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DSE®

# DSEULTRA®

# DSE4400 Quick Start Guide

**Document Number 057-103**

IMT Manual # 99905333

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**DSE Model 4400 series Control and Instrumentation System Operators Manual**



**Amendments since last publication**

| Amd. No. | Comments |
|---|---|
| | |
| | |
| | |

***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. |

# 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 |
|---|---|
| 053-056 | 4410 installation instructions |
| 053-057 | 4420 installation instructions |
| 053-058 | 4430 installation instructions |
| 057-004 | Electronic Engines and DSE wiring manual |
| 057-093 | 4400 Series Configuration Suite manual |

# 2 INTRODUCTION

This document details the installation and operation requirements of the DSE4400 Series modules, part of the DSEUltra® 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.* 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

The **DSE 4400 series** module has been designed to allow the operator to start and stop the engine/generator, and if required, transfer the load.
The user also has the facility to view the system operating parameters via the LCD display.

The **DSE 4400** module monitors the engine, indicating the operational status and fault conditions, automatically shutting down the engine and giving a true first up fault condition of an engine failure. The LCD display indicates the fault.

The powerful microprocessor contained within the module allows for incorporation of a range of enhanced features:

- *Text based LCD display*
- ***True RMS** Voltage monitoring.*
- *Engine parameter monitoring.*
- *Fully configurable inputs for use as alarms or a range of different functions.*
- *Engine ECU interface to **electronic engines** (specify on ordering)*
- *Magnetic pickup interface for engine only applications (specify on ordering)*

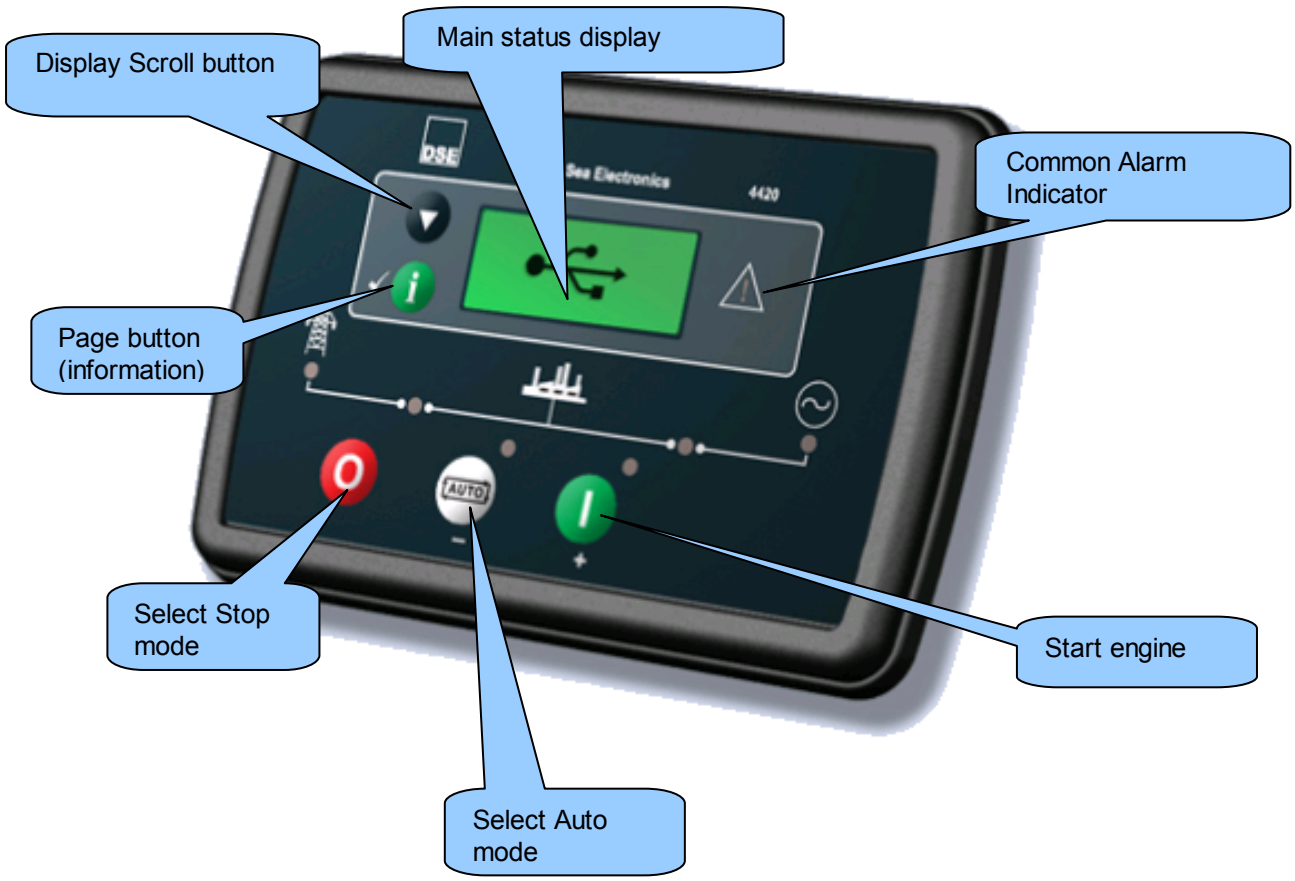
Using a PC and the 4400 series configuration software allows alteration of selected operational sequences, timers and alarm trips.

