“The manual”

The Manual - Table of Contents:

1 About Carp Pilot Pro and "The Manual"

Carp Pilot Pro is a Ground Control Station (GCS) specially designed for boats and is optimized for use with bait boats to support the angler's need of features. This app is a straightforward and efficient tool to control your bait boat, with some impressive abilities under the hood.

You need an autopilot built in to enjoy all features of the app. If you have no autopilot, you can still enjoy all abilities of the app where an active controlling component inside the boat is not needed. Features that require an autopilot are tagged.

You need an Android device to install the Carp Pilot Pro. The device must run Android 5.1 or higher for all but one feature, the solution to download maps requires Android 6 or higher. To enjoy the app, bigger screen size is always better. All features should work on screen sizes of 5 inches and above, but smaller sized screens leave very little visible map area left to work with. Make sure to use the application settings to reduce optional features to a minimum on small sized devices. The best user experience you will get by using a Tablet sized device. A very common solution is to use a tablet of around 10 inches and place it on a camera tripod.

The Carp Pilot Pro is capable of being used "stand alone" without the regular RC remote-control radio transmitter. It is still recommended to have it built in though as these radios usually have far more reach than most telemetry transmission options. Should you drive the boat beyond telemetry reach then you always have a backup.

To utilize the Carp Pilot Pro properly you need some insight into the built-in capabilities, what they are and how to use them. Some understanding of the many optional settings will also help you enjoy the app even more.

In addition to using this guide, please also explore these sources of information:

1.1 The Rover guides on the ArduPilot wiki pages

For supported autopilot hardware, please visit:
Autopilot Hardware Options — Rover documentation (ardupilot.org)

For first time setup, watch the video series how to build a bait boat:
Buidling a bait boat - YouTube
Or visit the ArduPilot Wiki and read the first time setup section:
First Time Setup and Configuration — Rover documentation (ardupilot.org)

Autopilot will not behave gracefully without some tuning. The latest tuning guides you find here:
First Drive with Rover — Rover documentation (ardupilot.org)

1.2 The Carp Pilot YouTube channel

Visual guidance and advice on how to use the app, and highly valuable guidance on how to build a proper bait boat and other bait boat related features are available on this channel:

https://www.youtube.com/c/TheCarpPilot

1.3 The Carp Pilot Pro user group on Facebook

Information, tips, questions and answers are available in the closed user group on Facebook. Just ask and we will let you in:

https://www.facebook.com/groups/1190394528531465/

2 Supported autopilot hardware and software

This application supports the autopilot called "**Ardupilot**".

There is a wide range (more than 50 variants) of autopilot hardware alternatives supported. Please check the ArduRover Wiki for the current overview of available options here:

Autopilot Hardware Options — Rover documentation (ardupilot.org)

Please be careful with autopilots that are discontinued and notice the section about autopilots that are no longer supported. Unsupported autopilot boards may still work, but their old firmware will limit what the Carp Pilot Pro can do.

This application is designed to be used with boats, and the only supported firmware variant is "**Rover**". The app will misbehave if you try to use it with any other firmware like "copter" or "plane": Please install the correct firmware alternative!

How to flash an autopilot with the software using Mission Planner is described in ArduPilot Wiki pages here:

Loading Firmware — Mission Planner documentation (ardupilot.org)

The process is also demonstrated, basic setup included, in the Carp Pilot Video about "preparing the autopilot", here:
https://youtu.be/PFL-nYuIbuE

Should you have a bait boat with unsupported software you should either flash your autopilot with the correct software or stop using Carp Pilot Pro. This application will never be adapted to any other firmware variant. Rover firmware is also the only firmware suitable for boats.

2.1 Special note to APM users

If you build a new autopilot into your boat, please do not select the APM. It is cheap for a reason!

Even though the APM is discontinued and officially no longer supported, an APM autopilot with "Rover" type of firmware will work with Carp Pilot Pro. But as the APM got its last firmware update in 2015 (version 2.5.1), some features do not work. And never will. Boat owners with APM should consider upgrading their boats to gain the following abilities (most notable shortcomings):

- Red home icon appearing automatically: Please download waypoints from boat to see the home icon.
- As you are forced to download waypoints from the boat, the Carp Pilot Pro waypoint database will be less efficient.
- Drag and drop home icon to a better position (like out in the water).
- Concurrent use of remote transmitter sticks and switches with Carp Pilot Pro on-screen joystick and servo buttons (if you use the joystick, the APM will lose its ability to listen to the remote transmitter until it is turned off and on again).
- The Goto+ actions will not be executed as the APM is not able to tell that it has reached the desired target.
- To arm or disarm the boat with Carp Pilot Pro buttons is not supported.
- Mode loiter (keep position on the water despite of wind and current) is not supported.
- Limited support for new hardware. Examples: Newer GPS models and ESP boards for UDP serial telemetry connection may or may not work.

2.2 Keep the Carp Pilot Pro up-to-date

The Carp Pilot Pro is constantly developed. Features are added, and old problems are fixed. If you encounter a problem then we welcome the problem report or question, especially in our Facebook user group. But we cannot fix a problem in an old app version. New features and bug fixes are only made available in the latest released version.

In addition to bug fixes and new features, the Carp Pilot Pro also infrequently needs to update the commercial keys for the Google Map solution and other license keys. And at some point, the old map key will become deprecated. If you have not updated the Carp Pilot Pro for some time and suddenly experience Google Maps has gone: Please update the app to the latest version.

To update the app version, please use your Google Play app on your Android device.

3 About this manual

The manual aims to describe all features of the app. When new versions get abilities that alter how to use the Carp Pilot Pro, this guide will come out in a new version.

The manual you read now is made for the:

- **Carp Pilot Pro** version **4.6.4**
- This version of the manual was last updated: **2023.06.25**

This guide throughout describes the app based on the following assumptions:

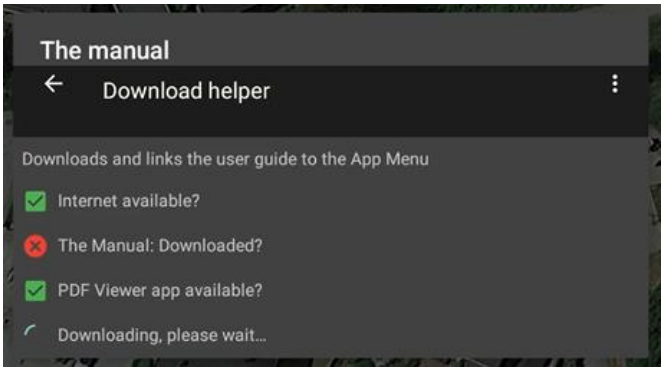
- You have the latest version of Carp Pilot Pro installed.
- You use an Android tablet (big screen) and not a phone.
- The tablet is held in a horizontal orientation.
- You have the default “left hand” selected (impacts the way action icons are placed).
- System language is English (US).

The guide is from the developer provided in English language only. With help from the community, additional language versions of the manual may become available.

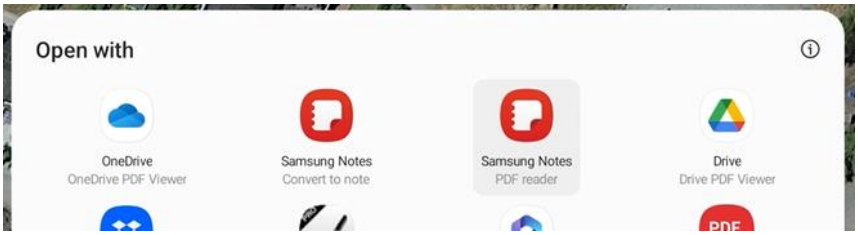
3.1 Download and view The Manual on your device

To view the manual on your Android device you will need an App capable of reading PDF files installed. Many free of charge apps are available, and often at least one comes pre-installed with your device. Is not, search Google Play and install one.

When you select The Manual from the main menu, the Carp Pilot Pro will check if it is already downloaded or if an updated version exists. It will be downloaded automatically if your device is connected to the internet:



When downloaded, The Manual is available for offline viewing. You open it from the main menu. Tap the desired PDF reader from the “Open with” pop-up screen, then tap “just once” to view The Manual. If you only want to use one app every time you open a PDF file you may tap “always” instead (choice then applies to any PDF file, not just The Manual):



4 What are Carp Pilot Pro premium abilities?

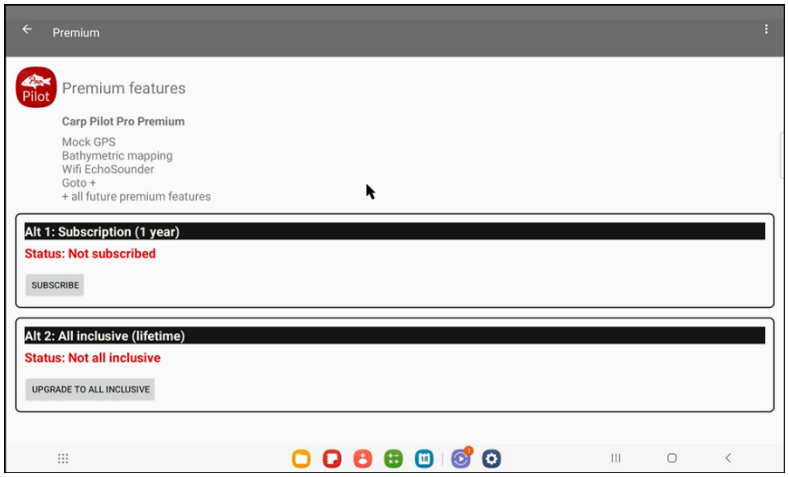
Carp Pilot Pro is a paid app. But to keep costs for many users down, the entry purchase cost from Google Play is kept low. And the most advanced abilities that not all users need are made available as in-app purchases. The basic version is already an incredible powerful app. But so are the optional "premium abilities", should you need them. Review abilities before making an in-app purchase of premium, make sure you need these abilities first.

Now, features that are only available for our premium users are:

- **GPS: Use of Mock GPS and direct Navionics GPS integration**
  For doing bathymetric work in other apps but utilizing the often superior GPS found in a bait boat.
- **Wifi echo sounders**: Integration of depth (and temperature) measures
  Enables the Carp Pilot Pro to scan areas using echo sounders and create log files used for generation of bathymetric maps (topographical maps of the area below the water line)
  Please note that Carp Pilot Pro does not render the echo sounder screen, use the app provided by the echo sounder vendor for this (usually in split screen view with the Carp Pilot Pro).
- **Live bathymetric maps creation**
  Create bathymetric maps directly and watch it grow in the map screen inside the Carp Pilot Pro while your boat is driving.
- **Bathymetric editor**
  Offering abilities on par with very expensive software to create bathymetric maps from depth logs created by Carp Pilot Pro or other mapping software solutions. Bathymetric maps are stored and available to be displayed over the base map while using the Carp Pilot Pro.
- **Goto +**
  Very convenient and efficient method to send your bait boat to the desired spot, release the hook and lead, bait up and return home afterwards. Hands-free!

4.1 How to get premium abilities?

Use the app menu (top left) and find the menu item "Premium features".



A screen providing two options is available, and if you have already purchased one product it will be visible.

Note: To make a purchase the Android device MUST be connected to the internet.

4.1.1 Subscription model

For the price of approximately 10 Euro, you get the right to use the application's premium features for one year.

Note: This price has been fixed for some years, prices are due for review. No notice will be given before a price increase.

Note: If you have a subscription, this will usually be renewed when the old subscription period has passed. This may not be a problem. But, if you at some point decide to upgrade to the all-inclusive one-time purchase model instead then you MUST remember to cancel the subscription to avoid unnecessary costs later. The Carp Pilot Pro will show a red warning if it detects you make a purchase and still have a valid subscription!

4.1.2 All-inclusive one-time purchase

For the price of approximately 50 Euro, you get the right to use the application's premium features for one year. If you have an active subscription, make sure to cancel this if you buy the all-inclusive!

5 How do I connect the Carp Pilot Pro to my bait boat?

5.1 For boats that do not have a built-in autopilot

If your boat has no built-in autopilot, you can still use the app with many of its abilities. In settings for connection, select GPS. And then select the correct sub-option as described in the following.

Please NEVER select this option if your boat has an autopilot built in!

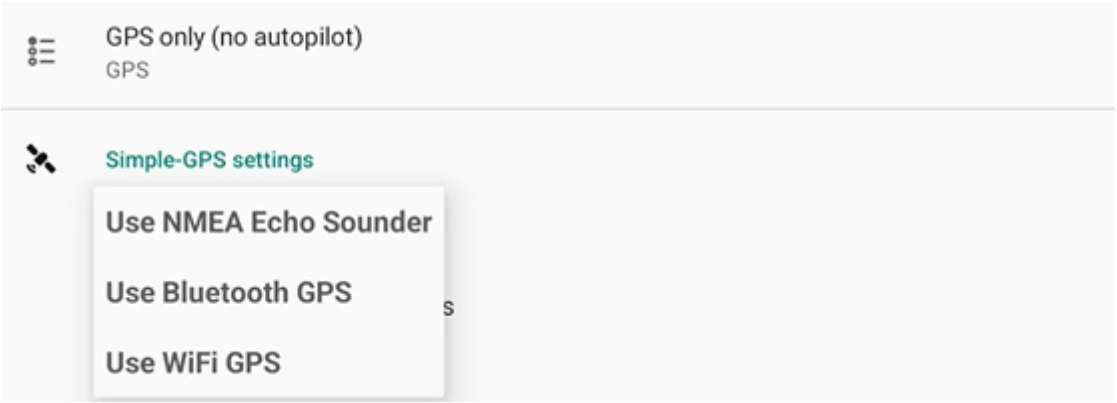
5.1.1 GPS connection

When using GPS only for connection, the app does not have any "connect now" button or menu item. The app will be connected as soon as the GPS data is present. The way to tell if your GPS data is present is to watch the GPS icon in the telemetry line:

- Info text below GPS icon says "no data"
  In this case the app cannot see any data from a GPS at all. Please double check that your Android Wifi is turned on and check that it is connected to the correct Wifi access point. If OK, double check your physical setup
- Info text below GPS icon says "No fix"
  In this case the app is receiving data from the GPS. The GPS, however, still does not have a proper fix, and the boat icon cannot yet be displayed. Be patient, or if you are only testing then move to an area with better GPS reception (outdoors, away from buildings and with a clear view to sky)

As soon as the GPS has a valid fix the boat icon will appear on the map. It will be yellow for 2D fix and red for 3D fix. The boat direction will be incorrect until the boat moves as the app relies on the GPS sentences and not the compass.

If the app HAS had a successful connection with a GPS fix, and the app then loses the connection (say you turn off that boat) the boat icon will turn gray and stick to the last known position.



5.1.1.1 Using Wifi GPS

Wifi GPS is the term for a GPS placed inside your boat where the NMEA0183 data is transmitted from the boat to your Android device by means of a serial Wifi connection.

How to build a Wifi GPS is described on the Carp Pilot YouTube channel. Please use the ESP images as described in the 2023 version video. You can also use some other commercially available products like "the injector", but it is far cheaper to build your own.

Wifi GPS default connection values: IP address 192.168.0.255 (broadcast for 192.168.0), port 2000.

5.1.1.2 Using Bluetooth GPS

Bluetooth GPS is the term for a GPS placed inside your boat where the NMEA0183 data is transmitted from the boat to your Android device by means of a serial Bluetooth connection.

Example of how to build such a GPS is described in the 2023 version of Wifi GPS on the Carp Pilot YouTube channel. Please watch the section using the Skydroid T10 in this video.

For a Bluetooth connection to work you must first pair your Android device with the Bluetooth source. Once you have done that, the app will show a list of paired devices the first time you try to connect using Bluetooth. After you have selected the Bluetooth device, the app will remember the choice forever and you never have to think about this again.

Should you choose the wrong Bluetooth device then you need to re-enter the settings for connection. In the options for Bluetooth, you will see which Bluetooth device is stored as the standard device. If this is incorrect, please press the “forget default device” button. Then you may start over.

5.1.1.3 Using a Wifi fish finder (Premium users only)

As use of Wifi fish finder in general is only available for Premium users, utilizing the GPS inside the built in Wifi fish finder is an option you may only use if you are a premium customer.

As the Wifi GPS solution requires GPS data provided as NMEA0183, echo sounders like Raymarine Dragonfly and Vexilar SP200 are not supported for providing the boat position.

There are many echo sounders with built in Wifi that provides GPS data as NMEA0183. If your boat is equipped with such a device, then you may select this as GPS option. In this case you do not have to install a separate Wifi GPS as position will be available from the echo sounder.

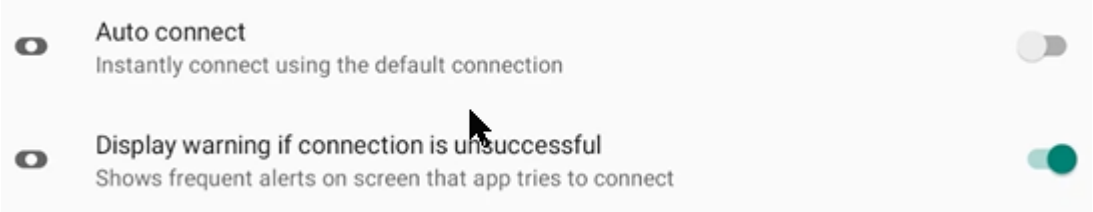
5.2 For bait boat with built in Autopilot

5.2.1 Required mavlink protocol

The Carp Pilot Pro can ONLY be used with mavlink1. This is an option set for the serial port used when you physically connect the wiring for telemetry connection on the autopilot. The most used physical connection alternatives are named “telem1” and “telem2” (serial port 1 and 2). To make the Carp Pilot Pro connect, please set protocol to “mavlink1” using the following ArduPilot parameters:

- Telem1: Set “SERIAL1_PROTOCOL” to value 1
- Telem2: Set “SERIAL2_PROTOCOL” to value 1

5.2.2 Options Auto connect and Alert if connection is not successful



Auto connect:

- If this option is selected, the app will constantly try to connect to your boat using the selected settings until it succeeds.
- If this option is not activated, then please select “connect” using the options menu top right.

Alert if connection is not successful:

- If this option is selected then, while trying to connect, the app will repeatedly show a red alert if connection is not successful. The alert message includes key info about your active connection choice, helpful to understand why the connection fails.

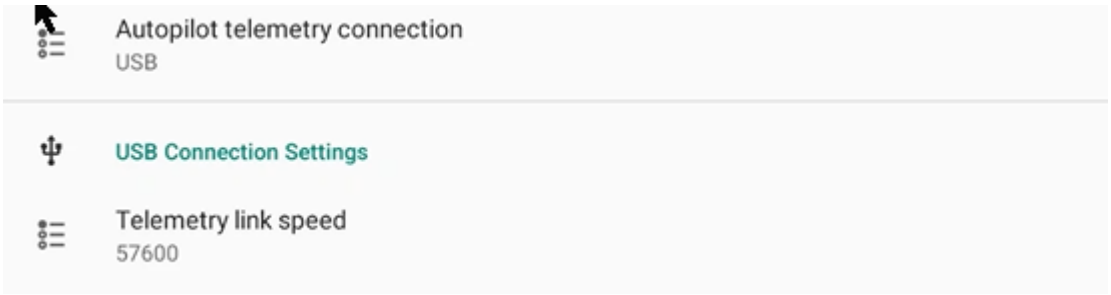
Successful connection:

- The app will visually and audibly confirm that it is connected to the autopilot.
- The telemetry line will also start to show data received from the boat.
- The boat icon will appear as a yellow icon as soon as the autopilot concludes the GPS position estimate is at a bare minimum (only manual driving possible)
- The boat icon turns red when the position estimate reaches the level to pass EKF satisfaction (all driving modes possible).
- The red home position icon also appears when the autopilot has sufficient position quality, making it report its the position as its home.
  APM users please note: APM only reports its home position when waypoints are downloaded.

Connection later lost:

- If you at some point lose the connection (like when selecting to disconnect from the options menu top right) to the autopilot, the boat icon will turn gray and stick to the last known position.

