MURPHY®

by ENOVATION CONTROLS

PowerView®
Model PV300 - P

Operations Manual

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Section 78

To consistently bring you the highest quality, full-featured products, we reserve the right to change our specifications and designs at any time. The latest version of this manual can be found at www.murphybyenovationcontrols.com.

Warranty - A limited warranty on materials and workmanship is given with this Murphy product. A copy of the warranty may be viewed or printed by going to http://www.murphybyenovationcontrols.com/warranty

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.

Table of Contents

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Introduction

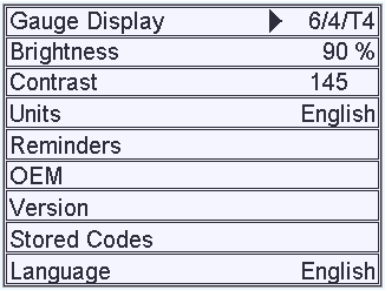
Congratulations on purchasing the PowerView 300-P. This advanced tool provides monitoring of Tier 4/Euro Stage 4 compliant electronic engines. The PV300-P monitors multiple J1939 parameters, and provides basic engine alarm/shutdown with integrated throttle control.

This manual will assist you in becoming familiar with the PowerView 300-P display, identifying navigation basics, and recognizing useful options and features. The clear 3.8" monochrome screen makes it easy to see the parameters in the 1-up, 4-up, or 6-up display, especially in bright sunlight.

Engine and Transmission Parameters

The following are some of the engine and transmission parameters that can be displayed in standard or metric units as well as in English, Spanish, French, Italian, or German languages.

- Engine RPM
- Total Engine hours
- Voltage
- Coolant temperature
- Oil pressure
- Fuel level
- Trip Fuel
- Diesel Exhaust Fluid Level
- Percent Soot
- Transmission oil pressure
- Hydraulic Pressures
- % Load @ Current RPM
- Active fault codes
- Stored fault codes



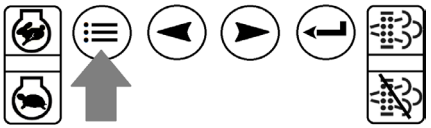
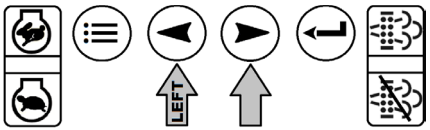
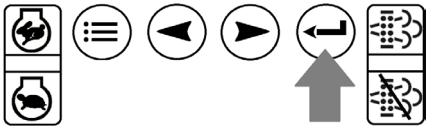
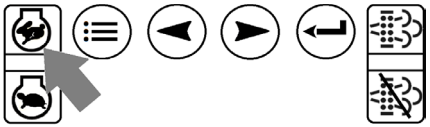
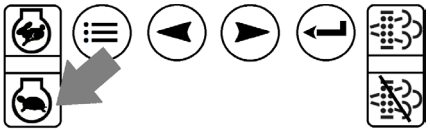
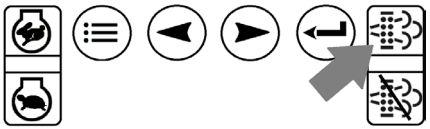
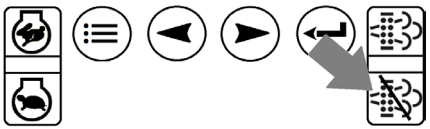
This is the PV300-P Main Menu. Information on Navigation and Keypad functions follows.

Navigation and Keypad Functions

The keys on the keypad perform the following functions:

	**Menu** – Enter or exit menu screens.
	**Left Arrow** – Scroll the screen or move the parameter selection to the left or upward.
	**Right Arrow** – Scroll the screen and move the parameter selection to the right or downward.
	**Enter Key** – Select a menu or parameter or hide/view an active fault code.
	**Increase Speed** – If Speed Control is ON, press to throttle up. Each time the HARE is pressed, the throttle demand increases the engine to the desired speed. The speed settings are determined by selections made in the OEM-Speed Setup. The default setting is Inc/Dec.
	**Decrease Speed** – If Speed Control is ON, press to throttle down. Each time the TORTOISE is pressed, the throttle demand decreases the engine to the desired speed. The speed settings are determined by selections made in the OEM-Speed Setup. The default setting is Inc/Dec.
	**Request DPF Regen** – Press and hold to request a regeneration to start.
	**Inhibit DPF Regen** – Press to prevent regeneration from occurring.