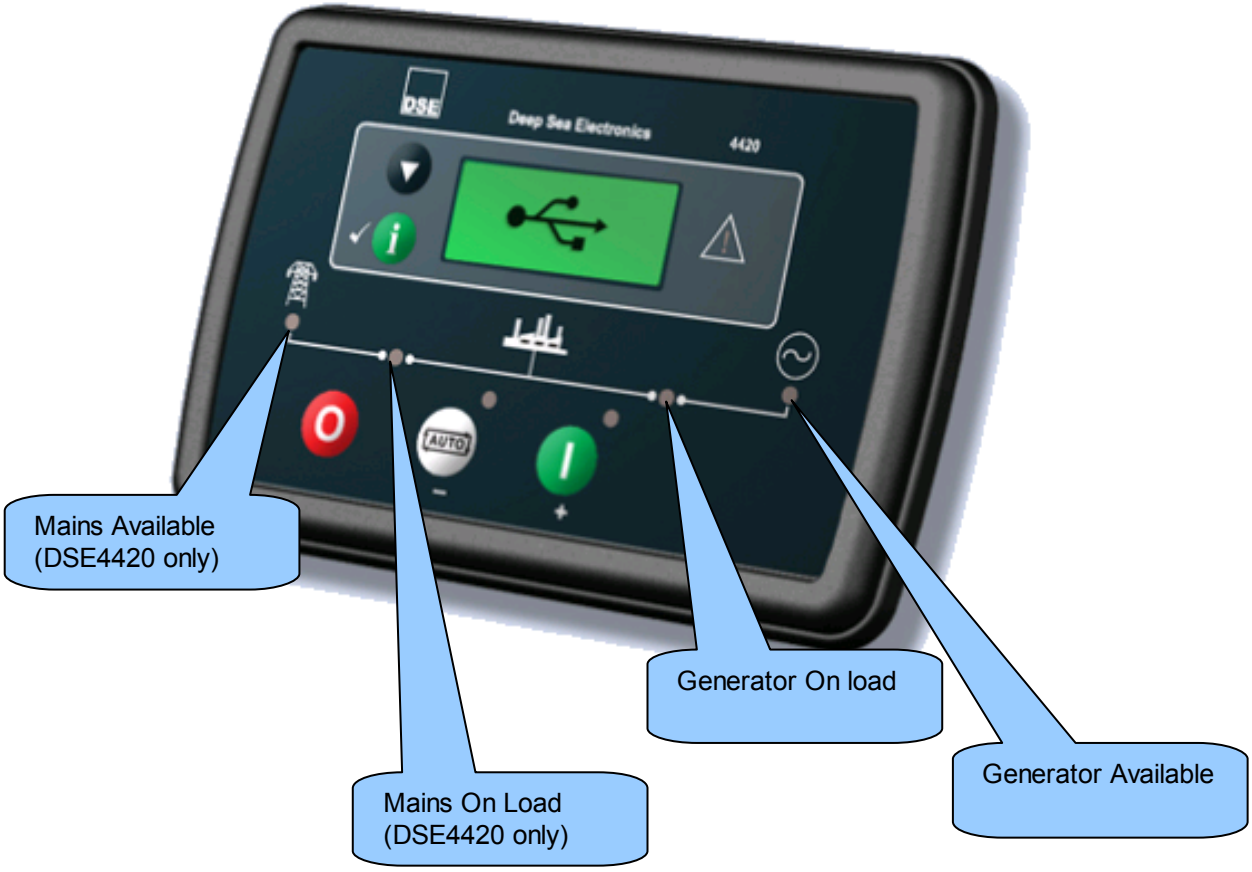
Additionally, the module's integral fascia configuration editor allows full adjustment of all this information.

A robust plastic case designed for front panel mounting houses the module. Connections are via locking plug and sockets.

# 3 DESCRIPTION OF CONTROLS

The following section details the function and meaning of the various controls on the module.




DSE
Deep Sea Electronics
4420
AUTO
Mains Available
(DSE4420 only)
Mains On Load
(DSE4420 only)
Generator On load
Generator Available

## 3.1 QUICKSTART GUIDE

This section provides a quick start guide to the module's operation.

### 3.1.1 STARTING THE ENGINE


**NOTE:- For further details, see the section entitled 'OPERATION' elsewhere in this manual.**

### 3.1.2 STOPPING THE ENGINE


**NOTE:- For further details, see the section entitled 'OPERATION' elsewhere in this manual.**

## 3.2 VIEWING THE INSTRUMENTS

It is possible to scroll to display the different pages of information by repeatedly operating the down button

Pressin the information button toggles between instrumenation and event log displays

Once selected the page will remain on the LCD display until the user selects a different page or after an extended period of inactivity, the module will revert to the status display.

When scrolling manually by pressing the button, the display will automatically return to the Status page if no buttons are pressed for the duration of the configurable *LCD Page Timer*.

If an alarm becomes active while viewing the status page, the display shows the Alarms page to draw the operator's attention to the alarm condition.

Metering:
- Generator Voltage, 3-phase, L-L and L-N
- Generator Amps L1, L2 and L3 (On/Off selectable in software)
- Generator Frequency
- Mains Voltage, 3-phase, L-L and L-N
- Battery Voltage
- Engine hours Run
- Oil Pressure Gauge
- Engine Temperature Gauge
- Fuel Level
- Fail to Start

Indicators:
- Fail to Stop
- Low Oil pressure
- High Engine Temperature
- Under/Over-speed
- Under/Over voltage – Warning, Shutdown or Electrical Trip
- Emergency Stop
- Failed to reach loading voltage
- Failed to reach loading frequency
- Charge Fail
- Over Current – Warning, Shutdown or Electrical Trip
- Low DC Voltage
- + AMF indications
- + CAN diagnostics

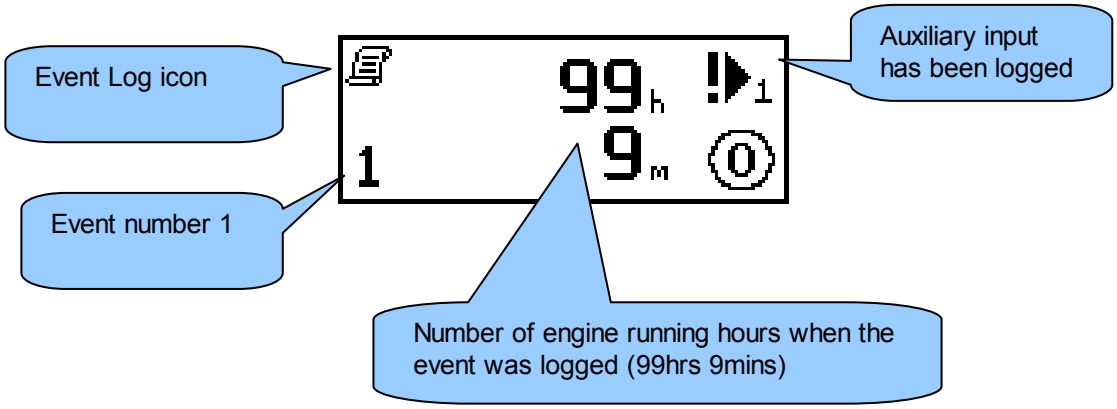
At power up, the display will display the software version and then display the default display screen, which will display Generator Frequency.

