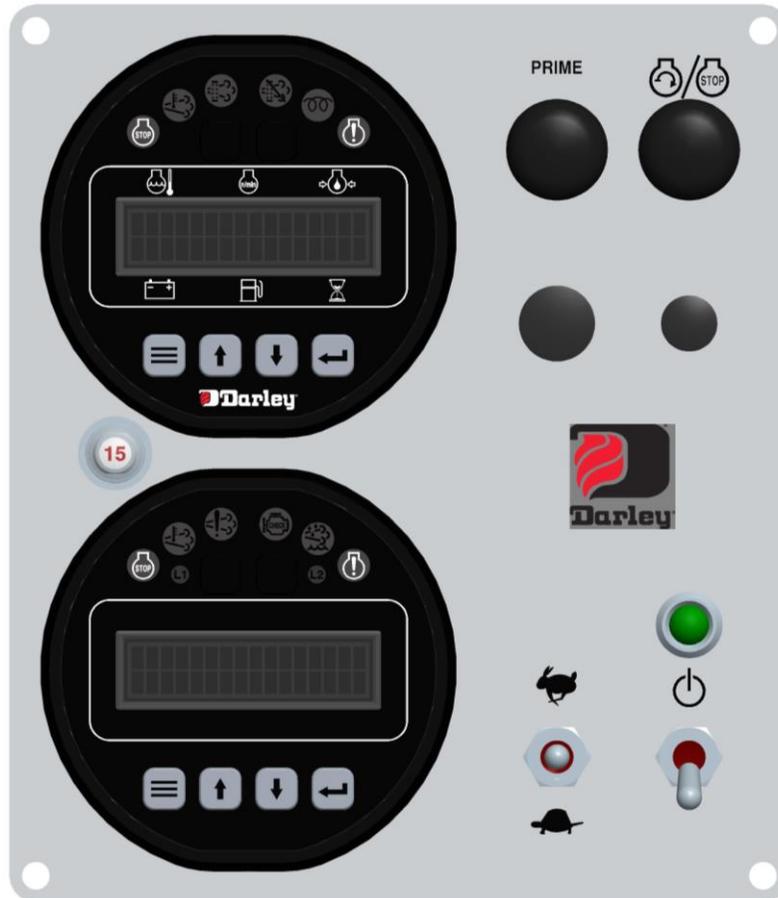# Product Manual

Pump Display & Control Panel
Mechanical Engines

Part Number: MVP-M1704
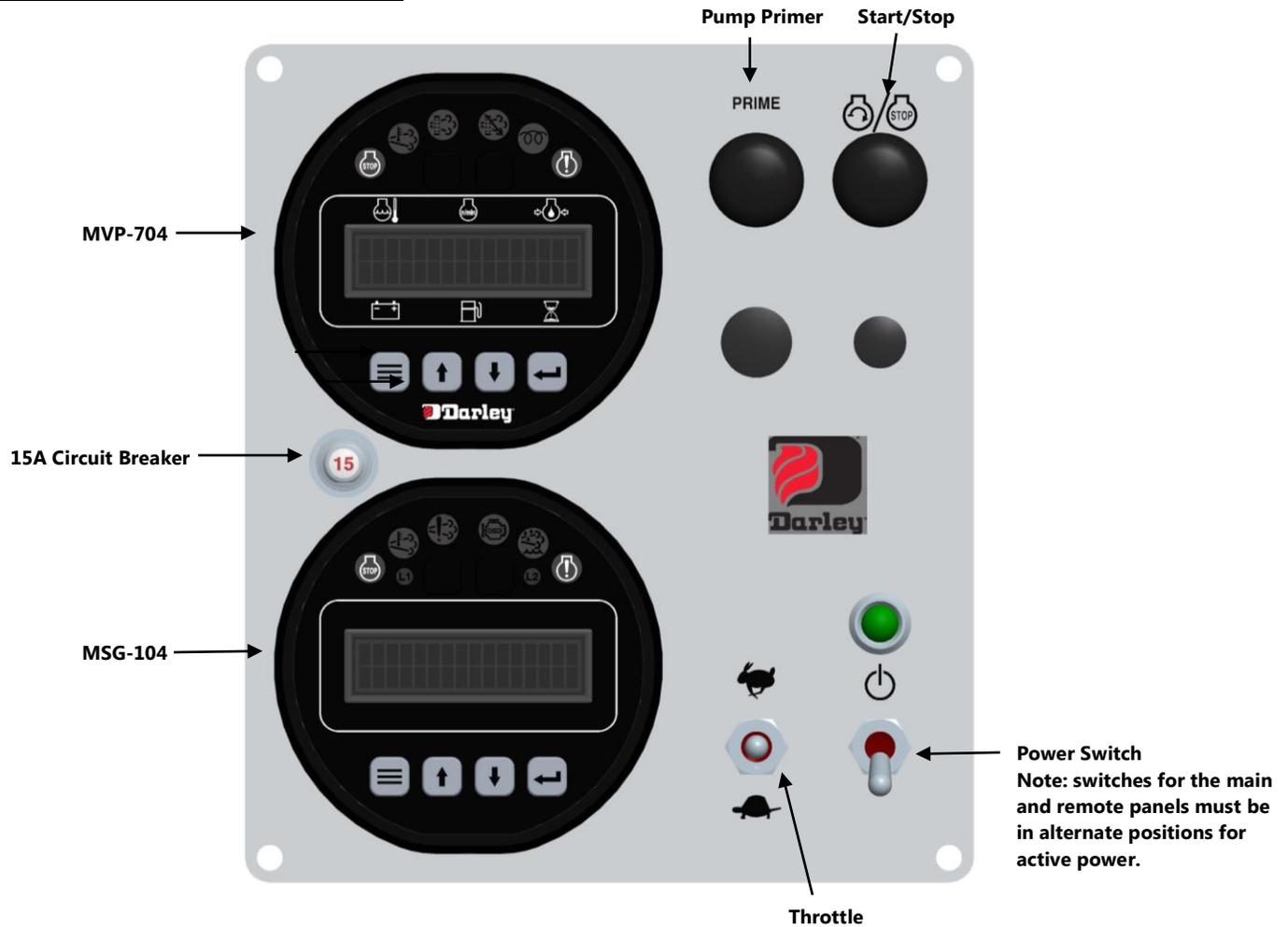**Revision: 1.0**

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TABLE OF CONTENTS

PANEL INFORMATION

J1939 Mechanical Actuator Calibration

Prior to operation, the J1939 Actuator requires calibration with the MVP-704. This will require the following steps:

- With the engine running, go to the *Throttle Configuration* Menu