Basic Navigation

	1. Press **Menu** to display the **Main Menu** items.
	2. Use the Left and Right **Arrow Keys** to move between menu items or within a list in a menu item.
	3. When the cursor ▶ points to your choice, press **Enter**. Some menu items open in a new screen, for others the unselected items disappear and your choice displays as a single item.
	4. Increase Throttle (Hare) – Throttle control is enabled and set in the OEM Menu.
	5. Decrease Throttle (Tortoise) – Throttle control is enabled and set in the OEM Menu.
	6. DPF Regen – Request a Regeneration. If DPF Regen is set to **ON**, press to request a regeneration to start.
	7. DPF Regen – Inhibit Regeneration. If DPF Regen is set to **ON**, press to inhibit a regen.

First Time Start Up

When power is applied to the PowerView 300-P, the **Warning** and **Shutdown** lights illuminate and the Murphy logo displays. If a preheat message is being actively broadcast from the Engine Control Unit (ECU), a **Wait to Start** message displays below the Murphy logo as shown in the image below.

Once the engine has started, the 6-up parameter view displays with Engine RPM, Oil Pressure, Coolant Temperature, Voltage, % Load, and Engine Hours. To reach the 4-up and Tier 4-up screens, press the **Right Arrow** repeatedly.

1900 RPM	83 psi OIL PRESS
32 F COOL TEMP	24 VDC VOLT
65 % % LOAD	59 hrs ENGINE HRS

6-up screen

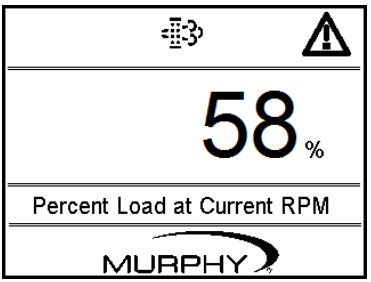
Main Menu Options

This section describes the items listed in the **Main menu.** These options display whenever you press **Menu**. Use the **Arrow Keys** to scroll through the items. When the cursor ▶ displays next to your choice, press **Enter** to select the menu item.

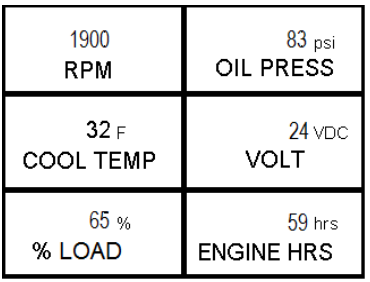
Gauge Display

Press **Enter** to select the way in which gauge information displays. The selections are **1-Up** or **6/4/T4**.

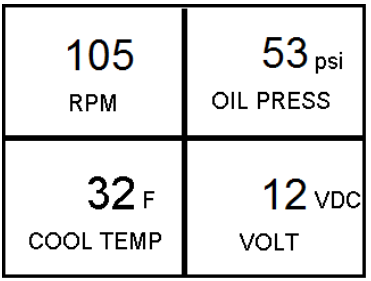
- **1-up** displays one gauge reading at a time. You can scroll through all the parameter readings by pressing the **Right Arrow** repeatedly.
- To see all the screens of the **6/4/T4-up** display, press the **Right Arrow** repeatedly – in turn you will see the 6-up, 4-up and T4-up. One more press returns you to the 6-up display.



