

**COMPLEX SOLUTIONS  
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**DEEP SEA ELECTRONICS**

**DSEEXTRA<sup>®</sup>**

**DSE2548 LED expansion module**

**057-084**

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DSE2548 relay output expansion module

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## 1 BIBLIOGRAPHY

This document refers to and is referred to by the following DSE publications which can be obtained from the DSE website [www.deepseapl.com](http://www.deepseapl.com)

DSE PART	DESCRIPTION
057-074	7000 series operators manual
057-077	7000 series configuration software manual

## 2 INTRODUCTION

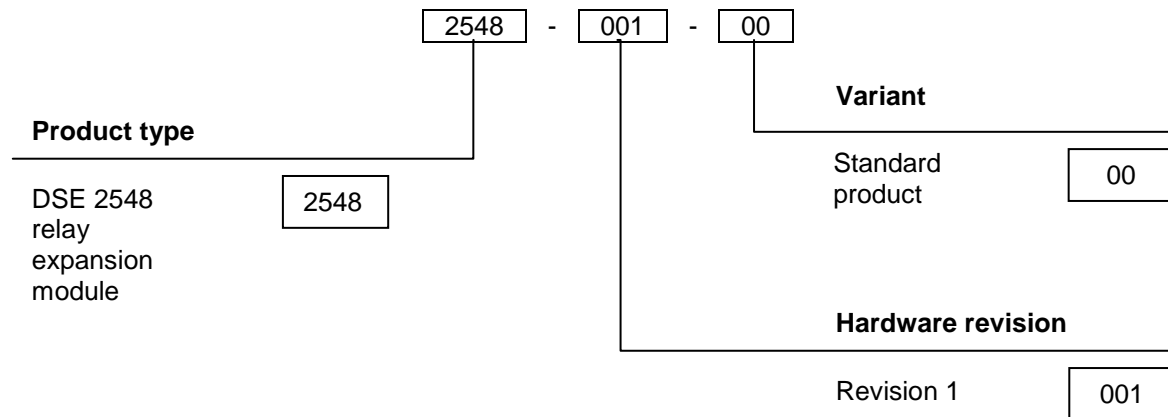
This document details the installation requirements of the DSE2548 LED expansion module part of the DSEExtra® range of ancilliary modules.

DSE2548 LED expansion module is used in conjunction with compatible DSE controllers to provide additional LED indication functionality. The LEDs are configured in the 'host controller', the DSE2548 module is not itself configured aside from the 'ID switch' detailed below.

For further details on configuring the 'host controller' you are referred to the relevant configuration software manual.

### 3 SPECIFICATIONS

#### 3.1 PART NUMBERING



At the time of this document production, there are no variants of this product and there have been no revisions of the module hardware.

#### 3.2 POWER SUPPLY

Minimum supply voltage	8V continuous, 4V for up to 5 minutes.
Cranking dropouts	Able to survive 0V for 50mS providing the supply was at least 10V before the dropout and recovers to 5 volts afterwards.
Maximum supply voltage	35V continuous (protection to 60V)
Maximum operating current	112mA at 12V, 53mA at 24V Conditions: All LED's lit and sounder active.
Maximum standby current	74mA at 12V, 35mA at 24V Conditions: All LED's off and sounder inactive.

#### 3.3 TERMINAL SPECIFICATION

Connection type	Screw terminal, rising clamp, no internal spring
Min cable size	0.5mm <sup>2</sup> (AWG 20)
Max cable size	2.5mm <sup>2</sup> (AWG 14)
Recommended cable size	Refer to table below