- Press up arrow until the screen displays *Calibrate Actuator*. Change to Yes.
- Adjust the engine speed to the desired minimum speed and press enter for yes.
- Adjust the engine speed to the desired maximum speed and press enter for yes
- Press enter to save the change
- Recycle Power

Panel Connectors
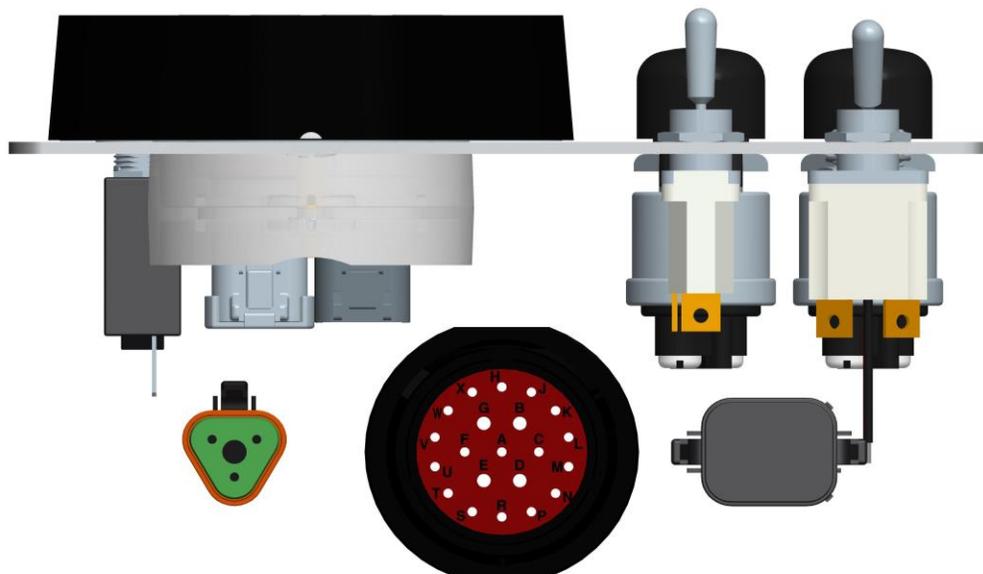
Instance:MVP-M1704

Engine Harness Connector –Deutsch 21 pin (HDP24-24-21PE)
Transducer Connector –Deutsch 3 pin (DT06-3S)
Remote Connector –Deutsch 8 pin (DT06-8S)

