Manual# 1006422

User's Manual

Marine Pro.

400E Series

DCU 410E – Engine Control Unit
RP 410E – Remote Panel

RP 410E

DCU 410E

auto MASKIN

User's Manual

for

Marine Pro 400E Series

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DCU 410E – Engine Control Unit

RP 410E – Remote Panel

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Rev.	Date	Description
1.0	16.11.2015	Initial Release Revision.
1.1	20.09.2016	Updates for RP 410E
1.2	27.01.2017	Synched to 3.5P2 firmware release
1.3	12.09.2017	Synched to 3.6 firmware release

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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.

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

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.

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/

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Contact Information

See the website to locate the nearest distributor.

www.auto-maskin.com

Overview of the 400 series

Available Modules

These are some of the main modules available in the 400 series:

- DCU 410/E Engine Control Unit
- DCU 408 Engine Control Unit, without user interface
- SDU 404 Safety Unit
- SDU 410 Safety Unit
- RIO 410 I/O Expansion Unit
- RIO 412 Exhaust Temperature Unit
- RP 410/E Remote Panel

The following is a brief explanation of the different modules.

DCU 410E/408 Engine Control Units

The DCU 410E and DCU 408 are engine monitoring and control units.

One panel is required for each engine.

The DCU 410E has a color screen, and buttons for user interaction.

The DCU 408 does not have screen or buttons, and is intended for use with remote panels.

Note! The DCU 410E and DCU 408 will hereafter be referred to as the "DCU" only. If functionality differs between the two, this will be noted.

SDU 404/410 Safety Unit

The SDU 404/410 is the safety module, and is linked to the DCU engine control unit. It is mandatory in classed installations that are to be type approved.

When connected to the SDU link of a DCU, the DCU will detect it automatically.

RIO 410 I/O Expansion Unit

The RIO 410 is an I/O expansion unit, and is linked to the DCU.

A maximum of four RIO units can be connected to one DCU.

When connected to the RIO link of a DCU, the DCU will detect it automatically

RIO 412 Exhaust Temperature Unit

The RIO 412 is an expansion unit with 20 thermocouple channels. The operator can read individual cylinder temperatures, as well as average values.

When connected, the DCU detects it automatically and adds a new page to its configuration.

RP 410E Remote Panel

The RP 410E is the remote panel for the DCU engine panels.

Numerous RP remote panels can be connected together in the same Ethernet network.

One RP 410E can be connected to a maximum of eight DCU units.

When an RP 410E remote panel is connected on the Ethernet link to one or several DCU units, the RP can update its configuration automatically.

DCU 410E Operation

Configurations

The behavior of the DCU 410E depends heavily on its configuration.

For instance, the start/stop buttons can be configured as latched, meaning the DCU completes the start/stop cycle once the button is pressed, or it can be configured as hold-to, meaning the operator must keep the button pressed until the engine has started or stopped.

The configuration of the DCU is not part of this document.

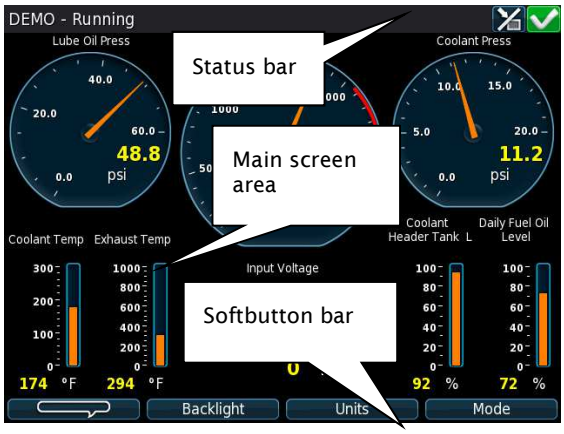
Buttons

The DCU has ten buttons for the following:

- Engine Start
- Engine Stop
- Display/Hide Alarm List
- Display/Hide Menu
- Menu navigation with arrow up/down
- Four “softbuttons” with screen-dependent functionality

Screen Layout

The screen is divided into three main sections from the top and downwards as follows:



Status bar

Top-most line on the screen, which is reserved for engine state (left) and status symbols (right).

The status bar flashes in the event of an alarm.

Main screen area

This is where all instruments and menu items are displayed.

Softbutton bar

Bottom-most line on the screen, which is reserved for softbuttons.

These have varying functionality depending on the current screen.

Status bar symbols

These are the symbols in the top-right area of the status bar.

Several symbols may be visible simultaneously.

	DCU is in automatic mode.
	DCU is in emergency mode.
	DCU is in manual mode.
	DCU is in local mode.
	DCU is in *harbor* mode.
	DCU is in *shutdown override* mode.
	A service interval is past due.
	All OK. (no alarms)
	Gear Indicators
	Gear in **Neutral** position.
	Gear in **Forward** position.
	Gear in **Reverse** position.
	Gear **Engaged**. (direction unknown)
	Gear status **Unknown**.

Automatic Mode

The DCU is ready to accept automatic start- and stop commands.

Local start- and stop is possible.

Emergency Mode

This mode is available only if the DCU is configured as a Combined Harbor/Emergency set.

Channels configured as shutdown will not give an engine shutdown, but indicate with an alarm only.

The Exception is overspeed, which is not disabled.

Manual Mode

The DCU does not accept automatic start- and stop commands.

Local start and stop is possible.

Harbor Mode

This mode is available only if the DCU is configured as a Combined Harbor/Emergency set.

Shutdown channels are enabled.

Automatic start/stop is disabled.

Shutdown Override

All channels configured as shutdown will give alarm only.

The exception is overspeed, which is enabled.

Service

A service interval is past due.

All OK

There are no alarms in the alarm list.

Gear Indicators

If DCU is configured for gear indication/control these 5 indicators may be displayed on the status bar depending on gear state.

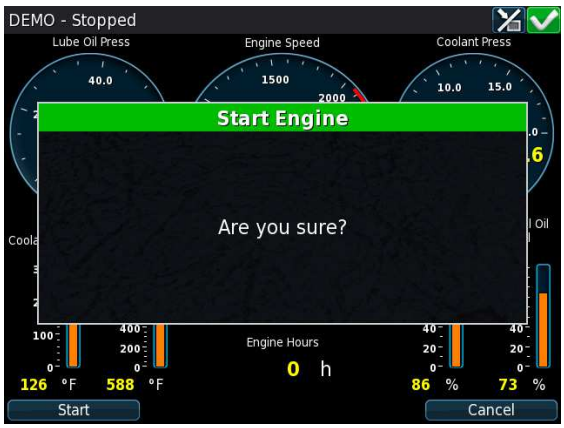
Start Engine

The start button can be configured as *latched* or *hold*. The stop button mimics the configured start button regime.

Latched Start

If the button is configured as *latched*, press the start button, observe the confirmation dialog, and press the soft button Start to start.

The DCU will complete the start sequence.