### 3.4 DSENET®

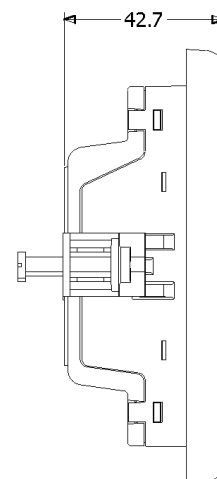
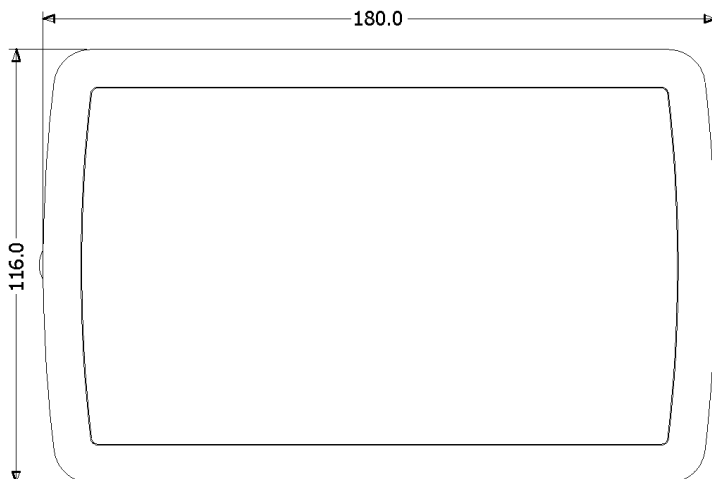
DSEnet is the interconnection cable between the host controller and the expansion module(s) and must not be connect to any device other than DSE equipment designed for connection to the DSEnet.

Cable type	Two core screened twisted pair
Cable characteristic impedance	120Ω
Recommended cable	Belden 9841 Belden 9271
Maximum cable length	1000m (1km) when using Belden 9841 or direct equivalent. 500m (0.5km) when using Belden 9271 or direct equivalent.
DSEnet topology	Bus with no stubs (spurs)
DSEnet termination	120Ω. Fitted internally to host controller. Must be fitted externally to the 'last' expansion module by the customer .
Maximum expansion modules	Refer to host controller documentation

**NOTE : As a termination resistor is internally fitted to the host controller, the host controller must be the 'first' unit on the DSEnet. A termination resistor MUST be fitted to the 'last' unit on the DSEnet. See the section entitled 'Typical Wiring Diagram' elsewhere in this manual for details.**

### 3.5 DIMENSIONS

Overall size	180.0mm x 116.0mm x 42.7mm (7.07" x 4.57" x 1.68")
Mounting type	Panel mounting
Panel cutout	154mm x 98mm (6.06" x 3.86")



### 3.6 APPLICABLE STANDARDS

<b>BS EN 60068-2-1</b> (Minimum temperature)	-30°C (-22°F)
<b>BS EN 60068-2-2</b> (Maximum temperature)	+70°C (158°F)
<b>BS EN 60950</b>	Safety of information technology equipment, including electrical business equipment
<b>BS EN 61000-6-2</b>	EMC Generic Immunity Standard (Industrial)
<b>BS EN 61000-6-4</b>	EMC Generic Emission Standard (Industrial)
<b>BS EN 60529</b> (Degrees of protection provided by enclosures)	IP65 when mounted into panel with optional gasket IP42 when mounted into panel WITHOUT gasket
<b>UL508</b> <b>NEMA rating</b>	Enclosure type 2 when mounted into panel WITHOUT gasket Enclosure type 12 when mounted into panel with gasket

In line with our policy of continual development, Deep Sea Electronics, reserve the right to change specification without notice.

