

FRC

A Safe Fleet Brand

TACHP3**ENGINE MONITORING DISPLAY
MODEL: TPA600****FIRE RESEARCH CORPORATION**www.fireresearch.com

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Overview

The Engine Monitoring Display is an all-in-one instrument panel with integrated monitoring and display capabilities that saves valuable pump panel space. It combines four different instruments in one waterproof unit. It provides both audible and visual warning alarms if specified parameters go outside of set limits.

The Engine Monitoring Display has a 4-digit LED display for engine RPM and 3-digit LED displays for engine oil pressure, engine coolant temperature, and battery voltage. During normal operation warning messages are displayed as they occur.

The Engine Monitoring Display receives input information from the J1939 CAN bus.

Features

Non-Multiplexed Display Means No Flickering

Digital Engine RPM, Oil Pressure, and Coolant Temperature Displays

Battery Voltage Display with Low and Over Voltage Warnings

Automatically Adjusts to 12 or 24 Volt System

Programmable Parameters

Audible and Visual Warnings

LED Brightness Automatically Adjusts for Day or Night Operation

Transmission Temperature Displayed (When Available)

Specifications

Display Module

Supply Power: 12/24 VDC/ Auto Detected

Supply Current: 1.5 Amps

Dimensions: 4.2" by 4.2" by 0.7"

Audible Alarm Buzzer

Volume: 95 dB

GENERAL DESCRIPTION

The Engine Monitoring Display receives all input from the J1939 CAN bus.

Components

The Engine Monitoring Display consist of the following components:

Display Module

Buzzer

Controls and Indicators

All controls and indicators are located on the front of the control module. Refer top Operation and Programming Sections for more information.

RPM Display

Shows the current engine RPM in bright red digits. It also shows error codes, stored data, and program features.

OIL PRESSURE Display

Shows the engine oil pressure in bright red 0.4" digits.

ENGINE TEMP Display

Shows engine coolant temperature in bright red 0.4" digits. (Shows transmission temperature when selected.)

VOLTAGE Display

Shows the battery voltage in bright red 0.4" digits.

When in the information scroll mode this display shows system and options information.

MENU Button

The MENU button is used to show the transmission temperature if it is available. It is also used to access program features. (Transmission temperature is shown in the ENGINE TEMP display.)

SILENCE Button

The SILENCE button is to de-activate the audible warning alarm. It is also used to access program features.

