

PowerView Display Module

General

Your machine is equipped with a PowerView display module, a multifunctional tool that enables you to view many different engine or transmission parameters and service codes. The system allows you to accurately monitor the modern electronic engine and transmission installed on your machine. The PowerView includes a graphical backlit LCD screen. It has excellent contrast and viewing from all angles. Back lighting can be controlled via menu or external dimmer potentiometer. The display can show either a single parameter or a quadrant display showing four parameters simultaneously. Diagnostic capabilities include fault codes with text translation for the most common fault conditions. The PowerView has four buttons using self-calibrating charge transfer activation technology, which eliminates the concern for pushbutton wear and failure. In addition, operators can navigate the display with ease.

Display Parameters

The following are some of the engine and transmission parameters displayed by the PowerView in English or Metric units, as well as in Spanish, French, or German (when applicable, consult engine or transmission manufacturer for SAE J1939 supported parameters):

- Engine RPM
- Engine Hours
- Machine Hours
- System Voltage
- % Engine Load at the current RPM
- Coolant Temperature
- Oil Pressure
- Fuel Economy
- Throttle Position
- Engine Manifold Air Temperature
- Current Fuel Consumption
- Transmission Oil Pressure
- Transmission Oil Temperature
- Transmission Gear Position
- Active Service Codes
- Stored Service Codes (when supported)
- Set Units for display (English or Metric)
- Engine Configuration Parameters

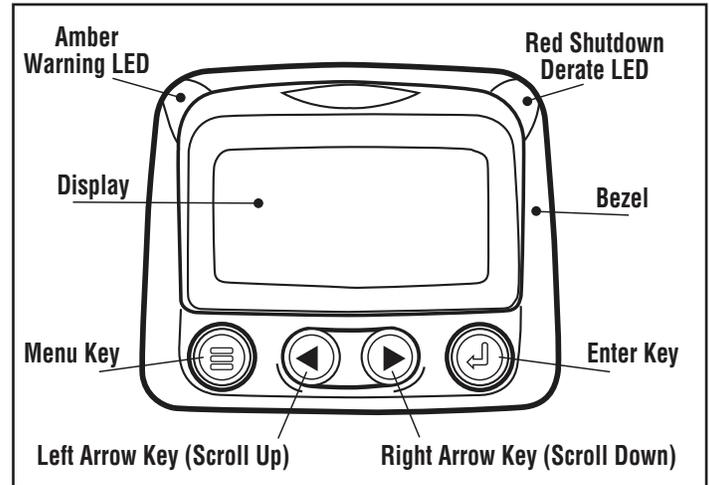


Fig. 1 Powerview Faceplate Features

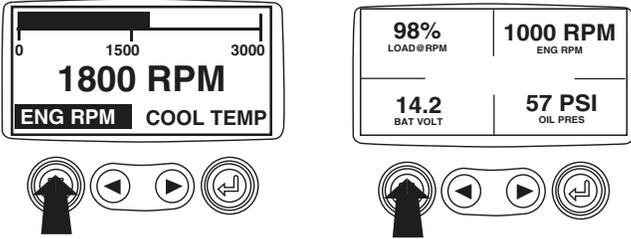
Keypad Functions

The keypad on the PowerView is a capacitive touch sensing system. There are no mechanical switches to wear or stick, and the technology has been time proven in many applications. It operates in extreme temperatures, with gloves, through ice, snow, mud, grease, etc., and it allows complete sealing of the front of the PowerView. The 'key is touched' feedback is provided by flashing the screen. The keys on the keypad perform the following functions:

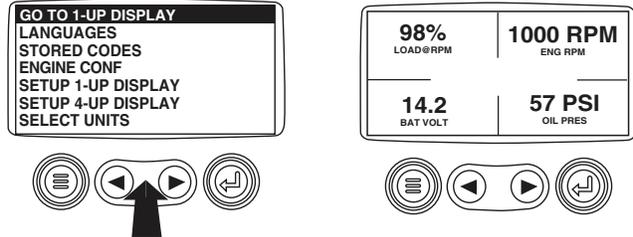
- »  **Menu Key** - The Menu Key is touched to either enter or exit the menu screens.
- »  **Left Arrow** - The Left Arrow Key is touched to scroll through the screen either moving the parameter selection toward the left or upward.
- »  **Right Arrow** - The Right Arrow Key is touched to scroll through the screen either moving the parameter selection toward the right or downward.
- »  **Enter Key** - The Enter Key (also known as Enter Button) is touched to select the parameter that is highlighted on the screen.

Main Menu Navigation

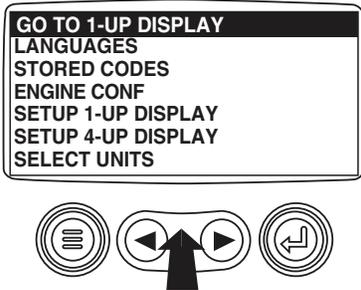
- Starting at the single or four engine parameter display, touch "Menu".



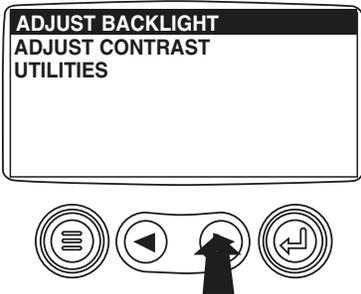
- Touch the "Arrows" to scroll to the desired menu item or touch "Menu" to exit the Main menu and return to the engine parameter display.



- The first seven items of the "Main Menu" will be displayed. Touching the "Arrow Buttons" will scroll through the menu selection.

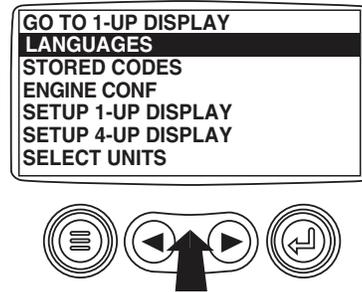


- Touching the right arrow button will scroll down to reveal the last items of "Main Menu" screen highlighting the next item down.

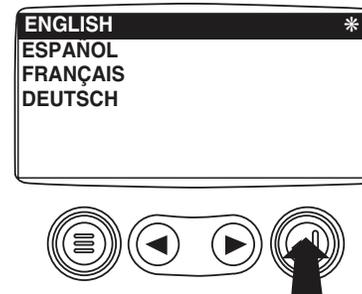


Selecting a Language

- Starting at the main menu display use the "Arrows" to scroll to the "Language" menu and once highlighted touch the "Enter" button.



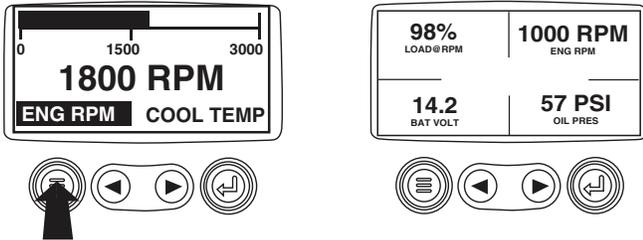
- The language choices will be displayed. Use the "Arrow" buttons to scroll through the selections and touch "Enter" to make a selection.



