SKYTRAXX 4.0

HowToUse - Manual

Rev. 1.5

SKYTRAXX

For us, the focus of all developments of SKYTRAXX is the pilot. Our products are the result of our own enthusiasm for flying in constant contact with countless pilots, from beginners to the world's best athletes.

Our high claim is perfection in function and technology with simple and intuitive operation, always oriented to the needs of everyday flying. With our products we want to offer the best possible support when flying.

We realize this claim through very mature and flexible basic concepts, the use of the highest quality components, an excellent team, creativity and the joy of our own work. A healthy eye for the balance between what is technically possible and what makes sense for flight practice is just as important to us as short distances to our component manufacturers with guaranteed fair production conditions in the region and constant contact with our customers.

Foreword

We are pleased that you have decided on a SKYTRAXX flight instrument and thank you for your trust in our products.

The SKYTRAXX 4.0 is a high-end universal flight instrument based on the revolutionary SKYTRAXX concept, which has already proven itself in thousands of devices worldwide. It offers very extensive functions with maximum user-friendliness, high reliability, long battery life, compact dimensions and low weight.

The SKYTRAXX 4.0 is easy and intuitive to use and offers optimal support in flight for a large number of pilots.

Function and screen displays can be adjusted according to your own flying style, preferences, individual needs and the current conditions.

We wish you a lot of joy and happy flights with the SKYTRAXX 4.0. Michael Blank, Managing Director, Dr.-Ing. Jürgen Eckert, Chief Developer SKYTRAXX GmbH.

About this guide

With the HowToUse Guide for your SKYTRAXX 4.0, we would like to provide you with practical instructions for the sensible use of your new flight instrument. The focus is on which function you can best use when flying and how the SKYTRAXX 4.0 flight instrument can be optimally adapted to your personal flying requirements and preferences.

The instructions are written for pilots without previous knowledge of flight instruments. It is intended to help you understand how your SKYTRAXX 4.0 works so that it can provide you with targeted and optimal support when flying.

You will then immediately understand how operation and customization work for you without the respective configuration instructions (which you can of course also find here).

If you are already a crack and therefore some explanations seem detailed to you, use the table of contents as a guide to find the answer to your question directly.

We hope you enjoy reading it and even more when flying with your SKYTRAXX 4.0

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Main features

- compact, lightweight device with integrated GNSS and logger
- very easy-to-use high-tech vario with high-precision sensor resolution
- current airspace data, obstacles, landing sites and take-off sites worldwide
- automatic update via integrated mobile phone connection
- Altimeter barometric and GNSS
- instantaneously responding variometer
- large color display with the best contrast in sunlight
- 32 gigabytes of memory
- Running time up to 30 hours
- thermal assistant
- FANET and FLARM integrated
- Live tracking via mobile network and FANET+
- user definable fields on each page
- Real-time XC score and FAI triangle calculator
- USB-C interface
- low weight (180 grams)

SKYTRAXX 4.0 - basic functions

Imagine you have a building set with different colored building blocks. Each of these building blocks has a specific function, such as a pillar, a window or a roof element. You can combine these individual building blocks in a variety of ways to build your own personal house: plain, simple and clear, large and complex, colorful and playful.

You can imagine your SKYTRAXX 4.0 flight instrument as such a construction kit. The device provides you with the following basic functions:

- **Variometer:** Climb and descent values of the aircraft
- **barometric altimeter:** measurement of altitude using air pressure
- **GNSS:** Position determination using satellite signals
- **compass**
- **Airspace information:** airspace class and limitations, proximity information
- **Terrain information:** Information about terrain shape and elevation as well as the current flight altitude above ground (approximately!)
- **Topographical information:** place names, bodies of water, roads, train stations, mountain railways, etc.
- **Obstacle information:** cable car cables, power lines and other exposed obstacles in the airspace
- **Thermal assistant:** Centering aid when flying in thermals
- **FANET+:** Collision warning for other aircraft and complex information system
- **Navigation information:** course, waypoints, route information, etc.
- **Cross-country flight support:** Triangle optimization assistant, calculation of XC points, XC type, XC km, distance flown
- **Flight Log:** Database of your flights and hiked routes, statistics
- **Cellular connection:** live tracking and automatic updates
- **Management:** menu language, pilot profile(s), OLC profile(s), units, etc.

We explain the individual functions in detail in later chapters.

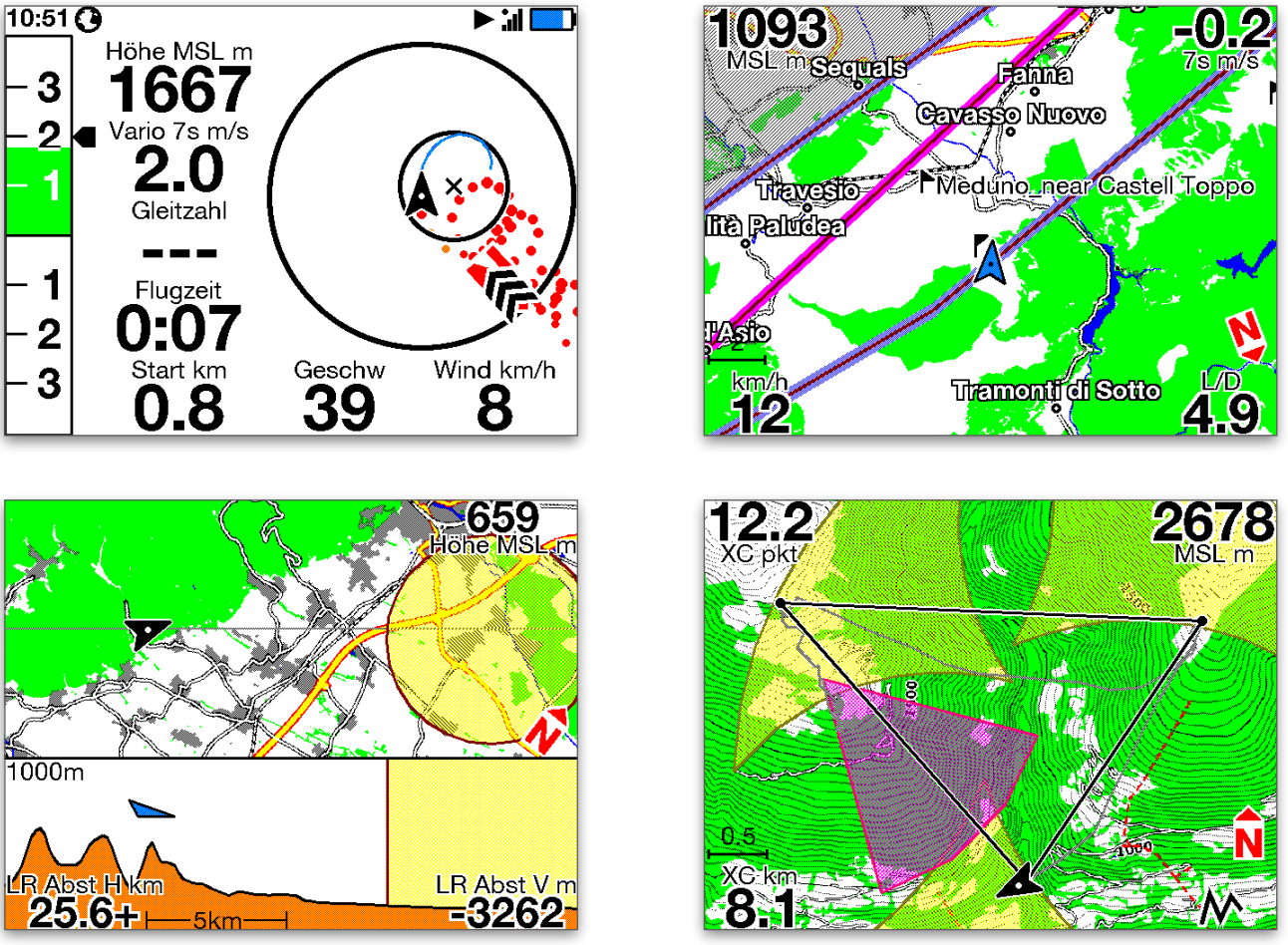
The concept of flight screens

All these functions are basically available to you. So that they are quickly and easily accessible for you, there are predefined "assemblies", i.e. compilations of building blocks that have been developed on the basis of many pilots' many years of practical flight experience.

We call these function groups "flight screens" because they provide you with concentrated information on the display that is tailored to different flight situations.

The motto here is: less is more, the flight screens are designed in such a way that the information is available in a concentrated and clear manner, only as much as you currently need or want to be displayed.

You can define any number of these flight screens of the same or different type in any order and have them displayed by switching to the next flight screen with the OK button.



different flight screens on the SKYTRAXX 4.0

The concept »simple and yet flexible«

You can fly with your SYKTRAXX 4.0 immediately after unpacking it without any configuration effort.

We provide you with a field-tested standard configuration of different flight screens ex works, on which the most important displays for different flight situations are predefined.

For example, you will find a flight screen with information on your aircraft's climb and descent rates, with an altimeter, current glide ratio over the ground, wind information and a thermal centering aid. Another flight screen shows the airspace information on a map display, etc.

This compilation of the flight screens is summarized in the so-called Classic Theme.

In the >main menu >settings >flight screens you can add more types of flight screens to your current configuration, change the order of the screens or delete individual flight screens.

On each flight screen you can also set the font size of the display and define display fields with the desired information.

