POWERVIEW

Installation and Operations Manual MURPHY

Please read the following information before installing. A visual inspection of this product for damage during shipping is recommended before mounting. It is your responsibility to have a qualified person install this unit.

GENERAL INFORMATION

WARNING

BEFORE BEGINNING INSTALLATION OF THIS MURPHY PRODUCT
- ✔ **Disconnect all electrical power to the machine.**
- ✔ **Make sure the machine cannot operate during installation.**
- ✔ **Follow all safety warnings of the machine manufacturer.**
- ✔ **Read and follow all installation instructions.**

Description

The PowerView is a powerful new display in a line of components manufactured by FWMurphy as part of its J1939 MurphyLink™† Family. The J1939 MurphyLink™ Family of products have been developed to meet the needs for instrumentation and control on electronically controlled engines communicating using the SAE J1939 Controller Area Network (CAN).

The PowerView System is comprised of the PowerView and the Mlink™ PowerView Gages. The PowerView is a multifunction tool that enables equipment operators to view many different engine or transmission parameters and service codes. The system provides a window into modern electronic engines and transmissions. 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.

The enhanced alarm indication has ultra bright alarm and shutdown LEDs (amber & red). It has a wide operating temperature range of -40 to +85º C (-40 to185º F), display viewing -40 to +75º C (-40 to 167º F), and increased environmental sealing to +/- 5 PSI (± 34kPa). It also features Deutsch DT style connectors molded into the case and fits quickly and easily into existing 2-1/16 in. (52 mm) gage opening with little effort.

Other components in the system are microprocessor-based Mlink™ PowerView Gages for displaying critical engine data broadcast by an electronic engine or transmission's Engine Control Unit (ECU): engine RPM, oil pressure, coolant temperature, system voltage, etc. and a combination audible alarm and relay unit for warning and shutdown annunciation. Up to 32 components may be linked to the PowerView using a simple daisy chain wire connection scheme using RS485. The PowerView and all connected components can be powered by 12- or 24-volt systems.

Warranty

A limited warranty on materials and workmanship is given with this FWMurphy product. A copy of the warranty may be viewed or printed by going to www.fwmurphy.com/warranty.html

† *MurphyLink™ is a registered trademark of FWMurphy. All other trademarks and service marks used in this document are the property of their respective owners.*

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

Specifications

Display: 1.3 x 2.6 in. (33 x 66 mm), 64 x 128 pixels.

Operating Voltage: 8 VDC minimum to 32 VDC max.

Reversed Polarity: Withstands reversed battery terminal polarity indefinitely within operating temperatures.

Operating Temperature: -40 to +85ºC (-40 to185ºF).

Display Viewing Temperature: -40 to +75ºC (-40 to 167ºF).

Storage Temperature: -40 to +85ºC (-40 to185ºF).

Environmental Sealing: IP68, +/- 5 PSI (+/- 34.4 kPa).

Power Supply Operating Current: (@ 14 VDC)= 52 mA minimum; 268 mA maximum (LCD heater on).

CAN BUS: SAE J1939 Compliant.

Case: Polycarbonate / Polyester.

Clamp: Polyester (PBT).

Connectors: 6-Pin Deutsch DTO6 Series.

Maximum Panel Thickness: 3/8 in. (9.6 mm).

Mounting Hole: 2.062 inch (52 mm) in diameter.

Auxiliary Communications: Either:
Gages: One (1) RS485 port, MODBUS RTU master.
MODBUS: One (1) RS485 port, MODBUS RTU slave, selectable baud rate; 9600; 19.2K; 38.4K.

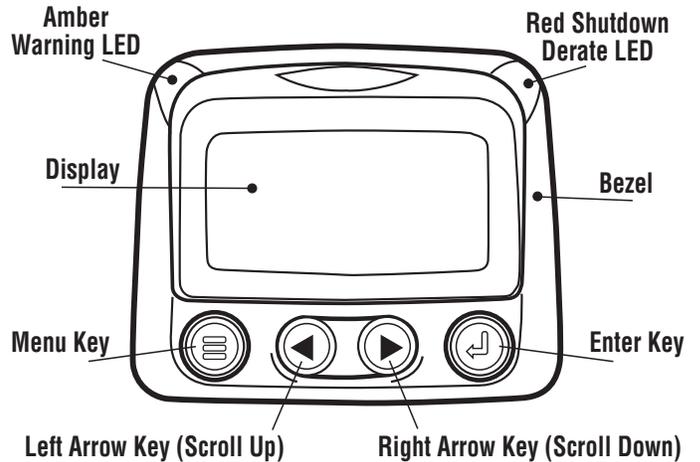**Potentiometer (External Dimmer)Input:** 1K ohm, 1/4 W

Shipping Weights (all models): 1/2 lb. (225 g.)

Shipping Dimensions (all models): 6 x 6 x 6 in. (152 x 152 x 152 mm).

Table of Contents

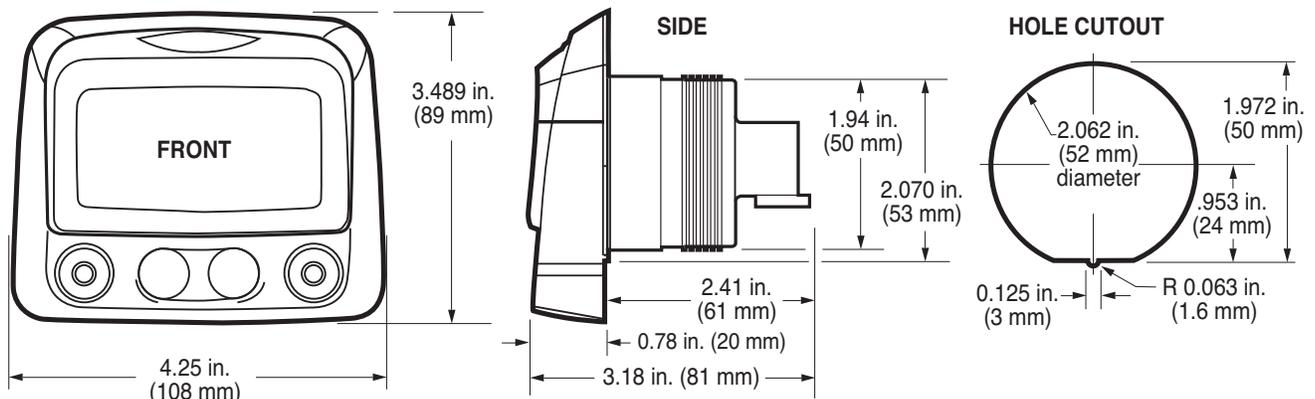## Faceplate Features

Keypad Functions

The keypad on the PowerView is a capacitive <u>touch</u> 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.

Typical Mounting Dimensions

Typical Quick-Connect Diagram

To Engine ECU

To Battery Power

PVW-CH

PVW-PH

Customer provided wire harness or CAN extension harnesses or power extension harnesses.

External Dimmer Wire 24 inch.

CAN_SHLD
CAN_LO
CAN_HI

POWERVIEW PV100

Last PVA Gage or PVAA Audible Alarm

Terminating Resistor PVJR

OR

To PVAA Audible Alarm

To optional external device

Relay N.O.
Relay N.C.
Ext. Sonalert
Relay Comm.

Optional PVW-A wire harness (includes terminating resistor)

External Dimmer
B+
GRND

A B

PVA Gage

Next PVA Gage

Wire harness PVW-J

Wire harness PVW-P

Wire harness PVW-J

Wire harness PVW-J

PowerView Unit Back View
Deutsch DTO6-6S Style Connections

Plug A

PIN 3 CAN_LO
PIN 4 CAN_SHLD
PIN 2 CAN_HI
PIN 5 Dimmer Potentiometer
PIN 1 V+
PIN 6 GRND

A   B

Plug B

PIN 3 RS485+
PIN 4 RS485−
PIN 1 V+
PIN 6 GRND

Recommended Connectors:
Body: Deustch DTO6-6S
Wedge Lock: W6S
Terminals: 0462-201-16141
Sealing Plug: 114017
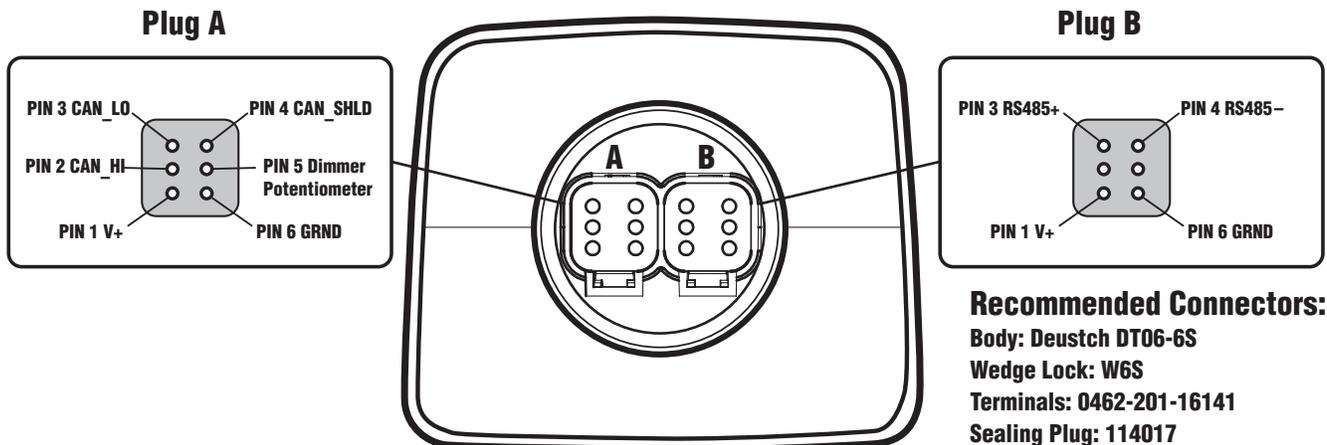
IMPORTANT: To eliminate external interference: RS485(+) and RS485(-) should be twisted pair cable or twist wires together, one twist per inch minimum. CAN_L, CAN_H and CAN Shield should be approved J1939 CAN bus cable (CAN wire for example: RADOX plug and play cable, from Champlain cable). (RS485 wire for example: BELDEN 9841 or 3105A).