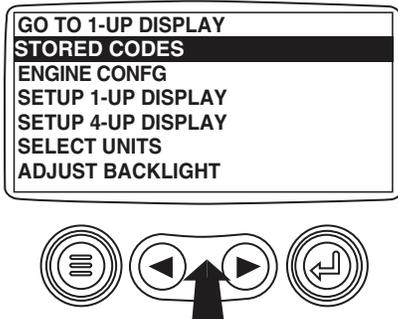
- Now that you have selected the language, touch the "Menu" button to return to the main menu display.

Stored Fault Codes

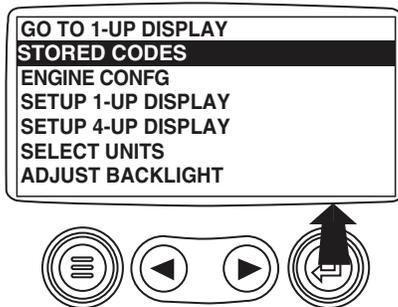
- Starting at the single or the four engine parameter display touch the “Menu button”.



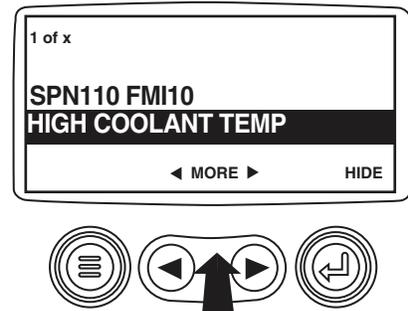
- The main menu will pop up on the display. Use the “Arrow Buttons” to scroll through the menu until the Stored Fault Codes is highlighted.



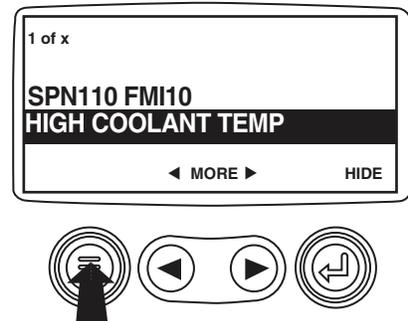
- Once the “Stored Fault Codes” menu item has been highlighted, touch the “Enter Button” to view the “Stored Fault Codes” (when applicable, consult engine or transmission manufacturer for SAE J1939 supported parameters).



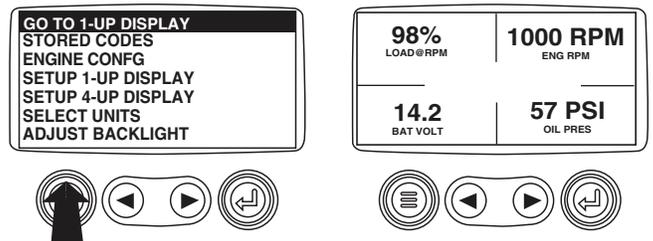
- If the word “MORE” appears above the “Arrow Buttons” there are more stored fault codes that may be viewed. Use the “Arrow Buttons” to scroll to the next Stored Diagnostic Code.



- Touch the “Menu Button” to return to the main menu.

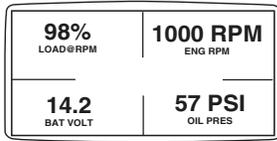
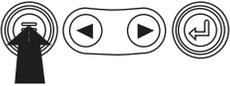
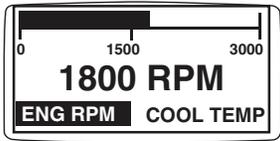


- Touch the “Menu Button” to exit the Main menu and return to the engine parameter display.

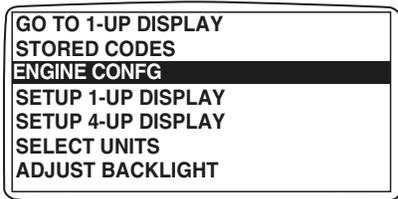


Engine Configuration Data

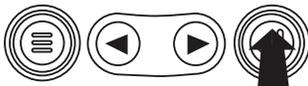
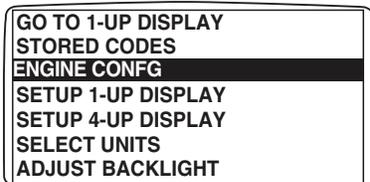
- Starting at the single or four engine parameter display touch the "Menu Button".
- Use the "Arrow Buttons" to scroll through the menu until the "Engine Configuration" is highlighted.
- Once the "Engine Configuration" menu item has been highlighted, touch the "Enter Button" to view the engine configuration data.
- Use the "Arrow Buttons" to scroll through the engine configuration data.



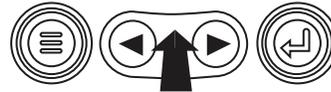
- The main menu will pop up on the display. Use the "Arrow Buttons" to scroll through the menu until the "Engine Configuration" is highlighted.



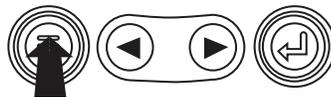
- Once the "Engine Configuration" menu item has been highlighted, touch the "Enter Button" to view the engine configuration data.



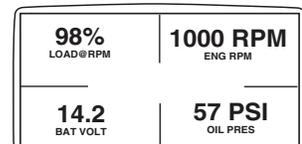
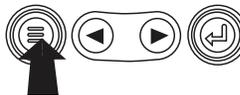
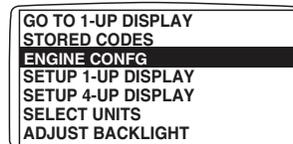
- Use the "Arrow Buttons" to scroll through the engine configuration data.



- Touch the "Menu Button" to return to the main menu.

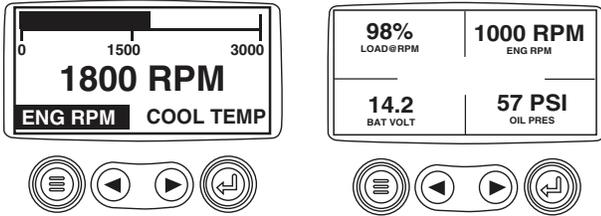


- Touch the "Menu Button" to exit the Main menu and return to the engine parameter display.



Faults and Warnings - Auxiliary Gage Fault

1. During normal operation the single or four parameter screen will be displayed.



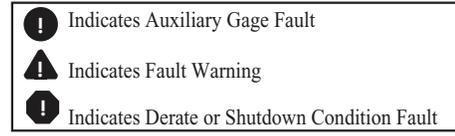
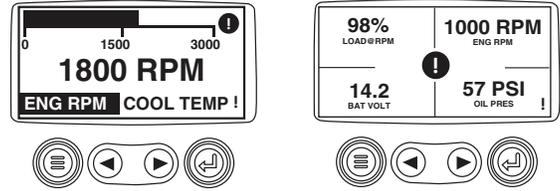
2. The PVA Series of auxiliary gages can be attached to the PowerView. These auxiliary gages communicate with the Modbus master PowerView via a daisy-chained RS-485 port. If at any time during system initialization or normal operation an auxiliary gage should fail, the single or four parameter screen will be replaced with the “MLink Gage Fault” message.