5.2.3 USB connection



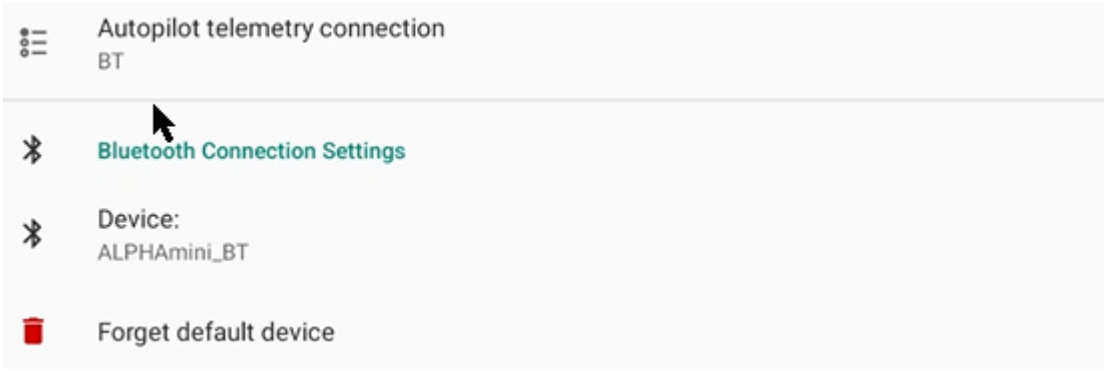
USB connection is the correct choice for boats with built in SiK Radio and a matching radio on shore where you typically connect that radio to your Android device using a USB OTG cable.

There is one sub-setting for this connection alternative:

- Baud rate.

The default baud rate is 57600, as is the default baud rate for radios you may buy. If you have altered the radio setup to another baud rate, please select among the available options in the list selector. If not, leave this setting alone.

5.2.4 Bluetooth connection



Bluetooth connection is the correct choice for boats with a Bluetooth connection prepared. Normally, Bluetooth has very limited range and is only used if you have a "land station" that takes care of the boat telemetry and then shares the serial data stream onshore using Bluetooth. Using RC radios from Skydroid is the other typical option, these radios transmit the telemetry data through the remote connection and share the telemetry data onshore using Bluetooth.

For a Bluetooth connection to work you must first pair your Android device with the Bluetooth source. Once you have done that, the app will show a list of paired devices the first time you try to connect using Bluetooth.

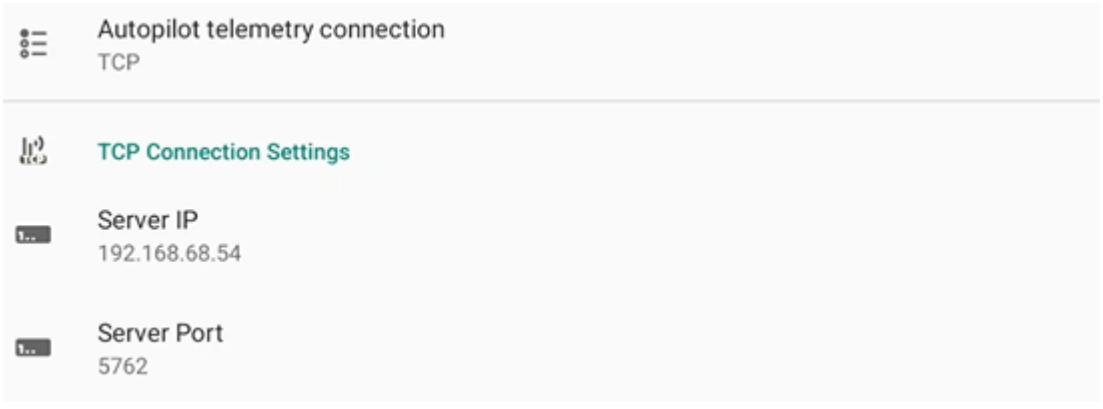
Device:

- After you have selected the Bluetooth device, the app will remember the choice forever and you never have to think about this again. The selected device is shown here.

Forget default device:

- Should you choose the wrong Bluetooth device then you need to re-enter the settings for connection. please press the "forget default device" button. Then you may start over.

5.2.5 TCP connection



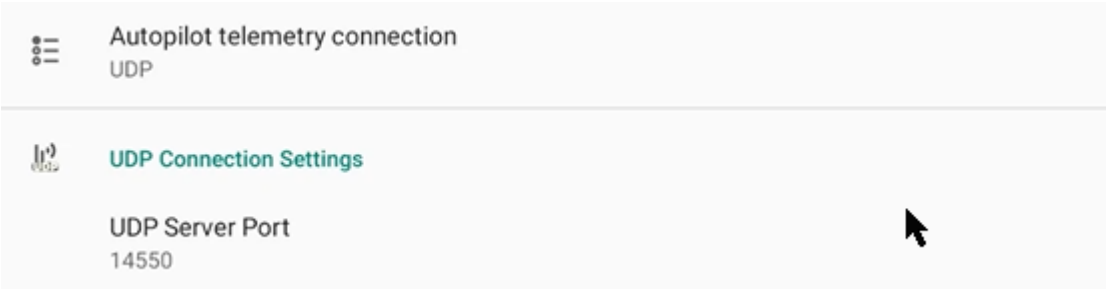
TCP connection is used if you transmit the telemetry data over a Wifi connection using an adapter designed to provide data by TCP. Usually, such adapters are purchased ready-made and come with the IP address and port to be used printed on the back side of the adapter.

TCP connection requires you to specify two things:

- The IP address to connect to.
- The port to use when you connect.

Should the app struggle to connect, please double check these settings and check that you are connected to the Wifi access point as well.

5.2.6 UDP connection



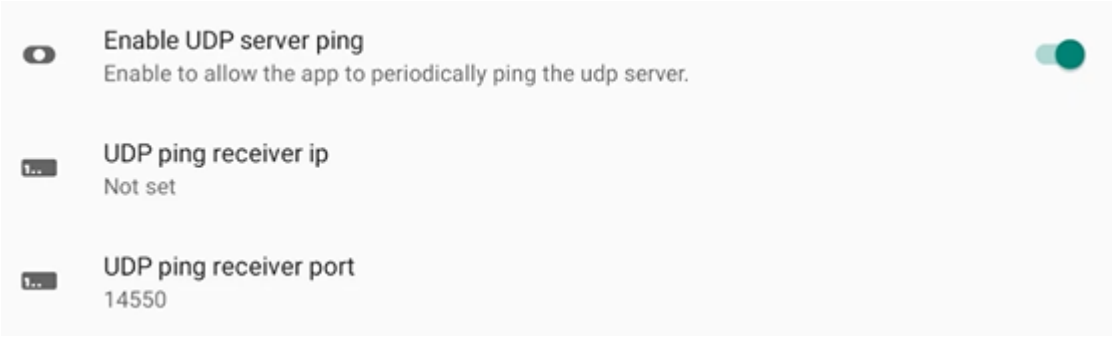
UDP connection is used if you transmit the telemetry data over a Wifi connection using an adapter designed to provide data by UDP. Usually, such adapters are purchased ready-made and comes with the port to be used printed on the back side of the adapter.

UDP connection requires you to specify one thing:

- The port to use when you connect.

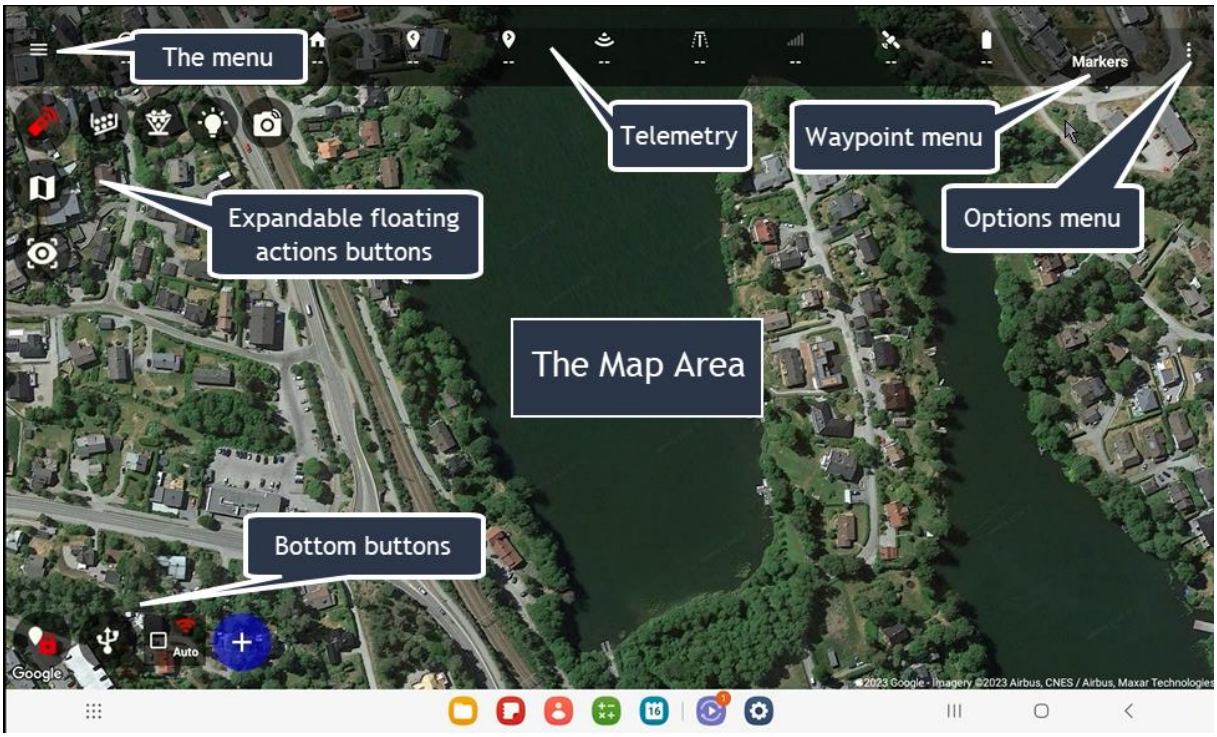
Should the app struggle to connect, please double check these settings and check that you are connected to the Wifi access point as well.

Some UDP implementations do not instantly broadcast its data. If this is the case with you, please also activate the “server ping” to “wake up” the adapter and type in the IP address and the port to be used.



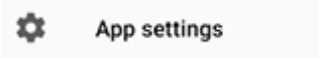
The IP address is usually the IP of the Wifi gateway, and the port is usually identical to the port printed on the back side of your UDP adapter.

6 The Carp Pilot Pro user interface



6.1 The menu button top left

6.1.1 App settings

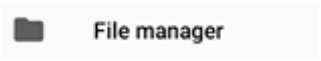


This app is highly customizable and offers a wide range of settings to make the app appear and behave just the way you want it to.

When entering settings, the first screen you will see is the settings categories. Select a category to adjust settings one by one. If you use an Android tablet, then settings have a two-panes layout with categories to the left and settings for the selected category to the right.

All settings are explained in the "THE COMPLETE GUIDE TO APP SETTINGS" chapter.

6.1.2 File manager



File manager opens the built in file manager ability that has access to all the app's private folders and files.

Also see the video about file explorer for a visual guide on the Carp Pilot Pro YouTube channel.

How to use the file manager is explained in the "FILE MANAGER" chapter.

6.1.3 My waypoints

The visual database viewer for all your waypoints is opened when selecting my waypoints.

Also see the video about waypoints for a visual guide on the Carp Pilot Pro YouTube channel.

How to manage your waypoints is explained in the "MY WAYPOINTS" chapter.

6.1.4 Bathymetry (*Premium)

Selecting bathymetry will open the bathymetric editor allowing you to create and manage all files needed to get depth maps onto the driving map. This feature is only available for Premium users.

Also see the video about the bathymetric editor for a visual guide on the Carp Pilot Pro YouTube channel.

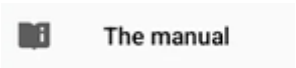
How to use the bathymetric is explained in the "BATHYMETRY – THE EDITOR (PREMIUM USERS ONLY)" chapter.

6.1.5 Premium features

Some features in this app are for Premium users only. Selecting this menu item opens the screen where you can subscribe to or purchase lifetime premium abilities.

How to get premium abilities is explained in the "HOW TO GET PREMIUM ABILITIES?" chapter.

6.1.6 The Manual



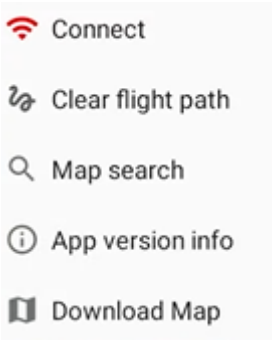
This user guide is available directly from the app menu. The first time you select this menu item, the user guide must be downloaded. Downloading requires internet availability and is fully automated. Please reach the chapter "DOWNLOAD AND VIEW THE MANUAL ON YOUR DEVICE" for more information.

6.1.7 Ardupilot parameters (Autopilot only, may be disabled by the boat factory)

The app can modify the autopilot's parameters directly. If you purchased the boat ready set up, then the autopilot is usually tuned by the vendor. In this case please do not ever use this option.

How to alter parameters is explained in the "SETTING ARDUPILOT PARAMETERS" chapter.

6.2 The options menu top right



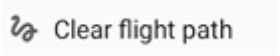
6.2.1 Connect or disconnect (Autopilot only)

If you have not selected to auto connect the app with the boat, you may use the options menu and:

- Select “connect” if boat is not yet connected.
- Select “disconnect” if the boat is currently connected.

Connection to the autopilot is required to establish the telemetry data stream and control the boat using the app. You may opt to use auto connect, please see chapter “AUTOPILOT TELEMETRY CONNECTION” for information.

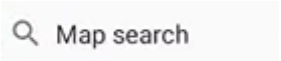
6.2.2 Clear flight path (Autopilot only)



If you have selected to display the historical driven path, then you may clear this from the screen by using this menu option.

Enabling path to be displayed is done in settings or in the start screen for live mapping. Enabling path is generally not recommended as the app will have to remember each point in the path the boat has driven until now, especially not recommended for low-end Android devices.

6.2.3 Map search

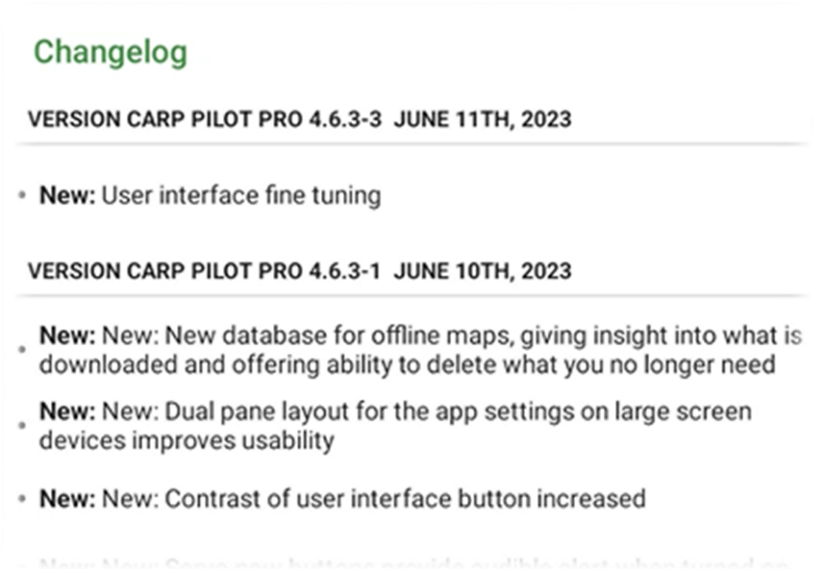


Map search requires the app to be connected to the internet. Map search is available in this options menu and from one icon revealed if you expand the maps selector icon. The menu choice brings up a search dialog. Enter search string and hit search.

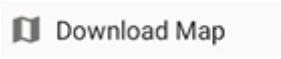
Search results are listed below. If you click a search result, the app will zoom in on the area found.

6.2.4 App version info

App version choice will bring up a screen displaying the complete change log for the app. The current version is always on top and then the second latest below. Scroll down to read it all in reverse historical order.



6.2.5 Download map



Download maps brings up a screen where you may zoom in on an area for which you want to have a guarantee that you have maps available when your Android device is not connected to the internet.

How to download maps is explained in the "OFFLINE MAPS, AND HOW TO DOWNLOAD" chapter.

6.3 The telemetry information top line

The top line will display telemetry data when the app is in driving mode. If you click icon down left so that the lock icon turns green, a big white text top right will say "Planning" and the telemetry line gets replaced with icons for planning instead. Please click again on the button down left to get the red lock icon and to have telemetry visible.

For GPS only users, the top line always displays telemetry data as you have no planning tools.

6.3.1 How to customize which telemetry data is to be viewed?

You may customize which telemetry data is to be visible. Use settings for telemetry data to switch items not needed off. For users with small screen Android devices, please limit the visible telemetry to the most important choices.

How to customize visible telemetry is explained in the "THE COMPLETE GUIDE TO APP SETTINGS" chapter.

6.3.2 Telemetry Alpha to Omega

6.3.2.1 Boat Speed

Boat speed is displayed as reported from the autopilot or from the GPS. Unit of measure is m/s or km/h for metric units, ft/s or miles/h for imperial units. Choice of unit is selected in app settings for user interface.

6.3.2.2 Stopwatch (autopilot only)

Displays the time with active connection with the autopilot. This timer is reset it you disconnect and reconnect with the boat.

6.3.2.3 Home point distance

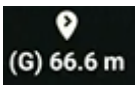
Distance in meters or feet (depending on choice of unit) from the boat to the home point.

6.3.2.4 Distance to previous point (autopilot only)

Distance in meters or feet (depending on choice of unit). When driving, this is a measure of the distance since the last waypoint in the mission. Normally used in automatic route driving. But also works in other cases:

- From the position the boat had when you click a marker to do "go to".
- From the position reached using go to. After reaching the target the measure is reset, and if the boat drifts off you can see how far. And adjust using manual driving.

6.3.2.5 Distance to next target



Distance in meters or feet (depending on choice of unit).

Distance to the next target is the remaining distance to a target when driving auto, go to or return to home.

This distance is also visible above the waypoint in the map (thus redundant, you do not really need this telemetry measure activated in the top telemetry line):

For GPS only users, this measure will also appear if you click a waypoint in the app. A “target” button will also appear on the map, click this to remove the measure again.

6.3.2.6 Ardupilot/Wifi depth

When a Wifi echo sounder is detected and data for depths is received, the reported depth will be displayed below the icon.

This icon is also clickable and will drop down a small window where you can also see the temperature for echo sounders that has support for this (currently supported for all but Raymarine Dragonfly).

Depth reported from ArduPilot is also supported. How to install a NMEA echo sounder and get this to work with an autopilot, please read:
Boat Configuration — Rover documentation (ardupilot.org)

Do NOT use NMEA echo sounder connected to the autopilot in parallel with a Wifi echo sounder, this is NOT supported and will create a series of problems as data from both will sources be combined in the app.

See chapter “SUPPORTED ECHO SOUNDERS AND HOW TO SET THEM UP” for more info.

6.3.2.7 Distance sensors (Autopilot only)

If you equip your boat with a lidar then the measures can be made visible using this telemetry option.

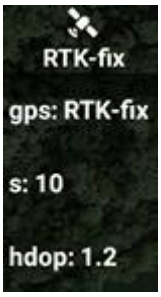
The screen has five measures made available (down, front, back, left, right) if you click the distance icon. Select the appropriate direction from the small dropdown screen. And note that “down” is redundant if you already have an echo sounder implemented.

6.3.2.8 Telemetry signal (Autopilot only)

Telemetry signal strength is available for telemetry connection options USB and Bluetooth. If you use Wifi alternatives UDP or TCP, please watch the Android system Wifi icon instead.

6.3.2.9 Boat GPS

Shows key data about the GPS and changes color to reveal the state of the GPS data.



Gray icon always means the GPS data is not present at all, usually with "no data" written below. Yellow icon illustrates a fair connection for autopilot, 2D for GPS only. White icon is displayed if the EKF estimate in the autopilot is acceptable, or for 3D fix for GPS only.

If you click the icon, you get a drop-down screen to observe other indicators as well. You can change what is reported below the icon between fix, number of satellites and HDOP by clicking the value in this drop-down screen.

6.3.2.10 Boat battery (Autopilot only)

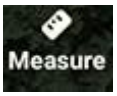
Battery reveals the state of the boat battery in terms of voltage. Icon is white for good charge condition, yellow for lower acceptable and red if the voltage begins to drop to low levels (time to get the boat back and swap battery).

The battery indicator only works if you use a supported power module for your autopilot AND tune it properly. See this info for how to do this using mission planner: [Power Monitor/Module Configuration in Mission Planner — Copter documentation (ardupilot.org)]

Also, you must select the correct battery chemistry and the proper size using settings for boat control.

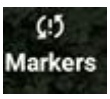
How to select the correct battery is explained in boat control settings the "**BATTERY VOLTAGE**" chapter.

6.3.3 Measure tool (GPS only in telemetry line)



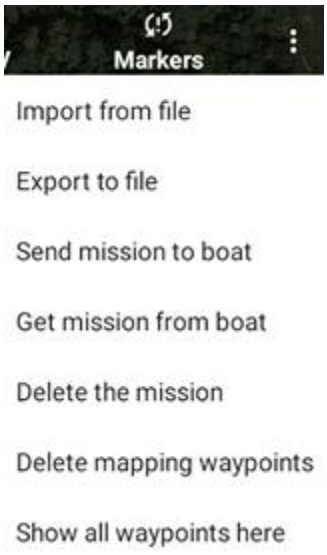
For GPS only users there are no planning tools available. The measure tool that belongs to planning for autopilot users are however available in the telemetry line. For more information about the measuring ability, please read more in chapter "**MEASURE DISTANCES TOOL**".