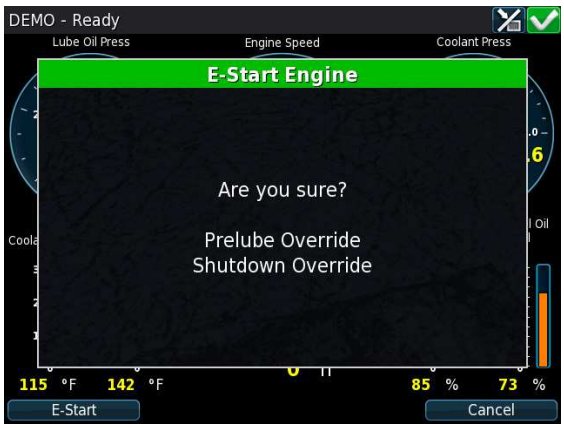
Hold Start

If the start button is configured as *hold*, press and hold the start button until the engine has started.

There will be no confirmation dialog.

E-Start

If the DCU is configured for it, an Emergency Start option is available in the Start dialog. See the previous picture.



Note! Activating E-Start will override any configured Prelube and also set Shutdown Override. The engine will start immediately, and run in a Shutdown Override mode setting.

If necessary, the operator can switch off Shutdown Override mode once the engine has started.

Stop Engine

The stop button mimics the start button regime. If latched start is configured, the stop button will trigger a latched stop and vice versa.

Latched Stop

While in a latched start/stop setup, a click on the stop button displays a confirmation dialog. By selecting the "Stop" softbutton, the DCU will order and engine stop and complete the sequence automatically.

To dismiss this dialog and abort the stop command, click the "Cancel" softbutton.

Hold Stop

If the start and stop buttons are configured as *hold*, press and hold the stop button until the engine has stopped.

There will be no confirmation dialog.

Alarm List

Indication

Whenever there is a new event in the alarm list, the DCU indicates as follows:

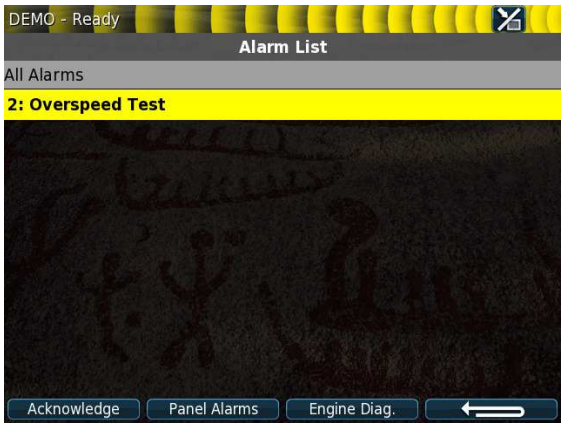
- Buzzer oscillates
- Alarm list LED flashes
- The screen status bar flashes

Note! The color of the flashing LED and status bar is either yellow (warning) or red (alarm or shutdown) depending on the most severe unacknowledged event in the list.

Enter the Alarm List

To see the alarm list, press the alarm list button.

Press the button again to leave the alarm list.



The above picture indicates a warning in the alarm list.

Filter Alarms

The alarm list can filter alarms in three groups

- All Alarms (all alarms and diagnostics)
- Panel Alarms (all alarms, no diagnostics)
- Diagnostics (diagnostics only)

To switch between the different views, press the corresponding softbutton 2 and/or softbutton 3.

Silence the Buzzer

If the buzzer sounds, press the alarm list button to silence the buzzer.

- If the alarm list is currently *not* displayed, then this operation will display the alarm list.
- If the alarm list *is* displayed, then pressing the alarm list button to silence the buzzer will not exit the alarm list.

Acknowledge a single alarm

- In the alarm list, select the alarm to be acknowledged using the arrow buttons. Note that the selected alarm line will expand to reveal additional information, if any.
- Press the Acknowledge button to acknowledge the selected alarm.

Acknowledge all alarms

- In the alarm list, press and hold (~1 sec) the Acknowledge button. This acknowledges all alarms.

Note that alarms that are still active will stay displayed in the screen until they go inactive.

Further reading

For an explanation around the use of colors and bold text in the alarm list, see the chapter on page 33.

Softbuttons

The DCU has four softbuttons, see picture below.

These are located at the bottom of the screen, and changes depending on the actual screen.

Softbuttons in Instrument View

The configuration of the DCU controls which functions are made available for the four softbuttons in this view.

Each functionfunction button may be configured to the following possible functions:

None

No function. Nothing happens when pressing the button.

Language

Presents the language select dialog.

Note that there are several pages to select from in the Language menu.

Select the desired language and press the Ok button.

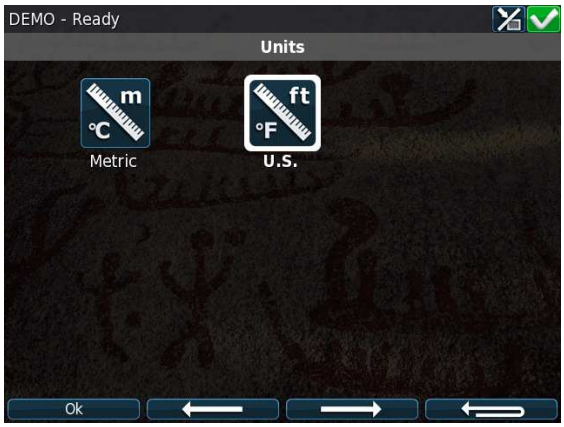
Backlight

Select the desired backlight intensity.

Note that if 10% is selected, the menu will still be using 50% backlight.

Units

Select the preferred unit set of measure.



Press the Ok button to select.

Mode

Select the mode of operation.

Automatic Mode

The DCU accepts external automatic start- and stop commands, as well as remote start- and stop commands.

Manual

The DCU does *not* accept external start- and stop commands.

It does accept remote start- and stop commands.

Local

The DCU does not accept *any* external commands.

Local start- and stop commands are accepted.

Controls

Access certain engine related functions.

Engine Overspeed Test

Set to **Active** to activate the engine overspeed test.

This temporarily lowers the overspeed setpoint to 95% of the nominal speed of the engine. Start the engine to perform the test.

The test will deactivate automatically after a timeout, or when an actual overspeed (from the test) is detected.

Gear

Opens the Gear Control form. Note, this function may not be available, as it depends on how the DCU is configured.

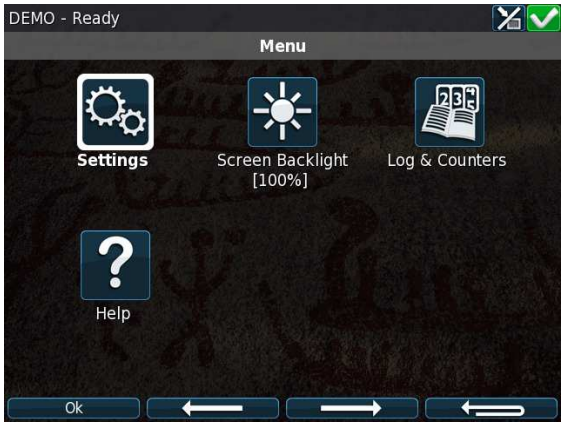
This form is used to inspect transmission related parameters and to request gear changes.

