
Configuration Manual

Marine Pro.

200E Series

DCU 210E/208E – Engine Panel

RP 210E – Remote Panel



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Configuration Manual

for the

Marine Pro 200E Series

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**DCU 210E** Diesel Engine Control Unit

**DCU 208E** Diesel Engine Control Unit

**RP 210E** Remote Panel

Revision            1.0  
Revised            October 15, 2015

### Revision history:

| Rev. | Date       | Description |
|------|------------|-------------|
| 1.0  | 15.10.2015 | Release     |

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# Table of Content

|                                                     |          |                                            |           |
|-----------------------------------------------------|----------|--------------------------------------------|-----------|
| <b>DOCUMENT INFORMATION</b> .....                   | <b>1</b> | <i>J1939</i> .....                         | <b>18</b> |
| ABOUT THIS MANUAL .....                             | 1        | <i>Differential</i> .....                  | 18        |
| <i>Responsibilities</i> .....                       | 1        | <i>Average</i> .....                       | 18        |
| MATCHING FIRMWARE .....                             | 1        | <i>Special</i> .....                       | 19        |
| ORDERING INFORMATION.....                           | 1        | <i>Analog Modbus</i> .....                 | 19        |
| OVERVIEW OF THE 200 SERIES .....                    | 2        | <i>Digital Modbus</i> .....                | 19        |
| <i>DCU 210E Engine Panel</i> .....                  | 2        | <i>EGT</i> .....                           | 20        |
| <i>DCU 208E Engine Panel</i> .....                  | 2        | CONFIG OUTPUTS.....                        | 20        |
| <i>Configuration</i> .....                          | 2        | <i>Available functions</i> .....           | 20        |
| <i>RP 210E Remote Panel</i> .....                   | 2        | <i>12/24V Outputs</i> .....                | 22        |
| <i>Ethernet Switch</i> .....                        | 3        | <i>Relays</i> .....                        | 22        |
| <i>Expansion</i> .....                              | 3        | <i>Speed Relays</i> .....                  | 22        |
| FIRST POWER-ON.....                                 | 4        | <i>J1939 Outputs</i> .....                 | 23        |
| <i>Preparations</i> .....                           | 4        | <b>INTERFACE DESIGN</b> .....              | <b>24</b> |
| <i>First Power-On Wizard</i> .....                  | 4        | CONFIGURATION .....                        | 24        |
| <b>CONFIGURATION</b> .....                          | <b>5</b> | <i>Header</i> .....                        | 24        |
| CONFIGURATION- AND FIRMWARE FILES.....              | 5        | <i>Instruments</i> .....                   | 24        |
| <i>DCU Web Server Configuration Interface</i> ..... | 5        | <i>Gear</i> .....                          | 24        |
| <i>USB memory with Configuration file</i> .....     | 5        | PAGES .....                                | 24        |
| <i>Connecting to the DCU</i> .....                  | 5        | <i>Page details</i> .....                  | 24        |
| <i>Further connection settings</i> .....            | 6        | <i>Apply a signal to a slot</i> .....      | 25        |
| <i>Logged in</i> .....                              | 7        | <i>Edit a signal</i> .....                 | 25        |
| <i>DCU</i> .....                                    | 7        | <i>Insert a new Page</i> .....             | 25        |
| <i>RIO</i> .....                                    | 8        | <i>Choose a Template</i> .....             | 25        |
| <i>SDU</i> .....                                    | 8        | <i>Delete a Page</i> .....                 | 25        |
| <i>Wallpaper</i> .....                              | 8        | <b>START/STOP/ PRELUBE</b> .....           | <b>26</b> |
| <i>Versions</i> .....                               | 8        | PRELUBE .....                              | 26        |
| <i>Troubleshooting</i> .....                        | 8        | <i>Prelube – Fixed Time</i> .....          | 26        |
| MAIN DCU WEB SERVER MENU.....                       | 8        | <i>Prelube – Until Pressure</i> .....      | 26        |
| <i>Password</i> .....                               | 8        | <i>Oscillating</i> .....                   | 26        |
| <i>File</i> .....                                   | 8        | <b>DCU ENGINE START/STOP CONTROL</b> ..... | 27        |
| I/O CONFIGURATION .....                             | 9        | AUTOMATIC START .....                      | 27        |
| FLEXIBLE I/O .....                                  | 9        | STARTER 1.....                             | 27        |
| CONFIG INPUTS .....                                 | 10       | STARTER 2.....                             | 27        |
| <i>Engine Speed</i> .....                           | 10       | AUTOMATIC STOP.....                        | 28        |
| <i>Individual Speed Sensors</i> .....               | 11       | START/STOP BUTTONS .....                   | 28        |
| <i>Engine Load</i> .....                            | 12       | <i>Latched buttons</i> .....               | 28        |
| <i>Transmission</i> .....                           | 12       | <i>Momentary buttons</i> .....             | 28        |
| <i>Switch</i> .....                                 | 13       | <i>E-Start</i> .....                       | 28        |
| <i>4-20mA</i> .....                                 | 15       | USER INTERFACE.....                        | 29        |
| <i>Thermistor</i> .....                             | 17       | <i>Language</i> .....                      | 29        |
| <i>Voltage sensor</i> .....                         | 17       | <i>Buzzer</i> .....                        | 29        |

|                                               |           |                                       |    |
|-----------------------------------------------|-----------|---------------------------------------|----|
| ENGINE MODEL.....                             | 30        | POWER-ON WIZARD.....                  | 35 |
| <i>Engine Name</i> .....                      | 30        | ADMINISTRATION MENU.....              | 36 |
| SERVICE INTERVAL .....                        | 30        | <i>DCU Connection</i> .....           | 36 |
| <i>View Service Status</i> .....              | 30        | <i>DCU Alarms</i> .....               | 36 |
| <i>Configure</i> .....                        | 30        | <i>DCU Acknowledge</i> .....          | 36 |
| COMMUNICATION .....                           | 30        | <i>IP Address</i> .....               | 37 |
| <i>Network Communication</i> .....            | 31        | <i>Cameras</i> .....                  | 37 |
| <i>Modbus RTU</i> .....                       | 31        | <i>Station Location</i> .....         | 37 |
| <i>Modbus TCP</i> .....                       | 31        | <i>Change Password</i> .....          | 37 |
| <i>J1939 Configuration</i> .....              | 31        | <i>Station priority</i> .....         | 38 |
| MISCELLANEOUS .....                           | 32        | <i>Lock</i> .....                     | 38 |
| <i>Alarm Configuration</i> .....              | 32        | <i>System Voltage</i> .....           | 38 |
| <i>Counters</i> .....                         | 32        | <i>Reset to Factory Default</i> ..... | 39 |
| <i>Acknowledge Configuration</i> .....        | 33        |                                       |    |
| <i>Event Log</i> .....                        | 33        |                                       |    |
| <i>Suppress DM1 faults</i> .....              | 33        |                                       |    |
| <i>Engine Application Configuration</i> ..... | 33        |                                       |    |
| <i>System Voltage</i> .....                   | 34        |                                       |    |
| <i>Factory Reset</i> .....                    | 34        |                                       |    |
| <b>RP CONFIGURATION.....</b>                  | <b>35</b> |                                       |    |

## Document Information

### About this manual

This manual has been published primarily for professionals and qualified personnel.

The user of this material is assumed to have basic knowledge in marine systems, and must be able to carry out related electrical work.



#### Warning!

Work on the low-voltage circuit should only be carried out by qualified and experienced personnel.

Installation or work on the shore power equipment *must only* be carried out by electricians authorized to work with such installations.

#### Responsibilities



#### Warning!

It is the *sole responsibility of the installer* to ensure that the installation work is carried out in a satisfactorily manner, that it is operationally in good order, that the approved material and accessories are used and that the installation meet all applicable rules and regulations.

**Note!** Auto-Maskin continuously upgrades its products and reserves the right to make changes and improvements without prior notice.

All information in this manual is based upon information at the time of printing.

For updated information, please contact your local distributor.

### Matching firmware

This Configuration Manual is for the 200E Series of panels.

