

Murphymatic® Engine Microcontroller A91 Series

The A91 is a completely unattended startup/shutdown and run controller for engine-driven equipment. This user-friendly, compact microprocessor-based controller covers all basic start/stop operations plus other features found on more sophisticated and expensive controllers.

The A91 is designed to operate from a 12- or 24-volt battery and requires a magnetic sensor (pickup) for speed detection. It includes features such as crank and rest cycles, time delay lockouts, sensing circuit for crank disconnect and over-speed and time delays before start and stop. Warm-up and cool down are connected only on the WC model. Four LEDs indicate shutdown for low lube oil, pressure, high temperature, over crank and over-speed and are reset by turning the power off. A fifth LED for engine running indicates when crank disconnect occurs.

The microcontroller is available in several configurations and is factory programmed. Certain parameters can be field adjusted without altering the basic control program.

The A91 is housed in a NEMA 3R enclosure with a hinged and gasketed dead front door. This weatherproof enclosure includes two 1/2 inch conduit holes [7/8 in. (22 mm) diameter] in the bottom for input and output wiring.

All of the electrical components are installed on a box-shaped, hinged front subpanel assembly. This working assembly can be purchased and installed in the user's choice of enclosures.



Applications

A variety of applications can be covered with the micro-controller such as:

- Air/Gas Compressors
- Standby Generator Sets
- Fire/Emergency/Flood Pumps
- Booster/Transfer Pumps
- Municipal Fresh/Waste Water Treatment
- Sewage Lift Stations

Models

Model	Description
A91	For less than 5 amp current draw up to 24 VDC electric run output*
A91-S	For 10 amp current draw up to 240 VDC electric run output*
A91-WC	Same as A91- with a warm-up/cool down relay
A91-S-WC	Same as A91-S with a warm-up/cool down relay
Any Model -LC	Less weatherproof enclosure

* Run output is the voltage and current required for an ignition system, fuel valve or solenoid actuator that allows the engine to run.

Specifications

Power Input: 12 or 24 VDC nominal (specify)

Standby Power Consumption: <50mA

Magnetic Pickup Input: Requires 2 V rms minimum

Sensor Input Polarity: Negative (-)

Outputs: Five open collector transistor 500 mA sink
Two relay, 5 Amp maximum at 12 or 24 VDC (sourcing)

Reverse Polarity Protection: 200 volt peak reverse voltage

On-board Memory: 8k PROM (programmable, read only memory); data retention 10 years

Operating Temperature Range: -20 to 140°F (-25 to 60°C)

Operating Humidity Range: 0-95% Non-Condensing

User Trip point Adjustments: Five on-board potentiometers (320° turn)

Test-Off-Automatic Toggle Switch: Three position switch for:

Test: Starts engine in automatic mode and runs until switched off or emergency shutdown occurs

Off: Disconnects all power to control circuits. Stop/disables engine from starting and resets shutdown indicators

Auto: Automatic start/stop sequencing is initiated by external switches and signals

Cycle Crank Timer: 5 crank attempts 7 seconds each; 4 rest periods 15 seconds each, before overcrank

Overspeed Trip Point Setting: From 2500-9000 Hz

Crank Disconnect Speed Setting: From 400-2500 Hz

Shutdown Time Delay: 15 seconds after engine start; locks out low lube oil, pressure and high temperature.

Engine Run LED: Turns on when crank disconnect occurs

Shutdown Output: Removes DC output or operates dry relay contacts for engine shutdown (depending on model used)

Start/Stop: SPDT momentary or SPST maintained switches

Warm-up Time Delay: Field adjustable from 0-300 seconds to load the engine after warm-up (model -WC only)

Cool down Time Delay: Field adjustable from 0-300 seconds (model -WC only)

Enclosure: Weatherproof NEMA 3R

Enclosure Coating: Red enamel

Subpanel Coating: White enamel

Shipping Weight: 17 lb. (8 kg); subpanel: 7 lb. (3.2 kg)

Shipping Dimensions: 12 x 12 x 9 in. (305 x 305 x 229 mm)

Features

The A91 series combines the advantages of solid state microprocessor control logic with the dependability of Murphy's experience in engine automation systems. This engine controller eliminates the need for most electromechanical logic and control relays, while providing built-in design features:

