

Product Manual

Engine Display & Control Panel J1939 Engines



Part Number: MVP-A7102
Revision: 2.0

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Prior to starting the engine, select the proper throttle control mode and parameters required for application.

CAN Bus Configuration

This module communicates to the engine ECU via the J1939 CAN Bus network. This is a three wire connection to the engine ECU. Engine information and alarm codes are broadcast over the CAN bus from the engine ECU to the controller display. And, the controller communicates throttle commands to the engine ECU over the CAN bus.

To assure proper communications between the engine ECU and the controller, the correct **SOURCE ADDRESS** and **TSC1 ADDRESS** need to be selected in the controller for the particular engine make and model. These settings are available in the **CAN CONFIGURATION MENU**.

Throttle Settings

The following **bolded** settings are required for manual (and automatic) operation in the Throttle Configuration menu.

Throttle Configuration	Throttle Type Selection
	TSC Minimum Speed
	TSC Maximum Speed
	TSC Ramp Rate
	Throttle Curve Selection

Manual Throttle Options

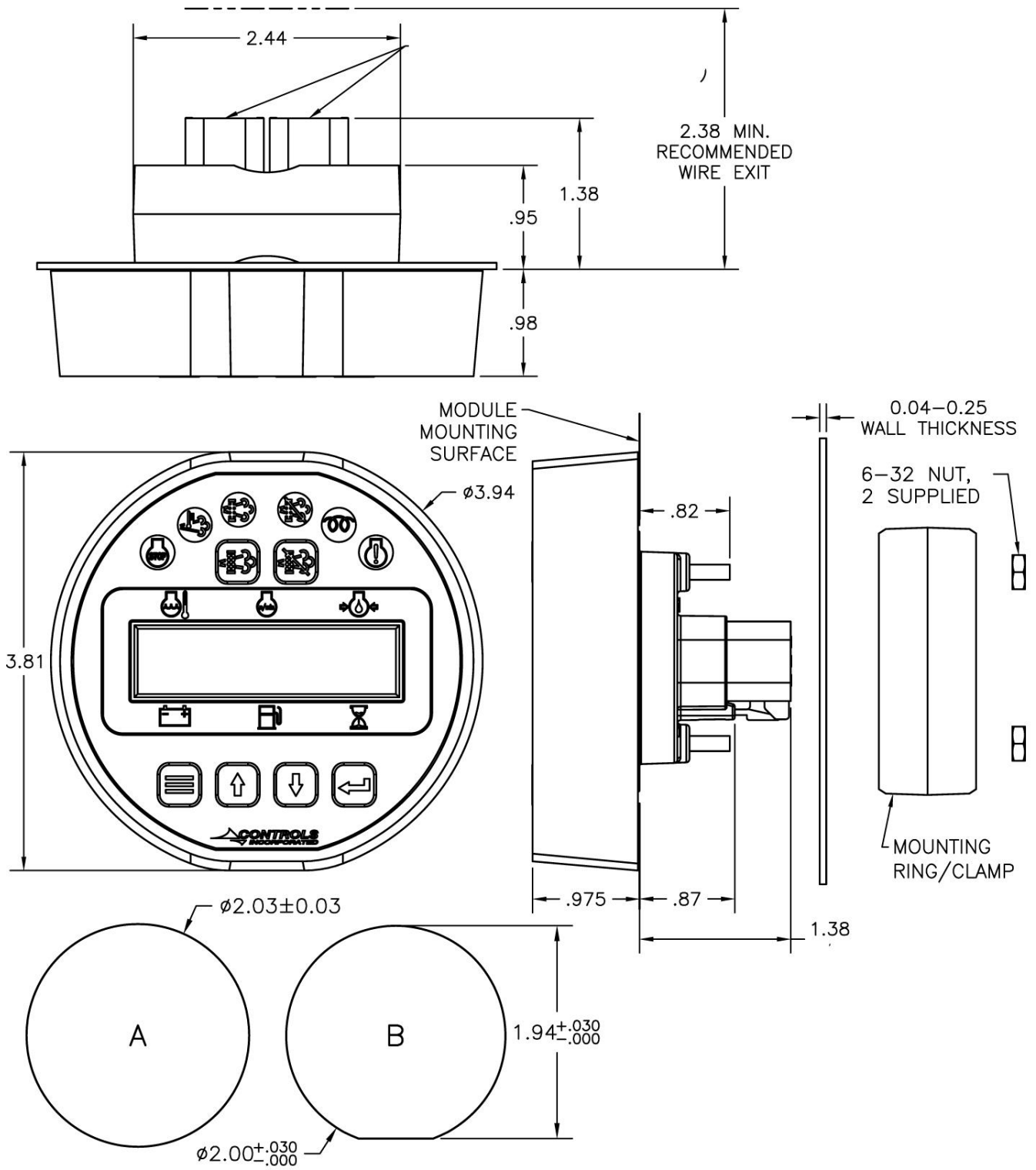
1) Vernier Throttle

Vernier throttle is standard up and down throttle between the minimum and maximum selections. The ramp rate is the rate of acceleration in rpm's per second. The control panel uses J1939 throttle, also called "torque speed control" or TSC1.

2) Multistate Throttle

Multistate throttle provides for one, two, three or four specific operating speeds. Pressing the up and down buttons adjusts engine speed between the selected multistate speed selections.

INSTALLATION INFORMATION



MOUNTING HOLE REQUIREMENTS (A OR B)