## 3.3 EVENT LOG

The info button toggles between the display of the instrumentation and the event log. Pressing the down button will move to the previous event, the event log entry at position 1 being the most recent. On moving from the instrumentation value to the event log the unit will display the most recent entry.

A number in the bottom left indicates the event log entry currently being displayed. There are five event log entries in the 44xx units. When the event log is being displayed the icon in the alarm icon area indicates the alarm type at that position of the event log. The hours run at the time of the alarm will be displayed in the instrumentation area. The bottom right icon indicates the current mode as normal.

Example of Auxiliary Input Shutdown Alarm.



# 4 OPERATION

## 4.1 AUTOMATIC MODE OF OPERATION

**NOTE:- If a digital input configured to *panel lock* is active, changing module modes will not be possible. Viewing the instruments and event logs is NOT affected by panel lock.**

Activate auto mode by pressing the AUTO pushbutton. The icon is displayed to indicate Auto Mode operation if no alarms are present.

Auto mode will allow the generator to operate fully automatically, starting and stopping as required with no user intervention.

### 4.1.1 WAITING IN AUTO MODE

If a starting request is made, the starting sequence will begin.
Starting requests can be from the following sources :

- Mains failure (DSE4420 only)
- Activation of an auxiliary input that has been configured to *remote start*
- Activation of the inbuilt exercise scheduler.

### 4.1.2 STARTING SEQUENCE

To allow for 'false' start requests, the *start delay* timer begins.

Should all start requests be removed during the *start delay* timer, the unit will return to a stand-by state.

If a start request is still present at the end of the *start delay* timer, the fuel relay is energised and the engine will be cranked.

**NOTE:- If the unit has been configured for CAN, compatible ECU's will receive the start command via CAN.**

If the engine fails to fire during this cranking attempt then the starter motor is disengaged for the *crank rest* duration after which the next start attempt is made. Should this sequence continue beyond the set number of attempts, the start sequence will be terminated and the display shows ***Fail to Start.***

When the engine fires, the starter motor is disengaged. Speed detection is factory configured to be derived from the main alternator output frequency but can additionally be measured from a Magnetic Pickup mounted on the flywheel (Selected by PC using the 3000 series configuration software).

Additionally, rising oil pressure can be used to disconnect the starter motor (but cannot detect underspeed or overspeed).

**NOTE:- If the unit has been configured for CAN, speed sensing is via CAN.**

After the starter motor has disengaged, the *Safety On* timer activates, allowing Oil Pressure, High Engine Temperature, Under-speed, Charge Fail and any delayed Auxiliary fault inputs to stabilise without triggering the fault.

### 4.1.3 ENGINE RUNNING

Once the engine is running and all starting timers have expired, the animated  icon is displayed.

DSE4410 - The generator will be placed on load if configured to do so.

**NOTE:-The load transfer signal remains inactive until the Oil Pressure has risen. This prevents excessive wear on the engine.**

If all start requests are removed, the *stopping sequence* will begin.

### 4.1.4 STOPPING SEQUENCE

The *return delay* timer operates to ensure that the starting request has been permanently removed and isn't just a short term removal. Should another start request be made during the cooling down period, the set will return on load.

If there are no starting requests at the end of the *return delay* timer, the load is removed from the generator to the mains supply and the *cooling* timer is initiated.

The *cooling* timer allows the set to run off load and cool sufficiently before being stopped. This is particularly important where turbo chargers are fitted to the engine.

After the *cooling* timer has expired, the set is stopped.

## 4.2 MANUAL OPERATION

Manual mode allows the operator to start and stop the set manually, and if required change the state of the load switching devices. Module mode is active when the button is pressed.

### 4.2.1 WAITING IN MANUAL MODE

To begin the starting sequence, press the button. If 'protected start' is disabled, the start sequence begins immediately.
If 'Protected Start' is enabled , the icon is displayed to indicate Manual mode and the manual LED flashes. The button must be pressed once more to begin the start sequence.

### 4.2.2 STARTING SEQUENCE

**NOTE:- There is no *start delay* in this mode of operation.**

The fuel relay is energised and the engine is cranked.

**NOTE:- If the unit has been configured for CAN, compatible ECU's will receive the start command via CAN.**

If the engine fails to fire during this cranking attempt then the starter motor is disengaged for the *crank rest* duration after which the next start attempt is made. Should this sequence continue beyond the set number of attempts, the start sequence will be terminated and the display shows ***Fail to Start.***

When the engine fires, the starter motor is disengaged. Speed detection is factory configured to be derived from the main alternator output frequency but can additionally be measured from a Magnetic Pickup mounted on the flywheel (Selected by PC using the 3000 series configuration software).

Additionally, rising oil pressure can be used disconnect the starter motor (but cannot detect underspeed or overspeed).

**NOTE:- If the unit has been configured for CAN, speed sensing is via CAN.**

After the starter motor has disengaged, the *Safety On* timer activates, allowing Oil Pressure, High Engine Temperature, Under-speed, Charge Fail and any delayed Auxiliary fault inputs to stabilise without triggering the fault.

### 4.2.3 ENGINE RUNNING

In manual mode, the load is not transferred to the generator unless a 'loading request' is made.
A loading request can come from a number of sources.