Prelube Override

Activates or deactivates Prelube Override. When active, a start attempt will skip the prelube sequence and attempt to start the engine immediately. Prelube Override is automatically deactivated after a start attempt. Note, this function is only present if the DCU is configured to perform prelubing prior to start of the engine.

Menu

Press the menu button to access the menu.



Settings

Note that the settings menu has two pages.

Mode

Select the mode of operation. This is discussed on page 10.

Start Disabled

Set active to disable all starts, also local start.

Note! It is recommended to remove the start battery connection before any maintenance work on the engine.

Prelube Override

Set active to override prelube.

If selecting Prelube Override during a prelube sequence, the prelube will be cancelled and the DCU will continue to crank the engine.

Button Beep

Set to disabled to not have the internal buzzer beep for every button press.

Language

Select the language. All internal messages are ready translated. All configured signals must be translated in the configuration.

If a signal does not have a text description in the selected language, then the English language will be used.

If the signal does not have an English text description either, then the *channel name* will be used, eg. “4-20mA channel #1”.

Units

Select the units of operation, Metric or U.S.

- Metric (Celsius, bar, etc), or
- U.S. (Fahrenheit, psi, etc)

Note that the selection is local to this panel only.

Wallpaper

Set the wallpaper (background image) for instruments, menus and popups respectively.

Engine Overspeed Test

In this mode, the engine can be tested for overspeed by lowering the overspeed setpoint to 90% of the nominal (max) speed.

Activate

- Make sure the engine is not running. The Overspeed Test mode cannot be entered on a running engine.

- Note that the overspeed setpoint has been lowered by observing the red are on the RPM meter.
- Start the engine and adjust rpm until it crosses the red labeled setpoint.
- Observe engine shutdown.

Note! If the Overspeed Shutdown has been disabled in the configuration, then this test will NOT generate a shutdown.

Deactivate

The Overspeed Test times out after 5 minutes, or when an actual overspeed situation is observed.

The test can also be turned off by selecting the menu item again.

Connect a PC

To connect to the DCU, an Ethernet cable and a PC or laptop is necessary.

Connect the cable

Connect a standard CAT5 ethernet cable between the laptop Ethernet port and the DCU Ethernet port (COM 6).

Matching IP-address range

To connect a PC to the DCU, the IP-address (IP number) of the PC or laptop must be in the same 'range' as the IP-address of the DCU.

Often, the IP-address in a laptop is not available to change by the user due to company policy.

Whenever the laptop is connected in a network, it is given a new IP-address.

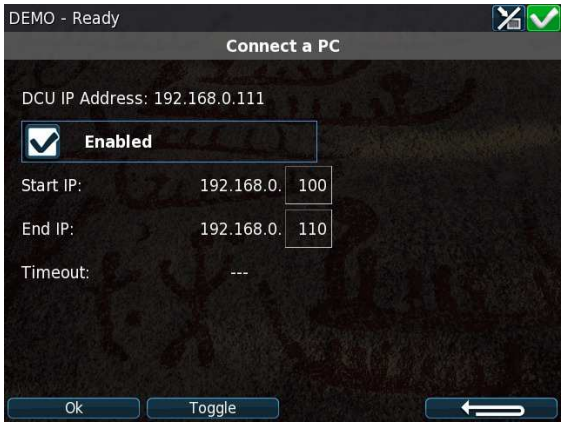
Normally, the laptop is given a new IP-address whenever it connects to the network at work. This scheme is called dynamic IP-address.

This given IP-address may not match that of the DCU though.

For this purpose, the DCU has an inbuilt server component, which resembles that of the company network, and gives the laptop an IP-address that matches the DCU.

On the top of this form is the DCU's current IP-address. The next lines display a start- and end IP-address.

This is the range the DCU's DHCP server will scan.



Make sure the DCU IP-address is *outside* the DHCP Start- and End IP-address range, by setting the start IP higher or the end IP lower than the DCU IP-address.

For the example in the figure above, a Start IP of 192.168.0.110 is OK, whilst a Start IP of 192.168.0.105 is not.

When the range is fine, then press the OK button. The DCU's server will now give a new IP-address to any laptop connected to the DCU within the next 10 minutes (timeout period).

The laptop keeps the new IP-address even after the 10 minute timeout, which is fine.

Connect to the PC

When the above exercise is done, connect to the DCU by typing the DCU IP-address into the browser's URL field.

The above picture is representative for a typical successful login.

Administration

This menu gives access to the next level of menus, and is not discussed in this manual.

A four digit pin-code is needed to access the menu.

Interface Design

Up to four extra instrument screens can be added by the user.

Note! The webserver can also be used to add new user screens.

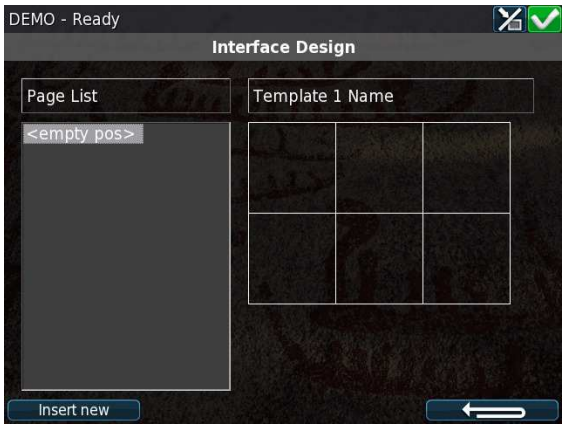
The screen layout

Each screen is built up as follows.

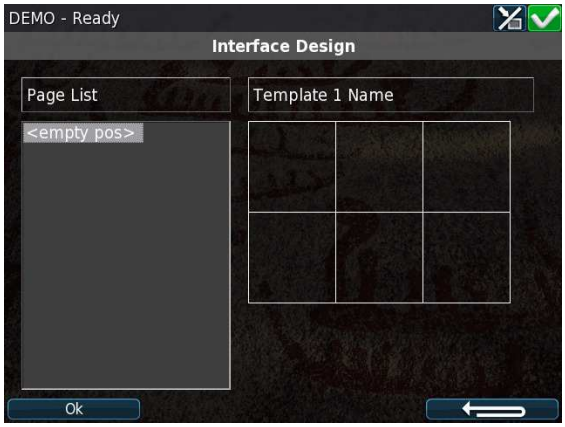
- Each screen has a *template*. There are multiple templates to choose from, and each screen can have a different template.
- A template is divided into rectangles called *slots*. A slot is simply a placeholder for a widget.
- A *Widget* can be a circular dial, a horizontal bargraph, a numerical value, etc. To be used, the widget must fit into the slot.

Add a user screen

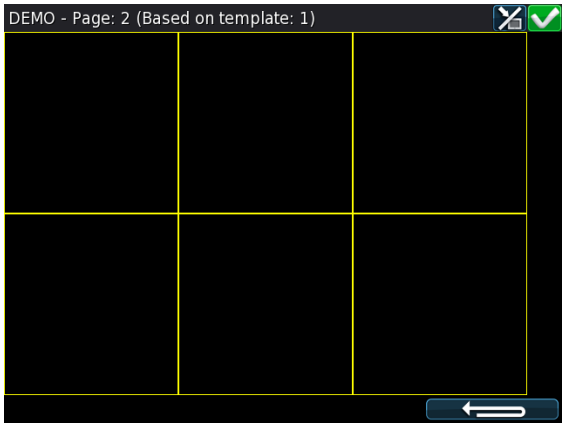
- Press 'Insert new'.



