C-PILOT EVO

USER MANUAL

Software version 0302030

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Compass s.r.l.
Via San Pio X°, 224
31033, Castelfranco Veneto (TV), Italy
www.compass-italy.com - info@compass-italy.com

Important changes with respect to the previous version of the manual are marked with a double red line on the left of the page

Limitation of liability

The manufacturer reserves the right to modify the device or the devices specifications in this manual without prior notice. It is absolutely forbidden to use the device for different uses other than those for which it has been devised for, as inferred to in this manual. When using the features in this device, obey all laws and respect privacy and legitimate rights of others.

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Safety instructions

Please read the following safety instructions carefully. Not following them may be dangerous and/or illegal. Please read carefully the user manual for further details.

- SWITCHING ON IN SAFE ENVIRONMENTS: do not switch the device on when prohibited or whenever it could cause any interference or danger. All wireless devices may be susceptible to interference, which could affect the performance of other appliances (TV, radio, ...)
- ROAD SAFETY: do not operate the device while driving.
- SWITCH OFF IN HOSPITALS: follow any restrictions. Switch the device off in hospitals or near medical equipment (hearing aid equipment, pacemaker …) the device could cause interference. Also keep a distance of 20 cm between pacemaker and device.
- SWITCH OFF IN AIRCRAFT: follow any restrictions. Wireless and digital devices can cause interference with aircraft equipment.
- SWITCH OFF WHEN REFUELLING: do not use the device at refuelling point. Switch off near petrol stations or fuel depots and chemical plants.
- SWITCH OFF NEAR BLASTING: follow any restrictions. Do not use the device where blasting is in progress.
- USE THE DEVICE SENSIBLY: do not use the device for any uses other than those it has been built for. Keep to the instructions as explained in the product manual.
- QUALIFIED SERVICE: only qualified personnel may install or repair this product.

- ACCESSORIES AND BATTERIES: use only approved accessories and batteries. Do not use incompatible products. The use of nonstandard products can cause damage to the device and/or people.
- BATTERY DISPOSAL: the batteries must be disposed according to the appropriate modes. The consumer must duly hand in worn out batteries, either at the appropriate collection points for the general public, in his own town, or wherever batteries of the same kind are sold (compulsory warning according to law on the disposal of batteries).
- AVOID GETTING THE DEVICE WET: the device is not water-resistant, keep it dry. Contact with water or any other liquid could cause serious damage to the device.
- DO NOT RECHARGE THE BATTERY at temperature above 50°C, for example if exposed to direct sun light for a prolonged time. This might damage the device and its battery.

Information on the device

C-Pilot EVO is a portable device that, thanks to its state-of-the-art GPS receiver, determines its geographical location in real time. Additionally, the detected data can be recorded for further analysis. It can send or exchange the data by means of BlueTooth connection, serial port, USB connections, standard SD memory card;

The GPS (Global Positioning System) is able to detect the user's position in any given point of the Earth's surface and consists in a ground receiver which captures and analyses signals from a series of satellites in orbit (*fix* procedure). In some climatic or structural conditions, partial or total GPS signal coverage may be missing. In this case, some functions may not be available.

Notwithstanding the Selective Availability (SA) introduced by the United States of America for military reasons, the margin of error on the GPS data is only limited but not deleted. The location data can contain inaccuracies caused by external factors as errors in the orbit and in the satellite clocks, climatic conditions and multipath effects.

Using and taking care of C-Pilot EVO

Let us give you some advices to take advantage of the features of your C-Pilot EVO and to keep it functional and in order:

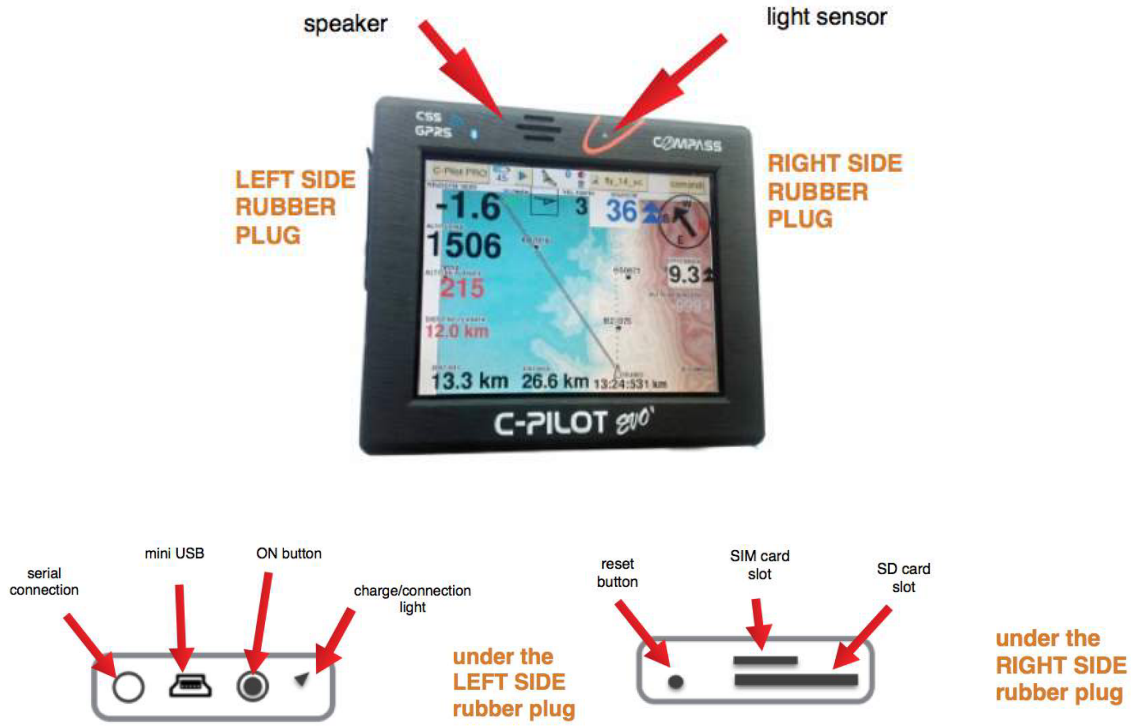
- The antireflection layer of the touch panel is particularly effective and allows a remarkable reduction of reflexes. It can suffer from mechanical and chemical wear. To keep it efficient and in good conditions for a long time, please avoid exposure to dirt or greasy substances. Fingerprints, for example, contain acid substances that can corrode the antireflection layer in the most used parts of the display. Also scratches and mechanical abrasion can deteriorate the layer leading to sub-optimal visibility in particular illumination conditions. We recommend to clean it when necessary with a tissue for lens cleaning, taking care that dust, sand or other materials than can scratch it while cleaning are not present. Do not apply excessive pressure while cleaning: you might damage the touch panel. Stains similar to oily liquids underneath the touch-panel surface indicate that it has been subjected to excessive pressure and should be replaced by a qualified technician to guarantee correct operation. Being due to incorrect handling, this kind of damage is not covered by our warranty.
- When you switch it on for the first time, do it outside, in a place with an unobstructed view of the sky, to allow for the first fix of the GPS. This should occur in a few minutes after powering your unit on. If you leave C-Pilot EVO off for several days, or format the internal or USB memory, please follow this procedure again.
- Do not cover the upper part of the device where the GPS and BlueTooth antennas, the light sensor and the speaker are hosted. If you cover them, you might experience low reception/transmission, low audio volume, bad backlight regulation, less battery life.
- Do not cover the hole on the rubber cover of the ports and connectors. Doing so might interfere with the internal barometer and variometer.
- The touch panel is of a very special type to guarantee the maximum display readability in every lightning condition. The first times that you use it, you might find it more rigid than those commonly mounted on PDA’s. Try getting used to it gradually. Try using the tip of your finger: this will require less force to activate the touch panel.
- C-Pilot EVO can be charged from any 5 V miniUSB charger, but we cannot guarantee that their power and quality is enough to charge C-Pilot EVO or not to damage it.
- We recommend recharging C-Pilot EVO when it is switched off. This will shorten the recharge time to a maximum of eight hours.
- Keep the display surface as clean as possible: dirt and fingerprints can diffuse ambient light and make the antireflection treatment of C-Pilot EVO less effective. The touch panel features a surface treatment that makes it easy to clean. Please use a soft tissue (the kind normally used for sunglasses) and avoid chemicals.

- Do not place other electronic equipment too close to C-Pilot EVO: they could disturb to or be disturbed by it.
- Do not expose C-Pilot EVO to temperatures above 50°C (122°F) or lower than -20°C (-4°F) for long periods. Do not leave C-Pilot EVO in your car during winter or during the hottest months.
- In case of accidental drop in water, do not switch C-Pilot on! Unscrew the case and disconnect the battery cable. In case of drop in salty water, rinse thoroughly with fresh water. Wait till everything is perfectly dry before trying to switch the device on again. Do not use hot sources to shorten the drying time.

  Warning: damages due to contact with water are not covered by the warranty. Disassembling the instrument will void the warranty. Anyway, in case of drop in water, disassembling the instrument may save it. Please send it back to Compass to have it checked. Tell us exactly what happened.
- Take care that C-Pilot EVO is positioned and held in place appropriately in your flight equipment. Use the Velcro provided and the safety cable connected to a fixed ring. If the device falls down while flying it may cause severe damages to persons and objects. It is your responsibility to insure that it is properly held in place.
- Before flying, check that the rubber covers of the port slots are securely closed. This will prevent dust and water from entering inside C-Pilot EVO.
- If you are using an external power source connected to the mini USB plug and it starts raining, please unplug the external source and close the rubber cover.
- Warning: external power sources may be connected to C-Pilot EVO before switching the device on or once the device is completely switched on. Do not connect an external power source before the instrument has finished the booting procedure.

Introduction

Thank you for purchasing C-Pilot EVO. We are confident that it will be with you during your flights for many years. We have tried to make it as user friendly as possible, but we recommend anyway a careful reading of the user manual to learn all the features of your device: by doing so, you will be able to configure it as you like.



C-Pilot EVO has been designed to be fully customisable. For example, you can design freely the navigation page, adding data fields, resizing and moving them in any place of the screen. Every navigation page (display) that you create can be saved and loaded later at any time. You have the same versatility also for the audio profile of the variometer. All your customisations will be saved in a specific memory of C-Pilot EVO, accessible via USB. This allows you to copy all of your settings to your PC to archive them, to send them to a flight fellow, or to add new displays or audio profiles to C-Pilot EVO.

The user interface is entirely based on a large, colour display with touch panel. This allowed us to make C-Pilot EVO as intuitive as possible: interacting with your device is as easy as touching its screen. Every yellow rectangle is a virtual button: by touching it you activate a new menu or, for example, you can modify a setting. There is no need to remember complicated combinations of keys to change a parameter. You just have to touch it with your finger.

Let us have a look at the display and to the notification icons.

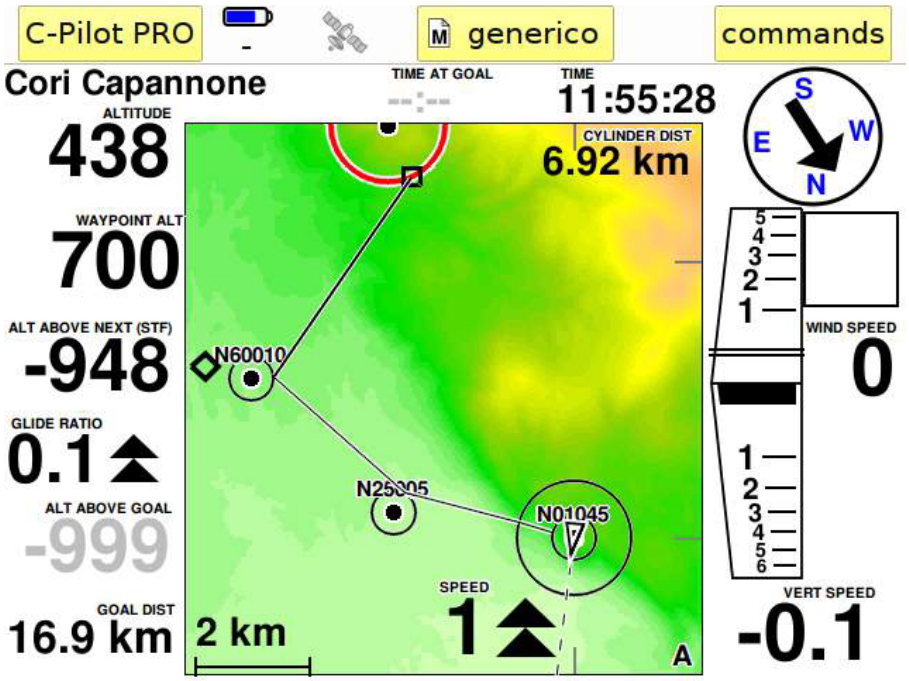


Figure 1: the navigation page. It includes the flight data, the map, the status icons and the menu buttons

During your flights, you will mainly use the navigation page. It is composed of two parts. The top part is the control bar:

It includes several icons that show some important parameters:
On the top menu bar you can find 3 buttons and some icons:

The SD Card icon means that the SD Card is inside the slot and C-Pilot EVO is using it. if the icon is red colored the C-Pilot is not able to use the SD Card or one or more files are corrupted

battery charge level (when empty and red battery is going to finish)

C-Pilot EVO is logging the track (Warning: when the instrument is switched on but does not fell the pilot move - waiting to take off - the device will not register the track)

Bluetooth module is active

live tracking active and transmitting data (when blue)

speaker (sound of variometer) is muted

satellites 3D fix is active and valid (if grey the fix is not active)

The control bar also includes some buttons that allow accessing all the features of C-Pilot PRO.

C-Pilot PRO	Shows the main menu. Typically, you will use this button only before taking off to customise C-Pilot PRO.
generic	Shows the active display. The icons   indicate respectively when the manual or automatic display management is active. In the following you will learn how to use the displays of C-Pilot PRO (page 49).
commands	This button shows some commands that can be useful while flying, such as the volume controls and the task control buttons (page 9).

All the instrument settings are accessible via the main menu, shown in Figure 2. It shows up when you press the **C-Pilot PRO** button in the navigation page. After eight seconds it disappears automatically if you do not press any button; the navigation page will appear again.

Figure 2: the main menu

In-flight use

C-Pilot EVO was designed so that it requires very few inputs from the pilot while flying. This was one of our main targets right from the start of the development of the device. We wanted it to be very easy to use, but, more importantly, we wanted to guarantee the maximum safety for you, by avoiding any unnecessary distraction. C-Pilot EVO manages automatically the displays (we shall see later how to design them, on page 49), by showing the one that you have chosen for the specific flight situation you are in. It manages automatically the turnpoints of a task, and also optimizes the magnification of the map so that you always see your next turnpoint. Simply touching on the map the waypoint the pilot desires to navigate to, can launch a “GOTO”.

Manual/Automatic selection of the displays

You can disable (or enable again) at any time the automatic selection of the display and manually select one among those stored in C-Pilot PRO by pressing the central button in the control bar.

If the display selection is in automatic mode, this is shown by the icon:

While the manual-selection mode is indicated by;

When you press the central button, that indicates the name of the actually selected display, the list of stored displays will be shown (Figure 3). By selecting a display from the list and pressing the “**ok**” button, the selected display will be loaded and the manual display selection will be activated. The automatic selection can be restored by pressing the “**auto**” button. “**Cancel**” closes the display-selection page without changing the currently-active setting.

The display-selection page will disappear automatically in ten seconds.

Warning: while the Manual mode is activated, the instrument will not automatically switch into the Thermal mode (thermal assistant page) or into other automatic configurations of the display (start, goal, airspaces …)

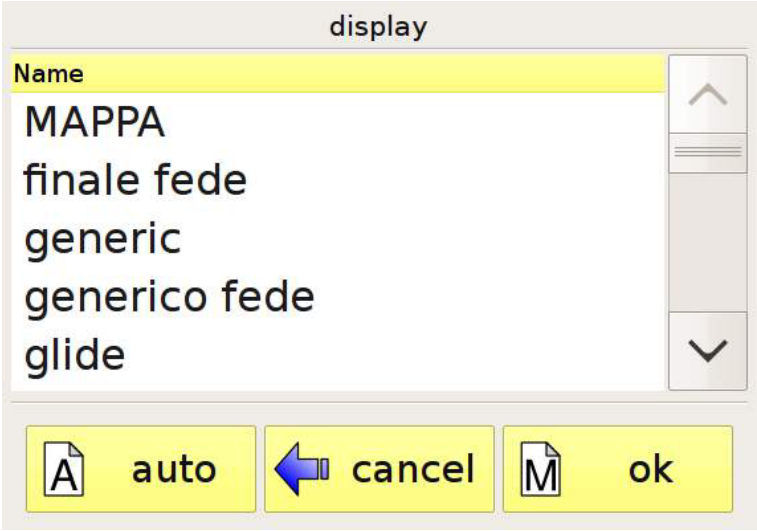


Figure 3: display-selection page

The command page

For the rare occasions when you have to interact with C-Pilot PRO while flying, we have prepared an easy-to-access page that contains the main commands. You can open it by pressing the "**commands**" button in the control bar.

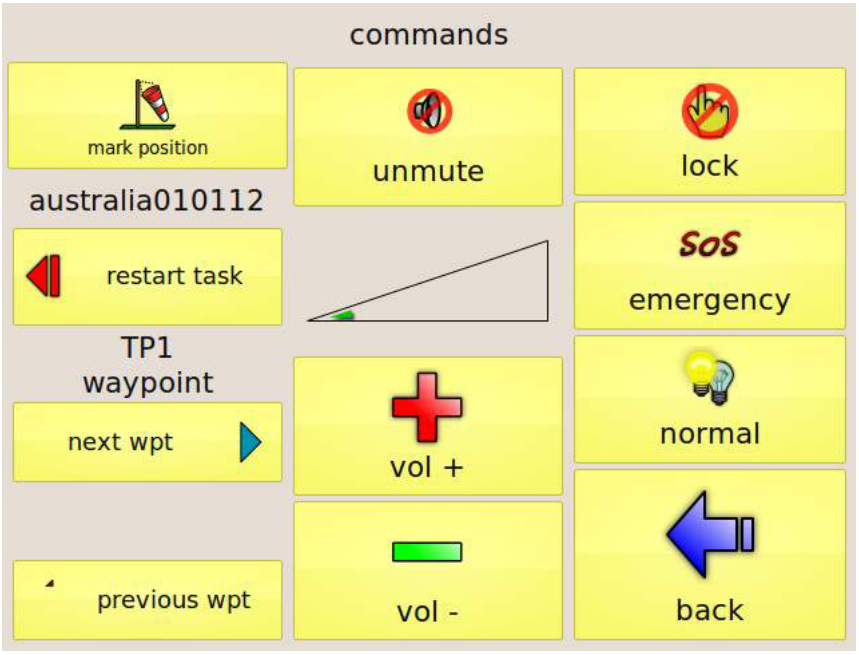


Figure 4: the command page

The first column on the left in the command page (Figure 4) allows you to manually control the

turnpoint sequence in the active task.

- **Restart task:** the task navigation starts over from the first turnpoint;
- **Next waypoint, previous waypoint:** manually select the next waypoint in the task or the previous.

The central column controls the volume of C-Pilot EVO. You can increase or decrease the volume or enable/disable completely the variometer audio.

On the right you will find:

- The touch-panel lock button. This will return to the navigation page and lock the touch panel to avoid involuntarily changing some settings before take off. When activated, it will deactivate automatically when C-Pilot PRO detects the take off.
- The **SOS** button sends an emergency message by means of a DSX Safly device, if connected.
- **normal**/**powersave** button: if powersave is active, the backlight will switch off when there is no input from the touch panel for 30 s. Just touch the touch panel to reactivate the backlight for 30 s more.
- The **back** button brings you back to the navigation page.

The command page, as well as the other menu pages, is automatically closed if not used for eight seconds.

Starting up

Switching on and off C-Pilot PRO

You can switch on C-Pilot PRO by pressing the power button underneath the left rubber cover (Figure 5). There is no need to open the cover: just **press on the Compass logo**, impressed on the cover, **for approximately five seconds**. When you see the C-Pilot EVO logo on the display, you can release the button. The device will complete the start up procedure in more or less 20 seconds.

To turn the device off, press briefly the power button, then press the "**ok**" button in the confirmation alert that appears.

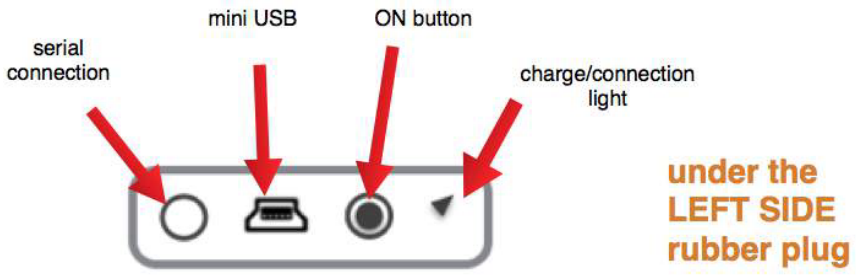
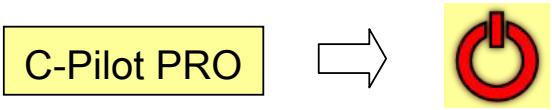


Figure 5: connectors and buttons are on the left side of the device

You can also use the "**off**" button in the main menu (Figure 2), shown after pressing the "**C-Pilot PRO**" button in the navigation page.



Touch-panel calibration

After switching the device on, if necessary, you may calibrate the touch panel (factory pre-calibrated) by pressing for approx one second the power button; when the confirmation alert shows up, press again the power button. Follow the instructions (Figure 6). The calibration procedure takes more or less 10 seconds to complete.

Due to its quality, you will rarely need to recalibrate the touch panel. It will become necessary when you feel that the panel does not react to your commands or touch. Please do not drag your finger while calibrating the instrument: simply touch the centre of the taget. It is sensible to pressure: you can use it while wearing gloves as well as with your bare fingers.

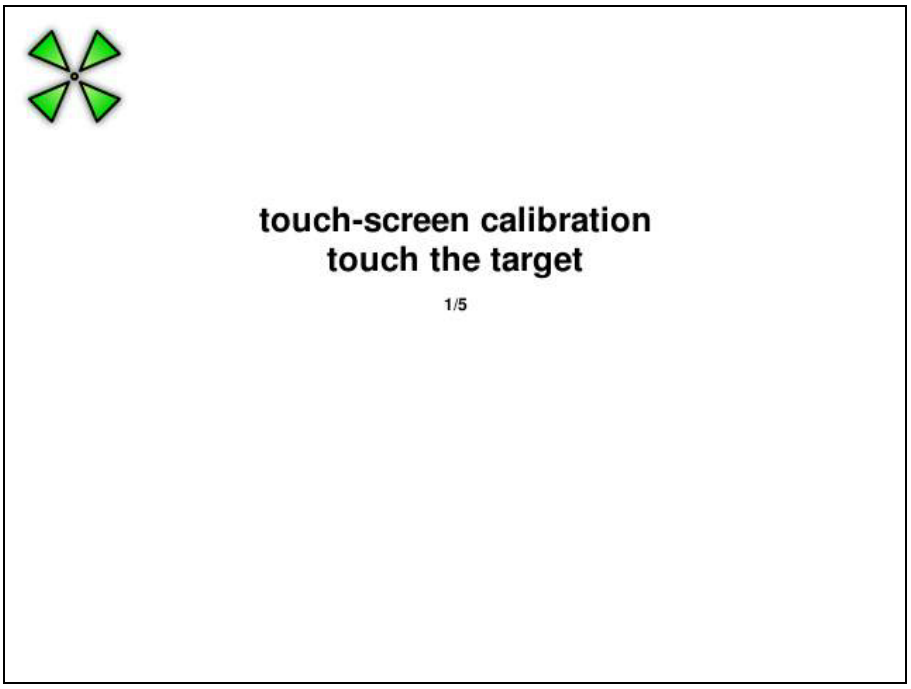


Figure 6: touch-panel calibration

Optimal in-flight position

C-Pilot PRO features a LCD display optimised for direct-sunlight operation. The built-in light sensor automatically tunes the LCD backlight to guarantee the optimal contrast in any light condition and – at the same time – limiting the battery consumption.

Figure 7: optimal in-flight position.

In order to get the best results in terms of readability and contrast, we suggest positioning your C-Pilot PRO at about 12-15 degrees to your line of sight, as shown in Figure 7.

Battery

The capacity of the battery will allow you, in normal flight conditions, from 13 to 20 hours of usage, depending on the backlight intensity, on the speaker volume, on use of GPRS, on use of Bluetooth and environment conditions (light & temperature).

The battery status is shown in the control bar by the “battery” icon. The number underneath the icon shows the remaining capacity in percentage. This is displayed also by the icons that change in sequence:

When the battery is almost completely empty, C-Pilot PRO warns you by showing an alert window. After approx eight seconds, C-Pilot PRO turns automatically off.