It has been updated to match the following firmware releases.

| Panel          | Firmw. | Release   |
|----------------|--------|-----------|
| DCU 210E/ 208E | 3.3 P1 | Oct. 2015 |
| RP 210E        | 3.3 P1 | Oct. 2015 |

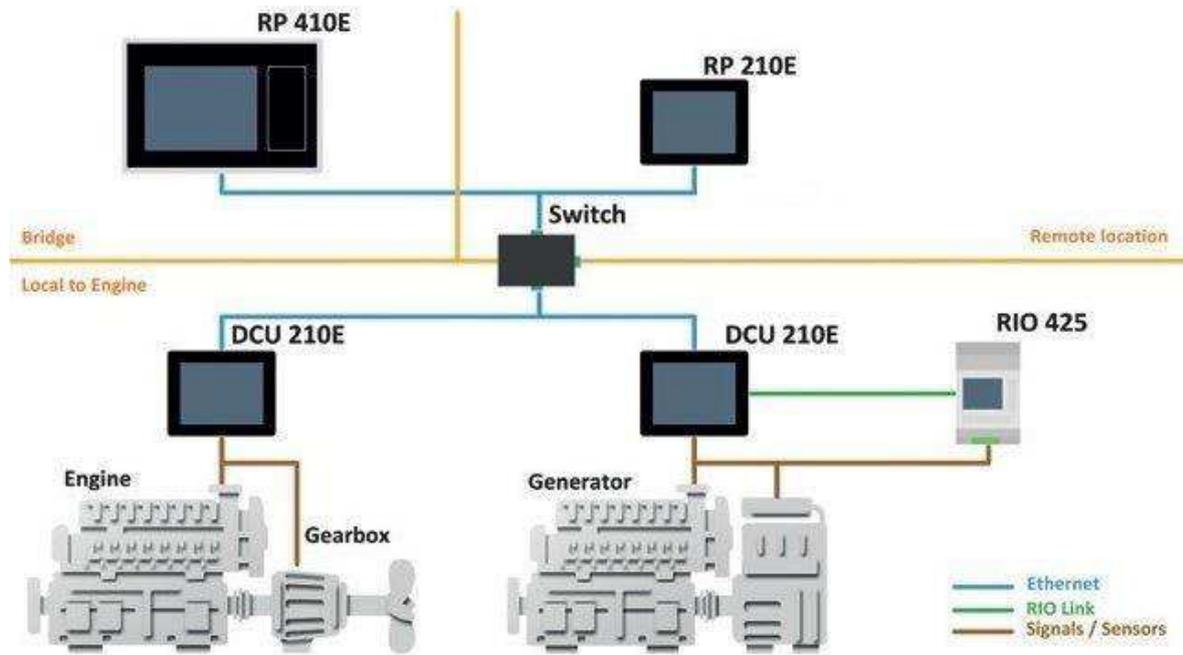
### Ordering information

The Marine Pro covers a wide range of compatible products within both the 200- and 400 Series. Please visit our web site for more information.

<http://auto-maskin.com/marine/>

## Overview of the 200 series

The drawing below shows a typical layout.



### DCU 210E Engine Panel

The DCU 210E engine panel is the main building block in the 200 Series. Engine sensor values are displayed on the color touch screen, and commands and other user interaction is also here.

### DCU 208E Engine Panel

The DCU 208E is basically the same as the DCU 210E, but without the color touch screen.

It saves cost being used in smaller engine rooms, where a remote panel is all that is needed.

### Configuration

An ordinary PC web-browser is used to configure the DCU, using the inbuilt web-server on the DCU.

### RP 210E Remote Panel

The optional RP remote panel brings everything on the DCU to a remote location, with the exact same user interface. It does not need any configuration, as it is reading the configuration from the DCU.

As such, the RP can easily be retrofitted.

The RP also supports one IP-camera to be installed on the network.

## Ethernet Switch

The Ethernet switch is not necessary if only one DCU 210E and one RP 210E is in use. These can then be wired with an Ethernet cable directly.

It is recommended to make use of an Ethernet switch though, as it simplifies PC configuration connection and future expansion to remote panels and/or camera interface.

## Expansion

The basic system can be expanded with more input and output channels using the versatile RIO units (Remote I/O).

Currently, there are RIO units for

- General I/O expansion, RIO 410 and RIO 210.
- Exhaust temperature monitoring, RIO 412
- Generator monitoring, RIO 425
- Load sharing, LSU 408

## First Power-On

### Preparations

First, make sure to consult the Quick Installation Guide (QIG) that came with the panel.

### Installation

Install the panel according to guidelines in the Installation manual.

### Connections

Connect power to the panel according to guidelines in the Installation manual.

### First Power-On Wizard

The DCU (not DCU 208E) will display the *first power-on wizard* at the first power up after delivery, or after a factory reset of the panel.

All wizard settings can be changed later.

## Configuration

This section explains the configuration of the DCU.

### Configuration- and Firmware files

The DCU may be configured either using the built in web server, or by inserting a USB memory stick with a predefined configuration file.

#### DCU Web Server Configuration Interface

The panel has an built in web server, offering access to full configuration.

#### USB memory with Configuration file

Insert a USB memory with the configuration file(s) and follow the guidelines appearing on the panel screen.

#### Valid filename characters

- a-z
- A-Z
- 0-9
- “\_” (underscore)
- “-“ (hyphen)

If other characters are being used, then the panel may not “see” it. Rename the configuration file to solve the issue.

When the USB memory is inserted, the panel asks for the administration password (4 digits).

The panel then lists the configuration file(s) available on the USB memory.

Select file(s) then select **COPY** to copy these files into the User Files area in the panel. Note that this does not activate the file; it is merely a copy of the file into the panel.

Select a file, and then select **USE** to copy and activate this configuration file.

**Note!** The DCU 208E does not have a screen interface and hence this method does not work on that unit.

### USB memory with Firmware file

A USB memory stick can be used to install a new firmware in the DCU.

**Note!** If the memory unit has firmware for both the DCU and the RP, and the intention is to upgrade both panels, then make sure to upgrade the RP firmware first!

#### Connecting to the DCU

It is possible to connect a laptop to the DCU either directly or through a LAN (Local Area Network).

**Note!** For use in an existing Ethernet network, check the configuration of the LAN with the LAN manager.

### To connect to the DCU

Connect an Ethernet cable between the laptop and the DCU port Ethernet port.

- In the DCU menu, select **Help – Version Information**. Note the IP address. From factory, the IP address is 192.168.0.101.
- In the internet browsers address field area, type the IP address, eg.  
http://192.168.0.101.
- Press **Enter**, and note the login screen.
- In the login screen, type
  - Username: **dcu**
  - Password: **1234** (from factory)

## Logged In?

Proceed to the Web Server Configuration section, page 7.

## Not Logged In?

Continue with connection settings as described below.

## Further connection settings

### Change the IP address of the DCU

If necessary, the IP address of the DCU can easily be changed.

**Note!** The last digit in the IP address becomes the engine number.

The DCU has a fixed IP address that is set during the first power-on set up. The IP address may also be changed later, in the DCU panel menu here:

- Menu – Settings – Administration – Network Configuration

## IP address convention

The factory default IP address of the DCU is 192.168.0.101. The first three groups must be the same for all components in the LAN, for instance **192.168.0.x**, where x is the other unit in the LAN.

**Note!** The x-number must be unique within the LAN. Also, the two last digits in x will represent the engine number.

**Example:** A DCU with the IP address 192.168.0.104 will be named “Engine #4”.

## Factory defaults for the DCU

Factory defaults are valid at initial startup only.

- IP address: 192.168.0.101
- Subnet Mask: 255.255.255.0
- Default Gateway: 192.168.0.1

The IP address configuration will not be kept, if a Factory Reset operation is performed.

DHCP IP addresses range: 101 – 199 within the subnet defined by the DCUs IP address.

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## Web Server Configuration

**Note!** This chapter is not applicable for the RP 210E.

### Connection troubles

Make sure that the PC and the DCU is connected to the same subnet.

If still a problem with configuring the IP address check the following:

#### Use the 'Connect a PC' feature

From the DCU select "Connect a PC" icon in the Settings Menu and mark/toggle the Enabled check box.

In addition and after enabling you may have to disconnect and reconnect the Ethernet cable.

#### Use Static IP connection

Change computer IP settings for LAN to static IP settings.

### Logged in

Once logged in, the DCU can be configured.

When logged in, the browser displays the Home screen.



The Home screen has the following menu items.

**Note!** All changes to DCU, RIO and SDU configuration is applied directly on DCU, and not in the PC.

### DCU

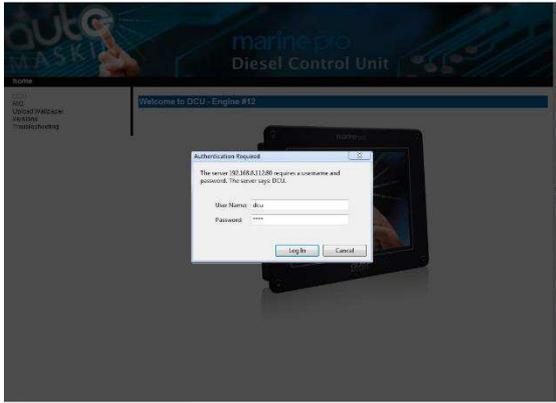
This is the top level menu for the DCU configuration.

To access the DCU section, log in with the following:

- User Name: **dcu**
- Password: **1234** (from factory)

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## Main DCU web server menu



### RIO

This is the menu top level for the optional expansion I/O modules RIO 210, 410, 412 and 425.

### SDU

This is the menu top level for the optional Shutdown unit modules SDU 404 and SDU 410.

### Wallpaper

A personal wallpaper can be uploaded.

### Versions

This top level menu item lists the hardware and software version of the DCU . If the DCU is connected to J1939 and the ECM data is transmitted, ECM version will also be displayed.

### Troubleshooting

The troubleshooting section makes it possible to troubleshoot I/O and communication on the DCU, and the RIO units.

The menu is found here:

Home → DCU.

This is the main menu for the DCU configuration. The following is an overview of the menu items.

### Password

The DCU configuration is password protected with a pin code.

Select this option to change the password. First, type in the old password and then the new password twice.

Default password is “1234”.

### File

File handling.

