



Advanced Generator Start (AGS) is an OutBack programming option available to off-grid users who regularly use generator-supplied power. AGS mode sets the conditions under which a generator will start, eliminating inconvenient manual starting and stopping. AGS energizes the AUX output found on the FX Series Inverter/Charger to start the generator based on user-determined preferences

## HOW DOES AGS WORK?

- *The Absorb Setpoint and Time settings determine how long the generator will run.*
- *The inverter provides 12VDC from the AUX (auxiliary) output when conditions call for the generator.*
- *The FX maintains this current until it is time to shut off the generator.*

## HARDWARE

### What do I need?

- *MATE and MATE manual*
- *FX and FX Manual*

#### ▶ 2-wire start generators:

*A relay capable of the generator's starter amps with a coil that draws no more than 800mA @ 12V.*

#### ▶ 3-wire (or more) generators:

*A generator start control module (GSCM) is needed. Depending on the type of control module, an external relay may be needed as a switch.*

### Where can I find a relay?

- *RadioShack: SPST 30 amp Auto Relay #275-226*
- *Grainger: 10 amp SPDT relay #5ZH14 MFR: Omron #G2R-1-S-DC12*

### Where can I get a GSCM?

- *Atkinson Electronics produces generator control modules that work with Outback inverters.*  
[www.atkinsolelectronics.com](http://www.atkinsolelectronics.com)  
800-261-3602

### **Where is the manual for the GSCM?**

- <http://atkinselelectronics.com/list.asp?lt=gen&mn=1>

### **How is the Relay connected?**

- *The coil of the relay goes to the inverter's AUX+ and AUX-.*
- *The contacts of the relay are connected to the starter leads of the generator (or start module)*

### **What size wire should I use for the Auxiliary?**

- *22 AWG*

## **SETUP**

### **How do I set up the AGS?**

- Please see the MATE manual for instructions.

### **Do I need to set anything in the ADV/FX/Aux menu?**

- *No, the AGS overrides these settings for the device on the AGS Port.*

### **Required Settings**

These must be set for AGS to work:

- *Go to MAIN/ADV/"Password"/MATE/AGS/Setup on the MATE AGS Port. This is set to the port of the FX that has the relay connected. If the MATE is plugged directly to the inverter, this is set to 0.*
- *Press Down*
- *AGS Enabled—Set to Yes*
- *Press Down*
- *AGS Control—For automatic control, this is changed to Auto. The display will show Auto-Off or Auto-On depending on if it is calling for the generator.*

### **Optional Settings**

These can be changed to your system needs:

- *Press Down*
- *DC Genset: Yes if you are using a DC generator*

- *Press Down*
- *VDC Genstop—High battery cutoff for AGS ( AC or DC generator) This mode shuts off AGS if the battery is above this voltage for 15 minutes.*
- *Press Down*
- *AGS Fault Time—If the inverter does not connect to the AC input after this time, an AGS Error occurs.*
- *Press Down*
- *Press Menu AGS*
- *Press Volt Start*
- *There are three set points in this menu:*
  - ▶ *24 Hour*
  - ▶ *2 Hour*
  - ▶ *2 Minute*

*If the battery voltage falls below each of these set points, a respective timer is started. When one of these timers reaches 0, the generator is turned on.*

### **Do I need to have the MATE connected at all times?**

- *Yes. The MATE controls the AGS functions.*

*NOTE: If the MATE is unplugged, the AGS function will not work, but the settings will be saved.*

## **TESTING**

### **How do I know if it works?**

- *A low battery condition can be simulated to test the AGS function.*
- *After setting up the AGS in Auto mode, record these settings:*

*MAIN/STATUS/FX/Batt on the MATE*

*Actual and Temp compensated battery voltages \_\_\_\_\_ Volts  
 \_\_\_\_\_ Volts temp compensated*

*MAIN/ADV/"Password"/FX/Chgr*

*Absorb voltage and time \_\_\_\_\_ Volts  
 \_\_\_\_\_ Hours*

- *Change the Absorb voltage to just above the actual and temp compensated battery voltages.*

- *Reduce the Absorb Time to 0.1 hours.*

MAIN/ADV/"Password"/MATE/AGS/Volt Start

2 Minute Volt Start \_\_\_\_\_ Volts

- *Adjust the 2 Minute set point above the actual and temp compensated battery voltages.*
- *After 2 minutes, the generator should start. It will then run for 6 minutes (absorb time) at the new absorb set point.*
- *With the test successful, go back to re-enter the previously recorded settings.*

## **TROUBLESHOOTING**

### **The generator never came on, what next?**

*Some things to check:*

- *Be sure AGS is set up. Is it enabled?*
- *Press the AC IN hot key 2 times. What mode is displayed (Man-Off, Auto-On, Auto-Off, Man-On)? Be sure this is set to Auto.*

### **Gen Start Control shows Auto-Off, shouldn't it say Auto-On?**

- *When the AGS calls for the generator, it will display Auto-On.*
- *Auto-Off indicates the generator is no longer needed according to the conditions programmed by the user.*

### **An AGS error has occurred.**

- *This happens when the inverter has not connected, for any reason, to the AC input for the AGS Fault time.*
- *Make sure that when AGS calls for the generator, it is actually starting the genset.*

### **The generator has not started, but the MATE displays Auto-On.**

- *Check for 12VDC coming from the Aux output of the inverter.*
- *Also, check if the relay (or start module) activates.*
- *Sounds too simple, but check the oil, gas and generator battery.*

**The generator has started, but still goes into error.**

- *When the generator starts, does the inverter's AC IN LED blink and/or eventually turn solid? The FX may see an AC input but not see the correct voltage or frequency. Note: Frequency limits cannot be adjusted.*
- *The input voltage limit can be adjusted under MAIN/ADV/"Password"/FX/PG2/Gen on the MATE.*
- *If the inverter's AC IN LED blinks but never turns solid, make sure the MATE is set to USE the AC input.*
- *Press the AC IN hot key once and then select USE.*