

USER MANUAL

Updated to the software version 5.0.x R

(where "x" indicates all versions of 5.0 software)

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1. Introduction

The plotter is a computerized electronic chart system, designed as a navigation aid. This manual describes the core functionality of the software for marine plotters and is valid for different plotter families, such as controller, plotters 9"/12", etc.

The plotter integrates GPS data with an electronic navigational SD card and can display additional information from AIS, Fish Finder, and other sensors. The plotter is compatible with both C-Map MAX and C-Map 4D map format on micro SD card.

C-Map authorized resellers can purchase the C-Map SD cards. Navigating through the plotter pages is possible using either keyboard, touchscreen or the remote controller.

1.1 Conventions used

Plotters can be controlled using hardware keys (located on the plotter or the remote controller) or both hardware keys and touchscreen operations.

In order to distinguish between hardware keys, menu items, buttons, icons, touchscreen and key operations, the following mapping is used:

- [POWER], [MENU] - hardware keys are given capitalized and enclosed in square brackets;
- "General Settings", "OK" - menu items and buttons (displayed on the screen) are enclosed in quotes;
- The words "press", "release" mean operation with hardware keys, located on plotters;
- The words "tap", "swipe" mean operation with menu items, buttons, lists, icons on touchscreen plotter;
- The word "select" means choosing an item in two ways:
 1. using a joystick/joyypad or a rotor wheel to highlight an item and [ENTER] key to select it;
 2. using tap gestures for touchscreen plotters.

1.2 Keyboards

Different plotter families have varied set of hardware keys

Some keys are common for all plotters; you can see their description below.

- The joystick/joyypad can move the cursor around the map (pan the map) or through menu items. Press [UP], [DOWN], [LEFT] or [RIGHT]. From now on we refer in a generic way to joystick also to indicate the joyypad;
- Function keys like [F1] are special keys. Each key can perform two functions. A short press performs the fixed function (it can be labeled on the unit face). A long press (press a key and hold it) executes a second function that can be customized by the user. This gives you a wider scope of functions that can be executed by pressing function keys. See Par. 7.2 to learn how to customize the function keys;
- [MOB] is a special key dedicated to man-over-board situation. Pressing "MOB" places a MOB mark on the current boat position and starts navigation to that place;
- [MENU] opens the main menu if pressed on one of the main pages ("Map", "Fish Finder", "GPS Status", "Engine Monitor Display"). Also, it moves focus to the control buttons, located on the top bar of menu pages such as "Marks", "Routes", "Tracks", and others;
- [ENTER] is used to confirm an action or a selection. When on the "Map" page, pressing [ENTER]

- opens the contextual menu of a map object;
- [CLEAR]* exits from the current menu or, if you are on the “Map” page and the cursor is away from the boat position, centers the map on the boat position (home mode);
- [POWER] turns the device on/off when pressed and held in. Short press allows switching day/night mode of the screen or change the brightness and disable touchscreen, depending on the plotter family.

*[CLEAR] may also refer to [BACK] or [CLR]

1.3 Touchscreen gestures

	Tap (touch the screen for less than 1 second and release your finger): Perform action corresponding to touch area of the screen: select, activate button, etc.
	Long tap (touch the screen and hold your finger for more than 1 second): Open editable item, e.g. databox.
	Pan (touch the screen on the “Map” page, keep your finger pressed and move in any direction): Pan the map.
	Pinch in / Pinch out (touch the screen with two fingers simultaneously, then move fingers closer or further): Zoom-in / zoom-out on the “Map” page or change the range on the “Fish Finder” page.
	Rotate (touch the screen with two fingers simultaneously and move them clockwise or counterclockwise): Rotate the map.
	Scroll up-down or left-right (touch the screen and move your finger to the sides): Scroll through the lists or through Fish Finder echogram history.
	Swipe (touch the top edge of the screen with one finger, keep it pressed and move quickly to the bottom): Open page selector.
	Two fingers swipe (touch the screen with two fingers simultaneously, then move both fingers up/ down or left/right): Tilt the map or scroll tide graph history.

1.4 Remote controller

You can operate on some of the plotters using the optional remote controller. It connects to the plotter via radio signal. Check that one AAA battery is plugged into the remote controller before using it.

To pair the remote controller to the plotter:

1. Open the main menu by pressing [MENU];
2. Select “General Settings” > “Remote Keyboard”;

3. Set “Enabled” to ON;
4. Select the “PIN” tab and enter the PIN code given on the backside of your remote controller;
5. Push the joystick of the remote controller to activate it.

Now you can operate on the plotter also using the remote controller.

The battery status can be seen on the “Remote Keyboard” page if it is connected to the plotter.

2. On Board user manual

There is user manual built in the plotter's software.

You can find it as the last item in the main menu of each page:

1. Open the main menu by pressing [MENU];
2. Select "User Manual".

How to read the manual

1. Press [UP-DOWN] or use scroll gesture to scroll the page;
2. Press [LEFT-RIGHT] to go to the previous or the next page;
3. Press [ZOOM IN-ZOOM OUT] or use rotor wheel to zoom the page;
4. Press [ENTER] to find a page by number;
5. Press [CLEAR] or tap the "Home" icon to close the manual.

How to search a keyword

1. Press [MENU] to highlight the "Search" icon and [ENTER] to call a virtual keyboard, or tap the "Search" icon;
2. Type a keyword in the keyboard: use [UP-DOWN] and [LEFT-RIGHT] to highlight a letter and [ENTER] to confirm selection, or tap the letters. After entering the keyword, move the cursor over "Done" and press [ENTER] button, or tap it;
3. The first page with the chosen keyword will be presented and the keyword highlighted;
4. Press [LEFT-RIGHT] to go to the previous or the next page containing the keyword;
5. Press [CLEAR] or tap the "Clear Search" icon to close the search view.

3. Getting started

3.1 Switching on

Before powering the plotter on, check for the correct voltage (10-35 volt) and the correct connections with other instruments. Press and hold [POWER] to turn on the plotter.

3.2 Switching off

Press and hold [POWER] to switch the plotter off. A countdown timer appears on the screen. If you release [POWER] before the countdown timer reaches zero, the plotter will remain switched on.

3.3 Initial Settings

When turning the plotter on for the first time, you can change main settings on “Initial Settings” page (“Language”, “Units”, “Formats and References”, “Date and Time”, “Engine Setup” and “Ship Profile”). “Initial Settings” page will be also displayed after restoring to factory default settings (Par. 7.1). This page allows selecting software language, units, date and time format, position format and engines number:

1. Switch the plotter on and wait for the “Initial Settings” page to appear on the screen;
2. Select the preferred item by pressing [DOWN] / [UP] or tap with your finger. It is possible to keep the default value;
3. Press [ENTER] or tap to confirm the selection;
4. Press [CLEAR], tap “Back” icon of the submenu or tap outside the submenu to return to “Initial Settings” items list;
5. After introducing all desired changes, select “Confirm”;
6. On the “Warning – Limitation in use” page press [DOWN] or scroll to read the limitations on use;
7. Press [ENTER] or tap “OK” when you reach the end of the text to accept the limitations on use.

NOTE: You must accept all the limitations specified on the “Warning – Limitation in use” page in order to use the plotter.

3.4 Selecting the software language

To set the main language of software:

1. Open the main menu by pressing [MENU];
2. Select “General Settings” > “Language”, then select the preferred language.

3.5 Selecting the chart language

To change the language of the map information, for example, names of geographical objects:

1. Open the main menu by pressing [MENU];
2. Select “Map Settings” > “Chart Settings” > “Language”, then select the chart language from the list.

3.6 Setting units, time zone and time format

To change units:

1. Open the main menu by pressing [MENU];
2. Select "General Settings" > "Units";
3. Select an option for each set of units.

To change time zone:

1. Open the main menu by pressing [MENU];
2. Select "General Settings" > "Date and Time";
3. Choose between "UTC" or "Custom" (can be adjusted after "UTC" set to OFF).

If you chose "Custom":

1. Select the desired zone from the "Custom" submenu;
2. Select "Daylight Saving Time" (it must be enabled/disabled manually).

To change date and time format:

1. Open the main menu by pressing [MENU];
2. Select "General Settings" > "Date and Time";
3. Choose the date format and the time format.

4. Controlling the display

The plotter displays 3 main pages:

- "Map" (Par. 4.2);
- "Fish Finder" (Par. 4.3);
- Split "Map / Fish Finder" page (Par. 4.4);

To change the displayed page:

1. Open the main menu by pressing [MENU];
2. Select "Page";
3. In the widget popup, select the desired page using a joystick or tap the needed one.

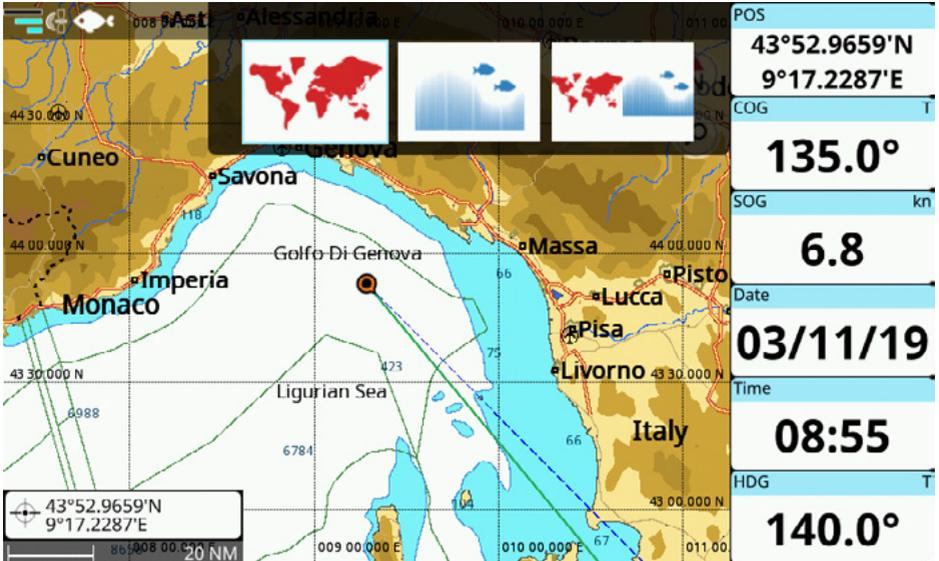


Figure 4 - Pages widget popup

NOTE: Changing pages on the touchscreen plotters can be done also by vertical swipe (from the top) to call a page widget.

A quicker way to switch between pages is to set one of the function keys (Par. 7.2) to "Page". As well, some models of plotter can also have a [PAGE] key for switching pages.

4.1 Status bar

The status bar appears in the upper left part of the screen on every page.

It can display various icons:

- WiFi connection status and the wireless signal strength;
- GPS status depending on the quality of satellite data;
- Remote controller connection status;
- Fish Finder connection status;
- Captain Cloud connection status.

4.2 The “Map” page

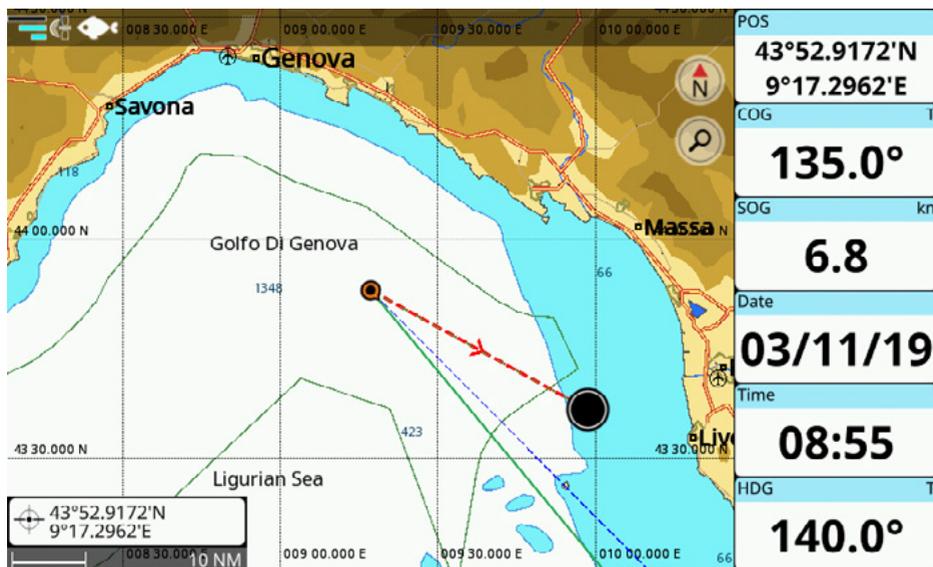


Figure 4.2.a - Map page

The “Map” page includes map, cursor box, databoxes map mode switch icon and wheel mode switch icon.

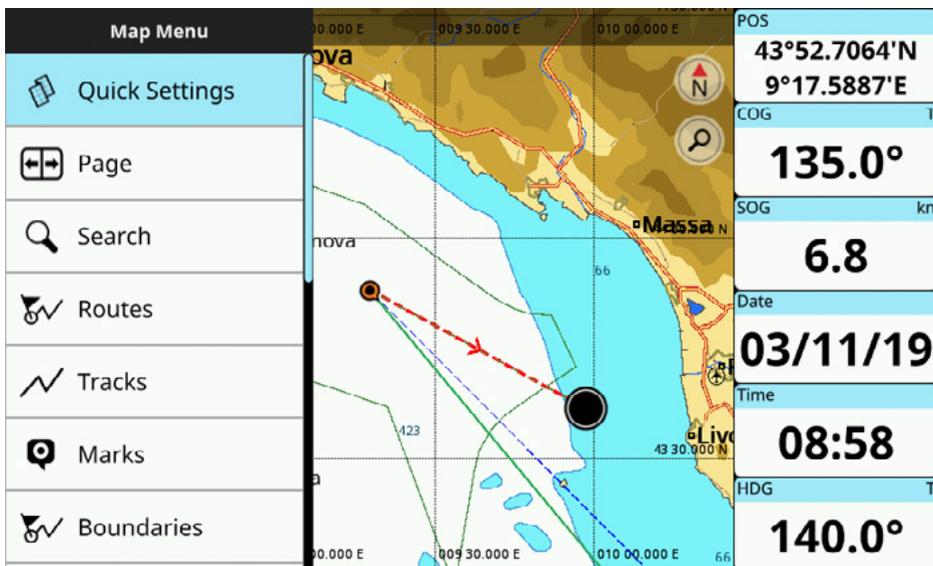


Figure 4.2.b - Map page menu

The cursor box appears on the left bottom of the map and shows the Lat/Lon in home mode, additionally it shows DST and BRG when in cursor mode.

The databoxes are displayed on the right part of the screen, its content can be customized (Par. 4.5). Map mode switch icon displays the current orientation of the map as:

- North Up (NU)
- Head Up (HU)
- Course Up (CU)

The orientation of the map can be changed by tapping the icon of from the main menu (Par. 16.3).

Press [ENTER] or long tap the map to open the cursor contextual menu, and [CLEAR] or tap elsewhere to close it.

Press [MENU] to open the main menu of the “Map” page.

4.3 The “Fish Finder” page

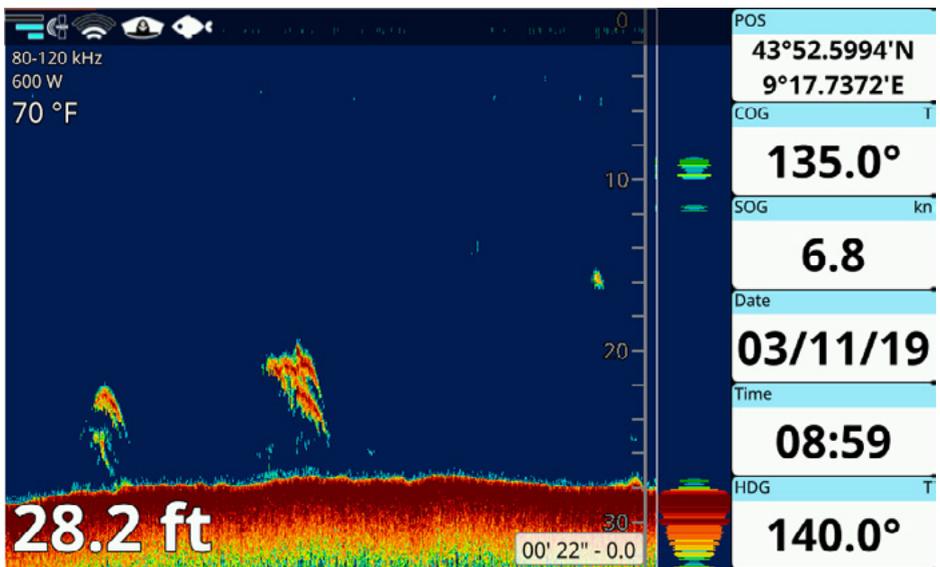


Figure 4.3.a - Fish Finder page (simulation mode)

The “Fish Finder” page can be available:

- If a Black Box Fish Finder accessory is connected to the plotter;
- Without other connections in case of combo plotters.

For more details about the Fish Finder see Par. 20.

Press [MENU] to open the main menu of the “Fish Finder” page.