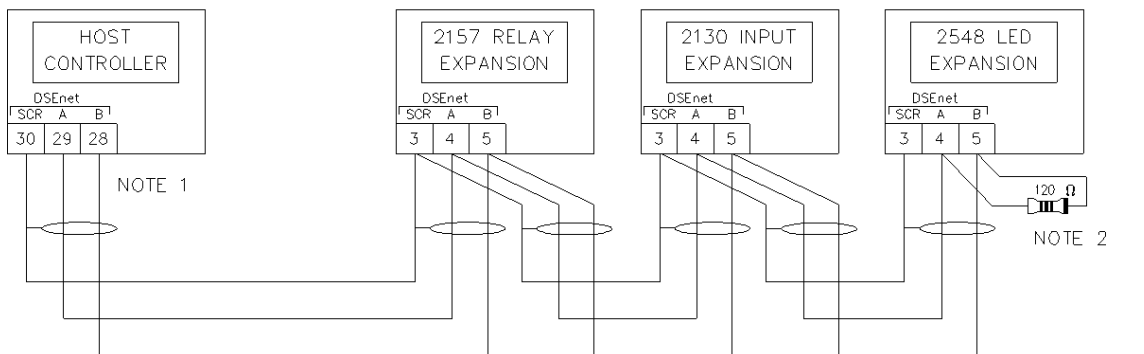
## 4 INSTALLATION

### 4.1 USER CONNECTIONS

#### 4.1.1 CONNECTOR A

Terminal	Function	Recommended size	
1	DC supply positive	1.0mm <sup>2</sup> (AWG 18)	
2	DC supply negative	1.0mm <sup>2</sup> (AWG 18)	
3	Screen		DSEnet only
4	A	0.5mm <sup>2</sup> (AWG 20)	DSEnet only
5	B	0.5mm <sup>2</sup> (AWG 20)	DSEnet only

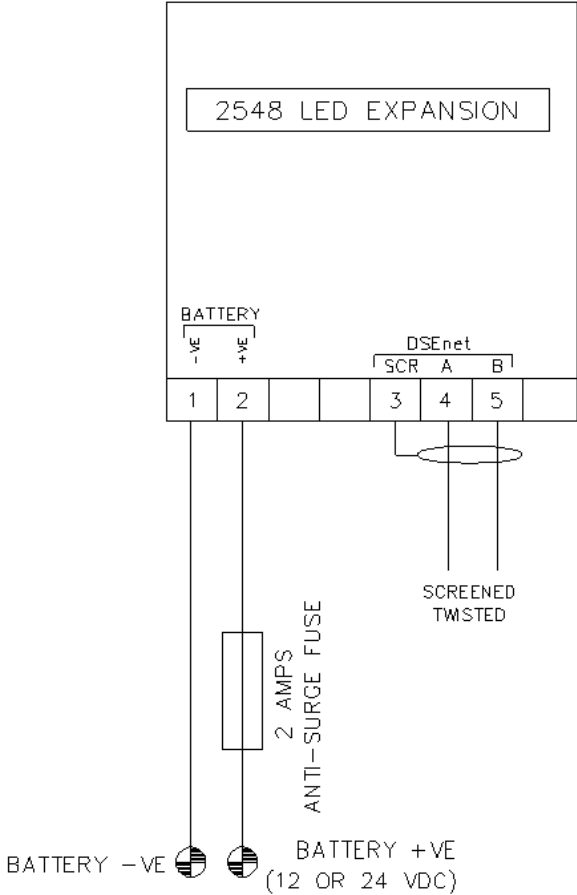
### 4.2 SCHEMATIC INTERCONNECTION DIAGRAM



NOTE 1  
AS A TERMINATING RESISTOR IS INTERNALLY FITTED TO THE HOST CONTROLLER, THE HOST CONTROLLER MUST BE THE FIRST UNIT ON THE DSEnet

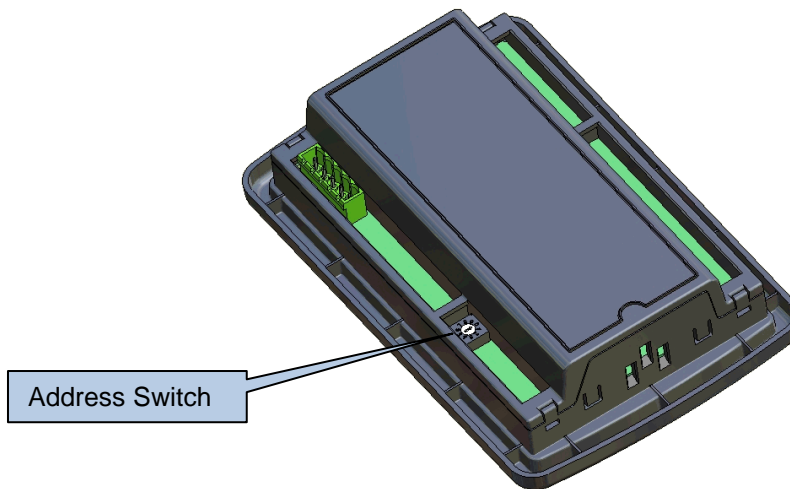
NOTE 2  
A 120 OHM TERMINATION RESISTOR MUST BE FITTED TO THE LAST UNIT ON THE DSEnet