PowerView Deutsch DT06-6S Style Unit to PVA Gage

Note 1: Place Resistor between CAN_H and CAN_L Line near PowerView (included in PVW-P or factory purchased panels).

Note 2: Use SAE J1939 compliant wiring or equipment.

Note 3: Electronic dimmer switch recommended with 4A, capacity or heavy duty rheostat switch, 1000 ohm, 0.25 watt.

Note 4: Only use 120 ohm characteristic impedance cable, ex Belden 9841.

Note 5: RS485 shield connected to PowerView end only.

Note 6: Place Resistor at End of Line on last PVA gage. (Included for factory purchased panels.)

Note 7: If a backlight dimmer is not used, connect the blue backlight wire to ground. Do not leave the blue backlight wire unconnected.

PowerView Deutsch DT06-6S Style Unit to MODBUS Output

Note 1: Place Resistor between CAN_H and CAN_L Line near PowerView (included in PVW-P or factory purchased panels).

Note 2: Use SAE J1939 compliant wiring or equipment.

Note 3: Electronic dimmer switch recommended with 4A, capacity or heavy duty rheostat switch, 1000 ohm, 0.25 watt.

Note 4: Only use 120 ohm characteristic impedance cable, ex Belden 9841.

Note 5: RS485 shield connected to PowerView end only.

Note 6: Place Resistor at End of Line. (Included for factory purchased panels.)

Note 7: If a backlight dimmer is not used, connect the blue backlight wire to ground. Do not leave the blue backlight wire unconnected.

Note 8: PVA gages cannot be used with the MODBUS feature.

For a complete listing of MODBUS Registers visit our website at www.fwmurphy.com

PowerView Menus (First Time Start Up)

1. When power is first applied to the PowerView, the "Logo" is displayed.
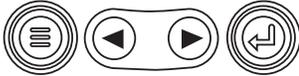
2. The "Wait to Start" message will be displayed for engines with a pre-startup sequence. Once the "Wait to Start" message is no longer displayed the operator may start the engine. Note: Displays only when SAE J1939 message is supported by engine manufacturer.

WAIT TO
START
PREHEAT
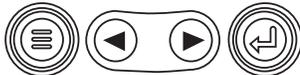
3. Once the engine has started the single engine parameter is displayed.

0   1500   3000
1800 RPM
ENG RPM   COOL TEMP
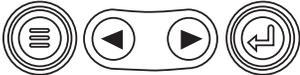
Main Menu Navigation

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

0   1500   3000
1800 RPM
ENG RPM   COOL TEMP

98% LOAD@RPM	1000 RPM ENG RPM
14.2 BAT VOLT	57 PSI OIL PRES
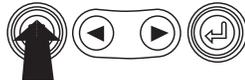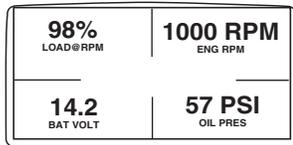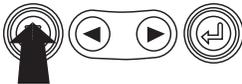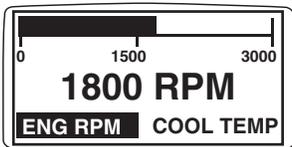
2. The first seven items of the "Main Menu" will be displayed. Touching the "Arrow Buttons" will scroll through the menu selection.

GO TO 1-UP DISPLAY
LANGUAGES
STORED CODES
ENGINE CONF
SETUP 1-UP DISPLAY
SETUP 4-UP DISPLAY
SELECT UNITS
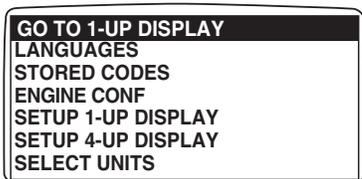
3. Touching the right arrow button will scroll down to reveal the last items of "Main Menu" screen highlighting the next item down.

ADJUST BACKLIGHT
ADJUST CONTRAST
UTILITIES
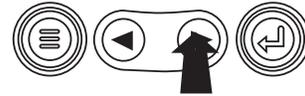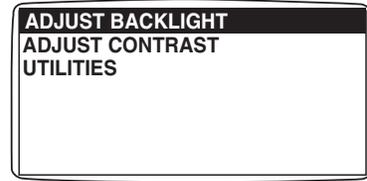
4. Touch the "Arrows" to scroll to the desired menu item or touch "Menu" to exit the Main menu and return to the engine parameter display.

GO TO 1-UP DISPLAY
LANGUAGES
STORED CODES
ENGINE CONF
SETUP 1-UP DISPLAY
SETUP 4-UP DISPLAY
SELECT UNITS

98% LOAD@RPM	1000 RPM ENG RPM
14.2 BAT VOLT	57 PSI OIL PRES
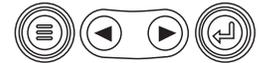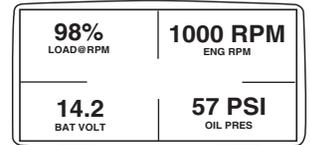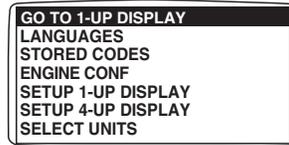
Selecting a Language

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

GO TO 1-UP DISPLAY
LANGUAGES
STORED CODES
ENGINE CONF
SETUP 1-UP DISPLAY
SETUP 4-UP DISPLAY
SELECT UNITS
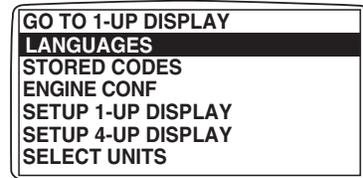
2. The language choices will be displayed. Use the "Arrow" buttons to scroll through the selections and touch "Enter" to make a selection.

ENGLISH   *
ESPANOL
FRANÇAIS
DEUTSCH
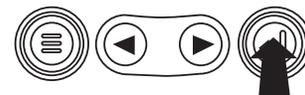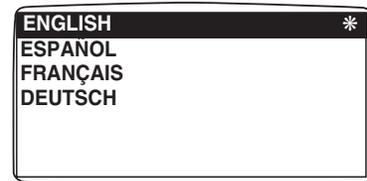
3. Now that you have selected the language, touch the "Menu" button to return to the main menu display.

Stored Fault Codes

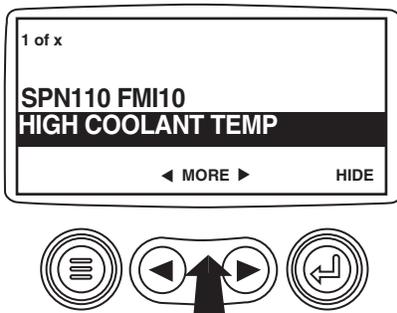**1**. Starting at the single or the four engine parameter display touch the "Menu button".
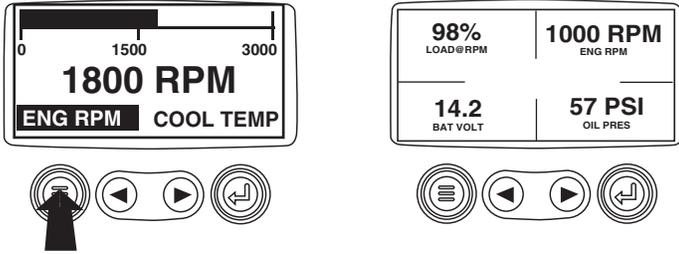
2. The main menu will pop up on the display. Use the "Arrow Buttons" to scroll through the menu until the Stored Fault Codes is highlighted.
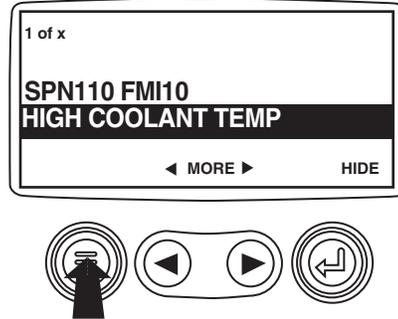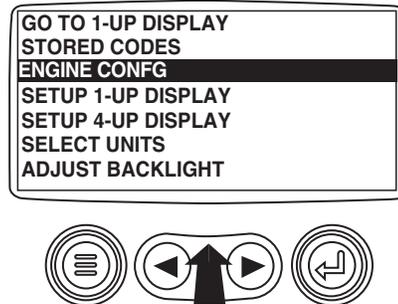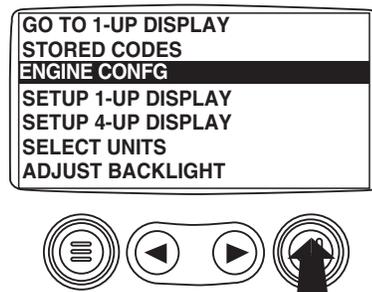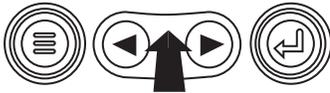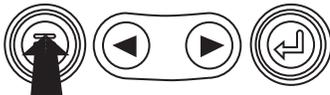
```
GO TO 1-UP DISPLAY
STORED CODES
ENGINE CONFG
SETUP 1-UP DISPLAY
SETUP 4-UP DISPLAY
SELECT UNITS
ADJUST BACKLIGHT
```
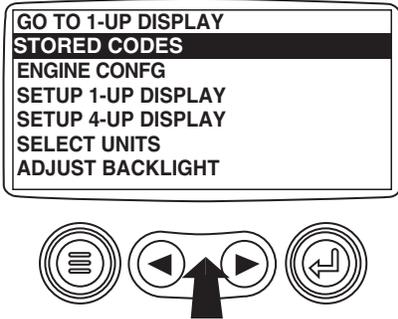