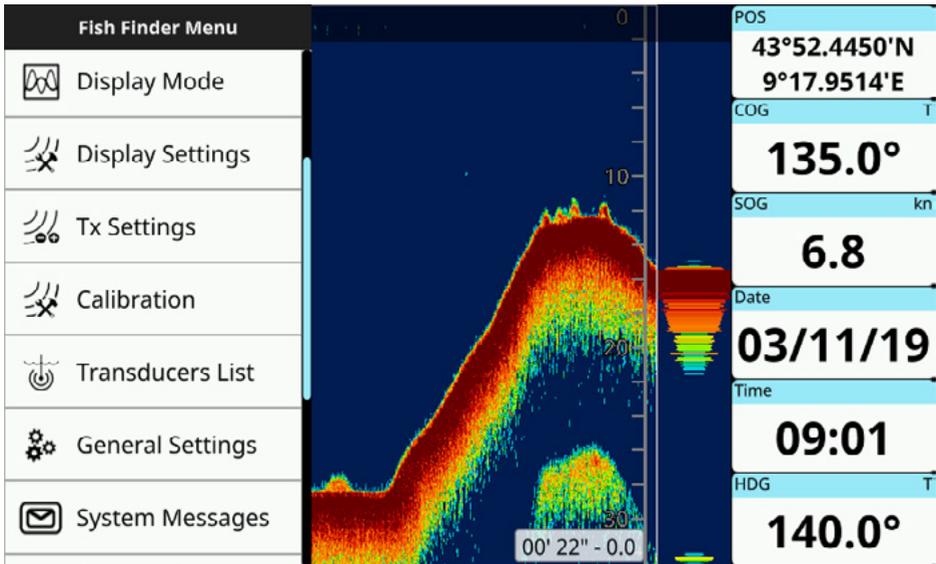


Figure 4.3.b - Menu on the Fish Finder page

4.4 The split page

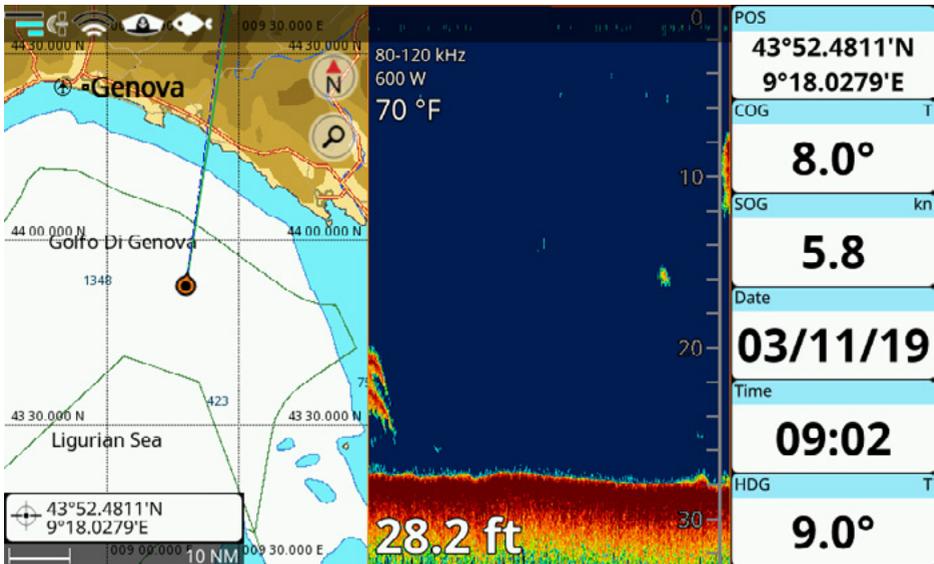


Figure 4.4 - Example of the split page

The split page is a screen split between the “Map” and the “Fish Finder” pages. Each half of the split view has its own main menu. When you open the split page, the active view is always the “Map” part. In

order to operate on the “Fish Finder” part, press [MENU] twice or tap the “Fish Finder” part of the page.

To change the active view with the remote controller:

1. Press [MENU] twice;
- or
2. Long press [SWITCH WHEEL].

To open the contextual menu on the “Map” part, press [ENTER] or long tap while the map view is active.

To open the contextual menu on the “Fish Finder” part, press [ENTER] or long tap on the echogram of the “Fish Finder” part.

4.5 Databoxes customization

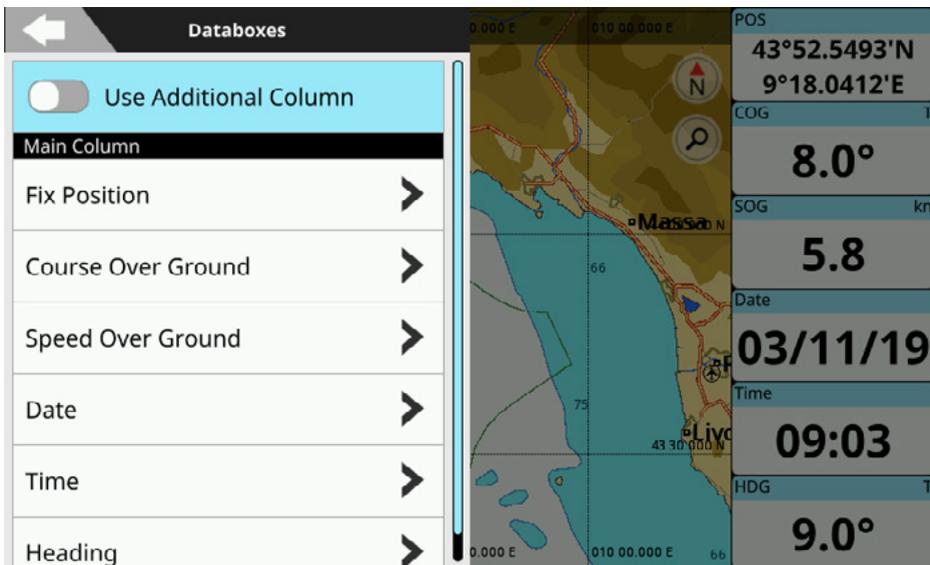


Figure 4.5 – Databoxes menu on the Map page

The data window is a set of customizable databoxes. It is present on the “Map” and “Fish Finder”. The boxes may be set up to display various sensor data. In “Quick Settings” you can customize the number of columns and databoxes content.

To customize databoxes content on “Map” or “Fish Finder” pages:

1. Long tap the databoxes;
- or
2. Open the main menu by pressing [MENU] and select “Quick Settings” > “Databoxes”;
3. Enable “Use Additional Column” to display two columns of databoxes;
4. Select the databox from main and additional column and choose the preferred option from the list;
5. Press [CLEAR] or tap “Back” icon to return to the databoxes list;
- or
6. Tap elsewhere or long press [CLEAR] to exit databoxes editing.

5. Using C-Map Data (4D / Max)

The plotter has a built-in background world map, but to use it as a navigation aid, C-Map detailed map is required. The plotter is compatible with both C-Map MAX and C-Map 4D map format on micro SD card. The C-Map micro SD card can be purchased from C-Map authorized resellers.

To use C-Map detailed map (4D or MAX), insert the micro SD card with data to the micro SD slot of your plotter.

NOTE: After inserting the C-Map micro SD card, the plotter could ask for the restart to apply it.

5.1 Moving around the map

The map can be explored in different ways. Wheel mode switch icon, located on the top right of the screen near the map mode switch icon, shows which mode is active now: zoom, rotate or tilt.

To change the mode on the plotters without touchscreen, the remote controller has to be connected:

1. Connect the remote controller (Par. 1.4);
2. Change the mode using [SWITCH WHEEL].

To change the mode on the touchscreen plotter, tap wheel mode switch icon to choose the preferred mode.

Depending on the plotter, touchscreen gestures, keyboard or remote controller can be used to move around the map.

Zoom mode



Use joystick or pan gesture to pan the map.

Use [ZOOM IN] and [ZOOM OUT], rotor wheel, remote controller wheel or pinch in and pinch out gestures to change the map scale so that a smaller or larger area is shown on the Map page.

Rotate mode



Use rotor wheel, remote controller wheel or rotate gesture to rotate the map.

Tilt mode



Use rotor wheel, remote controller wheel or two fingers swipe to tilt the map. While the map is tilted, ship icon displayed as an arrow.

Rotor wheel and remote controller wheel actions depend on the wheel mode switch icon status.

On the touchscreen plotters, you can pan, zoom in, zoom out, tilt and rotate the map with touchscreen gestures in each of the modes.

The plotters with keyboards allow to pan, zoom in and zoom out the map using hardware keys despite the wheel mode switch icon status.

5.2 Finding your boat position

The most common use of the plotter is to show your boat's current location.

You can home the cursor to the boat using [CLEAR]. This would center the map view on the boat

position and update the display as the boat moves.

On touchscreen plotters you can also use “Back to Fix” icon, located near the cursor box on the bottom left part of the screen.

The “Own Ship Offset” function helps to keep the majority of the area in front of the vessel's position, so if you turn on this function, the plotter will take into account your course to locate the boat at the most comfortable position on the map relative to the actual course.

To turn screen amplifier on/off:

1. Open the main menu by pressing [MENU];
2. Select “General Settings” > “Ship”;
3. Enable/disable “Own Ship Offset” option.

Use the joystick or tap gesture to move the cursor away from the boat's current position and exit the home mode.

The “Back to fix after timeout” function gets back to home mode, centering ship on the map after 30 seconds time-out. You can switch this function on/off:

1. Open the main menu by pressing [MENU];
2. Select “General Settings” > “Navigation”;
3. Enable/disable “Back to Fix After Timeout”.

5.3 Chart Info and Quick Info



Figure 5.3 - Object's Quick Info popup and Chart Info contextual menu on the Map page

The detailed map has a database of information about map objects, which may be helpful for

navigation. To read map full information, press [ENTER] or long tap over the desired point on the map and select “Chart Info” in the contextual menu.

There is also “Quick Info” popup appearing automatically when you place the cursor over any of the map objects. Automatic “Quick Info” popup can be turned off:

1. Open the main menu by pressing [MENU];
2. Select “Map Settings” > “Display Mode”;
3. Disable “Chart Tooltip”.

NOTE: On touchscreen devices, you can tap the “Quick Info” popup to open the “Full Info” page.

To leave the “Chart Info” page and get back to the map press [CLEAR] or tap the “Home” icon on the top right of the screen.

The “Chart Info” page lists information about the selected object or map area. “Depth area” tab is present on the “Chart Info” page of the majority of objects and presents information about minimal and maximal depth. Other useful navigation information is present on this page. The “Chart Info” page contains “Locate on Map” and “Go To” buttons.

5.4 Overzoom

If you want to overzoom the map in areas without the detailed coverage, you can enable the overzoom mode. This will allow you to zoom-in to your user data closer. This feature may be useful if you need to navigate to a user point (for example, mark or waypoint) with close zoom-in on areas outside the detailed map.

To turn the “Overzoom” function ON:

1. Open the main menu by pressing [MENU];
2. Select “Map Settings” > “Chart Aspect Mode”;
3. Enable “Overzoom”.

The warning message “No cartography” could appear in the overzoom mode in the bottom right part of the screen. Pay attention that no map is available in the overzoom mode - the screen background will be always blue, without visible land or sea.

NOTE: Overzoom mode is less useful in areas with detailed map coverage because detailed maps provide zoom levels, on which overzoom would hide the map. Therefore, “Overzoom” is turned off by default and should be enabled only in case you want to operate in areas without detailed map coverage.

6. Quick Settings

“Quick Settings” is the first item in the main menu of every page. It contains some useful actions, which may vary depending on a page.

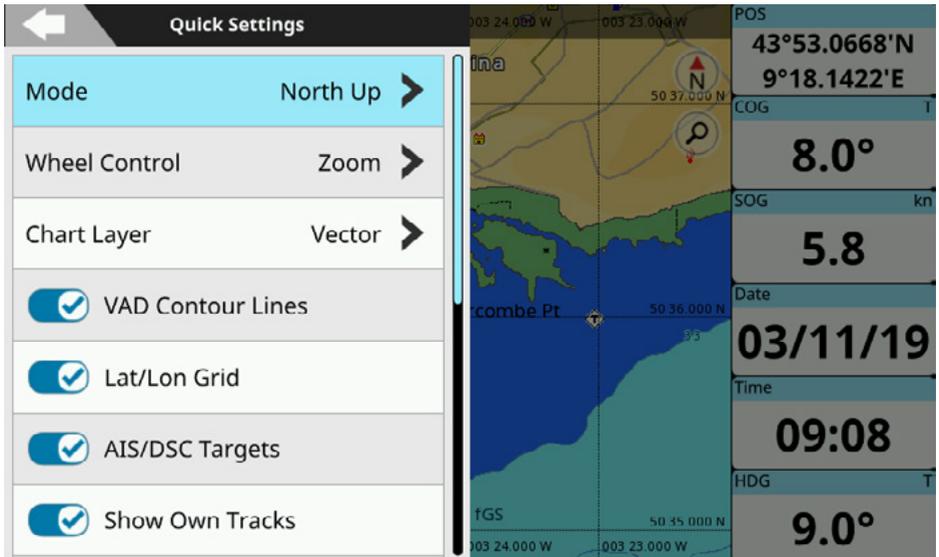


Figure 6.1.a – Quick Settings menu on the Map page

“Quick Settings” menu item on the “Map” page includes such settings:

- Map mode (Par. 16.3);
- Wheel control function setting (Par. 5.1);
- Chart layer type: depending on the cartography, vector, shaded relief, satellite or raster chart types can be available;
- Enable or disable VAD contour lines displaying on map;
- Hide or show latitude and longitude grid;
- AIS and DSC displaying;
- Enable or disable user data (tracks, routes, marks and boundaries) drawing on map (Par. 9);
- Set up databoxes (Par. 4.5);
- Enable MOB (Par. 13);
- Find a place on map by entering its position: selecting “Lat/Lon Position” menu item opens a keyboard for entering the coordinates. After pressing “Done” map will be displayed with cursor located on the needed position.
- Open “GPS” Diagnostic page: the “GPS” page displays navigational data and geometric interposition of satellites with respect to the receiver.

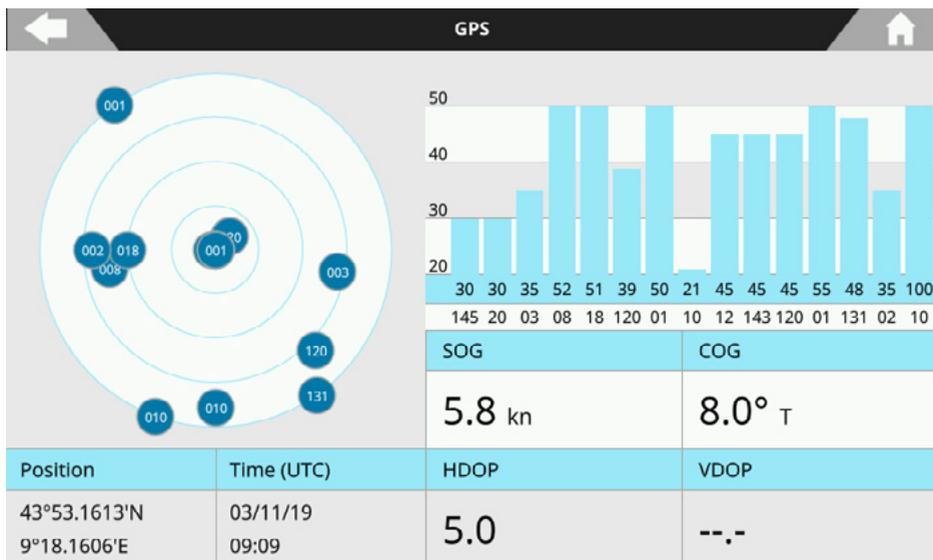


Figure 6.1.b – The GPS Diagnostics page

“Quick Settings” menu on other pages contains “Databoxes”, “MOB” and “GPS Diagnostic” items.

7. General Settings

To access the “General Settings” page:

1. Open the main menu by pressing [MENU];
2. Select “General Settings”.

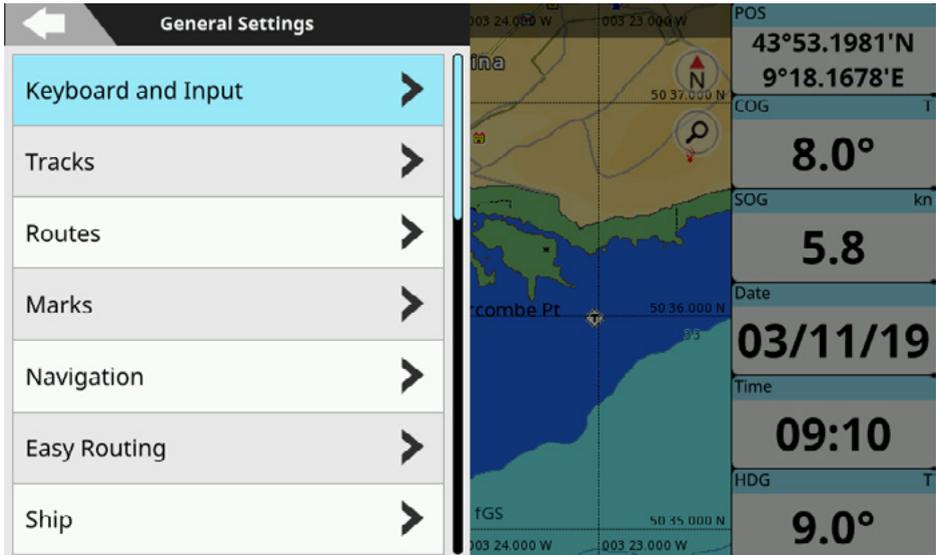


Figure 7 - General Settings page

7.1 Export/import of user settings

Exporting and importing of user settings to micro SD card can be done on “Restore and Backup” page.

1. Insert micro SD card to the plotter;
2. Open the main menu by pressing [MENU];
3. Select “General Settings” > “Restore and Backup” > “Export Configuration”;
4. Press [ENTER] or tap “OK” to close the popup.

The file with your plotter settings configuration (file extension is .ini) is located at the root folder of micro SD card. You can save it and import back to the plotter at any time:

1. Insert micro SD card with a configuration file into the plotter;
2. Open the main menu by pressing [MENU];
3. Select “General Settings” > “Restore and Backup” > “Import Configuration”.

By importing configurations from micro SD card you overwrite your current settings of the plotter.

To restore all settings to factory defaults:

1. Open the main menu by pressing [MENU];
2. Open “General Settings” > “Restore and Backup” > “Reset to Factory Defaults”;
3. Confirm your action and select “Yes” by pressing [ENTER] or tap in order to restart the device.

NOTE: You can also clear all user data or both user data and settings on “Restore and Backup” page.

NOTE: Do not eject micro SD card until the message about successful import or export appears on your screen.

7.2 Keyboard and function keys settings

On the “Keyboard and Input” page you can change settings for the keyboard, such as beep sound on key press, cursor speed and autofocus, keyboard backlight, and function keys settings.

Beeper

By default, the beep sound that accompanies every key press and tap is turned on. To turn it off:

1. Open the main menu by pressing [MENU];
2. Select “General Settings” > “Keyboard and Input”;
3. Disable “Beep on Keypress” and “Beep in Touch”.

