DEEP SEA ELECTRONICS

DSEG0123 AMSC Load Share Interface
Operator Manual

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DSEG0123 Operator Manual

Amendments Since Last Publication

Amd. No.	Comments
1	Initial Release

TABLE OF CONTENTS

Section **Page**

1 INTRODUCTION

The advent of electronic load share controllers has in some cases meant that existing control systems require expensive updates if additional generating sets are added into the system. This is because many of the ‘newer’ controllers utilise proprietary communication links rather than the traditional analogue load share lines (often called Parallel Lines) used in existing systems.

The DSEG86xx and load share modules utilise Advanced MultiSet Communications (AMSC) link to enable load sharing between other Deep Sea Load share modules equipped generators, as well as providing other advanced functionality not available with load share lines.

The G0123 AMSC Load Share Lines Interface is designed to allow the Deep Sea Load Share Modules to interface with analogue load share lines on existing systems without the need to replace the existing controls. As the AMSC datalink is not used in applications of this type, enhanced features provided by this link are not available. E.g. Dead Bus Arbitration, load demand scheme etc.

The G0123 monitors the load share lines and converts this into digital information. This data is then used by the onboard microprocessor to allow the G0123 to drive load share lines and to communicate on the AMSC link with the host DSE Load Share controller.

When communication to the host controller is established successfully the CAN1 or CAN2 LED will light depending on the redundancy settings and which ports are connected

1.1 CLARIFICATION OF NOTATION

Clarification of notation used within this publication.

NOTE:	**Highlights an essential element of a procedure to ensure correctness.**
CAUTION!	**Indicates a procedure or practice, which, if not strictly observed, could result in damage or destruction of equipment.**
WARNING!	**Indicates a procedure or practice, which could result in injury to personnel or loss of life if not followed correctly.**

1.2 GLOSSARY OF TERMS

Term	Description
AMSC	Advanced Multi-Set Communication
AVR	Automatic Voltage Regulator
CAN	Controller Area Network. Vehicle standard to allow digital devices to communicate to one another.
GSM	Global System for Mobile communications. Cell phone technology used in most of the World.
IEEE	Institute of Electrical and Electronics Engineers
ISBN	International Standard Bibliographic Description
LED	Light Emitting Diode
PIN	PIN number
PLC	Programmable Logic Controller. A programmable digital device used to create logic for a specific purpose.
RTD	An RTD (Resistance Temperature Detector) is a sensor whose resistance changes as its temperature changes. The resistance increases as the temperature of the sensor increases.
USB	Universal Serial Bus

Continued over page…

1.2.1 BIBLIOGRAPHY

This document refers to, and is referred by the following DSE publications which are obtained from the DSE website: www.deepseaelectronics.com or by contacting DSE technical support: support@deepseaelectronics.com.

1.2.2 INSTALLATION INSTRUCTIONS

Installation instructions are obtained from the DSE website: www.deepseaelectronics.com or by contacting DSE technical support: support@deepseaelectronic.com and are intended as a 'quick start' guide only.

DSE Part	Description
053-032	DSE2548 LED Expansion Annunciator Installation Instructions
053-033	DSE2130 Input Expansion Installation Instructions
053-034	DSE2157 Output Expansion Installation Instructions
053-049	DSE9xxx Battery Charger Installation Instructions
053-125	DSE2131 Ratio-metric Input Expansion Installation Instructions
053-126	DSE2133 RTD/Thermocouple Input Expansion Installation Instructions
053-134	DSE2152 Ratio-metric Output Expansion Installation Instructions
053-147	DSE9460 & DSE9461 Battery Charger Installation Instructions
053-185	DSE9473 & DSE9483 Battery Charger Installation Instructions
053-251	DSE BC2410Ei Installation Instructions
053-256	DSEG8600 Installation Instructions
053-253	DSEG8660 Installation Instructions
053-263	DSEG0123 Installation Instructions
053-267	DSE BC1205 & DSE BC2405 Installation Instructions

1.2.3 MANUALS

Product manuals are obtained from the DSE website: www.deepseaelectronics.com or by contacting DSE technical support: support@deepseaelectronic.com.

