Touch 10 User Guide

v1.0.1

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Important

Mastervolt strives to ensure all information is correct at the time of printing. However, the company reserves the right to change without notice any features and specifications of either its products or associated documentation.

Translations: In the event that there is a difference between a translation of this manual and the English version, the English version should be considered the official version.

FCC Statement: This device complies with the limits for a Class B digital device, pursuant to part 15 of FCC rules. These rules pertain to reasonable protection from harmful interference in a normal installation. This equipment generates extremely low levels of radio frequency energy which should not interfere with normal radio equipment if installed properly. If interference is detected and attributed to this device, you could try to:

- re-orient or relocate the receiving antenna
- separate the equipment and the receiver
- isolate circuit output between the device and the radio
- contact an experienced technician or dealer to help.

It is the owner's sole responsibility to install and operate the device in a manner that will not cause accidents, personal injury or property damage.

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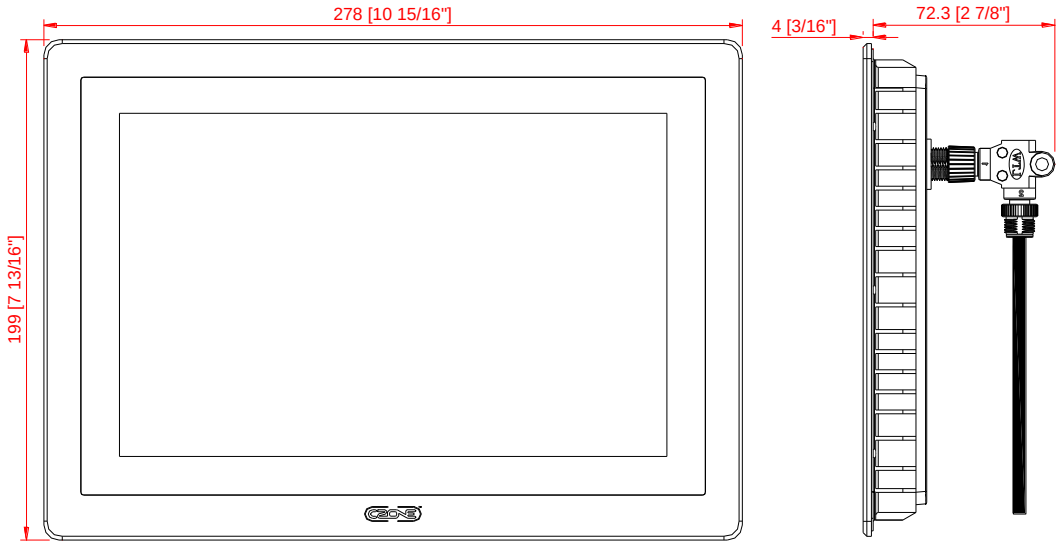
1 General Information

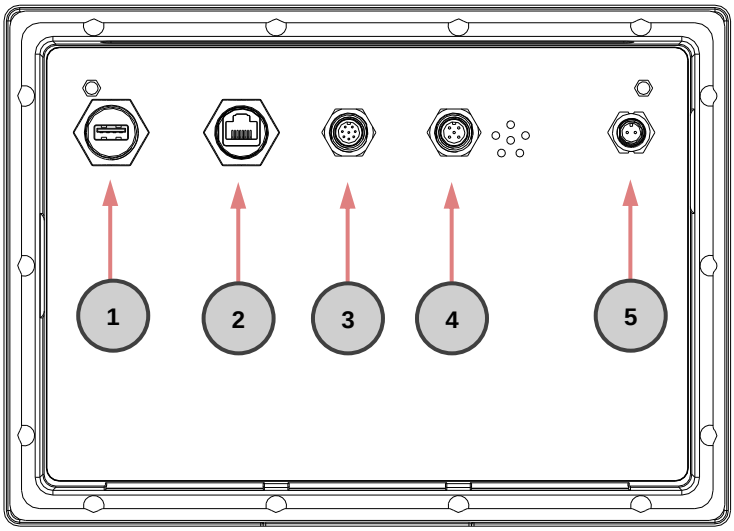
1.1 Description

CZone Touch 10 is a 10.1” colour touch-screen, which operates as a Display Interface on any new or existing CZone network. It is designed especially for marine environments and has no moving parts. With its large touch-screen and multiple levels of backlighting, Touch 10 provides fast and positive operation in all visibility conditions. Together with toughened glass and splash proofing, this makes it ideal for cockpits and other exposed locations.

1.2 Dimensions



1.3 Connections



1. USB 2.0
2. Ethernet
3. GPIO (General Purpose Input Output)
4. NMEA 2000
5. 8-32V DC power

2 Getting Started

2.1 Installation

Refer to the supplied CZone Touch 10 Mounting Template for mounting and installation instructions

- Run the supplied power cable to a suitable 12V or 24V supply through a fuse rated at 3A
- Run an NMEA2000 cable from the NMEA2000 connector to an NMEA2000 network backbone

2.2 First Power Up

If connecting Touch 10 to an existing CZone network, ensure the display has been added to the CZone configuration file and assigned a dipswitch. Every CZone device on a network requires a unique dipswitch to operate correctly, and the Touch 10 has a virtual dipswitch. Refer to the CZone Configuration Tool manual for this process.

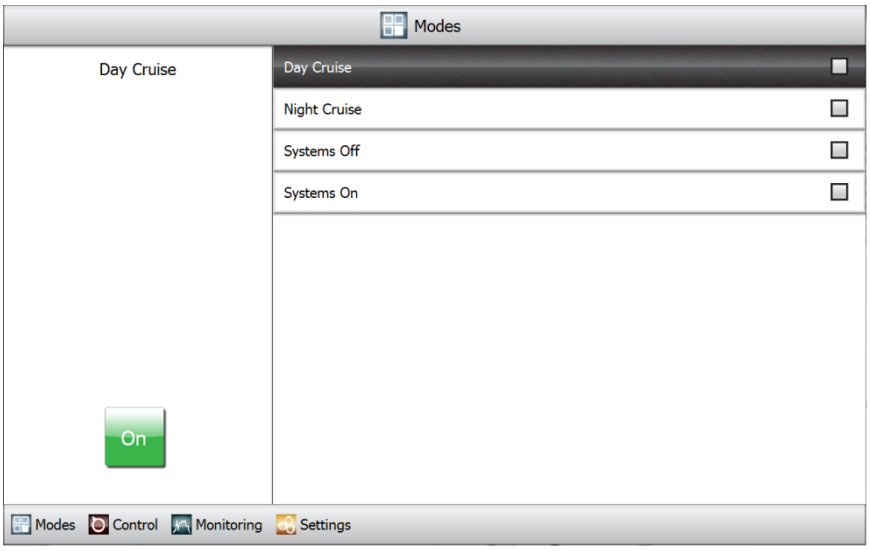
1. Turn on the circuit breaker or switch supplying power to the Touch 10.

2. The CZone splash-screen will appear for about 10 seconds then the text ‘Starting Configuration Claim’. Touch 10 will now read the CZone configuration file from another CZone device on the network.

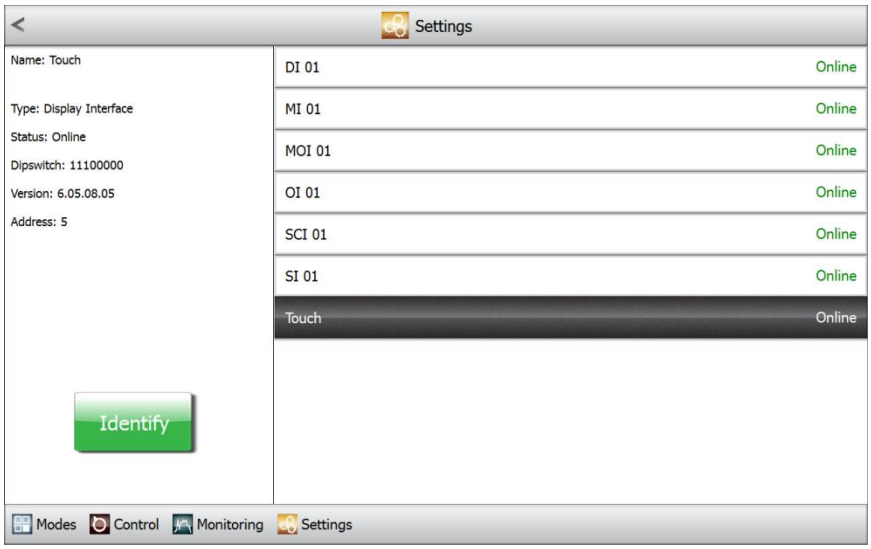
3. When configuration has been successfully read the text ‘Configuration Successful’ will appear. It is also possible to write the configuration to the network at a later date for new installations.

4. Select the virtual dipswitch from the list of configured CZone devices, for new installations the dipswitch can be set by selecting Dipswitch from the Settings ⇨ System page.

5. Once dipswitch has been set the Modes page from the configured system will appear.



6. To ensure network connections are good and that Touch 10 can see the rest of the CZone devices go to the Settings ⇨ Network page and check configured modules are showing ‘Online’.



7. Update software on Touch 10 if a newer version is available. Current software version can be checked by selecting About from the Settings page. Refer to Chapter 3.2.4.1 on Page 26 for software update process.

8. Touch 10 is now ready for use.

3 Operations in Detail

3.1 Accessing a Function Within its Group

3.1.1 Groups of Functions, and the Tabbed Main Menu

CZone operations are divided into four functional groups:

1. **Modes** - complete setups for operating the vessel in a consistent way: for example, when docked; cruising at night or in daylight; at anchor; and so on
2. **Control** - individual control of the vessel's equipment, such as pumps, lights, refrigeration and power isolators
3. **Monitoring** - measurement of the vessel's devices and subsystems, including tank levels, AC and DC power sources such as batteries and inverters, alarms and others
4. **Settings** - control over Touch 10 and CZone parameters, rather than other on-board equipment. This includes units of measurement, backlight settings, time zones, etc.

Touch 10 offers a tab-based main menu, with a "home tab" for each of the above functional groups. (The menu is shown in Figure 1. It is displayed along the bottom of the screen at all times except when a keypad overlay is shown.)

Figure 1 Touch 10's Tab-based Main Menu

To access any function in a group, start by clicking its home tab. The GUI will display the tab's home page, a top-level selection with functions divided more finely into sub-categories. (See Figure 2 for an example.)

