DEEP SEA ELECTRONICS PLC

DSE855 USB to Ethernet Convertor Operator Manual

Document Number: 057-205

Author: Anthony Manton

Deep Sea Electronics Plc
Highfield House
Hunmanby
North Yorkshire
YO14 0PH
ENGLAND

Sales Tel: +44 (0) 1723 890099
Sales Fax: +44 (0) 1723 893303

E-mail: sales@deepseaplc.com
Website: www.deepseaplc.com

DSE855 USB to Ethernet Convertor Operator Manual

© Deep Sea Electronics Plc
All rights reserved. No part of this publication may be reproduced in any material form (including photocopying or storing in any medium by electronic means or other) without the written permission of the copyright holder except in accordance with the provisions of the Copyright, Designs and Patents Act 1988.
Applications for the copyright holder's written permission to reproduce any part of this publication should be addressed to Deep Sea Electronics Plc at the address above.

Any reference to trademarked product names used within this publication is owned by their respective companies.

Deep Sea Electronics Plc reserves the right to change the contents of this document without prior notice.

Amendments Since Last Publication

Amd. No.	Comments
1	First release
2	Updated to cover module firmware version 1.0.11
3	Updated compatability list
4	Removed compatibility list

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.

Table of Contents

1 BIBLIOGRAPHY

This document refers to and is referred to by the following DSE publications which can be obtained from the DSE website www.deepseaplc.com

DSE Part	Description
053-159	DSE855 Installation Instructions

2 INTRODUCTION

This document details the installation requirements of the DSE855 USB to Ethernet Convertor. 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.deepseaplc.com

DSE855 USB to Ethernet Convertor is used to give Modbus TCP connectivity to a number of DSE's range of USB enabled controllers.

This allows connection of supported controllers to external Modbus TCP Master devices in many ways. A non-exhaustive list is given below.

- Connection over Ethernet to DSE Configuration Suite PC Software for configuration and monitoring.
- Connection over Ethernet to third party Building Management Systems (BMS) with Modbus TCP Master support.
- Connection over Ethernet to third party PLCs / HMIs with Modbus TCP Master support.

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

3 SPECIFICATIONS

3.1 POWER SUPPLY

Minimum Supply Voltage	8 V continuous, 4 V for up to 5 minutes.
Cranking Dropouts	Able to survive 0 V for 100 mS providing the supply was at least 8 V before the dropout and recovers to 8 V afterwards.
Maximum Supply Voltage	32 V continuous (transient protection to 64 V)
Power Up Current	3 A transient inrush at initial power up.
Typical Operating Current	100 mA at 12 V DC, 58 mA at 24V DC

3.2 TERMINAL SPECIFICATION

Connection Type	Screw terminal, rising clamp, no internal spring
Min Cable Size	0.5 mm² (AWG 20)
Max Cable Size	2.5 mm² (AWG 14)

3.3 USB HOST CONNECTOR

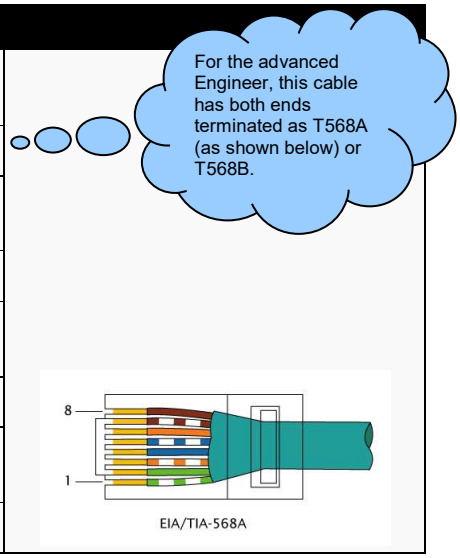
This USB type A socket provides support for connection to one DSE controller.
Use USB type A to USB type B cable.

NOTE: DSE stock a USB suitable cable for this purpose. Part number 016-125.

3.4 ETHERNET CONNECTOR

The DSE855 Gateway module is fitted with an autosensing ethernet socket (10baseT/100baseT) for connection to the Modbus TCP master.

Pin	Connection 1 (T568A)	Connection 2 (T568A)
1	white/green stripe	white/green stripe
2	green solid	green solid
3	white/orange stripe	white/orange stripe
4	blue solid	blue solid
5	white/blue stripe	white/blue stripe
6	orange solid	orange solid
7	white/brown stripe	white/brown stripe
8	brown solid	brown solid



NOTE: DSE Stock a 2m (2yds) Ethernet Cable – Part number 016-137. Alternatively they can be purchased from any good PC or IT store.
As the Gateway is autosensing, either a 'straight through' or 'crossover' cable can be used. The diagram above shows a 'straight though' cable.

