IMPORTANT:** If multiple inverters are used in the installation, make certain to change settings as appropriate for each inverter on its assigned port. Changing settings for a single inverter in a multiple-inverter system may result in conflicts in operation.

- Charge controller Settings (C) are described beginning on page 18. For details about a FLEXmax or FLEXmax Extreme charge controller, see the controller literature. The MATE3s can monitor, but not program, an MX600 controller.

**NOTE:** Once the settings have been changed to match the configuration, they are stored in the static memory of the MATE3s. Once the configuration is established, save the data to an SD card. That way the configuration can be restored without having to repeat each setting individually. (See S-2.)

System Information

The letter codes for each branch of the Settings menu are continued on subsequent pages under the appropriate sections.

**S-1. System Information**

This screen contains a basic outline of the system. Many of these settings inform other system functions.

- **Type** — either Off Grid, Grid Tied, or Backup
- **Array Wattage** — Allows for a PV array(s) with total wattage rating of 0 to 72 kW
- **Generator kW Rating** — Allows for a generator with a rating of 0 to 280 kW
- **Max Inverter kW** — Allows for an inverter system with total wattage rating of 0 to 72 kW
- **Battery Ah** — Allows for a bank with a total amp-hour rating of 25 to 10,000 Ah
- **Battery Type** — Allows for an AC or DC generator, or None
- **Max Charger kW** — Allows for a system with a total charger rating of 0 to 60 kW
- **Nominal Voltage** — Allows for a battery bank with a voltage of 12, 24, 36, 48, or 60 Vdc

**NOTE:** The letter codes for each branch of the Settings menu are continued on subsequent pages under the appropriate sections.

For example, charge controller setting menu items are labeled C-1, C-2, C-3, and so on.

S-2. Save/Restore Configuration

A configuration is the sum of all MATE3s settings for all devices. This menu allows for saving a configuration to an SD card after programming is complete. It can restore a lost or erased configuration from the SD card to the MATE3s. It can also copy a configuration from an SD card to an identical system.

To save or update, select Save Configuration and follow the A steps. To restore from an SD card, select Restore Configuration and follow the B steps.

**NOTE:** The Profile Wizard (see section W on page 40) has similar functions. However, it does not affect the entire system configuration and is not interchangeable with this function. See Recommended Programming Order.

A. To save a configuration to an SD card:

If other configurations have been saved on the SD card, a list will be displayed. Choose Option 1 or 2.

1. Select a name on the list with the control wheel. Then press <Save> to save the new settings over the selected configurations. Saving to SD Card will be displayed. Proceed to 3.

OR

2. Press <New> to create a new configuration name. (8 characters maximum)

   - Use the control wheel to scroll through the <New> soft key will automatically default to Option 2.

   - Use << or >> to move to the desired character location.

   - Use <Delete> to erase characters when highlighted.

   - Press <Save> to save the new configuration name. Saving to SD Card will be displayed.

In either case:

3. Wait for the confirmation screen to appear. After the screen appears, press <Continue> to return to the Main Menu.

B. To restore a configuration from an SD card:

1. If other configurations have been saved on the SD card, a list will be displayed. Use the control wheel to select the name of the configuration that is to be restored.

2. Press <Restore> to start the process. Wait for the confirmation screen to appear.

3. After the screen appears, press <Continue> to return to the Main Menu.
S-3. OPTICS RE

OPTICS RE is the web-based remote monitoring and control application for OutBack devices.

- The OPTICS RE menu item enables or disables the application.
- It is also possible to communicate with OutBack devices using the Modbus protocol and SunSpec client software as described in the AXS Port Owner’s Manual. The SunSpec interface menu item enables or disables this type of data stream from the MATE3s.
- The Modbus Port menu item is the Modbus TCP/IP port number. The default setting is the standard internet designation. The port number can be changed if necessary.
- The status of OPTICS RE can be monitored with the Page key. This key opens a screen similar to Ethernet Addresses in S-9.

S-6. Date and Time

The Date and Time screen allows the date and time to be set for the current date and current time.

**IMPORTANT:**
- Some features are dependent on time and date settings. Be sure to adjust these settings for the proper time and date for the location of the installation.
- The MATE3s clock does not automatically adjust for daylight savings time.
- The MATE3s does automatically adjust for leap year.

**HOUR**

0 to 23

**MINUTE**

00 to 59

**DAY**

1 to 31

**MONTH**

Jan (January) to Dec (December)

**YEAR**

2011+

**WEEKDAY**

Mon to Sun

**TIME ZONE**

Internet Time and Zone are not active here. These items become active when OPTICS RE is implemented.

S-7. LCD Display

Ambient lighting and eyesight varies with each installation. The contrast, color, brightness, and backlighting of the LCD can be adjusted to provide the best visibility for a given location.

- **Contrast** — Range is from 1 to 100, from lowest contrast to highest contrast.
- **Color** — Range is from 1 to 11 discrete display colors.
- **Brightness** — Range is from 1 to 10, from dimmest to brightest.
- **Backlight** — ON, OFF, or AUTO (see Auto Timeout below).
- **Auto Timeout** — The amount of time that will elapse before the screen backlight turns off. Range is from 1 to 300 seconds.

S-8. Sound

The Sound menu item allows the user to enable, or disable, sounds when a button is pushed or the control wheel is used.

- **Button Beep** — Enabled or Disabled.
- **Wheel Click** — Enabled or Disabled.

S-9. Ethernet Addresses

To connect the MATE3s to a personal computer or network, it may be necessary to manually set the IP address, netmask, gateway, DNS-1, and DNS-2 (optional) addresses to the host router.

**IMPORTANT:** Using this function requires advanced knowledge of network administration and internet protocols. Due to the variety of routers available, specific instructions will vary.

- **DHCP** — Enabled (Dynamic Host Configuration Protocol enabled). This allows the MATE3s to be assigned the IP address, netmask, gateway, DNS-1 and DNS-2 numbers from a router.
- **DHCP** — Disabled (Dynamic Host Configuration Protocol disabled). This allows the user to set the following parameters.
  - **IP Address** — 192.168.xxx.xxx (*default IP address is 192.168.0.64)
  - **Netmask** — 255.255.255.000
  - **Gateway** — 192.168.xxx.xxx (*default gateway)
  - **DNS-1** — 192.168.xxx.xxx (*default DNS-1)
  - **DNS-2** — 192.168.xxx.xxx (*this can vary by installation.)

S-10. Ethernet Ports

The MATE3s is preprogrammed to use the following ports for Ethernet communication. These ports are adjustable if required.

- **HTTP** — Range 1 to 65535 (default 80)
- **FTP** — Range 1 to 65535 (default 21)
- **Telnet** — Range 1 to 65535 (default 23)
**S-11. Data Stream**

The **Network Data Stream** option can be enabled if the data is destined for a network server.

- **Network Data Stream** — Enabled or Disabled
- **Destination IP** — The IP address of the host computer or server.
- **Destination Port** — The port number assigned to the MATE3s on the host computer or server.

**S-12. Battery Voltage Min/Max Reset**

This screen shows the time and date of the highest and lowest battery voltages that have been recorded. The **Reset** key resets these items to the values present at that moment.

**Before**

```
Date: 12/3/2013 Time: 12:30:00
Minimum Voltage: 10.000
Maximum Voltage: 15.000
```

**After**

```
Date: 12/3/2013 Time: 12:30:00
Minimum Voltage: 10.000
Maximum Voltage: 15.000
```

**S-13. Clear Internal Data Log**

This screen allows the option to clear the internal history of the MATE3s. The **Yes** key clears all graph data, Event logs, and similar items.

**Clear Internal Data Log**

```
Clear Internal Data Log
Yes / No
```

**S-14. System Name**

This screen allows the installer to give the installation a unique name and status title.

- **Name** — Any combination of characters up to 30 characters maximum. This information is displayed by the web site interface (if used).
- **Status Title** — (Optional) Any combination of characters up to 15 characters maximum. This name is displayed on the Home screen.

**S-15. Installer Information**

This screen allows a location to enter basic installer information.

- **Company** — Any combination of characters up to 28 characters maximum.
- **Name** — Any combination of characters up to 19 characters maximum.
- **Phone** — Any combination of characters up to 15 characters maximum.
- **Notes** — Any combination of characters up to 31 characters maximum.

---

**S-16. Installer Settings**

This screen is a menu with options to set user access levels and the installer password.

- **Set User Access Level (A)** — This prevents unauthorized access to certain levels of menus when using the standard password. It is the default setting.
- **Advanced** — Access Level 2 (UAL2). This allows access to many user menus. It also accesses the menus of UAL3 and UAL4.
- **Basic** — Access Level 3 (UAL3). This allows access to the designated basic user menus. It also accesses the menus of UAL4.
- **Minimum** — Access Level 4 (UAL4). This allows access to only a few designated user menus. The ability to program is minimal.

**Change Installer Password (B)**

If the installer password is lost or forgotten, this process is used to reset access to the device. The screen will generate a challenge code as shown in the image. Once the installer has the challenge code, it is necessary to contact OutBack Technical Support (see inside front cover) to obtain a temporary “challenge password” that corresponds with the MATE3s-generated challenge code. After entering a valid challenge password, the MATE3s will immediately display the **Change Installer Password** screen. The installer should change the password according to preference. Make certain to record the new password.

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**Installation Notes:**

- The installer password consists of four settable numerical digits from 0 to 9.
- The default password is **1732**.
- **IMPORTANT:** Changes to system settings should only be made by qualified personnel.

**Challenge Installer Password (C)**

The challenge password consists of four settable numerical digits from 0 to 9.

**IMPORTANT:** After changing the installer password, cycle the power to the MATE3s. Unplug the cable, wait 5 seconds, then plug it back in. This will ensure the new installer password is saved.
Many of the inverter settings in this section apply to all classes of inverters. However, some inverters use different screens. In cases where screens are different or product-specific, the title indicates the inverter class.

I-1. Search

This function can minimize inverter power draw when no loads are present.

- **Name** — Adjusts the Search mode sensitivity while searching for loads. Setting this item to zero will disable Search mode.
- **Pulse Length** — Adjusts the duration of search pulses (in single AC cycles). Longer pulses will detect loads more quickly. This consumes more power.
- **Pulse Spacing** — Adjusts the time between search pulses (in single AC cycles). Shorter spacing will detect loads more quickly. This consumes more power.

I-2. AC Input and Current Limit

This menu controls the input current that the inverter can draw. It has independent settings for two AC sources. It is common for one source to be the utility grid and the other is an AC generator. The settings are labeled accordingly. (It also has an independent setting for the inverter’s charger.)

**NOTE**: FX-class, FXR-class, and Radian-class inverters interact differently with multiple AC sources. Note also that several items in this menu are also controlled in the <Input Select> soft key menu. See the MATE3s Overview Guide.

Adjust these settings to the size of the input circuit breaker or conductor. This is for protection. If combined charging and loads exceed this setting, the inverter automatically reduces its charge rate. (The loads receive priority.) If the loads exceed the limit on their own, the charge reduces to zero. This setting may be assisted by the Input Support function, if present.

Beyond this point, the input breaker may trip. This is accompanied by a MATE3s event and the warning 'Input Amps > Max'.

**NOTE**: If multiple parallel inverters are installed with a limited AC source, the combined amperage settings must be less than the AC input circuit. The MATE3s Profile Wizard can perform this calculation. (See page 40.)

- **Input Type** — (FX-class and FXR-class only; A, C, D) — The inverter has two choices for AC sources: Grid or Gen. It cannot use both at once, but it can be switched between them using an external selector switch. The user can select between defined parameters for each source. (See I-3. See page 42 for the effects of the Profile Wizard on this setting.)
- **Input Priority** — (Radian-class only; B) — The inverter can be wired to two AC sources: Grid or Gen. It can accept either source but cannot use both at once. However, it will accept one input as a default selection if both sources are active at the same time.
- **Grid and Gen Input AC Limit** — Adjusts the inverter’s draw to the size of the appropriate input circuit or source. (See page 42.)
- **Charger AC Limit** — Adjusts the draw of the inverter’s charger. This setting can be limited to avoid accidentally overcharging the batteries. It should not exceed the maximum charge rate of the battery bank. (See page 42.)
- **Charger Control** — (FX-class and Radian-class only; A and B) — Turns off the charger for an individual inverter and prevents it from responding to global charger commands.
- **Input Support** — (FX-class only; C) — Enables the Input Support function, if present. Not all FX-class inverters have this function (B).