>Main Menu >Settings >Flight Screens

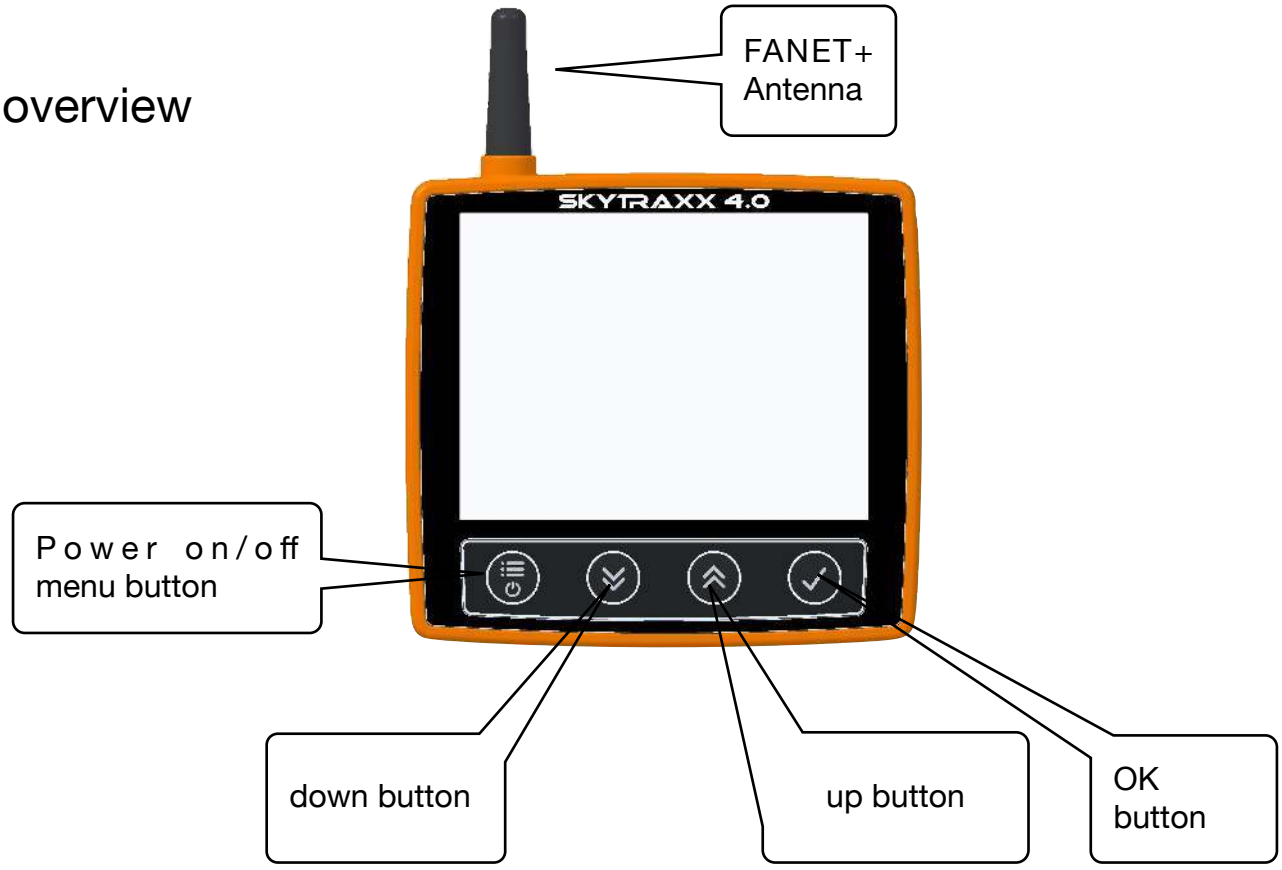
Select flight screen and define how fields are displayed.

In addition, you can turn on or turn off certain features of your individual flight screens. We explain these functions in the following chapters.

You can find detailed descriptions in the Configuring flight screens chapter.

You can also select other combinations of flight screens via the >main menu under >Extras >Themes.

overview



function keys

All functions and settings can be controlled with the four function keys. They are also easy to use with gloves.

The button on the far left (>Menu) has the following functions:

- Switch on (press briefly and confirm with >OK)
- Switch off (press for a few seconds, then confirm with >OK)
- Menu (short press to go to main menu)
- Back (short press to go back one level in the menu)
- Reset: Press and hold the button for 10 seconds, the device restarts. This will not delete any data.

Functions of the two middle buttons (>up / >down):

- Scroll through individual menu items or change the setting values
- Change volume (classic page) or scale (map pages).

The right button (>OK) has the following functions:

- confirm the selection made
- Switch between screen pages

main menu

The main menu gives you access to the individual modules (basic functions) of your SKYTRAXX 4.0, for example to configure your screen displays, call up your flight log or make general settings. You get to the main menu with the leftmost button on your device (>On / Off / Menu).

Use the arrow buttons to select the desired menu item and confirm with the button on the far right of your device (>OK).

With >OK you get one step further in the menu, one step back with the >Menu button.

You have the following options in the main menu:

- **FANET participants:** Displays currently active FANET users, FANET wind or ground stations.
- **Recording (Rec):** Switch between automatic recording after start or manual recording. Long press prevents recording.
- **Logbook:** Contains the saved data sorted by year and month as well as day and start time.
- **Navigation:** management of waypoints and routes, competition functions.
- **Settings:** Individual adjustments.
- **Status and update information:** position data, time, air pressure, battery status, software version.
- **Burnair:** Access to your Burnair services.
- **Switch off**

Second menu

Scroll with the arrow keys until an orange stripe appears at the top of the screen and confirm with >OK. Another menu opens and you may see a status display on the screen (e.g. when automatically searching for updates or when charging the battery).

- Adjusting the volume (also found in the main menu under Settings)
- Turning the backlight on and off (e.g. if you want to configure something on your device at home in low light)
- Switching the FANET+ communication on and off (for details, see the FANET+ chapter)
- Toggle cellular connection on and off

cellular connection

The SKYTRAXX 4.0 contains a SIM card for the data connection to the mobile network (international).

The device automatically updates the system software, the airspace data and the integrated worldwide terrain and obstacle database.

Live tracking is also possible with the cellular connection.

The costs for the online services are included in the purchase price of the SKYTRAXX 4.0 for the first year. You can then purchase this service for a further year (does not extend automatically) or keep your data up to date manually using the update function.

To activate the function, see the next chapter (some basic settings).

You can find more information about this on our website www.skytraxx.eu

Some basic settings

Although the "Management" item is listed last in the list of basic functions, let's start here because it deals with some basic settings. However, you only need to change the default settings in individual cases, your device is immediately ready to fly even without any configuration.

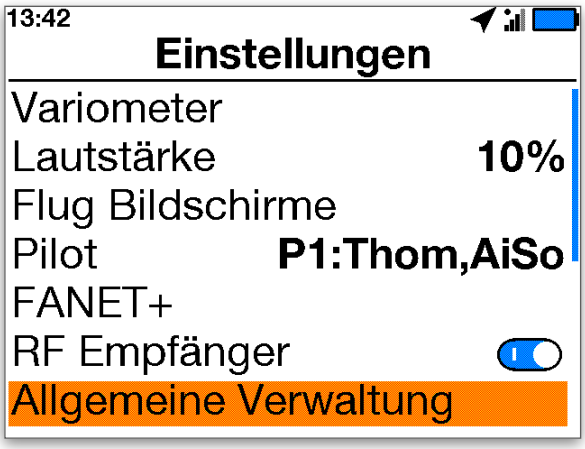
Activate the cellular connection

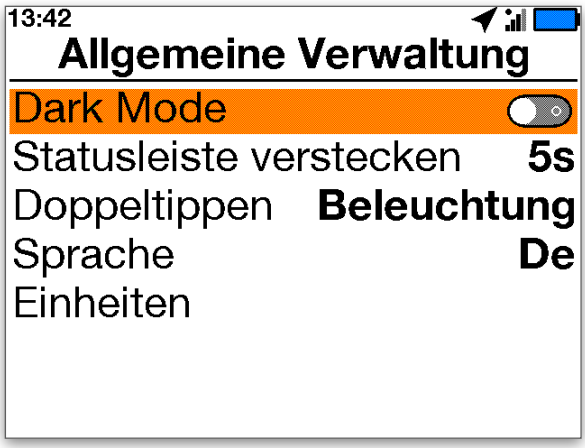
The mobile phone connection is initially inactive when you purchase your SKYTRAXX 4.0. To activate it, select the menu item on the far right in the »second menu« (see above):

cellular connection

Then follow the on-screen instructions

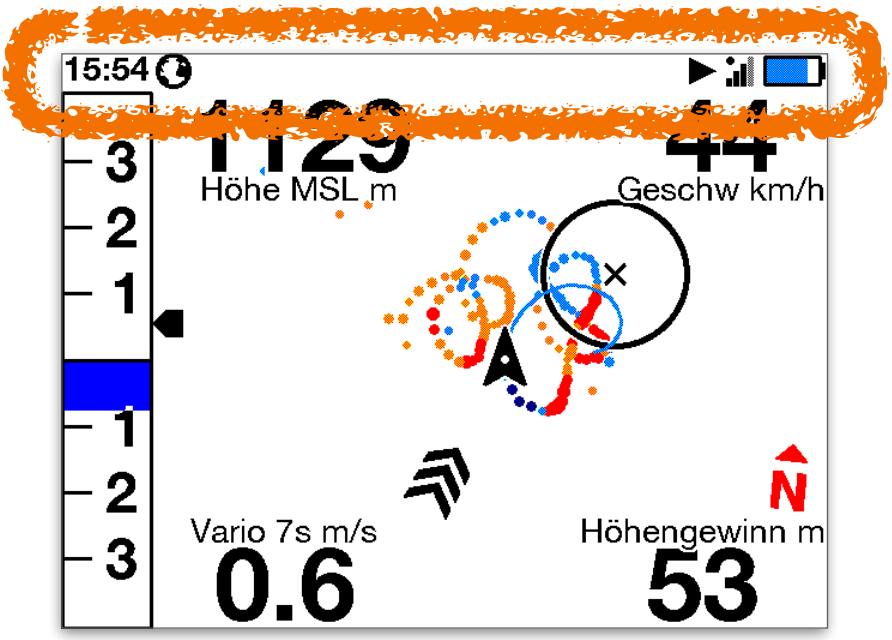
In the main menu, under >Settings >General management, you can find, among other things, the settings for the language, the units of measurement used in the display, the duration of the status display (see below »Status bar«).