3.5 DIMENSIONS

Parameter	Description
Overall Size	35.0 mm x 96.9 mm x 102.2 mm (1.34" x 3.81" x 4.02")
Mounting Type	DIN rail EN 50022 35 mm type only Indoor Use Only
Minimum Ambient Operating Temperature	-30 °C (-22 °F)
Maximum Ambient Operating Temperature	50 ºC (122 ºF)
Weight	140 g (4.9 oz)

3.6 APPLICABLE STANDARDS

UL508 NEMA rating	Enclosure type 1 (indoor use only)
Modbus	DSE855 Supports connection to Modbus TCP Master via Ethernet and DSE Modbus Slave by USB.

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

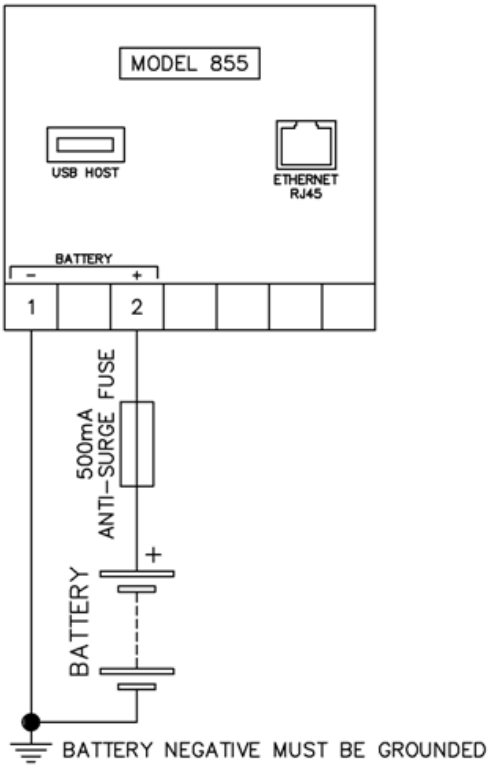
3.7 INSTALLATION

The DSE855 is designed to be mounted within a control panel, on the DIN rail utilising the integral mounts. For dimension and mounting details, see the section entitled *Specification, Dimensions* elsewhere in this document.

3.8 USER CONNECTIONS

Terminal	Function	Recommended size
1	DC supply negative	1.0mm² (AWG18)
2	DC supply positive	1.0mm² (AWG18)
3	RESERVED	
4	RESERVED	
5	RESERVED	

3.9 TYPICAL WIRING DIAGRAM



NOTE: Ensure you consult with the IT/Network manager before connecting the DSE855 to the network.

.

3.9.1 DEVICE COMPATIBILITY

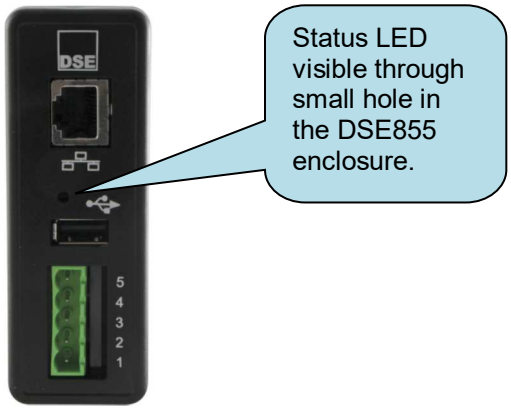
For up to date information regarding device compatibility contact DSE technical support:

Tel: +44 1723 890099
Fax: +44 1723 893303
Email: support@deepseaplc.com
Web: https://www.deepseaplc.com/support

4 CONTROLS AND INDICATIONS

An LED shows operating status of the USB connection to the host DSE controller.

LED State	Description
Off	DSE855 is powered down.
Flashing Slowly	DSE855 has no active USB connection to a host DSE controller.
Flashing Rapidly	DSE855 is connected to a host DSE controller by USB and data is being transmitted.



5 SETUP

The DSE855 is setup using a PC with web browser and a ‘straight through’ or ‘crossover’ network cable.

5.1 BROWSER COMPATIBILITY

5.1.1 GOOGLE CHROME

The management pages are optimised for Google Chrome web browser.