- Detection of mains failure (DSE4420 only)
- Activation of an auxiliary input that has been configured to *remote start on load*

**NOTE:-The load transfer signal remains inactive until the Oil Pressure has risen. This prevents excessive wear on the engine.**

Once the load has been transferred to the generator, it will not be automatically removed. To manually transfer the load back to the mains (DSE4420) or to remove the load from the generator (DSE4410) either:

- Press the *auto mode*  button to return to automatic mode. The set will observe all auto mode start requests and stopping timers before beginning the *Auto mode stopping sequence*.
- 
- Press the *stop button* 

### 4.2.4 STOPPING SEQUENCE

In manual mode the set will continue to run until either :

- The *stop button*  is pressed – The set will immediately stop
- The *auto button*  is pressed. The set will observe all auto mode start requests and stopping timers before beginning the *Auto mode stopping sequence*.

# 5 MODULE DISPLAY

## 5.1 BACKLIGHT

The backlight will be on if the unit has sufficient voltage on the power connection while the unit is turned on, unless the unit is cranking for which the backlight will be turned off.

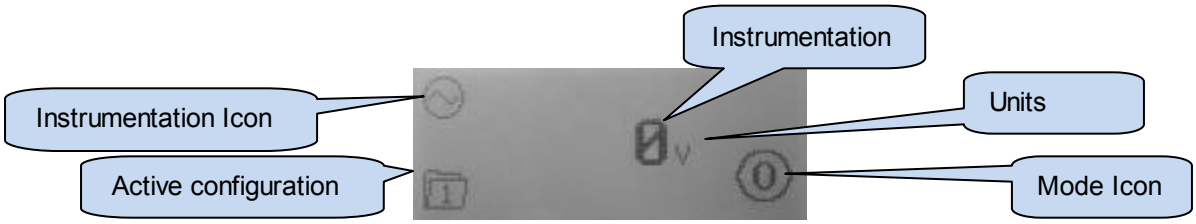
## 5.2 GRAPHICAL DISPLAY

A 48x132 pixel LCD is used for the display. The display is segmented into areas for instrumentation, units, alarm icons and various other icons.

<table>
<tr><td>Inst. Icon</td><td>Instrumentation</td><td>Units</td><td rowspan="2">Alarm Icon</td></tr>
<tr><td rowspan="3">Active config /FPE, event index</td><td>Instrumentation</td><td>Units</td></tr>
<tr><td>Instrumentation</td><td>Units</td><td rowspan="2">Mode Icon</td></tr>
</table>

### 5.2.1 DISPLAY EXAMPLE

This example shows Generator Volts as shown by the Generator symbol.




### 5.2.2 MODE ICON

An icon is displayed in the mode icon area of the display to indicate what mode the unit is currently in.

| Icon | Graphic | Details |
|---|---|---|
| Stopped | | Appears when the engine is at rest and the unit is in stop mode. |
| Auto | | Appears when the engine is at rest and the unit is in auto mode. |
| Manual | | Appears when the engine is at rest and the unit is in manual mode. |
| Timer animation | | Appears when a timer is active, for example cranking time, crank rest etc. |
| Running animation | | Appears when the engine is running, and all timers have expired, either on or off load. The animation will be rate is reduced when running in idle mode. |
| Front panel editor | | Appears when the unit is in the front panel editor |

### 5.2.3 INSTRUMENTATION ICONS

When displaying instrumentation a small icon is displayed in the instrumentation icon area to indicate what value is currently being displayed. This is necessary to distinguish between mains and generator voltages, icons for oil pressure and coolant temperature are added for consistency.

| Icon | Graphic | Details |
|---|---|---|
| Generator | | Used for generator voltage and generator frequency |
| Mains | | Used for mains voltages and mains frequency |
| Engine speed | | Engine speed instrumentation screen |
| Hours Run | | Hours run instrumentation screen |
| Battery voltage | | Battery voltage instrumentation screen |
| Engine temperature | | Coolant temperature instrumentation screen |
| Oil pressure | | Oil pressure instrumentation screen |
| Flexible sensor | | Flexible sensor instrumentation screen |
| Event log | | Appears when the event log is being displayed |

### 5.2.4 ALARM ICONS

When current instrumentation is being displayed the icons area will be used to display currently active conditions. In instances where more than one alarm is present the icon area will transition between icons to display all active alarm conditions. For information alarm conditions see section **Error! Reference source not found.**.

When the event log is being displayed the alarm icon area will be used to indicate which alarm was logged.

| Alarm | Icon |
|---|---|
| External input alarm | |
| Failed to start | |
| Failed to stop | |
| Low oil pressure | |
| Water temperature | |
| Under speed | |
| Over speed | |
| Charge alternator | |
| Low fuel | |
| Plant battery volts (under/over) | |
| Under voltage | |
| Over frequency | |

| | |
|---|---|
| CAN data fail<br>44x0-xxx-02 CAN module only | |
| ECU warning/fail<br>44x0-xxx-02 CAN module only | |
| Emergency stop | |
| Loss of MPU<br>44x0-xxx-01 MPU module only | |
| Flexible sender alarms | |
| MPU Open circuit<br>44x0-xxx-01 MPU module only | |
| Generator contactor alarm | |
| Mains Failure<br>DSE4420 only | |
| Mains Return<br>DSE4420 only | |
| Over voltage | |
| Under frequency | |

| CONFIGURATION PARAMETERS – MODULE (PAGE 1) | | | | | | |
|---|---|---|---|---|---|---|
| 101 | Contrast | 000 (%) | 106 | Protected start enable | On (1), off (0) | |
| 102 | Fast loading enabled | On (1), off (0) | 107 | RESERVED | | |
| 103 | RESERVED | | 108 | Event log display format | On (1), off (0) | |
| 104 | Lamp test at startup | On (1), off (0) | 109 | Start in auto | On (1), off (0) | |
| 105 | Power save mode enable | On (1), off (0) | 110 | Diagnostic Trouble Code string (english only) enable | On (1), off (0) | CAN |