21 Pin Engine Harness Connector	
Pin	Function
B	Battery Positive
E	Battery Negative
G	Key On Power
D	Crank Signal
V	J1939 High
U	J1939 Low
F	Can Bus Shield
K	Tachometer
T	Pre Heat Signal
A`	Key On Power
H	Engine Temperature
X	Oil Pressure
N	Auxiliary Switch Input
R	Prime Button
S	Prime Button

3 Pin Transducer Harness Connector	
Pin	Function
A	5 VDC
B	Battery Negative
C	Transducer Signal

8 Pin Remote Harness Connector	
Pin	Function
1	Battery Positive
2	Switched B+
3	J1939 High
4	J1939 Low
5	J1939 Shield
6	Prime Button
7	Prime Button
8	Battery Negative

MVP-704 MODULE

INSTALLATION INFORMATION
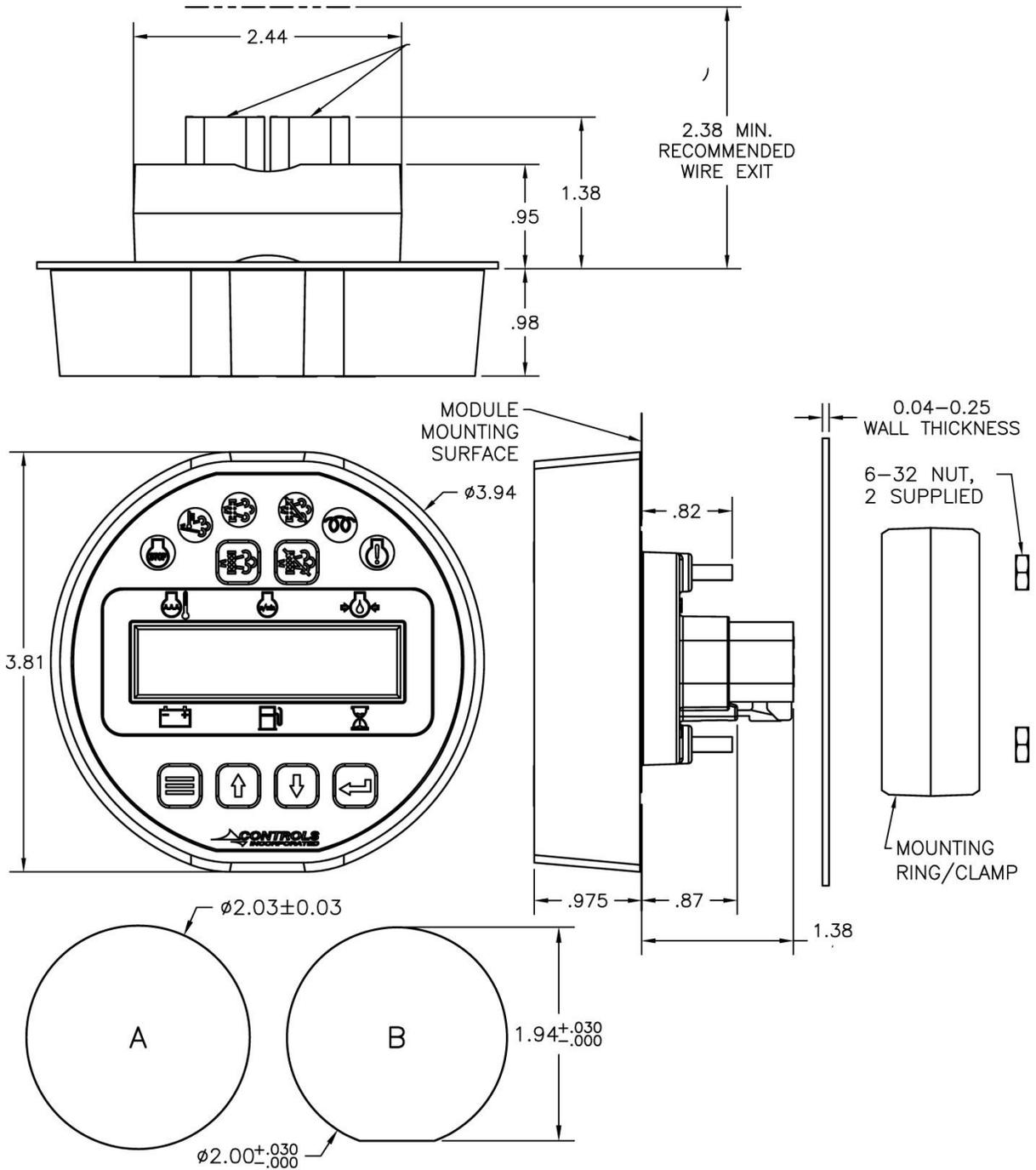
MOUNTING HOLE REQUIREMENTS (A OR B)