3 Once the "Stored Fault Codes" menu item has been highlighted touch the "Enter Button" to view the "Stored Fault Codes" (when applicable, consult engine or transmission manufacturer for SAE J1939 supported parameters).

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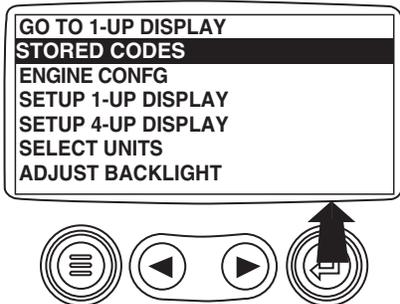

4. If the word "MORE" appears above the "Arrow Buttons" there are more stored fault codes that may be viewed. Use the "Arrow Buttons" to scroll to the next Stored Diagnostic Code.

```
1 of x

SPN110 FMI10
HIGH COOLANT TEMP

         ◄ MORE ►            HIDE
```


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

```
1 of x

SPN110 FMI10
HIGH COOLANT TEMP

         ◄ MORE ►            HIDE
```


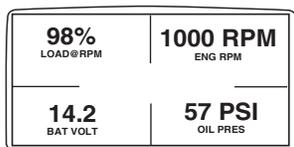**6**. Touch the "Menu Button" to exit the Main menu and return to the engine parameter display.

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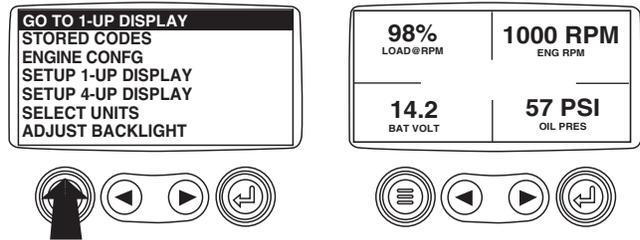

Engine Configuration Data

1. Starting at the single or four engine parameter display touch the "Menu Button".
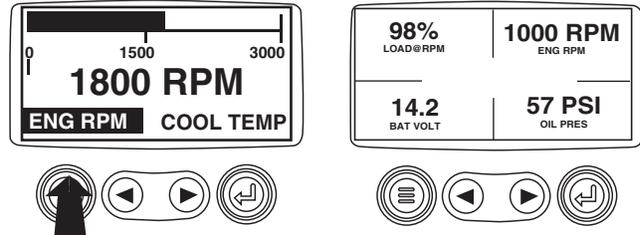
2. The main menu will pop up on the display. Use the "Arrow Buttons" to scroll through the menu until the "Engine Configuration" is highlighted.

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


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

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

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

ENGINE SPEED PT 1

1000 RPM

◄ MORE ►

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

ENGINE SPEED PT 1

1000 RPM

◄ MORE ►

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

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

98% LOAD@RPM	1000 RPM ENG RPM
14.2 BAT VOLT	57 PSI OIL PRES
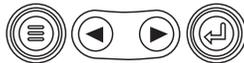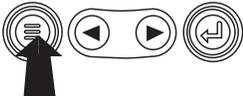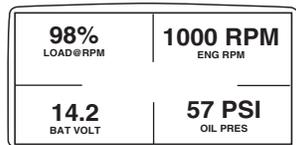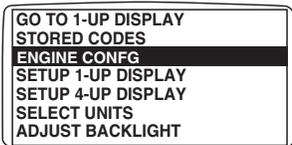
Faults and Warnings

Auxiliary Gage Fault

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

0   1500   3000
1800 RPM
ENG RPM   COOL TEMP

98% LOAD@RPM	1000 RPM ENG RPM
14.2 BAT VOLT	57 PSI OIL PRES
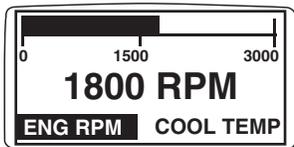
2. The PVA Series of auxiliary gages can be attached to the PowerView. These auxiliary gages communicate with the Modbus master PowerView via a daisy-chained RS-485 port. If at any time during system initialization or normal operation an auxiliary gage should fail, the single or four parameter screen will be replaced with the "MLink Gage Fault" message.
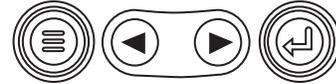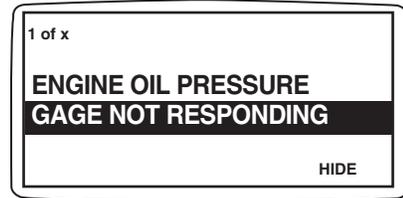
1 of x

ENGINE OIL PRESSURE
GAGE NOT RESPONDING

HIDE

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

1 of x

ENGINE OIL PRESSURE
GAGE NOT RESPONDING

HIDE

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

0   1500   3000
1800 RPM
ENG RPM   COOL TEMP !

98% LOAD@RPM	1000 RPM ENG RPM
14.2 BAT VOLT	57 PSI OIL PRES !

!	Indicates Auxiliary Gage Fault
⚠	Indicates Fault Warning
!	Indicates Derate or Shutdown Condition Fault
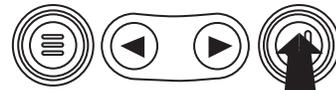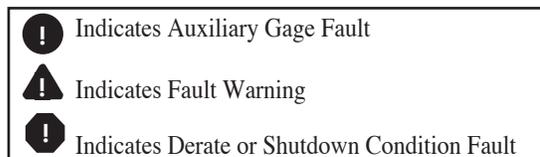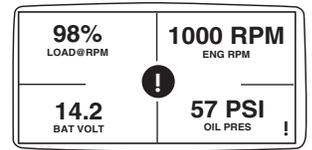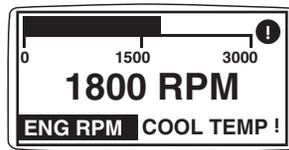
5. Touching the "Enter Button" will redisplay the hidden fault. Touching the "Enter Button" once again will hide the fault and return the screen to the single or four parameter display. NOTE: The fault can only be cleared by correcting the cause of the fault condition.
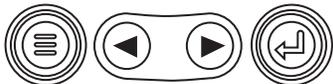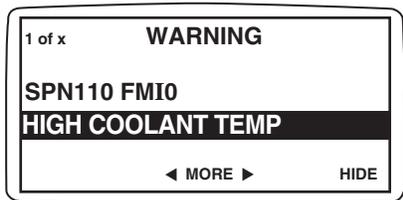
1 of x

**ENGINE OIL PRESSURE**
GAGE NOT RESPONDING
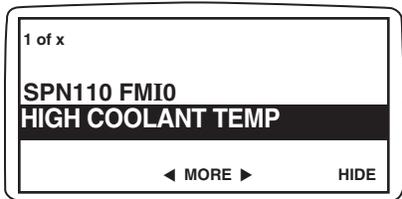
HIDE
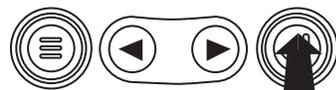
Active Fault Codes

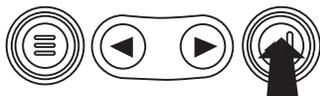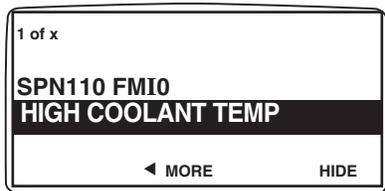**1**. During normal operation the single or four parameter screen will be displayed.
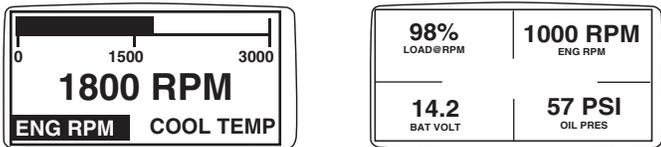
2. When the PowerView receives a fault code from an engine control unit the single or four parameter screen will be replaced with the "Active Fault Codes" message.