- Applicable to all types of engines
- Built in speed sensing circuit with:
 - Adjustable crank disconnect RPM
 - Adjustable overspeed RPM
- Three position Selector Switch allows for automatic off or test mode
- Engine running LED indicator
- Four, first-out shutdown LED indicators for:
 - Low lube oil
 - High temperature
 - Overcrank
 - Overspeed

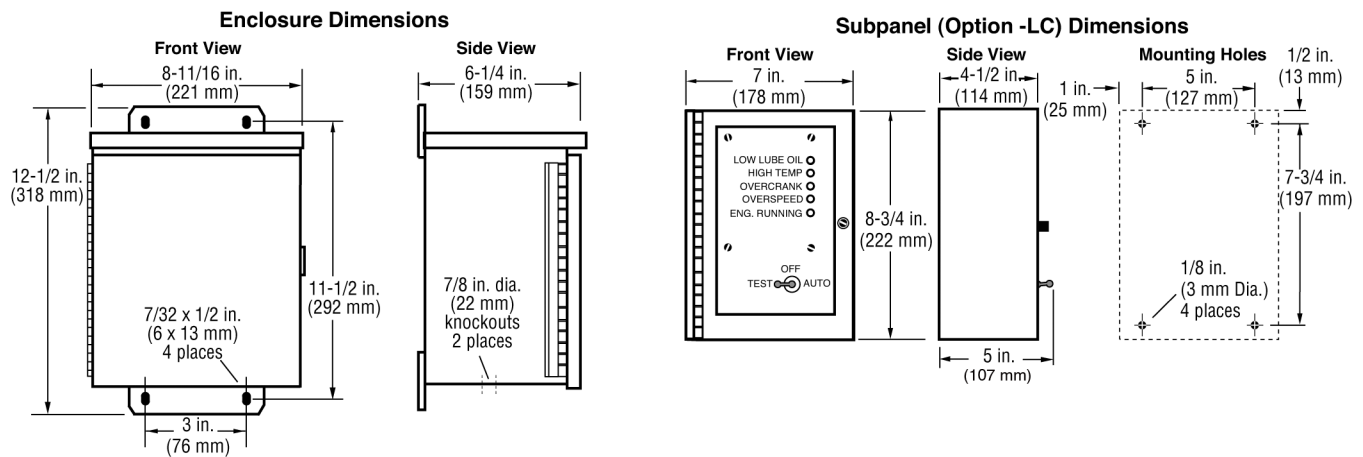
- Quality 16 point terminal block
- Start from either remote contact close to start, open to stop or N.O. contacts close to start, close to stop.
- Relays are plug-in type with LED indicator for fast service and maintenance.

Optional Features

-S: Includes a relay to isolate magneto and capacitor discharge ignition systems.

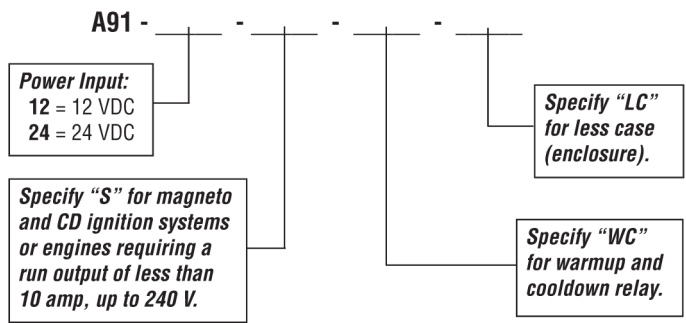
-WC: Includes a relay for loading and unloading driven equipment for engine warm-up and cool down.

Dimensions



How to Order

Options listed below. All configurations may not be available. Call your sales representative or Enovation Controls for more information.



Part Number	Description	Notes
MP3298	Magnetic Pickup	Accessories
00002062	12-V auxiliary starter solenoid	
00002063	24-V auxiliary starter solenoid	
AT67207	Throttle controller	
CO3	Clutch actuator	

Note: Run output is 5 amp @ 12 or 24 VDC. Run output is the voltage required for an ignition system, fuel valve or solenoid actuator that allows the engine to run.