### Load any file

To change the configuration of the DCU, load a different configuration file.

**Note!** Panel will restart with the new configuration file.

### Factory Default

Select a file to activate a predefined factory configuration file.

### User Uploaded

This lists the files that are previously user uploaded to this DCU.

Select a file to activate a new configuration for the DCU.

## Delete configuration file

The possibility to delete a user uploaded configuration file.

## Configuration Printout

This prints the current configuration to screen.

To print to paper, use the browsers print menu.

## Save file as...

This saves the current configuration of the DCU into a file on the PC. The default file extension is .cfg.

## Upload to DCU

### Firmware

The firmware can be updated whenever there is a new version available.

### Wallpaper

A personal wallpaper can be uploaded. Make sure the file is in PNG format.

### Configuration

A new configuration file can be loaded into the DCU. Note that this menu loads the file only. To activate the file, choose the User Uploaded section as described under File.

## I/O Configuration

The I/O section is found under: Home → DCU → I/O Configuration.

It has menu items for flexible I/O, input and output signals. These are separated into three sections.

**Note!** Always remember to press the Submit button after each change on the configuration pages. No changes are saved until this button is pressed!

## Flexible I/O

This is where the Flexible I/O channels are defined. Each channel can be used for a variety of input and output functions, such as:

- 24VDC Supply
- 0VDC
- Switch Input
- Configurable Output
- 4–20mA sensor
- Voltage sensor
- 5V (#6)
- J1939#2 (#20 and #21)

**Note!** Making changes to the flexible I/O configuration may result in damage to sensors connected to the panel. It is recommended to disconnect all sensors from the panel before making changes.

After a flexible I/O channel has been defined it will appear in the respective menu as enabled.

Eg. Connector C1P1 has been defined as a “4–20mA” channel in the Flexible I/O section. It will now be available in DCU → Config Inputs → 4–20mA.

## Config Inputs

This is where the I/O input channels are configured, such as 4–20mA, PT100 and switch inputs.

### Engine Speed

This is where engine speed sensors are configured, and the overspeed setpoint is set. The majority of the configuration is synchronized with SDU.

#### Engine Speed

assign custom name

**Source**

RPM Primary Source:

RPM Secondary Source:

RPM Third Source:

**Local Pickup**

DCU Pickup Pulses Per Revolution:

**General Configuration**

RPM Rounding [RPM]:  Valid range: 80 - 800 RPM

Run Setpoint / RPM Setpoint 1 [RPM]:

RPM Setpoint 2 [RPM]:

RPM Setpoint 3 [RPM]:

RPM Setpoint 4 [RPM]:

RPM Setpoint 5 [RPM]:

RPM Ready To Take Load [RPM]:

RPM Nominal Speed [RPM]:  Valid range: 200 - 3000 RPM

**General**

Channel Use:

**Display**

Display Range Min [RPM]:

Display Range Max [RPM]:

Display Major Divider [RPM]:

Display Minor Divider [RPM]:

Display Multiplier:

**Overspeed**

RPM Overspeed [RPM]:

RPM Overspeed Delay [milliseconds]:

RPM Overspeed Shutdown Enabled:

[Submit](#)

[Home](#)→[DCU](#)→[I/O Configuration](#)→[Engine Speed](#)

### Source

The DCU can read engine speed from one, two or three sensor sources.

| Source | Comment                                     |
|--------|---------------------------------------------|
| J1939  | J1939 CANbus connected to terminals C1P7–8. |

| Source  | Comment                                                                                                                            |
|---------|------------------------------------------------------------------------------------------------------------------------------------|
| J1939#2 | J1939 CANbus #2 connected to Flexible I/O #20–#21.                                                                                 |
| DCU     | Magnetic pickup locally connected to DCU, terminals C4P1 and Flexible I/O#18.                                                      |
| SDU 410 | One of the two pickups connected to the SDU safety unit.<br><br>The SDU has a scheme for selecting from its two connected pickups. |
| SDU 404 | Magnetic pickup locally connected to SDU.                                                                                          |

### Source

The engine speed sources are prioritized.

The DCU will use the sensor assigned as the primary source first. If the primary source is lost, then the secondary and then the third source will be used.

### Local Pickup

If there is a pickup connected to the DCU, or “DCU” is selected among the sources above, then set the pulses per revolution here.

### General Configuration

**RPM Rounding** rounds off the displayed value to nearest 1, 5 or 10 RPM.

**RPM Setpoint** is the RPM at which the DCU indicates the engine is running, and disconnects the cranks.

**RPM Setpoint 2–5** are optional setpoints that can be used in conjunction with other sensors.

**RPM Ready to take Load** is a signal that can be configured to an output. It activates when that RPM is reached. It deactivates when a stop command is given, OR the speed drops below the threshold, minus 15%.

**RPM Nominal Speed** is the engines nominal speed, and is used to lower the RPM Overspeed on the Overspeed test to 95 % of the nominal speed.

## General

**Channel Use** is the selection for where the signal shall be displayed.

Select **DCU+RP** to display the instrument in the DCU and in the RP.

Select **DCU** to display in DCU only, and not in any connected RP.

Select **RP** to display in any connected RP only, and not in the DCU.

## Display

These values define how the instrument widget is presented.

**Display Range Min** is the minimum value displayed, normally 0 (zero).

**Display Range Max** is the maximum value displayed. For an engine running at 1500 rpm nominally, a typical maximum setting would be 1800 RPM.

**Display Major Divider** is where the instrument widget writes an RPM value, normally every 500 RPM.

**Display Minor Divider** is the tickmarks between the major divider marks, normally every 100 RPM.

**Display Multiplier** is the multiplier value. The value is printed in the RPM meter.

## Overspeed

**RPM Overspeed** is the setpoint where the DCU indicates overspeed.

**RPM Overspeed Delay** is the delay – in milliseconds – before alarm or shutdown. Typical setpoint is 100ms.

**RPM Overspeed Shutdown Enabled** is where the overspeed behavior is selected. Select **Yes** for the DCU to shut down the engine. Select **No** to disable overspeed shutdown.

## Individual Speed Sensors

Note that *any* speed signal can be connected here, and that this is treated separately from the Engine Speed signal configured above.

## Engine Speed (DCU)

### Channel Use

This selects the panel the instrument widget is displayed on. It is possible to display the instrument on

- The DCU engine panel, and
- The RP remote panel, or
- A combination of the two.

### Sensor Unit

There is no choice; select **RPM**.

## Sensor Range Min/Max

These values are fixed

## Display Unit

There is no choice; select **RPM**.

## Display Range Min

Select the low end of the scale.

## Display Range Max

Select the high end of the scale.

## Display Major Divider

Select the major tickmarks. These are labeled with RPM values.

## Display Minor Divider

Select the number of minor tickmarks between the major tickmarks.

## Display Multiplier

Select a value multiplier of 1, 10, 100 or 1000.

## Event

Select type of event for this channel.

## Engine Speed (J1939)

See the Engine Speed (DCU) section.

## Engine Speed (SDU 410)

See the Engine Speed (DCU) section.

## Engine Speed (SDU 404)

See the Engine Speed (DCU) section.

## Engine Load

First, configure either a 4–20mA, 0–5V input or the J1939 PGN 0xf003, SPN 92. Select then the engine load source from the dropdown menu. Engine load can now be used as an additional setting when configuring alarms.

## Transmission

The transmission menu are used for Gear control, to Indicate current Gear or as start interlock.

Gear control is enabled under Home → DCU → User Interface.

When enabled the “Backlight” button will be replaced with “Gear” in instrument view. Selecting “Gear” will open a new page on the DCU with functions for Gear control as described below.

## Gear

The gear source is used as start interlock when a gear is engaged and/or to display the current gear.

Select the gear feedback source used.

To display current gear go to:

Home → DCU → User Interface

and enable “Show Gear Indicator

Instead Of All Ok”. To get the Gear

indicator as an half height vertical bar

graph go to: Home→DCU→ Interface

design→Pages. Choose witch page and

slot the gear indicator shall be shown.

## Shaft Lock

If the DCU gear control is used, the shaft lock input will prevent gear changes when active. Select a Shaft Lock source from the pull down menu.

**Note!** The shaft lock source must be a switch input.

## RPM Interlock

If the DCU gear control is used, the RPM Interlock input will prevent gear changes when active. Select a RPM Interlock source from the pull down menu.

**Note!** The RPM Interlock source must be a switch input.

## Shaft Speed

If the DCU gear control is used, the Shaft Speed can be displayed wherever the user wants. To choose its placement go to:

Home→DCU→Interface→design→Pages

It is possible to enable “Mirrored view” which will put the zero value on top of the gauge.

## Switch

There are 21 configurable channels available as switch inputs. Each channel can be configured as an (ordinary) engine switch input channel, or it can be configured to perform a function, like Automatic Start.

## Switch Input #3

Copy configuration from:

---

**Configure**

assign custom name

English Used:

**Function**

Use as:

**General**

Channel Use:

Event:

Input State:

Delay Before Event [sec]:

Requires Running Engine:

Requires In Gear:

Requires Engine Load:

Use As Additional Run:

[Home](#)→[DCU](#)→[I/O Configuration](#)→[Switch](#)

First, select any of the enabled switch channels. Then, for each channel, set the following parameters.