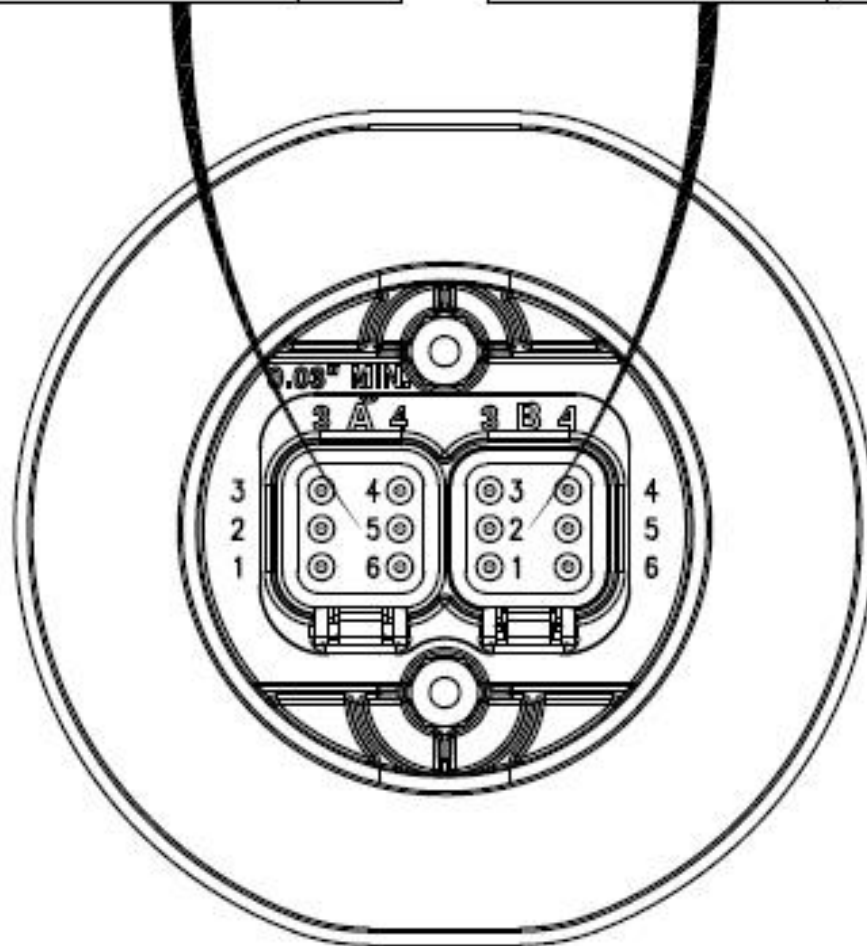
MODULE CONNECTORS

CONNECTOR A

FUNCTION	PIN
BATTERY +	1
CAN HIGH	2
CAN LOW	3
DIGITAL INPUT	4
FUEL LEVEL	5
BATTERY -	6

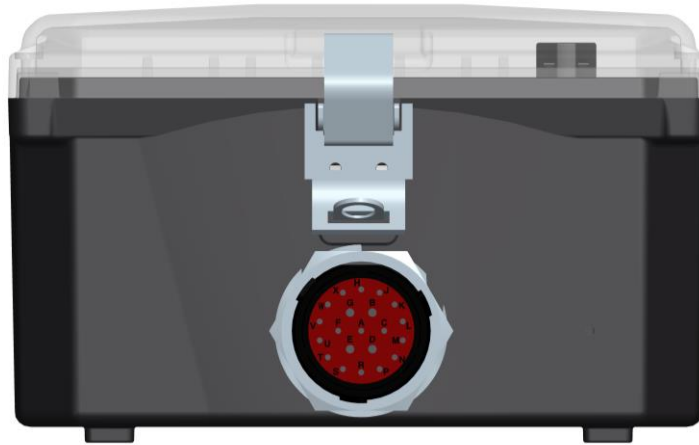
CONNECTOR B

FUNCTION	PIN
BATTERY POSITIVE	1
N/A	2
MODBUS A	3
MODBUS B	4
N/A	5
BATTERY -	6



ENGINE HARNESS CONNECTOR INFORMATION

Engine Harness Connector –Deutsch 21 pin (HDP24-24-21PE)



21 Pin Connector

Pin	Function
B	Battery Positive
E	Battery Negative
G	Key On Power
D	Crank Signal
V	J1939 High
U	J1939 Low
J	Alternator Excite
L	Analog Throttle Emulator
M	Analog Throttle Emulator
C	Analog Throttle Emulator
R	Digital Throttle Emulator
S	Digital Throttle Emulator
Loose	Fuel Level Sender
Loose	Digital Input 1

ENGINE ALARMS, CODES AND MESSAGES

Engine ECU Alarm/De-Rate/Shut Downs

It is important to understand panel operation with respect to engine safety protections, alarms, and fault codes. The panel operates with J1939 engines. These engines have an ECU (engine control unit) which is essentially a computer that runs the engine. When engine parameters are out of normal operating ranges, the ECU takes specific actions which can include the following:

- 1) Broadcast a trouble code
- 2) Broadcast a red or yellow lamp
- 3) De-rate the engine
- 4) Shut down the engine
- 5) Turn on alarm horn

It is the engine ECU that de-rates or shuts down the engine when it is not operating within normal parameters. This includes more common shut downs like high engine temperature and low oil pressure but can encompass a large range of parameters depending on the ECU.

