**COMPLEX SOLUTIONS
MADE SIMPLE**

DSE®

DEEP SEA ELECTRONICS

DSE3000 Series PC configuration suite

057-087

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DSE®

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DSE3000 Series configuration suite

Amendments

Issue	Comments
1	Initial release
1.1	Added "Power up in AUTO mode" item
2	Added phase to phase voltage display, oil pressure as PSI and AC systems. Module version V1.3

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
057-004	Electronic Engines and DSE wiring
057-086	DSE3000 Series operator manual

The following third party documents are also referred to :

ISBN	DESCRIPTION
1-55937-879-4	IEEE Std C37.2-1996 IEEE Standard Electrical Power System Device Function Numbers and Contact Designations. Published by Institute of Electrical and Electronics Engineers Inc

2   DESCRIPTION

The **Configuration Suite** allows supported DSE modules (such as the DSE3000 series) to be connected to a PC via USB A – USB B cable. Once connected the various operating parameters within the module can be viewed or edited as required by the engineer. This software allows easy controlled access to these values and also has diagnostic monitoring facilities.

The configuration suite should only be used by competent, qualified personnel, as changes to the operation of the module may have safety implications on the panel / generating set to which it is fitted. Access to critical operational sequences and settings for use by qualified engineers, may be barred by a security code set by the generator provider.
The information contained in this manual should be read in conjunction with the information contained in the appropriate module documentation. This manual only details which settings are available and how they may be used.
A separate manual deals with the operation of the individual module (See section entitled *Bibliography* elsewhere in this document).

2.1   SOFTWARE INSTALLATION INSTRUCTIONS
Minimum system requirements

Operating System   *Windows Vista, Windows XP or Windows 2000 with Microsoft™ .Net® 2.0 framework*
Monitor   *17 inch recommended (1024 x 768 resolution)*
Communications   *USB required to configure the module.*

⚠**NOTE: - As the Configuration Suite software for Windows™ is a 32-Bit application requiring Microsoft .net 2 framework, it will not operate on Windows 2.0, 3.0, 3.1,3.11, 95, 98 or Me.**

⚠**NOTE: - Exit all other programs before installing the software. It is recommended that any earlier releases of the software be uninstalled prior to installing this version.**

⚠**NOTE: - Please register online at** www.deepseaplc.com **– Once registered you will be able to download updates to the software to ensure that you always have access to the latest features.**
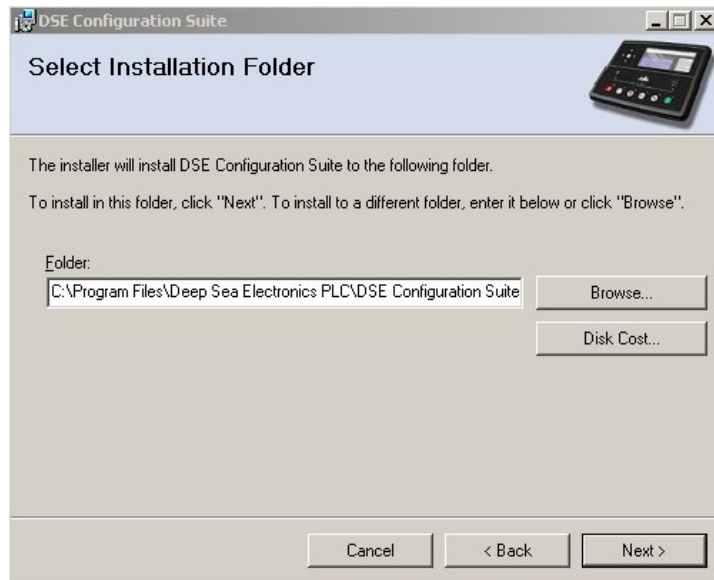

Insert the Software CD into the CD-ROM drive on the PC. The CD will then Auto-run if this feature is enabled on your PC.
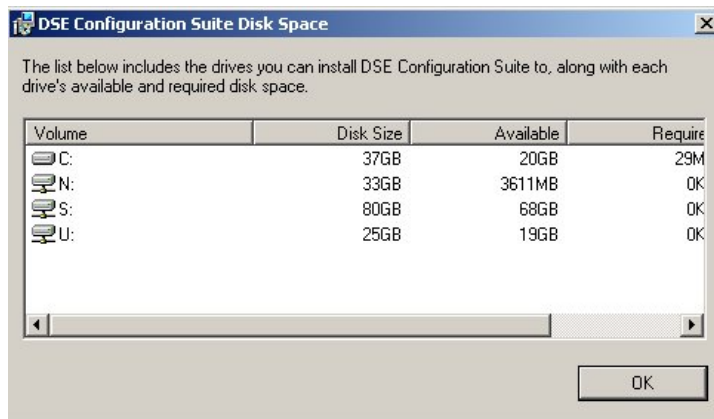
Alternatively:

- Double click on **Computer**

- Double click on **CD-ROM Drive**
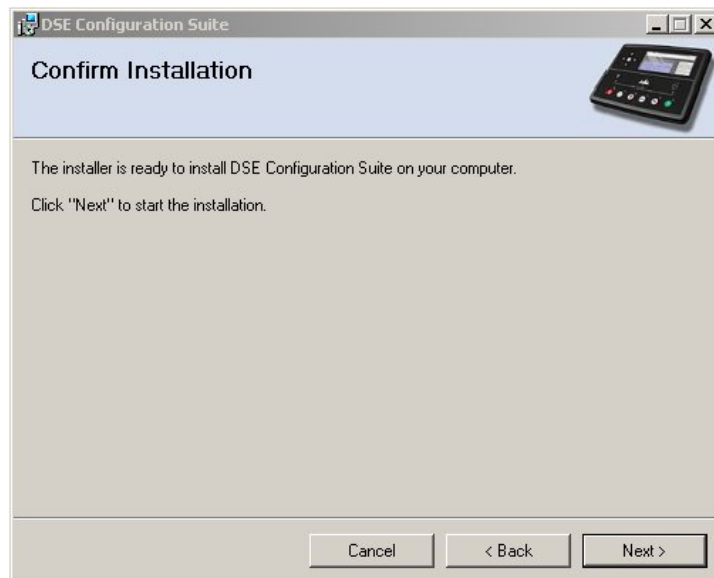
- Double click CDSetup
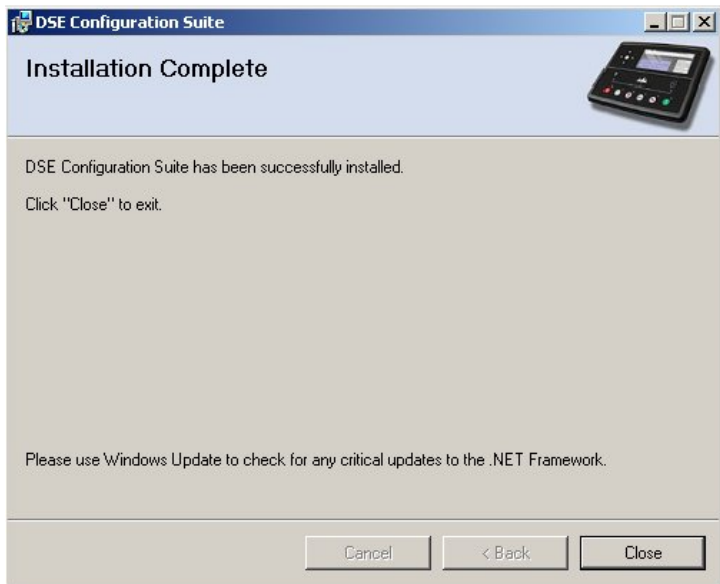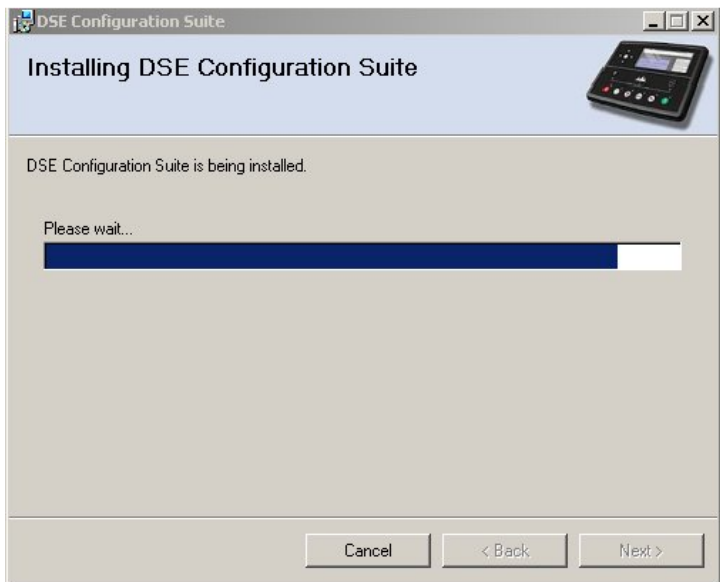
Click **Next** to continue

Select *Disk Cost* to view remaining disk space, Click **Next** to continue.

Example showing the *Disk Cost* window.

3 HARDWARE INSTALLATION

Ensure the Configuration Suite Software is installed on the PC as described above.
The installation of the PC software also installs the DSE Controller USB Driver automatically.
Connect the USB cable to the module and to the PCC using a Type A to Type B USB Cable.

Windows detects the module when power is applied to it.

You are now ready to configure or monitor the module using the Configuration Suite Software.

3.1 TROUBLESHOOTING INSTALLATION

Occasionally USB devices are disabled by the Windows operating system, the following procedure will re-enable the device in these instances.