3. To acknowledge and “Hide” the fault and return to the single or four parameter display, touch the “Enter Button”.



4. The display will return to the single or four parameter screen.

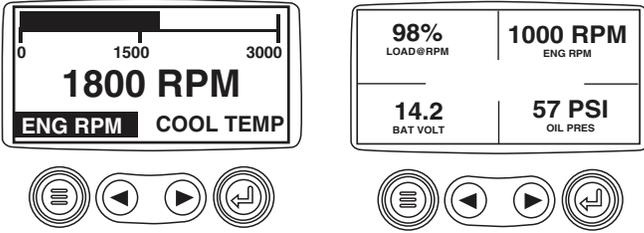


5. Touching the “Enter Button” will redisplay the hidden fault. Touching the “Enter Button” once again will hide the fault and return the screen to the single or four parameter display. NOTE: The fault can only be cleared by correcting the cause of the fault condition.

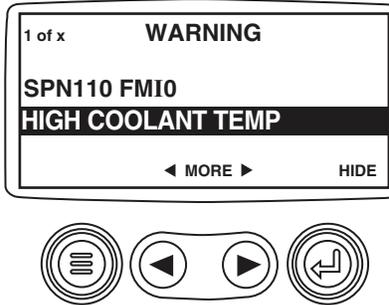


Active Fault Codes

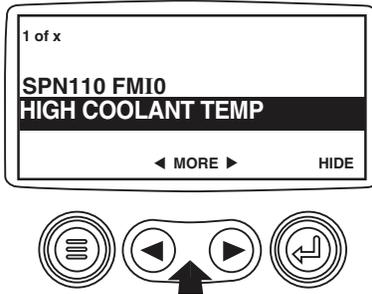
1. During normal operation the single or four parameter screen will be displayed.



2. When the PowerView receives a fault code from an engine control unit the single or four parameter screen will be replaced with the "Active Fault Codes" message.



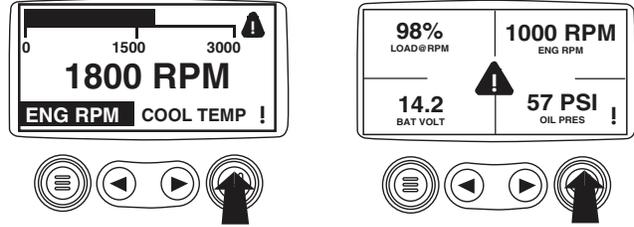
3. If the word "MORE" appears above the "Arrow Buttons" there are more active fault codes that may be viewed. Use the "Arrow Buttons" to scroll to the next "Active Fault Code".



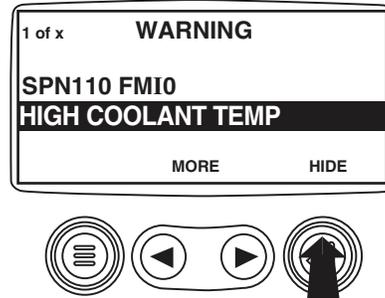
4. To acknowledge and "Hide" the fault and return to the single or four parameter display touch the "Enter Button".



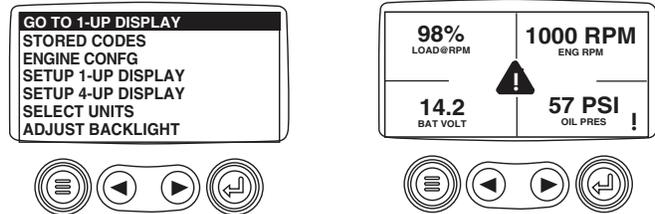
5. The display will return to the single or four parameter display, but the display will contain the "Active Fault" warning icon. Touching the "Enter Button" will redisplay the hidden fault.



6. Touching the "Enter Button" once again will hide the fault and return the screen to the single or four parameter display.

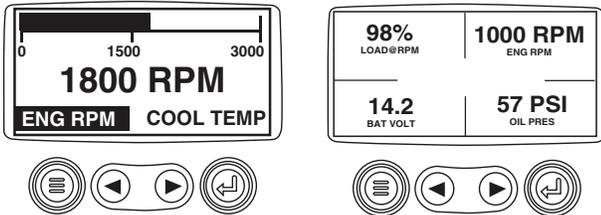


7. The Single or Four parameter screen will display the fault icon until the fault condition is corrected. NOTE: Ignoring active fault codes could result in severe engine damage.

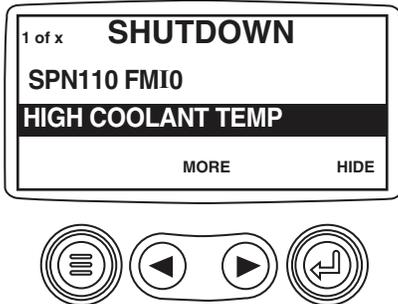


Shutdown Codes

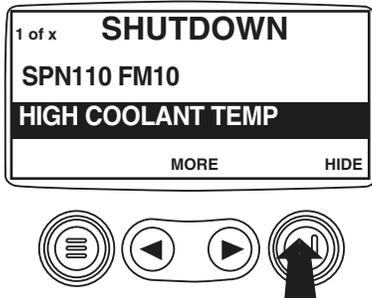
1. During normal operation the single or four parameter screen will be displayed.



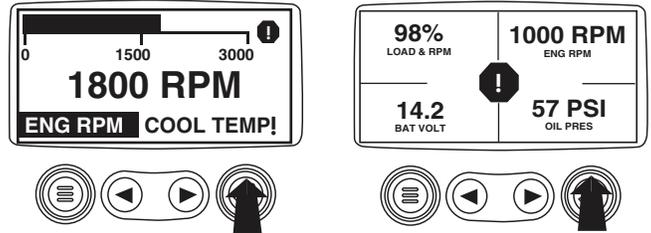
2. When the PowerView receives a severe fault code from an engine control unit the single or four parameter screen will be replaced with the “Shutdown!” message.



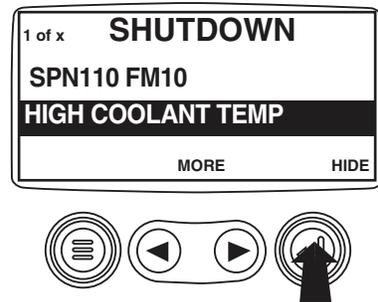
3. To acknowledge and “Hide” the fault and return to the single or four parameter display touch the “Enter Button”.