**NOTE**: Input Support is present in Radian- and FXR-class inverters, but is not selectable. It only works in Support mode. See I-3a.

I-3a. Grid and Gen Input Mode and Limits (FXR-class and Radian-class)

The inverter will not connect to an AC source unless specific conditions are met. Each input selection has a menu to adjust the conditions. In the Radian, the Grid Input Mode and Limits menu applies to the input labeled GRID. Gen Input Mode and Limits affects the GEN input. In FXR inverters, each menu may apply depending on whether the single input is set to accept Grid or Gen. See I-2.

When the conditions are met, the inverter will accept the source after the designated delay.

- **Input Mode** — Sets this input to one of seven AC input modes (see list). Each mode has specific advantages for a particular application. (See page 42 for the effects of the Profile Wizard on this setting.)
- **Voltage Limit Lower and Upper** — Set the acceptable AC voltage. If the source is within this range, the inverter accepts it. If it exceeds this range, the inverter disconnects itself. It will return to inverting if that function is active.
- **Transfer Delay** — Sets the duration that the input AC voltage or frequency may exceed limits before disconnection. This may be preceded by a warning and may be followed by a Last AC Disconnect message. (See the MATE3s Overview Guide.)
- **Connect Delay** — Sets the designated delay period before the inverter begins accepting power from the source. This is intended to give a generator time to stabilize its output. It is not the same as the AGS warmup period (see page 25).

**GridZero Mode**

- **DoD Volts** — Adjusts the lowest allowable battery discharge voltage. Loads will switch to grid power when this setting is reached.
- **DoD Amps** — Adjusts the maximum current (in AC amperes) at which GridZero mode draws power from the batteries.

**Mini Grid Mode**

- **Connect to Grid** — Adjusts the battery voltage setting that causes the inverter to reconnect to the utility grid in Mini Grid mode.
- **Connect Delay** — Adjusts the delay period after reaching Connect to Grid before the inverter reconnects to the grid.

I-3b. Grid and Gen Input Voltage Limits (FX-class only)

The inverter will not connect to an AC source unless specific conditions are met. When Input Type is set to Grid or Gen in the AC Input and Current Limit screen (I-2), these menus adjust the limits on acceptable source voltage. Frequency is not adjustable.

- **Lower and Upper Voltage Limit** — Sets the limits on the acceptable AC voltage. If the source is within the appropriate range, the inverter will accept it. If it exceeds this range, the inverter will disconnect itself. It will return to inverting if that function is active.
- **Transfer Delay** — Sets the duration that the input AC voltage or frequency may exceed limits before the inverter disconnects itself. This may be preceded by a warning and may be followed by a Last AC Disconnect message. (See the MATE3s Overview Guide.)
- **Connect Delay** — Sets the designated delay period before the inverter begins accepting power from the source. This is intended to give a generator time to stabilize its output. It is not the same as the AGS warmup period (see page 25).
I-4. AC Output

This menu adjusts the output voltage while the inverter is inverting. When using an AC input source, this setting does not affect the inverter’s output, or the source acceptance parameters.

I-5. Low Battery

While inverting, the inverter stops functioning if the battery voltage decreases below Cut-Out Voltage for five minutes. This is Low Battery Cut-Out (LBCO). It is accompanied by a MATE3s event and the error Low Battery V. See the MATE3s Overview Guide.

The inverter recovers from LBCO after rising (charging) to Cut-In Voltage for ten minutes. The error clears itself and the inverter automatically resumes functioning.

I-6. Battery Charger

The inverter uses a “three-stage” battery charging cycle which utilizes multiple settings. This menu controls the voltages and timers for the charger.

IMPORTANT: Charger settings must be carried for a given battery type. Follow all battery manufacturer recommendations. Incorrect settings may cause the batteries to be poorly charged.

I-7. Battery Equalize

This menu controls the settings for equalization. This process is used for battery maintenance.

CAUTION: Battery Damage
- Do not operate sealed batteries unless approved by the manufacturer.
- Some batteries may suffer severe damage.
- Follow all battery manufacturer recommendations for equalization.

I-8. Auxiliary Output

The Auxiliary Output menu controls any inverter’s Auxiliary (AUX) output. The AUX terminals provide 12 Vdc to control loads.

Modes
1. Remote < On/Off >
2. Load < Off/On >
3. Cool < Off/On >
4. Fault < Off/On >
5. DC Divert < Off/On >
6. AC Divert < Off/On >

Auxiliary Output

- Status – The AUX output status is controlled by the < Off/On > soft keys.
- Aux Mode – Selects one of the available modes. (See the list to the left.) If an Aux Mode has settable parameters, additional fields will appear. The modes and parameters are depicted below. The < Off >, < Auto >, and < On > soft keys are also depicted.
- < Off > activates the AUX output immediately. It displays Manual Off and remains continuously active until < Off > is selected.
- < Auto > activates the AUX output according to the Aux Mode automatic criteria. When activated, it displays Auto On; otherwise it displays Auto Off.
- < Off > deactivates the AUX output. It displays Manual Off. Note that the AUX output may still activate from the settings of inverter or MATE3s functions such as AGS. (See page 25.) Remote mode should be used to prevent unwanted activations.

FXR-class and Radian class parameters:
- ON:Batt < (Radian- and FXR-class) or Enable Voltage (FX-class) — High-voltage threshold for activation. The activation lasts one minute.
- OFF:Batt < (and Delay) — Low-voltage threshold and time before deactivation.
- OFF Delay — The delay before the AUX deactivates.
- OFF Delay < (FXR- and Radian-class) — High-voltage threshold before deactivation. It can activate again.
- GT Limits (FXR-class and Radian-class) — The AUX activates as an alert that the grid does not meet grid interactive parameters and the inverter has stopped setting. It can operate a small cooling fan.
- Not depicted. No settable parameters.
- Sometimes called IEEE.

FXR-class and Radian class parameters:
- ON:Batt < (and Delay) — High-voltage threshold and time before activation.
- OFF:Batt < (and Delay) — Low-voltage threshold and time before deactivation.
- GT Limits (FXR-class and Radian-class) — Enable Voltage — High-voltage threshold for the AUX to activate.
- OFF Delay — The delay before the AUX can activate again.
- 11. Source Status (FXR- and Radian-class) — The AUX activates when the inverter accepts an AC source. It can operate an indicator to show that the source is present.
- Not depicted. No settable parameters.
I-9. Inverter Stacking

This menu contains settings to coordinate, or “stack”, multiple inverters. Stacking assigns an inverter to a particular phase or output. Any inverter connected to an OutBack HUB product must be designated as master or slave of some type. Stacking configurations and other details are discussed in the inverter literature. The Change soft key enters a new series of screens. The inverter’s output is disabled as shown below. This prevents phase shifting and other problems which can arise from inverters remaining active while their programming is changed.

Stack Mode — Assigns the inverter to a specific priority and output (phase). This assignment must be made for every inverter that is connected to a HUB port. In a multiple-inverter system, one inverter must be assigned as master. The others are assigned to other phases or as slaves.

- Master or 1-phase Master — The primary inverter for single-inverter systems, single-phase stacked systems, or split-phase systems. In models where this selection reads Master, it is also used for three-phase systems.
- Slave — A secondary inverter in a stacked system.
- Classic Slave — A secondary (L2) inverter, partly independent of the master.
- OB Slave L1 — A secondary (L1) inverter for single-phase (parallel) or split-phase multiple-inverter systems.
- OB Slave L2 — A secondary (L2) inverter for split-phase multiple-inverter systems.
- L2 Phase Master — The subphase master inverter for the L2 output in a split-phase system.
- B Phase (C Phase) Master — The subphase master inverter for the B or C outputs in a three-phase system.
- 3p Master or 3phase Master — The primary inverter for three-phase systems that include the selection 1-2phase Master as shown above. The 3p Master is Phase A.
- 3phase Classic B (C) — 3p OB Slave A (B C) — A secondary inverter for three-phase systems. Used in models where the phases are assigned based on the HUB port.
- 3phase Slave — A secondary inverter for three-phase systems. Used in older models for B and C phases where the phases are assigned based on the HUB port.

See the inverter literature for more information on these stacking modes.

CAUTION: Equipment Damage

Ensure the inverter outputs are turned off, or disconnected, before programming. Failure to do so could result in damage to the equipment.

IMPORTANT:

- All inverters connected to ports on the HUB Communications Manager must be assigned valid designations for stacking and Power Save Levels. If this is not done, the system may give any number of error messages or other symptoms.
- All stacked inverters must have the same firmware revision. If inverters are stacked with different firmware revisions, any inverter with a revision different from the master will not invert and will not connect to an AC source. The MATE3s will register an event and will display the following message:

An inverter firmware mismatch has been detected. Inverters X, Y, Z are disabled.
Visit www.outbackpower.com for current inverter firmware.

- Combining unstacked or incorrectly stacked inverters may cause similar problems.
- If more than one model series is stacked together, any inverter model belonging to a series different from the master will not invert and will not connect to an AC source. The MATE3s will register an event and will display the following message:

A model mismatch has been detected. Inverters are incompatible. Inverters X, Y, Z are disabled. Match all models before proceeding.

- Stack modes are inverter-dependent. The list to the right shows all possible modes. Some are not available with all OutBack inverters.

The output is activated when the selection is complete. Regardless, make certain to observe the caution below when programming.

I-10. Power Save Ranking

Each inverter uses power while it remains on, even if it is not inverting or charging. Power Save can put slave inverters into Silent mode. This mode minimizes the idle consumption. The inverters will come on again when the loads require power.

Selecting Power Save Ranking will bring up one of the menus below. This depends on whether the inverter on that port has been set as a master (including subphase masters) or a slave. The inverters are given a ‘rank’ or level number. This controls the order in which slaves activate (or return to Silent mode).

- Master Power Save Level — Sets the rank of the master or subphase master. Any inverter ranked equal or less than the master will not enter Silent mode.
- Slave Power Save Level — Sets the ranking of slave inverters. This rank controls the order in which slaves activate (or return to Silent mode). Lower rank numbers activate when lesser loads are applied. Higher ranks only activate when the load increases to a high level.

See the inverter literature for more information on Power Save.

I-11. Grid-Tie Sell

This menu sets basic limits for Offset operation, which includes the “grid-tie” (grid-interactive) function.

- Offset Enable (also called Grid-Tie Enable*) — Enables or disables the inverter’s Offset function by selecting Y or N. This controls grid interaction in applicable models. It also controls offset operation in the Support, Mini Grid, and GridZero modes in applicable models.

NOTE: If Enable Auto Grid-Tie Control (see page 38) is set to Y (yes), Offset Enable may be turned on according to MATE3s and FLEXnet DC automatic criteria, even if it is manually turned off here. Offset Enable will switch to Y.

- Sell Voltage — Sets the operating point for offset operation, including the grid-interactive function. When this point is exceeded (usually from renewable charging), the inverter sends the extra power to the loads. This offsets the use of the AC source. If the energy exceeds the loads, a grid-interactive inverter can sell the utility.

- Grid-Tie Window* — Sets the requirements for the utility grid before the grid-interactive function can work. If the voltage and frequency are within designated ranges, the inverter can sell power. Otherwise, this function will not operate. (A message will appear in the Sell Status screen.) Two selections are available, IEEE and user. Specific settings for each set point are listed in the inverter literature.

- IEEE selection has narrower settings than the user setting.
- IEEE is required by most utilities in the United States. (For American models, its voltage and frequency criteria are preset to the requirements of UL1741 and IEEE 1547.)

*Only used in GS8048 and grid-interactive FX-class inverters
I-12. Module Control (Radian-class only)

This item is used to disable either of a Radian-class inverter’s internal power modules for testing. If one module fails or if troubleshooting is otherwise needed, the module selection can be performed manually. The available options are Auto, Left, Right, and Both. The inverter can be directed to use a single, specified module (left or right), or it can turn on both modules simultaneously. This procedure should be performed only if directed by OutBack Technical Support. It should not be performed on inverters that do not have two power modules.