- Disconnect the *Deep Sea Electronics Controller* from the USB port. Wait a moment, then reconnect and try again. If you still encounter problems then :
- Try another USB cable. If you don't have one, it's the same type of cable as usually used between a PC and a USB printer. If you still encounter problems then :
- Disconnect the *Deep Sea Electronics Controller*. Shutdown, then restart the PC. Reconnect the interface, then try again. If you continue to experience problems then :
- check the USB port with another device (for instance a mouse, printer or digital camera).
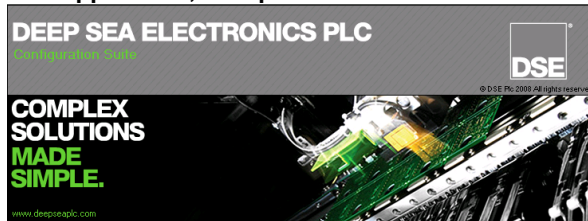
4   USING THE CONFIGURATION SUITE

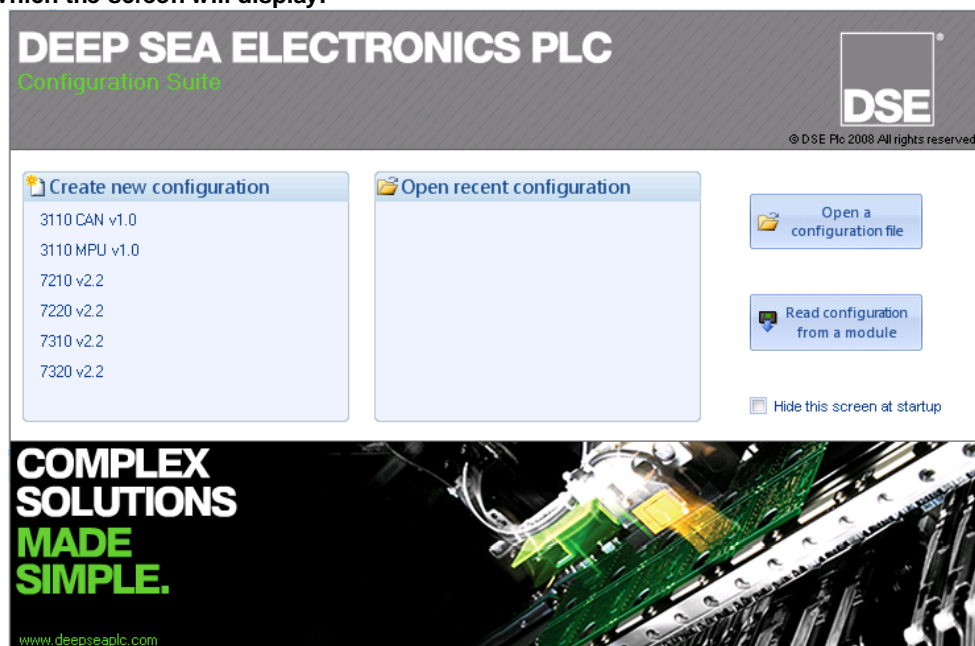To run the Configuration Suite Software for Windows program click the Windows start button

 or depending upon your version of Windows.

Then select 'All Programs' - 'Deep Sea Electronics PLC' – "DSE Configuration Suite" – "DSE Configuration Suite"

After a short delay to load the application, the splash screen is shown...

...after which the screen will display:-

This is the initial start-up screen and can be disabled by checking the box *Hide this screen at start-up.* The screen prompts the user to select between the three main uses for the software:

- Creating a new configuration. Select the module type under *Create new configuration.* This allows you to create a configuration for the 'latest' module version. Use *File | Convert to...* to convert the configuration to suit an earlier module version or use *Tools | Update firmware* to update an 'earlier' module to the latest firmware version.
- Editing a configuration previously saved to disk or flash memory device. Select the configuration file either from the *Open recent configuration* area or by clicking *Open a configuration file* and browsing to the file.
- Reading and changing the configuration of a connected module. Click *Read configuration from a module.* The file is read from a currently connected DSE controller and is available for editing in the Configuration Suite.

Alternatively you can ignore this screen and continue to use the program in the background. Once you make a connection or load/create a configuration, the start-up screen will disappear.

5 MENUS AND TOOLBAR

The menu and toolbar are located at the top of the screen:

File Tools Help

Connect via USB

5.1 FILE MENU

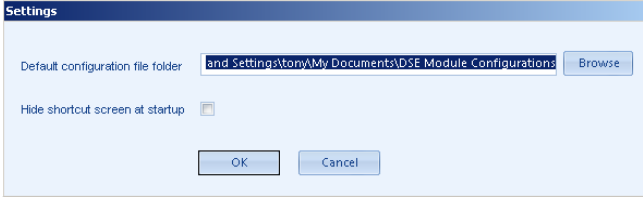|	
New	Create a new configuration file. You are prompted to select what kind of module you want to create the configuration for. The settings of the new configuration file match the factory settings for the chosen module type. You can only select to create a configuration file for the 'latest' version of controller. If you want to create a configuration for an earlier version of controller, you can use *Convert to...* to make your configuration suitable for the earlier controller or use *Tools	Update firmware* to update the earlier module to the latest version.
Open	Open an existing file from disk or flash memory device.
Close	Close the currently open file.
Save	Save the currently open file to the location it was loaded from previously. If this is a new file, you are prompted to enter a filename.
Save As..	Save the currently open file, under a new name. You will be prompted to enter a filename.
Write to module	Send the currently open configuration settings to the controller.
Read from module	Read the settings out of the connected controller for viewing / editing.
Import from module	Read the settings from the connected DSE controller and convert to the currently selected configuration type.
Import from file	Read the settings from a DSE configuration file on disk or flash memory device and convert to the currently selected configuration type.
Convert to... ▶	Convert the currently loaded configuration file to suit another module type or another module version.
Print	Print the currently open configuration file.
Print Preview	Preview what the configuration file will look like on the page after printing.
Page Setup	Select printer type and printer settings.
Exit	Exit the software. If the currently open file has changed since it was last saved, you will be prompted to save it.