You can force the device to stay on till the battery lasts (you get 20 minutes more of usage) by pressing the “**ok**” button in the alert window. Please remember that this is an emergency procedure. **Use it only when strictly necessary** as it might lead to data loss. The backlight of the display is disabled to increase the remaining time as much as possible.

Warning: if the battery level goes below a predefined security setting (3.2 V), it will not be possible to turn on the device without recharging the battery above the security level. Please note that, in this situation, recharging will occur very slowly to protect the battery.

While charging the battery, the icons cycle with an interval of approx 3 seconds.

Recharging the battery

We recommend recharging the device while it is switched off to shorten the recharge time to a maximum of eight hours from a completely drained battery. **While it is off and recharging, the backlight will make a short flash every 15 seconds to show that the charge is in progress.** A double flash indicates that the charge is complete. While recharging the red light under the left side rubber cover is switched on.

Warning: please note the peculiar sequence of flashes that C-Pilot EVO’s diaplay does when you switch it on. If you see the same flashes while recharging the unit, then it is quite likely that the charger that you are using is not powerful enough and it is not recharging your battery

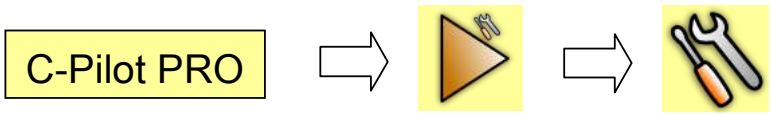
If you leave C-Pilot EVO off for a very long time, the battery might discharge completely. The internal protection of the battery will prevent it to be damaged, but you may not be able to switch the device on even when you plug in the charger. In this case it is necessary to wait some hours to allow

the battery to recharge to the minimum level necessary for the correct operation of C-Pilot EVO. In this case the backlight will not flash during the recharge.

You can charge the battery also by connecting the device to a PC via the USB cable. Be aware anyway that some PC, laptops in particular, do not provide enough energy from the USB ports to fully recharge C-Pilot EVO.

Setting up C-Pilot EVO

When you turn the device on for the first time, you need to configure some parameters that control the operation of C-Pilot EVO. The device will store your settings. From the main menu, you can access the most important configuration options by pressing the "**configuration**" button**.**



You will be shown a list with the parameters (see Figure 8). As we have already said, every editable parameter is indicated by a yellow rectangle. For example, to change the language used by C-Pilot PRO, you just have to press the yellow button beside "**language**".

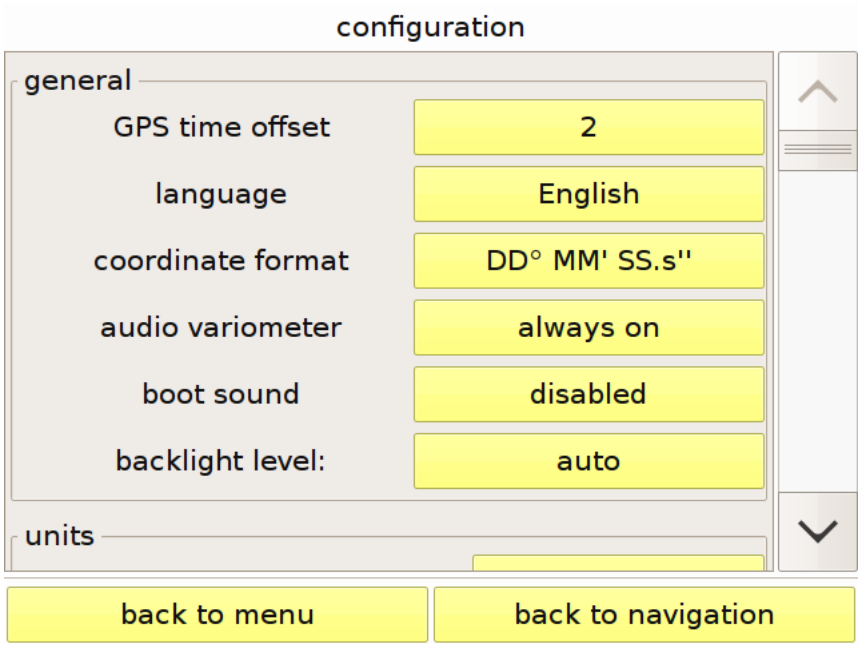


Figure 8: main settings of C-Pilot PRO

General

- **GPS time offset**: sets the difference between the local and UTC time. Change it depending on the time zone where you are. It is possible to set fractional hours for those countries that requires so; Remember to select "East" or "West", depending on the part of the world the C-Pilot is used (example "west" for North & Suth America and "east" for most Europe and Asia)
- **Language**: choose the language used by C-Pilot EVO;

- **Coordinate format**: change the visualization format of coordinates. For example, you can choose between degrees, minutes, and seconds or UTM;
- **Audio variometer**: if you choose "**active after takeoff**", the variometer audio is disabled between -0.3 m/s e +0.3 m/s before takeoff. This prevents the variometer to beep also before taking off.
- **Backlight level**: the backlight intensity has a mayor impact on the display readability in different ambient-light conditions and also on the battery life. The backlight level can be automatically controlled by means of the C-Pilot EVO light sensor. This will react to more than 200 light levels, with a sensitivity that closely resembles the one of the human eye. We have finely calibrated the backlight automatic control during several in-flight tests to guarantee the optimal display contrast while limiting as much as possible the energy consumption. For example, in direct sunlight the backlight is completely switched off: the transflective display of C-Pilot EVO allows taking advantage of the sun light rather than the internal LEDs to provide an excellent contrast and long battery life. If you wish, you can turn the backlight off or set it to the maximum level by means of this button.

1Units

- **distance**: you can choose between metric system, nautical miles (1 mn = 1852 m) or statute miles (1 sm = 1609 m);
- **altitude**: meters or feet (1 ft = 0,3048 m);
- **horizontal speed**: km/h, knots (1 kts = 1,85 km/h) or miles per hour (1 mph = 1,609 km/h);
- **vertical speed**: meters per second (m/s), feet per minute (1 ftm = 0,3048 m/min) or feet per second (1 fts = 0,3048 m/s).
- **Temperature**: degrees Celsius or Fahrenheit.

Averages

- **Audio variometer**: sets the response time of the audio variometer from 0.5 seconds to 10 seconds. Smaller values correspond to a faster reactivity of the device.

Warning: the 0.5 s value is very short: the variometer responds almost in real time to changes of pressure. Having performed many in-fight tests, we do not reccomend to use this setting but in the weakest flight conditions;

- **Analog variometer**: sets the response time of the analog indicator of the vertical speed (climb speed) from 1 second to 100 seconds;
- **Digital variometer**: sets the response time of the digital indicator of the vertical speed (climb speed) from 1 second to 100 seconds;
- **Glide ratio**: response time of the glide-ratio calculator. The shorter the time, the bigger the fluctuations of the value shown in the navigation page will be;

- **Altitude at waypoint**: sets the response time of the calculation of the arrival height to the next turnpoint. This setting affects several data (arrival height above the waypoint, arrival altitude MSL, etc...).
- **Altitude at goal**: sets the response time of the calculation of the arrival height to goal. This setting affects several data (arrival height above the goal waypoint, arrival altitude MSL at goal, etc...).
- **TAS (C-Probe)**: sets the response time of the calculation of the true airspeed. The true airspeed is available when C-Pilot EVO is connected to the optional external sensor C-Probe.

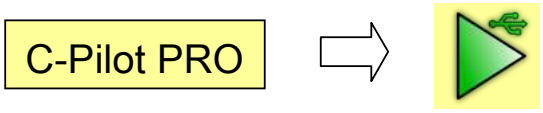
Restore default values: restore factory presets.

In any configuration page, you will find two buttons that you may use to switch menu page or to go back immediately to the navigation page.

Connectivity

C-Pilot PRO can be connected to a PC or other devices by means of several kinds of connections: serial RS232, USB, or BlueTooth. The serial and USB ports are located on the left side of the device, underneath the rubber protection (Figure 5).

From the main menu, you can access the connection page (Figure 9) by pressing the "**connections**" button.



The RS232 serial connection requires a widely-used 2.5 mm stereo jack connector. You can use the serial port to download track logs, upload routes or waypoints to the device using the NMEA or MLR protocols.

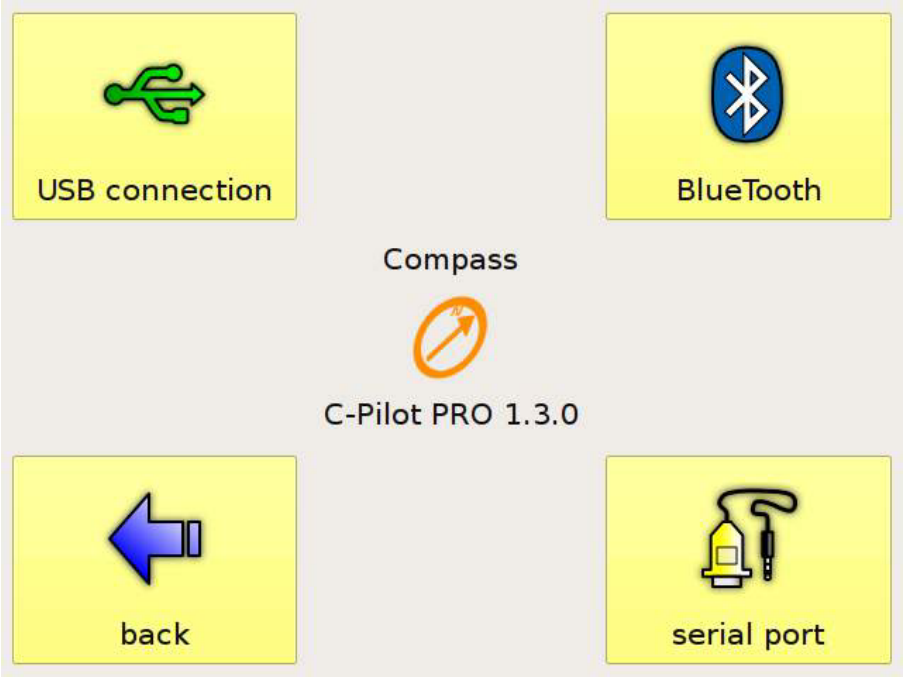
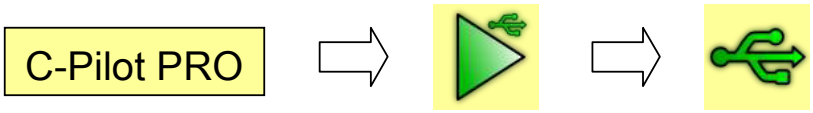


Figure 9: connection setup page

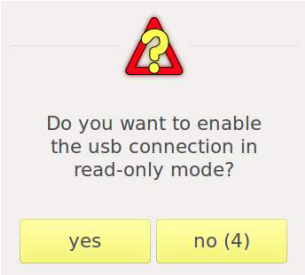
USB Connection

When you open this page, you are also activating the device USB drivers. At this stage, you can

connect C-Pilot EVO to your PC using the USB cable. C-Pilot PRO will be seen from the PC as a generic USB storage device. **If the USB cable is already connected when you access the USB page, you will have to unplug the cable and plug it again to activate the connection.**



WARNING: before connecting the C-Pilot EVO a window will appear in the device's display showing a question: "*Do you want to enable connection in read-only mode*?". If you press yes the C-Pilot EVO will not allow you to exchange any data but only to download a track file.



C-Pilot EVO USB memory will be shown as a removable disk, containing all the system folders (Figure 10), such as displays, variometer audio files, maps, routes, track logs, and polars. You can also add other kind of data, exactly as you would do with a USB memory.

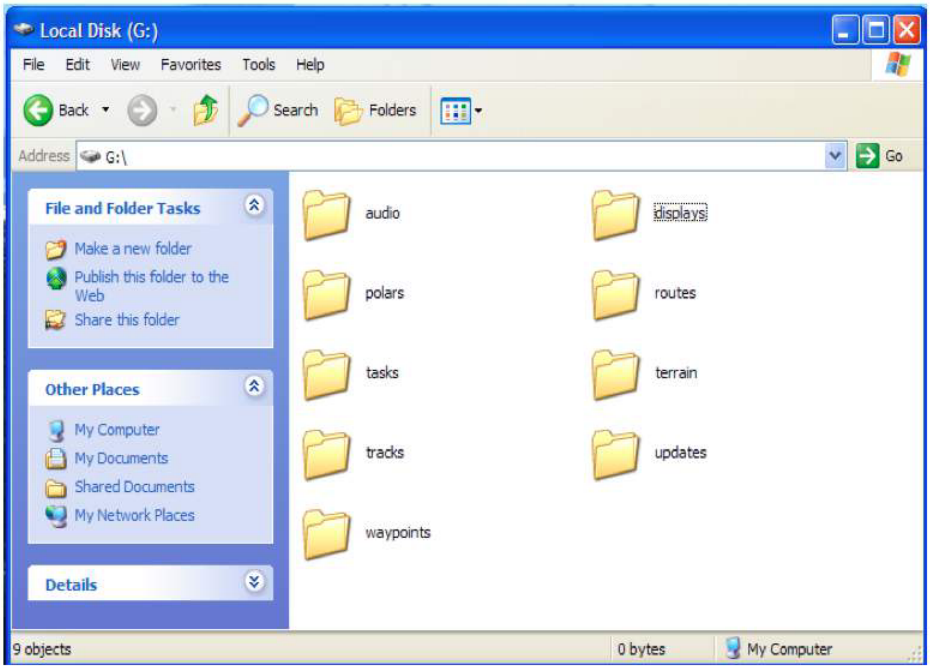


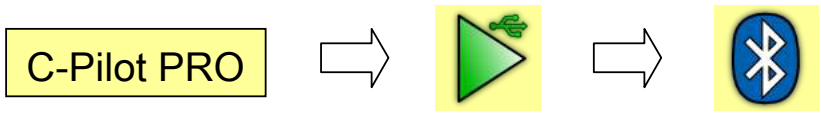
Figure 10: content of the USB memory

VERY IMPORTANT WARNING: before going back to the navigation page or unplugging the USB cable, please disable the USB connection using the "safely remove hardware" procedure on your PC (normally by the right button of mouse). Otherwise you might experience data loss, as in all the USB storage peripherals. If you do not use the "safe disconnection" the USB memory may be damaged and, in some cases, you need to format the USB memory of your C-Pilot EVO.

BlueTooth connection

You can pair C-Pilot EVO to other BlueTooth-enabled devices to transfer data to and from C-Pilot EVO. When you send a file to C-Pilot EVO from your PC, if it is a system file (such as a display file or an audio file), C-Pilot EVO will store it in the proper folder, ready to be used. Unrecognised files will be stored in the main folder of the USB memory.

You can enable or disable the BlueTooth module to save energy. You can also set the transmission power between 10 m and 100 m of transmission radius.



If the BlueTooth module is enabled, the standard BlueTooth logo will be shown on the navigation page.

The BlueTooth connection needs a four-digit password that must be used during the pairing procedure to protect your device from unauthorised accesses. C-Pilot EVO chooses randomly a password for you (you can read and/or change it from the BlueTooth page).

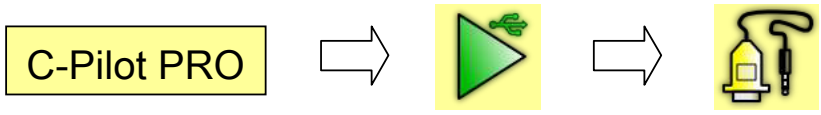
After pairing your device with a PC, two new virtual serial ports (an incoming one and an outgoing one) will be created on your PC. You can use the outgoing one to simulate a serial connection to download track logs with any program that supports the serial MLR protocol (such as GPSdump, CompeGPS, etc.).

C-Pilot EVO can be used as a BlueTooth GPS. Using the virtual serial port, it can send GPS coordinates to an external device (1 point per second).

Serial connection

You can use the serial connection to interface C-Pilot EVO to most of the flight-analysis programs (GPSdump, CompeGPS, etc.) using the MLR protocol to transfer track logs or waypoints.

The serial connection allows using a DSX Safly logger to receive SMS messages and send an emergency message to a given telephone number.



The serial configuration page allows you to configure very easily C-Pilot EVO to use the MLR protocol or to interface to a Safly device. For other devices, you can set the baud rate manually.

Serial connection via USB cable

The USB port plays a double role:

- It simulates a serial connection between your C-Pilot PRO and your PC (or Mac), allowing for an extremely fast download of your tracklogs;
- It makes C-Pilot PRO to be seen as a USB memory stick by your PC, as described above.

The former is the normally active mode, while the second can be activated by the user by accessing the “USB connection” page.

The serial connection via USB works correctly with the majority of the operating systems, including Linux, Mac OS, and Windows XP, Vista and 7.

If your computer is a Mac or is running Linux, you do not have to install any driver: just plug the USB cable to activate the virtual serial port.

In the case of a PC running Windows, the first time that you plug the USB cable, you will be asked to install a driver. Choose to install the driver manually and select “CPilotPRO_2.inf” from the user-manual CD. After confirming, Windows will ask you to install the “usbser.sys” file. This file is normally already available in the “Windows\System32\drivers" folder: select it and confirm.

At the end of this procedure, a new serial port will be available on your PC that can be used to download your tracklogs from the C-Pilot EVO by means of software such as GPSdump, CompeGPS, Gipsy and the others supporting the MLR protocol.

If you need to know which COM number has been assigned to the C-Pilot EVO, right-click on the “My Computer” icon, select “Properties” and then “Device Manager”. Expand the “Ports” entry in the list and note the serial port associated to the C-Pilot EVO.

SD Memory Card

C-Pilot EVO uses different memories. We recommend to use the internal USB memory for storing the files the pilot uses most frequently (most used custom displays, most used waypoint files …) in order to leave the internal USB more free than possible.

All data can be stored in the SD card that can be used as a backup memory of your C-Pilot EVO.

Maps - mandatory - are to be stored in the SD Card Terrain folder: the device will automatically read the maps stored in the SD.

Files to be used by C-Pilot EVO are not much heavy. A 4GB memory is much more than enough.

If you use a SD previously used by other device, **we recommend to complete format the SD**

before using (and not use the "fast format" option) it in the C-Pilot EVO (could happen that if SD card was previously used by a Gopro, a Mac or other devices as cameras of many brands, some "ghost" files could be stored inside: the C-Pilot EVO will try to run these files and could become slow, freezes or refuses to use the SD). Please c**ontrol the SD card is not locked by it's side button** before use it.

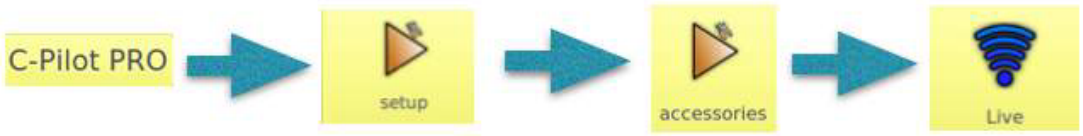
Once the SD is virgin or formatted as virgin, you can insert it in the C-Pilot EVO's slot (right side): push it till you hear a smooth "Click" that confirms it is well stored inside the device. **The C-Pilot EVO will ask you to format the SD card.** Push the button YES end wait a second: the SD is ready for use. Switch the instrument off before pulling out the SD Card after first use in C-Pilot EVO. Now you can store terrain maps inside the Terrain folder of your C-Pilot's Sd memory Card.

GPRS (SIM card) setup for Livetrack24

C-Pilot EVO GPRS will send your data (position, speed, …) in real time for live tracking. Set up the device is very easy. It is necessary, first, to insert the SIM card inside the slot on right side of C-Pilot EVO (push it till you will hear a smooth "Click")

It is necessary to be (previously) registered in the www.livetrcak24 website.

Go in the LIVE page of C-Pilot EVO:



complete the fields by clicking on them and using the C-Pilot's keyboard:

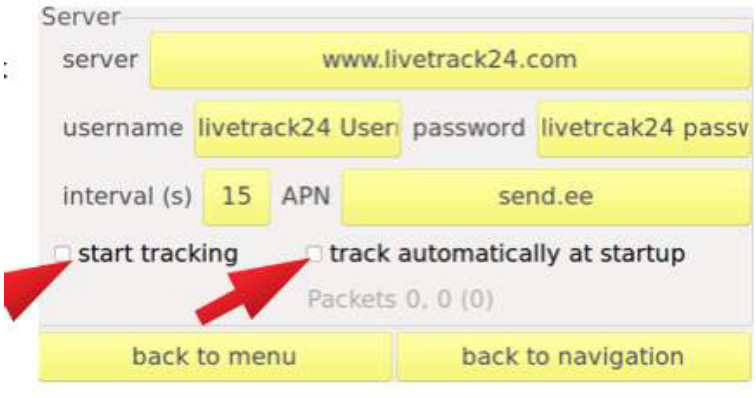
1) press server button and write the name of server **www.livetrack24.com. ATTENTION: control that is WWW… and not TEST…!**

2) Enter, in the same way, your username and password (the ones you have registered with to livetrack24 website)

3) choose the interval time the device will send to the server the packets of data (15 to 25 seconds is a good compromise).

4) enter the APN (**the APN depends on the telephonic company of the SIM card**: verify it by

asking to your telephonic company or searching in the telephonic company's website). **"send.ee" is the APN correct for ONE Sim Card company** (the most used);

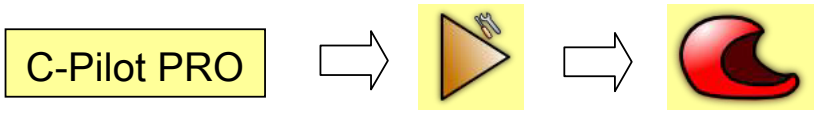


5) just choose (by putting the flag) if you want to start tracking automatically or manually.

When LIVE TRACKING is active the live track icon will appear in the top bar menu of your instrument

Pilot's data

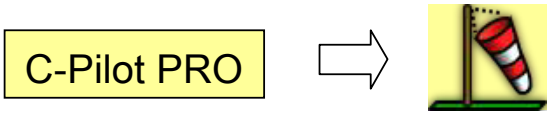
From the configuration menu you can access to the Pilot's page by pressing the "**pilot**" button to enter your personal data. C-Pilot EVO stores your name, your competition number, and the emergency telephone number to which you can send an SMS (by means of a Safly device) containing your coordinates. See page 20 for further information.



By means of the checkboxes "**add name to IGC file**" and "**add number to IGC file**", you can have your number or your name added to the IGC filename of the track logs.

Waypoint management

C-Pilot EVO can store several waypoints, ready to be used to define a competition task or to navigate to one of them. Waypoint data can be entered manually on the device or loaded from a file in the USB memory by using the waypoint-management page.



This page (Figure 11) shows the available waypoints. When you select a waypoint by touching it, C-Pilot EVO shows its coordinates. Remember that you can change the format of the coordinates by means of the "**format**" button.

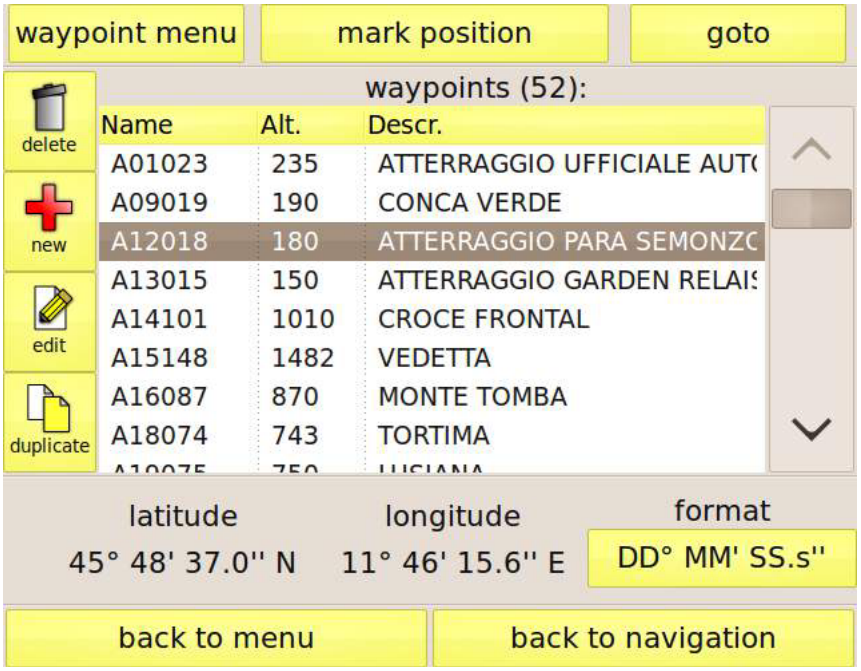


Figure 11: waypoint management page

By selecting a waypoint from the list, you will be able to perform several actions:

- **Edit**: allows you to modify the waypoint data (Figure 12). You just have to touch the parameter that you want to change. The coordinate format can be changed also from here. Pressing "**ok**", you can confirm the changes and go back to the waypoint page. The "**ok & new**" button allows you to confirm the changes and to immediately create a new waypoint having the same coordinates of the previous one. This makes entering several waypoints

with similar coordinates really easy.