I-13. Calibrate

This menu allows adjustment of the inverter’s internal voltmeters. Calibration can improve system performance. Multiple inverters can achieve voltage targets at the same time. This image shows the readings taken by the inverter in Vac and Vdc. To the right of each value is the calibration setting which adjusts the reading. The settable range will vary with inverter model. See the inverter literature for specific ranges.

- **Input Voltage** — Calibrates the AC voltage measurement made at the inverter’s AC input (from an incoming AC source).
- **Output Voltage** — Calibrates the AC voltage measurement made at the inverter’s AC output (from the inverter’s own power, or from an incoming AC source).
- **Battery Voltage** — Calibrates the DC voltage measurement made at the inverter’s DC terminals.

To calibrate the battery voltage reading:
1. Place an accurate DC voltmeter at the battery terminals (not the inverter terminals).
2. Operate the inverter at about half power, then adjust the **Battery Voltage** setting until the inverter’s battery voltage matches the reading on the DC voltmeter.

The AC readings are calibrated similarly at the AC terminals.

**IMPORTANT:**
Calibration does not change the actual output of the inverter, only the reading of that output.

I-14. Grid Interface Protection

This menu contains sensitive inverter settings. Some settings relate to regional requirements or large system performance (Operating Frequency, Multi-Phase Coordination). However, most settings are related specifically to grid-interactive applications. All settings are protected as they can noticeably affect inverter operation. The installer password needs to be initially set before this menu is visible. (See page 9.) None of these settings should be changed unless required by the utility company or another authority.

Each Grid Interface Protection item opens a separate screen with adjustable menu items.

- **Operating Frequency** — This screen has a single item which selects the operating nominal frequency of the inverter. The options are 60 Hz or 50 Hz. The default setting depends on the model of inverter. Pressing Change on this screen leads to a warning screen before this setting can be changed.
- **Stage 1 Voltage Trip and Stage 2 Voltage Trip** — These settings are based on high and low AC voltage conditions (Over and Under Voltage Trip) and inverter response times for each condition (Clearance Time).
- **Frequency Trip** — This screen has inverter disconnection settings. These are based on high and low AC frequency conditions (Over and Under Frequency Trip) and inverter response times (Clearance Time).
- **Mains Loss** — This screen has a setting for inverter disconnection time (Clearance Time) following the loss of an AC source. It also has a Reconnect Delay setting after the source is introduced or restored.
- **Multi-Phase Coordination** (FXR-class only) — This screen allows activation of Coordinated AC Connect/Disconnect. When this function is active, the AC source must deliver input in the appropriate phase to all inverters. If the master or subphase master inverters do not sense a acceptable AC source, the entire system will disconnect from the source.

1. Operate the inverter at about half power, then adjust the **Battery Voltage** setting until the inverter’s battery voltage matches the reading on the DC voltmeter.
2. Place an accurate DC voltmeter at the battery terminals (not the inverter terminals).

I-15. Model Select (FXR-class only)

This item designates whether an inverter is a vented or sealed model. If replacing the control PCBA in a sealed FXR-class inverter, it must be re-programmed for that model. The default setting is for a vented model.

I-16. Reset to Factory Defaults

This screen allows the user to erase the settings from the selected inverter and start over with the values programmed at the factory.

Entering this screen brings up the query Reset Inverter to Factory Defaults? Use the soft keys to select No or Yes.

- If No is selected, the screen returns to the Inverter menu. No changes will be made to any settings.
- If Yes is selected, the inverter’s settings immediately change to the original factory values.

NOTE: Some items are retained at the present setting even when the inverter is reset to factory defaults. The retained settings include the Output Voltage, all items in the Calibrate menu, Model Select, and all items in the Grid Interface Protection menu.
Charge Controller Settings

C-1. Charger

The charge controller uses a "three-stage" charging cycle with multiple settings. This menu controls the charging voltages and timers. See the charge controller literature for an explanation of the cycle.

- **Absorb Voltage** — Adjusts the voltage of Bulk and Absorption stages. (See page 42 for the effects of the Profile Wizard.)
- **(Absorb) Time** — Adjusts the duration of Absorption stage.
- **Float Voltage** — Adjusts the voltage of Float stage. (See page 42.)
- **Rabulk Voltage** — Adjusts the point of low battery voltage that triggers a new Bulk stage after 50 seconds.
- **Current Limit** — Adjusts the maximum charging amperage.
- **Absorb End Amps** — Adjusts the "trickle" charge that will override Absorb Time and proceed to the Float stage. This should be set to just above the lowest absorption current. **NOTE**: If more than one controller is present, this item should be left at zero.

C-2. MPPT

The charge controller uses a maximum power point tracking (MPPT) algorithm which controls the PV array to harvest maximum wattage. Although MPPT is automatic, this menu allows adjustment for special applications. See the charge controller literature for more details.

- **MPPT Mode** — Selects between Auto (which allows automatic MPPT) and U-Pick (which limits the MPPT to a specified voltage).
- **U-Pick VOC** — Adjusts the MPPT limit as a percentage of the array's open-circuit voltage (VOC).
- **Wake up VOC Change VDC** — Adjusts the amount of VOC increase for wakeup needed to leave Snooze mode and begin MPPT. (The charge controller manual uses the title "Wake up Mode").
- **Snooze Mode Amps** — Adjusts the controller's required current level during the wake up time.
- **MPP Range Minimum and Maximum** — Adjust the lower and upper MPPT limit to narrow the focus of the process. Minimum options are half the array's VOC, or the full VOC. Maximum options are 80%, 90%, and 99% of the array's VOC. (The Owner's Manual uses the title "Mpp Range Limit %.")

C-3. Temperature Compensation

When equipped with the Remote Temperature Sensor (RTS), the charge controller compensates for temperature changes by raising or lowering its charging voltages. However, the sensitivity of other DC devices could require limits on this compensation. This menu can adjust the upper and lower limits of temperature compensation. See the charge controller Owner's Manual for an explanation of temperature compensation.

- **Mode** — Selects between Wide, which allows full compensation, and Limited, which allows the manual limits controlled by the next two set points. (The charge controller Owner's Manual features this as an option under "RTS Compensation").
- **Limited** — Selects the upper and lower temperature voltage — Adjusts the highest and lowest allowed compensated voltage. (The Owner's Manual features these as an option under "RTS Compensation").

C-4. Battery Equalize

**CAUTION: Battery Damage**

Do not equalize any sealed battery types (VRLA, AGM, Gel, or other) unless approved by the manufacturer. Some batteries may suffer severe damage from equalization. Contact the battery manufacturer for recommendations on equalization voltage, duration, schedule, and/or advisability. Always follow manufacturer recommendations for equalization.

This menu controls the settings for the equalization process, which is used for battery maintenance. See the charge controller Owner's Manual for an explanation of equalization.

- **Equalization Voltage** — Adjusts the voltage of the Equalization cycle. **NOTE**: For better performance on float charge, a float voltage should be selected. The charge controller's Float voltage returns to normal any time the inverter enters Absorb mode.
- **Automatic Battery Equalization** — Establishes a schedule which begins a new cycle after a certain number of days. Setting to 0 disables the automatic schedule.

C-5. Grid-Tie Mode

**GRID-TIE MODE**

GRID-TIE MODE requires a grid-interactive inverter (also known as grid-tied or grid-tie enabled). Not all inverters are grid-interactive. If the MATE3s is connected to a non-grid-interactive inverter, Grid-Tie Mode will not function if selected.

This menu allows the charge controller to work more effectively with any grid-interactive inverters present on the HUB. When enabled, this setting automatically raises the charge controller's Float voltage to equal its Absorption voltage. Since the inverter sells power to maintain its own Float, Absorption, or other settings (all normally lower than the controller), this mode makes it easier for the inverter to sell power.

**NOTE**: The charge controller's Float voltage returns to normal any time the inverter enters PassThru or Silent modes. (See the MATE3s Overview Guide for a list of inverter modes.)

- **N** (No) disables Grid-Tie Mode. **Y** (Yes) enables Grid-Tie Mode. (See page 42 for the effects of the Profile Wizard on this setting.)

C-6. Auxiliary Output

This menu controls the output and functionality of the Auxiliary (AUX) output. These terminals provide a 12 Vdc output that can deliver up to 0.2 Adc to control external loads. Typical loads include signaling a generator to start, sending a fault alarm signal, or running a small fan to cool the inverter. See the charge controller Owner's Manual for more information.

- **Status** — The Auxiliary Output status is controlled by the **<Off>** <Auto>, and **<On>** soft keys.
  - **<Off>** activates the AUX immediately. It displays Manual On and remains continuously active until **<Off>** is selected.
  - **<Auto>** activates the AUX by automatic criteria according to the Aux Mode selected. (See the next page.) When activated, it displays the **Auto** On, otherwise it displays **Auto Off**.
  - **<Off>** (deactivates the Auxiliary Output) and prevents any of the charge controller's automatic AUX options from working. When **<Off>** is selected, it displays **Manual Off**. Note that even if the AUX output is set to **<Off>**, it may still be activated by an external option not based in the charge controller, such as A03. (See page 25.)
  - **Aux Mode**—Selects one of nine functions. See the next page.
C-6 (Auxiliary Output, continued)

Aux Modes

- Aux Mode includes nine functions with automatic criteria. They do not necessarily appear in the order shown here. Vent Fan appears first if the controller is at factory default values; otherwise, it displays the last option selected. (Aux modes are described in the charge controller Owner’s Manual.)

  - Vent Fan activates the AUX output in response to high DC (battery) voltage. It can operate a small fan. The output deactivates when the voltage drops below the set point.
    - Enable Voltage — The high-voltage setting for activation.
    - Hold Time — The delay after reaching Enable Voltage before AUX deactivation.
    - Active: High or Low — Active High activates the output when conditions are met; Active Low deactivates the output when the same conditions are met but activates it the rest of the time.

  - PV Trigger activates the AUX output due to high the PV voltage. This can operate an alarm to indicate a dangerously high Voc.
    - Enable Voltage — The high-voltage setting for activation (if Active High).
    - Hold Time — The delay after reaching Enable Voltage before AUX deactivation.
    - Active: High or Low — Active High activates the output when conditions are met; Active Low deactivates the output when the same conditions are met but activates it the rest of the time.

  - Error Output responds to “low battery” or “failure to charge” conditions. Low battery is defined by a set point. Failure to charge means the PV fails to exceed the battery voltage by 3 Vdc for 26 consecutive hours. This can operate an alarm for an array problem.
    - Low Battery Voltage — The low-voltage setting for deactivation.
      - NOTE: This option is “Active Low” only.

  - Remote allows the AUX output to be activated by manual or automatic commands based in the MATE3s (such as AGS).
    - Not depicted. No settable parameters.

- Night Light uses the PV voltage as a light sensor. When it drops below a settable voltage, the AUX output activates. It remains active for a certain amount of time. It can operate lights or devices after dark.
  - Active: High or Low — Active High activates the output when conditions are met; Active Low deactivates the output when the same conditions are met but activates it the rest of the time.

  - Diversion: Relay activates the AUX output upon reaching the target voltage for charging. See below.
    - Threshold — The low-voltage setting that activates the output (following the Hysteresis Time).
    - Hysteresis Time — The length of time the output remains active.

  - Diversion: Solid St activates the AUX output upon reaching the target voltage for charging. The output is pulse width modulated (PWM) for exact control.
    - Both functions are used to control a diversion load.
      - Active: High or Low — Active High activates the output when conditions are met; Active Low deactivates the output when the same conditions are met but activates it the rest of the time.

  - Low Batt Disconnect activates the AUX output upon reaching low battery voltage. It can be used to disconnect non-critical loads.
    - Disconnect — The low-voltage setting at which the output is activated after Disconnect Delay.
    - Re-Connect — The setting at which the output is deactivated again after reaching Disconnect.
    - Disconnect Delay — The time after reaching Disconnect before the output is activated.

C-7. Restart Mode

This setting allows the user to choose between continuous MPP tracking, or occasional restarts of the sweeping process. A restart means the controller abandons the existing maximum power point. It then “re-sweeps”, or begins gathering new power point data.

- Restart Mode — 0, 1, or 2
  - 0 — Initial sweep and then continuous MPP tracking.
  - 1 — Automatic re-sweep every 90 minutes if controller is in an MPPT mode (MPPT, Float, MPPT Bulk etc).
  - 2 — Automatic re-sweep every 90 minutes if controller is in any charging mode.

