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**DEEP SEA ELECTRONICS**

**DSE**EXTRA<sup>®</sup>

**DSE160 1A Self Seeking Power Supply**

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#### DSE160 1A Self Seeking Power Supply Module Operator Manual

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#### Amendments since last publication

Amd. No.	Comments

Typeface : The typeface used in this document is *Arial*. Care should be taken not to mistake the upper case letter I with the numeral 1. The numeral 1 has a top serif to avoid this confusion.

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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)

### 1.1 INSTALLATION INSTRUCTIONS

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

DSE PART	DESCRIPTION
053-065	DSE160 Self Seeking Power Supply Installation Instructions
053-061	DSE332 ATS Installation Instructions

### 1.2 MANUALS

DSE PART	DESCRIPTION
057-106	DSE332 ATS Operator Manual

## 2 INTRODUCTION

This document details the installation and operation requirements of the DSE160 1A Self Seeking Power Supply, part of the DSEExtra® range of ancilliary devices.

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*. You will not be automatically informed of updates. Any future updates of this document will be included on the DSE website at [www.deepseapl.com](http://www.deepseapl.com)

## 3 DESCRIPTION

The DSE160 is designed to provide 1A DC power to a panel. For example this could be an ATS panel. The DSE160 supplies DC power to the ATS controller using either the generator or the mains supply or optionally a DC battery supply.

As one supply fails and the output is fed by another supply, there is no break or drop in the output voltage, it is a continuous DC output. When supplied by the mains or generator supply, the DC output is 13V (0.2V tolerance). When supplied from the optional battery, the output voltage is the voltage supplied to BAT terminals less approximately 0.6V DC.



## 4 SPECIFICATIONS

### 4.1 PART NUMBERING

Where three numbers exist the middle section should be ignored (ie 0160-001-00 is treated as 0160-00).

	0160	-	00	
<b>Product type</b>				<b>Variant</b>
DSE160 1A self seeking supply	0160			12V output 00
				24V output 01

### 4.2 POWER SUPPLY

Tests conducted at 25°C


Input voltage (AC RMS)	90V (min)	305V (max)
Input current with 0.5A output	0.205A	0.067A
Input current with 0A output	0.017	0.008

Output current (max)	1A
Output voltage	12V or 24V depending upon module version

### 4.3 OPERATING TEMPERATURE

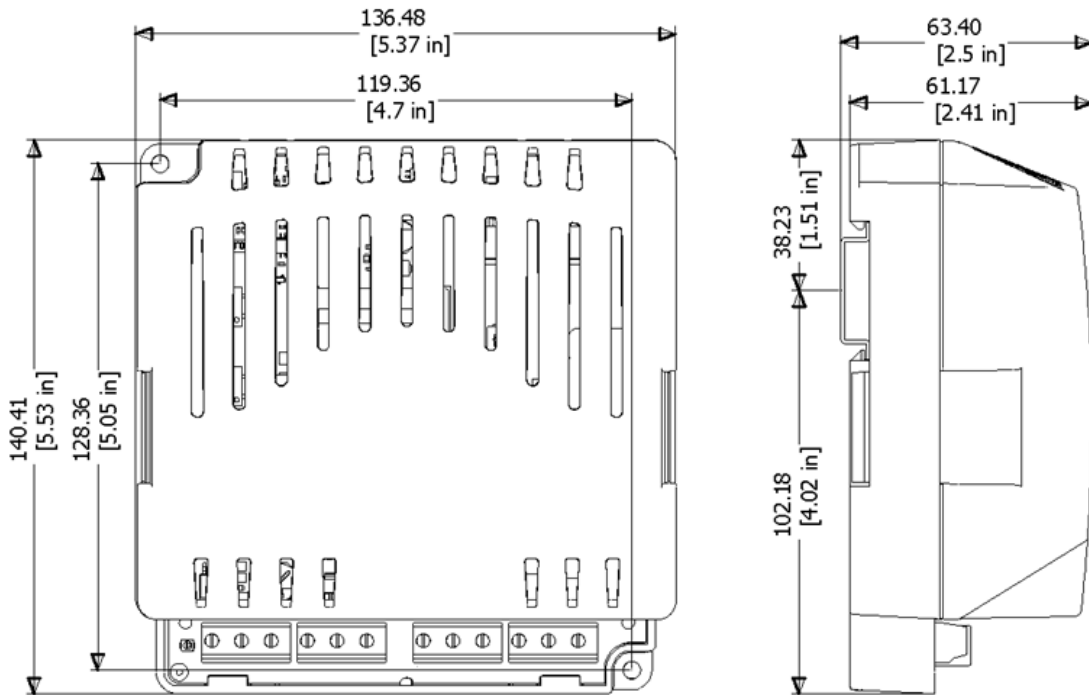
Operating Temperature	-30°C to 60°C (-22°F to 131°F)
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### 4.4 TERMINAL SPECIFICATION