5.2   TOOLS MENU

Options	Opens the *Settings* screen containing customisation options for the Configuration Suite. **Settings** Default configuration file folder `and Settings\tony\My Documents\DSE Module Configurations` Browse Hide shortcut screen at startup ☐ OK Cancel
Update Firmware	Allows the user to update the firmware (internal software) of the 3000 Series controller. See overleaf for complete description of this function.

5.2.1 UPDATE FIRMWARE

Selecting *Update Firmware* initiates the update wizard:

Firmware Update Wizard (1 of 6)

Welcome

This wizard will guide you through the firmware update process.

⚠ **Warning**

Interrupting this process at any point may render the module inoperable.

< Back   Next >

> Click the **exit** button if you don't want to update your module.

> **Hint** : Stopping the update process once it begins could leave the module inoperable! If this occurs, simply run the update wizard again and let it complete correctly.

> Click **next** to continue.

Firmware Update Wizard (2 of 6)

Power down

Disconnect the module from power supply.

< Back   Next >

> Ensure the module's supply is removed, and then Click **next** to continue.
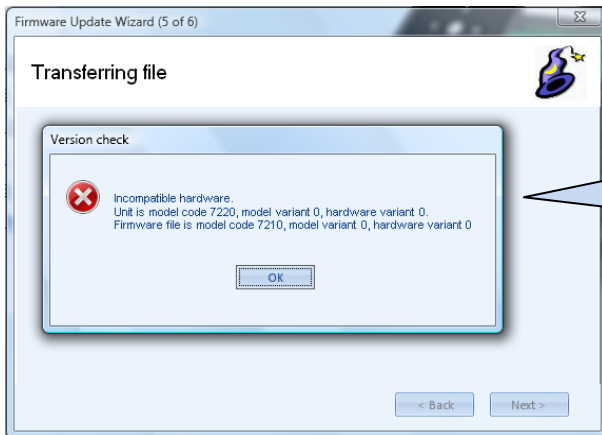
Firmware Update Wizard (3 of 6)

Connect USB

Connect the USB cable between the module and PC.

< Back   Next >

> Connect the USB cable to the module and into your PC, then Click **next** to continue.

Firmware Update Wizard (4 of 6)

Select file

Select firmware update file.

File name:

Browse

< Back   Next >

> Click to select the firmware update file.

> Then click **next** to continue.

Firmware Update Wizard (5 of 6)

Power up

Power up the module to start the transfer.

< Back   Next >
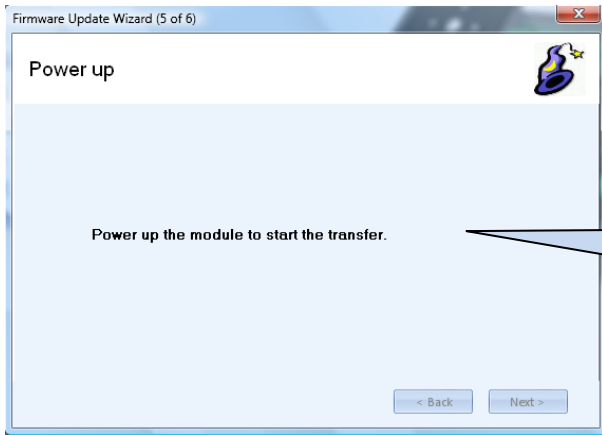
> Power up the module. It will be automatically detected and the update process will begin.

Firmware Update Wizard (5 of 6)

Transferring file

Version check

Incompatible hardware.
Unit is model code 7220, model variant 0, hardware variant 0.
Firmware file is model code 7210, model variant 0, hardware variant 0

OK

< Back   Next >

> If the file you attempt to send to the module is not compatible with the currently connected module, the update cannot continue.
> In this example an attempt was made to send a 7210 firmware file to a 7220 module!

Firmware Update Wizard (6 of 6)

Transferring File

Transferri

Overall progress:

25 %

Transfer progress:

99 %

< Back   Next >
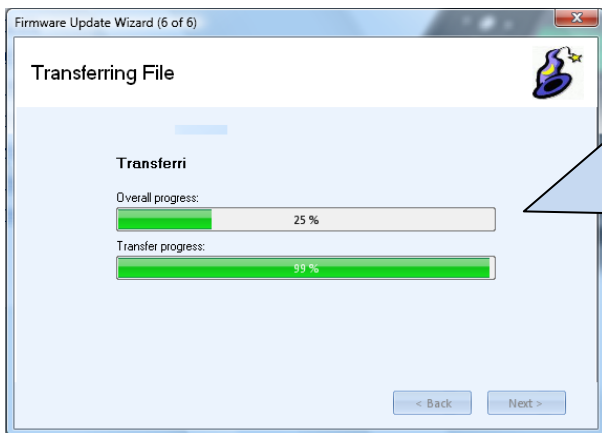
> The update is now in progress and will take under one minute.
>
> During this phase:
>
> - DO NOT DISCONNECT THE USB CONNECTION
>
> - DO NOT TURN OFF YOUR PC
>
> - DO NOT REMOVE POWER FROM THE DSE CONTROLLER

Firmware Update Wizard (6 of 6)

Transferring File

Update Comp

Complete

Update Complete.