C-8. Calibrate

This menu allows adjustment of the voltmeter. Calibration can improve system performance. Multiple controllers can achieve voltage targets at the same time.

To calibrate the charge controller:
1. Place an accurate DC voltmeter at the battery terminals. Failure to charge means the PV fails to exceed the battery voltage by 3 Vdc for 26 consecutive hours. This can operate an alarm for an array problem.

2. Operate the controller while delivering normal PV current, then adjust the Battery Voltage setting until the inverter's battery voltage matches the reading on the DC voltmeter.

C-9. Reset to Factory Defaults

This screen allows the user to erase the settings from the selected charge controller and start over with the factory programmed settings. These values are listed in the charge controller Owner’s Manual.

Entering this screen brings up the query “Reset Charge Controller to Factory Defaults?”

Use the soft keys to select No or Yes.
- If <No> is selected, the screen returns to the Charge Controller menu. No changes will be made to any settings.
- If <Yes> is selected, the controller’s settings immediately change to the original factory values. The screen displays the message “Charge Controller Restored to Factory Defaults.” A “<Continue>” soft key will appear. Pressing this key returns the screen to the Charge Controller menu.
Battery Monitor Settings

Battery Monitor Settings (B)
- Battery Setup (B-1)
- Shunt Enable (B-2)
- FLEXnet Relay Mode (B-3)
- FLEXnet Relay Set Points (B-4)
- Reset to Factory Defaults (B-5)

B-1. Battery Setup
This menu sets the parameters used by the FLEXnet DC battery monitor (FN-DC) to track battery status. (Many of the figures must be given by the battery manufacturer.) These settings are “fully charged” parameters. When they are met, the Home screen SOC percentage indicator meter will alternate between light and dark text. (See the MATE3s Overview Guide.)

- **Battery Amp-hours** — Identifies the total size of the battery bank in amp-hours.
- **Charged Voltage** — This is the minimum voltage that the batteries must reach during the Bulk or Absorption stages for the FN-DC to consider the batteries fully charged.
- **Charged Return Amps** — Sets the limit to which the current must “trickle down” or decrease before the batteries are considered charged.
- **Time** — Sets the duration the Charged Voltage and Charged Return Amps must be maintained before the charging cycle is considered finished.
- **Charge Factor** — Adjusts the anticipated charging efficiency of the batteries. Because the batteries cannot be 100% efficient, the battery monitor discounts a certain percentage of the energy used to charge them. This provides a more realistic estimate of the amount of charge that has been restored.

See the FLEXnet DC literature for more information on recommended settings. See page 42 for the effects of the Profile Wizard on several of these settings.

B-2. Shunt Enable
This menu allows the user to turn on or off any of three shunts (current sensors) used by the battery monitor. These are designated as shunts A, B, and C. For more information on the use of each shunt, see the Owner’s Manual for the FLEXnet DC.

- **Y (yes)** — Instructs the battery monitor to measure the current running through a particular shunt.
- **N (no)** — Instructs the battery monitor to ignore the selected shunt.

**NOTE:** The MATE3s has certain additional functions that can be used with the FLEXnet DC. See M-8 on page 38.

B-3. FLEXnet Relay Mode
This menu allows the user to turn on or off an internal relay. The relay contacts are rated for 5 amps at 30 Vdc. (It provides no voltage of its own.) The relay can be used as a switch to turn other devices on or off. For more information, see the FLEXnet Relay Set Points menu and the FLEXnet DC literature.

- **Status** — The Relay output status is controlled by the <Off>, <Auto>, and <On> soft keys.
  - <Off> activates the relay immediately. Its contacts will remain continuously closed until <Off> is selected.
  - <Auto> activates the relay by automatic criteria, according to the option selected in Relay Set Points.
  - <Off> deactivates the relay and prevents any of the FLEXnet Relay Set Points options from working. Note that even if the relay output is set to <Off>, it may still be activated by an external option such as AGS. (See page 25.)
- **Invert Logic** — Switches the relay’s function from N.O. (a normally open state) to N.C. (a normally closed state). The selections are N (no) and Y (yes). Since the default condition is N.O., the N selection means it remains in this state. Selecting Y inverts the logic to N.C. The relay will close with an audible click when this occurs.

B-4. FLEXnet Relay Set Points
This menu allows the user to adjust the criteria used by the Auto selection in the FLEXnet Relay Mode menu. For more information on these criteria, see the FLEXnet DC literature.

**NOTE:** The following set points assume N.O. logic as described in B-3. If N.C. logic is used, all uses of the words “close” or “open” are reversed.

- **Voltage:** **High** — The relay will close upon reaching a specified high voltage level following the appropriate delay.
- **Voltage:** **Low** — After the relay was closed according to the High voltage set point, it will open again upon reaching a specified low voltage level following the appropriate delay; see below.
- **SOC:** **High** — If voltage conditions are not met, the relay will close when the battery state of charge (SOC) increases to a specified percentage following the appropriate delay.
- **SOC:** **Low** — After the relay was closed according to the High SOC set point, it will open again upon reaching a specified low SOC level following the appropriate delay.
- **Delay:** **High** — Sets the delay time before the relay closes due to a High set point. This applies to either the SOC or voltage settings.
- **Delay:** **Low** — Sets the delay time before the relay opens due to a Low set point. This applies to either the SOC or voltage settings.

B-5. Reset to Factory Defaults
Use the soft keys to select No or Yes.
- If **No** is selected, the screen returns to the Battery Monitor menu. No changes will be made to any settings.
- If **Yes** is selected, the battery monitor’s settings immediately change to the original factory values. The screen displays the message FLEXnet DC Restored to Factory Defaults. A <Continue> soft key will appear. Pressing this key returns the screen to the Battery Monitor menu.

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**NOTE:** The MATE3s has certain additional functions that can be used with the FLEXnet DC. See M-8 on page 38.
MATE3s Settings

AGS (Setup)

MATE3s Settings (M)
- Advanced Generator Start (AGS) (M-1)
- Data Logging (M-2)
- High Battery Transfer (M-3)
- Grid Use Time (M-4)
- Load Grid Transfer (M-5)
- Charge Controller Float Coordination (M-6)
- Global Charger Output Control (M-7)
- FLEXnet DC Advanced Control (M-8)
- AG Coupled Control (M-9)
- FLEXtime Schedule (M-10)
- Automatic Daily Reboot (M-11)
- Reset to Factory Defaults (M-12)

AGS Connections
The AGS mode can start a generator using the AUX connections on various items of OutBack equipment. Some AUX connections deliver a 12-volt output while others are "dry" contacts with no voltage. Different generators may require either. It is more common for the start circuit on a two-wire-start generator to use dry contacts. Radian-class inverters and the FLEXnet DC Battery Monitor include dry contacts on their AUX Relay connection. In the FXR-class or FX-class inverters, the AUX output delivers a 12-volt signal. This output can be used to drive the OBR-16-DIN (or a similar relay) which is equipped with dry-contact connections. If using a generator with a three-wire-start circuit, a three-wire to two-wire conversion kit may be needed to use OutBack AUX connections. Atkinson Electronics (http://atkinsonelectronics.com) is one company which makes these kits. The Atkinson GSM-Mini is intended to work with OutBack inverters. See the OutBack product literature for more information on wiring these devices.

AGS Operation
AGS starts the generator when any of its Start conditions are met and stops the generator when any of its Stop conditions are met. A Quiet Time schedule overrides most Start conditions to keep the generator from running at inappropriate hours. See page 31 for a list of conditions that will stop the generator. To identify that the generator has started, the MATE3s uses the Input Status message located in the AC Fault hot key screen. (See the MATE3s Overview Guide). If this item does not change to Use, the MATE3s will display an AGS Fault message. See Fault Time and related topics throughout section M-1.

NOTE: AGS is intended to take control of the AUX output of OutBack inverters and charge controllers. For this function to work correctly, these products must be set to Remote. (See pages 12 and 20.)

NOTE: Gen Alert is another way to automatically start a generator, but it does not offer the same range of programming options as AGS. AGS is a function of the MATE3s while Gen Alert is a function of the inverter, which is programmed using the MATE3s. Information on the Gen Alert function can be found on page 13 and in the inverter Operator’s Manual.

IMPORTANT:
- It is important not to confuse AGS with Gen Alert. These are two separate methods for requesting a generator to start. Gen Alert set points should not be used as AGS set points.
- The AC generator must connect to the inverter’s GEN terminal input when using AGS. If the input priority is set to GRID and the GRID terminals are energized, an automatically controlled generator will shut down.
- AGS turns on the inverter’s charger even if it had previously been manually disabled.

AGS Topics
These menus show the different topics, settings, and starting conditions for AGS.

AGS Screens and topics included under M-1:
- AGS Setup (this page)
- Voltage Start (page 26)
- Load Start (page 26)
- State-of-Charge Start (page 27)
- Must Run Schedule (page 27)
- Quiet Time Schedule (page 28)
- Generator Exercise Schedule (page 28)
- Set Total Generator Run Time (page 29)
- AGS Timers (page 29)
- AGS Functional Test (page 30)
- AGS Troubleshooting (page 30)
- Start and Stop Reasons (page 31)

AGS Setup
These items provide the basic operating parameters for AGS. Many of these settings are required for any sort of AGS operation. They should be adjusted before selecting starting criteria such as voltage or load start.

- AGS Enabled — either enables (Y) or disables (N) AGS operation.
  - Port — designates a port on a HUB communications manager. This port becomes the recipient of AGS commands. Select a specific inverter or other device for generator control. Set Port to the HUB port number (1 through 10) for that device. If only one device is present and the HUB communications manager is not used, the Port for that device is designated zero (0).
  - Fault Time — the period the generator is given for connection to the inverter system after the AUX output has been activated. If the generator fails to connect, the MATE3s displays an AGS Fault message on the GEN hot key screen. A fault is added to the event log. The EVENT LED indicator will illuminate. This period can be anywhere from 5 to 30 minutes.
  - Control (Radian-class only) — selects which AUX terminals are used for AGS. In a Radian inverter, either the AUX Output or AUX Relay terminals may be used.
  - Warmup Time — adjusts the time (in minutes) the generator is allowed to run with no load (before charging begins). This time can be from 0 to 30 minutes, but should follow the generator manufacturer’s recommendations.
  - DC Generator — designates that a DC generator is in use instead of an AC generator. When this item is set to Y, the automatic stop settings designated on the following pages do not apply. Instead, the following apply.
    - DC Absorb Voltage — the voltage the batteries must reach when the DC Absorb Voltage. Once this time expires, the MATE3s shuts the generator off.
    - DC Absorb Voltage — the voltage the batteries must reach when the DC Absorb Voltage. Once this time expires, the MATE3s shuts the generator off.
    - The Stop SOC % setting (see page 27) can also be used to stop a DC generator.

Notes
These settings are only effective when DC Generator is set to Y. This item also disables Cool Down and Warmup settings.
- If an AC generator is in use, this menu must be set to N.
- See page 43 for the effects of the Profile Wizard on this setting.
M-1. AGS continued

- **Voltage Start**
  
  Three starting voltages are available. These are low-voltage set points which are linked to times of 24 hours, 2 hours, and 2 minutes. These times indicate how long the batteries should be left at a particular low voltage before starting the generator for recharge.
  - If the battery voltage drops below any of these set points, that timer starts counting down.
  - If the voltage is above the set point, the timer counts up again.
  - When any timer reaches zero (0), a start command is sent to the generator.
  - The timers automatically reset to maximum when AGS stops the generator, or upon an AGS fault.
  - See page 29 to view these timers.

After a generator runs due to Voltage Start, it will be stopped when the inverter completes the battery charging cycle.

- **State-of-Charge (SOC) Start**
  
  Occasional it is not effective for the generator to start on the basis of voltage. AGS can operate the generator based on battery SOC information from the FLEXnet DC battery monitor (FN-DC).

  - **Enable** — Y (Yes) causes the MATE3s to start and stop the generator based on the items below. N (no) disables this function.

  - **Start SOC** — When the FN-DC shows an SOC below this setting (0 to 99%), the generator starts. (The SOC value is displayed on the Home screen. See the MATE3s Overview Guide.)