3. If the word "MORE" appears above the "Arrow Buttons" there are more active fault codes that may be viewed.
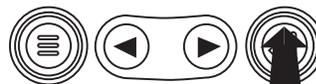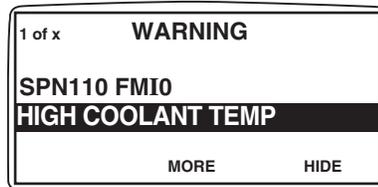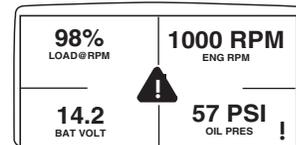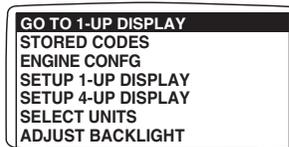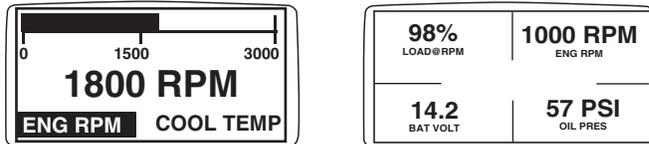Use the "Arrow Buttons" to scroll to the next "Active Fault Code"
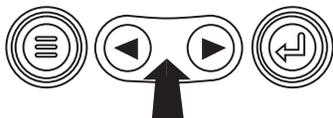
4. To acknowledge and "Hide" the fault and return to the single or four parameter display touch the "Enter Button".

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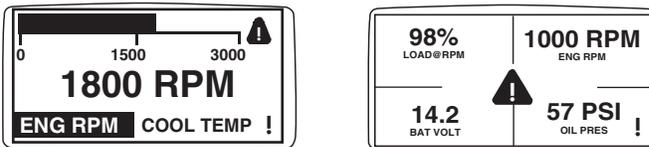
6. Touching the "Enter Button" once again will hide the fault and return the screen to the single or four parameter display.

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.
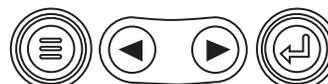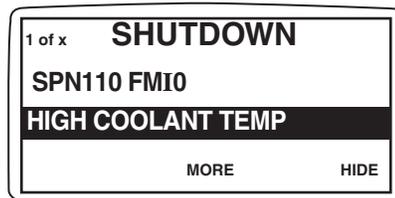
Shutdown Codes

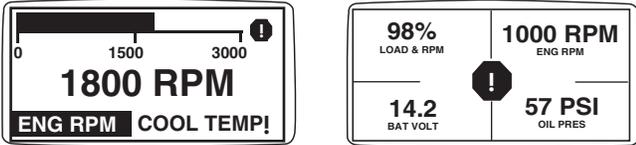**1**. During normal operation the single or four parameter screen will be displayed.

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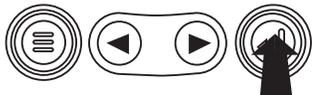
3. To acknowledge and "Hide" the fault and return to the single or four parameter display touch the "Enter Button".

```
1 of x        SHUTDOWN

SPN110 FM10

HIGH COOLANT TEMP

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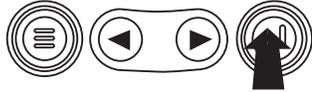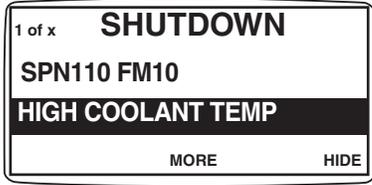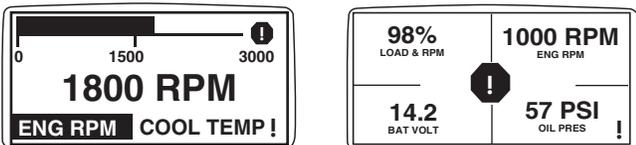
4. The display will return to the single or four parameter display, but the display will contain the "Shut Down" icon. Touching the "Enter Button" will redisplay the hidden fault.

```
0      1500      3000

1800 RPM

ENG RPM   COOL TEMP!
```

```
98%           1000 RPM
LOAD & RPM    ENG RPM

14.2          57 PSI
BAT VOLT      OIL PRES
```

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

```
1 of x        SHUTDOWN

SPN110 FM10

HIGH COOLANT TEMP

              MORE          HIDE
```
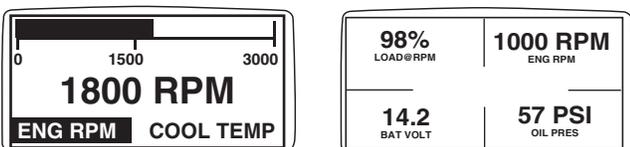
6. The Single or Four parameter screen will display the fault icon until the fault condition is corrected. NOTE: Ignoring active fault codes could result in severe engine damage.
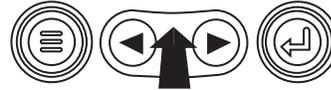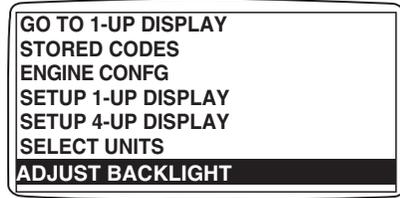
```
0      1500      3000

1800 RPM

ENG RPM   COOL TEMP !
```

```
98%           1000 RPM
LOAD & RPM    ENG RPM

14.2          57 PSI
BAT VOLT      OIL PRES  !
```
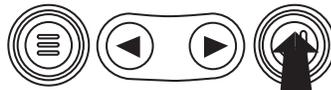
Back Light Adjustment

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

```
0      1500      3000

1800 RPM

ENG RPM   COOL TEMP
```

```
98%           1000 RPM
LOAD@RPM      ENG RPM

14.2          57 PSI
BAT VOLT      OIL PRES
```

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.

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

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

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

4. Use the "Arrow Buttons" to select the desired backlight intensity.

```
ADJUST BACKLIGHT
```

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

```
ADJUST BACKLIGHT
```

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

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

