

Product Manual

Engine Display and Control J1939 Engines



Part Number: MVP-62303

Revision: 3.0

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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 (Default = TSC Multistate)
	E-Throttle Mode (Default = Remote Accelerator Pedal Position)
	Cooperative TSC (Default = Off)
	TSC Minimum Speed
	TSC Maximum Speed
	TSC Ramp Rate
	Throttle Curve Selection
	TSC Multistate Speeds 1-4

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.

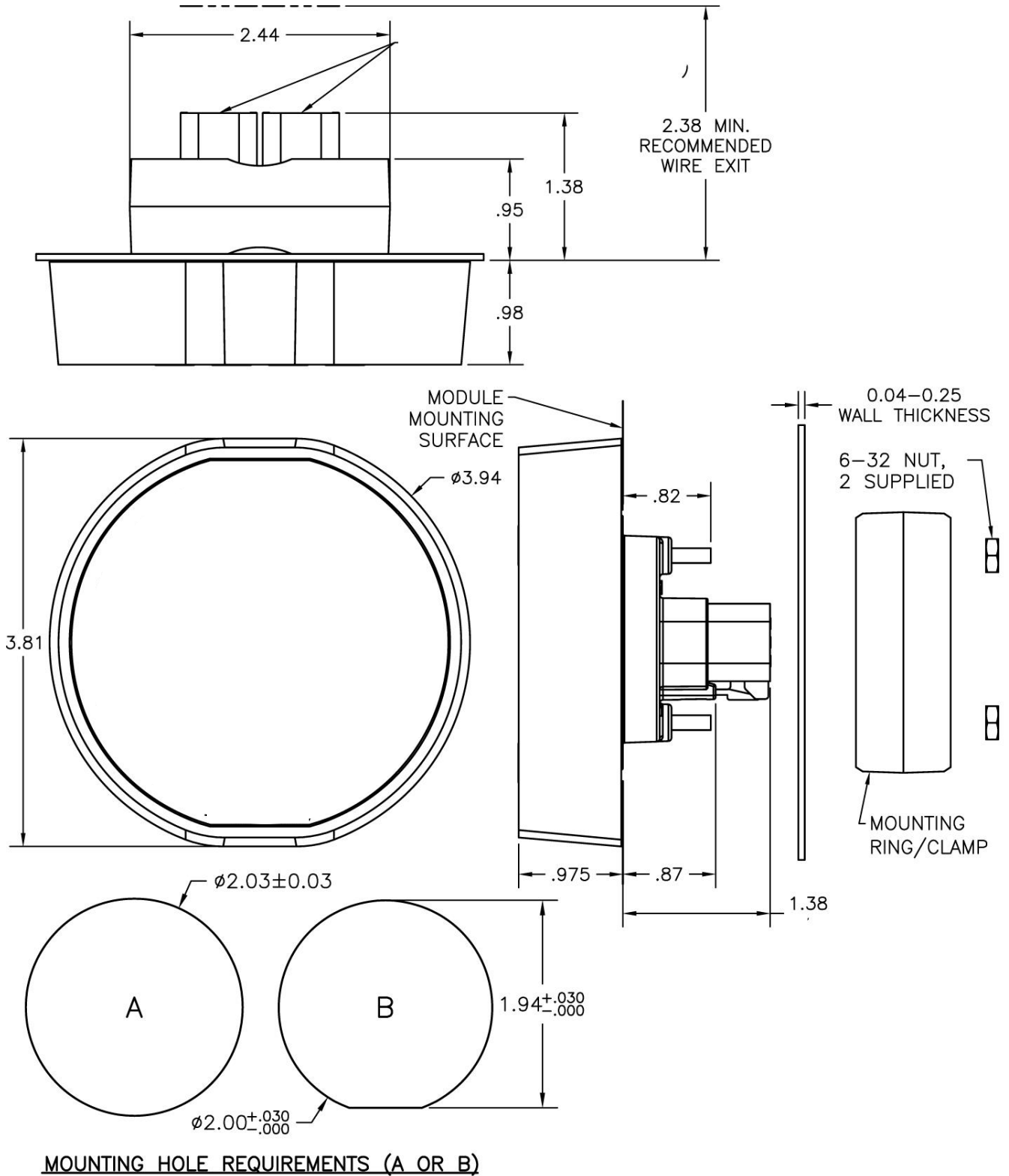
2) Multistate Throttle

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.

