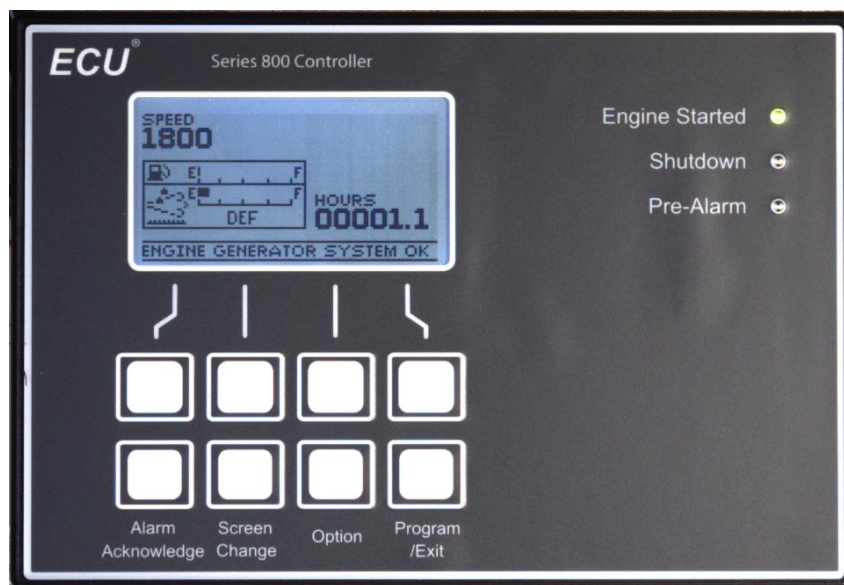


ECU[®]

ECU-830/835 Series

Operating Manual

Customer



Understanding the hardware and operations of the 835 Series Controller

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Engineering Concepts Unlimited Inc.
8950 Technology Drive
Fishers, IN 46038

Proprietary Information

Preliminary Specifications

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800 Series of Controls for EPA 4I and 4F Requirements

This Manual covers the essential basics of the 8XX Series of controllers for generator, pump and auxillary controls systems when involved with Engines in the 4I and 4F categories. Refer to the detailed pages for full descriptions of operations and Screen Data interpretation.

These unit specifications refer to CAN (Controller Area Network) based systems only. The unit is comprehensive in that it both controls the engine and fully monitors the engine parameters via LCD eliminating the requirement for separate CAN viewers and system complexity.

Refer to addendum manuals for units for direct AC monitoring of the Generator or specialty systems.

System Capabilities

The system has the following capabilities depending on the engine model and User Password levels using a Menu based system:

- Automatically or manually start an Engine using electrical signals
- Operate Starting Relays and Fuel System or ECM power inputs to control the operation of the engine system
- Monitor all signals for signs of pre-alarm conditions that may lead to engine damage or shutdown as prescribed by the Engine Manufacturer in their supplied specifications including the DM1 messaging (live) and the DM2 (stored) conditions.
- Monitor conditions of the After Treatment System for but not limited to the SCR, DOC and DPF systems
 - Certain engines can be monitored for AfterTreatment System health via indicators including DEF levels based on Engine Manufacturer supplied specifications.
 - Interacting with the AfterTreatment System is provided, including System Regeneration suppression or initiation based on Engine conditions.
 - Depending on system abilities overseeing the cleaning process may also be monitored.
- Produce warnings in English statements based on the PGN and SPN.FMI information being supplied from the ECM on the Engine via CAN bus to the control.
 - Up to 18 warning conditions can be scrolled at a time. Also Engine Shutdown messages are supplied.
- Upon Engine Shutdown a shutdown log of the events that were active within an hour meter time stamp are stored for later viewing thus allowing analysis of the events that led to the engine system shutdown.
- Most 8XX units support in field USB flash drive firmware upgrades capability.
- Certain models have an abbreviated CAN recorder that allows a recording to be made and transferred to a flash drive. The file must then be sent to ECU for decoding.
- Certain models will have a configurable output and sometimes input system for auxiliary relays and inputs if your system has the extended capability.
- All units can support at least 1 external ECU 5 Gauge monitoring panel allowing conventional viewing of several key engine parameters.
- Certain models support external ECU external Relay/Input modules as well as up to 2 Remote Annunciator units.

Specifications

Physical/Environmental

- Temperature Range of Control System: -40 to +85C
- LCD Operating Temperature -40 (with heater) to 75C
 - Heater option allows usable low temperature operation.
 - LCD readability above 75C is lowered.
- LED Indicator Temperature -40 to +85C
- Overlay Switch life 100,000 cycles
- Relay cycle life at load 50,000 cycles
- Weight: 1.5Lbs Approximate
- Encapsulant: Epoxy Fire Resistant Self Extinguishing
- Overlay: UV resistant, Water Resistant
- Connectors: Plug type, Polyamide, 15 amp rating, Euro Style
- Mounting Bolts: 8-32 1/2 inch long (4 plcs)
- Dimensions: See drawing on page 14.

Electrical

- DC voltage operations range: 9 to 30 VDC
- Basic model without constant on is 0.000 amps in Standby
- Current consumption typical on: 150 to 250 milliAmps
- Heater approximate additional Current Consumption: 400 milliAmps
- Master Fuse inline input rating: 5 Amps
- Max total current output of Starter and Fuel outputs: 5 Amps DC
- Auxiliary Output relays Normally Open if included: 2 Amps DC
- Input signals: 0 to 30 VDC
- Fuel Input Sender: 30 ohms(full) to 240 ohms(empty) standard curve
- Communications bus: CAN bus 250 Kbaud, Terminator provided by Customer
- Auxiliary bus: RS485, 9600Baud, 120 Ohm Terminators provided by Customer
- USB connection: Standard A Female Socket for USB drives or CDC use. 100mA maximum current draw.
- Communications Ports Total (Model Dependent): 1 RS232, up to 3 RS485 and one USB
- Depending on configuration: MODBUS 485 monitoring/control of the unit
- SCADA options if included: Function 16 and Function 3 MODICON Support
- Maximum Auxiliary Relays (model dependent) 4 to 5
- Standard 5 amp relay outputs: 2
- Special Option 5 amp relay outputs additional: 2
- Fuel Input: 30 to 240 ohm non linear
- Standard inputs: 5 inclusive of Fuel Input
- Maximum inputs: 13 with extra terminal length (2 485 port option)
- Maximum inputs: 11 with extra terminal length (3 485 port option)
- Total output of all DC relays combined is 5 amps
- Average current draw of model 835 is approximately .25 amp
- Input voltage 9 – 30VDC (Transient suppressed)
- Max output for any single DC relay 5 amps
- Max current draw of unit is 1.5 amps (optional heaters in on state), exclusive of relay outputs.

Basic Operation of the Control

When properly connected to a Engine Control Module (ECM), starting relay and power switch connection to the ECM the control is ready for service. The standard configuration uses two external toggle switches. One switch is for the Auto-Off-Manual function and one is for the System Check feature if provided.

These two switches work as follows:

When placing the switch in the Manual position, the Control will (in 1 second) do a quick systems check of the LEDs and verify CAN (Controller Area Network) communications with the ECM. If communications are correct, the Control will signal via the Starter output to begin Engine cranking. Based on the OEM settings this can be a single or multiple crank attempt with rest cycles. Depending on the Engine and temperature there may be a glow plug or air inlet heater time that will hold the control until the ECM is ready for engine cranking. Upon Engine cranking the output of the Speed MPU on the ECM is monitored to assure a stream of proper RPM data is being supplied. Upon proper RPM being achieved, the Control will depower the starter and the engine will begin operation. At all times PGNs and all DM1 (live messages) are being monitored. Control based items are also being observed including CAN bus communications, fuel levels and others depending on engine model and control type.

The second switch is used as a Fleet operations tool. With the manual-off-auto switch in the off position you can activate the Systems Check Diagnostic Switch and the system will power up the control and the fuel and battery can be viewed on the LCD. If the ECU-GAUGE unit is also on the panel, the fuel and battery voltage can be viewed there as well. The engine is not started or the ECM powered up for this test.

Diagnostic Mode

If the Systems Diagnostic Switch is held on and then the auto-off-manual switch is put in the manual position the unit enters into System Diagnostic Mode. This powers up the ECM (but does not initiate cranking) and all DM1 messaging is streamed to the Control allowing full monitoring. This allows Engine Manufacturers to connect to the unit with their service tools since the ECM is now powered up. This mode is for electronic system interaction only.

DO NOT ATTEMPT ANY MECHANICAL MAINTENANCE ON THE ENGINE IN THIS MODE SINCE THE ENGINE CAN ACCIDENTALLY START UP. ALWAYS REMOVE THE BATTERY CONNECTIONS PRIOR TO ENGINE SERVICE ACTIVITIES.

Diagnostic Viewer

By pressing the PROG/EXIT button the first level screen will appear. Select Diagnostics and you can view DM1 or DM2 data and also System Shutdown data.

Refer to the detailed pages for more information.

DPF Management Systems

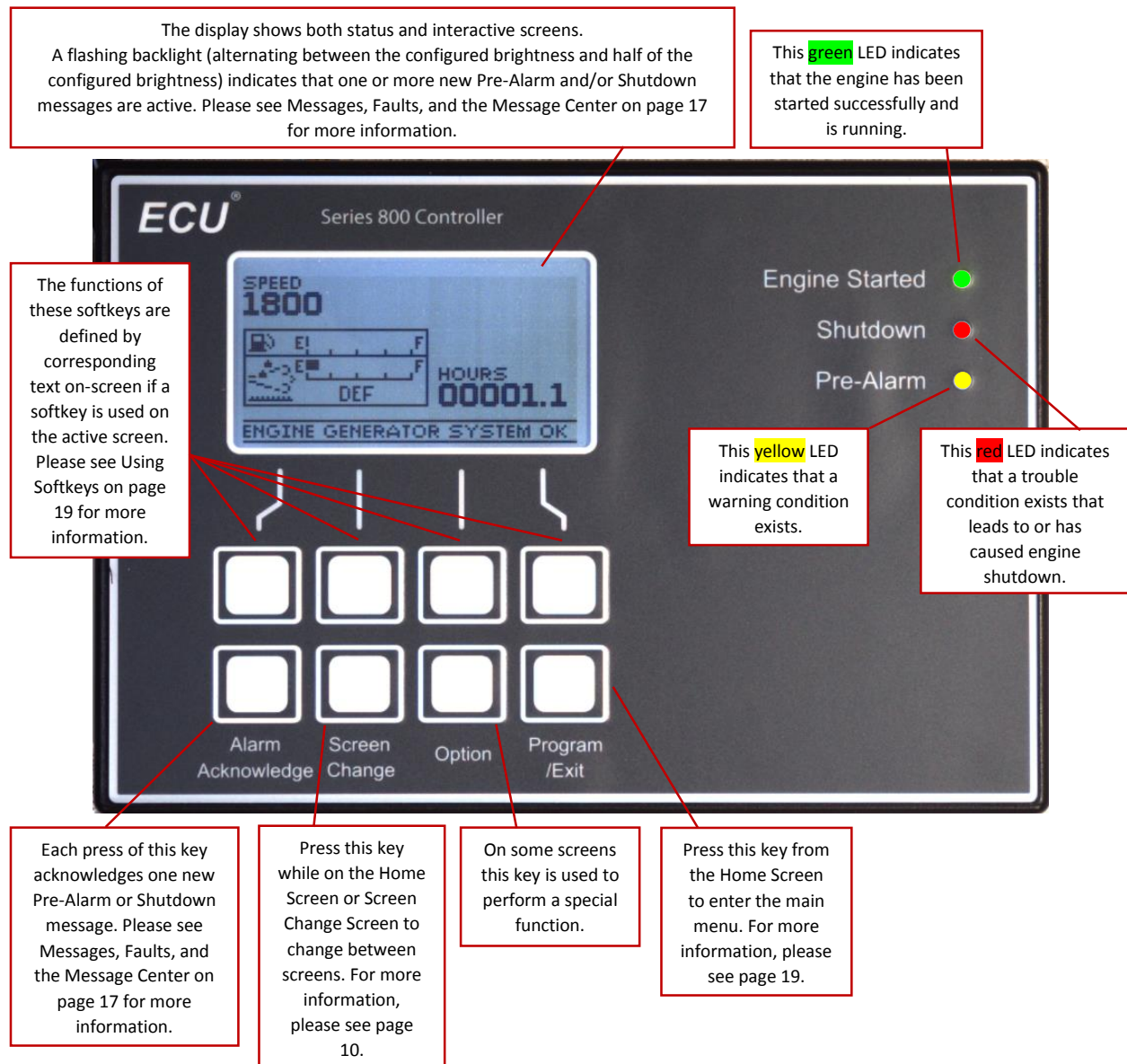
The 8XX units depending on engine Manufacturer has various interactions with the Engine.

On a Cummins Engine the control operates with what is known as a “soft stop”. If certain parameters have occurred that show soot levels that are not manageable, the ECU-830/835 control will stop the engine. Instructions on the screen will tell the operator what to do. The soft stop cycle will require restarting the engine in idle and then the 8XX controller will request a cleaning cycle. You must follow the procedure for the cleaning to take affect. There is also a “DPF grace period” that will allow the engine to run for a short time (often set to about 15 minutes) for emergency operations to occur. However, the engine will continue to be shut down with warnings of impending problems if the engine is not allowed to regen or to have proper service. DPF units can go to totally unusable condition if not cared for properly and very expensive service or replacement will ensue.

Screens have the directions of what the operator must do in these conditions. Other Engines do not have “soft stop” so the 8XX follows the DM1 messaging and PGN messaging to decide if the engine will be stopped. Engine Manufacturers are continuing to evolve this technology to eliminate all these efforts but as of now, all engines have a “quality of filter” parameter or parameters that combined reflect the condition of the engine After Treatment system. On some systems the 8XX unit follows very carefully all signals of the engine and with fidelity displays the data from the engine system allowing the engine to make final decisions on continued operations.

Annotated Control Faceplate

Below is an illustration describing the features found on the front faceplate of an ECU-830/835 control.