```
98%           1000 RPM
LOAD@RPM      ENG RPM

14.2          57 PSI
BAT VOLT      OIL PRES
```
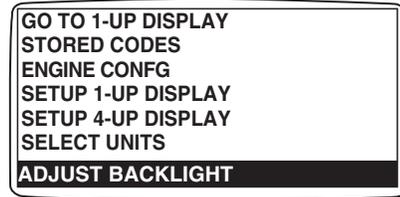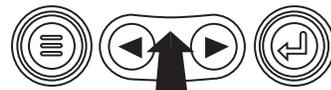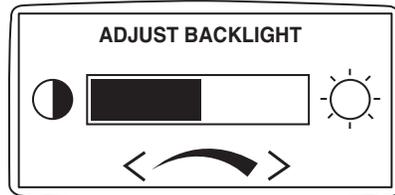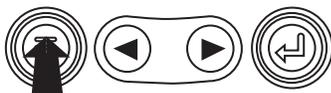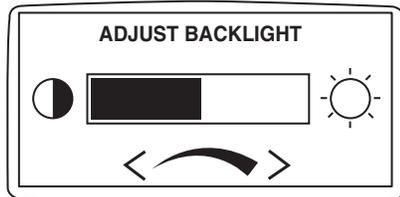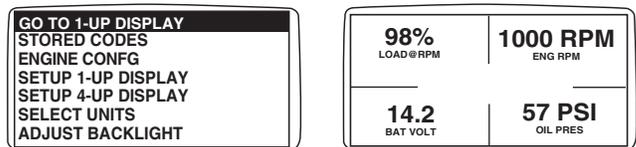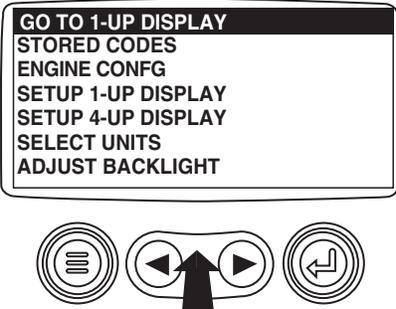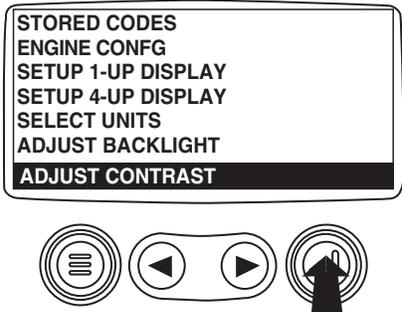
Contrast Adjustment

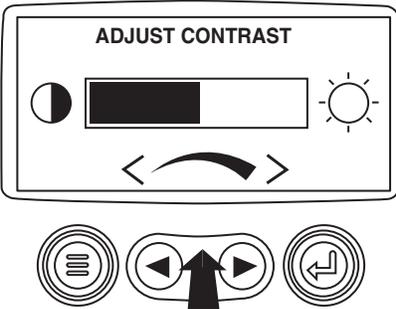**1**. Starting at the single or four engine parameter display, touch the "Menu Button".
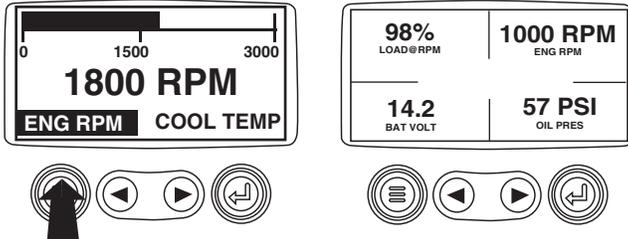
2. The main menu will pop up on the display. Use the "Arrow Buttons" to scroll through the menu until "Adjust Contrast" is highlighted.
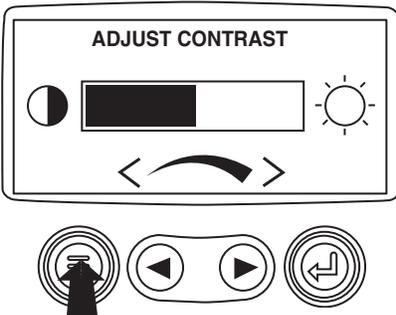
```
GO TO 1-UP DISPLAY
STORED CODES
ENGINE CONFG
SETUP 1-UP DISPLAY
SETUP 4-UP DISPLAY
SELECT UNITS
ADJUST BACKLIGHT
```

3. Once the "Adjust Contrast" menu item has been highlighted touch the "Enter Button" to activate the "Adjust Contrast" function.
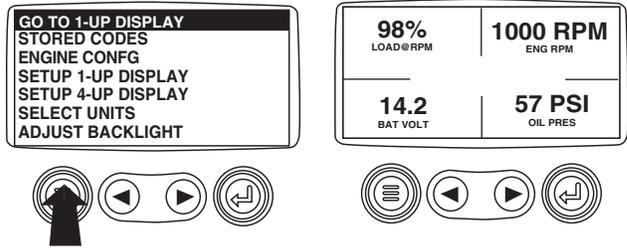
```
STORED CODES
ENGINE CONFG
SETUP 1-UP DISPLAY
SETUP 4-UP DISPLAY
SELECT UNITS
ADJUST BACKLIGHT
ADJUST CONTRAST
```

4. Use the "Arrow Buttons" to select the desired contrast intensity.

```
ADJUST CONTRAST
```

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

```
ADJUST CONTRAST
```

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

```
GO TO 1-UP DISPLAY
STORED CODES
ENGINE CONFG
SETUP 1-UP DISPLAY
SETUP 4-UP DISPLAY
SELECT UNITS
ADJUST BACKLIGHT
```
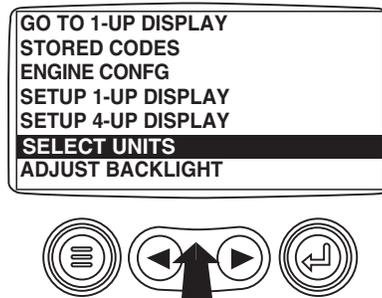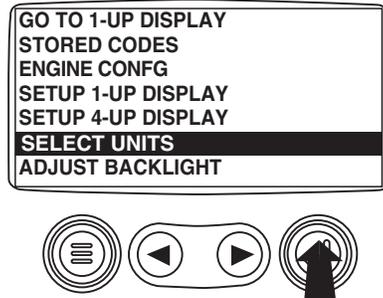
Select Units

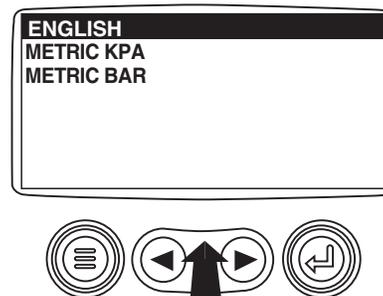**1**. Starting at the single or four engine parameter display touch the "Menu Button".
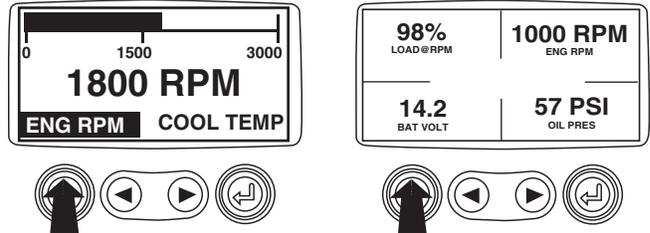
2. The main menu will pop up on the display. Use the arrow buttons to scroll through the menu until the "Select Units" is highlighted.

```
GO TO 1-UP DISPLAY
STORED CODES
ENGINE CONFG
SETUP 1-UP DISPLAY
SETUP 4-UP DISPLAY
SELECT UNITS
ADJUST BACKLIGHT
```
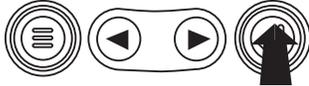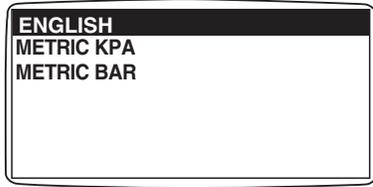
3. Once the "Select Units" menu item has been highlighted touch the "Enter Button" to access the "Select Units" function.

```
GO TO 1-UP DISPLAY
STORED CODES
ENGINE CONFG
SETUP 1-UP DISPLAY
SETUP 4-UP DISPLAY
SELECT UNITS
ADJUST BACKLIGHT
```
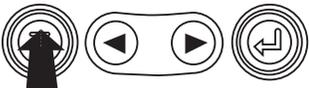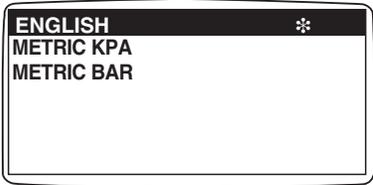
4. Use the arrows to highlight the desired units. "English" for Imperial units i.e. PSI, ºF or Metric kPa, Metric Bar for IS units i.e. kPa, Bar, ºC.
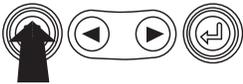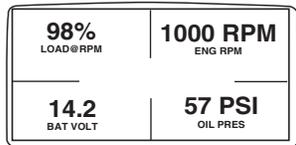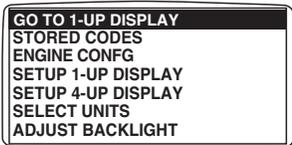
```
ENGLISH
METRIC KPA
METRIC BAR
```

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

```
ENGLISH
METRIC KPA
METRIC BAR
```

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

```
ENGLISH                    ✳
METRIC KPA
METRIC BAR
```
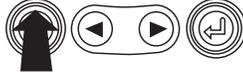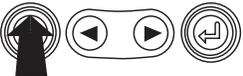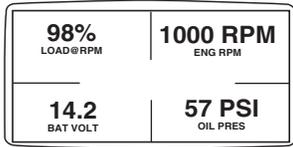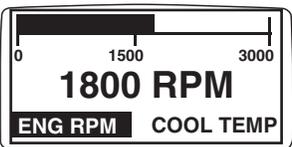
**7**. Touch the "Menu Button" to exit the Main menu and return to the engine parameter display.

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

```
98%          1000 RPM
LOAD@RPM       ENG RPM

14.2          57 PSI
BAT VOLT      OIL PRES
```

Setup 1-Up Display

1. Starting at the single engine parameter display, touch the "Menu Button".

```
0      1500      3000
     1800 RPM
ENG RPM    COOL TEMP
```

```
98%          1000 RPM
LOAD@RPM       ENG RPM

14.2          57 PSI
BAT VOLT      OIL PRES
```

2. 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.
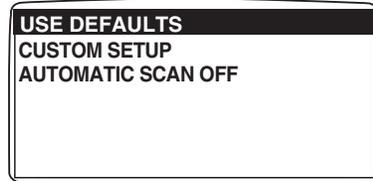
```
GO TO 1-UP DISPLAY
STORED CODES
ENGINE CONFG
SETUP 1-UP DISPLAY
SETUP 4-UP DISPLAY
SELECT UNITSD
ADJUST BACKLIGHT
```
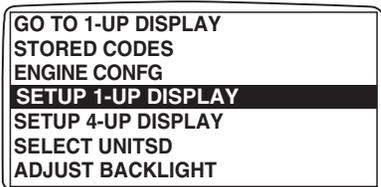
3. Once the "Setup 1-up Display" menu item has been highlighted touch the "Enter Button" to access the "Setup 1-up Display" function.