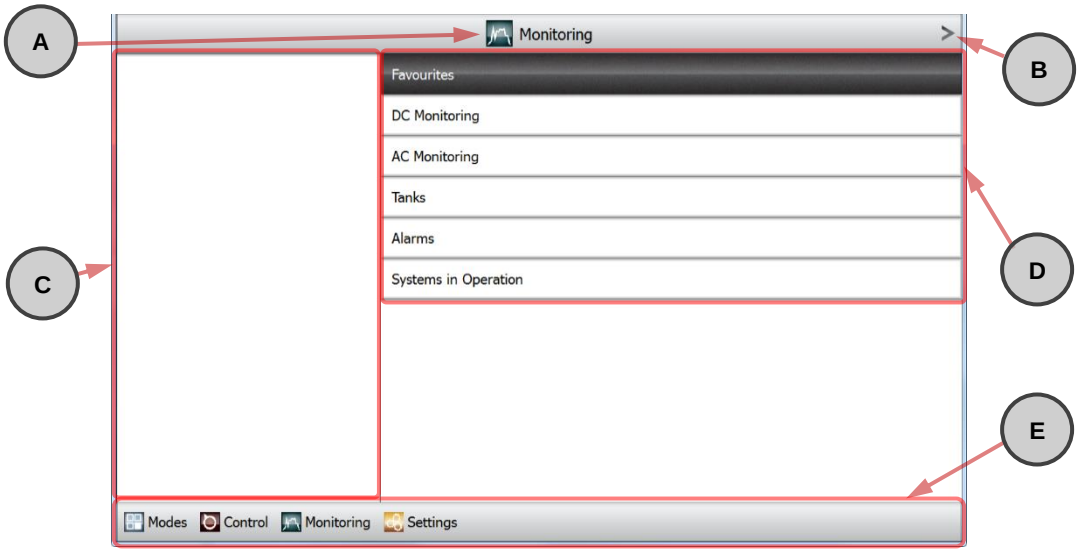


Figure 2 Home-page for the Monitoring Functional Group

A Title, showing name of current functional group.

B Accept button. Clicking this has the same effect as clicking the highlighted sub-category.

C Display panel. (This remains blank unless used by the current function, e.g. to mimic meters for monitoring.)

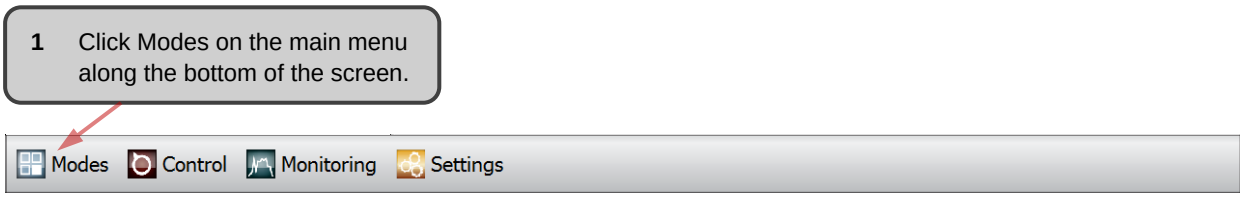
D Sub-categories available for further selection. (In this example, clicking the Accept button will drill down further into the highlighted Favourites sub-category.)

E Tab-based main menu.

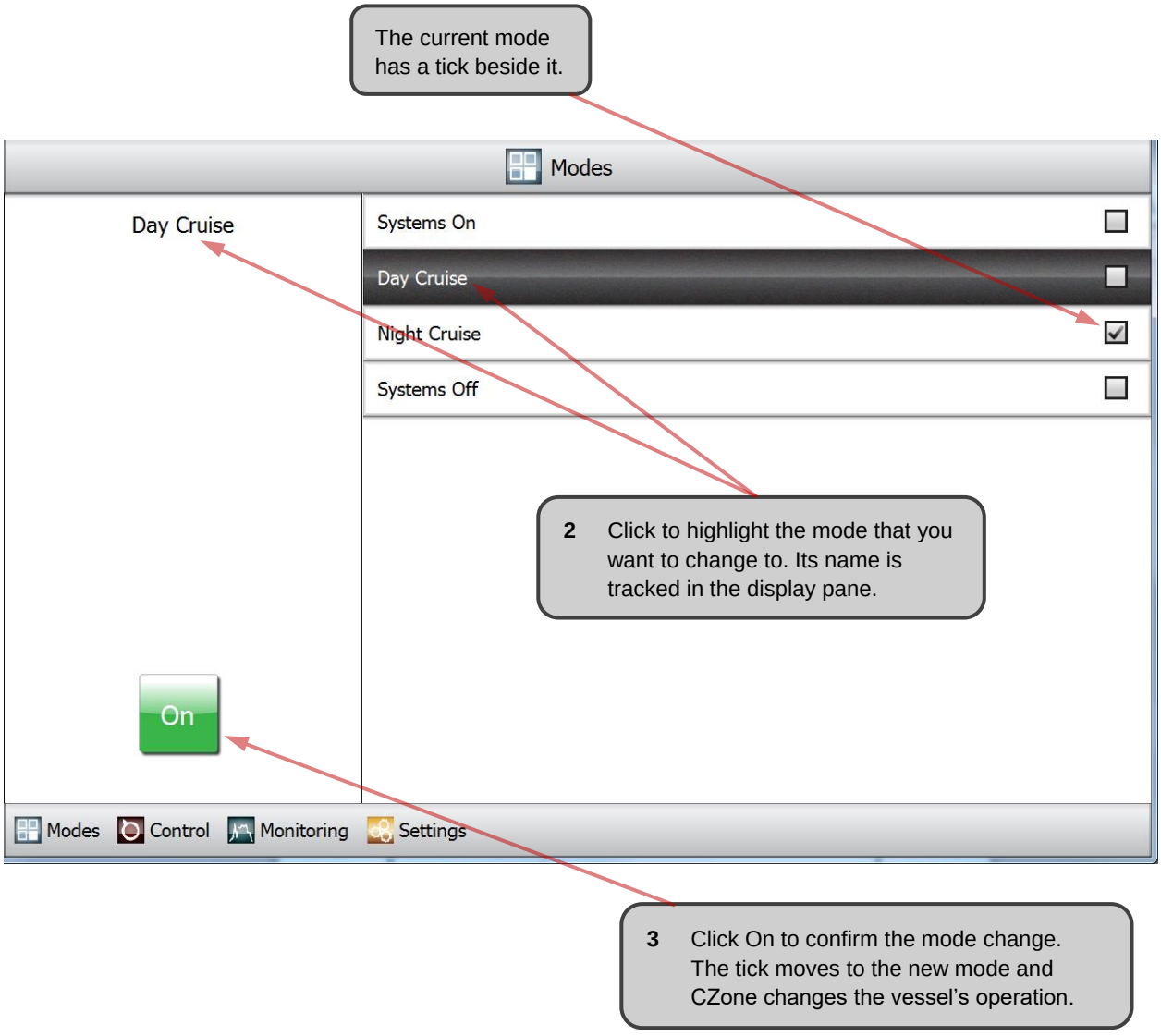
3.2 CZone Functions by Group

3.2.1 Modes

The Modes group is very simple to navigate because it has only one level. This is deliberate: changing modes is intended to reconfigure the vessel's operation as easily as possible. Modes will vary between vessels and are configured by the boatbuilder.



The Modes home-page appears, listing all available operating modes that have been configured for the vessel. The topmost mode is highlighted. The following is an example screen showing how to change modes:



Modes are configured by the boatbuilder using the CZone Configuration Tool. Only one mode from a ‘mode group’ can be selected at a time; most vessels have only one mode group.

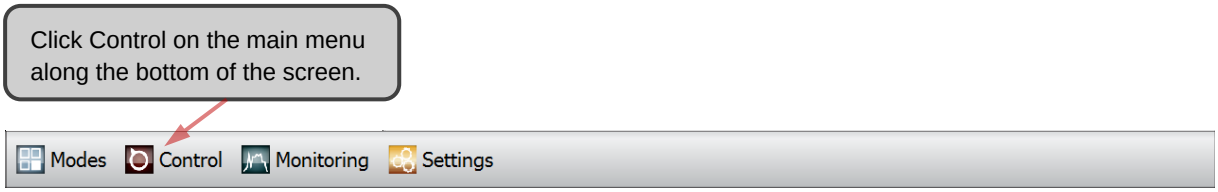
If the Modes page has ticks beside two or more modes then the vessel has more than one mode group. In that case several modes can be in force at a time, one from each group, and an Off button may appear beside the On button shown above.

Below is an example which summarises the effect that selecting a mode has on the vessel’s systems. The boatbuilder should supply a similar summary for each of the modes configured for a particular vessel.

	Modes Configuration			
	Systems On	**Day Cruise**	**Night Cruise**	**Systems Off**
Backlight Zone 1	On	On	On (30.0%)	Off
Cabin Lights	On	Off	On (2.0%)	Off
Charger	Not Used	Not Used	Not Used	Not Used
Courtesy Lights Blue	Off	Off	On	Off
Courtesy Lights White	On	On	Off	Off
Fan	Off	On	On	Off
Fresh Water Pump	On	On	On	Off
Galley Lights	On	Off	On (2.0%)	Off
Hatch Lifter	Not Used	Not Used	Not Used	Not Used
Navigation Lights	Off	Off	On	Off
Saloon Lights	On	On	On (2.0%)	Off

3.2.2 Control

The main menu's Control tab accesses all configured circuits on the CZone network.



Depending on which CZone modules are on the vessel, you may have one or more of the following four circuit types:

- **DC Control** - 12V or 24V DC loads, such as LED lights and fresh-water pumps.
- **AC Control** - 120V or 230V AC loads, such as air conditioning and AC outlets.
- **AC Mains Control** - a page for controlling/monitoring AC mains supplies (e.g. generator and/or shore power). (Note: Requires a CZone AC Mains Interface.)
- **Inverters/Chargers** - a page for controlling/monitoring Mastervolt Inverter/Chargers.

All AC and DC circuit types are accessible through the All circuit category. Circuits may also be assigned a group category such as Lights or Pumps which allows circuits on large systems to be accessed quickly. There may also be a Favourites category which will be configured by the boatbuilder for fast access to essential circuits.