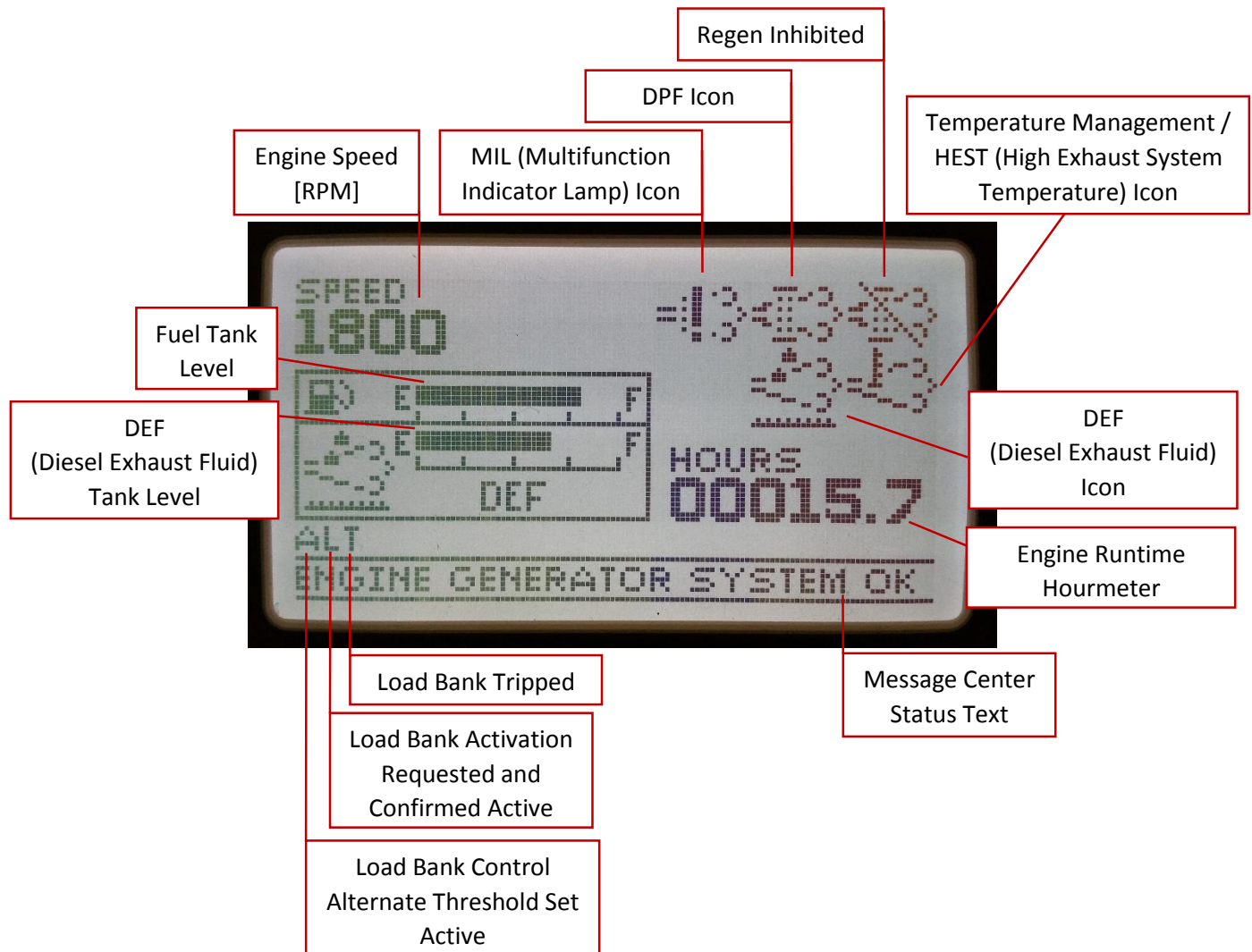


Annotated Control Screens

Most display screen images in this document are specifically those found in the ECU-835 software for use with a John Deere Tier 4 Final diesel engine. While ECU-835 software for use with other engines may display different screens, many screens are similar.

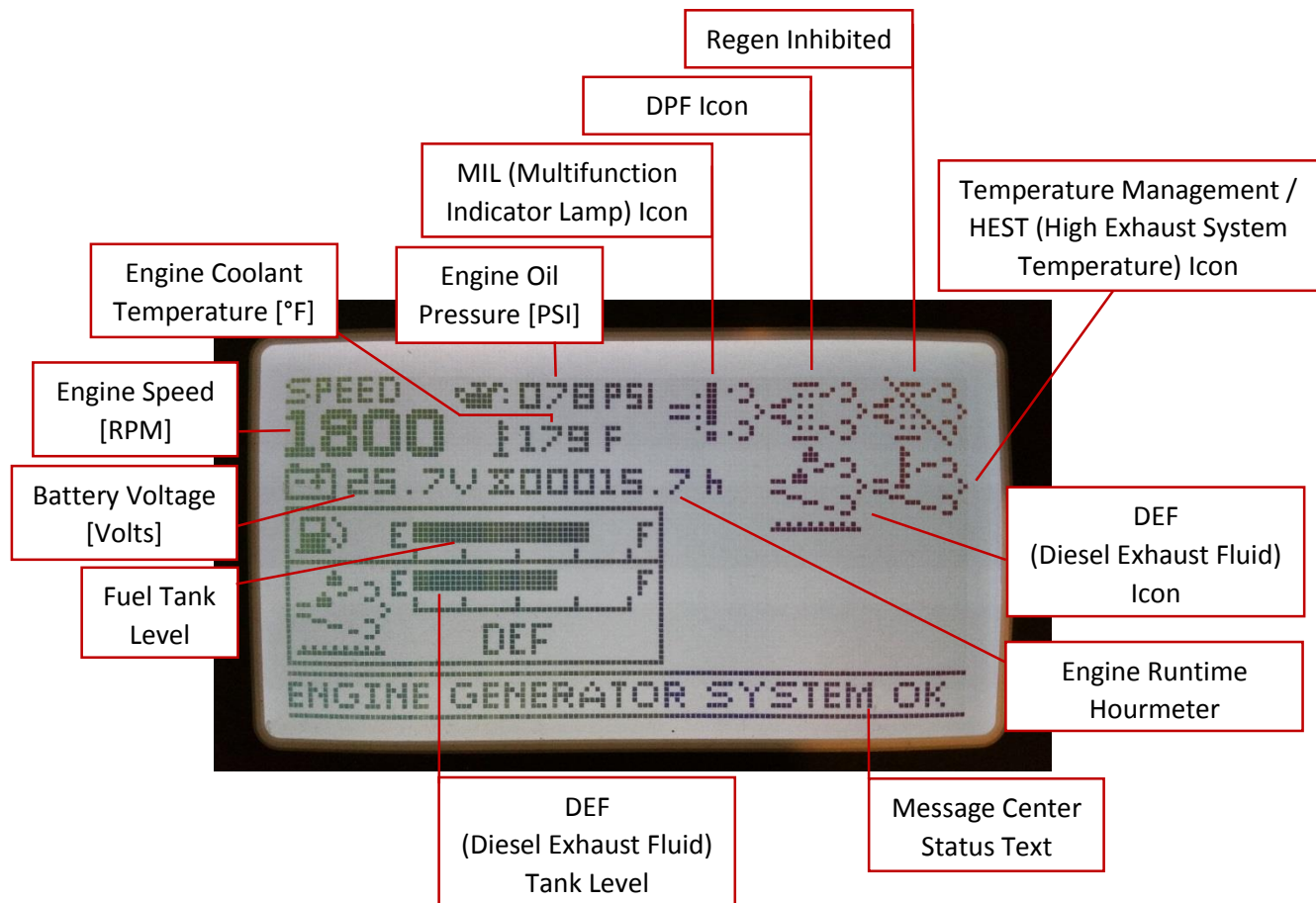
Home Screen

This screen (or similar) is displayed after the ECU-830/835 control is powered on. A different screen would be shown if the ECU-830/835 were powered on in Hour Check Mode (please see page 11 for more information).

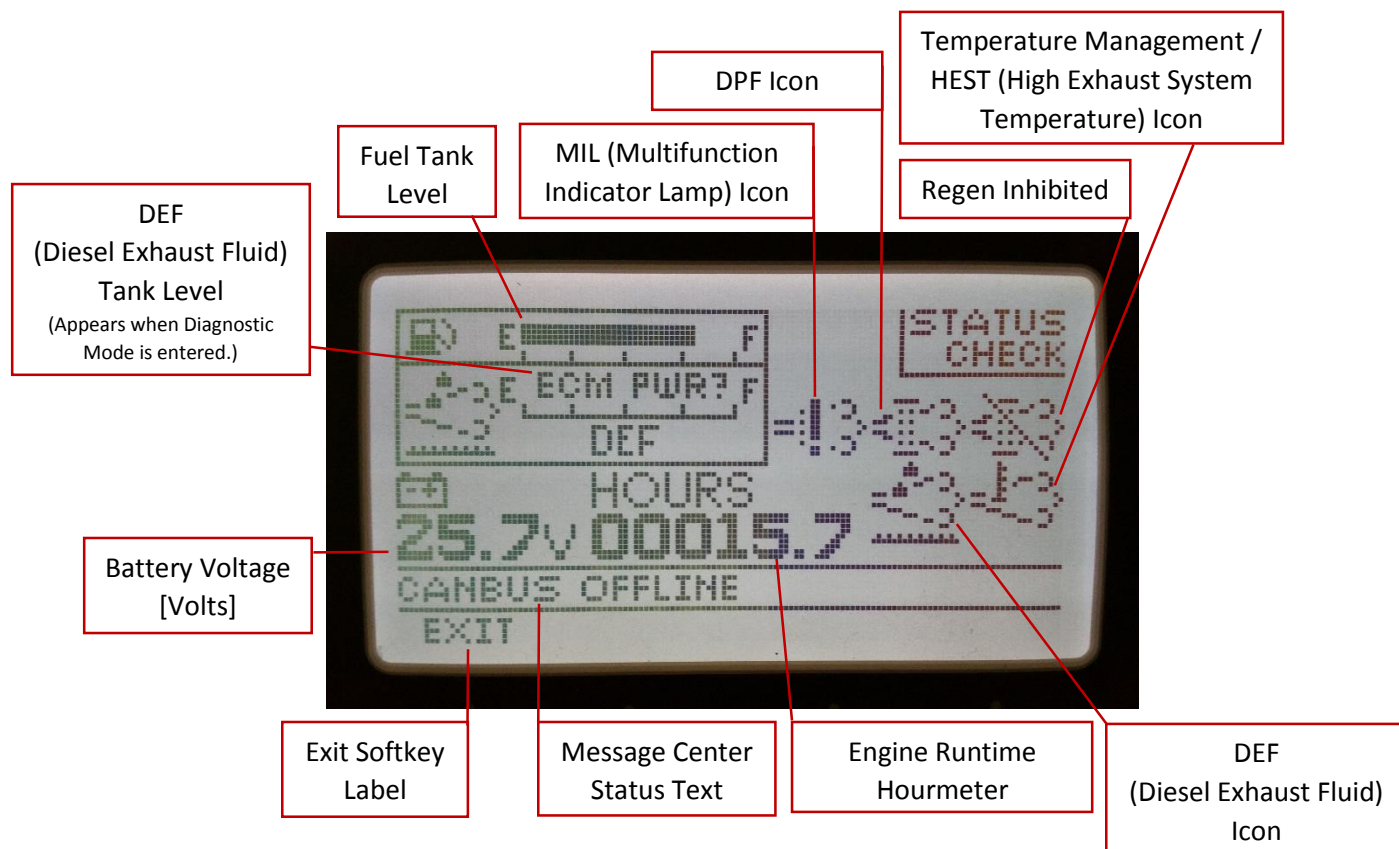


Screen Change Screen

To reach this screen, press the Screen Change key on the front panel of the ECU-830/835 control while the Home Screen is displayed. Pressing the screen change key again will allow viewing of other provided screens if available.



Status Check Screen (Hour Check Mode)



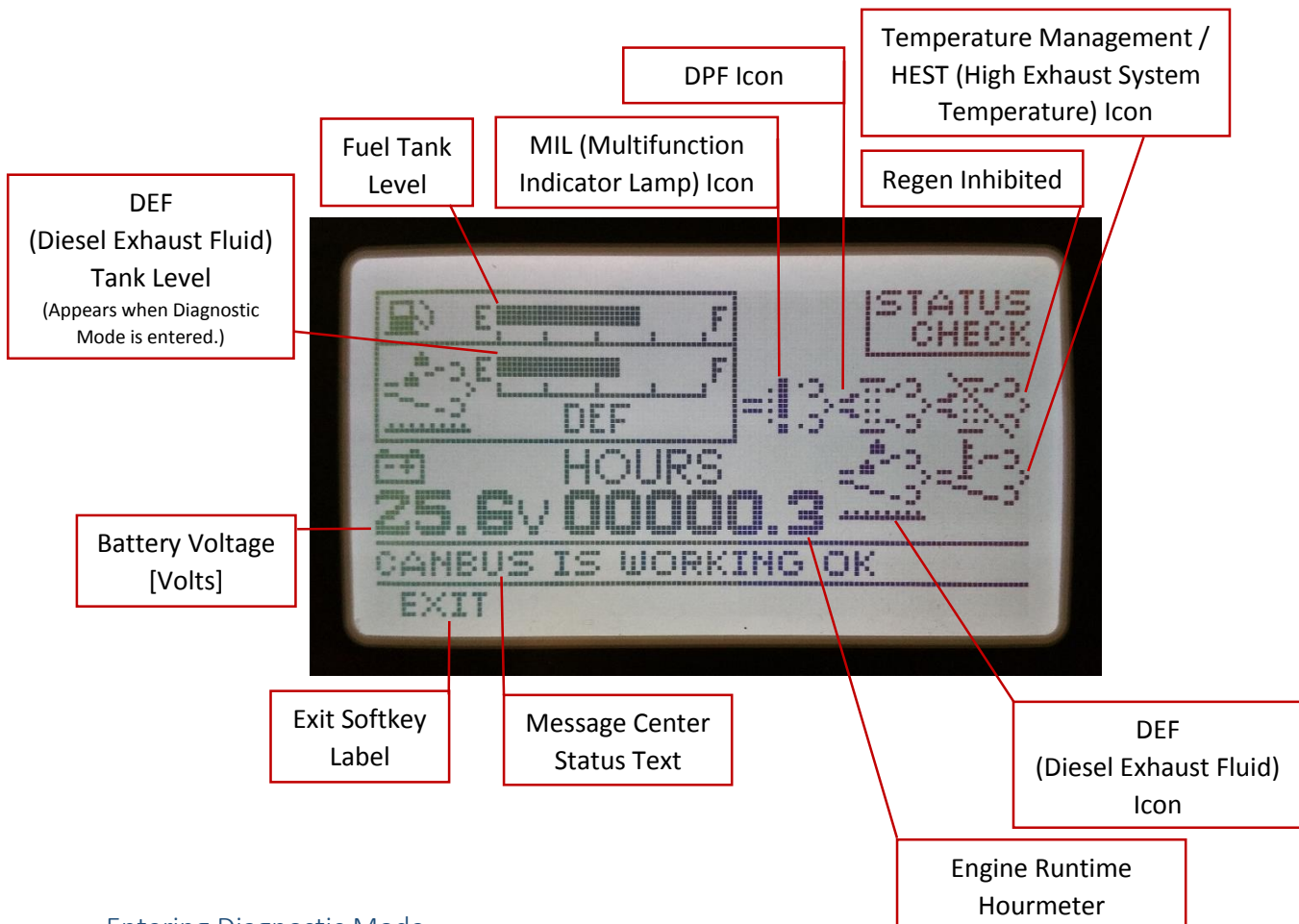
Entering Hour Check Mode

To enter Hour Check Mode and show the Status Check Screen, please use the following steps.

- **Do not attempt any mechanical maintenance on the engine in this mode since the engine can accidentally start up. Always remove the battery connections prior to engine service activities.**
- With the control powered off, locate the HOUR CHECK BUTTON (pictured below) on the control panel for the equipment the ECU-830/835 controller controls.
- Press and hold the HOUR CHECK BUTTON.
- The ECU-830/835 control should power on and display this Status Check Screen.
 - Parameters such as the fuel level, battery voltage, and hourmeter can be viewed. Only the parameters sensed directly by the ECU-830/835 will be valid, as power is not applied to the ECM. To power off the ECU-830/835 control, release the HOUR CHECK BUTTON.