- Use the up/down arrow buttons to select a suitable template. Press 'OK', then 'Save'.



- Now, press 'Slot Design' and 'Edit View'.



- Use the arrow up/dn buttons to select a slot (indicated with a bold rectangle around it).

- Select ‘Pick Signal’. Pick a signal from the list of configured signals, for instance Engine Speed.

- Now, press arrow buttons up/dn again to select another slot, and repeat the process.
- Press softbutton 4 when finished.

Observe the new screen.

Press the arrow buttons to cycle between screens.

Delete a user screen

First, select the menu item Interface Design.

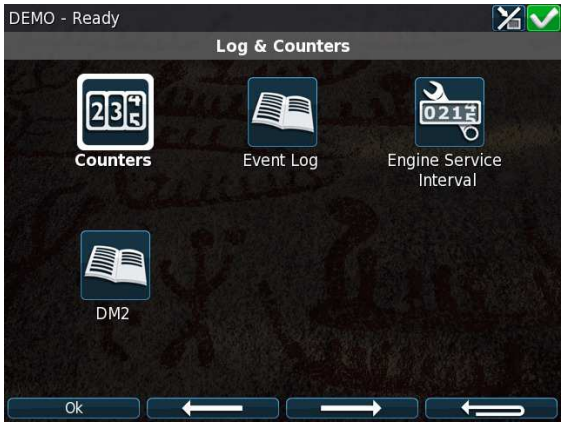
Using the arrow up/dn buttons, select the screen to be deleted.

Press the Delete button to delete the screen.

Log & Counters

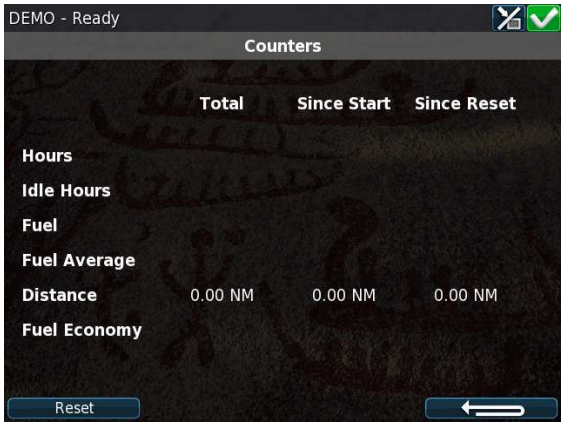
The engine running hours are available in this menu.

Events and service intervals are also available.



Counters

The Counters page display engine running hours.



Total

The total accumulated engine hours. Depending on the configuration, the value is calculated in the DCU, or read from the ECM.

This counter value cannot be reset by the operator.

Since Start

This counter starts at zero every time the engine is started, and counts until the engine is stopped.

This counter value cannot be reset by the operator.

Since Reset

This counter accumulates every time the engine is running.

Press the Reset button to clear the Since Reset values.

Idle Hours

The idle hours counter counts whenever the engine is running below 600 rpm.

Event Log

The DCU keeps a log of all events. The log is about 500 events long, after which the oldest event is lost.

Note! Using the web server, the entire log can be downloaded.

An event is defined as any diagnostic, warning alarm or engine shutdown situation, but also certain user interaction such as start- and stop button.

Event Sorting

The events can be sorted as follows:

- Oldest first
- Most severe first
- Least severe first
- Count

Navigation

Use the up and down arrow to navigate in the event log.

Timestamp

The selected event will be expanded, and the second line displays the running hours when the event triggered.

For alarms, the second line will also display the running hours for the acknowledged and inactive events.

Engine Service Interval

Four different service intervals can be configured.

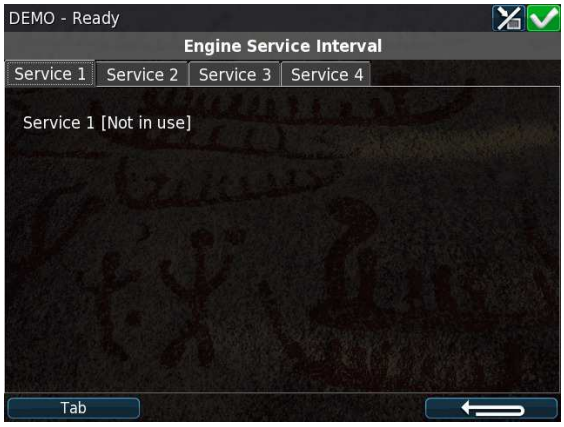
The DCU indicates with a warning when a service is past due.

Next Service Interval

Press the Tab button to see the next service interval.

Service Done

Press this button when the service has been completed. The counter restarts.



The Service done operator event appears in the event log.

DM2

DM2 presents stored trouble codes according to SAE J1939, and the DCU can retrieve stored DTCs / DM2 from a J1939 node. It needs to select a J1939 node.

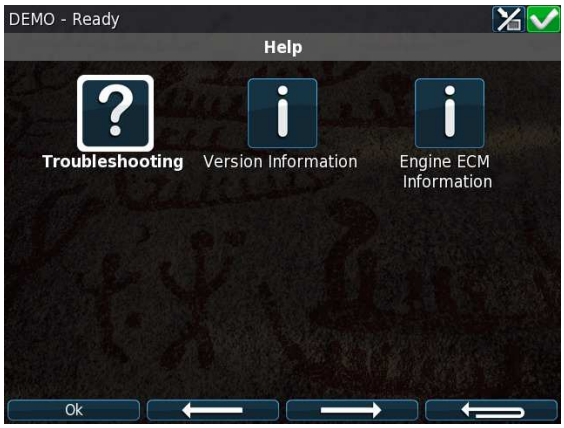
Screen Backlight

Select the desired backlight intensity.

Note that if 10% is selected, the DCU will still switch to 50% backlight intensity while in the menu.

Help

The help menu has information about the panel and troubleshooting information.



Troubleshooting

The DCU has a comprehensive troubleshooting screen for the DCU, and also for each of the optional expansion units.

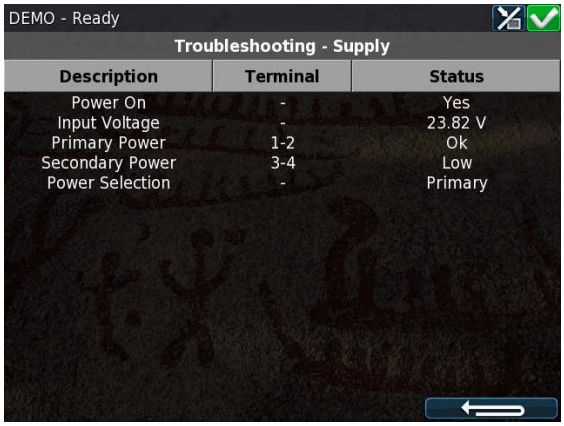
Troubleshooting DCU

Note that there are *three* troubleshooting screens for the DCU.