MODULE CONNECTOR INFORMATION

CONNECTOR A

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

CONNECTOR B

FUNCTION	PIN
START/STOP INPUT	1
FUEL/RUN	2
TEMP INPUT	3
OIL PRESS INPUT	4
PREHEAT	5
CRANK	6
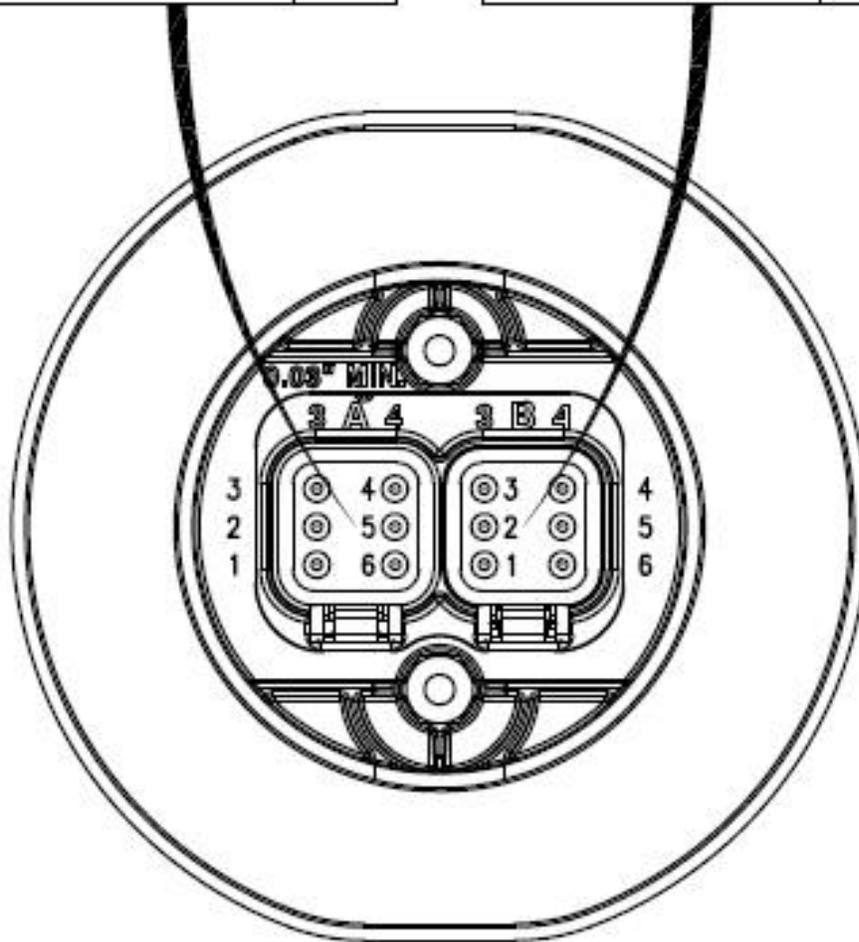
CONTROL PANEL SPECIFIC ALARMS AND SHUT DOWNS

The panel has its own engine safety alarms and shut downs that can be enabled. These alarms and shut downs are managed by the control panel. The available options are listed below and can be accessed via the Engine Safety Configuration menu.