- **Duplicate**: this button creates a new waypoint with the same coordinates of the selected one and opens the waypoint editing window (Figure 12).
- **New**: creates a new waypoint and opens the waypoint editing window (Figure 12).
- **Delete**: removes the selected waypoint from the list.

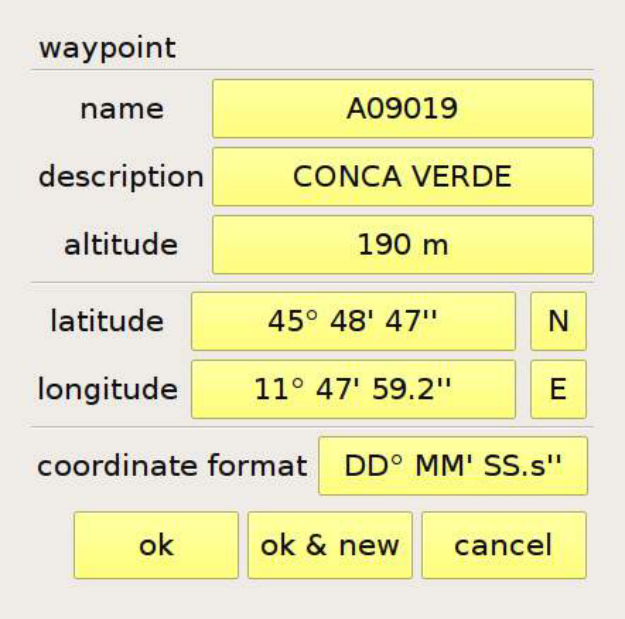


Figure 12: waypoint editing page

You can import waypoints from CompeGPS, Ozi Explorer and GPSdump files (with .wpt extension) placed in the "**waypoints**" folder of the USB memory.

The "**waypoint menu**" button gives you access to the following commands (Figure 13):

Open file: you will be shown a list of all the waypoint files available in the "**waypoints**" folder of the USB memory (Figure 14). To import the waypoint from a file, select it and press "**ok**". If you do not need a file any more, you can delete it by pressing "**delete file**".

Save file: saves all the waypoint shown in the list in a file (CompeGPS format).

Delete all: removes all the waypoints from the list.

Note: this command does not delete the files from which the waypoints were loaded. You will be able to load them again later when you need them. This allows you to have at the touch of your finger only the waypoints that you really need, while keeping the rest in the USB memory.

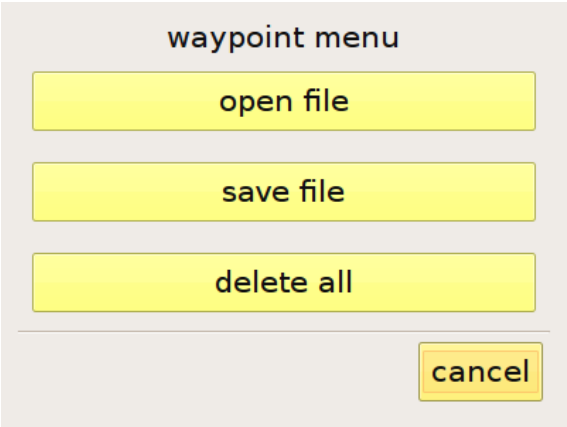


Figure 13: waypoint menu

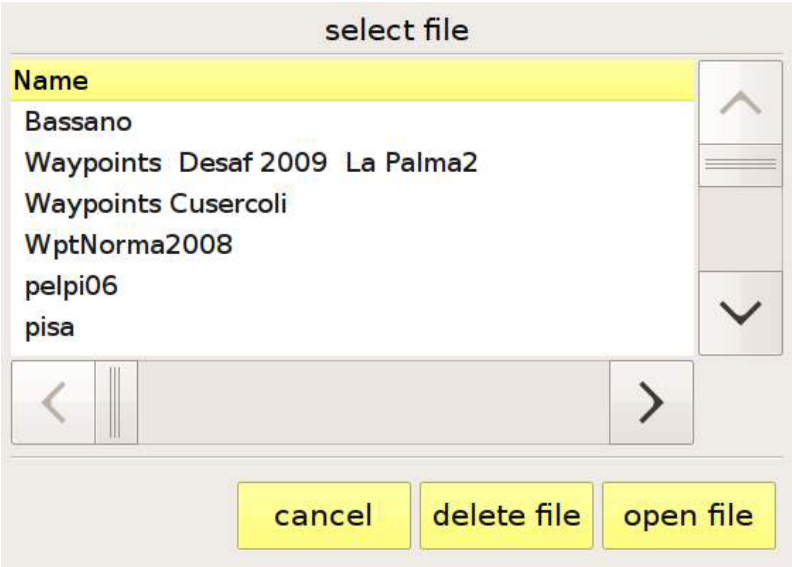


Figure 14: loading a waypoint file

In the top part of the waypoint page, the "**mark position**" button allows you to create a waypoint corresponding to your current GPS position.

You can navigate to a waypoint in the list by selecting it and pressing "**goto**". To stop an active goto, you have to enter the task management page and press the multifunction button "**stop goto**". We shall say more about this button later, when we describe the task-setup page, at page 29.

Once activated a WP file, you will see the waypoints listed inside the Waypoint menu of C-Pilot EVO and, at the same moment they will appear in the map (as black points).

From the menu Maps of C-Pilot EVO you can choose how to visualize the Waypoints (by the name and/or the description …)

By a simple touch on the map of the desired waypoint (on this example Garden Borso Landing) a window will appear containing the main informations about the touched waypoint (altitude, distance, name and description). In the bottom part of the window it is possible to activate the GOTO navigation to the waypoint simply by pressing the "YES" button

.

Entering a competition task

Entering a task just before taking off for your competition is a delicate phase. We believe that we have simplified this procedure as much as possible by developing a graphical user interface (Figure 15) that resembles the standard panel used at every competition during the briefing.

Let us have a look at the procedure that you have to follow to create a new task. The first thing is to give a name to the task.

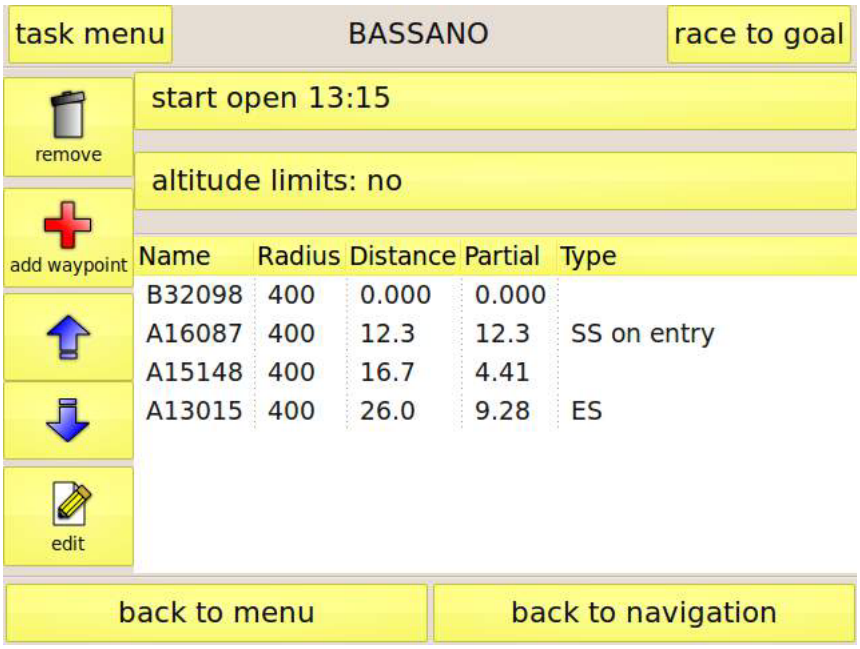


Figure 15: task editing page

Press the "**task menu**" button in the top left corner, followed by "**new task**". Enter the task name using the virtual keyboard that appears, then press "**ok**". The name will be shown at the top of the page.

Enter the task times by pressing the times button. A specific page (Figure 16) will allow entering the data. You can enable or disable the task open and task close times by means of the checkbox. Press "**ok**" to confirm the data when you are ready.

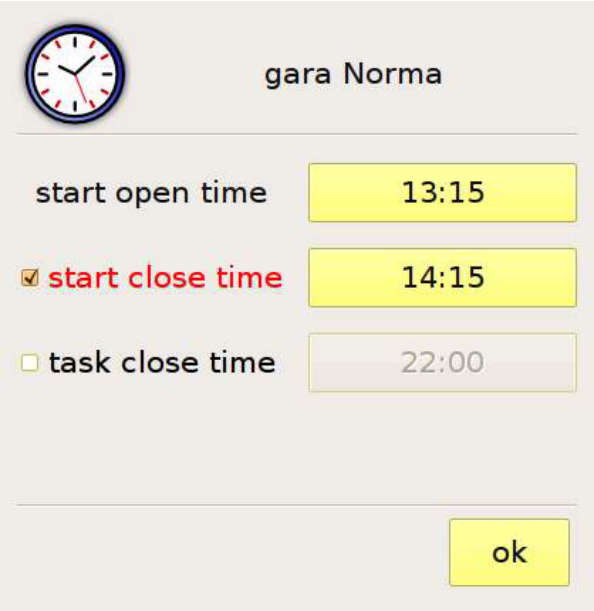


Figure 16: entering the task times

The data shown in the waypoint list can be modified by touching the name of the columns of the list. For example, touching "**Name**", toggles between the short name and the description of the waypoint. Touching "**Distance**" or "**Partial**" toggles between non-optimised distances – calculated centre-to-centre – and optimized distances.

If the competition has been assigned a maximum altitude, you can enter it by pressing the "**altitude limits**" button and entering the data in the page shown in Figure 17. When approaching the altitude limit that you entered, C-Pilot PRO will warn you with a visual (the altitude data in the navigation page flashes) and an acoustic alarm.

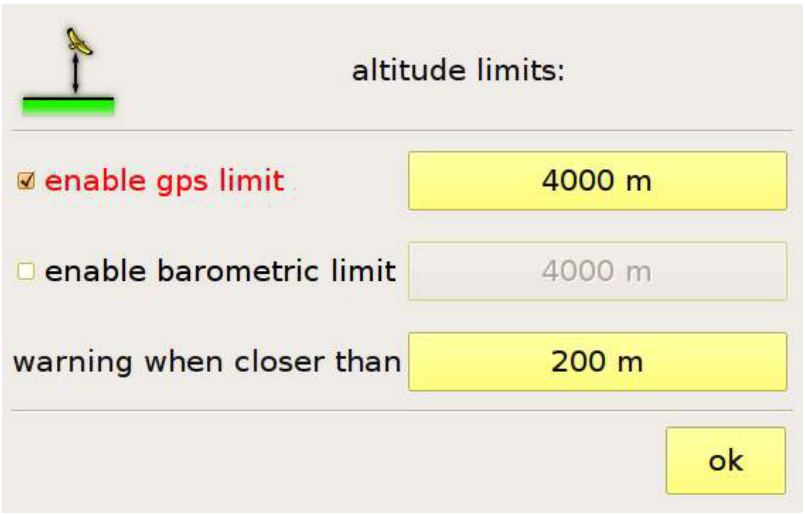


Figure 17: task altitude limits

You can enter an altitude limit relative to the barometric altitude and/or one relative to GPS altitude depending on the specific requirements of the competition committee. The enabled altitude limits will be reported in the task editing page. The "**alert distance**" parameter corresponds to the distance from the limit that will trigger the alarms.

Now you are ready to enter the task waypoints: press "**add waypoint**" and choose the first waypoint from the list that will appear (Figure 18). To speed up selection, the waypoint may be filtered by name by means of the buttons below the list: in the example of Figure 16, only waypoints whose name begins with "A", "B", or "0" (zero), followed by "C", "D", or "1" are shown. To remove the filter, you can use the blue-arrow button on the right of the filter.

It is up to you whether to insert the take-off waypoint or not. We suggest doing so, in order to get the total task length. Comparing the length calculated by C-Pilot EVO to the one given by the competition committee will allow you to find errors in the task entered.

Select the first waypoint that you want to add and press "**ok**".

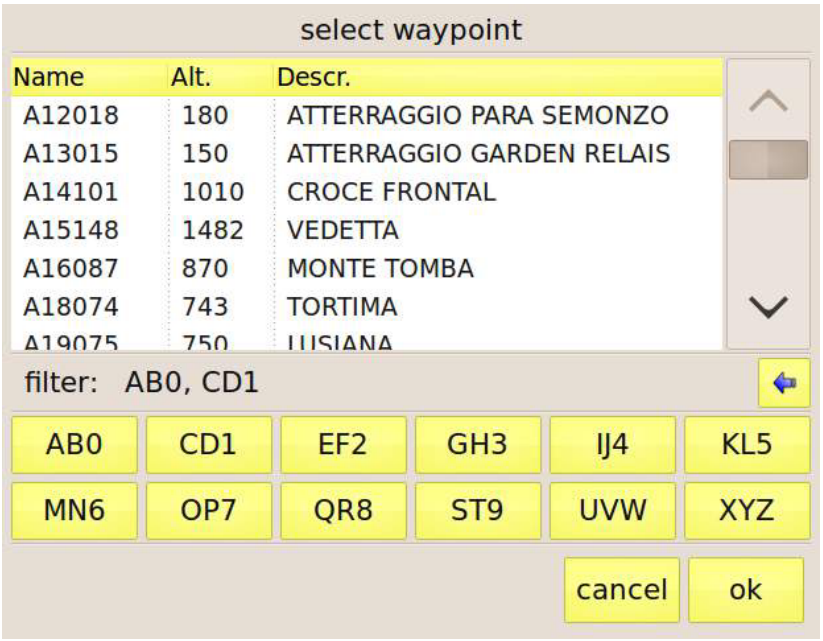


Figure 18: adding a waypoint to the task

C-Pilot PRO offers the possibility of adding waypoints to the current task directly from the map. This innovative feature, that we have named **Task-To-Go**, allows creating new tasks in a very intuitive and fast way (see page 33).

When adding a waypoint, C-Pilot EVO will ask for its details (Figure 19), such as its radius, whether it is the start waypoint or the end of speed section or the goal line (in the latter case you will be asked to enter the line length rather than the radius). After entering all the details, confirm with "**ok**" and go on with the following waypoints.

If the start waypoint must be validated also as a normal turnpoint, you have to enter it twice: the first time marking it as start and assigning it the start radius, the second time with the normal turnpoint radius, exactly as it would appear on the briefing panel. The last value of the radius that you enter becomes the default value in order to speed up the procedure.

While you enter the task, the list in the task page (Figure 15) will show you the name of the waypoint (if you touch the "**name**" button, C-Pilot EVO will show the description of the waypoint rather than the name), total distance, the distance to the previous waypoint and the details (e. g.: SS = start, ES = end of speed section).

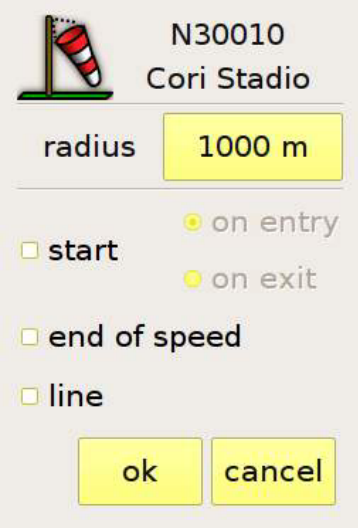


Figure 19: turnpoint details

For each waypoint, it is possible to choose if it has to be validated on entry or on exit. C-Pilot EVO will optimize the route taking into account both cases.

When needed, you can change the order of the turnpoints by means of the "**up**" and "**down**" buttons on the left of the list. You can also remove a waypoint from the list or change its details.

The button in the top right corner of the page determines the kind of start. You can choose among **Race to Goal, Elapsed Time,** and **Clock start** (Figure 20).

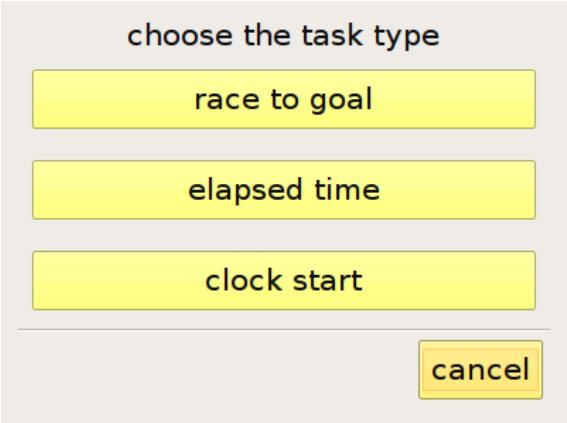


Figure 20: choice of the task type

In **race-to-goal** competitions the race start time is the same for all the pilots and coincides with the start opening time. In **elapsed time**, the start time is individual and corresponds to the time at which the pilot validates the start waypoint. In **Clock start** mode there are multiple start gates at predefined intervals.

When the task is complete, you can have it shown on a cartographic map. From "**task menu**" select "**show on map**". C-Pilot EVO will show the current task, including waypoints, cylinders, optimised path and goal line.

In order to inspect the details of the task, such as glides, cylinder positions, and so on, you can pan or magnify the map by using the map controls, just with your finger. This innovative feature is made possible by the C-Pilot EVO hi-res, colour display with touch panel.

The "**task menu**" offers several additional functions:

Start navigation: initiate the navigation of the current task and go back to the navigation page. While flying, C-Pilot EVO will manage all the details of the task navigation autonomously, allowing the pilot to concentrate on flying and on the task strategy.

Load task: allows you to load a previously stored task.

Rename task: modifies the name of the current task.

Load CompeGPS route: imports a route file (CompeGPS file with *.rte* extension) from the "**routes**" folder in the USB memory and converts it into a task.

When a task or a go-to is active, the "**task menu**" button is replaced by "**stop task**" or "**stop goto**" that you can use to stop the task or the go-to.

Let us suggest you to practice by creating some demo tasks in order to get to know as well as possible the user interface of C-Pilot EVO before flying.

Task-To-Go

By means of this new feature, Task-To-Go, made possible by the touch-panel-based user interface of C-Pilot EVO, you will be able to insert or modify the task waypoints directly from the map.

After adding at least the first waypoint as described in the previous paragraph, select “**show map**” from the “**task menu**”. You will be shown a map centered on the waypoints that are already in the task. All the waypoints loaded in the memory of the device will also be shown.

Please remember that you can change the map scale by using the virtual buttons described at page 65.

Touch the waypoint that you wish to add with your fingertip. C-Pilot EVO will ask you the details of the waypoint by means of the panel shown in Figure 19. When you press “**ok**”, the waypoint will be added to the task.

Take into account that you can always switch between map-based and list-based task editing.

If the point of the map that you have touched is considered ambiguous, in the sense that it is close to several waypoints, C-Pilot EVO will show you a list of such waypoints (Figure 21) allowing to choose. This allows adding waypoints without changing the map zoom.

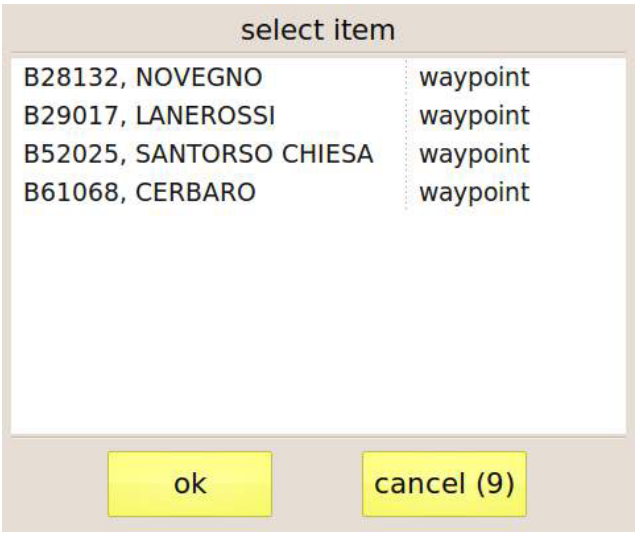


Figure 21: selection of a waypoint among a group in close proximity

If you “touch” a waypoint that is already part of the task, C-Pilot PRO will ask you whether you wish to add it again, to remove it from the task, or edit its properties.

Route optimisation

When you start a task, C-Pilot PRO calculates the optimised path that minimises the overall distance. In a competition, this often translates in an advantage even larger than one kilometre.

The optimised point on the active cylinder is shown with a triangle, pointing inward if the waypoint has to be validated on entry, or outward in the opposite case.

Figure 22 shows a real flight situation occurred during a competition. The optimised path suggested by C-Pilot PRO is drawn as a black line, while the path that you would follow aiming at the centres of

the turnpoints is drawn in red. The advantage, in terms of distance to fly, is quite clear.

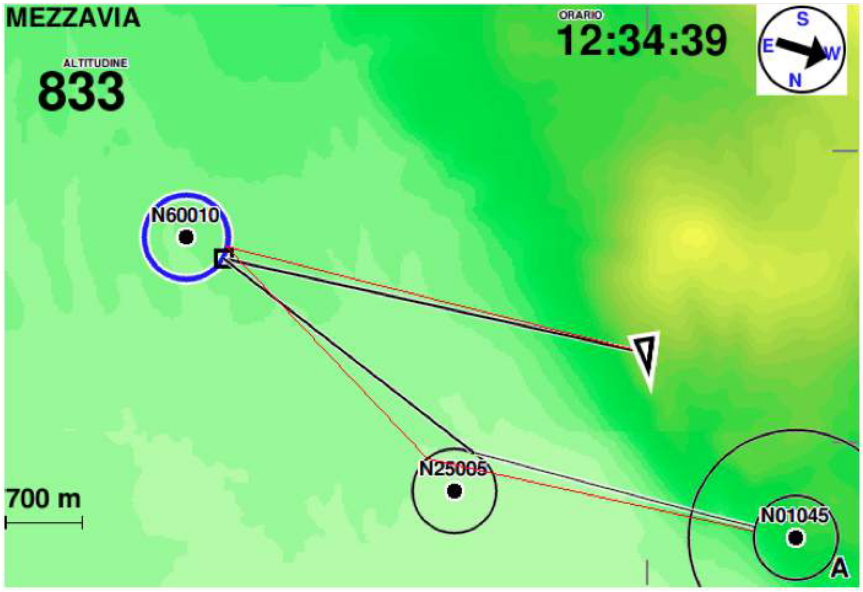
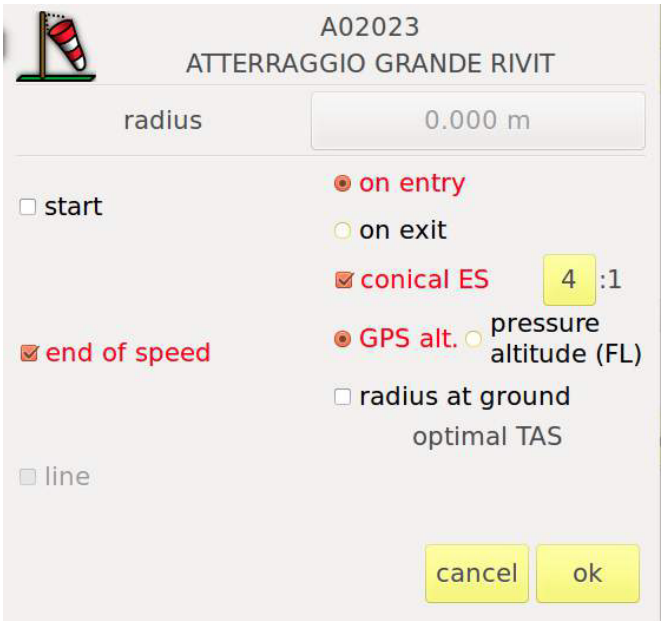


Figure 22: route optimisation

CONICAL END SPEED SESSION

It is possible to set the goal as Conical End Speed Session (CESS).



