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Introduction

By providing two programmable outputs the PDC-J1939 controller offers a wide range of possibilities for operating a variety of equipment including: forestry, construction and industrial. This unit can read engine parameters directly from the engine’s ECM via the J1939 CAN Bus, while at the same time controlling the equipment’s run rate.

Operating on either 12 or 24 VDC, the PDC-J1939 can fit into most applications. The combination of a custom connection harness and an easy to use Mil-Spec connector allows an operator to be set up and running within minutes.
Cautions and Warnings

Warning: Before welding on the Machine, ensure that all connectors are disconnected from the control panel. Failure to do so could result in damage to the panel itself or its components.

Warning: Disconnect all power before making any wiring connections to the control panel.

Caution: Improper operation of these controls could cause damage to equipment. Do not allow anyone to operate this equipment before completely reading the manual.

Caution: Electronic controls are intended as general purpose switches. They are not safety devices. Malfunctions may occur.

Caution: Electronic products are used to initiate an operation where false operation could be dangerous. Point-of-operation guarding devices must be installed and maintained to meet OSHA and ANSI Machine safety standards. The manufacturer shall not accept responsibility for installation, application, or safety of systems
Getting to know your PDC-J1939

In this chapter you will become familiar with the basic parts, functionality, and mounting of the PDC-J1939.
Parts Identification
Identifying the parts of the PDC-J1939 will help with installation as well as troubleshooting possible problems. Below are the basic parts of the controller:

1. Trim Ring
2. Bezel
3. Face Plate
4. Set Button
5. Up Button
6. Down Button
7. LCD Screen
8. Output LED
9. Enclosure
10. Bale
11. Mounting Posts
12. Wing Nuts
13. Serial Number/Date Code Label
14. 7-Pin Mil-Spec Connector
15. Gore-Tex® Patch (DO NOT REMOVE)
16. Revision Label
**Pin Configuration**

The Pin Configuration of the PDC-J1939 is very similar to the standard PDC with the addition of the j1939 twisted pair. The wiring for the PDC-J1939 is as follows:

A. Output #2 (Brown)  
B. Output #1 (Green)  
C. Power (Red)  
D. J1939 CAN Hi (Clear Twisted Pair)  
E. J1939 CAN Low (Black Twisted Pair)  
F. Ground (Black)

**Wiring Example**

The following diagram illustrates a typical installation scenario.
Mounting

The following diagrams show the mounting dimensions for the PDC-J1939.

Note:
3.25 inch diameter Cutout is required for installation.
Allow 2 inches rear clearance when mounting this unit.
Programming Your PDC-J1939

Learn how to program the PDC-J1939 Controller. This chapter will guide you through the steps necessary to program the controller, as well as viewing the J1939 information on the display.
**OEM Programming**

1. With the Keyswitch off; depress and hold the “Up” and “Set” buttons.

2. Turn the Keyswitch to the on position until the screen displays “0”.

3. Using the “Up” and “Down” buttons scroll to the number “747”.

4. Press the “Set” button.

5. Select the desired “Option” for the machine.

6. Press the Set button

7. Use the “Up” and “Down” buttons to set the HI RPM Value.

8. Press the “Set” button.

9. Use the “Up” and “Down” buttons to set the LO RPM Value.

10. Press the “Set” button.

11. Use the “Up” and “Down” buttons to set the BACK-UP TIME.

12. Press the “Set” button.

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**NOTE:** If the J1939 Gauge has already been installed from the Original Equipment Manufacturer, these settings should already be programmed correctly from the factory. Changing these settings may cause improper operation of the machine.
*Option Descriptions

<table>
<thead>
<tr>
<th>Option 1 (Dump Valve)</th>
<th>When OPT 1 is selected the 2nd output is set to come on LO and then it times out for the duration of the BACK-UP time, at which point the 1st output comes on. When the AUTOFEED is turned off in this mode, both outputs become disabled.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option 2 (Forward Valve)</td>
<td>When OPT 2 is selected the 1st output will automatically be set to come on at HI, the 2nd output automatically comes on at LO, and if the AUTOFEED is turned off the 1st output becomes activated all the time and the 2nd output becomes disabled.</td>
</tr>
<tr>
<td>Option 3</td>
<td>When OPT 3 is selected the 1st and 2nd outputs will automatically be set to come on at LO. When the AUTOFEED is turned off, both outputs become disabled.</td>
</tr>
<tr>
<td>Option 4</td>
<td>OPT 4 allows for more detailed customized programming.</td>
</tr>
</tbody>
</table>

**Setting the Parameters**

The PDC-J1939 allows the flexibility to make changes to your settings. This allows changes to be made in the field with the ability to adjust the “HI”, “Lo” and “Back” settings of your machine. To set these parameters follow the steps below:

1. With the Keyswitch off; depress and hold the “Up” and “Set” buttons.

2. Turn the Keyswitch to the on position until the screen displays “0”.

3. Press the “Set” button.

4. Use the “Up” and “Down” buttons to set the HI RPM Value.

5. Press the “Set” button.

6. Use the “Up” and “Down” buttons to set the LO RPM Value.

7. Press the “Set” button.

8. Use the “Up” and “Down” buttons to set the BACK-UP TIME.

9. Press the “Set” button.
Disabling/Enabling the ‘Auto-feed’ Function

The ‘Auto-feed’ function is enabled by default. To disable it perform the following steps:

1. With either the machine running or the key switch in the “On” position, depress and hold the “Down” button for two to three seconds. When the ‘Auto-feed’ function is disabled the controller will display engine RPMs for four seconds then flash “Off”. The controller will continue this cycle until the ‘Auto-feed’ function is re-engaged.