Connection type	One part connector with screw terminals. <ul style="list-style-type: none"> <li>Rising clamp</li> <li>No internal spring</li> </ul> 
Minimum cable size	0.5mm <sup>2</sup> (AWG 24)
Maximum cable size	2.5mm <sup>2</sup> (AWG 10)

## 4.5 DIMENSIONS AND MOUNTING

Overall size	136.48mm x 140.41mm x 63.40mm 5.37" x 5.53" x 2.5"
Weight	0.5kg
Mounting type	DIN rail or chassis mounting
Din rail type	EN 50022 35mm type only
Mounting holes	Suitable for M4
Mounting hole centres	119.36mm x 128.36mm 4.7" x 5.05"



Dimensions in mm unless stated

#### 4.6 APPLICABLE STANDARDS

<b>BS 4884-1</b>	This document conforms to BS4884-1 1992 Specification for presentation of essential information.
<b>BS 4884-2</b>	This document conforms to BS4884-2 1993 Guide to content
<b>BS 4884-3</b>	This document conforms to BS4884-3 1993 Guide to presentation
<b>BS EN 60068-2-1</b> (Minimum temperature)	-30°C (-22°F)
<b>BS EN 60068-2-2</b> (Maximum temperature)	+60°C (131°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) (see overleaf)	IP20
<b>UL508</b> <b>NEMA rating</b> (Approximate) (see overleaf)	1

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

## 4.6.1 ENCLOSURE CLASSIFICATIONS


### 4.6.1.1 IP CLASSIFICATIONS

DSE160 series specification under BS EN 60529 Degrees of protection provided by enclosures

First Digit Protection against contact and ingress of solid objects	Second Digit Protection against ingress of water
0 No protection	0 No protection
1 Protected against ingress solid objects with a diameter of more than 50 mm. No protection against deliberate access, e.g. with a hand, but large surfaces of the body are prevented from approach.	1 Protection against dripping water falling vertically. No harmful effect must be produced (vertically falling drops).
2 Protected against penetration by solid objects with a diameter of more than 12 mm. Fingers or similar objects prevented from approach.	2 Protection against dripping water falling vertically. There must be no harmful effect when the equipment (enclosure) is tilted at an angle up to 15° from its normal position (drops falling at an angle).
3 Protected against ingress of solid objects with a diameter of more than 2.5 mm. Tools, wires etc. with a thickness of more than 2.5 mm are prevented from approach.	3 Protection against water falling at any angle up to 60° from the vertical. There must be no harmful effect (spray water).
4 Protected against ingress of solid objects with a diameter of more than 1 mm. Tools, wires etc. with a thickness of more than 1 mm are prevented from approach.	4 Protection against water splashed against the equipment (enclosure) from any direction. There must be no harmful effect (splashing water).
5 Protected against harmful dust deposits. Ingress of dust is not totally prevented but the dust must not enter in sufficient quantity to interface with satisfactory operation of the equipment. Complete protection against contact.	5 Protection against water projected from a nozzle against the equipment (enclosure) from any direction. There must be no harmful effect (water jet).
6 Protection against ingress of dust (dust tight). Complete protection against contact.	6 Protection against heavy seas or powerful water jets. Water must not enter the equipment (enclosure) in harmful quantities (splashing over).

### 4.6.1.2 NEMA CLASSIFICATIONS

DSE0160 NEMA Rating (Approximate)

 **NOTE: - There is no direct equivalence between IP / NEMA ratings. IP figures shown are approximate only.**

<b>1</b> IP20	Provides a degree of protection against contact with the enclosure equipment and against a limited amount of falling dirt.
<b>2</b> IP31	Provides a degree of protection against limited amounts of falling water and dirt.
<b>3</b> IP64	Provides a degree of protection against windblown dust, rain and sleet; undamaged by the formation of ice on the enclosure.
<b>3R</b> IP32	Provides a degree of protection against rain and sleet; undamaged by the formation of ice on the enclosure.
<b>4 (X)</b> IP66	Provides a degree of protection against splashing water, windblown dust and rain, hose directed water; undamaged by the formation of ice on the enclosure. (Resist corrosion).
<b>12/12K</b> IP65	Provides a degree of protection against dust, falling dirt and dripping non corrosive liquids.
<b>13</b> IP65	Provides a degree of protection against dust and spraying of water, oil and non corrosive coolants.