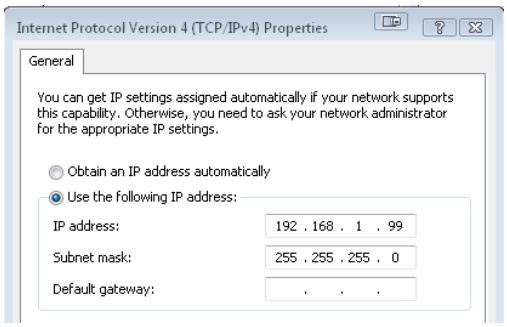
5.1.2 INTERNET EXPLORER

The management pages are optimised for Internet Explorer 9 and above.

5.1.3 MOZILLA FIREFOX

The management pages are optimised for Mozilla Firefox

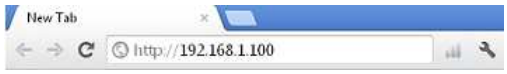
5.2 CONNECTING TO THE GATEWAY MANAGEMENT PAGES



You may wish to consult your company IT department before making changes to your PC network settings.

Connect the DSE855 ethernet port directly to your PC Ethernet port.
You can use either a 'straight through' or 'crossover' network cable.

Set the PC IP address as shown.



Using Google Chrome, Microsoft Internet Explorer or Mozilla Firefox, enter the IP address of the gateway.

Enter the username and password of the Gateway. The factory settings are detailed below.

NOTE: Password is CASE SENSITIVE.

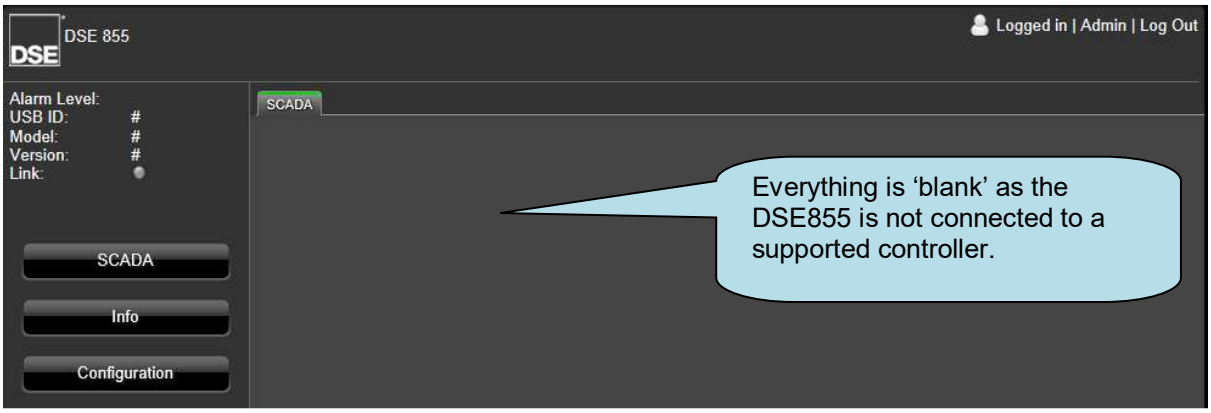
NOTE: For further information refer to DSE Publication: *057-205 DSE855 Operator Manual* available from www.deepseaplc.com

5.3 FACTORY SETTINGS

IP Address	Username	Password
192.168.1.100	admin	Password1234

5.4 INITIAL CONNECTION

If no supported DSE controller is connected to the DSE855, the following screen is displayed.