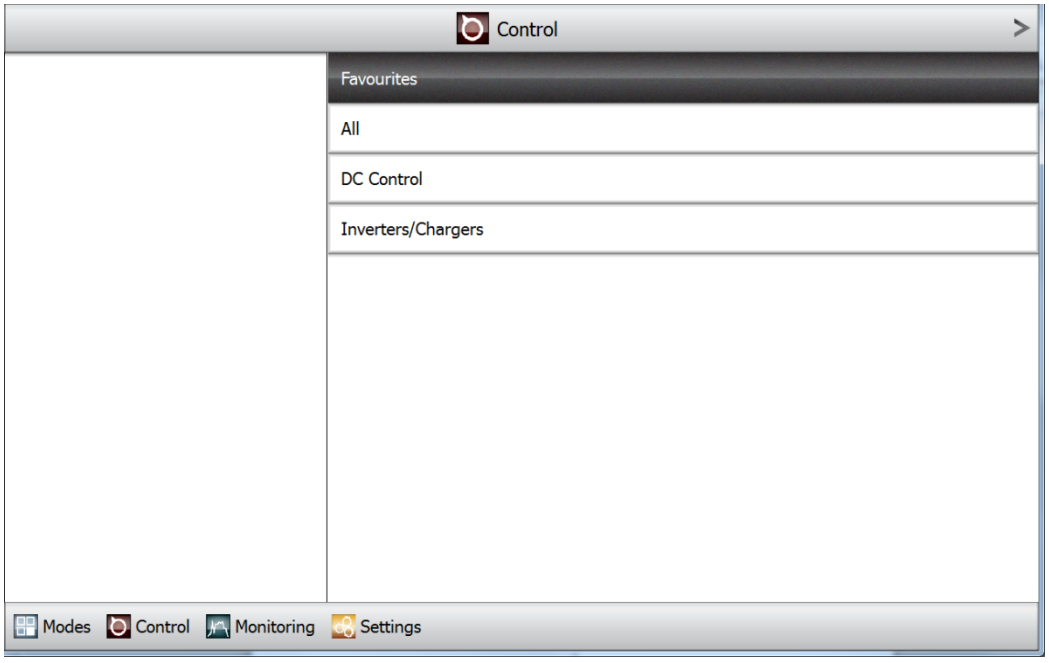


Figure 3 Control Home-page for a Typical Vessel

3.2.2.1 DC Control and AC Control Circuits

All DC Control and AC Control circuits behave in a similar way. An example is shown below:

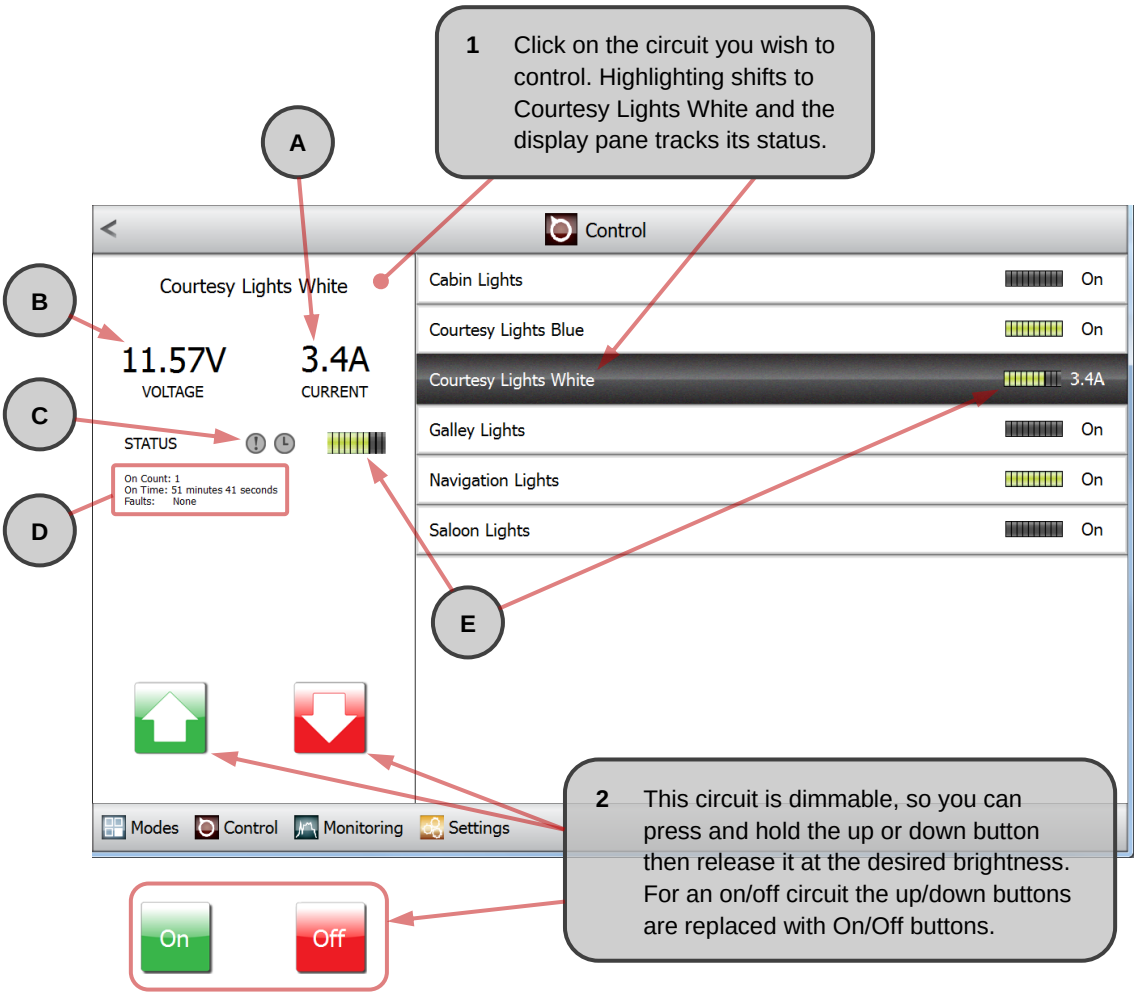


Figure 4 DC Control: the Lights Category

A Current draw is tracked while the circuit is active, or shown as Off

B The voltage from the battery supplying the circuit (if configured) is tracked while the circuit is active, or shown as ▬ ▬ ▬

C The alarm status is grey while the circuit is operating correctly. If an alarm is raised this indicator changes to .

D On Count tracks the number of times the circuit has been activated.
On Time displays the aggregate time for which the circuit has been active.
Faults reports the most recent fault raised by the circuit, or None if it is operating correctly.

E The status bars are dark while the circuit is inactive. When an on/off circuit is active, these indicators change to . The example circuit is dimmable, so the number of lit segments in each status bar tracks the circuit's setting. When an alarm is raised, the status bars change to .

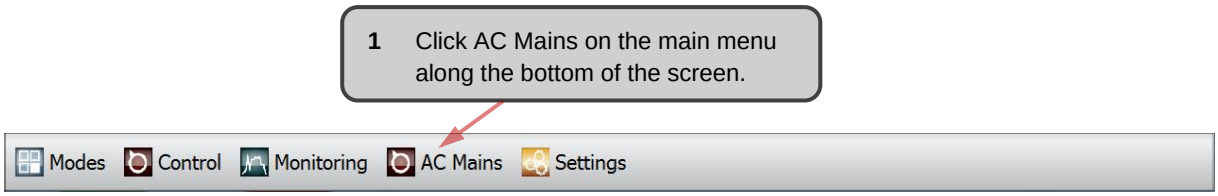
3.2.2.2 AC Mains Control

The AC Mains option appears if an AC Mains Interface module is on the CZone network. It provides a graphical interface for directing power between:

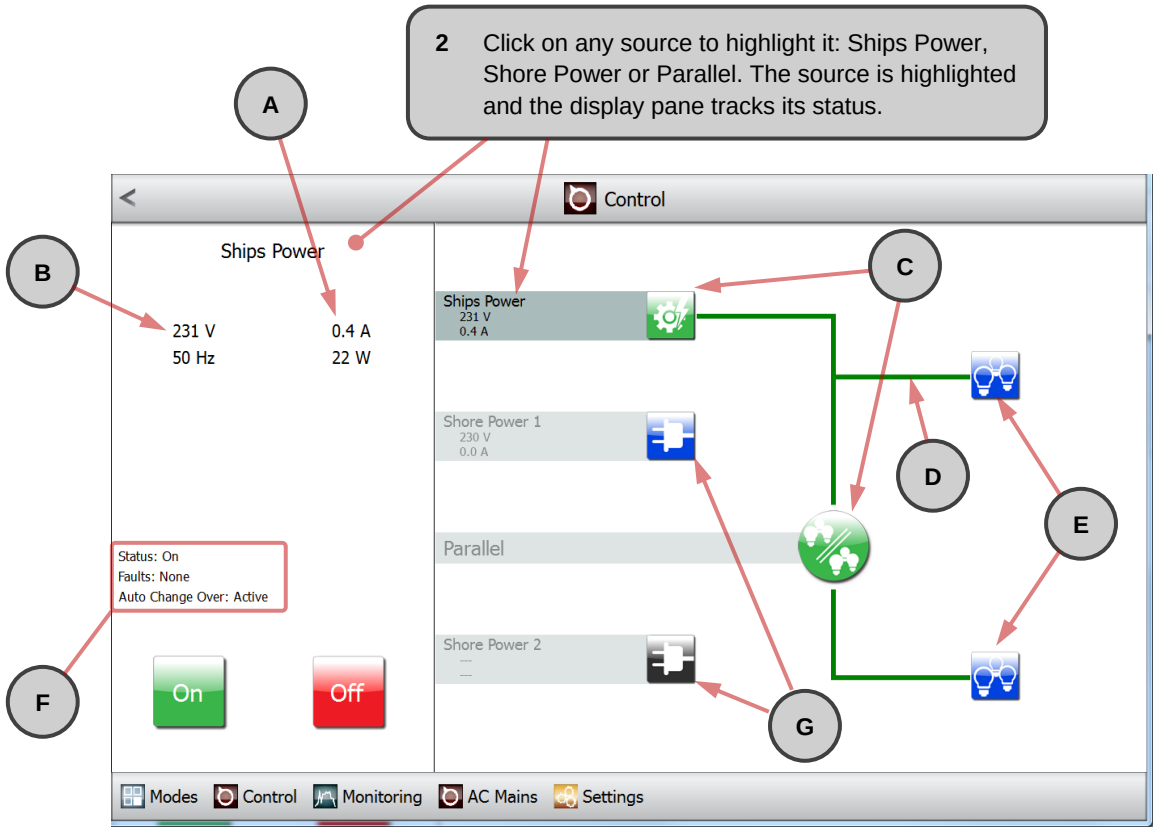
- AC mains sources - e.g. on-board generators and shore power connections

  AND

- AC mains loads - e.g. air conditioners and power outlets.



AC Mains control is configured by the boatbuilder and is likely to differ from vessel to vessel. The example below is typical: the ship is in an operating mode which routes AC mains automatically, depending on the priorities of any available sources.