| CONFIGURATION PARAMETERS – APPLICATION (PAGE 2) (CAN VERSION MODULE ONLY) | | | | | |
|---|---|---|---|---|---|
| 201 | Alternate engine speed | On (1), off (0) | 203 | Can ECU data fail action | 0 (action) |
| 202 | Can ECU data fail enable | On (1), off (0) | 204 | Can ECU data fail delay | 0:00 |

| CONFIGURATION PARAMETERS – INPUTS (PAGE 3) | | | |
|---|---|---|---|
| 301 | Low oil pressure enable | On (1), off (0) | |
| 302 | Low oil pressure trip | 0.00 bar | |
| 303 | High engine temperature trip | 00 deg c | |
| 304 | Digital input A source | 0 (input source) | |
| 305 | Digital input A polarity | 0 (polarity) | |
| 306 | Digital input A action (if source = user config) | 0 (action) | |
| 307 | Digital input A arming (if source = user config) | 0 (arming) | |
| 308 | Digital input A activation delay (if source = user config) | 0:00 | |
| 309 | Digital input B source | 0 (input source) | |
| 310 | Digital input B polarity | 0 (polarity) | |
| 311 | Digital input B action (if source = user config) | 0 (action) | |
| 312 | Digital input B arming (if source = user config) | 0 (arming) | |
| 313 | Digital input B activation delay (if source = user config) | 0:00 | |
| 314 | Digital input C source | 0 (input source) | |
| 315 | Digital input C polarity | 0 (polarity) | |
| 316 | Digital input C action (if source = user config) | 0 (action) | |
| 317 | Digital input C arming (if source = user config) | 0 (arming) | |
| 318 | Digital input C activation delay (if source = user config) | 0:00 | |
| 319 | Digital input D source | 0 (input source) | |
| 320 | Digital input D polarity | 0 (polarity) | |
| 321 | Digital input D action (if source = user config) | 0 (action) | |
| 322 | Digital input D arming (if source = user config) | 0 (arming) | |
| 323 | Digital input D activation delay (if source = user config) | 0:00 | |
| 324 | Analogue input A sensor type | 0 (sensor type) | |
| 325 | Analogue input A sensor selection (pressure senor list) | 0 (pressure sensor) | |
| 326 | Analogue input A (set as digtal) source (oil pressure sender) | 0 (input source) | |
| 327 | Analogue input A (set as digital) polarity | 0 (polarity) | |
| 328 | Analogue input A (set as digital) action (if source = user config) | 0 (action) | |
| 329 | Analogue input A (set as digital) arming (if source = user config) | 0 (arming) | |
| 330 | Analogue input A (set as digital) activation delay (if source = user config) | 0:00 | |
| 331 | Analogue input B sensor type | 0 (sensor type) | |
| 332 | Analogue input B sensor selection (temperature senor list) | 0 (temp sensor) | |
| 333 | Analogue input B (set as digital) source (temperature sender) | 0 (input source) | |
| 334 | Analogue input B polarity (set as digital) | 0 (polarity) | |
| 335 | Analogue input B (set as digital) action (if source = user config) | 0 (action) | |
| 336 | Analogue input B (set as digital) arming (if source = user config) | 0 (arming) | |
| 337 | Analogue input B (set as digital) activation delay (if source = user config) | 0:00 | |
| 338 | Analogue input C sensor type | 0 (sensor type) | |
| 339 | Analogue input C sensor selection (pressure / temp / percentage) | 0 (sensor) | |
| 340 | Analogue input C (set as digital) source (flexible sender) | 0 (input source) | |
| 341 | Analogue input C (set as digital) polarity | 0 (polarity) | |
| 342 | Analogue input C (set as digital) action (if source = user config) | 0 (action) | |
| 343 | Analogue input C (set as digital) arming (if source = user config) | 0 (arming) | |
| 344 | Analogue input C (set as digital) activation delay (if source = user config) | 0:00 | |
| 345 | Oil pressure sender open circuit alarm | On (1), off (0) | |
| 346 | Temperature sender open circuit alarm | On (1), off (0) | |

| CONFIGURATION PARAMETERS – OUTPUTS (PAGE 4) | | | |
|---|---|---|---|
| 401 | Digital output A source | 0 (output source) | CAN |
| 402 | Digital output A polarity | 0 (output source polarity) | CAN |
| 403 | Digital output B source | 0 (output source) | CAN |
| 404 | Digital output B polarity | 0 (output source polarity) | CAN |
| 405 | Digital output C source | 0 (output source) | |
| 406 | Digital output C polarity | 0 (output source polarity) | |
| 407 | Digital output D source | 0 (output source) | |
| 408 | Digital output D polarity | 0 (output source polarity) | |
| 409 | Digital output E source | 0 (output source) | |
| 410 | Digital output E polarity | 0 (output source polarity) | |
| 411 | Digital output F source | 0 (output source) | |
| 412 | Digital output F polarity | 0 (output source polarity) | |

| CONFIGURATION PARAMETERS – TIMERS (PAGE 5) | | | | | |
|---|---|---|---|---|---|
| 501 | RESERVED | 507 | Smoke limiting off | 513 | Failed to stop delay |
| 502 | Start delay | 508 | Safety on delay | 514 | Generator transient delay |
| 503 | Preheat timer | 509 | Warm up time | 515 | Power save mode delay |
| 504 | Crank time | 510 | Return delay | 516 | Transfer time |
| 505 | Crank rest time | 511 | Cooling time | 517 | Breaker trip pulse |
| 506 | Smoke limiting | 512 | Ets solenoid hold | 518 | Breaker close pulse |

| CONFIGURATION PARAMETERS – GENERATOR (PAGE 6) | | | | | |
|---|---|---|---|---|---|
| 601 | Alternator fitted | On (1), off (0) | 609 | Under frequency enable | On (1), off (0) |
| 602 | Alternator poles | 0 | 610 | Under frequnecy level | 0.0 Hz |
| 603 | Reserved | | 611 | Loading frequency | 0.0 Hz |
| 604 | Reserved | | 612 | Nominal frequency | 0.0 Hz |
| 605 | Under voltage enabled | On (1), off (0) | 613 | Over frequency enable | On (1), off (0) |
| 606 | Under voltage level | 0 V | 614 | Over frequency trip | 0.0 Hz |
| 607 | Loading voltage | 0 V | 615 | AC system | AC system (see table below) |
| 608 | Over voltage level | 0 V | | | |