## Available functions for Switch inputs

The following functions are available for the switch inputs.

The **highlighted** functions are the most typically being used.

| Function Name    | Description                                                                                                                           |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| None             | The channel is being used as an (ordinary) engine sensor switch input                                                                 |
| Local Mode       | Sets the panel to local mode, meaning all external commands are blocked.                                                              |
| Remote Mode      | Sets the panel to remote mode, meaning all local commands are blocked.                                                                |
| Backlight 100%   | Force backlight to 100%                                                                                                               |
| Prelube override | The configured prelube sequence is aborted                                                                                            |
| Prelube complete | Signal shall come from the prelube system, notifying the panel that the prelube sequence is completed. The panel will commence start. |

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| Function Name            | Description                                                                                                                                                      |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Start disabled           | Start is disabled                                                                                                                                                |
| Automatic mode           | The panel accepts automatic start/stop signals                                                                                                                   |
| Automatic start          | Panel will commence the start sequence. Requires Automatic mode.                                                                                                 |
| Automatic stop           | Panel will commence the stop sequence. Requires Automatic mode.                                                                                                  |
| Remote start             | Same as the local start button. Disabled if panel in local mode.                                                                                                 |
| Remote stop              | Same as the local stop button. Disabled if panel in local mode.                                                                                                  |
| Local Start              | Local Start button                                                                                                                                               |
| Local Stop               | Local Stop button                                                                                                                                                |
| Local Acknowledge        | Used to acknowledge all events in the alarm list                                                                                                                 |
| Local/Remote Acknowledge | Used to acknowledge all events in the alarm list                                                                                                                 |
| Remote Acknowledge       | Used to acknowledge all events in the alarm list                                                                                                                 |
| Shutdown override        | Makes all the configured shutdown channels into alarm channels, so engine will not shut down automatically. Engine overspeed shutdown is however always enabled. |
| In gear                  | From gearbox on prop. Engines. Disables start attempts.                                                                                                          |
| In Gear (Ahead)          | From gearbox on prop. Engines to indicate Ahead gear.                                                                                                            |
| In Gear (Astern)         | From gearbox on prop. Engines to indicate Astern gear.                                                                                                           |
| Toggle Crank mode        | Toggle between crank modes.                                                                                                                                      |
| Power On                 | Toggle Sleep mode.                                                                                                                                               |

## Function Use as

Select **None** if the channel is to be used as an ordinary engine switch input.

Select any of the other functions described above to assign that function to the input channel.

## Channel Use

This describes how the channel is used.

Select **Not in use** if the channel shall be disabled.

Select **Event** if the channel shall make any form of event. An event can be a warning, an alarm or an engine shutdown.

Select **Silent Event** for an active channel, but no panel alarms. The event will be available on communication only.

## Event

If any type of event was selected under Channel Use, then select the type of event here. It can be a Warning, Load Reduction, Alarm or a Shutdown.

If **None** is selected, then the channel is active but no events are created.

## Input State

**Normally Open** means the contact must close to make the event, whereas **Normally Closed** means the contact must open to make the event.

## Delay Before Event

Choose the desired persistence time before the channel activates the event.

This field is only available if the Event field is selected.

### Requires Running Engine

Typically, this shall be set to **Yes** for pressure sensors, and to **No** for all other sensors.

Select any of the other setpoints to activate the channel at other rpm values.

### Requires in gear

If gear is required to monitor event Must be in gear (Switch)

### Requires Engine Load

### Initial Delay

If the requires above is set **Yes**, set the persistence time after the engine is running until the channel is enabled.

This field is only available if all requires that is selected are fulfilled.

### Use as Additional Run

If the DCU has one pickup source only, we recommend adding an engine oil pressure switch as an engine running indication.

**Note!** Do not use any other pressure sensors – or any other signals – as engine running indication!

- If **two** engine speed (pickup) sources<sup>1</sup> are in use, then we recommend leaving this off for all switches, i.e. set to **No**.

<sup>1</sup> An engine speed source can be either the magnetic pickup or the SAE J1939 CANbus signal connected to the DCU.

- If **one** engine speed source only is in use, then locate the engine **low oil pressure switch** and use this as the Additional Run signal. Set to **Yes**.

### 4–20mA

First, select one of the enabled 4–20mA channels. Then, for each selected channel, set the following.

4-20mA #1

Configure

assign custom name: Lube Oil Press

English Used: Lube Oil Press

General

Channel Use: DCU+RP

Sensor

Sensor Unit: psi

Sensor Range Min: 0.00

Sensor Range Max: 80.00

Display

Display Unit: US

Display Range Min: 0.00

Display Range Max: 80.00

Display Major Divider: 20.00

Display Minor Divider: 5.00

Display Multiplier: 1

Metric

Metric Unit: bar

Metric Range Min: 0.00

Metric Range Max: 4.50

Metric Major Divider: 1.50

Metric Minor Divider: 0.50

Metric Multiplier: 1

Alarming (in US Units)

Event: None

Note! Submit to apply new unit.

Submit

[Home](#)→[DCU](#)→[I/O Configuration](#)→[4-20mA](#)

### Channel Use

This selects the panel the instrument widget is displayed on. It is possible to display the instrument on

- The DCU engine panel, and
- The RP remote panel, or
- A combination of the two.

It is also possible to suppress the alarm events, as can be seen in the following table overview.

# Marine Pro.

| Type of use             | DCU      |          | RP       |          |
|-------------------------|----------|----------|----------|----------|
|                         | D        | E        | D        | E        |
| Not in use              |          |          |          |          |
| Event                   |          | x        |          | x        |
| DCU                     | x        |          |          |          |
| DCU + Event             | x        | x        |          | x        |
| RP                      |          |          | x        |          |
| RP + Event              |          |          | x        | x        |
| DCU + RP                | x        |          | x        |          |
| <b>DCU + RP + Event</b> | <b>x</b> | <b>x</b> | <b>x</b> | <b>x</b> |
| Silent Event            |          |          |          |          |
| DCU + Silent Event      | x        |          |          |          |
| RP + Silent Event       |          |          | x        |          |
| DCU + RP + Silent Event | x        |          | x        |          |

*D = Displayed on panel*

*E = Event*

*Event = warning, alarm or shutdown*

*Silent Event = no local event; on communication only*

**Note!** Normally – and in most cases – the selection should be “DCU + RP + Event”, as bolded and outlined in the table above. This makes sure the channel is displayed in the DCU and in the RP, if and when an RP is installed.

If for example a signal is necessary in the DCU engine panel only, and not in the RP remote panel, then select **DCU + Event** from the selection.

## Sensor

### Sensor Unit

Select the unit, as printed on the sensor. An oil pressure sensor might for instance be in *Bar* or *psi*.

### Sensor Range Min/Max

Select the sensor range values for min and max, as printed on the sensor.

## Display

### Display Unit

For the above sensor, select the desired displayed unit for US and Metric values.

### Display Range Min/Max

For the above sensor, select the desired minimum and maximum values displayed in the instrument, for US and Metric values.

### Display Major/Minor Divider

For the above sensor, select the desired major and minor divisions in the instrument, for US and Metric values. The major divider number is printed at each major divider.

### Display Multiplier

Select a multiplication factor as necessary.

An instrument with displayed range 0–10,000 would display as 0–1,000 with a multiplication factor of 10. The multiplication factor is printed in the instrument (round gages only).

### Update Metric/US

When the US section has been completed, then the web server can calculate the other section, and vice versa.

**Note!** The application does not round off values. It is highly recommended to adjust the calculated values by hand, and set sensible round-figure values.

## Alarming

This section is always completed in the currently panel selected system unit.

### Event

Select the desired combination of warning, alarm and shutdown. Select “RPM dependent” for a setpoint that varies with RPM, and complete the boxes.

### Threshold [unit]

Select the alarm threshold value in the correct units.

### Delay After Crossing Threshold

Set the persistence time before the event. Value is in seconds.

### Threshold Type

Set the event to appear on a rising (higher) or falling (lower) signal. A temperature fail is normally “too high”, and a pressure fail is normally “too low”.

### Requires Running Engine

Set **Yes** to disable the event when the engine is not running (enabled when engine is running only).

Set **No** to enable the event always.

### Requires In Gear

### Requires Engine Load

### Initial Delay

If the requires above is set **Yes**, set the persistence time after the engine is running until the channel is enabled.

## Use as Additional Run

If the DCU has one pickup source only, we recommend adding an engine oil pressure switch as an engine running indication.

## Thermistor

First, select any of the two thermistor channels.

## Configuration

Then, for each selected channel, set the parameters, as for the 4–20mA section, see page 15.

**Thermistor #1**

Configure

assign custom name  
English Used: Coolant Temp

**General**  
Channel Use: DCU+RP

**Sensor**  
Sensor Type: PT100  
Sensor Unit: Celsius  
Sensor Range Min: 0.00  
Sensor Range Max: 800.00

**Display**  
Display Unit: US  
Display Range Min: 0.00  
Display Range Max: 300.00  
Display Major Divider: 100.00  
Display Minor Divider: 20.00  
Display Multiplier: 1  
Update Metric  
Mirrored View: No  
Update US

**Metric**  
Celsius  
0.00  
150.00  
50.00  
20.00

Update US

**Alarming (in US Units)**  
Event: None

Submit

[Home](#) → [DCU](#) → [I/O Configuration](#) → [Thermistor](#)

## Voltage sensor

There are 19 configurable channels available as Voltage sensor inputs. Select the desired Flexible I/O to be used as a voltage input in the Flexible I/O → Configure Menu. There are four different 0V to choose: #2, #5, #12 and #18.