A Current draw and power consumption are tracked for the selected source

B Voltage and frequency are tracked, even if the source is unloaded

C Sources (including the Parallel circuit-breaker) are coloured green when connected to load-groups

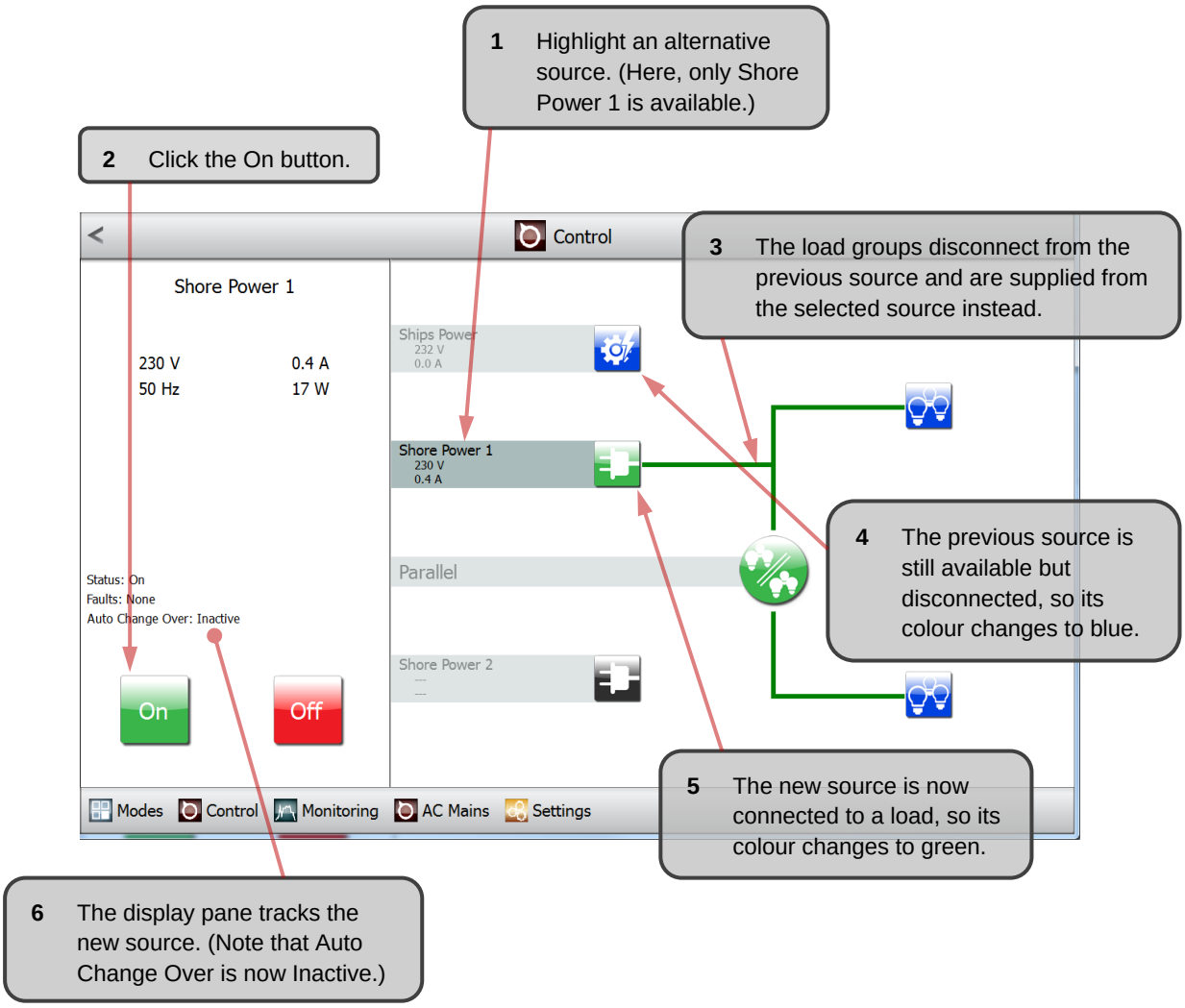
D Connections between sources and load-groups are coloured green

E Load-groups are coloured blue and resemble light-bulbs

F Status reports whether the source is On, Available (but off), or Unavailable.
Faults indicates the most recent fault raised by the circuit, or None if it is operating correctly.
Auto Change Over is Inactive if AC mains is being routed manually. In this example, automatic generator control is in force so Auto Change Over is Active.

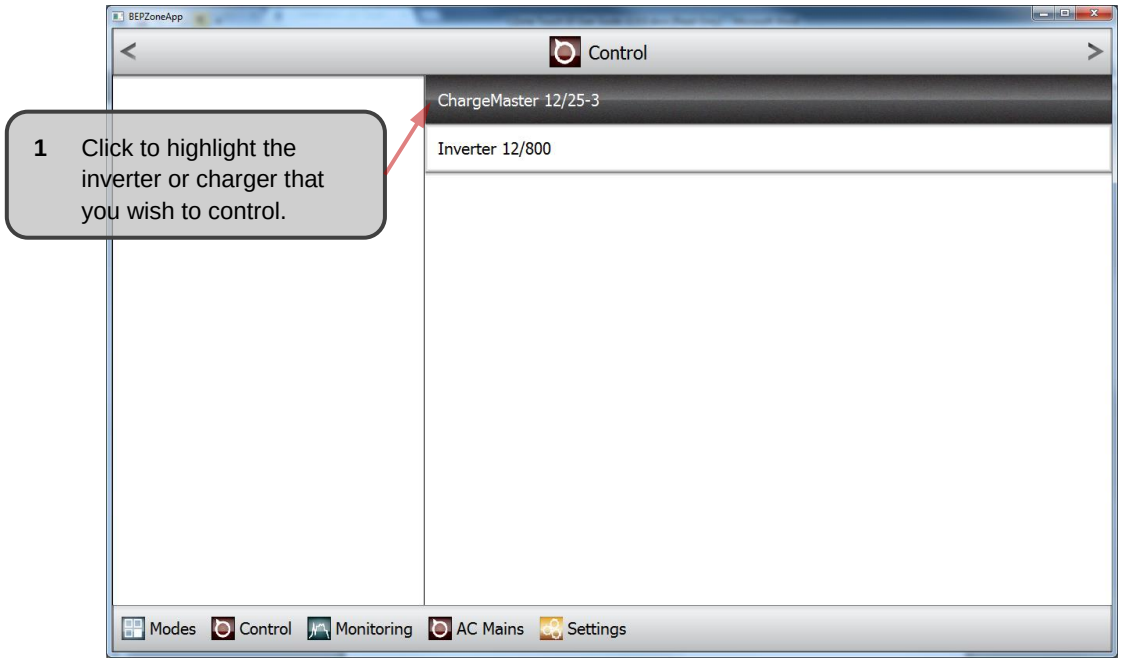
G Sources are coloured blue when they are available but unloaded, or black when they are unavailable.

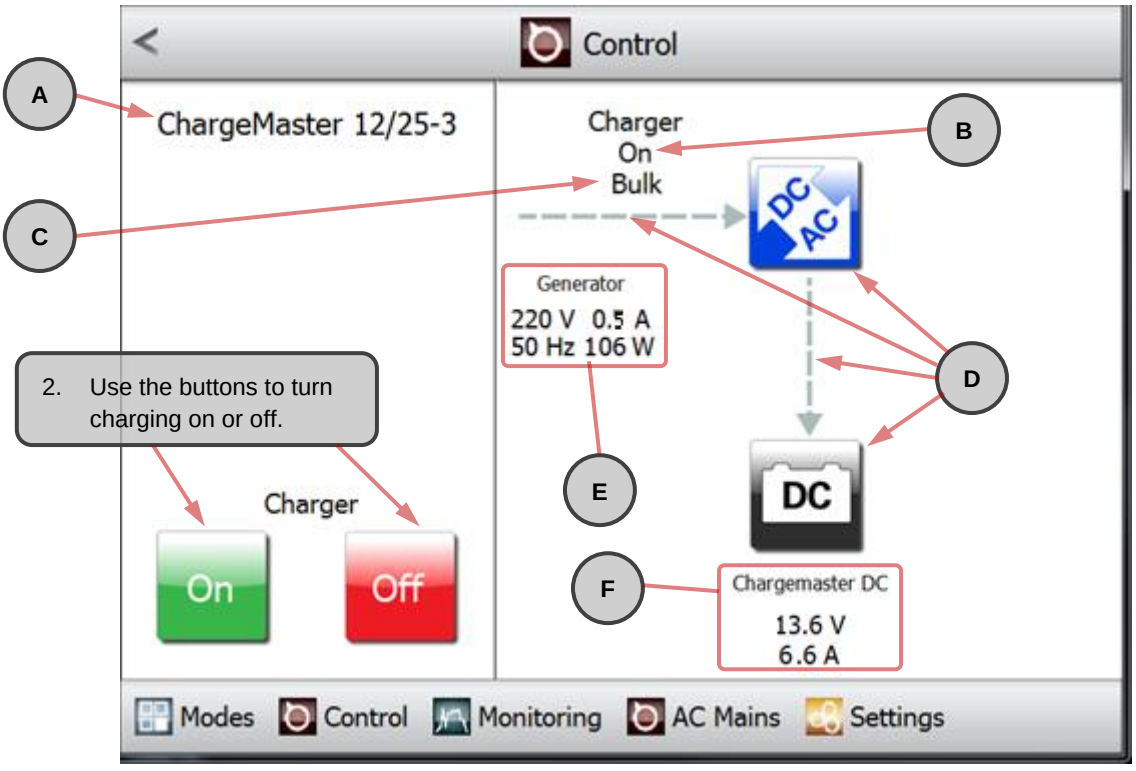
The following screen shows how to override generator control and supply the load-groups from a different AC mains source:



3.2.2.3 Inverter/Charger Control

All Inverter/Charger circuits behave in a similar way; an example is shown below. On choosing Inverters/Chargers from the Control home-page, the available inverters and chargers are listed:





A The name of the selected charger or inverter is shown in the display pane.

B The charger status is shown: On or Off.

C While the charger is On, the charging mode is displayed: Bulk, Absorption or Float.

D The charging circuit is represented using current paths, and icons for the battery and for AC/DC conversion.

E The state of the source is shown: RMS voltage, current drain, frequency and real power.

F The battery's charging state is shown: DC voltage and input current.

3.2.3 Monitoring

The main menu's Monitoring tab accesses all configured metering on the CZone network.

Depending on which CZone modules are on the vessel, you may have one or more of the following five monitoring types:

- **DC Monitoring** - 12V or 24V supplies such as house or starter batteries, and chargers
- **AC Monitoring** - 120V or 230V AC sources, such as shore power supplies, on-board generators and inverters
- **Tanks** – levels for tanks such as fresh-water, fuel, black water or grey water
- **Alarms** - Alarm history, and unacknowledged alarms at four severity levels: Warning, Standard, Important and Critical
- **Systems in Operation** - access to all configured circuits that are active, in the same categories that appear under the Control menu.

There may also be a Favourites category which will be configured by the boatbuilder for fast access to essential meters.