**MAINS (PAGE 7) is not available on DSE4410 controllers.**

| CONFIGURATION PARAMETERS – ENGINE (Page 8) | | | | | | |
|---|---|---|---|---|---|---|
| 801 | Magnetic pickup fitted | On (1), off (0) | ~ | 818 | Low battery volts trip | 00.0 V |
| 802 | Flywheel teeth | 000 | ~ | 819 | Low battery volts return | 00.0 V |
| 803 | Start Attempts | 0 | | 820 | Low battery volts delay | 0:00:00 |
| 804 | RESERVED | | | 821 | High battery volts enable | On (1), off (0) |
| 805 | RESERVED | | | 822 | High battery volts return | 00.0 V |
| 806 | Gas choke timer (Gas engine only) | 0:00 | ~ | 823 | High battery volts warning | 00.0 V |
| 807 | Gas on delay (Gas engine only) | 0:00 | ~ | 824 | High battery volts warning delay | 00.0 V |
| 808 | Gas ignition off delay (Gas engine only) | 0:00 | ~ | 825 | Charge alt shutdown enable | On (1), off (0) |
| 809 | Crank disconnect on Oil pressure enable | On (1), off (0) | | 826 | Charge alt shutdown trip | 00.0 V |
| 810 | Check oil pressure prior to starting | On (1), off (0) | | 827 | Charge alt shutdown trip delay | 0:00:00 |
| 811 | Crank disconnect on Oil threshold | 0.00 Bar | | 828 | Charge alt warning trip enable | On (1), off (0) |
| 812 | Crank disconnect on frequency | 0.0Hz | | 829 | Charge alt warning trip | 00.0 V |
| 813 | Crank disconnect on Engine Speed | 000 rpm | | 830 | Charge alt warning trip delay | 0:00:00 |
| 814 | Under speed enable | On (1), off (0) | | 831 | Low battery start Arming | On (1), off (0) |
| 815 | Under speed trip | 0000 rpm | | 832 | Low battery start Threshold | 00.0 V |
| 816 | Over speed trip | 0000 rpm | | 833 | Low battery start Delay | 0:00:00 |
| 817 | Low battery volts enable | On (1), off (0) | | 834 | Low battery start Run time | 0:00:00 |

| CONFIGURATION PARAMETERS – ALTERNATIVE CONFIGURATION (Page 9) | | |
|---|---|---|
| 901 | Alt config – Default configuration | Main (0), Alternative (1) |
| 902 | Alt config – Enable configuration | On (1), Off (0) |
| 903 | Alt config - Alternative Engine Speed | On (1), Off (0) |
| 904 | Alt config - Under Voltage Shutdown Enable | On (1), Off (0) |
| 905 | Alt config - Under Voltage trip level | 0 V |
| 906 | Alt config - Loading Voltage | 0 V |
| 907 | Alt config - Over Voltage trip level | 0 V |
| 908 | Alt config - Under frequency enabled | On (1), Off (0) |
| 909 | Alt config - Under frequency trip level | 0.0 Hz |
| 910 | Alt config - Loading Frequency | 0.0 Hz |
| 911 | Alt config - Nominal Frequency | 0.0 Hz |
| 912 | Alt config - Over Frequency enabled | On (1), Off (0) |
| 913 | Alt config - Over Frequency trip level | 0.0 Hz |
| 914 | Alt config - AC System | AC system (see table) |
| 915-928 | RESERVED | |
| 929 | Alt config – Alternative under speed shutdown enable | On (1), Off (0) |
| 930 | Alt config – Alternative under speed shutdown trip | 0000 rpm |
| 931 | Alt config – Alternative over speed shutdown trip | 0000 rpm |

CAN = 44xx – 02 (CAN) option only ~ = 44xx –01 (Magnetic pickup) option only

Output source list overleaf...

| CONFIGURATION PARAMETERS – FLEXIBLE SENSOR (PAGE 10) | | |
|---|---|---|
| 1001 | Flexible sensor alarm arming | 0 (Arming) |
| 1002 | Flexible sensor - Low alarm enable | 0 (Action) |
| 1003 | Flexible sensor - Low alarm trip (units depend upon sensor type) | 0 % / 0.00 bar / 0 ℃ |
| 1004 | Flexible sensor - High alarm enable | 0 (Action) |
| 1005 | Flexible sensor - High alarm trip (units depend upon sensor type) | 0 % / 0.00 bar / 0 ℃ |
| 1006 | Flexible sensor - Low warning enable | On (1), Off (0) |
| 1007 | Flexible sensor - Low warning trip (units depend upon sensor type) | 0 % / 0.00 bar / 0 ℃ |
| 1008 | Flexible sensor – High warning enable | On (1), Off (0) |
| 1009 | Flexible sensor – High warning trip (units depend upon sensor type) | 0 % / 0.00 bar / 0 ℃ |

| CONFIGURATION PARAMETERS – SCHEDULER (Page 11) | | | | | |
|---|---|---|---|---|---|
| 1101 | Enable scheduler | On (1), off (0) | 1104 | Day | 0 (Day, 1=Monday) |
| 1102 | On or off load | On (1), off (0) | 1105 | Duration | 0:00:00 |
| 1103 | Start time | 0:00:00 | | | |

| CONFIGURATION PARAMETERS – TIME AND DAY (Page 12) | | | | | |
|---|---|---|---|---|---|
| 1201 | Time of day | 0:00 | 1202 | Day of week | 0 (Day, 1=Monday) |