OK

Overall progress:

< Back   Next >
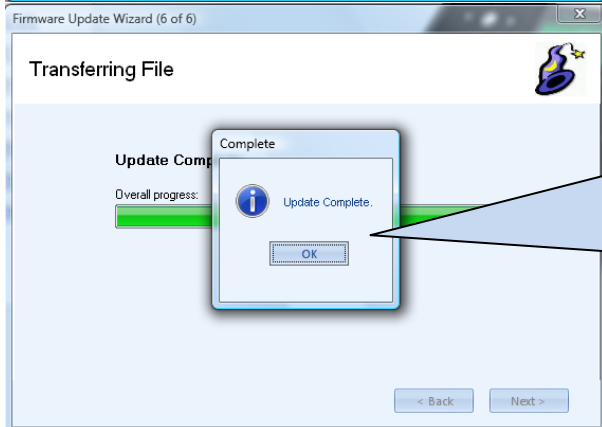
> The update is now complete.
>
> The module will automatically restart with the updated firmware (internal software program).
>
> It is now safe to disconnect the USB lead and power down the module or your PC.
>
> Click **OK** to continue.

5.3   HELP MENU

About	Shows the version number of the configuration suite

5.4   TOOLBAR

The toolbar contains the most used commands from the menus and is often a quicker way of accessing these commands.

	Create a new configuration file
	Open an existing file from disk or flash memory device
	Save the currently open file to the location it was loaded from previously. If this is a new file, you are prompted to enter a filename.
	Print the currently open configuration file
	Preview what the configuration file will look like on the page after printing.
	Send the currently open configuration settings to the controller
	Read the settings out of the connected controller for viewing / editing
	Shows the version number of the configuration suite
Connect via ▼	Select the communication method. The choices present are dependent upon your PC's configuration. The DSE3000 series support only connection by USB.
USB	To connect via **USB** directly to the controller, select *USB* : Connect via USB ▼

6   EDIT CONFIG

This menu allows module configuration, to change the function of Inputs, Outputs and LED's, system timers and level settings to suit a particular application.
The available items for configuration depend upon the type of module connected. This document details the configurable parameters of the DSE3000 Series controllers only. Configuration of other module is contained within their respective manual.

6.1   SCREEN LAYOUT

Move to the *Previous* or *Next* configuration page

Close this configuration file

The coloured shading shows the currently selected page.

Click to return to this page at any time

Step forward or backward through previously viewed pages

Click + or – to show or hide the sub settings within each sections.

The type of configuration file being edited

Click to select the subsection to view / edit

| Previous ⬆ | Next ⬇ |

3110 CAN Configuration v1.0

⊟ 3110 CAN Configuration
  Module
  Application
  ⊞ Inputs
  Digital Outputs
  Timers
  ⊞ Generator
  ⊞ Engine
  ⊞ Alternative Configura

3110 CAN

Module
Application
Inputs
Digital Outputs
Timers
Generator
Engine
Alternative Config

| Back | 🏠 | Forward |

6.2 MODULE

This section allows the user to change the options related to the modules' operation.

Module

Module Options

Lamp Test at Power Up ☐
Power Save Mode Enable ☐
Protected Start Enable ☐
Power Up in AUTO Mode ☐
Display Oil Pressure in PSI ☐
Display Voltages Phase to Phase ☐

Miscellaneous Options	
Lamp Test at Startup	☐ = Lamp test at startup is not enabled ☑ = Illuminates all module LEDs at startup
Power Save Mode enable	☐ = Power Save Mode is not enabled ☑ = Module is placed into low current power save mode after one minute of inactivity in STOP mode.
Protected Start Enabled	☐ = The engine is started when the Start Button is pressed. ☑ = Manual mode is entered upon the first press of the Start Button. A further press is required to start the engine. This helps prevent inadvertent starting of the set by users pressing the button by mistake.
Power up in AUTO mode	☐ =The module enters STOP mode when DC power is first applied (normal operation) ☑ = The module enters AUTO mode when DC power is first applied ⚠️ **CAUTION!** (The set will start upon application of the DC supply if the remote start input is active and *Power up in AUTO mode* is selected)
Display Oil pressure in PSI (CAN variant only) (V1.3+)	☐ =The module displays the oil pressure in bar ☑ = The module displays the oil pressure in PSI (pounds per square inch)
Display voltages phase to phase (V1.3+)	☐ =The module displays the voltage as measured at its terminals. ☑ = The module displays the measured voltage multiplied by 2 or by 'root 3' as required by the AC System selected.

6.3 APPLICATION

Application

ECU (ECM) Options

Engine Type   Generic J1939 ▼
Alternative Engine Speed ☐

Allows selection of the Engine type being used (ie Conventional Diesel Engine, Gas Engine or Electronic Engine)

CAN Data Fail Alarm

Action   Shutdown ▼
Arming   From Safety On ▼
Activation Delay   0s

Instructs electronic engines to run a their 'alternative speed' (supported CAN engines only)

Configuration of the CAN data fail alarm, providing protection against the failure of the engine ECU data link.