Status Check Screen (Diagnostic Mode)



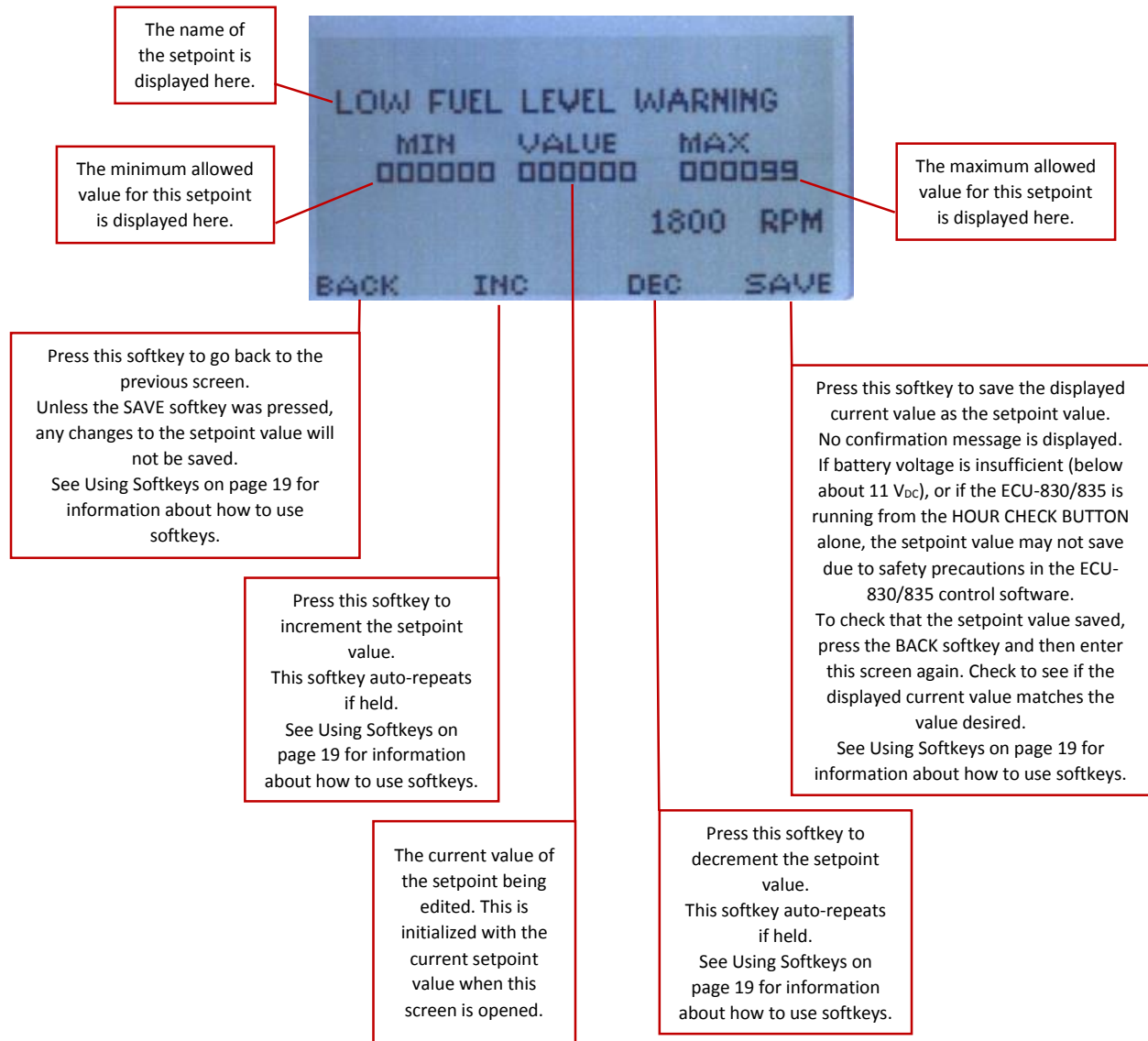
Entering Diagnostic Mode

- If instead it is desired to interact with the ECM (for example to view the DEF level or to read a DM2 record) but still refrain from starting the engine, use Diagnostic Mode.
- To enter Diagnostic Mode
 - **Do not attempt any mechanical maintenance on the engine in this mode since the engine can accidentally start up. Always remove the battery connections prior to engine service activities.**
 - Follow the instructions found on page 11 for Entering Hour Check Mode.
 - While still holding the HOUR CHECK BUTTON, turn the control switch (pictured right) on the control panel to the MANUAL position then release the HOUR CHECK BUTTON. This places the ECU-830/835 control in Diagnostic Mode.
 - Power should now be applied to the ECM.
- When in Diagnostic Mode, the special message “CANBUS IS WORKING OK” and a special version of the message “CANBUS COMM ERROR” can be seen. While in diagnostic mode, both of these are Maintenance-type messages.



Setpoint Adjustment Screen

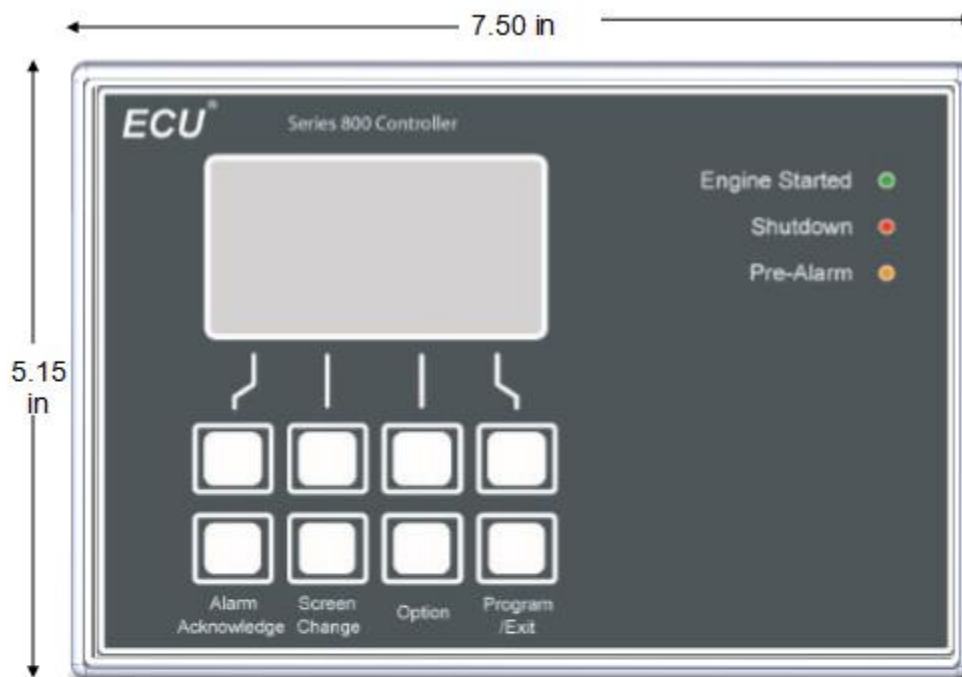
Adjustment of various setpoint values can be accomplished via this reusable screen.



Dimensions, Mounting, and Wiring

Physical Dimensions

Models ECU-830/835

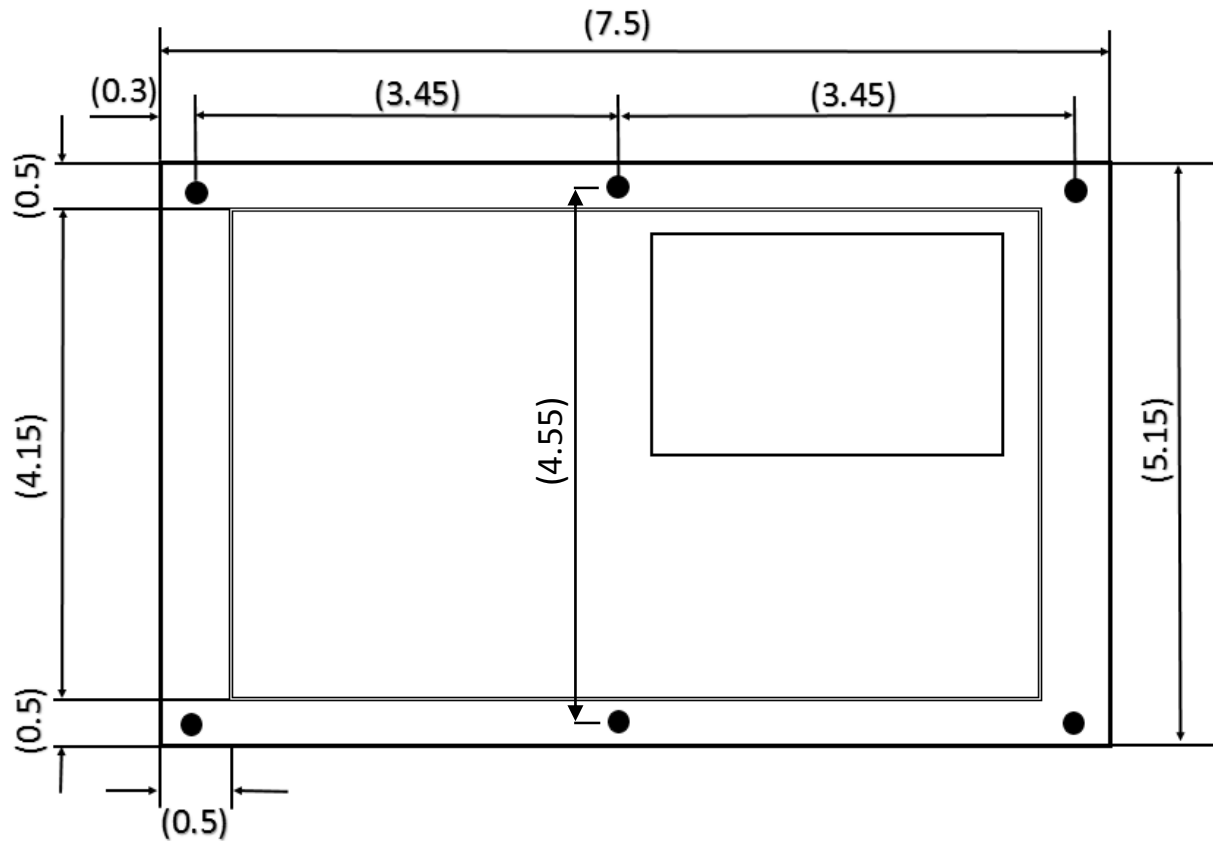


Behind Panel Requirement



Screw Threads are .5 inches exposed and are 8-32

Mounting Dimensions

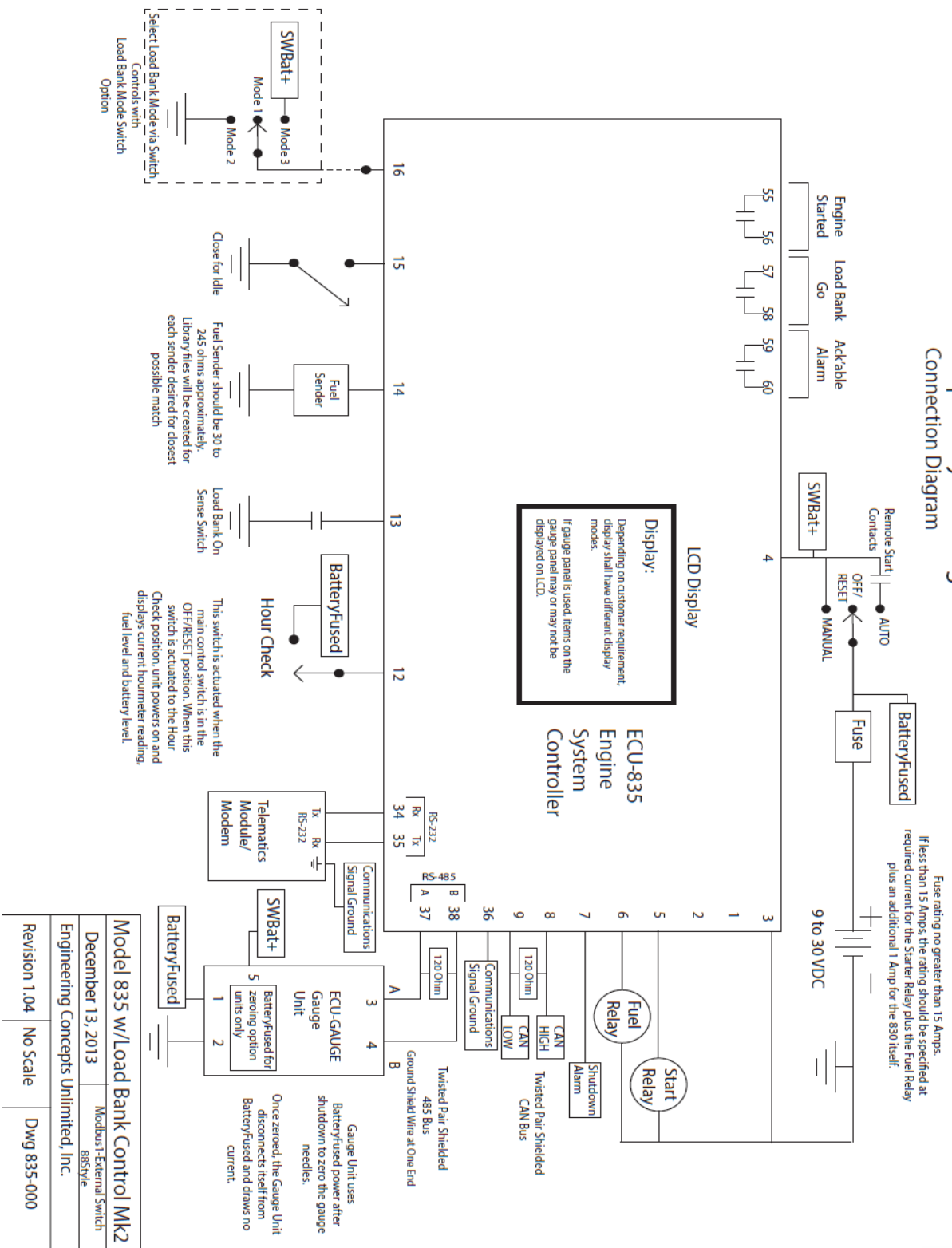


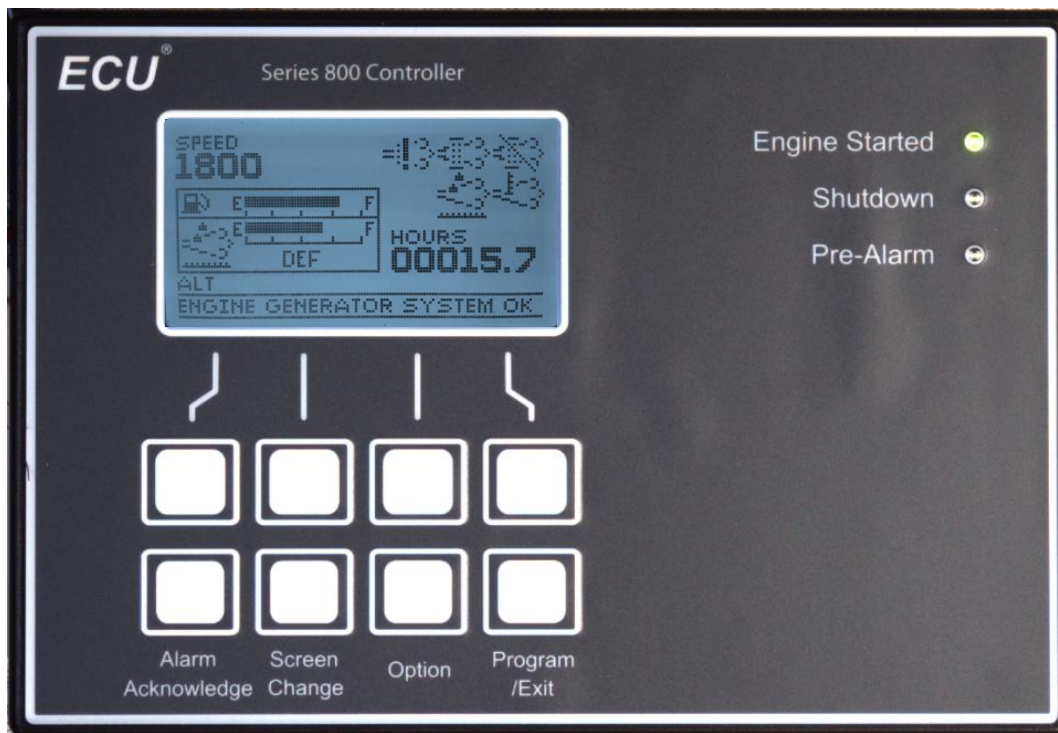
All dimensions are shown in inches.