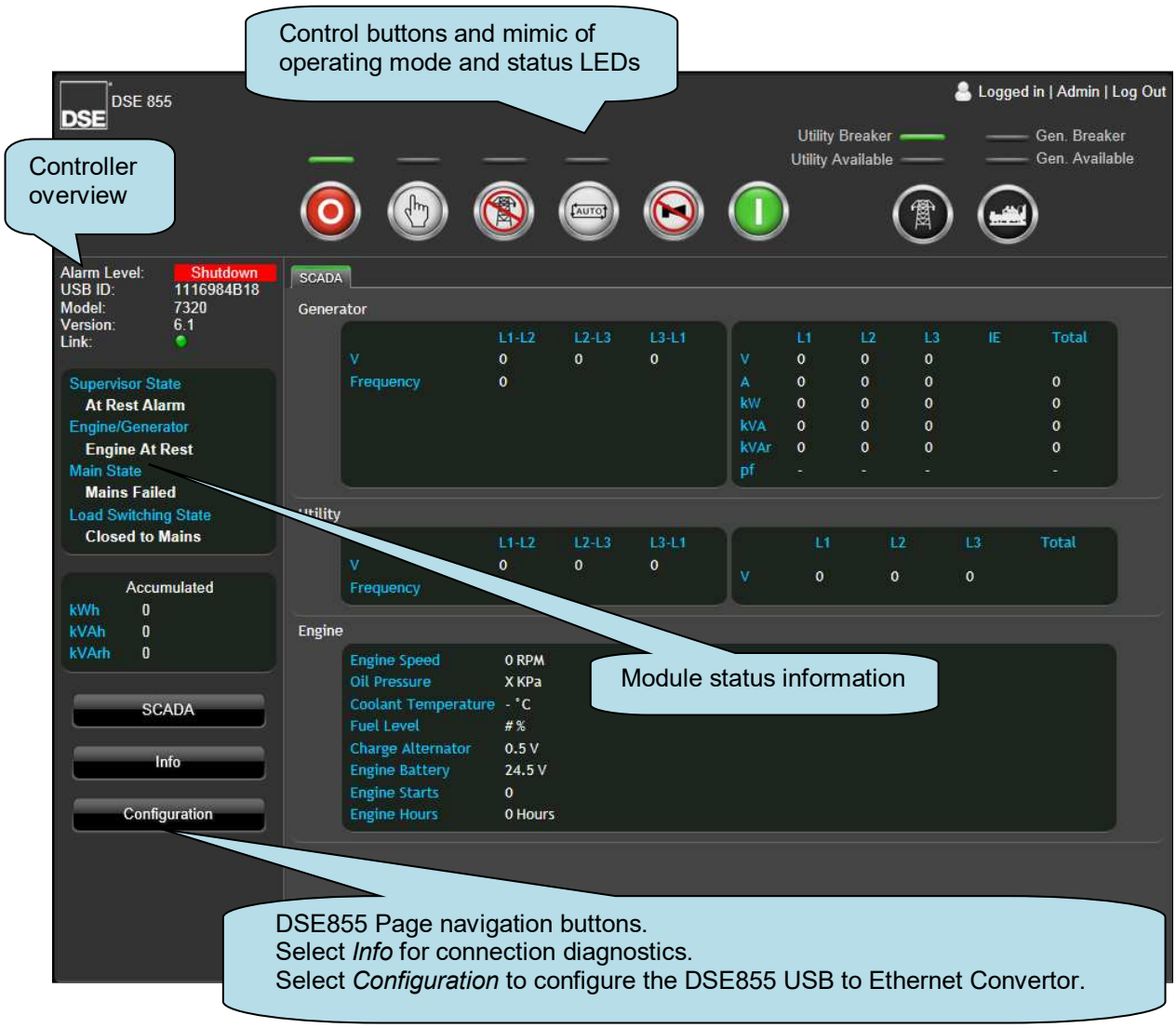


When connected to a supported controller, the initially displayed screen is a fully functioning SCADA display as shown and detailed overleaf.