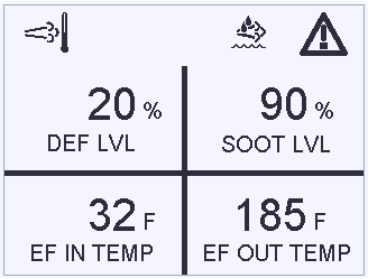
1-up Display with DPF Regen and Warning icons



6-up Display without Icons



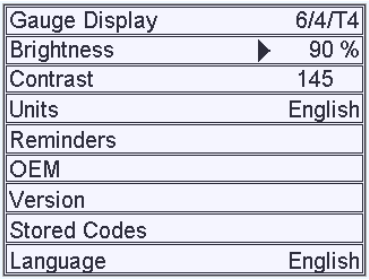
4-up Display without Icons

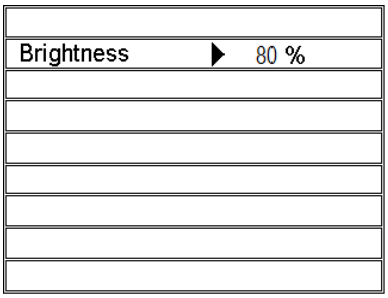


T4-up with DPF Regen Icons

Brightness

Press **Enter** to select **Brightness** from the menu.





The other menu items disappear and Brightness remains. Use the **Left** and **Right Arrow** keys to increase or decrease the backlight intensity of the display in 5% increments.

Press **Menu** to save your changes and return to the full Main menu display.

Contrast

Press **Enter** to select **Contrast** from the menu. The other menu items disappear and **Contrast** remains. Use the **Left** and **Right Arrow** keys to increase or decrease the lightness/darkness of the lines, words, and numbers on the screen. Adjust Contrast in one-unit increments. Press Menu to save your changes and return to the Main menu display.

Units

Press **Enter** to select **Units** from the menu. The other menu items disappear and **Units** remains. Use the **Left** and **Right Arrow** keys to scroll through the choices: **English** (PSI, °F), **Bar** (Bar, °C), or **Kpa** (Kpa, °C). Press Menu to save your change and return to the full Menu display.

Reminders

Press **Enter** to select **Reminder** from the menu.

Gauge Display	6/4/T4
Brightness	90 %
Contrast	145
Units	English
Reminders ▶	Enter
OEM	
Version	
Stored Codes	
Language	English

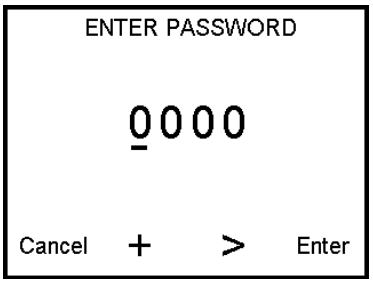
Service Reminder	Interval	Remaining
Engine Oil	8000	7050
Air Filters	8000	7050
Hydraulic Oil	10000	9050
Service Engine	10000	9050
Service Machine	20000	19050

The **Service Reminder** screen displays. This screen shows the **Interval** values and **Remaining** time before servicing is required. The Service Reminders are Engine Oil, Air Filters, Hydraulic Oil, Service Engine, and Service Machine.

OEM

You must have a password to access the **OEM** menu. If you have the password, press **Enter** to access the **Password** screen.

Gauge Display	6/4/T4
Brightness	90 %
Contrast	145
Units	English
Reminders	
OEM ▶	Enter
Version	
Stored Codes	
Language	English



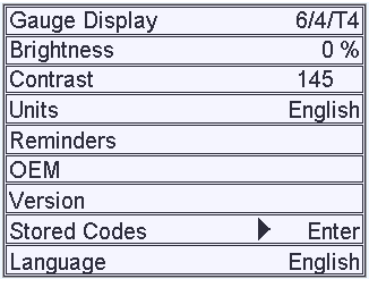
ENTER PASSWORD screen – Enter the four-digit value in the spaces provided. Start at the furthest left value and use the **Left Arrow** to increment the number and the **Right Arrow** to move to the next position. If you do not have the password, contact the OEM from whom you purchased the engine. For more information, see **OEM Menu Options** on page 9.