Below is screen one.

Supply

The two power supplies are listed, with information about voltage and supply selection.

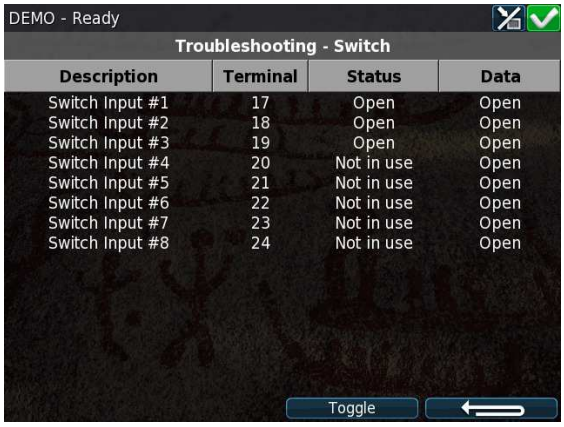


The DCU automatically select its power from either the primary or the secondary supply.

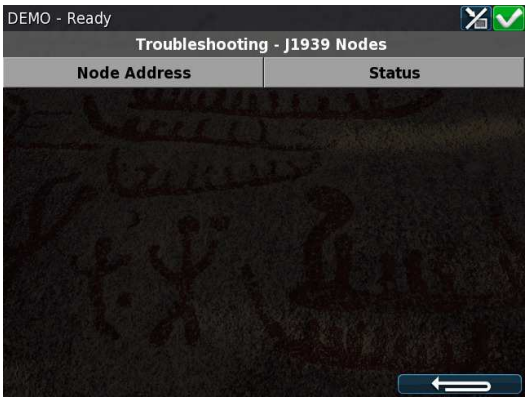
In the above example, the secondary supply is low, so the DCU selected the primary power.

Switch

For each of the eight switch channels, this section indicates if the switch is open (0V) or closed (24V input).



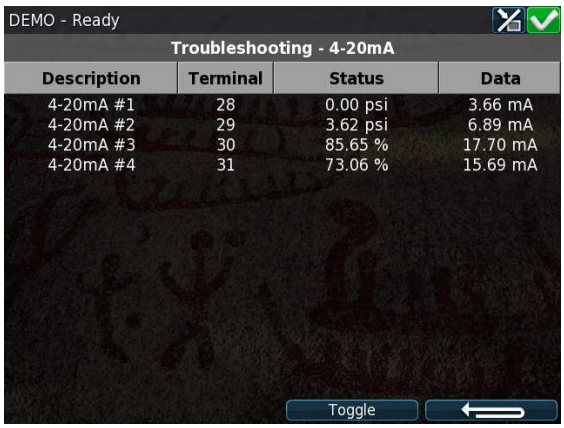
If for instance the troubleshooting screen indicates open, and there is a



24V signal connected to the input channel, then that input channel is broken.

4-20mA

There are four channels on the DCU.

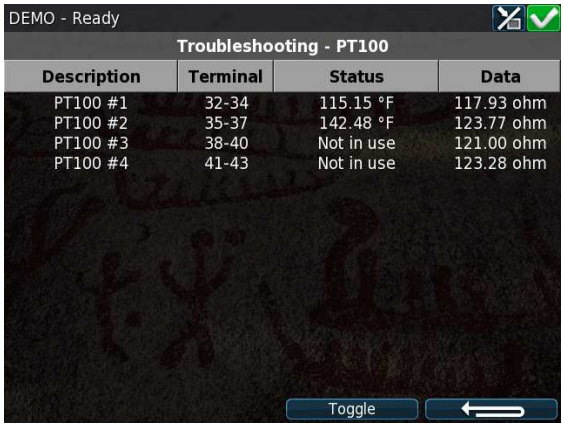


For each of the channels, there is an indication for:

- Value, in configured unit (if any)
- Value, in mA
- Broken wire (if <2mA)
- Short circuit (if >25mA)
- Channel in use or not

PT100

There are four channels on the DCU.



For each of the channels, there is an indication of:

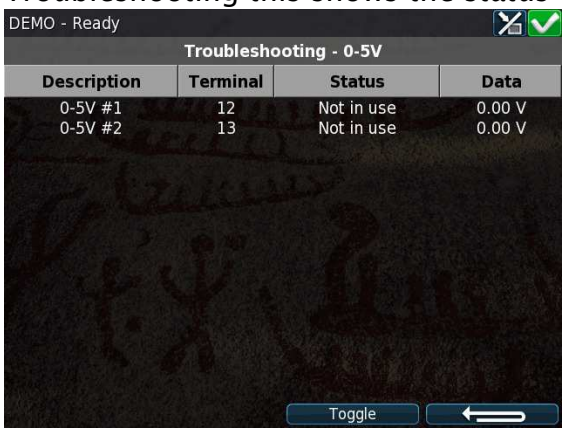
- Value, in configured unit (if any)
- Faulty channel
- Channel in use or not

J1939 Nodes

Displays the status (Active / Lost / mm) on the J1939 nodes that exist or have existed. Is not stored in the DCU, but this list is built up at power-on.

Volatge Sensor

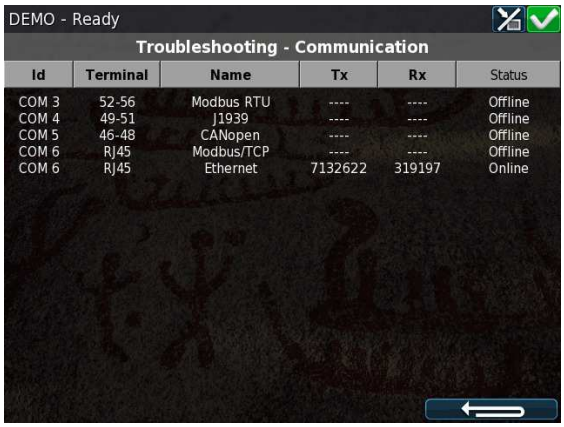
Troubleshooting this shows the status



of the 2 x voltage sensor, which is 0-5V.

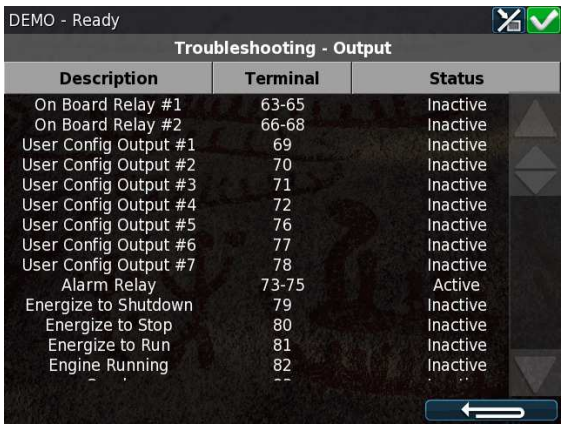
Communication

This section lists communication status for communication ports COM 1 to COM 6.