5.5 SCADA

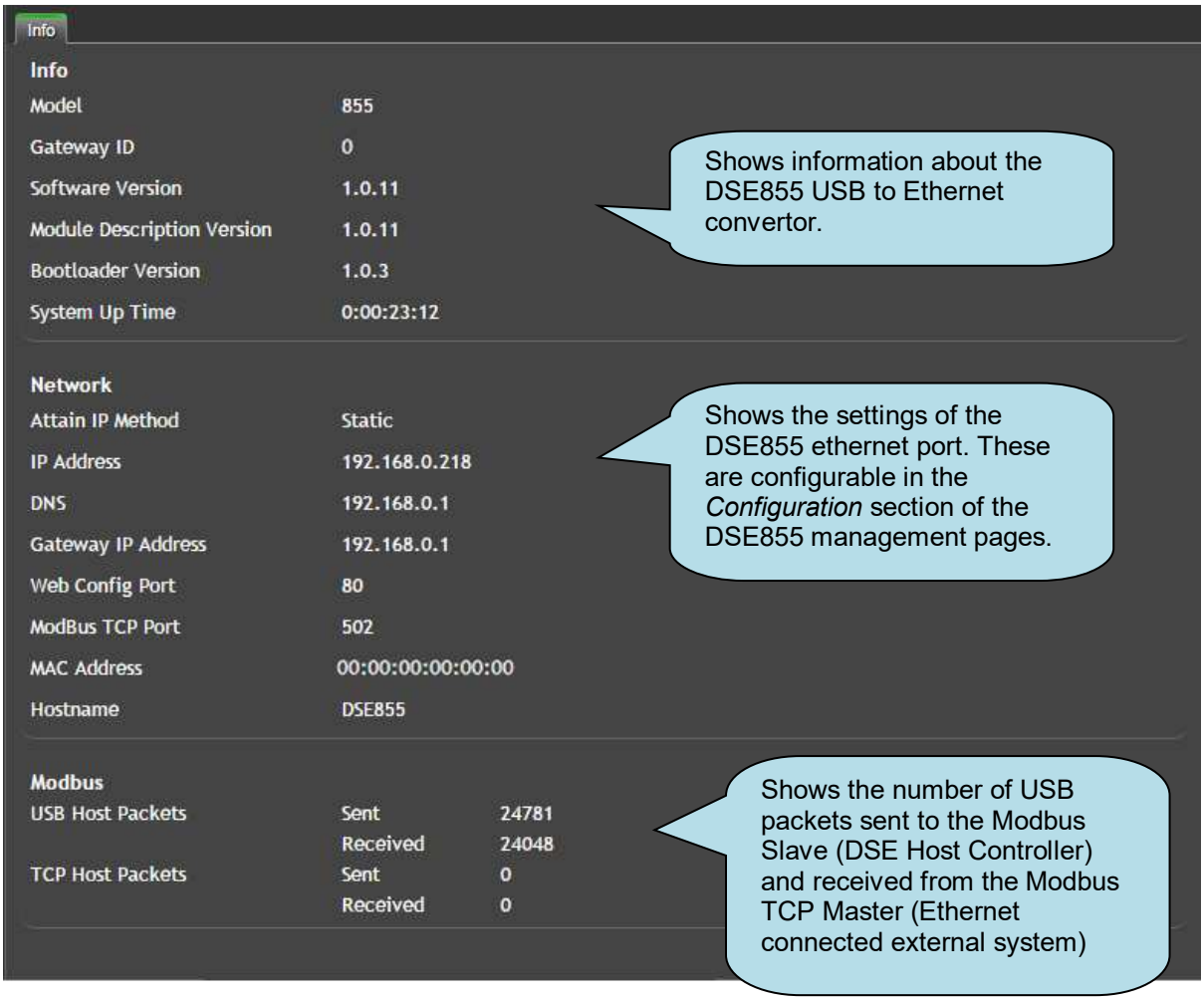
Depending upon the instrumentation supported by the connected controller, the SCADA page allows for simple monitoring and control over the connected DSE host controller.

NOTE: For information regarding the control of the USB connected DSE controller, refer to the relevant Operator Manual available from www.deepseaplc.com.



5.6 INFO

Shows status and connection diagnostic information about the currently connected controller.

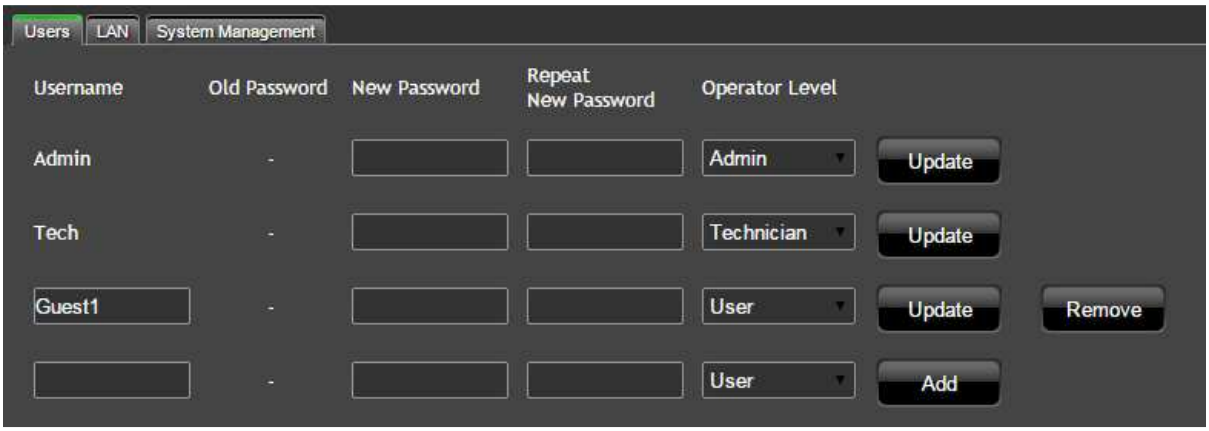


5.7 CONFIGURATION

The configuration pages are separated into three sub tabs.