6.4   INPUTS

The inputs page is subdivided into smaller sections.
Select the required section with the mouse.

6.4.1   DIGITAL INPUTS

The *digital inputs* page is subdivided into smaller sections.
Select the required section with the mouse.

Digital Inputs

Digital Inputs A - C

Digital Inputs D - F

Input function. See section entitled *Input functions* for details of all available functions
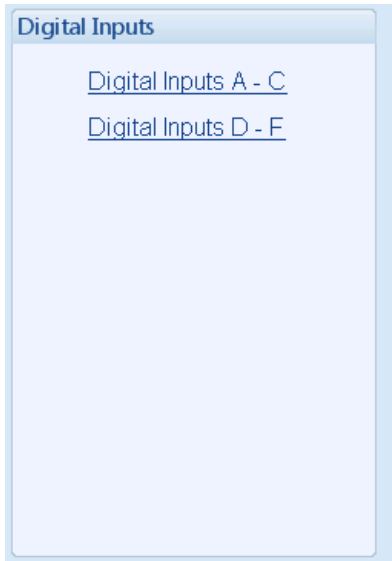
Digital Input A

Function	Emergency Stop
Polarity	Open to Activate
Action	
Arming	

As this example shows a *predefined* function, these parameters are *greyed out* as they are not applicable

Digital Input B

Function	Remote Start On Load
Polarity	Close to Activate
Action	
Arming	

Close or *open to activate*

Example of a user configured input

Digital Input C

Function	User Configured
Polarity	Close to Activate
Action	Warning
Arming	From Safety On

Select the type of alarm required.
For details of these, see the section entitled *Alarm Types* elsewhere in this document.

Configures when the input is active:
Never, always, active from starting, active from the end of the safety timer

6.4.2 INPUT FUNCTIONS

Where a digital input is NOT configured as "user configured", a selection can be made from a list of predefined functions. The selections are as follows:

Under the scope of IEEE 37.2, *function numbers can also be used to represent functions in microprocessor devices and software programs.* Where the DSE input functions can be represented by IEEE 37.2, the function number is listed below.

Function	Description
User Configured	Allows the user to set how the inputs reacts when active (typically used to give an alarm signal to the controller from an external protection device).
Alternative Configuration	Used to instruct the module to use the settings in the 'alternative' configuration.
Coolant Temperature switch	This input is used to give a *Coolant Temperature High* shutdown from a digital normally open or closed switch.
Emergency Stop	Used to give a signal from the Emergency Stop switch to give immediate shutdown of the engine. It is also recommended that the emergency stop switch breaks the signal from the Fuel and Start outputs or ECU Power outputs as applicable.
External Panel Lock	Used to lock the module into the current operating mode (ie STOP or AUTO mode)
Low fuel level switch	A digital normally open or closed fuel level switch gives this input to trigger a warning alarm.
Oil Pressure Switch	A digital normally open or closed oil pressure switch gives this input.
Remote Start off load	If this input is active, operation will be similar to the 'Remote Start on load' function except that the generator will not be instructed to take the load. This function can be used where an engine only run is required e.g. for exercise.
Remote Start on load	When in auto mode, the module will perform the start sequence and transfer load to the generator. In Manual mode, the load will be transferred to the generator if the engine is already running, however in manual mode, this input will not generate start/stop requests of the engine.
Smoke limit IEEE 37.2 – 18 accelerating or decelerating device	This input instructs the module to give a *run at idle speed* command to the engine either via an output configured to *smoke limit* or by data commands when used with supported electronic engines.

6.5   OUTPUTS

Select what the
output is to be
used to control

Digital Outputs

Digital Outputs

Select if the relay is to
energise or *de-energise*
upon activation of the
source

	Source	Polarity
Output A	CAN ECU Power	Energise
Output B	CAN ECU Stop	Energise
Output C	Close Gen Output	Energise
Output D	Common Alarm	Energise

These labels
match the
typical wiring
diagram

6.5.1 OUTPUT SOURCES

Under the scope of IEEE 37.2, *function numbers can also be used to represent functions in microprocessor devices and software programs*. Where the DSE output functions can be represented by IEEE 37.2, the function number is listed below.

> The outputs are in alphabetical order with the *parameter* first. For instance for overspeed output, it's listed as *Engine Overspeed*.