DSE Part	Description
057-004	Electronic Engines and DSE Wiring Guide
057-045	Guide to Synchronising and Load Sharing Part 1 (Usage of DSE Load Share Controllers in synchronisation / load sharing systems.)
057-046	Guide to Synchronising and Load Sharing Part 2 (Governor & AVR Interfacing)
057-047	Load Share System Design and Commissioning Guide
057-082	DSE2130 Input Expansion Operator Manual
057-083	DSE2157 Output Expansion Operator Manual
057-084	DSE2548 Annunciator Expansion Operator Manual
057-085	DSE9xxx Battery Charger Operator Manual
057-139	DSE2131 Ratio-metric Input Expansion Manual
057-140	DSE2133 RTD/Thermocouple Expansion Manual
057-141	DSE2152 Ratio-metric Output Expansion Manual
057-151	DSE Configuration Suite PC Software Installation & Operation Manual
057-175	PLC Programming Guide for DSE Controllers
057-176	DSE9460 & DSE9461 Battery Charger Operator Manual
057-220	Options for Communications with DSE Controllers
057-315	DSE BC2410Ei Configuration Suite PC Software Manual
057-322	DSEG8600 Configuration Suite PC Software Manual
057-323	DSEG8600 Operator Manual
057-324	DSEG8660 Configuration Suite PC Software Manual
057-325	DSEG8660 Operator Manual
057-355	DSE BC1205 & BC2405 Operator Manual

1.2.4 TRAINING GUIDES

Training guides are provided as ‘hand-out’ sheets on specific subjects during training sessions and contain specific information regarding to that subject.

DSE Part	Description
056-001	Four Steps To Synchronising
056-005	Using CTs With DSE Products
056-006	Introduction to Comms
056-010	Over Current Protection
056-013	Load Demand Scheme
056-018	Negative Phase Sequence
056-019	Earth Fault Protection
056-020	Loss of Excitation
056-021	Mains Decoupling
056-022	Breaker Control
056-023	Adding New CAN Files
056-024	GSM Modem
056-026	kW, kvar, kVA and pf.
056-029	Smoke Limiting
056-030	Module PIN Codes
056-033	Synchronising Requirements
056-036	Expansion Modules
056-043	Sync Process
056-045	PLC as Load Demand Controller
056-047	Out of Sync and Failed to Close
056-051	Modbus Control
056-053	Recommended Modems
056-055	Alternate Configurations
056-057	SW1 & SW2
056-069	Firmware Update
056-072	Dead Bus Synchronising
056-075	Adding Language Files
056-076	Gencomm Alarms
056-079	Gencomm Status
056-080	Modbus
056-081	Screen Heaters
056-082	Override Gencomm PLC Example
056-084	Synchronising & Load sharing
056-086	G59
056-091	Equipotential Earth Bonding
056-092	Best Practices for Wiring Restive Sensors
056-095	Remote Start Input Functions
056-097	USB Earth Loop and Isolation
056-099	Digital Output to Digital Input Connection

1.2.5 THIRD PARTY DOCUMENTS

The following third-party documents are also referred to:

Reference	Description
ISBN 1-55937-879-4	IEEE Std C37.2-1996 IEEE Standard Electrical Power System Device Function Numbers and Contact Designations. Institute of Electrical and Electronics Engineers Inc
ISBN 0-7506-1147-2	Diesel generator handbook. L.L.J. Mahon
ISBN 0-9625949-3-8	On-Site Power Generation. EGSA Education Committee.

2 CONNECTION DESCRIPTION

	Pin No	Description	Cable Size	Notes
	1	DC Plant Supply Input (Negative)	2.5 mm² AWG 13	Connect to ground where applicable.
	2	DC Plant Supply Input (Positive)	2.5 mm² AWG 13	Supplies the module and DC Outputs E, F, G, H, I & J
CAN 1	3	CAN Port H	0.5 mm² AWG 20	Use only 120 Ω CAN or RS485 approved cable
	4	CAN Port L	0.5 mm² AWG 20	Use only 120 Ω CAN or RS485 approved cable
	5	CAN Port Screen	Shield	Use only 120 Ω CAN or RS485 approved cable
kW Share	6	Port Screen	Shield	Use only 120 Ω CAN or RS485 approved cable
	7	Negative	0.5 mm² AWG 20	Use only 120 Ω CAN or RS485 approved cable
	8	Positive	0.5 mm² AWG 20	Use only 120 Ω CAN or RS485 approved cable
kvar Share	9	Port Screen	Shield	Use only 120 Ω CAN or RS485 approved cable
	10	Negative	0.5 mm² AWG 20	Use only 120 Ω CAN or RS485 approved cable
	11	Positive	0.5 mm² AWG 20	Use only 120 Ω CAN or RS485 approved cable
CAN 2	12	CAN Port H	0.5 mm² AWG 20	Use only 120 Ω CAN or RS485 approved cable
	13	CAN Port L	0.5 mm² AWG 20	Use only 120 Ω CAN or RS485 approved cable
	14	CAN Port Screen	Shield	Use only 120 Ω CAN or RS485 approved cable
	15	Not Connected		
	16	Not Connected		
	17	Not Connected		
	18	Not Connected		

NOTE: CAN 1 and CAN 2 do not have internal terminations of 120 Ω therefore a resistor (supplied) MUST be fitted to these terminals.