5.7.1 USERS

Allows setup of the Users able to access the DSE855 management pages and their access level when logged in.



Parameter	Description
Operator Level	Sets the level of access for the user. The Operator Levels of *Admin* and *Technician* cannot be changed.

Built in *Admin* and *Tech* accounts are provided (Factory set password: Password1234). The password is changeable when logged into the accounts however the *Operator Level* for these accounts cannot be changed.

The Admin account has full access to all features of the DSE855 and is also able to create, edit and remove user accounts.

Each user account has three possible access levels that allow or deny access to specific functions of the DSE855 and the USB connected controller.

When granted the correct Operator Level, the functions perform the following actions:

Function	Description
Monitor	Allows the user to access the SCADA page of the DSE855 to monitor the attached DSE module and to monitor the status of the DSE855.
Control	Allows the user to access the SCADA page of the DSE855 to control the attached DSE module (ie to use the 'Control buttons' in the SCADA page).
Configure	Allows the user to change the settings in the DSE855.
Manage Other Users	Allows the user to add new users, change existing users' passwords and delete existing users.
Change Own Password	Allows the user to manage their own password.

5.7.1.1 ACCESS TO THE DSE855

Access to the DSE855's functions are governed by the Operator Level as follows.

Operator Level	Monitor	Configure	Manage Other Users	Change Own Password
Technician	✓			✓
User	✓			✓
Admin	✓	✓	✓	✓

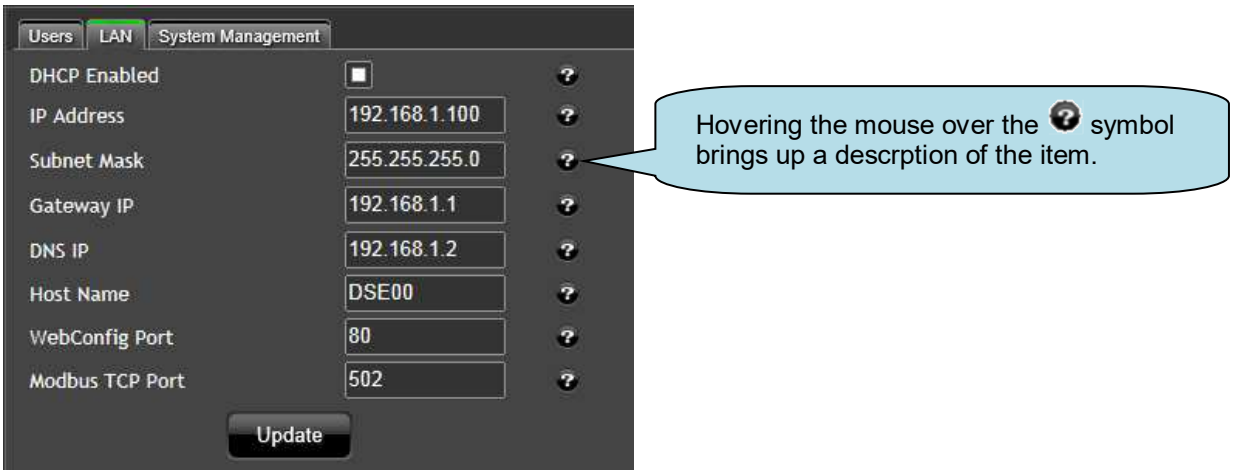
5.7.1.2 ACCESS TO THE USB CONNECTED CONTROLLER

Access to the USB connected controller functions are governed by the Operator Level as follows.

Operator Level	Monitor	Control
Technician	✓	✓
User	✓	
Admin	✓	✓

5.7.2 LAN

Ensure you consult with the IT/Network manager of the site before connecting the DSE855 to the network and before making any changes to these settings on an existing installation.