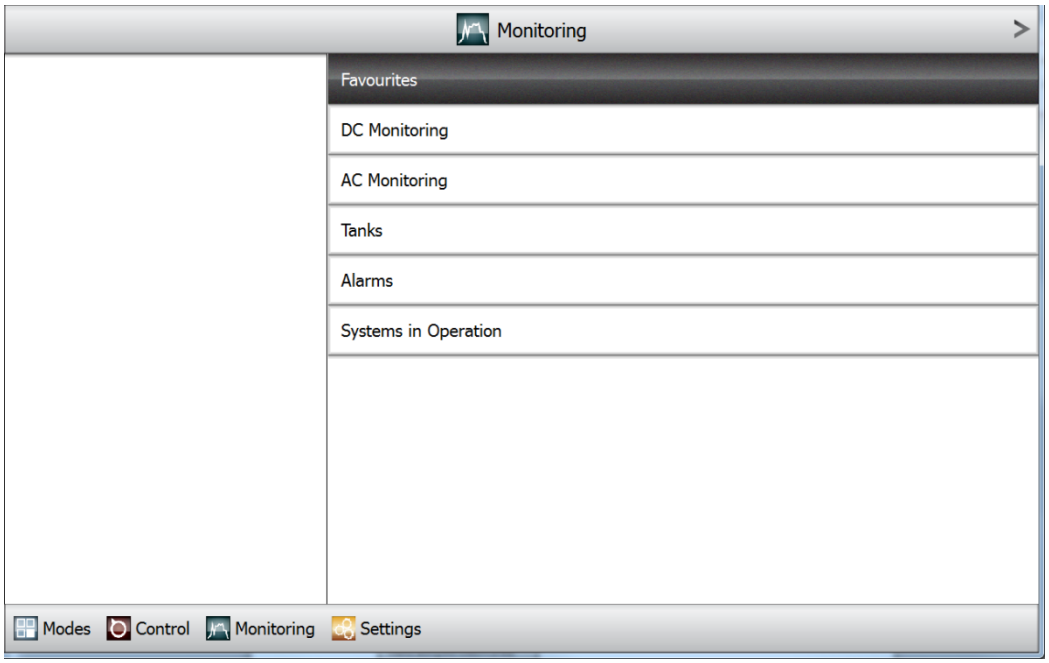
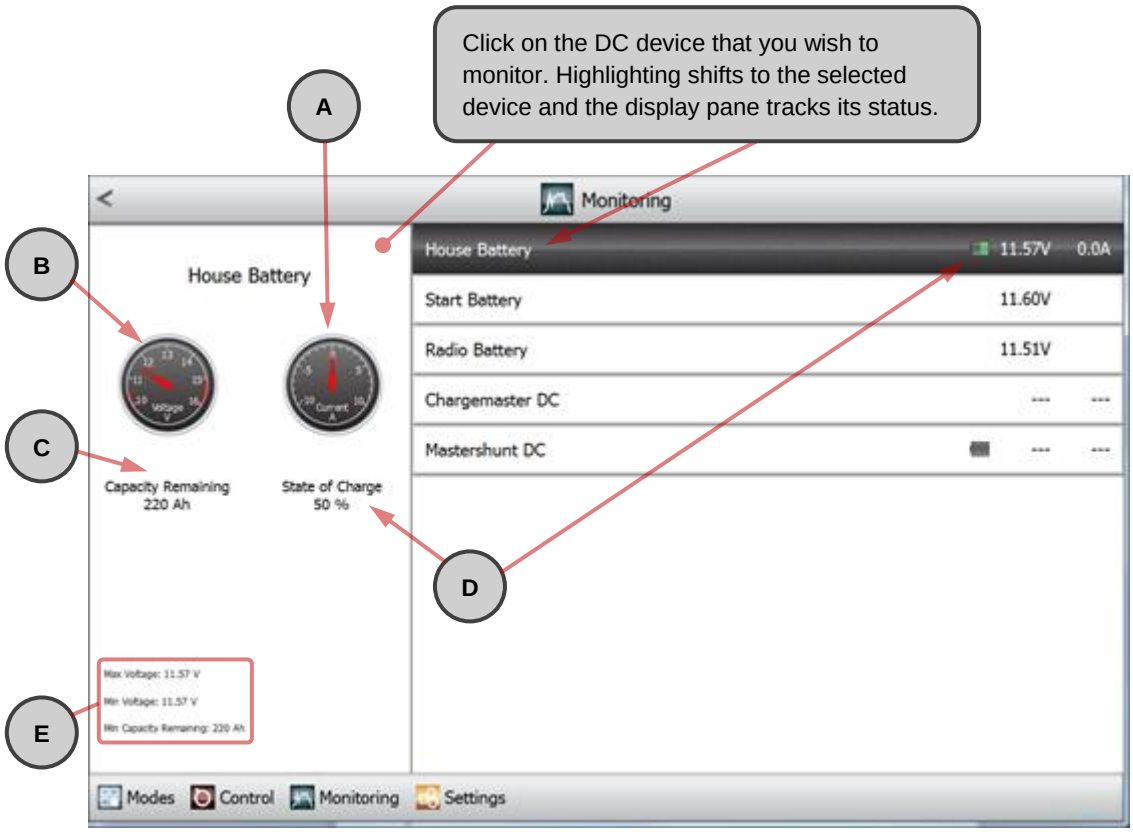


Figure 5 Monitoring Home-page for a Typical Vessel

3.2.3.1 DC Monitoring

All DC Monitoring meters behave in the same way. An example is shown below:



A An analogue gauge is mimicked to show the current draw

B Another gauge shows the voltage

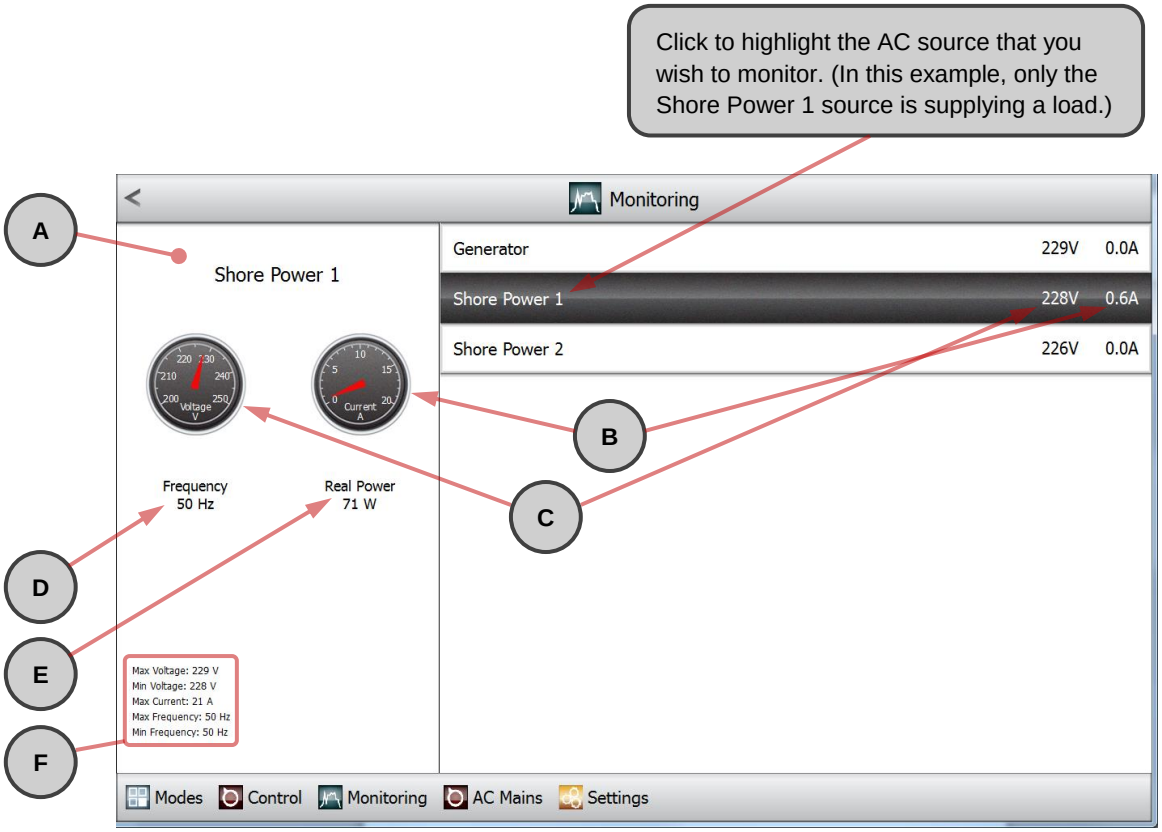
C The calculated remaining capacity is shown, in amp-hours

D The calculated charge-state is shown, as a percentage of full charge and as the green portion of a small icon resembling a cell

E The maximum and minimum recent states of the battery are reported.

3.2.3.2 AC Monitoring

All AC Monitoring meters behave in the same way. An example is shown below:



A The status of the selected AC Mains source is detailed in the display panel

B The current drawn by all load groups supplied by the source is shown, to the right of the highlighted name and using an analogue meter gauge

C The RMS voltage of the selected AC Mains source is shown, also in the highlighted region and using an analogue meter gauge

D The frequency of the AC Mains source is shown

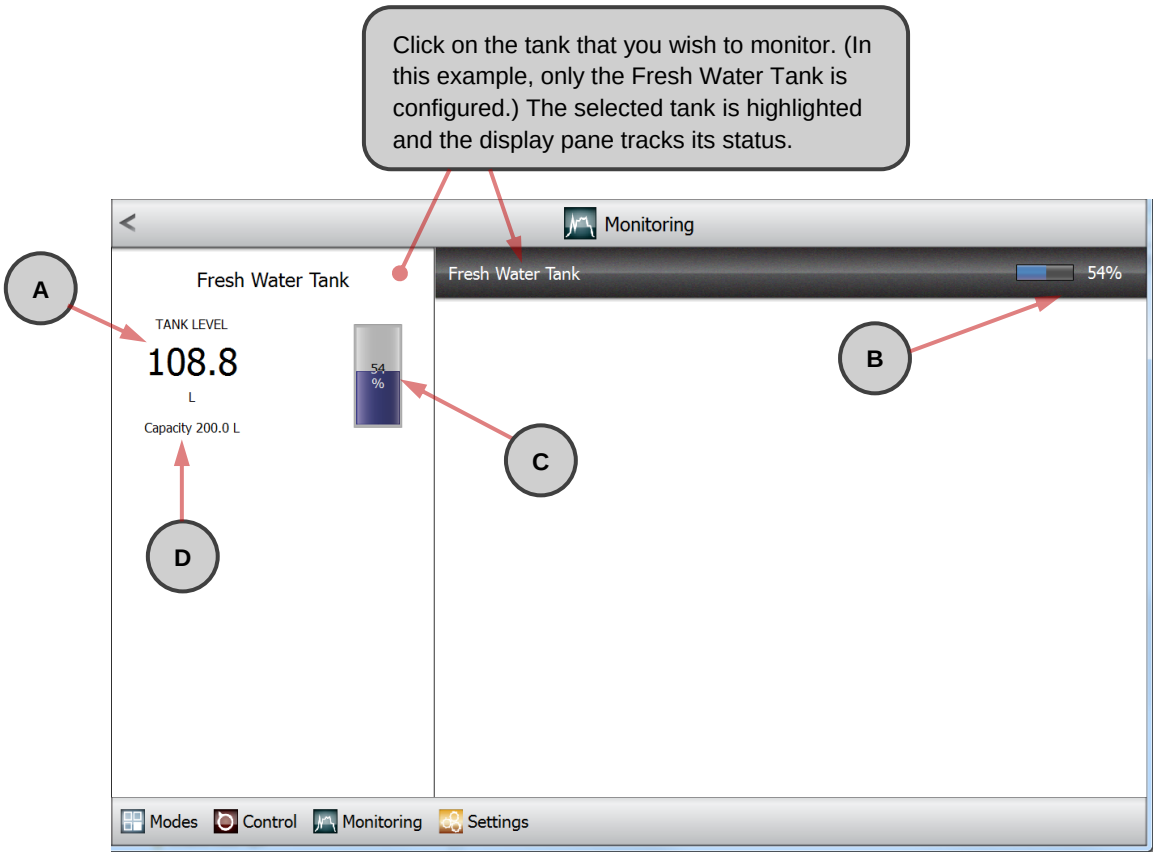
E The real power being supplied to all load groups supplied by the source is shown

F Worst-case recent performance of the selected source is shown, including:

- maximum and minimum RMS voltages
- maximum current draw by all supplied load groups
- maximum and minimum supply frequency.

