



FEATURES

- *Micro-processor based design.*
- *Integral mains failure monitoring and load switching control.*
- *Automatic engine starting and stopping.*
- *Automatic shutdown on fault condition.*
- *Custom graphical icon display.*
- *Provides engine and generator instrumentation.*
- *Provides engine alarms and status information.*
- *Comprehensive list of timers and pre-configured sequences.*
- *Front panel and PC configurable inputs, outputs, alarms and timers.*
- *LED and LCD alarm indication.*
- *Compatible with 5200 series modules for easy upgrade path.*

DESCRIPTION

The Model 5120 is an **Automatic Mains Failure Module** which has been designed to allow the OEM to meet demand for increased capability within the generator industry.

The module has been primarily designed to monitor the incoming mains supply. Should the mains supply fall below a configurable limit, the generator will be automatically started and the load transferred. When the AC mains supply returns to within limits, the module will then transfer back to the mains.

The module indicates the operational status of the generator and monitors the engine parameters. Should a fault condition occur, the module will shut down the engine indicating any faults by means of a graphical LCD display and a flashing LED on the front panel. Selected operational timers and alarms can be adjusted by the customer.

**Configuration** of the module can be carried out manually utilising the front panel editor, or alternatively by PC, using the 5120 software.

Operation of the module is via pushbuttons mounted on the front panel with STOP, MANUAL, TEST and AUTO modes.

DESCRIPTION (continued)

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

**Multiple alarm channels** are provided to monitor for the following conditions:

- ▶ Under/Over speed
- ▶ Charge alternator failure
- ▶ Emergency stop
- ▶ Low oil pressure
- ▶ High engine temperature
- ▶ Fail to start
- ▶ Fail to come to rest
- ▶ Loss of speed sensing signal

Additional inputs can be configured for indication, warning or shutdown. Alarms are indicated by an LCD Icon and LED illumination.

The 5120 module provides engine and electrical metering facilities via the LCD display with the following instrumentation displays, accessed via the 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

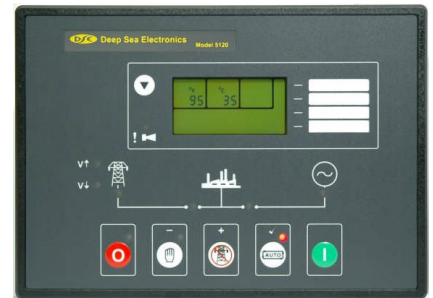
The instrumentation displays are supplemented further by **LCD Icon Displays**, for various engine alarms.

Uncommitted 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 - 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.



DESCRIPTION (continued)

The five fully configurable auxiliary inputs can be selected to be 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 - refer to appropriate manuals for details.

Dedicated outputs are provided for the control of both the mains and generator switching devices. This feature combined with the inbuilt incoming mains supply sensing, alleviates the requirement for expensive external devices. This gives the OEM, when space is limited, the choice to opt for a more compact enclosure.

**Analogue inputs** are provided for oil pressure and engine temperature. These connect to conventional engine mounted resistive sender units (such as VDO or Datcon 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.

A range of different functions, conditions or alarms can be selected for the three configurable relay outputs. These outputs supply positive plant supply out. Refer to appropriate manuals for details.

**The 5120 is also available as an Auto Start module (model 5110). Please contact Deep Sea Electronics, or visit our web site at [www.deepseapl.com](http://www.deepseapl.com) for further details.**

# SPECIFICATION

## DC Supply:

8 to 35 V Continuous.

## Cranking Dropouts:

Able to survive 0 V for 50mS, providing supply was at least 10V before dropout and supply recovers to 5V.

*This is achieved without the need for internal batteries.*

## 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.

## Operating Temperature Range:

-30 to +70°C

## Charge Fail / Excitation Range:

0 V to 35 V

## Max. Operating Current:

320mA at 12V, 215mA at 24V

## Max. Standby Current:

175mA at 12V, 95mA at 24V

## Alternator Input Range:

15V(ph-N) to 300(ph-N) 3 Phase 4wire AC (+20%)

## Alternator Input Frequency:

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

## Mains Supply Input Range:

15V(ph-N) to 300(ph-N) 3 Phase 4wire AC (+20%)

## Mains Supply 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.

## Dimensions:

240mm x 172mm x 57mm (9½" x 6¾" x 2¼")