## 5 INSTALLATION

### 5.1 USER CONNECTIONS

#### 5.1.1 DC OUTPUT

PIN No	DESCRIPTION	CABLE SIZE	NOTES
OP-	DC Plant Supply Output (Negative)	2.5mm <sup>2</sup> AWG 13	
OP+	DC Plant Supply Output (Positive)	2.5 mm <sup>2</sup> AWG 13	12V or 24V DC (depending on module version) Max 1A

#### 5.1.2 DC INPUT

PIN No	DESCRIPTION	CABLE SIZE	NOTES
BT-	Battery Supply Input (Negative)	2.5mm <sup>2</sup> AWG 13	
BT+	Battery Supply Input (Positive)	2.5 mm <sup>2</sup> AWG 13	(Recommended Maximum Fuse 2A anti-surge)

#### 5.1.3 AC INPUT 1

Usually connected to the mains (utility) supply.

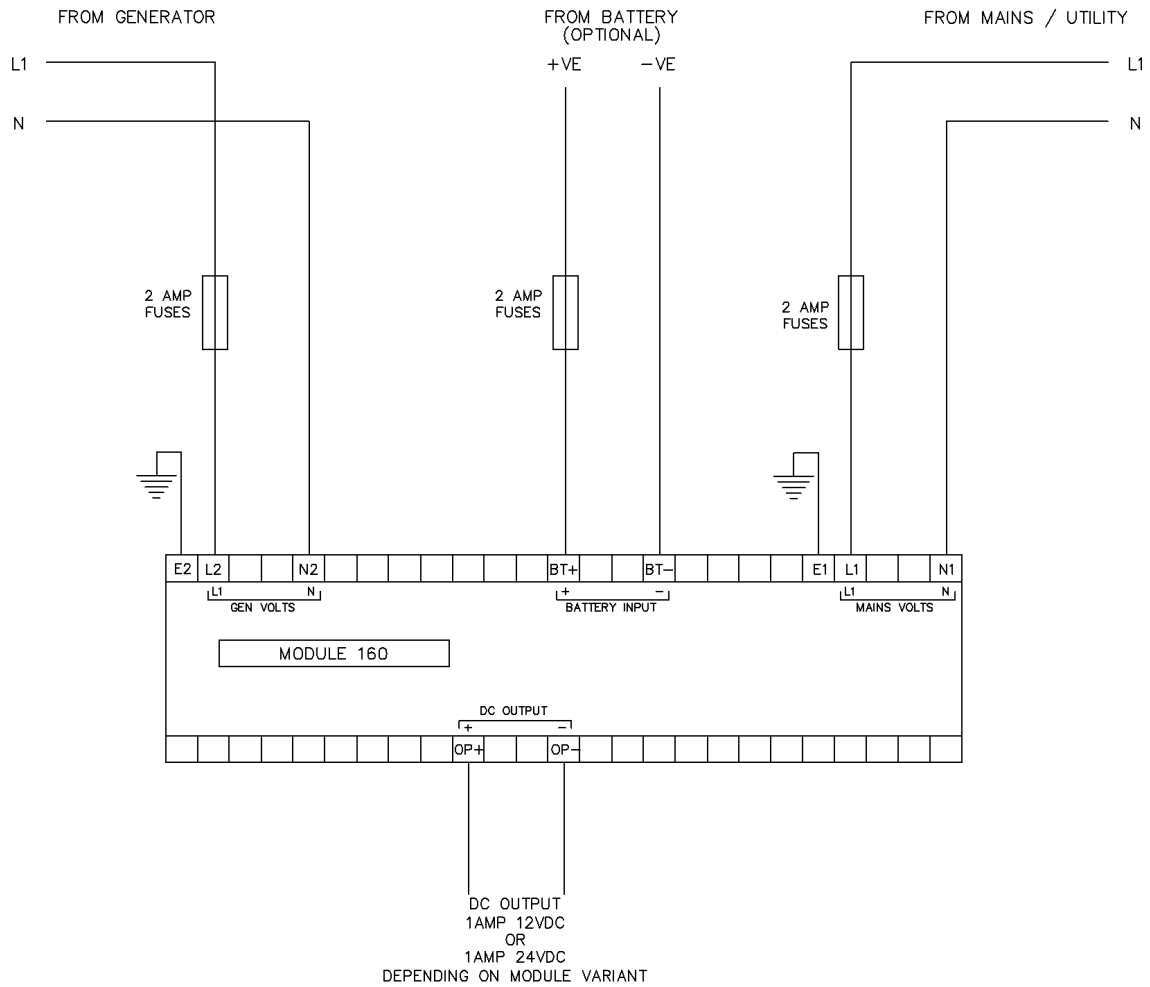
PIN No	DESCRIPTION	CABLE SIZE	NOTES
E1	Earth connection to AC Supply 1	2.5mm <sup>2</sup> AWG 13	
N1	Neutral connection to AC Supply 1	2.5 mm <sup>2</sup> AWG 13	
L1	L1 connection to AC Supply 1	2.5 mm <sup>2</sup> AWG 13	(Recommended Maximum Fuse 2A anti-surge)

#### 5.1.4 AC INPUT 2

Usually connected to the generator output.