status bar

When changing between the individual flight screens and between the menu and the flight screen, a status bar appears at the top of the screen for a few seconds (time can be set):



The individual symbols have the following meaning:

Mobile data connection

Search for update information

USB connection active

update active

GNSS fix (sufficient GPS reception)

Cellular connection quality

Airspace warning temporarily disabled

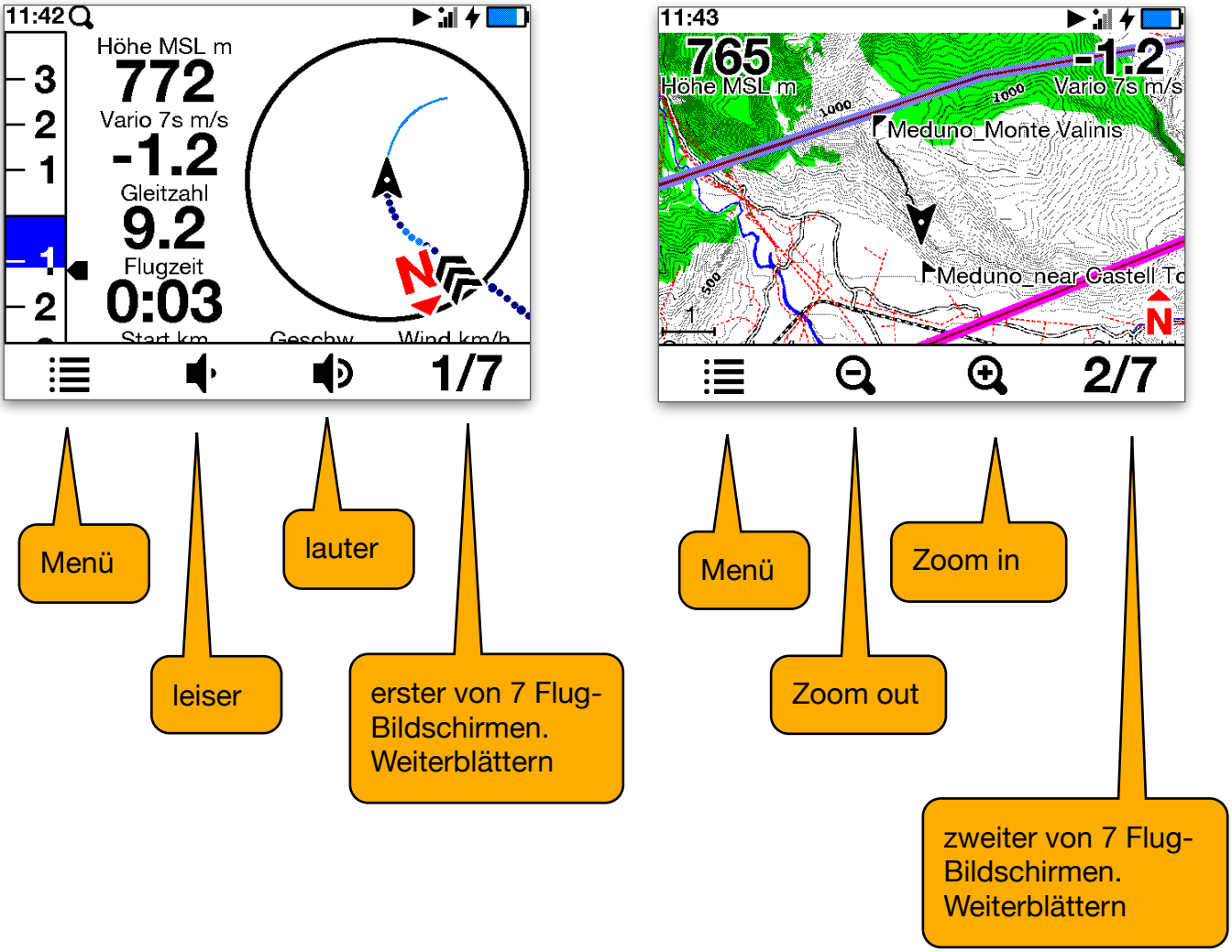
Playback (flight log)

lighting

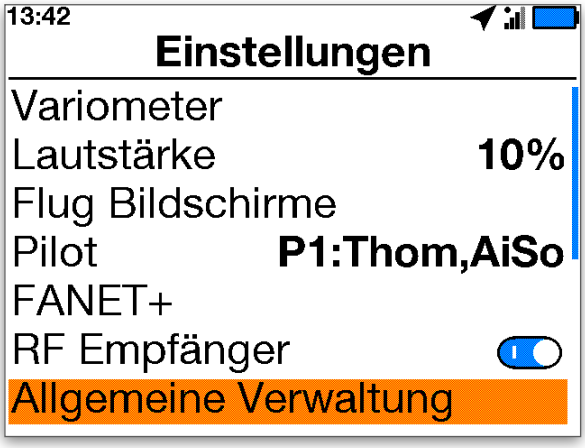
✓ If, for example, you want to configure settings or read out your flight log in poor light conditions, you can switch on the lighting in the second menu or simply by double-tapping the device surface.

Flight screen info

When switching between flight screens, information appears briefly at the bottom edge of the screen as to the meaning of the four buttons on the device:



scroll bar



The blue bar on the right edge of the screen indicates that a menu has multiple pages.

Scrolling up or down is done with the arrow keys.

Personalize your Skytraxx 4.0

Your flight instrument can communicate with other pilots via FANET+ who transmit current flight data for live tracking and, after the flight, transmit the IGC file in which your flight is recorded directly to an online server (DHV-XC, XC contest, XCglobe…).

If you activate the corresponding options, the device will also transmit your name and your aircraft.

It is therefore best to save your pilot data on the SKYTRAXX 4.0 in the pilot profile. They are then available for the communication functions if required.

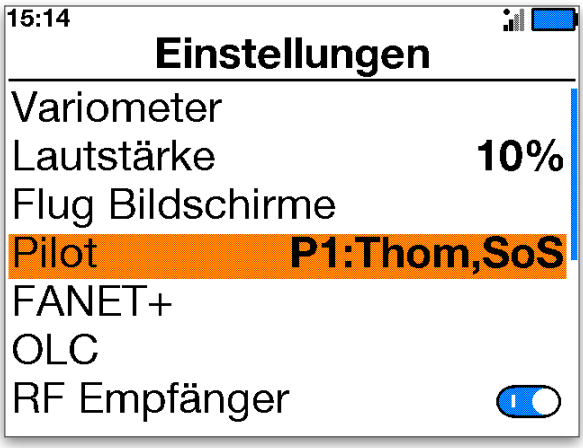
If you have several wings or different pilots fly with the flight instrument, you can also create several pilot profiles and select them for the flight accordingly.

If desired, the SKYTRAXX 4.0 also saves the access data for one or more online servers in the so-called OLC profile. (OLC stands for OnLine Contest).

This means that flights can be uploaded directly from the Skytraxx 4.0. This requires an activated mobile phone connection. For more information, see the Cellular Connection and Online Contest chapters.

pilot profile

Use the left button (>On/Off / Menu / Back) to open the main menu on your device and then use the arrow buttons to select Settings (gear) and Pilot.

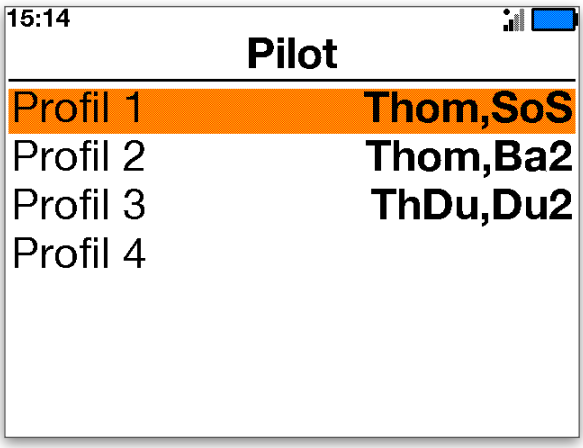


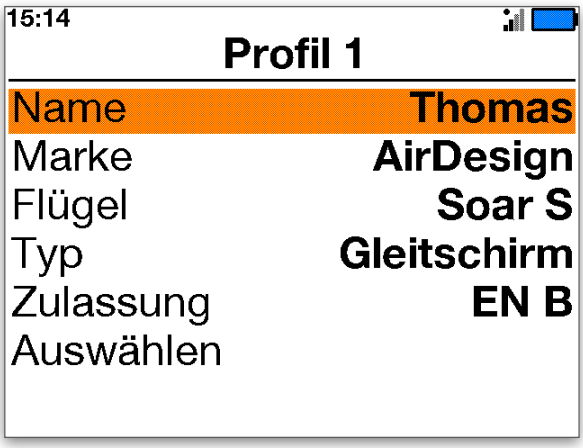
editing mode

Hold your device horizontally before selecting one of the input fields. A screen similar to a computer keyboard now appears.

Slowly tilt your device lengthwise and crosswise to move the cursor and confirm the selected letter with the >OK button.

At the end, confirm the entry with OK on the on-screen keyboard. Do this for each input field.





The basic functions of the SYKTRAXX 4.0

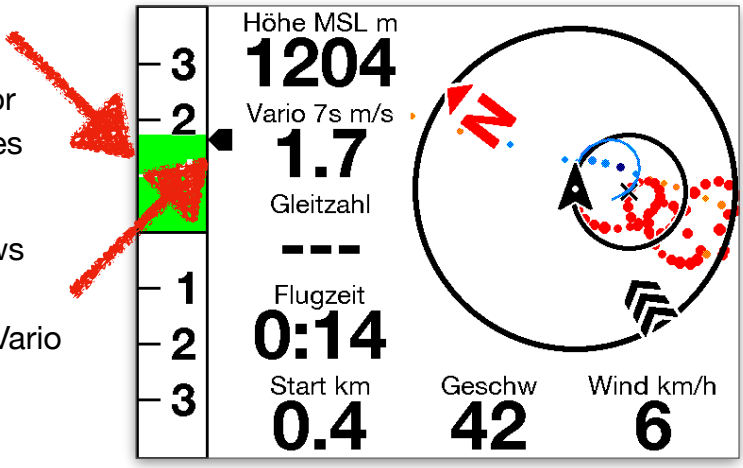
Variometer

Probably the most important part of your flight instrument is the variometer. It informs you whether you are climbing or descending with your aircraft. The device can show you how strong the climb or sink is as an acoustic signal or on the display.