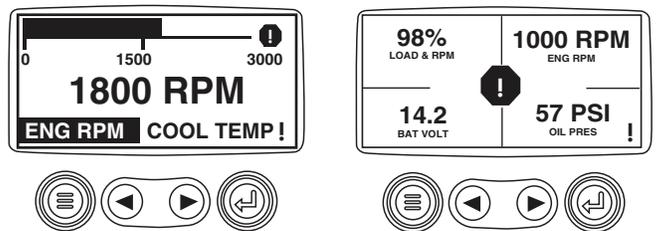
4. The display will return to the single or four parameter display, but the display will contain the “Shut Down” icon. Touching the “Enter Button” will redisplay the hidden fault.



5. Touching the “Enter Button” once again will hide the fault and return the screen to the single or four parameter display.

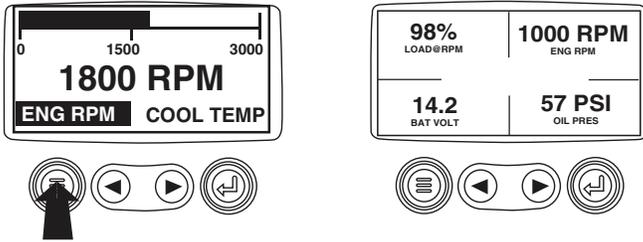


6. The Single or Four parameter screen will display the fault icon until the fault condition is corrected. NOTE: Ignoring active fault codes could result in severe engine damage.

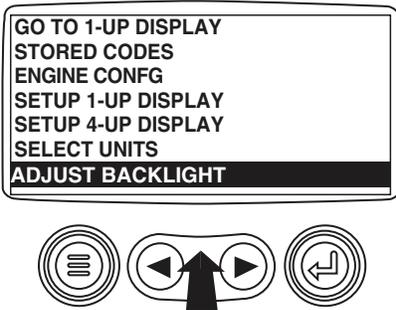


Back Light Adjustment

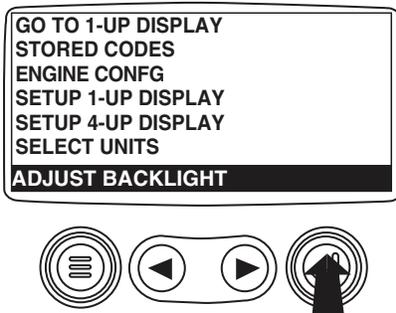
1. Starting at the single or four engine parameter display touch the "Menu Button".
4. Use the "Arrow Buttons" to select the desired backlight intensity.



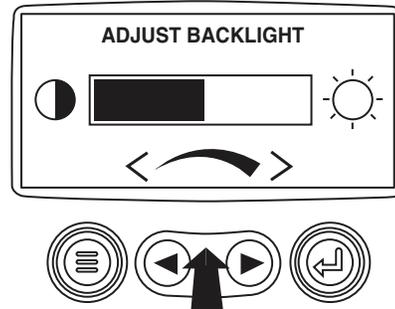
2. The main menu will pop up on the display. Use the "Arrow Buttons" to scroll through the menu until the "Adjust Backlight" is highlighted.



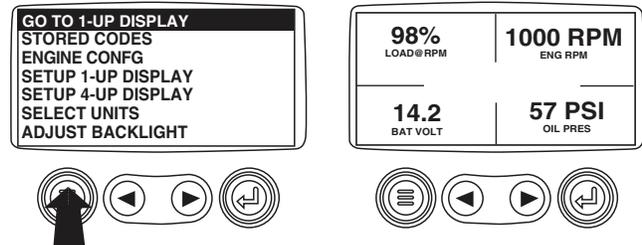
3. Once the "Adjust Backlight" menu item has been highlighted touch the "Enter Button" to activate the "Adjust Backlight" function.



5. Touch the "Menu Button" to return to the main menu.

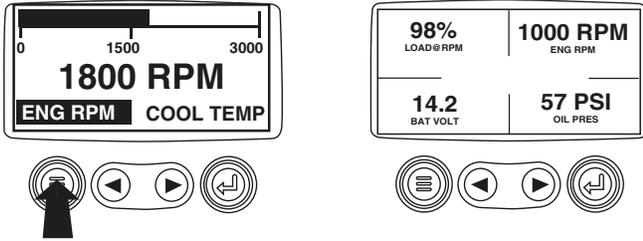


6. Touch the "Menu Button" to exit the Main menu and return to the engine parameter display.

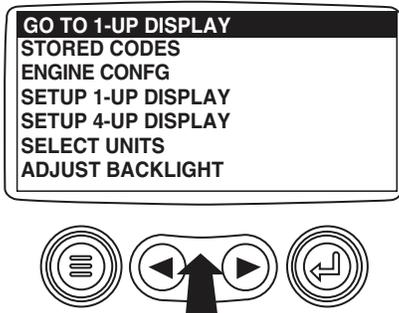


Contrast Adjustment

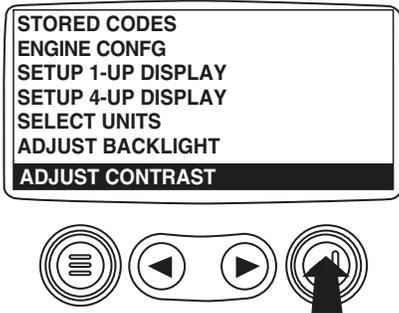
- Starting at the single or four engine parameter display, touch the “Menu Button”.
- Use the “Arrow Buttons” to select the desired contrast intensity.



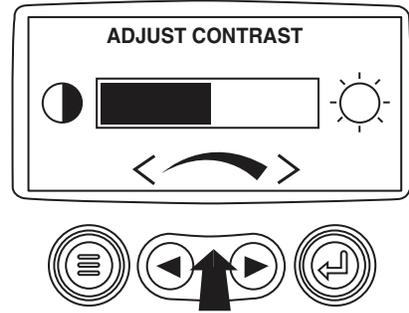
- The main menu will pop up on the display. Use the “Arrow Buttons” to scroll through the menu until “Adjust Contrast” is highlighted.



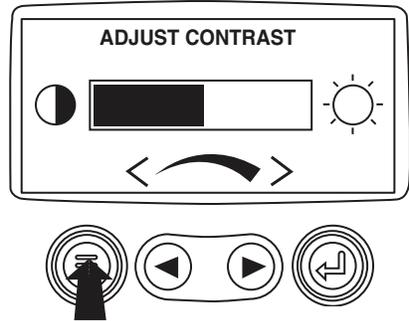
- Once the “Adjust Contrast” menu item has been highlighted touch the “Enter Button” to activate the “Adjust Contrast” function.



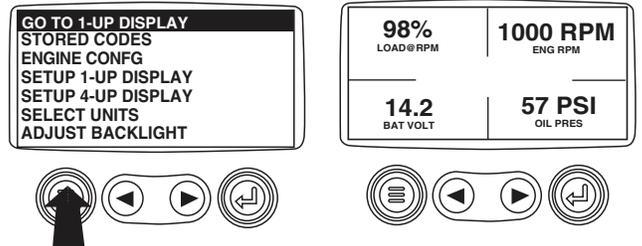
- Use the “Arrow Buttons” to select the desired contrast intensity.



- Touch the “Menu Button” to return to the main menu.