6.3.3.1 The waypoint menu



To the right in Telemetry line (and in the Planning tools line) we find the waypoint or mission menu. An exclamation mark inside indicates the app does not consider to be in sync with the boat's information about the current mission. For any driving mode but auto, this does not matter.

Tapping this symbol will reveal a menu:



Import from file: Allows you import waypoints from files stored in the waypoint's directory. The action will wipe all current waypoints from the mission inside the app and replace them with the waypoints available in the selected file.

Export to file: Allows you to save the waypoints currently available in the mission to a file in the waypoint's directory, file name of your choosing. No need to add a file extension, the app will save the file as a text file (.txt).

Send mission to boat: Sends waypoints currently part of the mission to the boat. The action will wipe all current waypoints from the mission inside the boat and replace them with the waypoints as seen in the app.

Download mission from boat: Retrieves waypoints currently present in the boat to the app. The action will wipe all current waypoints from the mission inside the app and replace them with the waypoints that were currently present in the boat.

Delete the mission: The action wipes all waypoints currently present in the mission in the app. No waypoints will remain in the app after this action. The waypoints are only deleted from the mission and not from the waypoint database.

Delete mapping waypoints: The action wipes waypoint of type mapping from the mission in the app. Waypoints of type waypoint and hotspot will remain in the mission. The waypoints are only deleted from the mission and not from the waypoint database.

Show all waypoints here: The action will use the visible map area to query the database for all waypoints that have a matching position, and all waypoints resulting of this query will be added to the mission and become visible in the app.

6.4 The planning tools top line (Autopilot only)

Planning tools are a set of features to help you place waypoints and to plan missions. The planning tools are only available for autopilot users. By selecting the proper tool, you decide what will happen when you click the map.

When tapping on the map, short tap and long tap have the same function. Please note a depth map (KMZ file) placed over the map will catch the short map tap and block the tap to be registered from by the map. So, when you have such a map overlaid then please long tap to put out new waypoints.

6.4.1 How to switch on and off the planning tools

You swap between planning and driving by using the waypoint lock icon down left:

When the bottom left icon has a red lock then you are in driving mode. And waypoints are locked for editing. In the top line you have telemetry data. If you tap on this button, you will enter the planning mode.

When the bottom left icon has a green opened lock then you are in planning mode. In the top line your telemetry data gets hidden and replaced with a line of tools to aid planning. To the right on the screen, the word “planning” will also appear to warn you what mode you are currently in. When in planning mode, waypoints are open for editing. If you tap on this button, you will enter driving mode.

6.4.2 The planning tools, one by one

The active planning tool has a non-black background, and the active planning tool is also indicated in writing to the right side of the vertical divider in the planning tool line.

6.4.2.1 Add new waypoint

A new waypoint is added when you tap or long tap the map. Use a long tap if a depth map is overlaid the base map. The waypoint will be added to:

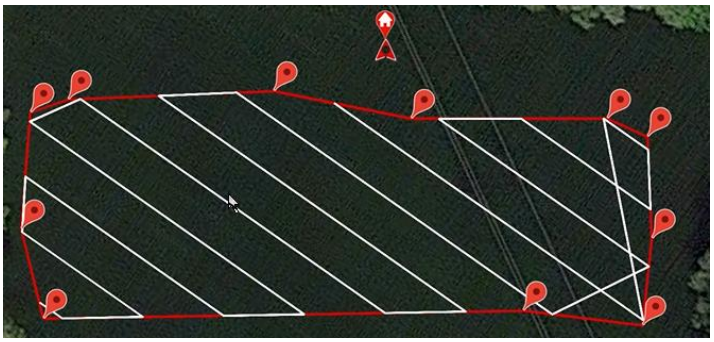
- The map.
- The mission.
- As a new waypoint in the database.
- As a waypoint available in the “last known waypoints”.

6.4.2.2 Draw a survey boundary

A line will be drawn as you touch the map with your finger and drag it to draw a line. The line will be the outer perimeter (boundary) for a mapping mission. You should aim to draw a near closed polygon.

When you lift the finger from the screen the polygon will be closed by the app, and red markers will be put around the perimeter. In addition, a set of white driving lines will be created inside the polygon.

This mapping object will remain like this until the mission is sent to the boat. When sent to the boat the mapping object will be replaced by regular waypoints of type mapping.



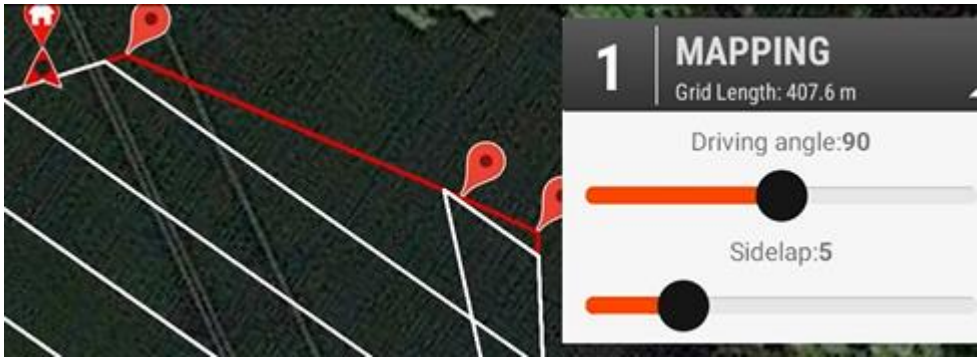
A mapping object has very different editable parameters than a regular waypoint. Tap the survey object in the list of mission items below, the mission object changes color from red to transparent black to indicate it is selected:

And now you can …:

- Adjust the outer boundary:
  - Long tap a red marker until it pops up from the map.

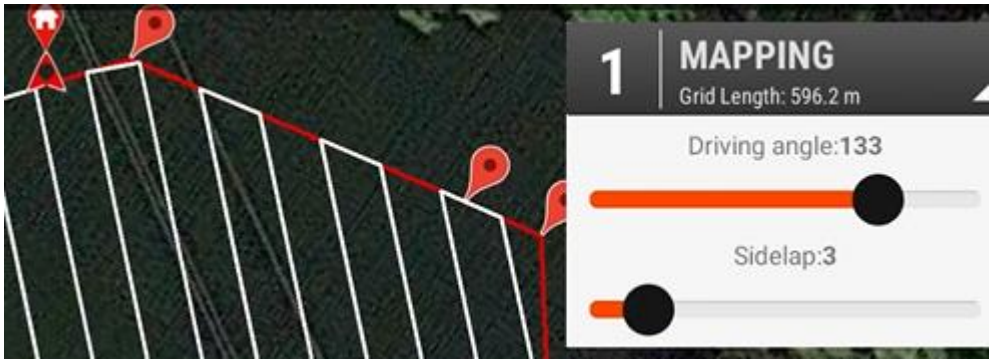
While keeping the finger on the screen, drag until the red marker is in the desired position and lift the finger. The outer boundary polygon will be redrawn as a result. Keep on moving the red markers until you have achieved the desired outer perimeter.

- Adjust the driving lines direction and space between them:



  - Driving direction: Make sure to select a driving direction to avoid driving paths crossing the water shoreline.

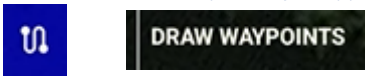
  - **Side lap**: The distance in meters between driving lines. Note: If you use a mapping to create bathymetric maps then a narrow grid of driving will increase the quality of the depth map compared to a wide grid. But at the same time the distance needed also increases. If you change side lap from 10 to 5 meters as an example, the distance the boat must drive to complete the mission increases with approximately 100 %. The total length of the grid to be driven is visible on top of the edit window. Take this distance into consideration before you upload the mission to your boat. And be sure you have sufficient time and sufficiently charged batteries to complete the mission.



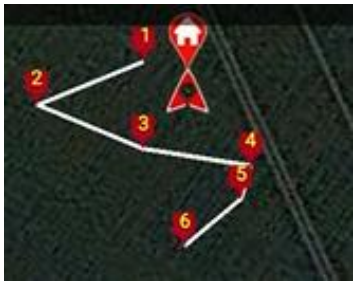
A mapping object is of no use until you upload the mission to the boat. Mapping objects are NOT stored in the waypoint database, nor is a mapping object stored in the “last know waypoints”.

After the mission is uploaded to the boat and the mapping object is converted to a set of mapping waypoints, these mapping waypoints are added to the waypoint database. Mapping waypoints are never added to the "last known mission".

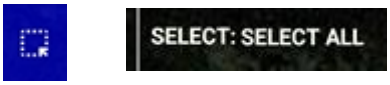
6.4.2.3 Draw a path of waypoints



This tool will add a series of waypoints type mapping. Use for driving a specific route. Each waypoint in the series is a single waypoint edited like any ordinary waypoint.



6.4.2.4 Selection function



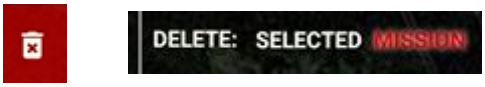
The select function makes it possible to select more than one waypoint at a time. To instantly select all, tap "SELECT ALL".

Tapping on any marker or mission item box below will add the object to the selected items. If a marker was already selected, tapping it once more deselects it.

When one marker only is selected, the info window to edit the selected waypoint will appear. When more than one waypoint is selected the info window will disappear. You may also use selection to delete more than one waypoint at a time.

All the waypoints are added to the waypoint database. Mapping waypoints are never added to the "last known mission".

6.4.2.5 Delete function



Delete function offers the option to:

- Delete a selection (one or more) of waypoints from the mission.
- Delete the entire mission.
- Any waypoint tapped when the delete function is activated will immediately be deleted from the mission.

Deleting any waypoint will remove the waypoint from the "last known mission" but will never remove it from the waypoint database. To permanently delete waypoints, please read the "MY WAYPOINTS" chapter.

6.4.2.6 Measure distances tool

The last function in the planning tools line is the measure tool. When the measure tool icon is selected it turns white. When active, the following ability is available for short or long tapping the map or for tapping ANY icon on the screen (boat icon and home icon included):

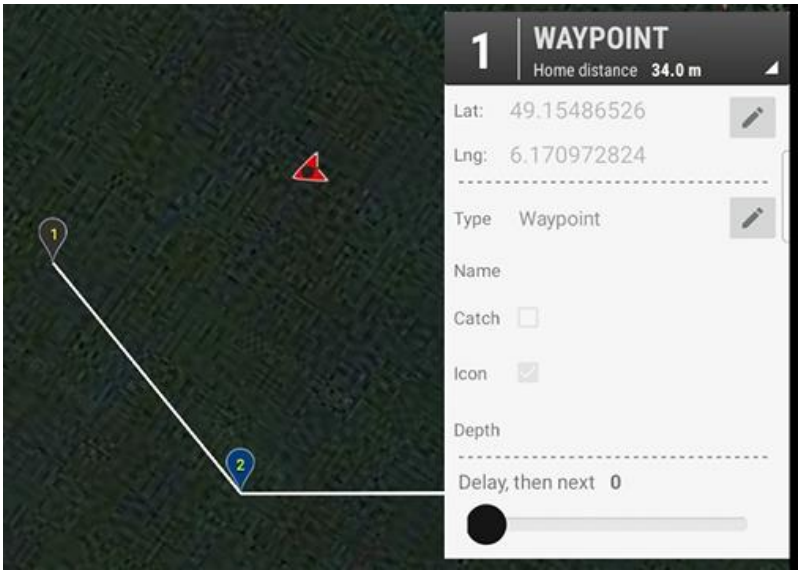
- Tap once and the first "ruler" marker is placed on the map or above a marker (if a marker is clicked)
- Tap second and the second "ruler" marker is placed on the map or above a marker (if a marker is clicked). In addition, a yellow line between the two markers is drawn, the distance is measured by the app and in the middle of these two markers the distance between these two markers is displayed as a yellow-colored number. The measure will be in the same unit as you have selected in the settings for user interface (in meters for metric, in feet for imperial)
- Tap third and the two ruler icons, the yellow line and the yellow measure are removed from the map.

These "three-step-tap" method is valid if the measure function is active. Deactivate the measure function by tapping any other planning tool or by tapping the measure icon once more.

6.4.2.7 The waypoint menu

The waypoint or mission menu in the planning tools line is identical to the menu available in the telemetry line. Please read about this menu in the "THE WAYPOINT MENU" chapter.

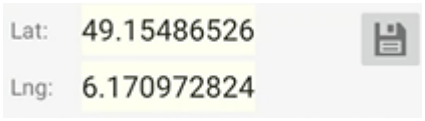
6.4.3 Edit info for any waypoint



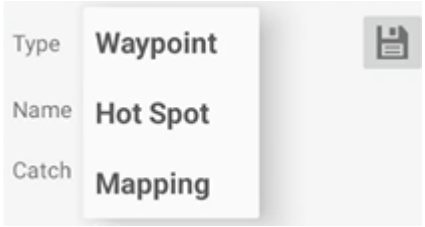
You may edit the waypoint by tapping the marker in the map or by tapping the corresponding square below. An info window will appear on the right. To change any value, tap the pencil in this window. To save any changed values tap the save icon. To close the edit window, tap in the map or tap another waypoint to select this instead.

These fields are editable:

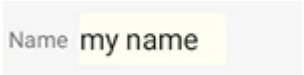
- Position (Latitude and Longitude)



  The position (the combination of latitude and longitude) is on the top editable field. Note: Only use to re-generate a known position. To alter the position, it is generally recommended to move the waypoint marker on the map instead.
- Type of waypoint:



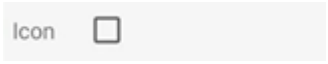
  The first waypoint data field is the type of waypoint. Waypoint types have different colors: Waypoint is blue, hotspot is green, mapping has a different look all together.
- Name:



  You may tag the waypoint with a name. The marker will however be displayed as a standard marker as long as the “icon” checkbox remains checked. Names can be max 20 characters long.
- Catch:

To visualize that this position has provided a catch you may use this checkbox. A white micro carp icon will be visible in the mission item list below and inside the marker.

- Icon:

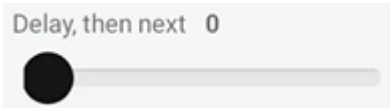


By default, waypoints are presented on the map as a standard map marker with their mission item number inside. If, however, you opted to tag the marker with a name then the map marker with the name will be used instead if you uncheck “icon”.

- Depth:

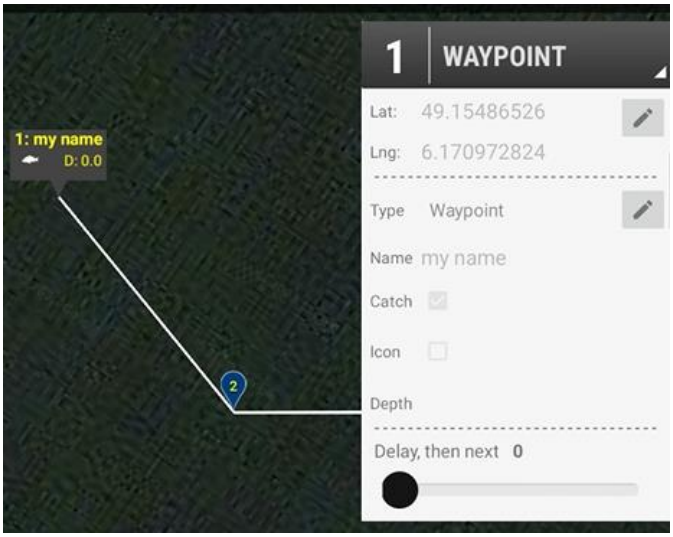
If you have an active echo sounder and add a new waypoint with the blue + button, the depth will be captured and added to the waypoint info. It is possible to edit this value using the depth field.

- Delay, then next:



If you drive missions instead of using standard go to, then you may have the boat hold at this waypoint before driving to the next waypoint by sliding the drawer. Default hold is 0 seconds. Value set by the slider handle is in seconds. Max hold time is 60 seconds.

Remember to tap save if you change any values, if not all original values are kept. An edited waypoint may look like this:



6.5 Floating action buttons on the screen

Each floating action button on the top left side is a category “holder” that may contain many actions. If you tap them, the button will tilt over and expand all functions inside. Tap once more to collapse the functions. Select a function inside and the “holder” will also collapse.

6.5.1 Servo remote control (Autopilot only)



When touched the servo buttons get expanded and the remote-control icon is tilted over. The tilted remote-control icon will be red if the autopilot is not connected indicating that the servo buttons will not work. If the boat is connected the tilted remote-control icon will be green.

When the application is newly installed, no servo buttons are configured and expanding the button shows no functions. Long tap on the button to bring up the manager for the buttons. See "SETTING UP A SERVO BUTTON" for how to use this! The following assumes you have some servo buttons already set up.

When the tilted remote-control icon is green (boat autopilot is connected), touching any visible servo button will instantly trigger the function inside the boat:

Icons with transparent background are functions turned "off", icons with green background are functions turned "on".

For all functions implemented using autopilot channel 1-8, the color will change when the autopilot confirms the new PWM output value. Audible alert also provided. Meaning the button will also change color if you switch the function on or off using your RC remote-control radio transmitter.

For any function implemented using autopilot channel 9 or higher this dual ability is not present, the color of the servo button changes because you tap the button and hence is no confirmation that the intended action did in fact occur.

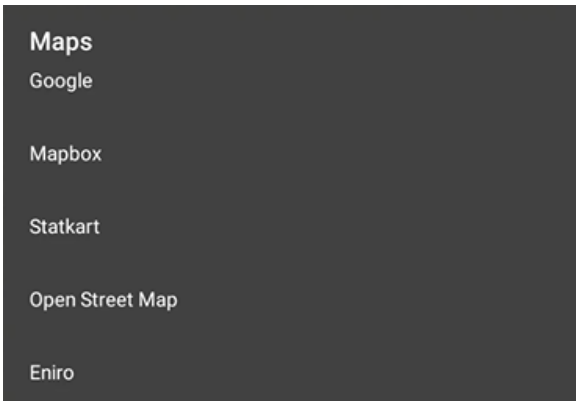
6.5.2 Map selection control

The map category "holder" contains these functions:

6.5.2.1 Cogged map icon: Map tile overlay provider

The cogged map icon makes it possible to select tiles from 5 different providers. Google Map is default when you have installed the app. The app will remember this choice of tile providers between app restarts.

A popup screen will appear, select the desired provider there.



Please note that the Google Map tiles are only available when you are connected to the internet, while the other providers are all available also offline if you have downloaded maps for the area previously.

How to download maps for use when your Android device is offline is explained in the "OFFLINE MAPS, AND HOW TO DOWNLOAD" chapter.

6.5.2.2 Map icon: Map style (only for Google Maps)

The map style icon is available if you have selected Google Maps and will offer you the option to select the map style. Four styles are available:

- Satellite maps, and satellite maps with roads and places names on top ("hybrid")
- Normal Google Maps style
- Terrain Google Maps style

6.5.2.3 Map overlay button: To show or hide your depth maps

The map overlay button is used to show or to hide your depth maps over the base map:

- **Short tap**: Brings up a popup window listing depth maps by names, allowing you to select any depth map that is currently stored in the KMZ folder. When you have selected the map then the depth map will be made visible, and the app will zoom in on this map.
  You can only select to show one depth map on the screen, selecting another depth map will remove the previous, show the new and zoom in on it.
- **Long tap**: If any depth map was presently visible on the map it will be removed.

6.5.2.4 Map search button: The same function you have in the options menu

Map search button triggers the same map search function as available in the options menu top right. This only works if you are connected to the internet. Read about this function in the options menu description for "MAP SEARCH".

6.5.3 Focus selection control

These functions let you quickly zoom in on the desired objects on the screen:

6.5.3.1 First person view button: Drive like car navigation style (Autopilot only)

This function provides you with a view as known from car navigation systems: The boat icon is put in the center low position of the screen, boat icon facing up. The boat icon will remain in this position, when you drive the map will rotate. When driving the map will zoom in on boat and target marker when the remaining distance to the marker is close and zoom out again when the distance from the last marker is far away while driving missions. This mode makes sense to utilize if your boat is equipped with a front facing video camera, it will then provide you a “first person view” to support that video camera.

6.5.3.2 Boat icon button: Zoom to current boat position

If you click this button the app will zoom in on the boat icon and place the boat icon in the center of the map, provided the app is connected to the boat.

6.5.3.3 Person icon button: Zoom to my position

If you click this button the app will zoom in on your position and put your position to the center of the app, provided the Android device location settings are activated.