```
GO TO 1-UP DISPLAY
STORED CODES
ENGINE CONFG
SETUP 1-UP DISPLAY
SETUP 4-UP DISPLAY
SELECT UNITSD
ADJUST BACKLIGHT
```
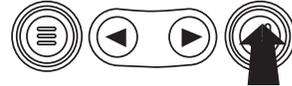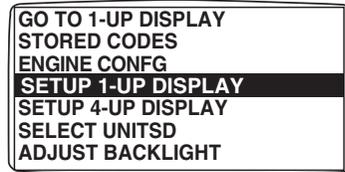
4. Three options are available for modification of the 1-Up display.

    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.

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

```
USE DEFAULTS
CUSTOM SETUP
AUTOMATIC SCAN OFF
```

6. Touch the "Enter Button" to activate the "Use Defaults" function.

```
USE DEFAULTS
CUSTOM SETUP
AUTOMATIC SCAN OFF
```
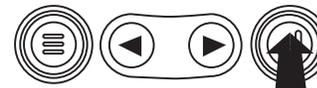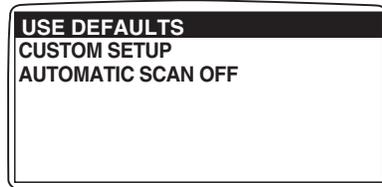
7. A message indicating the "Single Engine" parameter display parameters are reset to the factory defaults will be displayed, then the display will return to the "Custom Setup" menu.
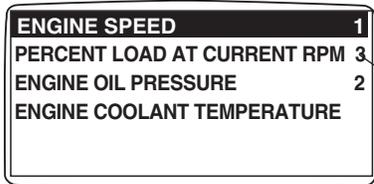
```
RESTORED TO
DEFAULTS
```
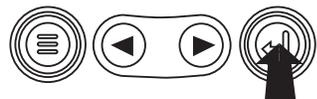
8. **Custom Setup** - To perform a custom setup of the 1-Up Display, use the arrow buttons to scroll to and highlight "Custom Setup" on the display.

```
USE DEFAULTS
CUSTOM SETUP
AUTOMATIC SCAN OFF
```
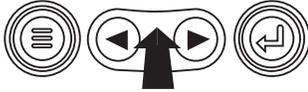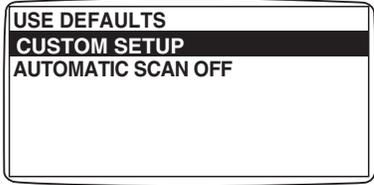
9.   Touching the "Enter Button" will display a list of engine parameters.
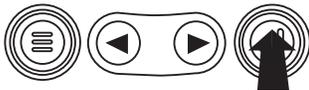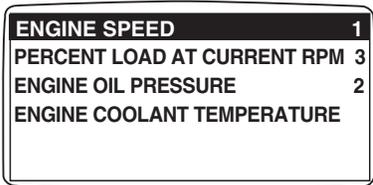
```
USE DEFAULTS
CUSTOM SETUP
AUTOMATIC SCAN OFF
```
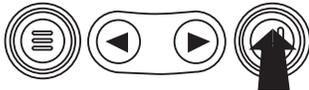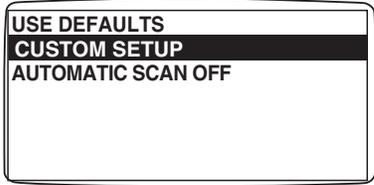
10. Use the "Arrow Buttons" to scroll to and highlight a selected parameter (parameter with a # symbol to right of it).

```
ENGINE SPEED                   1
PERCENT LOAD AT CURRENT RPM  3
ENGINE OIL PRESSURE            2
ENGINE COOLANT TEMPERATURE
```
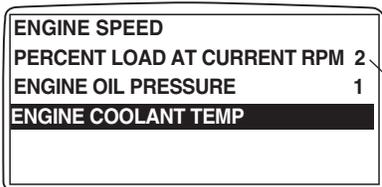
This number indicates the order of display for the parameters and that the parameter is selected for display.

11. Touch the "Enter Button" to deselect the selected parameter removing it from the list of parameters being displayed on the 1-up display.
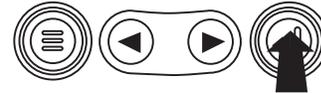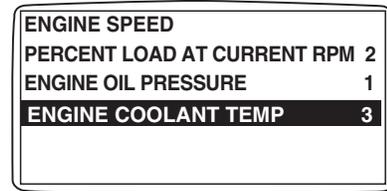
```
ENGINE SPEED                   1
PERCENT LOAD AT CURRENT RPM  3
ENGINE OIL PRESSURE            2
ENGINE COOLANT TEMPERATURE
```

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

```
ENGINE SPEED
PERCENT LOAD AT CURRENT RPM  2
ENGINE OIL PRESSURE            1
ENGINE COOLANT TEMP
```

Note that the numbers now indicate the new order of display for the parameters.

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

```
ENGINE SPEED
PERCENT LOAD AT CURRENT RPM  2
ENGINE OIL PRESSURE            1
ENGINE COOLANT TEMP            3
```

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.

```
USE DEFAULTS
CUSTOM SETUP
AUTOMATIC SCAN OFF
```
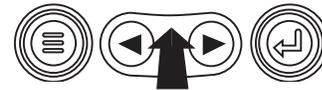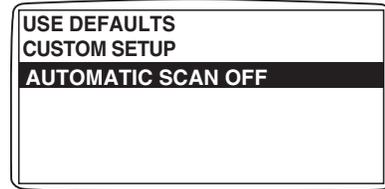
16. Touching the "Enter Button" toggles the "Automatic Scan" function on.

```
USE DEFAULTS
CUSTOM SETUP
AUTOMATIC SCAN ON
```
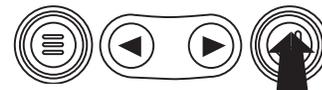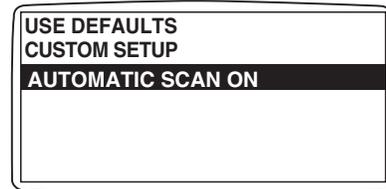
17. Touching the "Enter Button" again toggles the "Automatic Scan" function off.

```
USE DEFAULTS
CUSTOM SETUP
AUTOMATIC SCAN OFF
```
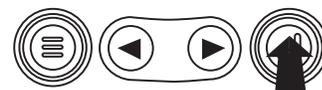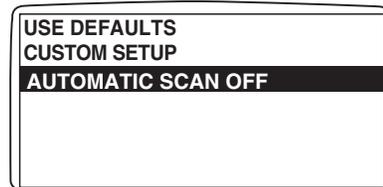
18. Once the "Use Defaults", "Custom Setup" and "Automatic Scan" functions have been set touch the "Menu Button" to return to the main menu.
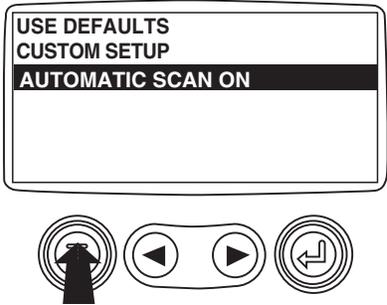
```
USE DEFAULTS
CUSTOM SETUP
AUTOMATIC SCAN ON
```

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

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

```
0    1500    3000
1800 RPM
ENG RPM    COOL TEMP
```
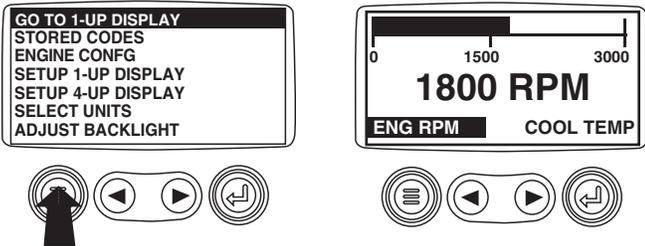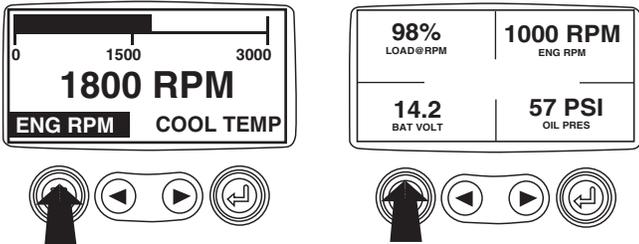
Setup 4-Up Display

1. From the single or four engine parameter display touch the "Menu Button".

```
0    1500    3000
1800 RPM
ENG RPM    COOL TEMP
```

```
98%            1000 RPM
LOAD@RPM        ENG RPM

14.2           57 PSI
BAT VOLT       OIL PRES
```

2. 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.

```
GO TO 1-UP DISPLAY
STORED CODES
ENGINE CONFG
SETUP 1-UP DISPLAY
SETUP 4-UP DISPLAY
SELECT UNITS
ADJUST BACKLIGHT
```
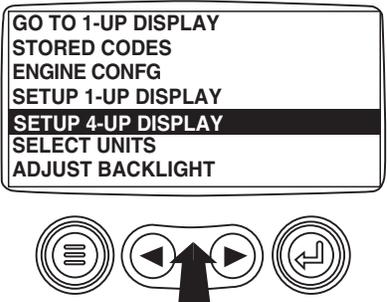
3. Once the "Setup 4-Up Display" menu item has been highlighted touch the "Enter Button" to activate the "Setup 4-Up Display" menu.