  - **Stop SOC** — When the FN-DC shows that the SOC has exceeded this setting (0 to 100%), the generator stops.

  **NOTE**: In some cases the charger may not easily reach a setting of 100% SOC. It is recommended to set Stop SOC no higher than 98%.

If Stop SOC is not desirable, AGS can stop the generator by another means.

- **Enable Full Charge** — When set to Y (yes), the MATE3s completes a full charging cycle regardless of Stop SOC. N (no) disables this function.

  - **Interval** — the days (0 to 30) before Enable Full Charge is used.

  The MATE3s will perform Start SOC as normal. The MATE3s compares the Interval period against the Days SinceParms Met display. (See the MATE3s Overview Guide.) If Days SinceParms Met is equal or higher, then the generator will run until the FLEXnet DC’s charge parameters are met, regardless of the SOC value. (See page 31 for more information.)

  After the cycle is over, the SOC is automatically reset to 100% when the batteries begin to discharge for one minute.

  Setting Enable Full Charge to N or setting the Interval to zero (0) days will disable the function.

- **Load Start**
  
  The generator can start whenever the system AC load exceeds the Start wattage for the programmed Delay time. The generator is stopped when the AC load drops below a Stop set point for the Delay time.

  - **Enabled** — either enables (Y) or disables (N) the Load Start function.

  - **Start** — the load size (0 to 50 kW) which requires the generator to start following the Delay time (1 to 240 minutes).

  - **Stop** — the lower load setting (0 to 49 kW) which ends the generator operation following the Delay time (1 to 240 minutes).

**IMPORTANT:**
- If DC Generator is set to Y, the generator will only stop after reaching the DC generator parameters shown on page 25.

- **Must Run Schedule**
  
  This is a period of time when the generator is commanded to run regardless of other conditions. This is usually set because large loads are expected to be present. Must Run Schedule times can be set individually for weekdays and weekends.

  - **Enabled** — either enables (Y) or disables (N) the Must Run Schedule function.

  - **Weekday Start** — the daily time (00:00 to 23:59) when the generator must start.

  - **Weekday Stop** — the daily time (00:00 to 23:59) when the generator must stop after **Weekday Start**.

  - **Weekend Start** — the daily time (00:00 to 23:59) when the generator must start.

  - **Weekend Stop** — the daily time (00:00 to 23:59) when the generator must stop after **Weekend Start**.

  The Must Run Schedule is disabled when **Start** and **Stop** are set to the same time, or if **Enable** is set to N.
M-1. AGS continued

- **Quiet Time Schedule**
  This is a period of time when the generator is commanded not to run regardless of other conditions. *Quiet Time* is usually set due to the risk of inappropriate noise or other reasons. *Quiet Time* can be set individually for weekdays and weekends.

  - **Enable** — either enables (Y) or disables (N) the *Quiet Time* function.
  - **Weekday Start** — the beginning time (00:00 to 23:59, Monday through Friday) when the generator is not allowed to start.
  - **Weekday Stop** — the ending time (00:00 to 23:59, Monday through Friday) after which the generator is allowed to start.
  - **Weekend Start** — the beginning time (00:00 to 23:59, Saturday and Sunday) when the generator is not allowed to start.
  - **Weekend Stop** — the ending time (00:00 to 23:59, Saturday and Sunday) after which the generator is allowed to start.

  **IMPORTANT:**
  *Quiet Time* overrides most of the starting set points (Voltage, Load, Must Run, Exercise etc.), preventing the generator from starting automatically. The only exception is 2 Minute Start, which is considered an “emergency” start set point and which will start the generator regardless of *Quiet Time* settings.

- **Generator Exercise Schedule**
  This is a period of time when the generator is scheduled to run briefly regardless of other conditions. The exercise function can operate once a week or every few weeks.

  - **Enable** — either enables (Y) or disables (N) the *Exercise* function.
  - **Exercise Run on** — the day of the week (Mon to Sun) when *Generator Exercise* is scheduled.
  - **Start Time** — the time (00:00 to 23:59) at which the generator starts.
  - **Run Period** — the duration (1 to 240 minutes) of the exercise period.
  - **Exercise Interval** — the number of weeks (0 to 8) that will pass between exercise periods.
  - **Disable Sell During Exercise** — either prohibits (Y) or permits (N) a grid-interactive model from selling power during the exercise period. This is mostly applicable to DC generators.

  **IMPORTANT:**
  Regularly running a generator keeps engine components lubricated, expels excess moisture, charges the starting battery, and helps prevent carbon build-up. Consult the generator owner’s manual for the appropriate length and frequency of exercise periods and what load to run during the exercise period.

- **Set Generator Total Run Time**
  The total running time for an automatic generator is displayed on the *Generator Status* screen, which is accessed with the *Gen* hot key. (See the MATE3s Overview Guide.) If the existing total is inaccurate in some way, it may need to be corrected or reset. This menu allows the timer to be set to a different figure. It can also be reset to zero.

  - **Generator Total Run Time** — 0.0 to 999.9 hours

- **AGS Timers**
  This is a read-only screen that displays times and values for the MATE3s functions described on the preceding pages. Programming of these values is done in the *Quiet Time Schedule, Voltage Start, Load Start, Must Run Schedule, or State of Charge Start* menus described on the previous page.

  - **Fault** begins counting from zero when no voltage is detected after a generator start. When the *Fault Time* setting is reached according to the *AGS Setup* screen on page 25, an AGS fault will be generated. An event will also be recorded. (See page 47).
  - **2 Min, 2 Hour, and 24 Hour** begin counting down from the maximum time when the respective conditions are reached for each setting. If any of these timers reach zero, the generator will be started.
  - **Enable** — either prohibits (Y) or permits (N) a grid-interactive model from selling power during the *Exercise Period*. This is mostly applicable to DC generators.
  - **Load Start and Load Stop** begin counting from zero when the respective conditions are reached for each setting. If either of these timers reach the delay time as set in the *Load Start* screen on page 28, the generator will be started or stopped as appropriate.
  - **DC Absorb** is used with the DC generator settings shown on page 25. It begins counting from zero when the *DC Absorb Voltage* is reached. The generator will be stopped when the *DC Absorb Time* setting is reached.
M-1. AGS continued

- AGS Functional Test
  Before any further programming, confirm that the generator is working properly. Using the generator’s own controls, manually turn it on and then shut it off.
  Next, test the remote start functionality. Go to the Generator Status screen using the GEN hot key.
  To test the AGS function through the MATE3s:
  1. Press the GEN hot key to bring up the Generator Status screen.
  2. Press the <ON> soft key and wait for the generator to start running.
  3. Press the <OFF> soft key to shut the generator off.
  4. Press the <AUTO> soft key to put the generator in AUTO mode. (Automatic functions need to be tested separately.)
  5. Press the <BACK> soft key to return to the Home screen.

- AGS Troubleshooting
  If the generator fails to start or connect, there are many possible reasons. The steps below provide initial guidance for troubleshooting.

Symptom | Possible Cause | Possible Remedy
--- | --- | ---
AGS sends a command but the generator does not start. | Open circuit between AUX connection and generator. | Ensure the generator will start using its own controls. Ensure it will start using the <ON> soft key in the GEN hot key screen. Check all conductors, including external relays, contacts, or other devices.
AGS starts the generator but AGS Fault appears anyway. | Generator output is not reaching inverter input terminals. | Check all circuit breakers and switches. Measure AC voltage at inverter input terminals.
AGS is not enabled. | Generator output does not meet inverter requirements. | Check generator voltage and frequency. To clear an AGS fault, go to the GEN hot key screen. Press the <OFF> soft key. | Check mode in the GEN hot key screen. Ensure AGS Enabled is set to Y. (See page 25.)
AGS does not send a start command under expected conditions. | The AGS timers have not been activated by the present conditions. | Check to make sure at least one AGS timer is active. (See page 29.) If the timers are not active, check the AGS settings. Compare all settings against the Start and Stop Reasons table. (See page 31.)
A Stop condition is active. This could include Quiet Time. | Compare all settings against the Start and Stop Reasons table. (See page 31.)

- Start and Stop Reasons
  After AGS has started the generator, the GEN hot key screen shows the reason for starting under Last Run. The first two columns in the table below are a list of start reasons.
  The remaining columns display the possible reasons for the generator to stop. The possible stop reasons are connected to the start reasons. For example, a generator which started due to Load kW can stop due to reduction of load kilowatts, due to Quiet Time, or manually. However, it will not stop due to battery state of charge (SOC) or any of the other reasons.

### AGS (Testing)

#### AGS Troubleshooting

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Possible Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGS sends a command but the generator does not start.</td>
<td>Open circuit between AUX connection and generator.</td>
<td>Ensure the generator will start using its own controls. Ensure it will start using the &lt;ON&gt; soft key in the GEN hot key screen. Check all conductors, including external relays, contacts, or other devices.</td>
</tr>
<tr>
<td>AGS starts the generator but AGS Fault appears anyway.</td>
<td>Generator output is not reaching inverter input terminals.</td>
<td>Check all circuit breakers and switches. Measure AC voltage at inverter input terminals.</td>
</tr>
<tr>
<td>AGS is not enabled.</td>
<td>Generator output does not meet inverter requirements.</td>
<td>Check generator voltage and frequency. To clear an AGS fault, go to the GEN hot key screen. Press the &lt;OFF&gt; soft key.</td>
</tr>
<tr>
<td>AGS does not send a start command under expected conditions.</td>
<td>The AGS timers have not been activated by the present conditions.</td>
<td>Check to make sure at least one AGS timer is active. (See page 29.) If the timers are not active, check the AGS settings. Compare all settings against the Start and Stop Reasons table. (See page 31.)</td>
</tr>
<tr>
<td>A Stop condition is active. This could include Quiet Time.</td>
<td>Compare all settings against the Start and Stop Reasons table. (See page 31.)</td>
<td></td>
</tr>
</tbody>
</table>
**M-2. Data Logging**

The **Data Logging** function enables the MATE3s to record operational status information about the system. Individual status information is recorded for each device connected to the MATE3s. This function will record data to the internal flash memory for up to one year and selectively to an SD memory card up to the capacity of the card.

- The MATE3s can use an SD card of up to 4 GB capacity.
- To accommodate the card, it is recommended to leave 2" clearance on the right side of the MATE3s.
- Inserting the card in the slot causes an SD card icon to appear on the Home screen.

**Data Log File Format**

Information generated by this function will be saved on the SD card in a generic .csv file format, which can be read by most spreadsheet programs. The file name on the .csv file will appear as follows:

**Example:** 11062722.csv (YYMMDHHH.csv)

**Where:** YY = Last 2 digits of the year, MM = Month (01-12), DD = Day (01-31), HR = Hour (00-23)

**NOTES:**

- The headers shown above each part of the table are included for convenience. The headers are not included in the download.
- The data stream used to compile this download is the same as that used by the MATE3 USB Card.
- For more information on any of the table items, see the [MATE3 USB Card Owner’s Manual](#).

This shows the more of the data log as it actually appears. The rows for each field are repeated with updated information at the specified interval (5 seconds in this example).

Note that the order and designation of each column may change. Each row represents a different device. The columns are arranged appropriately for the device type and that particular device.
M-3 High Battery Transfer (HBX)

In High Battery Transfer (HBX) mode, the system is connected to an AC source such as the utility grid; however, it will use battery power as the first priority. The AC source is locked out until needed.

In this mode, the system runs on DC power for as long as the batteries can be sustained. It is expected that the batteries will be charged from renewable sources such as PV power. When the batteries become depleted, the system reconnects to the AC source to operate the loads.

The batteries may be recharged during this time using the renewable source. When the batteries are recharged to a high enough voltage, the system transfers back to the AC source as the primary source (hence the name High Battery Transfer).

HBX Mode commands the inverter to:

- Connect to an AC source if the battery voltage has fallen below the Grid Connect voltage for the amount of time set in the (connect) Delay set point.
- Disconnect the AC source if the battery state of charge (SOC) has fallen below the Grid Connect SOC for any amount of time.
- Disconnect the AC source and switch to powering the loads from the battery bank if the battery voltage has risen above the Grid Disconnect voltage for the amount of time set in the (disconnect) Delay set point.
- Disconnect the AC source and switch to powering loads from the battery bank if the battery state of charge (SOC) has risen above the Grid Disconnect SOC for any amount of time.