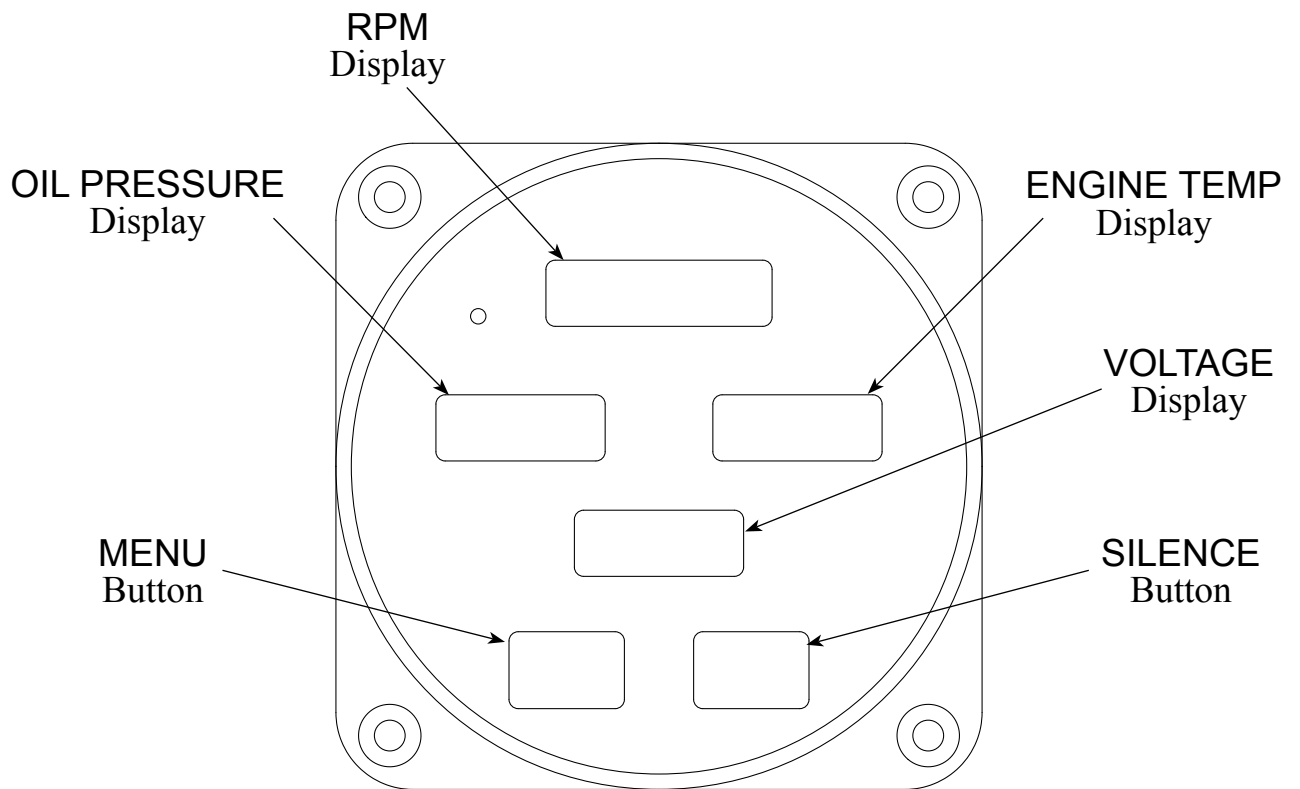


Figure 1. Controls and Indicators

INSTALLATION

The Engine Monitoring Display receives engine RPM, oil pressure, coolant temperature, and voltage information over the J1939 CAN bus from the engine ECM. (Refer to Wiring Section.)

Install Display Module

1. Measure and mark mounting location for display module cable and mounting screw holes. Make sure there is clearance behind the panel for the module and cables before drilling holes. Refer to Figure 2 for layout and dimensions.
2. Drill a 1.25-inch diameter hole.
3. Drill four holes, clearance or tapped, for 10-32 mounting screws.
3. Place display module in position and secure with screws.
4. Connect cable at rear of the module. (Refer to Wiring section.)

Install Buzzer

A buzzer is supplied with the Engine Monitoring Display. Install the buzzer close to the control module so the audible warning is easily associated with the visual warning on the display. A cutout hole of 1-1/8" (1.125") is required on the pump panel. (Refer to Wiring Section.)