Setting the Cone is very intuitive.

a) select the waypoint as END OF SPEED;

b) select as CONICAL ES;

c) manage the inclination of cone simply by pressing the button on the right side (in this example “4”);

d) set the cone radius at ground just by selecting the option (a window will appear to enter the radius the task director has decided)

Fai Triangle and Xc-Assistant

You C-PilotEVO helps you in your Xc-flights, exactly as is does in a competition. Compass, in fact, has has leveraged its expertise in the competition software (that is considered the best ever and used by the world champions) to develop the best software even for Cross Country. By these functions, the C-PilotEVO:

- keeps the pilot informed about the optimized route and the distance ha has already flown;
- keeps the pilot informed about the average speed (km/h) on the optimized route flown;
- keeps the pilot informed (both graphics and datas) about the minimum and max FAI triangle possible, in relation to the portion already flown;
- shows the pilot the best Yassen/FAI triangle (optimized);
- shows the pilot the sector where to validate the Turn Point 3 to close the triangle;
- shows the pilot (both graphics and data) the final sector (optimized triangle's total distance - 20%) to close the flight;
- Shows the pilot additional data about the "flat triangle" flown and the distance and route he has to fly to validate it;
- - Keeps the pilot informed about the altitude he will reach the optimal point of any sector, the glide ratio required to reach the sector, the distance of the sector.

It is very interesting to note how the software works together with the Glide Over Terrain graphics functions. By the 2 functions together (triangle assistant and G.O.T.) the pilot will have a precise "look" of both: the sectors and the end of his glide, in graphics and data. By this way the pilot can decide quickly the best route in order to touch the sectors and to close his flight optimizing his time and glide.
WARNING: the flight downloaded in websites like XContest.org or similar can result a little different from the suggestions received in flight by the instrument, because XContest analyses the tack after completing it, while xC-Assistant does the contrary.

Introduction: different ways to use the Triangle assistant

You have 3 different options in using the xC-Assistant:

1) **MANUAL** (recommended only in particular cases): the Vertex1 and the Vertex2 are planned and fixed by the pilot before the take off. This is indicated for declared flights or for strictly planned flights.

2) **AUTO MODE** (**recommended if the pilot has planned the flight he will do or has a good idea of it**): the pilot, while in flight, **marks manually the Turn Point 1 (Vertex 1**) using the touch screen. From that moment on, the instrument works automatically. In fact the instrument automatically marks the Vertex2, draws the sectors of Turn Point 3 and, after it, the final sector.

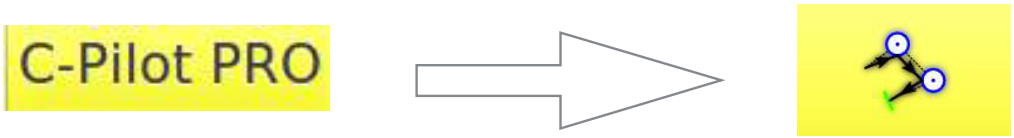
3) **<u>"FREE" AUTO MODE</u>**: the pilot just starts the navigation in auto mode at take off. No other actions are needed. The instrument draws in the map, in purple color, the best FAI triangle possible considering the tack in real time already flown. If the pilot wants, he can start the navigation to close the drawn triangle and update the navigation by touching the same button. This function needs a little experience in managing the xC-Assistant software and we **recommend to use it after a little experience in using the AUTO MODE**.

In any case, the pilot has the possibility, if he is not able to close the Yassen/FAI triangle (or conditions does not allow him), to close a flat triangle and navigate with it.

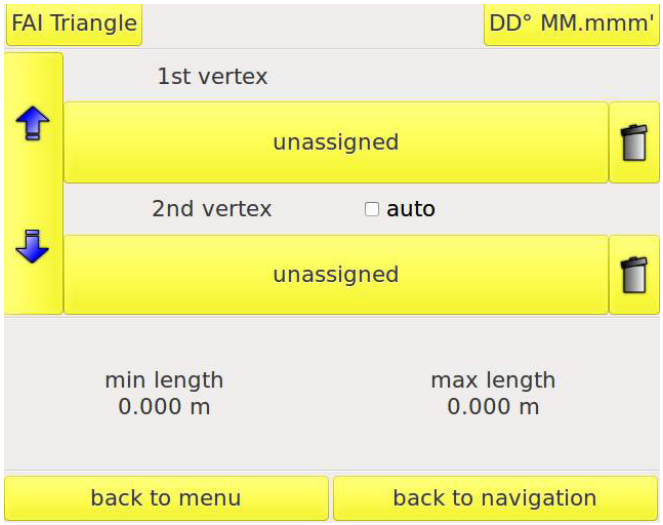
Start the navigation

At take off (or in flight if you forgot it), you have to START the NAVIGATION in order to let the instrument run the xC-Assistant software. Enter in the C-PilotPRO menu and press the TASK button

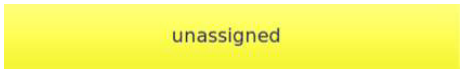
The TASK page has 2 different options: "COMPETITION TASK" and "FAI TRIANGLE". Of course, if you want to run the XC-Assistant, choose the FAI Triangle page by pressing the button.



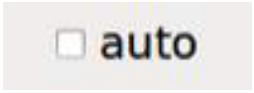
Now you are inside the XC-Assistant page of C-Pilot EVO:



You have now just few buttons to set and start the navigation:

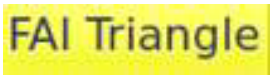


By this buttons (vertex 1 and vertex 2). You can set manually your Turn Points if you want to run a declared triangle, or if you have exactly planned your triangle before the take off. When you press the button "unassigned", the list of waypoints will appear in the display of C-pilot EVO. You may choose any waypoint as "Vertex 1" and , then, as "Vertex 2". Once you have selected both, C-Pilot EVO will show the minimum and maximum triangle length. (**normally you do not use these buttons!)**



If you want the XC-Assistant run in automatic mode (most of times), you just have to "flag" the AUTO checkbox. The auto mode is already flagged as defalut

by pressing the "Trash" icon you can cancel a fixed vertex. This can be useful in flight if you want to reset your triangle (cancel both Turn Points) or if you want to renew the Vertex 1 (in the AUTO mode the Vertex 2 is renewed automatically).



this button IS VERY IMPORTANT because it allows the pilot to start the navigation (mandatory for starting the triangle navigation).

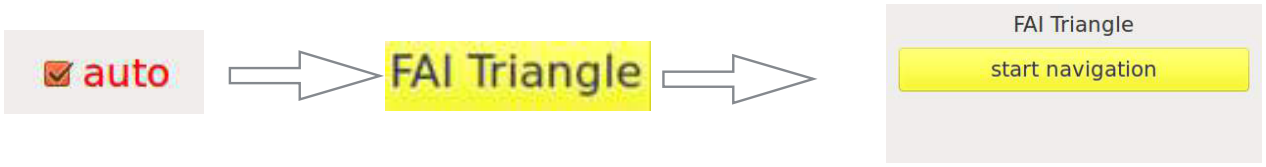
NORMALLY, IF THE PILOT JUST WANTS TO START THE FLIGHT IN AUTO MODE, HE HAS TO ENTER THE MENU AND PUSH "FAI TRIANGLE" button and the button "START NAVIGATION"

Let's see how to start the navigation in different modes:

1. Free Automatic navigation mode

It is possible to use the xC-Assistant in FREE AUTO mode: the pilot has just to start the navigation and fly. Even if it seems the easier way to use the triangle assistant, it is less intuitive than the AUTO MODE (by marking the first turn point): as consequence it is recommend for more experienced pilots in running the x-CAssistant.

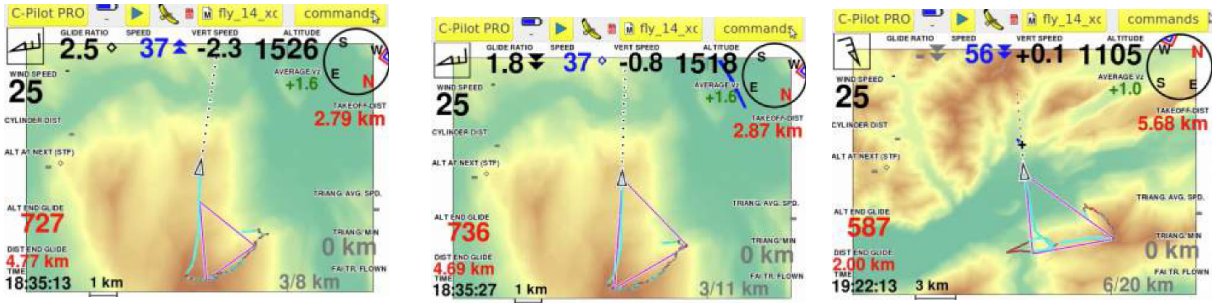
before starting the navigation, just control that the AUTO checkbox is flagged and start the navigation:



Now the pilot flies normally because nothing else is required to do. At the first part of the flight, the pilot will not see any graphics, because it is very likely that he just flies in quite straight direction and

the C-Pilot will not detect any triangle.

While flying, the xC-Assistant will continuously analyse your track. As soon as it detects that a Yassen / FAI triangle is possible (bigger than 15 km), it will draw the triangle in violet colour (see pics below).

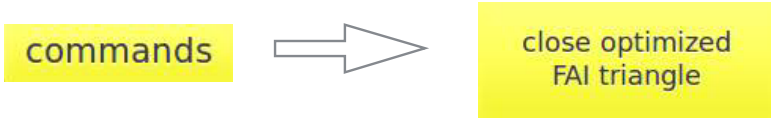


ATTENTION: the xC-Assistant will draw the best triangle possible! This does not mean that the triangle will necessarily start from the point where the pilot is because, as the instrument of course cannot know the pilot's intentions, the triangle is drawn only by considering the actual situation.

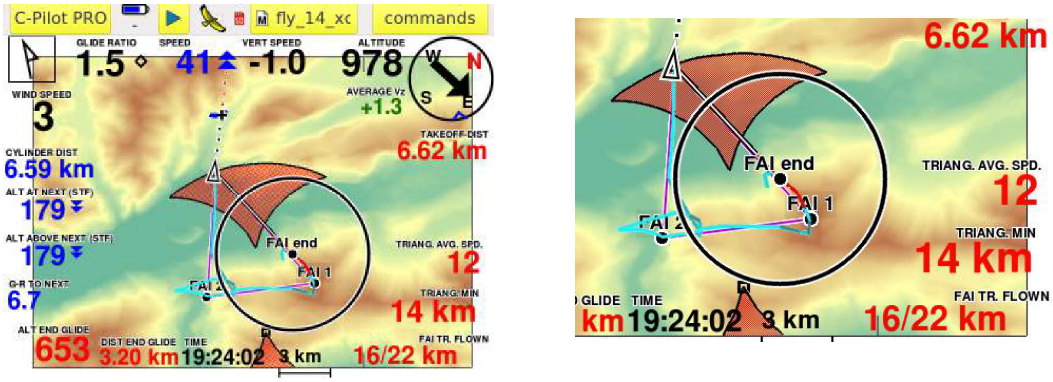
The XC-Assistant will update the violet triangle by continuously re-analysing the track, as showed in the example below.

You can complete the triangle just by flying along the purple lines but you have a better option, that is to start the navigation as soon as you want to close the triangle.

As soon as you want to navigate the triangle (while in flight): enter in the COMMANDS menu and press "close optimized FAI triangle"



the instrument will navigate you (as in a competition task) by drawing the TP3 sectors and the closing sector (circular) as shown in the figure

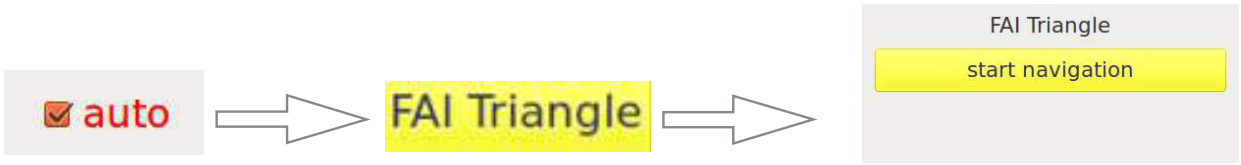


The command "close optimized FAI Triangle" can be renewed during the flight if the pilot want to update the triangle and the navigation to it.

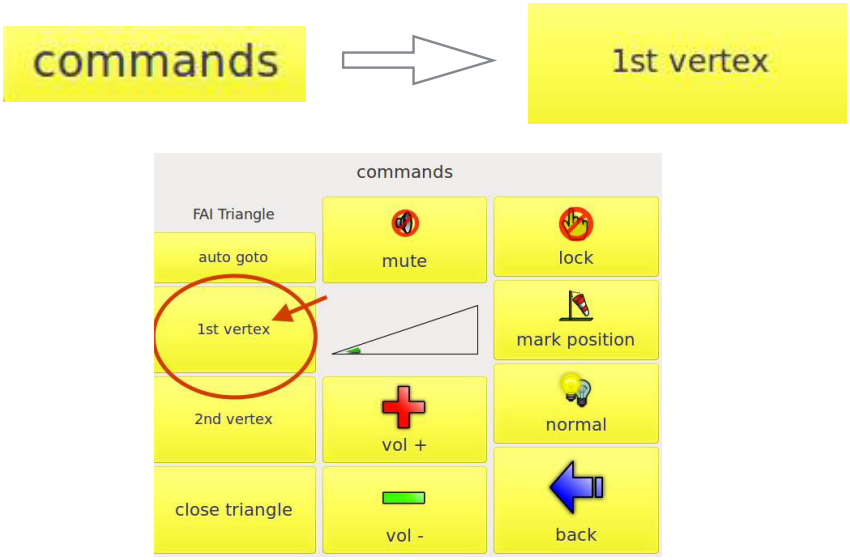
2. Auto Mode NavigationRoute optimisation

This is a very clever way to navigate with XC-Assistant and **we recommend it**. In this case the pilot has a good idea, before the take off, about the flight he is going to do.

To start the navigation, just be sure the AUTO checkbox is flagged and start the navigation exactly as in the case of free automatic mode:



When you are arrived to your first Turn Point, you have to press the COMMANDS button in your display (right upper angle of display) and mark the TP1 (Turn Point 1) by pressing the **1th VERTEX** button.

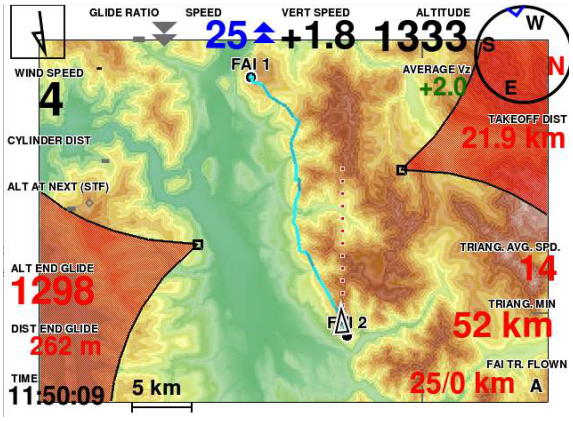


From this moment on you will notice that C-Pilot EVO draws a point called “FAI1” and, at the same time, it starts to draw the sectors of the triangle. These sectors, of course will grow as far as the distance, between you and the FAI1 point, increases.

Note that it is not crucial to mark the FAI1 point with absolute precision: the instrument will calculate the triangle using, in any case, the best points you your track. At the same time, it is important, anyway, to be precise in marking the FAI1 point to let the xC-Assistant give good suggestions to you while flying to the second Turn Point of the Triangle.

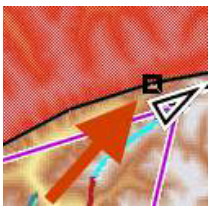
No more activity is required by the pilot from now on. In fact C-Pilot EVO will **detect automatically the turn point 2** (FAI2) by calculating (and re-calculating continuously) the best point possible. **Note that the instrument will automatically cancel the FAI2 point if it feels that the pilot has reached a better point (as TP2) and is improving in his flight. As soon as the instrument feels again that the FAI2 point is reached, the xC-Assistant will draw it again**.

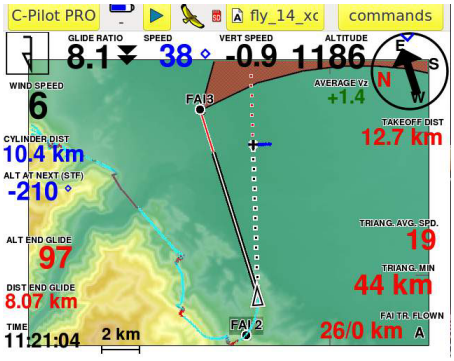
(Of course, if the pilot wants, the second vertex may be marked manually in the COMMANDS menu. This option is to be considered useful in only some particular cases.)



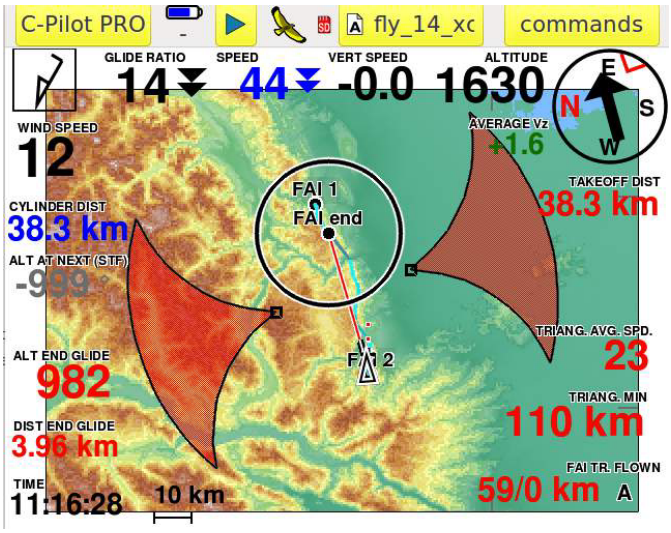
From the moment the second vertex is marked by the instrument, you have two main options if you want the instrument to navigate with more suggestions:

a) **enter in the COMMANDS menu and press the button AUTO GOTO**. In this case the instrument will navigate you to the triangle sector, and will show some useful data fields (example: glide ratio required to the best sector point; distance to the sector; arrival altitude at the sector, navigation line to the sector … exactly as in competition). Note that **a little square will be automatically drawn by the instrument in the sector's side: this is the best point to touch for closing the triangle**. From the moment the pilot has reached the sector, the same will change colour (from red to grey) and the instrument will navigate automatically the pilot to the closing sector.





b) **enter in the COMMANDS menu and press CLOSE TRIANGLE**. In this case the instrument **will close a FLAT TRIANGLE**. It will stop the navigation to the sector and will navigate the pilot to the closing sector of the FLAT triangle ignoring the Yassen/Fai triangle. This is a very frequent case: the pilot is not willing to close a Yassen/FAI triangle: his task is to go back to the best point to close a flat triangle or to close a flight “go and come back” or similar (that is considered in any case as Flat triangle by the XContest rules). **Note that this command (choice) is not reversible.**

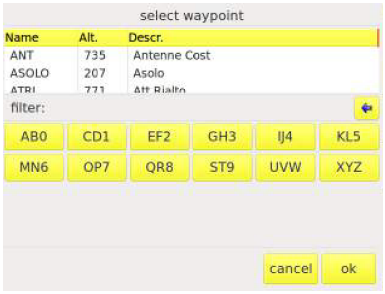


Note that, in any case, the instrument will draw, in violet, the best FAI triangle possibile considering the track points.

Note that, even if the x-CAssistant is running, you can navigate - as usual - by the “GOTO” to any waypoint. C-Pilot EVO, in this case, considers as a “priority” the navigation to a single waypoint and, as consequence, the auto-zoom of the map is calibrated to the navigation to the waypoint and not to the triangle (all triangle data fields and graphics iof the xC-Assistant remain active and running). As soon as you want to navigate again with the x-CAssistant (triangle navigation), you may enter in the COMMANDS menu and press AUTO GOTO: the instrument will navigate the triangle and the auto-zoom is calibrated to the entire triangle scenery, leaving the navigation by the GOTO. This option is reversible.

3. Manual Navigation

If you want to navigate a declared triangle, or to fly to precise turn points you can select manually the FAI1 and FAI2 Turn Points.
Enter in the FAI triangle menu and do not select the AUTO mode. Press the Vertex 1 button “UNASSIGNED” . The waypoint list will appear.



select a waypoint and confirm it by the button “OK”
Repeat the procedure for the Vertex FAI 2.

Now you can notice that the instrument displays the min and max triangle leggings possible.

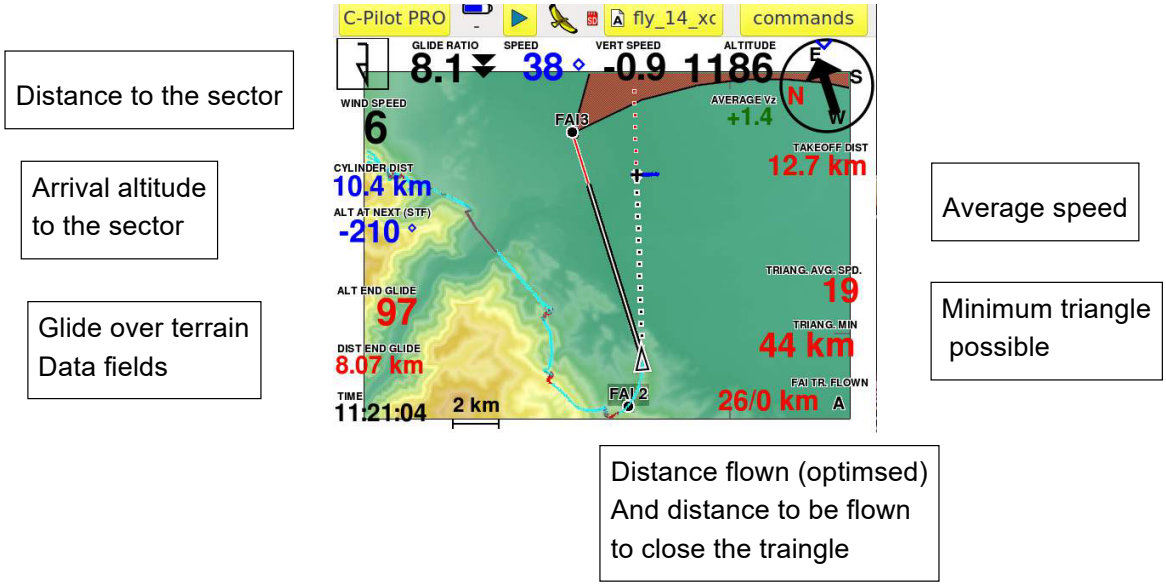
remember to START NAVIGATION.

The instrument will display the triangle and the waypoints as soon as it will 3D fix satellites.

Triangle data fields

If you want to navigate the triangle, you have the possibility to use some data fields especially designed for that purpose. As consequence, it is very useful to customize special displays for the XC flights.

This figure is only an example of a customized display for the Xc navigation



As shown, you may use some special data fields (find them in the Custom Display List and).

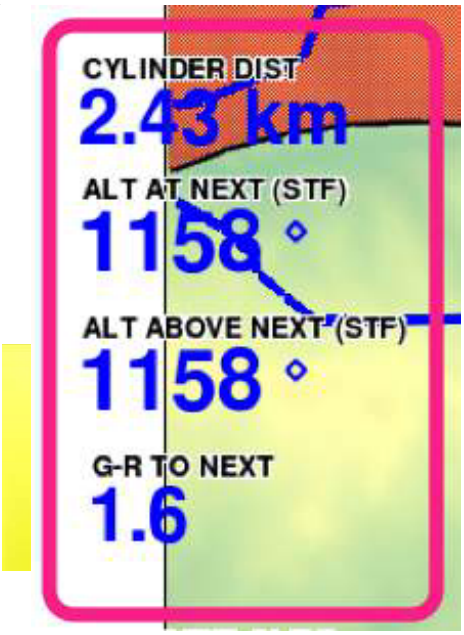
TRIANG MIN: shows in real time while flying the minimum triangle possible considering the track already done

TRIANG MAX: shows in real time while flying the maximum triangle possible considering the track already done

TRIANG AVG SPD: shows in real time the average speed of the pilot in the optimized distance already covered; this is very useful because the pilot has a good idea of his speed during a cross country flight. As consequence he can decide if it is better to turn to close the triangle or to insist to try a longer track.

FAI TRIANGLE FLOWN: this data field is composed by 2 numbers divided by a slash.
The number in the left shows the optimized distance already covered by the pilot (considering the track).
The number on the right will be active only after the FAI2 point has been marked (manually or in auto mode): **this number shows the total optimized distance necessary to close the triangle**.
Example: 64/100 = the pilot has already flown 64 Km. the total minimum flight length is 100 km (for closing completely the triangle).

In some cases it is possible to find the number in the right showing less distance (in Km) than the one in the left. This is not an error but a good suggestion. In fact the XC-Assistant has calculated that the best triangle possible considering the flight already done is more little than the distance covered. As consequence the pilot will obtain more points in closing a FLAT triangle rather than a FAI triangle
Example: 100/52 = you can close a triangle of max 52 km … but you have already flown 100 km. As consequence is more useful to continue the flight or to go back and close a flat triangle.



