

# M154B series *J1939 Universal Control* for Electronically Governed Engines



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## *Installation / User Manual*

**Cummins QSF 2.8 T4F**

P/N: MN10070-00

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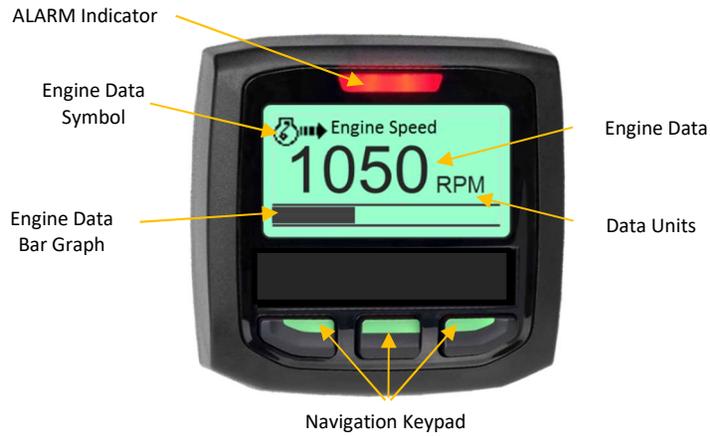
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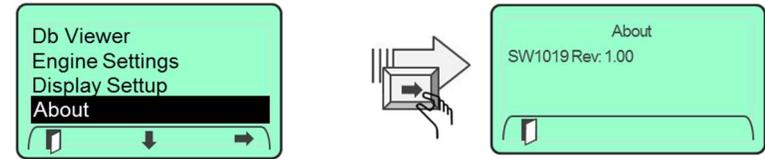
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# System Startup



# About



## Display Setup

The sequence of display setup screens is as follows:

- Db Viewer  
Engine Settings  
**Display Setup**  
About
- Language English  
Display Mode Single  
Backlight 80  
Contrast 50
- Language English  
Display Mode Single  
**Backlight 80**  
Contrast 50
- Display Mode Single  
Backlight 80  
**Contrast 50**  
Pressure Units PSI
- Backlight 80  
Contrast 50  
**Pressure Units PSI**  
Temp Units FAHR
- Contrast 50  
Pressure Units PSI  
**Temp Units FAHR**  
Volume Units GAL
- Contrast 50  
Pressure Units PSI  
Temp Units FAHR  
**Volume Units GAL**

## Powering the System

The M154B Control Panel is powered from the engine battery connection via the engine harness connector. Make sure the engine harness is connected to the M154B before proceeding. To power the system turn the key switch to the “ON” position. This will activate the control panel and apply power to the engine ECU. Should the control panel indicate a fault condition do not start the engine. Review the fault condition and proceed to correct the condition before starting the engine. See Fault Codes section of this manual for details on system faults.

## Starting the Engine

To start the engine, turn the key switch clockwise to the “Start” position. Should a fault condition exist the engine ECU may prevent the engine from starting. All fault conditions will be indicated by the digital display. The display will indicate the active fault(s) by presenting a pop-up graphic describing the fault condition.

## Controlling Engine Speed

When the engine is started, the control panel will set the engine speed to the minimum rpm speed setting. To change the engine speed toggle the throttle control (“Fast-Rabbit / Slow-Turtle”) switch to reach the desired speed setting. The engine speed cannot be commanded below the minimum rpm speed setting or above the maximum rpm speed setting. See section Configuring Min/Max Engine Speeds for more details.

## Engine Data

The Engine data may be displayed in three different formats: Single Data Format, Dual Data Format and Single Data/Status Format.

### Single Data Format

To change the data being displayed press any key to activate the softkey menu. Press the change “U” softkey to access the next data display available.

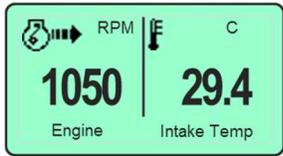
The data displays shown are:

- Engine Speed: 1050 RPM
- Battery Voltage: 13.6 V
- Coolant Level: 20 %

See Appendix B Display List for complete selection of data displays available.

### Dual Data Format

Refer to the Display Setup section to configure the screen for two parameters at a time as shown below.



To change the data being displayed press any key to activate the softkey menu. Press the change “U” softkey to access the next data display available.

### Single Data/System Status Format

#### Engine and System Status

When there is status information that needs the attention of the operator, the Single Data/System Status format will be displayed as shown below. The right side of the screen will display icons for Engine Warnings and Alarms/Stop. See the Alarms section of this manual.



Engine Warning



Engine Alarm/Stop

#### Wait to Start

The “Wait to Start” is generated by the engine ECU when the ECU determines the operator is trying to start the engine before the heaters have finished heating.

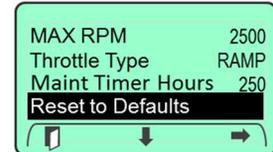
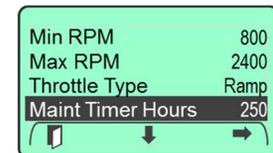
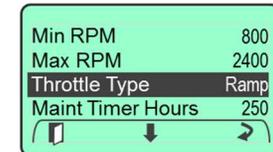
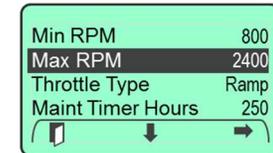
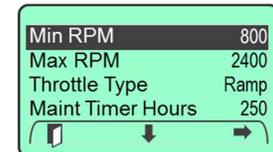
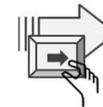
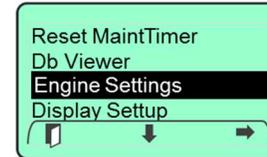


