# **Electronic Monitoring Systems**

**EMS448** 

FWMurphy





# 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.

## **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.

• Compressors

Trucks

• Pumps

## Applications

- Industrial Engines
- Generators
- Construction Equipment

## **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, 32 character, back lit. **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<sup>®</sup> instruments.<sup>(2)(3)</sup>
- 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).

- EMS447 / EMS448 Controllers
- Full Equipment Protection<sup>(1)</sup>
- Field Adjustable Parameters<sup>(1)</sup>
- First-Out Shutdowns and/or Alarms<sup>(1)</sup>
- Shutdown History File<sup>(1)</sup>
- Service Reminders<sup>(1)</sup>
- Back Lit Alphanumeric Display
- 1/4 DIN or NEMA 4X Enclosed Models
  - Frequency: 1 optically-isolated input for speed reference, such as MP3298 magnetic sensor.

#### EMS447 Outputs:

- 3-Transistor digital: 200 mA sinking.<sup>(4)</sup>
- 3-Relay: SPST 3A @ 30VDC N.O. connected to battery positive.
- S449-4 Relay Board (optional):
   2-Transistor digital: 200 mA sinking.
   4-Relay: 2-SPST, 5A @ 30 VDC, 250 VAC, 1/10 hp @ 120 VAC; <sup>(4)</sup>
   2-DPDT, 2A @ 220 VDC,250 VAC. <sup>(5)</sup>
- S449-2 Relay Board (optional):
- 6-Dry Relay: 4 SPST, 5A @ 30 VDC, 250 VAC, 1/10 hp @ 120 VAC; <sup>(4)</sup> 2 DPDT, 2A @ 220 VDC, 250 VAC. <sup>(5)</sup>

#### EMS448 Outputs:

- 2-Transistor digital: 200 mA sinking.
  - 4-Relay: 2-SPST, 5A @ 30 VDC, 250 VAC, 1/10 hp @ 120 VAC; <sup>(4)</sup> 2-DPDT, 2A @ 220 VDC,250 VAC. <sup>(4)</sup>
  - S449-1 Relay Board (optional):
     6-Dry Relay: 4 SPST, 5A @ 30 VDC, 250 VAC, 1/10 hp @ 120 VAC; <sup>(4)</sup>
     2 DPDT, 2A @ 220 VDC, 250 VAC. <sup>(5)</sup>

#### 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).

#### (1) Program specific.

- (2) One additional input can be ordered and traded for one transistor output.
  (3) Isolates the internal circuitry of the Murphy EMS from the sensor input circuitry to help avoid electrical noise and damage.
- <sup>(4)</sup> One additional output can be ordered and traded for one digital input.
- (5) One DPDT pole has common connected to battery+. N.O. available fused and unfused.





### **EMS447 Optional Wiring Harness and Relay Boards**



## Warranty

A two-year limited warranty on materials and workmanship is given with this Murphy product. Details are available on request and are packed with each unit.



CONTROL SYSTEMS & SERVICES DIVISION P.O. Box 1819; Rosenberg, Texas 77471; USA (281) 342-0297 fax (281) 341-6006 e-mail sales@fwmurphy.com

MURPHY DE MEXICO, S.A. DE C.V. Blvd. Antonio Rocha Cordero 300, Fracción del Aguaje San Luis Potosí, S.L.P.; México 78384 +52-444-8206264 fax +52-444-8206336 e-mail ventas@murphymex.com.mx www.murphymex.com.mx FRANK W. MURPHY, LTD. Church Rd.; Laverstock, Salisbury SP1 1QZ; U.K. +44 1722 410055 fax +44 1722 410088 e-mail sales@fwmurphy.co.uk www.fwmurphy.co.uk

MURPHY SWITCH OF CALIFORNIA 41343 12th Street West Palmdale, California 93551-1442; USA (661) 272-4700 fax (661) 947-7570 e-mail sales@murphyswitch.com www.murphyswitch.com MACQUARRIE CORPORATION 1620 Hume Highway

Campbellfield, Vic 3061; Australia +61 3 9358-5555 fax +61 3 9358-5558 e-mail murphy@macquarrie.com.au



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