



DEEP SEA ELECTRONICS

705

Auto Transfer Switch control



Issue 2
MR 26/02/03

DESCRIPTION

The 705 is an Automatic Transfer Switch controller which will monitor the incoming AC mains (utility) supply. Should a Mains (utility) failure occur the 705 will instruct the genset to start and take load. It utilises advanced surface mount construction techniques to provide a compact yet highly specified module.

Operation of the module is via three pushbuttons mounted on the front panel with Manual off load, Manual on load and Auto positions. Selection of the Auto mode is confirmed by LED indicator, and monitors the incoming mains (utility) supply (3 phase or single phase). Should the incoming AC mains (utility) supply fall below a configurable pre-set limit (180V default), the generator will be requested to start, and load transferred to the genset.

When the AC mains (utility) supply returns within limits, the module will wait for a configurable, stabilisation period, and then transfer load back to the mains. The engine will be requested to stop after a cool-down period.


The module's microprocessor provides a comprehensive list of timers and functions, and access to the settings is via a small Configuration Switch on the rear of the module. Parameter settings can be adjusted using the front panel pushbuttons once in Configuration Mode.


The module monitors the engine and provides the following functions:

- Mains (utility) failure detection with configurable fail and return timers.
- Adjustable Warming and cooling timers.
- Adjustable Mains (utility) Fail voltage level.
- Changeover contactor control with LED mimic.
- Generator available indication (from genset frequency).
- Engine Start signal.

Issues such as environmental compliance and EMC have been carefully engineered into the design. Advanced features such as Protected Solid State Outputs mean that there are no moving parts or contacts to burn out.

OPERATION

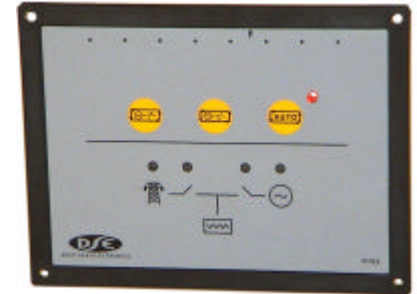
Manual off load  **mode** - This is used to manually start and run the engine off load. Should the mains (utility) supply fail, then the load is transferred to the generator automatically.

Manual on load  **mode** - This is used to manually start and run the engine on load.

AUTO mode - This selects the automatic mode of operation, in which the module will await a mains failure. Once detected, the module will initiate its pre-configured start sequence, observing the Start Delay Timer before starting the engine. When the mains supply returns, the module will initiate its pre-configured stopping sequence.

FEATURES

- **Micro-processor based design**
- **Automatic Mains failure detection**
- **Control of the Contactors or change-over device**
- **Configurable via front panel**
- **Simple pushbutton controlled operation**
- **Configurable Timer Settings**
- **Solid State Start Outputs**
- **External Remote Start Input**
- **LED Mimic indication**
- **Mains Fail/ Return Delay Timer**
- **Warm-up/Cooling Timer**
- **Single/Three phase mains sensing**
- **Load contactor control Solid State Outputs**
- **Load shedding input ("Close to Neutral position")**



SPECIFICATION

DC Supply:

8 to 35 V Continuous.

Cranking Dropouts:

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

Max. Current:

Operating 50mA

Standby 10mA

Alternator Input Range:

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

Alternator Input Frequency:

50 - 60 Hz at rated engine speed (Minimum: 75V AC Ph-N)

Genset available from 45Hz

Start Request Output:

1.2 Amp DC at supply voltage.

Auxiliary Outputs:

1.2 Amp DC at supply voltage.

Dimensions:

165mm x 125mm x 29mm

(6.5" x 4.9" x 1.2")

Operating Temperature Range:

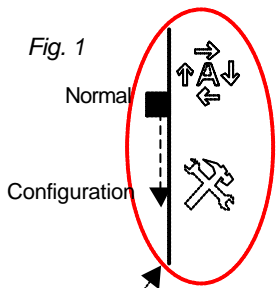
-30⁰ to + 70⁰ C

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


*The 700 series modules have been designed for **front panel mounting**. The module is fitted into the cut-out, and screw holes are provided for secure fixing.*


CONFIGURATION

Configuration Mode is selected by operation of a small switch on the rear, left-hand edge of the PCB. This is partially hidden to prevent accidental operation. See figs 1 and 2



Once Configuration Mode is selected, the 'Auto' LED will commence rapid flashing. When in Configuration Mode all normal operation is suspended.

The 'manual on load'  pushbutton can be used to select the LED 'code' that corresponds to the required function. The 5 left hand LED's will form the code.

The 'Manual off load'  pushbutton will allow the user to change the function settings. The 3 right-hand LED's inform the user of the current setting for the chosen function.

When the required setting is displayed, press the 'Auto' button to save the selection. The process is repeated for each function change.

When configuration is complete, the Configuration Mode Selector Switch should be returned to the 'Normal' position.

A key to configuration options is provided with the Installation Instructions supplied with module.