**IMPORTANT:**
- HBX mode will control the master inverter in port 1 of a HUB Communications Manager. The master will then instruct all subphase masters and slaves to connect or disconnect from the AC input source.
- For best operation, the inverter’s charger should be turned off when HBX mode is in use. This mode is intended for systems that rely primarily on the renewable energy source for charging. The settings of HBX mode allow it to disconnect from the utility grid whenever it can charge effectively using the renewable source. Use of the inverter’s charger may interfere with these priorities. This may keep both HBX mode and the inverter’s charger from working effectively.
- See the MATE3s Overview Guide (the CHARGEN hot key) for instructions on shutting off the charger.

### HBX Mode Default Set Points

<table>
<thead>
<tr>
<th>System Voltage</th>
<th>12 V</th>
<th>24 V</th>
<th>36 V</th>
<th>48 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Voltage</td>
<td>13</td>
<td>26</td>
<td>38</td>
<td>52</td>
</tr>
<tr>
<td>Low Voltage</td>
<td>12</td>
<td>24</td>
<td>36</td>
<td>48</td>
</tr>
<tr>
<td>Time</td>
<td>1 hour</td>
<td>1 hour</td>
<td>1 hour</td>
<td>1 hour</td>
</tr>
</tbody>
</table>

**NOTES ON SELECTING HBX MODE:**
- HBX mode has similar priorities to the Mini Grid mode used by FXR-class and Radian-class inverters. However, it is not compatible with Mini Grid and cannot be used at the same time. To prevent conflicts when using HBX mode, make certain not to select Mini Grid. (Selection of AC input modes can be found on page 11. Information on Mini Grid and other modes can be found in the inverter Operator’s Manual.)
- HBX is also incompatible with the Grid Use Time and Load Grid Transfer functions in the MATE3s. These functions do not have similar priorities to Mini Grid or HBX, but they do control the inverter’s connection and disconnection with the grid. HBX should not be used with these functions. (See pages 36 and 37.)
- When deciding whether to use Mini Grid mode or HBX, the user should consider the aspects of each.
  - Mini Grid logic is based in the FXR inverter and can function in the absence of the MATE3s. HBX logic is based in the MATE3s and cannot function unless the MATE3s is installed and operating.
  - Mini Grid can use utility grid power to fully recharge the batteries every time it reconnects to the grid. HBX can only do so under specific circumstances.
  - HBX set points have a wide range of settings. Mini Grid uses settings intended to protect the batteries from excessive discharge; however, most of its settings are automatic and do not allow customization.
  - HBX works more efficiently with a larger renewable source, but there is no specification for renewable size.
  - Mini Grid cannot work properly unless the source is larger than the size of the loads. If this condition is not met, Mini Grid will not disconnect the inverter from the utility grid.

**Menu Items**

- Enabled/Disabled
- Grid Connect — xx.x VDC (inverter-dependent)
- (Grid Connect) Delay — 0 to 240 minutes
- Grid Disconnect — xx.x VDC (inverter-dependent)
- (Grid Disconnect) Delay — 0 to 240 minutes
- Grid Connect SOC — 10% to 100%
- Grid Disconnect SOC — 50% to 100%

**NOTES ON SETTING HBX MODE:**
- Grid Connect and Grid Disconnect delay set points are used to prevent the inverter from switching to grid power in the event of a sudden, sizable demand for power that may momentarily drop the voltage below the Grid Connect value.
- The SOC set points are only usable by a system equipped with a battery monitor.
M-4. Grid Use Time

This function allows the system to connect to (use) the utility grid and disconnect from (drop) it on a schedule. Grid Use Time mode is programmed separately for weekday and weekend connect times. Before turning the Grid Use Time mode on, set all weekday and weekend time periods.

- Three Grid Use Time periods may be programmed on weekdays.
- Only one Grid Use Time may be programmed on a weekend.

- Enable — either enables (Y) or disables (N) the Grid Use Time function.
- Three Enable fields are present for the three possible weekday usages.
- Weekday: Use — the daily time (00:00 to 23:59) Monday through Friday when the system is told to Use the utility grid.
- Weekday: Drop — the daily time (00:00 to 23:59) Monday through Friday when the system is told to Drop the utility grid.
- Three different Drop times can be set.
- Weekend: Use — the daily time (00:00 to 23:59) Saturday and Sunday when the system is told to Use the utility grid.
- Weekend: Drop — the daily time (00:00 to 23:59) Saturday and Sunday when the system is told to Drop the utility grid.

**IMPORTANT:**
- The time and date must be accurately programmed for this mode to function properly.
- Care must be taken when programming weekday and weekend times that encompass USE periods past midnight (12:00 AM). The user must take into account weekday USE periods that will end on a Saturday.
- Grid Use Time cannot be used with HBX mode or Load Grid Transfer. These functions have incompatible priorities and will conflict with each other.
- Grid Use Time cannot be used if the inverter’s Mini Grid AC input mode is used (see page 11). These functions have incompatible priorities and will conflict with each other.
- The MATE3s does not automatically adjust its clock for Daylight Savings Time. This may affect timing of grid usage.
- If a start time equals a stop time, no action will be taken and the time period is ignored.
- If the battery voltage falls below the inverter’s Low Battery Cut-Out voltage, the inverter will automatically connect to the utility grid.

**EXAMPLE #1:**

Weekday Start — 6:00 AM Stop — 6:00 AM
Weekend Start — 12:00 AM Stop — 12:00 AM

The weekday Use period has been left at its default (00:00 or 12:00 AM). Any time that a Start time equals a Stop time, no action will be taken and the time period is ignored. The above settings will have the following results:

- Monday – Friday evenings at 6 PM, the MATE3s issues a USE command to the inverter allowing the AC input source to be used.
- Monday – Friday mornings at 6 AM, a DROP command is issued.

**EXAMPLE #2:**

Weekday Start — 6:00 PM Stop — 6:00 AM
Weekend Start — 4:00 PM Stop — 8:00 AM

- Monday – Thursday evenings at 6:00 PM, the MATE3s issues a USE command to the inverter allowing the AC input source to be used.
- Monday – Friday at 6:00 AM, a DROP command is issued. On Friday evening at 6:00 PM, a USE command is issued but since the weekend start and stop times are equal, the weekend use time is disabled. No DROP command will be issued until Monday morning at 6 AM.

M-5. Load Grid Transfer

The MATE3s can force all inverters to automatically reconnect to the utility grid, even if the normal mode is to be disconnected. Inverters can reconnect based on high output loads, or based on low battery voltage.

- Mode — Enabled allows automatic grid reconnection. Disabled means reconnection will only occur according to the inverter’s own operating mode or other programming.
- AC Load Threshold — The amount of load which requires the inverter to connect.
- Load Connect Delay — The length of time the AC Load Threshold must be exceeded before the inverter reconnects.
- Load Disconnect Delay — The length of time the loads must remain below the AC Load Threshold before the inverter disconnects from the grid.
- Connect Low Battery — The low battery voltage level which requires the inverter to connect.
- Disconnect High Battery — The voltage level which the batteries must reach before the inverter disconnects from the grid.

**NOTES:**

- This function cannot be used with Mini Grid or Global Charger Output Control.
- Maximum Battery Charge — the maximum combined charging current (10 to 800 amps) allowed.

M-6. Charge Controller Float Coordination

This menu enables the coordination of more than one OutBack FLEXmax charge controller. (This function also works on MX60 charge controllers with firmware revision 5.11.) This enables the devices to enter the float stage, or perform other activities, simultaneously rather than individually. Float Coordination means that when one charge controller finishes a bulk charge and moves into the float stage, the MATE3s directs any other charge controllers into the float stage as well.

**EXAMPLE #2:**

Monday – Friday evenings at 6:00 PM, the MATE3s issues a USE command to the inverter allowing the AC input source to be used.

**EXAMPLE #2:**

Monday – Friday at 6:00 AM, a DROP command is issued. On Friday evening at 6:00 PM, a USE command is issued.

**NOTES:**

- This function requires the system to have a FLEXnet DC battery monitor installed in the system.
- The FLEXmax charge controllers must be set to Grid-Tie Mode in order to establish priority for this function. (See page 19.) However, the inverters in the system cannot use grid-interactive functions (if any).
M-8. FLEXnet DC Advanced Control

This menu allows certain advanced functions to be used with the FLEXnet DC (FN-DC) if installed. See the FN-DC literature for more information.

- Enable Charge Termination Control — allows the battery charging to be stopped for all inverters on the system, once the charging parameters on the FN-DC have been met. (See page 22 for these parameters.) Options are N (no) or Y (yes).
- Enable Auto Grid-Tie Control — if grid-interactive inverters are present on the system, this control allows their grid-interactive function to be turned off at midnight each night. This function allows the charge controllers to complete a charge cycle at the beginning of the next day before the system begins selling. It prevents the batteries from remaining at or below the Sell voltage for extended periods without receiving a full charge.

If grid-interactive inverters are not present, this item is inactive. Options are N (no) or Y (yes). When Y is selected, "grid-tie" mode will be enabled on grid-interactive inverters anytime the battery monitor signals that charge parameters have been met.

NOTE: When grid-tie mode is enabled with this function, the Offset Enable menu item (see page 15) will change to Y (yes). The inverter will become capable of selling even if the function had been previously turned off.

M-9. AC Coupled Control

This menu activates the AC Coupling function of a Radian-class inverter. Using the GSLC175-AC120/240, the Radian’s output can interface with the output of another grid-tied inverter.

When Enabled; the Radian 12V AUX output closes the ROCB (remote-operated circuit breaker) in the GS Load Center. This connects the Radian inverter’s output bus to that of the grid-tied inverter.

This function works with all Radian AC input modes except Generator. It must be used on the GRID input. Connecting a source in Generator mode, or connecting to the GEN input in any mode, causes the ROCB to open.

While the grid is present, the following operations can occur.

- During the day, the Radian transfers excess AC power from the grid-tied inverter and back to the utility grid during the day. It also transfers grid power to the critical loads panel at night.
- During a grid failure, the following operations can occur.
  - The Radian’s own output provides a stable AC source to the grid-tied inverter. This allows the grid-tied inverter to remain active without the grid. The grid-tied inverter continues to deliver power to any loads present on the Radian’s output. This is applicable during a grid failure, or in an off-grid system.
  - Any AC power not consumed by the loads is converted by the Radian to DC power and delivered to the bank.
  - Power delivered to the battery bank is controlled by several reference (target) voltages, particularly the Radian battery charger settings. The settings Absorb Voltage and Float Voltage are used as reference voltages. These are the same voltages that are used by the inverter’s Offset function. (See the Operator’s Manual for more information on this function.)
  - If the battery voltage exceeds the target, the 12V AUX output will open the ROCB. This removes the AC source from the grid-tied inverter, shutting it down. This will also remove the source of excess battery energy. The Radian still powers the critical loads.
  - The 12V AUX output will reconnect the Radian’s output to the grid-tied inverter when the battery voltage decreases to a safe level.

NOTES:

The GridZero AC input mode is not recommended in an AC-coupled system due to several incompatible priorities. See the OutBack website, www.outbackpower.com, for detailed information on AC coupling.

M-10. FLEXtime Schedule

The inverter can switch between AC input modes based on time of day. The input mode selection, previously fixed, becomes flexible according to a schedule. Three mode and time selections are available.

- Input Mode — the selection (off) during the selected time.
- Hour and Minute — the selection (00:00 to 23:59) which defines that part of the schedule.

NOTES:

- The times under each selection are start times only. The stop time is defined by the start time for the next selection.
- Leaving a selection blank means it will be skipped. If all selections are blank, this function will not operate.
- FLEXtime Schedule is available for FXR-class and Radian-class inverters only.

M-11. Automatic Daily Reboot

The MATE3s can reboot itself every 24 hours. This is a backup measure in the event of a display freeze or a disconnect from OPTICS RE.

- Reboot every 24 hours — enables (Y) or disables (N) this function.

NOTE: This function is not recommended if AGS is in use.

M-12. Reset to Factory Defaults

This screen allows the user to erase the settings from the MATE3s and start over with the values programmed at the factory. Entering this screen brings up the query Reset MATE3s to Factory Defaults?

