

MULTI-ATTEMPT AUTOMATIC ENGINE SMART SWITCH

Model SFS01-V2

DESCRIPTION

The Model **SFS01-V2** is a Multi-attempt Automatic Engine Smart Switch designed to automatically [remotely] or manually 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 "ST. FAIL" LED as well as informing operator via SMS. Other functions and possible engine fault conditions are also visually shown via a set of LEDs located on the module.

The SFS01-V2 is designed to receive start/stop commands from a specially coded SMS or via direct call from a control server (CS) phone number(s). It is capable of storing up to 10 CS numbers (index 0-9) giving you and your colleagues an equal opportunity to control your engine from any place on earth where mobile network is available. You won't be charged for a call from CS phone number because the module will hang up incoming call immediately after recognizing you as a valid operator. The SFS01-V2 is fitted inside a polycarbonate IP67 rated enclosure. Wired remote control of the SFS01-V2 is available through terminals 5 & 13 [using momentary N/O switch]. Wireless local control via a key fob is available as an option. Programming and operation of SFS01-V2 is via specially coded SMS described in this manual.

START and RUN Sequence

0.5 Second after the fuel relay is energized [wire 5], the 5 attempt start will begin its start sequence: the start relay will energize, feeding battery +ve [on wire 6 to wire 2 and then on to the start circuit]. If the engine has not fired by the end of 1st attempt, the starter is turned off for a resting period. The sequence will then repeat up to a maximum number of start attempts. Following a successful start, sensed when the oil pressure switch changes its state, the start relay is de-energized and latched out to prevent reengagement of the starter with the engine running.

Lower PCB (green): engine controller Inputs are available for: Relay outputs are provided for: Warning lights [LEDs] provided to indicate the following: Fuel Solenoid Output • Low Oil Pressure [wire 3] • ST. FAIL LED [Unsuccessful start after multiple attempts and S/D] Starter Motor Output Wired Remote Start [wire 1] • E. STOP LED [Active state of emergency stop switch and S/D] Battery –Ve [wire GR/Y] • LOW OIL LED [Low oil pressure alarm and S/D] The relays supply positive plant Battery +Ve [wire 6] HET / GL LED [High engine temperature and S/D] / [Glow plug energized] supply out. • W. Pressure switch [wire 4] • SPEED LED [Over/under engine speed failure and S/D] • ON LOAD LED [Generator is onload] Upper PCB (blue): 3G/GSM controller • Green LED (SRV): lit during handling commands / messaging. Red LED (ACT): flashing every second during network initialization and flashing 2 times every 5th second after successful network initialization. Engine controller specification **3G/GSM** controller specification **IMPORTANT!** DC Supply: 12Vdc DC Supply: 12Vdc Max. standby current: ~10mA @ 12 V Max. standby current:~150mA / Average 50mA Number of attempts: 5 The starter relay can only energize Receiver/transmitter: Integrated into SFS01-3G module. Crank durations: 2-3-3-4-5 sec Working Frequencies: Dual-Band UMTS/HSDPA for 2nd and follow up crank cycle if Pause between each attempt: 20 sec 850/1900MHz "Low Oil Pressure" is sensed, to Hold-off timer* set for: 7 sec Quad-Band GSM/GPRS/EDGE Starter relay output: 10A max 850/900/1800/1900MHz confirm that the engine is Fuel solenoid output 10A max SIM Card: Standard size SIM (3V & 1.8V) Operating Temperature Range: -20 to +55°C. stationary. SIM card must be activated and inserted by a user into de-Humidity: Less Than 80% RH energised module before powering up the unit.

* During engine cranking and for a short time afterwards the protective 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, the inputs are enabled providing normal protection from the module.

Inserting a SIM card into 3G/GSM controller





Communication and management





All standard sms confirmations will be issued automatically after that as usual.

Setting up control server phone numbers (CS) using sms commands



text "**CS1**". Now you can check if CS1 number has been deleted by requesting a new CS phone number list by texting: "**CS?**"

Wiring diagram

CAUTION! ENGINE FITTED WITH REMOTE START MODULE. ENGINE MAY START WITHOUT WARNING. ISOLATE STARTER CIRCUIT PRIOR TO ANY MAINTENANCE. CONTACT ALDGATE PUMPS FOR MORE INFORMATION IF REQUIRED.



Wiring diagram

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This form is designed for your own personal information

It may be helpful if you list your preferred control server "CS" numbers here for future reference.

CS #	Number	Name
0		
1		
2		
3		
4		
5		
6		
7		
8		
9		

Remember - the above numbers will have the capability to start and stop your diesel pump set.

If loading a land line telephone number please add the area code.

The listed CS numbers will all receive text messages informing them of the operation of the diesel pump set.

A good rule of thumb is to ask all other persons listed on the CS to contact "CSO" prior to starting or stopping the engine to avoid duplication of messages to the control module.

The primary user (CS"O") will receive a txt message from the control module every Friday just to confirm all is well.

Quick Guide to SMS Commands

- Start and stop the engine send: **OK** via SMS
- To check the engine and pump status send: **STATUS?** via SMS.
- To get a list of authorised phone numbers [CS numbers] that can activate the module send: **CS**? via SMS.
- To check that the module is currently being powered by the engine starting battery send: **POW** via SMS. (Please note POW only confirms the modules battery supply. The SFS-3G V2

controller will send a SMS if the battery voltage drops below 11.5 volts.)

• **Remember** - if you start your engine manually via the key start, you must stop the engine manually via the key start.

When the engine is started manually, you will receive a "pump running status normal" text only No message is sent regarding the engine status.

If you text Status? with the engine running (started manually) the module would respond with

"Engine status: alarm" "Pump status: normal"

This is because when the engine is started manually the module understands that no automatic re-start procedure is required so the module ignores the engine OPS that monitors oil pressure.

• Likewise - if you start your engine via SMS using the control module, you must stop the engine via SMS.

When the engine is started remotely via text using the control module, you will receive the following "Pump running. Status: Normal (Date & Time)"

followed by

"Engine running. Status: Normal (Date & Time)"

If you text Status? with the engine running (started via SMS) the module would respond with

"Engine status: normal"

"Pump status: normal"

The "Oil Pressure Switch" is activated by the engine running and is acting normally. If the engine failed to start the Oil Pressure Switch would send the required signals to begin the re-start procedure.