Choose “Voltage sensor” in the “Function” drop down list. Take note of which pin number corresponds to Flexible I/O # selected.

Select “Voltage sensor” from the I/O configuration menu. Select the appropriate Voltage Sensor # on the left side menu. Use the drop down menus to select Range, Unit and display features. Alarm features can also be set if desired.

**Note!** Flexible I/O # 6, pin C3P1 can be configured as supply for 0–5V sensors.

## J1939

Select a SAE J1939 CANbus signal from the list.

### J1939

#### J1939 signal search

|                                       |                      |
|---------------------------------------|----------------------|
| Signal Name:                          | <input type="text"/> |
| PGN (in hexadecimal):                 | <input type="text"/> |
| SPN:                                  | <input type="text"/> |
| <input type="button" value="Search"/> |                      |

[Home](#)→[DCU](#)→[I/O Configuration](#)→[J 1939](#)

## Select

Select from the left–hand side column the first letter in the signal.

For instance, if looking for the “Fuel Rate” signal, select **D–F** in the left column.

## Search

The right–hand side column can be used to search for the desired signal. Type the information available and hit the **Search** button.

## Configuration

Once the signal is selected, the rest of the configuration is exactly as for the 4–20 mA signal type; see page 15.

## Differential

A *differential* channel is a *logical* (and not physical) channel, made up by two physical channels.

The physical channels may be hardwired or from the J1939 CANbus.

## Diff Signal #1

### Configure

assign custom name

#### General

Diff Source Signal #1:

Diff Source Signal #2:

[Home](#)→[DCU](#)→[I/O Configuration](#)→[Differential](#)

The differential channel will output the difference between the two source (physical) channels.

The sensor unit must be the same for the two selected source signals, for instance they must both be bar, and not one bar and the other psi.

The differential channels can be assigned to an instrument widget as per normal.

## Average

An *average* channel is a logical (and not physical) channel, made up by up to 20 analogue physical channels.

The average channel will output the average between the up to twenty source (physical) channels.

The sensor unit must be the same for the selected source signals, for instance they must all be bar, and not one bar and the other psi.

The average channels can be assigned to an instrument widget as per normal.

## Special

These signals do not naturally fit into any other group.

## Input Voltage

The input voltage is monitored with fixed setpoints. The setpoints are as follows:

### 24V System

- Warning: <21V
- Alarm: <18V

### 12V System

- Warning: <11V
- Alarm: <10V

Here, there is a possibility to add another set of warning/alarm setpoints, and also to configure a widget for voltage display.

## Calculated Fuel Rate

The DCU can calculate the fuel consumption and present an approximate figure.

Select the channel and configure as above.

## Engine Hours

If the engine hour signal is not available on the J1939 CANbus, it can be calculated by the DCU.

The appearance of the counter is configured in this dialog.

## Instantaneous Fuel Economy

The DCU can calculate the instantaneous fuel rate if calculated fuel rate or measured fuel rate, and vessel speed is provided.

## Analog Modbus

The DCU can handle up to 50 analog Modbus sensors. Sensor unit of measurement and range can be set with the drop down menu. The sensor number corresponds to customer selected address of sensor.

See the Communication I/O List under Modbus Analog available online [here](#).

### Modbus Analog Sensor #1

#### Configure

assign custom name

#### Sensor

Sensor Unit:  Note! Submit to apply new unit.  
Sensor Range Min:   
Sensor Range Max:

[Home](#)→[DCU](#)→[I/O Configuration](#)→[Analog Modbus](#)

## Digital Modbus

The DCU can handle up to 500 digital Modbus sensors. The DCU is designed to handle digital sensors that behave as switches. The sensors can be configured from the drop down menus. The sensor number corresponds to customer selected address of sensor.

See the Communication I/O List under Modbus Digital available online [here](#).

## Modbus Digital Sensor #1

### Copy

Copy configuration from: None Copy

### Configure

#### assign custom name

#### Function

Use as: None

#### General

Channel Use: Not in use

Event: None

Input State: Normally Closed, Event on open

Requires Running Engine: No

Requires In Gear: No

Requires Engine Load: No

Use As Additional Run: No

Submit

[Home](#)→[DCU](#)→[I/O Configuration](#)→[Digital Modbus](#)

## EGT

The EGT menus are used to configure events associated with cylinder/turbo values set in the RIO 412 exhaust temperature monitor. EGT events can also be set using EGT data received over the J1939 interface.

## Config Outputs

This is the section for the configurable outputs, such as 12/24V outputs, relay outputs etc.

### Available functions

These functions are available to configure to any output.

The **highlighted** functions are the most typically being used.

| Function Name                      | Description                                                                            |
|------------------------------------|----------------------------------------------------------------------------------------|
| Acknowledge button                 | The acknowledge button is activated                                                    |
| Buzzer active                      | The buzzer is active                                                                   |
| Shutdown in alarm list             | There is a shutdown event in the alarm list                                            |
| Load Reduction in Alarm List       | There is a Load Reduction event in the alarm list                                      |
| Alarm in alarm list                | There is an alarm event in the alarm list                                              |
| Warning in alarm list              | There is a warning event in the alarm list                                             |
| <b>All faults (Unacknowledged)</b> | Any new event in the alarm list                                                        |
| Common diagnostic message          | Any ECM-sourced diagnostic message in the alarm list                                   |
| Ready state                        | The DCU is in Ready state                                                              |
| Init. delay state                  | The time between reception of the automatic start signal until the first start attempt |
| Cranking state                     | Panel is cranking (starting) the engine                                                |
| Awaiting run state                 | Panel finished cranking and is waiting for the engine to spin up                       |

# Marine Pro.

| Function Name              | Description                                                                                                                     |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| Running state              | Engine is running                                                                                                               |
| Crank delay state          | Crank rest time between automatic start attempts                                                                                |
| Delayed stopped state      | State is active and timer is running                                                                                            |
| Cooling state              | Panel has activated the Gen. Breaker Disconnect signal and the engine is now running on idle load                               |
| Stopping state             | Engine is stopping                                                                                                              |
| Stopped state              | Engine has stopped/is below 5 rpm. This state is minimum 10 sec in duration.                                                    |
| Blocked state              | Engine cannot be started, usually caused by a shutdown that is not acknowledged                                                 |
| Stopped for unknown reason | The panel lost all signals indicating that the engine is running, but no stop command was ever given to the panel. Out of fuel? |
| First start attempt failed | The first in a sequence of start attempts has failed                                                                            |
| Final start attempt failed | During an automatic start sequence, after the final start attempt, + crank rest time                                            |
| In Local mode              | The panel is in local mode and will not accept remote commands                                                                  |
| DCU Tacho Failure          | The pickup (MPU) signal is lost during engine run                                                                               |
| Service Interval           | One of the configured service intervals are due                                                                                 |

| Function Name                              | Description                                                                                                                                                                                                                               |
|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Engine Protection Override                 | The panel is in shutdown override state, and shutdown channels are now alarming only. Overspeed setpoint is always enabled.                                                                                                               |
| Engine Protection Override /Emergency Mode | Same as “Engine Protection Override” but also with Emergency mode activated.                                                                                                                                                              |
| Power on                                   | The panel is powered                                                                                                                                                                                                                      |
| Power off                                  | The panel is powered off                                                                                                                                                                                                                  |
| Supply Voltage Low                         | The supply voltage is below the fixed setpoint. Note different setpoints for 12V and 24V systems.                                                                                                                                         |
| Speed Relay 1, 2, 3, 4                     | The function activates at the configured rpm value                                                                                                                                                                                        |
| Alarm or Ack Button or Remote Acknowledge  | The panel is being acknowledged and the buzzer is silenced                                                                                                                                                                                |
| Common Start Failed                        | Start or crank failure                                                                                                                                                                                                                    |
| Common Stop Failed                         | Stop failed. A configurable timer (Engine Stopping Time) passed without the engine stopping.                                                                                                                                              |
| Soft Button 1, 2, 3, 4                     | One of the soft buttons at the bottom of the screen is pressed.                                                                                                                                                                           |
| Ready To Take Load                         | Engine rpm is above the setpoint                                                                                                                                                                                                          |
| Ready for PMS Start                        | Panel is ready for power management start: <ul style="list-style-type: none"> <li>– Panel <u>is</u> in Auto</li> <li>– Panel <u>is not</u> in Local</li> <li>– Panel supply V. <u>is</u> OK</li> <li>– Panel is in Ready state</li> </ul> |

# Marine Pro.

| Function Name        | Description                                                                                                           |
|----------------------|-----------------------------------------------------------------------------------------------------------------------|
| New Alarm Pulse      | Whenever a new event appears in the alarm list, this function activates for a second, then de-activates automatically |
| In Manual mode       | Panel is in manual mode and will not start automatically                                                              |
| Overspeed            | Engine rpm is above configured setpoint for overspeed                                                                 |
| In Remote Mode       | Panel can be commanded from remote                                                                                    |
| ETR                  | Energize to Run. Active when engine cranks or runs.                                                                   |
| ETS                  | Energize to Stop. Activates when engine is stopping                                                                   |
| Shutdown             | Engine is being stopped automatically from a sensor input, including overspeed                                        |
| Running              | Engine is running                                                                                                     |
| Crank                | Panel is cranking/ starting the engine                                                                                |
| Prelube Activation   | The panel has activated the prelube function                                                                          |
| Emergency start/mode | Panel is in emergency mode, or an E-Start sequence is activated                                                       |

In addition to the fixed functions described above.

