DEEP SEA ELECTRONICS PLC

DSEM040 Operator Manual

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DSEM040 Operator Manual

Amendments Since Last Publication

Amd. No.	Comments
1	Initial Release

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Section **Page**

1 INTRODUCTION

This document details the installation and operation requirements of the DSEM040 and is part of the DSEControl® range of products.

The manual forms part of the product and should be kept for the entire life of the product. If the product is passed or supplied to another party, ensure that this document is passed to them for reference purposes.
This is not a *controlled document.* DSE do not automatically inform on updates. Any future updates of this document are included on the DSE website at www.deepseaplc.com

The DSEM040 is designed to provide a *development* kit to allow users to evaluate the DSEM6xx series of controllers.

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
DSEControl	A Range of programmable devices designed primarily for *Off-Highway* applications.
DSEMxxx,	All modules in the DSEControl range.
DSEM6xx	All base modules in the DSEControl range.
DSEM8xx	All display modules in the DSEControl range.
DSEM2xx	All expansion modules in the DSEControl range.
PLC	Programmable Logic Controller A programmable digital device used to create logic for a specific purpose.

1.3 BIBLIOGRAPHY

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

1.3.1 INSTALLATION INSTRUCTIONS

Installation instructions are supplied with the product in the box and are intended as a ‘quick start’ guide only.

DSE Part	Description
053-186	M640 Installation Instructions

1.3.2 OPERATOR MANUALS

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

DSE Part	Description
057-244	M640 Operator Manual

2 SPECIFICATION

2.1 CONTENTS

DSEM040 consists of the following parts.

2.1.1 BREAKOUT PCB

PCB providing easy-to-use connections to the DSEM640 device. For full description, refer to the section entitled *User Connections and Jumpers* elsewhere in this document.

2.1.2 CONNECTION HARNESSES

Available separately as a pack containing all three harnesses, DSE Part Number 016-165.

2.1.2.1 HARNESS A, 23 WAY – DSE SUPPLY AND CAN

Connector and each end (TE part number 770680-1). All pins connected, cable length 1 m, automotive style cable sheathing.

2.1.2.2 HARNESS B, 35 WAY – I/O

Connector at each end (TE part number 776164-4). All pins connected, cable length 1 m, automotive style cable sheathing.

2.1.2.3 HARNESS C, 35 WAY – I/O

Connector at each end (TE part number 776164-1). All pins connected, cable length 1 m, automotive style cable sheathing.

2.1.3 CARRYING CASE

Available separately as DSE part number 020-1007.

2.1.4 CODESYS 3.5 SOFTWARE

CODESYS 3.5 and the DSEPackage containing the device descriptor files are available from the DSE Website www.deepseaplc.com.

2.1.5 ETHERNET CONNECTION CABLE

Ethernet programming cable, M12 to RJ45
Available separately as DSE part number 016-160.

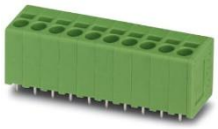
2.1.6 USB CONNECTION CABLE

USB interface cable, M12 (B coded) to USB plug, type A.
Available separately as DSE part number 016-161.

2.2 OPERATING TEMPERATURE

Module	Specification
DSEM040	-30 ºC +70 ºC (-22 ºF +158 ºF)

2.3 TERMINAL SPECIFICATION

Description	Specification	
Connection Type	One part connector suitable for stripped wires. Push terminal, with internal spring.	
Minimum Cable Size	0.5 mm² (AWG 24)	
Maximum Cable Size	2.5 mm² (AWG 11)	
Wire Strip Length	7 mm (9/32”)	

