74-0A4087-00

Flight Systems

Replacement for Generac 0A4087

www.flightsystems.com

Installation Manual

Version 1.2

DESCRIPTION

Flight Systems is now offering a new GenStart model controller that is an exact drop-in replacement for the popular Generac E-Panel controller (0A4087). It mounts in the original panel cut-out with the original clamps, and the original harness plugs right in. No wiring changes are needed. Set-up is fast and easy using the front panel controls.

FEATURES

- Exact drop-in replacement for Generac E-Panel controller (0A4087)
- User friendly, easier access to information
- Enhanced graphics display with icons; visible day or night
- More information displayed on each screen
- LED indicators for Power, Not In Auto, Com Alarm and Gen Run
- Electronic PIN-accessible lockout replaces key switch
- Audible alarm
- Real-time clock
- Automatic, programmable self-exercise
- Timestamped event logging
- Communications port selection (RS232/RS485) from front panel
- GenLink® version 1.0 (via RS-232) is supported
- Compatible with Generac 20-light Remote Annunciator Panel (0A6388)
- Compatible with Generac 8-Channel Relay Panel (0A9036)
- Made in U.S.A.

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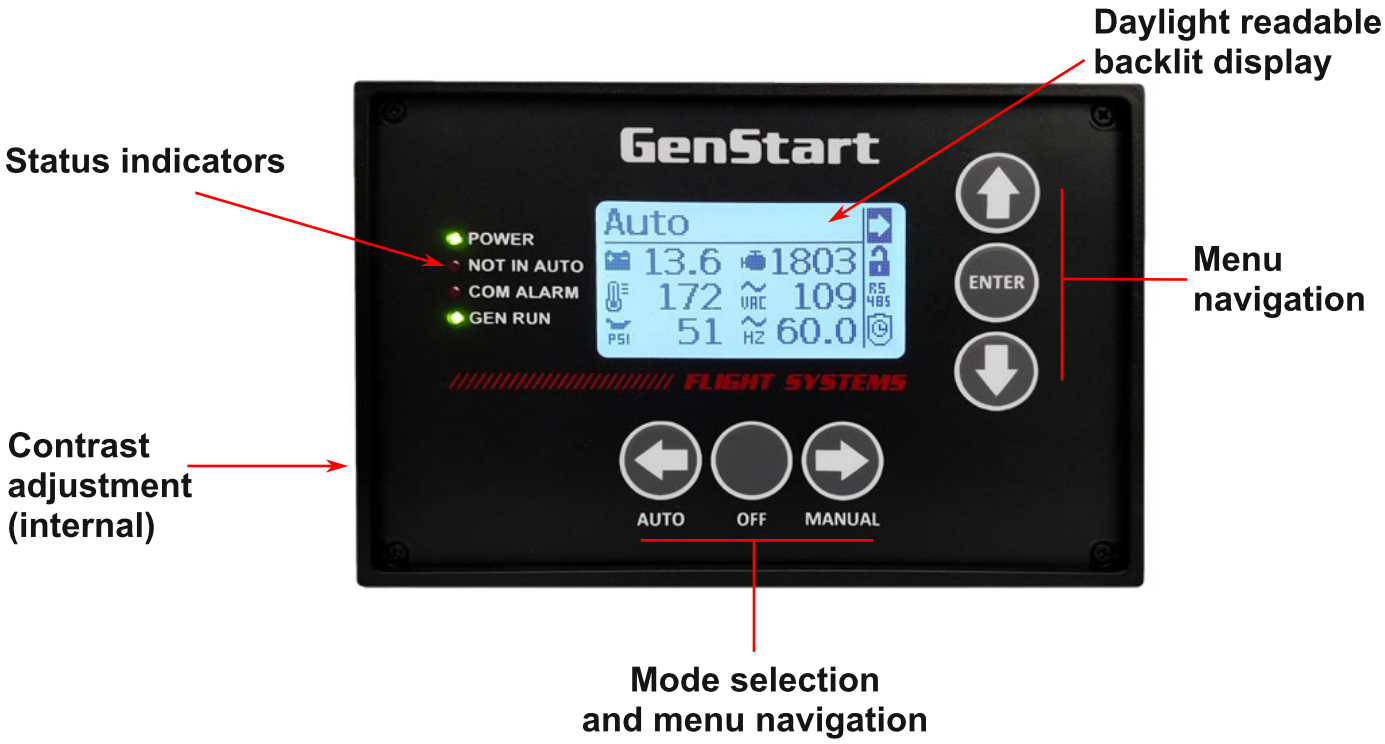
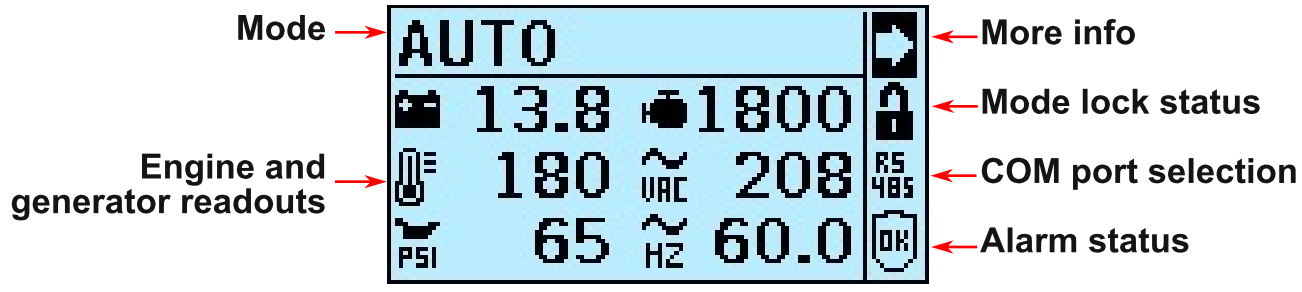
LAYOUT