*Each alarm must be enabled in the Engine Safety Configuration menu to activate.*

Heading	Default	Range	Units
Sender Check Bypass	0:10	0:05 – 1:00	Min:Sec
Fuel Level Check	Off	Off / Always / Run	
Low Fuel Pre Alarm	20	0 - 100	%
Low Fuel Alarm	1	0 - 100	%
Fuel Alarm Delay	0:05	0:01 – 1:40	Sec
Fuel Level Alarm Action	Shutdown		
Oil Pressure Check	Run	Off / Always / Run	
Low Oil Press Pre Alarm	15	0 - 100	PSI
Low Oil Press Alarm	10	0 - 100	PSI
Oil Pressure Alarm Action	Shutdown		
Oil Press Alarm Delay	0:05	0:01 – 1:40	Sec
Temperature Check	Run	Off / Always / Run	
High Temp Pre Alarm	220	150 - 300	Deg F
High Temp Alarm	230	150 - 300	Deg F
Temperature Alarm Action	Shutdown		
Temp Alarm Delay	0:05	0:01 – 1:40	Min:Sec
Battery Volts Check	Off	Off / Always / Run	
Low Battery Pre Alarm	12.0	0.0 – 40.0	Volts
Hi Battery Pre Alarm	15.0	0.0 – 40.0	Volts
Over Speed Check	Off	Off / Always / Run	
Over Speed Alarm	3000	650 - 5000	RPM
Over Speed Alarm Delay	0:05	0:01 – 1:40	Min:Sec

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.

Indicator Lamps

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Engine Fault Lamp

Engine Alarm Lamp
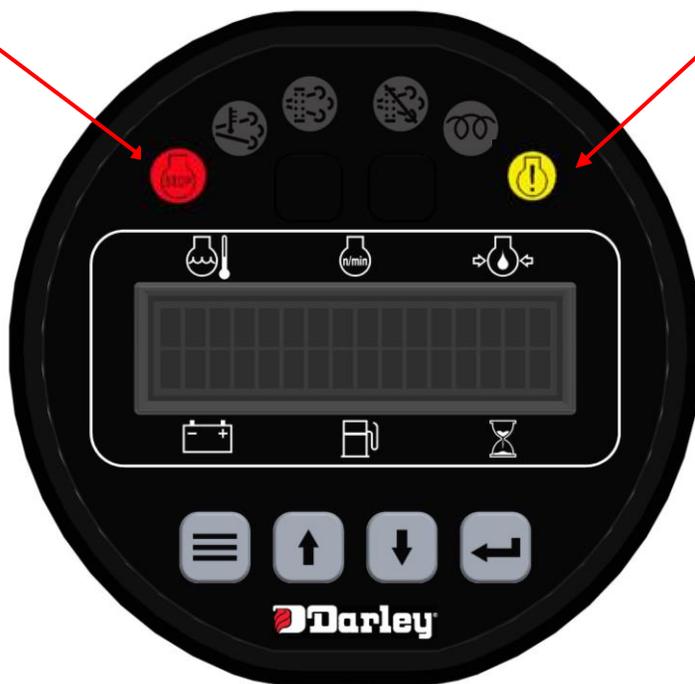
CONTROL PANEL ANALOG AND DIGITAL INPUTS

The panel has <u>one analog input</u> and up to <u>one digital input</u> available to monitor other components, senders or signals. These 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	Start/Stop			
	Message	None			
	Check	Always	Off / Always / Run		

Digital Outputs

1) <u>Alarm</u> – Engine shutdown when active with display message as assigned. A red lamp will also be illuminated.

2) <u>Pre Alarm </u>– Warning message will be displayed along with a yellow lamp when active.

3) <u>Pre Alarm & Alarm</u> - Energizes an external audible alarm when a pre alarm or alarm condition is present. Pressing the ENTER button will silence.

4) <u>Alarm Horn</u> - Energizes an external audible alarm when an alarm condition is present. Pressing the ENTER button will silence.

5) <u>Engine Run</u> - Relay will be active when engine RPM is greater than 600. Typically used to drive an auxiliary circuit such as louvers or send a signal to a monitoring station.

6) <u>Low Oil Press Alarm</u> - Relay closes if a low oil pressure shutdown is detected.

7) <u>High Coolant Temp Alarm</u> - Relay closes if a high engine temperature shutdown is detected.

8) <u>Over Speed Alarm</u> - Relay closes if an over speed shutdown is detected.