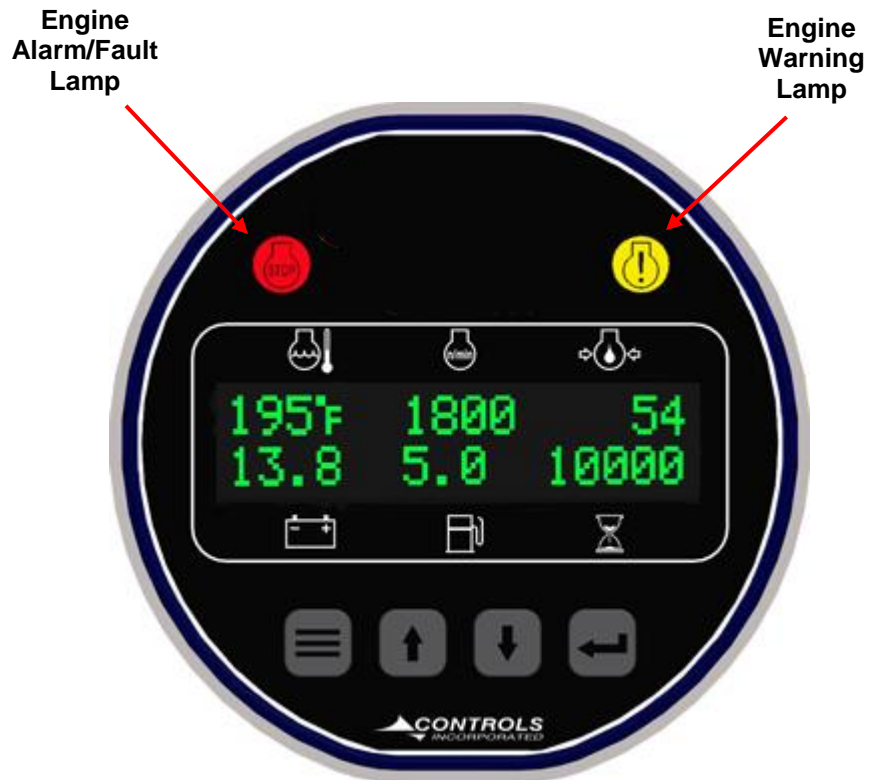
Alarm Annunciation and Code Reader

This panel is configured to operate with standard J1939 engines where engine de-rate and shutdowns are managed by the engine ECU. The panel communicates with the engine ECU and serves as a trouble code reader. When the engine ECU broadcasts a trouble code (called an SPN.FMI code) the panel does the following:

- 1) Illuminate the appropriate LED indicator lamp
 - a. Yellow Lamp = Alarm
 - b. Red Lamp = Engine Shut Down
- 2) Displays the trouble code (standard SPN.FMI code)
- 3) Displays a code description on the LCD screen
- 4) Displays the occurrence count of the code



Indicator Lamps



Active and Stored Engine ECU Codes

The panel also provides the ability to check the engine ECU for all ACTIVE and STORED engine ECU codes. These codes can be viewed via the Active Codes and Stored Codes menus.

CONTROL PANEL ANALOG AND DIGITAL INPUTS

The panel has one analog input and one digital input available to monitor other components, senders or signals. These inputs can be used for a number of purposes including alarms and shut downs. Two digital inputs are pre-set for external throttle control.

Input	Heading	Default	Options	Connector	Pin
Analog 1	Function		Fuel level	A	5
Digital 1	Normally	Open	Open / Closed	A	4
	Function	None			
	Message	None			
	Check	Off	Off / Always / Run		

1) **Analog 1 Function Options**

- 1) Fuel Level S-W – Fuel amount, in percentage, can be measured and displayed using a standard Stewart Warner scale sender of 240 ohms – 33 ohms. 240 = Empty and 33 = Full. Sender ground must be common with battery negative.
- 2) Fuel Level VDO – Fuel amount, in percentage can be measured and displayed using a VDO scale sender of 10 ohms – 180 ohms. 10 = Empty and 180 = Full. Sender ground must be common with battery negative.
- 3) Oil Pressure PSI – Oil pressure, in PSI, can be measured and displayed using a standard Stewart Warner scale sender of 240 ohms – 33 ohms. 240 = 0 PSI and 33 = 100 PSI. Sender ground must be common with battery negative.
- 4) Oil Pressure bar – Oil pressure, in bar, can be measured and displayed standard Stewart Warner scale sender of 240 ohms – 33 ohms. 240 = 0 bar and 33 = 7 bar. Sender ground must be common with battery negative.
- 5) Oil Pressure VDO PSI – Oil pressure, in PSI, can be measured and displayed using a standard Stewart Warner scale sender of 10 ohms – 180 ohms. 10 = 0 PSI and 180 = 150 PSI. Sender ground must be common with battery negative.
- 6) Oil Pressure bar – Oil pressure, in bar, can be measured and displayed using a standard Stewart Warner scale sender of 10 ohms – 180 ohms. 240 = 0 bar and 33 = 10 bar. Sender ground must be common with battery negative.
- 7) Switch – This setting allows for a switch to be connected rather than an analog sender. Set Analog 1 Message to assign a label to the switch device.
- 8) None – Set when no functionality is required.