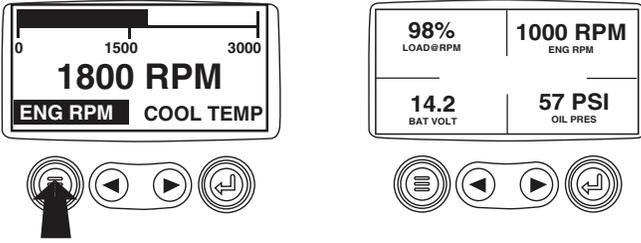


- Touch the “Menu Button” to exit the Main menu and return to the engine parameter display.



Select Units

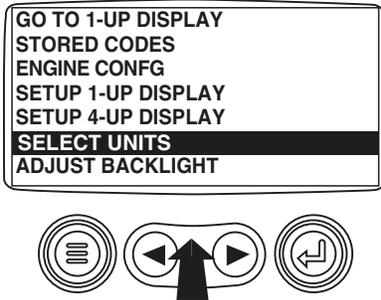
- Starting at the single or four engine parameter display touch the "Menu Button".



- Touch the "Enter Button" to select the highlighted units.



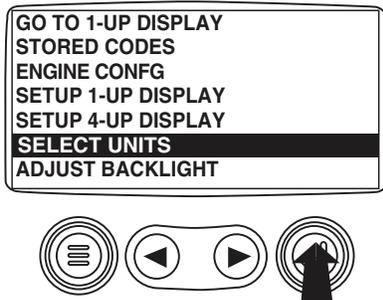
- The main menu will pop up on the display. Use the arrow buttons to scroll through the menu until the "Select Units" is highlighted.



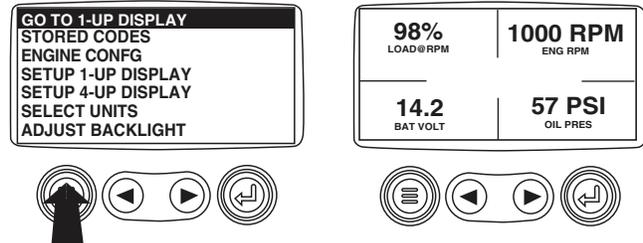
- Touch the "Menu Button" to return to the "Main Menu".



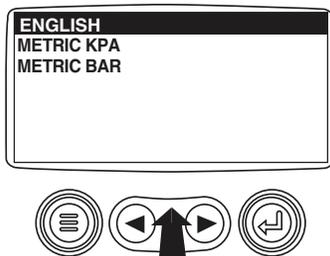
- Once the "Select Units" menu item has been highlighted touch the "Enter Button" to access the "Select Units" function.



- Touch the "Menu Button" to exit the Main menu and return to the engine parameter display.

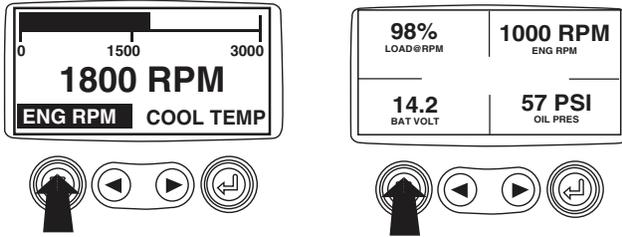


- Use the arrows to highlight the desired units. "English" for Imperial units i.e. PSI, °F or Metric kPa, Metric Bar for IS units i.e. kPa, Bar, °C.

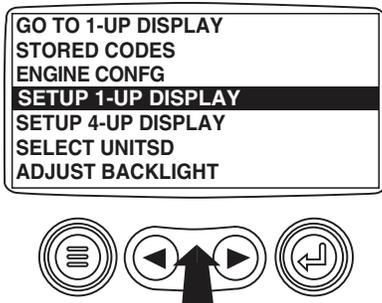


Setup 1-Up Display

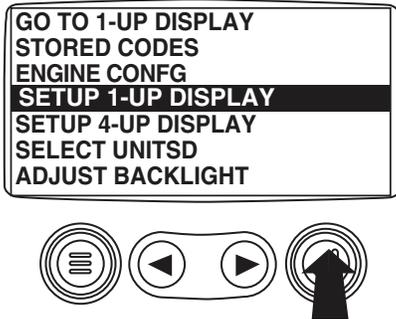
- Starting at the single engine parameter display, touch the “Menu Button”.



- The main menu will pop up on the display. Use the “Arrow Buttons” to scroll through the menu until the “Setup 1-up Display” is highlighted.



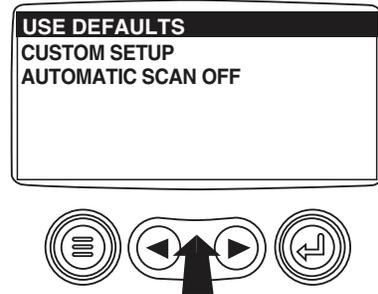
- Once the “Setup 1-up Display” menu item has been highlighted touch the “Enter Button” to access the “Setup 1-up Display” function.



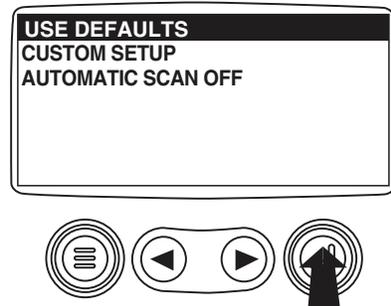
- Three options are available for modification of the 1-Up display.

- a) **Use Defaults** – This option contains a set of engine parameters: Engine Hours, Engine RPM, System Voltage, Battery Voltage, % Engine Load at Current RPM, Coolant Temperature, Oil Pressure.
- b) **Custom Setup** – This option allows for the modification of what parameter, the number of parameters, and the order in which the parameters are being displayed.
- c) **Automatic Scan** – Selecting the scan function will cause the 1-Up Display to scroll through the selected set of parameters one at a time, momentarily pausing at each.

- Use Defaults** - To select “Use Defaults” use the arrow buttons to scroll to and highlight “Use Defaults” in the menu display..

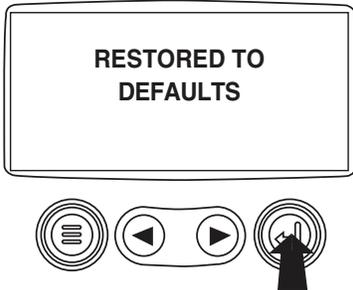


- Touch the “Enter Button” to activate the “Use Defaults” function.

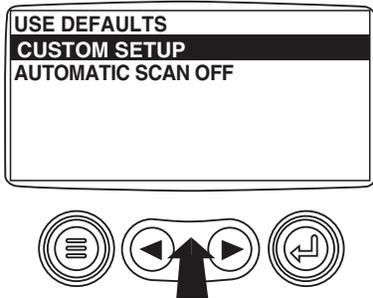


Setup 1-Up Display (Cont)

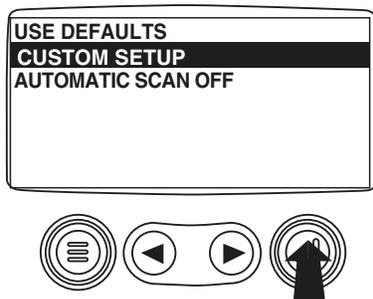
7. A message indicating the “Single Engine” parameter display parameters are reset to the factory defaults will be displayed, then the display will return to the “Custom Setup” menu.