9) <u>Over Crank Alarm</u> - Relay closes if an over crank alarm is detected.

10) <u>Low Fuel Level Alarm</u> - Relay closes if a low fuel level shutdown is detected.

11) <u>Fuel / Run</u> - Relay will be active during an engine start request and while the engine is running.

12) <u>Custom 1</u> - Reserved for OEM applications.

13) <u>Preheat -</u> Relay will be active during programmed preheat period. Used to drive a preheat relay.

Digital Function Activation

1) <u>Off / Always / Run</u> – 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) <u>Alarm Delay</u> – The time period, after Sender Check Bypass, that the parameter must be on the alarm condition before the alarm becomes latched.

CONTROL PANEL RELAY OUTPUTS

The panel has <u>three relay outputs </u>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
Relay 1			B	2
	Function	Fuel Run		
	Polarity	Positive		
	Initial State	On		
Input	**Heading**	**Default**	**Connector**	**Pin**
Relay 2			B	5
	Function	Preheat		
	Polarity	Positive		
	Initial State	Off		
Input	**Heading**	**Default**	**Connector**	**Pin**
Relay 3			B	6
	Function	Crank		
	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 Menus

Main Menus	Sub Menus
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

Viewing Menus

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)

Configuration Menus

To access the controller setup menus, a password is required. The password is 4345.

Configuration Menus

(1)	**Quick Setup**	Multiplex Type (Default = Main Electronic)
		Engine Type (Default = Mechanical)
		Flywheel Teeth (Default = 30)
		Preheat Time
		Performance Display Off/On

(2)	**Eng. Parameter Configuration**	Engine Type
		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 Setup (Default to Start/Stop)

(4)	**Output Configuration**	Configure Selection (Channels/Message)
		Relay 1 Function (Default to Fuel/Run)
		Relay 2 Function (Default to Preheat)
		Relay 3 Function (Default to Crank)

(5)	**Throttle Configuration**	Throttle Type (Default = TSC Vernier)
		Cooperative TSC Mode
		TSC Minimum Speed
		TSC Min @ Actuator Position %
		TSC Maximum Speed
		TSC Max @ Actuator Position %
		TSC Bump Speed
		TSC Ramp Rate
		Throttle Curve
		Multi State Speeds 1-4
		Speed Limit
		Torque Derate Limit
		Calibrate Actuator (default = No)

(6)	**Engine Safety Configuration**	Sender Check By-Pass (Default = 0:10)
		Parameter Selection (Fuel Level, Oil Pressure, Temperature, Battery, Over speed, Speed Limit, Derate to Shutdown)
		Parameter Settings (vary based on selection)

(7)	**Module Configuration**	Preheat Time
		Low Power Mode
		Power Save Delay
		Multiplex Comm Mode
		Multiplex Timeout
		Pre-Alarms Displayed (Default = 4)
		Check Run Criteria
		Clear Operation Log (Default = No)
		Clear Alarm Log (Default = No)
		Clear # of Starts
		Engine Run Criteria
		Engine Stop Criteria

(8)	**Display Configuration**	English/Metric Selection
		Performance Display Off/On
		Fuel Display

(9)	**CAN Configuration**	Engine Manufacturer
		TSC1 Address (Default = 3) Others available
		Source Address (Default = 44) 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
		Schedule Selection
		Schedule Reset
		Schedule Interval
		Schedule Warning
		Schedule Trip
		Schedule Message

(11) **Emissions Configuration**

Allow Service Regen
Regen Interlock
TSC Transmit
DPF Inhibit Lamp Source
Electric Interlock Required