```
GO TO 1-UP DISPLAY
STORED CODES
ENGINE CONFG
SETUP 1-UP DISPLAY
SETUP 4-UP DISPLAY
SELECT UNITS
ADJUST BACKLIGHT
```
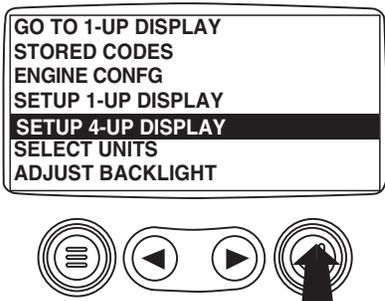
**4**. Touch the "Enter Button" to activate the "Use Defaults" function. This action will reset the unit to the factory default.

```
USE DEFAULTS
CUSTOM SETUP
```
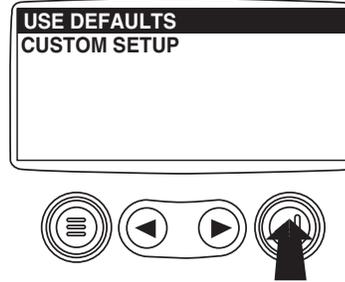
5. The "Use Defaults"screen will be displayed during the reseting period then will automatically return to the "Setup 4-Up Display" menu.

```
RESTORED TO
DEFAULTS
```
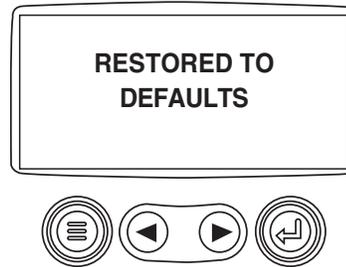
6. Select the "4-Up Custom Setup" from the "4-Up Setup" menu.

```
USE DEFAULTS
CUSTOM SETUP
```
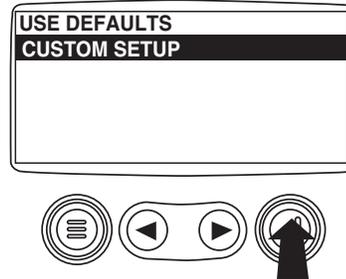
7. The quadrent with the backlit parameter value is the current selected parameter. Use the "Arrow Buttons" to highlight the parameter value in the quadrant you wish to place a new parameter.

```
125°F          1000 RPM
COOL TEMP      ENG RPM

14.2           57 PSI
BAT VOLT       OIL PRES
```
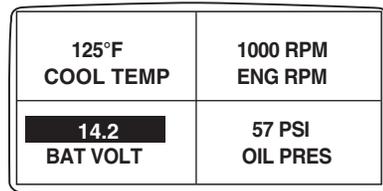
8. Touch the "Enter Button" and a list of parameters will appear.

```
125°F          1000 RPM
COOL TEMP      ENG RPM

14.2           57 PSI
BAT VOLT       OIL PRES
```
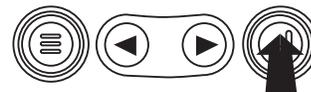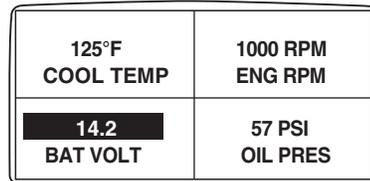
9. The parameter that is highlighted is the selected parameter for the screen. Use the "Arrow Buttons" to highlight the new parameter to be placed in the quadrent selected in the previous screen.

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.
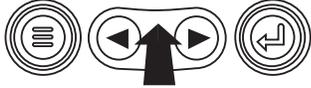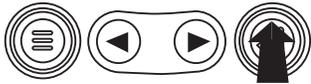1. = Upper Left Quadrant
2. = Lower Left Quadrant
3. = Upper Right Quadrant
4.= Lower Right Quadrant

**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	
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

Note the number to the right of the selected parameter indicating that the parameter is now assigned to that display location.
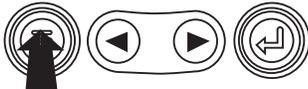
12. The parameter in the selected quadrent has changed to the parameter selected in the previous screen.
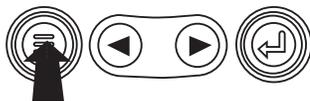
125°F COOL TEMP	**1000 RPM** **ENG RPM**
143°F OIL TEMP	57 PSI OIL PRES
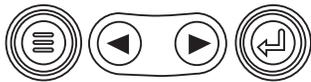
13. Repeat the parameter selection process until all spaces are filled.
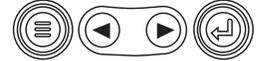**14**. Touch the "Menu Button" to return to the main menu.

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 CONFG
SETUP 1-UP DISPLAY
SETUP 4-UP DISPLAY
SELECT UNITS
ADJUST BACKLIGHT

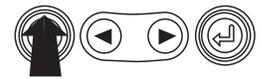|	
125% COOL TEMP	1000 RPM ENG RPM
143°F OIL TEMP	57 PSI OIL PRES

Utilities *(Information and troubleshooting)*

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

0   1500   3000
1800 RPM
ENG RPM   COOL TEMP

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

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

| |
|---|
| STORED CODES |
| ENGINE CONFG |
| SETUP 1-UP DISPLAY |
| SETUP 4-UP DISPLAY |
| SELECT UNITS |
| ADJUST BACKLIGHT |
| **UTILITIES** |

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

| |
|---|
| STORED CODES |
| ENGINE CONFG |
| SETUP 1-UP DISPLAY |
| SETUP 4-UP DISPLAY |
| SELECT UNITS |
| ADJUST BACKLIGHT |
| **UTILITIES** |

4. 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 38.4 k Baud, 8 data bits, no parity check, 1 stop bits, half duplex.
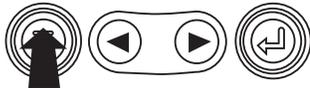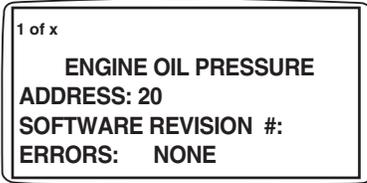
GAGE DATA
REMOVE ALL GAGES
SOFTWARE VERSION
MODBUS SETUP
FAULT CONVERSION
DEMO MODE ON
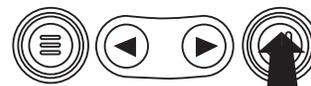
**5**. Use the "Arrow buttons" to scroll through the items or touch "Menu" to return to the "Utilities" menu.

```
1 of x
        ENGINE OIL PRESSURE
ADDRESS: 20
SOFTWARE REVISION  #:
ERRORS:    NONE
```
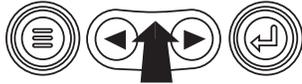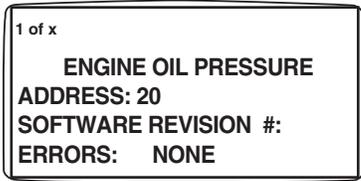
6. Touch "Menu Button" to return to the "Utilities" menu.

```
1 of x
        ENGINE OIL PRESSURE
ADDRESS: 20
SOFTWARE REVISION  #:
ERRORS:    NONE
```

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

```
        CLEARING GAGES
          PLEASE WAIT
```
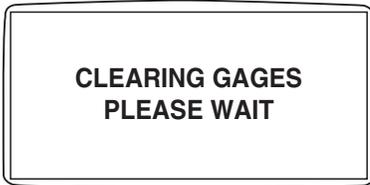
8. When the gage data has cleared, the display automatically returns to the "Utilities" menu. Scroll to "Software Version". Touch "Select" to view the software version currently in the PowerView.

```
          SOFTWARE
           VERSION
        MURPHY: X.XX
```
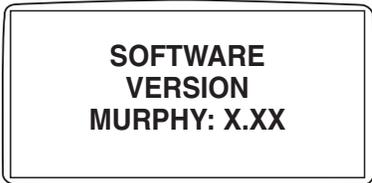
9. Touch "Menu" to return to "Utilities". Highlight "Fault Conversion" using the "Arrows". Touch "Select" to enter the Fault convertion menu.

```
GAGE DATA
REMOVE ALL GAGES
SOFTWARE VERSION
FAULT CONVERSION
```
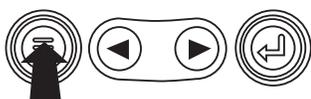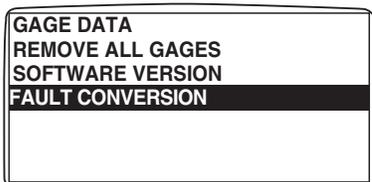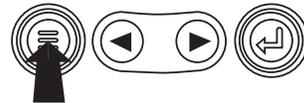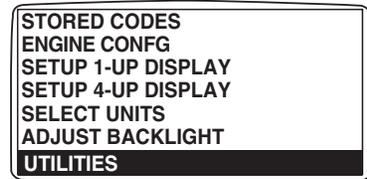
11. Use the "Arrows" to scroll and highlight the version then touch "Select" and an asterisks appears to the right of the selection.

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.
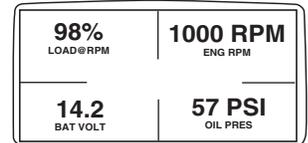
```
J1939 VERSION 1                    *
J1939 VERSION 2
J1939 VERSION 3
J1939 VERSION 4
```
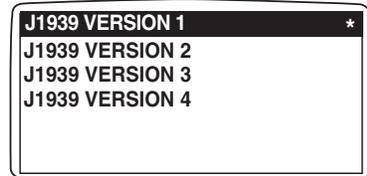
12. Touch the "Menu" button to return to "Utilities" menu. Touch the "Menu" button again to to return to the "Main" menu.