- If <No> is selected, the screen returns to the Battery Monitor menu. No changes will be made to any settings.
- If <Yes> is selected, the battery monitor’s settings immediately change to the original factory values. The screen displays the message MATE3s Restored to Factory Defaults. A <Continue> soft key will appear. Pressing this key returns the screen to the MATE3s menu.
W-2. Using Existing Profiles

If the most recent profile was lost or changed, it can be retrieved from an SD card and applied to the system. If the profile was not ideal, any existing value can be changed before re-applying the profile.

To apply a profile that was previously saved:
1. From the Profile Wizard menu, select Existing Profile. This will take the most recent profile stored in the MATE3s and apply it to the system.

When Using Existing Profile is displayed:
2. If the profile needs to be changed, press the <Continue> soft key. This enters a series of screens with settings. The progression of screens is shown on page 42, beginning with System Type (A).
3. To retrieve and apply the most recent profile, press the <Program> soft key K. All settings will be programmed into the appropriate devices and will immediately take effect. The message Programming System will appear. When it is complete, System Programmed and the <Save> soft key (L) will appear. See Step 5.
4. The last setup screen is the Setup Complete screen J. At this point the profile can be applied to the system (K). Any changes can be saved first (L).
5. The <Save> soft key (L) allows the profile to be saved to the SD card. The screens are shown on page 43, beginning with the Save Profile Wizard screen (L).
6. Once programming and saving is complete, press <Exit> to return to the Main Menu.

W-3. Restoring Profiles

Previously saved profiles can be selected and retrieved. If the profile was not ideal, any existing value can be changed. Once all values are confirmed, the profile can either be saved or applied.

To restore a profile that was previously saved:
1. From the Profile Wizard menu, select Restore Profile. The MATE3s will access the SD card and display the names of the profiles available to be restored.
2. Use the control wheel to scroll through the names.
3. When the desired profile is selected, press the <RESTORE> soft key to start the restoration process. This will go through each screen to confirm it is accurate. The progression of screens is shown below, beginning with System Type (A).
4. The last setup screen is the Setup Complete screen J. At this point the profile can be applied to the system (K), or it can be saved first (L). See Step 6.
5. The <Program> soft key K will apply the profile to the system. All settings will be programmed into the appropriate devices and will immediately take effect. The message Programming System will appear. When it is complete, System Programmed and the <Save> soft key (L) will appear.
6. The <Save> soft key (L) allows the profile to be saved to the SD card. The screens are shown on page 43, beginning with the Save Profile Wizard screen (L).
7. Once programming and saving is complete, press <Exit> to return to the Main Menu.

W-1. Creating New Profiles

Creating a profile involves customizing various aspects of a system. These include system type, battery charging and monitoring, and inverter interactions with both utility grid and generator. Once a custom profile is saved to an SD card, it can be re-applied if the settings are ever lost. An installer can also apply a configuration from an SD card to similar systems.

To create a new profile:
1. From the Profile Wizard menu, select New Profile.
2. Press <Continue> to confirm a new profile. This enters a series of screens with settings. The screens are shown on page 42, beginning with System Type (A).
3. The last setup screen is the Setup Complete screen J. At this point the profile can be applied to the system (K), or it can be saved first (L).

NOTE: Pressing the <Exit> soft key will return to the Main Menu without saving or applying the profile. All changes will be lost.

4. The <Program> soft key (K) will apply the profile to the system. All settings will be programmed into the appropriate devices and will immediately take effect.

The message Programming System will appear. When it is complete, System Programmed will appear. The <Save> soft key (L) will appear again.

IMPORTANT: Making changes in steps 2 and 3 is not the same as programming them. Changes are only applied to the system once the <Program> soft key is pressed.

5. The <Save> soft key (L) saves the profile to the SD card. The screens are shown on page 43, beginning with the Save Profile Wizard screen (L).

NOTE: Saving a profile will not apply it to the system, but a saved profile can be retrieved and applied later. See W-2.

6. Once programming and saving is complete, press <Exit> to return to the Main Menu.
W-4. Profile Settings

This section shows the process of customizing all system elements. The screen progression shown is the same whether A is selected in the New Profile, Existing Profile, or Restore Profile menus.

Note that Wizard profiles are useful for rapid setup of multiple devices, but they do not configure the entire system. Items not covered include inverter stacking (see M-6 on page 37), charge controller float coordination (see M-6 on page 37), and many system settings (see S-1 beginning on page 4). In addition, if settings are made in the wrong order, the Wizard may overwrite some customized settings. To ensure that all settings are made correctly and retained, make certain to follow the Recommended Programming Order on page 4.

C

D

E

F

G

H

I

NOTES:
- AC Input Breaker Size controls Grid Input AC Limit. (See page 10.)
- As shown in F, if Generator Start is set to Manual or Generator Type is DC, then AC Input Breaker Size controls both the Gen Input AC Limit and the Charger AC Limit. (See page 10.)
- If the settings in F are Auto or AC, then the Gen AC limit is set using Size from F. AC Output Voltage from B, and the total number of inverters. The charger limit is either the Gen AC limit or AC Input Breaker Size, whichever is larger.
- See 1-3 on page 11 and 1-9 on page 14 for more information on AC configuration.

D Wizard AC Configuration (D):
- AC Output Voltage (Vac)
- AC Phase (Single, Split, 3-Phase)
- AC Input Breaker Size (Aac)
- Maximum Output Load (Aac)

E Wizard Generator Configuration (F):
- Generator Installed (Y or N)
- Generator Type (AC or DC) and Size (kW)
- AUX Output Port

F Wizard System Type (B):
- System Type (Off Grid, Grid Tied, Backup)
- System Voltage (Vdc)
- Array Wattage
- Battery Type (FLA, Gel, AGM) and Capacity (Ah)

G Wizard Battery Monitor (I):
- Shunt A Connection — Disabled, Inverter, Charge Controller, DC Load, DC Gen, Wind Turbine, Hydro (these names can be used to identify each shunt)

H Wizard Battery Monitor (I):
- Shunt A
  - Connection — Disabled, Inverter, Charge Controller, DC Load, DC Gen, Wind Turbine, Hydro

I Wizard Battery Monitor (I):
- Shunt B Connection — Disabled, Inverter, Charge Controller, DC Load, DC Gen, Wind Turbine, Hydro

J Wizard Battery Monitor (I):
- Shunt C Connection — Disabled, Inverter, Charge Controller, DC Load, DC Gen, Wind Turbine, Hydro

K Wizard Generator Configuration (F):
- Generator Installed (Y or N)
- Generator Type (AC or DC) and Size (kW)
- AUX Output Port

L Wizard Grid Use Schedule (G):
- Period 1, 2, and 3 Enable — (N or Y)
- Period 1 Use — 0:00 to 23:59
- Period 1 Drop — 0:00 to 23:59
- Period 2 Use — 0:00 to 23:59
- Period 2 Drop — 0:00 to 23:59
- Period 3 Use — 0:00 to 23:59
- Period 3 Drop — 0:00 to 23:59

M Wizard Grid Use Schedule (G):
- Period 1, 2, and 3 Enable — (N or Y)
- Weekday — Use — 0:00 to 23:59
- Weekday — Drop — 0:00 to 23:59
- Weekend — Use — 0:00 to 23:59
- Weekend — Drop — 0:00 to 23:59

N Wizard AC Configuration (D):
- AC Output Voltage (Vac)
- AC Phase (Single, Split, 3-Phase)
- AC Input Breaker Size (Aac)
- Maximum Output Load (Aac)

O Wizard Generator Configuration (F):
- Generator Installed (Y or N)
- Generator Type (AC or DC) and Size (kW)
- AUX Output Port

P Wizard Grid Use Schedule (G):
- Period 1, 2, and 3 Enable — (N or Y)
- Weekday — Use — 0:00 to 23:59
- Weekday — Drop — 0:00 to 23:59
- Weekend — Use — 0:00 to 23:59
- Weekend — Drop — 0:00 to 23:59

Q Wizard AC Configuration (D):
- AC Output Voltage (Vac)
- AC Phase (Single, Split, 3-Phase)
- AC Input Breaker Size (Aac)
- Maximum Output Load (Aac)

R Wizard Generator Configuration (F):
- Generator Installed (Y or N)
- Generator Type (AC or DC) and Size (kW)
- AUX Output Port

S Wizard Grid Use Schedule (G):
- Period 1, 2, and 3 Enable — (N or Y)
- Weekday — Use — 0:00 to 23:59
- Weekday — Drop — 0:00 to 23:59
- Weekend — Use — 0:00 to 23:59
- Weekend — Drop — 0:00 to 23:59

T Wizard AC Configuration (D):
- AC Output Voltage (Vac)
- AC Phase (Single, Split, 3-Phase)
- AC Input Breaker Size (Aac)
- Maximum Output Load (Aac)

U Wizard Generator Configuration (F):
- Generator Installed (Y or N)
- Generator Type (AC or DC) and Size (kW)
- AUX Output Port

V Wizard Grid Use Schedule (G):
- Period 1, 2, and 3 Enable — (N or Y)
- Weekday — Use — 0:00 to 23:59
- Weekday — Drop — 0:00 to 23:59
- Weekend — Use — 0:00 to 23:59
- Weekend — Drop — 0:00 to 23:59

W Wizard AC Configuration (D):
- AC Output Voltage (Vac)
- AC Phase (Single, Split, 3-Phase)
- AC Input Breaker Size (Aac)
- Maximum Output Load (Aac)

X Wizard Generator Configuration (F):
- Generator Installed (Y or N)
- Generator Type (AC or DC) and Size (kW)
- AUX Output Port

Y Wizard Grid Use Schedule (G):
- Period 1, 2, and 3 Enable — (N or Y)
- Weekday — Use — 0:00 to 23:59
- Weekday — Drop — 0:00 to 23:59
- Weekend — Use — 0:00 to 23:59
- Weekend — Drop — 0:00 to 23:59

Z Wizard AC Configuration (D):
- AC Output Voltage (Vac)
- AC Phase (Single, Split, 3-Phase)
- AC Input Breaker Size (Aac)
- Maximum Output Load (Aac)
Device Data Logs (D)

Users can create Device Data Logs for the FLEXmax (FM) Charge Controller and the FLEXnet (FN) DC Battery Monitor. The data logs can then be uploaded and saved to an SD card, or erased. Data logs can be converted to spreadsheets and graphs. They can be used to evaluate performance and trends.

- Saving Data Logs for the FLEXmax Charge Controller (D-1)
- Saving Data Logs for the FLEXnet DC Battery Monitor (D-2)
- Erasing Data Logs (D-3)

### D-1. Saving Data Logs for the FLEXmax Charge Controller

To create a data log for the FLEXmax Charge Controller:

1. From the **DEVICE DATA LOGS** menu, select **FLEXmax Charge Controller**.
2. From the **FM Charge Controller Data Log** menu, select **Upload and Save Data Log**.
3. If other data logs have been saved on the SD card, a list will be displayed. Proceed to 3.

   **OR**

   2. Press the **<New>** soft key (**M**) to create a new profile name. (8 characters maximum)
      - Use the control wheel to scroll through the available characters.
      - Use <—> or <—> to move to the desired character location.
      - Use <Delete> to erase characters when highlighted.

   Press **<Save>** to save the new profile name. **Saving to SD Card** will be displayed. In either case:

   3. Wait for the confirmation screen to appear. After the screen appears, press **<Continue>** to return to the **Setup Complete** screen.

### D-2. Saving Data Logs for the FLEXnet DC Battery Monitor

To create a data log for the FLEXnet DC Battery Monitor:

1. From the **DEVICE DATA LOGS** menu, select **FLEXnet DC Battery Monitor**.
2. From the **FN Charge Controller Data Log** menu, select **Upload and Save Data Log**.
3. If other data logs have been saved on the SD card, a list will be displayed. Proceed to 3.

   **OR**

   2. Press the **<New>** soft key (**M**) to create a new profile name. (8 characters maximum)
      - Use the control wheel to scroll through the available characters.
      - Use <—> or <—> to move to the desired character location.
      - Use <Delete> to erase characters when highlighted.