2) **Digital Function Activation**

- 1) Off / Always / Run – Describes when the parameter will be monitored for alarm conditions. Run refers to when the engine is running. Off disables the alarm conditions. Always enables the alarm constantly regardless of engine state.
- 2) Alarm Delay – The time period, after Sender Check Bypass, that the parameter must be on the alarm condition before the alarm becomes latched.

MENU SYSTEM

To Enter Menu System

Hold MENU button and press ENTER button.

Menu Navigation

Press MENU button to scroll menu options.

Press UP arrow button to enter menu.

Press DOWN arrow button to reverse.

Exit Menu System

Hold MENU button and press ENTER button.

To Change a Setting

Press ENTER button to bring up brackets [].

Press UP arrow button and DOWN arrow button to change setting.

Press ENTER button to make selection, brackets disappear.

Recycle key to the OFF position after changing a setting.

Main Menu

Main Menu	Sub Menu		
Active Engine Fault Codes	View/Scroll Active Fault Codes	} Viewing Menu	
Stored Engine Fault Codes	View/Scroll Stored Fault Codes		
Engine Parameters	View ECU Engine Information (% Load, Torque, Oil Temp, etc.)		
Engine Identification	Engine Model # View		
	Engine Serial # View		
Module Information	Control Unit Part# View		
	Control Unit Software Version View		
Controller Setup (PASSWORD PROTECTED)	Quick Setup	(1)	} Configuration Menu
	Engine Parameter Configuration	(2)	
	Input Configuration	(3)	
	Throttle Configuration	(4)	
	Module Configuration	(5)	
	Display Configuration	(6)	
	CAN Configuration	(7)	
	MODBUS Configuration	(8)	

To access the controller setup menus, a password is required.

Configuration Menus

(1) Quick Setup	Engine Manufacturer (Default = John Deere)
	TSC Minimum Speed (Default = 650 RPM)
	TSC Maximum Speed (Default = 2400 RPM)
	Performance Display (Default = Off)
(2) Eng. Parameter Configuration	Parameter Selection (Speed, Coolant Temp., Oil Pressure, Fuel Level, Voltage, Hour Meter)
	Parameter Setup (Varies based on parameter)
(3) Input Configuration	Configure Parameter (Channels, Custom Message)
	Digital Input A4 Configuration
(4) Throttle Configuration	Throttle Type Selection
	TSC Mode
	TSC Minimum Speed
	TSC Maximum Speed
	TSC Bump Speed
	TSC Ramp Rate
	Throttle Curve Selection
	Multi State Speed #1
	Multi State Speed #2
	Multi State Speed #3
(5) Module Configuration	Pre Alarms Displayed (Default = 4)
	Clear Number of Starts (Yes/No)
	Engine Run Speed Criteria
	Engine Stop Speed Criteria
(6) Display Configuration	Pressure & Temp Units (English/Metric)
	Performance Display On/Off

(7) CAN bus Configuration	Engine Manufacturer (John Deere)
	TSC1 Address (Default = 3) Others available
	Source Address (Default = 44) Others available
	Engine Address (Default = 0) Others available
	Fuel Level Transmit
	Voltage Transmit
	Hours Transmit
	Engine Status Transmit
	Panel Status Transmit
	Panel Information Transmit
	Faults Transmit
	Text During Sleep
	JDLINK Auto Accept

(9) MOD bus Configuration	Mode Off/Slave/Gauges
	Baud Rate
	Parity
	Stop Bits
	Slave Address
	Communication Timeout