DSE2160 Input / Output Expansion Module Installation Guide

DEEP SEA ELECTRONICS
DSE2160 Installation Instructions
053-268
ISSUE 1

Contents

DSE2160 Input / Output Expansion Module

This document details the installation requirements of the DSE2160 Input and Output Expansion Module and is part of the DSEGenset® range of products.
The DSE2160 Input and Output Expansion module is designed to enhance the input capabilities of supported DSE modules. The module offers 8 Digital Input/Outputs, 6 Digital Inputs and 2 Analogue inputs. The configuration of the expansion module is done within the host module's configuration. The only configuration applied to DSE2160 is the selection of the ID switch to match the host module's configuration.

CONTROLS AND INDICATION

STATUS LED
The Status LED indicates the operating state of the module.

Status LED	Condition
Off	Module is not powered.
Red Flashing	Module is powered but there is no communication.
Red Constant	Module is powered and communication is working.

ID SWITCH

The DSENet ID Rotary Selector selects the communication ID that the module uses for DSENet or the source address that the module uses for CAN, as it is capable of being connected to multiple DSE2160 modules/devices at the same time.
The DSENet® ID rotary switch must be operated using an isolated adjustment tool.

NOTE: The DSENet® ID be set to be a unique number compared to any other DSE2160. The DSENet® ID of the DSE2160 does not interfere with the DSENet® ID of any other type of expansion module. For instance it's OK to have a DSE2160 with a DSENet® ID of 1 and a DSE2170 with a DSENet® ID of 1.

POWER SUPPLY REQUIREMENTS

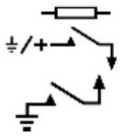
Description	Specification
Minimum Supply Voltage	8 V continuous
Cranking Dropouts	Able to survive 0 V for 50 ms providing the supply was at least greater than 10 V for 2 seconds before the dropout and recovers to 5 V afterwards.
Maximum Supply Voltage	35 V continuous (60 V protection)
Reverse Polarity Protection	-35 V continuous
Maximum Operating Current	190 mA at 12 V 90 mA at 24 V
Maximum Standby Current	110 mA at 12 V 50 mA at 24 V

USER CONNECTIONS

DC SUPPLY, DSENET® & RS485

	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 Digital Outputs
	3	DSENet® Expansion Screen	Shield	Use only 120 W CAN or RS485 approved cable
	4	DSENet® Expansion A	0.5 mm² AWG 20	
	5	DSENet® Expansion B	0.5 mm² AWG 20	
CAN	6	CAN Screen	Shield	Use only 120 W CAN or RS485 approved cable
	7	CAN H	0.5 mm² AWG 20	
	8	CAN L	0.5 mm² AWG 20	

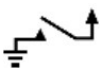
DIGITAL INPUT/OUTPUTS

	Pin No	Description	Cable Size	Notes
	9	Digital Input/Output A	1.0mm² AWG 18	When configured as a digital output, switches module supply positive or negative depending on configuration. When configured as digital input, switch to n egative.
	10	Digital Input/Output B	1.0mm² AWG 18	
	11	Digital Input/Output C	1.0mm² AWG 18	
	12	Digital Input/Output D	1.0mm² AWG 18	
	13	Digital Input/Output E	1.0mm² AWG 18	
	14	Digital Input/Output F	1.0mm² AWG 18	
	15	Digital Input/Output G	1.0mm² AWG 18	
	16	Digital Input/Output H	1.0mm² AWG 18	

DIGITAL INPUTS

NOTE: DC Input A (Terminal 17) offers various modes of input.

1. Digital input mode: Functions similarly to Connector B (Terminals 10-16).
2. Pulse counting mode: Primarily designed for tallying the output generated by gas meters and similar devices.
3. Frequency measurement mode: Enables the measurement of frequencies ranging from 5Hz to 10kHz.

	Pin No	Description	Cable Size	Notes
	17	Digital/High Frequency Input A	1.0mm² AWG 18	Switch to negative.
	18	Digital Input B	1.0mm² AWG 18	
	19	Digital Input C	1.0mm² AWG 18	
	20	Digital Input D	1.0mm² AWG 18	
	21	Digital Input E	1.0mm² AWG 18	
	22	Digital Input F	1.0mm² AWG 18	

ANALOGUE INPUTS

NOTE: It is VERY important that terminals 24 and 26 (sensor common) are connected to an earth point on the ENGINE BLOCK, not within the control panel, and must be a sound electrical connection to the sensor bodies. This connection MUST NOT be used to provide an earth connection for other terminals or devices. The simplest way to achieve this is to run a SEPARATE earth connection from the system earth star point to terminal 24 and 26 directly, and not use this earth for other connections.