DISPLAY



Engine & Generator

- Battery Voltage
- Coolant Temp
- Oil Pressure
- Engine RPM
- Voltage AC
- Frequency
- Engine Hours
- Coolant Level
- Fuel Level
- Oil Temp
- Analog Input 1
- Analog Input 2

Alarm Status

- Alarms Clear
- Warning
- Alarm Bypass
- Cool Down
- Alarm Shutdown

Settings

- Settings
- More Info
- RS232 COM
- RS485 COM
- CANbus Selected

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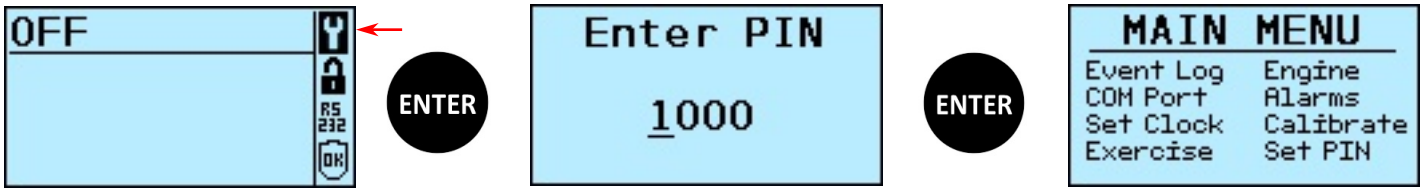
ACCESS THE MAIN MENU

To access the Main Menu, place the controller in the OFF position. Select the Settings icon and press **ENTER**. When prompted to enter your PIN, use the **UP** and **DOWN** arrows to adjust values and the **LEFT** and **RIGHT** arrows to move the cursor. The default PIN is 1000.



When making adjustments use the arrow buttons to navigate. Press **ENTER** to select an option. If the function contains multiple parameters, pressing **ENTER** will progress to the next available parameter. To save your settings you must navigate to the SAVE function and press **ENTER** to exit. Optionally, you can select BACK to cancel or press **OFF** to cancel or move back in the menu at any time. Most alarms have 2 parameters, active state and function, which are abbreviated as follows.

ACTIVE STATES
OFF - DISABLED
DEL - DELAYED
IMM - IMMEDIATE
ON - ALWAYS ON

FUNCTIONS
NLT - NON LATCHING
LAT - LATCHING
STA - STATUS ONLY
SD - SHUT DOWN

ENGINE CONFIGURATION

Use the navigation buttons to select Engine and press **ENTER**. Use the **UP** and **DOWN** arrows to select a parameter to edit. Press **ENTER** to highlight the parameter value and use the **UP** and **DOWN** arrows to increase or decrease the entry. When complete press **ENTER** to return to the engine options. Repeat the same procedure for all of the engine parameters. This **MUST** be complete before attempting to run.

Flywheel - 137 teeth
Crank Disconnect - 500 RPM
Crank Time - 10 seconds
Crank Rest - 5 seconds
Crank Attempts - 3
Nominal Voltage - 150 VAC
Frequency - 58.0 Hz
Preheat - 0 seconds
Alarm Bypass - 10 seconds
Warm Up - 0 seconds
Cool Down - 0 seconds

ALARM CONFIGURATION

Return to the main menu and select Alarms. The following parameters **MUST** be set or confirmed before running.

