

## 3 Attempt Automatic Generator Control Module

### DESCRIPTION

The Model 002FRS is an Automatic Generator Control Module designed to automatically start and stop the engine. It will indicate the operational status and fault conditions, automatically shut down the engine and indicate the start engine failure by a flashing LED on the front panel. Other simultaneous faults are indicated by steady LED.

Operation of the module is via rocker switch mounted on the front panel with START and STOP/AUTO positions. Remote control of the module is via terminal 1.

### START

0.5 Second after the fuel relay is energized, the 3 attempt start will begin its start sequence: the start relay will energize, feeding battery +ve (on terminal 6 to terminal 7 and thence on to the start circuit. The crank period is set for 12 seconds.

If the engine has not fired by the end of 1st attempt, the starter is turned off for a 20 sec. period. The sequence will then repeat up to a maximum number of start attempts.

During engine cranking and for a short time afterwards the protection hold-off timer is active and the relevant alarms inputs are inhibited. This enables the engine to start and achieve normal running conditions. Once the timer has expired (reprogrammable) the inputs are enabled providing normal protection from the module.

Following a successful start, sensed when AC alternator's voltage rises above 40% of nominal, the crank relay is de-energized and latched out to prevent reengagement of the starter with the engine running.

The starter relay can only energize for 2<sup>nd</sup> and 3<sup>rd</sup> crank cycle if "Low Oil Pressure" is sensed, to confirm that the engine is stationary. This is designed to prevent damage to the starter and ring gear in the event of the control module not sensing that the engine has started (i.e. terminals 11 and 12 are not connected to the alternator AC output or AC alternator is faulty).

Should the engine still fail to start after the maximum number of attempts, **START FAIL** is displayed and the starter is latched out until reset via stop position rocker switch.



Relay outputs are provided for:

- Fuel Solenoid Output
- Start Output
- DC alternator excitation

The relays supply positive plant supply out.

Configurable inputs are available for:

- Low Oil Pressure.
- High Engine Temperature.
- Remote Start.
- Speed sensor on/off.
- AC alternator monitor.
- Spare alarm input (N/C) to give protection expansion. This allows the module to function with N/O or N/C switches.

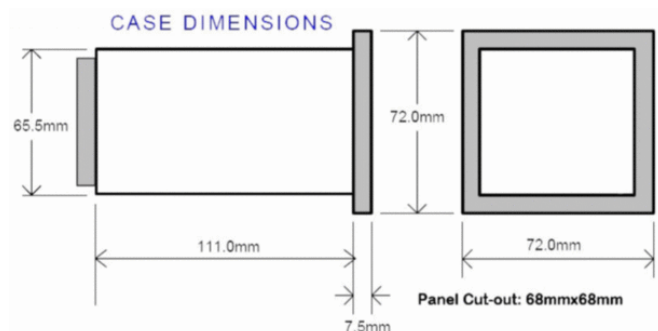
Multiple alarm channels are provided to monitor the following:

- Under/Over speed (speed fault)
- Low oil pressure
- High engine temperature
- Fail to Start
- Spare Alarm channel
- Cranking
- Fuelling

The AECM 002FRS series modules have been designed for front panel mounting.

The module is fitted into the cut-out with the fixing clips removed.

These are then fitted from the rear.



DC Supply: 8 to 33 V Continuous.

Max. Operating Current: 90 mA at 12 V. 87 mA at 24 V;

Max. Standby Current: 10 mA at 12 V. 10 mA at 24 V;

Alternator Input Range: 15 - 300 V ac RMS;

Low Frequency Limit: 30 Hz; (reprogrammable)

High Frequency Limit: 57Hz; (reprogrammable)

Number of attempts: 3 (reprogrammable)

Crank duration: 12 sec. (reprogrammable)

Hold-off timer set for: 7 sec. (reprogrammable)

Start Relay Output: 2 Amp DC at supply voltage, internally protected with a resettable fuse.

Fuel Relay Output: 2 Amp DC at supply voltage, internally protected with a resettable fuse.

Dimensions: 72 X 72 X 111mm (Excluding rocker switch)

Operating Temperature Range: -30 to +70°C

# AUTOMATIC ENGINE CONTROL MODULE

## TYPICAL CONNECTIONS

002XXX