NOTE: If PTFE insulating tape is used on the sensor thread when using earth return sensors, ensure not to insulate the entire thread, as this prevents the sensor body from being earthed via the engine block.

	Pin No	Description	Cable Size	Notes
	23	Analogue Input A	0.5 mm² AWG 20	Connect to the output of the sensor.
	24	Analogue Input A Return	0.5 mm² AWG 20	Ground return feed for Analogue Input A.
	25	Analogue Input B	0.5mm² AWG 20	Connect to the output of the sensor.
	26	Analogue Input B Return	0.5 mm² AWG 20	Ground return feed for Analogue Input B.

REQUIREMENTS FOR UL

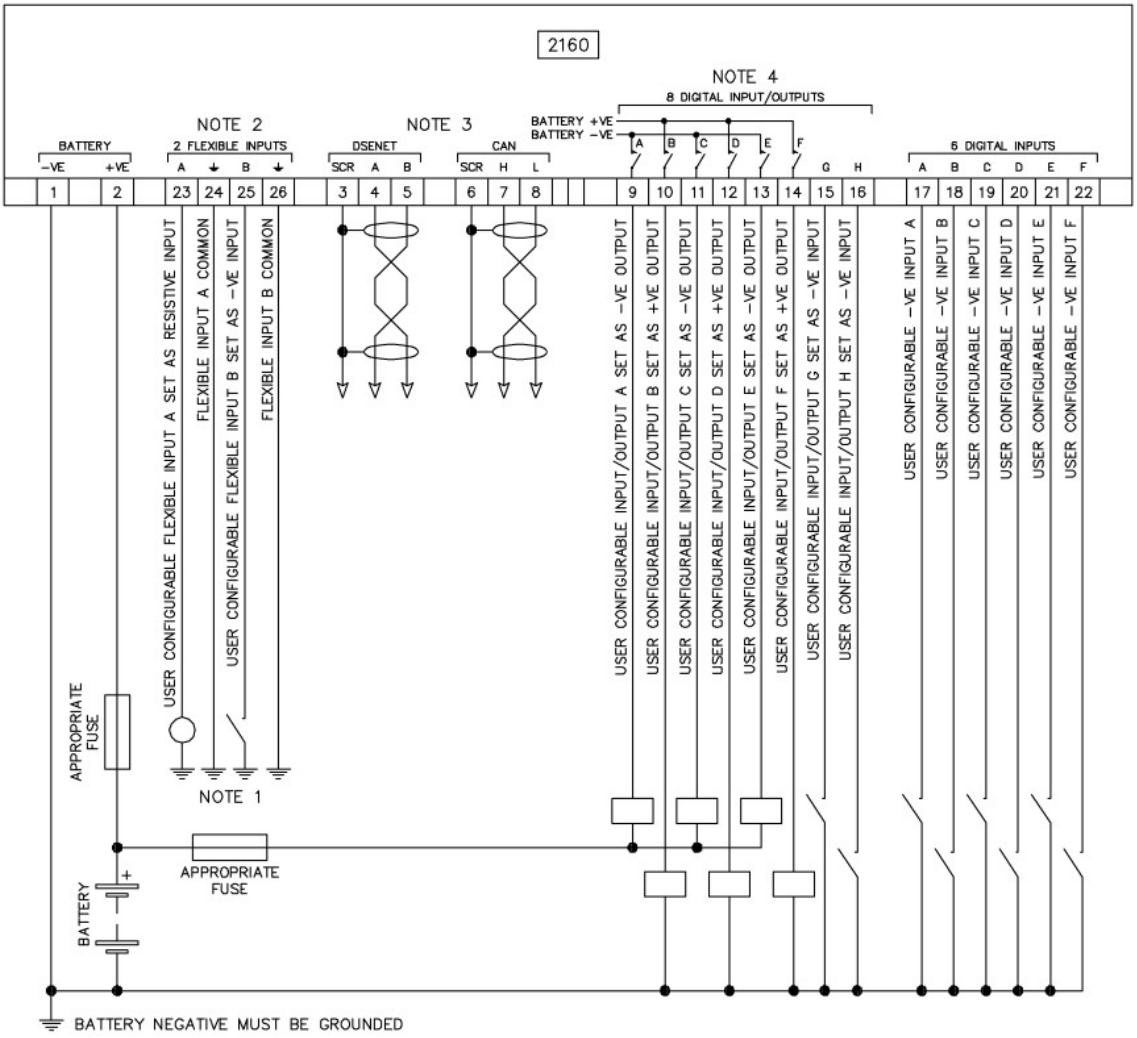
Specification	Description
Screw Terminal Tig htening Torque	● 4.5 lb-in (0.5 Nm)
Conductors	● Terminals suitable for connection of conductor size 13 AWG to 20 AWG (0.5 mm² to 2.5 mm²). ● Conductor protection must be provided in accordance with NFPA 70, Article 240 (USA). ● Low voltage circuits (35 V or less) must be supplied from the engine starting battery or a n isolated secondary circuit and protected by a Listed fuse rated max. 2A. ● The communication, sensor, and/or battery derived circuit conductors shall be separated and secured to maintain at least ¼” (6 mm) separation from the generator and mains connected circuit conductors unless all conductors are rated 600 V or greater. ● Use only copper conductors rated for a minimum operating temperature of 158 °F (70 ° C).
Communication Cir cuits	● Must be connected to communication circuits of UL Listed equipment (if working to UL r equirements).
DC Output	● The current pilot duty of the DC outputs is not rated. ● The DC outputs must not be used for control of a fuel safety valve.
Mounting	● The device shall be installed within an unventilated Type 1 enclosure minimum, or ventil ated Type 1 enclosure minimum provided with filters to maintain a pollution degree 2 or controlled environment. ● For flat surface mounting in Type 1 Enclosure Type rating provided with filters to maintai n a pollution degree 2 or controlled environment. Surrounding air temperature -22 ºF to + 158 ºF (-30 ºC to +70 ºC).