Output

This lists the output status on DCU terminals 63 to 84.



If for instance terminal 81 indicates 'Active' (24V) but a voltmeter indicates that there is no 24V on terminal 81, then that output channel is faulty.

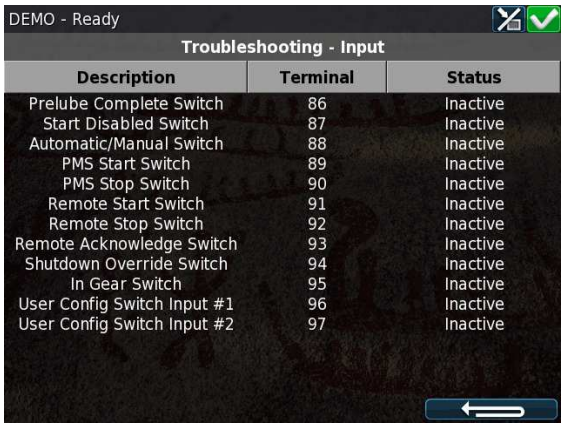
MK14 Output

Displays the status of the MK-14 interface.

Input

This lists the input status on DCU

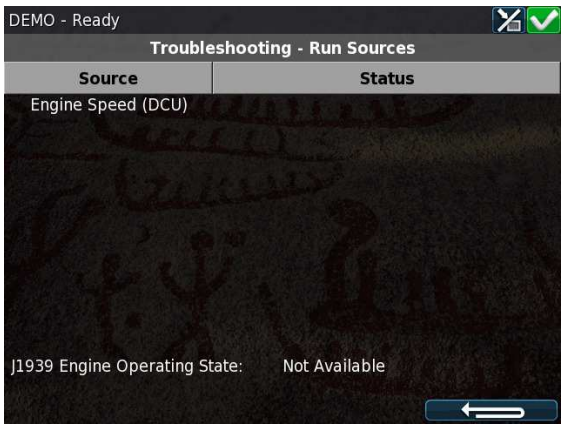
terminal 86 to 97.



If for instance DCU terminal 89 is measured to 24V, but the troubleshooting screen for that channel indicates 'Inactive', then that input channel is faulty.

Run Sources

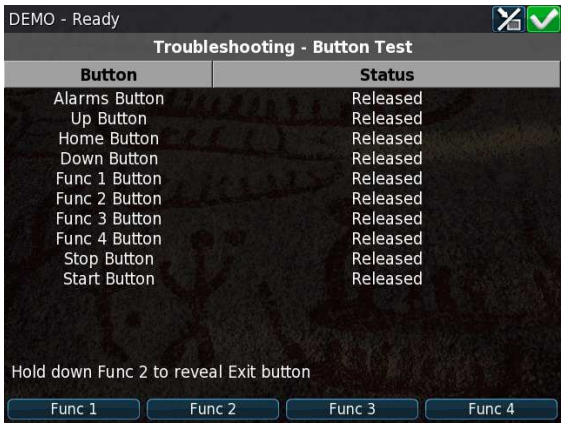
A number of different sources can be configured to indicate for the DCU that the engine is running.



This page indicates which source is giving the DCU a running engine indication.

Button Test

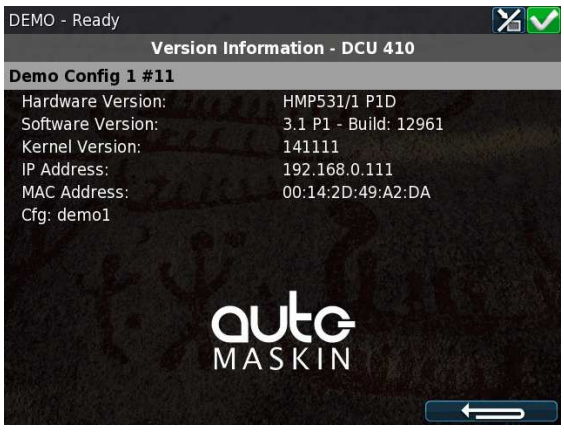
This option makes it possible to test that all DCU buttons work.



To leave the test, press and hold button Func 2, then press button Func 4.

Version Information

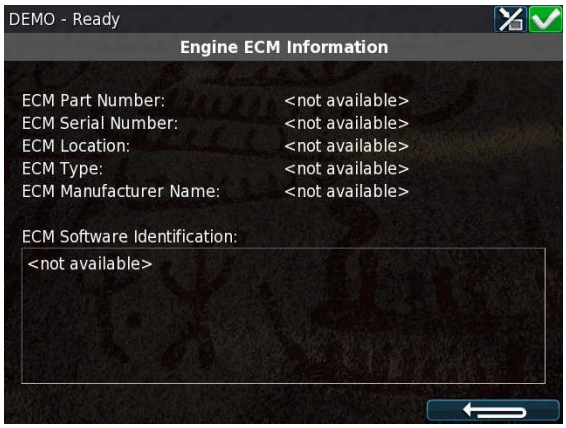
This displays the firmware number of the DCU, and also the IP-address.



Press the Details button to see further software component versions.

Engine ECM information

Shows ECM information according to SAE J1939 PGN 0xFDC5 (ECU ID), as well PGN 0xFEDA (ECM Software Identification).



RP 410E Operation

Introduction

The RP 410E is a remote panel for DCU's in the 200 and 400 series.

It can monitor and control up to eight DCU's.

Home

The small Home button always displays the first page of instruments.

If the RP is connected to more than one DCU, then the Home button displays the engine overview to select an engine first.

Note! Long-press (~1 sec) the Home button is a shortcut to the main menu.

Alarm List

Press this button to enter/leave the alarm list.

Start

Press this button to initiate the start procedure.

Stop

Press this button to initiate the stop procedure.

Screen Layout

The screen is divided into three main sections:

Status bar

The upper bar on the screen is the status bar.

It displays engine status on the left-hand side, and status indication symbols on the right-hand side.

Softbutton bar

The bottom bar on the screen is reserved for softbuttons.

Softbuttons change depending on the current screen.

Main screen area

This is where all instruments and menu icons are displayed.

Status bar symbols

These are the symbols in the top-right area of the status bar.

Several symbols may be visible simultaneously.

DCU is in *automatic* or *emergency* mode.

DCU is in *manual* mode.

DCU is in *local* mode.

DCU is in *harbor* mode.

DCU is in *shutdown override* mode.

Service past due on one of the DCU's.

All OK on all DCU's.
(no alarms)

This RP is not the active station for any of the connected DCU's.

This RP is the active station for at least one - but not all – the connected DCU's.

This RP is the active station for all connected DCU's.

Start Engine

Press the Start button. The Start Engine dialog as shown below – or similar – is displayed.

Select the engine(s) to start by selecting them on the touch screen, and then observe the following dialog.