Standard Wiring Diagram

The wiring diagram on the next page covers standard installations.

Proprietary Drawings and Controls Connection Diagram





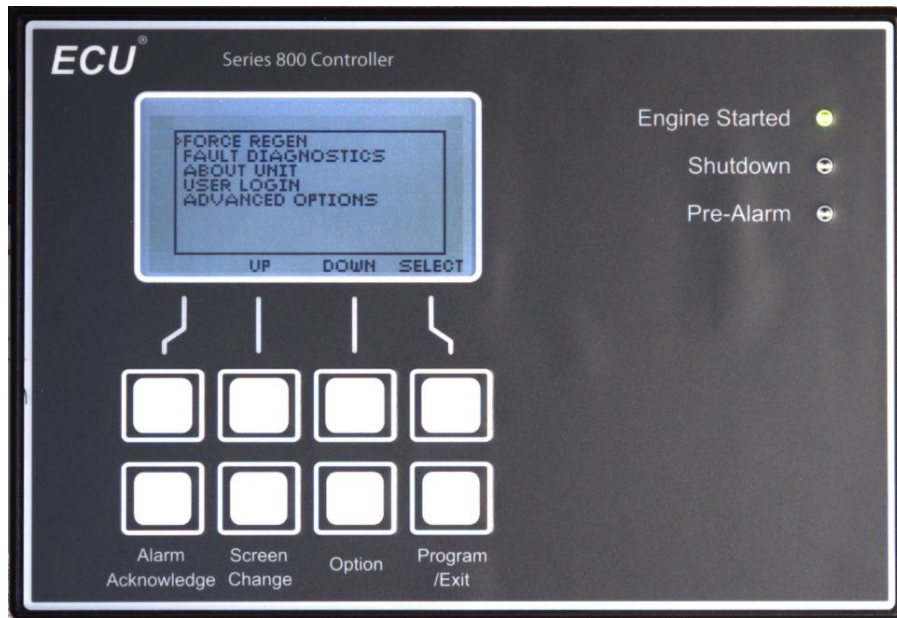
Using the Home Screen

- Engine running
- **Control displaying all icons for illustrative purposes** – Please see page 9 for a detailed description of this screen.
- The above screen shows various parameters including these EPA-required items.
 - DEF (Diesel Exhaust Fluid) Tank Level
 - Status Icons
- LED lamps indicate the status of the engine
 - Engine Started – **green** – the engine is running
 - Shutdown – **red** – engine is either approaching shutdown or has been shut down. Check the Engine Started lamp to determine if the engine is running or not.
 - Pre-Alarm – **yellow** – a warning condition exists
- Press the Screen Change key to change between the Home Screen (detailed on page 9) and the Screen Change Screen (detailed on page 10).
- Press the Program/Exit key to enter the menu.

Messages, Faults, and the Message Center

- Message Center - shown at the bottom of this screen
 - ENGINE GENERATOR SYSTEM OK (as shown) is displayed when no status messages are active.
 - Maintenance, Pre-Alarm, and/or Shutdown messages will appear in this portion of the screen.
- New Pre-Alarm or Shutdown messages (these two specific types of messages may be referred to as 'faults') are indicated by the LCD backlight flashing (alternating between the set brightness and half the set brightness) and, if equipped and configured, via a contact closure (please contact a qualified technician with access to the service manual if you would like to know more about how to configure the contact closure).

- Acknowledge new Pre-Alarm and/or Shutdown messages by pressing the Alarm Acknowledge key while on the Home Screen. Press the Alarm Acknowledge key once for each new Pre-Alarm and/or Shutdown message.
 - Once all new Pre-Alarm and/or Shutdown messages have been acknowledged in this manner,
 - The LCD backlight will stop flashing,
 - If equipped and configured, the closed contact will open, and
 - All active Maintenance, Pre-Alarm, and/or Shutdown messages will cycle through in the Message Center.

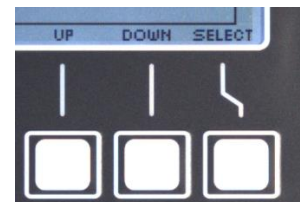


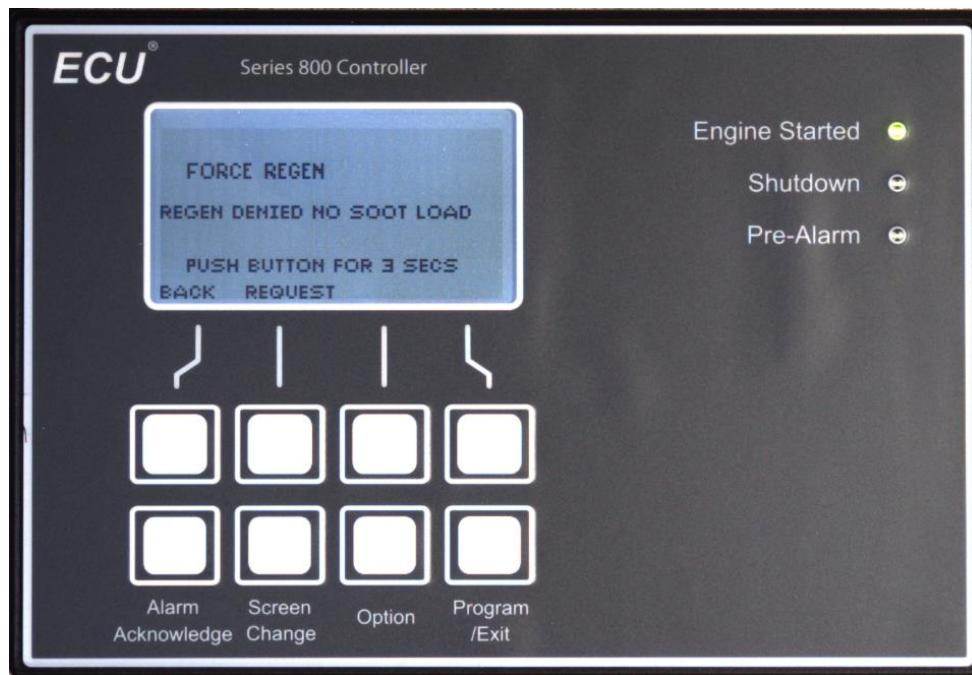
Main Menu

- Use the UP, DOWN, and SELECT softkeys to navigate the menu (see Using Softkeys below).
 - The UP and DOWN softkeys move the cursor (>) up and down.
 - The SELECT softkey chooses the item with the cursor (>) next to it. This can advance the screen to either a utility screen or to a sub-menu, depending on what item is chosen.
 - A BACK softkey will become available once a sub-menu is entered.
- To exit the menu, press the Program/Exit key while on the Main Menu.
 - To return to the Main Menu from a submenu, keep pressing the BACK softkey until the BACK softkey is no longer available which indicates that the displayed menu is the Main Menu. The Program/Exit key is enabled only on the Main Menu.
- More options may be made available via a USER LOGIN password.
 - Please contact your dealer about a USER LOGIN password if needed.
- Sub-menus and utilities accessible from the main menu
 - FORCE REGEN – Enables sending a request to the ECM (Engine Control Module) to perform a regen cycle on demand.
 - FAULT DIAGNOSTICS – Provides access to utilities to aid in status and/or fault diagnostics.
 - ABOUT UNIT – Provides information about this ECU-830/835 control that is helpful for field diagnostics and service personnel.
 - USER LOGIN – Access to login-related activities.
 - ADVANCED OPTIONS – Access to additional menu items.

Using Softkeys

- The ECU-830/835 control makes extensive use of softkeys.
- When a softkey is available, on the screen caption text will appear that aligns above one of the white lines near the top of keys on the ECU-830/835.
- Press the key on the other end of the white line to use the softkey.

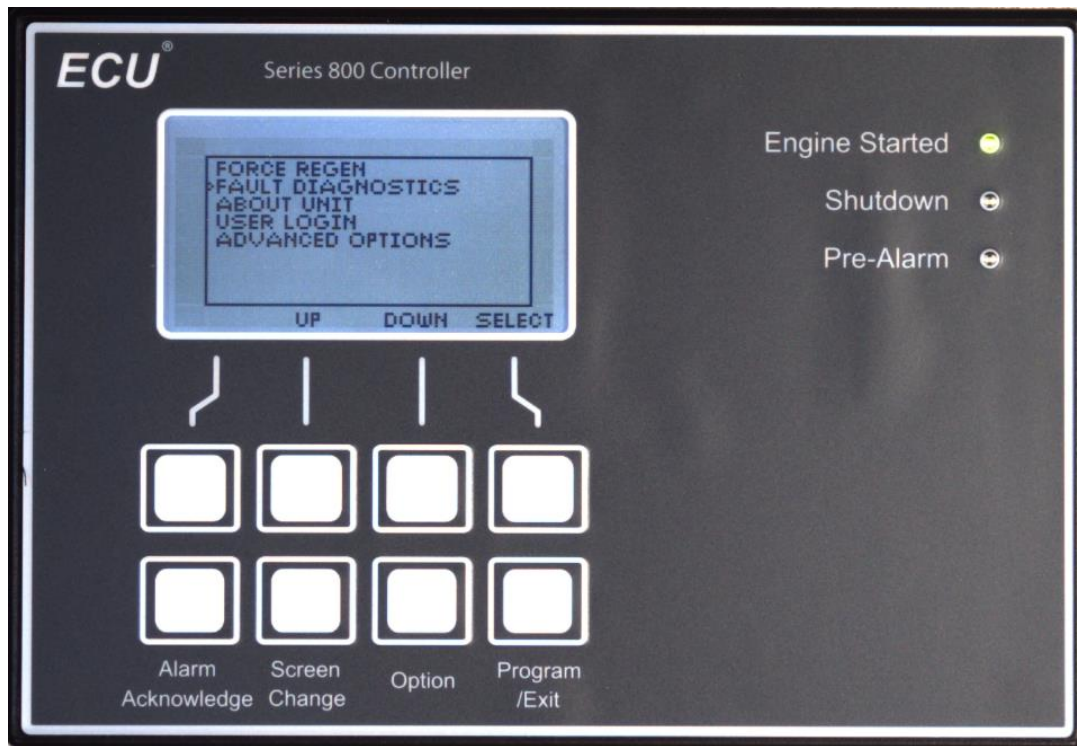




Force Regen

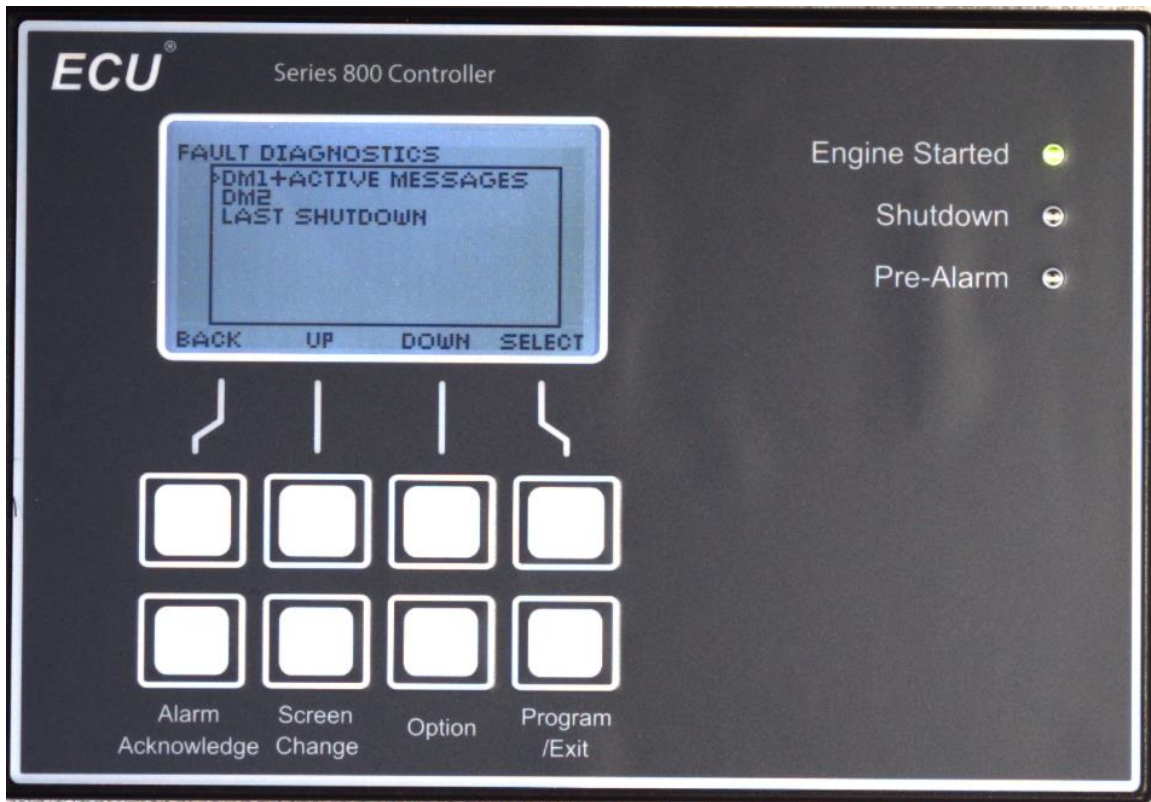
If you are in a cramped area, excess heat of regeneration may be dangerous. In the interest of safety, you can request a Regen Inhibit telling the ECM not to regen even though it may have to. Please see Inhibit Regen on page 37 if needed.

- The current regen condition displayed
 - Even if a REGEN DENIED condition is reported, a regen request can still be sent. However, the regen request may not be accepted by the ECM.
- Be careful.
 - Regen makes the exhaust very hot. Regen can generate very high exhaust temperatures. Ensure that flammable items are a very safe distance away from the engine and exhaust before starting regen.
 - Follow safety information given in engine literature, information placards, and/or equipment manufacturer literature.
- To request force regen:
 - Press and hold the REQUEST softkey for three (3) seconds, then release the softkey.
 - If the engine allows regen will begin.
- Regen:
 - Is a contraction for 'regeneration'.
 - Seeks to regenerate the exhaust filter, so it can once again run with reduced backpressure and be ready to capture more contaminants from the engine exhaust gasses. For engines equipped with a DPF (diesel particulate filter), this involves removing soot out of the DPF via a thermal process.