6.5.3.4 Double outwards arrow button: Zoom to fit the current mission

If you click on this button the app will zoom in to cover all waypoints that are currently part of the mission. If the home icon is present this is included in the set of markers included when setting the zoom.

6.5.4 Video selection

If you have selected to activate either HTTP video or USB video in the settings for video, a video selector icon will appear below the focus selector button. The cameras activated in the settings will be visible when video selection is expanded.

Please see chapter on “USING VIDEO IN THE APP” for more information.

6.5.4.1 HTTP Camera button

If you click this button the app will start a viewer for HTTP camera. Tap once more to remove the viewer.

6.5.4.2 USB Camera button

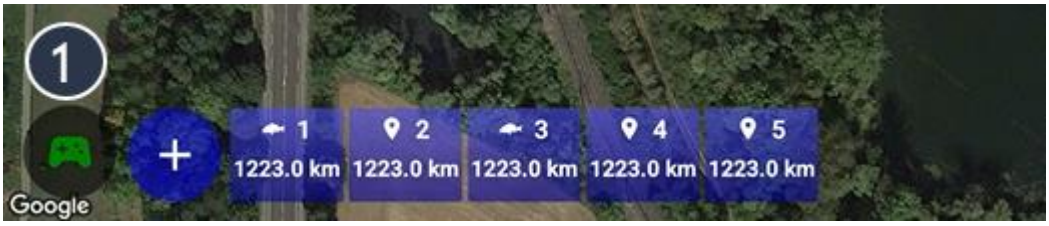
If you click this button the app will start a viewer for USB video camera. Tap once more to remove the viewer.

6.5.4.3 Camera Joystick button

If you click on this button the app will bring up a special joystick controlling vertical movement only. Tap once more to remove this joystick.

6.6 The bottom buttons for GPS only usage

At the bottom of the screen, we find these functions:



Button #1 corresponds with the mode selection button for autopilot, when connected. But as GPS cannot support any other mode than manual driving, tapping the icon has no effect. If you by accident selected GPS mode for your autopilot equipped boat, you can long-tap the mode manual icon to get quickly back and correct your connection choice.

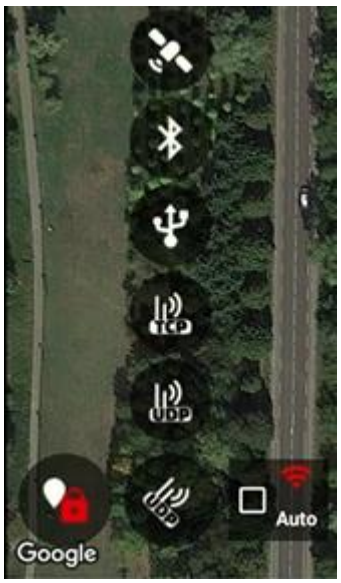
6.7 The bottom buttons, when disconnected

At the bottom of the screen, when the autopilot is not connected, we find these functions:

Focus only on the buttons special for the disconnected state, the other functions are described in the following chapter.

6.7.1 Connection choice

The connection method button shows your current selected choice of connection.



When clicked it shows all supported connection options. You need to select the one that matches how you implemented the telemetry connection. Here you select the connection choice: Button tilts over and expands the possible options. The selection collapses as soon as you select.

The different ways to connect your boat are thoroughly described in "**How do I connect the Carp Pilot Pro to my bait boat?**".

This connection method button disappears as soon as the boat is connected.

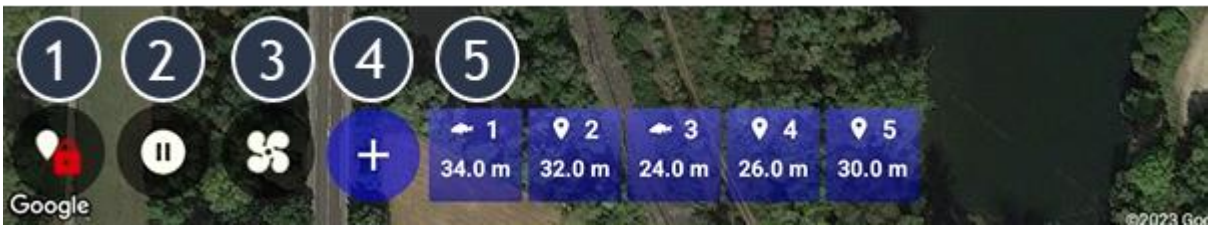
6.7.2 Automatic connect

To the right of the connection type choice, you have a square button where you may check to automatically connect or not using the selected connection choice. If this is not checked then please use the options menu to connect to the boat.

This button disappears as soon as the boat is connected.

6.8 The bottom buttons, when connected

At the bottom of the screen, when the autopilot is connected, we find these functions:



6.8.1 Waypoint lock/unlock button (Autopilot only)

To the left of the screen, the selector to choose between driving mode and planning mode is available.

The red lock icon reveals you are currently in driving mode. Tap once to swap planning mode.

The green unlocked icon reveals you are currently in planning mode. Tap once to swap driving mode.

6.8.2 Mode selection button (Only autopilot, only when connected, only in driving mode)

The current autopilot driving mode is visible. In this sample, the boat is in mode “pause”:

If you press this button, the mode selector expands and let you choose another driving mode:

You can modify which modes that you want to have available by enabling or disabling the various driving modes in the settings for boat control, see chapter for “DRIVING MODES” for more info.

The mode selection button expands a choice of modes to be selected when you tap it. When you select a new mode, the Carp Pilot Pro will command the autopilot to change its mode and collapse the mode choice section. But please note, only when the autopilot confirms it accepts the new mode the mode selection button will be updated. All modes besides manual and pause require the autopilot to have a valid GPS position. If it has no valid position the autopilot will deny changing to the new mode

6.8.2.1 Mode: Return to home position (Autopilot only)

Selecting the red house “return to home” button will make the boat drive back to the red house icon in a straight line from its current position. The boat will stop when the position of the red house icon is reached. Make sure the red house icon is not on shore. If it is, long tap and drag the red house icon into the water before it is too late!

6.8.2.2 Mode: Pause (Autopilot only)

Pause will disable the motors and leave the boat floating with no attempts to correct the position.

6.8.2.3 Mode: Loiter (Autopilot only)

Loiter will stop the boat in the current position and the boat will hold the current position within the margins set as configured using ArduPilot parameters LOIT_TYPE (heading), LOIT_RADIUS (distance) and LOIT_SPEED_GAIN (aggressiveness).

6.8.2.4 Mode: Automatic (Autopilot only)

Before entering automatic mode, the app will ask you to EITHER upload the current waypoints to the boat or download the current waypoints in the boat to the app.

After that, the autopilot will drive through all waypoints stored in the boat in the order displayed per waypoint icon (number 1 - n). The boat will stop at the last waypoint.

6.8.2.5 Mode: Manual

Manual mode will enable driving with your remote control. It will also trigger an on-screen joystick you can use to drive using your thumb.

6.8.2.6 Mode: Goto

Goto mode instantly sends the boat to any marker you tap on the map. Your boat will then drive to the tapped marker and stop.

The marker you tapped will also change into orange color. Driving path is displayed, and the remaining distance to the selected marker shown on the top of the marker:

6.8.2.7 The on-screen joystick (autopilot only)

If "Show joystick" is activated in App settings, then the on-screen joystick will automatically appear over the driving mode selection button as soon as manual mode is selected. It will be temporarily removed if the driving mode selector is expanded.

The on-screen joystick is green in color if the autopilot is "armed" (driving allowed), red if the autopilot is disarmed. Motors will not work if the autopilot is disarmed, the red colored joystick will be a clear and visible indicator that you need to arm the autopilot.

Driving with joystick is self-explanatory: Up is forward, down is backward, sides are turning. As expected for using a combined stick for driving and steering with your remote-control RC radio.

Please read more on how to tune the joystick in the "**JOYSTICK (AUTOPILOT ONLY)**".

6.8.2.8 What happens at the end of an automatic mode?

At end of "go to", "automatic" and "return to home" the boat will stop driving. Depending on the following settings, this is what is going to happen after the boat has reached the target:

- Ardupilot parameter MIS_DONE_BEHAVE will determine the general behavior, please read the ArduRover wiki for your options.
- In App settings for boat control, you may override whatever is set for Ardupilot, see more in the "**BOAT CONTROLS (AUTOPILOT ONLY)**" chapter.

6.8.3 The arming/disarming button (Autopilot only)


The white icon indicates throttle is enabled (autopilot armed), red that throttle is blocked (disarmed). Tap the icon to swap between these states. These buttons cannot be used with the APM.

If the autopilot is configured to have arming required (Ardupilot parameter ARMING_REQUIRE), then please select in settings to have the arming button available as described in "**SHOW BUTTONS TO ARM/DISARM**".

6.8.4 The "+" add waypoint button

This button has two alternate behaviors:

- When blue it will add a waypoint at the BOAT's current position.
- When red it will add a new waypoint at YOUR position.
- To swap between these two behaviors, long-tap the plus icon.

6.8.5 The mission list buttons

At the bottom of the screen, all waypoints currently part of the "mission" are listed as individual square boxes in a "mission list". The boxes will always contain a number corresponding to the number as seen in the waypoint marker icons on the map screen. In addition, the following information is also available inside each box:

- Box color:
  - Blue is a regular waypoint.
  - Green is a waypoint of type hotspot.
  - Red is a waypoint used for paths or as part of a survey.
- Small marker icon: This is a waypoint.
- Small fish icon: For this waypoint you have tagged that you have had a catch.
- Distance from home: When the boat is connected AND the autopilot has a valid position then this is the distance between the red house icon and the waypoint. In GPS only mode, the red home icon is the Android device position, and the distance is from the Android device to the waypoint.

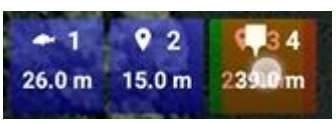
6.8.6 Functions available for each waypoint list button

The functions available for each button depends on the mode of operation and the choice of connection:

6.8.6.1 GPS only connection:

To delete a waypoint, tap and drag up or down:

To move the icon (and renumber the waypoint markers on the map), long tap and drag sideways beyond the icon at its side.

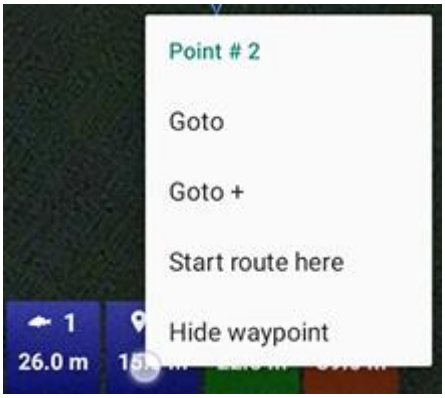


6.8.6.2 Autopilot: Driving mode (waypoints are locked)

Short tap on a box:

- The boat will instantly change mode into go to, the marker in the map will also be colored orange to illustrate it is the selected target boat will then drive to the selected waypoint marker and stop.

Long tap on a box: Brings up a menu, where you may choose:



Goto the waypoint marker (equal to short tap above). The marker in the map will also be colored orange to illustrate it is the selected target. The boat will then drive to the selected waypoint marker and stop.

Start route here (boat enters automatic mode but starts the automatic mission from the number of the box selected). If this does not work and the mission always starts with waypoint number 1, please change the Ardupilot parameter MIS_RESTART from 1 to 0.

Goto+ (Premium feature): Puts the boat in "pause" mode and brings up a control panel that lists all servo functions that are to be executed once the boat reaches the target.

You may re-order the functions by long tapping and drag/drop up- or downwards. You can remove a function for this particular Goto+ by long tapping and dragging it sideways. At the bottom of the panel, you can abort the Goto+, or click OK to start the Goto+. The boat will then enter "go to" and drive until the target is reached.

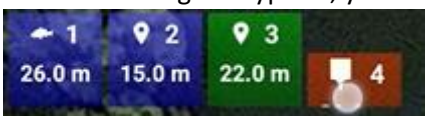
As soon as the target is reached the autopilot executes the desired actions in the listed order.
If the last item listed is still the house icon, the boat will return to the red house icon at the end.

The servo actions listed for Goto+ will be the ones you selected to be available when you set up the servo buttons in the servo button manager. It is suggested you only select functions related to baiting up to be available.

6.8.6.3 Autopilot: Planning mode (waypoints are unlocked)

In planning mode, the ability is limited to select or deselect the waypoint. Normally, selecting a box will color the box dark grey and bring up a popup window with information about the waypoint. The way to edit waypoint information is described in the chapter "**THE PLANNING TOOLS TOP LINE (AUTOPILOT ONLY)".**

To delete a single waypoint, you may also tap and drag up or down:



To move the icon (and renumber the waypoint markers on the map), long tap and drag sideways beyond the icon at its side.

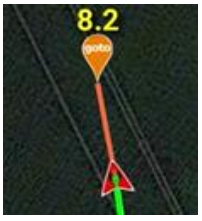
6.9 Functions available in the map area

In the map area you will see:

- The waypoint markers that are “part of the mission”.
- The red home point (if the boat is connected and the autopilot has a valid position)
- The boat icon (appears after the autopilot is connected and the autopilot position is fair or good).
- White interconnecting lines…

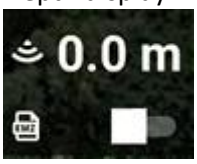
White interconnecting lines are shown in planning mode to illustrate how the boat will travel in an automatic mode. If you want to, these lines may always be visible: Enter app settings for maps to set them always visible.

- Red leach path …



The red leash from the boat to the next target waypoint in driving mode go to, auto and return to home. The distance remaining to the next target will appear in yellow letters above the next target waypoint marker.

- A green trailing path illustrating the path travelled behind the boat icon. This trail will be “eaten up” after a short time (can be overruled in settings). Any remaining trail can be removed from the map using the clear flight path in the options menu.
- Depth display…



A display for echosounder reported depth appears automatically if a supported echo sounder connected and is reporting depth values. The switch below is used to start live mapping.

And you have the following functions available:

- Waypoint marker and Home Point click.

- Waypoint marker and Home Point long click and drag/drop.
- Map click and map long click.
- Echo sounder switch to start/stop live mapping.

6.9.1 Move marker: Long tapping a waypoint marker or the red home icon

When long tapping, the icon will pop up and move away from your finger (your finger will otherwise hide the position when you drop it).

Keep your finger pressed to the screen and move so the pointy end of the marker reaches the desired new position. Then lift your finger from the screen to set the new position.

Note: In driving mode for Autopilot then markers are locked, and the waypoint will move back to its original position once you lift the finger. This is to avoid mistakes when driving. In autopilot planning and in GPS only then the marker will be moved, and you cannot undo this action.

6.9.2 Select marker: Short-tap a waypoint marker or the red home icon

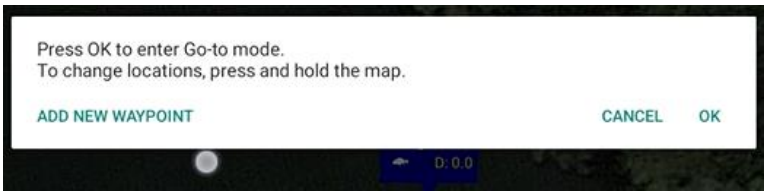
Autopilot driving mode: If you click a marker then the marker will turn orange, boat will instantly enter go to mode, show the leach path to the marker, display the remaining distance above it and drive until the target is reached.

Autopilot planning mode: Clicking a marker will select it, make the icon turn gray and bring up the info window for the marker. Clicking it again will deselect the marker and close the info window.

In GPS only mode: If you click a marker the marker will turn orange, show a leash path from boat icon to marker and display the remaining distance above the marker. You must drive the boat there using your remote control. A new floating action button for the additional information will pop up on the side. Click it to remove the “go to” info from the map.

6.9.3 Tapping or long tapping the map (outside of any marker)

In autopilot driving mode: A short tap directly on the map does nothing. But…



Long tap will bring up a question if you want to enter go to mode and drive to the tapped position, or if you want to add a new marker on the long-tapped position.

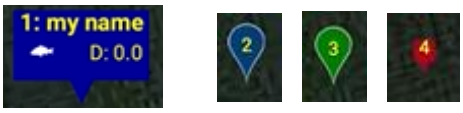
In GPS only mode and in Autopilot planning mode: If the map is clean (no depth map overlay), tapping and long tapping will normally add a new waypoint marker on the tapped position (for Autopilot planning this depends on which planning tool was selected, default tool is to add a new waypoint). But: If a depth map is overlaid the map, then this will block the short tap from hitting the map. Long tap will ALWAYS go through the overlaid information and trigger a new waypoint to be added (for Autopilot planning mode still depending on the current selected planning tool, of course).

6.9.4 Using map measurement tool

The use of map measure is using the ruler icon in planning mode (autopilot only) or in the telemetry line (non-autopilot). Its use is described in the chapter for “MEASURE DISTANCES TOOL”.

6.9.5 The waypoint marker icons

Waypoints are represented on the map as icons. These icons represent a geographical 2-dimensional position defined by the waypoint's latitude and longitude. The exact position is "pointed at" on the bottom and of the marker.



The color of the icon represents the type of waypoint. Carp Pilot Pro uses three types of waypoints: Blue for "waypoint", green for "hotspot" and red for waypoints used as part of a survey or driving paths. The icon can also be represented by a name and have graphical element inside to illustrate that you have had a catch on this position. To change these attributes, enter "planning mode" (Autopilot only) or chose "My waypoints" from the menu.

6.9.6 The home position icon

The home position icon is colored red with an included white house symbol. Position of the "home" is a geographical 2-dimensional position defined by the home position latitude and longitude.

For autopilot use the home position is initially set by the autopilot as soon as the boat is connected, and the autopilot determines it has a valid position. The autopilot then tells the Carp Pilot Pro: "Here I am, this is my home", and the home position icon will appear on the map on this exact position.

The user may long tap and drag/drop the home icon to a new position using autopilot, and the Carp Pilot Pro will then tell the autopilot to update its home position accordingly.

Note: For APM users, the home position icon is only set when waypoints are downloaded. And you cannot drag and drop the home point.

For non-autopilot use the home position is defined by the Android device' position, provided that the user has enabled positioning on the app. In this case the home position cannot be moved by drag/drop, instead the home icon will move according to the position of the tablet should it change.

6.9.7 The boat icon

The boat icon is a multi-colored icon representing the boat's position, a geographical 2-dimensional position defined by the boat's current latitude and longitude. Note that when all other markers have their position defined as the bottom "pointy" end of the icon, the exact position of the boat is in the center of the boat icon (the tiny cross inside). I addition to the position, the attitude of the boat will also turn the icon to point in the direction the boat is currently moving.

Yellow boat: 2D GPS fix for GPS only use, position found but EKF is not satisfactory for autopilot.

Red boat: 3D GPS fix for GPS only use, position found and EKF is satisfactory for autopilot.

Gray boat: Connection to boat lost, boat icon placed in last known position.

For boats with autopilot, the boat position and attitude will normally be updated 3-5 times per second. Position is determined by the boat's GPS, while attitude is determined by the installed electronic compass. For compass-less setup, the autopilot will determine the attitude based on movements and position updates and may be incorrect until the boat starts to move.

For GPS only boats the position is also set by GPS position updates. Attitude is retrieved from GPS sentences also and will normally only be reported by the GPS after a more significant position change. You may turn the boat on a spot using an autopilot and see the icon rotate on the map, but that is not the case for a boat with a GPS only solution: The boat must move, and the GPS will then determine the boat icon direction based on which direction the boat moved (ie: Boat direction is always calculated AFTER a movement has occurred, and boat icon direction will thus always lag slightly behind the actual change of direction of the boat).

Also compared to all other icons on the map, the boat icon is the only icon you can never move by drag/drop.