Wait to Start

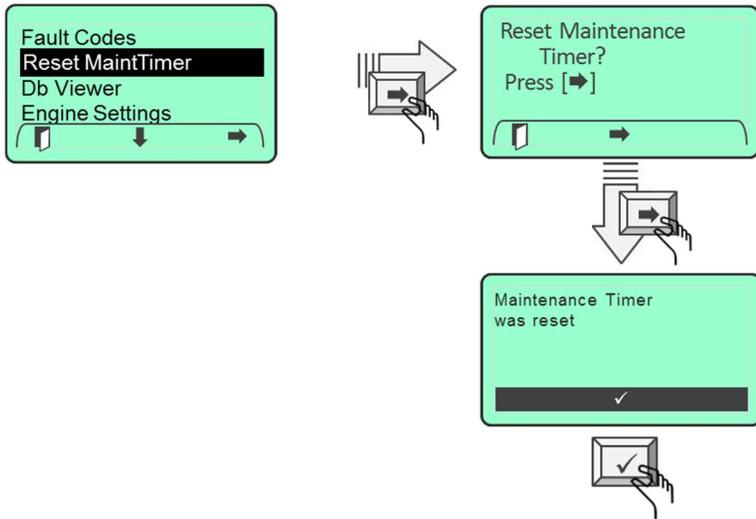
### Default Display

To configure a specific display as the default startup display, access the desired display and leave active for 5 minutes. The system will automatically set this display as the default startup display.

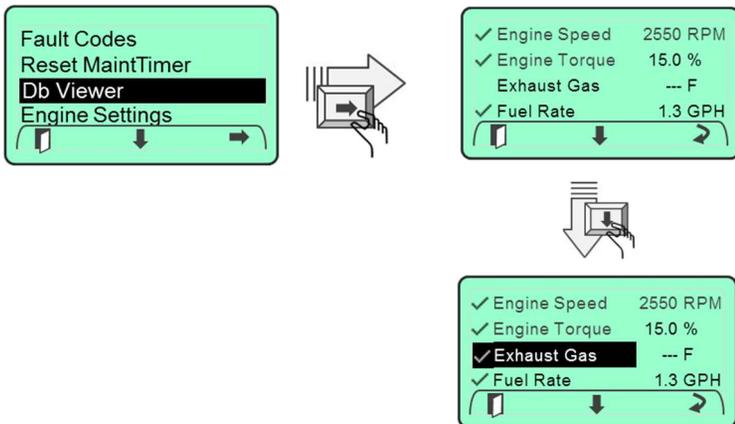
### Engine Settings



### Reset Maintenance Timer

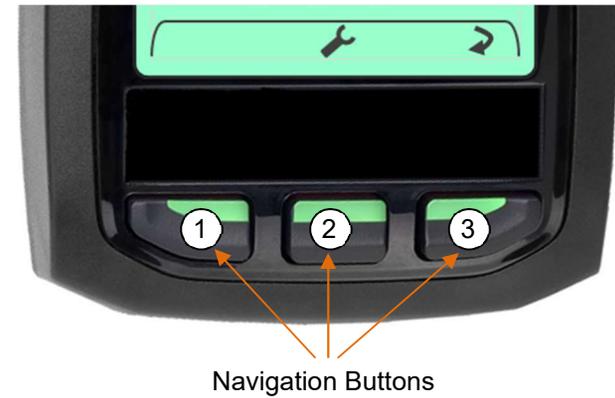


### DB Viewer



### Menu Navigation

The control unit has three navigation buttons which are dynamically configured as softkeys. The system softkeys are used to navigate between displays, select menu items and change data. Pressing any of the three buttons will display the softkey menu associated with each button.

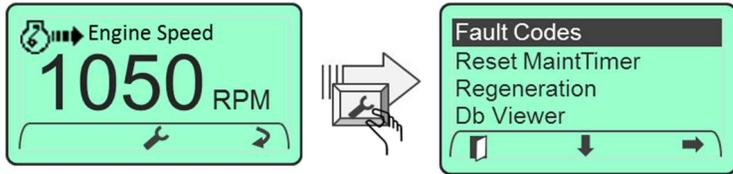


### Softkey Buttons

- : Tools (Main Menu)
- : Exit
- : Change
- : Scroll Down
- : Select
- : Increment Value
- : Decrement Value
- : Acknowledge
- : More Information

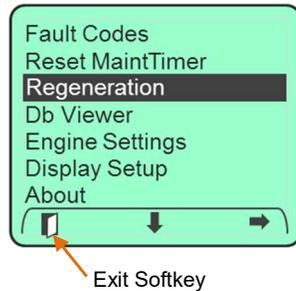
### Accessing the Main Menu

To access the Main Menu press any of the three navigation buttons. The M154B will display a softkey popup window defining the available navigation possibilities. Select the Main Menu using the “Tools” softkey.



### Navigating the Main Menu

Access the main menu using the “Tools” softkey. The main menu will be displayed along with the main menu softkey popup window. Navigate through the main menu selections by using the “↓” key. When the desired menu item is highlighted, press the “→” key to select the menu item. To exit the main menu and return to the data displays press the “Exit” softkey.

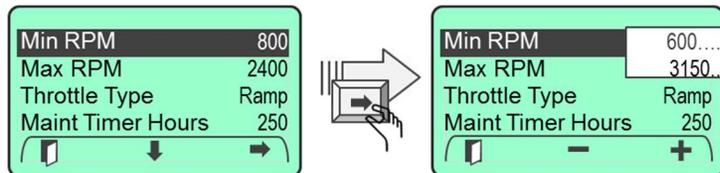


### Changing Parameter Settings

Parameter settings can be changed in one of two ways; using the “+” / “-” softkeys to increment and decrement a numeric value or using the “Change” softkey to toggle through a predetermined list of settings or the. The M154B guides the user through this process by dynamically providing the proper softkey choices.

### Changing a Numeric Value

The Min RPM engine setting is an example of a numeric value that can be configured. Changing the minimum rpm setting is accomplished by entering the engine settings menu, navigating to the Min RPM menu and then selecting the Min RPM setting via the “→” softkey. The M154B will display the + / - softkey popup. The + / - softkeys are then used to increment and decrement the rpm value.