2.4 POWER SUPPLY REQUIREMENTS

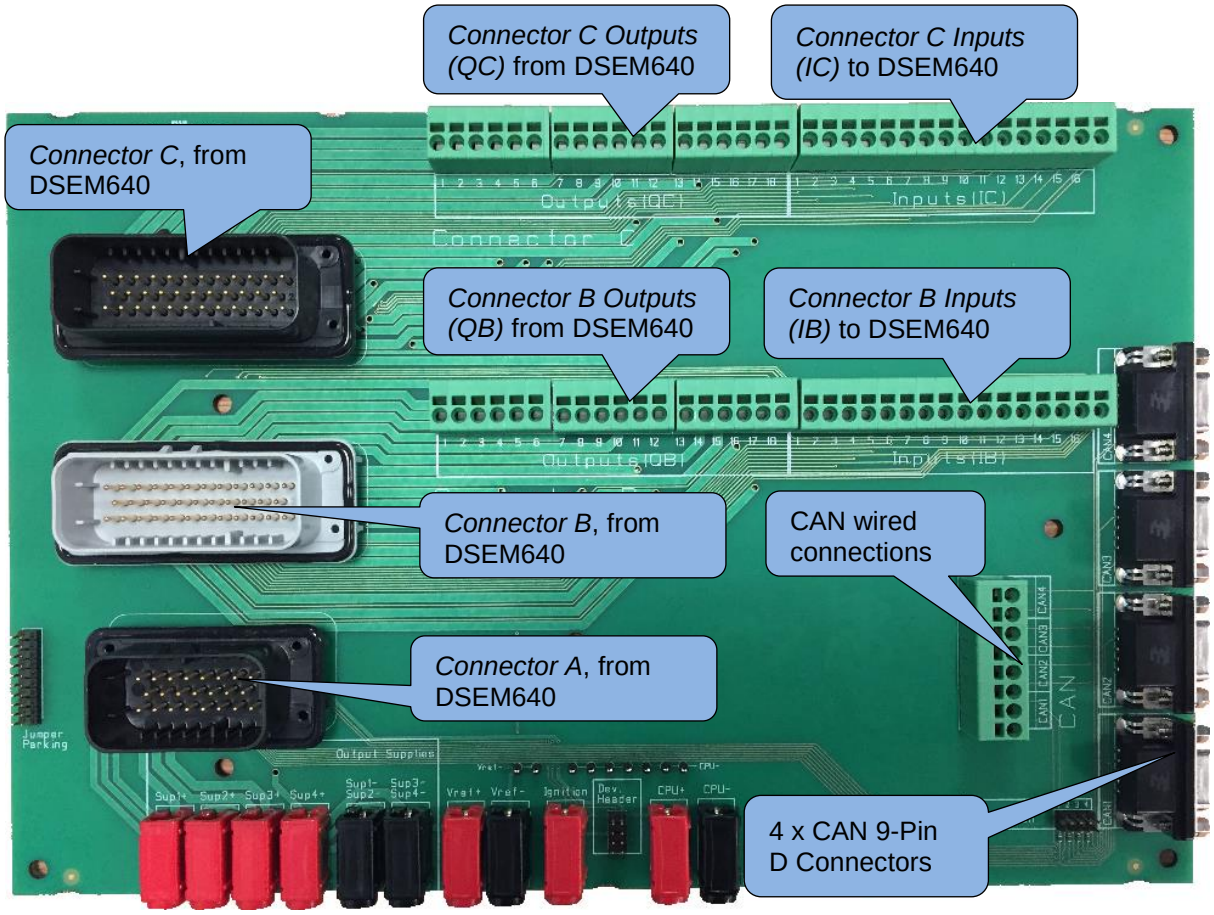
As the DSEM040 connects to the DSEM640, power supply requirements of the DSEM640 are shown below.

Description	Specification
Operating Voltage (Connector A, Terminal 4)	8 V to 36 V
Maximum Current (no external loads)	300 mA at 24 V
Maximum Current (ignition off)	5 mA at 24 V

3 USER CONNECTIONS AND JUMPERS

The DSEM040 is a 'breakout' board. Supplied harnesses connect DSEM640 to the DSEM040. The signals are routed to readily usable connections to ease developments of prototypes.

3.1 CONNECTOR BLOCKS



3.2 CONNECTORS A, B & C

NOTE: For descriptions and specifications of all connections, refer to DSE Publication *057-244 M640 Operator Manual.*

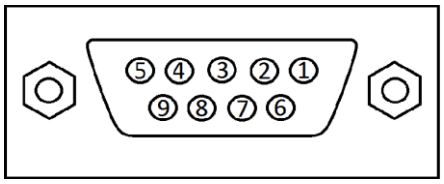
Connector A is routed to provide DC Supply, Output Supplies, CAN and other signals to convenient connectors on the M040 PCB.

Connector B Outputs (QB) and *Connector B Inputs (IB)* are routed directly from the *Connector B* connection from the DSEM640.

Connector C Outputs (QC) and *Connector C Inputs (IC)* are routed directly from the *Connector C* connection from the DSEM640.