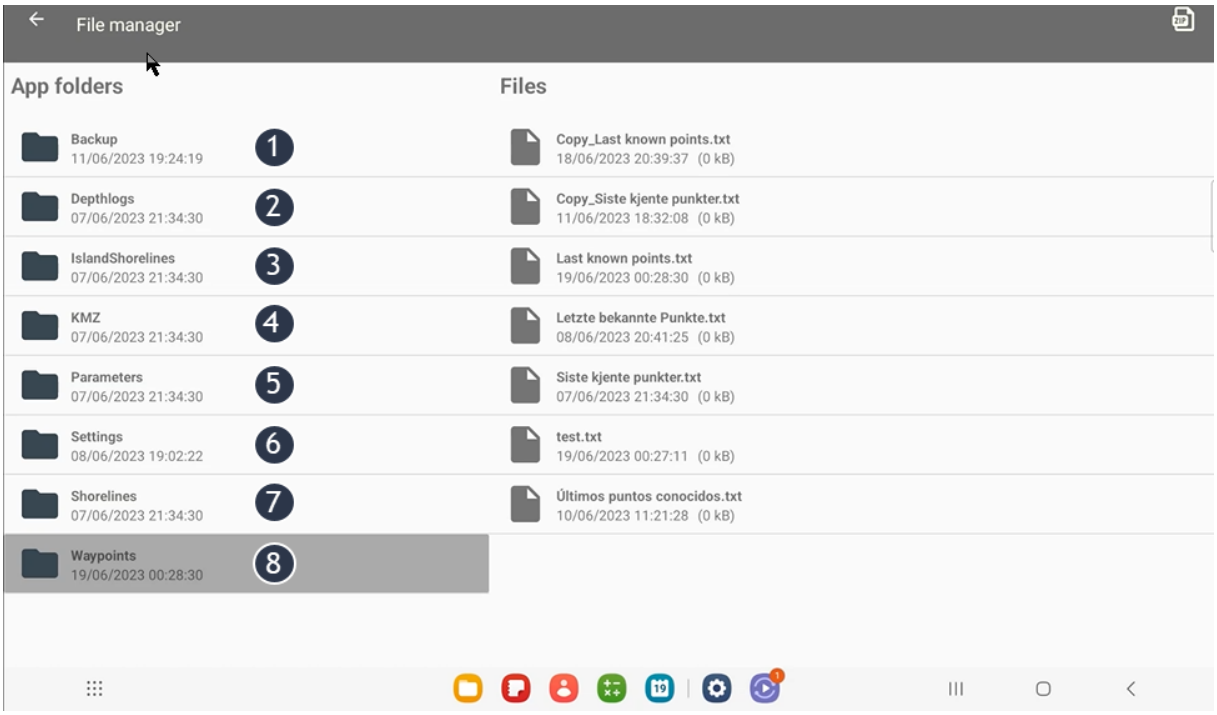
7 In depth usage descriptions

7.1 File manager

For a visual guide on how to use the file manager, please visit the Carp Pilot YouTube channel and watch the video about the file manager. Here:
https://youtu.be/v82BhFqNebo

The integrated file manager is started from the left app menu. The folders are fixed by the app (you cannot add or remove any folders). When starting up the file manager, the folders are initially visible. Tap a folder name to browse the content.

7.1.1 Available folders



7.1.1.1 "Backup"

If you make backup of folders or backup of your waypoints database, the backup is placed in this directory. Visit this folder to share such backups to a safe storage (like OneDrive, Google Drive and on).

7.1.1.2 "Depthlogs"

If you do live mapping, the log containing position and the belonging depth records are stored here. You can share such logs to use with other bathymetric tools like Reefmaster, and you can share depth logs from other apps to this directory and use the bathymetric editor to create depth maps from them.

Please note that the depth logs are the ACTUAL valuable data also for live mapping. A KMZ depth map can always be recreated using the depth logs, but you cannot re-generate the depth logs from a KMZ depth maps. For anyone serious about making depth maps: Please make sure you never lose these files. Do regular backup and store the files in another location than the Android device (like OneDrive, Google Drive or whatever you prefer).

7.1.1.3 "IslandShorelines"

If you draw a shoreline in the bathymetric editor and save it as a shoreline of type "island", the file is stored here.

7.1.1.4 "KMZ"

If you create depth maps using live mapping or using the bathymetric editor, the resulting depth map is saved as a KMZ file and stored in this folder. If you receive a ready-made depth map from a friend and want to use it with this app, please share that KMZ or KML file to this directory.

7.1.1.5 "Parameters" (Autopilot only)

If you download parameters from the boat to the app, the file with extension "param" is saved in this folder.

7.1.1.6 Settings

The settings folder only contains the servo buttons Json config file which is saved here. If the servo buttons config is missing, then the app will automatically create a new. The settings you select for servo buttons are stored in this file. If you use multiple android devices to control your boat, share this file to a safe location (like OneDrive, Google Drive or whatever you prefer) and then share the file further to the other device in the settings folder. Then you do not have to set up the buttons once more on the other device.

Please do not try to manually edit this file using a Json or text tool. If the file gets corrupted, then the app may not start. If you get such a problem, connect the Android device to a PC using USB, browse into this directory and delete the file.

7.1.1.7 "Shorelines"

If you draw a shoreline in the bathymetric editor and save it as a shoreline of type "shoreline", the file is stored here.

7.1.1.8 "Waypoints"

If you export waypoints to a file, then the file will be saved in this folder. If you want to import waypoints to mission from a file, files present in this folder will be shown with the file name as name. You may share a waypoint file to other users from this folder, and if you receive a waypoint file from another user then please share it to this folder.

7.1.2 File management abilities

File management abilities are all available on top of files listed when a folder is selected. With exception of the ZIP button, the file management functions require you to first select a file. These functions only work with one file selected at a time.

The following functions are available:

7.1.2.1 ZIP button

Always available, also when no file is selected. Tap the icon and then:

- All files in this folder are added to a zipped: <folder name>.zip.
- The zip file is stored in the backup folder.
- The share to dialog is automatically started, allowing you to store the backup on another location instantly.

7.1.2.2 Delete button

Delete removes the file permanently. You will be asked to confirm that you want to delete the file as a safety measure.

7.1.2.3 Copy button

Copy instantly creates a copy of the selected file with new name “Copy_”<file name>. You can rename the file afterwards.

7.1.2.4 Rename button

Rename button opens a dialog with an edit text field, the current name of the file is filled in. Alter the file name and tap “OK” to rename it. You do not have to bother about file extension, the renamed file will have the same extension as the original.

7.1.2.5 Share button

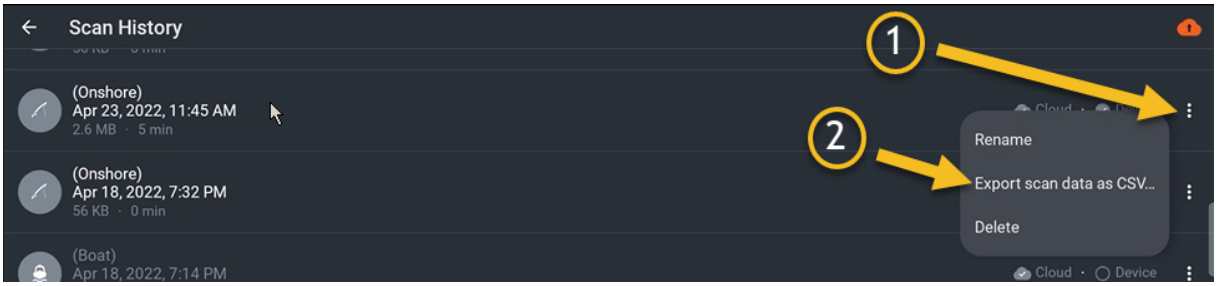
To share the file to somewhere else, tap the share icon and the standard Android sharing dialog will start. Select which app you want to share it to (like OneDrive to save the file on your OneDrive account or an email app to send the file as an attachment):

Be careful not to select “always” in the Android dialog as that will limit your choice “forever” (you need to enter Android App settings to reverse a default share share-to action). It is safer to:

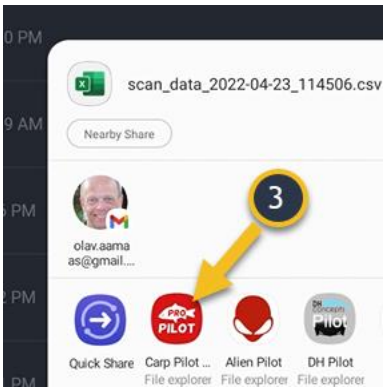
1. Select the desired app once, and then:
2. Choose “just once”.

7.1.2.6 File manager when receiving files from other apps

The file manager is prepared to receive files from other apps. You **share from** these apps in a similar manner to using Carp Pilot Pro. **Make sure to share the actual file and not only a link**. Here, we found a Fish Deeper scan (depth log) we want to share:

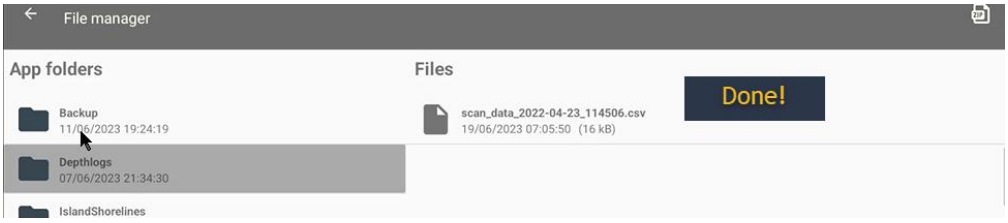


A similar share-to dialog starts, now we want to share this to the depth log folder in Carp Pilot Pro:



When the Carp Pilot Pro (File explorer) is selected, the Carp Pilot Pro opens and will display the file manager. It is your responsibility to select the correct folder as described in this chapter. Once a folder is selected, a plus button will appear in the tools line. Here we enter “Depthlogs”, then click the white +:

The file is then copied into the correct folder, we may now utilize this Fish Deeper file to make bathymetric maps inside Carp Pilot Pro:



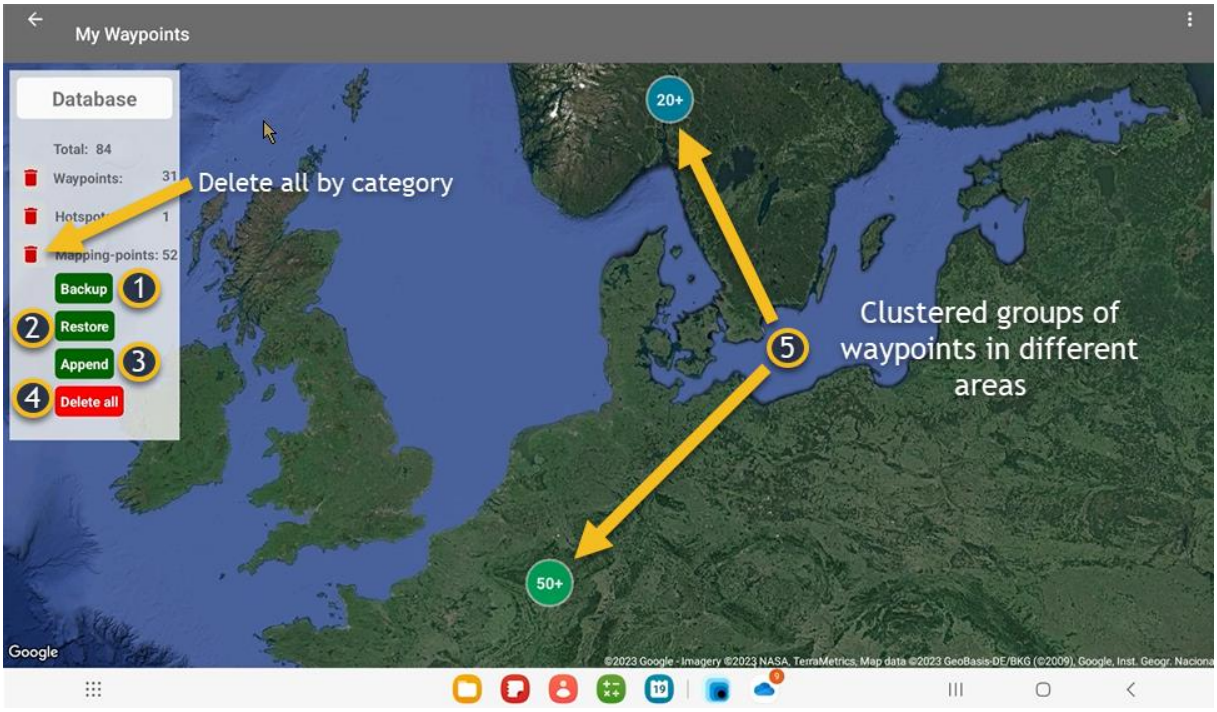
Return to Fish Deeper app to share more files using the Android back button:

7.2 My waypoints

Waypoints are Google Map markers with various icons, colors and meta data set by you. The Carp Pilot Pro comes with a built-in database to remember your waypoints. When you work with waypoints in the app, the position and type of waypoint is saved in this database. As are additional attributes like “name”, depth and so on. When you delete waypoints using other parts of the app, the waypoints are only removed from the mission. The database still remembers them. To permanently delete a waypoint from the database you need to select the ”**My waypoints**” menu item from the app menu top left.

A visual guide on the waypoint database and how it works is available on the Carp Pilot YouTube channel as “the video about waypoints”.

7.2.1 The waypoint database



In the waypoint database, the general information and high-level functions are available to the left under title “Database”, while information about individual waypoints opens on the right side of the screen when a waypoint marker is selected. If a marker is selected it changes color to red.

The red trash bin icons to the left of the waypoint let you delete all waypoints of this category with a single click. Usually done to get rid of old mapping-points efficiently.

7.2.1.1 Backup

Click once on the backup button. The database is exported to a csv file with extension “db” and saved in the “backup” folder (you may reach this folder using the built in file explorer). The name is automatically set as “waypoint-db-backup-“<YYYYMMDD-HHMMSS>

7.2.1.2 Restore

Click once on the restore button and a dialog pops up displaying the current backup files for the database currently present in the backup folder. As a restore will wipe the entire database and then import from the selected backup you will be asked to confirm before proceeding after you selected a file.

7.2.1.3 Append

Click once on the append button and a dialog pops up displaying the current backup files for the database currently present in the backup folder. As a append adds all records from the backup to the existing database you may end up with duplicates. The option to append is mainly added to allow you to enrich your database using the backup from a friend who may have waypoints from other waters than you. You must confirm the alert before the action is completed.

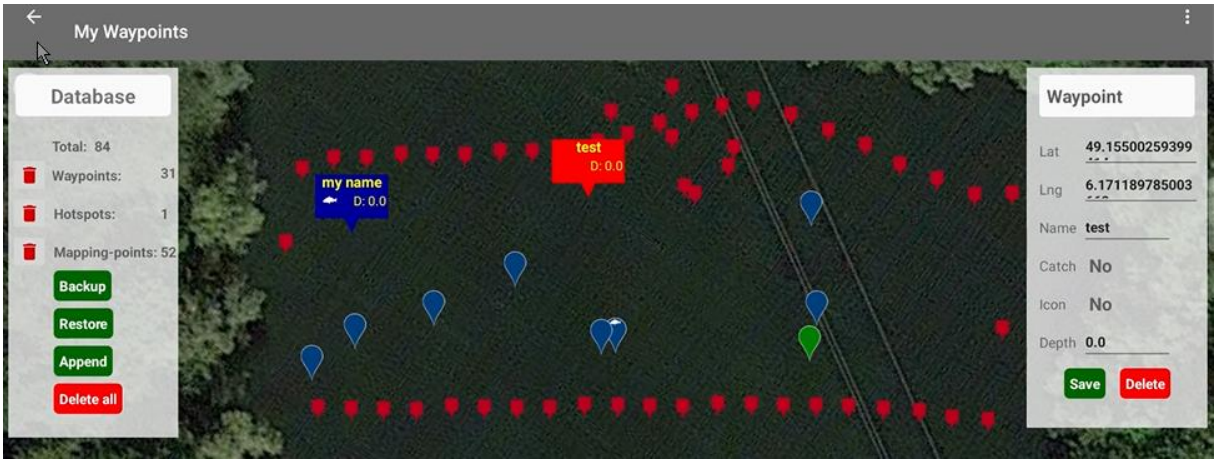
7.2.1.4 Delete all

Click once to wipe your waypoint database clean. You must confirm this action to proceed as all your waypoints will be permanently deleted. If you never made any backup before doing this, then you have no source to restore waypoints from and you start on scratch.

7.2.1.5 Clustering and zooming

When opening "My waypoints", the map area zooms in to cover the entire area where you have waypoints. As you may have waypoints distributed over a wide geographical area, the waypoints are clustered into groups with round blue icons displaying the number of waypoints covered in different areas. You may zoom in and out by standard Android finger pinch. But if you click on a cluster icon the app will also zoom in to display all waypoints beneath this cluster. If you have many waypoints in nearby waters, you may get another set of clusters in this area, and you can tap the desired cluster once more to zoom further. Beyond a certain zoom level, all waypoints are shown no matter how many waypoints you have.

7.2.1.6 Altering waypoint information

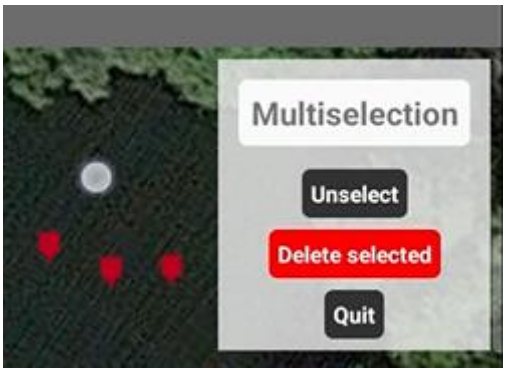


To view, alter and even delete single waypoints, tap a waypoint icon and it will turn red. An info screen pops up to the right. All fields are instantly editable, just tap and change. To save the altered info, tap the save button. If you tap outside of the info screen the info screen is closed without saving any changes. You can also tap the delete button to delete the selected waypoint.

The metadata you may set for waypoints are the same as described in the chapter "THE PLANNING TOOLS TOP LINE (AUTOPILOT ONLY)".

7.2.1.7 Multi select

To select multiple waypoints, a long tap on the map itself (outside of any marker icons) and a multi select info screen appears to the right. Now you may tap many icons to add them all as selected. The info screen has 3 buttons that should be self-explanatory:



Unselect will deselect all icons and make them appear in their original color.

Delete selected deletes all the selected permanently.

Quit closes the multi selection mode, all red marked icons return to their original color and the info window for multi select closes.

7.3 Bathymetry – the editor (Premium users only)

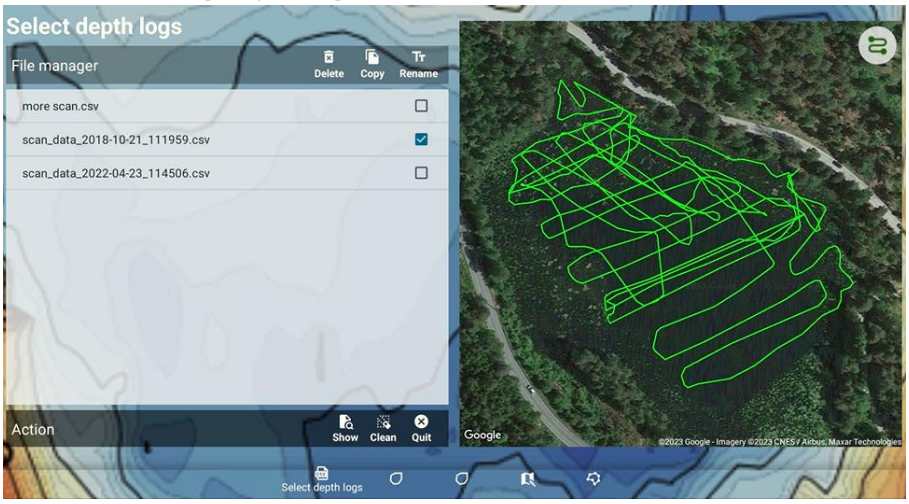
Using the bathymetry editor is a simple process of following the navigator steps below, typically involving these steps in the order:

1. Select one or more depth logs as source for the map.
2. Then select a shoreline for the water if you have one prepared.
3. Optionally select one/many shorelines for any islands in the water if you have this prepared.
4. Selecting some options like name and color for the map, and then hit create.

If you need shoreline for water's edge or for some islands, then there is a built-in editor for that as well.

The files you need to generate depth maps are usually created inside the app itself, but it is possible to use other depth logs as well. Please refer to the "**FILE MANAGER**" to learn how to share to and from the app.

7.3.1 Selecting depth logs



In the first screen you select one or multiple depth logs from the list. On this screen, all csv files stored in the "depthlogs" directory will be listed.

7.3.1.1 Additional tools available if you select one logfile only

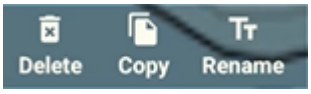
The list of logs is on the left side, a map on the right side. When you click a log:

Map area viewer:

- Zooms in on the area covered by the log, and shows the paths driven by the boat in green lines.
- If you click more than one log, additional lines are also displayed
  Make sure that all green lines are in the same water, if not you will get problems
  Should green lines not be made visible, see tools section below.