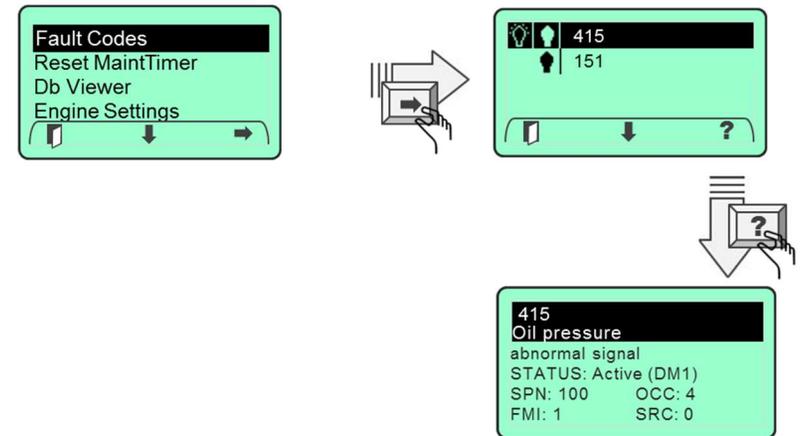


## Appendix C - Menu Overview

### Main Menu



### Fault Codes



### Dual Data Format

 V	 BAR
<b>13.6</b>	<b>1.01</b>
Battery	Barometer

 %	 C
<b>38</b>	<b>70.0</b>
Cool Level	Coolant Temp

 HRS	 %
<b>38</b>	<b>47</b>
Eng Hours	Eng Load

 LPH	 BAR
<b>227.1</b>	<b>1030.0</b>
Fuel Rate	Fuel Rail 1

 BAR	 HRS
<b>1.52</b>	<b>150</b>
Intake Mnfid	Maintenance

 PSI	 RPM
<b>43.5</b>	<b>1050</b>
Oil Pressure	Engine

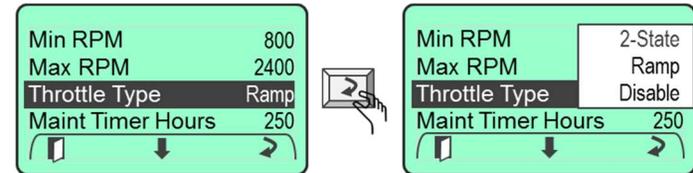
 RPM	 C
<b>1050</b>	<b>29.4</b>
Engine	Intake Temp

 C	 RPM
<b>43.0</b>	<b>1850</b>
Intake Mnfid	Requested

### Changing a Selection

Setting the throttle type is an example of toggling through a selection of predetermined choices. To change the throttle type, access the throttle type menu from the engine settings menu. Navigate to the throttle type menu using the “↓” softkey. Note: The M154B changes the softkey popup window to provide the user with the correct navigation choices.

Toggle through the available throttle type settings by using the change “↻” softkey. When the desired parameter is displayed navigating to the next menu item or exiting from the engine settings menu by selecting the “Exit” softkey.



Use the EXIT “⏏” softkey to save the selection and return to the previous display.

# System Operation

## Alarms

### Alarm Functionality

Engine fault codes (active and stored) are generated by the engine ECU and communicated to the control panel via the CANBus communications network.

### Active Fault Codes

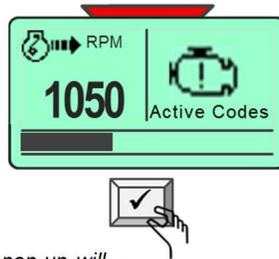
The M154B Control System reads standard J1939 DM1 messages to indicate active fault codes. When a fault is active the control system activates a popup Fault Display containing a check engine ICON, Fault severity text based on fault lamp activation (Engine symbol = “Warning”; Engine symbol with “!” = “Stop”) a description of the active fault and the FMI text associated with the active fault. The display to the right represents an unacknowledged fault for an oil pressure fault condition.



The acknowledge alarm stripe at the bottom of the display prompts the operator to acknowledge the fault. The controller also blinks the red LED fault indicator located above the digital display.

### Acknowledging Active Faults

To acknowledge an active fault, press the “Acknowledge” softkey (middle) button. This will remove the pop-up graphic. The controller will indicate that an active fault is present by displaying a fault lamp icon on the main data display. The system will also display “Active Codes” in the alarm description area of the display.



*Note: If the fault condition is cleared the associated pop-up will automatically be removed.*

# Appendix B – Display List

## Single Data Format



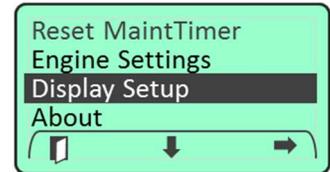
## Appendix A – Displayed Data

Parameter	Identifier	PGN	SPN	Bar graph Limits
Active Faults	DM1	65226		-----
Stored Faults	DM2	65227		-----
Barometric Pressure	AMB	65269	108	0 1.25 Bar
Battery Voltage	VEP	65271	168	0 18 Volts
Coolant Level	EFL/P1	65263	111	0 100 %
Coolant Temperature	ET1	65262	110	0 120 C
Engine Hours	HOURS	65253	247	0 20,000
Engine Load	EEC2	61443	92	0 100 %
Fuel Rate	LFE1	65266	183	0 20 L/Hr
Fuel Pressure – Rail 1	EFL/P2	65243	157	0 1800 Bar
Manifold Pressure	IC1	65270	102	0 20 L/Hr
Manifold Temperature	IC1	65270	105	0 100 C
Oil Pressure	EFL/P1	65263	100	0 5 Bar
Requested Speed	TSC1	00000	696	600 3150 RPM
RPM	EEC1	61444	190	0 3000 RPM

## Contrast and Lighting

### Backlight Setting

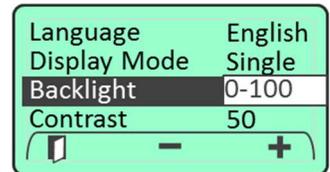
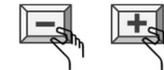
The LCD backlight is adjustable from 0% to 100%. To adjust the LCD backlight enter the Main Menu and navigate to the “Display Setup” menu. When highlighted enter the Display Setup menu by selecting the “➔” softkey.