Output source	Activates…	Is not active….
Not Used	The output will not change state (Unused)	
CAN Data Fail	Becomes active when no CAN data is received from the ECU after the safety delay timer has expired	Inactive when: • CAN data is being received • The set is at rest • During the starting sequence before the safety delay timer has expired
CAN ECU Warning	The engine ECU has indicated that a Warning alarm is present.	Inactive when no Warning alarm from the ECU is present
CAN ECU Shutdown	The engine ECU has indicated that a Shutdown alarm is present.	Inactive when no Shutdown alarm from the ECU is present
CAN ECU Power	Used to switch an external relay to power the CAN ECU. Exact timing of this output is dependent upon the type of the engine ECU	
CAN ECU Stop	Active when the DSE controller is requesting that the CAN ECU stops the engine.	
Close Generator IEEE 37.2 – 52 ac circuit breaker	Used to control the load switching device. Whenever the 3110 module selects the generator to be on load this control source will be active.	Inactive whenever the generator is not required to be on load
Close Generator Pulse IEEE 37.2 – 52 ac circuit breaker	Used to control the load switching device. Whenever the 3110 module selects the generator to be on load this control source will be active for the duration of the Breaker Close Pulse timer, after which it will become inactive again.	
Common Alarm	Active when one or more alarms (of any type) are active	The output is inactive when no alarms are present
Common Electrical Trip	Active when one or more E*lectrical trip* alarms are active	The output is inactive when no electrical alarms are present
Common Shutdown	Active when one or more *Shutdown* alarms are active	The output is inactive when no shutdown alarms are present
Common Warning	Active when one or more *Warning* alarms are active	The output is inactive when no warning alarms are present
Energise to Stop	Normally used to control an *Energise to Stop* solenoid, this output becomes active when the controller wants the set to stop running.	Becomes inactive a configurable amount of time after the set has stopped. This is the *ETS hold time*.
Fuel Relay	Becomes active when the controller requires the governor/fuel system to be active.	Becomes inactive whenever the set should be stopped, including between crank attempts, upon controlled stops and upon fault shutdowns.
Gas Choke On	Becomes active during starting for the duration of the Gas Choke timer. Normally used to choke a gas engine.	Inactive at all other times
Generator Available	Becomes active when the generator is available to take load.	Inactive when • *Loading voltage* and *loading frequency* have not been reached • After *electrical trip* alarm • During the starting sequence before the end of the warming timer.

Output source	Activates…	Is not active….
Open Generator IEEE 37.2 – 52 ac circuit breaker	Used to control the load switching device. Whenever the 3110 module selects the generator to be off load this control source will be active.	Inactive whenever the generator is required to be on load
Open Generator Pulse IEEE 37.2 – 52 ac circuit breaker	Used to control the load switching device. Whenever the 3110 module selects the generator to be off load this control source will be active for the duration of the Breaker Open Pulse timer, after which it will become inactive again.	
Preheat during preheat timer	Becomes active when the preheat timer begins. Normally used to control the engine preheat glow-plugs.	Inactive when : • The set is stopped • The preheat timer has expired
Preheat until end of crank	Becomes active when the preheat timer begins. Normally used to control the engine preheat glow-plugs.	Inactive when : • The set is stopped • The set has reached *crank disconnect* conditions
Preheat Mode until end of safety timer	Becomes active when the preheat timer begins. Normally used to control the engine preheat glow-plugs.	Inactive when : • The set is stopped • The set has reached the end of the *safety delay* timer
Preheat Mode until end of warming timer	Becomes active when the preheat timer begins. Normally used to control the engine preheat glow-plugs.	Inactive when : • The set is stopped • The set has reached the end of the *warming* timer
Smoke Limiting	Becomes active when the controller requests that the engine runs at idle speed. As an output, this can be used to give a signal to the *Idle input* of an engine speed governor (if available)	Becomes inactive when the controller requests that the engine runs at rated speed.
Start Relay IEEE 37.2 – 54 turning gear engaging device	Active when the controller requires the cranking of the engine.	

6.6 TIMERS

Many timers are associated with alarms. Where this occurs, the timer for the alarm is located on the same page as the alarm setting. Timers not associated with an alarm are located on the timers page.
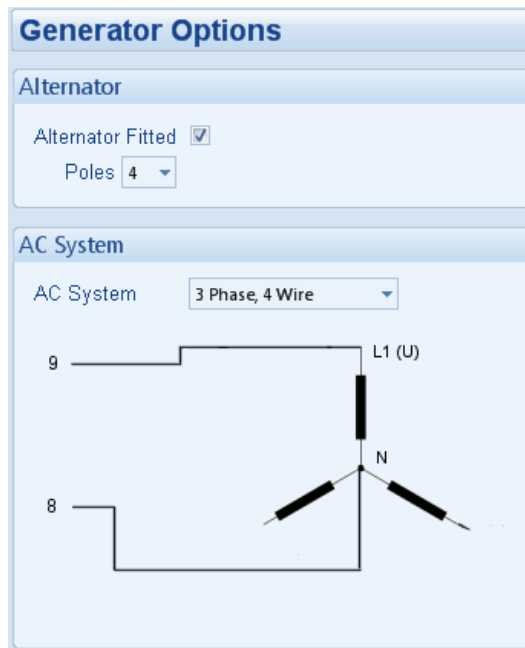