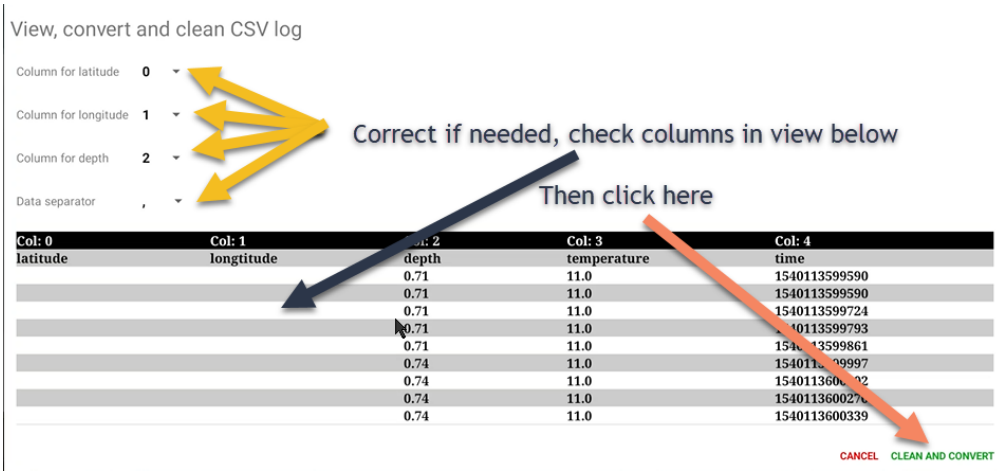
File management tools are available on the top when ONE file, and include:

- Tools on top: **Delete, Copy, Rename**



  These functions work exactly as described in the "FILE MANAGEMENT ABILITIES"
  If you use any of these file tools, the screen will refresh the content and no files will be selected.
- Tools below: **Show**

  Should the green lines not appear on the map then the CSV file is not organized according to the standard implementation of Carp Pilot Pro



  - Carp Pilot Pro expects the first three fields to be (bare minimum for bathymetry):
    (0) Latitude
    (1) Longitude
    (2) Depth
    In addition, Carp Pilot Pro expects the CSV file to separate its values using comma ","
  - The show tool displays the top lines of this file and dropdowns to be used to alter the columns for these values and the separator. Click "reload data" to use the new settings.
  - Make the needed adjustments and click "clean and convert". This will re-construct the file and remove all records inside the file that does not have all three attributes present. The illustration is of a Fish Deeper file full of records without position that should be cleaned to speed up progress.

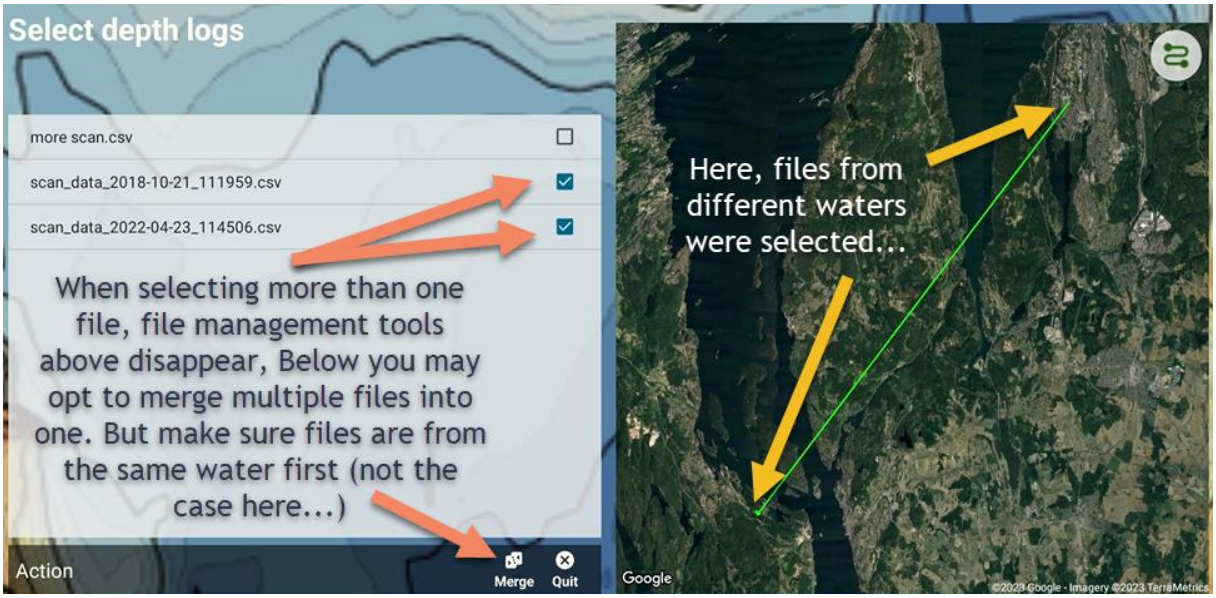
- The window closes, the file list renews itself and the converted file is made available as <oldfilename>"_CONVERTED.
- Click the new file. If you can see the green driving lines you are successful. Should the green lines fill up the map completely, the source file likely comes from another source than Carp Pilot Pro and may be sorted in another way than the actual timeline of the mapping performed.

- Tools below: **Clean**

- If your depth logs come from another app than Carp Pilot Pro then the file may contain numerous records that do not include all three needed attributes for bathymetry. One example is depth logs exported from the Deeper app that often contain 20-50 depth records with no position before you find the one with both depth and position.
- Clicking clean removes all redundant records to produce a much smaller file that will be processed far more efficiently when creating the map later.
- When you have clicked the "save" button, the dialog closes, the file list is refreshed and the resulting file is typically named <oldfilename>"_CLEAN.

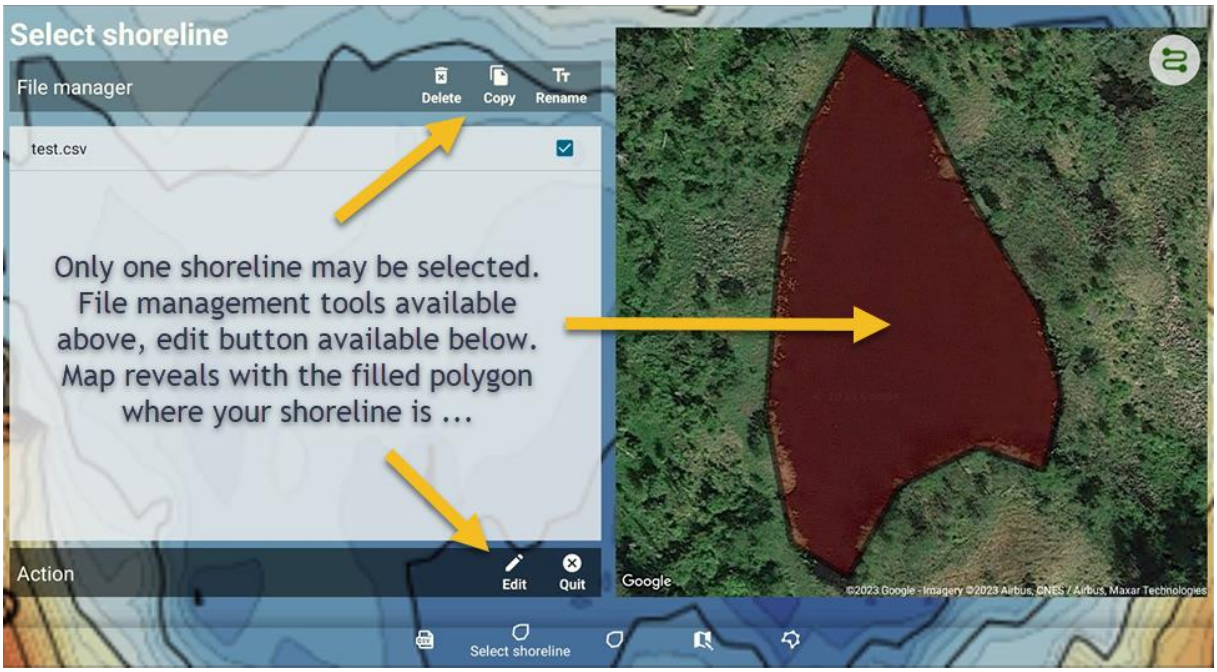
Tools are available on the top and bottom for MORE THAN ONE file is selected:

- Tools on top: **None**
- Tools below: **Merge**



- You may merge multiple files into one single file by pressing the merge button.
- When you have clicked the "save" button, the dialog closes, the file list is refreshed and the resulting file is typically named <oldfilename>"_COMBINED.

7.3.2 Selecting shoreline



Selecting a shoreline, if you have one ready is pretty much the same procedure as selecting a depth log with the following abilities. When you click a shoreline:

- A red filled polygon appears on the screen. Make sure the polygon covers the same water as the selected depth log(s). If not, you have selected a shoreline that does not match the selected depth log(s).
- You may only select ONE shoreline at a time.

Tools are available on the top and bottom for a shoreline file is selected:

- Tools on top: **Identical tools as in the depth logs screen**
- Tools below: **Edit**

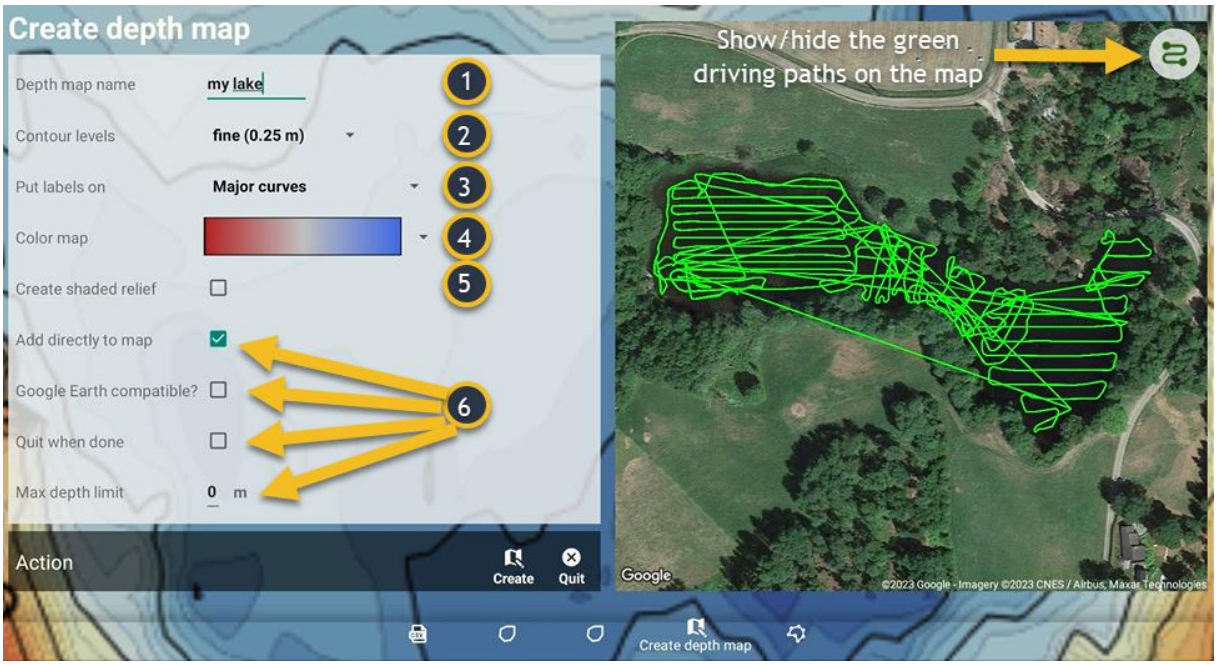
If you click edit when a shoreline is selected, the shoreline file opens in the shoreline editor. See separate description.

7.3.3 Selecting island shoreline(s)

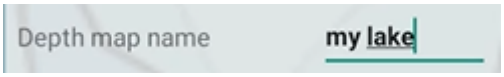
Selecting shoreline for islands behaves in the exact same manner as shoreline for the water, with one exception: For islands you may select more than one shoreline file. Make sure the islands are in the same water as the selected shoreline and the selected depth log(s). This is instantly verified by the zoom (focus is kept on the designated water) and by watching that the filled polygons appear on the same water on the map.

7.3.4 Creating the map

You must, as the bare minimum, select at least one depth log to create a bathymetric map. And you must give it a name. If not, the process will abruptly stop after clicking create. All other fields are optional.



7.3.4.1 Giving the depth map a name

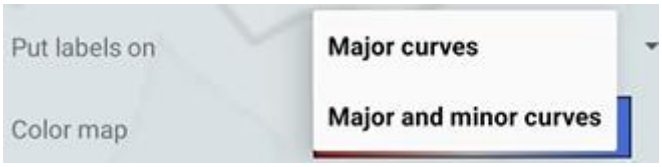


The name field will search existing KMZ file names as you type. Existing names matching the patterns of the letters you type will appear as a drop down below the name field. This is helpful if you want to overwrite an existing depth map with a new version, and in order to avoid it.

7.3.4.2 Contour levels

Contour levels for major curves (solid) are set per meter. The contour levels you decide here are the number of intermediate curves (dotted) in-between.

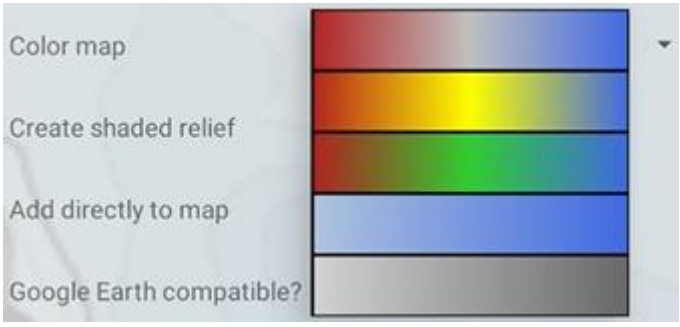
7.3.4.3 Labels



By default, the depth map will get labels on the major (1-meter) curves only, sparingly distributed on the map. If you want, you may select to have labels also put in the minor curves.

7.3.4.4 Color map

The dropdown lists using color schemes the available set of colors you may choose. Color choice is a matter of taste, and the app will remember this setting the next time you make a make a map.



7.3.4.5 Shaded reliefs

Shaded relief is a type of bathymetric map where sunshine is artificially cast at the map so that shadows form in the areas the sun cannot reach. The purpose is to create a visual 3D effect and an easier to read map:

- **Shaded relief** is selected and brings up two drop down choices you must use.
- **Sun height**:

  Select an angle of 10 to 60 degrees.
- **Sun position**:

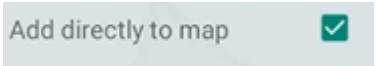
  You can place the sun in 8 different positions compared to the map. If you place the sun "north" of the map, the sun will shine its light southwards.

Shaded relief may take some experimentation to get right. You may also have to use various colors, have mapped the entire water and added a carefully designed a shoreline.

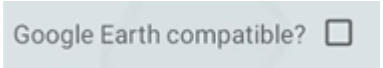
7.3.4.6 Additional options

The three additional options to consider:

- **Add directly to map**:

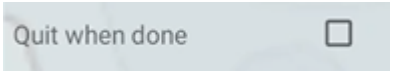
  This will make the map automatically appear on the driving map when you quit the bathymetry editor.
- **Google Earth compatible**: (setting is candidate for removal)

  Due to an error in Google Maps, shaded reliefs that works in Google Earth will not be visible without a workaround. Sadly, this workaround makes the map incompatible with Google Earth. Use this checkbox to make the map compatible with Google Earth also, but note that the quality will suffer when zooming in. The error was reported to the project behind the

Google Maps utilities library by the Carp Pilot some years ago. It was recently fixed, but the fix is not yet rolled out.

- **Quit when done**:



This will close the bathymetric editor when the map creation is completed.

7.3.5 Drawing a shoreline

If you have selected a depth log then, when starting, the shoreline editor will zoom in on the same water as the selected depth log(s). You can zoom in and out using multi touch. And the map search button is also available. Should you need to get back to the area with selected logs, touch the CSV button.

To draw a shoreline:

- Create shorlines by single tapping along the shore in the map.
  Note: You MUST tap in a consistent pattern either clockwise or anti clockwise.
- White markers will be added along the path, and as a valid polygon forms the inner area will be transparent red. The first marker has a zero “0”, the latest marker has a solid white plus “+”
  In addition, intermediate markers will be put out in in-between every solid white marker. These additional markers have white circles with transparent inner and a white “+” inside.
- If you see that an area has insufficient markers to follow the actual shoreline on the map, tap an additional + marker to add additional markers in-between.
- If you were unprecise in placing a marker, long tap the marker until it pops up. With finger kept on the screen, move the marker to align with the map shoreline and lift the finger when done to fix it in the new position.

Tools are available on the top and bottom for in the shoreline editor:

- Tools on top: **None**

- Tools below: **Undo**

  - Removes the latest added white markers (solid and additional plus marker).
- Tools below: **Clear**

  - Removes all markers from the map so you may start over with a clean map.
- Tools below: **Save**

  - When completed, tap “save”. Select if the shoreline is a standard shoreline or an island shoreline, then tap “OK”.

7.4 Bathymetry – live mapping (Premium users only)

Live mapping is when the bathymetric map is created on the driving map “live” when you drive the boat on the water. Please note that the process is demanding for the tablet in terms of memory usage and to some degree on the CPU usage, and low-end Android devices may struggle to complete larger waters.

7.4.1 Starting (and stopping) live bathymetry

You can start live bathymetry from the small display of depth top right in the map area by flipping the switch. This display will only be visible if depth data is received by the Carp Pilot Pro from the

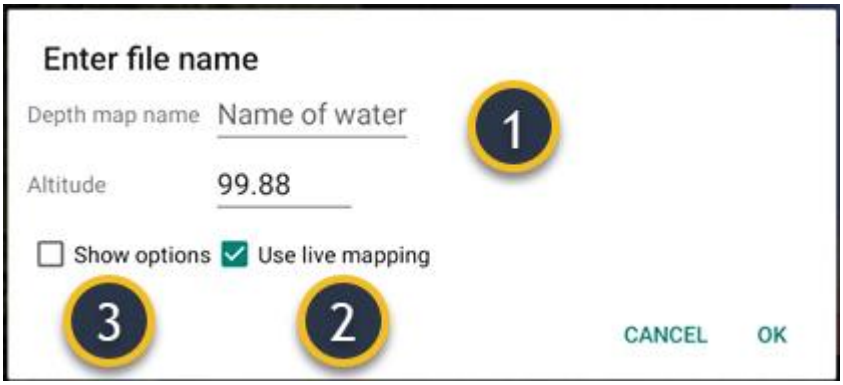
echo sounder. The app must also be connected to the autopilot inside the boat (or with the Wifi GPS source) as bathymetry requires a combination of position and depth (3-dimensional data).

Please note: Start live mapping when your boat is in the water. Stop live mapping before lifting the boat out again. Some echo sounders produce false values while standing on the shore or while being carried in the open air. You do not want these false values to appear on your depth map.

To stop live mapping when done, please flip the switch below the depth display back left again. When you stop live mapping, a dialog box appears on the screen offering you to go directly to the bathymetry editor to post process the values (like adding a shoreline, selecting additional depth logs and so on).

7.4.2 Filling in the form to begin mapping

As a bare minimum, you must give the map a name. Other choices have a predefined value, but you may also alter these before starting. Note: Altitude not used, will be removed in future version.



7.4.2.1 Giving the depth map a name

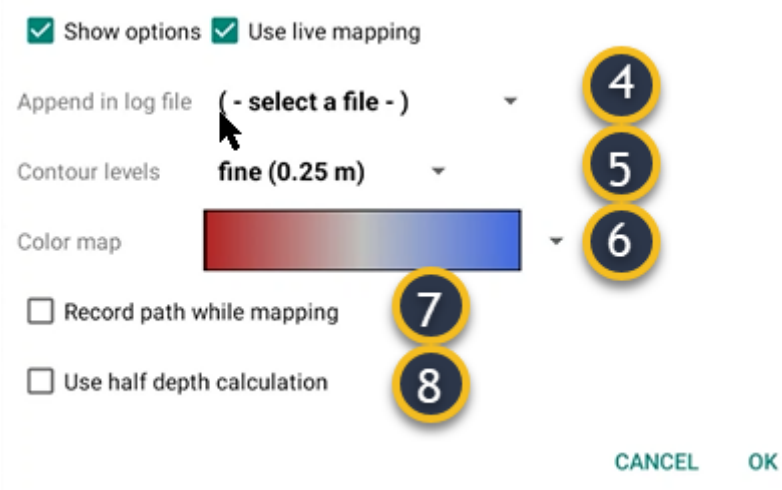
The name field will search existing KMZ file names as you type. Existing names matching the patterns of the letters you type will appear as a drop down below the name field. This is helpful if you want to overwrite an existing depth map with a new version, and in order to avoid it.
Whatever name you select is up to you. Many users prefer to include the water's actual name or nick name.

7.4.2.2 Use live mapping

When checked (default), the Carp Pilot Pro will draw the map when the boat drives. If not checked, then only logs will be created. These logs you can use to create the bathymetric map when your mapping session is completed. For lower-end Android devices (low on memory or weak CPU power) this may be a good choice on larger waters.