   Press **<Save>** to save the new data log name. **Saving to SD Card** will be displayed. In either case:

   3. Wait for the confirmation screen to appear. After the screen appears, press **<Continue>** to return to Upload and Save Data Log.

### W-5. Saving the Profile to an SD card

This section shows the process of saving the profile and creating names for each file. The screen progression shown here is the same whether **A** is selected in the **New Profile**, **Existing Profile**, or **Restore Profile** menus.

To save a profile to an SD card:

If other profiles have been saved on the SD card, a list will be displayed (**L**). Choose Option 1 or 2 below.

**NOTE:** If the SD card is empty, pressing **<Save>** will automatically default to Option 2 below.

1. Select a name on the list with the control wheel. Press the **<Save>** soft key (**N**) to save the new settings over the selected profile. **Saving to SD Card** will be displayed. Proceed to 3.

   **OR**

   2. Press the **<New>** soft key (**M**) to create a new profile name. (8 characters maximum)
      - Use the control wheel to scroll through the available characters.
      - Use <—> or <—> to move to the desired character location.
      - Use <Delete> to erase characters when highlighted.

   Press **<Save>** to save the new profile name. **Saving to SD Card** will be displayed. In either case:

   3. Wait for the confirmation screen to appear. After the screen appears, press **<Continue>** to return to the **Setup Complete** screen.

### W-5. Saving the Profile to an SD card

This section shows the process of saving the profile and creating names for each file. The screen progression shown here is the same whether **A** is selected in the **New Profile**, **Existing Profile**, or **Restore Profile** menus.

To save a profile to an SD card:

If other profiles have been saved on the SD card, a list will be displayed (**L**). Choose Option 1 or 2 below.

**NOTE:** If the SD card is empty, pressing **<Save>** will automatically default to Option 2 below.

1. Select a name on the list with the control wheel. Press the **<Save>** soft key (**N**) to save the new settings over the selected profile. **Saving to SD Card** will be displayed. Proceed to 3.

   **OR**

   2. Press the **<New>** soft key (**M**) to create a new profile name. (8 characters maximum)
      - Use the control wheel to scroll through the available characters.
      - Use <—> or <—> to move to the desired character location.
      - Use <Delete> to erase characters when highlighted.

   Press **<Save>** to save the new profile name. **Saving to SD Card** will be displayed. In either case:

   3. Wait for the confirmation screen to appear. After the screen appears, press **<Continue>** to return to the **Setup Complete** screen.

### W-5. Saving the Profile to an SD card

This section shows the process of saving the profile and creating names for each file. The screen progression shown here is the same whether **A** is selected in the **New Profile**, **Existing Profile**, or **Restore Profile** menus.

To save a profile to an SD card:

If other profiles have been saved on the SD card, a list will be displayed (**L**). Choose Option 1 or 2 below.

**NOTE:** If the SD card is empty, pressing **<Save>** will automatically default to Option 2 below.

1. Select a name on the list with the control wheel. Press the **<Save>** soft key (**N**) to save the new settings over the selected profile. **Saving to SD Card** will be displayed. Proceed to 3.

   **OR**

   2. Press the **<New>** soft key (**M**) to create a new profile name. (8 characters maximum)
      - Use the control wheel to scroll through the available characters.
      - Use <—> or <—> to move to the desired character location.
      - Use <Delete> to erase characters when highlighted.

   Press **<Save>** to save the new profile name. **Saving to SD Card** will be displayed. In either case:

   3. Wait for the confirmation screen to appear. After the screen appears, press **<Continue>** to return to the **Setup Complete** screen.
D-2. Saving Data Logs for the FLEXnet DC

To create a data log for the FLEXnet DC:

1. From the DEVICE DATA LOGS menu, select FLEXnet Battery Monitor.
2. From the FN Battery Monitor Data Log menu, select Upload and Save Data Log.
3. If other data logs have been saved on the SD card, a list will be displayed.
   A. Select a name on the list with the control wheel. Press <Save> to save the new data over the selected log. Saving to SD Card will be displayed. Proceed to C.
   B. Press <New> to create a unique name for the new data log. (8 characters maximum)
      - Use the control wheel to scroll through the available characters.
      - Use <→> or <←> to move to the desired character location.
      - Use <Delete> to erase characters when highlighted.
   C. Press <Save> to save the new data log name. Saving to SD Card will be displayed.

In either case:

A. If the SD card is empty, pressing the <Save> soft key will automatically default to Option B.

OR

B. Press <New> to create a unique name for the new data log, (8 characters maximum)
   - Use the control wheel to scroll through the available characters.
   - Use <→> or <←> to move to the desired character location.
   - Use <Delete> to erase characters when highlighted.
   C. Press <Save> to save the new data log name. Saving to SD Card will be displayed.

NOTE: This header line is included in the download.

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<th>In AH</th>
<th>In kWh</th>
<th>Out AH</th>
<th>Out kWh</th>
<th>Net AH</th>
<th>Net kWh</th>
<th>Min SOC</th>
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<td>0.12</td>
<td>0.54</td>
<td>1.55</td>
<td>96</td>
<td></td>
</tr>
</tbody>
</table>

D-3. Erasing Data Logs

To erase a data log for either the FLEXmax controller or the FLEXnet DC:

1. From the DEVICE DATA LOGS menu, select the appropriate device. FLEXnet DC is described here.
2. From the Data Log menu for that device, select Erase Data Log.
3. A query screen will appear. Press <Yes> to erase the data log. Pressing <No> returns to the Data Log menu for that device.

E-1. To Save an Event Log

To create a data log for the FLEXmax Charge Controller:

1. From the Event Logs menu, select Save Events to SD Card.
2. On the Date Range set point, use the control wheel to select the date for the event log (or logs) to be saved to the SD card. The range will start with All and will move backward to yesterday, up to one year's worth of logs.

3. If other event logs have been saved on the SD card, a list will be displayed.
   A. Select a name on the list with the control wheel. Press <Save> to save the new events over the selected event log. Saving to SD Card will be displayed.
   B. Press <Save> to save the new data log name. Saving to SD Card will be displayed.
   C. Wait for the confirmation screen to appear. After the screen appears, press <Continue> to return to Event Logs.

E-2. To Read an Event Log File from the SD Card

When an Event Log is downloaded to an SD card, an .elg file is created. This file can be opened in Notepad or MS Word as a text file. Event logs can be used to identify repeated symptoms and other patterns.

A partial Event Log is depicted here.

E-3. Erasing Data Logs

To erase a data log for either the FLEXmax controller or the FLEXnet DC:

1. From the DEVICE DATA LOGS menu, select the appropriate device. FLEXnet DC is described here.
2. From the Data Log menu for that device, select Erase Data Log.
3. A query screen will appear. Press <Yes> to erase the data log. Pressing <No> returns to the Data Log menu for that device.
To delete an Event Log:

1. From the Event Logs menu, select Delete Events.
2. On the Date Range set point, use the control wheel to select the date for the event log (or logs) to be deleted. The range will start with All and will move backward to yesterday, up to one year’s worth of logs.
3. If a log with a specific date is desired, then use the control wheel to scroll through the list. When the name to be deleted is selected, press <Continue>.
4. A query screen will appear. Press <Yes> to erase the data log. Pressing <No> returns to the Date Range screen.
5. Wait for the confirmation screen to appear. After the screen appears, press <Continue> to return to Event Logs.

Firmware Update

The MATE3s can be updated to the latest revision by installing the latest firmware. Firmware can be ordered on a preloaded SD card, or downloaded from www.outbackpower.com. For the exact update procedure, refer to the MATE3s Overview Guide.

Troubleshooting

Common Problems

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Possible Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATE3s does not power up.</td>
<td>The MATE3s is powered by the OutBack product to which it is connected. The OutBack products may not be powered up or connected.</td>
<td>Check all OutBack devices for correct operation. Check or replace the CAT5 cable running from the MATE3s to the OutBack product.</td>
</tr>
<tr>
<td>HUB product loses power when cable is plugged into MATE3s.</td>
<td>The left-hand RJ45 port on the back of the MATE3s is wired differently from the HUB port. It may short out a HUB product.</td>
<td>Make sure the CAT5 cable is plugged into the correct RJ45 port. This is the right-hand port when looking at the rear of the MATE3s.</td>
</tr>
<tr>
<td>MATE3s does not display a particular device, meter, or setting.</td>
<td>The CAT5 cable may have an open or broken conductor.</td>
<td>Check or replace the CAT5 cable running from the MATE3s to the OutBack product. Check all OutBack devices for correct operation. Make sure no OutBack devices have been moved, unplugged, or added.</td>
</tr>
<tr>
<td>MATE3s voltmeter for a particular device or screen is inaccurate.</td>
<td>Meter could be incorrectly calibrated.</td>
<td>Confirm correct voltage with an accurate voltmeter. Make all tests on the terminals of the OutBack product. If necessary, adjust the MATE3s meter using the Calibration menus. See pages 16 and 21.</td>
</tr>
</tbody>
</table>
Troubleshooting

Event Messages

The **EVENTS** indicator shows that an event has occurred which requires attention. If this LED illuminates, follow these steps to help determine the nature of the fault. This may also help resolve the problem.

See the MATE3s Overview Guide for more information on the **EVENTS** indicator.

To investigate event messages:

1. Look at the system indicator on the Home screen. The icon will change to indicate the device that needs attention.

![](image1.png)

2. Check the LED indicator.
   - A flashing **EVENTS** indicator means a warning has occurred.
   - A solid **EVENTS** indicator may mean that the system has shut down due to an error. If Advanced Generator Start (AGS) is in use, it may also mean the system has suffered an AGS fault.

3. Press the **EVENTS** hot key A to display the Event History screen.
   - The Event History screen will appear with a list of events that have occurred.
   - The **<Next>** soft key C selects the next event in the list.
   - The **<Prev>** soft key D selects the previous event in the list.
   - The control wheel will also scroll up and down the list.
   - The **<Back>** soft key B returns to the Home screen.

4. Press the **<Detail>** soft key E when the desired event is highlighted in the list. This opens the Event History Detail screen.
   - Using the control wheel will display the details for the previous, or next events.
   - The **<ACK>** soft key G will acknowledge one open event.
   - The **<ACK ALL>** soft key H will acknowledge all open events.

![](image2.png)

5. If the event involves another device within the system, then refer to that device’s manual for troubleshooting advice.

MATE3s Specifications

<table>
<thead>
<tr>
<th>Mechanical</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions (H x W x D)</td>
<td>7 7/8 x 9 1/2 x 3 5/8” (19 x 17.9 x 4.2 cm)</td>
</tr>
<tr>
<td>Shipping Dimensions (H x W x D)</td>
<td>3 1/2 x 9 x 13 1/2” (33.7 x 22.9 x 34.3 cm)</td>
</tr>
<tr>
<td>Weight</td>
<td>1.4 lb (0.64 kg)</td>
</tr>
<tr>
<td>Shipping Weight</td>
<td>3.0 lb (1.36 kg)</td>
</tr>
<tr>
<td>Ports</td>
<td>RJ45 for proprietary OutBack HUB communication (x1), RJ45 Ethernet port (x1)</td>
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<tr>
<td>Nonvolatile Memory</td>
<td>CR2032</td>
</tr>
<tr>
<td>Interface Display</td>
<td>Liquid Crystal Display (LCD)</td>
</tr>
<tr>
<td>Control Keypad</td>
<td>4 soft keys, 6 hot keys</td>
</tr>
<tr>
<td>Status Indicators</td>
<td>9 LED indicators</td>
</tr>
<tr>
<td>Communication Protocol</td>
<td>Proprietary OutBack network</td>
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<td>Interconnection Cabling Standard</td>
<td>Category 5 OutBack proprietary</td>
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<tr>
<td>PC Interface</td>
<td>Category 5</td>
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<tr>
<td>Environmental Rating</td>
<td>Indoor only</td>
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<tr>
<td>Warranty</td>
<td>5-year standard</td>
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</table>

Regulatory

- Emissions: Indoor only
- Compliance: CE Conformance European EN 50022 Class B

Firmware Revision

This manual applies to MATE3s System Display and Controllers with a firmware version of 001.001.xxx or higher.

FCC Information to the User

This equipment has been tested and found to comply with the limits for a Class B digital device when powered by a DC source, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Consult the dealer or an experienced radio/TV technician for help.