CYLINDER DIST: this fileld (normally used in competition to show the distance to the WP cylinder) if the XC-Assistant is activated with AUTOGOTO will show the distance to the next sector of the triangle

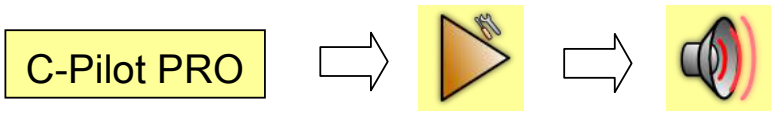
ALT AT NEXT: this fileld if the XC-Assistant is activated with AUTOGOTO will show the altitude the pilot will arrive to the next sector of the triangle

ALT ABOVE NEXT: this fileld if the XC-Assistant is activated with AUTOGOTO will show the altitude the pilot will arrive above the next sector of the triangle considering the terrain

G/R TO NEXT: this fileld if the XC-Assistant is activated with AUTOGOTO will show the altitude the pilot will arrive to the next sector of the triangle

Audio variometer: Compass Sound System (CSS)

The CSS is an advanced function made available by C-Pilot EVO. The variometer sound is surely one of the most important features for a pilot. With C-Pilot EVO you can completely tune it to your taste. You will be able to get the most out of the outstanding sensitivity of the C-Pilot PRO variometer. There will be no screaming near base to annoy you or loss of sensitivity in weak conditions. Here is how to create your own audio profile.



In the "**setup**" menu, press the "**audio**" button. The user interface allows a full control over the variometer sound while being as intuitive as possible (Figure 23).

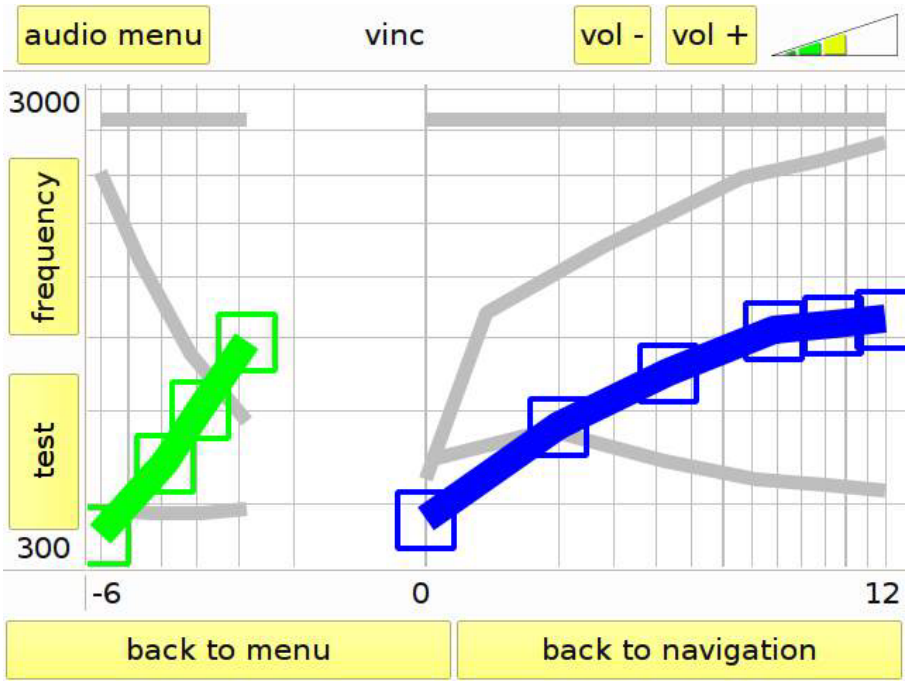


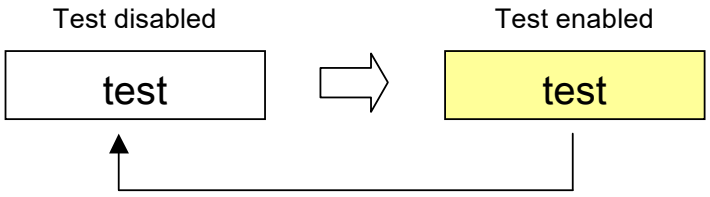
Figure 23: variometer sound setup

Frequency: one of the parameters that you can customise is the frequency of the sound: this can go from 300 Hz to 3000 Hz depending on your vertical speed. The plot is divided in two sectors: positive values (climbing) up to 12 m/s on the right and negative values (sinking) down to -6 m/s on the left. The interval between the vertical grey lines is 1 m/s. Please note that the spacing between 0

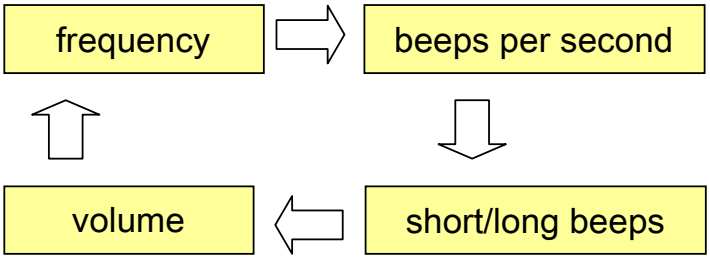
and 1 m/s is larger than that, for example, between 5 m/s and 6 m/s. This allows you to have a greater precision when you need it most.

Blue and a green thick lines show the response of the audio. You can move the squared cursors with your finger to tune the curves as you like.

To test your new setting, press the "**test**" button: when you touch the display you will hear the sound corresponding to the value of vertical speed that you have "touched." Pressing "**test**" again, you go back to the editing mode to change the curves again.



In the same way, you can tune three other parameters: the number of beeps per second (from 1 beep every two seconds to 5 beeps per second), the beep duration from completely silent (0% ratio between sound and silence, when the cursors are at the bottom of the plot) to continuous sound (100% ratio when the cursors are at the top of the plot), and even the volume of the sound at different vertical velocities.



Warning: the speaker can produce up to 1 W sounds. A loud continuous sound can reduce the battery life.

The **audio menu** (Figure 24) includes four commands:

- **New audio**: creates a new audio profile based on the default one;
- **load audio**: loads an audio profile from the USB memory;
- **rename**: opens a virtual keyboard that allows you to change the name of the current audio profile;
- **undo the changes**: restores the previously saved profile.

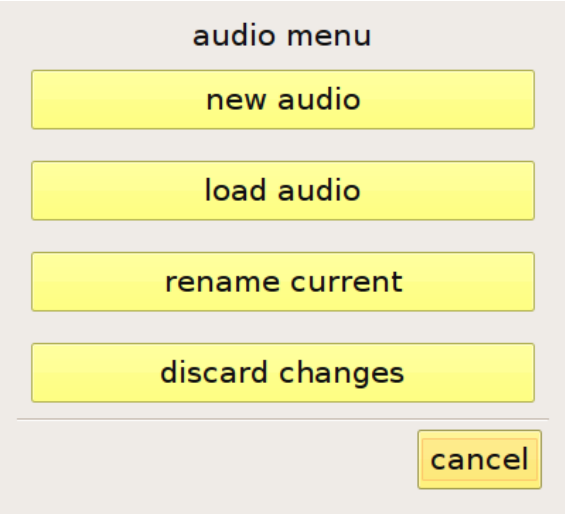
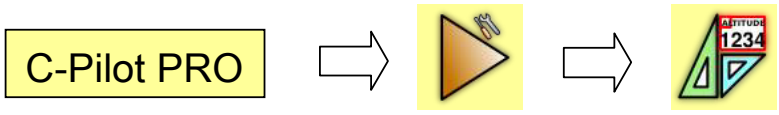


Figure 24: audio menu

Customised-display management

One of the most distinctive innovations introduced by C-Pilot EVO, together with the variometer customisation, is the possibility to design the navigation page.



Press the "**display**" button in the "**setup**" page to open the display management page (Figure 25). From there, you can modify and customise the navigation page by deciding which information you want to be shown, where and how big. Different customisations (displays) can be saved by name and reloaded when you need them. When you open the display page, you will be shown a list of the displays stored in the USB memory of C-Pilot EVO.

You can create as many displays as you like and save them in the USB memory or SD Card memory. Selected displays can be assigned to different flight situations: thermal climb, wait for start during a task, final glide, generic or airspace proximity alarm.

Assigning a display to a flight situation is quite easy: touch the display in the list to select it and then press the button corresponding to the chosen situation. The "start" condition has a higher priority with respect to "thermal". "Final glide" has a further setting: it will trigger when the calculated arrival height above goal is larger than the selected value. The condition assigned to each display is shown on the left of the list.

By means of the buttons on the right side of the page, you can perform several operations on the selected display.

- **Delete**: deletes the selected display. The corresponding file is removed from the USB memory. You will not be able to delete the last display: you need to have at least one;
- **Duplicate**: creates a new display, identical to the selected one and asks for its name. By doing so, you can have a common base to modify, without having to start from scratch when you need a new display;
- **Edit**: allows you to fully customise the display. The editing interface (Figure 26) shows all the data fields that are included in the selected display. Each field is divided in two halves. By dragging the left half you can place the field where you want on the screen. The right half allows you to resize the field. There are a lot of data fields. We shall describe them in the next paragraph. For each data field, C-Pilot PRO shows a descriptive label (such as "Altitude") that can be resized by means of a command in the "**display menu**".
- **Rename:** shows a virtual keyboard that allows you to change the name of the selected display.

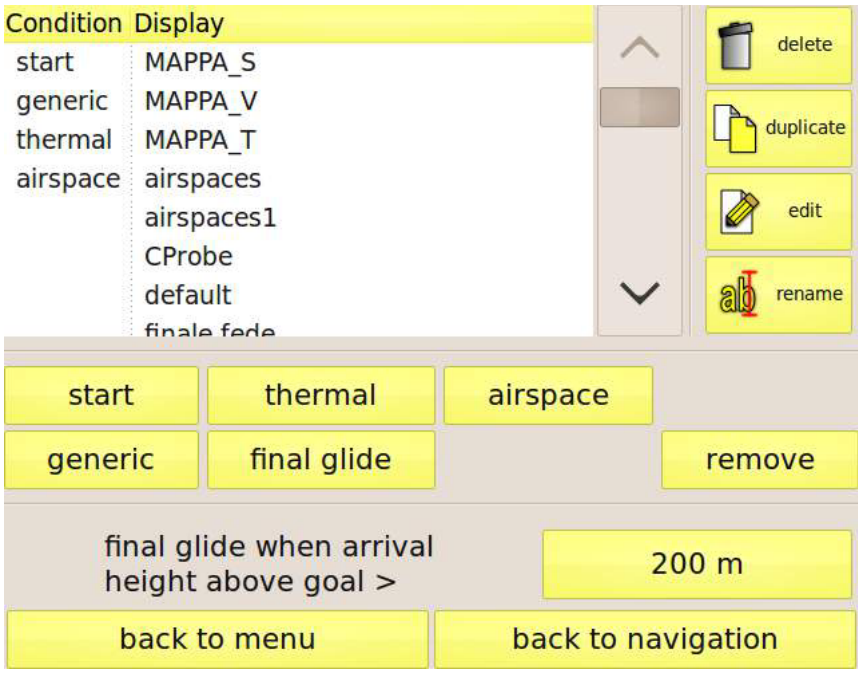


Figure 25: display-management page

Editing a display

Editing a display is fast and easy. Select it from the list and press the "**edit**" button to start the editor. You will be shown the data fields as they would appear in the navigation window, but with a gray border. When you touch a field, its border turns red, meaning that it is active and you can modify it.

Each field is divided in two halves. By dragging the left half you can place the field where you want on the screen. The right half allows you to resize the field. For example, to move a field in a different position on the screen, you just have to touch its left side with your finger and drag it where you want. The "**properties**" button in the top right corner of the screen may be used to change the colour of the characters or to make the background of the field opaque, so that you can see it very clearly even if it is above other fields, such as the map.

The "**display menu**" button allows you to save the changes and to go back to the display management page, by pressing the "**done**" button. You can also choose the size of the field labels (small, medium, or large). This setting affects only the display that you are editing.

By means of the "**discard changes**" you can restore the previous version of the display, discarding the changes that you have done. "**Revert to default**" discard all your changes and restore the default display. Press "**cancel**" to close the menu and continue editing the display.

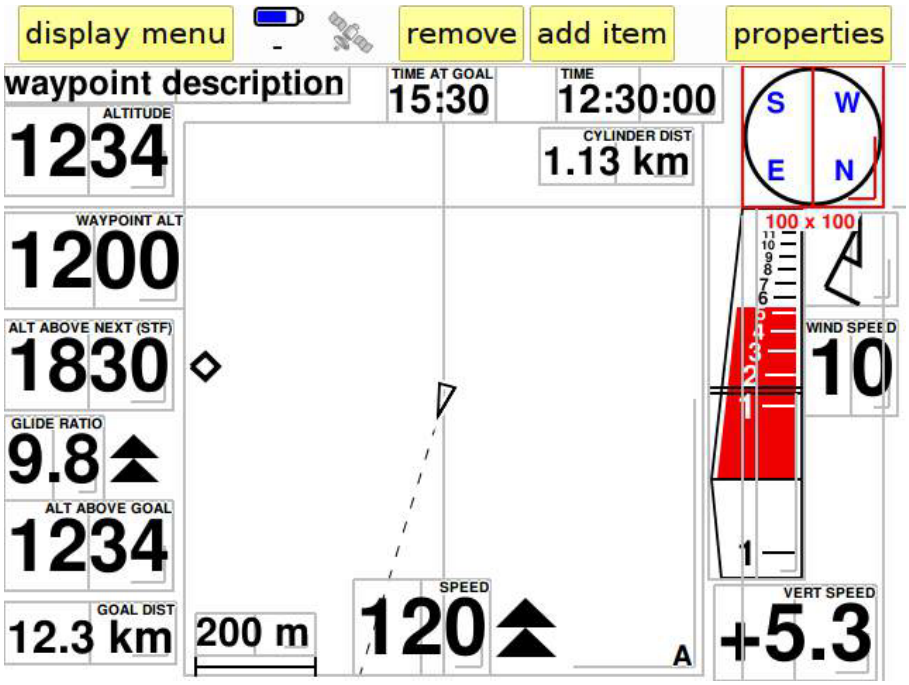


Figure 26: editing a display

To remove a data field from the display, just touch it to activate it (its border turns red) and press "**remove**" from the control bar at the top of the screen.

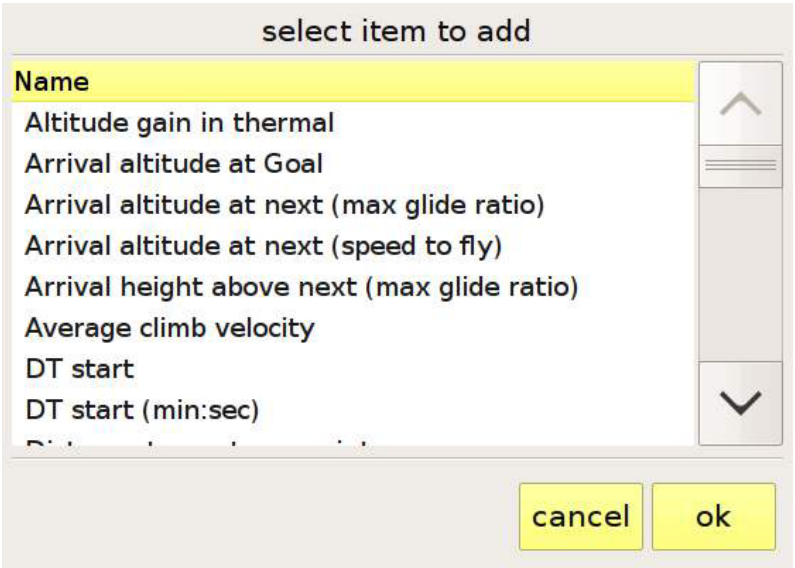


Figure 27: list of the items that can be shown

To add another field to the display, press "**add item**". A list (Figure 27) will appear showing all the

available items ordered alphabetically. Select the item that you want to be shown in the display and press "**ok**". The selected item will appear in the middle of the display, ready to be positioned and/or resized.

There are 36 items that you can choose from. Here is the list ordered by function.

Flight data

- **Acceleration:** total acceleration determined by the optional external sensor C-Probe, in units of "g".
- **Altitude:** it is the altitude with respect to the sea level determined by the pressure sensor reading.
- **Altitude GPS:** it is the altitude with respect to the sea level determined by the internal GPS.
- **Height over terrain:** shows your height with respect to the ground. To operate correctly, this field requires that the terrain map of your flight area is correctly loaded in the device, even if not shown in the map. Warning: Compass s.r.l. does not guarantee in any way the correctness of the terrain file and therefore does not guarantee also the correctness of the height above ground.
- **Altitude limit:** indicates the maximum allowed altitude at your current position depending on the currently-loaded airspaces and on the limits entered in the active task.
- **Round compass:** this item has a double function. It shows the direction that you are flying to with respect to the ground. The cardinal points rotate showing where the North is. If a task or a go-to is active, a big arrow in the middle will indicate the bearing to your next waypoint. A small green circle indicated the direction to the centre of the next waypoint. A small blue triangle on the round compass circle indicates the direction of wind. Two small blue triangles indicates the direction of the wind and that the speed of wind is more than 1/3 of the pilot's speed. A red triangle indicates that the speed of wind is more than ½ of pilot's speed.
- **Heading:** shows the direction of motion in degrees with respect to the North.
- **Magnetic heading:** magnetic heading determined by the optional external sensor C-Probe.
- **Distance from take-off:** distance between your current position and the take off point.
- **Flight duration:** duration of the current flight, starting from the moment when C-Pilot PRO has detected the take off.
- **Glide ratio:** shows the glide ratio with respect to ground. It averages the horizontal and vertical speeds over the time interval set in the configuration page (see page 16). The symbols beside the numeric value indicate whether you have to accelerate or decelerate to fly at maximum glide ratio, taking into account also the wind. Two upward-pointing triangles mean that you have to increase your speed more than 6 km/h (3 km/h each) to fly at maximum glide ratio. One triangle suggests a speed increase of 3-to-6 km/h. A diamond means that your speed is correct. Downward-pointing triangles analogously suggest slowing down.

- **True and indicated airspeeds:** show the true and indicated airspeeds (measured by the optional external sensor C-Probe). Please refer to the user manual of the C-Probe for further details.
- **Air-referenced glide ratio:** shows the glide ratio calculated taking into account the horizontal speed (measured by the optional external sensor C-Probe) and on the vertical speed measured by the variometer.
- **Flight level:** the flight level is defined consistently with its use in aviation. “FL050”, for example, indicates an altitude of 5000 feet, calculated from the atmospheric pressure measured by the internal barometer and referred to the standard atmosphere. It might be useful for example if in your flight area it is forbidden to fly above a given Flight level.
- **Altitude gain in thermal:** this is a partial altimeter that automatically nulls when you turn at least 270° while climbing. It is very useful to estimate your gain or height loss while centring the thermal. It nulls again when you stop climbing for a time longer than the “autozoom persistence” in the “map” page (see page 59).
- **Time from GPS:** shows the time given by the GPS corrected by the offset set in the configuration page (see page 15).
- **Analog vario:** your vertical speed is displayed graphically by a solid bar. It is coloured in cyan for velocities smaller than the past average climb velocity, red for values that are larger than twice the average velocity, and with intermediate colour gradations in between. The response time of the analog variometer can be set in the configuration page (page 16). The scale is not fixed: it is shifted depending on the current vertical speed to optimise the screen usage. **A double horizontal line indicates the past average climb speed. This value is used by the device as the McCready parameter. Take note that, at the same time, the track showed in the thermal page will assume the same colors: cyan for vertical speed lower than the past average climb speed and red for values that are larger than twice the average climb velocity.**
- **Vertical speed:** it is the digital indicator of the vertical velocity. Its response time can be set in the configuration page (page 16).
- **Netto vario:** indicates the vertical speed of the airmass. This value is calculated taking into account the sink rate of your wing, determined from the polar curve that you are using, and the airspeed measured by the optional external sensor C-Probe.
- **Average climb velocity:** digital indicator of the average climb speed during the last 30 minutes. It is used by C-Pilot PRO as the McCready parameter and used to estimate arrival heights at the next waypoints.
- **Ground speed:** ground speed measured by the GPS. The symbols beside the numeric field indicate whether you have to accelerate or decelerate to fly at the predicted speed-to-fly according to the McCready theory, taking into account the wind. Two upward-pointing

triangles mean that you have to increase your speed more than 6 km/h (3 km/h each) to fly at the speed to fly. One triangle suggests a speed increase of 3-to-6 km/h. A diamond means that your speed is correct. Downward-pointing triangles analogously suggest slowing down.

- **Wind speed:** this item shows the wind speed. Its value is automatically calculated when you turn more than 270 degrees.
- **Optimal Speed indicator:** it is a very intuitive graphic bar that shows the pilot, in real time, the optimal speed to fly (referred to air) in relation to the particular phase of flight. While waiting the start the instrument will calculate the optimal speed as the one more close possible to the best glide ratio. While in cross or in competition the optimal speed will take in consideration the MacCready factor. While in glide to goal, and in particular in Conical ESS, the speed indicator will calculate the optimal speed to reach the cone in the less time possible. Optimal speed is achieved, in any different phase, when the indicator is shown as diamond in the green central part of the bar. If the speed indicator is allocated in the lower red part and showed by a double arrow, it means the pilot has to increase the speed and, at the contrary, when the indicator is allocated in the upper red segment it meand the pilot has to reduce his speed.
- **Wind arrow:** the wind speed is automatically calculated when you turn more than 270 degrees. It is represented graphically by the standard meteorological symbol: an arrow indicating the wind direction, with various tails indicating its intensity. A short tail corresponds to 5 knots, a long one to 10 knots. The direction is shown with respect to your motion: an upward pointing arrow means that you are flying downwind.
- **Wind arrow (North):** the wind arrow with the “N” label shows the wind direction with respect to the North. It is particularly useful when using the map with "**North up**" orientation.

Final-glide data

- **Arrival altitude above Goal:** C-Pilot PRO calculates continuously the arrival height above goal at speed to fly, taking into account the wind speed and the wing polar. This field helps you choosing when to start your final glide to goal. The calculation includes the optimised path through the remaining turnpoints.
- **Arrival altitude at Goal:** this is the arrival altitude above mean sea level at goal. It is calculated as the previous item. The maximum value shown is 9999 m.
- **Required altitude to Goal:** indicates the minimum altitude above mean sea level that you need to reach goal flying at speed to fly.
- **Distance to Goal:** this is the length of the optimised route from where you are to goal.
- **Glide ratio required to Goal**: shows the glide ratio that you need to arrive at goal gliding along the optimised route.

- **Arrival time at Goal**: shows the estimated arrival time at goal flying at the speed to fly along the optimised route. If you still need gaining altitude to glide to goal, C-Pilot PRO takes into account the additional time needed to climb this excess altitude at the measured average climb rate.
- **Time at ESS**: shows the arrival time at End of Speed Session. It is useful most of all in Conical ESS to verify if staying in a thermal or flying at a determinate speed shortens or not the arrival time.

Start-pylon data

- **dT start:** shows – in seconds – how early (or late) you will arrive at the start pylon gliding from where you are at maximum glide ratio with respect to the ground (this also holds if you are inside the cylinder). This parameter is extremely useful while waiting for the opening of the start window. When it shows zero (an acoustic alarm will warn you), you will arrive at the start cylinder exactly when the window opens. When calculating **dT start**, C-Pilot PRO takes into account any waypoint that has to be validated before the start pylon. The arrival time to the start pylon is determined considering the optimised route. Data shown by this parameter depends on the task type:
  - Race to goal: dT start refers to the start open time. This is indicated by the symbol **OP**;
  - Elapsed time: dT start refers to the start close time. In this kind of tasks it might be convenient to validate the start pylon after the other pilots: dT start indicates if you can still make it to the cylinder before it closes. This is indicated by the symbol **CL**;
  - Clock gate: dT start refers to the open time of the next gate. This is indicated by the symbol **k**.
- **dT start (min:sec):** similar to the previous item, but the time is expressed in minutes:seconds.
- **Time to the opening of the start window:** shows a countdown relative to the start-windows opening time.
- **Time needed to arrive at the start cylinder:** indicates how long you will need to glide to the start cylinder from your current position.
- **DT start ruler**: graphical representation of the **dT start** parameter. Each tick in the ruler corresponds to 10 s. The ticks are not uniformly spaced to allow for maximum readability when **dT start** is close to zero, while allowing to show also large values. The value is indicated by a blue rectangle. If **dT start** is positive (you would arrive early) the rectangle is solid filled. If it is negative (you are late) the rectangle is not filled.