Navigate through the “Display Setup” menu using “⏴” softkey until the “Backlight” entry is highlighted. Press the “➔” softkey to select the backlight parameter setting.



Use the + / - softkeys to set the backlight value.



### Contrast Setting

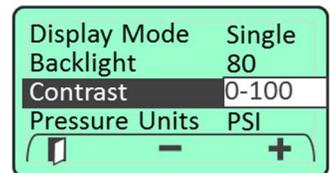
The LCD contrast is adjustable from 0% to 100%. To adjust the LCD contrast enter the Main Menu and navigate to the “Display Setup” menu. When highlighted enter the Display Setup menu by selecting the “➔” softkey.



Navigate through the “Display Setup” menu using “⏴” softkey until the “Contrast” entry is highlighted. Press the “➔” softkey to select the contrast parameter setting.

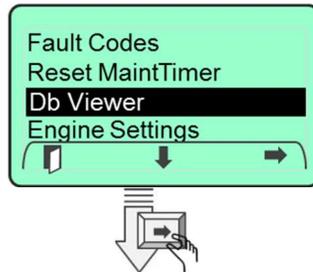


Use the + / - softkeys to set the contrast value. Note: Setting the contrast value below 30 may render the display to be unreadable.



## Database Viewer / Display Mapping

The Db Viewer menu selection provides a listing of all data supported by the M154B System. To access the Db Viewer enter to the Main Menu. Navigate to the “Db Viewer” menu entry using the “↓” softkey. Select Db Viewer using the “→” softkey.



The display will present a listing of the data in alphabetical order and provide a realtime update of the data values. Any data parameter that cannot read data from the CANbus will show dashes “---” in the data value field.

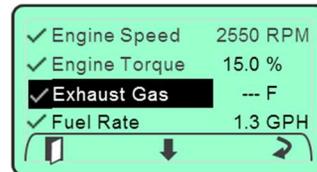


### Display Mapping

The M154B allows the operator to decide which data displays will be shown in the main rotation list of displays. Any data parameter listed in the Db Viewer list can be selected to be viewed in the main rotation list of displays. To selected a data parameter for the viewing list scroll down the data list using the “↓” softkey. When the desired data parameter is highlighted select the parameter for the rotation list by using the “Change” softkey.



A checkmark will be shown to indicate the data parameter has been selected for the rotation list.



To remove a data parameter from the rotation list, select the desired data parameter and remove the selection using the “Change” softkey.

## Troubleshooting Guide

Symptom	Action
Key “ON”; No display or alarm sounded	<ul style="list-style-type: none"> <li>Verify Battery is connected and battery switch, if installed, is in “ON” position.</li> <li>Check engine fuse. If fuse blown check engine wiring.</li> <li>Check engine harness connection at control panel.</li> <li>Reset circuit breaker</li> </ul>
Key “ON”; No display or alarm sounded; Tachometer backlight flashing; No throttle control.	<ul style="list-style-type: none"> <li>Check engine harness connection at control panel. Engine connector pin W is improperly wired. Pin W MUST be open.</li> </ul>
Key “ON”; Alarm sounded but no display.	<ul style="list-style-type: none"> <li>Check display contrast/lighting level</li> <li>Replace tachometer gauge</li> </ul>
Key “ON”; Display “ON”; Engine data is missing or intermittent.	<ul style="list-style-type: none"> <li>Check Engine harness connections.</li> <li>Check main fuse on engine.</li> <li>Check for active alarms.</li> <li>Check Diagnostic Trouble Codes.</li> </ul>
Key “ON”; Display active and showing data but Engine will not start	<ul style="list-style-type: none"> <li>Check for system alarms.</li> <li>Check Diagnostic Trouble Code screen for engine faults.</li> <li>Check external engine shutdown input.</li> </ul>
Key “ON”; Display active, no engine data, Engine will not start	<ul style="list-style-type: none"> <li>Check for system alarms.</li> <li>Check Diagnostic Trouble Code screen for engine faults.</li> <li>Check remote engine shutdown input.</li> <li>Replace Control Panel.</li> </ul>
Throttle switch does not change engine speed.	<ul style="list-style-type: none"> <li>Engine Fault. Check DTC screen for specific engine failure.</li> <li>Ensure Engine Speed settings do not exceed engine manufacturer recommendations.</li> </ul>
Engine Speed will not ramp.	<ul style="list-style-type: none"> <li>Check User Setting menu. Throttle Type set for 2-State.</li> </ul>

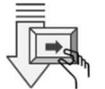
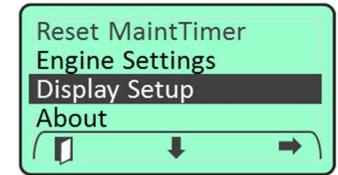
## System Components

PART NUMBER	DESCRIPTION
M154B00-M1017	Kit; Eng Ctrl, J1939, Cummins QSF28, T4F, 2.3" Dpy
M154B01-M1017	CP; Eng Ctrl, J1939, Cummins QSF28, T4F, 2.3" Dpy, 8x6 PNL MNT
M154B10-M1017	CP; Eng Ctrl, J1939, Cummins QSF28, T4F, 2.3" Dpy, 8x7 ENCL
M154B20-M1017	CP; Eng Ctrl, J1939, Cummins QSF28, T4F, 2.3" Dpy, NEMA 4X ENCL
DS1104-M1017	DP; 2.3", J1939 Ctrl, Cummins QSF28, T4F, MBW
MN10070	Manual; User/Install, M154B Series Cummins QSF28 T4F
MN10045	Manual; Mounting Template, 2.3" Dpy, B Series
1000017-23	Keyswitch; 4 pos, ACC-OFF-ON-START, common key
1000107-00	Switch; Rocker, (ON)-OFF-(ON)
1000146-50	Harness; Control, M154B Series

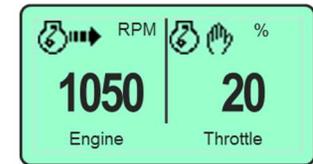
## Display Format

Two display formats are available in the M154B Control System; "Single" display and "Dual" display formats. To access the display format setting, enter the Main Menu. Navigate to the "Display Setup" menu entry using "↓" softkey. When highlighted, enter the Display Setup menu by selecting the "→" softkey. Navigate to the "Display Mode" entry using "↓" softkey until the "Display Mode" entry is highlighted.