3) High/Low

Engine accelerates to the Max speed setting with the UP button is pressed. When the UP button is released, the engine goes back to idle speed.

INSTALLATION INFORMATION



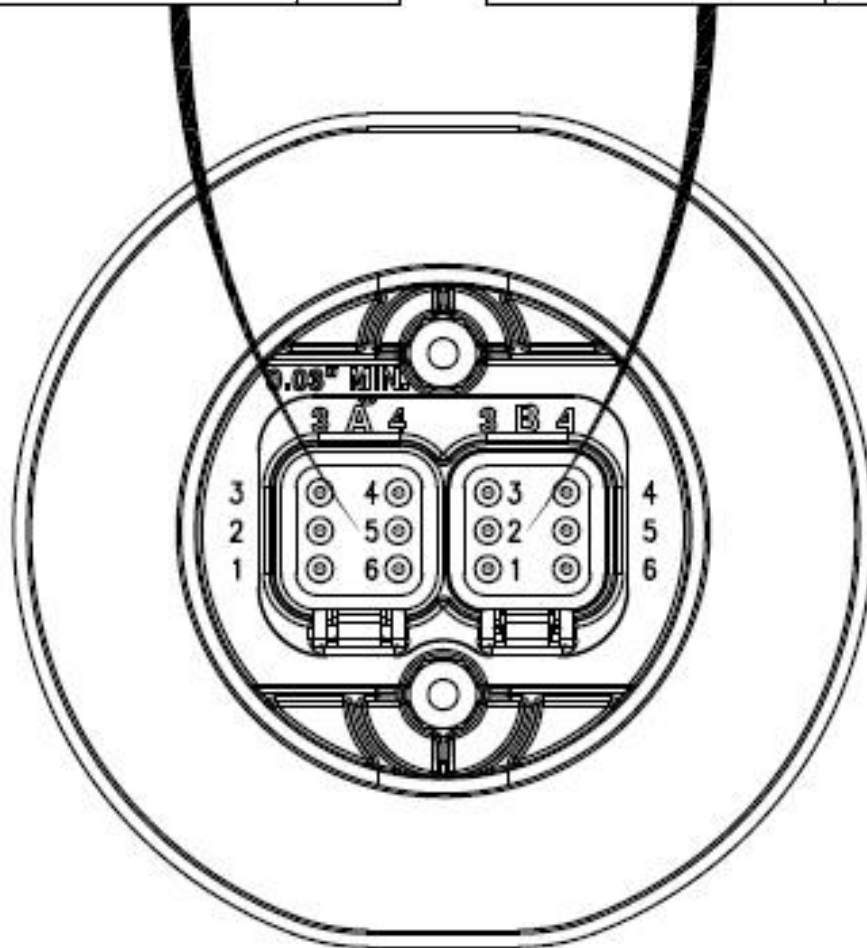
CONNECTOR INFORMATION

CONNECTOR A

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

CONNECTOR B

FUNCTION	PIN
EXTERNAL SD	1
FUEL/RUN	2
THROTTLE UP	3
THROTTLE DOWN	4
OUTPUT #2	5
OUTPUT #3	6



PANEL CONNECTOR INFORMATION



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

4 Pin Connector

Pin	Function
1	External Shutdown
2	Fuel Level Input
3	Output #2
4	Output #3

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.