Parameter	Description
DHCP Enabled	☑ = The DSE855 will request network settings from a DHCP server. ☐ = The DSE855 network settings must be entered manually.
IP Address	(Factory setting 192.168.1.100)
Subnet mask	(Factory setting 255.255.255.0)
Gateway IP	IP address of the internet router that the DSE855 is connected to.
DNS IP	IP address of the Domain Name Service. Usually this is the same as the Gateway IP.
Hostname	Hostname of the device. Used to identify the DSE855 on the network. Give this a meaningful name to assist the network IT manager to recognise the device on the network.
WebConfig Port	The port number that these configuration pages are served on. Care must be taken with this setting when connecting to an existing network in case other devices are already using port 80 to serve webpages.
Modbus TCP Port	The port number that the Modbus TCP Master uses to communicate with the DSE855.

5.7.3 SYSTEM MANAGEMENT

Parameter	Description
Update Firmware	See section entitled *Firmware Upgrade by TFTP* for full description.
Module Description	This option allows for management of the DSE855's internal file system. When required this allows Module Description Templates to be added or changed. ***Download***: Creates a backup file of the DSE855's Module Description Templates currently stored in the DSE855. ***Have Disk***: Allows restoration of a Module Description Template previously saved to disk.
Backup Configuration	***Download***: Creates a backup file of the DSE855's configuration. ***Have Disk***: Allows restoration of a backup previously saved to disk.
Reboot The Device	Restarts the DSE855.
Factory Reset This Device	Sets the DSE855 back to factory settings.

5.7.4 FIRMWARE UPGRADE

When available, firmware upgrade files are found on Deep Sea Electronics PLC website www.deepseaplc.com.

To do this, Firmware update files are required as follows:

Description	DSE855 USB to Ethernet Convertor
Firmware update files	A855-01.bin B855-01.bin C855-01.bin

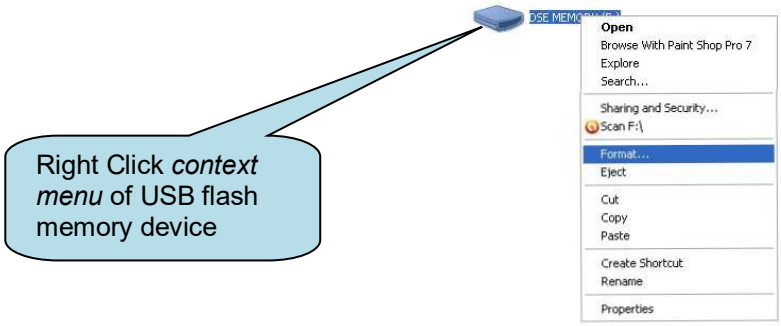
A USB flash memory stick formatted to *FAT* is also required. See Section entitled *How to Format a USB Flash Memory Stick to FAT*, elsewhere in this document.

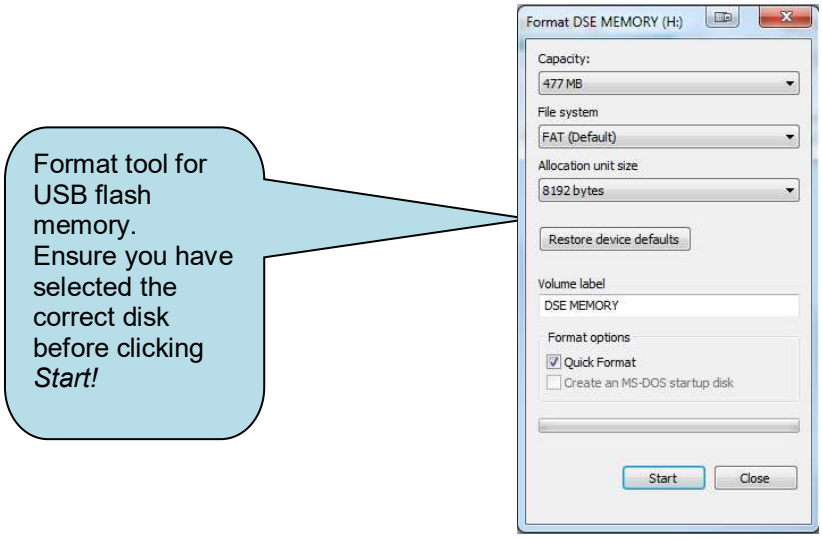
To update the Firmware:

- Copy the upgrade files onto the USB flash memory stick.
- Power down the 855 USB to Ethernet Convertor.
- Insert the USB flash memory stick into the 'USB Host' socket of the 855 USB to Ethernet Convertor.
- Power up the 855. The red LED on the module will flash slowly whilst the firmware is updated.
- Wait for the red module LED to flash quickly three times to indicate a successful update.
- Remove the DC power from the DSE855 and remove the USB memory stick. Update is complete.