2. To re-engage the ‘Auto-feed’ function depress and hold the “Set” button for one second.

Viewing the J1939 Information

The PDC-J1939 allows you to view the engine RPMs, battery voltage, water temperature, oil and boost pressure, percent load, fuel consumption (GPH) and true engine hours. To view this information just follow the steps below:

1. With the engine running press the “Up” button for one second.

2. When you see the water temp. symbol appear on the LCD, release the button.

3. To view the other parameters (rpm, water pressure, boost pressure, oil pressure, battery voltage, engine hours, percent load and fuel consumption) just press and release the “Up” button.
## Explanation of “On-Screen” Symbols

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Symbol" /></td>
<td>This is the first thing shown on the screen when the system is powered up. This information is valuable for troubleshooting issues. This is the Program Version for the PDC-J1939</td>
</tr>
<tr>
<td><img src="image2.png" alt="Symbol" /></td>
<td>This screen shows the Water Temperature of the system in degrees Fahrenheit</td>
</tr>
<tr>
<td><img src="image3.png" alt="Symbol" /></td>
<td>This screen shows the Battery Voltage of the system in VDC</td>
</tr>
<tr>
<td><img src="image4.png" alt="Symbol" /></td>
<td>This screen shows the Oil Pressure of the system in PSI</td>
</tr>
<tr>
<td><img src="image5.png" alt="Symbol" /></td>
<td>This screen shows the Actual Engine Hours of the system</td>
</tr>
<tr>
<td><img src="image6.png" alt="Symbol" /></td>
<td>This screen shows the RPMs of the engine</td>
</tr>
<tr>
<td><img src="image7.png" alt="Symbol" /></td>
<td>This screen shows the Percent Load of the engine</td>
</tr>
<tr>
<td><img src="image8.png" alt="Symbol" /></td>
<td>This screen shows the system’s Fuel Consumption in Gallons per Hour</td>
</tr>
<tr>
<td><img src="image9.png" alt="Symbol" /></td>
<td>This screen shows the Engine Boost Pressure in PSI</td>
</tr>
<tr>
<td><img src="image10.png" alt="Symbol" /></td>
<td>This screen indicates an active fault on the J1939 CAN Bus. Refer to page 14 for more information</td>
</tr>
</tbody>
</table>
Scroll Feature

The scroll feature allows you to view all of the PDC-J1939 engine parameters on the fly without having to step through the programming sequence. To access the scroll feature perform the following steps:

1. Depress and hold the “Up” button for 3 seconds. At this point the system will display each of the different parameters for 5 seconds.

2. To stop the scroll feature simply press the “Up” button again.
Troubleshooting

This chapter will guide you through common troubleshooting procedures. You will also learn how to access the J1939 Fault Codes.
Viewing J1939 Fault Codes (Display reads “FALT”)

The PDC-J1939 has the ability to read and display any Fault conditions that are present on the J1939 Bus. If an error is present you will see “FALT” appear on the screen every five seconds. In order to view the fault codes follow the steps below:

1. Depress and hold the “Set” button. Once you see “FC n” appear on the screen release the button.

2. Press the “Down” button so the display reads “FC y”

3. Press the “Set” button to see any active faults.

The Fault codes are laid out as follows:

1. The first thing that you see is “FC (0-99)”. This number indicates the number of the fault code. The faults are numbered sequentially from 0-99.
2. The second thing that you will see is “SP XX”. This indicates the SPN (Suspect Parameter Number).
3. Next you will see “FI XX”. This is the FMI (Fault Mode Indicator).
4. Finally, you will see “OC XX”. This is the number of occurrences of the fault.
5. At the end of the section you see the Fault Code Number display again. You will then have the option to Repeat the current code, move on to the next code or end the sequence.

Controller displays “— — — —” on the screen

If the controller displays “— — — —” on the LCD it means that the J1939 Bus is not connected properly or has a problem. Check the following:

1. Check the connection to the digital controller to make sure that there is good contact at all connection points.
2. With a multi-meter check the resistance between the J1939 wires anywhere on the Bus. Anything other than 60Ω indicates a resistance error on the J1939 Bus.

The controller does not power up

If the controller does not power up check the following:

1. Check all fuses to make sure that they are good. (Do not replace a bad fuse with one of a Higher rating).
2. Check all connections to the Controller. Make sure that all connections are tight and that all pins/sockets are making good contact.
3. With a multi-meter check the voltage coming into the controller. Also, check continuity of the power wire as well as the ground wire.

Outputs not functioning correctly

1. See page 10 to reset all settings to factory defaults.
2. Check voltage at coils. Ensure that the OHM rating for the coil is within the Manufacturer’s Specifications.
Troubleshooting Problems

**No Display**
1. Check continuity of the RED wire to a clean power source.
2. Check the 7.5 Amp fuse.
3. Check continuity of the BLACK wire to ground connection.

**Feed does not re-engage after stopping**
1. See page 10 to reset all settings to factory defaults.
2. Check all connections to the Controller. Make sure that all connections are tight and that all pins/sockets are making good contact.
3. Check all fuses to make sure that they are good. *(Do not replace a bad fuse with one of a Higher rating)*