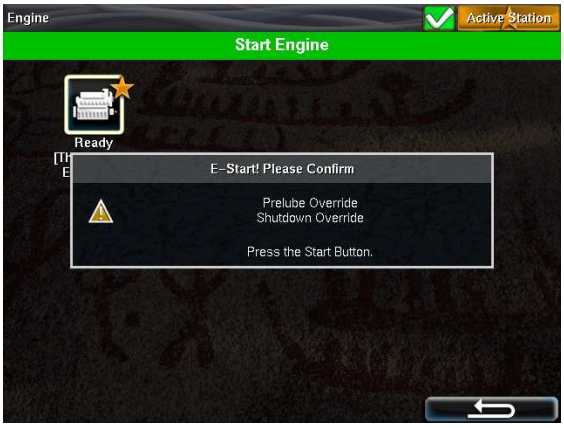
Now, press the Start button again to start the selected engine(s).

Note! If the DCU is not configured for a latched start sequence, then it is necessary to hold the start button until the engine has started.

E-Start

If the DCU is configured for E-Start, an Emergency Start option is available in the Start dialog.

See the previous picture.



Note! Activating E-Start will override any configured Prelube and also set Shutdown Override. The engine will start immediately, and run in a Shutdown Override setting.

The operator can switch off Shutdown Override once the engine has started.

Stop Engine

Press the Stop button. The Stop Engine dialog as shown below – or similar – is displayed.

Select the engine(s) to stop by selecting them on the touch screen, and then observe the following dialog.

Now, press the Stop button again to stop the selected engine(s).

Note! If the DCU is not configured for a latched stop sequence, then it is necessary to hold the stop button until the engine has stopped.

Alarm List

Enter the Alarm List

Press the Alarm List button to enter the alarm list.

Press the Alarm List button again to leave the alarm list.

The star before the engine name indicates this RP is the active station for that engine.

The yellow dot in the Alarm Views button indicates some filtering is active.

Silence the Buzzer

If the buzzer sounds, press the alarm list button to silence the buzzer.

- If the alarm list is currently *not* displayed, then this operation will display the alarm list.
- If the alarm list *is* displayed, pressing the alarm list button to silence the buzzer will not exit the alarm list.

Acknowledge a single alarm

- First, select the alarm to be acknowledged by touching it on the screen. Note that it will expand to reveal additional information, if any.
- Press the Acknowledge button to acknowledge the selected alarm.

Acknowledge all alarms

- In the alarm list, press and hold (1 sec) the Acknowledge button. This acknowledges all alarms.

Note! Alarms that are still active will stay displayed in the screen until they go inactive. They will have a grey background.

Active Station indication in the Alarm List

If a star is displayed just before the engine name – as in the picture above – it means this RP is the active station for that engine.

Note! The RP must be the active station for a certain engine to be able to acknowledge alarms on it.

Filter Alarms

The RP can receive alarms from up to eight different DCU panels.

If alarm filtering is desirable, there are two buttons for this purpose:

- Engine Views (softbutton #2)
- Alarm Views (softbutton #3)

Note! A yellow dot in the button indicates that a filter is applied.

See the button Alarm Views in the picture above for an example.

Engine Views

Press 'Engine Views' for an engine filter selection.

This lists all engines the RP is connected to, and also 'This Station' and 'All'.

This Station

This selection will display alarms built into the RP panel only, and not any of the alarms originating from the DCU.

Engine Name

Press any of the engine names to display alarms from this engine only.

All other engines and also RP panel alarms are suppressed.

All

No filtering; all alarms from all sources are displayed.

Alarm Views

Press 'Alarm Views' to filter alarm types from the DCU panels.

Panel Alarms

This selection filters away diagnostic alarms from the ECM[1], and displays all other alarms.

ECM Diagnostics

This selection filters away all alarms but the diagnostic messages and alarms coming from the engine ECM.

All

No filtering; all alarms from all sources are displayed.

Further reading

For an explanation on the use of colors and bold text in the alarm list, see the chapter The Alarm List.

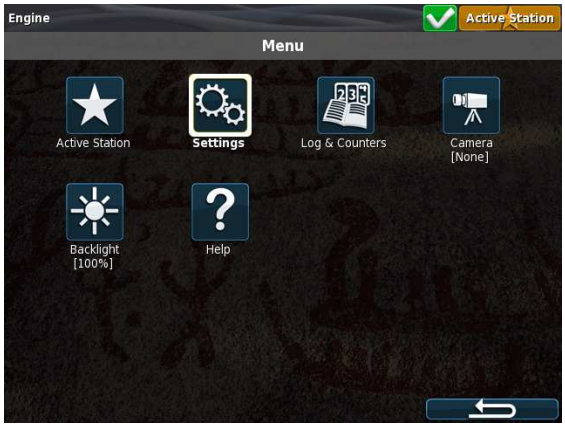
[1] ECM = Electronic Control Module

Menu

There are two ways of accessing the main menu.

In instrument view:

- Press the softbutton 1 Menu button.
- Press the middle of the screen and hold for ~1 sec.
- Press the home button for ~1 sec.



Upon entering the menu, the previously used menu item is selected.

Active Station

The dialog displays all the engines the RP is connected to.

This RP is the active station for the engine(s) marked with a star.

Request the Active Station status

If the RP is not the active station for a certain engine, then a request can be sent to the RP with the current active station status.

Select the desired engine and then select Request.

Note! If there is exactly one RP in the network, it may initially not be the active station. Select it once. The current selection is stored, also after reboot.

Release the Active Station status

A DCU that is currently the active station on this RP (marked with a star) can be released, so that other RP's can take it.

Select the engine that is to be released, then press the Release button.

Settings

This Setting menu has a subset of less used user settings.

Units

Select to toggle between Metric and U.S. units on this panel.

Calibrate Touch

Select to re-calibrate the touch screen, is necessary.

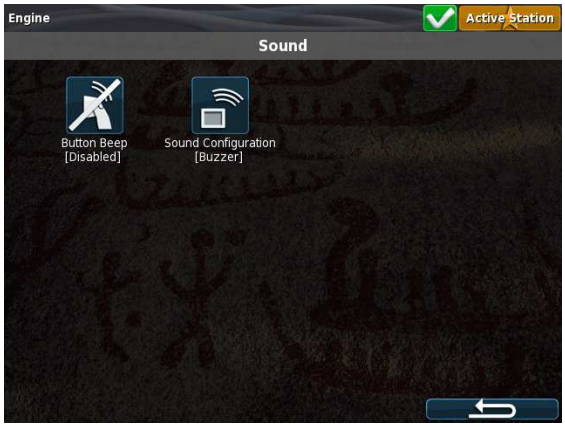
Wallpaper

Select a wallpaper/background for each of Instrument, Menus and Popups.

Sound

The Sound option controls audible notifications.

Select between the inbuilt buzzer or the inbuilt speakers.



Button Beep

Toggle this to enable or disable the button beeps.

Sound Configuration

The RP panels has inbuilt speakers for alarm- and notification sounds.

Select to use the speakers or the inbuilt buzzer for audible feedback.

Note! The 3.5 mm line out output on the rear lid can be connected to external speakers if necessary.

