Description

The EMS447 and EMS448 Electronic Monitoring Systems/Controllers are micro-processor based for monitoring and control of equipment functions. The basic EMS system is programmed for a typical industrial engine power unit. Custom programming is available to adapt the EMS to a wide variety of engine and equipment requirements. Basic programs provide auto-start/manual start and first-out shutdown for engine functions such as pressure, temperature, level and overspeed. Necessary time delays for start up lockout are included. Operating data is displayed on a 32 character back lit alphanumeric liquid crystal display. The EMS operating parameters are configured through a simple three-button interface. Access to the system memory is controlled by entry codes. A password-protected program uses built-in memory to display the alarm/shutdown history, including a display of the last ten shutdowns, when and why they occurred and displays all of the engine operating conditions at time of last shutdown.

Basic Program Features

An on-board hourmeter keeps a log of equipment running hours and alerts you when to change oil, filters and perform other routine service. Ramp Oil Pressure monitoring protects equipment at both high rated speed and low idle speed. For instance, based on engine manufacturer’s requirement, shutdown could occur at 30 lb. (207 kPa) pressure at 1800 RPM or at 5 lb. (34 kPa) at 600 RPM or any shutdown point in between.

EMS448 / EMS448 Controllers

- Full Equipment Protection
- Field Adjustable Parameters
- First-Out Shutdowns and/or Alarms
- Shutdown History File
- Service Reminders
- Back Lit LCD or VFD Alphanumeric Display
- 1/4 DIN or NEMA 4X Enclosed Models

Basic Models

EMS448 has an extruded aluminum enclosure suitable for panel mounting. Wiring is via optional wiring harness. Relay boards are available for additional relay contact capability. Refer to “Accessories” on the back page. EMS448 has a NEMA 4X type enclosure. Wiring is connected directly to the relay board terminal block located within the enclosure. Relay board for additional relay contact capability is available. See “Optional Accessories” on reverse side.

Applications

- Industrial Engines
- Generators
- Construction Equipment
- Compressors
- Trucks
- Pumps

Specifications

Input Voltage: 10 to 28 VDC.
Operating Temperature: -4 to 149°F (-20 to 65°C).
Storage Temperature: -4 to 149°F (-20 to 65°C).
Display: Alphanumeric: 2-line, 32character backlight LCD (standard); VFD optional.
Relative Humidity: 95%RH @ 140°F (60°C).
Communications: RS485 port, standard.
Sensor Inputs:
- Digital: 3-optically-isolated inputs, (positive voltage or ground) such as from Murphy SWICH-GAGE® instruments.
- Analog: Up to 8 inputs—accepts a variety of resistive sending units, such as from Murphy electric gage senders. NOTE: When resistive sending units are used, one input will be designated for battery voltage sensing. The use of 2-wire type senders is strongly recommended. Special order analog inputs available (4-20 mA or 0-5 VDC).
- Frequency: 1 optically-isolated input for speed reference, such as MP3298 magnetic sensor.

EMS447 Outputs:

- 3-Transistor digital: 125 mA sinking.
- 3-Relay: SPST 3A @ 30VDC N.O. connected to battery positive.
- S449-4 Relay Board (optional)*:
  - 2-Transistor digital: 125 mA sinking.
  - 4-Relay: 2-SPST, 5A @ 30 VDC, 250 VAC, 1/10 hp @ 120 VAC (4).
  - 2-DPDT, 2A @ 220 VDC,250 VAC (5).
- S449-2 Relay Board (optional)*:
  - 6-Dry Relay: 4 SPST, 5A @ 30 VDC, 250 VAC, 1/10 hp @ 120 VAC (6)
  - 2 DPDT, 2A @ 220 VDC, 250 VAC (5).

EMS448 Outputs:

- 2-Transistor digital: 125 mA sinking.
- 4-Relay: 2-SPST, 5A @ 30 VDC, 250 VAC*, 1/10 hp @ 120 VAC (6).
  - 2-DPDT, 2A @ 220 VDC,250 VAC (5).
- S449-1 Relay Board (optional)*:
  - 6-Dry Relay: 4 SPST, 5A @ 30 VDC, 250 VAC, 1/10 hp @ 120 VAC (6).
  - 2 DPDT, 2A @ 220 VDC, 250 VAC (5).

Shipping Weights and Dimensions

EMS447: 2-1/4 lb (1 kg); 9-1/4 x 8-1/4 x 5-1/4 in. (235 x 210 x 133 mm).
EMS448: 3-1/2 lb (1.5 kg); 12-1/4 x 7-1/4 x 5-3/4 in. (311 x 184 x 146 mm).

*Not Class I, Division 2 approved.
How to Order
To order the EMS use the model number designation diagram below.

<table>
<thead>
<tr>
<th>Model</th>
<th>EMS447 = 1/4DIN aluminum box</th>
<th>EMS448 = NEMA4X weatherproof</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lighting</td>
<td>Blank = default green</td>
<td>RBL = red black lighting (faceplate reads MEMIS)</td>
</tr>
<tr>
<td>Display</td>
<td>Blank = default LCD</td>
<td>VFD = vacuum fluorescent</td>
</tr>
<tr>
<td>Case</td>
<td>Blank = non-vented</td>
<td>V = vented case</td>
</tr>
<tr>
<td>Clock</td>
<td>Blank = without clock</td>
<td>C = clock function</td>
</tr>
</tbody>
</table>

Accessories
Required to complete the installation
EMS25TB = Plug-in terminal block assembly
EMS25RM = Rail mount DIN type terminal block
EMS25CAR2 = Ribbon cable with 2 male D-subminiature connectors
EMS25CAS = Male connector with 9 ft. (2.74 m) long color coded cable
EMS25MS = Solder type male D-subminiature connector
EMS25MSR = Relay board instead of S449-3 relay board.
EMS25MS2 = Relay board (EMS447 only)
EMS25MS4 = Relay board (EMS447 only)
EMS25CASR = Standard length ribbon cable is 2 ft. (610 mm). Specify in feet for other lengths. Example: EMS25CAS4 (for 4 feet long).

EMS447 Optional Wiring Harness and Relay Boards

Warranty
A limited warranty on materials and workmanship is given with this FW Murphy product.
A copy of the warranty may be viewed or printed by going to www.fwmurphy.com/support/warranty.htm

In order to consistently bring you the highest quality, full featured products, we reserve the right to change our specifications and designs at any time.

Bulletin EMS-92199B page 2 of 2