Optical indication on the display

The bar shows the climb or sink rate currently determined by various sensors. If the value exceeds +4 m/s or -4 m/s, the scale automatically changes to higher values.

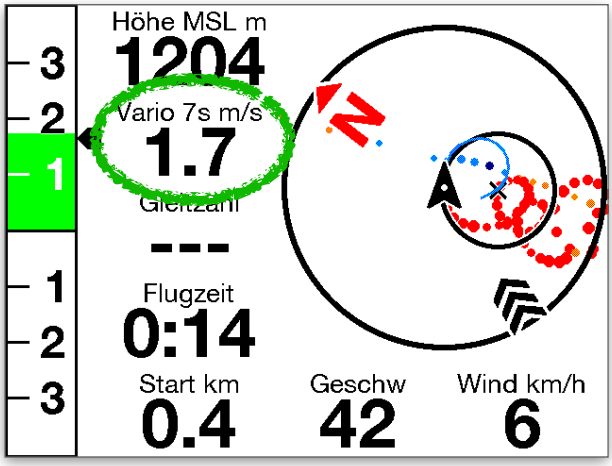
The small triangle next to the bar shows the value titled over a freely selectable time interval: Settings > Variometer > Vario integration time.



✓ We recommend a value between 6 and max. 20 seconds. A thermal circuit typically lasts between 12 and 25 seconds. If you climb more than half a circle on average, it's worth turning in and re-centering.

You can also display the current or integrated rise/fall value as a number. There is a preset field for this on the Classic Page flight screen. It is factory set to the integrated rise/fall value (factory integration time 20 seconds).

This panel can also be configured on all other flight screens. See the Flight Screens chapter for more information.



Acoustic signal (beep)

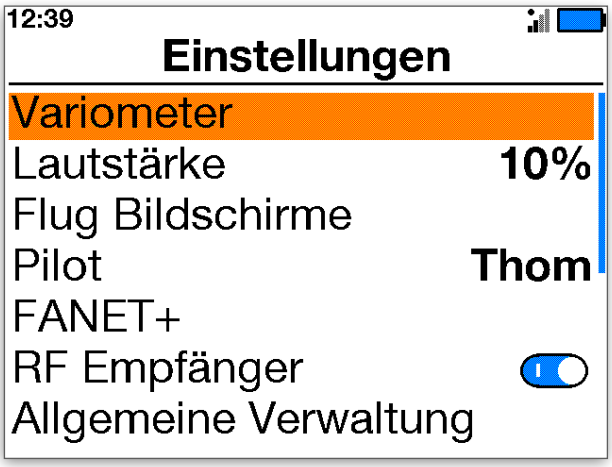
The acoustic vario signal helps you to concentrate on your surroundings when thermalling without having to look at the display.

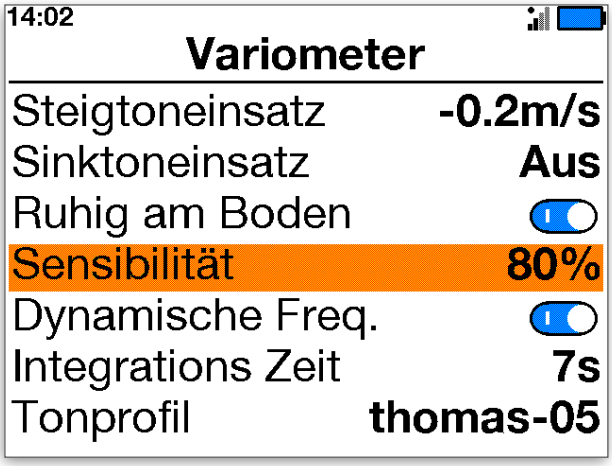
Configured correctly, it gives you immediate and very precise information about the thermals and your flight status.

Many pilots will get along well with the standard setting. However, you can also adapt the acoustic signal very precisely to your preferences and to the conditions on the flight site.

Setting the sensitivity

The sensitivity decides how immediately the vario responds to changes in climbing or sinking. When the sensitivity is set to high, your aircraft will notify you of every tiny change in flight attitude with a display and beeps.





✓ A sensitive vario setting is helpful for pilots with a lot of thermal experience.

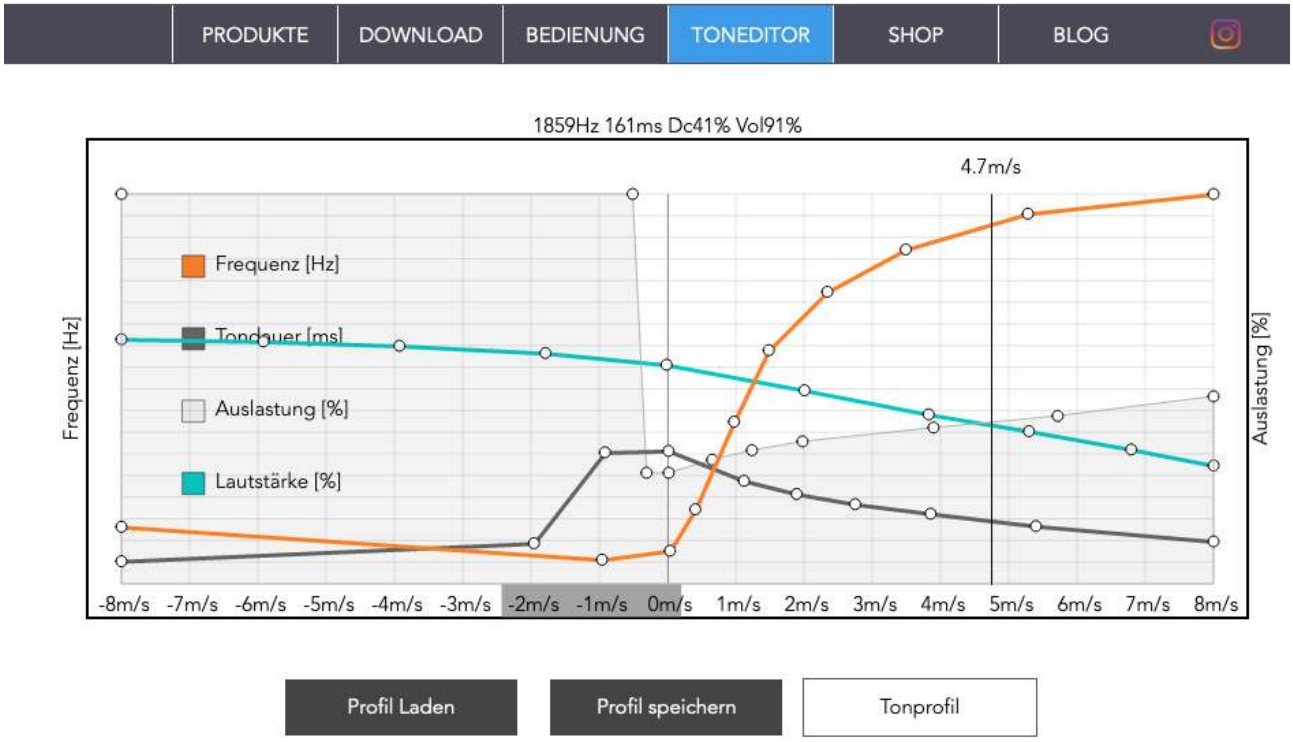
✓ If you have little experience with thermal flying, we recommend a sensitivity of 50-60%, otherwise the strong fluctuations in the acoustic signal will confuse you rather than help you.

More setting options

You can adjust the acoustic vario signal according to your needs using four parameters:

1. **Frequency: pitch depending on the rise or fall value**
2. **Tone Duration: Duration of each beep**
3. **Utilization: Duration of the pause between the beeps. High load = short break, low load = long break**
4. **Volume: depending on the rise or fall value**

All of these parameters are configurable using the sound editor on Skytraxx's website.



sound editor on the Skytraxx-Website:

✓ Choose the sound profile and vario sensitivity depending on the flight conditions. The settings are always changed quickly.

Recommendation for the settings

- **Flat land, r**ather low rate of climb in thermals and rather difficult entry or difficult centering:

✓ Choose a clear increase in the audio frequency in the range from +0.2 m/s to approx. 2 m/s. Then let the frequency curve slowly flatten out. If you have very strong climb values, a difference of +/- 0.2 or 0.3 m/s is of little relevance.

✓ In the area of weak climb, however, it is very advantageous for centering if you see small differences in the vario acoustics.

- **High mountains** or basically strong climb and sink values, rather easy centering

✓ Choose a flatter curve for pitch rise versus rise.

✓ Tone duration and load: a short tone duration in connection with a high load transmits even the smallest changes to you within a short time.

✓ Loudness: the human ear perceives the higher vario tones more strongly than the lower ones. If you are annoyed by the high tones when climbing steeply, turn down the volume in this area.

Once you have configured all the parameters to your liking, save your sound profile as a file. Then load this file into the »vario-tones« directory on your SKYTRAXX and select the sound profile on the device under

>Settings >Variometer >Sound profile off.

The sound profiles are compatible and interchangeable among the 2.1, 3.0 and 4.0 series devices.

✓ You will already find a number of predefined sound profiles for different flight conditions on your device. Try them!

climbing tone

The climb tone onset defines at which climb of your aircraft the vario starts beeping. However, the thermal in which the aircraft is located is already increasing significantly more than the value of the climb tone use (climbing of the aircraft in an updraft = air mass increase - inherent descent of the aircraft).