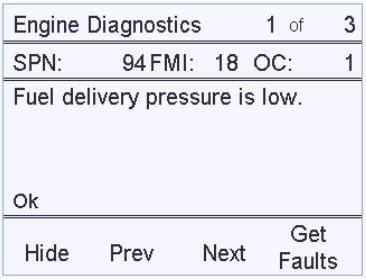
Version

Press **Enter** to select **Version** from the menu. The Version screen lists information specific to the Configuration, Loader, and Application Versions currently on the PV300-P unit. It also lists the part number of the unit. You may need this information if requesting assistance from Technical Support

Stored Codes (DM2)

Press Enter and the PV300-P requests and displays stored fault codes from the engine ECU.





Use the **Left** and **Right** arrows to scroll through the screens if there is more than one stored fault. Each saved code shows the SPN (Suspect Parameter Number), FMI (Failure Mode Identifier), and OC (Occurrence Count). The OC indicates if the same fault occurred more than once.

If available, a text explanation of the Warning or Shutdown also displays.

Languages

English is the default language. To change the language selection, with the cursor in the **Languages** field, press **Enter** repeatedly to scroll through the language choices: English, French, Italian, Spanish, or German. Stop when you have the appropriate language showing in the field. Your Language selection automatically saves.

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OEM Menu Options

The OEM menu allows original equipment manufacturers to modify PV300-P options to work specifically with their equipment. Although the code is 3482, you may not have access to the OEM menu. If the Murphy standard key does not work, contact the OEM from whom you purchased the engine or machine.

Speed Setup ▶	Enter
DPF Regen	On
Reminders Setup	
Fault Conversion	J1939 V-1
Data Rate	250kbps
Source Address	43
Restore Defaults	
Machine Hours	
Clear Faults	

You must have a password to enter the **OEM Menu**. From this menu, you set speed control limitations, DPF Regen, Reminders, and other functions for the PV-300-P.

Speed Setup

Press **Enter** to reach the **Speed Control** screen. The Speed Control screen offers several throttle features: Turn Speed Control ON/OFF, set an RPM High Limit, set an RPM Low Limit, and set speed control options associated with the throttle buttons (Hare and Tortoise).

On the Speed Control screen:

1) With the cursor ▶ in the **Speed Control** field, use the **Enter** key to turn **Speed Control ON** or **OFF**. If Speed Control is **OFF** you can edit the values, but the functionality of the buttons is not enabled.
2) Move the cursor to the RPM **High Limit** field and press **Enter**. The **Set High Limit** screen displays. Use the **Arrow** keys for **Dec** (decrease) and **Inc** (increase) to set the high RPM limit. Press **Enter** to save the change or press **Cancel** to exit the screen without making a change.
3) Move the cursor to the RPM **Low Limit** field and press **Enter**. The **Set Low Limit** screen displays. Use the **Arrow** keys for **Dec** (decrease) and **Inc** (increase) to set the low RPM limit. Press **Enter** to save the change or press **Cancel** to exit the screen without making a change.

Once the high and low values are set, you cannot throttle the engine above the high limit or below the low limit.

TSC1 (Torque Speed Control)

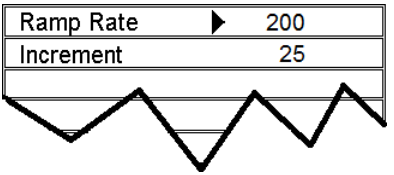
TSC1 offers four (4) combinations of control for the throttle buttons (Hare/Tortoise). You select the attribute of throttle control in **TSC1 Type**: Inc/Dec, Idle/Run, Idle/Run 2, and Idle/Run 3. The default is **Inc/Dec**.

TSC1 Setup mirrors the selection made in **TSC1 Type** with fields where set-to-speed RPM values are established.

1. TSC1 Type – select an attribute:
   - Inc/Dec -
   - Idle/Run -
   - Idle/Run2 -
   - Idle/Run3 -

   NOTE: Ensure the correct selection shows in the field before moving to TSC1 Setup.