MSG-104 MODULE

MODULE CONNECTOR INFORMATION

CONNECTOR A

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

CONNECTOR B

FUNCTION	PIN
5VDC OUTPUT	1
THROTTLE UP	2
PRESSURE INPUT	3
N/A	4
THROTTLE DOWN	5
N/A	6
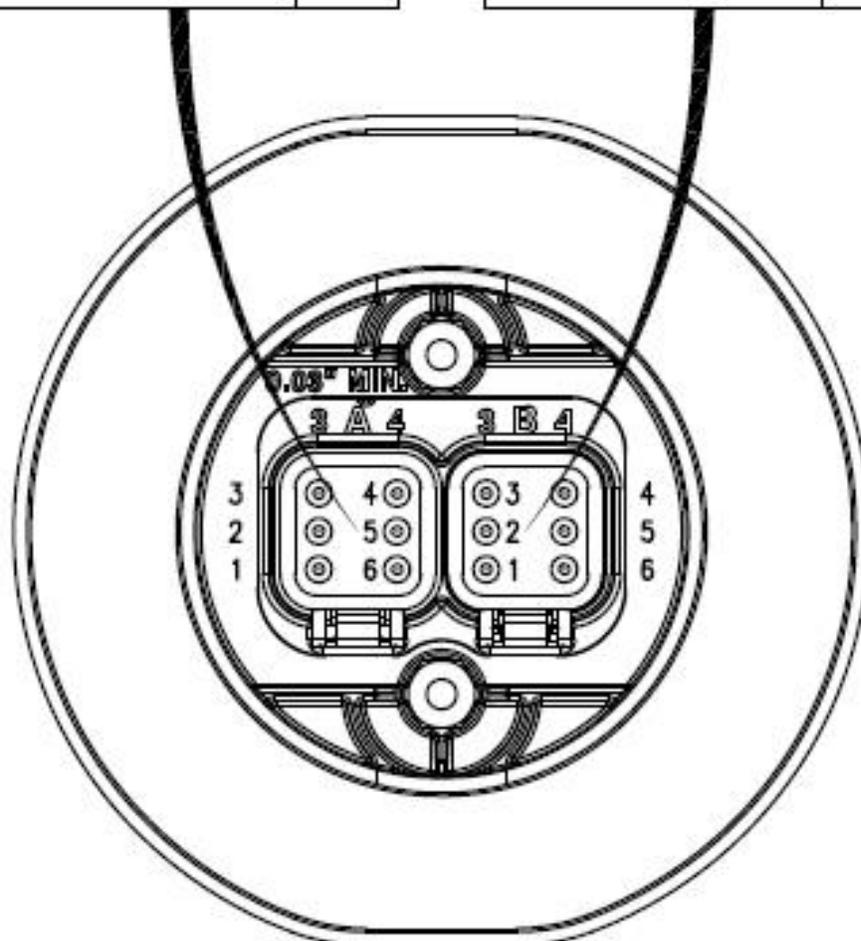
CONTROL PANEL ANALOG AND DIGITAL INPUTS

The panel has four 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.

Input	Heading	Default	Options	Connector	Pin
Digital 1	Normally	Open	Open / Closed	A	4
	Function	None			
	Message	None			
	Check	Always	Off / Always / Run		
Digital 2	Normally	Open	Open / Closed	B	2
	Function	Throttle Up			
	Message	None			
	Check	Always	Off / Always / Run		
Digital 3	Normally	Open	Open / Closed	B	5
	Function	Throttle Down			
	Message	None			
	Check	Always	Off / Always / Run		
Digital 6	Normally	Open	Open / Closed	A	5
	Function	Alarm			
	Message	Ext. Shutdown			
	Check	Always	Off / Always / Run		

MENU SYSTEM

Main Menus

Main Menus	Sub Menus

Alarm Event Log	View/Scroll Logged Alarms (32 max)

Viewing Menus

Module Information	Control Unit Part# View
	Control Unit Software Version View

Controller Setup	Pressure Configuration	(1)
(PASSWORD PROTECTED)	Input Configuration	(2)
	Pressure Safety Configuration	(3)
	CAN Configuration	(4)

Configuration Menus

To access the controller setup menus, a password is required. The password is 4345.

Configuration Menus

(1)

Pressure Configuration	Parameter
	Pressure Source
	Pressure Input Channel
	Pressure Minimum
	Pressure Maximum
	Current Pressure
	Zero Trim Calibration

(2)

Input Configuration	Configure Selection (Channels/Message)
	Digital 1-4 Setup

(3)

Pressure Safety Configuration	Pressure Check (Default = Off)
	Low Pressure Pre Alarm @ (Default = 0 psi)
	Low Pressure Alarm @ (Default = 0 psi)
	High Pressure Pre Alarm @ (Default = 500 psi)
	High Pressure Alarm @ (default = 500 psi)
	Pressure Alarm Delay (Default = 0:05)
	Pressure Hysteresis (Default = 5 psi)

(4)

CAN Configuration	Pressure Transmit