5.7.5 HOW TO FORMAT A USB FLASH MEMORY STICK TO FAT

- Insert memory stick into PC USB port.
- Browse to *Computer* in Windows Explorer.
- Identify the memory stick, *Right Click* the device and select *Format*.
- Select *FAT* and click *Start*.

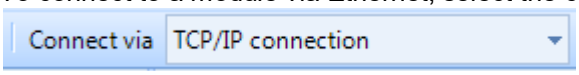




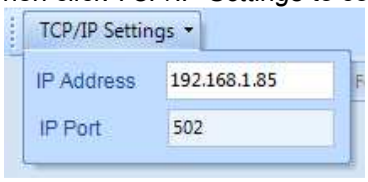
6 UTILISING THE DSE855

6.1.1 CONNECTING USING DSE CONFIGURATION SUITE PC SOFTWARE

To connect to a module via Ethernet, select the comport from the *Connect Via* list, for example:



Then click *TCP/IP Settings* to configure the Ethernet Port:



You must consult your network administrator for help in selecting these settings.
They must match the settings in the DSE855 *Lan* configuration page that you wish to communicate with.

Parameter	Description
IP Address	IP V4 address of the DSE855 you wish to communicate with.
IP Port	TCP Port number that the DSE855 is configured to use.

DSE Configuration Suite is now correctly configured to communicate with the DSE Controller connected to the DSE855 USB port.

For information in regards to setting up the DSE controller connected to the DSE855 USB port, refer to the relevant Configuration Suite PC Software Manual which can be found on our website: www.deepseaplc.com.

6.2 CONNECTING USING A THIRD PARTY MODBUS MASTER

The DSE855 Ethernet port is a Modbus TCP Slave. The Modbus Master must be configured to communicate with the DSE855 using the settings entered on the *Lan* configuration page.
Modbus queries from the master are received by this port, and relayed to the DSE controller connected to the USB port.
This controller replies to the query which is received by the DSE855's USB port, and returned back to the Modbus TCP master by the DSE855's Ethernet port.

The host DSE controller has addressable registers as defined in the DSEGencomm Document.
This and other DSEGencomm training documents are available from DSE Technical Support upon request from support@deepseaplc.com.

DSE Part Number	Document Name	Description
056-080	Modbus.pdf	Describes the different types of Modbus.
056-078	DSEGencomm.pptx	Training Presentation about Modbus on DSE products.
056-079	Gencomm Status.pptx	Training Presentation about alternative ways to read status information from the DSE controller.
056-051	Gencomm Control Keys	Training Document describing how to control the DSE module using Modbus.
056-076	Gencomm Alarms	Describes how to read alarm status information from the DSE controller.
N/A	Gencomm	Describes the DSE controller's modbus register mapping.

7 FAULT DIAGNOSIS

Nature of Problem	Suggestion
Factory settings	IP Address: 192.168.1.100 Web Management Pages Port: 80 Username: admin Password: Password1234 (case sensitive)
I've forgotton my password and/or IP address	Performing the firmware update with a USB memory stick reverts the DSE855 to the default settings. Check section entitled "Firmware Upgrade" elsewhere in this document.
Management pages cannot be accessed via remote connection	The factory set LAN IP address is 192.168.1.100. Management pages are accessible via web browser on port 80. Check router and firewall settings are configured correctly to match this information. Remember that accessing the DSE855 remotely from the WAN (Ethernet) will require you to enter the IP address of the broadband router into the PC browser. For easier trouble shooting, connect the DSE855 directly to a PC Ethernet port.
Management pages cannot be accessed via direct connection to PC	Check network connections. Check network settings. Ensure PC is on the same subnet as the DSE855. Default IP address of the Gateway is 192.168.1.100 – Set your PC to 192.168.1.99 then enter http://192.168.1.100 into your browser.

8 MAINTENANCE, SPARES, REPAIR AND SERVICING

The module 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).

If you require additional plugs from DSE, please contact our Sales department using the part numbers below.

Module Terminal Designation	Description	Part No.
1-5 	5 way 5.08mm	007-445

If you require ethernet or USB cables, please contact our Sales department using the part numbers below.

Connection	Description	Part No.
USB	USB A to USB B (DSE855 to host controller)	016-125
Ethernet	2 m (2 yd) Ethernet Cable	016-137

8.1 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).

8.2 DISPOSAL

8.2.1 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.

This page is intentionally blank

This page is intentionally blank