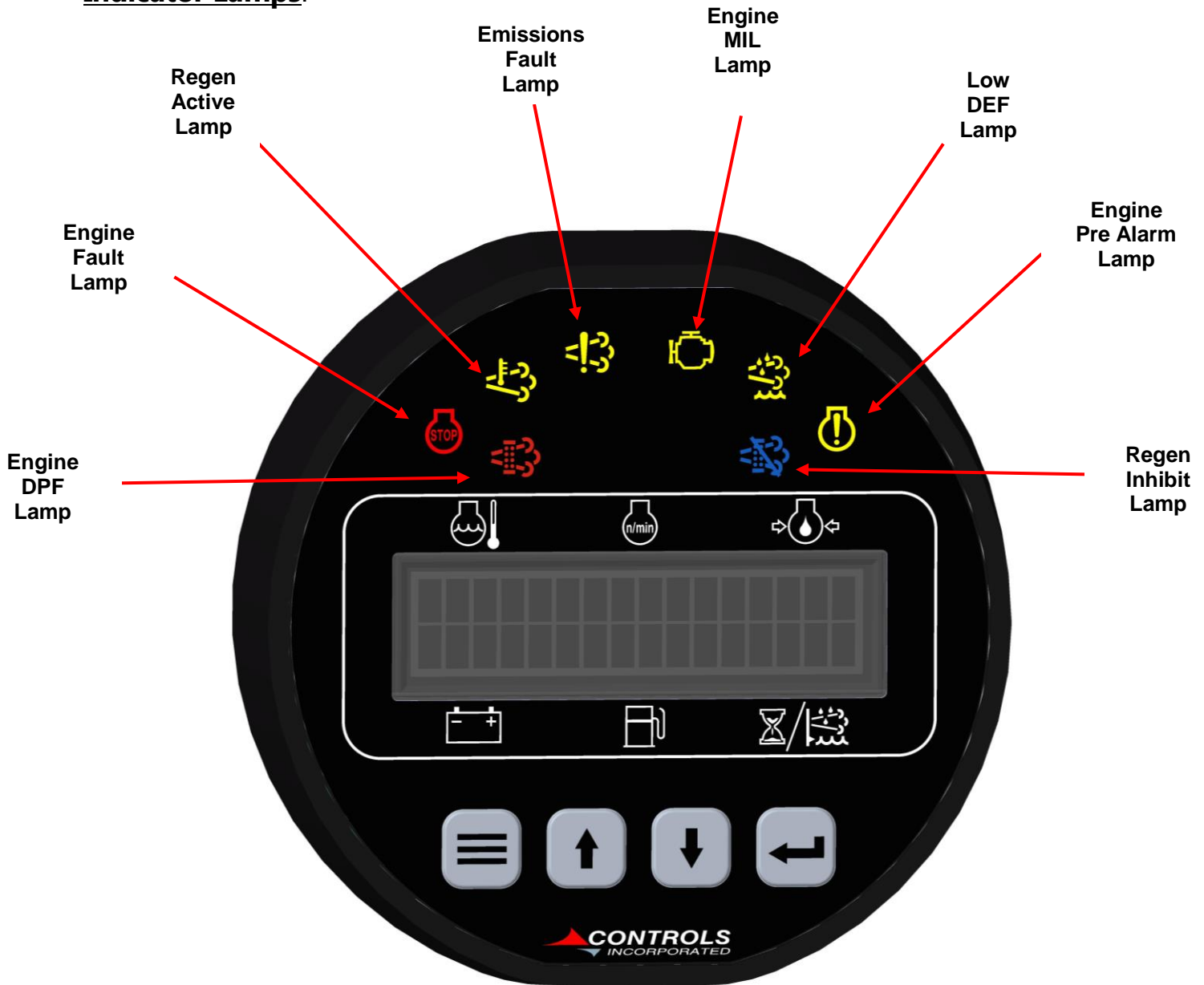
Alarm Annunciation and Code Reader

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 digital inputs and three analog inputs available to monitor other components, senders or signals. The analog input is preset to fuel level and cannot be configured. The digital inputs can be used for a number of purposes including alarms and shut downs.

Input	Heading	Default	Options	Connector	Pin
Digital 1	Normally	Open	Open / Closed	B	1
	Function	Alarm			
	Message	External Shutdown			
	Check	Always	Off / Always / Run		
Analog 2	Function	Throttle Up	Always	B	3
Analog 3	Function	Throttle Down	Always	B	4

Digital Function

- 1) Pre Alarm – Warning message will be displayed along with a yellow lamp when active.
- 2) Throttle Up – Mimics the front panel key press for speed control.
- 3) Throttle Down - Mimics the front panel key press for speed control.

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.

CONTROL PANEL OUTPUTS

The panel has three outputs available to signal other devices based on predefined events. These Outputs can be used for a number of purposes including engine operation or driving an audible alarm.