2.1 USB CLIENT (PC CONFIG SUITE CONFIGURATION) CONNECTOR

NOTE: The USB connection cable between the PC and the module must not be extended beyond 5 m (16 feet). For distances over 5 m, it is possible to use a third-party USB extender. Typically, they extend USB up to 50 m. The supply and support of this type of equipment is outside the scope of Deep Sea Electronics.

CAUTION!: Care must be taken not to overload the PCs USB system by connecting more than the recommended number of USB devices to the PC. For further information, consult your PC supplier.

	Description	Cable Size	Notes
	Socket for connection to PC with DSE Configuration Suite Software	0.5 mm² AWG 20	This is a standard USB type A to type B connector. 

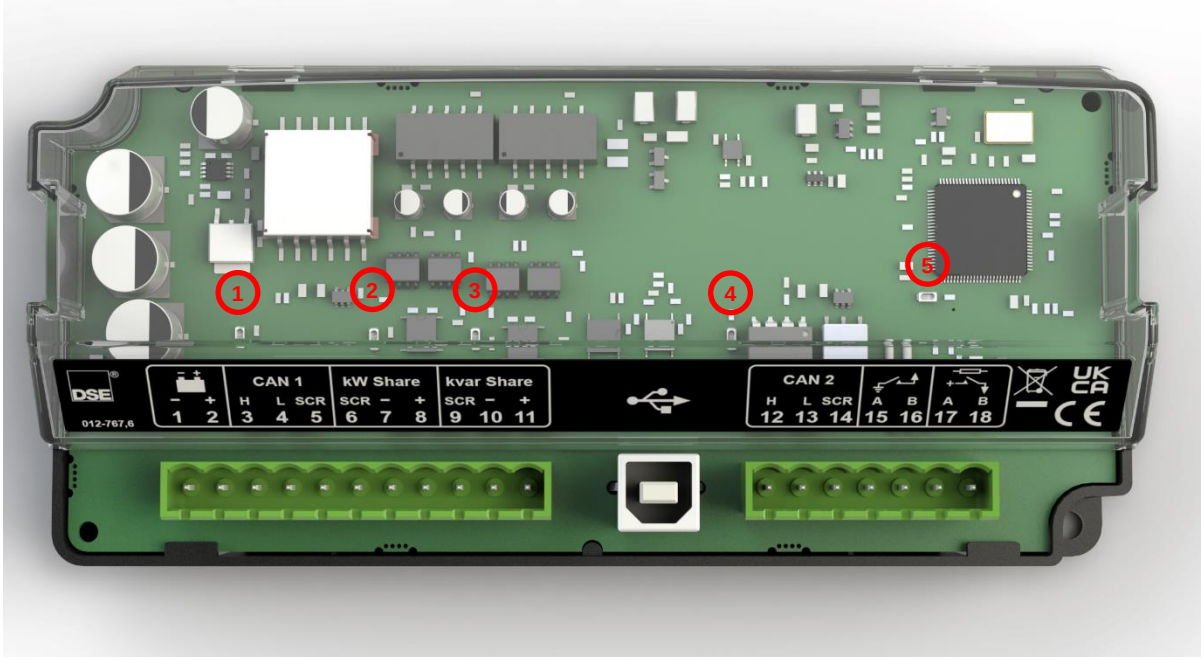
3 SETTINGS

To allow connection to the load sharing lines of a wide variety of manufacturers, the G0123 interface is configurable using Config Suite. See document 057-351 entitled DSEG0123 AMSC Configuration Suite PC Software Manual for further information.