**Parameters with multiple choices use the following identification tables for the parameter values :**

| INPUT SOURCE LIST | | | | | |
|---|---|---|---|---|---|
| 0 | User Configured | 8 | Emergency Stop | 16 | Oil Pressure Switch |
| 1 | Alarm Mute | 9 | External Panel Lock | 17 | Remote Start Off Load |
| 2 | Alarm Reset | 10 | RESERVED | 18 | Remote Start On Load |
| 3 | Alternative Configuration | 11 | Generator load inhibit | 19 | RESERVED |
| 4 | RESERVED | 12 | Lamp Test | 20 | Smoke Limiting |
| 5 | Auto start inhibit | 13 | Low Fuel Level Switch | 21 | Close Generator |
| 6 | RESERVED | 14 | RESERVED | 22 | Open Generator |
| 7 | Coolant Temperature Switch | 15 | RESERVED | | |

| INPUT ACTION LIST | |
|---|---|
| **Index** | **Action** |
| 0 | Electrical Trip |
| 1 | Shutdown |
| 2 | Warning |

| INPUT ARMING LIST | |
|---|---|
| **Index** | **Arming** |
| 0 | Always |
| 1 | From Safety On |
| 2 | From Starting |
| 3 | Never |

| INPUT POLARITY LIST | |
|---|---|
| **Index** | **Action** |
| 0 | Close to Activate |
| 1 | Open to Activate |

| OUTPUT POLARITY LIST | |
|---|---|
| **Index** | **Arming** |
| 0 | Energise |
| 1 | De-energise |

| CAN DATA FAIL ACTION | |
|---|---|
| **Index** | **Action** |
| 0 | None |
| 1 | Shutdown |
| 2 | Warning always latched |

| CAN DATA FAIL ARMING | |
|---|---|
| **Index** | **Arming** |
| 0 | From Safety On |
| 1 | From Starting |

| FLEXIBLE SENSOR ALARM ACTION LIST | |
|---|---|
| **Index** | **Action** |
| 0 | None |
| 1 | Shutdown |
| 2 | Electrical Trip |

| AC SYSTEM | |
|---|---|
| **Index** | **Type** |
| 0 | 2 phase 3 wire (L1-L2) |
| 1 | 2 phase 3 wire (L1-L3) |
| 2 | 3 phase 3 wire |
| 3 | 3 phase 4 wire |
| 4 | 3 phase 4 wire (Delta) |
| 5 | Single phase 2 wire |

| FLEXIBLE SENSOR TYPE | |
|---|---|
| **Index** | **Type** |
| 0 | None |
| 1 | Digital Input |
| 2 | Percentage sensor |
| 3 | Pressure sensor |
| 4 | Temperature sensor |

| SENSOR SELECTIONS FOR PERCENTAGE | |
|---|---|
| 0 | Not used |
| 1 | Dig closed for alarm |
| 2 | Dig open for alarm |
| 3 | VDO ohm (10-180) |
| 4 | VDO tube (90-0) |
| 5 | Us ohm (240-33) |
| 6 | GM ohm (0-90) |
| 7 | GM ohm (0-30) |
| 8 | Ford (73-10) |
| 9 | User defined |

Dig = Digital Switch

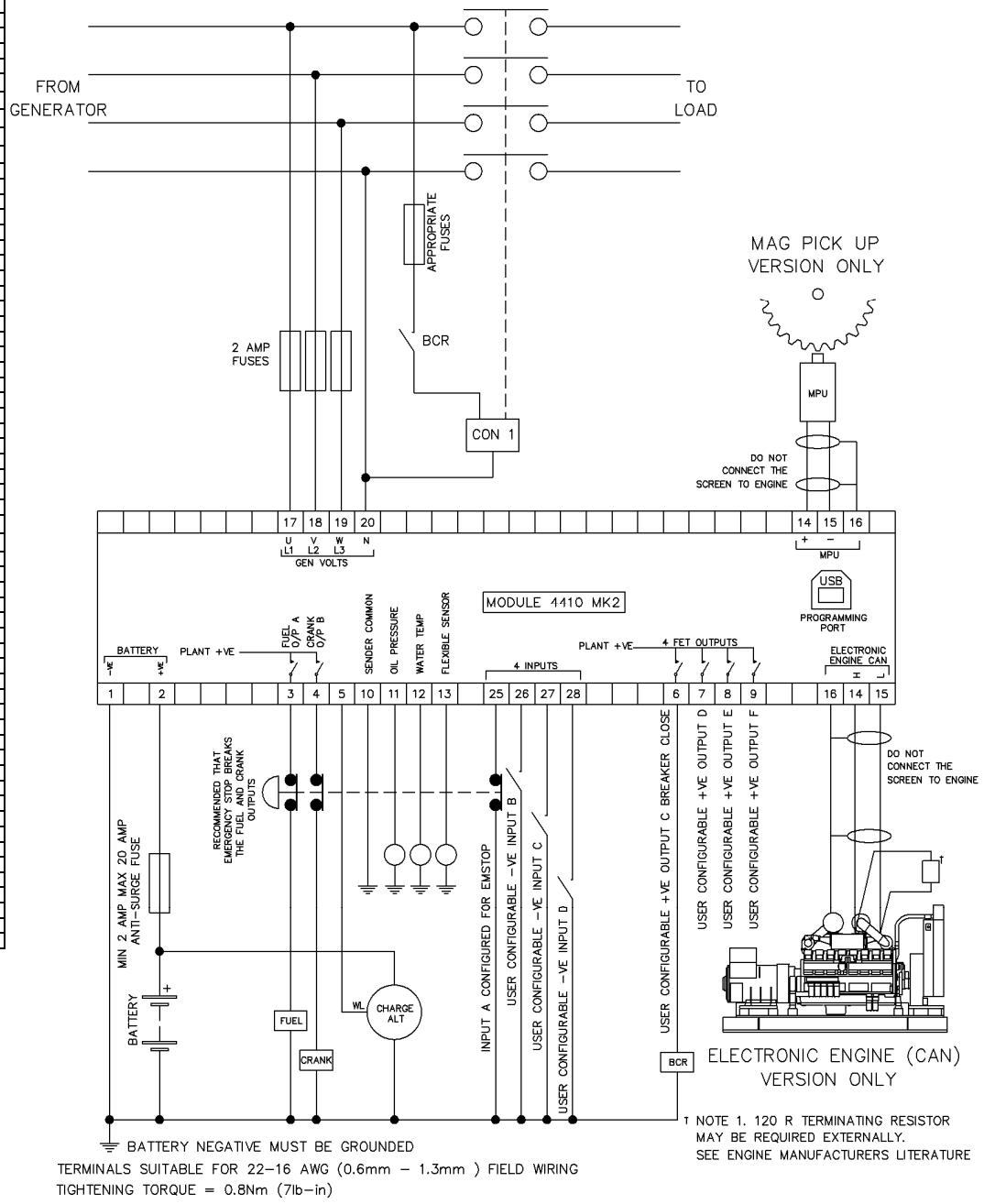
| SENSOR SELECTIONS FOR OIL PRESSURE | |
|---|---|
| 0 | Not used |
| 1 | Dig closed for alarm |
| 2 | Dig open for alarm |
| 3 | VDO 5 bar |
| 4 | VDO 10 bar |
| 5 | Datacon 5 bar |
| 6 | Datacon 10 bar |
| 7 | Datacon 7 bar |
| 8 | Murphy 7 bar |
| 9 | CMB812 |
| 10 | Veglia |
| 11 | User defined |