Choose the desired display mode setting by cycling through the list of choices using the "Change" soft key.



Single Display



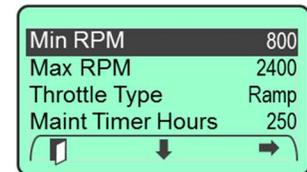
Dual Display

## Engine Speed Limits

The M154B allows the user to configure minimum and maximum engine rpm limits. The minimum engine rpm value is determined by the "Min RPM" speed setting in the Engine menu. The maximum engine rpm value is determined by the "Max RPM" speed setting in the Engine menu. Once configured the M154B prevents the user from throttling the engine above or below these values.

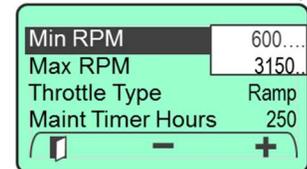
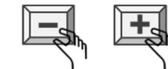
### Setting Min Engine Speed

To access the "Min RPM" setting, enter the Main Menu. Navigate to the "Engine Settings" menu entry using "↓" softkey and select "Engine Settings" using the "→" softkey.



Navigate through the "Engine Settings" menu using "↓" softkey until the "Min RPM" entry is highlighted. Press the "→" softkey to select the min RPM entry setting.

Use the + / - softkeys to set the minimum engine rpm value.



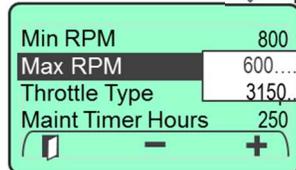
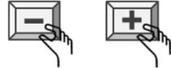
Use the EXIT “

### Setting Max Engine Speed

To access the “Max RPM” setting, enter the Main Menu. Navigate to the “Engine Settings” menu entry using “

Navigate through the “Engine Settings” menu using “

Use the + / - softkeys to set the maximum engine rpm value.

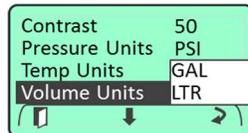
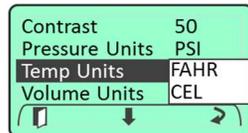


Use the EXIT “

### Engineering Units

Displayed engineering units can be configured for Pressure, Temperature and Volume. To access the engineering unit’s settings, enter the Main Menu. Navigate to the “Display Setup” menu entry using “

Navigate through the “Display Setup” menu using “



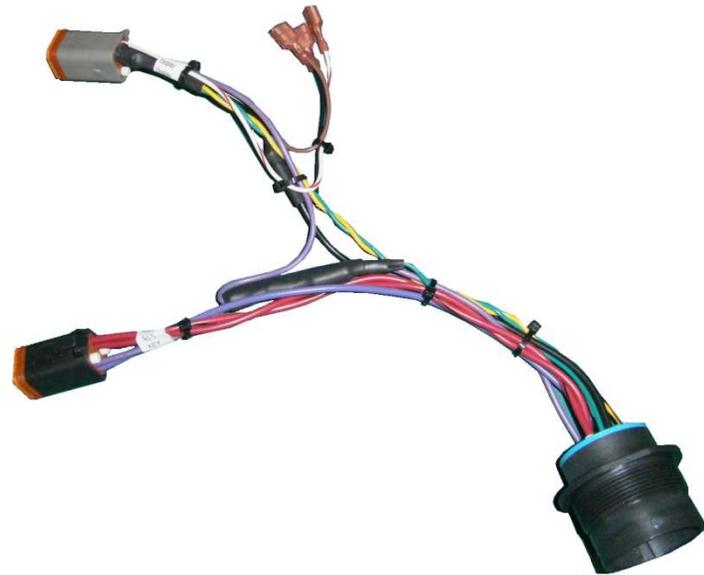
Choose the desired parameter setting by cycling through the list of choices using the “**Change**” softkey.