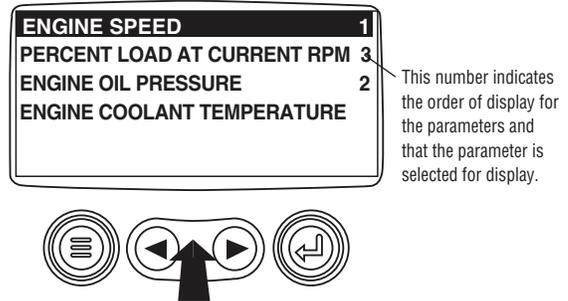
8. **Custom Setup** - To perform a custom setup of the 1-Up Display, use the arrow buttons to scroll to and highlight “Custom Setup” on the display.



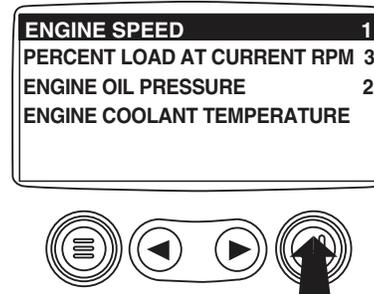
9. Touching the “Enter Button” will display a list of engine parameters.



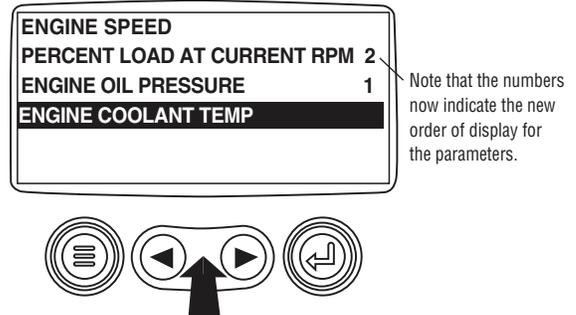
10. Use the “Arrow Buttons” to scroll to and highlight a selected parameter (parameter with a # symbol to right of it).



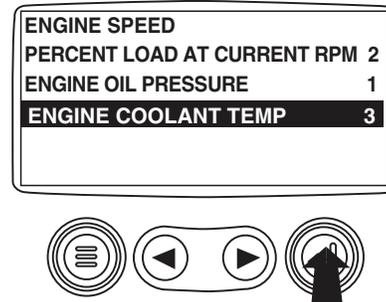
11. Touch the “Enter Button” to deselect the selected parameter removing it from the list of parameters being displayed on the 1-up display.



12. Use the “Arrow Buttons” to scroll and highlight the desired parameter that has not been selected for display.



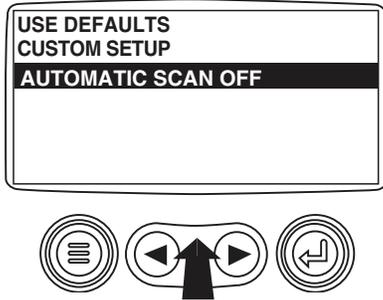
13. Touch the “Enter button” to select the highlighted parameter for inclusion in the Single Engine Parameter Display.



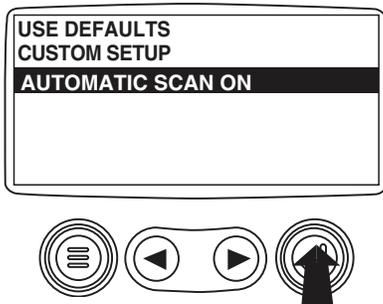
Setup 1-Up Display (Cont)

14. Continue to scroll and select additional parameters for the custom 1-Up Display. Touch the "Menu button" at any time to return to the "Custom Setup" menu.

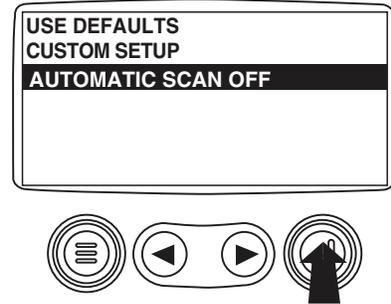
15. **Automatic Scan** - Selecting the scan function will cause the 1-Up Display to scroll through the selected set of parameters one at a time. Use the "Arrow Buttons" to scroll to the "Automatic Scan" function.



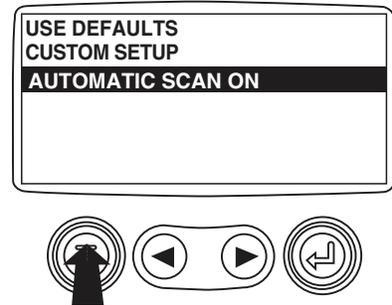
16. Touching the "Enter Button" toggles the "Automatic Scan" function on.



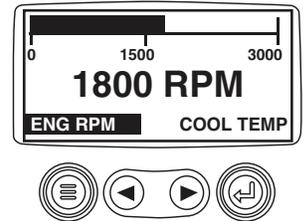
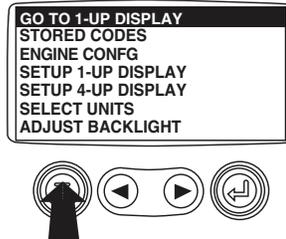
17. Touching the "Enter Button" again toggles the "Automatic Scan" function off.



18. Once the "Use Defaults", "Custom Setup" and "Automatic Scan" functions have been set, touch the "Menu Button" to return to the main menu.

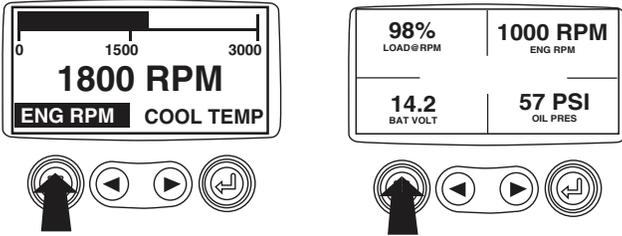


19. Touch the "Menu Button" to exit the Main menu and return to the engine parameter display.

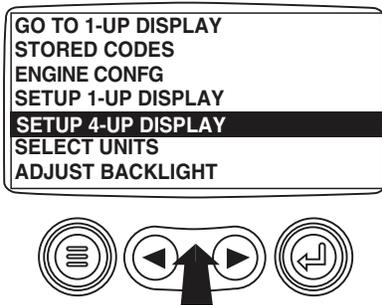


Setup 4-Up Display

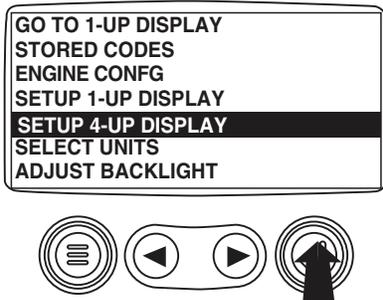
- From the single or four engine parameter display touch the “Menu Button”.