Cursor speed and auto focus

The speed of the cursor movement can be changed: the scale is from 1 to 10. By default, cursor speed is 5. Try different cursor speed to set up the most comfortable one.

1. Open the main menu by pressing [MENU];
2. Select “General Settings” > “Keyboard and Input”;
3. Select the desired cursor speed value.

Auto focus helps to place the cursor to the user or the cartography objects on the map. If it is enabled, the focus will be moved to the object, when the cursor is placed near it.

Keyboard backlight

Keyboard backlight can be set to auto, custom or turned off:

1. Open the main menu by pressing [MENU];
2. Select “General Settings” > “Keyboard and Input” > “Backlight” section;
3. Select “Off”. “Auto” or “Custom”. In case of “Custom” adjust the brightness to set the desired value.

Choosing “Auto” the keyboard’s backlight becomes bright at night (from sunset to sunrise). After sunrise, it gradually decreases until noon. In the afternoon, it gradually increases.

Function keys

The keyboard may include some amount of function keys: F1, F2, F3 etc. Each of them has a double function: a pre-assigned one and a customizable one. The pre-assigned function, which depending on your plotter might be indicated in the front panel, can be executed by a short press on a function key. The customizable function can be executed by press and hold (so-called long press).

In order to customize a function key:

1. Open the main menu by pressing [MENU];
2. Select “General Settings” > “Keyboard and Input”;
3. Choose a function key you want to customize and open list of options;
4. Scroll through the list to select the desired function;
5. To return to function keys list: press [CLEAR] or tap “Back” icon;

or

6. To close the menu: long press [CLEAR] or tap outside the menu.

For example, if you setup F1 to the “Next Page” function, and after that, you do a long press of F1 while being on the “Map” page, it will cycle to the next page (the “Fish Finder” page). Repeatedly pressing this button, the plotter will cycle through all available pages.

Screenshots

One of the function keys can be set to perform screenshots.

If the micro SD card is inserted into the plotter, screenshot will be saved on the root of the card.

If no user micro SD card inserted, screenshots will be saved to the internal memory. You can save up to 50 screenshots.

To export the screenshots from the internal memory to the micro SD card:

1. Open the main menu by pressing [MENU];
2. Select “General Settings” > “Screenshots”;
3. Insert a micro SD card to the slot of the plotter;
4. Select “Export to SD”.

All screenshots can be deleted using the “Delete All” option.

7.3 Navigation settings

On the “Routes” and “Navigation” pages you can configure the following settings for navigation:

- Automatic route following (Par. 8.3);
- Route following optimization (Par. 8.3.2);
- Arrival circle radius (Par. 8.3.2);
- Cross track distance value;
- Back to fix after timeout (Par. 5.2);
- Static navigation:

Static navigation aims to avoid boat position bouncing, and disables SOG numeric field. If the boat is stationary (boat’s SOG is under the specified speed value), it is recommended to turn static navigation on:

1. Open the main menu by pressing [MENU];
2. Select “General Settings” > “Navigation”;
3. Enable “Static Navigation”.

By default, the static navigation activates when boat’s SOG is lower than 1 kn, but you can change this value on the “Navigation” page:

1. Enable “Static Navigation” as described above;
2. Select the “SOG Threshold” slider;
3. Enter the desired speed value by moving the slider knob with rotor wheel, [LEFT] and [RIGHT] buttons or with a finger, or use virtual keyboard and press “Done”.

- Position and speed filters:

It allows smoothing the unexpected leaps of ship position and speed caused by possible incorrect or distorted signal or errors of raw NMEA data received from antenna. You can enable or disable position and speed filters:

4. Open the main menu by pressing [MENU];

5. Select “General Settings” > “Navigation”;
6. Choose “Position Filter” or “Speed Filter” and select a type (low, medium or high) or turn it off.

7.4 Display settings

Display settings allow changing resolution and ratio of the screen, connected to the plotter, automatically or manually.

NOTE: This setting is not available for touchscreen plotters.

Normally, automatic detection of external display parameters is quite acceptable for navigation on most of the modern displays. In case you notice distortions, try to change ratio/resolution manually:

1. Open the main menu by pressing [MENU];
 2. Select “General Settings” > “Display”;
 3. Choose the desired resolution for 16:9 or 4:3 ratio;
 4. Confirm reboot by selecting “Ok” in the warning dialog;
 5. Select “Keep” in the warning dialog to keep new settings;
- or
6. Select “Revert” to get back to automatically detected screen resolution.

NOTE: Reboot is required for new settings to become active. If after reboot you cannot see anything (e.g. the screen is black) just wait for 15 seconds, after which the plotter will restart and the resolution will be set automatically.

NOTE: Make sure you choose the correct display resolution. Otherwise, all data may be displayed distorted, including important bathymetric information.

7.5 Ship Profile settings

Settings related to the ship icon displaying on map can be edited on the “Ship” page:

1. Open the main menu by pressing [MENU];
2. Select “General Settings” > “Ship”.

You can enable or disable heading and course lines using “Show COG Vector” and “Show Heading Line” switchers (these settings can be changed in ship icon contextual menu on the “Map” page). “Own Ship Icon” menu item allows you choosing your boat’s icon on the map.

In “Orientation Mode” submenu, you can choose ship icon displaying mode: heading up, course up or north up.

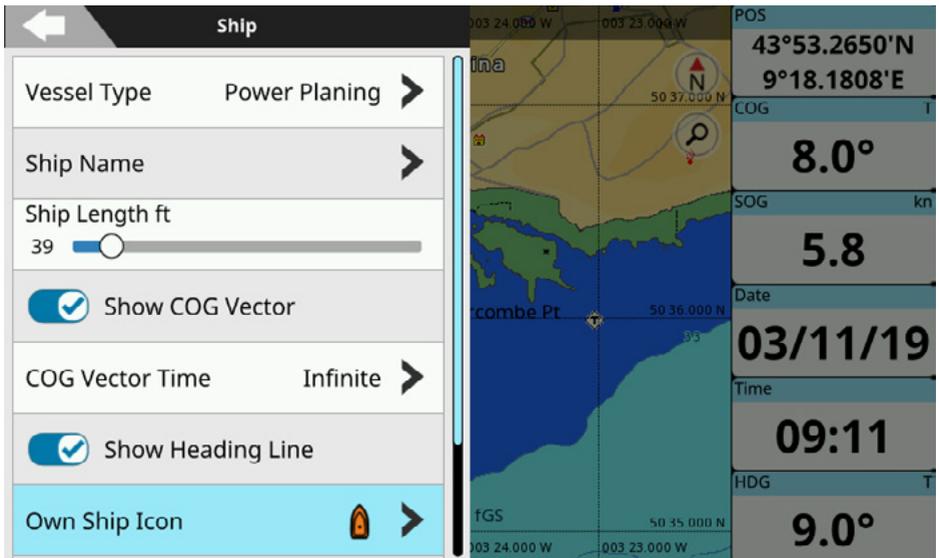


Figure 7.5 - Ship page

7.6 Loran-C

You can use Loran-C coordinate system on your plotter. In order to change the coordinate system to Loran-C, make following steps:

1. Open the main menu by pressing [MENU];
2. Select "General Settings" > "Formats and References" > "Position Format" > "TD Coordinate System".

Here you have to select a chain and two secondary stations for the selected chain. The two selectable secondary stations are used to calculate the TD (Time Difference) position:

- To choose a chain, select "Chain" and the desired station from the list;
- To choose secondary stations for the chain, select "Secondary Station 1", and the station from the list;
- Repeat the procedure for the "Secondary Station 2".

The "Alternate Solution" option allows setting an offset for TD coordinates. Simply input the desired offset for the first ("Additional Secondary Factor 1") and the second ("Additional Secondary Factor 2") coordinates. It will be added to the initial TD value or subtracted from it.

8. Go To function

8.1 Navigation to a single destination

1. Place the cursor at the desired position on the map;
2. Open contextual menu by pressing [ENTER] or long tap the screen;
3. Select "Go To".

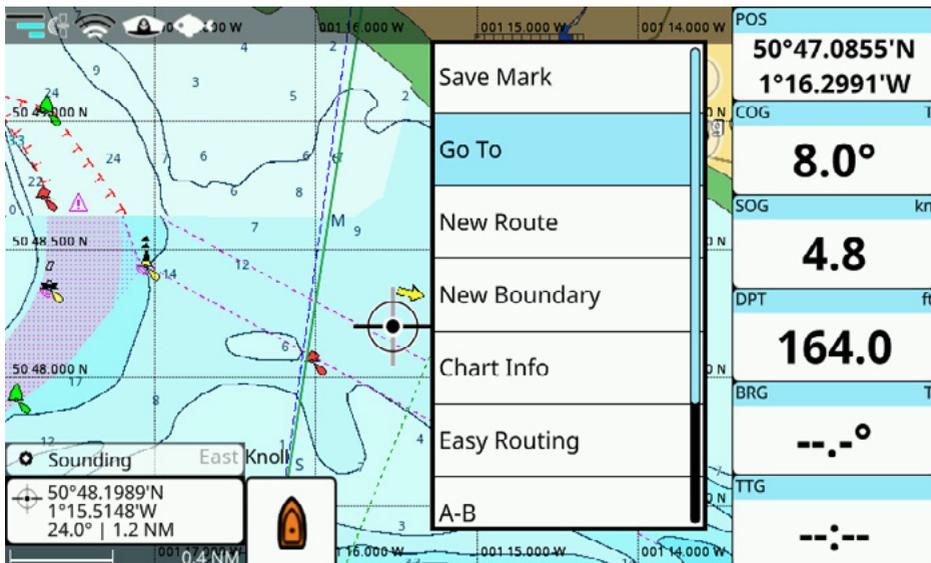


Figure 8.1.a - Map page with the cursor contextual menu

A red line and cross track distance corridor lines are shown on the screen connecting the destination with the initial boat's position (departure point). All navigation data in the data window, such as BRG, TTG, DST, XTE, is related to the destination.

When your vessel arrives at the destination (crosses arrival circle radius), a dialog window "Destination reached" appears on the screen.

To stop navigation:

1. Place the cursor at any place on the map;
2. Select "Stop Nav" from the contextual menu.

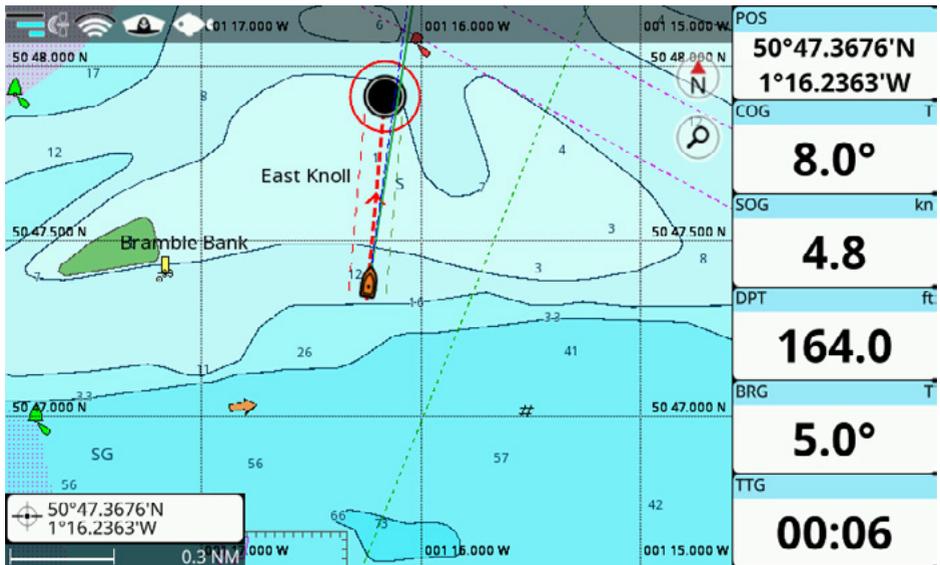


Figure 8.1.b - Map page with active navigation

8.2 Creating a route

A route consists of a set of waypoints.

To create a route on the map:

1. Place the cursor on the map at the desired position;
2. Select "New Route" from the contextual menu. Now you are in a route creation mode;
3. Move the cursor to the desired place on the map;
4. Press [ENTER] or tap the map to add a waypoint, or [CLEAR] to exit route creation mode.

When you create a new route, it has default prefix 'Route' with incrementing number. You can change default prefix:

1. Open the main menu by pressing [MENU];
2. Select "Routes" > "More" > "Default prefix";
3. Save new default prefix by inserting it into the keyboard and confirm by selecting "Done".

See Par. 9.2.2 about editing a route.

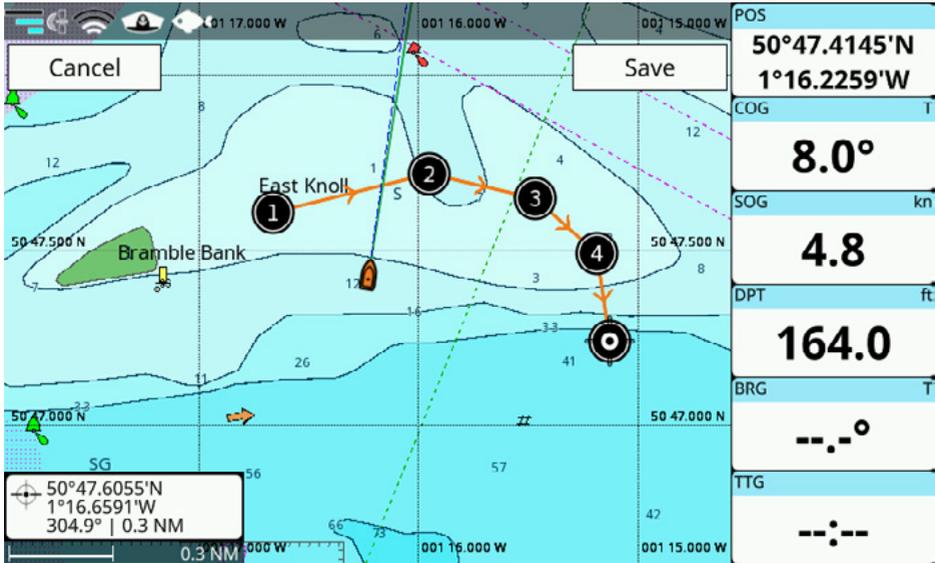


Figure 8.2 - Map page in the route creation mode

8.3 Route following

A route consists of a set of waypoints. The navigation is activated step by step from a waypoint to the next one, so when this waypoint is reached, the navigation towards the next one starts.

You can start navigation to the existing route, which is already created and shown on the map:

1. Place the cursor over one waypoint of the route;
 2. Call a contextual menu by pressing [ENTER] or a long tap;
 3. Select "Start Nav" to start navigating to the route, beginning from the nearest waypoint;
- or
4. Select "Start Here" to start navigating to the route, beginning from this particular waypoint;
- or
5. Select "Reverse" to start route navigation from this point to the beginning of the route (in reverse direction);
- or
6. Select "Go To" to start navigating to the single destination (and not to route).

When you reach the first waypoint, navigation will be started to the next waypoint automatically. The current destination has an arrival circle radius around it.

If you want to prevent automatic navigation to the next waypoint and receive a notification each time waypoint is reached:

1. Open the main menu by pressing [MENU];
2. Select "General Settings" > "Routes";
3. Disable "Automatic Route Following".

8.3.1 Route following options

Most of the route following options can be modified from the map with no need to open route's page.

Inserting a waypoint

During navigation, you may want to first reach another point on the map, and only then navigate to the initial destination.

To insert a waypoint put the cursor over the desired position and select "Insert WP" in the contextual menu. If the "Add Waypoint" function is set in your function keys you can also place the cursor on the map on the desired position and press the proper function key.

A route will be created connecting your current position, waypoint and final destination.

Appending a waypoint

When in navigation to the active route, you can also append a waypoint at the end of the route by clicking anywhere on the map:

1. Place the cursor on the desired location on the map;
2. Call a contextual menu by pressing [ENTER] or a long tap;
3. Select "Append WP" from the contextual menu.

Skipping a waypoint

If you want to skip current destination and to navigate to the next one in route:

1. Place the cursor at the waypoint which is a current destination;
2. Call a contextual menu by pressing [ENTER] or a long tap;
3. Select "Skip".

Opening the waypoints' list

To quickly access the list of all waypoints of a route and get detailed information about it:

1. Place the cursor over the waypoint on the map;
2. Call a contextual menu by pressing [ENTER] or a long tap;
3. Select "Open WP List".

Deleting a waypoint or the entire route

You can delete a waypoint only if it is not the current destination. To delete a waypoint use "Delete WP" option in waypoint's contextual menu.

You can delete the entire route from the map. If it is the active route (so that you are navigating to it), first of all, navigation has to be stopped in order to be able to delete it.

1. Place the cursor at the waypoint or the route leg;
2. Call a contextual menu by pressing [ENTER] or a long tap;
3. Select "Delete Route".

Reversing a route

To reverse navigation direction, use "Reverse" option in waypoint's contextual menu. You can reverse route from map only if you are in navigation mode, so selecting "Reverse" will start navigation to a route.

Extending a route

To add waypoints to the end of an existing route in navigation:

1. Place the cursor on the last waypoint in the route;
2. Call a contextual menu by pressing [ENTER] or a long tap;
3. Select “Extend” and move the cursor to place new waypoint;
4. Press [ENTER] or tap to save waypoint’s position.

8.3.2 Route following optimization

Under the normal route navigation (without optimization), the vessel is required to approach a waypoint within a certain distance (arrival radius) in order for the route to advance to the next waypoint.

With the “Route Following Optimization” option, the route is constantly recalculated (optimized) to allow automatic advancement to the next waypoint, even if the vessel never gets within the waypoint arrival zone. In this way, “Route Following Optimization” can be thought as a ‘close enough’ navigation when absolute route following precision is not required.

By default, the arrival radius is 0.1 Nm, but it can be changed on the “General Settings” page:

1. Open “General Settings” > “Navigation” > “Arrival Circle Radius”;
2. Select the desired distance with the slider.

8.4 Easy routing

You may want to create a route in a safe way, avoiding obstacles on the route. For this purpose, there is a special option “Easy Routing” that detects dangerous or non-safe objects and avoids them by building a safe route.

