



# Deep Sea Electronics Plc

## 500 Series CONTROL MODULES

### MODEL 560 AUTO START / INSTRUMENTATION MODULE

#### DESCRIPTION

The Model 560 is an **Automatic Engine Control Module**, which has been designed to allow the OEM to meet most of the industry's complex specifications. The module is used to automatically start and stop the engine, indicating the operational status and fault conditions; automatically shutting down the engine and indicating the engine failure by means of a graphical LCD display and a flashing LED on the front panel. Selected operational sequences, timers and alarms can be altered by the customer. Alterations to the system are made by using the 808 interface and a PC. This interface also provides real time diagnostic facilities.

Operation of the module is via a three position rotary switch (key-switch option available) mounted on the front panel with STOP, AUTO and MANUAL positions.

A further pushbutton provides an LCD DISPLAY SCROLL function to view the instrumentation.

The module features Microprocessor control and provides a comprehensive list of timers and pre-configured sequences. This allows complex specifications to be easily met. Configurable expansion facilities are also provided.

The 560 module provides **metering and alarm facilities** via the LCD display with the following instrumentation displays, accessed via the DISPLAY SCROLL push-button:-

- Generator Volts L1-N, L2-N, L3-N
- Generator Volts L1-L2, L2-L3, L3-L1
- Generator Amps L1,L2,L3
- Generator Frequency Hz
- Engine Speed RPM
- Engine Oil Pressure (PSI & Bar)
- Engine Temperature (°C & °F)
- Plant battery Volts
- Engine Hours Run

L1-L2	L2-L3	L3-L1
420	391	405

e.g.

The 500 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. Connection is via locking plug and socket connectors.

- Compliant with BS EN 60950 Low Voltage Directive
- Compliant with BS EN 50081-2 EMC Directive
- Compliant with BS EN 50082-2 EMC Directive

Description continues overleaf...

#### FEATURES



- Micro-processor based Design
- Automatic Engine Starting and Stopping
- Automatic Shutdown on Fault Condition
- Custom Graphical Icon type LCD Display
- PC Configurable via MS-Windows based software
- Provides Engine Instrumentation
- Provides Generator Output Instrumentation
- Provides Alarm and Status Information
- Simple selector switch controlled Operation
- Real time Diagnostics via MS-Windows '95
- Configurable Digital Inputs
- Configurable Relay Outputs
- Configurable Timer Settings
- Configurable Alarm Trip Points
- Expansion Modules for further enhancement
- External remote start input
- LED & LCD Alarm indication
- Adjustable crank cycle/attempts
- In-built logic for Smoke Limit Control

## DESCRIPTION - CONTINUED

The instrumentation displays are supplemented further by **LCD icon displays for various Alarms**

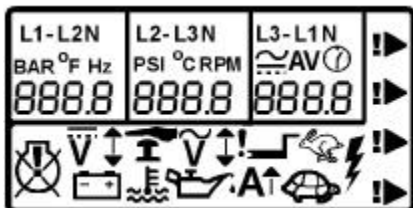
**Bi-colour LED indication** is also provided for Alarm present (Amber steady = *Warning*, Red Flashing = *Shutdown*). Un-committed LCD icons allow the user to configure the module to provide other status or alarm indications from either internal states or from external digital inputs.

The module accepts the following **digital inputs**;  
Emergency Stop Input - A N/C DC positive input  
5 Fully configurable warning or shutdown inputs  
With the exception of the Emergency Stop Input, these are configurable to be either N/C or N/O contacts, switched to the -Ve DC. The five fully configurable auxiliary inputs can be selected to be indication, warning or shutdown inputs either immediate or held off during start up to allow for use as protection expansion inputs. Alternatively they may be configured to control extra functions such as lamp test or Remote start input and many others - refer to appropriate manuals for details.

Engine **analogue inputs** are provided for Oil Pressure and Engine Temperature. These connect to conventional engine mounted resistive sender units (such as VDO or Datcom Type) to provide accurate monitoring and protection facilities. Alternatively they can be configured to interface with digital switch type inputs for Low oil pressure and high engine temperature shutdowns.