All configured events, e.g. a sensor configured as a warning, alarm or shutdown.

## 12/24V Outputs

The DCU has 19 configurable I/O available as 12/24V outputs. The function on each output is configured here.

Select one of the enabled 12/24V output channels.

### User Config Output #1

Event:

[Home](#)→[DCU](#)→[I/O Configuration](#)→[12/24V Outputs](#)

Then, for each channel, select the desired function.

## Relays

The DCU has two built in potential free relay contacts, which can be assigned a function.

Select one of the two relays.

### On Board Relay #1

Event:

[Home](#)→[DCU](#)→[I/O Configuration](#)→[Relay Functions](#)

Then, for each channel, select the desired function.

## Speed Relays

A Speed Relay is a relay that activates on a certain engine speed rpm, and deactivates when below that rpm.

For instance, speed relay #1 can be configured to activate at 1200 rpm, and will then deactivate at <1200 rpm.

## Speed Relays

|                                       |        |
|---------------------------------------|--------|
| Speed Relay #1 Enabled:               | No ▾   |
| Speed Relay #1 Activate Speed [RPM]:  | 0      |
| Event:                                | None ▾ |
| Speed Relay #1 Event Log:             | No ▾   |
| Delay After Crossing Threshold [sec]: | 0      |
|                                       |        |
| Speed Relay #2 Enabled:               | No ▾   |
| Speed Relay #2 Activate Speed [RPM]:  | 0      |
| Event:                                | None ▾ |
| Speed Relay #2 Event Log:             | No ▾   |
| Delay After Crossing Threshold [sec]: | 0      |
|                                       |        |
| Speed Relay #3 Enabled:               | No ▾   |
| Speed Relay #3 Activate Speed [RPM]:  | 0      |
| Event:                                | None ▾ |
| Speed Relay #3 Event Log:             | No ▾   |
| Delay After Crossing Threshold [sec]: | 0      |
|                                       |        |
| Speed Relay #4 Enabled:               | No ▾   |
| Speed Relay #4 Activate Speed [RPM]:  | 0      |
| Event:                                | None ▾ |
| Speed Relay #4 Event Log:             | No ▾   |
| Delay After Crossing Threshold [sec]: | 0      |

[Home](#)→[DCU](#)→[I/O Configuration](#)→[Speed Relays](#)

Set Event Log to **Yes** to create an event in the log when the speed relay activates.

The Speed Relay can now be assigned to any configurable output.

## J1939 Outputs

The DCU has a variety of predefined messages available to be transmitted over J1939.

## J1939

### Select

Select from the left-hand side column the first letter in the signal.

For instance, if looking for the “Fuel Rate” signal, select **D–F** in the left column.

## Search

The right-hand side column can be used to search for the desired signal. Type the information available and hit the **Search** button.

## Configuration

Once the signal is selected, the rest of the configuration is exactly as for the 4–20 mA signal type; see page 15.

## Special

In this section special J1939 messages is listed.

## Interface Design

This is the section where templates are populated with the already configured signals from the I/O section.

The menu is found here:

Home → DCU → Interface Design.

This is how an instrument page is designed:

- A **page** is built using one of several available **templates**.
- A **template** has several **slot** positions. A slot is simply an area on the screen.
- Each *slot* position can hold one **widget** type. A **widget** is for example a needle instrument or a bar graph.
- Each **widget** can be assigned a **signal**.

## Configuration

Changes done in configuration will apply to all pages.

Header

“Show Gear indicator Instead Of All Ok” should only be set to yes if “ahead/astern” switches are used.

This will enable an arrow in the upper right corner of the screen displaying gear position.

Instruments

“Green section on Gauges” will change the outer line of all gauges to green. If a warning or an alarming threshold is set, this will still be red.

Gear

“Enable Gear Control” will enable the Gear Control and replace the backlight button with “Gear” on the DCU.

“In Local Mode Only” will only allow for gear changes to be done when the DCU is in Local Mode.

## Pages

This is where the configuration of the different pages is done.

A Page is a screen on the panel. The panel can maximum have five instrument screens.

### Pages

Page Manipulation

Insert Page Before Page 1

Select Page

Page 1 Page 2

*Home → DCU → Interface Design → Pages*

In the example above, three pages are already created. Click on a page to select it, for instance click on **Page 1**.

Page details

In the picture below, **Page 1** is selected.

# Marine Pro.

## Pages

### Page Manipulation

Insert Page Before Page 1

### Select Page

Page 1 Page 2 Page 3

### Page 1

#### Template 14



### Populate Slots

|                                       |               |                                                    |
|---------------------------------------|---------------|----------------------------------------------------|
| Slot 1:                               | P-Lube Oil    | Edit Signal                                        |
| Slot 2:                               | Engine Speed  | Edit Signal                                        |
| Slot 3:                               | T-Coolant     | Edit Signal                                        |
| Slot 4:                               |               |                                                    |
| Slot 5:                               |               |                                                    |
| Slot 6:                               | Input Voltage | Edit Signal                                        |
| Slot 7:                               | Engine Hours  | Edit Signal                                        |
| Slot 8:                               |               |                                                    |
| Slot 9:                               |               |                                                    |
| <input type="button" value="Submit"/> |               | <input type="button" value="Delete Current Page"/> |

As can be seen above, **Page 1** is made using **Template 14**.

There are **9 slot sections** in the template, each with a **Widget**.

Slots 1, 2, 3, 6 and 7 are assigned a signal.

### Apply a signal to a slot

To add a signal to a slot position, select the drop-down list for the desired slot, then select the signal from the selection of available signals.

Only signals that have been configured for use are visible in the drop-down list.

### Edit a signal

Click on the **Edit Signal** link to edit the signal.

### Insert a new Page

Choose whether the new page is to appear before or after an existing page, then press the **Insert Page** button.

The pages will be renumbered automatically.

### Choose a Template

A range of templates will be presented. Choose a template and start populating the page with predefined signals.

The chosen template will appear at the bottom of the screen. Select a signal and press **Submit** to clear the other templates.

### Delete a Page

First Select the page, and then press the **Delete** button.

There is no undo-function, so make sure the correct page is deleted.

The pages will be renumbered automatically.

## Start/Stop/ Prelube

This menu section covers the manual and automatic start and stop sequence.

### Prelube

The DCU can prelube the engine at certain regular intervals, and/or before start.

#### Prelube - Fixed Time

This will activate the Prelube function. Note that this function must be assigned to an output.

#### Prelube Time

Set the number of seconds the DCU shall prelube before start.

Typical setting:

- 5–30 seconds

#### Prelube - Until Pressure

This will prelube until the DCU receives a signal telling it that prelube is finished.

The Prelube Complete input signal must be configured on one of the ten switch input channels.

#### Prelube Timeout

The DCU expects to receive the Prelube Complete signal within this timer period.

Typical setting:

- 5–30 seconds

#### Override Allowed

Select if a prelube should be possible to manually override, to continue the start sequence with an incomplete prelube sequence.

**Note!** The override is done in the DCU

Menu → Settings → Prelube Override

#### Action Upon Timeout

Select the action for when the Prelube Timeout timer elapses.

- Select **Allow Start** to continue cranking the engine anyway.
- Select **Abort Start** to abort the start sequence. The DCU will indicate with a Prelube Failure alarm.

#### Oscillating

The DCU can prelube the engine continuously, in a never ending sequence.

The sequence is disabled while the engine is running.

#### Oscillating Enabled

Set to **Yes** to enable oscillating prelube.

#### Oscillating On-Time

Set the number of seconds the DCU shall lubricate the engine.

Typical setting:

- 60 seconds

## Oscillating Off-Time

Set the number of minutes between each lubrication action.

Typical setting:

- 60 minutes

## DCU Engine Start/Stop Control

### Automatic Start

The DCU can start the engine automatically. The following conditions must be met:

- A channel must be configured as Automatic Start and activated.
- The DCU must be in the Automatic mode of operation:
- Menu → Settings → Mode

### Initial Start Delay

When the start sequence activates, this timer must elapse before the DCU will do the first start attempt.

Typical setting:

- 1 second

### No. of Start Attempts

The total number of start attempts.

Typical setting:

- 3 attempts

### Prelube Before Each Start Attempt

Select **Yes** to prelube before each start attempt.

Select **No** to prelube before the first attempt only.

### Starter 1

#### Cranking Time

The time the starter engine is engaged.

Typical setting:

- 5–7 seconds

#### Delay Between Start Attempts

If the engine did not start after the previous attempt, it will delay this many seconds until it does the next start attempt.