7.4.2.3 Show options

The start live mapping form is short, but you may check show options to get additional optional values to select. The screen expands to show the options you may enjoy (with exception of 7 and 8, these are the same options as when you use the bathymetric editor):



7.4.2.4 Append in log

Append in log allows you to select an existing depth log file from your previous mapping efforts and have Carp Pilot Pro to add additional values to it. If you choose this, you can afterwards not change the log name.

7.4.2.5 Contour levels

Contour levels for major curves (solid) are set per meter. The contour levels you decide here are the number of intermediate curves (dotted) in-between.

7.4.2.6 Color map

A set of colormaps are available for you to choose from.

7.4.2.7 Record path while mapping

If you want, the live mapping session's driven path can be recorded as a green trailing line while mapping is in progress. This is generally not recommended. You can clear the path at any time by selecting clear path from the options menu top right.

7.4.2.8 Use half depth calculation

This is an experimental feature requested by Raymarine users. The reason is that this echo sounder on rare occasions produces depth values that are twice the size of the real value. The echo sounder screen may look OK graphically, but Carp Pilot Pro relies on the actual depth values reported. And on these rare occasions, when the value is twice the actual value, this may hamper the entire mapping attempt. If selected, then 50 % will appear in big white letters below the depth display top right in the map area. Only use when strictly needed.

7.5 Setting ArduPilot parameters

For anyone that has purchased a ready set up and configured boat, please leave this screen alone. You risk messing up the autopilot. And the builder will be able to detect you have altered the settings if you send it back for service.

The Carp Pilot Pro parameter screen is very basic and "raw", you need to know exactly which parameter to alter. If you do not know this, better leave the parameter screen untouched.

- First, connect the Carp Pilot Pro to the boat autopilot. And wait for the parameter download to complete.
- Before you change anything, use the save icon \and make a backup of the parameters you have in the boat autopilot. Give the file a meaningful name. The file will be stored in the

"parameter" folder which you may open using the file manager and share to a backup outside your tablet.
- To find the correct parameter to alter, either type in the search field or scroll through.
- To change a parameter, click on the value to the right and type in the new value.
- Using "cloud upload" icon or the green "upload" action on the bottom of the screen.
- Done.

7.6 Offline maps, and how to download

How to use the offline maps solution is visually described on Carp Pilot YouTube channel in video about offline maps 2023 update. Here:

https://youtu.be/BXnAVIoPM2c

But there is also another temporary way to make the maps appear while offline.

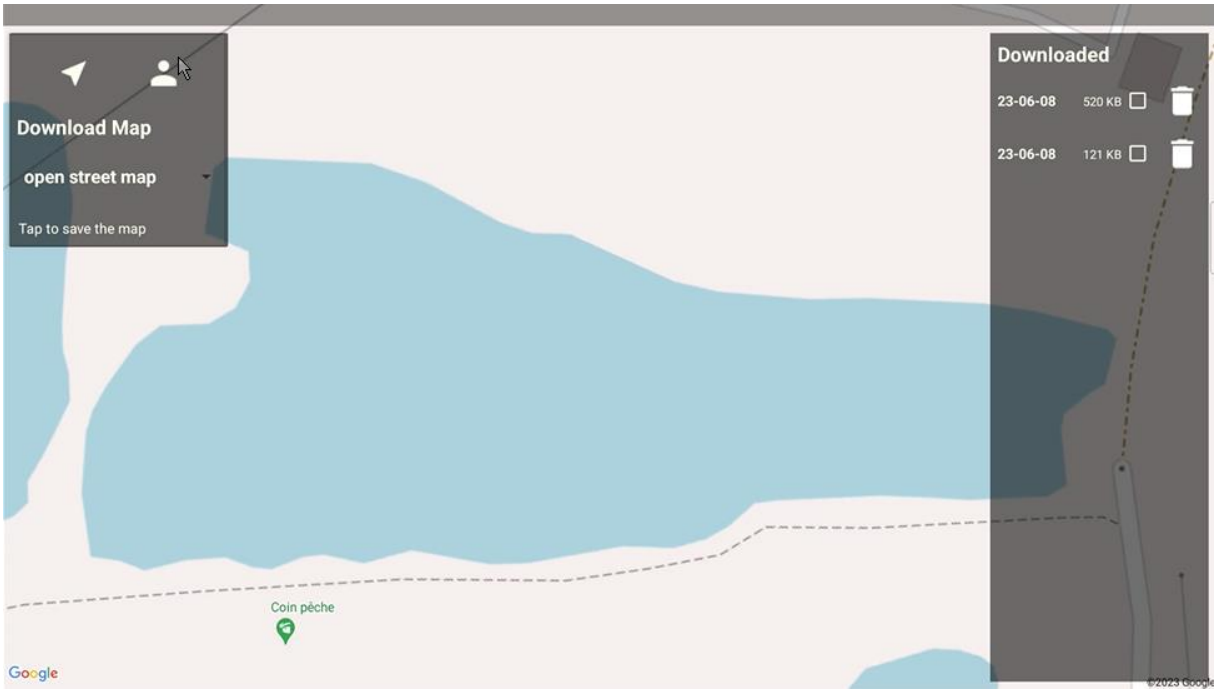
7.6.1 Getting Google Maps to (temporarily) appear while offline

When your Android device is still connected to the internet, move the map to the water you want to fish at. Then zoom maximal in on multiple areas (as a minimum the areas where you want to use in the upcoming session). When done, the Google Map tiles are temporarily stored in the "cache". And Google Maps will remember these tiles for a while. Sadly, Google has not officially stated for how long the tiles will remain in the cache. And at some point, with no warning, the tiles are gone, and your map is empty while offline.

This is a temporarily solution, with no guarantee for how long the map will be available. If you want to have maps available guaranteed, read on!

7.6.2 How to download maps to have them permanently available

To download maps for permanent storage and guaranteed availability, use the **options menu top right and select download maps**. If you, when selecting to download maps, had Google Maps already selected this will change into Open Street map.



To download maps, make sure your Android device is connected to the internet. You can use downloaded maps with no internet connection, but to download maps an internet connection is required.

7.6.3 Zoom in on required area

Make sure to select zoom the area you need. Even though the offline map solution has been optimized, a large area requires a significant volume of map tiles to be downloaded. And as each file is an image, large areas require a lot of storage space. The outer visible map you have on the screen will be the area you have as "selected". If you zoom out to a too wide area you will not be allowed to start the download.

7.6.4 Select map tile provider and download

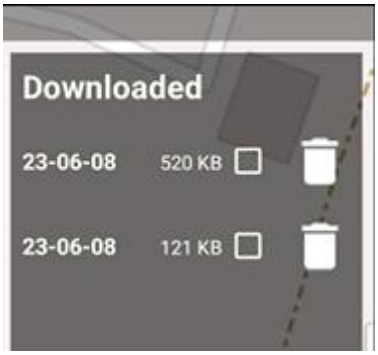
To the top left you have the dropdown selection for map tile provider. You may select between:

- Non satellite maps: Starkart (Norway only), Eniro (Scandinavian only) and Open Street map (world).
- Satellite maps: Mapbox (account required).

Please see chapter for "**MAPBOX CATEGORY**" for how to get the Mapbox account entered in the app settings!

When the desired provider has been chosen, hit "tap to save the map" and wait for the progress bar to finish!

7.6.5 How to manage maps you have already downloaded



When a map is downloaded it will appear as an available downloaded map on the right hand of the screen. You can see the size of the file for each map downloaded by the selected tile provider.

If you tap the checkbox, the map will automatically move the map and zoom in on the area covered by the download. On the map, a square semi-transparent box appears. This is the area covered.

To the right, for each downloaded map, there is a trach bin icon. If you click that the map will instantly be deleted.

7.6.6 Using downloaded maps

When you are out fishing and have no internet connection, select the tile provider you have maps downloaded for by expanding the map chooser icon. The first icon, a map icon with a cogged wheel, will bring up the possible map tile providers. Select the one you have downloaded maps for. And the offline maps appear on the screen. In the outskirts of the downloaded map, you will have nothing or possibly the Google Maps “base map” if this was “cached” by your Android device.

7.7 Supported echo sounders and how to set them up

This app has integration with multiple echo sounders built in. The focus is to utilize the reported depth in order to log files for depth map creation purposes. There is no graphical display of the fish finder integrated, for this you must use the dedicated app for that fish finder instead.

Make sure to NEVER integrate an echo sounder directly with the autopilot and activate Wifi echo sounder as this will create a duplicate source of depth and create problems.

The app supports these echo sounders:

7.7.1.1 NMEA0183 echo sounders integrated with an ArduPilot serial port as range finder

By following the advice on the ArduRover wiki you should be able to integrate multiple models directly with an Autopilot and utilize this to create bathymetric maps live or using the editor:

Sonars — Rover documentation (ardupilot.org)

No setup is required in the app to use an echo sounder integrated with the autopilot.

7.7.1.2 Deeper echo sounders (Premium users only)

All echo sounders from Deeper that offers a NMEA0183 interface are supported. At time of writing these models are supported:

- Deeper Chirp +
- Deeper Chirp + 2.0
- Deeper Pro + 2.0

To use Deeper:

- Activate Wifi echo sounder and select “Deeper” as model.
- It is suggested you also enable the depth icon in the telemetry line.
- Start the Fish Deeper app and connect your tablet to the Deeper Wifi. Then set the Deeper into mode: Mapping from shore (this is the ONLY mode you can select).
- Note that the Deeper ONLY offers an NMEA interface if the Deeper has a proper Wifi fix.
- Use the app standalone or in split screen mode with the Fish Deeper app (the Fish Deeper app does not have to be started while using the Deeper for mapping, but you will probably find it useful to also use this app to see the graphical echo sounder screen).

These Deeper models can also be used as GPS source for GPS only users. Select Wifi GPS with sub option “use configured echo sounder” to utilize this.

7.7.1.3 Simrad echo sounders (Premium users only)

The app is tested with Simrad GO XSE 5 and 7 but will likely work with any Simrad echo sounder that is able to provide NMEA0183 over Wifi.

To use Simrad:

- Activate Wifi echo sounder and select “Simrad” as model.
- It is suggested you also enable the depth icon in the telemetry line.

Simrad can also be used as GPS source for GPS only users. Select Wifi GPS with sub option “use configured echo sounder” to utilize this.

7.7.1.4 Lowrance echo sounders (Premium users only)

The app is tested with Lowrance Elite Ti2 but will likely work with any Lowrance echo sounder that is able to provide NMEA0183 over Wifi.

To use Lowrance:

- Activate Wifi echo sounder and select “Lowrance” as model.
- It is suggested you also enable the depth icon in the telemetry line.

Lowrance can also be used as GPS source for GPS only users. Select Wifi GPS with sub option “use configured echo sounder” to utilize this.

7.7.1.5 Vexilar echo sounders (Premium users only)

The app is tested with SP200 and will likely only work with this model.

To use Vexilar SP200:

- Activate Wifi echo sounder and select “Vexilar” as model.
- It is suggested you also enable the depth icon in the telemetry line.

Vexilar SP200 cannot be used as GPS source for GPS only users.

The app from Vexilar cannot be used in split screen with this app: Only one app on a single Android device can be the master. You can however use Vexilar’s own app on a separate Android device in parallel.

7.7.1.6 Raymarine echo sounders (Premium users only)

The app is tested with Raymarine Dragonfly WiFish, 4 Pro and 5 Pro. Likely also work on 7 Pro, but no other models from Raymarine.

To use Raymarine:

- Activate Wifi echo sounder and select “Raymarine” as model.
- It is suggested you also enable the depth icon in the telemetry line.

Raymarine cannot be used as GPS source for GPS only users.

7.8 Using video in the app

Notice* about using USB video on this version of the app: When Android 12 was introduced, new privacy and security rules were introduced. This change made the video driver implemented in this app incompatible. The method to use USB video now only applies to Android devices running Android 11 or lower. This manual will be updated when the problem is resolved.

7.8.1 Video types and how to activate

Icons to trigger video is not available per default, this must be activated under settings for Video in app settings. Please read the guide on "VIDEO" for more information.

7.8.2 USB Video

To use USB video on Android 8 or above (also see notice*):

- Close this app.
- Plug the Video receiver into your Android device using USB cable.
- Start the app from the app chooser when the Android system asks.
- If this is the first time ever you try USB video with this app then this time only:
    - Click on the USB Video icon.
    - Accept the permissions asked for.
    - Close the app, remove and re-insert the USB cable.
    - Start the app from the app chooser when the Android system asks.
- Please never remove the USB cable from the device before the app is closed again.

To watch video after it has been started as described above:

- Click the USB video icon, and a video window opens and starts to show the video picture.
- If you activated the recording button you may record video by starting and stopping recording by pressing the recording button.
- Long tap on the black border around the video window to move it around.

7.8.3 MJPEG video

To use MJPEG source for video (example: Raspberry Pi Camera with a MJPEG server):

- Click the HTTP video icon, and a video window opens and starts to show the video picture.
- If you activated the take picture button you may take pictures by pressing the photo button
- Long tap on the black border around the video window to move it around.

7.9 Using Goto+ (Premium users)

Goto+ is a small mini mission you typically use for dropping hook and lead and for baiting up.

Goto+ is not supported for APM users as the APM is unable to report that it has arrived at the target.

When in driving mode, Goto+ is triggered by a long tap on the desired square box below (the one corresponding to the waypoint number). A runner user interface pops up low right on the screen. The screen will contain all the actions you have selected in servo button setup for use in Goto+. In addition, the home icon will be put on the bottom to bring the boat back home after baiting up.

You may long tap and then drag icons for functions you do not want to use right now to the left to remove them for this run.

You may also long tap and drag icons up or down to re-order this execution. If you always re-order execution, consider to permanently re-order the icons in the servo buttons setup screen instead.

When Goto+ is triggered, boat autopilot is set in pause mode to allow you some time to think through the actions before you start. Below in the runner you have two buttons:

- Cancel: To close the runner and abort Goto+.
- Run: To start Goto+.

After selecting run you will have two buttons available down in the runner:

- Cancel: To close the runner and abort Goto+.
- Pause: To pause Goto+.

After clicking “run” the boat will drive to the target waypoint. When reaching the distance away from the waypoint as set in settings for boat control (the WAYPOINT_RADIUS) the autopilot will report it has reached the target. Carp Pilot Pro will then command the autopilot to execute the servo button actions still present in the runner, starting on top and moving down. Items executed will be removed from the list along with the progress.

If you have momentary servo buttons in the list, Carp Pilot Pro will first turn button on and then turn it off again after the time set for momentary hold time has passed. The momentary hold time will be listed to the right of the icon. If the time is 2 seconds or more, the hold time will be counted down to zero.

If you kept the home icon at the bottom of the list, the seconds defined boat control settings for “Wait before RTL after Goto+” will be counted down. Then the boat will return to and stop at the Home Position icon.

8 The complete guide to app settings

In general, app settings are always started by tapping the menu icon top left and then choosing App Settings from the menu. The app settings then start. To close the app settings, tap the back button from the settings main menu and you will return to the driving map.

For some app settings there is a short cut into specific settings (Autopilot users only):

- The remote-control icon, used to expand the configured servo buttons: Long-tap this icon.
  - App settings for servo opens, you may now configure the settings.
  - Press back and return to the driving map.
- While the app is disconnected, long press the connection chooser icon or the auto connect checkbox icon.
  - App settings for connection opens, you may now configure the settings.
  - Press back and return to the driving map.

For users with phone size Android devices, the app settings are organized in single screen size. The first window is the category overview. Tap desired category and you will be brought to the settings for this category.

For users with big screen devices (tablets), the app settings are organized with a dual pane view with categories to the left and the settings for the selected category to the right. When app settings start, the connection category is always pre-selected.

Settings are explained per category below, in the same order that the category chooser lists them (from top to bottom).

8.1 Connection

The different ways to connect the app is described in the chapter "**How do I connect the Carp Pilot Pro to my bait boat?**". Here's information on how you use the settings screen:

8.1.1 Autopilot telemetry connection

This selection list you choose which connection method to use with your boat. If you have an autopilot you may select between UDP, TCP, USB and Bluetooth. If you have no autopilot, you must equip the boat with a Wifi GPS solution and then select GPS. Never select GPS if you have an autopilot on board!
The choice you make here is identical to the default value in the connection chooser on the screen when the boat is not connected.
The choice you make also determine which settings are available further down in this screen.

- Auto connect
  Selecting this will make the boat try to connect to the selected connection type. If activated, you will also see that the checkbox "auto" is selected besides the connection chooser in the app screen when the boat is not connected.
  If this setting is not activated then you must select to connect from the options menu top right.
- Display warning if connection is not successful
  It is recommended to have this setting activated as it will soon reveal of the settings are incorrect during setup. If setup is correct and it still appears then you have usually forgotten something (USB radio not plugged in, the Bluetooth telemetry source not running, the Wifi not connected to enable TCP or UDP telemetry)

For sub settings, please read the “How do I connect the Carp Pilot Pro to my bait boat?” as all options are clearly described there!

8.2 Maps

These settings are part user interface, part strictly map related. They are all about how the map is treated using this app. The most general settings are:

- **Enable map rotation** (candidate to be removed)
  Makes it possible to use two fingers to rotate the driving map. As this is something anyone should want, this setting is a candidate for removal.
- **Display boat driving direction**
  This setting is most useful when driving in manual mode and thus only available in this mode. If activated, a red line starting from the boat is drawn in the direction you drive (until the edge of the visible map). This is helpful if you drive in manual mode, you can aim that line to pass the waypoint you want to reach.

8.2.1 Use points category

- **Show user position on screen**
  This setting is also available in the GPS and Echo Sounder settings screen. More info available there
- **Auto download waypoints from boat**
  Note: Users of APM MUST enable this setting, otherwise the red home position icon will not appear until you manually select to download waypoints from the boat.
  What happens is that the waypoints currently available in the app gets deleted and whatever is present in the boat gets downloaded.
  Keeping waypoints in app and boat synchronized is only needed if you want to drive an automatic mission. And the app will ask you to upload or download waypoints when you start automatic mode anyway.
  This setting is generally not recommended for anyone that has a modern autopilot and thus disabled by default.

8.2.2 Use path category

You are generally not recommended to activate any of these settings, but under certain circumstances they may be useful:

- **Record path Come home / Manual / Goto / Route**
  The app will record all positions the boat has travelled and display a green never-ending trailing line behind the boat. You can clear this path from the options menu top right.
  Reason this is not recommended is that the lines clutter the driving map. And in addition, when you have been driving the boat for a while, the number of positions to remember becomes significant and can hamper the performance of (in particular) lower end Android devices.
- **Display driving path between waypoints**
  As anglers usually bait up at positions, this setting is generally not recommended to use as it clutters the driving map with white lines. If you need to plan a mapping mission then in the planning mode, these white lines are anyway present there.

8.2.3 Mapbox category

Out of the available map tiles for online and offline maps, Mapbox is the only option that requires you to register a "user" with the map provider. The config needed to make Mapbox maps work is entered here:

- **Max zoom for offline maps** (candidate to be removed)
  This adds the ability to limit the zoom of offline maps and reduce the number of map tiles to download. As the solution for offline maps has been significantly improved, this setting is redundant. You are recommended to keep this choice untouched; it will be removed in the future.
- **Mapbox access token**
  Here you put in the public access token available in your account section from Mapbox. This is the only setting you need to enter in order to get Satellite View maps from Mapbox.

8.2.3.1 Use personal style

For Mapbox, this app has for quite some time had the ability to support private (secure) Mapbox token and to retrieve maps in different versions from Mapbox. But as the offline maps' solution has been improved dramatically, and since the bathymetric abilities were introduced, this way to handle Mapbox has become redundant. The entire section below is candidate to be removed:

- **Use personal Mapbox style**
  Selecting this will enable a set of settings needed for this to work, as seen in the following. Note: To enable this you must use a secret token, and the token must be defined using the style component. And you must document the secret token outside of your Mapbox account as it becomes unreadable the minute you activate it!
- **Use multiple Mapbox styles with selector**
  Enables a similar ability to select between different styles as for Google Maps
- **Mapbox style id**
  You may copy the entire style from Mapbox styles and paste it here. The Mapbox user ID field will be filled in automatically.
- **Mapbox user ID**
  This is the username registered as your Mapbox user name.

8.3 GPS and echo sounder

These settings determine the use of some advanced app features for positioning and use of echo sounder:

- **Show user position on screen**
  Generally not a recommended setting. The setting will automatically turn on of you long press the blue + icon (add waypoint) so it turns red, allowing you to add position where you (or rather your tablet) are. It also turns off again if you long press once more to return the + icon to the blue state (adds waypoint where the boat is).
- **Echo sounder**
  This setting is the same setting as in the telemetry options but repeated here: It shows or hides the depth measure icon from the telemetry line. The reason for keeping it also here is that the app supports NMEA0183 echo sounders connected to an autopilot serial port. So, it makes sense to also be available here.

