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**Class 1**

ESC

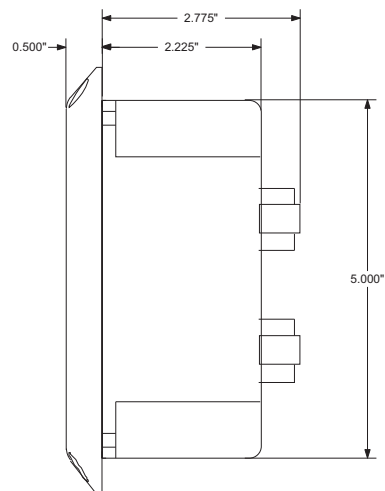
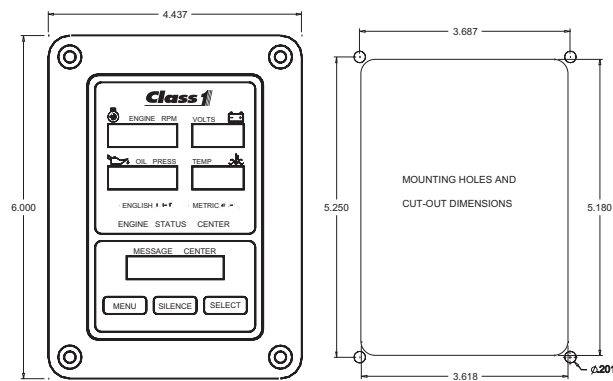
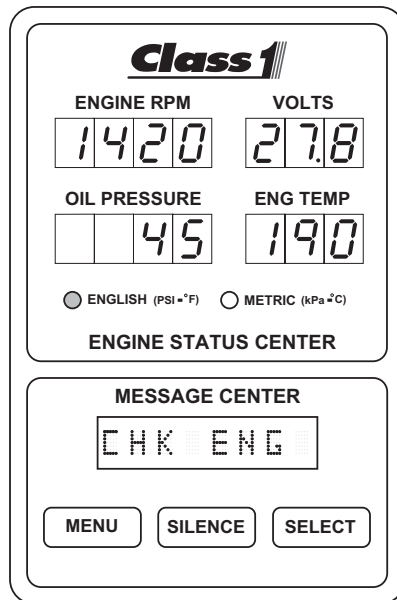
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***Class1***'s Engine Status Center (**ESC** - p/n 105536) provides the pump operator with engine and system operating information in a single unit.

- ☑ Engine RPM Display
- ☑ System Voltage Display and Alarm (HI and LO alarms)
- ☑ Engine Oil Pressure Display and Alarm
- ☑ Engine Temperature Display and Alarm (Oil or Coolant )
- ☑ Alarm set-points can be 'preset' for custom installations
- ☑ Alarm Silence and Disable Feature
- ☑ Alert! Messages with audible signal
- ☑ Engine Status (Check Engine and Stop Engine Messages)
- ☑ English or Metric Display
- ☑ Hourmeters for Engine, PTO and 'User' time
- ☑ Service Interval Timer for PTO with Reminder Message
- ☑ 'Incident' Timer
- ☑ Custom Message Display

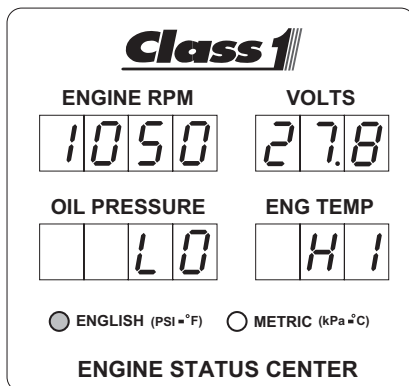
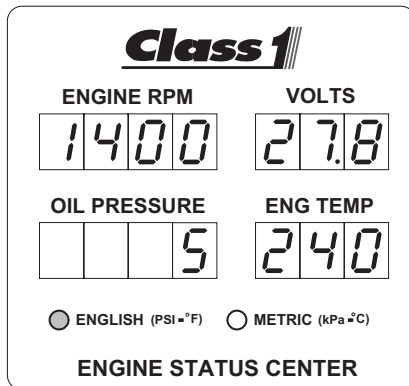
The **Class1** Engine Status Center (ESC) is a convenient self contained Engine information display for the Pump Panel Operator. Visual and Audible Alarms are available for critical information. The ESC utilizes the SAE J-1587 data link for engine information.