1. Place the cursor at the desired start position;
2. Call a contextual menu by pressing [ENTER] or a long tap;
3. Select “Easy Routing” and place the cursor at the desired end position.

A safe route will be created.

You can also apply this option to the existing route: it will modify the existing route leg. The plotter will identify obstacles between two waypoints and re-build the route so that obstacles would be avoided. The decision about avoiding obstacles on your way is based on information about your boat parameters (depth, height, width). To apply this option:

1. Place the cursor on a route leg (a line that connects two waypoints);
2. Call a contextual menu by pressing [ENTER] or a long tap;
3. Select “Leg Easy Routing”.

NOTE: You must have an up-to-date C-Map 4D map to use this option. This option is not supported for MAX map. Please make sure that your route is within detailed chart coverage.

NOTE: You must input correct information about your boat parameters in “General Settings” > “Easy Routing”.

9. User Data

User data point is an object that you can place on the map to mark a specific point and get it stored in the plotter's database. The plotter has the following types of user data: marks/events, tracks, routes, waypoints and boundaries. A mark can be created on the cursor's position while an event is created on boat's position. A track is a boat trail. A waypoint is a part of a route. A boundary can be useful to mark some area on map.

There is a limitation on the maximal amount of user data you can save:

- 30000 marks;
- 1000 routes each having 50 waypoints at most;
- 30000 trackpoints;
- 1000 boundaries each having 50 vertices at most.

All the user data can be accessed both from the map and from the dedicated page in the main menu. Operating on the map is possible via contextual menu. When you press [ENTER] on the map or execute long tap gesture, the contextual menu appears. Using contextual menu you can add, edit or delete user data.

9.1 Marks

Marks are a useful and easy way to mark and store any place on the map. Like any other user data type, marks can be added, modified or deleted both on the "Marks" page and on the map.



	▲ Name	Date	DST/BRG	Position		
	Mark1	02/06/19 12:27	128 NM 290°	51°26.9949'N 001°48.6557'W		
	Mark2	02/06/19 12:28	115 NM 292°	51°25.0652'N 001°27.0650'W		
	Mark3	02/06/19 12:27	110 NM 289°	51°19.4831'N 001°21.5378'W		
	Mark4	02/07/19 13:04	145 NM 269°	50°37.6062'N 002°24.0724'W		
	Mark5	02/07/19 13:04	144 NM 268°	50°34.8656'N 002°22.5937'W		
	Mark6	02/07/19 13:04	140 NM 267°	50°34.1384'N 002°16.5475'W		

Figure 9.1 - Marks page

To open the "Marks" page:

1. Open the main menu by pressing [MENU];

2. Select “Marks”.

On this page, you can observe all marks and events that are stored on your plotter.

9.1.1 Adding a new mark



Figure 9.1.1 - Marks on the Map page

To add a mark on the map:

1. Place the cursor at the desired position on the map;
2. Call a contextual menu by pressing [ENTER] or a long tap;
3. Select “Save mark”.

To add an event on the “Map” page:

1. Open map page;
2. Home the cursor to the boat using [CLEAR];
3. Call a contextual menu by pressing [ENTER] or a long tap;
4. Select “Save Event”.

9.1.2 Editing mark’s color, symbol, name and description

You can change color, symbol, name and description of each mark. To edit marks on the “Marks” page:

1. Open the main menu by pressing [MENU];
2. Select “Marks”;
3. Choose a mark in the list;
4. Select “Color”, “Symbol”, “Name” or “Description”.

On the “Map” page:

1. Place the cursor over the mark;

2. Call a contextual menu by pressing [ENTER] or a long tap;
3. Select "Edit Name", "Edit Description", "Edit Color" or "Edit Symbol".

9.1.3 Editing mark's position

On the "Marks" page:

1. Open the main menu by pressing [MENU];
2. Select "Marks";
3. Choose a mark in the list;
4. Select "Position";
5. Introduce changes and confirm by selecting "Done" or exit without saving ([CLEAR] or "Back" icon).

On the map:

1. Place the cursor over the mark;
 2. Call a contextual menu by pressing [ENTER] or a long tap;
 3. Select "Move" or "Edit Position";
 4. If "Move" was selected: move the cursor over the map and save new position by pressing [ENTER] or tap the map, or press [CLEAR] to cancel the movement;
- or
5. If "Edit Position" was selected: enter new "Latitude" and "Longitude" values and confirm by selecting "Done" or press [CLEAR] (or tap "Back" icon) to exit without saving.

9.1.4 Marks displaying on the map

By default, mark's name contains a prefix "Mark" and a number.

See Par. 9.7 on how to change a prefix. Mark's number presentation can be set in the "Marks" settings:

1. Open the main menu by pressing [MENU];
2. Select "General Settings" > "Marks" > "Zero Handling";
3. Choose "Suppress" to remove zeros in the mark's name (e.g. Mark1), or "Padding" to see the full name (e.g. Mark00001).

Sometimes it may be useful to hide mark's name on the map.

1. Open the main menu by pressing [MENU];
2. Select "General Settings" > "Marks";
3. Disable "Show Names".

After that, all the marks on the map will be displayed without their names.

You can set an icon size to be small, standard or large:

1. Open the main menu by pressing [MENU];
2. Select "General Settings" > "Marks" > "Icon Size";
3. Choose a desired size.

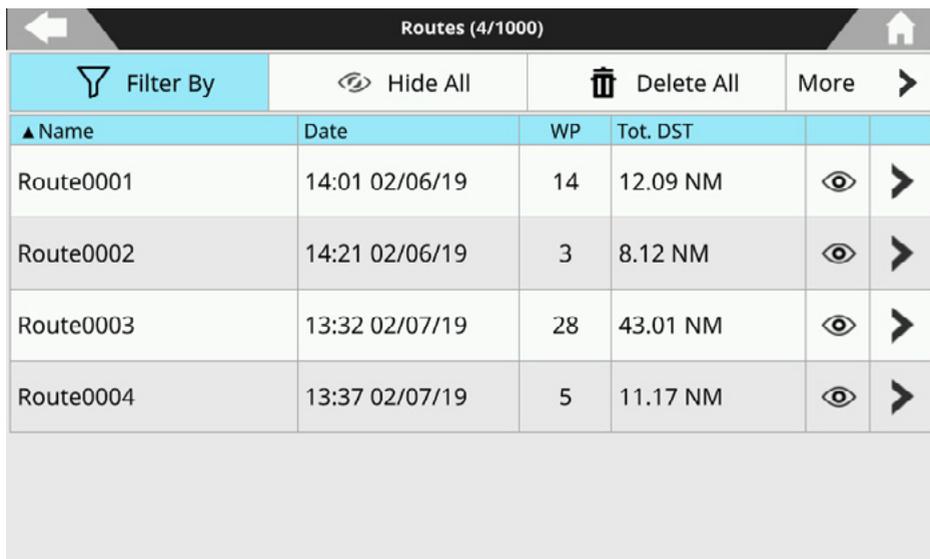
9.2 Routes

Routes can be modified or deleted on the "Routes" page and on the map.

To open the “Routes” page:

1. Open the main menu by pressing [MENU];
2. Select “Routes”.

On this page, you can observe all routes that are stored on your plotter and open the list of waypoints of a selected route.



Routes (4/1000)					
Filter By	Hide All	Delete All	More		
▲ Name	Date	WP	Tot. DST		
Route0001	14:01 02/06/19	14	12.09 NM	👁	➤
Route0002	14:21 02/06/19	3	8.12 NM	👁	➤
Route0003	13:32 02/07/19	28	43.01 NM	👁	➤
Route0004	13:37 02/07/19	5	11.17 NM	👁	➤

Figure 9.2 - Routes page

9.2.1 Creating a new route

To create a route on the map:

1. Place the cursor at the desired position on the map;
2. Call a contextual menu by pressing [ENTER] or a long tap;
3. Select “New Route”;
4. Place the cursor at the position, where the next waypoint should be saved; confirm by pressing [ENTER] or tap the map;
5. Repeat previous step for each waypoint;
6. After all the waypoints are placed, press [CLEAR] or tap “Save” button to exit route creation mode.

9.2.2 Editing route’s name and description

To edit route’s name and description on the “Routes” page:

1. Open the main menu by pressing [MENU];
2. Select “Routes”;
3. Choose a route in the list;
4. Select “Name” or “Description”.

On the map:

1. Place the cursor over the route leg;
2. Call a contextual menu by pressing [ENTER] or a long tap;
3. Select "Edit Name" or "Edit Description".

9.2.3 Routes planning speed

"Routes Planning Speed" allows you to choose a speed, that will be used in time to go calculations (e.g. in the route's waypoints list or in A-B info box).

To set the speed:

1. Open the main menu by pressing [MENU];
2. Select "General Settings" > "Routes";
3. Set the desired speed with a "Route Planning Speed" slider.

9.3 Waypoints

Departure Time		12/03/19 09:33		Routes Planning Speed		5 kn
Name	BRG	DST	TOT	TTG	TTTG	
WPT1	29.3° T	35.32 NM	35.32 NM	13h43'	13h43'	➤
WPT2	110.1° T	7.48 NM	42.80 NM	02h54'	16h38'	➤
WPT3	137.1° T	7.16 NM	49.96 NM	02h47'	19h25'	➤

Figure 9.3 - Waypoints list

Each route is a set of waypoints. List of waypoints can be accessed either from the map or from the "Routes" page.

9.3.1 Editing waypoint's position

To change waypoint's coordinates in waypoints list:

1. Open the main menu by pressing [MENU];
2. Select "Routes" and choose a route from the list > "Detail";
3. Select the waypoint in the list of waypoints > "Position";

4. Input new latitude and longitude values and select “Done” to save or press [CLEAR] or tap “Back” icon to exit position editing.

On the map:

1. Place the cursor over the waypoint on the map;
2. Call a contextual menu by pressing [ENTER] or a long tap;
3. Select “Move”;
4. Move cursor over the map and save new position by pressing [ENTER].

You can also change waypoint’s position by inputting new coordinates manually. In this case, select “Edit Position” in waypoint’s contextual menu on the map.

NOTE: If a waypoint is a current active destination, its position cannot be changed.

9.4 Tracks

Tracks (2/1000)					
Filter By		Hide All	Delete All	More	
Name	Date	Track Points			
 Track1	14:07 02/07/19	140			
 Track2	14:19 02/07/19	2863			

Figure 9.4 - Tracks page

By recording tracks you can store history about your boat moving over the map, so you can track where your boat has been. Tracks can be edited or deleted both on the “Tracks” page and on the map.

To start track recording on the map:

1. Press [CLEAR] or tap “Back to Fix” icon to center on fix position;
2. Press [ENTER] to call a contextual menu;
3. Enable “Record Track”.

You can also use function keys to start/stop track recording.

9.4.1 Editing track's color, name, and description

You can change color, name and description of tracks. To activate the editing mode on the "Tracks" page:

1. Open the main menu by pressing [MENU];
2. Select "Tracks";
3. Choose a track in the list > select "Name", "Description" or "Color".

To edit track color on the map:

1. Place the cursor over the track;
2. Call a contextual menu by pressing [ENTER] or a long tap;
3. Select "Edit Color".

9.4.2 Setting up a track generation interval and color logic

There are three ways to record a track: using smart tracking algorithm, by time or by distance.

By default, track is recording by smart tracking. It means that new trackpoint will be saved, if ship position or bearing were significantly changed. This recording option helps to save a space on the device memory. Recording by distance means trackpoint is placed when the distance from its last stored position is greater than the defined distance.

If track is recorded by time, a trackpoint is placed after the defined time.

You can select the track generation time interval [1, 5, 10, 30 sec, 1, 5, 10, 30 min, 1 h] or distance [0.01 - 20.00] Nm. Setting a short time interval between trackpoints is best suited to navigate within a close or complex environment, while a greater time interval is best suited to a long journey.

To select the track generation interval:

1. Open the main menu by pressing [MENU];
2. Open "General Settings" > "Tracks";
3. Select "Record By" and choose the desired algorithm..
4. In case "Time" or "Distance" were selected, set "Time Interval" or "Distance Interval" values.

9.4.3 Converting track to route

You can convert a track to a route so that the new route will outline the boat's track.

1. Open the main menu by pressing [MENU];
2. Select "Tracks";
3. Select a track in the list > "Convert to Route".

9.5 Boundaries

You can modify or delete boundaries on the "Boundaries" page and one the map.

To open the "Boundaries" page:

1. Open the main menu by pressing [MENU];
2. Select "Boundaries".

Boundaries (3/1000)						
Filter By	Hide All	Delete All	More			
Name	Date	VX	Length			
 Boundary0001	16:58 02/20/19	5	3.47 NM			
 Boundary0002	16:58 02/20/19	15	11.67 NM			
 Boundary0003	16:59 02/20/19	12	20.64 NM			

Figure 9.5 – Boundaries page

On this page, you can see all boundaries that are stored on the plotter and open the list of vertices of a selected boundary.

9.5.1 Creating a boundary

To create a boundary on the map:

1. Place the cursor at the desired position on the map;
2. Call a contextual menu by pressing [ENTER] or a long tap;
3. Select “New Boundary”;
4. Place the cursor at the position, where the next vertex should be saved; confirm by pressing [ENTER] or tap the map;
5. Repeat previous step for each vertex;
6. After all the vertices are placed, press [CLEAR] to exit boundary creation mode, or tap “Save” button.

9.5.2 Editing boundary’s color, name and description

1. Open the main menu by pressing [MENU];
2. Select “Boundaries”;
3. Choose a boundary in the list;
4. Select “Color”, “Name” or “Description”.

To edit boundary’s color on the map:

1. Place the cursor over the boundary;
2. Call a contextual menu by pressing [ENTER] or a long tap;
3. Select “Edit Color”.

9.5.3 Vertices

Name	BRG	DST	TOT	TTG	TTTG	
VX1	258.2° T	2.18 NM	2.18 NM	00h50'	00h50'	➤
VX2	117.3° T	1.42 NM	3.60 NM	00h33'	01h23'	➤
VX3	118.5° T	1.14 NM	4.74 NM	00h26'	01h50'	➤
VX4	85.9° T	1.05 NM	5.79 NM	00h24'	02h14'	➤
VX5	65.9° T	0.96 NM	6.75 NM	00h22'	02h37'	➤
VX6	43.3° T	1.02 NM	7.77 NM	00h23'	03h01'	➤
VX7	319.3° T	0.56 NM	8.32 NM	00h13'	03h14'	➤

Figure 9.5.2 – Vertices list

Each boundary is a set of vertices. Vertices can be edited or deleted either from the map or from the “Boundaries” page.

To edit vertex position on the map:

1. Place the cursor over the vertex;
2. Call a contextual menu by pressing [ENTER] or a long tap;
3. Select “Edit Line”;
4. Move cursor to the new vertex position and press [ENTER], or tap the map;
5. Press [ENTER] or tap “Save” button to exit boundary edit mode.

To edit vertex position on the “Boundaries” page:

1. Open the main menu by pressing [MENU];
2. Select “Boundaries” and choose a boundary from the list > “Detail”;
3. Select the vertex in the list > “Position”;
4. Input new latitude and longitude values and select “Done” to save or press [CLEAR] or tap “Back” icon to exit position editing.

9.6 Locate user data on the map

You can browse through the list of all user points (ex: marks) and then open map on the selected point’s position. Depending on a type of user data, it can be done differently.

To locate a route, a track, a mark or a boundary:

1. Open the main menu by pressing [MENU];

2. Select “Routes” (“Tracks”, “Marks” or “Boundaries”);
3. Choose the point in the list;
4. Select “Locate on map”.

To locate a waypoint or a vertex:

1. Open the main menu by pressing [MENU];
2. Select needed page (“Routes” or “Boundaries”);
3. Choose the point in the list (a route or a boundary) > “Detail”;
4. Select the waypoint or the vertex > “Locate on map”.

You will be relocated to the “Map” page with the point centered on the map.

9.7 Changing user data default color, symbol or prefix

A new route, mark, event, track and boundary will be created with a default color, symbol, and name with incrementing number. To change defaults:

1. Open the main menu by pressing [MENU];
 2. Select “Marks”, “Tracks”, “Routes” or “Boundaries” page;
 3. Select “More” in the top bar menu;
 4. Select “Default Color”, “Default Symbol” or “Default prefix”;
 5. Save new default color and/or symbol;
- or
6. Save new default prefix by inserting it with the keyboard and selecting “Done”.

NOTE: Vertices and waypoints prefix cannot be changed.

9.8 Displaying user data

To enable or disable all the tracks, marks, routes or boundaries displaying on the map screen:

1. Open the main menu by pressing [MENU];
2. Select the “Marks”, “Tracks”, “Routes” or “Boundaries” page;
3. Select “Hide all” button in the top bar menu to hide all the user data of this type.

If data is hidden, the “Show all” button appears in the top bar menu. By selecting it, you can display user data on the map again.

To hide/show a particular mark, track, route or boundary:

1. Open the main menu by pressing [MENU];
2. Select “Marks”, “Tracks”, “Routes” or “Boundaries” page;
3. Choose the desired point’s menu and select “Hide” (or “Show”).

9.9 User data filters

You can filter routes by name and date, tracks and boundaries by color, name and date and filter marks by color, symbol and name. Choose any filter option or all of them at once.

1. Open the main menu by pressing [MENU];

2. Select "Routes", "Tracks", "Marks" or "Boundaries";
3. Choose "Filter by" to open filter window – it has a list of filters to apply;
4. Select the filter by pressing [ENTER] or tap the needed one;
5. Open keyboard to insert name and select "Done" after name entered;
6. Press [CLEAR] or tap "Back" icon to apply.

After the filter was applied, you can execute group operations over filtered user data (delete or hide). When there is no filter activated, group operation will be applied to all the user data items in the list.

9.10 Order of user data on the page

Order of routes, tracks and marks on dedicated pages can be changed. You can sort out:

- Routes by name, date of creation, number of waypoints and total distance;
- Tracks by name and date of creation;
- Marks by name, date of creation and DST/BRG;
- Boundaries by name, date of creation, number of vertices and total length.

To sort the user points:

1. Open the main menu by pressing [MENU];
2. Select "Routes", "Tracks", "Marks" or "Boundaries";
3. Move focus to the desired column and press [ENTER], or tap the column name.