## Connection Details

### Control Harness

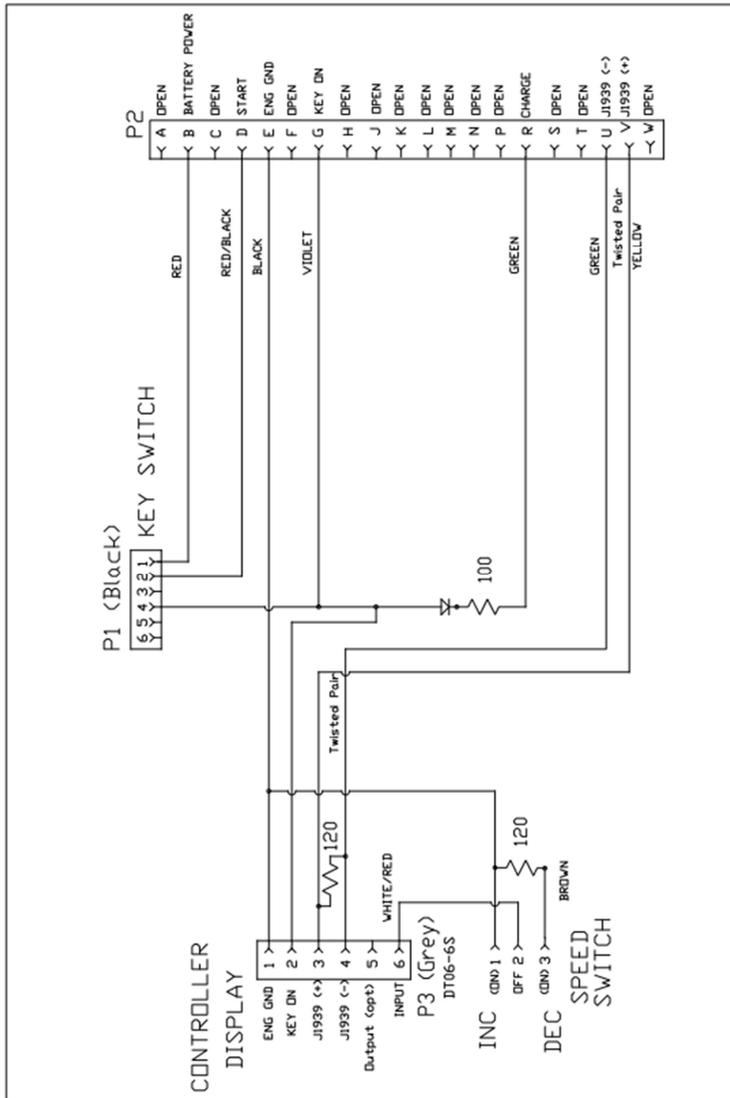
PN:1000146-50 The main control harness provides connections from the engine to the controller, throttle switch, and key switch.



Control Harness Connector Details

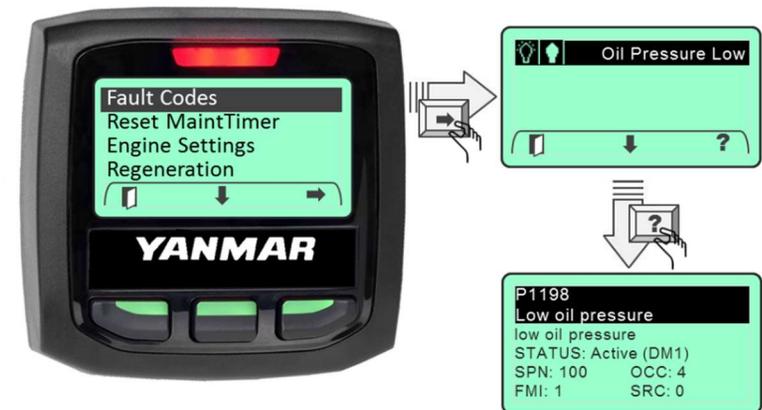
Connector	Description
P1	6 Pin; connects to keyswitch, black housing
P2	Engine connector
P3	6 Pin; connects to controller, grey housing
White/Red Quick Connect	Center position of throttle switch
Brown Quick Connect	Lower position of throttle switch
Black Quick Connect	Top position of throttle switch

# Wiring Diagram



# Fault Codes

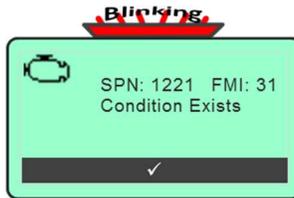
The M154B allows the operator to request any stored fault codes that may be contained in the engine ECU. To view stored faults select the “Fault Codes” menu selection from the main menu. When selected the control system will send a request to the engine ECU for any stored faults the ECU may have stored. The control system uses the standard J1939 DM2 messaging request for this data. Should any faults exist the M154B will provide a summary list of the active and stored faults. The summary list will show if the fault is Active / Stored, or both Active and Stored. The summary list will contain the engine manufacturer specific Fault Code (if available) for the fault condition. To view more detailed information about any of the fault conditions listed, navigate to the desired fault condition and select the “?” softkey. A more detailed description of the fault will be presented along with the current Status. The additional information includes description, J1939 SPN, FMI, Source Address and Occurrence data.



	Active Fault
	Stored Fault
	Active & Stored Fault
	Active Fault
	Stored Fault
	Active & Stored Fault

### Unknown Fault Codes

Should the control system encounter a fault code that is not identified by the manufacturers fault code list, the control system will indicate the active lamp, SPN Number, FMI code and FMI text.

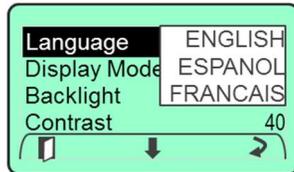


When detail information about the fault is requested the control system will provide the broadcast SPN, FMI, Occurrence and SA values.



### Language Selection

The M154B provides a language selection via the Display Setup menu. To set the language enter the Main Menu and navigate to the "Display Setup" menu. Navigate to the Language selection and use the "Change" "U" softkey to set the language.



*Note: Not all versions of the M154B will provide language selection capability.*

### Maintenance Timer

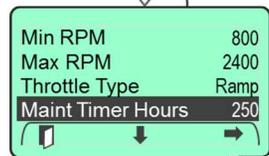
The M154B System provides an engine maintenance timer feature. The maintenance timer is a countdown timer and indicates the amount of engine runtime remaining until maintenance is due. The maintenance timer is configurable and resettable by the operator. If the system is powered but the engine is not running maintenance hours will not be accumulated.