2. Move the cursor to the **TSC1 Setup** field and press **Enter**. The choice made in **TSC1 Type** determines what you see in the **TSC1 Setup** list. For example, if **Inc/Dec** was selected, the following displays:



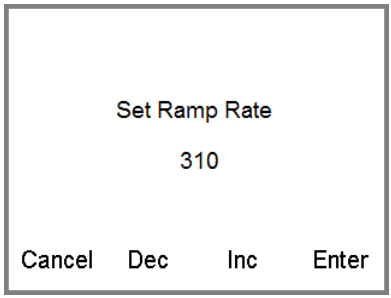
The following table shows the **TSC1 Type** and lists the associated **TSC1 Setup** items with their default values.

TSC1 Type	TSC1 Setup
Inc/Dec	**Ramp Rate** – the default is 200. Ramp Rate allows engine RPM to increase at a steady rate to the maximum set. **Increment** – the default is 25. Increment fixes the jump in RPM as it reaches the maximum run or idle.
Idle/Run	**Idle** – the default is 800. Idle is the rate at which the engine is running reasonably smooth, but not performing work under load. **Run** – the default is 2000. Run is the speed at which the engine will run when under load. The engine RPM increases to this when the Hare is pressed.

TSC1 Type	TSC1 Setup
Idle/Run2	**Idle** – the default is 800 **Run1** – the default is 1600. This option allows 2 speeds for the engine. Press the Hare or Tortoise to bump the throttle demand to the engine **up** or **down**. **Run2** – the default is 2200. The second throttle bump.
Idle/Run3	**Idle** - the default is 800 **Run1** – the default is 1000. This option allows 3 speeds for the engine. Press the Hare or Tortoise to bump the throttle demand to the engine **up** or **down**. **Run2** – the default is 1600. This is the second throttle bump. **Run3** – the default is 2200. This is the third throttle bump.

3. Move the cursor to an item in the **TSC1 Setup** list and press **Enter**. The '**Set**' screen for the item selected displays.

4. As shown in the following example, use the **Arrow** keys for **Dec** (decrease) and **Inc** (increase) to reach the wanted value. Press **Enter** to save the change or press **Cancel** to exit the screen without saving the changes.



5. When finished setting the values for the items in the **TSC1 Setup** list, press **Menu** to return to the **Speed Control** screen. On the **Speed Control** screen, press **Menu** to save the changes and exit to the OEM menu.

> **NOTE:** Once enabled **Speed Control** will stay enabled even through power cycles. To turn **OFF**, you must disable the feature from the **Speed Control** screen.

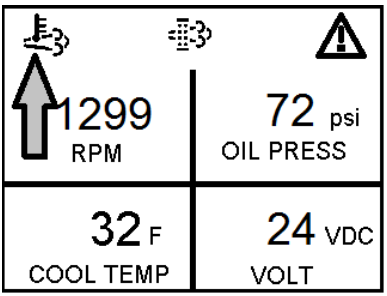
DPF Regen*

*Murphy products are compliant with requirements for U.S. EPA Emission Standard – Tier 4 and EU Emissions Standard – Stage IIIB for diesel engines. These engines when fitted with a DPF (Diesel Particulate Filter) can self-clean the filter of particulates. This self-cleaning is known as Regeneration. PV300-P offers 3-CAN options when DPF REGEN is enabled and available in the engine ECU. For more information, see the Tier 4 Overview document (1110836) under **PV300-P Literature** on the Enovation Controls Web site (**www.murphybyenovationcontrols.com**).

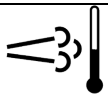
Move the cursor to the **DPF Regen** field and press **Enter** to turn DPF Regen ON or OFF.

> NOTE: If DPF Regen is OFF in the **OEM** Menu, the symbols display when received, but request and inhibit functions (buttons) are disabled.

When a DPF message broadcasts on the CAN, the appropriate symbol displays on the PV300-P screen. Gauge information shrinks to allow the symbols to show at the top of the display.



The following ISO symbols indicate regeneration status.