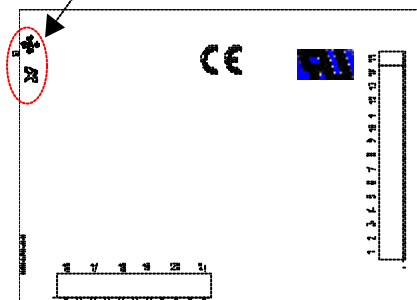
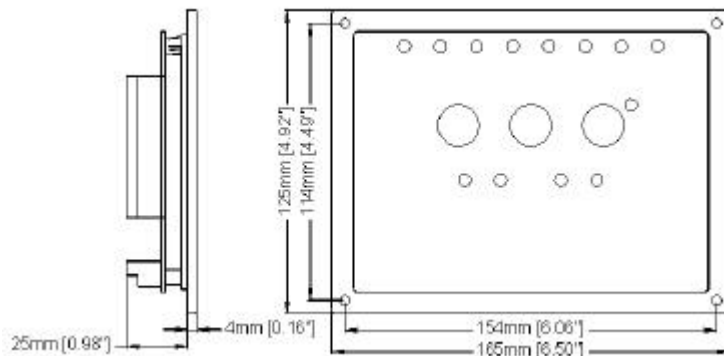


Fig. 2 Reverse of 705



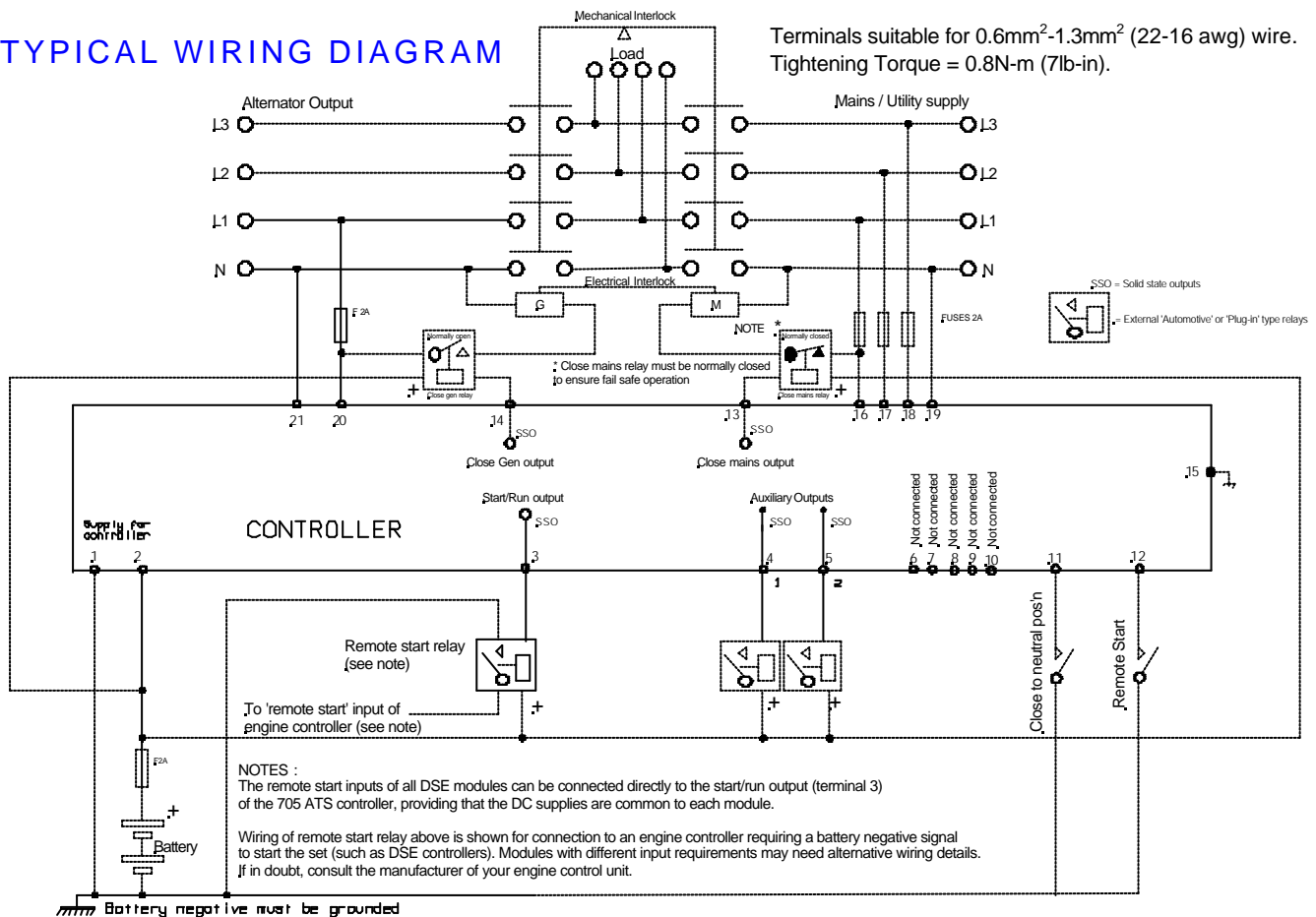
Dimensions:
165mm x 125mm x 29mm
(6.5" x 4.9" x 1.2")

Panel cutout:
149mm x 109mm
(5.9" x 4.3")

Mounting Method:
4 x 4.2mm diameter holes
suitable for M4 screws.

TYPICAL WIRING DIAGRAM

Terminals suitable for 0.6mm²-1.3mm² (22-16 awg) wire.
Tightening Torque = 0.8N-m (7lb-in).



<p>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 Web - www.deepseapl.com</p>	<p>Deep Sea Electronics Inc. 5301 E. State St. – Suite 202 Rockford, Illinois 61108. U.S.A. Phone +1 (815) 316-8706 Fax +1 (815) 316-8708 Email - dsesales@deepseausa.com Web - www.deepseausa.com</p>
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