3.2.3.3 Tanks

All Tank monitoring meters behave in the same way. An example is shown below:



A The current level in the tank is displayed, using the configured units

B The tank's level is reported in the highlighted section, as a percentage and as the blue portion of a status bar

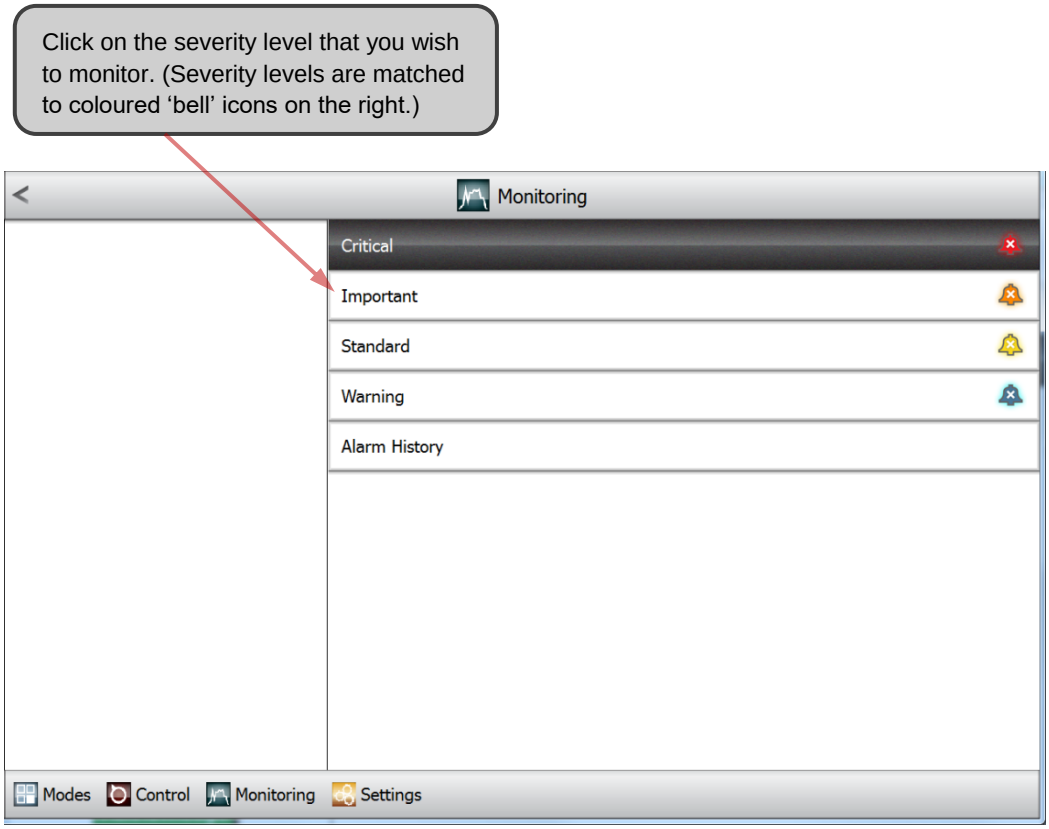
C In the display pane, a cylindrical tank mimic shows the tank level in blue and as a percentage

D The capacity of the tank is shown in the configured units.

3.2.3.4 Alarms

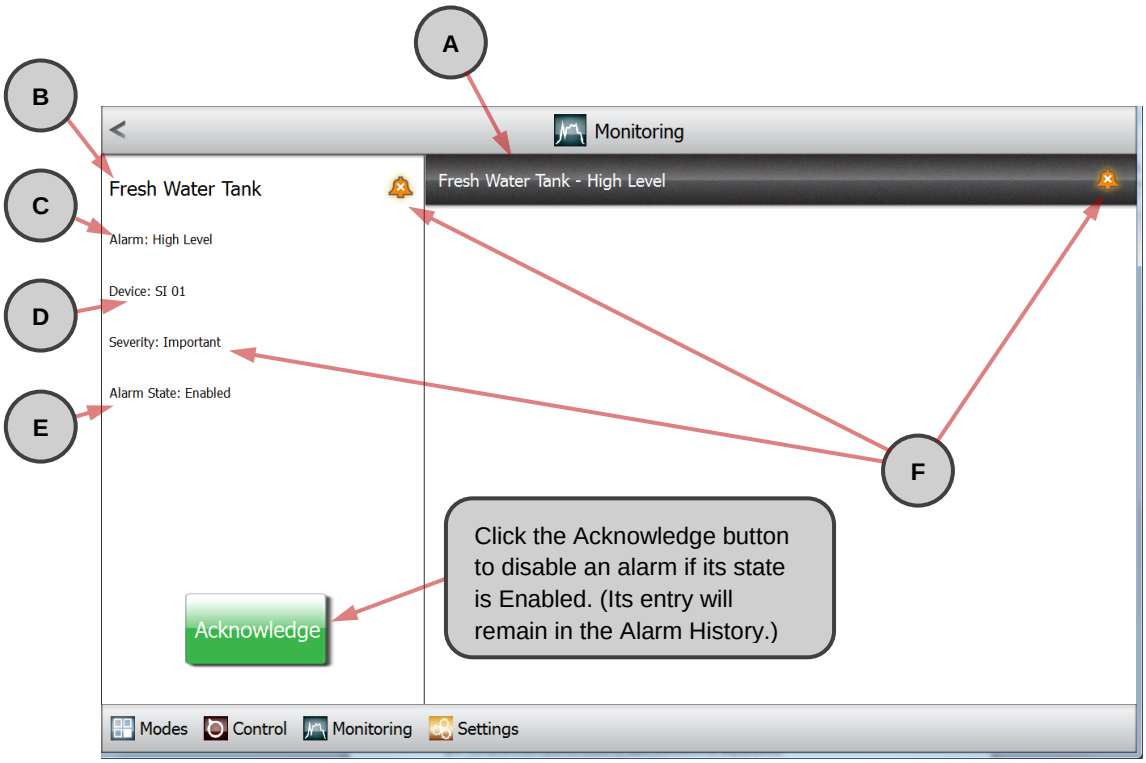
Alarm monitoring behaves in the same way for all levels of severity. On selecting Alarms from the Monitoring home-page you can select historical alarms, or active alarms of any severity.

3.2.3.4.1 Alarms of a Selected Severity



Below is a list of the different CZone alarm severities and their behaviour:

Alarm Level	Bell Colour	Action on Trigger	Additional Note
Critical	Red	Full-Screen Dialog, Audible Tone	Acknowledgement times out after 10 minutes then re-alarms
Important	Orange	Full-Screen Dialog, Audible Tone	Acknowledgement times out after 10 minutes
Standard	Yellow	Full-Screen Dialog	Full-screen dialogue disappears once alarm is acknowledged
Warning	Blue	Bell Appears	Bell disappears once alarm is acknowledged



A A list of active alarms appears, all with the selected severity level. More-recent alarms are listed first. (In this example, the High Level alarm from the Fresh Water Tank is the only important alarm currently active.)

B The name of the input that raised the alarm is shown in the display pane

C The name of the alarm is displayed

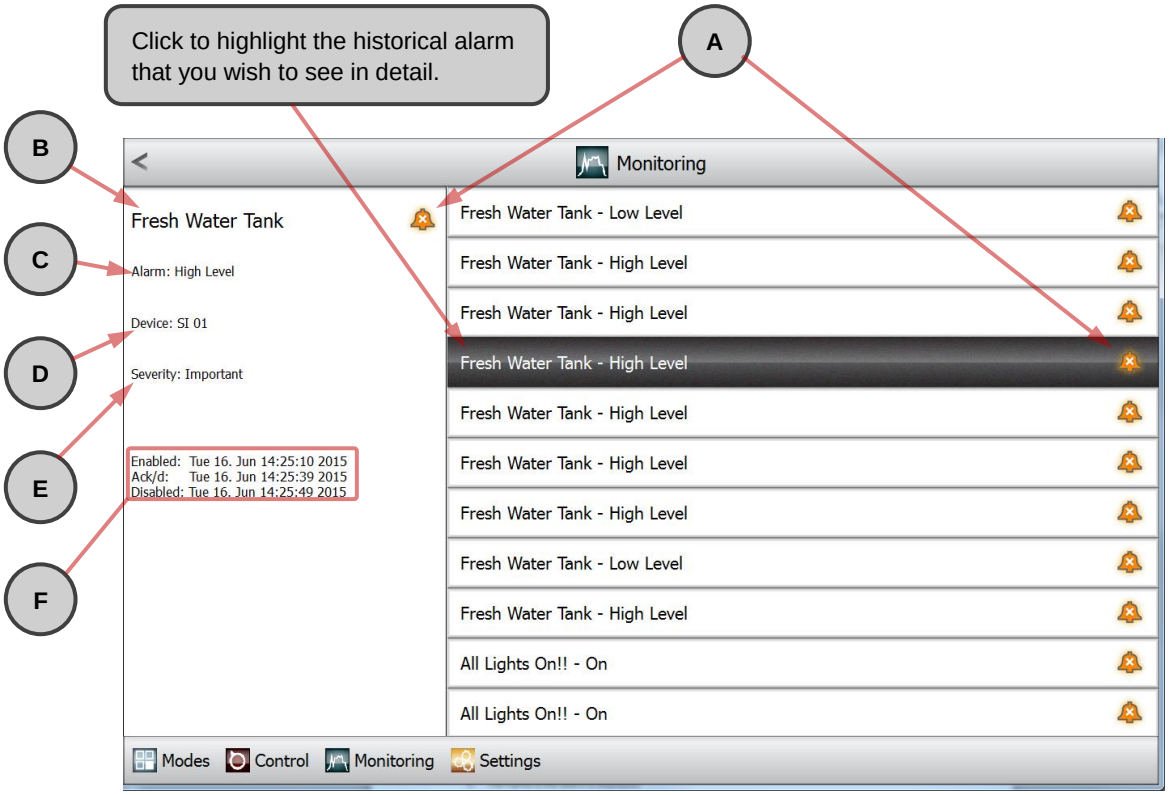
D The CZone module that detected the alarm is shown

E The alarm state is shown: either Enabled or Acknowledged.

F The alarm severity is described in words, and with a bell-shaped icon of the appropriate colour.

3.2.3.4.2 Alarm History

Selecting Alarm History from the Monitoring ⇨ Alarms page displays the most recent alarms (up to 100). Alarms are listed according to when they were raised, with the most recent first. Alarm history includes all alarms above Warning severity by default. The minimum severity saved in history can be changed from the Settings ⇨ System ⇨ Alarm Log Severity page.



A The alarm severity is indicated with a bell-shaped icon of the appropriate colour

B The name of the input that raised the alarm is displayed

C The name of the alarm is shown

D The CZone module that detected the alarm is shown

E The severity of the alarm is reported in words

F The date/time stamps for the alarm are:

- when it was raised (i.e. enabled)
- when it was acknowledged
- when it was cancelled (i.e. disabled).