✓ As a rule, a climb tone insert is recommended. 0.2 m/s (>Settings>Variometer>Climb tone use). You will then get acoustic information when it really rises.

If you already have some experience in thermalling, using a climb tone from -0.3 m/s can also be helpful. If you sink less than your aircraft's own sink rate (approx. -0.8 to -1 m/s), you are in a rising air mass.

Sink tone

The sink tone can inform you about strong sinking. It is usually set in such a way that the utilization (see above) is 100%, i.e. it is a continuous tone (you can clearly distinguish it from the climbing tone).

✓ If you are in a strong sink, you should change your flight line (approx. 45°) and accelerate into the wind.

Whether you want to use the Sinkton is a matter of taste.

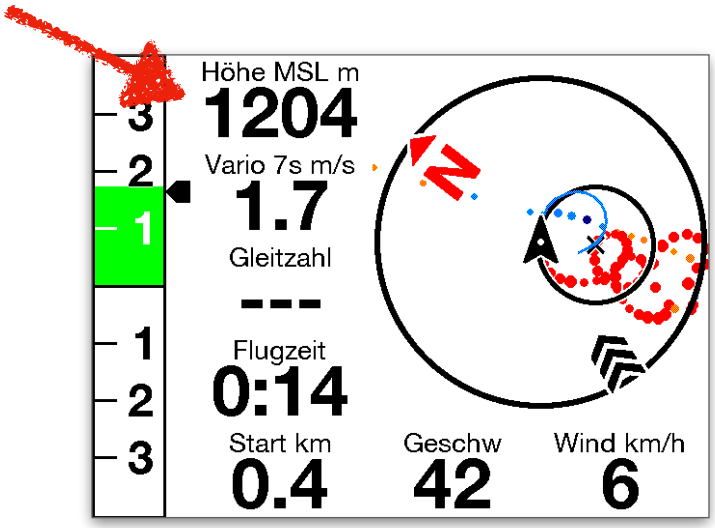
volume

✓ Set the volume as low as possible, preferably so that you can just hear the beeping in flight. So you can use the beep to support thermal flying, but at the same time train your intuition.

altimeter

The SKYTRAXX 4.0 always determines the flight altitude via the air pressure (this is a regulation under aviation law). However, since this fluctuates, the device calibrates itself when starting using the determined GPS position and its altitude information.

This means that, regardless of the weather conditions (or air pressure), after take-off you will always see the correct barometric altitude (the only relevant barometric altitude in terms of aviation law) in the altitude MSL (Main Sea Level - above mean sea level) display field.



As the air pressure of the flight can change, the displayed altitude may deviate slightly from the correct altitude (more so the longer the flight).

✓ Therefore, always use the altitude for the landing bearing!

The SKYTRAXX can also show you approximately the height above the ground (AGL - Above Ground Level). The device determines this altitude based on an internal database for the terrain altitude and your current GPS position.

! ATTENTION: the AGL display only approximately corresponds to the actual height above ground and can also deviate significantly from it. This display is useful for navigating in airspaces for which height above ground limits apply.

Since your SKYTRAXX compares the barometric altitude measurement with the determined GPS position, the altitude converted to normal air pressure (1013.25 hpa) is also available (altitude QNE).

QFE / QNE / QNH / QFF

For explanation see the Artikel zu den Q-Gruppen beim DWD >

airspaces

The SKYTRAXX 4.0 offers excellent support when navigating with airspace thanks to the very clear representation on the color display.

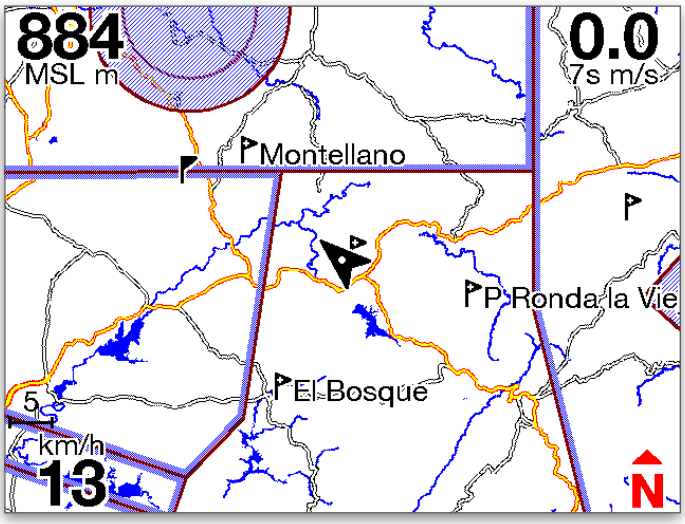
Your SKYTRAXX flight instrument contains a database of airspaces worldwide. The XCContest.org platform provides the data for this.

If your data connection is activated on the SKYTRAXX 4.0, the device automatically updates the airspace data on an ongoing basis.

Many airspaces are only temporarily active. The activation times or the periods in which the temporary airspaces are not active are also stored in the device's internal airspace database.

In the menu under >Settings >Airspace >Activation time you can choose whether you want to be warned when approaching (activation time OFF) or only if the airspace is active (activation time ON).

! Please note that in exceptional cases short-term changes are also possible, which the airspace database cannot take into account. Only the activation times that are published in the corresponding NOTAMs are legally binding.



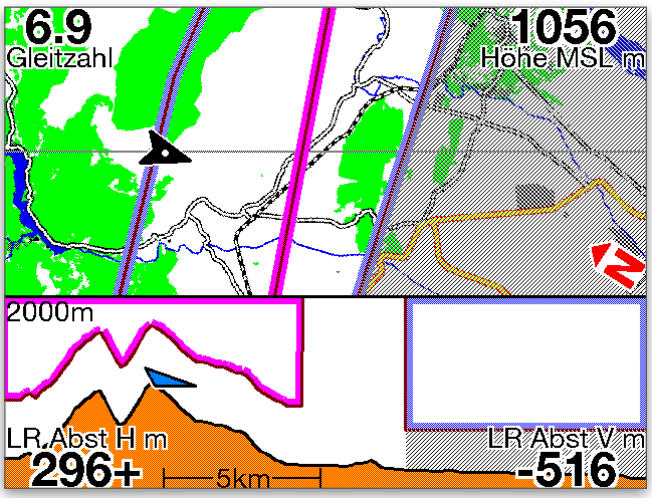
The SKYTRAXX 4.0 can display airspaces in all map displays (>Settings >Flight screens - select flight screen, then option >Airspaces ON)

The SKYTRAXX 4.0 shows the horizontal limits as on the ICAO map and the vertical limits as height MSL. The device converts the AGL heights and the flight levels into MSL heights, each adjusted to the current air pressure.

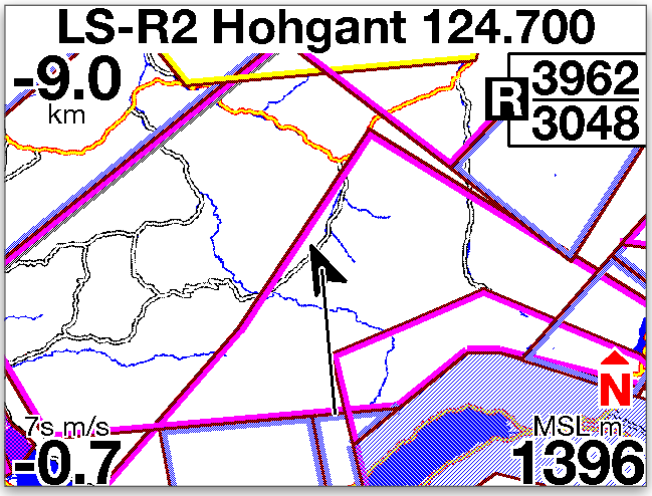
If an airspace boundary is marked e.g. with 2980, then according to the current air pressure at the airspace boundary, the MSL altitude display field also shows exactly 2980m.

cross section

The cross section view makes three-dimensional orientation easier for you.



The airspaces flight screen also shows you detailed information on individual airspaces.



You will see a connecting line on the screen between your position (arrow in the middle of the screen) and the currently selected airspace. It initially points to the airspace closest to your position.

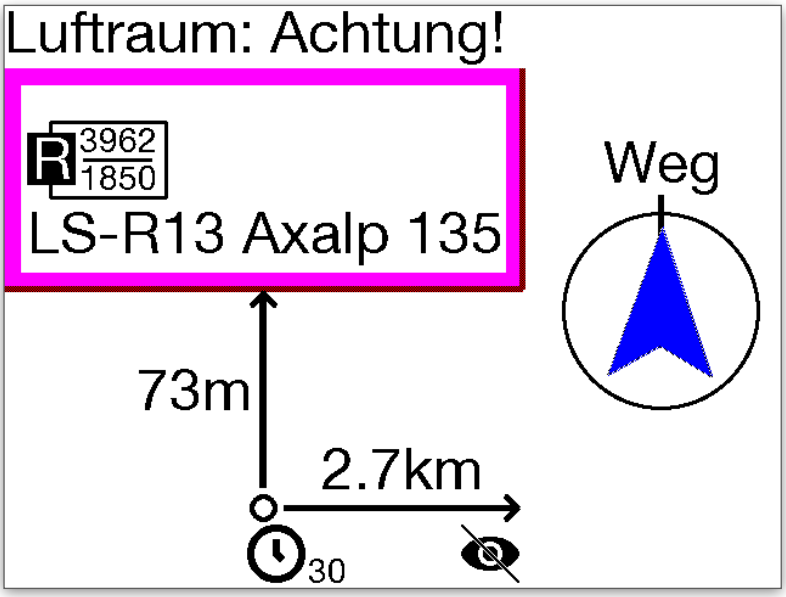
Use the arrow keys to get information about the next airspace.

Airspace warning - warning distances

If you approach a closed airspace or a danger zone, the SKYTRAXX 4.0 warns you in good time. You can set both the horizontal and vertical distance from which you will receive a warning from the device.