9.11 Exporting/importing user data

You can export or import your user data to or from a micro SD card. The acceptable file format for importing user data are GPX and DB.

To export user data in GPX format:

1. Insert a micro SD card to the micro SD slot of the plotter;
2. Open the main menu by pressing [MENU];
3. Select "General Settings" > "User Data";
4. Choose the data to export ("Routes and Marks", "Boundaries" or "Tracks") and select "Export to SD".

NOTE: Exported files will be placed on the root of the micro SD card.

To export user data in DB format:

1. Insert a micro SD card to the micro SD slot of the plotter;
2. Open the main menu by pressing [MENU];
3. Select "General Settings" > "Restore and Backup" > "Export User Data".

NOTE: Do not eject the micro SD card until the message "Data exported" appears on your screen. You do not need to switch off the plotter, you can remove the micro SD even if the plotter is turned on.

To import user data in GPX format from a micro SD card to your plotter:

1. Insert a micro SD card to the slot of the plotter;

2. Open the main menu by pressing [MENU];
3. Select “General Settings” > “User Data”;
4. Select the data type (“Routes and Marks”, “Boundaries” or “Tracks”) and press “Import from SD”.
5. Select the desired file.

To import user data in DB format from a micro SD card to your plotter:

1. Insert a micro SD card to the slot of the plotter;
2. Open the main menu by pressing [MENU];
3. Select “General Settings” > “Restore and Backup” > “Import User Data”;
4. Choose between “Append” (user data from the micro SD card will be added to the data on the plotter) and “Substitute” (the data on the plotter will be substituted with the data from the micro SD).

NOTE: In case DB data was already synchronized with Captain Cloud account, the popup will appear asking if to save the synchronization state. Select “No” if you want to be able to synchronize this data with your account.

NOTE: Do not eject the micro SD card until the message “Data has been successfully imported” appears on your screen.

NOTE: The GPX files must be located at the root of micro SD card in order to be successfully imported by the plotter. The import of data will not substitute/delete any user data on the plotter; the new user data will be added to the existing ones.

The DB files, that you want to import, must be located at \AMP\Userdata folder of micro SD card in order to be found by the plotter.

As well, exported DB files will be placed into \AMP\Userdata.

9.12 Deleting user data

There are two ways to delete user data: you can clear all the data at once or delete user points one by one.

To clear all the routes, tracks, marks and boundaries at once:

1. Open the main menu by pressing [MENU];
2. Select “General Settings” > “Restore and Backup”;
3. Choose “Clear User Data” and confirm the action by selecting “Yes”.

User data can be deleted also on the “Map” page:

1. Place the cursor over the route, the track, the mark or the boundary;
2. Call a contextual menu by pressing [ENTER] or a long tap;
3. Select “Delete”.

You can delete all the routes, tracks, marks and Boundaries on dedicated pages:

1. Open the main menu by pressing [MENU];
2. Select “Routes”, “Tracks”, “Marks” or “Boundaries”;

3. Select "Delete ALL" button in the top bar.

To delete a route, a track, a mark or a boundary one by one:

1. Open the main menu by pressing [MENU];
2. Select "Routes", "Tracks", "Marks" or "Boundaries";
3. Choose a route, a track, a mark or a boundary from the list;
4. Select "Delete".

10. A-B function

A-B function allows measuring distance and bearing between two points on the “Map” page.

You can access the A-B function in the contextual menu of the map:

1. Open the “Map” page;
 2. Select “A-B” from the contextual menu. The A point is positioned on the cursor position;
 3. Move the cursor to the desired place. You will see the B point at the cursor position, and line, that connects A and B;
 4. Press [ENTER] or tap to save A-B coordinates on the map;
- or
5. Press [CLEAR] to exit A-B mode.

The distance between A and B (DST), the bearing (BRG) and time to go (TTG) to reach B from A are displayed in the A-B info..

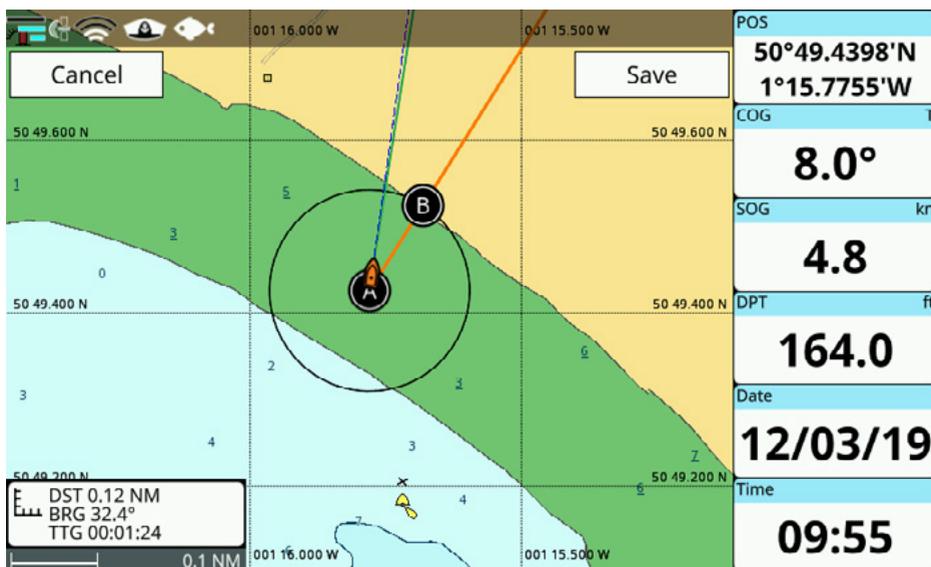


Figure 10 - A-B function

In case you want to measure a distance/bearing from your boat to one point on the map:

1. Center the map on fix by pressing [CLEAR] or tap “Back to Fix” icon;
 2. Call a contextual menu by pressing [ENTER];
 3. Select “A-B”. The A point will be placed on a ship position;
 4. Move the cursor to the desired position on the map;
 5. Press [ENTER] or tap to save A-B coordinates on the map;
- or
6. Press [CLEAR] to exit A-B mode.

To edit previously saved A-B on the map, call the contextual menu of A or B:

1. Place the cursor over “A” or over “B” icon;
2. Select “Edit A-B”;
3. Move cursor to change A-B and save new A-B coordinates.

NOTE: On touchscreen devices in A-B edit mode long tap on A or B allows to move both A and B points.

A-B will be fixed on the map until you delete it by pressing “Delete A-B” in the contextual menu of A or B. This action deletes A and B points and the connecting line.

11. Search function

Search function aims to help you to find objects on the map. Objects are found in a range around cursor position, which you can vary.

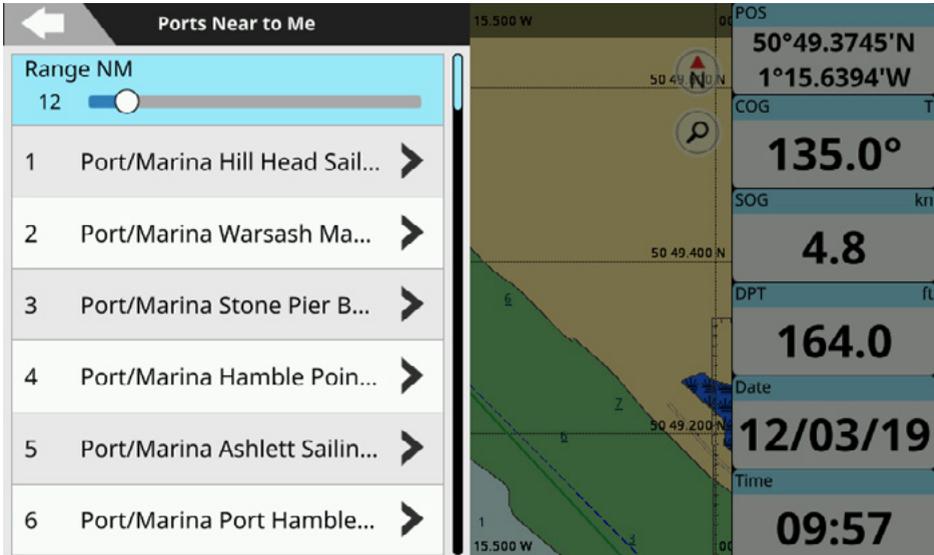


Figure 11 - Search page

NOTE: Search function requires the detailed C-Map map unless you search marks.

On the "Map" page:

1. Open the main menu by pressing [MENU];
2. Select "Search";
3. Choose the object to search and the range.

You can search different objects:

- Ports Near to Me;
- Ports by Name and Service;
- Tide Stations;
- Current Stations;
- Marks;
- Points of Interest;
- Wrecks;
- Obstructions;
- Lakes (Near to Me, by Name and Service).

The search operation may take some time, depending on the specified range of search. The larger range is covered by search, the longer it takes to find the objects.

After the search, the "Chart Info" page of the selected object can be reached. Here you can read information about the object, as well as locate the object on the map or start navigation to it.

12. Tides information

The “Tide Station” page displays a graphical page with the tides prediction of the selected object. You can reach a graph of a tide station in two ways:

1. Open the main menu by pressing [MENU];
 2. Select “Search” > “Tide Stations”;
 3. Select a station from the list;
 4. On the “Chart Info” page select “Graph”;
- or
5. Select the tide station on the map;
 6. Call a contextual menu by pressing [ENTER] or a long tap;
 7. Select “Show Graph”.

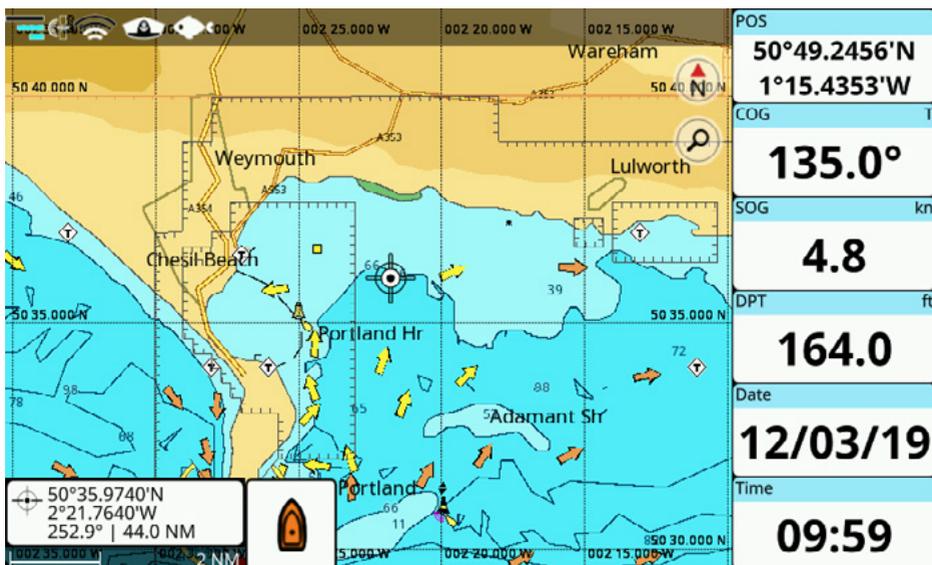


Figure 12.a - Tide height and tide stream stations on the Map page

On the “Tide Station” page you can see the information about the tide levels and sunrise/sunset and moonrise/moonset time for the selected date.

To change the date on the “Tide Station” page:

1. Select “Set Date” in the top bar;
2. Set date, month and year.

The tide graph will show the information for the new date.

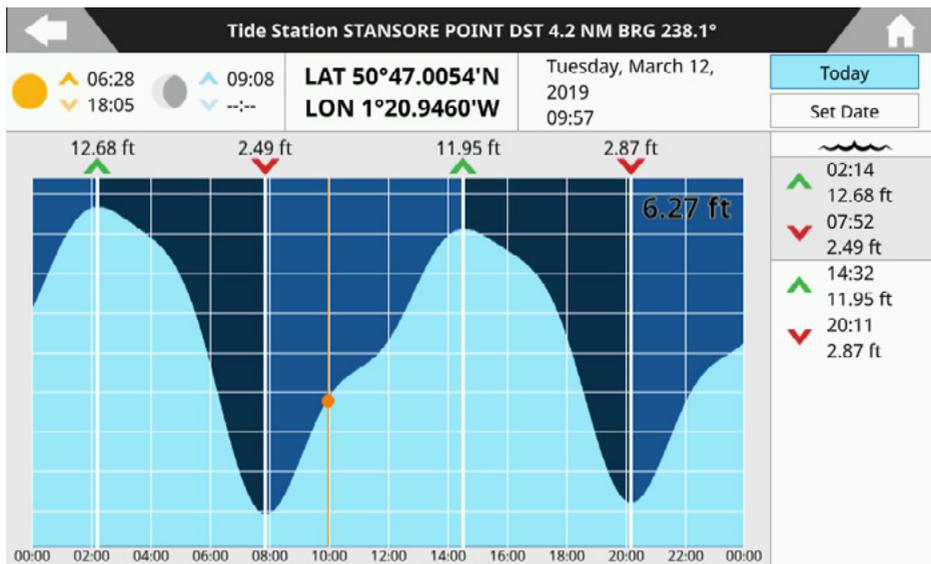


Figure 12.b - Tide Station page

You can check current tide level or move the cursor along the tide graph to see the tide height changes.

Press [UP] in order to move the cursor back to the “Change” option or tap the top bar.

Press [CLEAR] or tap the “Home” icon on the top right of the screen to exit the “Tide Station” page.

NOTE: On touchscreen devices, you can use two fingers swipe gesture to see tide graphs of previous or next days.

13. MOB

If a person or an object are lost overboard and you need to return to the location, use the MOB (Man Over Board) function.

NOTE: To activate the MOB function, a valid GPS fix must be available.

The MOB function can be accessed from any page by pressing [MOB] key of the plotter. Also MOB can be placed from "Quick Settings" menu.



The MOB icon is placed at the current fix position and at the same time navigation towards the MOB position starts.

To delete MOB icon and stop navigation to it:

1. Place cursor over the MOB icon and press [Enter] or tap the icon;
2. Select "Cancel MOB".

14. Alarms

The plotter provides alarms for various purposes: navigation, tank, wind and AIS monitoring. You can specify the desired alarm range for most of the functions.

To open the “Alarms” page:

1. Open the main menu by pressing [MENU];
2. Select “Alarms”.

An alarm is triggered when the specified condition happens, and shuts down when the condition disappears.

You can choose for the alarm to appear with a beep sound (which can be automatically muted after a timeout) or without it:

1. Open the main menu by pressing [MENU];
2. Select “Alarms” > “General Configuration”;
3. Enable or disable “Audible Alarm”.

When audible alarms are triggered, you can turn off the sound by pressing [CLEAR] or tap the alarm bar. Alarm bar will remain visible until the alarm condition is released. When two or more alarms are activated, the messages cycle on the alarm bar.

External alarm

The external alarm is a signal triggered by the plotter on a specific wire, which can be used by the external device (as a hooter or a buzzer).

To switch on the “External Alarm” function:

1. Open the main menu by pressing [MENU];
2. Select “Alarms” > “General Configuration”;
3. Enable or disable “External Alarm”.

NOTE: You can use “Auto Mute” slider to set a specific amount of time for a beep to sound. After the preset time will pass, notification will continue to be displayed.

Navigation alarms

Navigation alarms are presented with the following alarms:

- “Grounding” alarm scans map area within 1 nautical mile range in front of your course line (plus 8 degrees to the left and 8 degrees to the right direction) in order to find objects dangerous for navigation, such as shallow water (depth areas), intertidal areas, land, rocks, obstructions and shoreline constructions. You can set the minimum depth value for this alarm on the “Alarms” page;
- “Depth” alarm is automatically triggered when the depth value read by the depth transducer is too shallow;
- “Anchor” alarm is triggered when the ship moves off the current ship’s position location;
- “XTD” alarm is triggered when the vessel is deviating from a defined course. Cross track distance value can be set in “General Settings” > “Navigation” > “XTD Value NM”;
- “Arriving at Destination” alarm is triggered when the distance to destination becomes smaller than the value specified in “General Settings” > “Navigation” > “Arrival Circle Radius NM”;
- “Own Ship Speed” alarm is triggered when ship speed is within or outside specified ranges;
- “Trip Meter” alarm is triggered when the distance that ship passed till last “Trip Meter” databox

- reset, exceeds the preset one;
- "Surface Temperature" alarm is triggered when the temperature is within or outside the specified range;
- "Temperature Shear" alarm is triggered when the temperature changes with the preset amount of degrees during one minute.

NOTE: By default, all navigation alarms are turned off. Before you start the navigation, enable/disable alarms and customize ranges. The "Anchor" alarm turns off each time the plotter restarts.

Tank alarms

Tank alarms are triggered depending on a tank type. The type of fluid cannot be set manually, it is received via NMEA2000.

You can set on board the amount of tanks:

1. Open the main menu by pressing [MENU];
2. Select "Alarms" > "Tank Alarms";
3. Select a value from 1 to 6.

Depending on a fluid type, alarm is triggered when the value exceeds or lower than the one specified with "Notification Percentage" slider. For example, if the tank type is "Fuel", "Low Fuel" alarm will be triggered when fuel level is less than notification percentage value. For a "Waste water" tank type "High Waste Water" alarm occurs when the current tank value exceeds the notification percentage.

Wind alarms

Wind alarms aimed to inform about wind speed or angle changes. They include:

- "Max TWS" alarm is triggered when wind speed exceeds the value, set with "Max TWS Value" slider;
- "Wind Shift" alarm is triggered when wind direction changes for more than 90 degrees during one second;
- "Low AWA" alarm is triggered when apparent wind angle value is less than the value, set with "Min AWA Value" slider;
- "High AWA" alarm is triggered when apparent wind angle value is larger than the one specified with "Max AWA Value" slider.

AIS alarms

The AIS alarms are available only when a compatible AIS device is connected to the plotter.

This collision avoidance tool warns you when your boat gets too close to another vessel. AIS alarms include:

- "CPA Alarm": Closest Point of Approach is triggered when the distance to the closest point of approach is minor than the value set in alarm settings;
- "TCPA Alarm": Time to Closest Point of Approach is triggered when time to the closest point of approach is less then specified in alarm settings.