PIN No	DESCRIPTION	CABLE SIZE	NOTES
E2	Earth connection to AC Supply 2	2.5mm <sup>2</sup> AWG 13	
N2	Neutral connection to AC Supply 2	2.5 mm <sup>2</sup> AWG 13	
L2	L1 connection to AC Supply 2	2.5 mm <sup>2</sup> AWG 13	(Recommended Maximum Fuse 2A anti-surge)

## 5.2 TYPICAL WIRING DIAGRAM



TERMINALS SUITABLE FOR 22-16 AWG ( $0.6\text{mm}^2$  -  $1.5\text{mm}^2$ ) FIELD WIRING

TIGHTENING TORQUE = 0.8Nm (7lb-in)

Internal 250V 2A Anti Surge fuses (Ceramic 20mm x 5mm) are fitted to the Generator and Mains inputs.  
Internal self resetting thermal fuse is internally fitted to the Battery Input.  
External fuses are recommended to protect the connection cables to the DSE160 Self Seeking Supply.

## 6 MAINTENANCE, SPARES, REPAIR AND SERVICING

The DSE160 self seeking power supply is designed to be *Fit and Forget*. As such, there are no user serviceable parts within the controller other than the mains and generator input fuses listed below.

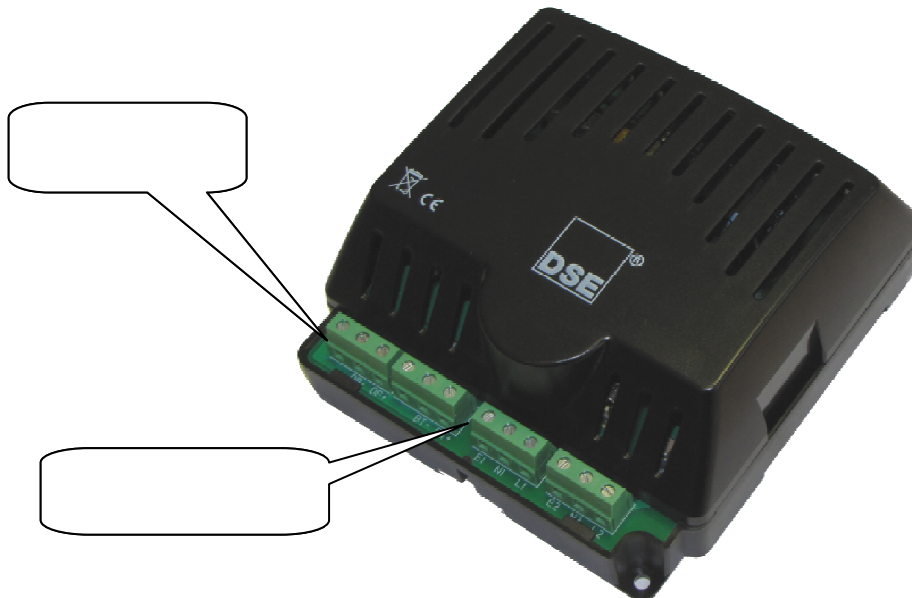
In the case of malfunction, you should contact your original equipment supplier (OEM).

<b>MAINS / GENERATOR internally fitted protection fuses</b>	20mm x 5mm ceramic fuse 2A anti-surge type
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## 7 INDICATIONS AND FAULT DIAGNOSIS

DSE160 has four indicator LEDs :

LED LABEL	LED DESCRIPTION
<b>MAINS</b>	Off when AC mains supply is not present or output voltage is too low. Steady during normal operation with AC mains supply above minimum operating voltage. Flashing when output is short circuited.
<b>GEN</b>	Off when AC generator supply is not present or output voltage is too low. Steady during normal operation with AC generator supply above minimum operating voltage. Flashing when output is short circuited.
<b>BAT</b>	Off when no battery is available, the battery voltage is too low or the output current is higher than 2 Amp (max rating of DSE160 = 1A). On when battery is available.
<b>OP</b>	On when output is operating normally. Off when unit is powered from the battery supply or when the output has failed. Flashing if output is short circuited when the unit is powered from either generator or mains supply.



## 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.