DPF Regen ISO Symbols			
Icon	**PGN**	**SPN**	**Description**
	64892	3698	**High Exhaust Temperature** (HEST) lamp indicates regeneration in process.
	64892	3697	**DPF Particulate Filter Restricted** lamp indicates a Regen is needed.

Cont. on next page

DPF Regen ISO Symbols			
	64892	3703	**DPF Inhibit** lamp indicates an inhibited Regen status.
	65110	1761	**Diesel Exhaust Fluid** (DEF). The level indicator displays when the fluid level drops to 12%. When the DEF drops to zero (0), the level indicator begins to flash.

1. The factory default is **ON**. However, if DPF Regen is set to OFF in the **OEM** Menu, the symbols still display when received, but request and inhibit functions (buttons) are disabled.
2.  **REQUEST DPF REGEN** – If DPF Regen is **ON**, press to request regeneration. PV300-P sends a request for a regeneration while the operator holds the Request button down.
3.  **INHIBIT DPF REGEN** – When it is necessary to eliminate the possibility of a regen occurring, press this to inhibit regeneration. If the engine accepts the request, the Inhibit message is broadcast from the ECU, and the **Inhibit Icon** displays. To disable **Inhibit DPF Regen**, press **Inhibit** again, and the unit defaults back to **Auto Regen**. The unit also defaults back to **Auto** with every power cycle.

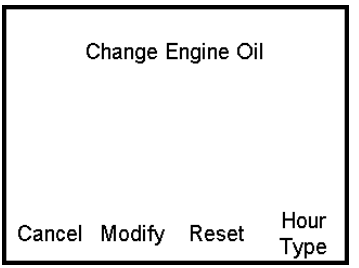
Reminders Setup

With the cursor ▶ in the **Reminders Setup** field, press **Enter** to reach the **Service Reminder** screen. Use the **Right** and **Left Arrows** to navigate to the Reminder you want to modify. Reminders available are *Engine Oil, Air Filters, Hydraulic Oil, Service Engine*, and *Service Machine*. All Reminders use Engine Hours or Machine Hours to calculate elapsed time. Engine Hours are the default. Modify all Service Reminders using the same steps:

1. With the cursor in the appropriate field, press **Enter** to reach a **Change** or **Service** screen.

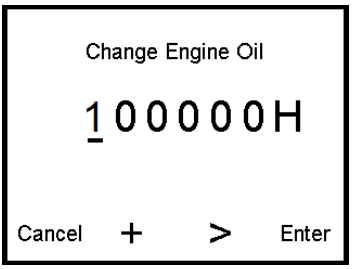
Service Reminder	Interval	Remaining
Engine Oil ▶	8000	7050
Air Filters	8000	7050
Hydraulic Oil	10000	9050
Service Engine	10000	9050
Service Machine	20000	19050

2. Press **Modify** to reach the screen where you change **Reminder** hours.

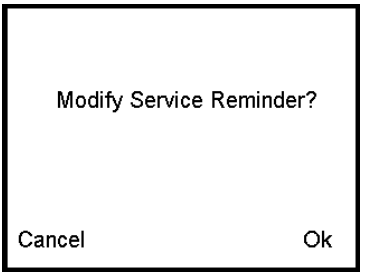


NOTE: On this screen, you also see **Hour Type**. To select an **Hour Type**, see the next set of instructions.

3. Use the **Right Arrow** to move to the starting numeric position (for example, the furthest left position is 100,000). Use the **Left Arrow** to increment the number, and the **Right Arrow** to move to the next numeric position you wish to change. When finished, press **Enter**.



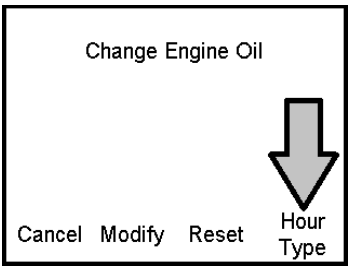
4. The confirmation screen **Modify Service Reminder?** displays. Press **OK** to save your changes or **Cancel** to exit the screen without saving. You return to the **Service Reminder** screen.