NOTE: It may be preferable to turn CPA and TCPA alarms off or set their values to the minimum acceptable when you are approaching harbor entrances and rivers, otherwise they may be triggered too often.

NOTE: Dangerous AIS targets will not be displayed on the map if CPA and TCPA alarms are disabled (Par. 19).

15. Simulation mode

The built-in simulation function allows you to become proficient in the use of the plotter. It simulates reception of the navigation data (position, SOG and COG).

The simulated boat's position is placed at the current position of the cursor when the simulation is activated. It can be moved to any place on the map by choosing "Move Ship Here" option from the map contextual menu.

To turn fix simulation on:

1. Open the main menu by pressing [MENU];
2. Select "Simulation" and enable "GPS Simulation";
3. Select "SOG" and "COG", input the desired values.

To center fix icon on the map:

1. Open the "Map" page;
2. Press [CLEAR] to get to the home mode (fix position will be centered) or tap "Back to fix" icon.

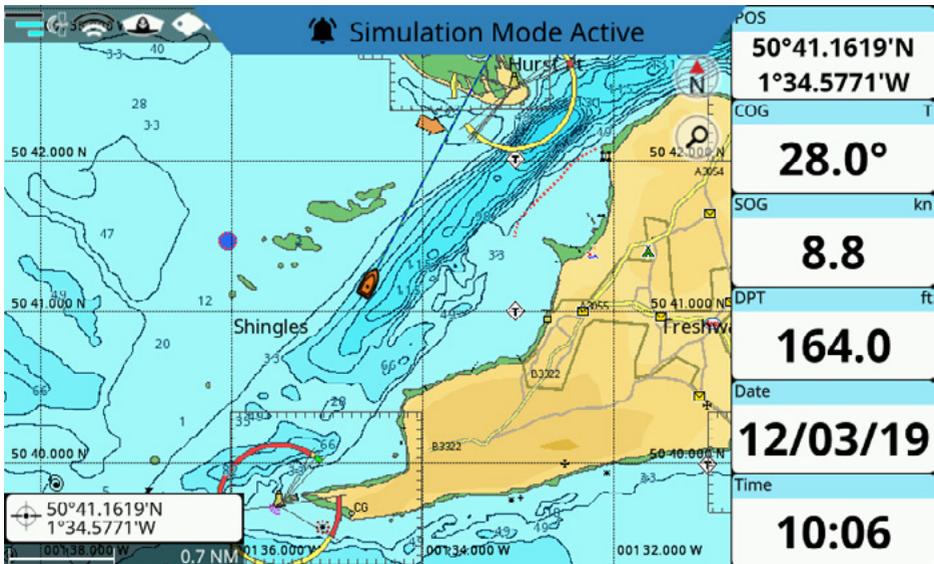


Figure 15 - Simulation mode

You can turn on AIS, route following and Fish Finder simulation in the same way.

- "Simulate Route Following" option allows demonstrating automatic route following by the boat's icon on the "Map" page;
- "Simulate AIS targets" generates AIS targets around your fix position;
- "Simulate Fish Finder Device" demonstrates the simulated echogram, transducer frequency, water temperature and depth.

16. Map settings

16.1 Course predictor

The course predictor is a line that starts from your boat and indicates the course direction. It is displayed on the map as an infinite blue dashed line by default.

You can customize it in the “Course Line” settings:

1. Get to the home mode on the “Map” page by pressing [CLEAR];
2. Call a contextual menu by pressing [ENTER] or a long tap;
3. Select “Course Line”.

On the “Ship” page you can either turn course line off or customize its length by selecting “Infinite” or time values.

Course predictor time can be set to 120 minutes.

To set the course predictor value:

1. Open the main menu by pressing [MENU];
2. Select “General Settings” > “Ship”;
3. Select “COG Vector Time”;
4. Choose the desired value.

Now the course line will be finite and its length will depend on your boat’s speed. The end of the finite course line is indicated by the blue circle.

16.2 Heading line

The heading line is a line that starts from the boat’s bow and indicates the heading direction.

It is presented on the map with an infinite green solid line by default. You can switch on/off the heading line:

1. Get to the home mode on the map by pressing [CLEAR];
2. Call a contextual menu by pressing [ENTER] or a long tap;
3. Disable “Heading Line”.

You can turn on the heading line in the same way.

Alternatively, you can enable or disable the heading line following these steps:

1. Open the main menu by pressing [MENU];;
2. Select “General Settings” > “Ship”;
3. Enable or disable “Show Heading Line”.



Figure 16.2 - Heading line on the map

16.3 Map Orientation

During navigation, the map can be fixed with north up, or it can be oriented as to keep the head up, or course up. Otherwise, you can choose a fixed custom map orientation, rotating the map (Par. 5.1).

1. Open the main menu by pressing [MENU];
2. Select "Quick Settings" > "Mode";
3. Select the desired option among "North Up", "Head Up" or "Course Up".

On touchscreen devices you can also change the mode by tap on the mode icon on the top right of the screen.

17. Ports settings

You can change the parameters of the serial and CAN interface on the “Ports and Connectivity” page:

1. Open the main menu by pressing [MENU];
2. Select “Ports and Connectivity”.

On this page you can set the configuration for serial ports (A, B, etc...) and CAN port. If your plotter is WiFi compatible, you can also enable WiFi on this page and connect to a network (Par. 18) as well as enable Mirror Control.

17.1 External serial ports

The plotter is equipped with serial ports (COM). Different plotter families can have specific ports dedicated to GPS sensor because of its special socket. You can configure it to Fish Finder or other NMEA 0183 device alternatively.

Some external ports can be used by embedded GPS device. In such cases, port will not be available for external device connection. To change the port setting:

1. Open the main menu by pressing [MENU];
2. Select “Ports and Connectivity”;
3. Select the serial port with “Internal GPS” label;
4. Disable “Use Port for Internal GPS”;
5. Select the option for serial port from the list displayed below.

Serial ports can be set up to receive NMEA 0183 data by selecting one of the following options.

NMEA 0183 device

1. Open the main menu by pressing [MENU];
2. Select “Ports and Connectivity” and select a port;
3. Select “NMEA 0183 device” > “Baud Rate”;
4. Select the desired baud rate.

Auto-detect

Connect NMEA 0183 device to the serial port and wait for the device to be found - the port tab will become marked with a green circle instead of red one.

NOTE: In the Auto-detect mode, baud rate is configured automatically.

17.2 Communication log

“Communication Log” allows the plotter to act as a computer terminal and display the data exactly as it is received or transmitted. This option is available in the “NMEA 0183 ” mode.

If the data displayed on the screen is unrecognizable, you may have selected the wrong input parameters for your particular accessory.

Check your accessory manual to be sure that you have selected the proper interface format.

If the screen is blank, the connection may be interrupted, and no data is being received.

17.3 NMEA2000 port

The plotter is equipped with one CAN port. CAN bus is a communication protocol that shares multiple data and signals through a single backbone cable. You can simply connect any CAN bus device onto the backbone cable to expand your network onboard.

With CAN bus, IDs are assigned to all the devices in the network, and the status of each sensor in the network can be detected. All CAN bus devices can be incorporated into the NMEA2000 network. This port can be turned on/off on the “CAN port” settings page:

1. Open the main menu by pressing [MENU];
2. Select “Ports and Connectivity” > “CAN port”;
3. Select “None” to turn the port off or “NMEA 2000” to turn it on.

17.4 Ports output

The plotter can output NMEA 0183 or NMEA 2000 data through your serial ports or the CAN port respectively. For serial ports, this option is available in the “NMEA 0183 device” mode of the serial ports options.

To enable output for a serial port:

1. Open the main menu by pressing [MENU];
2. Select “Ports and Connectivity” and choose the desired serial port (A, B, etc...);
3. Select “NMEA0183 device” > “Output options” > “Enable output”.

On the “Output options” page you can select:

- the NMEA 0183 version (2.0, 3.0, 4.0 or 4.1);
- the NMEA 0183 sentences for output.

For CAN port the port output function is available in the “NMEA 2000” mode.

1. Open the main menu by pressing [MENU];
2. Select “Ports and Connectivity” > “CAN port” > “Output options”;
3. Enable “Enable output”;
4. Choose the desired NMEA 2000 PGNs in the list below for output and enable them.

17.5 Input Manager

Different navigation data may be received from other devices to different ports of the plotter. Input manager page is helpful if there is more than one source of incoming data. On this page, you can check which data arrive to which port and choose the source to receive the data from, in case there are multiple sources.

For example, devices with internal GPS can receive position data both from NMEA 0183 and internal GPS. You can choose the source of the data by switching between serial ports:

1. Open the main menu by pressing [MENU];
2. Select “Ports and Connectivity” > “Input Manager”;
3. In “Position” section choose between the different serial ports.

NOTE:

Make sure that data sources are set correctly and don't forget to change settings in case data starts being received on another port. If data is received from non-selected port, the notification will occur suggesting to check the source. Once source was set to non-default or the notification was dismissed, it will not appear again.

17.6 Offset

You can adjust the values of depth, water and air temperature, speed through water, heading, wind speed and angle, received by the sensors, and set the damping time in the "Offset" menu.

Damping

Values of COG, SOG and wind can change fast. In order to improve the accuracy and to smooth the values, you can set a damping time. This time (can be set from 0 to 12 seconds) means, that the data, which were received in the chosen amount of seconds, will be used for calculations. The higher the damping is, the steadier COG, SOG and wind values are. Which also means, that they become less responsive to changes.

To set the damping time:

1. Open the main menu by pressing [MENU];
2. Select "Ports and Connectivity" > "Offset";
3. Set the desired values for "Wind Damping" and "COG & SOG Damping".

Boat position offset

Sometimes the position of your boat can be displayed in the wrong place of the map due to weak GPS signal or cartography accuracy. You can change the position of the boat on the map by introducing the latitude and longitude correction values:

1. Open the main menu by pressing [MENU];
2. Select "Ports and Connectivity" > "Offset";
3. Enable "Fix Offset";
4. Enter the values to the "Latitude Offset" and "Longitude Offset";

or

5. Return to the "Map" page and call cursor contextual menu > "Calculate Fix Offset".

18. WiFi

If your plotter is WiFi compatible, you can connect it to any available WiFi hotspot. The internet connection grants access to special features, such as Captain Cloud (Par. 18.1), Mirror Control (Par. 18.2), and software updates via the Internet (Par. 22.1).

In order to connect the plotter to the Internet, verify that WiFi is enabled in the settings page.

To turn WiFi on/off:

1. Open the main menu by pressing [MENU];
2. Select "Ports and Connectivity" > "WiFi";
3. Enable/disable "Wireless LAN".

After that, you can connect to the desired network in the list of available networks:

1. Select the desired WiFi hotspot in the automatically updated list;
2. Insert password for the network access.

The network will be remembered by the plotter, and next time it will be connected automatically.

If for any reason you don't want to connect to this network automatically anymore:

1. Open the main menu by pressing [MENU];
2. Select "Ports and Connectivity" > "WiFi";
3. Select "Disconnect" button near the active network name.

18.1 Captain Cloud

Captain Cloud is a special feature that saves your tracks, routes, and marks on the cloud and keeps them safe. Synchronizing user data with Captain Cloud allows to use and manage it on any other plotter, PC, tablet or smartphone connected to your private cloud.

User data synchronize with your account on captaincloud.com automatically.

You can create a new route or mark on Captain Cloud's map and it will automatically appear on your plotter.

In order to use Captain Cloud, you need to create your account on captaincloud.com, then you need to login to Captain Cloud on the plotter with the same credentials used on captaincloud.com.

1. Open the main menu by pressing [MENU];
2. Select "General Settings" > "Captain Cloud";
3. Enter the email address you used for your account on captaincloud.com and your password.

In a few seconds, the status will be changed to "Connected", after which data synchronization will be done automatically. Synchronization may take time if the amount of data is large. All the user data stored on plotter will be accessible on Captain Cloud website.

NOTE: All the modifications will be synchronized automatically every 60 seconds in case you have the Internet connection. In case you are not connected while making changes on your plotter, changes will be stored in the plotter memory and synchronized as soon as the Internet connection becomes available.

NOTE: Try to avoid simultaneous modifications of user data on the plotter and on the webpage. This may

cause collisions and unexpected behaviors.

If you want to log in as a different user on the plotter, you need to reset the “Captain Cloud” page:

1. Open the main menu by pressing [MENU];
2. Select “General Settings” > “Captain Cloud”;
3. Select “Reset”;
4. Carefully read information in the warning dialog and confirm the action.

NOTE: It is highly recommended to clear all user data on your plotter if you want to start synchronizing data with another user account.

18.2 Mirror Control

Wireless LAN connection compatible plotters can be controlled by smartphones or tablets with Mirror Control app installed. The application allows operating your Android or Apple device as a touchscreen plotter.

You can pair your devices via WiFi and then use a tablet/smartphone to control the plotter remotely:

1. Open the main menu by pressing [MENU];
2. Select “Ports and Connectivity” > “WiFi” and enable WiFi;
3. Connect the plotter to a hotspot;
4. Make sure your tablet is connected to the same hotspot;
5. Open “Ports and Connectivity” > “Mirror Control” and enable “Online status”. Menu icon will be displayed;
6. Open your app and pair it to a plotter by inserting IP Address, which is displayed on the “Mirror Control” page.



Figure 18.2 - Menu icon on the Map page

19. AIS and DSC

AIS is an Automatic Identification System. The AIS allows automatic tracking of ships for identifying and locating vessels by exchanging data with other nearby ships, AIS base stations, and satellites.

A vessel equipped with AIS is called a target. Information about up to 300 targets, received by AIS receiver, is displayed on the screen and on the “AIS” page:

1. Open the main menu by pressing [MENU];
2. Select “AIS”.

19.1 AIS and DSC filters

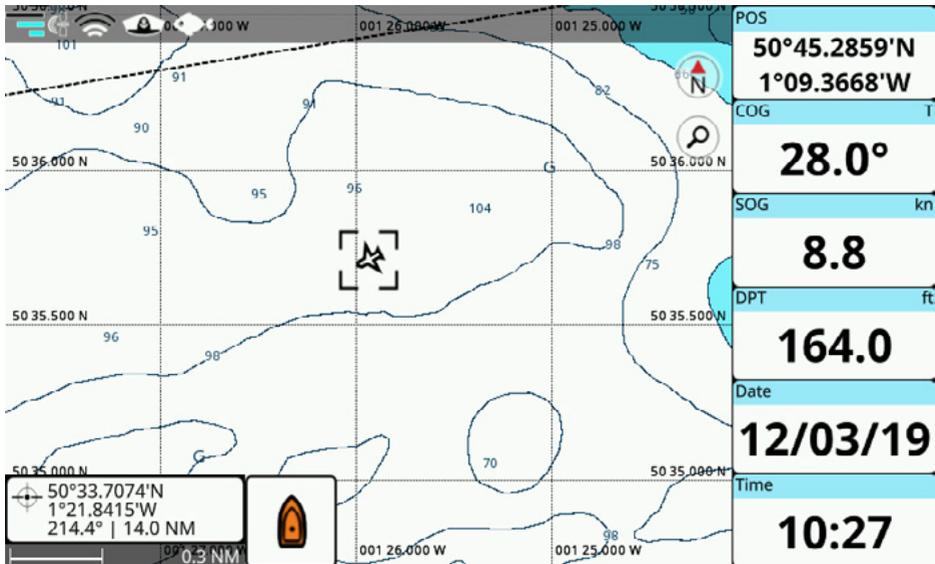


Figure 19.1.a - AIS target on the map

AIS display range filter

By default, the information is displayed about all targets within the display range 5 Nm. The display range is the range around your boat where targets become active. You can change the settings for display range:

1. Open the main menu by pressing [MENU];
2. Select “General Settings” > “AIS”;
3. Set the desired “Activation Range NM”.

AIS target speed

To apply AIS target speed filter:

1. Open the main menu by pressing [MENU];
2. Select "General Settings" > "AIS";
3. Set the desired speed with "Ignore Targets Slower Than" slider.

You will not see AIS targets with the speed slower than the selected value.

DSC displaying

DSC target is displayed on the "DSC" page for a predefined amount of time. By default, this value is 100 calls. To change the setting:

1. Open the main menu by pressing [MENU];
2. Select "General Settings" > "DSC";
3. Select "DSC List" and choose the needed value.

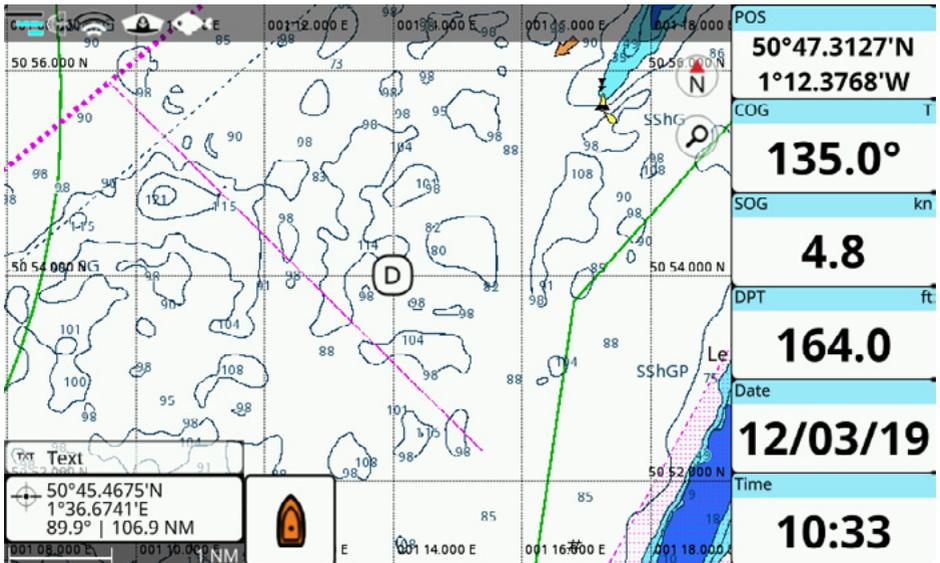


Figure 19.1.b - DSC on the map

19.2 AIS and DSC target information

On the "AIS" page you can access the following information about each target:

- Name;
- Call Sign;
- DST/BRG;
- Type;
- CPA/TCPA;
- Position.