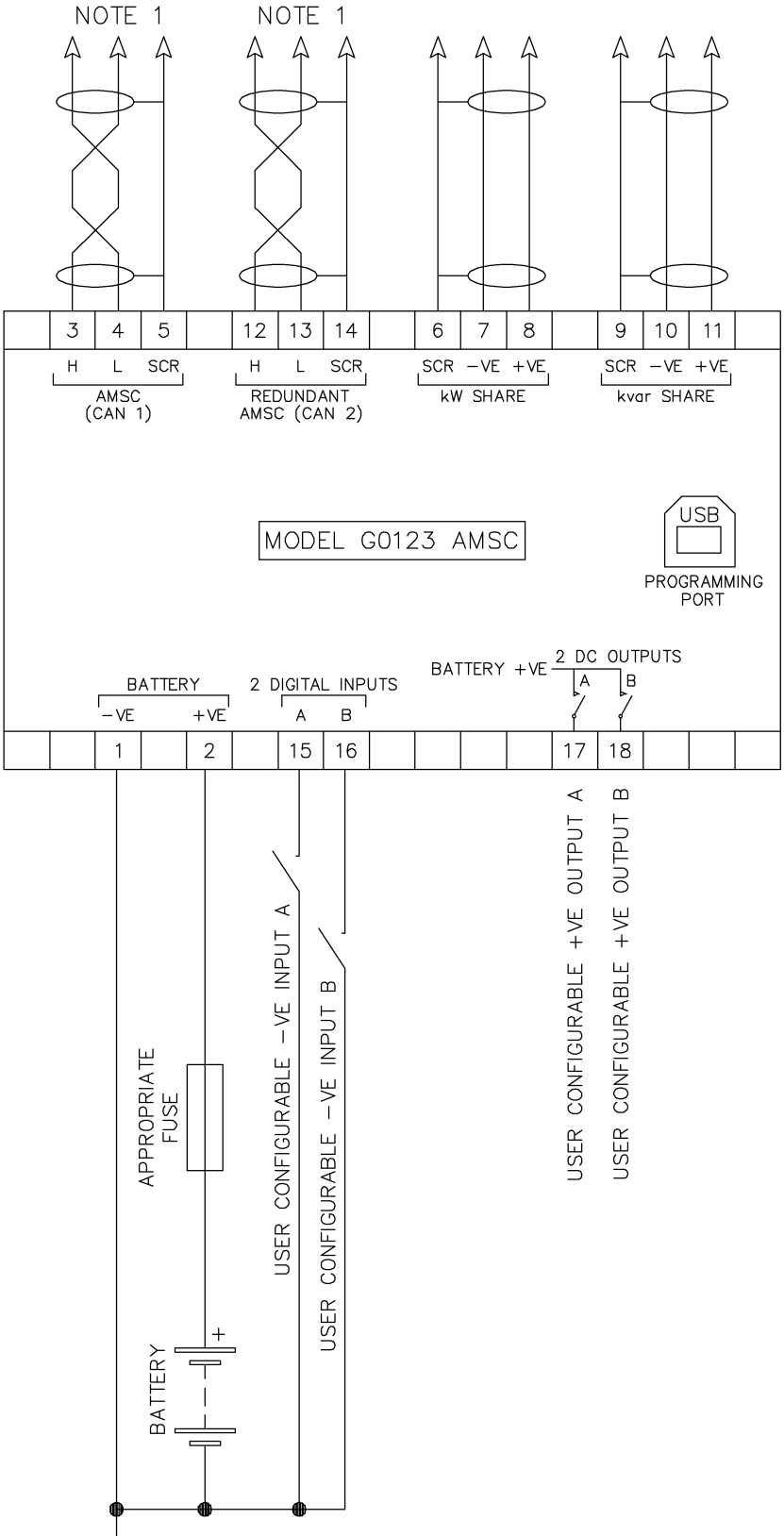
4 INDICATIONS

There are several LED's on the Load Sharing Interface to indicate the status of the G0123 AMSC module.

Position	Indication	Colour	Description
1	CAN 1	Green	Off – Not communicating with a Gen on the link Steady – Communicating correctly with a Gen on the link
2	kW Share	Green	Off – Disconnected from power share lines. Steady – Connected to power share lines.
3	kvar Share	Green	Off – Disconnected from var share lines. Steady – Connected to var share lines.
4	CAN 2	Green	Off – Not communicating with a Gen on the link Steady – Communicating correctly with a Gen on the link
5	Fault	Red	Off – No fault Rapid flashing – Internal fault