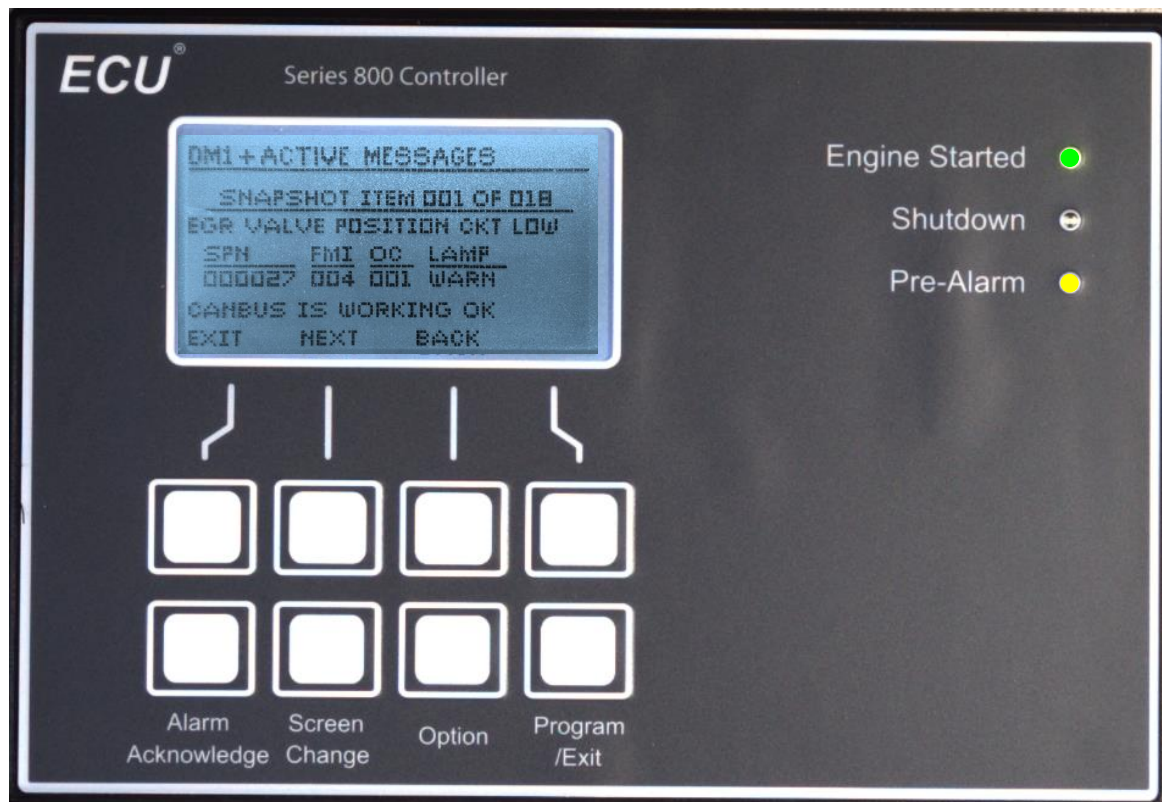
Fault Diagnostics Submenu

- Enables access to utilities for checking status and diagnosing issues.
- To access these utilities, use the SELECT softkey with this menu item chosen.
- Please see the next page to view the contents of the Fault Diagnostics Submenu.



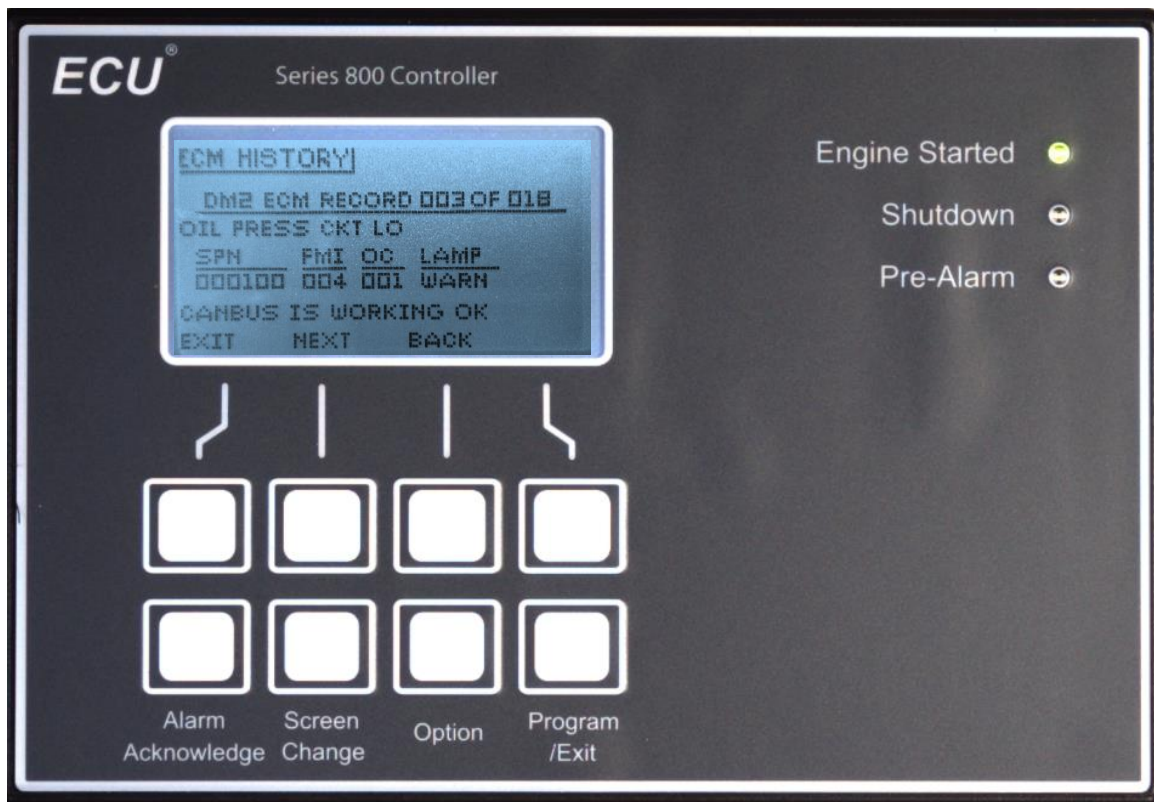
- **Faults Diagnostics**

- DM1+ACTIVE MESSAGES
 - View messages that are currently active.
- DM2
 - View SPN-FMI code history read from the ECM. Only ECM codes are displayed in this utility.
- LAST SHUTDOWN
 - View a record of all messages that were active at the instant the previous shutdown was performed by this ECU-830/835, with a hourmeter timestamp of the time at which each individual message became active.



DM1 & Active Messages

- If “000 OF 000” is displayed, no messages are currently active.
- Otherwise, one or more messages are currently active.
 - Use the NEXT and BACK softkeys to step through the list of active messages.
- To exit this utility screen,
 - Use the EXIT softkey.
- Active messages displayed are latched upon entry to this utility screen for ease of viewing.
 - Exit and re-enter this screen to view an updated listing of the active messages.
- CAN Bus Status can list any one of three different messages
 - CANBUS IS WORKING OK = CAN Bus activity is ongoing (as shown)
 - CANBUS COMM ERROR = CAN Bus communications timed out
 - CANBUS OFFLINE = CAN Bus communications expected to be offline, however CAN Bus communications may or may not be ongoing.
- If available, one or more of the following fields may be provided for a message.
 - SPN (Suspect Parameter Number) – The first half of the SPN-FMI message code.
 - FMI (Failure Mode Indicator) – The second half of the SPN-FMI message code.
 - OC (Occurrence Count) – The count of occurrences of this SPN-FMI message. For messages sourced by the ECU-830/835 controller itself, the OC (Occurrence Count) will be zero. Please contact our factory if a listing of SPN-FMI message codes sourced from the ECU-830/835 is needed; for all others consult the engine manufacturer.
 - LAMP (Lamp) – The type of the fault as indicated by the ECU-830/835.
 - MAINT – Maintenance, An informational or early service request message.
 - WARN – Warning, A trouble condition exists.
 - STOP – Stop, The presence of this message will cause the ECU-830/835 to shut down the engine.



DM2 Record

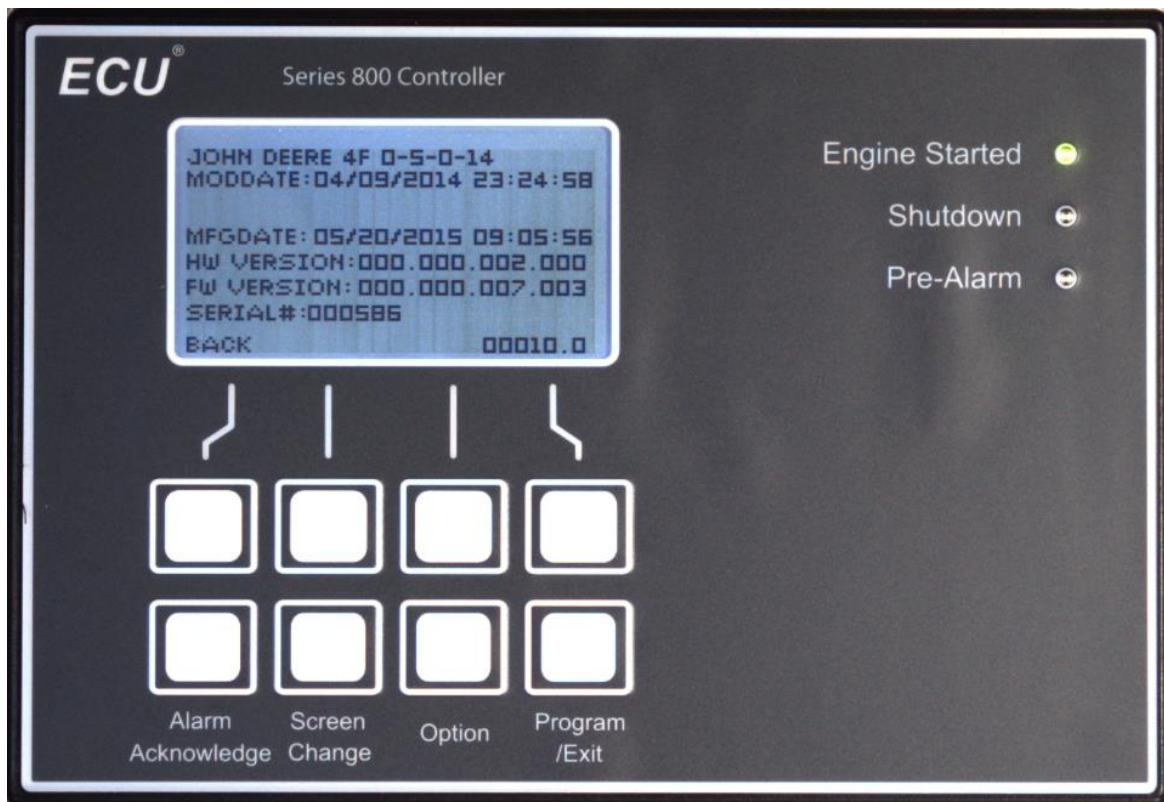
- Retrieves and allows viewing the contents of the DM2 SPN-FMI code history read from the ECM.
- It is generally possible to clear the DM2 record on the ECM by some means, so the record received from the ECM may or may not report the entire lifetime SPN-FMI code history for the ECM.
- An empty or missing DM2 record can be indicated differently by two distinct versions of this utility that can be found in the field.
 - Prior to firmware v0.0.11.0
 - The appearance of “000 OF 000” indicates that either the DM2 record was not received from the ECM, or that the DM2 record was received from the ECM but was empty.
 - Starting at firmware v0.0.11.0 and continuing to the present (v0.0.13.0 as of 06/06/2015)
 - A pop-up box appears while the ECU-830/835 attempts to read the DM2 record from the ECM.
 - An error message is displayed if no DM2 record was received from the ECM.
 - If the pop-up box closes itself and then “000 OF 000” appears, this indicates specifically that the DM2 record was received from the ECM but the received DM2 record was empty (contained zero messages).
- Otherwise, one or more messages exist in the ECM’s SPN-FMI code history.
 - Use the NEXT and BACK softkeys to step through the list of historical SPN-FMI code occurrences.
- To exit this utility screen,
 - Use the EXIT softkey.

- To read the DM2 record again,
 - Exit and re-enter this screen to read an updated copy of the DM2 record from the ECM.
- CAN Bus Status can list any one of three different messages
 - CANBUS IS WORKING OK = CAN Bus activity is ongoing (as shown)
 - CANBUS COMM ERROR = CAN Bus communications timed out
 - CANBUS OFFLINE = CAN Bus communications expected to be offline, however CAN Bus communications may or may not be ongoing.
- If available, one or more of the following fields may be provided for a message.
 - SPN (Suspect Parameter Number) – The first half of the SPN-FMI message code.
 - FMI (Failure Mode Indicator) – The second half of the SPN-FMI message code.
 - OC (Occurrence Count) – The count of historical occurrences of this SPN-FMI message as reported by the ECM.
 - LAMP (Lamp) – The type of the fault as indicated by the ECU-830/835.
 - Note, the DM2 record read from the ECM reports SPN-FMI code occurrences that occurred previously. A new occurrence of these SPN-FMI code(s) may or may not currently be active (to check, please use the utility detailed on page 23).
 - MAINT – Maintenance, This SPN-FMI code indicates an informational or early service request message.
 - WARN – Warning, This SPN-FMI code indicates a trouble condition.
 - STOP – Stop, The active presence of this message would cause the ECU-830/835 to shut down the engine if the related SPN-FMI code was currently active.



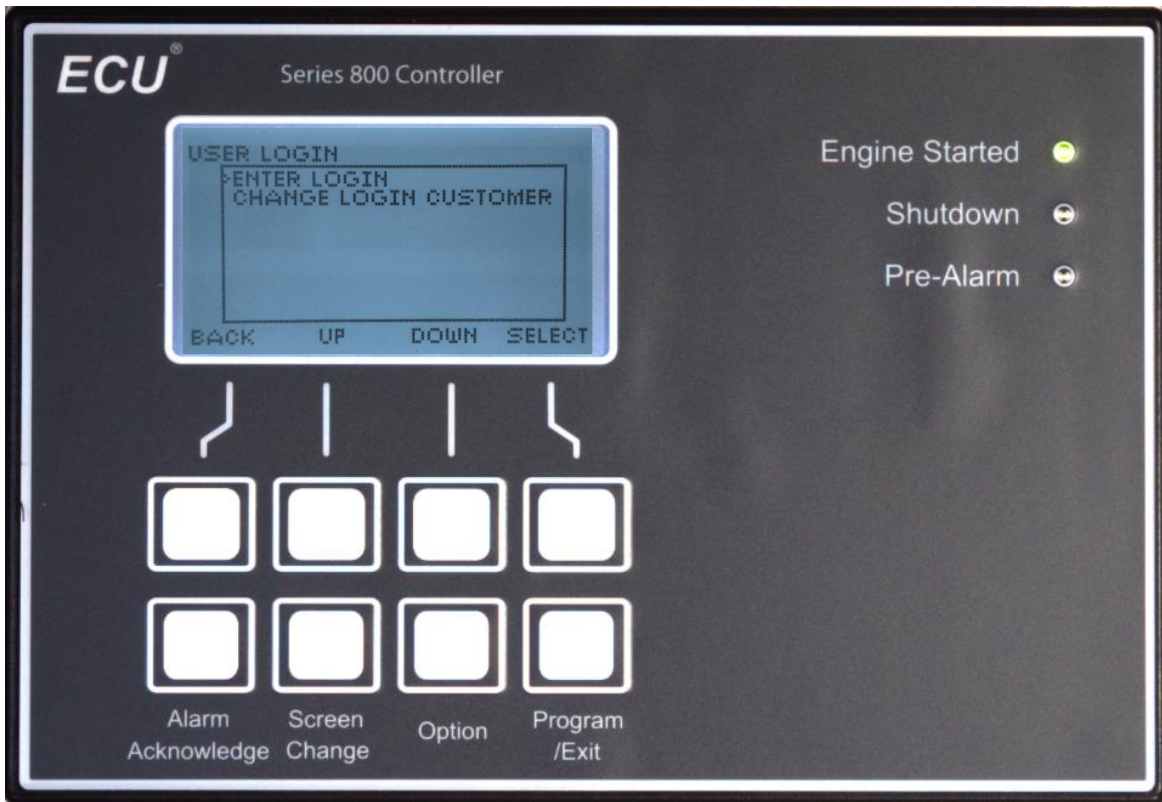
Last Shutdown

- Displays a record of the messages active when this ECU-830/835 control last performed an engine shutdown due to a fault.
 - If “000 OF 000” is displayed, no Last Shutdown record exists.
 - Otherwise, the fault ultimately causing this ECU-830/835 to shut down the engine is named beneath the ULTIMATE SHUTDOWN CAUSE heading.
- To step through the messages active when the last shutdown was performed,
 - Use the NEXT and BACK softkeys.
- To exit this utility screen,
 - Use the EXIT softkey.
- If available, one or more of the following fields may be provided for a message.
 - SPN (Suspect Parameter Number) – The first half of the SPN-FMI message code.
 - FMI (Failure Mode Indicator) – The second half of the SPN-FMI message code.
 - OC (Occurrence Count) – The count of occurrences of this SPN-FMI message. For messages sourced by the ECU-830/835 controller itself, the OC (Occurrence Count) will be zero. Please contact us if a listing of SPN-FMI message codes sourced from the ECU-830/835 is needed.
 - LAMP (Lamp) – The type of the fault as indicated by the ECU-830/835.
 - MAINT – Maintenance, An informational or early service request message.
 - WARN – Warning, A trouble condition existed.
 - STOP – Stop, The presence of this message would have caused the ECU-830/835 to shut down the engine.
 - Timestamp – The hourmeter reading at the time the occurrence of the message active at the time the ECU-830/835 control last performed an engine shutdown became active.