3.2.3.5 Systems in Operation

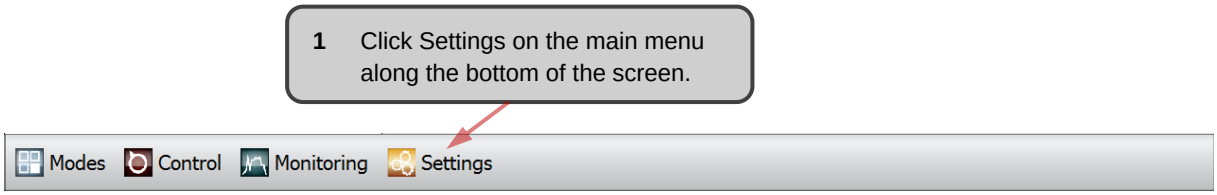
The Systems in Operation page lists all circuit categories that are configured for the vessel: for example Pumps, Fans/Ventilation, and Lighting. Selecting any category displays all active circuits in that category; alternatively, selecting All displays all active circuits regardless of their category.

Systems in operation behave exactly as DC or AC Control circuits: selecting a circuit displays its status and allows the circuit to be controlled. Consult Figure 4 for an example.

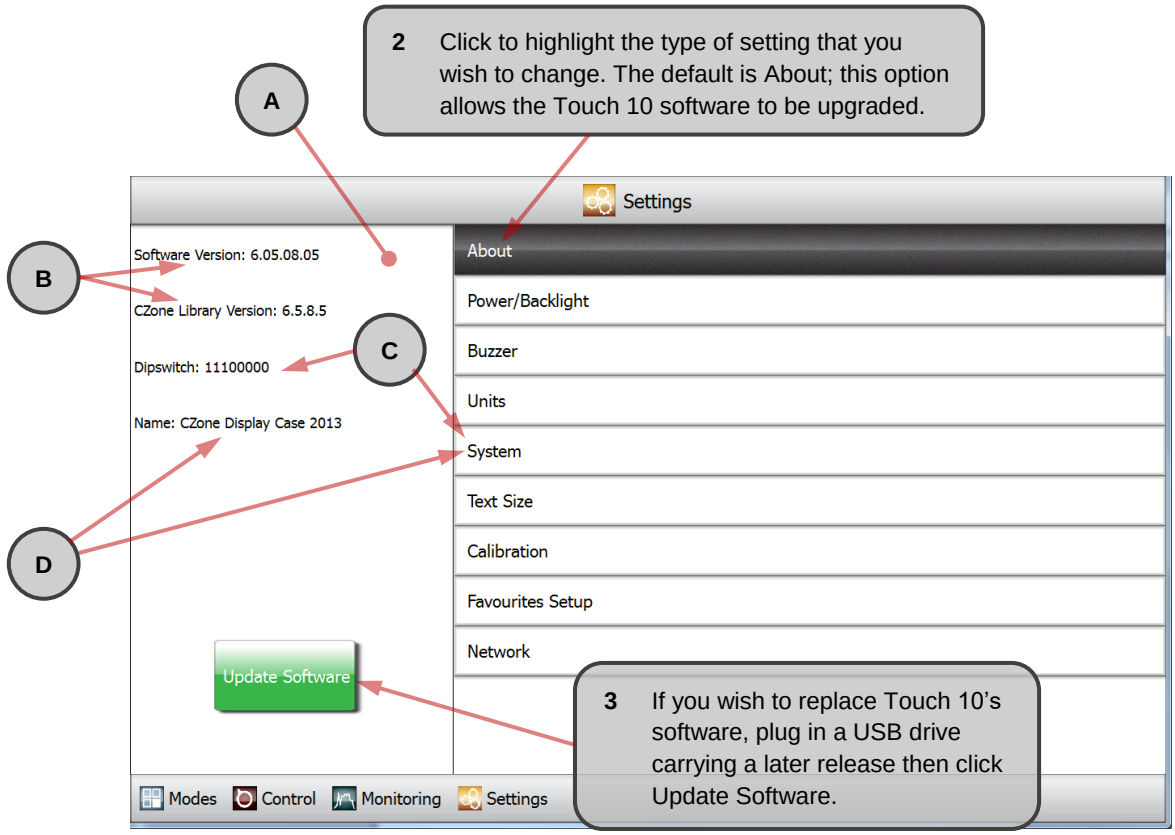
3.2.4 Settings

The Settings tab lets you query and change various parameters of CZone and Touch 10, including: measurement units (gallons, litres, etc.); the network configuration; date/time and others. Most settings are self-explanatory but several are explained below.

3.2.4.1 About, and Updating Touch 10's Software



The Settings home-page appears:

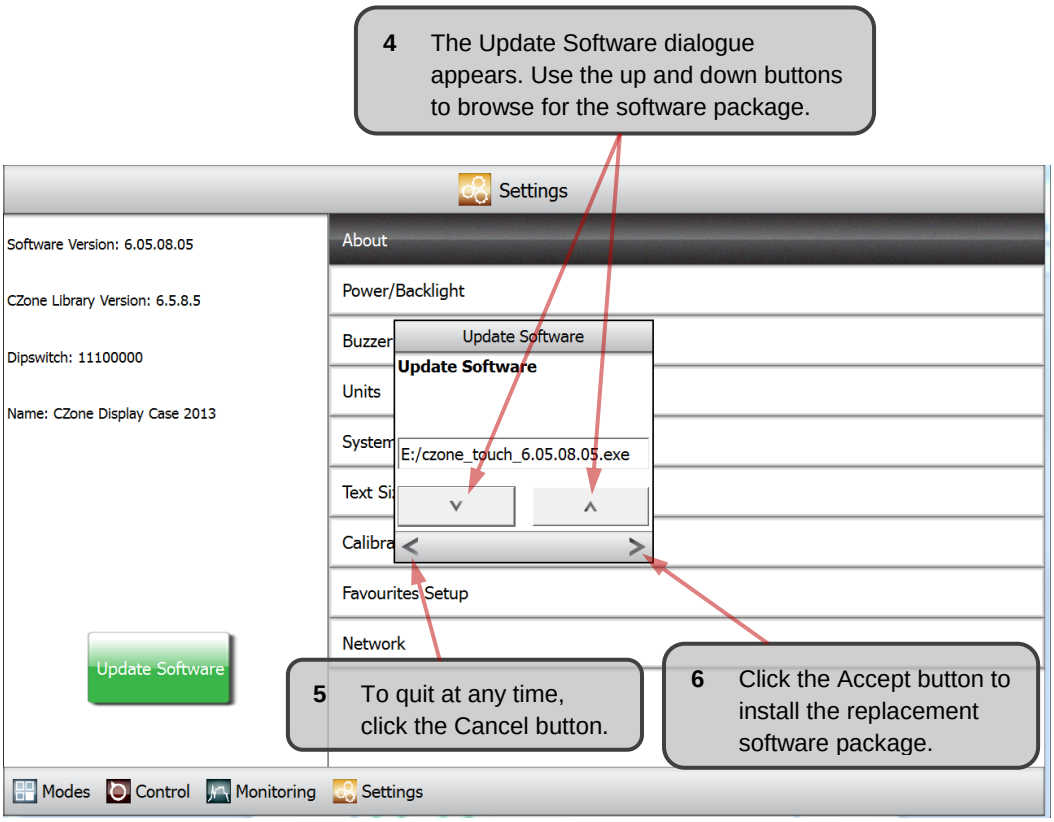


A The display pane shows current Touch 10 and CZone settings.

B The software and library versions show what is installed on Touch 10.

C Touch 10's dipswitch affects how it is addressed on the CZone network. (If necessary this can be changed via the System settings.)

D This field shows the name of the CZone network's current configuration. (This also can be changed via System.)

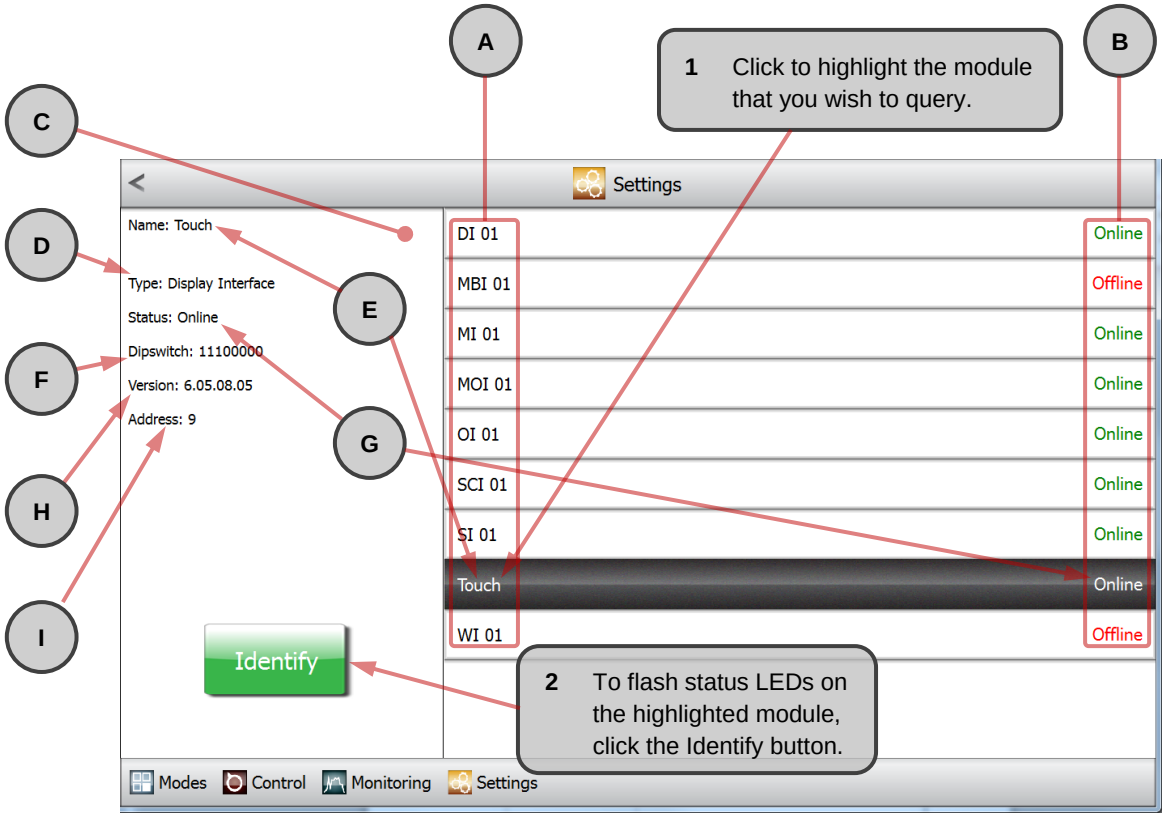


On clicking the Accept button, the upgrade starts immediately:

1. Touch 10 shuts down, then restarts with the new software installed
2. A series of splash screens is displayed; this takes a minute or so
3. The update ends with Touch 10 at its configured Startup Screen (typically the Modes home-page).

3.2.4.2 Network

Select Network from the Settings home-page to display all configured modules on the CZone:



A The names of all configured modules are listed.