Glide to next waypoint

- **Arrival height above next (max glide ratio):** arrival height (with respect to the waypoint altitude) at the optimised point of the next cylinder, flying at maximum glide ratio. The symbols on the right of the numeric indicator shows the rate of change of this parameter:

This is an innovative feature of C-Pilot EVO, particularly useful when there is a significant drift of the thermals due to the wind. It indicates whether your current thermal is useful or not.

A double upward-pointing triangle means that the arrival altitude at the next waypoint is increasing with a rate at least equal to the average climb. In this case it may be useful to stay in that thermal, even if the variometer shows a not so good value: the wind is drifting you toward the waypoint. A single upward-pointing triangle tells that the arrival altitude at the next waypoint is increasing with a rate at least equal to half of the average climb. A diamond indicates that the arrival altitude is not changing significantly: most probably, the height gain is being compensated by the wind drift. One or two downward-pointing triangles indicate that the arrival altitude is diminishing: if you are turning in a thermal, your height gain is not enough to compensate for the wind drift.

- **Arrival altitude at next (max glide ratio):** it is the arrival altitude above mean sea level at the optimised point of the cylinder, flying at maximum efficiency. The symbols indicate, as for the previous item, if the thermal is advantageous or not.
- **Arrival height above next (max glide ratio):** it is the arrival height with respect to the waypoint at the optimised point of the cylinder, flying at maximum efficiency. The symbols indicate, as for the previous item, if the thermal is advantageous or not.
- **Arrival height above next (speed to fly):** arrival height (with respect to the waypoint altitude) at the optimised point of the next cylinder, flying at speed to fly. The symbols indicate, as for the previous item, if the thermal is advantageous or not.
- **Arrival altitude at next (speed to fly):** it is the arrival altitude above mean sea level at the optimised point of the cylinder, flying at speed to fly. The symbols indicate, as for the previous item, if the thermal is advantageous or not.
- **Next waypoint altitude:** altitude above mean sea level of the next waypoint. The value is calculated from the waypoint name, if coded in the standard format (letter, two-digit sequential number of the waypoint, and three-digit altitude), or from the data entered in the waypoint page.
- **Next waypoint name:** shows the name of the next waypoint in the task
- **Next waypoint description:** shows the description of the next waypoint in the task.
- **Distance to next cylinder:** indicates the distance from the optimised point of the next turnpoint.
- **Distance to next waypoint:** this is the distance from the centre of the next turnpoint.
- **Glide ratio to next waypoint**: shows the glide ratio that you need to arrive to the cylinder of the next waypoint, at the optimised point.
- **Turn to next:** shows how many degrees and in which direction (shown by the triangular arrow) you have to turn to go toward the optimised point of the next waypoint.

FAI triangle and Xc Assistant

- **TRIANG MIN:** shows in real time, while flying, the minimum triangle possible considering the track already done

- **TRIANG MAX**: shows in real time while flying the maximum triangle possible considering the track already done

- **TRIANG AVG SPD**: shows in real time the average speed of the pilot in the optimized distance already covered; this is very useful because the pilot has a good idea of his speed during a cross country flight. As consequence he can decide if it is better to turn to close the triangle or to insist to try a longer track.

- **FAI TRIANGLE FLOWN**: this data field is composed by 2 numbers divided by a slash.
  The number in the left shows the optimized distance already covered by the pilot (considering the track).
  The number on the right will be active only after the FAI2 point has been marked (manually or in auto mode): **this number shows the total optimized distance necessary to close the triangle**.
  Example: 64/100 = the pilot has already flown 64 Km. the total minimum flight length is 100 km (for closing completely the triangle).
  In some cases it is possible to find the number in the right showing less distance (in Km) than the one in the left. This is not an error but a good suggestion. In fact the XC-Assistant has calculated that the best triangle possible considering the flight already done is more little than the distance covered. As consequence the pilot will obtain more points in closing a FLAT triangle rather than a FAI triangle
  Example: 100/52 = you can close a triangle of max 52 km … but you have already flown 100 km. As consequence is more useful to continue the flight or to go back and close a flat triangle.

- **CYLINDER DIST:** this fileld (normally used in competition to show the distance to the WP cylinder) if the XC-Assistant is activated with AUTOGOTO will show the distance to the next sector of the triangle

- **ALT AT NEXT**: this fileld if the XC-Assistant is activated with AUTOGOTO will show the altitude the pilot will arrive to the next sector of the triangle

- **ALT ABOVE NEXT**: this fileld if the XC-Assistant is activated with AUTOGOTO will show the altitude the pilot will arrive above the next sector of the triangle considering the terrain

- **G/R TO NEXT**: this fileld if the XC-Assistant is activated with AUTOGOTO will show the altitude the pilot will arrive to the next sector of the triangle

Glide over terrain

- **Distance at end of glide:** C-Pilot EVO, if you have loaded the terrain map of your flight zone, can estimate the distance that you can fly in straight line at the speed-to-fly taking into account the terrain of the area. This piece of information can be extremely useful to know the distance that separates you from the next side of a valley or to the next ridge.
- **Altitude at end of glide:** this field shows the altitude at which your glide at the speed-to-fly will intersect the terrain. Also this field is extremely useful in Cross-Country flights: it will allow you estimating, for example, at which altitude you will reach the next ridge. Also in this case you need to load the terrain maps of your flight area.
- **Arrival time at ground:** this fields estimates the time at which your glide will intersect the terrain.

Other fields

- **Map:** this is one of the most important and complex fields. It shows the task, the track log, the waypoints, and the terrain map. It is very useful in competition and in cross-country flights to optimise your flight. The next chapter will describe in details how to use it.
- **Task name**: shows the name of the active task.
- **Map scale:** it is shown as a segment with the indication of its length.
- **Navigation status:** show useful information about the status of the flight. For example, it indicates whether the start window is open or closed, or, if open, if you have to enter or exit to validate it.
- **Heading from take off:** shows the bearing in degrees from the takeoff point to your current position. It can be very useful to communicate your current position to the retrieve team.

Controlled airspace

- **Airspace warnings:** this field lists the airspaces that triggered one of the proximity or arrival-time alarms. It is particularly useful adding this field to the display that you associate to the “airspace warning” condition. This display will be shown automatically when at least one alarm is active.

Environmental variables

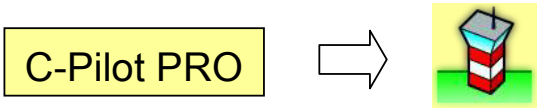
- **Humidity:** relative humidity (in percentage) determined by the optional external sensor C-Probe.
- **Temperature:** temperature measured by the optional external sensor C-Probe.
- **Cloud-base altitude:** altitude of the cloud base, calculated by taking into account temperature, humidity and dew point determined by the optional external sensor C-Probe.

Advanced management of airspaces

Long cross-country flights in regions where free-flight-prohibited airspaces are present requires particular attention for obvious safety reasons.

C-Pilot EVO is designed to give you the maximum situation awareness, thanks to the possibility to visualize on the map the airspaces and to activate audible alarms, based on proximity and arrival time. If you set it up correctly before flying, C-Pilot EVO will manage automatically all the details, allowing you to concentrate on your piloting.

You can access the main page that allows configuring airspace management by means of the "**airspaces**" button in the main menu:



The page, shown in Figure 28, provides a list of the airspaces in use and gives access to further pages to setup the proximity alarms, to choose the drawing options, and to create or edit new airspaces.

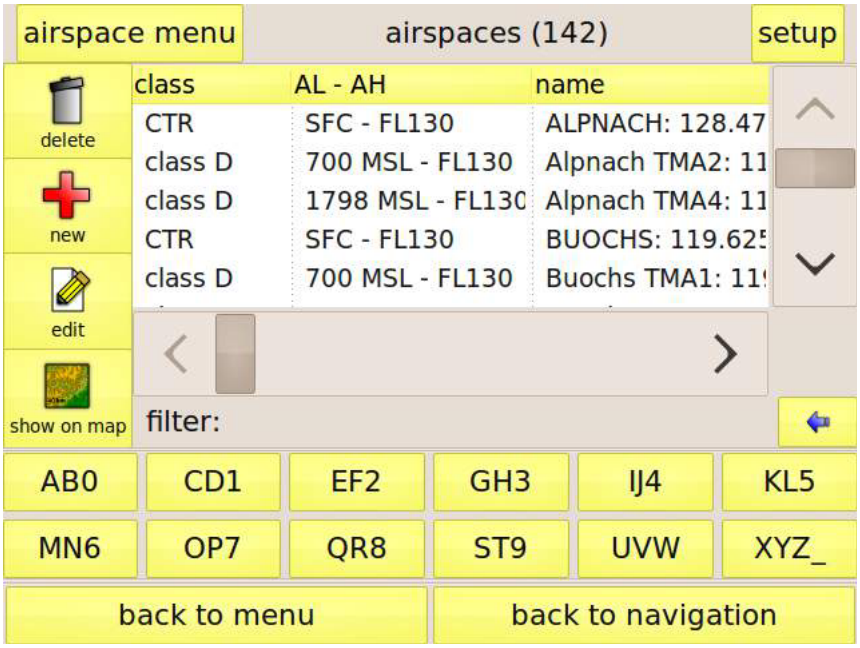


Figure 28: airspace management page.

The list reports the class, base and top altitude, and the name of the airspaces. It can be filtered by name when you need to search a specific airspace by means of the buttons below the list. For example, the filter "**AB0**", "**EF2**" will select all the airspaces whose name contains the characters "A", "B" or "0" (zero), followed by "E", "F" or "2".

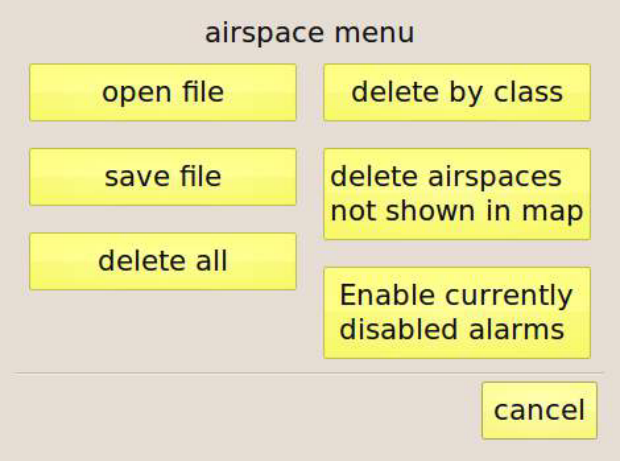


Figure 29: airspace management menu.

The "**airspace menu**" button gives access to the functions shown in Figure 29:

- **Open file**: allows adding to the list new airspaces from a file stored in the USB memory. C-Pilot EVO is compatible with the OpenAir™ format. You will be shown a list of the files contained in the "**Airspaces**" folder of the USB. Choose the one that you want to load. You can load several files consecutively.
- **Save file:** saves the airspaces in use in an OpenAir™ file, in the "**Airspaces**" folder of the USB memory.
- **Delete all:** deletes all the airspaces in use. Files in the "**Airspaces**" folder of the USB memory **will not** be deleted.
- **Delete by class:** you will be shown a list of all the classes in use. Select the one that you want to delete and press "ok". Files in the "**Airspaces**" folder of the USB memory **will not** be deleted.
- **Delete airspaces not shown in map:** in the navigation page, use the zoom and panning map controls to show your flight region. Selecting "**Delete airspaces not shown in map**" all the airspaces not shown in the map will be removed from the list Files in the "**Airspaces**" folder of the USB memory **will not** be deleted. This command helps you in organising the airspaces in smaller files, keeping only those in your flight area. Airspaces selected in this way can then be saved in a file, ready to be used again later.
- **Enable currently disabled alarms:** active alarms can easily be disabled while flying by touching the map (see below). This button reactivates all the disabled alarms.

By means of the buttons on the left of the list you can delete, edit or show in a map the airspace selected from the list. It is also possible to add new airspaces.

Drawing options and proximity alarms

The "**setup**" button allows configuring the map drawing options and the proximity alarms (Figure 30).

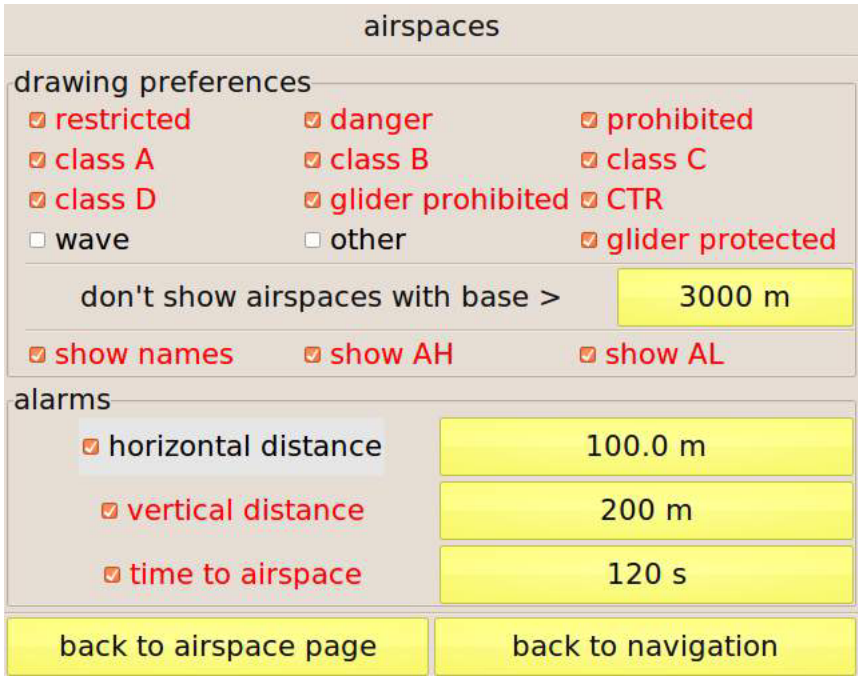


Figure 30: configuration of the map drawing options and of the proximiti alarms.

Drawing options

This page allows choosing the airspaces to be shown on the map based on their class. To avoid cluttering the map, you can also hide airspaces having their base higher than a threshold customisable by means of the button on the right of "**don't show airspaces with base >**" if you think that your flight will be at lower altitudes. You can also choose to show on the map any combination of the airspace name, its base and its top altitudes.

Alarms

Three kinds of alarms can be enabled:

- **Horizontal distance:** this warning is triggered when your horizontal distance to any of the airspaces in use drops below the threshold set by the button on the right.
- **Vertical distance:** this warning is triggered when your vertical distance to any of the airspaces in use drops below the set threshold and you are directly below it.
- **Time to airspace:** depending on your flight direction and speed, C-Pilot EVO estimated the time that it will take to enter in one of the close-by airspaces. If the calculated time is smaller than the threshold an alarm is triggered.

If any alarm triggers, if a display is associated to the "**airspace**" condition (see page 49) and if the display selection is in automatic mode (see page 8), C-Pilot EVO will show the selected display.

If an alarm is triggered, an audio alarm (a siren tone) will always be played, independently from the display configuration.

If present in the display shown, the "**Airspace warnings**" field will list all the airspaces that have triggered an alarm and the corresponding distances from your current position. An example of an "alarm" situation is shown in Figure 31. We suggest to add this field to the display associated to the "**airspace**" condition.

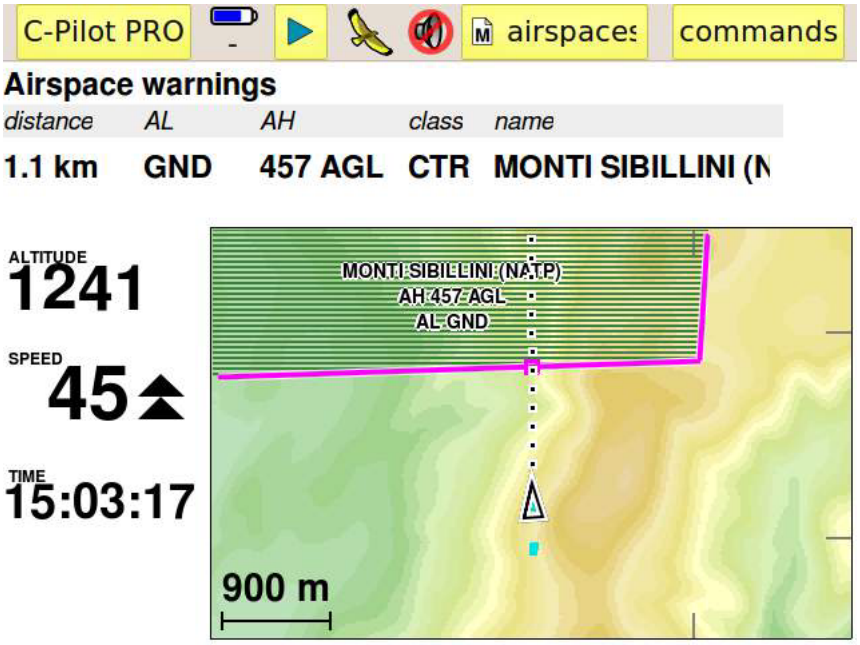


Figure 31: you are too close to an airspace: a proximity alarm is triggered.

Airspaces for which an alarm is active are shown on the map with a magenta border. A small square on the border indicates the minimum distance point.

If you are not interested in one of the airspaces that issued a warning, for example because it is not active in the day when you are flying, you can easily disable it by touching its name on the map. A confirmation message will appear. This setting is not permanently saved. When you switch off and back on the instrument, all the alarms will be activated again.

Disabled alarms can be reactivated by means of the "**Enable currently disabled alarms**" button of the airspace-page menu.

If you enter into an airspace, its border is shown in red. Also the corresponding line in the "**Airspace warnings**" field will be drawn in red.

In these critical situations, if the autozoom is active, the map is scaled automatically in order to allow you seeing at a glance your position with respect to all the airspaces that have triggered an alarm.

Creating or editing airspaces

Airspaces are defined by a list of elements: points, arcs and/or circles, defined from their

coordinates. By selecting an airspace from the list and pressing the "**edit**" button, you can edit the elements composing the selected airspaces or adding new ones by means of the page shown in Figure 32. The latter figure shows, for example, the Aviano ATZ airspace (see Figure 33), which is composed of an arc and a point.

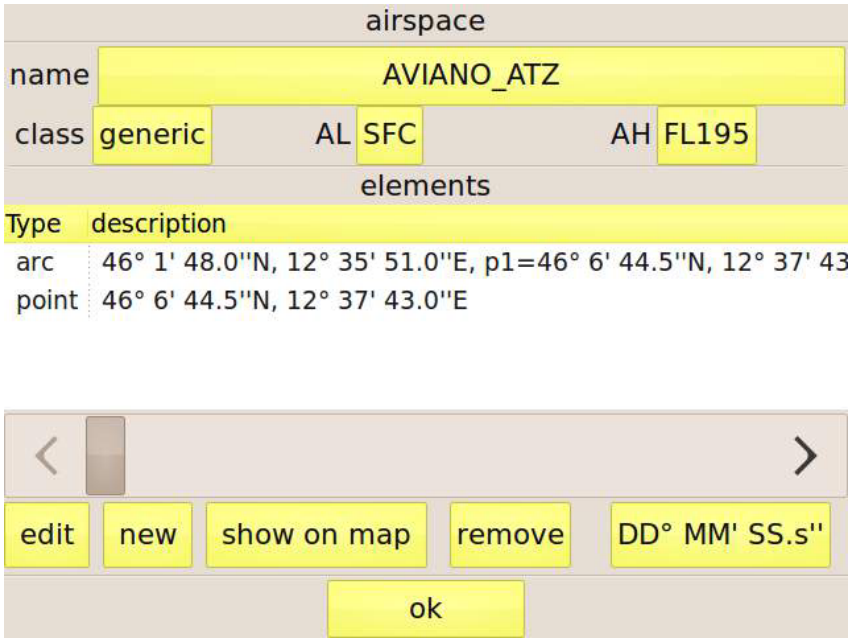


Figure 32: airspace editing page.

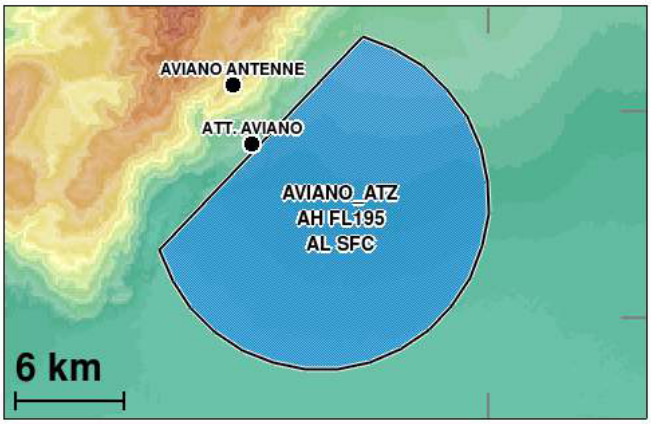


Figure 33: the airspace that is being edited.

The "**name**", "**class**", "**AH**", and "**AL**" buttons change the relative items of the airspace that you are editing. The list shows the elements that compose the airspace. The "**edit**" and "**remove**" buttons allows editing or removing the selected element. New elements can be added by means of the "**new**" button. "**Show on map**" opens a fullscreen map centered on the airspace that you are editing in order to allow you to verify its shape.

Top and Base altitude settings

By pressing the “**AH**” ed “**AL**” buttons C-Pilot EVO shows the altitude editing window (Figure 34). Altitudes (of the base in the case shown in the figure) are entered by type: from ground level (**SFC/GND**), as a flight level (**FL**), in meters or feet (**m** or **ft**) or as altitude above ground level (**AGL**). The value can be set by the button on the right of the label “**value**”.

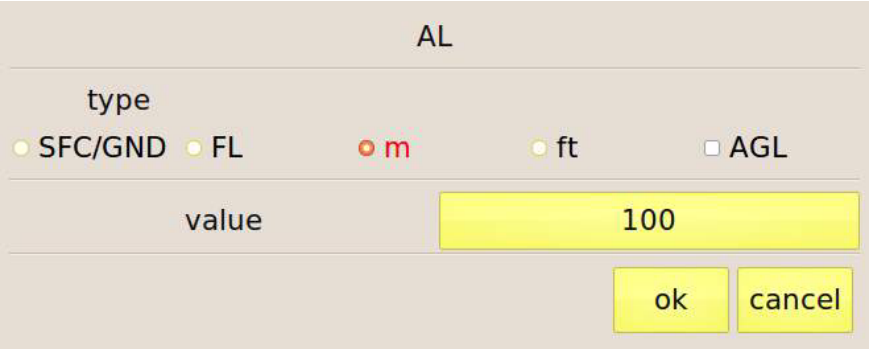


Figure 34: setting the altitude of the base of an airspace.

Class setting

Pressing the “**class**” button, you will be asked to enter the class of the airspace, selecting it from the list shown in Figure 35.

Figure 35: airspace class setting.

Map

Map operation

This is one of the most important and complex fields. It shows the task, the track log, the waypoints, and the terrain map. It is very useful in competition and in cross-country flights to optimise your decisions.

Your position is represented in the map by a triangle. Waypoints are shown as small solid circles. Their sequence (if a task is active) is indicated by black lines. The start cylinder, if the window is still closed, is drawn in red. When the window opens, it turns blue.

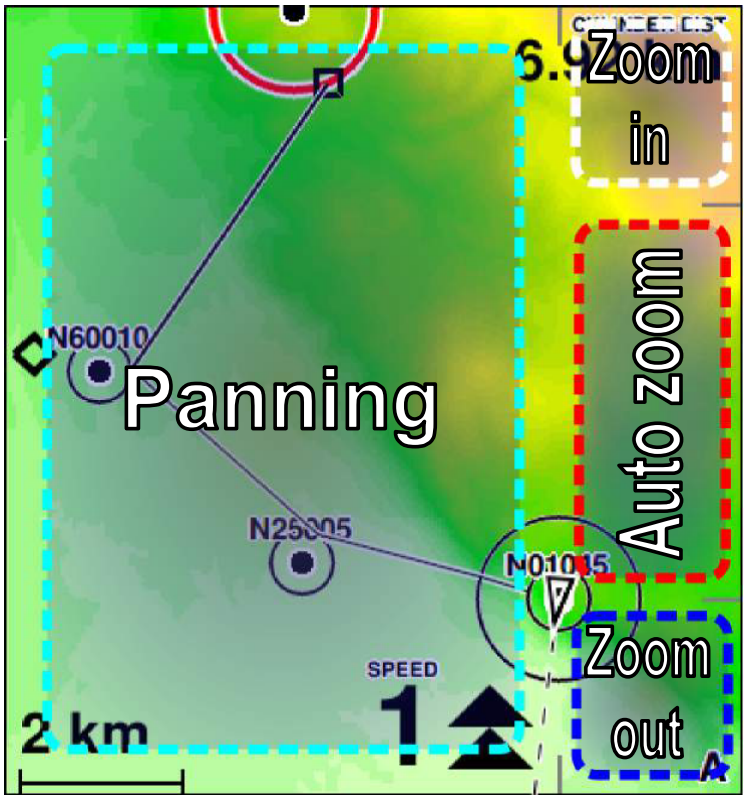


Figure 36: manual control of the map

C-Pilot EVO has an autozoom feature, signalled by a small “**A**” in the bottom right corner of the map, that automatically set the map scale and the centring in order to show the relevant region depending on the flight situation.