(>Settings >Airspace >Warning distance ...)

If you fall below the warning distance, you will hear a clear acoustic signal and a warning screen will appear:

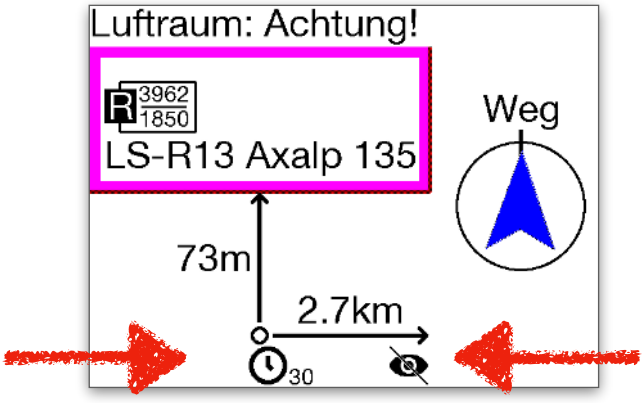


On the right side of the screen you will see an arrow. It points in the direction of the shortest way out of the approach area.

✓ To exit the critical area, fly with the arrow pointing up! This is the current flight direction!

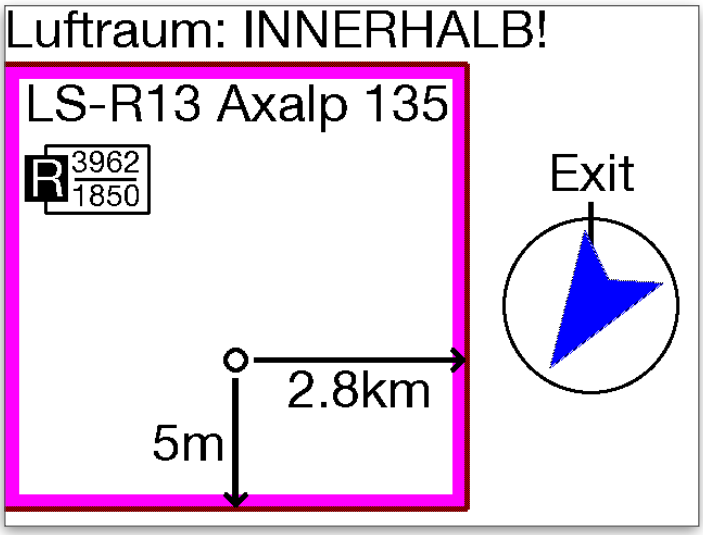
You can switch off the airspace warning for a period of 30 minutes or for the entire duration of the further flight, e.g. if it is a temporary airspace and you are sure that it will not be activated or if it is a danger zone (e.g. skydiving zone).

Disable warning for 30 min



Disable warning for the duration of the entire flight

If you are already inside a restricted airspace or a danger zone, the following screen will appear:



For the escape route and the temporary switching off of the warning, see above.

GPS functions

Your Skytraxx 4.0 flight instrument has a built-in satellite navigation module (GPS). After switching on, the device needs about 1-2 minutes (in rare cases up to 10 minutes) until it receives enough satellite signals for exact positioning.

✓ Always switch on your Skytraxx 4.0 a few minutes before the flight.

The barometric altimeter is then automatically compared with the GPS altitude.

The GPS module can provide numerous functions by determining the position in space:

- speed over ground
- Glide ratio over ground
- wind direction and speed
- Navigation functions such as GoTo, route, competition tasks, etc.
- Cross-country flight calculations such as distance traveled, scored distance according to competition rules, XC points, XC km, XC speed, triangle optimization
- Approaching airspace warning
- Warning of approaching an obstacle (cable car, high voltage power line, windmill, etc.)
- time and flight time

You can display the calculations of the GPS module on the different flight screens. Some displays are already preset depending on the flight screen, others you can configure yourself. See the chapter Configuring flight screens.

Glide ratio over ground

The Skytraxx calculates your glide ratio over the ground from the distance covered and the simultaneous loss of altitude. It is typically in the range of 7 to 9 in calm air with no thermals.

If the glide ratio is (significantly) lower, it may be worth using the accelerator.

✓ You can use the display of the glide ratio over the ground to determine whether accelerated flying is worthwhile.

✓ If the glide ratio is very high, you have a tailwind or you are in a rising air mass.

✓ When climbing, the device does not show any glide ratio.

wind direction and speed

The Skytraxx calculates the wind data from the different speeds in different flight directions. The calculation is most accurate when you have flown one or more even circles, e.g. in thermals.

At the beginning of the flight there is therefore no reliable wind calculation, even if the device shows something.

! The wind calculation is only a guide and actual wind readings may vary, particularly at different altitudes.

✓ Therefore, pay attention to possible wind indicators on the ground (windsock, flags, smoke plumes, trees, grass...) especially before landing.

✓ The most reliable wind information for landing is the windsock at the landing site!

Ground wind information

There are now numerous wind stations at take-off and landing sites and at relevant positions for assessing the current weather situation.

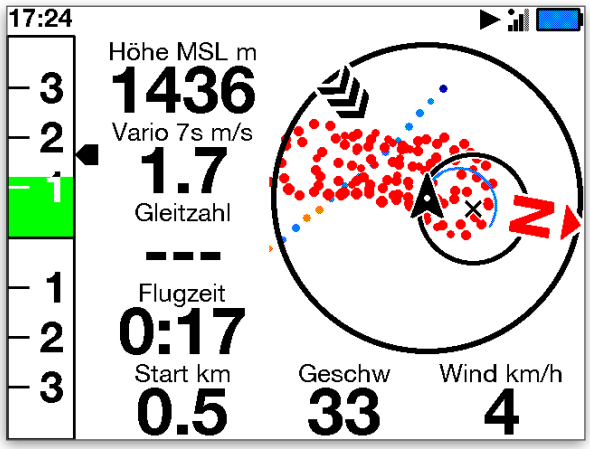
All wind data sent via FANET can be received immediately with the Skytraxx 4.0:

- on a Chart page if you have the Wind Stations option enabled (>Menu >Settings >Flight Screens >Chart Page)
- via the FANET user list (>Menu >FANET users >Wind stations)

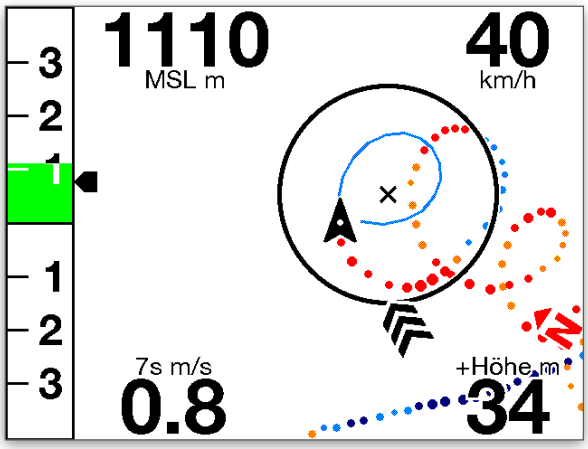
The data from many other wind stations are available via the connection to burnairMap. See the Burnair chapter.

thermal assistant

The Skytraxx 4.0 provides you with a sophisticated centering aid. It is available through two different flight screens:



Flight screen classic page

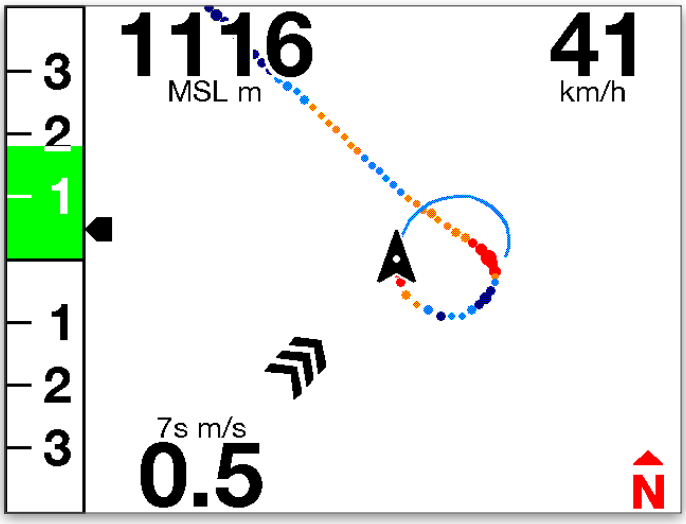


Flight Screen Thermal Assist

- ✓ The arrow keys change the volume on the classic side
- ✓ On the thermal assistant flight screen they have zoom function

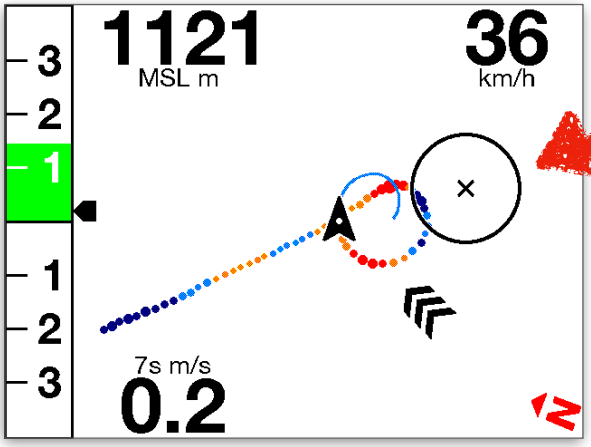
Flying with the thermal assistant

The Skytraxx 4.0 shows your flight track on the screen. Blue dots symbolize descent, orange/red indicate climb. The thicker the dots, the greater the rise or fall.