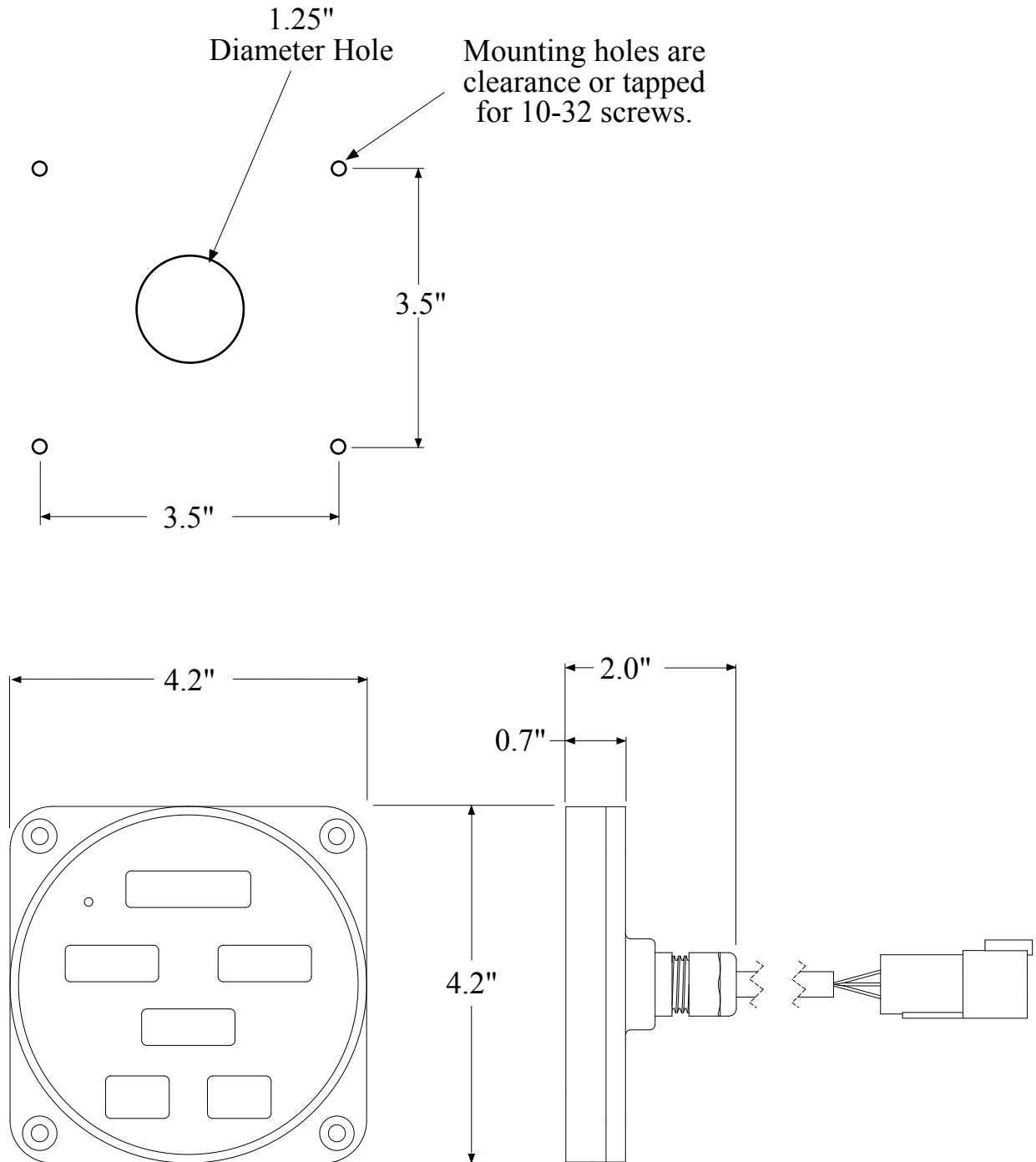


Figure 2. Display Module Mounting Dimensions

OPERATION

The Engine Monitoring Display shows crucial engine information to the pump operator.

Visual Alarm

When a monitored input exceeds the set warning level the display flashes. This visual alarm cannot be reset or cancelled manually. The alarm stops automatically when the monitored input is at a normal level.

Audible Alarm

The audible alarm is a clear distinctive warning that sounds when a monitored input exceeds the set warning level.

Silencing Audible Alarm

All audible alarms can be cancelled by pressing the SILENCE button. Pressing the SILENCE button does not change the visual warning.

Transmission Temperature

When the transmission temperature is available on the J1939 CAN bus and the program code P07 is enabled, press the MENU button to show it on the ENGINE TEMP display.

Engine Hours

To access the Engine Hours feature, press the MENU button again and Eng Hr is shown on the display. The actual number of hours will be shown on the RPM display.

Table 1. Error and Fault Warning Codes

DISPLAY	DESCRIPTION
E01	No Engine Data Received
E04	Oil Pressure Problem
E07	Engine Temp Problem
F01	High Battery Voltage
F02	Low Battery Voltage
F03	High Transmission Temperature
F04	Low Oil Pressure
F07	High Engine Coolant Temperature

PROGRAMMING

To access the program functions, to view and change parameter settings, a password is entered. The code for the Engine Monitoring Display is 2222.

Note: To exit the programming mode press the **SILENCE** and **MENU** buttons together. (The program mode times out after ten seconds if no buttons are pressed.)

Program Access

1. Press the **SILENCE** button and hold it until the RPM display shows four dashes — — — — . Release the button.
2. Press the **MENU** button within three seconds. The RPM display shows the number 1000. Each time the **MENU** button is pressed the first digit increments by 1. Set the first digit to the desired number.
3. Press the **SILENCE** button to move the cursor to the next digit. Press the **MENU** button to change the digit.
4. Repeat step 3 and enter the password code 2222.
Result: When a correct password code is entered **P 0 1** shows in the RPM display.
5. Press the **SILENCE** button to scroll through the program (P) codes.
6. Press and hold the **MENU** button for three seconds to enter the programming mode to view and change parameter settings.
7. While the parameter or value is flashing, *press and hold* the **MENU** button to change a selectable parameter or numerical value. Press the **MENU** button again to change the digit, or scroll through values. Next press the **SILENCE** button to move the cursor to the next digit to be changed, or the next window option.
8. Repeat steps 5 through 7 as necessary.
9. To exit the programming mode, press the **SILENCE** button to scroll through the P-codes until P99 is reached. At P99, the display will read 'END'. *Press and hold* the **MENU** button to fully exit the Programming mode and return to normal operation.