Before taking off the map is always north-up. If there is an active task and the autozoom is active,

the scale is set so that the entire task is visible. After take-off detection, the map is oriented depending on your setting in the map-property page (see page 66) and magnified in order to show your position and the next waypoint.

You can override C-Pilot EVO setting and change manually the scale by touching the top-right or bottom-right corners of the map (see Figure 36). If you touch the area marked with the “Auto zoom” label in Figure 36, you can restore the automatic scale (an “**A**” appears in the bottom right corner) and the automatic panning of the map.

You can manually pan the map by moving your finger on the screen, within the “panning” area. If the manual panning is active, the map is always shown North-up.

The activation of the thermal autozoom is signalled by a “**T**” in the bottom right corner, and the scale changes to the value set in the map-configuration page (see page 59).

Map settings

The “**map properties**” page (Figure 37) allows customising the map appearance for each display.

The “common settings” frame groups the parameters that affect the maps of all the displays. The first option is the “**autozoom persistence,**” that regulates for how long, after exiting from a thermal, the thermal autozoom should stay active.

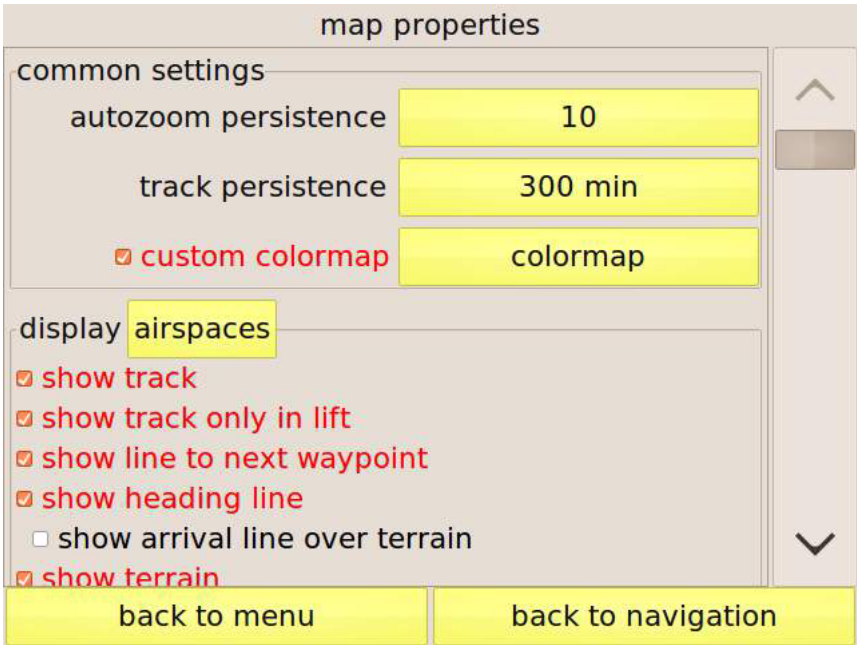


Figure 37: map setup page

When you start circling in a thermal, C-Pilot EVO activates the display assigned to the “thermal” situation (see page 49), if there is one. When you stop climbing, the previous display is shown. It may happen, especially when centring the thermal, that you hit sink for some time. During this

period, you might still want to see the thermal page. The "**autozoom persistence**" keeps the thermal display active for the set duration after stopping climbing. Additionally, during this time, the "altitude gain in thermal" will not be zeroed.

The "track persistence" allows you to set the length, in minutes, of the track log shown in the map.

When the "custom colormap" is not checked, the terrain is shaded according to a default colour scheme that has been optimized for general usage. Also the colour scheme can be customized (see "How to change the colour scale of the terrain maps" in the download section of the Compass website). Several colour schemes can be created and saved in the "colormaps" folder of the USB memory. Pressing the button on the right of "custom colormap" allows choosing your preferred shading scheme.

The rest of the setting shown in this page can be set independently for each display.

Select the display that contains the map to be configured by pressing the yellow button labelled "**display.**"

The customisable parameters are:

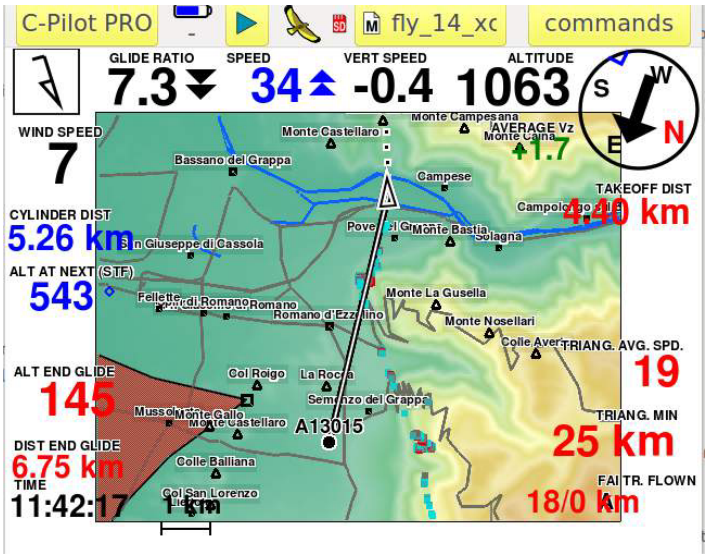
- **Show track:** when enabled, your trail is displayed in the map. The trail is coloured according to the vertical velocity (red for climbing fast, cyan for climbing slowly or sinking) as the analog variometer.
- **Show track in lift:** if the previous option is enabled, you can choose to have your trail shown only where you were climbing. This option makes the past thermals immediately and clearly identifiable on the map. Finding them again is just a matter to look at the map.
- **Show line to next waypoint:** draws a line connecting your current position to the optimised point of the next turnpoint.
- **Show heading line:** shows a dashed line indicating your heading. You can use it to aim precisely to your target. If you have uploaded to the USB memory the terrain maps of you flight area, C-Pilot PRO calculates where your glide will intersect the terrain (see page 71).
- **Show arrival line over terrain:** If you have uploaded to the USB memory the terrain maps of you flight area, C-Pilot EVO calculates where your glide will intersect the terrain. The intersection points calculated in the last six seconds are shown on the map connected by a line. It is therefore possible to identify at a glance the region that you can glide to. This option can be enabled only if the previous (Show heading line) is enabled. Please see page 71 for further details.
- **Show terrain:** shows terrain on the map. Altitude is colour-coded in such a way that you have the maximum contrast both for high mountains or small flatland hills. Terrain data must be present in the "**terrain**" folder of the USB memory. (see page 85.)
- **Map orientation:** let you choose your favourite map orientation. It can be "**North up**" (North is toward the upper part of the map), "**Track up**" (map is rotated to that your heading is oriented upward), "**Quasi track up**" (as the previous, but with smoother updates), and "**Course up**" (the bearing to the next waypoint is oriented upward). Please note that the map is always drawn "**North up**" before take off.

- **Thermal autozoom:** when C-Pilot EVO detects that you are turning in a thermal, the map scale switches to the value set in the "**map scale**" box to help centring the thermal.
- **Map scale:** when the thermal autozoom kicks in, the map scale will be set to this value.
- **Air-referenced track:** When this option is enabled and you are circling in a thermal, the track is drawn relative to the air rather than to the ground. In this way the wind-induced drift is compensated and centring the thermal is much more intuitive.
- **Show names, Show descriptions:** checking one of these options, the names and/or descriptions of the waypoint will be drawn on the map.
- **Font size:** size of the name and description of the waypoints shown on the map. Choose from small, medium, large.
- **Show all the waypoints:** when enabled, all the waypoints listed in the waypoint page will be shown on the map. Otherwise, only the track waypoint or the go-to one will be displayed

Topographic Map

Your instrument can show the topographic map together with the Terrain Map and - it's your choice - only the topographic maps or only the terrain maps. We called it "Cartography" to distinguish from the traditional Compass "Maps". The Cartography works together with the Maps: they are overlapped, and you will not notice that they are two different maps. The "Map" shows the terrain's shape and altimetry. The Cartography shows the cities, the roads, the rivers, the lakes, the mountain names… .

The topographic maps are vectorial and are based on the Open Street Map Project. The C-Pilot-EVO integrates the maps with any navigation function (triangles, waypoints, airspaces …), as you see in the picture.



- the square symbol represents a city (the more the city is important the more the square is big)
- the triangle symbol represent a mountain top: near this symbol you can read the mountain's name,
- Rivers are light blue lines and lakes are represented in the same blue as the rivers.
- Streets are grey lines

The more the map is zoomed (manually or in auto-mode) the more you will see details (the map has different levels). The Compass Team has decided not to have too many details: too many details of the maps may cause confusion with the graphics in the display and the pilot must be able to read all information by a short look at the diaplay (in some zones the streets, for example, could cover any

other information).

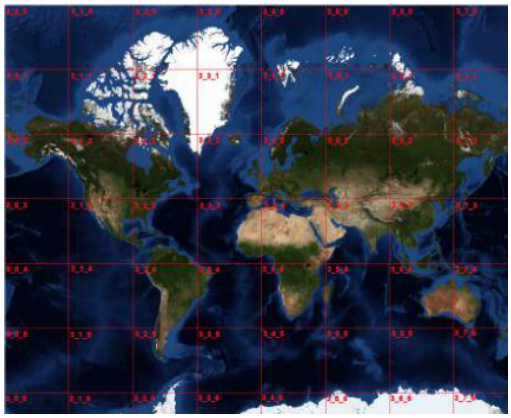
Map Download

Maps must be stored into the SD Card inside the “Cartography” folder. You can find this folder inside the C-PilotPRO folder of your SD card.

If your instrument is new and/or you have a virgin SD Card, after having formatted it for C-Pilot EVO, just download the map from the Compass website. You will see a map of the entire world, divided in squares (see picture below): click on the desired square. Download the zipped file from the Dropbox link that will appear. Unzip the file and copy (or drag & drop) the same file into the “Cartograhy” folder of your SD Card (find it inside the CPilotPRO directory). Note that some maps contain many data (example the Middle-Europe one) and it could take some time to download it (depending on your computer and the internet connection).

Of course you can download and update your SD Card with more than a map (depending on the storage capacity of your SD): the instrument will use automatically the correct maps.

If your instrument is not a new one (from 2016 on) you must update it. Updates supporting the new Cartography are the ones from 2016 on. While the update and the first time you will switch the instrument on after having updated it, keep the SD Card inside the C-Pilot EVO: automatically the Cartography folder will be created. From that moment on, follow the instructions above.



Map Settings

To activate the topographic maps, flag the checkbox “show Cities/water …” into the Map menu of your C-Pilot EVO.

The Topographic maps work exactly as explained for the Terrain Maps: follow the steps illustrated above, about the terrain maps setting.

Glide over terrain

C-Pilot EVO offers some innovative features that can be of great help in cross-country flight or during competitions, thanks to the large amount of memory and the graphic capabilities available. These make it possible to use high resolution maps to calculate your glide depending on the terrain of your flight area: you will be able to see at a glance if you can clear an obstacle, at which altitude you will arrive to the next ridge after crossing a valley, and much more.

The results of these calculations are shown in an immediate and intuitive way on the display, by means of numerical indications and graphics on the map.

In order for these features to work correctly, you will need to store in your C-Pilot PRO the maps of your flight area.

Glide along your heading direction

By enabling the "**Show heading line**" option in the map-setup page (see page 66), C-Pilot EVO will draw a line in the map that represents your flight direction (Figure 38).

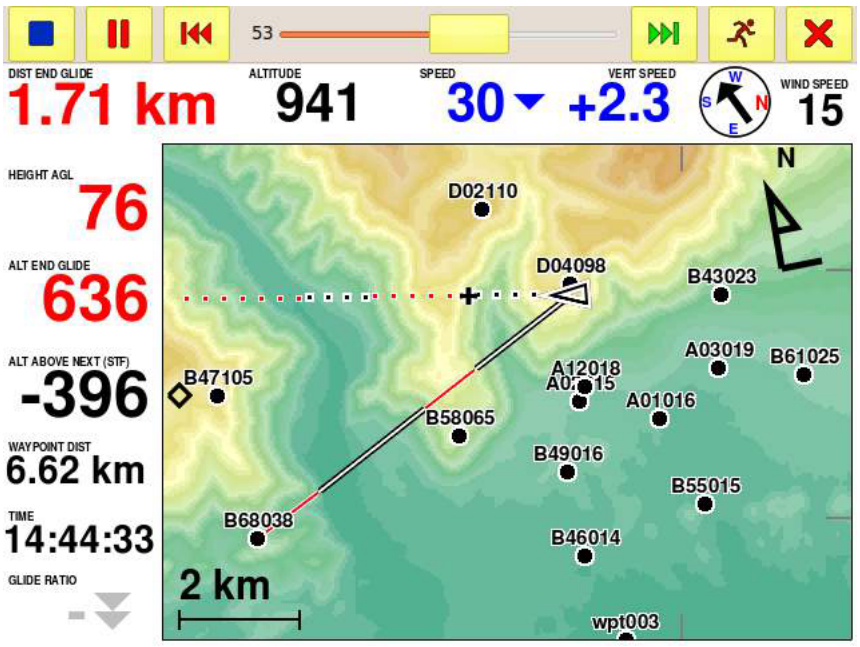


Figure 38: glide over terrain along your heading line and toward a waypoint.

Segments drawn with white dots with black borders show the parts of your glide where this is calculated (at the speed to fly and taking into account the estimated wind) to be above ground level. White dots with red borders show where your glide is below ground level. A black cross with white border (+) indicates where you will touch ground.

These indications allow you to realise immediately if you can clear an obstacle or you will need to climb more.

The altitude of the point (+) where you will touch the ground, is numerically shown in the "**Altitude at end of glide**" display field.

While crossing a valley, for example, the "**+**" symbol will tell you where you will meet the next ridge. The display field "**Altitude at end of glide**" will tell you at which altitude you will be, allowing you to evaluate whether your arrival altitude is enough to find a good climb or it is more convenient to climb more before crossing the valley.

The distance to the point indicated by the symbol "**+**" is shown by the display field "**Distance at end of glide**".

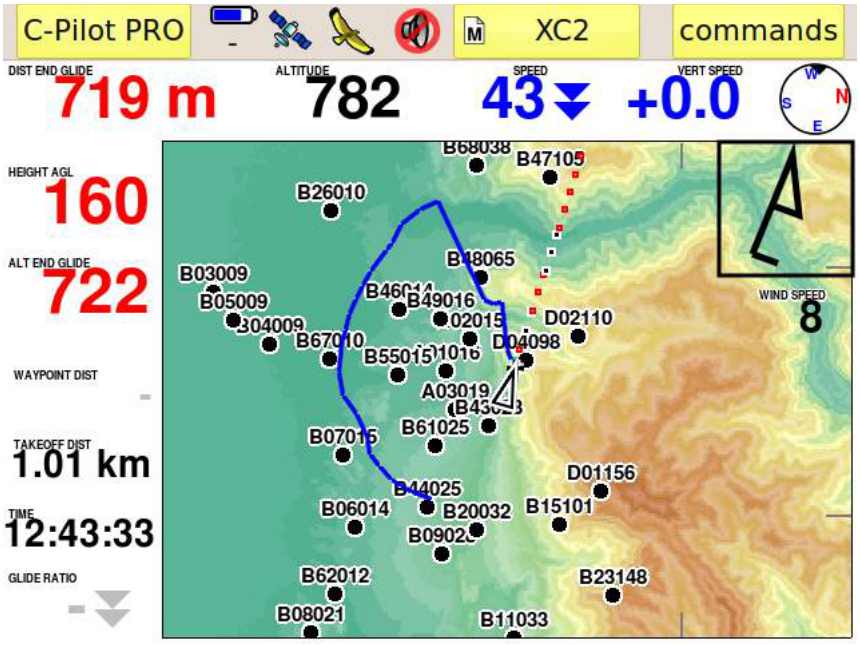


Figure 39: glide-over-terrain arrival line.

You can configure the map in such a way that the "**+**" symbol leaves a blue trace on the ground, with a persistence of approximately six seconds (Figure 39). While turning in a thermal, for example, the blue trace will show you the area and the waypoints that you can glide to.

To enable this option, tick the "**Show arrival line over terrain**" checkbox in the map-setup page (see page 66).

Glide to next waypoint

Even the glide along the direction to a waypoint, if a goto is active, is calculated depending on the terrain of the area if the option "**Show line to next waypoint**" is enabled (see page 66).

In this case, your glide is drawn with a white line with black borders where your glide is calculated to be above ground level and with a red line with white borders where it is below ground level.

Glide along a task

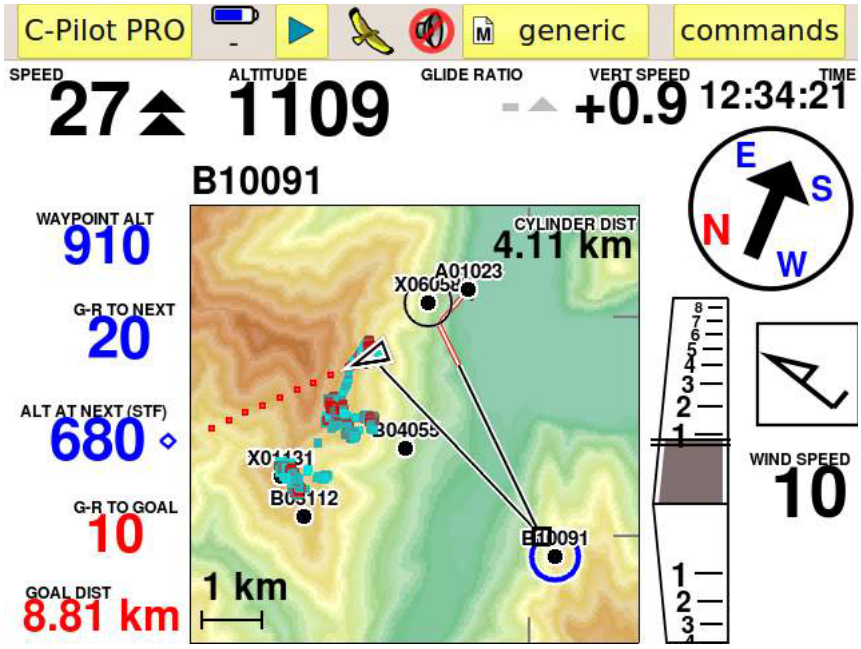


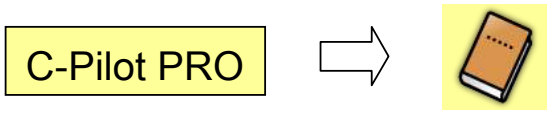
Figure 40: glide over terrain in task flights.

Glide-over-terrain calculations are performed also while flying a task, along the optimal path. As in the previous case, your glide is drawn with a white line with black borders where your glide is calculated to be above ground level and with a red line with white borders where it is below ground level. You will be able to see at a glance which waypoints can be reached (Figure 40).

This feature can give you a huge performance advantage in competition flights in particular in the case when some waypoints are on sharp ridges. In this case, it might happen that those waypoints can be validated even flying **below** the waypoint itself. A quick look at the map will allow you to check for this possibility.

Track logs

C-Pilot EVO stores your flight trails in an internal memory with approximately 300 hours (at five points per second) capacity. From the internal memory, flight logs can be exported to a PC via serial, BlueTooth connections, or copied as IGC files in another memory (USB memory) that can be accessed from a PC via a USB cable. It is possible to export the igc file to the SD memory card.



You can explore the logs stored in both memories by means of the "**Track log**" page (Figure 41). When you open it, you will be shown the list of flights contained in the internal memory. Flights are identified by the date and time of the take off and by the flight duration, ordered starting from the most recent flight.

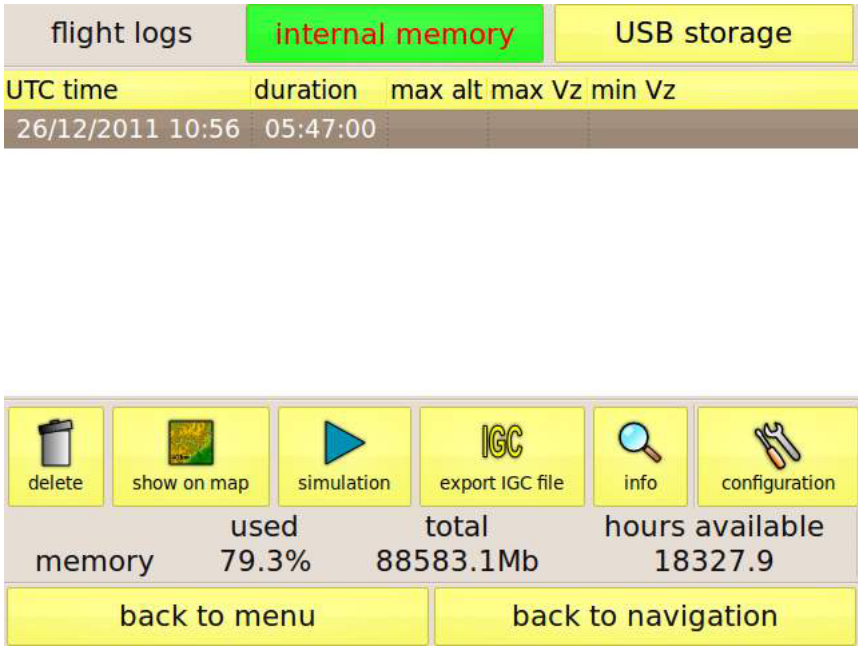


Figure 41: flight-log page

By means of the "**USB memory**" button, you can see the list of flight logs exported in IGC format. You can delete the selected flight or show it on the map by using the buttons on the right.

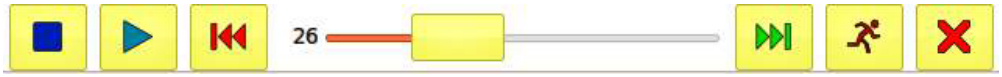
Below the list, you will find some indicators showing the amount of memory available. They refer to the internal or USB memory depending on which one is shown.

To select a track log, simply touch it. Then you will be able to perform the following actions by means of the buttons on the right:

- **Delete**: deletes the selected track log. Deleted track logs can not be recovered.
- **Show on map**: shows the selected track log on the map.

- **Export IGC**: convert the track log into an IGC file with digital signature (G-record) and store it in the USB memory or in the Sd Card memory, ready to be copied to your PC.
-
-
- **Simulation**: simulate the selected log. You will be shown the navigation window and the flight log will be reproduced. During the simulation, the GPS icon in the navigation bar is replaced by a "**play**" button:

Pressing the "**play**" button, you are shown the simulation-control buttons:



From left to right you will find:

- Stop the simulation;
- Play/Pause;
- Jump back of approximately five minutes;
- Sliding cursor. It allows you to find a precise point of the flight. The number indicates the time of the current point in percentage with respect to the total duration.
- Jump forward of approximately five minutes;
- Simulation-speed control. When pressed, a list allows you to choose from very slow to very fast;
- Back to the navigation bar without stopping the simulation.

- **Info**: this page shows a summary of the last or current task. It is updated continuously, so you can consult is also while flying. It displays the following data:
  - **Start arrival time**: the time when the start pylon was crossed.
  - **Start validation time**: in elapsed-time tasks this time coincides with the time that you have validly entered into (or exited, depending on the kind of start) the start pylon. In race-

to-goal tasks, after start validation, it shows the start opening time.

- **Goal validation time**: this is the time when you have successfully completed the speed section of the task.
- **Task duration**: this is the difference between the goal validation time and the start validation time.
- **Distance flown**: distance, projected onto the task route, from the start to the current position (or to the landing place).
- **Average velocity**: average velocity along the task route.
- **Maximum altitude**: maximum altitude above mean sea level attained during the flight.
- **Maximum climb speed** and **Maximum sink speed**: maximum vertical velocities recorded during the flight.

- **Configuration**: opens an additional page that allows configuring the flight logs.

Flight log configuration

This page, shown in Figure 42, allows selecting some export options and which additional data are saved in your logs.