**Note!** The timer starts when the engine rpm is less than 5rpm.

Typical setting:

- 5–7 seconds

### Starter 2

#### Enable Secondary Starter

Select **Yes** for dual starting.

Select **No** for just starting the one engine.

## Automatic Stop

The DCU can stop the engine automatically. The following conditions must be met:

- A channel must be configured as Automatic Stop and activated.
- The DCU must be in the Automatic mode of operation:
- Menu → Settings → Operation Mode

## Delay Before Disconnecting Generator Breaker

When the automatic stop condition is applied, the DCU will wait this many seconds, and then activate a signal to disconnect the generator breaker, if any.

The Disconnect Generator Breaker signal is not a standard output signal, and must be configured to a suitable 24V or relay output.

Typical setting:

- 1–60 seconds

## Cooling Time

After the previous timer has elapsed, the engine will continue to run (with no load) for this amount of time to cool down.

When the timer has elapsed, the DCU will stop the engine.

Typical setting:

- 1–10 minutes

## Start/Stop Buttons

The Start and Stop button can be configured to be Latched or Momentary.

**Note!** The selection is valid for the Start and Stop button.

### Latched buttons

Set the **Hold Buttons to Start/Stop** to **No** for a latched button interface.

The button will latch– and the operator can let go. The panel will finish the start/stop sequence.

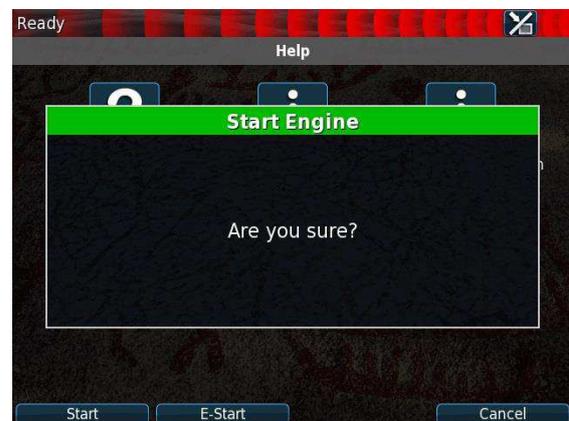
### Momentary buttons

Set the **Hold Buttons to Start/Stop** to **Yes** for a **momentary** (hold-to–start/stop) button interface.

The button must be pressed until the engine has started/stopped.

### E–Start

To allow the operator an Emergency Start option (E–Start) then set the **Allow E–Start** option to **Yes**, otherwise set it to **No**.



The **E–Start** will automatically do the following

- Override any prelube sequence
- Set shutdown override

## User Interface

A few of the user interface aspects are configured here, like languages and buzzer.

### Language

In this section, the signal descriptions can be manually translated to other languages.

### All Signals

Press All Signals to display all signals available in the DCU.

The page displays three rows of signal text.

| Default Text                 | English             | Norwegian            |
|------------------------------|---------------------|----------------------|
| Switch Input #1<br>4-20mA #1 | Coolant Temperature | Kjølevannstemperatur |
| Engine Speed                 | Engine Oil Pressure | Motoroljetrykk       |
| Input Voltage                | [default]           | [default]            |
| Calc. Engine Hours           | [default]           | [default]            |
| SDU Switch #1                | [default]           | [default]            |
| SDU Switch #2                | [default]           | [default]            |
| SDU Switch #3                | [default]           | [default]            |
| SDU Switch #4                | [default]           | [default]            |
| SDU Switch #5                | [default]           | [default]            |
| SDU Switch #7                | [default]           | [default]            |
| SDU Switch #8                | [default]           | [default]            |

The following rules apply:

- The first row is the **English Default** description. This description is being used if it is not changed.
- The second row is the **English Used** description. This description is being used by the panel. If the description says **default**, then the default description is being used.

- The third row is the **2nd language**. This description will be used when that language is selected by the panel operator.

| English Default   | English Used        | 2nd Language   |
|-------------------|---------------------|----------------|
| Engine Oil Press. | Engine Oil Pressure | Motoroljetrykk |
| Engine Speed      | [default]           | Motorturtall   |

The [default] field means that the English default text (left column) will be used.

Select any [default] text to change the signal text description.

### Enabled Signals Only

This is the same as for All Signals, except that only signals that are in use are listed.

### Service

The four Service intervals will indicate with a text. The default text can be changed.

As above, press the [default] field to change the default text.

### Buzzer

Control the panel buzzer behavior.

### Buzzer Off

Select **Yes** to suppress the buzzer automatically.

The buzzer will activate as before, but the DCU will automatically silence the buzzer.

## Engine Model

Set the engine name.

Engine Name

The default name is “Engine”.

Name the engine better, for example “Auxiliary” or “Doris”.

**Note!** The last two digits in the DCU IP address becomes the engine number.

If the IP address is 192.168.0.110, then the engine in this example is named “Auxiliary #10”.

## Service Interval

See and configure regular service intervals.

View Service Status

This will list the number of hours until next service is due.

### Configure

#### Service 1 - assign custom name

Service Enabled:  No  
Next Service At [hours]:   
Then Every [hours]:   
Pre-Warning Enabled:  Yes

#### Service 2 - assign custom name

Service Enabled:  No  
Next Service At [hours]:   
Then Every [hours]:   
Pre-Warning Enabled:  Yes

#### Service 3 - assign custom name

Service Enabled:  No  
Next Service At [hours]:   
Then Every [hours]:   
Pre-Warning Enabled:  Yes

#### Service 4 - assign custom name

Service Enabled:  No  
Next Service At [hours]:   
Then Every [hours]:   
Pre-Warning Enabled:  Yes

[Home](#)→[DCU](#)→[Service Interval](#)→[Configure](#)

Configure

Up to four different service intervals can be configured.

The default text “Service x” can be changed by selecting the **assign custom name** link.

### Service Enabled

Select **Yes** to enable this service interval timer.

### Next Service At

Select the hour counter value in the DCU for the *first* service. Note that this occurs one time on IP address.

This is useful if the first service should have a shorter interval than the regular service intervals.

### Then Every

Select the service interval in hours. The DCU will indicate every time this number of hours has elapsed.

### Example

Current DCU hour counter is 140 hours.

- Next Service At: 150 hours
- Then every: 250 hours

The first service notification will appear in 10 hours, then every 250 hours.

All hours are engine running hours.

## Communication

All the panel communication interfaces.

## Network Communication

Set the IP address, netmask and gateway for the DCU.

The default values are as follows:

- IP address: 192.168.0.101
- Netmask: 255.255.255.0
- Gateway: 192.168.0.1

Make sure the IP address is unique on the network.

If installing the DCU in an already established ship Ethernet environment, consult the network manager to obtain an IP address.

**Note!** The last two digits becomes the engine number, as part of the engine name.

### Example

The Engine name is “Auxiliary”, the IP address is selected as 192.168.0.110. The engine name then becomes “Auxiliary #10”.

## Modbus RTU

The DCU has an built in Modbus RTU communication interface.

## Modbus Parameters

- Baudrate: 9600–115200
- Databits: 8
- Stop bit: 1
- Parity: Even

In addition maximum Timeout can be specified. Default value is 20 [s].

## Address

Set the Modbus ID number for the RS-485 channel.

The number can be any integer in the 1–32 range, and must be unique on the Modbus network.

## Modbus I/O List

The Communication I/O List is available online [here](#).

## Modbus TCP

The DCU has a built in Modbus TCP communication interface.

If a Modbus TCP connection is detected and lost, an alarm will be raised after the set Maximum Timeout in seconds.

## J1939 Configuration

Configure how the SAE J1939 CANbus works.

## Source Address

The default panel source address is 242 (0xF2).

## Request Address

This is used to ask nodes for on request PGNs. Type in the node address.

## Allowed Addresses

This makes it possible to filter units on the CANbus, so that the DCU is reading data from specific units only. Normally, all sources are accepted.

## Allowed DM1 Addresses

This makes it possible to filter units on the CANbus, so that the DCU is reading data from specific units only. Normally, all sources are accepted.

## Miscellaneous

These configuration items do not naturally belong in other sections.

**Note!** Do not skip this section, as it highlights important configurations.

### Alarm Configuration

Configure how the SAE J1939 CANbus acts alarming wise.

### J1939 CANbus broken wire alarm when engine not running

Some engines electronic control modules (ECM) stops sending CAN traffic when the engine is not running or when stopping a running engine.

To avoid nuisance alarms in these situations, set this setting to **No**.

### J1939 CANbus Red Lamp Severity

Configure how the **ECM Red Lamp** signal is to be handled by the DCU.

Either the DCU will disregard of it, or it may be an Alarm or an engine Shutdown.

### J1939 Amber Warning Lamp Enabled

Select if the **ECM Amber Lamp** shall indicate with a Warning or be disabled.

### Counters

The DCU calculates and stores engine running hours.

### Counter Source

Set the counter source to be either from the J1939 CANbus, or from a locally generated counter in the DCU.

- Typically, on an electronic engine this shall be set to **J1939**.
- Likewise, if there is no CANbus on the engine, this setting must be **Local** for the counters to work.