| SENSOR SELECTIONS FOR COOLANT TEMPERATURE | |
|---|---|
| 0 | Not used |
| 1 | Dig closed for alarm |
| 2 | Dig open for alarm |
| 3 | VDO 120 ℃ |
| 4 | Datacon high |
| 5 | Datacon low |
| 6 | Murphy |
| 7 | Cummins |
| 8 | PT100 |
| 9 | Veglia |
| 10 | Beru |
| 11 | User defined |

| OUTPUT SOURCE LIST | | |
|---|---|---|
| 0 | Not used | |
| 1 | RESERVED | |
| 2 | RESERVED | |
| 3 | Audible Alarm | |
| 4 | Battery over volts warning | |
| 5 | Battery under volts warning | |
| 6 | CAN ECU data fail | CAN |
| 7 | CAN ECU error | CAN |
| 8 | CAN ECU fail | CAN |
| 9 | CAN ECU power | CAN |
| 10 | CAN ECU stop | CAN |
| 11 | Charge alternator shutdown | |
| 12 | Charge alternator warning | |
| 13 | Close Gen output | |
| 14 | Close Gen output pulse | |
| 15 | Close Mains output | |
| 16 | Close Mains output pulse | |
| 17 | Combined mains failure | |
| 18 | Common Alarm | |
| 19 | RESERVED | |
| 20 | Common Shutdown | |
| 21 | Common Warning | |
| 22 | RESERVED | |
| 23 | RESERVED | |
| 24 | RESERVED | |
| 25 | RESERVED | |
| 26 | RESERVED | |
| 27 | RESERVED | |
| 28 | RESERVED | |
| 29 | Emergency stop | |
| 30 | Energise to stop | |
| 31 | RESERVED | |
| 32 | RESERVED | |
| 33 | Fuel relay | |
| 34 | Gas choke on | |
| 35 | Gas ignition | |
| 36 | Generator Available | |
| 37 | RESERVED | |
| 38 | RESERVED | |
| 39 | RESERVED | |
| 40 | RESERVED | |
| 41 | Low fuel level | |
| 42 | RESERVED | |
| 43 | RESERVED | |
| 44 | RESERVED | |
| 45 | RESERVED | |
| 46 | RESERVED | |
| 47 | Open Gen Output | |
| 48 | Open Gen Output pulse | |
| 49 | RESERVED | |
| 50 | RESERVED | |
| 51 | RESERVED | |
| 52 | RESERVED | |
| 53 | Preheat During Preheat Timer | |
| 54 | Preheat Until End of Crank | |
| 55 | Preheat Until End of Safety Timer | |
| 56 | Preheat Until End of Warming Timer | |
| 57 | Smoke limiting | |
| 58 | Start relay | |
| 59 | RESERVED | |
| 60 | RESERVED | |
| 61 | RESERVED | |

44xx – 02 (CAN option) only
44xx – 01 (Magnetic pickup option) only

## TYPICAL WIRING DIAGRAM




BATTERY NEGATIVE MUST BE GROUNDED

TERMINALS SUITABLE FOR 22–16 AWG (0.6mm – 1.3mm ) FIELD WIRING

TIGHTENING TORQUE = 0.8Nm (7lb–in)



DEEP SEA ELECTRONICS

# DSE4410Mk2 INSTALLATION INSTRUCTIONS

**This instruction sheet is for DSE4410Mk2 controllers only. For DSE4410 Mk1 controllers use DSE publication 053-056**

## ACCESSING THE FRONT PANEL CONFIGURATION EDITOR

Ensure the engine is at rest and the module is in STOP mode by pressing the Stop/Reset button.

Press the Stop/Reset and Down buttons simultaneously.

The configuration icon is displayed, along with the first configurable parameter.

## EDITING A PARAMETER

Press to select the required 'page' as detailed in the configuration tables.

Press (+) to select the next parameter or (-) to select the previous parameter within the current page.

When viewing the parameter to be changed, press the button. The value begins to flash.

Press (+) or (-) to adjust the value to the required setting.

Press the save the current value, the value ceases flashing.

Press and hold the button to exit the editor, the configuration icon will be removed from the display.

**NOTE**: - Pressing and holding the + / - buttons will give auto-repeat functionality. Large values can be changed quicker by holding the buttons for a prolonged period. For instance large timers increment in 1 second steps to 1 minute, then in 30 second steps to 1 hour, then in 30 minute steps.

## DIMENSIONS

180mm x 116mm x 42mm (7.1" x 4.6" x 1.7")

## PANEL CUTOUT

154mm x 98mm (6" x 3.9")

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