Table 2. Program Functions

CODE	DESCRIPTION	OPTIONS and NOTES	FACTORY DEFAULT
P01	Units of measure	Select PSI, kPa, Bar °F, °C	PSI and °F
P02	Low oil pressure warning	Set Value (Set to 0 to synchronize warning with dash light.)	8 PSI
P03	High engine temperature warning	Set Value (Visual warning occurs 10 °F below audible setting.) (Set to 0 to synchronize warning with dash light.)	230 °F
P04	¹ Low battery voltage warning - engine running	Set Value	11.8/ 23.6 VDC
P05	¹ High battery voltage warning - engine running	Set Value	15.4/31.0 VDC
P06	¹ Low battery voltage warning - engine off	Set Value	11.7/23.4 VDC
P07	Transmission temperature enable/disable	Select yes - enabled (MENU button is pressed to show temp.) no - disabled	yes
P08	High transmission temperature warning	Set Value	300 °F
P09	² Battery voltage source	Select bus - voltage is read from J1939 CAN bus loc - voltage is read from the module input pins	bus

Notes:

1 - Module automatically detects 12 or 24 volt input.

2 - When set to bus and no voltage information is available on J1939, the module automatically reads the voltage from the module input pins.

The following are read only functions.

CODE	DESCRIPTION
P20	Model number
P21	Software revision
P22	Serial number
P23	Manufacturing date
P24	Hardware revision
P25	J1939 CAN Bus terminator

WIRING

The following figures include the schematics, wiring diagrams, block diagrams, and cables for the Engine Monitoring Display.

Connectors and Cables

The Engine Monitoring Display receives engine RPM, oil pressure, coolant temperature, and transmission temperature data over the J1939 CAN bus from the ECM.

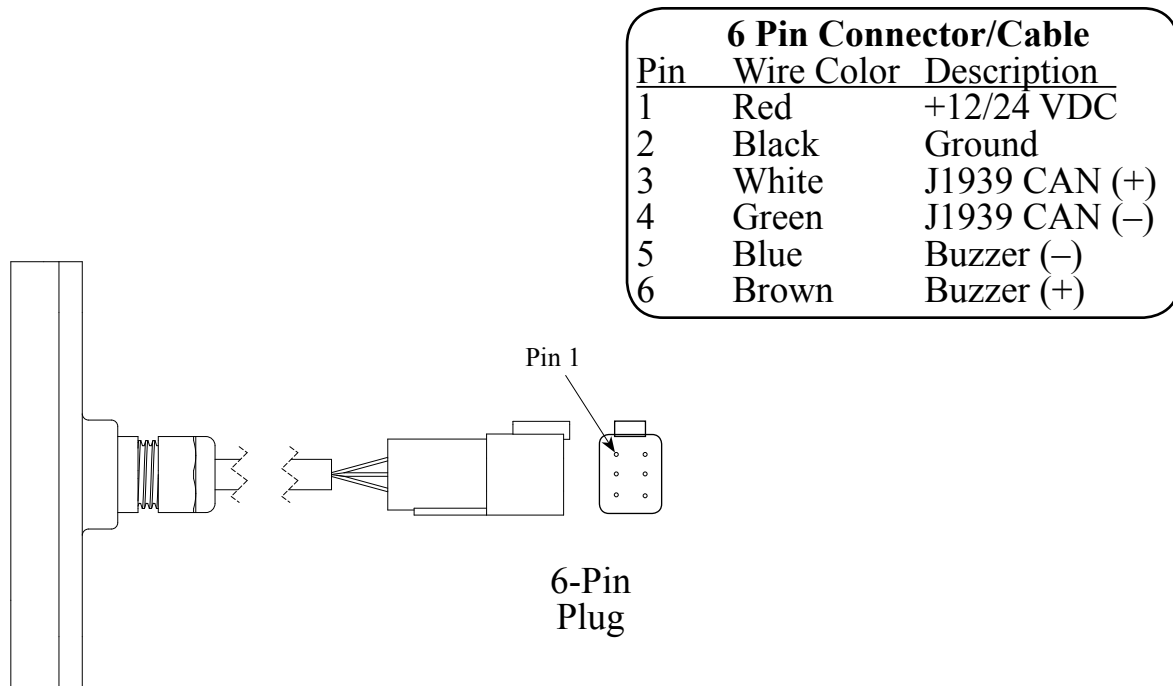


Figure 3. Wiring