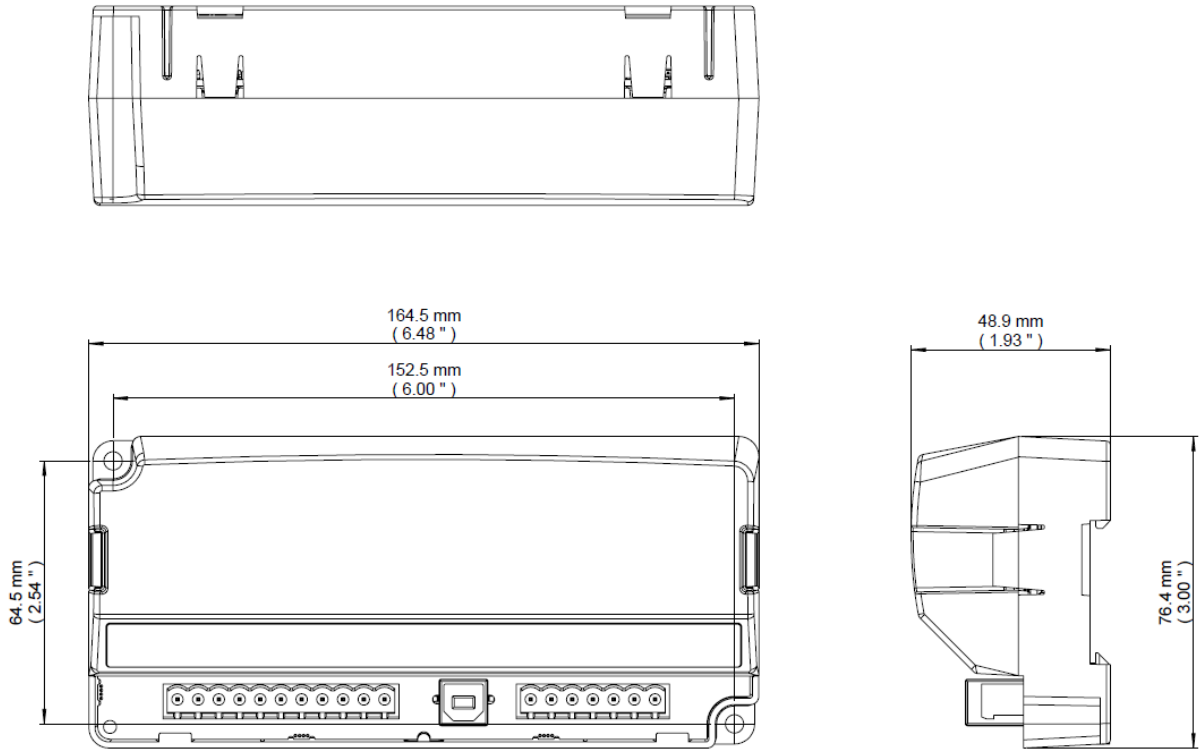


4.1 TYPICAL WIRING DIAGRAM



5 CASE DIMENSIONS

164.5mm x 76.4mm x 48.9mm
(6.87” x 3.00” x 1.93”)



6 SPECIFICATION

DC Supply	8V - 35 DC continuous
Cranking dropouts	Able to survive 0 V for 100mS assuming initial voltage of >10V dc for at least 2s prior to the crank request and returning to >5 vdc after crank event.
Max. current (operating and standby)	Max Current 12V = 180mA 24V = 100mA
Dimensions	164.5mm x 76.4mm x 48.9mm (6.87" x 3.00" x 1.93")
Mounting	DIN Rail mounted housing**.**
Electromagnetic compatibility	EN61000-6-4 (Emissions for Industrial Environments) EN61000-6-2 (Immunity for Industrial Environments).
Electrical safety	BS EN 61010 - Safety requirements for electrical equipment for measurement, control, and laboratory use. BS EN 61010-1:2010 Part 1: General requirements BS EN 61010-2-030:2010 Part 2-030: Particular requirements for testing and measuring circuits BS EN 61010-2-201:2018 Part 2-201: Particular requirements for control equipment
Cold temperature	BS EN 60068-2-1 to -40 ^{o}C
Hot temperature	BS EN 60068-2-2 to +80 ^{o}C
Humidity	BS EN 60068-2-30 Db Damp Heat Cyclic 20/55 °C @ 95% RH 48 Hours BS EN 60068-2-78 Cab Damp Heat Static 40 °C @ 93% RH 48 Hours
Vibration	BS EN60068-2-6 10 sweeps at 1 octave/minute in each of 3 major axes. 5Hz to 8Hz @ +/-7.5mm constant displacement 8Hz to 500Hz @ 2gn constant acceleration
Shock	BS EN 60068-2-27 3 Half sine shocks in each of 3 major axes 15gn amplitude, 11mS duration

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