



41343 12th Street West
PALMDALE, CALIFORNIA 93551
PHONE (661) 272-4700
FAX (661) 947-7570
web site: <http://www.murphyswitch.com>

ASM200 - RSX

MURPHYMATIC® Micro-Controller

Installation and Operation Manual

FOR USE WITH: PROGRAM # A89053

DATE: October 9, 2002

GENERAL INFORMATION

DESCRIPTION

The ASM200 MURPHYMATIC® Auto Start Module is an automatic engine controller that comes in a compact low-cost enclosure. The ASM200 may be used in conjunction with other Murphy signalling devices to automatically crank, start, monitor, and shutdown an engine.

SPECIFICATIONS

Voltage (SPECIFY): 12, 24, or 32 VDC
Overspeed Trip: 2,500 Hz to 9,000 Hz adjustable
Crank Disconnect Trip: 60 Hz to 2,000 Hz adjustable
Magnetic Pick-up Input: 1 Vrms minimum
Signal Output Rating: 5A 24 VDC Relay Outputs
500ma Sink Transistor Outputs
Reverse Polarity Protection: 200-volt peak reverse voltage
Crank/Rest Time: 2 to 20 seconds adjustable
Cranking Attempts: 2 to 12 adjustable
Oil Pressure Lockout Delay: 2 to 60 seconds adjustable
Overall Dimensions: 5-11/16"W (144 MM) x 6-3/8"H (162MM) x 2-3/16"D (56 MM)
Cutout Dimensions: 5-5/16"W (135 MM) x 5-3/8"H (137 MM)
Mounting (SPECIFY): ST Case Mount
Panel Mount

WIRING THE ASM200 MODULE

WARNING: Disconnect **ALL** electrical power before beginning the wiring. **STOP ALL** machinery before performing the hook up. Any load connected to the controller that draws current in excess of the rated level **MUST** be piloted at the load.

The ASM200 is a pilot duty device. The outputs are designed for control only.

1. Wire the ASM200 using 14 AWG stranded wire.
2. When hooking the battery positive (+) and ground wires to the ASM200, route them directly from the battery to the unit. This will help reduce electrical noise coupling and avoid voltage losses from other devices.
3. If a standby battery charger is installed, it must be wired directly to the battery, NOT to the ASM200. This could cause electronic "noise" produced by the charger to be coupled into the microprocessor. If the "noise" is severe, erratic operation could occur.
4. Do not route low voltage DC (battery) control wires in the same conduit as high voltage AC wires.
5. Use shielded cable for connecting the magnetic pick up to the ASM200. Ground only one end of the shield (we suggest you ground it at the engine).
6. Always place reverse bias diodes across inductive loads. This helps eliminate a source of electromagnetic noise.

SEQUENCE OF OPERATION

Sequence of Operation with Panel in "AUTO"

The ASM200 MURPHYMATIC® AUTO START MODULE, is a Microprocessor based engine controller. When signaled by a closure of N.O. contacts, the ASM200 will signal an engine to start and run. When the contact reopens, the ASM200 will signal the engine to stop. The ASM200 has customer adjustable Crank/Rest times, Number of Cranking attempts, Crank Disconnect RPM, Overspeed RPM, and Shutdown Lockout timer. It also has 5 Shutdown functions: OVERCRANK, OVERSPEED, LOSS OF SPEED, LOW OIL PRESSURE, AND HIGH TEMPERATURE. Turning both OVERCRANK and OVERSPEED outputs on indicates LOSS OF SPEED signal. This is the only time more than one (1) shutdown indicator will be turned on.

Sequence of Operation

- I. Remote N.O. contacts close to initiate a START Sequence.
 - A. Battery (+) is supplied to the Fuel Valve/Run Solenoid terminal.
 - B. Battery (+) is alternately supplied to the Starter Relay terminal until the engine starts or the preselected number of Cranking Attempts has been completed.
 1. If the engine fails to start, the Overcrank indicator will come on and the ASM200 will be locked out until reset (this is accomplished by turning the selector switch to the OFF position or removing power).
 2. If the engine starts, but dies again before the Safety Lockout timer expires, the ASM200 will wait 10 seconds before attempting to restart the engine.
 3. When the engine RPM rises above the CRANK DISCONNECT RPM set point, cranking is terminated and a RUN Sequence is initiated.
 - C. The SAFETY LOCKOUT Timer begins timing. After this time delay expires, the engine is running at speed, and all safety circuits are armed.
 1. Should any monitored condition (LOW OIL PRESSURE, HIGH TEMPERATURE, or OVERSPEED) occur, the appropriate Indicator will turn on to indicate cause of shutdown, and lockout the ASM200 until reset (this is accomplished by turning the selector switch to the OFF position or removing power).
- II. Remote N.O. contacts reopen to initiate a STOP Sequence.
 - A. Shutdown circuits are locked out.
 - B. Power (+) is removed from the Fuel Valve/Run Solenoid terminal.

Sequence of Operation with Panel in "TEST"

When the TEST-OFF-AUTO switch is placed in the "TEST" position, an automatic start signal is simulated. Therefore, the controller will operate the same as it does in "AUTO." However, it will continue to run as long as there are no signals from monitored conditions or until the TEST-OFF-AUTO switch is moved to the "AUTO" or "OFF" positions.

ASM200 I/O LIST

1. Battery (+) from Selector Switch.
2. Battery (-) ground or common.

3. Magnetic Pickup (-) (this terminal is internally grounded).
4. Magnetic Pickup (+)
5. LOW OIL PRESSURE Input (-) from a SWICHGAGE® or other N.C. switch.
6. HIGH TEMPERATURE Input (-) from a SWICHGAGE® or other N.O. switch.
7. Not Used.
8. START Input (-) from remote N.O. contact through Selector Switch, which could also give TEST signal.
9. FUEL VALVE/RUN SOLENOID Output (+) NOT TO EXCEED 5 AMPS!
10. LOW OIL PRESSURE Output (-) for remote indicator light (if used).
11. HIGH TEMPERATURE Output (-) for remote indicator light (if used).
12. OVERCRANK Output (-) for remote indicator light (if used).
13. OVERSPEED Output (-) for remote indicator light (if used).
14. ENGINE RUN Output (-) for remote indicator light (if used).
15. ENGINE FAIL Output (-) On any failure for remote indicator light (if used).
16. CRANKING RELAY Output (+) NOT TO EXCEED 5 AMPS!

Potentiometer Assignment

- R1 Crank/Rest Adjustment (Crank and Rest cycles will be equal). Adjustable from 2 - 20 seconds.
- R2 Crank Disconnect RPM Adjustment. Adjustable from 60 - 2000 Hz.
- R3 Overspeed RPM Adjustment. Adjustable from 2500 - 9000 Hz.
- R4 Safety Lockout Timer Adjustment. Adjustable from 0 - 60 Seconds.
- R5 Overcrank Adjustment. Adjustable from 2 - 12 Cranks.

LED Assignment

- LED1 LOW OIL PRESSURE
- LED2 HIGH TEMPERATURE
- LED3 OVERCRANK
- LED4 OVERSPEED
- LED5 ENGINE RUN