# LAYOUT



# Class 1

The **Engine Status Center Display (ESC)** continuously shows Engine RPM, Oil Pressure, Temperature, and System Voltage on four seven segment LED displays. The mode of operation (English or Metric) is indicated by an LED illuminated next to the current mode.



If a low oil pressure situation occurs, the oil pressure display will alternate between the current oil pressure and **LO**.

If a high temperature condition develops, the engine temperature display will toggle between the temperature value and **HI**.

A low voltage condition results in **CHK BATT** being displayed and the voltmeter alternates between the actual voltage and **LO**.

An overvoltage situation will display actual voltage alternating with **HI** on the voltmeter and **CHK ALT** will be shown in the message center.

# DISPLAYS

The **Message Center** is an eight character alphanumeric display. In normal operation the message center will display a logo.

If a Check Engine or Stop Engine malfunction occurs, Detroit Diesel Engines transmit both of these messages on the data bus, the display will read **CHK ENG** or **STOP ENG**. Other Electronic Engines may not transmit these messages. To display Stop or Check engine messages for these engines, connections must be made from the engine ECM or cab indicators to the ESC.



The message center also displays menu information when the menu switch is depressed. The menu may only be accessed when engine speed is below 900 RPM.

The **MENU** switch scrolls through the menu and the **SELECT** switch either selects the item or toggles between choices. The **SILENCE** switch saves current data and exits from the menu.

# CONNECTIONS



ESC harness connection to the apparatus is achieved by the use of two connectors.

## Deutsch DT06-4S 4 socket connector

<u>Cavity</u>	<u>Description</u>	<u>ESC</u>	
A-1	Ignition Power	24V In	Power for the ESC
A-2	System Ground	Ground in	Ground for the ESC
A-3	Data Link +	J1587 in	Data line positive
A-4	Data Link -	J1587 in	Data Line negative

## Deutsch DT06-12S 12 socket connector

<u>Cavity</u>	<u>Description</u>	<u>ESC</u>
B-1	Plug	
B-2	Plug	
B-3	Plug	
B-4	Check Engine	Ground input from engine ECM
B-5	User Input	Ground input from OEM can be used for STOP ENG
B-6	Plug	
B-7	Plug	
B-8	Plug	
B-9	Alarm	Ground output to an OEM alarm
B-10	PTO engaged	Positive input for PTO hours
B-11	User Hours	Positive input for USER hours
B-12	Low Fuel	Ground input for low fuel alert

B-4 is a ground input dedicated to the Check Engine Warning of the ESC. To receive this message on non-DDEC engines, you must provide this input.

B-5 is ground input that will display a generic warning message AUX IN. This can be any warning signal that you wish the operator to receive. For example on a non-DDEC engine, provide a ground input from the STOP Engine output of the engine ECM and change the message to read STOP ENG if you want the Pump Operator to receive the STOP ENGINE Message.

B-9 is a ground output to an OEM alarm.

B-10 is a positive (24 VDC) input that allows the ESC to accumulate PTO hours.

B-11 is a positive (24 VDC) input that will tally hours as long as the ESC and this input are active. The display message can be customized by the OEM to indicate its usage.

B-12 is a ground input from a tank level switch to alert the operator of a low fuel condition.

The ESC Menu can be entered at any time that the engine is operating at 900 RPM or less.

Enter the menu by pressing the **MENU** switch.

Scroll through the menu by using the **MENU** switch.

Select items from the menu by using the **SELECT** switch.

Save information and exit from the menu using the **SILENCE** switch.

## Menu Items

**MENU TEST LTS**                      Test Display.  
**SELECT**                      Illuminates all display segments, LEDs and sounds alarm.

**MENU UNITS: (E or M)**      Select units for display.  
**SELECT**                      Toggles English and Metric units.