DIMENSIONS AND MOUNTING

Parameter	Specification
Overall size	120 mm x 75 mm x 31.5 mm (4.72 ” x 2.95 ” x 1.24 ”)
Weight	200 g (0.44 lb)
Mounting type	DIN rail or chassis mounting
Din rail type	EN 50022 35mm type only
Mounting holes	M4 clearance
Mounting hole centres	108 mm x 63 mm (4.25” x 2.48 ”)

TYPICAL WIRING DIAGRAM

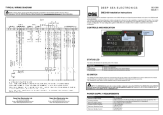
NOTE: A larger version of the Typical Wiring Diagram is available in the product’s operator manual, refer to DSE Publication: 057-361 DSE2160 Operator Manual available from **www.deepseaelectronics.com** for more information.



NOTE 1. THESE GROUND CONNECTIONS MUST BE ON THE ENGINE BLOCK, AND MUST BE TO THE SENSOR BODIES.
NOTE 2. THE 2 FLEXIBLE INPUTS ARE INDIVIDUALLY CONFIGURABLE AS VE DIGITAL INPUT OR RESISTIVE INPUT
NOTE 3. IF THE MODULE IS FIRST OR LAST UNIT ON THE LINK, IT MUST BE FITTED WITH A 120 OHM TERMINATION RESISTOR ACROSS TERMINALS A AND B FOR DSENET OR HAND L FOR CAN.
NOTE 4. THE 8 DIGITAL INPUT/OUTPUTS ARE INDIVIDUALLY CONFIGURABLE AS VE DIGITAL INPUT, VE DIGITAL OUTPUT. OR +VE DIGITAL OUTPUT.

Deep Sea Electronics Ltd.
Tel:+44 (0)1723 890099
Email: support@deepseaelectronics.com
Web: www.deepseaelectronics.com
Deep Sea Electronics Inc.
Tel: +1 (815) 316 8706
Email: support@deepseaelectronics.com
Web: www.deepseaelectronics.com

Documents / Resources

	**DSE DSE2160 Input / Output Expansion Module** [pdf] Installation Guide DSE2160 Input Output Expansion Module, DSE2160, Input Output Expansion Module, Output Expansion Module, Expansion Module, Module

References

- **User Manual**