Select Hour Type

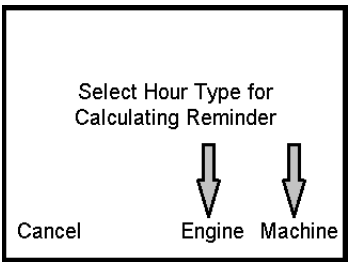
This option allows you to select either Engine or Machine Hours from which to calculate service reminders.

1. From the **Change** or **Service** screen, press **Hour Type** (Enter).

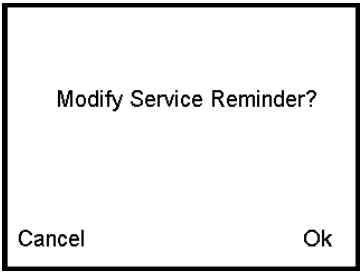


2. On the screen to the right, select either **Engine** or **Machine** by pressing the appropriate button.

The **Modify Service Reminder** screen displays.



3. The confirmation screen **Modify Service Reminder?** displays. Press **OK** to save your changes, you return to the **Service Reminder** screen. If you press **Cancel** to exit without saving, you return to the Change/Service screen.



Fault Conversion

Use the **Arrow Keys** to scroll to **Fault Conversion**. When the cursor ▶ displays in the **Fault Conversion** field, press **Enter** to change the J1939-Version. The PV300-P default is J1939-V4.

There are four methods for converting fault codes. The PV300-P always looks for J1939-Version 4 first. However, the PV300-P can be set to read another version (V-1 through V-3) if Version 4 is not available from the ECU.

If you receive an unrecognizable fault, try changing to a different J1939 Version. If the fault SPN is still unrecognizable, the ECU generating the fault is probably using Fault Conversion Version 4. If the SPN number does change, but is still unrecognizable, try changing to another unused J1939 Version and check the SPN number again.

Data Rate

Currently the CANBUS data rate is set at 250 kbs.

Source Address

Use this to set the source address of the PV300-P on the CAN Network.

CAUTION: This procedure could make the display automatically reboot.

1. Press **Enter** to reach the **Set Source Address** screen.
2. Use the **Arrow** keys to decrease or increase the address numeric. The range is 0 to 253. The default is address 43.
3. Press **Enter**. The confirmation screen **Change Source Address** displays.
4. Press **Cancel** to exit the screen without saving. You return to the OEM menu.
5. Press **Enter** to save your changes. The display will automatically reboot. This is necessary to use the updated source address on the network.

Restore Defaults

If there is a need to restore the display to the factory default settings, the **Restore Defaults** selection allows for this.

CAUTION: This procedure could make the display automatically reboot.

Press **Enter** to reach the "**Restore to factory defaults?"** screen.

Press **Enter**. A message displays "**Restoring all factory defaults**" and after a few moments, the display reboots.

Machine Hours

Machine hours are calculated by the PV300-P once the RPM is above 50. Use this feature if you want to track hours for just the machine, or if the engine does not broadcast engine hours.

To Set Machine Hours:

1. On the **OEM** menu, press **Enter**.
2. On the **Machine Hours** screen, press **Set**.
3. On the **Set Machine Hours** screen, use the **Left** and **Right** Arrow keys to decrease or increase the numeric display.

4. Press **Enter** to save your change and return to the **OEM** menu, or press **Cancel** to return to the **Machine Hours** screen.
5. To return to the **OEM** menu without saving, press **Cancel**.

To reset the **Machine Hours** to zero:

1. On the OEM menu, press **Enter**.
2. On the **Machine Hours** screen, press **Reset**.
3. On the "**Rest Machine Hours?"** screen, press **OK** to save the reset or press **Cancel** to exit back to the previous screen. Pressing **Cancel** on the **Machine Hours** screen returns you to the OEM menu.

Clear Faults (DM3)

Please consult your Factory Authorized Engine Service Dealer prior to clearing DM3 fault codes.