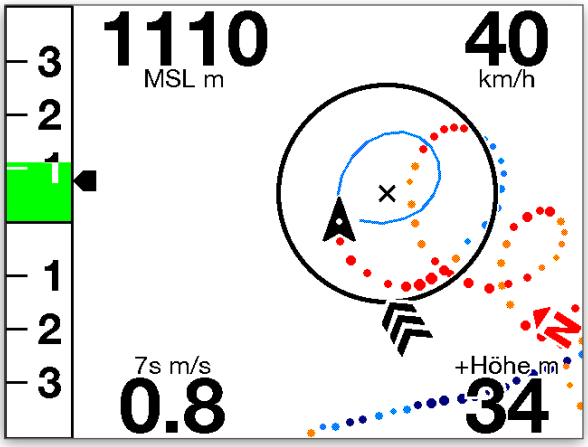


The thin blue line shows the assumed further flight path for the next few seconds, i.e. the trajectory if you continue to fly with an even turning radius as you are currently.

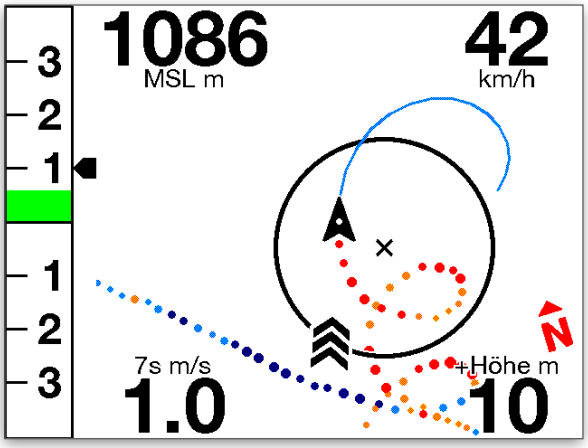
As soon as you have made the first circles or loops in the updraft, the device recognizes the area of the best climb. The Skytraxx now calculates the area of the best climb (thermal center) from the climb value, wind offset and the aircraft's own descent. A gray circle appears on the screen:

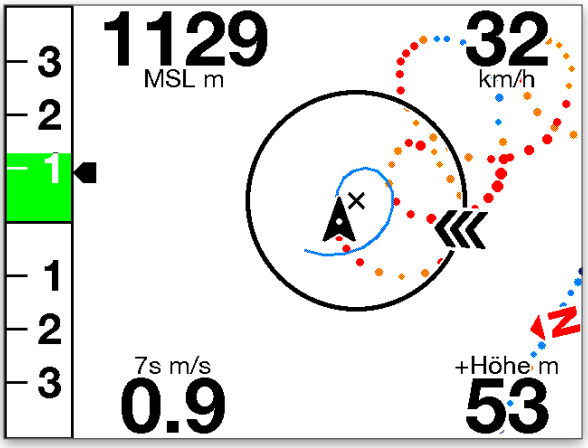


The updraft center calculated by the device can also be outside of your previous search circles or loops.



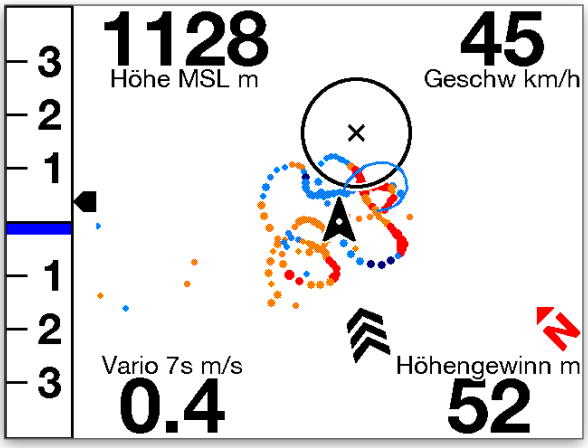
✓ Now fly on so that the thin blue line always points into the calculated thermal circle.

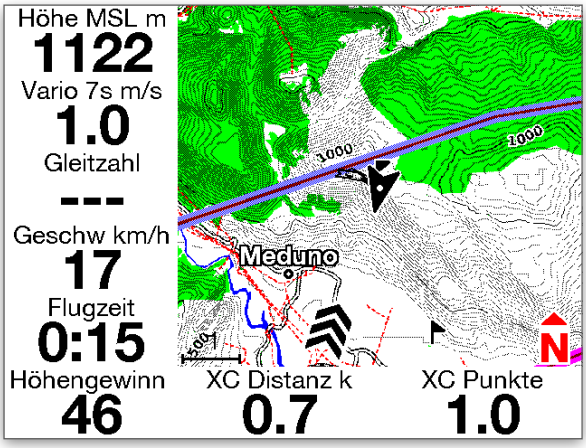




✓ **Correct your turn radius or trajectory when the blue line exits the circle.**

Altitude gain display field



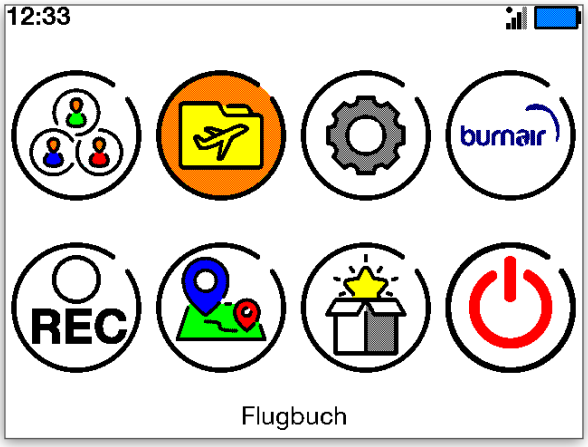


On the Thermal Assist and Split Page flight screens, you can enable the Altitude Gain indicator box. In tricky conditions, this helps to estimate when cranking is worthwhile.

If you have activated the automatic activation of the thermal assistant in the configuration of your flight screens (for more information see chapter "Configuring flight screens"), the screen display automatically switches to the thermal assistant flight screen when a usable thermal is detected and back to the previous one when the thermal is exited flight screen.

flight log

The Skytraxx 4.0 saves the recorded flight data in the device's internal flight log as an IGC file (optionally also as a KML file for google-earth).

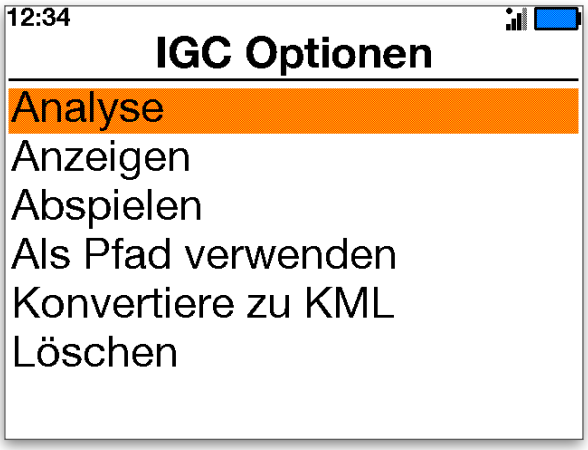


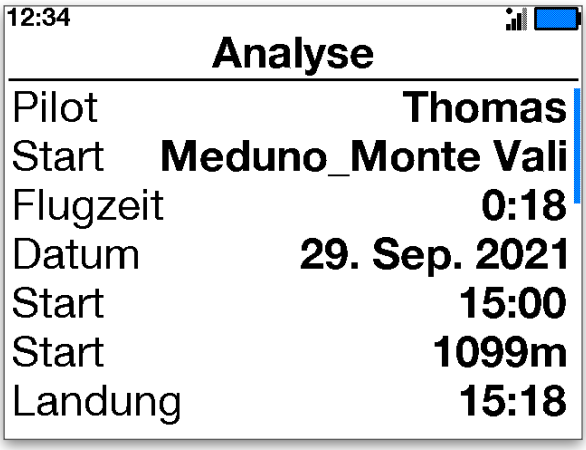
Call up with >Menu >Logbook

The saved records are organized by year, month and day and start time.

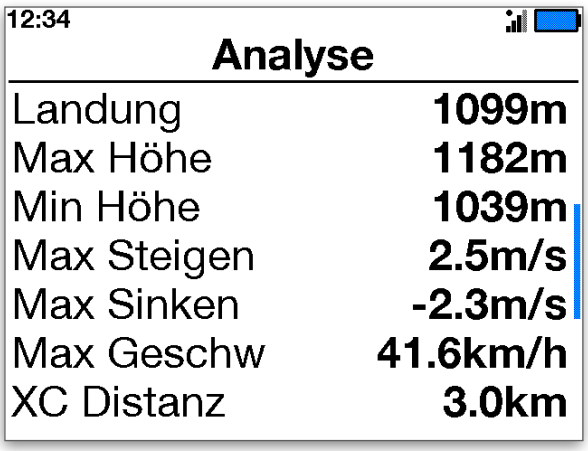
flight analysis

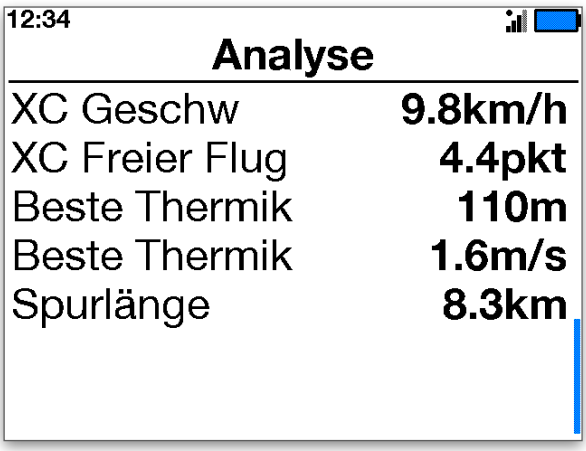
Find the desired flight in the flight log and then select >Analysis





Switch between the individual pages with the arrow keys >up >down.