Oil Pressure	**PRE LOW**	**25.0**	
	LOW	**15.0**	
Coolant Temp	**LOW**	**0**	
	PRE HIGH	**195**	
	HIGH	**220**	
Engine RPM	**OVER SPEED**	**3000**	
	UNDER SPEED	**1000**	
Stator	**OVER VOLTAGE**	**600**	**SD (SHUT DOWN)**
	UNDER VOLTAGE	**100**	**NLT (NON LATCHING)**
	OVER FREQUENCY	**65.0**	**SD (SHUT DOWN)**
	UNDER FREQUENCY	**35.0**	**NLT (NON LATCHING)**
Battery	**LOW**	**10.0**	
	HIGH	**30.0**	

The following parameters are optional.

Fuel Level	HIGH	80%	OFF (DISABLED)	
	PRE LOW	20%	OFF (DISABLED)	
	LOW	10%	OFF (DISABLED)	
Oil Temp	PRE HIGH	195	OFF (DISABLED)	NLT (NON LATCHING)
	HIGH	220	OFF (DISABLED)	SD (SHUT DOWN)
Analog Input 1	HIGH	8.0	OFF (DISABLED)	SD (SHUT DOWN)
	LOW	2.0	OFF (DISABLED)	SD (SHUT DOWN)
Analog Input 2	HIGH	8.0	OFF (DISABLED)	SD (SHUT DOWN)
	LOW	2.0	OFF (DISABLED)	SD (SHUT DOWN)
Digital Inputs	1 - OFF - SD	5 - OFF - SD		
	2 - OFF - SD	6 - OFF - SD		
	3 - OFF - SD	7 - OFF - SD		
	4 - OFF - SD	8 - OFF - SD		

COM PORT

From the main menu navigate to COM Port and press **ENTER**. Press **UP** to select RS485 or **DOWN** to select RS232. The current selection is displayed below. Press **ENTER** to save and exit.

REAL TIME CLOCK

To set the real time clock select the Set Clock function and press **ENTER**. Use the **UP** and **DOWN** arrows to chnage values. Press **ENTER** to move to the next option and press **ENTER** to save and exit. Optionally, you can enable the self exercise function by selecting Set Exercise from the main menu. The default setting for the exercise function is disabled.

Exercise	OFF
Weekday	SUN
Hour	01
Minute	00
Duration	00

EVENT LOG

The event log will display a history of alarms and exercise functions. Select Event Log and press **ENTER**. To view the event log select View Events and press **ENTER**. Use the **UP** and **DOWN** arrows to cycle through the event log. Most recent events will be displayed first. When finished press **OFF** to escape. To clear the event log select Clear Events. The event log will be erased and return to the Event Log menu. Press **OFF** to escape or scroll to the BACK option and press **ENTER**.

PIN LOCK

Activating the mode lock will require the user to enter a PIN before switching modes. Even in the event of a power failure, upon restoring power the unit will return to its locked mode until unlocked by the user. Note that for safety reasons, emergency stop will always override the mode lock and shut down the generator. The mode lock can be activated in auto, off, or manual position.

1. Place the unit in the required mode before activating the PIN lock.
2. Press **DOWN** to the unlocked icon and press **ENTER**.
3. Set the correct user PIN and press **ENTER** to activate the mode lock. The controller will return to the selected mode and the unlocked icon will change to locked.

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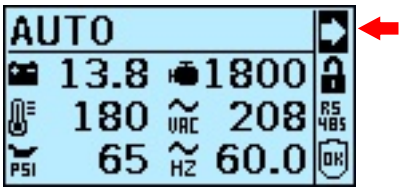
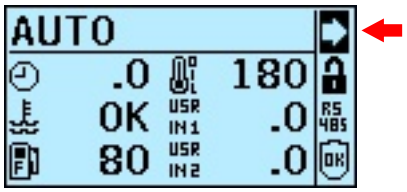
AUTO AND MANUAL MODE

To place the controller in AUTO or MANUAL use the **LEFT** and **RIGHT** arrows while in the OFF position. The default layout will display battery level, coolant temperature, oil pressure, RPM, ac voltage, and frequency. While in AUTO or MANUAL use the **LEFT** and **RIGHT** arrows to select the display or press **ENTER** on the info icon.

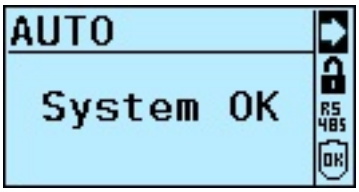
DISPLAY 1



DISPLAY 2



DISPLAY 3



In the event of a shut down or warning alarm, the display will default to page 3 indicating the cause of the alarm. To silence the alarm press ENTER to acknowledge the alarm and return to the default display setting.