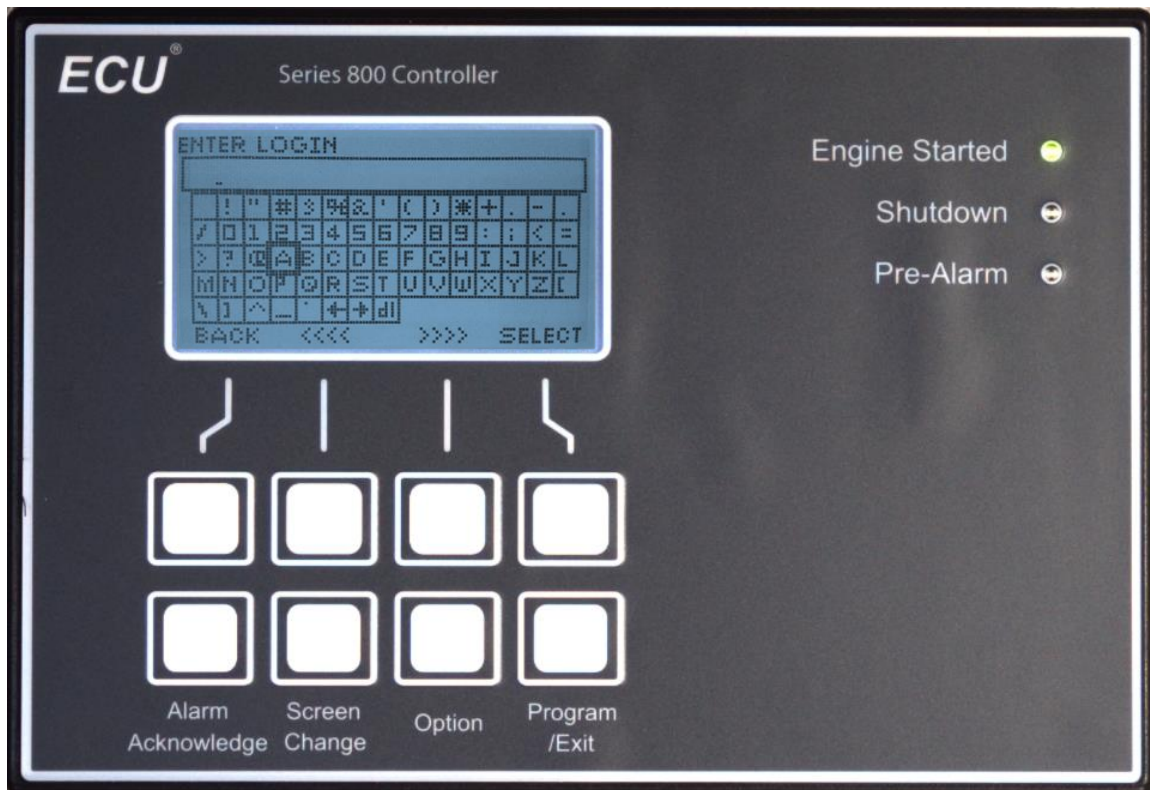
About Unit (Control Information Screen)

- To reach this screen, select ABOUT UNIT from the main menu (see page 19).
- The information on this screen can be helpful for both field service and when calling in for technical support.
- Starting from the top of this screen, listed information is as follows.
 - Personality module name and version
 - Here, “JOHN DEERE 4F” is the personality module name and “0-5-0-14” is the version of that personality module.
 - MODDATE, the timestamp at which this personality module software was developed.
 - Here, “04/09/2014 23:24:58”.
 - The next line may appear blank or may report additional information about the software currently running on this control.
 - MFGDATE, the timestamp at which this ECU-830/835 control was manufactured.
 - Here, “05/20/2015 09:05:56”.
 - HW VERSION, the version number for this ECU-830/835 control’s hardware.
 - Here, “000.000.002.000”.
 - FW VERSION, the version number for the firmware currently running on this ECU-830/835 control.
 - Here, “000.000.007.003”.
 - SERIAL#, the serial number of this ECU-830/835 control’s hardware.
 - Here, “000586”.
 - Depending on the software, some ECU-830/835 controls may or may not display a number at the bottom right of this screen. This number may be helpful for field service.
- To exit this screen, use the BACK softkey.



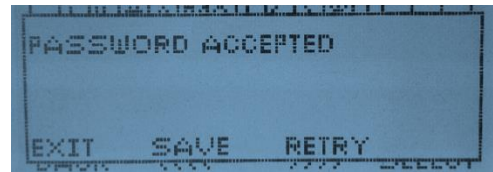
User Login Submenu

- Access this submenu via the Main Menu (see page 19).
- Items on this submenu
 - ENTER LOGIN
 - Opens a utility screen used for entering a user login password. Use user login passwords to obtain access to additional menu items in the Main Menu and/or submenus.
 - CHANGE LOGIN CUSTOMER (Requires Customer user login level)
 - Opens a utility screen used for changing the Customer user login password.



Enter Login




- Use this screen to enter a user login password. Entering certain user login passwords may reveal additional menu items in the Main Menu and/or submenus.
- Use the on-screen keyboard (see Using the On-Screen Keyboard on page 29) provided to enter a valid user login password.
- Once the user login password is entered, press the BACK softkey.
- If the user login password just entered was accepted, the pop-up message at right should be displayed.
 - The privilege level has been successfully changed to match the user login password that was just entered. Press the EXIT softkey to return to the menu system, which may now display additional menu items.
 - Powering off the ECU-830/835 controller resets the privilege level to the default (no user login password) level.
- Instead, if the user login password just entered was rejected, a similar pop-up message is displayed, except that the title reads “PASSWORD REJECTED”.
 - To try again, press the EXIT softkey, then select the ENTER LOGIN menu item again.

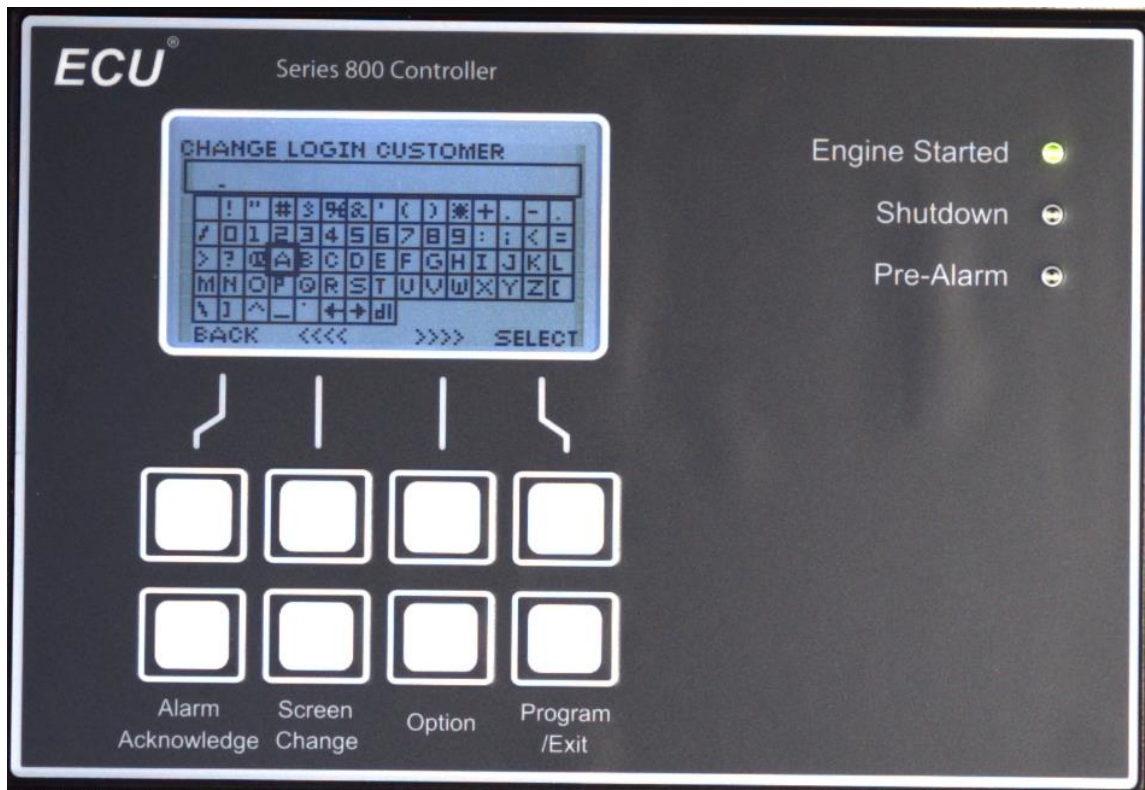


Using the On-Screen Keyboard

- The active character is highlighted by the bold square. In the detail image at right, the letter 'A' is the active character because it is highlighted by the bold square.
- To change the active character, use the softkeys <<<< and >>>> to move the bold square. These two softkeys auto-repeat if held. If desired, see Using Softkeys on page 19 for reference.
- To type in the active character, use the SELECT softkey.

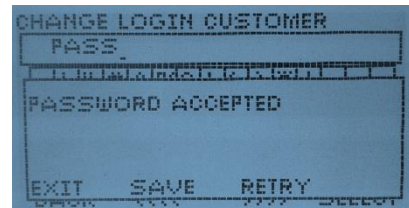


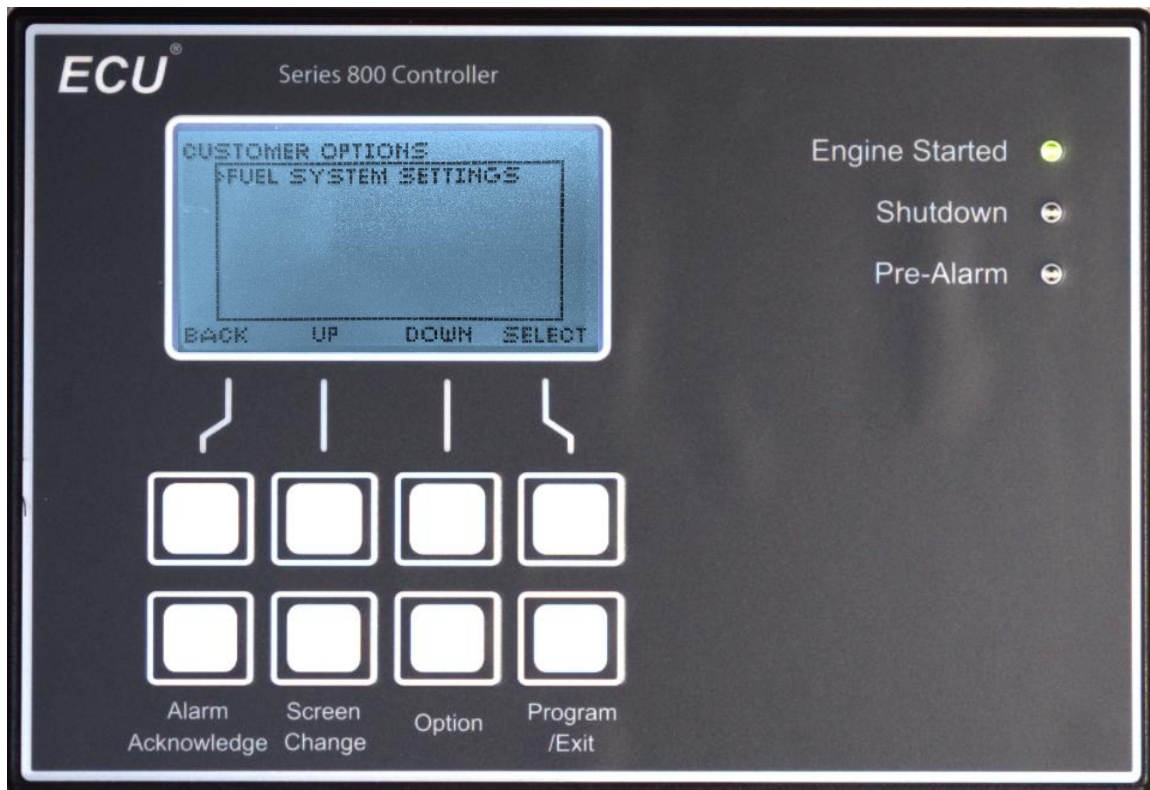
- Special Characters – If the SELECT softkey is pressed while one of the three following special characters is the active character, instead of the active character being typed in the specified operation will be performed.
 - To move the editing position left, use .
 - To move the editing position right, use .
 - To delete a character from the typed in text, use .



Change Login Customer

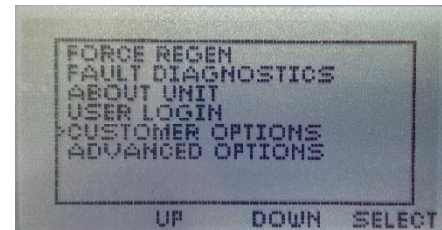
- Use this screen to change the Customer user login password.
 - Access this screen via the USER LOGIN submenu (see page 28).
 - The Customer user login privilege level is needed to access this screen. See Enter Login on page 29 for information on how to enter a user login password to gain access to a different privilege level.
- Changing the Customer user login password.
 - Note, **a user login password change can neither be undone nor reset**. Carefully record any password changes.
 - Use the on-screen keyboard to enter the desired new Customer user login password. For information on how to use the on-screen keyboard, see Using the On-Screen Keyboard on page 29.
 - Once the desired new Customer user login password has been entered, press the BACK softkey (for information on how to use a softkey, see Using Softkeys on page 19). In the example at right, the desired new Customer user login password happens to be "PASS".
 - The pop-up screen shown at right (titled "PASSWORD ACCEPTED") should appear. Press the SAVE softkey to save the desired new Customer user login password that was just entered.
 - This should return the display to the USER LOGIN submenu.
 - The Customer user login password has been changed.