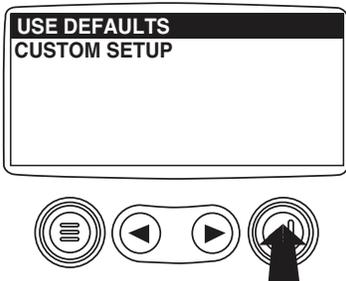
- The main menu will pop up on the display. Use the “Arrow Buttons” to scroll through the menu until the “Setup 4-Up Display” is highlighted.



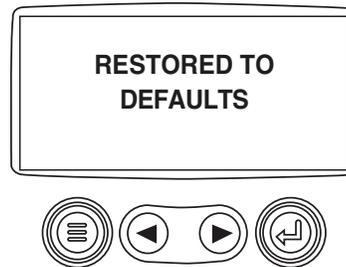
- Once the “Setup 4-Up Display” menu item has been highlighted touch the “Enter Button” to activate the “Setup 4-Up Display” menu.



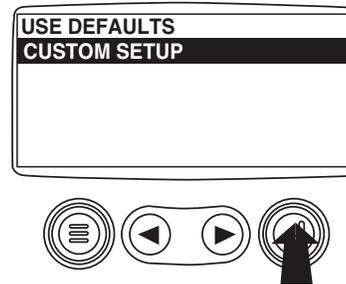
- Touch the “Enter Button” to activate the “Use Defaults” function. This action will reset the unit to the factory default.



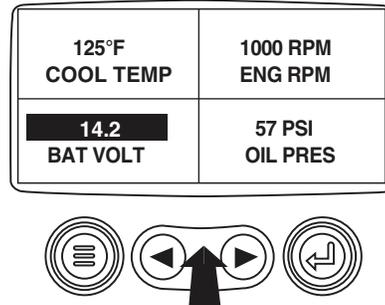
- The “Use Defaults” screen will be displayed during the resetting period then will automatically return to the “Setup 4-Up Display” menu.



- Select the “4-Up Custom Setup” from the “4-Up Setup” menu.



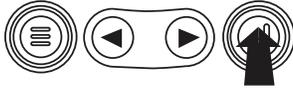
- The quadrant with the backlit parameter value is the current selected parameter. Use the “Arrow Buttons” to highlight the parameter value in the quadrant you wish to place a new parameter.



Setup 4-Up Display (Cont)

8. Touch the “Enter Button” and a list of parameters will appear.

125°F COOL TEMP	1000 RPM ENG RPM
14.2 BAT VOLT	57 PSI OIL PRES



9. The parameter that is highlighted is the selected parameter for the screen. Use the “Arrow Buttons” to highlight the new parameter to be placed in the quadrant selected in the previous screen.

ENGINE SPEED	3
ENGINE HOURS	
ENGINE COOLANT TEMPERATURE	1
BATTERY POTENTIAL	
ENGINE OIL TEMPERATURE	2
ENGINE OIL PRESSURE	4

The number to the right of the parameter indicates the quadrant in which it is displayed.
1. = Upper Left Quadrant
2. = Lower Left Quadrant
3. = Upper Right Quadrant
4. = Lower Right Quadrant



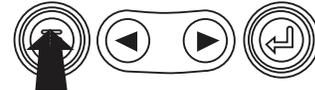
10. Touch the “Enter Button” to change the selected parameter in the quadrant to the new parameter.

ENGINE SPEED	3
ENGINE HOURS	
ENGINE COOLANT TEMPERATURE	1
BATTERY POTENTIAL	2
ENGINE OIL TEMPERATURE	2
ENGINE OIL PRESSURE	4



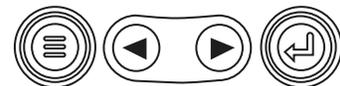
11. Use the “Menu Button” to return to the “4-UP Custom Setup” screen.

ENGINE SPEED	3
ENGINE HOURS	
ENGINE COOLANT TEMPERATURE	1
BATTERY POTENTIAL	
ENGINE OIL TEMPERATURE	2
ENGINE OIL PRESSURE	4



12. The parameter in the selected quadrant has changed to the parameter selected in the previous screen.

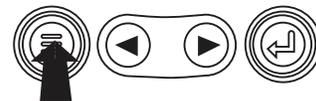
125°F COOL TEMP	1000 RPM ENG RPM
143°F OIL TEMP	57 PSI OIL PRES



13. Repeat the parameter selection process until all spaces are filled.

14. Touch the “Menu Button” to return to the main menu.

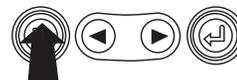
125°F COOL TEMP	1000 RPM ENG RPM
143°F OIL TEMP	57 PSI OIL PRES



15. Touch the “Menu Button” to exit the Main menu and return to the engine parameter display.

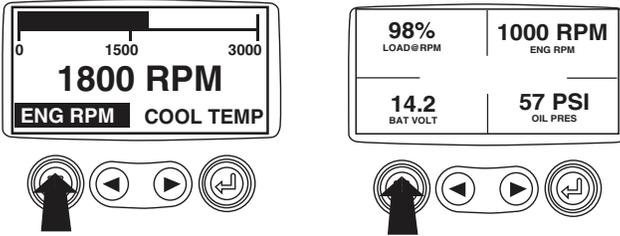
GO TO 1-UP DISPLAY
STORED CODES
ENGINE CFG
SETUP 1-UP DISPLAY
SETUP 4-UP DISPLAY
SELECT UNITS
ADJUST BACKLIGHT

125% COOL TEMP	1000 RPM ENG RPM
143°F OIL TEMP	57 PSI OIL PRES

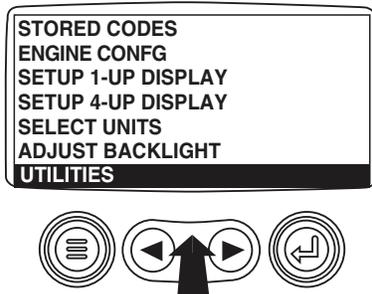


Utilities (Information and troubleshooting)

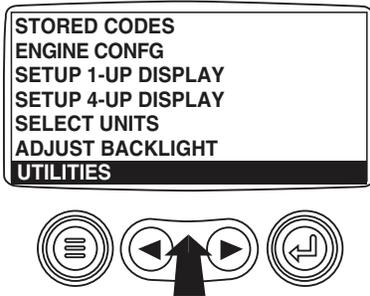
- Starting at the single or four engine parameter display, touch the "Menu button".