```
STORED CODES
ENGINE CONFG
SETUP 1-UP DISPLAY
SETUP 4-UP DISPLAY
SELECT UNITS
ADJUST BACKLIGHT
UTILITIES
```

MODBUS Setup

1. Starting at the single or four engine parameter display, touch the "Menu button".
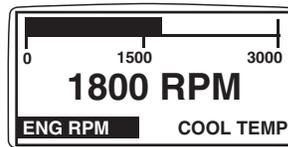
```
0      1500      3000
    1800 RPM
ENG RPM        COOL TEMP
```
```
98%          1000 RPM
LOAD@RPM        ENG RPM
14.2          57 PSI
BAT VOLT       OIL PRES
```

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

```
STORED CODES
ENGINE CONFG
SETUP 1-UP DISPLAY
SETUP 4-UP DISPLAY
SELECT UNITS
ADJUST BACKLIGHT
UTILITIES
```
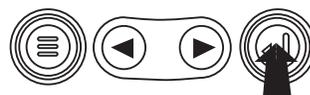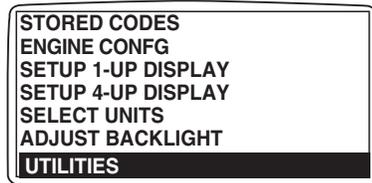
3. Once in the "Utilities" menu use the "Arrows" to scroll through the menu until the "Modbus Setup" menu is highlighted, then touch "Enter."

```
GAGE DATA
REMOVE ALL GAGES
SOFTWARE VERSION
MODBUS SETUP
FAULT CONVERSION
```
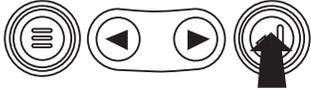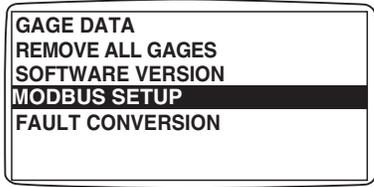
4. Use the "Arrows" to scroll down to and highlight either the "Slave Active or Master Active" modes. Touch the "Enter" button to toggle between master and slave.

```
USE FACTORY DEFAULT
SERIAL PORT SETUP
SOFTWARE VERSION
SLAVE ADDRESS SETUP
MASTER ACTIVE
```

5. Use the "Arrows" to scroll to the "Serial Port" menu to highlight it, then touch "Enter".
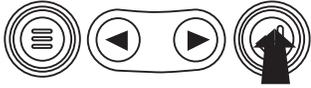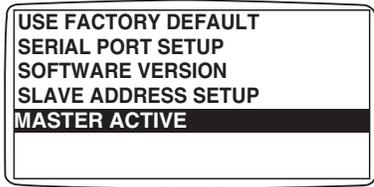
```
USE FACTORY DEFAULT
SERIAL PORT SETUP
SOFTWARE VERSION
SLAVE ADDRESS SETUP
MASTER ACTIVE
```
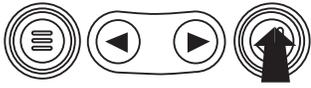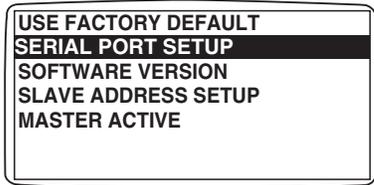
6. Use the "Arrow" button to scroll to each selection to configure the MODBUS values for your application.

```
BAUD RATE
PARITY
DATA BITS
STOP BITS
```
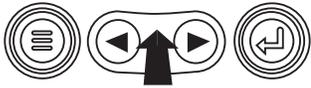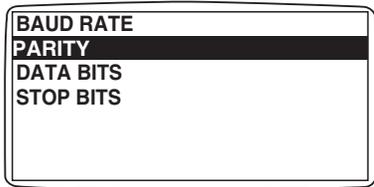
7. When finished, touch "Menu" to return to the previous screen.

SAE J1939 MurphyLink System Implementation of J1939 Parameters

Source: SAEJ1939-71 Surface Vehicle Recommended Practice

SAE J1939 Section	Description	PGN	Parameter	Display Value
5.3.6	Elec Eng Cont #2 - EEC2	61443	Accelerator Pedal Position	THROTTLE
			Percent Load at Current RPM	LOAD@RPM
5.3.7	Elec Eng Cont #1 - EEC1	61444	Actual engine % torque	ENG TORQ
			Engine Speed	ENG RPM
5.3.14	Vehicle Distance	65248	Trip Distance	TRIP DIST
			Total Vehicle Distance	VEH DIST
5.3.19	Engine hours, Revolutions	65253	Total Engine Hours	ENG HRS
5.3.23	Fuel Consumption	65257	Trip Fuel	TRIP FUEL
			Total Fuel Used	FUEL USED
5.3.28	Engine Temperature	65262	Engine Coolant Temp	COOL TEMP
			Fuel Temperature	FUEL TEMP
			Engine Oil Temperature	OIL TEMP
			Engine Intercooler Temperature	INTC TEMP
5.3.29	Engine Fluid Level/Pressure	65263	Fuel Delivery Pressure	FUEL PRES
			Engine Oil Level	OIL LVL
			Engine Oil Pressure	OIL PRES
			Coolant Pressure	COOL PRES
			Coolant Level	COOL LVL
5.3.31	Cruise Control /Vehicle Speed	65265	Wheel Based Vehicle Speed	VEH SPD
5.3.32	Fuel Economy	65266	Fuel Rate	FUEL RATE
			Instantaneous Fuel Economy	FUEL ECON
			Average Fuel Economy	AVG ECON
5.3.35	Ambient Conditions	65269	Barometric Pressure	BARO PRES
			Air Inlet Temperature	AIR IN TP
5.3.36	Inlet/Exhaust Conditions	65270	Boost Pressure	BST PRES
			Intake Manifold Temp	MANI TEMP
			Air Filter Differential Pressure	AIR DIF PR
			Exhaust Gas Temperature	EXH TEMP
5.3.37	Vehicle Electrical Power	65271	Alternator Voltage	ALT VOLT
			Electrical Potential (Voltage)	SYS VOLT
			Battery Pot. Voltage (Switched)	BAT VOLT
5.3.8	Electronic Transmission Controller #2	61445	Selected Gear	SLECT GEAR
		61445	Current Gear	CURNT GEAR
5.3.38	Transmission Fluids	65272	Transmission Oil Pressure	TRAN PRES
			Transmission Oil Temperature	TRAN TEMP
5.3.46	Engine Fluid Level/Pressure #2	65243	Injector Metering Rail 1 Pres	INJ PRES1
			Injector Metering Rail 2 Pres	INJ PRES2
5.3.58	Fan Drive	65213		FAN SPD
5.3.111	Auxiliary Pressures & Temperatures	65164	Auxiliary Temperature	AUX TEMP
			Auxiliary Pressure	AUX PRES
	Diagnostic Messages	65226	DM1 - Active Diagnostic	SRVCCODE
		65227	DM2 - Previously Act Diag Codes	STORCODE
		65228	DM3 - Diagnostic Clear	
J1939 N/A	Machine Hours (PowerView Calculated)	N/A	Machine Hours	MACH HRS
5.3.17	Engine Conf.	65251	Engine Configuration	ENG CONF
5.3.5	Electronic Transmission Controller #1	61442	Output Shaft Speed	OUT SFT SP
	Electronic Transmission Controller #1	61442	Input Shaft Speed	IN SFT SPD
	Electronic Transmission Controller #1	61442	Torque Converter Lockup Engaged	TORQ LOCK

GLOSSARY (Troubleshooting information)

CANBUS FAILURE
PowerView has not received any CAN messages for at least 30 seconds.

NO DATA
PowerView has not received the particular message being displayed for at least 5 seconds.

NOT SUPPORTED
PowerView has received a message from the ECU stating the displayed message is not supperted.

DATA ERROR
PowerView has received an error message from the ECU for the displayed message.

EMPTY
No parameter selected for this 4-UP quadrant.

WAIT TO START PREHEATING
This is a message from the engine indicating it is in a preheating cycle. Wait until this message clears before starting the engine.

TIMEOUT ECU NOT RESPONDING
The ECU did not respond to the PowerView request.

NO GAGE DATA
The PowerView has no record of connected gages to the RS485 bus.

In order to consistently bring you the highest quality, full featured products, we reserve the right to change our specifications and designs at any time.

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