4.3 TYPICAL WIRING DIAGRAM





## 5 CONTROLS AND INDICATIONS



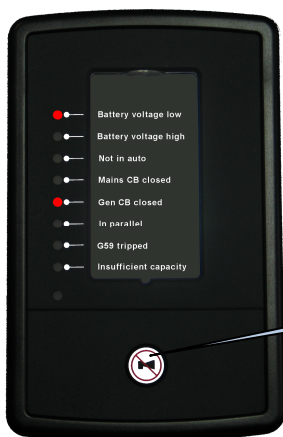
### 5.1 LED INDICATIONS

Function	Colour	Action
Power on / Link lost	RED	Steady when DC supply is connected and data is being received from the host controller. Flashing when the DC supply is connected and the data connection to the host controller is not operating.
Status 1-8	RED	Lit when the corresponding channel is active

### 5.2 SOUNDER

The 2548 LED expansion module has an integral sounder, activated upon a signal from the 'host controller'. The controller will activate the sounder when an alarm becomes active and silence the sounder when an alarm mute button (local or remote) is pressed.

### 5.3 PUSH BUTTON



Pressing the button will signal to the host controller that the button is pressed. The controller will respond by lighting all LEDs on the 2548 module (lamp test) and silencing the sounder (alarm mute). If configured to do so, the host controller will also perform a lamp test and alarm mute function.

Lamp test/alarm mute

## 5.4 ID SWITCH

The rotary ID switch is used to select the 'Identification' of the 2548 expansion module as the host controller is capable of giving instructions to a number of 2548 expansion modules at the same time (consult relevant modules instructions for further details on number of supported expansion units).

The switch (located at the rear of the module) should be operated using a small screwdriver and set to match the required ID.

**NOTE : The ID MUST be a unique number, different from the ID of any other 2548 module connected to the host controller.  
If two or more 2548 controllers are required to 'mimic' each other then they should be configured with different IDs, and both configured the same in the host controller.**

**NOTE : The selection of the ID of *other types* of expansion modules WILL NOT interfere/clash with the ID of the 2548. For instance if the 2548 is set to ID4, it is acceptable to have a *different type* of expansion module (for instance 2130) set to ID4 also.**

## 6 FAULT DIAGNOSIS

Nature of problem	Suggestion
LEDs don't activate on the 2548 module	Ensure the host controller is correctly configured to send signals to the 2548
Power LED indication does not illuminate	Check polarity and size of the connected DC supply are within the specifications of the DSE2548
Power LED flashes	This means the the communications link to the host controller has been lost. Check the connection of the DSEnet paying particular attention to the cable type being used and the positioning of the termination resistors.

## 7 MAINTENANCE, SPARES, REPAIR AND SERVICING

The DSE2548 is designed to be *Fit and Forget*. As such, there are no user serviceable parts. In the case of malfunction you should contact your original equipment supplier (OEM).

## 8 WARRANTY

DSE provides limited warranty to the equipment purchaser at the point of sale. For full details of any applicable warranty, you are referred to your original equipment supplier (OEM).

## 9 DISPOSAL

### 9.1 WEEE (WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT)

Directive 2002/96/EC

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



### 9.2 ROHS (RESTRICTION OF HAZARDOUS SUBSTANCES)

Directive 2002/95/EC:2006

To remove specified hazardous substances (Lead, Mercury, Hexavalent Chromium, Cadmium, PBB & PBDE's)

Exemption Note: Category 9. (Monitoring & Control Instruments) as defined in Annex 1B of the WEEE directive will be exempt from the RoHS legislation. This was confirmed in the August 2005 UK's Department of Trade and Industry RoHS REGULATIONS Guide (Para 11).

Despite this exemption DSE has been carefully removing all non RoHS compliant components from our supply chain and products.

When this is completed a Lead Free & RoHS compatible manufacturing process will be phased into DSE production.

This is a process that is almost complete and is being phased through different product groups.