### Update Local Engine Hours

This updates the local counter to any new value.

**Note!** This only works when the Counter Source is Local. If the Counter Source is J1939, the DCU counter setting will be overwritten by new values coming on the CANbus.

### Fuel Consumption

The DCU can calculate *approximate* fuel consumption values.

The values must be completed from the engine datasheet.

The signal is then to be configured under

Home → DCU → I/O Configuration → Special.

## Acknowledge Configuration

Configure if Acknowledge All is to be allowed or not.

If allowed, a long-press (1 sec) on the Acknowledge button will acknowledge all alarms simultaneously.

Default setting is **No**.

If this is set to **Yes** and the alarm list is full of alarms it is possible to acknowledge alarms that are not visible in the alarm list.

## Event Log

The DCU has an built in event log.

## Everything

This displays a list of all events in chronological order.

## Alarms Only

This displays a list of all warning, alarm and autostop (shutdown) events.

## User Interaction Only

This displays a list of all button presses.

## Commands Only

This displays a list of all remote commands to the DCU.

## Events Only

This displays a list of all events that are not alarms, for instance Power On.

## Save As...

The current list of events is saved into a text file on the PC.

## Suppress DM1 faults

Select the combinations of SPN and FMI messages that are to be suppressed.

## Engine Application Configuration

Configure how the engine is to be used.

The configured selection gives the operator different panel Mode selections as follows:

## Auxiliary

Operator Mode selections

- Automatic
- Manual
- Local

## Combined

Operator Mode selections

- Emergency
- Harbor
- Local

## Propulsion

Operator Mode selections

- Remote
- Local

## Emergency

Operator Mode selections

- Emergency

- Local

## System Voltage

The 200 Series is designed to be used in either 12VDC or 24VDC installations.

Select the correct system voltage for this application.

## Factory Reset

Do a factory reset of the panel.

The panel will restart.

## RP Configuration

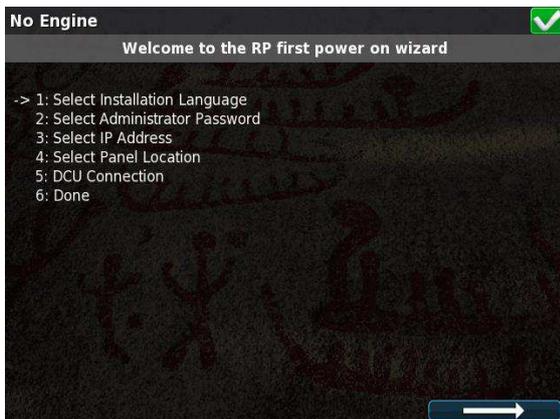
The RP remote panel reads the engine configuration from the DCU panel, so no detailed configuration is necessary. In addition to the Power-On wizard, this chapter explains the Administration section of the panel.

### Power-On Wizard

When power is first applied, the RP 210E will perform a first power-on startup wizard.

Finish the steps to proceed with the installation.

**Note!** Everything in the startup-wizard can be changed in the panel menu later.



### Select installation language

The selected language is used during the installation process only. The operator can change language in the menu later.

### Select administrator password

First, the RP asks for the default password. From factory, this is **1234**.

Next, the RP asks for the administrator password, which must be typed twice.

### Select IP address

The IP address shall be unique on the ethernet network.

The RP 210E default address is **192.168.0.201**.

If installing several panels, make sure they all have unique addresses.

### Select Panel location

Select the location that best matches the location of the panel.

This information is used on other RP remote panels only.

### Scan for DCUs

Press the Search button to search for DCU engine panels in the network.

The RP 210E can connect to one DCU engine panel only.

If the engine panel is not ready at this time, simply proceed. This step can be revisited in the RP panel menu later.

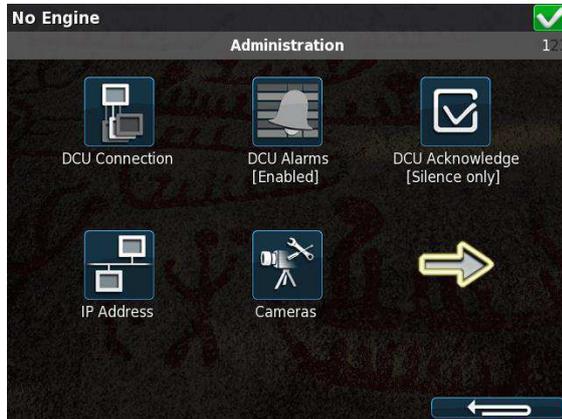
### Done

The RP 210E startup wizard has now finished.

If no DCU panel has been attached, then the RP 210E menu is displayed.

## Administration Menu

The RP 210E administration menu has installation selections that should be considered for each installation.



In the RP 210E menu, select **Settings**, then **Administration** to see the menu selections.

Type the **Administration password** made during the startup wizard.

### DCU Connection

In the DCU Connection menu, press the **Search** button. The panel will list all available DCU engine panels on the network.

Select an engine and press the **Ok** button.

The RP 210E has now saved the connection and will be displaying the instruments pages from the connected DCU.

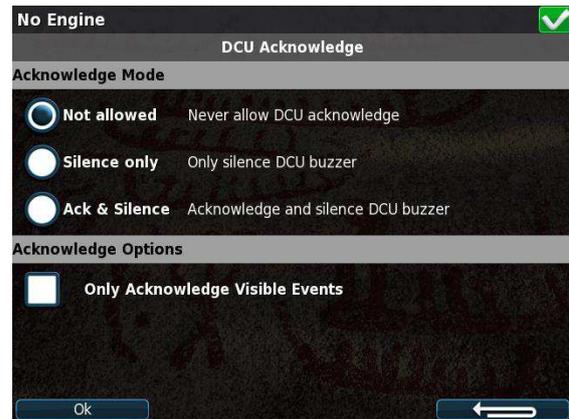
### DCU Alarms

If enabled, the RP 210E will display all alarms from the DCU engine panel.

If disabled, the RP 210E will not display any alarms from the DCU engine panel.

### DCU Acknowledge

This controls how the RP 210E shall handle alarm reset and acknowledge.



### Not Allowed

The RP 210 cannot acknowledge any alarms.

Select this only if the alarms are to be acknowledged in another panel instead.

### Silence Only

The buzzer can be silenced, but the alarms cannot be acknowledged.

### Ack & Silence

Full acknowledge control, just as on the local DCU engine panel.

### Only Acknowledge Visible Events

**Check** this option to not be able to acknowledge all alarms with a long-press (1 sec) on the Acknowledge button.

# Marine Pro.

**Uncheck** this option to force acknowledge of one alarm at a time.

## IP Address

If necessary, change the RP 210E panel IP address.

Always make sure that

- The three first digits are equal for all panels in the network.
- The last digit is unique in the ethernet network.

Changing the RP 210E IP address does not require a new DCU Connection to be performed.

## Cameras

Connect an IP camera to the ethernet network, and key in the Camera IP address. The RP 210E can connect and display images from one IP camera.

Below is an example picture from the galley.



## Station Location

Select the location for the RP 210E panel.

This location name is used by other RP remote panels only, in conjunction with Master Station selections.

## Change Password

Change the administration password to make sure no unauthorized access to the administration pages.

**Note!** If the password is lost, the RP 210E issues an encrypted password. This encrypted password can be decoded. Contact your distributor for more details.

## Station priority

Set the RP panel priority that is right for the application. Depending on the priority the panel is given it acts differently in conjunction with other RP remote panels.

The following are guidelines for selecting a station priority.

- If this RP 210E is the only remote panel in the installation, then select Priority 1.
- If there are more RP remote panels than this one, then select Priority 1 or 2.
- If this RP remote panel is for monitoring only, then select Priority 3.

|                  | RP is Priority 1                                                                                                                                                                                                                                          | RP is Priority 2                                                                                                                                                | RP is Priority 3                                                              |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
|                  | Typically highest priority control station, like the engine control room.<br><br>Also if one RP in the network only.                                                                                                                                      | Typically lower priority control station or wheelhouse.                                                                                                         | Typically in a possible public area, or where commands shall not be possible. |
| Take command     | Can always take command from the current active panel; no question asked.<br><br><b>Note!</b> If the operator tries to execute a command, and the panel is not the active station, it will immediately become the active station and execute the command. | Can take command from active station panels with priority 1 or 2 after confirmation at the current active panel.                                                | Disabled.<br><br>Panel with this priority can never be an Active Station.     |
| Handover command | Will handover command to priority 1 panel immediately.<br><br>May handover command to priority 2 panels, depending upon Confirmation Timeout Priority setting.                                                                                            | Will handover command to priority 1 panels immediately.<br><br>May handover command to priority 2 panels, depending upon Confirmation Timeout Priority setting. | Will handover command to priority 1 or 2 panels immediately.                  |

## Lock

When the administration password has been entered, the administration pages are unlocked for one hour.

Select **Lock** to close the administration pages immediately.

## System Voltage

The RP 210E panel can operate on either 24 VDC or on 12 VDC.

Select the option that is correct.

The panel will not be harmed if an incorrect selection is made, but it will give an “Incorrect Supply Voltage” warning in the alarm list.

## Reset to Factory Default

Select this option to reset the panel to its original factory setting.