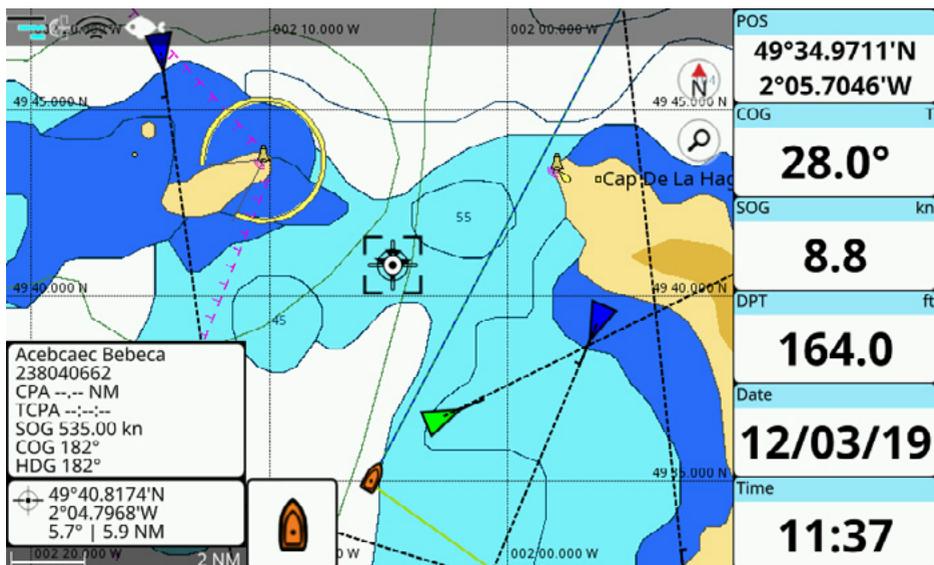


Figure 19.2.a - AIS target info box

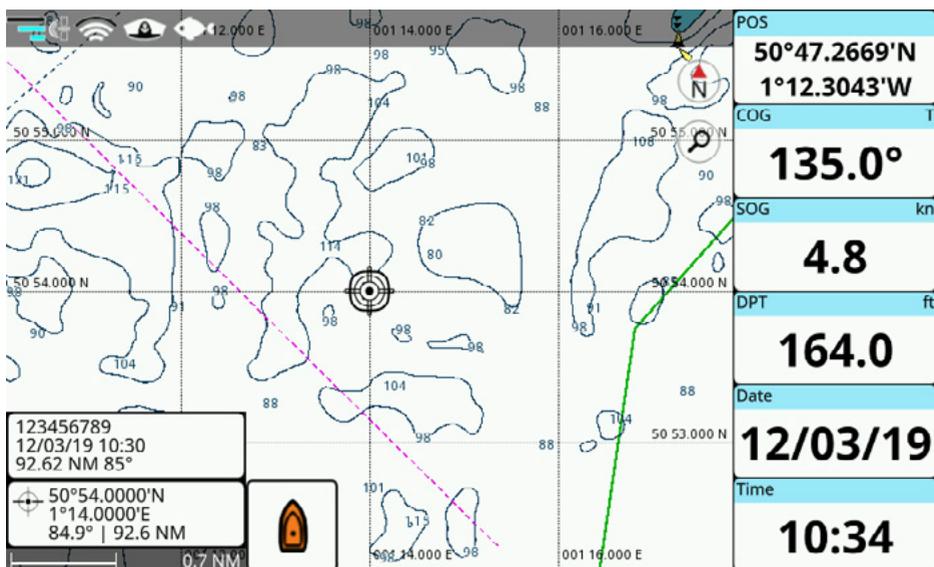


Figure 19.2.b - DSC target info box

On the "DSC" page the following information is displayed:

- MMSI;
- Time;

- DST/BRG;
- Position.

You can locate the selected AIS target and DSC on the map, start navigation on a target or save a mark on the target position:

1. Open "AIS" or "DSC" page;
2. Select the desired target in the list of AIS or DSC targets.

By placing the cursor over an AIS target icon on the map, the following information is displayed: AIS name, MMSI, CPA and TCPA, COG, SOG and HDG (see Fig. 19.2.a).

DSC info box shows MMSI, date and time, distance and bearing (see Fig. 19.2.b).

You can enable or disable displaying AIS or DSC target's name on the map:

1. Open the main menu by pressing [MENU];
2. Select "General Settings" > "AIS" or "DSC";
3. Enable/disable "Show Target IDs".

20. The Fish Finder

The Fish Finder consists of a high power transmitter, sensitive receiver and a transducer. The Fish Finder sends acoustic (sound) wave through the water. As this wave travels from the transducer to the bottom, it may strike fish, structures, thermoclines (temperature changes in the water). When the wave strikes an object(s) a certain amount of the wave is reflected back to the transducer depending on the composition and shape of the object. When the reflected wave is returned to the transducer it is converted into a voltage and is amplified by the receiver, processed and sent to the display.

20.1 Switching on the Fish Finder

Before you can see the information from Fish Finder on the screen, you must set up a plotter port. Depending on the type of your plotter, serial ports can have an option "Fish Finder" (you may use either this option or "Auto" option of the serial port), or there may be a special port to connect the external Fish Finder device.

A Fish Finder icon  appears in the status bar after Fish Finder is connected and detected by the plotter. "Disconnected" label appears at the bottom of the "Fish Finder" page in case you have disconnected the Fish Finder.

NOTE: The plotter does not support more than one Fish Finder, so make sure other serial ports are not set to "Fish Finder" option.

20.2 The "Fish Finder" full page

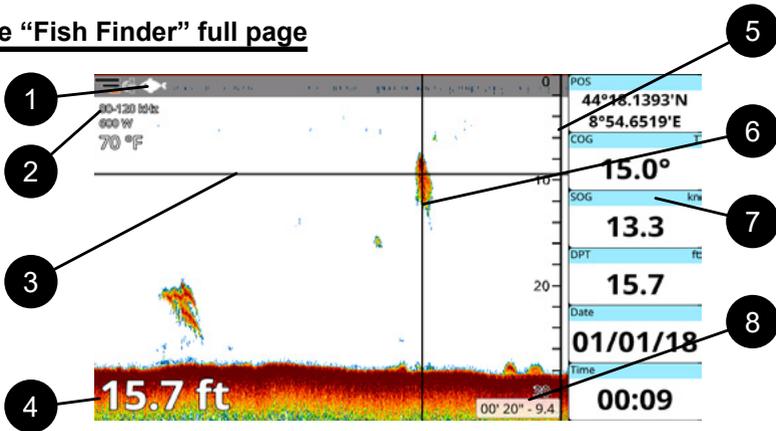


Figure 20.2 - Fish Finder full page

1. Fish Finder icon in the status bar means the Fish Finder is connected and active (or simulated);
2. Transducer data shows frequency and power of the transducer. Also, water temperature is displayed;
3. Variable depth marker (VDM) is a horizontal white line on the echogram with a depth label. The up/down joystick keys or scroll gestures can move it up and down. The label displays the depth of the VDM position;
4. Depth data is displayed in the bottom left part of the page. Depth units depend on your plotter

settings (Par. 3.6);

5. The depth ruler shows the range of depth, on which the Fish Finder is operating. It is a scale which reflects the depth of the area being displayed;

6. The vertical time marker is a vertical line on the echogram. The up/down joystick keys or scroll gestures can move it left and right to scroll the echogram history;

7. Databoxes (Par. 4.5);

8. Cursor box reporting time and depth data (corresponding to the intersection of VDM and vertical time marker lines). In order to hide the cursor, press [CLEAR].

Fish Finder main menu

Press [MENU] on Fish Finder page to make adjustments of:

- frequency;
- display mode;
- display settings;
- transmission settings;
- calibration;
- transducer list.

The rest of the menu items are common for all the device pages: “General Settings”, “System Messages”, “Ports and Connectivity”, “Simulation”, “User Manual”.

20.3 Echogram history

The echogram presents an approximate picture of the surface under the Fish Finder transducer that can be scrolled to see the history of the echoes received by the transducer.

To scroll the echogram, press [LEFT] on the “Fish Finder” page or use scroll gesture. You will see the vertical white line moving along the echogram. The scrollable history is limited and covers around 2048 echoes. In order to return the vertical time marker to the current time, press [CLEAR] or scroll to the most right.

Placing a mark on the Fish Finder echogram

You can place a mark in any place of the echogram history shown on the screen:

1. Press [LEFT]/[RIGHT] to place the vertical time marker or tap in the desired position;
2. Call the contextual menu by pressing [ENTER] or by a long tap gesture;
3. Select “Save Mark”.

The mark is placed and saved in the place where your boat was located at that exact time moment. To start navigation to the point:

1. Press [LEFT]/[RIGHT] to place the vertical time marker or tap [LEFT] the desired position to place the cursor;
2. Call the contextual menu by pressing [ENTER] or by a long tap gesture;
3. Select “Go To”.

Navigation will begin to the point where your boat was at that exact time moment, to which the vertical time marker pointed.

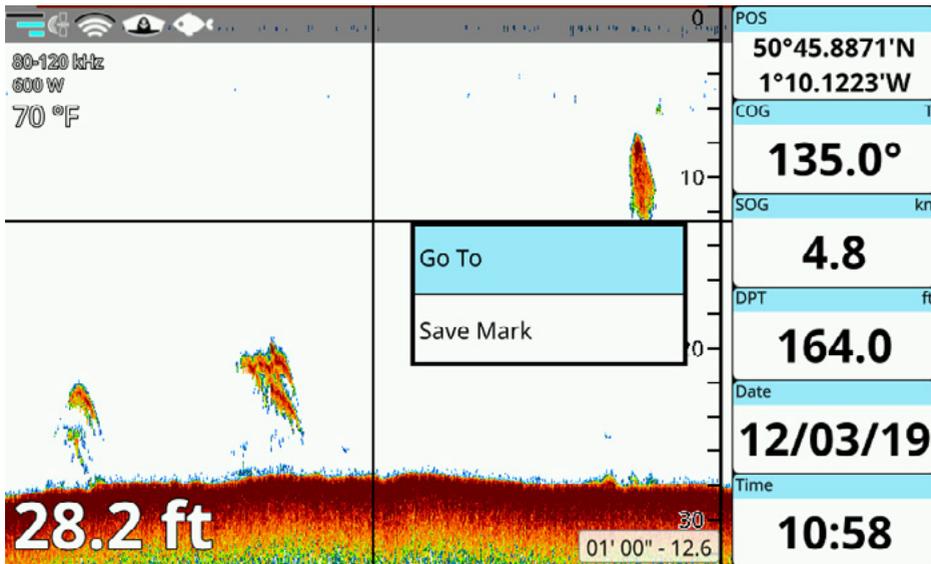


Figure 20.3 - Fish Finder history

20.4 Frequency

The operation frequency can be changed for some transducers. To change the operation frequency:

1. Open the main menu by pressing [MENU] on the "Fish Finder" page;
2. Select "Frequency".

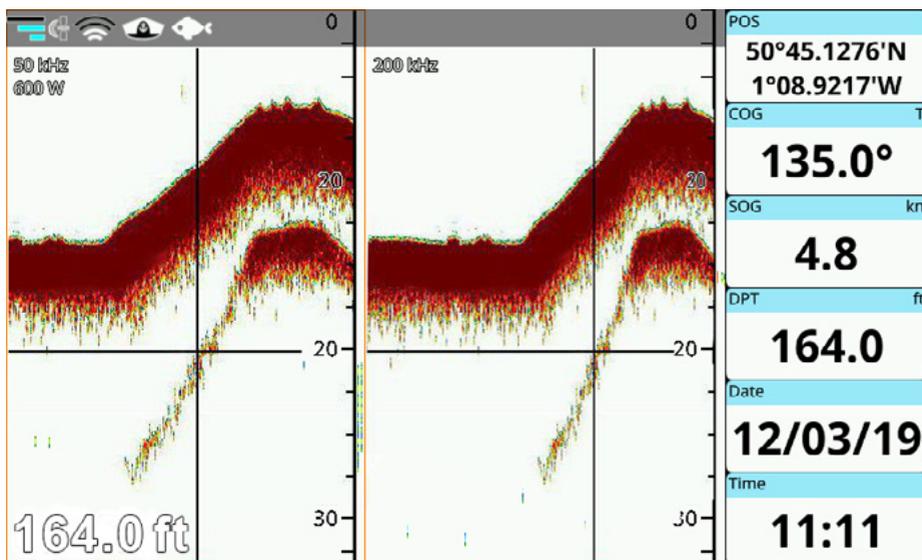


Figure 20.4 - Fish Finder page in double frequency.

For some transducers it is possible to operate in dual frequency mode. In such cases, the “Fish Finder” page is divided into two parts.

To enable double frequency mode:

1. Open the main menu by pressing [MENU] on the “Fish Finder” page;
2. Select “Display Mode” > “Dual”.

When in dual frequency mode, to operate on one side of the Fish Finder page, move focus by pressing [MENU] or tap the desired side. The active side is framed with the orange color.

20.5 Display mode and settings

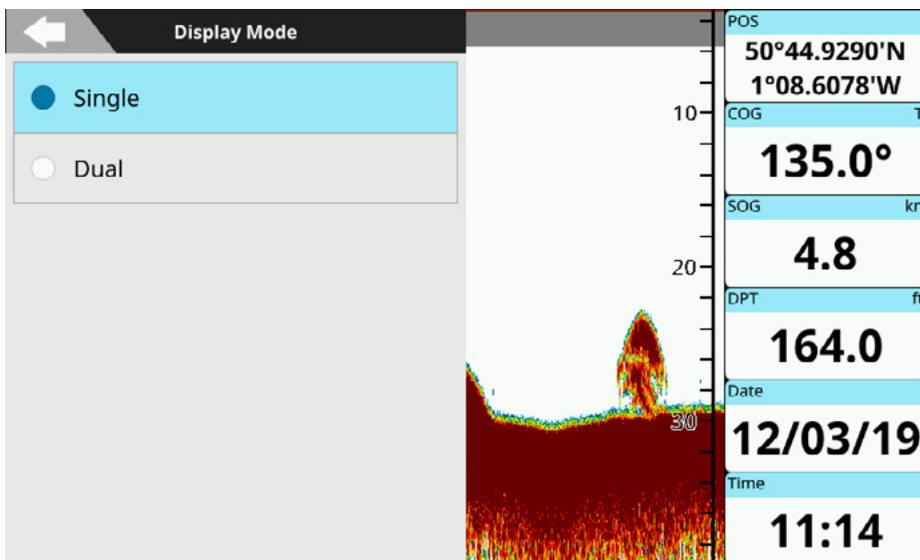


Figure 20.5 - Display modes

Display settings allow you to change mode and tuning the “Gain mode”, “Noise Filter” and “Sensitivity”. You can find display mode and settings in the main menu of the “Fish Finder” page.

Display mode

Display modes can differ depending on a transducer.

Single mode displays full “Fish Finder” page with a single echogram for the selected frequency.

Dual mode (if supported by the transducer) splits the “Fish Finder” page into two parts. Each part displays the echogram for predefined frequency (Par. 20.4).

Use pinch in/pinch out gestures or rotor wheel to change the depth range.

Gain mode

Gain mode influences the strength of echo and can be adjusted on the “Display Settings” page. You can use preset gain modes (like “Auto Fish”, which searches for fish, or “Auto Cruise”, which keeps track of a bottom area) or set it manually. Set “Clutter” to reduce noise.

To set values manually:

1. Open the main menu by pressing [MENU];
2. Select "Display Settings" > "Gain" or "Clutter";
3. Enter values using a numeric keyboard.

Noise Filter

Fish can be located near the surface, so it is useful to enable "Surface Noise Filter".

Depending on the transmission line of a transducer, you can increase or decrease "Area Noise Filter" values.

Sensitivity

"Interference" setting allows reducing the influence of other Fish Finders or equipment that can appear on the screen.

You can set "Erase Weak Echos" value so that reflections from plankton or sediments will not appear on the echogram.

"White Marker" and "Show White Edge" allow displaying echo in white color to differ fish near the seabed and bottom echo.

While echogram represents a history, "A-Scope" shows what is under a transducer right now. It is displayed on the right part of echogram. A-Scope can be enabled or disabled on the "Display Settings" page.

20.6 Offset

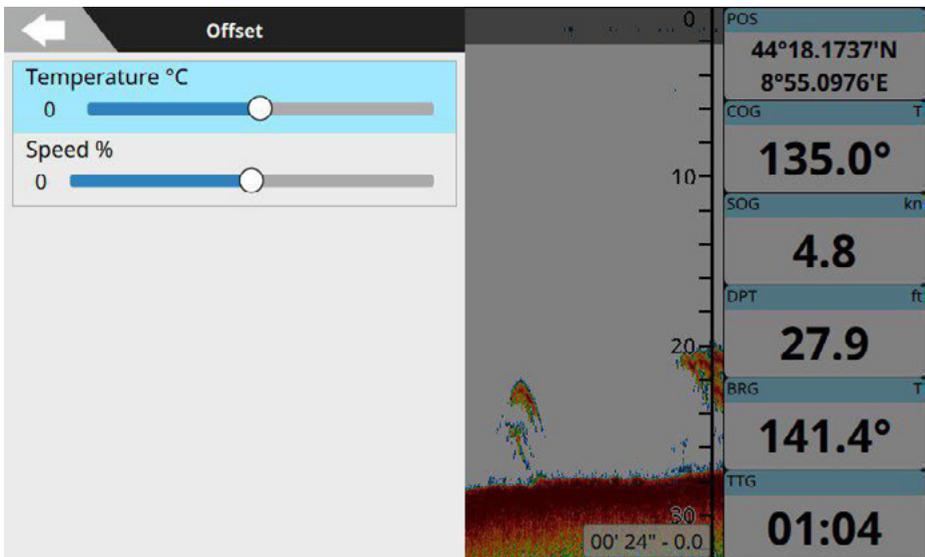


Figure 20.6 – Offset page

Offset settings allow you to adjust temperature and speed values received from a transducer.