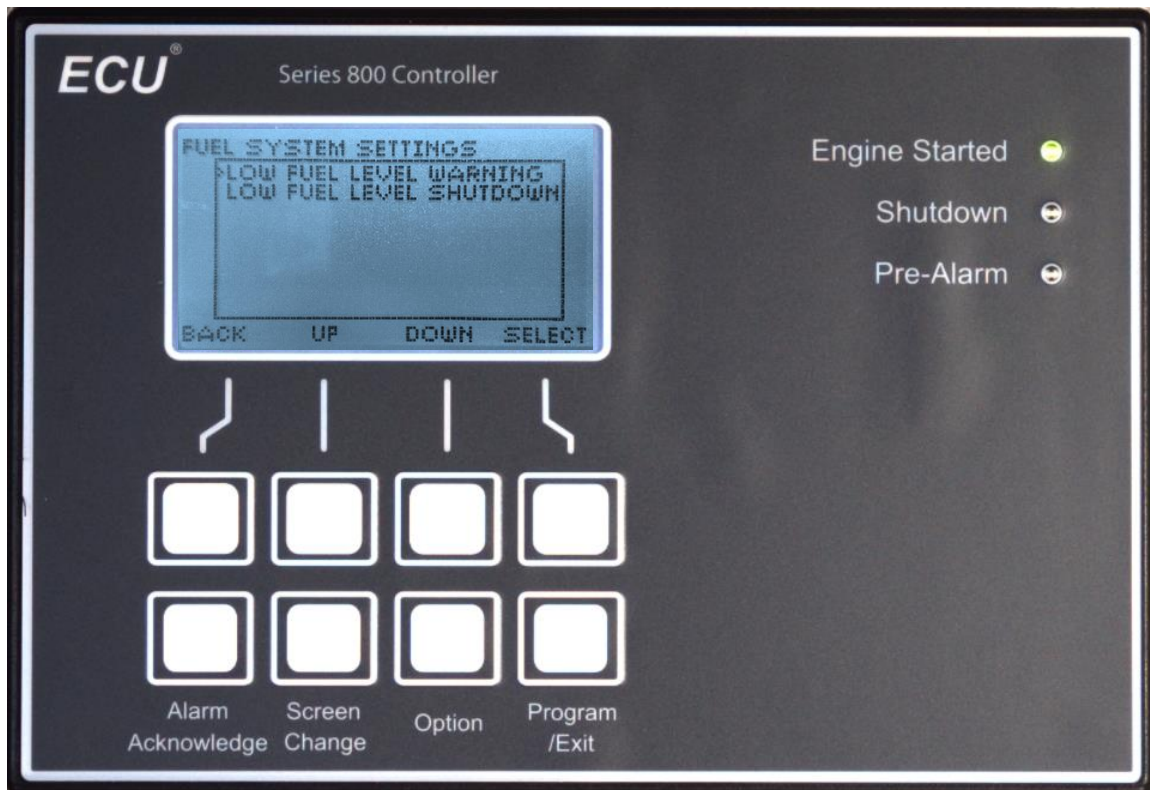




Customer Options Submenu

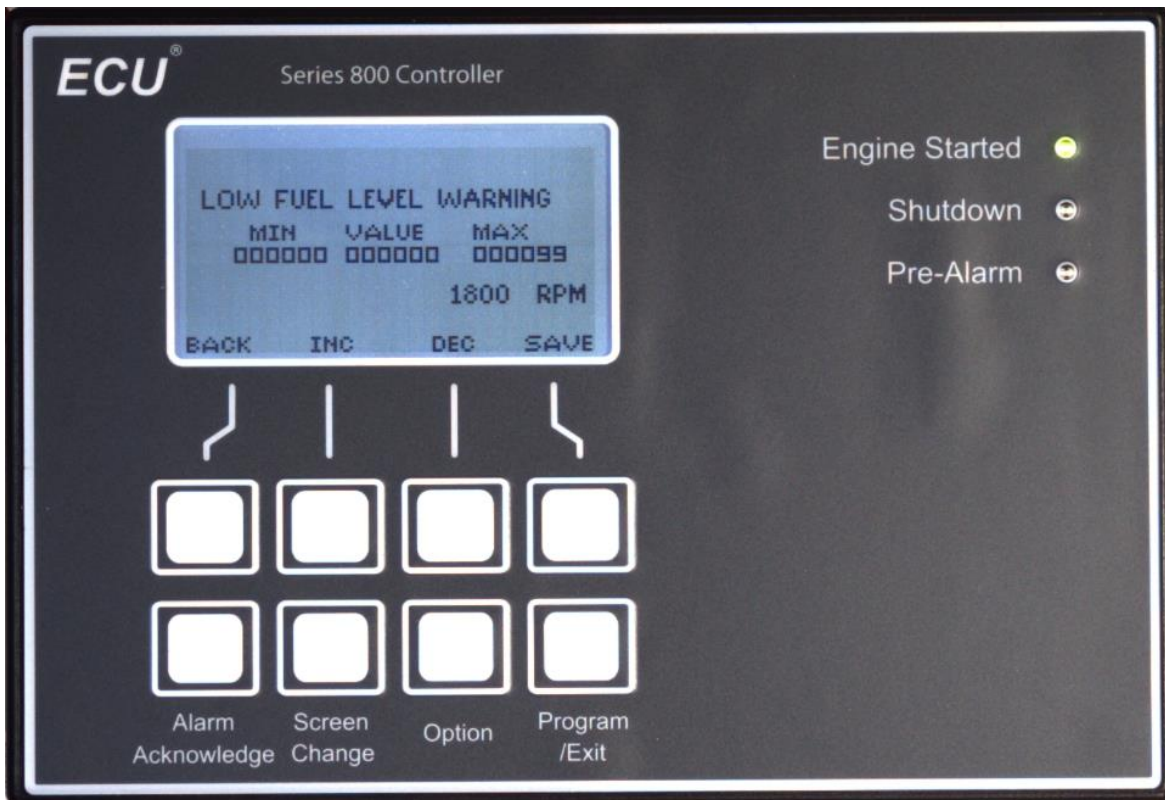
- Access to this submenu from the Main Menu (see page 19) becomes visible and available once the Customer privilege level (or higher) is reached. To change the current privilege level, see Enter Login on page 29. Then, the Main Menu should appear similar to the image at right.
- Items shown in the Customer Options submenu at the Customer privilege level may include:
 - FUEL SYSTEM SETTINGS
 - This submenu, at the Customer privilege level, provides options for setting the Pre-Alarm and Shutdown low fuel tank levels.





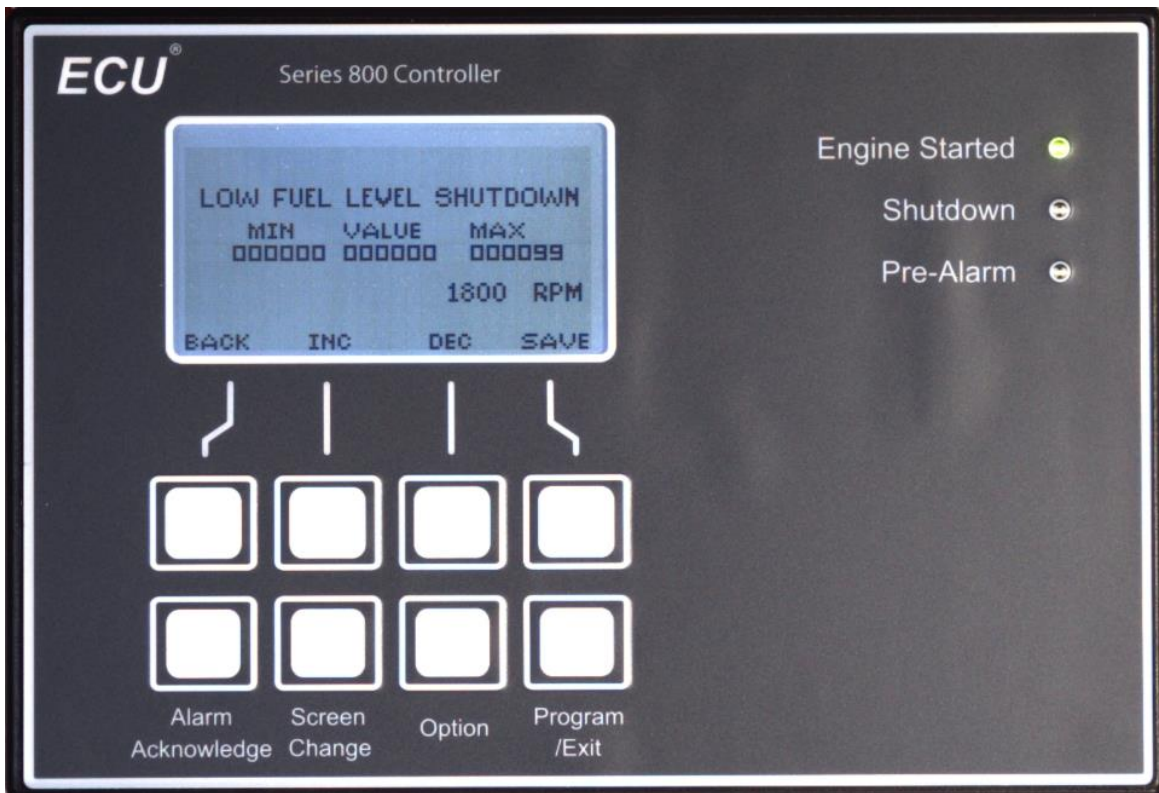
Fuel System Settings Submenu (Customer)

- Access via the Customer Options submenu (see page 32).
- Items shown in the Fuel System Settings submenu at the Customer privilege level may include:
 - LOW FUEL LEVEL WARNING
 - Configure the fuel tank level percentage below which a Pre-Alarm will activate.
 - LOW FUEL LEVEL SHUTDOWN
 - Configure the fuel tank level percentage below which the ECU-830/835 will shut down the engine.



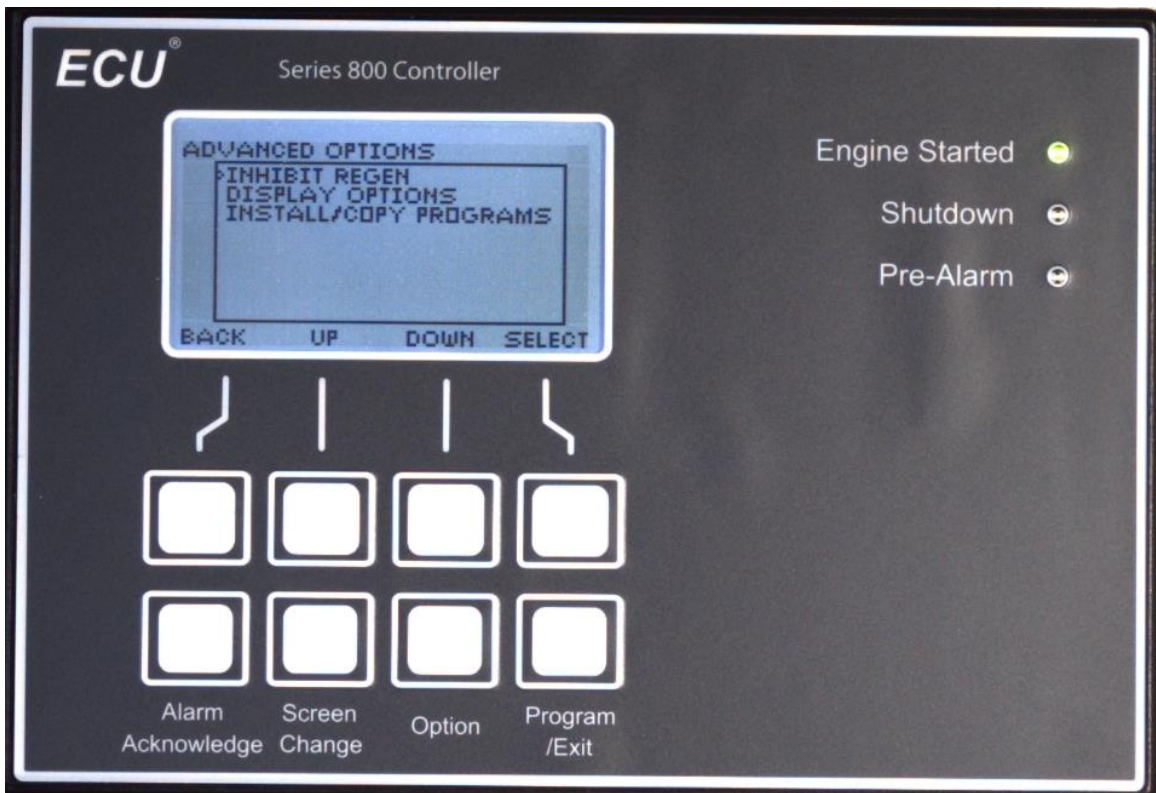
Low Fuel Level Warning

- Access via the Fuel System Settings Submenu (see page 33).
- Set the fuel tank level percentage below which a low fuel Pre-Alarm message should be activated.
- Set to zero to disable the low fuel level Pre-Alarm message.
- For information about how to adjust a setpoint value such as this setpoint, please see the annotated Setpoint Adjustment Screen on page 13.



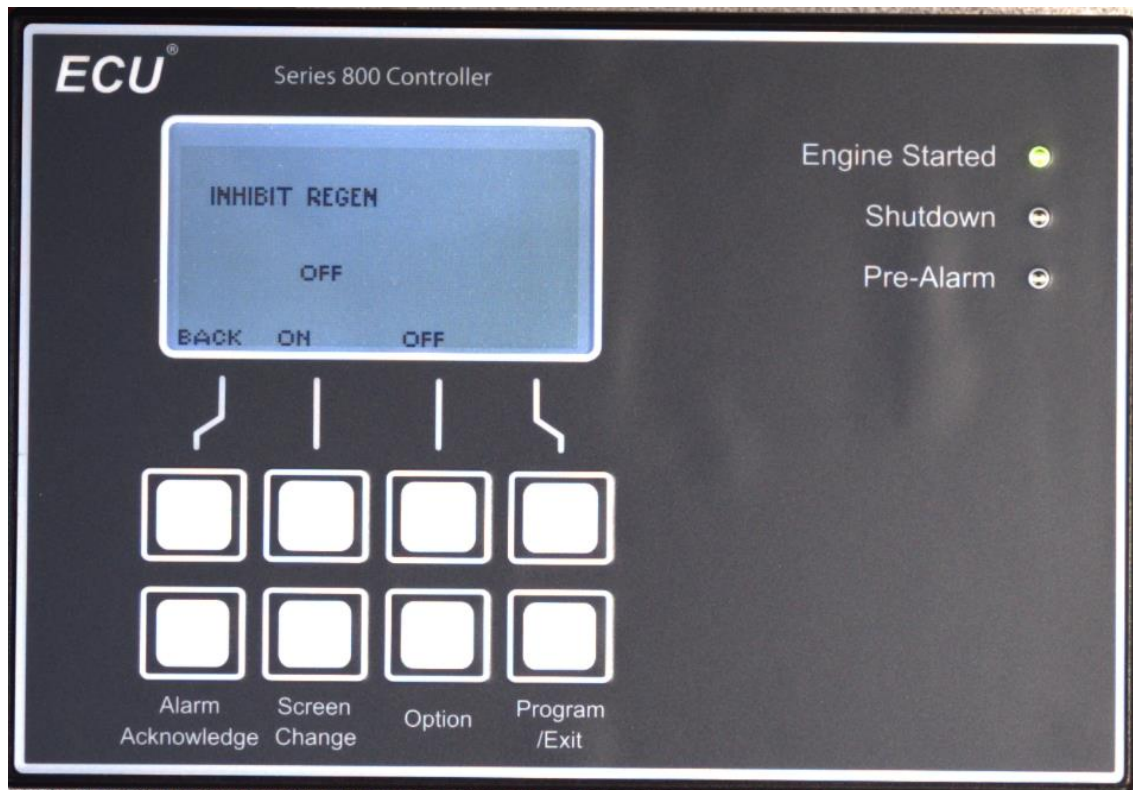
Low Fuel Level Shutdown

- Access via the Fuel System Settings Submenu (see page 33).
- Set the fuel tank level percentage below which a low fuel level Shutdown message should be activated, thus causing the ECU-830/835 control to shut down the engine.
- Set to zero to disable the low fuel level Shutdown.
- For information about how to adjust a setpoint value such as this setpoint, please see the annotated Setpoint Adjustment Screen on page 13.