The other setting options on this screen is only for Premium users:

- **Mock GPS**
  This is ONLY used when you want to perform depth mapping missions when you use another app (like Deeper, Navionics etc.) to create the depth map. ***If you use the bathymetric abilities of this app, then please do not enable mock GPS.***
  Mock GPS also requires you to activate Android developer settings on your tablet and then, in developer settings, also choose this app to offer the mock location.
  The great thing with mock GPS is that you use the often premium GPS inside your bait boat as the source of position instead of the GPS inside your echo sounder. As an example, the GPS inside the Deeper is far less accurate than the GPS typically used inside a Deeper. For premium users that do not have a supported Deeper model (like the old Pro+), this is a great way to improve the quality of your mapping inside the Deeper app.
- **Navionics GPS**
  This option provides a GPS source that the Navionics app can utilize without the additional setup in developer settings needed for Mock GPS. ***If you use the bathymetric abilities of this app, then please do not enable mock GPS.***
- **Wifi echo sounder**
  This option activates the ability to interact with multiple brands of echo sounders. Please note that only the depth value (and for some echo sounders also the temperature) is integrated. You will probably prefer to also bring up the echo sounder screen for from the vendor as well. But for creating depth maps this is not needed.
  Select the echo sounder model from the selection list that becomes available when activating Wifi echo sounder. No other settings are needed.
  Please do NOT activate this setting if you use an echo sounder integrated directly with your autopilot!
  Read more about the supported echo sounders in the chapter "SUPPORTED ECHO SOUNDERS AND HOW TO SET THEM UP".

8.4 User interface

The following major settings you should review:

- **Left- or right-handed screen** (default is left-handed):
  The entire driving screen gets mirrored if you select right-handed. Buttons move over to the right side of the screen. When reading this guide, all references to which side of the screen you find the buttons assume you use default left sided setup
  You may need to restart the app for this setting to take final effect.
- **Keep screen on** (default: Activated)
  This setting keeps the screen on while using the driving and planning screen. If not activated the screen will turn off according to the Android device's default settings. You generally do not want this to happen while using the app.
- **Lock screen orientation** (default: De-activated)
  If you fix the Android device to a tripod during use then this is a setting you do not need to consider. But if you have the device in your hand or fixed to the remote, this for sure is a setting to consider. If you tilt an Android device, Android rips the running activities down and re-builds them afterwards. As this is a demanding app for your Android system you may reduce the overall impact by locking the screen orientation to the orientation it has when connecting.
  Note: Currently only locks the app itself, it does not lock both apps if you use split screen.

- **Enable zoom to fit** (default: De-activated) (Autopilot only)
  In planning mode you can have the app zoom in on a waypoint when you select it in planning mode.

8.4.1 Boat control buttons

You can modify which boat controls you want to have visible inside the app:

8.4.1.1 Show buttons to arm/disarm

If you have set ARMING_REQUIRE to 0 in the autopilot, then the autopilot automatically arms the motors. Then these buttons will also not work. In this case disable these buttons, if not enable them. APM users may disable these buttons as APM does not support arming from an app.

8.4.1.2 Driving modes

You select which modes are to be visible when you tap the driving mode selection button. Except for mode “loiter” you can still access all the supported driving modes even if you hide them from the mode selection button. The reason is explained for each button separately.

There are two modes you cannot hide: Home and manual. Besides that, the following modes are your choice:

- **Auto/Route** button:
  When pressed, the boat will drive through all the waypoints in the mission, normally starting with number 1. If you never drive missions (like a depth mapping mission) but normally only drop bait at waypoints, you do not need this.
  Even if you do occasionally drive missions, you can always start a mission by long pressing a square waypoint box below and select “start mission here”.
- **Loiter** button
  Loiter keeps the boat in the current position. If not important for you, disable it.
  Some user struggle to tune their autopilot to loiter with grace. If your boat misbehaves then you may want to disable this mode.
  APM users may disable this button as APM does not support mode loiter.
- **Hold/pause** button
  Hold/pause simply shuts off the motors. Can be used as an alternative to loiter. But many users would rather have the boat enter manual mode as this offers the ability to adjust the boat by using the remote-control radio or the on-screen joystick.
- **Goto** button
  The go to button activates the ability to send the boat to any marker you click on. But at the same time, so does a short press on any marker or any of the square boxes below. So, this mode is not strictly needed inside the selectable modes.

8.4.2 Zooming buttons

It is generally recommended to have all zooming buttons available, but when the mantra is to make the user interface customizable then these are your options:

- **Zoom to mission** button
  Zooms in on the current area that covers all waypoint in the mission right now. Disable if you do not want this (you probably want it).
- **Zoom to boat** button
  Zooms in on the current area where boat is right now, provided the autopilot is connected. Disable if you do not want this (you probably want it).

- **Zoom to me** button
  Zooms in on the current area where you are right now, provided the Android device is equipped with a GPS and location services are activated. Disable it if you do not want this or your tablet is not configured to use location services.

8.4.3 Map buttons

As most of the mapping functions are mandatory, only one button is optional:

- **Add/Remove KMZ** button
  If you have no depth maps for your waters then you do not need this button, disable it. Otherwise make sure this button is enabled.

8.4.4 Language settings

This area contains two settings:

- **English as language** (note: this setting will likely be removed in the future)
  Keeps English as app language, even though the app is used on an Android device with another language set. Candidate to be removed.
- **Unit system** (note: Automatic is candidate to be removed)
  Here you define if the unit system metric or imperial is to be used by the app. The "auto" choice is candidate to be removed so that you will have to decide. In that case the default setting will be metric.

8.5 Telemetry

Each telemetry ability is thoroughly explained in the chapter "THE TELEMETRY INFORMATION TOP LINE". In the settings for telemetry, you simply activate or deactivate each measurement.

Review the usefulness of each measure and deactivate the measures you cannot use. The available telemetry measures are automatically limited for GPS only users (Autopilot only measures are automatically removed from the telemetry line and removed from this setting screen).

For speedometer, there is one additional setting here to choose between m/s or km/h. Besides that, this screen is only about turning features on or off.

8.6 Boat controls (Autopilot only)

Boat controls are settings thy directly impact how the app behaves with the autopilot or interprets the autopilot.

This section starts with two important settings:

Route/Goto complete set mode (also controls what happens after boat reaches "home" position driving RTL):

- Whatever you selected in the autopilot "MIS_DONE_BEHAVE" (at end of go to and auto).
- Hold/Loiter/Acro/Manual: When destination is reached, the app will force the boat over in this driving mode.
- Many find it useful to have the boat enter manual mode, as this will bring up the on-screen joystick to enable you to make minor adjustments directly or drive the boat from the home point the few meters into the shore.

Wait before RTL after Goto+ (Premium users)

- The default waiting time is 5 seconds. You may select from a long range of possible options.
- The purpose of this setting is to meet a request to have time to sink the line when putting out tackle before the boat turns around and drives over that line.

8.6.1 Boat speed settings

For convenience, some speed related autopilot parameters that are safe to set for everyone is made available directly in the settings:

- **Automatic speed** (WP_SPEED / CRUISE_SPEED / RTL_SPEED):
  WP/CRUISE is the speed in meters/second the boat will try to achieve in auto/go to modes, RTL is the speed for driving back to the home point. If RTL speed is not set, WP speed will be used.
- **Target reached distance** (WP_RADIUS):
  The distance in meters for when the autopilot shall assume that the target is reached. Do not set this too low (many have experienced problems going below 0.5 meters, their autopilot can never seem to reach the destination). When hitting "target reached" distance, the boat (as an example) will stop driving using go to and Goto+.
- **Reduce speed before target** (app specific setting)
  If this is not activated, the boat will drive using the automatic speed setting until reaching the target reached distance and then stop. If automatic speed is high the boat may slide several meters past the target even if the motors are stopped. By activating this setting, some additional settings appear:
- **Distance when close to target** (app specific setting)
  You may have the app slow down the speed before reaching the target reached distance. Enter the distance away from the target to slow down the boat here.
  Note: Some users struggle to get this setting to work. The default is 6 meters. If your boat does not react, increase the distance!
- **Reduced speed** (app specific setting)
  Enter the new speed for the boat when reaching distance close to target here. Do not go too low as the boat may struggle to move, especially when loaded and when dragging lines or while driving in wind or strong currents. Remember that your boat still needs to reach the target, you just want to slow down the speed to avoid it gliding too far beyond the waypoint.

8.6.2 Battery voltage

To make the battery reading correct, make sure to configure your power module using Mission Planner or QGC correctly. Then, when you have confirmed that the readings are correct, set the following:

- **Battery type**:
  Select the appropriate type: LiPo/LiIon, Pb (lead acid) or LiFePo4
- **Battery size**:
  After selecting the type, select the size you have in your boat (voltage or cell count)

Even if the voltage is correctly read, the battery icon to visualize graphically the remaining capacity depends on the type and size of the battery. As does the third setting:

- **Visual alarm on low battery**:
  A red alert is displayed on the screen should your battery level become dangerously low. Seeing this you should return your boat to shore immediately.
  If your power module is not correctly configured, make sure to disable this setting.

8.7 Notifications (Autopilot only)

Notifications are audible alerts for events, and the audible messages will be in the app language. If you do not want the app to speak to you when used, then disable speech output. Default, speech is enabled. Some alerts are always present when enabled: Events that can help you understand what is going on without a need to constantly watch the screen. Examples are:

- Changed driving mode.
- Reaching the target.
- Performing servo actions.
- Passing a waypoint during a mission.

Other alerts you may enable or disable by choice:

8.7.1 Mission and map events

8.7.1.1 Report passed point

Default setting while driving a mission is to speak up which point it just passed. If you would rather have the app, tell you which waypoint number it will drive to next, disable this setting.

8.7.1.2 Report GPS fix

It might be useful to have the app tell you whenever the GPS fix changes. On some locations the GPS conditions may however be a little in-between, making the GPS fix type change frequently. Upon user request, this setting was added to avoid a lot of chatter from their tablets in certain conditions. This setting is default off, enable it if desired.

8.7.1.3 Vehicle home update

Vehicle home update is useful and is activated by default. Whenever your autopilot gets a satisfying GPS position, the home point is set and from there on you may also use the automatic driving modes available in the app. If you drag/drop the Home Point, and this change in position is also accepted by the autopilot, this confirmation will also be set. You may disable this setting if desired.

8.7.2 Warnings

Warnings are useful. The three warnings you may select to activate or deactivate are:

- Low signal strength: If you use USB radio or Bluetooth for telemetry, such a warning is a clear indication that your boat is reaching the distance limit for then the app and the autopilot can communicate.
- Connection status: This event alerts should your telemetry status be unstable. If this warning comes frequently then you should review your telemetry solution.
- Warnings from the autopilot may also be very useful to activate.

8.7.3 Periodic reports

Periodic status reports are generally the least important alerts to get. You can disable them all by setting periodic report to off. If you select a period, then all active reports will be read out loud according to the selected interval. Reports possible are:

- Battery voltage
- Speed
- Signal strength

Default setting is that periodic reporting is off. Most users find these periodic reports a nuisance, but it is present should you want such periodic reports.

8.8 Servo (Autopilot only)

For users of APM, please disregard setting up servo buttons: These are features you cannot use!

Servo is the setting category for setting up “smart servo buttons”. When selecting this category, you will be shown a list overview, where each row includes:

- A list of possible icons to enable by clicking the checkbox to the left of the icon.
- A pencil icon to configure the button.
- A summary in text for the settings you have made for each button.

In addition to selecting icons to be made visible you may also long tap any line and drag/drop the line in the desired position. Selected icons will be displayed when you expand the servo selector “remote” icon in the app, in the order listed in this screen.

But until you configure the button to do something the button will not work. To set up a button, click the pencil icon.

8.8.1 Setting up a servo button

The configuration of any button is done in the Smart Servo Button which opens when you click the pencil in the list. The icon and some basic instructions are shown above. Then configure the button by altering the following fields.

Do remember to click “OK”, otherwise your settings get lost!

8.8.1.1 Channel drop down selection

You need to select a channel for this button. The channel must be identical to the servo output channel you have physically connected the “servo” to on the autopilot servo outlet.

You may NOT select channels used for steering and throttle!

8.8.1.2 Use the button

Two checkboxes to consider:

- **Use**: This checkbox corresponds with the checkbox in the list in the overview list
  If selected, the icon will appear amongst the buttons when the servo selector is expanded.
- **Use in Goto+** (only relevant if you are a premium customer)
  If selected, the icon will appear as a function in the Goto+ list. It is recommended only to select this for servo functions you use when baiting up a spot.

8.8.1.3 Servo on and off values

All servo buttons have two states: They are either on or off. The on-state will be clearly visible as a green button when used.

All buttons come with values pre-defined that will work for many servos (high and low, high per default being “on”). To change the value, click “edit” on the right side. Then click “save”. If your servo is reversed, you can quickly reverse the values by tapping the double arrow button between high and low values.

8.8.1.4 Dimmer

If your servo is a dimmer (like a brushed ESC or similar) you can activate the switch for dimmer. By doing this, servo MUST also be latching. For dimmers, the button on the driving screen will bring up a sliding dimmer control when clicked. Dragging the dimmer to the right will increase the PWM value seamlessly within the boundaries you set for PWM low and high.

8.8.1.5 Latching or momentary

A latching servo is a permanent switch: Touch the button and the servo is “on” and stays on until you touch it again to set the servo in “off” position. Latching servo is the default setting for all buttons.

A momentary servo is a temporary switch: Touch the button and the servo is on, but after the selected “hold time” it will turn itself off again. If used in Goto+, the hold time will be visible. And if the hold time is 2+ seconds a visual countdown is also provided.

8.8.1.6 Hold period if you selected momentary

This setting only appears if you selected the servo to be momentary. Do not select too short a time for this function as the servo may not be able to fully enter its “on” position before it is turned off again. Test to make sure the hold time is satisfactory for your use.

8.8.1.7 Choice: Set when connected

This is a special function to be handled with care. When the app connects to the boat, the default setting is that the app will do nothing with this servo. If you do select anything else, then the app will enforce this setting as soon as it is connected to the autopilot.

This setting is recommended to be used if you have ESCs used as servo control for other purposes than your motors. And especially if you want to use the app to control the boat without turning on your remote RC radio:

- Remote RC radios send out PWM signals for all channels when it gets connected to the receiver. Making sure your ESC gets “initialized” and activated. ESC with Forward/Reverse abilities usually requires a PWM value of 1500 to start, while an ESC for a plane usually requires a value around 1000 to start.
- If you do not turn that radio on, the autopilot will send out 0 as PWM value. Making the ESC complain. And the servo button will not work.

Choices possible:

- **Do nothing**: This servo function is disregarded when the autopilot is connected.
- **Servo on**: Servo is ALWAYS set to “on” when autopilot gets connected.
- **Servo off**: Servo is ALWAYS set to “off” when autopilot gets connected.
- **Custom value** Enter the desired PWM value.

8.9 Joystick (Autopilot only)

For users of APM, please disable the “show joystick”: The joystick is a feature you cannot use!

The joystick is preconfigured with an assumption that you connected the autopilot like this:

- Autopilot servo outlet 1:
  Left motor (for skid steering boat), or rudder (for motor and rudder boat)
- Autopilot servo outlet 3:
  Right motor (for skid steering boat), or motor(s) (for motor and rudder boat)
- That you did not change the RCMAP parameter in your autopilot

If you built the boat like above then you may still need to adjust, but the joystick will be more or less ready.

8.9.1 General settings

On top of the settings you have two choices. The recommended settings are:

- **Show joystick**: Enable to have the on-screen joystick visible every time you enter manual mode. If disabled, the joystick will never appear on the screen.
- **Retract joystick to center when released**: Enable to make the joystick pop back into center position when you lift the finger off the screen. If not selected the on-screen joystick will remain in the position when you lift finger from the screen. It may be difficult to put the joystick back into the center position.

8.9.2 Joystick tuning

8.9.2.1 Steering and Throttle

Steering and throttle have the exact same tuning options. You should review these settings if you find the joystick drives the boat too fast, steers to fast or driving/steering goes the opposite way as expected.

Max and Min values for PWM:

- Joystick assumes you used Motor ESCs for rover with forward and reverse (the standard for any boat). If you did not then please consider disabling the joystick, you cannot use it properly.
- Please note that the PWM values are “raw” values and will not respect any limitations that you have configured in the autopilot. If you limited PWM for a choice of motors that are too strong for your boat, to say max 1800 and min 1200, the joystick will put out 2100 anyway if this is set in the joystick settings.
- It is generally recommended that you have synchronized max and min values (if max is 1750 then min should be 1250) around the center 1500.
- Simply drag the sliders to the desired value.

Reverse:

Fix issue with throttle first so boat moves forward when stick is pushed up, exit the settings and try, then re-enter settings and fix steering issues second:

- If the boat drives backwards when you push stick up: Enable “Rev?” for the throttle.
- If boat turns left when you move stick up and to the right: Enable “Rev?” for the steering.

8.9.2.2 Throttle and steering channels

Channel 1 for Steering and Channel 3 for throttle is pre-selected and should only be changed if you altered the RCMAP in the autopilot.

If you did change the RCMAP, drag the sliders to the respective channels to make the joystick work.

8.10Video

The app supports two types of video sources of type USB or HTTP (HTTP being the viewer, source video tested is MJPEG streaming). In addition, you may use an on-screen joystick for lifting or lowering a camera.

The video selector button will be made visible on the main driving screen if either of these functions are activated:

- Show HTTP Video
- Show USB Video
- Use Camera Joystick

8.10.1 Use camera joystick (Autopilot only)

If you have an underwater camera, and the camera's motor is controlled by a channel connected to the autopilot by a servo outlet, you may select to activate a joystick. The joystick will be present as one of the buttons in the expanded camera selector. The app must be connected to the autopilot in the boat before the joystick becomes visible on the screen.

8.10.1.1 Camera joystick settings

The way to configure the camera joystick is almost identical to the setup for the regular on-screen driving joystick. Using sliders, select:

- Max PWM up.
- Max PWM down.
- The channel to be used.

In addition, should the camera move up when you try to lower it, select to reverse the joystick direction. Then you are done.

8.10.2 HTTP video

Enable the HTTP video viewer by selecting:

- Show "HTTP video" button.

Two buttons inside the video viewer can be activated if you want to (only recommended for large screens as these buttons otherwise take up too much space in the viewing screen):

- Show "take photo" button.
- Show "refresh" button.

The main setting is however the address to listen to. Make sure this matches the source MJPEG streaming source you have defined in your boat:

8.10.3 UVC Video

Enable the USB video viewer by selecting:

- Show "UVC video" button.

One button inside the video viewer can be activated if you want to (only recommended for large screens as these buttons otherwise take up too much space in the viewing screen):

- Show "record video" button.

8.11About

The about settings have some information about the app and the boat but do not contain any active settings. Instead, here you find resources for more information about the app:

8.11.1.1 Version

This is the installed app version on your Android device. Please regularly upgrade your app. In general, support is only provided if you keep the app up to date and use the latest version as problems are regularly fixed and the information in this document is aligned with the abilities of the latest available version.

In addition, if you get into problems to show the driving map from Google then this is because your app has become too old and the commercial key for using Google Maps has expired. When experiencing such problems, upgrade your app first and retry before attempting to ask for assistance.

8.11.1.2 Web page

The Carp Pilot Pro web page is a mostly static web page with general information intended for new users. Opens in a separate web browser window, requires internet connection.

8.11.1.3 Privacy

The privacy statement web page is a mostly static web page with general. Please note that this app does not collect any information about its use and does not include any community features. If you need to share information from this app with other users, please use the file manager and use the "share to" ability.

Should the app crash or experience issues with severe lag then, if connected to the internet shortly after, the app will report key information about the problem to Google Play automatically (this is standard for any app delivered by Google Play). The crash information is restricted to show exactly where in the code the app crashed and the generic reason for the crash. No other app data is part of this crash log besides the app version, the installed Android version and type of Android device. This information is highly valuable for solving problems with the app, and the developer can see this in his Google Play console.

Opens in a separate web browser window, requires internet connection.

8.11.1.4 YouTube channel

This opens the YouTube channel in a web browser, requires internet connection.

It is highly recommended that you subscribe to this channel for visual guides on how to use this app.

8.11.1.5 Facebook user group

This opens the Facebook user group in a web browser, requires internet connection. The user group is a closed group, please ask to join if you are not already a member. In this group you meet the growing community of app users that can help and provide guidance.

8.11.1.6 About the connected boat (Autopilot only)

This section only contains information about the boat if the Carp Pilot Pro is connected to the autopilot.

Here you can see which vehicle type and which firmware is installed on your autopilot.

Please note that this app is ONLY compatible with firmware of type rover. If using any other firmware, then you will not be granted support for any app problem you may encounter.