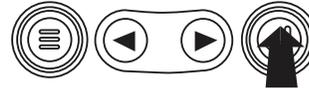
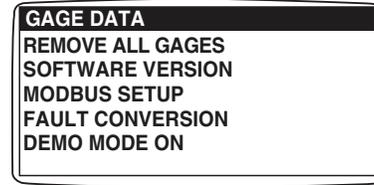
- The main menu will be displayed. Use the "Arrow buttons" to scroll through the menu until the "Utilities" is highlighted.



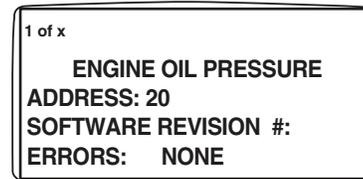
- Once the "Utilities" menu item has been highlighted, touch the "Enter Button" to activate the "Utilities" functions.



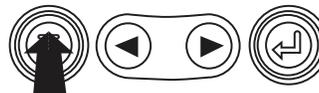
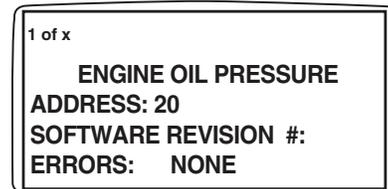
- Touch "Select" to enter the "Gage Data" display. When "Gage Data" is selected the PowerView will communicate with the analog gages at a fixed rate of 38.4k Baud, 8 data bits, no parity check, 1 stop bits, half duplex.



- Use the "Arrow buttons" to scroll through the items or touch "Menu" to return to the "Utilities" menu.



- Touch "Menu Button" to return to the "Utilities" menu.



Utilities (Information and troubleshooting, cont)

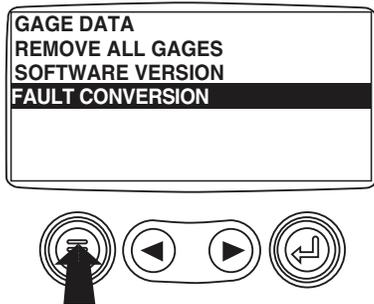
- Use the “Arrows” to highlight “Remove All Gages”. Touch “Select” to clear gage data from memory. It takes a moment to clear all gages.



- When the gage data has cleared, the display automatically returns to the “Utilities” menu. Scroll to “Software Version”. Touch “Select” to view the software version currently in the PowerView.



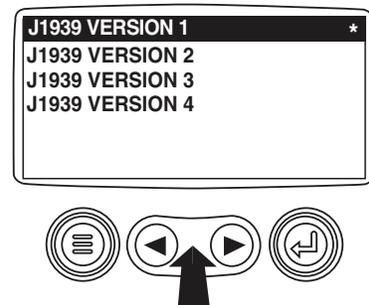
- Touch “Menu” to return to “Utilities”. Highlight “Fault Conversion” using the “Arrows”. Touch “Select” to enter the Fault conversion menu.



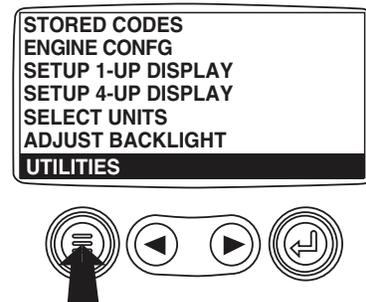
- Use the “Arrows” to scroll and highlight the version then touch “Select” and an asterisks appears to the right of the selection.

NOTE: There are four (4) different methods for converting fault codes. The PowerView always looks for J1939 Version 4 and can be set to use one of the 3 other J1939 versions. Most engine ECU’s use Version 4, therefore in most cases adjustment of this menu option will not be required.

Upon receiving an unrecognizable fault, change to a different J1939 Version. If the fault SPN does not change when the version is changed, the ECU generating the fault is using Fault Conversion method 4. If the SPN number does change but is still unrecognizable, try changing to another J1939 Version not yet used and continue to check the SPN number.

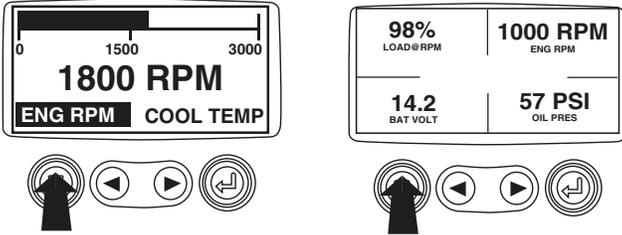


- Touch the “Menu” button to return to “Utilities” menu. Touch the “Menu” button again to to return to the “Main” menu.

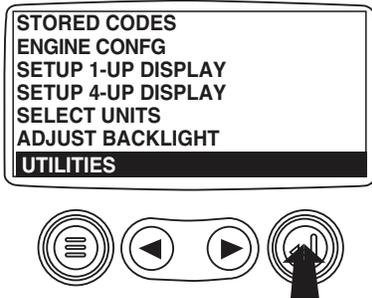


MODBUS Setup

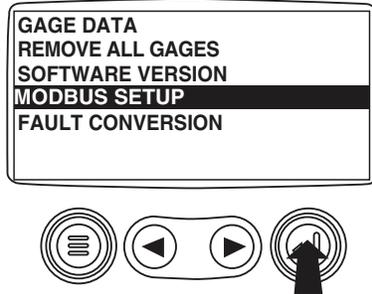
- Starting at the single or four engine parameter display, touch the "Menu button".



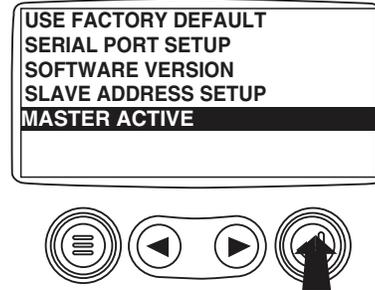
- The main menu will be displayed. Use the "Arrow buttons" to scroll through the menu until the "Utilities" is highlighted, then touch "Enter".



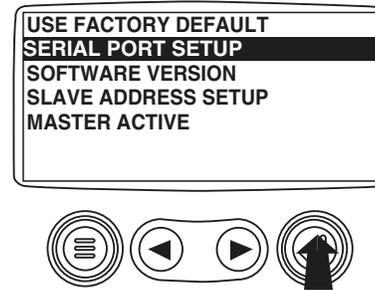
- Once in the "Utilities" menu use the "Arrows" to scroll through the menu until the "Modbus Setup" menu is highlighted, then touch "Enter".



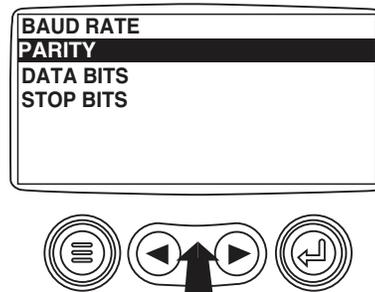
- Use the "Arrows" to scroll down to and highlight either the "Slave Active or Master Active" modes. Touch the "Enter" button to toggle between master and slave.



- Use the "Arrows" to scroll to the "Serial Port" menu to highlight it, then touch "Enter".



- Use the "Arrow" button to scroll to each selection to configure the MODBUS values for your application.



- When finished, touch "Menu" to return to the previous screen.