RELAY OUTPUTS BY FUNCTION CODE

0 - OUTPUT DISABLED
1 - COMMON ALARM
2 - PRE LOW OIL PRESSURE
3 - LOW OIL PRESSURE
4 - PRE HIGH COOLANT TEMP
5 - HIGH COOLANT TEMP
6 - LOW COOLANT TEMP
7 - PRE HIGH OIL TEMP
8 - HIGH OIL TEMP
9 - LOW BATTERY
10 - HIGH BATTERY
11 - OVER SPEED
12 - UNDER SPEED
13 - OVER COLTAGE
14 - UNDER VOLTAGE
15 - OVER FREQUENCY
16 - UNDER FREQUENCY
17 - HIGH FUEL LEVEL
18 - LOW FUEL LEVEL
19 - LOW FUEL CRITICAL
19 - LOW FUEL CRITICAL
20 - OVER CRANK
21 - LOW COOLANT LEVEL
22 - RPM SENSOR LOSS
23 - OIL PRESSURE START INHIBIT
24 - EMERGENCY STOP
25 - OIL PRESSURE SENSOR FAULT
26 - OIL TEMP SENSOR FAULT
27 - COOLANT TEMP SENSOR FAULT
28 - ANALOG INPUT 1 HIGH
29 - ANALOG INPUT 1 LOW
30 - ANALOG INPUT 2 HIGH
31 - ANALOG INPUT 2 LOW
32 - DIGITAL INPUT 1
33 - DIGITAL INPUT 2
34 - DIGITAL INPUT 3
35 - DIGITAL INPUT 4
36 - DIGITAL INPUT 5
37 - DIGITAL INPUT 6
38 - DIGITAL INPUT 7
39 - DIGITAL INPUT 8
40 - AUTO POSITION
41 - MANUAL POSITION
42 - OFF POSITION
43 - GENERATOR STOPPED
44 - GENERATOR SHUTDOWN ALARM
45 - GENERATOR READY TO START
46 - GENERATOR RUNNING
47 - TRANSFER READY
48 - GENERATOR READY, ALARMS ENABLED

PREHEAT OUTPUT / PREHEAT ALTERNATIVE

00 - PREHEAT DISABLED
11 - PREHEAT BEFORE START
22 - PREHEAT BEFORE AND DURING START

If preheat is set to disabled then the PREHEAT ALT (preheat alternative) function can be set to reassign the preheat relay to any of the 48 output functions previously listed.

CALIBRATION

To correct AC voltage readings first measure the voltage at the connector. On some generators the actual AC voltage is reduced or stepped down before connected to the controller. For example, on a 480VAC system 240VAC is typically seen at the connector. Before adjusting the scaling factor, **adjust the VAC calibration to match the voltage at the main power connector** (240VAC). As a general rule each decimal number will increase or decrease the AC voltage by 0.5VAC. After the voltage has been calibrated **adjust the scaling factor to display the correct systems voltage**. In this case 2.0 to display 480VAC. Optionally you can adjust for battery voltage and set run hours from this menu as well.

WARNING! The run hours can only be increased. Be absolutely sure the run hours are correct before saving. After the entry for run hours has been saved the operation can not be undone.

DEFAULT SETTINGS

Scaling Factor	1.0
VAC	0.157
Battery	0.135
Hours	0

SUPPORT

Technical Assistance - If you require technical assistance during installation or operation of the GenStart controller, please call our Technical Service Department at 71 7-590-7330 M-F, 8am-5pm ET or email hawk@flightsystems.com.

Warranty - The GenStart Controller is warranted to be free from defects in materials and workmanship for a period of two years from the date of shipment. FLIGHT SYSTEMS' liability is limited to the repair or replacement of defective product within the warranty period, and does not cover installation or removal costs incurred or possible damage to other equipment (including generator sets and transfer switches) as a result of a malfunction of the GENSTART REPLACEMENT CONTROL. If, in the opinion of FLIGHT SYSTEMS (or its authorized agent), the malfunction of the GENSTART REPLACEMENT CONTROL PANEL was caused by abuse, misuse or improper installation, the warranty claim will be disallowed and established repair rates shall apply.

Repair - Should the GenStart Controller suffer a problem when out of warranty, repair service is available from the manufacturer at reasonable rates. Ship unit to Flight Systems, 207 Hempt Road Mechanicsburg, PA 17050.