#### Setting Maintenance Timer

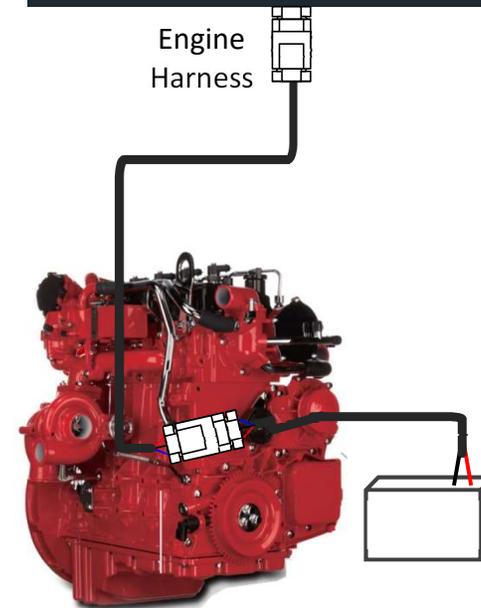
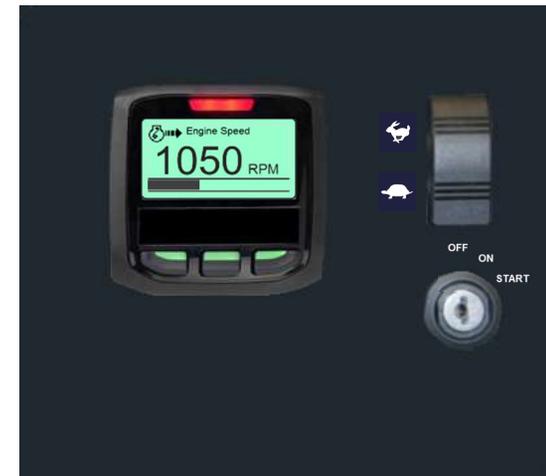
The timer will activate when set to a value > 0. To configure the maintenance timer enter the Main Menu and then navigate to the Engine Settings menu using the "↓" softkey. Select the "Engine Settings" menu using the "→" softkey.



Navigate to the "Maint Timer Hours" entry using the "↓" softkey. Use "→" softkey to select maintenance timer hours.



### System Block Diagram



# Technical Specifications

## System Specs

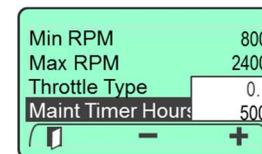
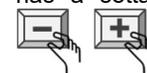
DS1104	
Display	Dot Matrix LCD
Resolution	128 x 64 pixels
Dimensions	76mm x 76mm (3.0" x 3.0")
Operating Voltage	9 to 32 VDC
Power Consumption – Backlight OFF	100 mA max at 12 VDC
Power Consumption – Backlight ON	500 mA max at 12 VDC
Communication	J1939 CAN 2.0B
Operating Temperature	-30C to +70C (-22F to 158F)
Storage Temperature	-40C to +80C (-40F to 176F)
Reverse Polarity Protection	Yes
Salt Spray	IEC60068-2-52: 1996
EMC	IEC61000 and EN55022
Degree of Protection	IP67
System Protection	Provided externally

## Factory Defaults

The system settings may be returned to factory defaults at any time by selecting “Reset to Defaults” in the Engine Settings screen.

PARAMETER	DEFAULT VALUE
Display Settings	
Language	English
Display Mode	Single
Backlight	80%
Contrast	45%
Pressure Units	PSI
Temperature Units	Fahrenheit
Volume Units	Gallons
Engine Settings	
Minimum Engine RPM	1000 RPM
Maximum Engine RPM	3200 RPM
Throttle Type	RAMP Mode
Maintenance Timer	0 Hours (off)
Passcode	OEM Specified
TSC1 Source Address	7

Use the + / - softkeys to set the “Maint Timer Hours” rpm value. The timer has a settable range of 0-500 hours.



Use the “EXIT” softkey to save the selection and return to the previous display.

**Note: Setting the timer to 0 will disable the maintenance timer operation.**

### Maintenance Timer Alert

When the maintenance timer expires the system will activate an “Engine Maintenance Due” alert popup window. If the maintenance due alert is acknowledged but the timer is not reset the alert popup will reinitiate for each



key “ON” cycle.

### Acknowledging Maintenance Timer

Acknowledge the maintenance alert by selecting the acknowledge “✓” softkey.

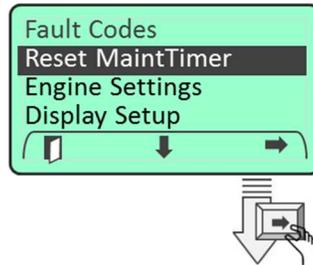


### Resetting Maintenance Timer

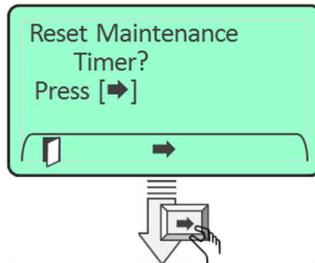
The maintenance timer is operator configurable and can be accessed via the engine settings menu. See “MaintTimer Hours” selection in engine settings menu. When the maintenance timer has expired a popup alert window will be displayed indicating that “Engine Maintenance is Due”. The operator must acknowledge this popup to return the controller to normal display operation.



To reset the maintenance timer enter the Main Menu and then scroll to the “Reset MaintTimer” entry using the “↓” softkey. Press the “→” softkey to select the reset maintenance timer menu item.



Press the “→” softkey to reset the timer.



Acknowledge the timer was reset by pressing the Acknowledge “✓” softkey.

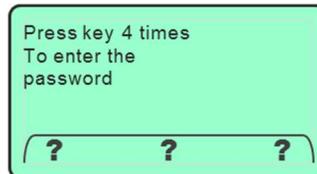


*Note: The maintenance hours data display will indicate 0 hrs when the timer has expired and the operator has not yet reset the timer.*



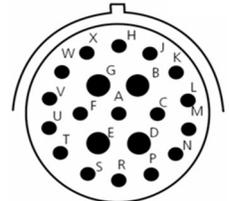
### Passcode

The controller passcode has been preset by the OEM and protects various parameters in the system database. When the operator tries to access the Engine Settings menu, the user will be prompted for the passcode entry. Entering the correct passcode will unlock the Engine Settings menu and changes may be made to various engine parameters. The Engine Settings menu will relock when the operator leaves the Engine Settings menu and the passcode will need to be reentered.