**MENU ALERT?: (Y or N)**      Enables or Disables  
**SELECT**                      Toggles the Alert tone on or off.  
Enables the Alert Tone to direct the attention of the operator to certain messages.

**MENU HOURS**                      View operating hours.  
**SELECT**                      PTO HOUR                      **SELECT**                      display PTO hours  
**SELECT**                      USER HR                      **SELECT**                      display USER hours  
**SELECT**                      ENG HOUR                      **SELECT**                      display ENGINE hours  
**SELECT**                      INCIDENT                      **SELECT**                      T=00:00 (hrs/mins)  
Timer starts at power up, resets at power down.

**MENU**                      return to TEST LTS.  
**SILENCE**                      at any point in the menu returns you to normal operation.

# MESSAGES



**Alert Messages** are preceded by a short tone burst to alert the operator. The cause for the alert is then displayed on the message center, alternating with other information.

## Alert Messages:

PTO ENGD	PTO engagement
CHK ENG	Check Engine
LDMGR ON	Load Management
TANK LOW	Tank Level
LM-LVL:x (1-8)	Shed level

**Alarm Messages** are accompanied by a pulsed alarm that continues until silenced or the cause eliminated. The alarm message is displayed in the message center and LO or HI is displayed on the appropriate display for temperature, oil and voltage alarms.

AUX IN **	User Input
LOW FUEL	less than 1/4 tank
STOP ENG	Stop Engine
CHK BATT *	System Voltage low
CHK ALT *	System Voltage high
LOW OIL *	Oil Pressure low
HI TEMP *	Temperature high

Oil and Temp. alarms are active only with engine running.

Normal **Messages** appear without any audible warning.

AUX HRS **	User hours
CLASS 1 **	Logo
SRVC PTO	Service reminder for PTO

\* Alarm Points are set by the OEM.

\*\* OEM configurable messages

## Defaults Settings:

Service time Interval	100 hours
Aux. Input Display	AUX IN
Aux. Hours Display	AUX HR
Logo	CLASS1
Low Voltage Alarm	YES
Temperature source	DEG:OIL
Low Oil Pressure	10 PSI (69 kPa)
High Temperature	230 °F (110 °C)
Low Voltage Alarm	23.8 VDC
Overtoltage	30.0 VDC

**ESC Power**

A-1 circuit

A-2 circuit

These are the power and ground inputs for ESC operation and they also provide system voltage information to the ESC for display.

**ESC Data**

A-3 circuit

A-4 circuit

Engine information is received electronically on the J-1587 data bus.

**Check Engine Warning**

B-4 circuit

This input (ground) must be active for a check engine warning on all engines except Detroit Diesel

**Auxiliary Input**

B-5 circuit

This input (ground) is used for an auxiliary device active or warning message (configurable by the OEM).

**Alarm Output**

B-9 circuit

This output (ground) should be active when TEST LTS is selected from the menu. The alarm can be deactivated during operation by the user.

**PTO HRS**

B-10 circuit

This input must be active (+ 24 VDC) when the PTO is engaged to log hours and display the PTO ENGD message.

**Auxiliary Hours**

B-11 circuit

This input (+ 24 VDC) can be used for any device that you want to monitor. The message is configurable by the OEM.

**Low Fuel**

B-12 circuit

This input (ground) will display a LOW FUEL alert message when active.



# NOTES

***Class 1***

## Notes:

The engine information is "read" from the engine ECM. If some information is displayed then the ESC is functioning properly. Missing information is the result of an engine broadcast not being sent or a message header not in the proper format. If temperature is missing check that the source (oil or water) is configured properly.

The voltage displayed is taken from the inputs at A1 and A2. It may vary from battery voltage dependent on the voltage drops in the wiring. The alarm points can be changed by the OEM to suit the end user.

The LOW FUEL input would normally be tied to a low fuel switch in the tank. This can be part of a sending unit or a separate switch.

The USER INPUT can be used for any purpose. It can be tied to a temperature switch on the transmission and labelled HOT TRNS or something to that effect.

The AUX HRS input can be tied to anything. An auxiliary generator or hydraulic pump for instance. The label can be changed and then hours on that equipment can be tracked.