**Relay outputs** are provided for Fuel Solenoid Output, Start Output and three configurable outputs. The configurable relay functions can be selected from a range of different functions, conditions or alarms. The relays supply positive plant supply out. Additional output relays can be added by means of the 157 Relay Expansion Module. A total of 11 outputs are available with full expansion of the 560 Module. This allows the module system to be incorporation into existing telemetry or Building management schemes via Voltage free contacts. Refer to appropriate manuals for details.

**Multiple alarm channels** are provided to monitor the following:-  
Under/Over Generator Volts  
Under/Over Generator Frequency  
Under/Overspeed  
Charge Fail  
Emergency Stop  
Low oil pressure  
High engine temperature  
Fail to Start  
Low/High DC Battery Volts  
Fail to come to rest  
Loss of speed sensing signal  
Generator High Current Warning  
along with any configurable input alarms as selected. Alarms are indicated by an LCD Icon and LED illumination.



## SPECIFICATION

### DC Supply:

8 to 35 V Continuous.

### Cranking Dropouts:

Able to survive 0 V for 50 mS, providing supply was at least 10 V before dropout and supply recovers to 5V. *This is achieved without the need for internal batteries.*

### Max. Operating Current:

390mA at 12 V. 250mA at 24 V.

### Max. Standby Current:

220mA at 12 V. 120mA at 24 V.

### Alternator Input Range:

15(ph-N) to 277(ph-N) 3 Phase 4wire AC (+20%)

### Alternator Input Frequency:

50 - 60 Hz at rated engine speed (Minimum: 15V AC Ph-N)

### Magnetic Pick-up Voltage Input Range:

+/- 0.5 V to 70 V Peak

**Magnetic Input Frequency:** 10,000 Hz (max) at rated engine speed.

### Start Relay Output:

16 Amp DC at supply voltage.

### Fuel Relay Output:

16 Amp DC at supply voltage.

### Auxiliary Relay Outputs:

5 Amp DC at supply voltage.

### Dimensions:

192 X 144 X 138

### Charge Fail / Excitation Range:

0 V to 35 V





















### Operating Temperature Range:

-30 to +70°C

## TIMERS & FUNCTIONS

- Start delay timer
- Stop delay timer
- Crank/Crank rest/ timers
- Safety on delay timer
- Warm-up timer
- Cooling timer
- Energise to stop hold timer
- Pre-heat timer
- Smoke limiting control timers
- Fail to come to rest timer
- Over-speed overshoot timer
- DC Battery alarm delay timers
- LCD Back-lighting for low light level operation
- Alternator Under/Over Volts Shutdown
- Alternator Under/Over Freq. Shutdown
- Under/Over Speed Shutdown
- Low Oil Pressure Shutdown
- High Engine Temp Shutdown
- Low/High Battery Volts Warning
- Generator High Current Warning
- Pin compatible with 55x module

# GRAPHICAL LCD DISPLAY

Display Symbol	Description	Display Symbol	Description
	Shutdown Alarm	<b>L1- L2</b>	Phase - Phase
	Warning Alarm	<b>L2- L3</b>	Phase - Phase
	High Coolant Temperature	<b>L3- L1</b>	Phase - Phase
	Low Oil Pressure	<b>L1- N</b>	Phase - Neutral
	Charge Fail	<b>L2- N</b>	Phase - Neutral
	Over-speed	<b>L3- N</b>	Phase -Neutral
	Under-speed	<b>BAR</b>	Pressure
	Fail to start (Over-crank)	<b>Hz</b>	Frequency
	Emergency Stop	<b>°F</b>	Temperature
	Electrical Trip	<b>PSI</b>	Pressure
	Generator High Current	<b>°C</b>	Temperature
	Over Voltage (AC)	<b>RPM</b>	Speed
	Under Voltage (AC)	<b>L1</b>	Phase
	Over Voltage (DC)	<b>L2</b>	Phase
	Under Voltage (DC)	<b>L3</b>	Phase
	Auxiliary Indication	<b>V</b>	Voltage
	Auxiliary Alarm (Warning or Shutdown)	<b>A</b>	Amperes
	AC		Hours Run
	DC		Common Alarm