Timer	Description
Start delay	Used to give a delay before starting in AUTO mode. This timer is activated upon a remote start signal being applied, or upon a start due to mains failure, scheduled run or any other *automatic* start. Typically this timer is applied to prevent starting upon fleeting remote start signals or short term mains failures.
Pre-heat	Give a 'pre start' time during which the *Preheat* output will become active (if configured)
Smoke limit	The amount of time that the engine will be requested to run at *idle* speed upon starting. This is typically used to limit emissions at startup.
Smoke limit off	This should be set to a little longer than the amout of time that the set takes to run up to rated speed after removal of the command to run at *idle* speed. If this time is too short, the set could be stopped due to *underspeed* failure. If the time is too long, *underspeed* protection is disabled until the *Smoke limit time off* time has expired.
Warming up time	The amount of time that the set will run BEFORE being allowed to take load. This is used to warm the engine to prevent excessive wear.
Return delay	A delay, used in auto mode only, that allows for short term removal of the request to stop the set before action is taken. This is usually used to ensure the set remains on load before accepting that the start request has been removed.
Cooling time	The amount of time that the set will be made to run OFF LOAD before being stopped. This is to allow the set to cool down and is particularly important for engines with turbo chargers.
ETS Solenoid hold	The amount of time the *Energise to stop* solenoid will be kept energised after the engine has come to rest. This is used to ensure the set has fully stopped before removal of the stop solenoid control signal.
Breaker close pulse	The amount of time that *Breaker Close Pulse* signals will be present when the request to close a breaker is given.
Breaker Trip pulse	The amount of time that *Breaker Open Pulse* signals will be present when the request to open a breaker is given.

6.7   GENERATOR

The *generator* page is subdivided into smaller sections.
Select the required section with the mouse.

Generator

Generator Options

Generator Voltage

Generator Frequency

6.7.1   GENERATOR OPTIONS

Generator Options

Alternator

Alternator Fitted ☑
Poles 4 ▼

AC System

AC System   3 Phase, 4 Wire   ▼

9 ——————   L1 (U)

N

8 ——————

Parameter	Description
Alternator fitted	☐ = There is no alternator in the system, it is an *engine only* application
	☑ = An alternator is fitted to the engine, it is a generator application.
Poles	The number of poles on the alternator
AC System (V1.3+)	Allows a number of AC systems to be catered for. Although the 3110 module has only a two-wire input, rated to 277V nominal (absolute maximum 305V), it is possible to use the module with different systems as long as the maximum rating is not exceeded.
	Selecting the AC system shows the connections required for that particular system, along with the relevant connection numbers on the controller.

6.7.2 GENERATOR VOLTAGE

> Click to enable or disable the alarms. The relevant values below will appear *greyed out* if the alarm is disabled.

Parameter	Description
Generator Under voltage	IEEE 37.2 - 27AC Undervoltage relay
Generator Over voltage	IEEE 37.2 - 59AC Overvoltage relay

6.7.3 GENERATOR FREQUENCY
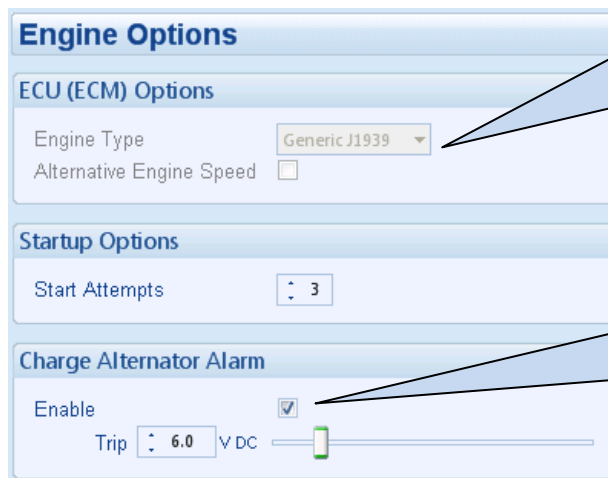
Parameter	Description
Generator Under Frequency	IEEE 37.2 -81 Frequency relay
Generator Over Frequency	IEEE 37.2 -81 Frequency relay

6.8   ENGINE

The *engine* page is subdivided into smaller sections.
Select the required section with the mouse.
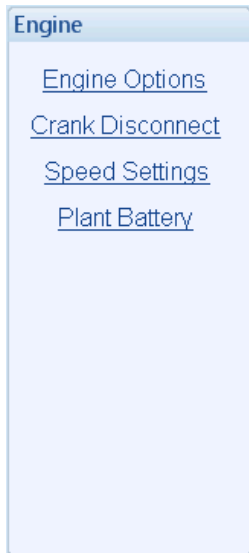
6.8.1   ENGINE OPTIONS

This item is not adjustable here, it's read only. To change this item, visit the *module* menu.

Click to enable or disable the option. The relevant values below will appear *greyed out* if the alarm is disabled.

6.8.2   CRANK DISCONNECT

Crank disconnect settings are used to detect when the set fires during the starting sequence.
As the set is cranked, the first parameter that passes it's *crank disconnect* setting will result in the cessation of the cranking signal.

Having more than one *crank disconnect* source allows for a much faster crank disconnect response leading to less wear on the engine and starter components, and provides added safety in case one source is lost, by a blown or tripped fuse for example.

6.8.3 SPEED SETTINGS

6.9 ALTERNATIVE CONFIGURATION

The Alternative Configuration is provided to allow the system designer to cater for different AC requirements utilising the same generator system. Typically this feature is used by Rental Set Manufacturers where the set is capable of being operated at (for instance) 120V 50Hz and 240V 50Hz using a selector switch, or by taking advantage of the "auto voltage sensing" option of the DSE3110 Series.

Alternative configuration options contain a subset of the main configuration. The adjustable parameters are not discussed here as they are identical to the main configuration options.