Advanced Options (Customer)

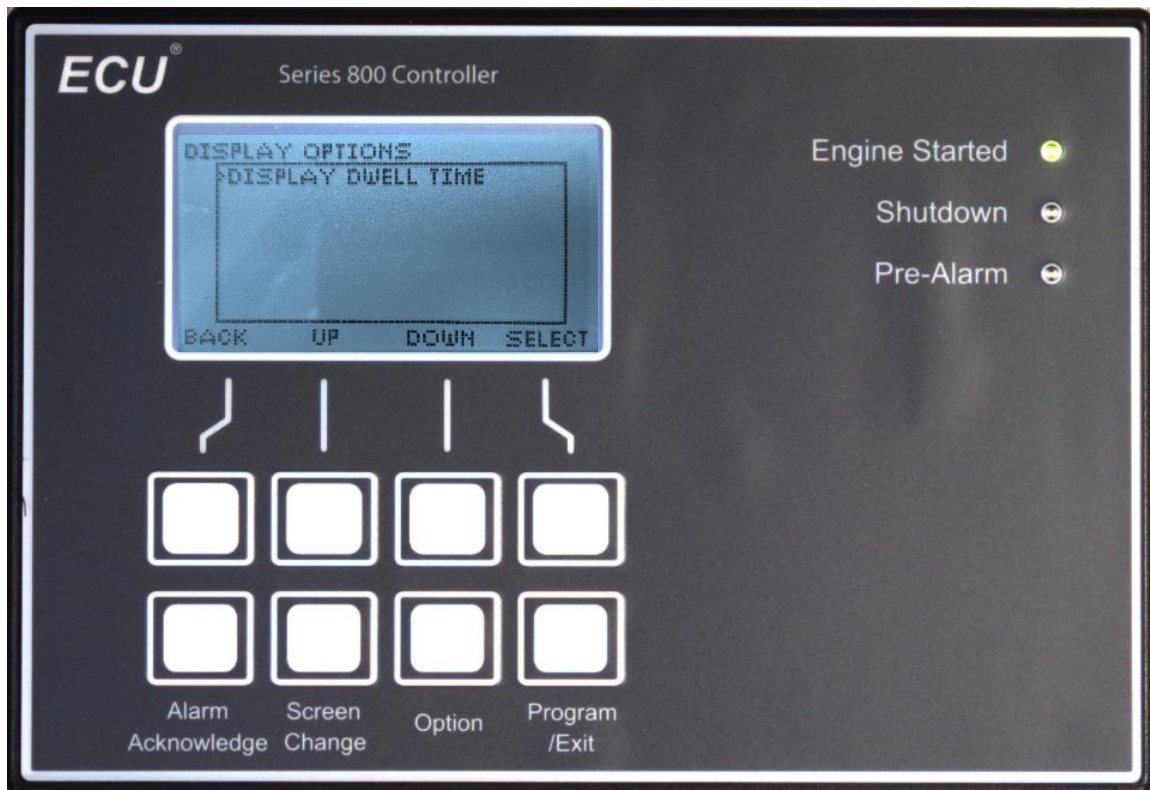
- Access this submenu from the Main Menu (see Main Menu on page 19).
- The above example display includes some options requiring the Customer privilege level.
 - See Enter Login on page 29 for information about how to use a user login password to change the current privilege level.
- Items that may be shown in this submenu include:
 - INHIBIT REGEN (Depending on software, may or may not require a user login password)
 - Provides access to a utility screen used to request that the ECM refrain from performing a regen cycle.
 - DISPLAY OPTIONS (Customer privilege level required)
 - Access to the Display Options submenu, where setpoints related to the display can be adjusted.
 - INSTALL/COPY PROGRAMS (Customer privilege level required)
 - Access to program and data movement utility screens, including the utility screen for field firmware updating the ECU-830/835 control.



Inhibit Regen

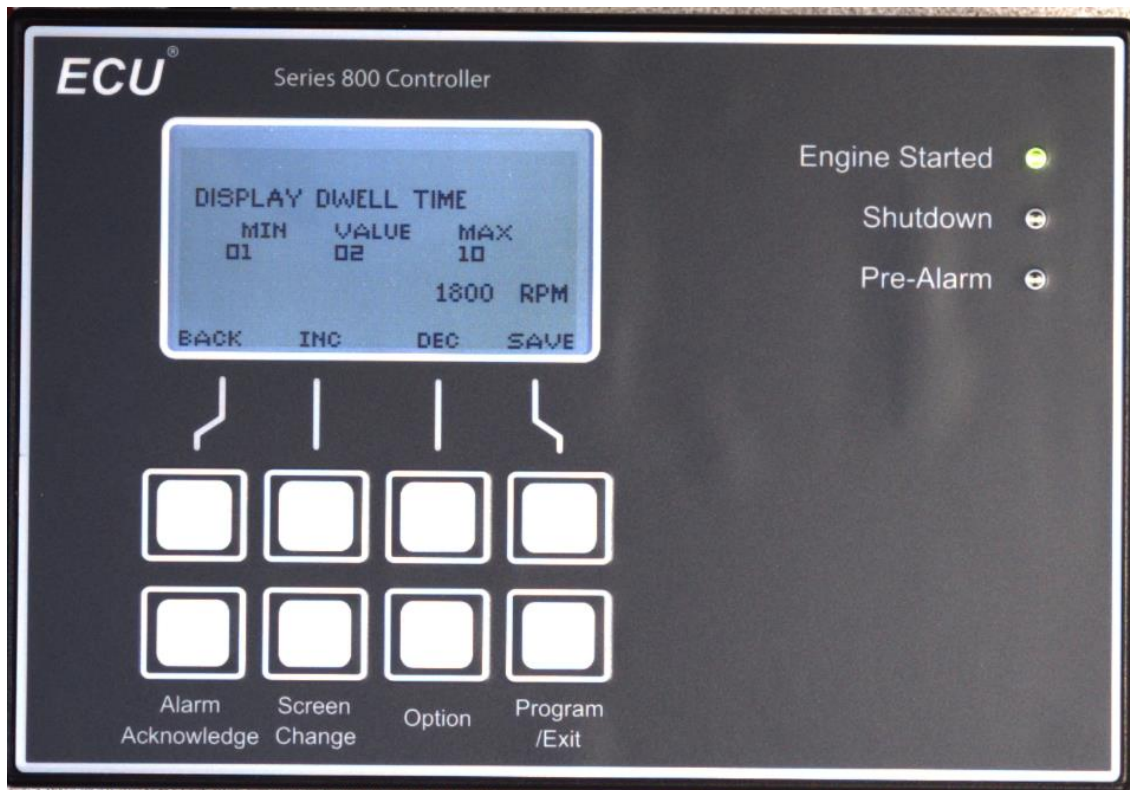
If you are in a cramped area, excess heat of regeneration may be dangerous. In the interest of safety, you can request a Regen Inhibit telling the ECM not to regen even though it may have to. This is by the startup and the request Regen Inhibit is forgotten after the unit is turned off. Use the Engine Manufacturers guidelines on when to use this feature since it can lead up to Warranty issues of damage caused by the engine not being able to Regenerate when needed.

- Access this screen via the Advanced Options submenu (see page 36).
- Engines can go into automatic regen during normal operation. During automatic regen, high temperatures can occur which can result in a safety issue should flammable materials exist near the engine or its exhaust system.
- Set INHIBIT REGEN to ON via the ON softkey on this screen to request that the ECM refrain from automatically starting a regen cycle (automatic regen).
- The INHIBIT REGEN request will revert to OFF automatically when the ECU-830/835 is powered off.
- Unless it is necessary to inhibit regen due to safety concerns, regen should not be inhibited.
- Inhibiting regen for too long can result in an excessively clogged DPF (Diesel Particulate Filter), which may require an expensive service call. Usually, lamps, icons, and/or messages should provide sufficient warning before the DPF becomes excessively clogged.



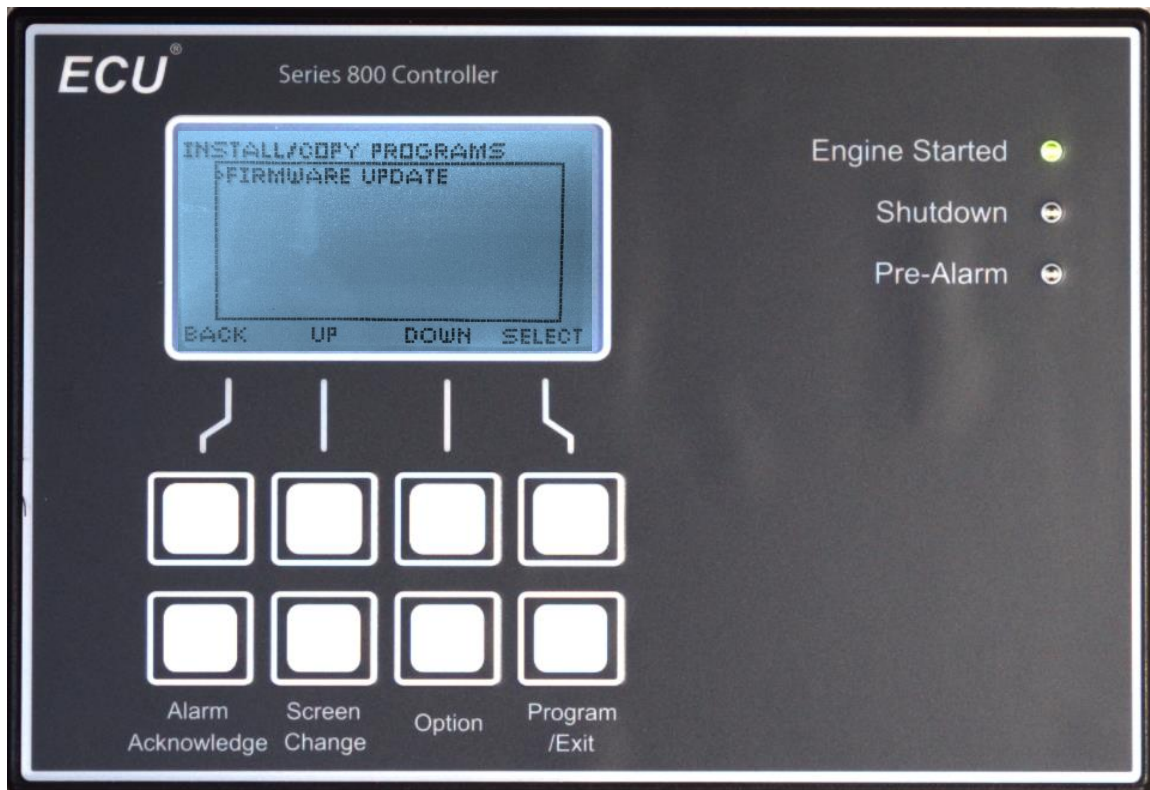
Display Options Submenu (Customer)

- Access via the Advanced Options submenu (see page 36).
- Items displayed in this submenu at the Customer privilege level may include:
 - DISPLAY DWELL TIME (Customer privilege level required)
 - Specifies the number of seconds for which each message is shown in the Message Center (see page 17) when all active messages are cycling through the Message Center.



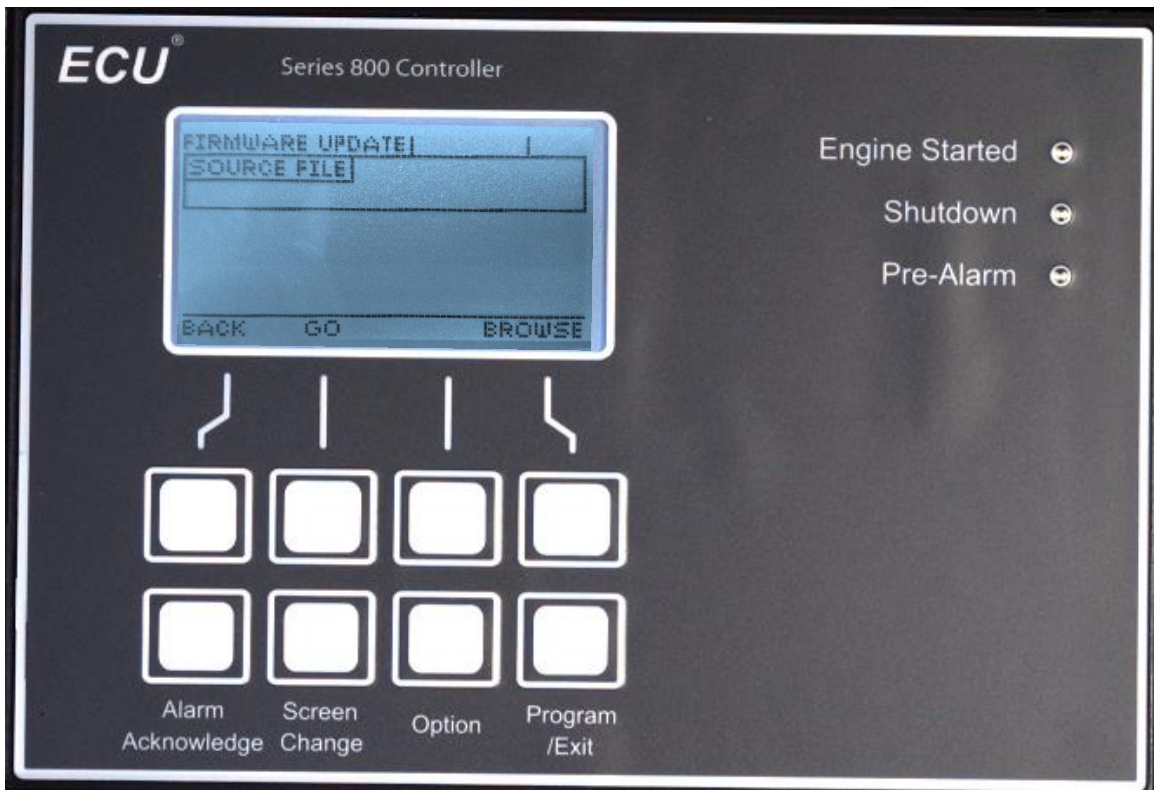
Display Dwell Time

- Access via the Display Options Submenu (see page 38).
- Specifies the number of seconds for which each message is shown in the Message Center (see page 15) when all active messages are cycling through the Message Center.
- Recommended value: 2 [seconds].
- For information about how to adjust a setpoint value such as this setpoint, please see the annotated Setpoint Adjustment Screen on page 13.



Install/Copy Programs Submenu (Customer)

- Access via the Advanced Options submenu (see page 36).
- Items displayed in this submenu at the Customer privilege level may include:
 - FIRMWARE UPDATE
 - Access to a utility screen used to perform a field firmware update on this ECU-830/835 controller.



Firmware Update

- Access via the Install/Copy Programs submenu (see page 40).
- Use to update the firmware on this ECU-830/835 control.
- See the document "ECU_830_FirmwareUpdateInstructions" for information on how to update the firmware on an ECU-830/835 control.

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