3.3 CAN

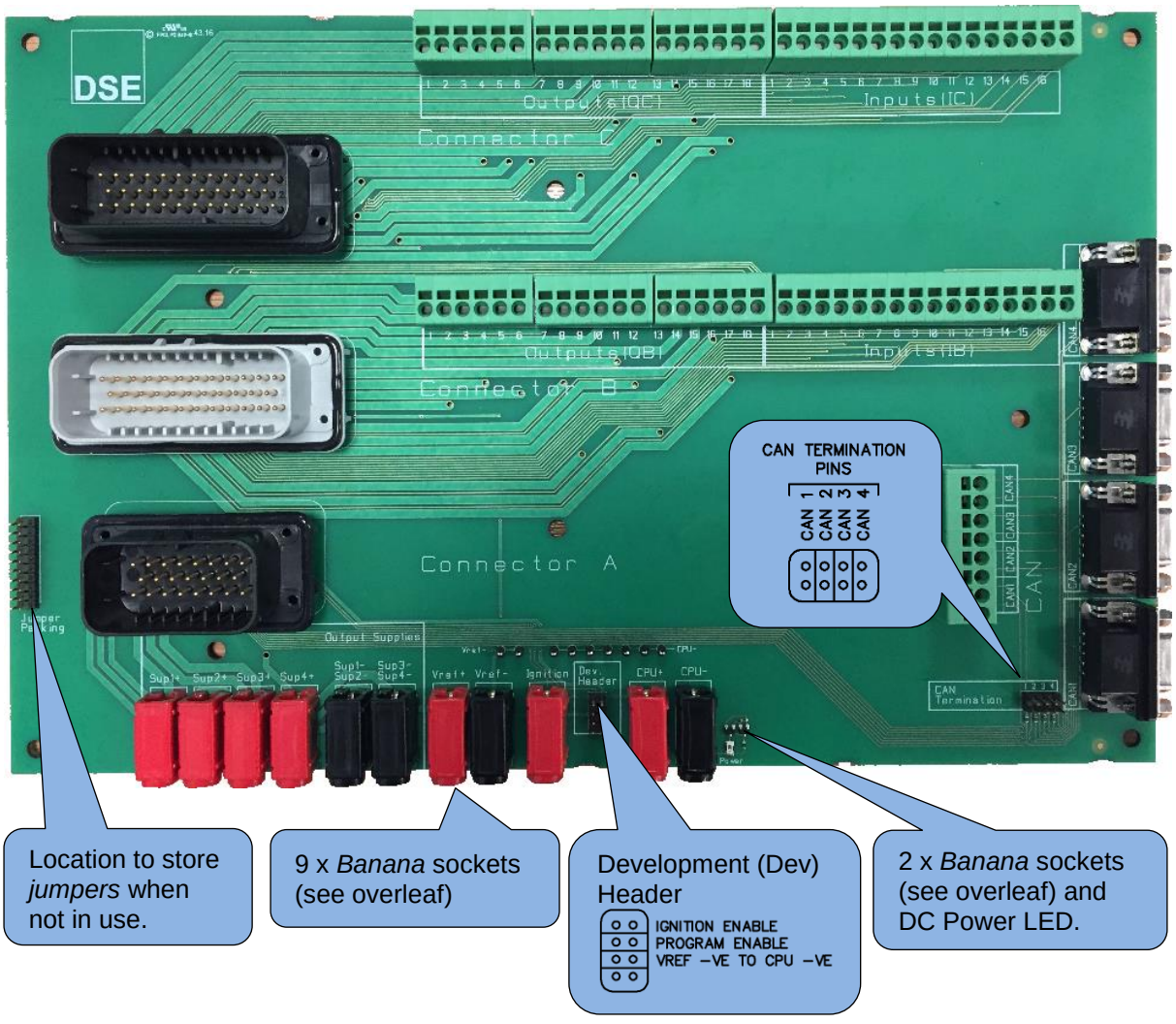
For convenience, the CAN ports are taken to 9-pin D type connectors as well as to connectors suitable for stripped wires. CAN1, 2, 3 & 4 have independent connectors, all identically wired.

9-Pin D Connector	Pin	Description
Image looking into the DSEM040 connector 	1	Not Connected
	2	CAN L
	3	CAN SCR
	4	Not Connected
	5	Not Connected
	6	Not Connected
	7	CAN H
	8	Not Connected
	9	Not Connected

3.3.1 CAN TERMINATION

CAN networks must be terminated at each end of the cable. Where the DSE device is the end of the network, 120 Ω CAN termination resistors are selected by fitting the appropriate jumpers.

3.4 BANANA SOCKETS AND JUMPERS



3.5 JUMPERS

3.5.1 DEV. HEADER

Jumper	Description
Ignition Enable	Connects DSEM640 Ignition (15) (Pin A3) to +ve supply
Program Enable	Connects DSEM640 Program Enable (Pin A6) to DSEM640 +ve supply (Pin A4)
VREF –ve to CPU -ve	Connects DSEM640 Vref –ve (B21 & C21) to DSEM640 –ve supply (Pin A5)
	Not Used

Example Showing *Program Enable* activated.

3.5.2 CAN TERMINATION

Jumper	Description
CAN Termination 1,2,3,4	Connects 120 Ω resistor from CAN H to CAN L

Example Showing the 120 Ω terminator enabled for CAN1. No terminator is enabled for CAN2, 3 & 4.

3.6 BANANA SOCKETS

Eleven 4mm Banana type sockets are used for the supply connections.

Banana Socket	Description	Connects to DSEM640 Pin
Sup1+	+ve supply for Output Supply 1	A1
Sup2+	+ve supply for Output Supply 2	A8
Sup3+	+ve supply for Output Supply 3	A16
Sup4+	+ve supply for Output Supply 4	A23
Sup1- Sup2-	–ve supply for Output Supplies 1 & 2	A7
Sup3- Sup4-	–ve supply for Output Supplies 3 & 4	A9
Vref+	+ve Voltage Reference	A2
Vref-	-ve Voltage Reference	B21, C21
Ignition	Ignition (15)	A3
CPU+	+ve supply for DSEM640	A4
CPU-	-ve supply for DSEM640	A5

4 MAINTENANCE AND WARRANTY

The controller is *Fit and Forget*. As such, there are no user serviceable parts within the controller. In the case of malfunction, you should contact your original equipment manufacturer (OEM).

DSE Provides limited warranty to the equipment purchaser at the point of sale. For full details of any applicable warranty, refer to the original equipment supplier (OEM).

5 DISPOSAL

5.1 WEEE (WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT)

If you use electrical and electronic equipment you must store, collect, treat, recycle and dispose of WEEE separately from your other waste

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