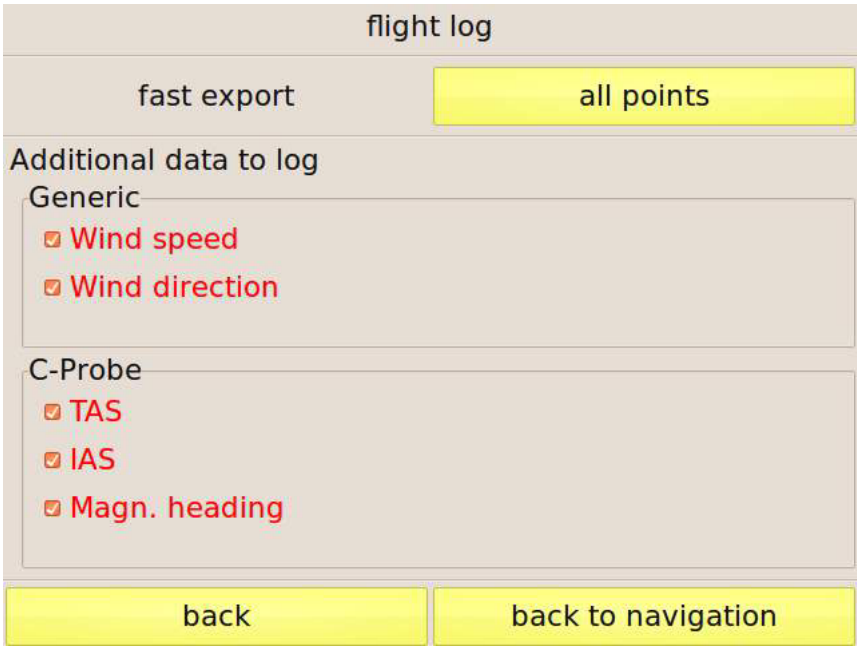


Figure 42: flight-log configuration page

Fast export: C-Pilot EVO stores your track with a resolution of five points per second. If you do not need to produce IGC files with such a high resolution, you can reduce the number of track points exported by selecting this option. Setting one point every 20 seconds, for example, you can download very long flights in few seconds with reduced resolution.

When downloading a track log stored while a task was active, C-Pilot PRO will download the most

significant points of the log (such as those corresponding to turnpoint validation) regardless of this setting to avoid skipping important points. The entry in the internal memory will always store the full resolution track log. You can export a flight later with a higher resolution if you need it.

Additional data to log: additional data are divided into two groups: the first one lists always available data, while the second contains only data that are available with the optional C-Probe. Select those that you wish to log. Please note that if an item is not selected, its values will not be logged during the flight and therefore will not be included in the IGC files when these are created.

Transferring track logs to your PC

C-Pilot EVO makes available several ways to transfer track logs to your PC.

USB transfer

In the track-log page (Figure 41), select the flight that you want to export and press the "**export IGC**" button. C-Pilot EVO will ask you to create an IGC file in the USB memory or to export the IGC file into the SD memory card. If you want to transfer the file via USB, select this option.

The IGC file name will be set following the FAI standard, for example: 2009-12-20-XXX-xYYY.igc. To the standard filename you can have your name and/or competition number added automatically, depending on your settings in the pilot page (page 24).

Each file will include the digital signature (G-Record) created by C-Pilot EVO, which will be used by validation programs to check for file integrity. The track points stored in the IGC file will be at the full resolution of five points per second if the "**Fast export**" checkbox was not checked, or a subset depending on your setting.

Now you can activate the USB port of C-Pilot EVO from the connection page (see page 18) and connect it via the USB cable to your PC. You have to activate the connection first and only then connect the cable.

Your PC will detect C-Pilot EVO as a generic mass-storage device (you don't have to install specific driver with Windows XP or newer operating systems and Linux), that will appear as a new disk. Inside it you will find a folder named "tracks" that will contain your IGC files. Copy the one of interest to your PC just as you would do with a file.

When done, do not forget to do the "safely remove hardware" procedure on your PC, then press the "**back to menu**" or "**back to navigation**" buttons to deactivate the connection.

SD memory card transfer

This is avery fast procedure. In the track-log page (Figure 41), select the flight that you want to export and press the "**export IGC**" button. C-Pilot EVO will ask you to create an IGC file in the USB memory or to export the IGC file into the SD memory card. If you want to save and then transfer the file via SD CARD, select this option. The file will be saved in the tracks folder of your SD memory card.

Serial-port transfer

Even if slower than the USB transfer, the serial connection is still widely used in competitions of all levels.

Here are the steps necessary to transfer a flight:

- Choose the MLR protocol in the serial-connection page (see page 20);
- Connect C-Pilot EVO to your PC via the serial cable (not provided);
- On your PC, start the program that you want to use to download the log (GPSdump, CompeGPS,...), and set it up in order to use the MLR protocol;
- On your PC, start the track transfer.

Also in this case, the points transferred will be a subset or all of those stored in the log depending on the "**fast export**" setting.

> Note: if you start the transfer while C-Pilot EVO is not in the track-log page, the last flight log will automatically be transferred. Otherwise, C-Pilot EVO will send the one selected in the list (see Figure 41).

BlueTooth transfer

The BlueTooth connection is quite fast and convenient. First of all, you have to pair your PC and C-Pilot EVO (you have to do this only once on your PC). During this operation, you will be asked to enter the password (or, equivalently, the pin code) of the device on your PC. You can find the password in the BlueTooth settings page (see page 20).

After the pairing is complete, on your PC you will find two new serial (COM on Windows systems) ports: incoming and outgoing.

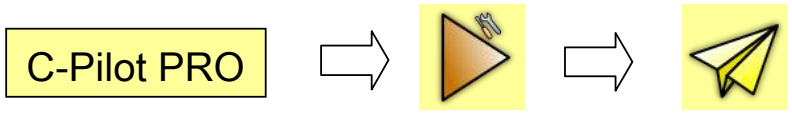
Now you just have to configure your flight-analysis software on your PC (GPSdump, CompeGPS ...) as for a normal serial connection, using the new outgoing port. When you start the track transfer, a BlueTooth connection will automatically be created (C-Pilot EVO will display an alert message) and the track will be transferred.

Please note that it is *not* necessary that the flight-analysis software on the PC support the BlueTooth interface to use it: it just has to support serial communications.

Also in this case, the points transferred will be a subset or all of those stored in the log depending on the "**fast export**" setting.

Polar curve

Entering a realistic polar curve of your wing allows C-Pilot EVO to perform precise calculations of the speed-to-fly theory by McCready and arrival altitudes at turnpoints. From the “**set up**” menu, open the “**polar**” page (Figure 43).



As a factory default, C-Pilot EVO will use a standard polar curve, which you can modify to match the one of your wing. Inside polar menu you can choose between 3 standard polars (competition, sport and standard) As a starting point, you can use a generic polar curve. You can find some in the internet. After some flights, you can try refining it.

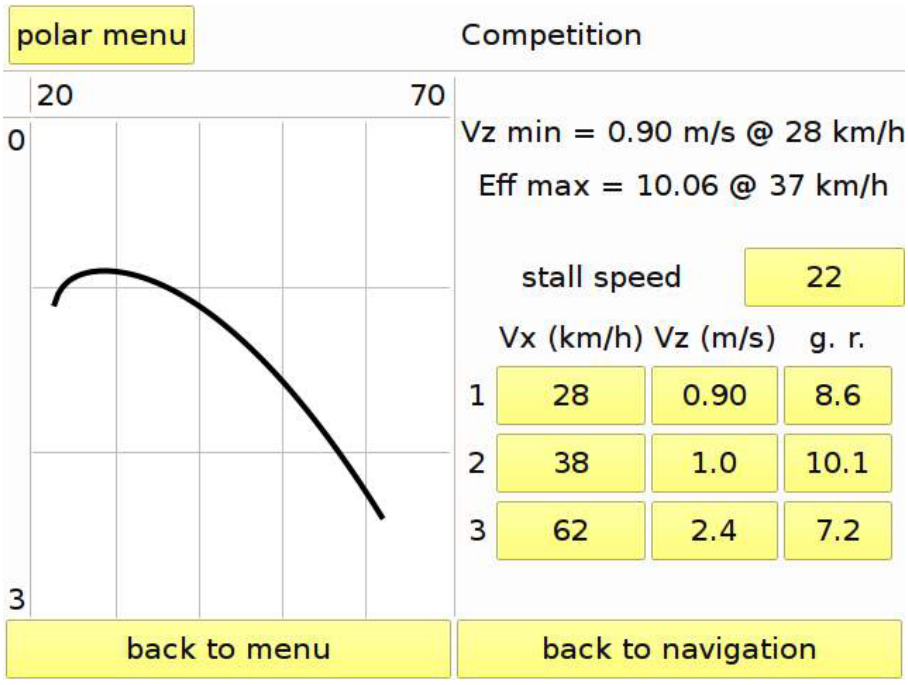


Figure 43: polar setup page

Entering a polar curve is rather simple. Select “**new polar**” from the “**polar menu**”. On the virtual keyboard that will appear, type the name of the new polar and press “**ok**”

On the left C-Pilot EVO shows the curve. The polar curve is defined by three pairs of values (horizontal speed and vertical speed) and by the stall speed.

Horizontal speed and vertical speed pairs can be entered by using the buttons on the right, organised in three columns by three rows. The columns, starting from the left, allow you to enter the horizontal speeds **Vx** (with respect to the air), the vertical speed **Vz** (sink rate), and the glide ratio **g.r.** Note that these three quantities are not independent: when, for example, you change Vx or Vz, the glide ratio will change accordingly.

Some important parameters of your wing will be calculated depending on your polar:

- The minimum sink rate (Vz min) and the corresponding horizontal speed (@ xx km/h);
- The maximum glide ratio and the corresponding horizontal speed (@ xx km/h).

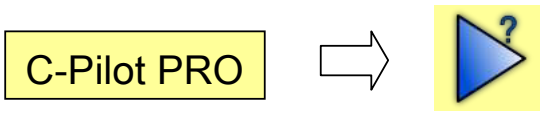
From now on, C-Pilot EVO will use your new polar for all the navigation calculations. Note that the stall speed and the maximum speed are used by C-Pilot EVO to calculate the wind speed when you turn more than 270°. The calculation of the wind is quite precise even if these two values are not known precisely.

We recommend tuning your polar step by step, depending on your observations during real flights. For example, if you happen to arrive at turnpoints consistently lower that what C-Pilot EVO calculates, this probably means that the polar entered is too optimistic.

By means of the “**polar menu**” you can load previously stored polars from the “polars” folder in the USB memory. With the same approach used for displays and audio configurations, you can rename the current polar or discard the last changes.

Information

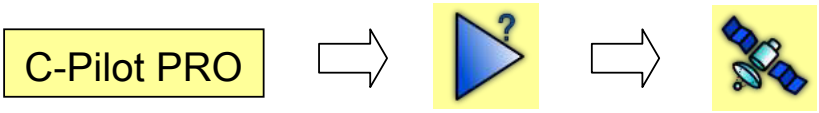
From this page you can get several useful data about your device and on the results of the last flight.



Two sub-pages are available.

GPS status

This page shows the status of the GPS module.



The GPS module of C-Pilot EVO is very sensitive and can receive signals from GPS satellites even situations where common receivers would fail.

Satellite positions are shown inside a schematic view of the sky, shown North up. The outer circle represents the horizon; the inner one has an elevation of 45°. Satellites are displayed as small, numbered circles placed according to their position (at least where the receiver thinks they are) in the sky.

A grey circle means that the GPS module is not receiving any signal from that satellite. A red circle is used when there are incoming data from that satellite, but it is not yet being used to calculate your position. The green circle indicates that the satellite is fixed. The “filling level” of the circle represents the quality of the signal.

When the fix is complete, at least 4 satellites in use are shown in green. The kind of fix (3D or 2D) is reported above the scheme.

On the right of the page you will find the fix data: UTC (Coordinated Universal Time) time and date, altitude, speed, and coordinates (shown in the selected format). If the fix is not valid, data are greyed out.

When the 3D fix is not available (“2D fix” or “no fix” are shown), C-Pilot PRO cannot record your position and the track log will not be updated. In this case, the GPS data shown on the right,

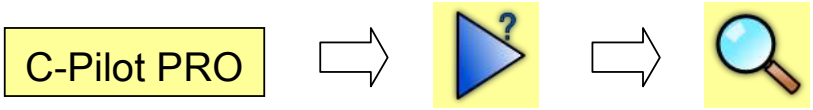
being invalid, will be greyed.

In the case of very poor reception, if the GPS module is not able to complete the fix for approx 30 minutes, the receiver will start a new search. All the satellites will disappear from the screen and newly acquired ones will be shown in the bottom part of the display.

If the GPS signal is completely absent for several hours, the receiver will shut itself off to reduce the power consumption. To restart it, you will have to power cycle C-Pilot EVO.

Hardware info

Here you will find some parameter of the hardware of C-Pilot PRO.



- **Battery voltage**: from 3.2 V to 4.2 V.
- **Battery current**: shows the instantaneous current consumption of the device or the recharge current when a charger is attached.
- **Backlight level**: backlight intensity in percentage.
- **Light sensor reading**: ambient-light level measured by the light sensor.
- **Raw pressure reading**: shows the un-calibrated reading of the pressure sensor.
- **Sensor calibration**: shows the calibration parameters of the pressure sensor. Each sensor is individually calibrated at Compass.
- **Pressure reading**: current atmospheric pressure.
- **Used flight-log memory**: amount (percentage) of internal memory used for flight logs.
- **Used USB memory**: amount (percentage) of USB memory in use.
- **Serial number**: the unique serial number of your device.
- **Kernel date**: date when the kernel of the operating system currently installed was created.

Software updates

C-Pilot EVO features a powerful processor that will allow adding new functions. Updating the device is a very simple procedure.

Download the update file from the Compass website (www.compass-italy.com) and copy it in the “updates” folder of the USB memory, after connecting C-Pilot EVO to your PC via USB cable (see the detailed procedure in the connection chapter, page 18).

Disable the USB connection and return to the navigation page. C-Pilot PRO will ask you if you want to install the update (Figure 44). If you answer “**no**”, C-Pilot PRO will prompt you to delete the update file; otherwise the installation procedure will start. Normally, the update will not take more than one minute.

> Warning: please take care that the battery is fully charged or connect a charger before starting the update procedure. If the battery drains during the installation, C-Pilot EVO may stop working.

When the installation procedure ends, C-Pilot EVO will confirm that the update was successfully completed. Press “**ok**” to switch the device off. When you power it on again the new update will be active.

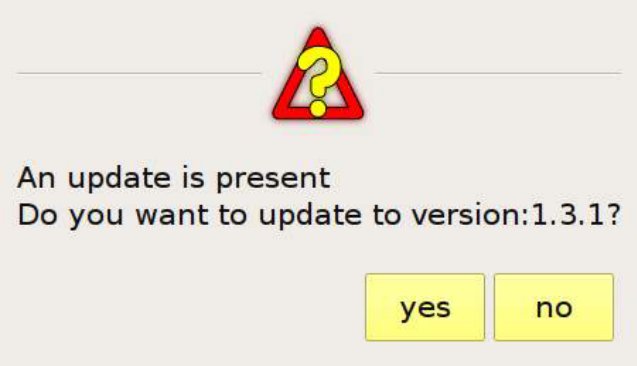


Figure 44: an update was found. Do you want to install it?

Terrain maps

C-Pilot EVO can show terrain maps to provide a visual representation of the terrain around you or to help planning a task.

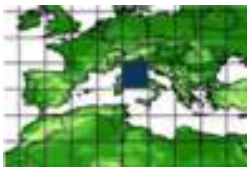
Maps of the entire globe are made available thanks to the Consortium for Spatial Information (CGIAR-CSI). You can download them from their website:

http://srtm.csi.cgiar.org/SELECTION/inputCoord.asp

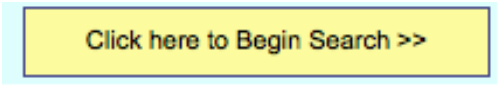
Maps must be loaded only into the SD card's memory and not copied into the USB internal memory of C-Pilot EVO. **C-Pilot EVO uses only SRTM files TIF version** (not google maps!) It's very simple to load one or more maps, just follow these steps:

1) find the maps in the web at **http://srtm.csi.cgiar.org/SELECTION/inputCoord.asp**;

2) choose the area square (map) you have to download by a click in the square itself (In the example of the picture central Italy). You can choose more than one area. The area will become blue colored (take note that usually it is necessary to click in the square under the one desired to select it);



3) press yellow button "click here to Begin Search"



4) verify the area is correct and then download the file by pressing **Data Download HTTP**; Do not use the "Download data mask" button;

5) Wait till the zipped folder of the area is completely downloaded and then unzip it by your computer. Inside the folder you will find 3 or 4 differnt files. C-Pilot EVO uses only the file in the format "srtm_xx_yy.tif", where *xx* and *yy* represent the tile that was downloaded. The filename extension must be ".tif". All other files must not be copied in the SD memory card

WARNING: never try to open or double click the ".tif" file downloaded. If opened by the computer the ".tif" file shall be corrupted and will not be readable anymore by C-Pilot EVO

6) connect the SD card to the Computer (remember that it has to be previously formatted for C-Pilot EVO as explained above) and **simply copy ONLY the ".tif"** file downloaded into the TERRAIN folder Of C-Pilot SD Card (you can do it by drag and drop); **do not copy other files!**

7) insert the SD Card inside the C-Pilot EVO's slot and switch the instrument on. As soon as the GPS will fix satellites, the map will appear. At first use it may be necessary to give a GOTO navigation to any waypoint inside the area of the map to make the map itself appear. If SD icon in the menu bar of C-Pilot is grey colored, it means C-Pilot EVO i correctly reading it. If the SD icon is red colored C-Pilot EVO has a problem to read the SD or some files inside iyìt may be corrupted.

To manage GeoTiff files on your PC, there are some excellent Open Source programs. We recommend QGIS (http://www.qgis.org/), available both for Windows and Linux systems.

C-Pilot EVO and open source software

C-Pilot EVO runs on the Linux operating system and takes advantage of many software packages licensed under GPL and LGPL. Some operating-system files were modified by Compass to adapt them to our hardware. As per the GPL, we shall be glad to send the source code of the operating system and the additional software packages to whoever will request them.

Specifications

Size	15.4 x 13 x 3.5 cm	
Weight	610 g	
Operating temperature	From -20°C to 60°C	
Display	Active-matrix TFT, 5.7'' diagonal	
	Resolution 640x480	
	65536 colours	
	Automatic backlight control	
	Touch panel	
GPS	Channels:	51 independent channels with WAAS/EGNOS
	Sensitivity:	-158 dBm in tracking mode; -146 dBm in acquisition
	Acquisition:	Cold Start: 36 s; Warm Start: 33 s; Hot Start: 1 s (open sky).
	Updates:	5 points per second
Battery	Li-ion, 3.7 V 6800 mAh	
Altimeter	From 0 to 8000 m	
Variometer	Resolution: 0.1 m/s, with configurable audio profile	
Memory	Flight logs:	170 Mb (approx 300 flight hours at 5 points per second)
	USB:	840 Mb
Connectivity	Serial:	RS232, jack (2.5 mm) connector
	USB:	Profile: mass storage device
	Bluetooth:	Class 1
		Serial port profile, Object push profile

Manufacturer’s limited warranty

This warranty does not limit the user’s (statutory) rights under any applicable national laws relating to the sale of consumer products.

During the warranty period, the Manufacturer or the Manufacturer authorized service company will in a reasonable time remedy defects in materials, design and workmanship free of charge by repairing. The manufacturer will, in accordance with this limited warranty (unless otherwise required by law), remedy defects by repair or, should the Manufacturer in its discretion deem it necessary, replace the product.

This limited warranty is only valid and enforceable in the country where the user has purchased the product provided that the same product has been intended for sale in that country by the manufacturer. However, if the user has purchased the product in a member state of the European Union, Iceland, Norway, Switzerland or Turkey and such product was originally intended by the Manufacturer for sale in one of these countries, this limited warranty service may apply because of country specific elements in the products.

Warranty period

The warranty period starts at the time of product’s original purchase by the first end-user. The product may consist of several different parts and different parts may be covered by a different warranty period. The different warranty periods are:

- 24 months for the device;
- 6 months for the following consumable parts and accessories: battery, chargers, device cover;
- the protection film applied on the screen panel is not covered by any warranty.

As far as national laws permit, the warranty period will not be extended or renewed or otherwise affected due to subsequent resale, repair or replacement of the product authorised by the manufacturer.

How to get warranty service

In the event of a product (or accessories) defect, please return it to a service company authorised by the manufacturer or to the manufacturer himself.

Any claim of the affected product (or accessory) is subject to notifying, either a service company authorised by the manufacturer or the manufacturer, of the alleged defect within a reasonable time of it having come to attention and in any event no later than before the expiry of the warranty period.

To make use of this warranty, in the event of the affected product (or accessory), it is necessary to return it to the service centre authorised by the manufacturer or to the manufacturer, together with

the original proof of purchase.

What the warranty does not cover

This limited warranty does not cover any third party software, setting, content, data or links, whether included or downloaded in the product, whether included during instalment, assembly, shipping or at any other time in the delivery chain or otherwise and in any way acquired by the user. The manufacturer does not warrant that any of its software: will work in combination, as to customer requirements, with any hardware or software provided by a third party and that the operation of any software will be uninterrupted or error free or that any defects in the software are correctable or will be corrected.

This limited warranty does not cover:

- normal wear and tear of the Product (including, without limitation, wear and tear of batteries or displays);
- defects caused by rough handling (including, without limitation, defects caused by sharp items, by bending, compressing or dropping, dropping in water, etc.);
- defects or damage caused by misuse of the Product, including use that is contrary to the instructions provided by the Manufacturer (e.g. as set out in the Product's user guide);
- defects caused by other factors/acts beyond the reasonable control of the Manufacturer.

This Limited Warranty does not cover defects or damage caused to the Product by misuse with, or connection to, any product, accessory, software and/or services not produced or supplied by the Manufacturer or by use of the Product for any other use than for intended use of the Product.

This Limited Warranty does not cover defects caused by the fact that the battery has been short-circuited or by the fact that the seals of the battery enclosure or the cells are broken or show evidence of tampering or by the fact that the battery has been used in equipment other than those for which it has been specified.

This Limited Warranty is not enforceable if the Product has been opened, modified or repaired by anyone other than a service centre authorized by the Manufacturer, if it is repaired using unauthorised spare parts or, if the Product's serial number has been removed, erased, defaced, altered or are illegible in any way and this shall be determined in the sole discretion of the Manufacturer.

This Limited Warranty is not enforceable if the Product has been exposed to moisture, to dampness or to extreme thermal or environmental conditions or to rapid changes in such conditions, to corrosion, to oxidation, to spillage of food or liquid or to influence from chemical products.

Other Important Notices

Please remember to make back-up copies or keep written records of all important content and data stored in your Product, because content and data may be lost during repair or replacement of the Product.

All replaced parts of the Product or accessories shall automatically become the property of the Manufacturer.

If the Product is found to be not covered by the terms and conditions of this Limited Warranty, the Manufacturer and its authorized service companies reserve the right to charge a handling fee for repairs/servicing. When repairing or replacing the Product, the Manufacturer may use products or parts that are new, equivalent to new or re-conditioned.

The Product may contain country specific elements/components/settings/software. If the Product has been re-exported from its original destination country to another country, the Product may contain specific elements/components/settings/software that cannot be considered a defect under this Limited Warranty.

In the event of Product repair, the Manufacturer and/or authorized service companies will restore the country specific settings where the Product was destined for sale and will in no way be liable for the loss of any changes of such settings carried out by the use, which in the same way cannot be considered a defect under this limited warranty.

Limitation of the manufacturer’s liability

This Limited Warranty is your sole and exclusive remedy against the Manufacturer and the Manufacturer’s sole and exclusive liability in respect of defects in the Product. This Limited Warranty replaces all other warranties and liabilities of the Manufacturer, whether oral, written, (non-mandatory) statutory, contractual, in tort or otherwise, (including, without limitation, and where permitted by applicable law, any implied conditions, warranties or other terms as to satisfactory quality or fitness for purpose).

However, this Limited Warranty shall neither exclude nor limit:

- any legal rights of the user under the applicable national laws;
- any rights against the seller of the Product.

To the extent permitted by applicable law, the Manufacturer does not assume any liability for loss of or damage to or corruption of data, for any loss of profit, loss of use of Products or function, loss of business, loss of contracts, loss of revenues or loss of anticipated savings, increased costs or expenses or for any indirect loss or damage, consequential loss or damage or special loss or damage.

To the extent permitted by applicable law, the Manufacturer’s liability shall be limited to the purchase value of the Product. The above limitations shall not apply in case of gross negligence or intentional misconduct of the Manufacturer or in case of death or personal injury resulting from the Manufacturer‘s proven negligence.

NOTE! Your Product is a sophisticated electronic device. The Manufacturer strongly encourages the user to carefully observe the user manual and instructions provided with and for the Product. Please also note that the Product might contain high precision displays, which could get scratched or otherwise damaged, if not handled carefully.