### Engine Connector

The engine connector is labeled “Engine” and requires no additional wiring. This connector mates directly to the on-engine harness connector. The table below describes the engine harness connections, associated connector pin number and wire color.



24-21

Desc	PIN Number	Engine Harness Connector – P2	Contact Size	Wire Color
B+	B	Battery + (10A)	12	Red
Start	D	Starter (30)	12	Red/Black
Ground	E	Ground	12	Black
Ignition Out	G	ECU Power (Ignition)	12	Violet
Charge In	R	Charge Lamp	16	Dark Green
CAN Lo	U	CAN Low (twisted pair)	16	Light Green
CAN Hi	V	CAN High (twisted pair)	16	Yellow
No Connection	A,C,F,H,J,K,L,M,N,P,S,T,W			

## Installing the System

### ⚠ CAUTION

The safety messages that follow have **CAUTION** level hazards.

ALWAYS ensure the power supply is OFF and battery cables are disconnected before you make any electrical connections.

### Making the Connections

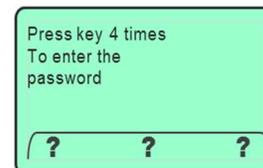
The control panel has one round connector with 21 contacts. This connector is an HDP24 Deutsch connector and provides the connection to the engine connector. (Note: Some engine may require an interface harness for this connection. Contact MBW Technical Support Team for details.) The supply power **MUST** be OFF when interconnecting the system.

#### Recommended order:

1. Verify the battery / battery switch connections to engine per the engine installation diagram. (Refer to engine manufacturer installation manual.) Verify engine is bonded to battery return (-). Verify engine block is connected to battery ground.
2. Disconnect battery.
3. Install control panel into housing. Attach engine connector to housing using supplied locknut and ring.
4. Fasten control panel to housing using #8 8-32 screws (not supplied).
5. Connect engine harness connector to mating control panel connector (HDP24-21 connector).
6. Connect battery.
7. Turn ignition key to "ON" position.
8. Ensure digital display is active. If display is not active;
  - a. Check battery and power connections.
  - b. Check ignition switch is on position.
9. Ensure system is displaying data for engine speed.

## Entering Passcode

The passcode consists of four entries via the three key keypad and can be any combination of numbers 1 thru 3. These numbers correspond to the softkey numbering. Assume the passcode is 1111. To enter the passcode press key #1 four times.



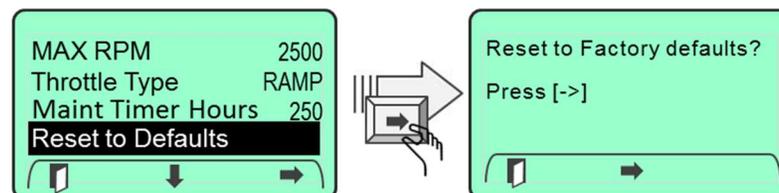
Key 1    Key 2    Key 3

## Reset to Defaults

To access the "Reset to Defaults" setting, enter the Main Menu. Navigate to the "Engine Settings" menu entry using "↓" softkey. When highlighted enter the Engine Settings menu by selecting the "➡" softkey.

Navigate through the "Engine Settings" menu using "↓" softkey until the "Reset to Defaults" entry is highlighted.

Press the "➡" softkey to navigate to the confirmation screen.



Press the "➡" softkey to return the unit to factory defaults.

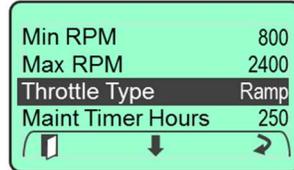
Factory Defaults Set  
REPOWER SYSTEM

## Throttle Type Operation

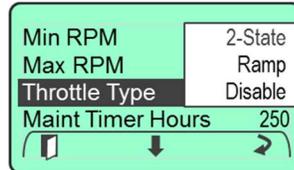
The M154B allows the user to configure three modes of throttle operation; Ramp, 2-State and Disabled. These modes are configured in the Engine Settings Menu.

### Configuring Throttle Switch Operation

To change the throttle operation access the “Throttle Type” setting menu by entering the Main Menu. Navigate to the “Engine Settings” menu entry using “↓” softkey. When highlighted enter the Engine Settings menu by selecting the “→” softkey. Navigate through the “Engine Settings” menu using “↓” softkey until the “Throttle Type” entry is highlighted.



Choose the desired parameter setting by cycling through the list of choices using the “Change” softkey.



### Ramp Throttle Operation

Ramp throttle operation allows the user to increment or decrement the desired engine RPM value by 10 RPM. To increment engine rpm simply press the throttle switch in the “Rabbit” position. Pressing the throttle switch in the “Turtle” direction will decrement the engine speed by 10 rpm. Holding the throttle switch in the “Rabbit” or “Turtle” position for > 2 seconds will cause the engine speed to increment or decrement at a rate of 50\* RPM / second.

**Note: The user cannot adjust the engine speed above or below the configured “Min” and “Max” engine speed settings. See section, Engine Speed Limits for more details.**

### 2-State Throttle Operation

Two-state throttle operation allows the operator to choose between two predetermined engine speeds at the single touch of the throttle control. The two predetermined engine speeds are defined by the rpm value configured in the Engine Settings menu for “Min RPM” speed and “Max RPM” speed. Pressing the throttle control in the “Rabbit” position sets the engine rpm to the configured “Max RPM” speed setting. Pressing the throttle control in the “Turtle” position sets the engine rpm to the configured “Min RPM” speed setting.

**CAUTION:** Changes to settings in the “Engine” menu will take affect while the engine is running. Any change to throttle type setting or engine min/max settings will become active after the change is saved AND a throttle command is issued.

### Disabled Throttle Operation

The M154B control allows the user to disable throttle commands. This is accomplished by selecting the “Disable” setting. When selected the transmission of the J1939 TSC1 message is suppressed.