B The status of each module is listed to its right and updated in near real-time. (A module may be Offline if it is not powered or is disconnected from the network, or if its dipswitch setting does not match the current configuration.)

C The display pane tracks the highlighted module.

D The type of the module is displayed. (Touch 10 is a CZone Display Interface.)

E The module's configured name is displayed.

F The configured dipswitch setting for the module is displayed. Note: If this differs from the module's actual dipswitch setting, the module will show as Offline.

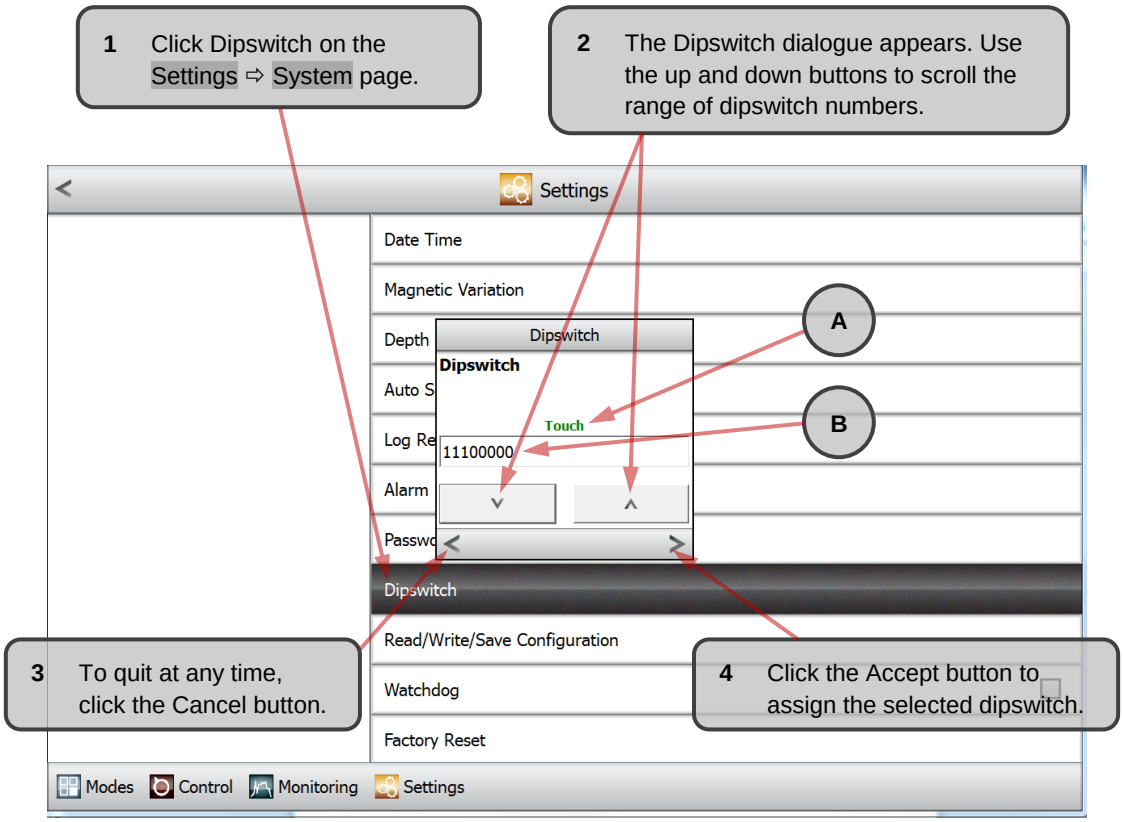
G The status of the module is repeated in the display pane.

H The module's software version is displayed.

I The module's CZone address is displayed.

3.2.4.3 Dipswitch

To change Touch 10's dipswitch and various other parameters, on the Settings home-page first click System:



A If the displayed dipswitch setting is not already assigned to a module, Available appears in green.

If the setting is not available, the name of its 'owner' module appears instead:

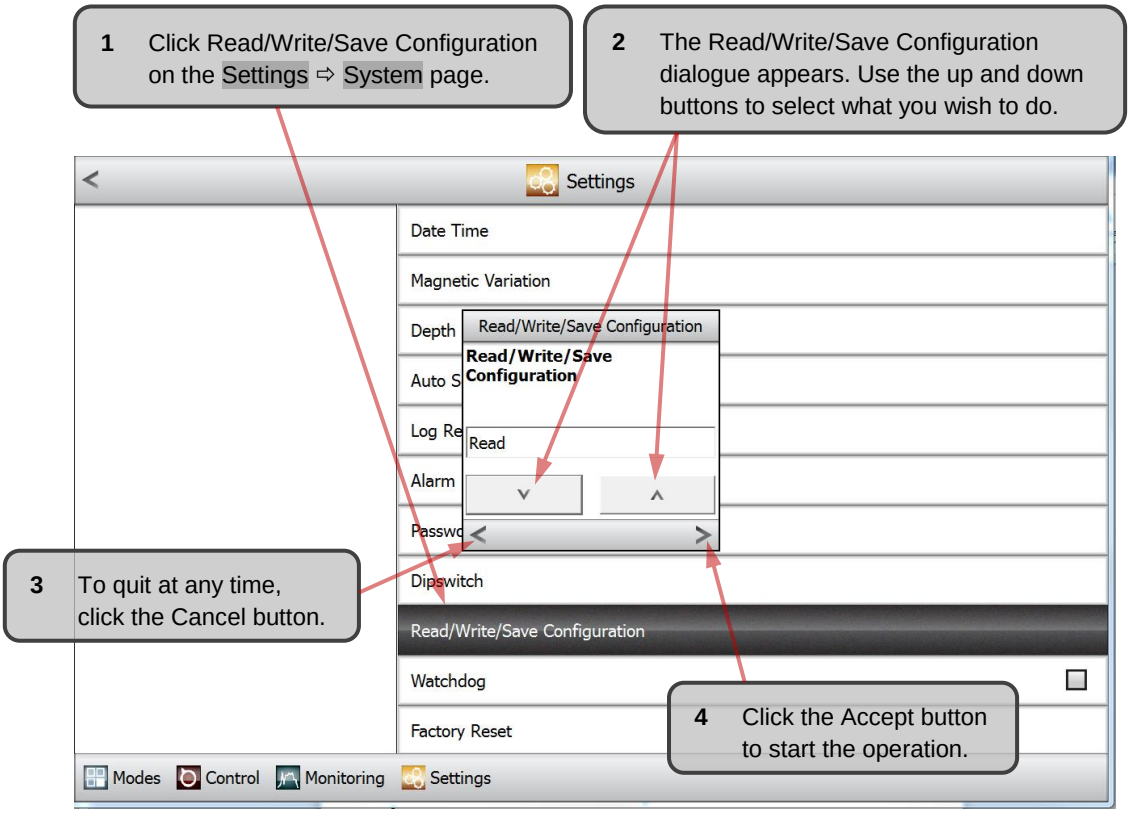
- The owner's name is in red if a conflict would be caused by claiming the dipswitch setting. This will occur if, for example, the owner has a hardware dipswitch.
- The owner's name is in green if its dipswitch setting could be claimed without causing a conflict. This will occur if, for example, the owner's dipswitch can be reassigned in software.

B The configured dipswitch setting is displayed. Each switch is on if its digit is 1, or off it is digit is 0.

3.2.4.4 CZone Configuration

The setup and behaviour of a CZone system is determined by its configuration. Different configurations can be defined by the boatbuilder, who will give each one a unique name. You can:

- ***read*** the current configuration from the network, to ensure Touch 10 has the same configuration as other modules
- ***write*** a new configuration to the network, from a configured DI such as Touch 10 or from a USB drive
- ***save*** Touch 10's current configuration to a USB drive, e.g. for diagnostics.



3.2.4.4.1 Read Configuration from CZone

If you click to accept Read from the dialogue, Touch 10 will first read the current CZone configuration then load it, leaving its configuration synchronized with the rest of the network. You may see screens in the following sequence, some very briefly and others lasting several seconds:

- Starting configuration claim
- Receiving Configuration <progress percentage>
- Loading Configuration
- Configuration Successful

Touch 10 will return to the Settings home-page.

3.2.4.4.2 Write Configuration to CZone

If you click to accept Write from the dialogue, Touch 10 will offer one of several sources for the configuration it should write:

- If Touch 10 is unconfigured and has no USB drive inserted, it will display None: there is nothing to write.
- If no USB drive is inserted and Touch 10 is configured, you will be prompted to write the Current Configuration to the network. This will leave Touch 10 and the rest of the CZone network synchronized to the same configuration.
- If a USB drive is inserted, in addition to the Current Configuration described above you can use the up and down buttons to browse any configuration (.zcf) files on the drive. The configuration you choose will be loaded and written first to Touch 10 and then to the rest of the network, leaving all modules synchronized.

3.2.4.4.3 Save Configuration to USB Drive

If a USB drive is inserted into Touch 10 and you click to accept Save from the dialogue, Touch 10 will prompt for a filename to save its configuration to. Upon providing the filename, Touch 10's current configuration will be saved to the USB drive.

4 Appendices

4.1 Technical Specifications

Model	CZone Touch 10
Article numbers	80-911-0100-00
Manufacturer	BEP Marine New Zealand
Type	LCD TFT
Touch Screen	Projected Capacitive Multi-Touch
Glass	1.1mm
Brightness	500cd/m^2
Resolution	1280 x 800 pixels, WXGA
Aspect Ratio	Widescreen (16:10)
Backlight	LED
Colour	18-bit RGB
CPU	Freescale ARM Cortex-A8 1GHz
Memory	SDRAM - 1GB DDR, Flash -4GB eMMC
Peripherals	Battery-backed real time clock
Power Supply	8-32VDC
Power Consumption	1A @ 12V, 500mA @ 24V
Ingress Protection	IP66
Operating Temperature	0°C - 50°C
Storage Temperature	-20°C - 60°C
Interfaces	NMEA 2000, USB 2.0, 10/100Mbps Ethernet, GPIO
Weight	800g (1lb 12oz)
Dimensions (H x W x D)	278mm x 199mm x 41mm (10⅞” x 7¾” x 1⅝”)
Certification	CE, FCC Class B, NMEA

5 EC DELCARATION OF CONFORMITY

We,

Power Products LLC

CE

Mailing Address:
BEP Marine LTD
PO Box 101-739 NSMC
Auckland 0632, New Zealand

Street Address:
42 Apollo Drive
Rosedale,
Auckland, 0632, New Zealand

Declare under our sole responsibility that the products:

- 80-911-0100-00 CZone Touch 10

To which this declaration related, is in conformity with the following standards or other normative documents:-

EMC : EN 60945:2002, IEC 60529:2013, ES150602012SE-1, ES150602013E-1, ES1506030453E-1 &
FCC Part15:2015, Subpart B, Class B & FCC/ANSI C63.4-2009

And therefore conforms with the protection requirements of Council Directives 2004/108/EC relating to electromagnetic compatibility.

Albany, New Zealand, 18 September 2015

Chris Wilkins
R & D Manager

BEP Marine Ltd

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