Input	Heading	Default	Connector	Pin
Output 1	Function	Fuel Run	B	2
	Polarity	Positive		
	Initial State	On		
Input	Heading	Default	Connector	Pin
Output 2	Function	None	B	5
	Polarity	Positive		
	Initial State	Off		
Input	Heading	Default	Connector	Pin
Output 3	Function	None	B	6
	Polarity	Positive		
	Initial State	Off		

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	
Stored Engine Fault Codes	View/Scroll Stored Fault Codes	
Engine Parameters	View ECU Engine Information (% Load, Torque, Oil Temp, etc.)	
Emissions Parameters	Regen Options (Auto, Inhibit, Request)	
	DEF Level	
	Regen Active/Not Active View	
	Regen Inhibited/Not Inhibited View	
	DPF Out Gas Temperature View	
	DPF Differential Pressure View	
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)
	Engine Parameter Configuration	(2)
	Input Configuration	(3)
	Output Configuration	(4)
	Throttle Configuration	(5)
	Engine Safety Configuration	(6)
	Module Configuration	(7)
	Display Configuration	(8)
	CAN Configuration	(9)
	Maintenance Configuration	(10)
	Emissions Configuration	(11)
	Clutch Configuration	(12)

Viewing Menus

Configuration Menus

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

Configuration Menus

(1) Quick Setup	Engine Manufacturer
	TSC Minimum Speed
	TSC Maximum Speed
	Performance Display Off/On
(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 Selection (Channels/Message)
	Digital 1-3 Function
(4) Output Configuration	Configure Selection (Channels/Message)
	Relay 1 Function (Default to Fuel/Run)
	Relay 2 Function (Default to Preheat)
	Relay 3 Function
(5) Throttle Configuration	Throttle Type
	E-Throttle Mode
	Cooperative TSC Mode
	TSC Minimum Speed
	TSC Maximum Speed
	TSC Bump Speed
	TSC Ramp Rate
	Throttle Curve
Multi State Speeds 1-4	
(6) Engine Safety Configuration	Sender Check By-Pass (Default = 0:10)
	Parameter Selection (Fuel Level, Oil Pressure, Temperature, Battery, Overspeed, Speed Limit, Derate to Shutdown)
	Parameter Settings (vary based on selection)
(7) Module Configuration	Pre Alarms Displayed
	Clear Number of Starts
	Engine Run Criteria Speed
	Engine Stop Criteria Speed
(8) Display Configuration	English/Metric Selection
	Performance Display Off/On

(9) CAN Configuration	Engine Manufacturer (Default = Cummins)
	TSC1 Address (Default = 3) Others available
	Source Address (Default = 3) Others available
	Engine Address (Default = 0) Others available
	Speed Transmit On/Off
	Temperature Transmit On/Off
	Oil Pressure Transmit On/Off
	Fuel Level Transmit On/Off
	Voltage Transmit On/Off
	Hours Transmit On/Off
Faults Transmit	
(10) Maintenance Configuration	Service Messages (Default = No)
	Schedule Selection
	Schedule Reset Yes/No
	Schedule Interval Setting
	Schedule Warning Setting
	Schedule Trip Setting
	Schedule Message
(11) Emissions Configuration	DEF Level Check (Default = Off)
	Low DEF Pre Alarm (Default = 16%)
	Low DEF Alarm (Default = 0%)
	DEF Alarm Delay
	Allow Service Regeneration Yes/No (Deere Only)
	Regeneration Interlock On/Off
	TSC Transmit Yes/No (stop TSC to engine during regeneration)
	DPF Inhibit Lamp Source
(12) Clutch Configuration	Clutch #1 Engage Trip (Default = None)
	Clutch #1 Engage Speed (Default = 800 rpm)
	Clutch #1 Engage Load (Default = 0%)
	Clutch #1 Engage Coolant Temperature (Default = 150°F)
	Clutch #1 Engage Delay (Default = 0:00)
	Clutch #1 Engage Interval (Default = 0:00)
	Clutch #1 Release Trip (Default = None)
	Clutch #1 Release Speed (Default = 800 rpm)
	Clutch #1 Release Load (Default = 0%)
	Clutch #1 Release Coolant Temperature (Default = 150°F)
	Clutch #1 Release Delay (Default = 0:00)
	Clutch #1 Release Interval (Default = 0:00)