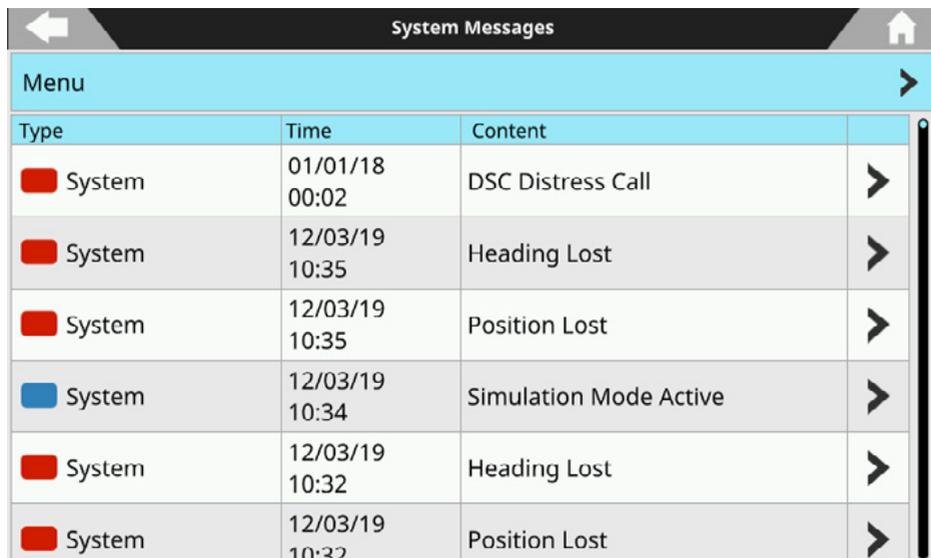
"Temperature" calibrates the water temperature sensor. Using the readings from a precise

temperature measuring device, you can insert a positive/negative offset to display the correct value on the Fish Finder screen.

“Speed” calibrates the value of water speed sensor. The calibration value, in the range between -50% and 50%, will be applied to the water speed from the transducer.

21. System messages

The “System Messages” page displays the history of all the warning messages and alarms with the date and time when they appeared.



Type	Time	Content	
System	01/01/18 00:02	DSC Distress Call	>
System	12/03/19 10:35	Heading Lost	>
System	12/03/19 10:35	Position Lost	>
System	12/03/19 10:34	Simulation Mode Active	>
System	12/03/19 10:32	Heading Lost	>
System	12/03/19 10:32	Position Lost	>

Figure 21 - System messages page

To access the “System Messages” page:

1. Open the main menu by pressing [MENU];
2. Select “System Messages”.

System messages can be filtered:

- by message type using “Show by Type” menu (choose “All”, “Notifications” or “System”);
- by date (choosing “From” and “To” date).

To save a specific system message or all system messages on the micro SD card:

1. Insert the micro SD card into the plotter;
2. Open the main menu by pressing [MENU];
3. Select “System Messages”;
4. Choose a system message and confirm the action by selecting “Yes” button in message dialog window;

or

5. Select “Menu” button on the top bar of the page > “Save All on SD” and confirm the action.

NOTE: Do not eject the micro SD card until the message “Data Exported” appears on your screen.

NOTE: All the system messages are cleared after restoring to factory defaults.

22. Updates

You can check your device software version on the “About” page:

1. Open the main menu by pressing [MENU];
2. Select “General Settings” > “About”.

Ask your customer support center for software update procedures.

Alternatively, if your plotter is connected to the Internet, choose updating software via WiFi.

22.1 Software update via WiFi

Software update via WiFi is an easy way to have always the latest software updates. The software automatically checks for updates once you connect the plotter to the Internet, and suggests you download the software update package. You may update software immediately or any time later.

NOTE: You will need to restart plotter in order to apply the software update.

If you decide to update later, you need to select “Later” in the software update dialog.

When you decide to apply software update, restart the system to get software update dialog again and select “Download”. You can check the downloading status:

1. Open the main menu by pressing [MENU];
2. Select “General Settings” > “About”;
3. Wait for download process to finish. A popup message will inform you that download process has been successful;
4. Confirm reboot of the plotter in the dialog.

After reboot, you will be guided through the installation process. Do not restart the plotter until installation is finished.

23. Acronyms and definitions

ALT = Altitude

Altitude of GPS Antenna on the medium sea level.

Alter = Alternate Solution (TD Coordinates System)

Parameter selected by the user that is applied in the conversion of TD values to geographical coordinates Lat/Lon. It defines which of the two possible solutions can be used.

AWA = Apparent Wind Angle

Angle from which the Wind appears to blow relative to a moving point (also called Relative Wind Angle).

AWS = Apparent Wind Speed

Speed at which the Wind appears to blow relative to a moving point (also called Relative Wind Speed).

BRG = Bearing

Angle between the North (True or Magnetic) and a destination. The horizontal direction of one terrestrial point from another referring to the North (True or Magnetic). It is often used to indicate the direction to follow to reach the destination.

Buoy

A floating object moored to the sea bottom in a particular (charted) place, as an aid to navigation.

Buoys and Beacons

Buoys and Beacons are used to indicate to mariners recommended or established routes, under water dangers, restrictions and regulations. They can be lighted or not and are colored according to their international code.

COG = Course Over Ground

Direction of the path over ground actually followed by a vessel.

Course Line (Time Line)

Graphical indication of the direction in which the Vessel is heading. The Course Line origin is the vessel's position so the time line movement is synchronized with the vessels Icon. Course Line "Course" is given by the value of COG (Course Over Ground) and its length is proportional to the SOG (Speed Over Ground).

Default

Original factory setting for any menu selection. The default values are set after a factory settings.

Depth Area

Sea areas included in the user selectable range of minimum and maximum depth limits. The sea area that is beyond the selected range is filled by a uniform white color, the sea area that is inside the selected range is filled by ordinary multicolor shading. The Spot Soundings and Depth Contours are displayed on the range only.

Depth Line (Also called Bathymetric Line)

Imaginary line connecting points of equal water depth.

Destination

In order to tag on the map the point, towards which the ship is Heading, you can use a special mark, called destination. When the destination is placed, all navigation data referred to this point.

DPT = Depth from Transducer

Water Depth below the Transducer. The Distance from the Depth Transducer to the ground.

DST = Distance

Geographical distance between two points on the map. It is possible to select the unit among Nm, Sm and Km.

ETA = Estimated Time of Arrival

Predicted time of reaching a destination or Waypoint.

Fix

Current position of the vessel provided by the GPS (connected to the plotter or built-in) or other positioning systems.

Fuel Consumption Rate

Estimated fuel consumption rate (per hour) of an engine boat referred to its relative estimated cruising speed.

GNSS = Global Navigation Satellite System

Any single or combined navigation system based on satellites. The current available satellites systems are: GPS, GLONASS and the combined GPS and GLONASS.

Go To

Function that defines the destination point and activates the navigation to it. The destination can be placed on any location of the map, an existing Mark point or on a predefined Route.

GPS = Global Positioning System

Satellite based navigation system operated by the US Department of Defense. It gives the navigator a position 24 hours a day, 365 days a year under any weather conditions.

HDG = Heading

Horizontal direction in which a ship actually points or heads in any moment (see also COG).

HDOP = Horizontal Dilution Of Precision

Precision of the positioning system (GPS). The smaller HDOP value indicates higher position accurately.

Home mode

All operations refer to the vessel's position.

Landmarks

Landmarks are any prominent object such as monument, building, silo, tower, mast, etc on land which can be used in determining a location or a direction.

Lat/Lon

Coordinate system using Latitude and Longitude coordinates to define a position on earth.

Lat/Lon Grid

Grid of parallels (of Latitude) and meridians (of Longitude) drawn on the map.

Latitude

Angular distance North or South of the equator measured by lines encircling the earth parallel to the equator in degrees from 0° to 90°.

Longitude

Angular distance East or West of the prime meridian (Greenwich meridian) as measured by lines perpendicular to the parallels and converging at the poles from 0° to 180°.

Magnetic Deviation

Value, expressed in degrees East or West that indicates the direction in which the north indicator on the compass card is offset from the magnetic north (the difference expressed in degrees East or West between the compass north and the magnetic north).

Magnetic Variation

Angle between the magnetic and geographic meridians at any place, expressed in degrees West or East to indicate the direction of magnetic North from true North. It changes from point to point, and (at the same point) with time.

Mark

Reference point related to cursor position. Typically it represents by an icon and label under Mark.

Navigate mode

Operating mode (called also Home mode): all operations refer to the vessel's position. Navigate or Navigation mode is also used to indicate that the destination is placed.

NMEA-0183

The NMEA-0183 Data Interface Standard was developed by the National Marine Electronics Association of America. It is an international standard that enables equipment from many different manufactures to be connected together and share information.

Port Info

Port Info function is a combination of a Port Info database containing all the relevant Safety and Navigational

information normally found in good pilot books and presentation software which displays special Port Facility Symbols.

Ports & Services

Areas along shore with facilities for mooring, downloading and uploading of ships, generally sheltered from waves and winds. Port installations are piers, wharves, pontoons, dry docks, cranes, etc.

Route

Sequence of Waypoints connected by segments (Route Legs). Among the available Routes, only one is the Active Route, which is shown by a straight line and arrows to indicate the direction.

SBAS = Satellite-based Augmentation Systems

The performance of Global Navigation Satellite Systems (GNSSs) can be improved by regional Satellite-based Augmentation Systems (SBASs), such as EGNOS, WAAS, MSAS, GAGAN etc. SBAS improves the accuracy and reliability of GNSS information by correcting signal measurement errors and by providing information about the accuracy, integrity, continuity and availability of its signals.

Scale

Allows the display of Map Scale (magnitude of the reference scale expressed in the actual unit of measure) and the current Map Datum.

SNR = Signal to Noise Ratio

Ratio between the magnitude of a radio signal and the magnitude of the noise (that is, the interferences). The SRN is expressed in decibels and it is associated to the GPS satellites signal quality.

SOG = Speed Over Ground

Current velocity at which the vessel is travelling, relative to a ground location. The SOG is normally provided by the GPS sensor.

Spot Sounding

Depth of the water in a specific and charted position. It is represented on the map by its own value expressed in the current depth unit.

STR = Steering

Difference between COG and CTS. If COG is 25° and CTS is 30°, then STR is 5° Right.

Tide

Periodic rise and fall of the surface of oceans, bays, etc., due principally to the gravitational interactions between the Moon and Earth.

Tide Graph

Calculates the tide heights for any past or future date and as a by-product of this calculation will also display the Maximum and Minimum Tide height and time for the day selected plus the times of Sunrise and Sunset. At some map levels, the plotter will display a new Tide Diamond Symbol for every Port or tide point in the database covered by that particular Data Media.

Tracks & Routes

Recommended and established routes for ships at sea, including traffic separation schemes, deep water routes.

TTG = Time To Go

Estimated time needed to reach your destination, based on your current speed and the distance to destination.

TWA = True Wind Angle

Angle of the Wind relative to a fixed point on the earth.

TWS = True Wind Speed

Velocity of the Wind relative to a fixed point on the earth.

Underwater Objects

Objects like obstruction, wreck, cable, etc.

User Point

Object you place on the map identified by its coordinates and displayed on the screen with a reference symbol (see Mark, Waypoint).

UTC = Universal Time Coordinated

Time scale based on the rotation of the earth that is used by most broadcast time services.

UTM = Universal Transverse Mercator

Metric Grid system used on most large and intermediate scale land topographic maps.

VMG= Velocity Made Good

Destination closing velocity. The VMG is calculated using the current speed of the vessel (SOG) and the difference between the current vessel course and the bearing to the destination.

WAAS = Wide Area Augmentation System

The Federal Aviation Administration (FAA), in cooperation with other DOT organizations and DOD, is augmenting the GPS/SPS with a satellite-based augmentation system, the WAAS. It will provide a signal-in-space to WAAS users to support en route through precision approach navigation. After achieving initial operational capability, the WAAS will then be incrementally improved over the next years to expand the area of coverage, increase the availability of precision approaches, increase signal redundancy and reduce operational restrictions.

Water Speed

Speed of the vessel relative to the water.

Waypoint

Any point to which one intends to navigate. A sequence of Waypoints makes up a Route plan.

XTD = Cross Track Distance

Distance from the ship's present position to the closest point on a line between the origin and destinations waypoints of the navigation.

Zoom-In

Shows more detail in a smaller area.

Zoom-Out

Operates similarly to zoom -in, but in the reverse, showing a wider but less detailed view.

24. Contextual menu diagram

NOTE: In navigation means that the user is following destination of any kind (Mark, WP, Route, etc...)

<p>Ownship no nav:</p> <ol style="list-style-type: none"> 1. Record Track 2. Save Event 3. Anchor Watch 4. Heading Line 5. Course Line 6. A-B 7. Chart Info 8. End Simulation¹ 	<p>Ownship during navigation:</p> <ol style="list-style-type: none"> 1. Stop Nav 2. Record Track 3. Save Event 4. Anchor Watch 5. Heading Line 6. Course Line 7. A-B 8. Chart Info 9. End Simulation¹ 	<p>Map background no nav:</p> <ol style="list-style-type: none"> 1. Save Mark 2. Go To 3. New Route 4. New Boundary 5. Chart Info 6. Easy Routing 7. A-B 8. Save Event 9. Move Ship Here¹ 10. Calculate Fix Offset³
<p>Map background during navigation:</p> <ol style="list-style-type: none"> 1. Save Mark 2. Go To 3. Stop Nav 4. Restart Nav 5. New Route 6. Chart Info 7. Easy Routing 8. New Boundary 9. A-B 10. Move Ship Here¹ 11. Calculate Fix Offset³ 	<p>Map background during navigation (Active route):</p> <ol style="list-style-type: none"> 1. Stop Nav 2. Go To 3. Save Mark 4. Insert WP 5. Append WP 6. New Route 7. Easy Routing 8. A-B 9. Chart Info 10. Calculate Fix Offset³ 	<p>Route leg no nav:</p> <ol style="list-style-type: none"> 1. Start Nav 2. Start Here (next WP after the leg) 3. Start Reverse 4. Go To 5. Insert (a WP in the selected point) 6. Extend 7. Save Mark 8. Chart Info 9. A-B 10. Leg Easy Routing 11. Edit Name 12. Edit Description 13. Delete Route 14. Open WP List
<p>Route leg during navigation (Active route, NOT current leg):</p> <ol style="list-style-type: none"> 1. Stop Nav 2. Restart Nav 3. Insert 4. Extend 5. Go To 6. Save Mark 7. Chart Info 8. A-B 9. Open WP List 10. Reverse 11. Start Here (next WP after the leg) 	<p>Route leg during navigation (Active route, current leg):</p> <ol style="list-style-type: none"> 1. Stop Nav 2. Restart Nav 3. Extend 4. Open WP List 	<p>Route WP no nav:</p> <ol style="list-style-type: none"> 1. Start Here 2. Reverse 3. Go To 4. Move 5. Edit Name 6. Edit Position 7. Edit Description² 8. Edit Color² 9. Edit Symbol² 10. Delete WP 11. Delete Route 12. A-B 13. Save Mark 14. Chart info 15. Start Nav 16. Open WP List
<p>Route WP during navigation (Active route, NOT current destination WP)</p> <ol style="list-style-type: none"> 1. Stop Nav 2. Start Here 3. Go To 4. Move 5. Edit Position 6. Extend 7. Skip 8. Save Mark 9. Delete WP 10. Open WP List 11. Reverse 12. A-B 13. Chart Info 	<p>Route WP during navigation (Active route, current destination WP)</p> <ol style="list-style-type: none"> 1. Stop Nav 2. Restart Nav 3. Skip 4. Open WP List 5. Reverse 6. A-B 7. Chart Info 	<p>Route WP during navigation (Not active route)</p> <ol style="list-style-type: none"> 1. Stop Nav 2. Start Here 3. Go To 4. Move 5. Edit Position 6. Extend 7. Save Mark 8. Delete WP 9. Open WP List 10. Reverse 11. A-B 12. Chart Info

¹ Only during simulation

² If WP is a Mark

³ If "Fix Offset" is enabled in "Ports and Connectivity" > "Offset"

<p>AIS or DSC target</p> <ol style="list-style-type: none"> Go To Easy Routing Save Mark Chart Info AIS List / DSC List 	<p>Boundary vertex</p> <ol style="list-style-type: none"> Edit Boundary Edit Color Delete Vertex Delete Boundary 	<p>Boundary leg</p> <ol style="list-style-type: none"> Insert Edit Color Extend Delete Boundary
<p>Route last WP in navigation, current destination</p> <ol style="list-style-type: none"> Stop Nav Extend Open WP List Reverse A-B Chart Info 	<p>A-B no navigation</p> <ol style="list-style-type: none"> Go To New Route Easy Routing Edit A-B Delete A-B Chart Info Calculate Fix Offset³ 	<p>A-B in navigation</p> <ol style="list-style-type: none"> Stop Nav Go To New Route Easy Routing Edit A-B Delete A-B Chart Info Calculate Fix Offset³
<p>Fish finder</p> <ol style="list-style-type: none"> Go To Save Mark 	<p>Track in navigation</p> <ol style="list-style-type: none"> Stop Nav Go To Save Mark New Route Easy Routing Edit Color Hide Delete Track A-B Chart Info MOB 	<p>Track no nav</p> <ol style="list-style-type: none"> Go To Save Mark New Route Easy Routing Edit Color Hide Delete Track A-B Chart Info MOB
<p>Active track in navigation</p> <ol style="list-style-type: none"> Stop Nav Go To Save Mark New Route Easy Routing Edit Color A-B Chart Info MOB 	<p>Active track no nav</p> <ol style="list-style-type: none"> Go To Save Mark New Route Easy Routing Edit Color A-B Chart Info MOB 	<p>Tide Station</p> <ol style="list-style-type: none"> Go To Show graph Chart Info
<p>Mark/Event in navigation</p> <ol style="list-style-type: none"> Stop Nav Go To Move Edit Position Edit Name Edit Description Edit Color Edit Symbol New Route Easy Routing Delete Move To Vessel A-B Chart Info MOB Calculate Fix Offset³ 	<p>Mark/Event no nav</p> <ol style="list-style-type: none"> Go To Move Edit Position Edit Name Edit Description Edit Color Edit Symbol New Route Easy Routing Delete Move To Vessel A-B Chart Info MOB Calculate Fix Offset³ 	

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