Output

When **ON** and an alarm condition is present, the **Output** will pulse **ON** and **OFF**. The **Output** remains steady when a shutdown condition is present. The **Output** turns **OFF** once the fault condition is corrected, it is not active on the CANBUS, and the fault has been acknowledged on the display.

Faults and Warnings

The PowerView 300 provides three means for displaying faults and warnings: visual LEDs on the casing (*Amber* in the upper left corner, and *Red* in the upper right corner), **Warning** or **Shutdown** screens, and **Fault Indicators** (symbols) that show on the display. In addition, DPF Regen (Tier 4/Euro State IIIB) icons display to indicate DPF Regen status.

Visual Indication

- Amber LED (Warning)
- Red LED (Derate / Shutdown)

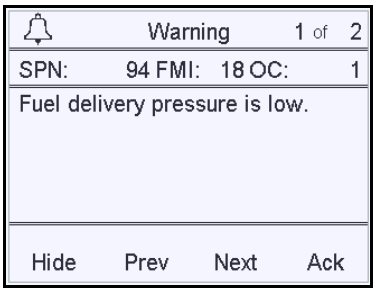
Fault Indicators for Active Fault Codes

Fault Indicators display at the top of the screen. The current gauge readings resize to allow room for any fault indicators.

Warning When the PowerView 300 receives a fault code from the ECU, the active fault code screen displays.

Shutdown When the PV300 receives a severe fault code from the ECU, the active fault code screen displays.

Warning or Shutdown Screens



Active Shutdown or **Warning** screens display when a fault occurs. The screen lists the SPN, FMI, text explanation of the fault, occurrence count, and indicates if there is more than one fault (1 of 2). In addition, it allows acknowledgement of the fault (Ack) and provision for temporarily removing the fault from the screen.

Acknowledging Fault Codes

To acknowledge a fault, then remove it from view and return to a gauge display screen, press **Enter (Ack)**, then press **Menu** (**Hide**). This only serves as a temporary measure, the fault must still be resolved to avoid situations that may damage or destroy an engine.

Supported Parameters

#	PGN	SPN	Description
1	61443	92	Percent Load at Current Speed
2	61444	190	Engine Speed
3	65253	247	Total Engine Hours
4	65262	110	Engine Coolant Temperature
5	65263	100	Engine Oil Pressure
6	65271	168	Electrical Potential
7	65271	158	Battery Potential Voltage
8	65271	167	Alternator Potential
9	65110	1761	Diesel Exhaust Fluid Level
10	64891	3719	Percent Soot
11	64891	3720	Percent Ash
12	64947	3245	Exhaust Filter Outlet Temperature
13	64948	3242	Exhaust Filter Inlet Temperature
14	65110	3031	Catalyst Tank Temperature
15	61444	(Internally Generated)	Machine Hours
16	61444	513	Actual Engine Torque
17	65257	182	Trip Fuel

18	65257	250	Total Fuel Used
19	65263	174	Fuel Temperature
20	65262	175	Engine Oil Temperature
21	65266	183	Fuel Rate
22	65266	184	Instantaneous Fuel Economy
23	65266	185	Average Fuel Economy
24	65270	102	Boost Pressure
25	65272	127	Transmission Oil Pressure
26	65272	177	Transmission Oil Temperature
27	65276	96	Fuel Level
28	61448	1762	Hydraulic Pressure
29	65128	1638	Hydraulic Temperature
30	64892	3700	DPF Active Regen Status

Specifications

Operating Voltage: 6.0 VDC minimum to 32 VDC maximum

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

Environmental

Operating Temperature: -40°C to 85°C (-40°F to 185°F)

Storage Temperature: -55°C to 85°C (-67°F to 185°F)

Sealing: IP67 (with connectors properly terminated and sealed)

CAN Bus: SAE J1939 compliant

Case: Polycarbonate

Output: Low side FET (1AMP max) (switches to ground upon fault)

Connectors: 6-pin and 12-pin Deutsch DT Series

Certifications: CE

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