## Panel Cutout:

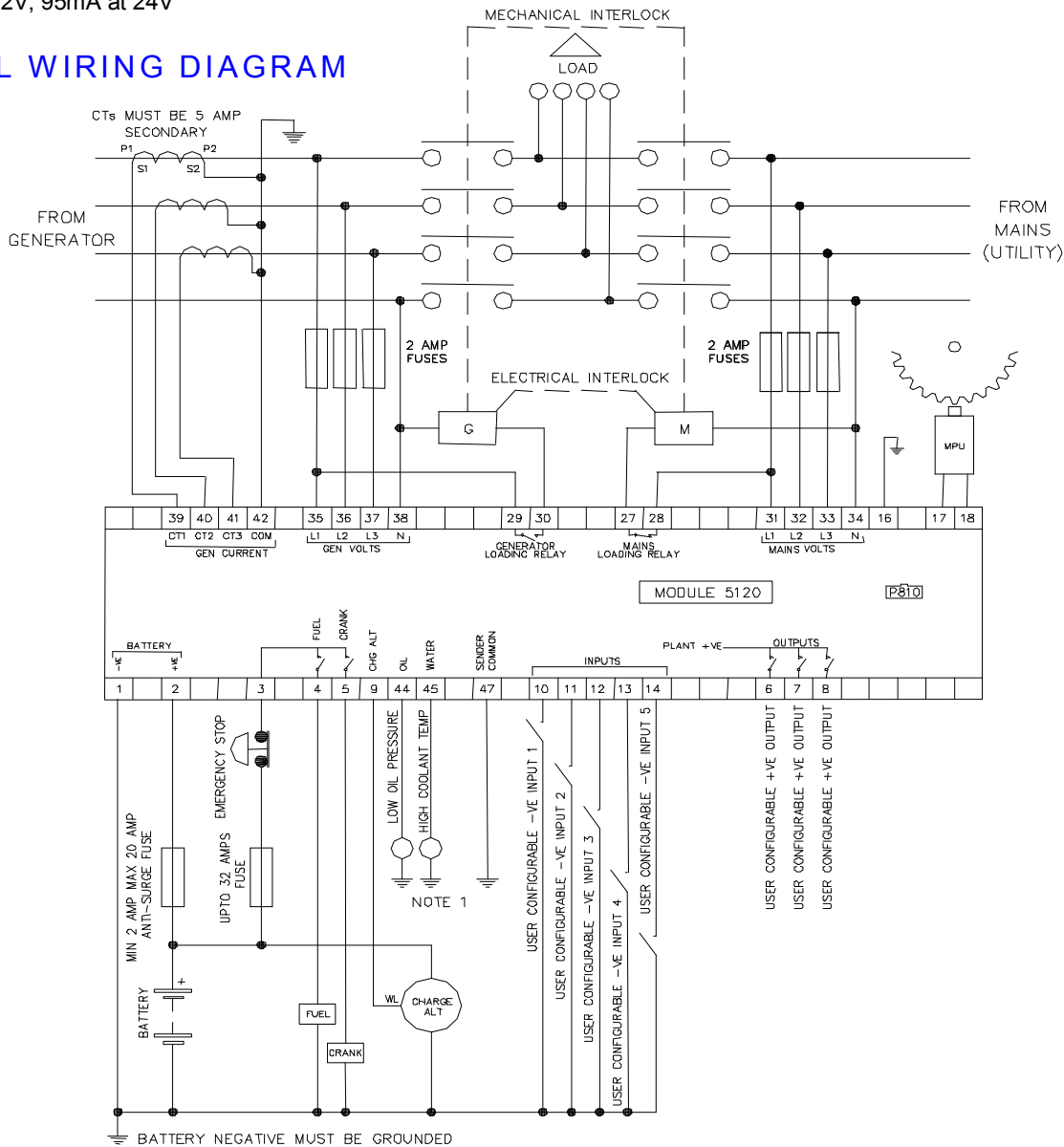
220mm x 160mm ( 8.7" x 6.3")

## Maximum Panel Thickness:

8mm (0.31")

Deep Sea Electronics plc reserve the right to change specification without notice.

# TYPICAL WIRING DIAGRAM



TERMINALS SUITABLE FOR 22-16 AWG (0.6mm - 1.3mm ) FIELD WIRING

TIGHTENING TORQUE = 0.8Nm (7lb-in)

### NOTE 1

THESE GROUND CONNECTIONS MUST BE ON THE ENGINE BLOCK, AND MUST BE TO THE SENDER BODIES.

THE GROUND WIRE TO TERMINAL 47 MUST NOT BE USED TO PROVIDE A GROUND CONNECTION TO ANY OTHER DEVICE

## Deep Sea Electronics Plc.

Highfield House, Hunmanby Industrial Estate,  
North Yorkshire. YO14 0PH. ENGLAND

Tel: +44 (0)1723 890099. Fax: +44 (0)1723 893303.

Email: [sales@deepseapl.com](mailto:sales@deepseapl.com) Web: [www.deepseapl.com](http://www.deepseapl.com)

## Deep Sea Electronics Inc.

3230 Williams Avenue  
Rockford, Illinois 61101-2668, U.S.A.

Phone: +1 (815) 316-8706. Fax: +1 (815) 316-8708.

Email: [dseasales@deepseausa.com](mailto:dseasales@deepseausa.com) Web: [www.deepseausa.com](http://www.deepseausa.com)