Language

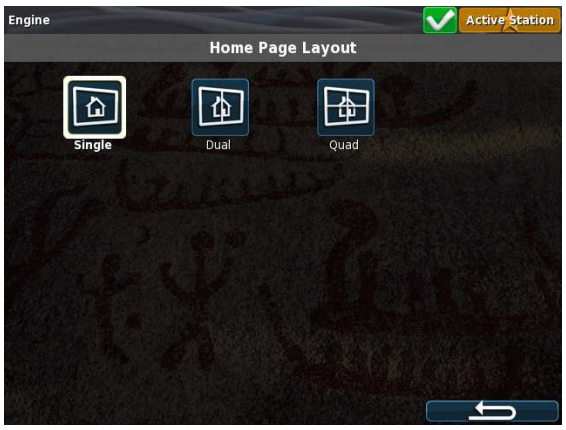
Select the appropriate RP operator language.

All texts internal to the RP are translated.

All texts internal in the DCU are translated, however user configured channels must be translated during commissioning of the DCU.

Home Page Layout

The Home page is accessed by pressing the Home button, and is the top level in the instrument hierarchy.



The Home page can use the entire screen for a single engine, or it can be divided into two or four rectangles.

Each rectangle then represents instruments for one engine.

For instance, if there are three engines connected to the RP, one can choose the following layout:

Single Screen

The Home button displays the engine with the lowest IP-address (usually engine #1).

Access to other engines will be from the Previous/Next buttons.

Dual Screen

If the screen is divided in two, the left pane displays engine #1, and the right pane displays engine #2.

Access to other engines is from the Previous/Next buttons.

Quad Screen

If the screen is divided into four rectangles, the top left quadrant displays engine #1, the top right quadrant displays engine #2, and the bottom left quadrant displays engine #3.

If there are 4-8 engines installed, the access to these engines will be from the Previous/Next buttons.

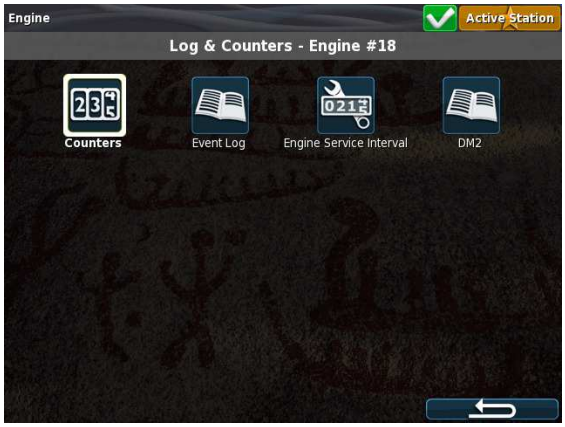
Administration

This is the submenu for accessing administrative configuration, and is not discussed in this manual.

Log & Counters

The counters page displays engine running hours for all the engines.

Note! Depending on the configuration, these values originate from the engine J1939 CAN bus or the DCU internally accumulated values.



Counters

This page displays the Total, Since Start and Since Reset values from each engine.

Event Log

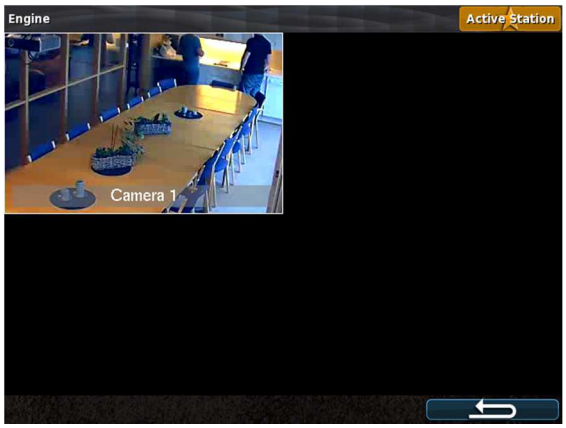
This displays the event log for the selected engine as from the RP panel itself.

Engine Service Interval

This displays the upcoming service intervals for the selected engine.

Camera

The RP panel can be connected to up to four IP-cameras.



Touch the picture to expand it to fill the entire screen.

Touch the picture again to reduce the size.

Backlight

Select between different screen backlight settings.

- 10% backlight intensity
- 50% backlight intensity
- 100% backlight intensity
- Automatic varies automatically between 10% and 100% intensity.
- Night Mode switches off the backlight completely, and also switches off LEDs. For any user interaction or alarm, the panel behaves as in Automatic.

Help

Select Troubleshooting, Version Information or Configuration Overview.

Troubleshooting

This is for troubleshooting communication and panel I/O.

Inputs

See status for RP panel inputs.

Outputs

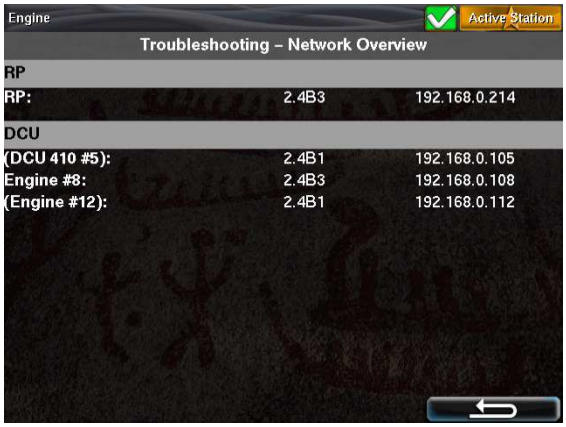
See status for RP panel outputs.

Communication

See status for RP communication channels.

Network Overview

This gives an overview of all the RP and DCU panels currently connected in the network.



Panels listed in parenthesis are detected on the network but not configured connected to this RP.

The Alarm List

The following is valid for the alarm list in the DCU and RP panels.

Severity number

The number in the leftmost column, preceding the alarm text, gives information about the severity of the event as follows.

This is mostly as an aid to the colorblind, as the colors gives most of the information otherwise.

Number	Event	Background color w/ active
0	Shutdown	Red
1	Alarm	Red
2	Warning	Yellow
3	Diagnostic	White

Bold text

- An unacknowledged event is in **bold text.**
- An acknowledged event is in normal text.

Background colors

- An alarm is displayed on a red background.
- An engine shutdown is displayed on a red background with a small “STOP” sign.
- A warning is displayed on a yellow background.
- A diagnostic message is displayed on a white background.
- An unacknowledged event that turned inactive before acknowledge, is displayed on a grey background. For instance, the coolant temperature may have been above the setpoint, and then dropped below the setpoint again before the operator acknowledged it.

Sample events

See sample events with explanations in the alarm list below.

Alarm List	
0: New active Shutdown	***(bold text, red background, STOP sign)***
1: Acknowledged active Alarm	*(red background)*
1: Unacknowledged inactive Alarm	***(Bold red text, grey background)***
2: New active Warning	***(bold text, yellow background)***
2: Acknowledged active Warning	*(yellow background)*
2: Unacknowledged inactive Warning	***(bold yellow text, grey background)***
3: New White Diagnostic	***(bold text, white background)***
3: Acknowledged White Diagnostic	*(white background)*
3: Unacknowledged inactive Diagnostic	***(bold black text, grey background)***