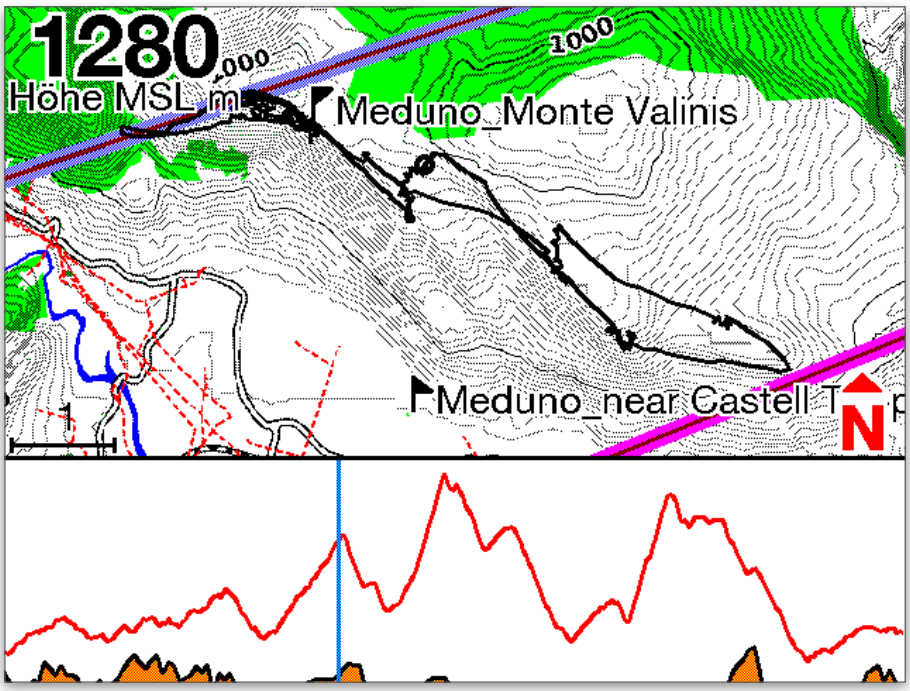




view flight

You can also view the flight on a split map page with the flight's elevation profile:

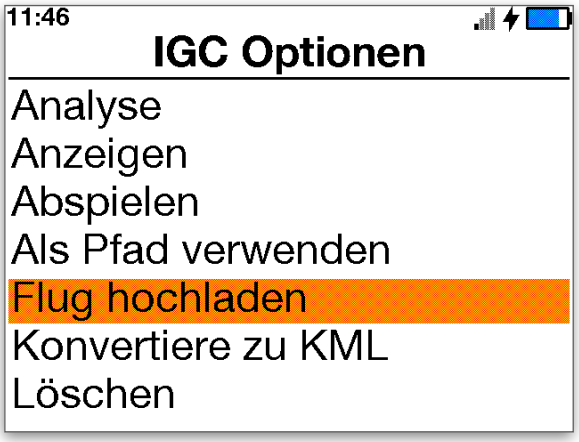
Use the arrow keys to scroll along the flight path. On the map, the small circle marks the current position, on the elevation profile the blue line:

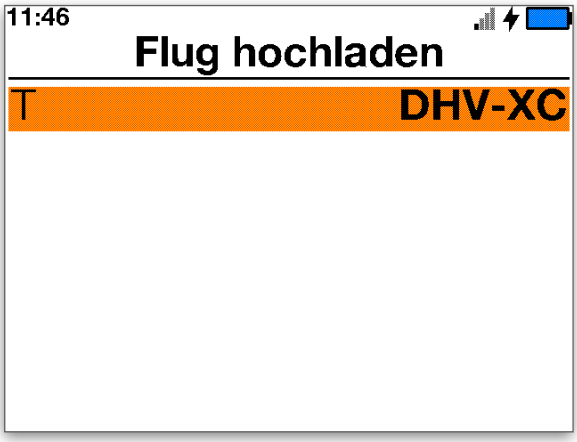


upload flight

If you have created an OLC profile (see chapter Online Contest), you can upload a flight from your SKYTRAXX 4.0 flight log directly to an OLC server:

To upload a flight, select it in the flight log (see chapter Flight log) and select IGC options >Upload flight and the corresponding OLC profile. Finished!





play flight

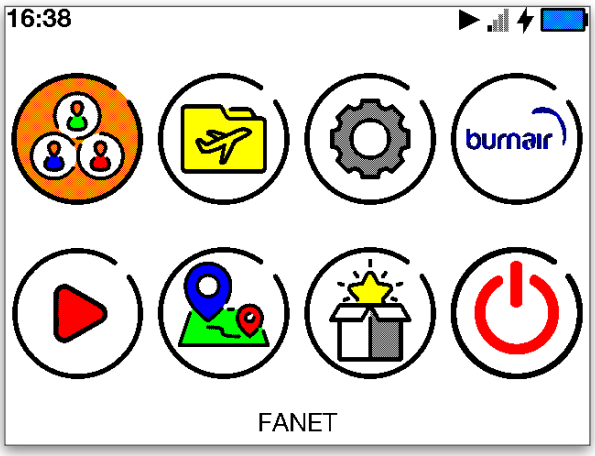
Your Skytraxx 4.0 can show you a flight from the flight log in real time or in acceleration (2x, 4x, 8x, etc.) on the display, just like in the flight itself.

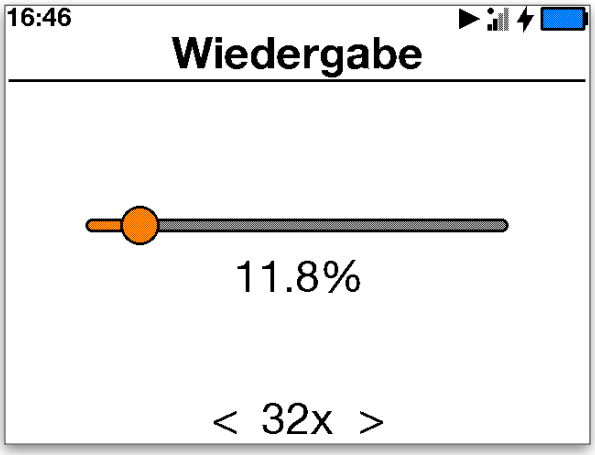
To do this, select the flight by year, month, day and start time and then under IGC Options > Play. Now you see all screen displays exactly as you would in flight, including airspace and obstacle warnings.

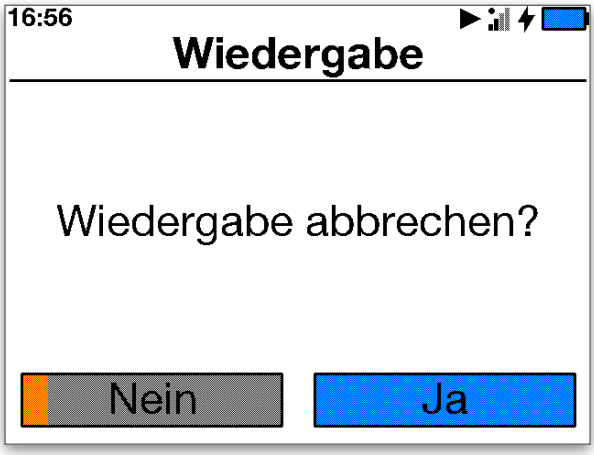
✓ Playing flights is a great way to test your flight screen settings.

You can change flight screens during playback, make changes to their configuration (display fields, parameters for map display) or their order, add or delete flight screens (>Menu >Settings >Flight screens).

You change the playback speed with >Menu >Playback and then with the arrow keys. Confirm and return to the flight with >OK.







To end playback, select >Menu >Playback again and then exit the playback dialog with the left button (>Menu / Back).

Confirm the cancellation of playback with Yes.

FANET+

FANET is a sophisticated radio network-based communication system for exchanging information between aircraft.

FANET+ also sends position data in a form that can be evaluated by FLARM receivers.

FLARM is a collision avoidance system.

FLARM receivers evaluate the position data of the FANET signal and calculate whether a collision can occur if both aircraft continue their flight path unchanged. If this is the case, the FLARM warns the pilot at a greater distance and suggests an alternative course.

By linking FANET+ and FLARM, fast-flying colleagues such as gliders, powered aircraft or helicopters can recognize us early on and avoid us in good time.

Paragliders are so slow that an electronic collision warning is not necessary, we can react faster and avoid each other on sight.

Data transmission with FANET

FANET+ continuously transmits position data, speed, course (flight direction), rate of climb or descent, the type of aircraft (paraglider, hang glider, glider, etc.), a status and a unique identifier (FANET ID).

Optionally, you can have your name transmitted in plain text.

You specify the data for the name, type and type of aircraft in the SKYTRAXX 4.0 in the pilot profile (see chapter Pilot profile).

Other FANET participants, FLARM receivers and numerous FANET and FALRM-compatible ground stations can receive this data if they are within radio range.

FANET devices also act as relay stations, i.e. they forward signals from others that may not be in direct reception range.

This results in a range of the FANET signal in the air and in good weather from 10 km to over 150 km.

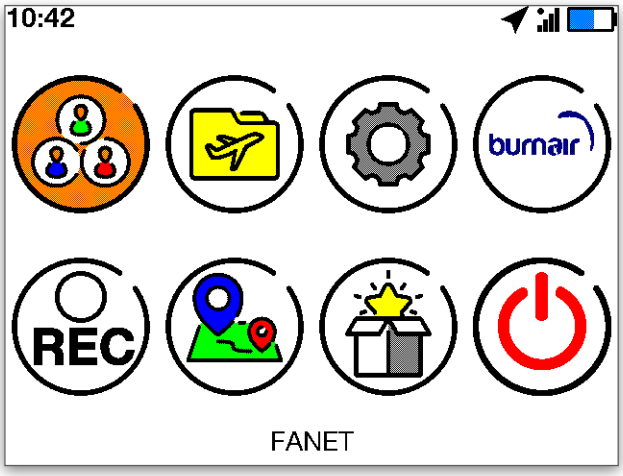
! Attention: if you have activated FANET or FLARM on your device (default setting), you are "visible" to the public, i.e. on numerous online platforms for LIve Tracking and of course for other FANET and FLARM participants.

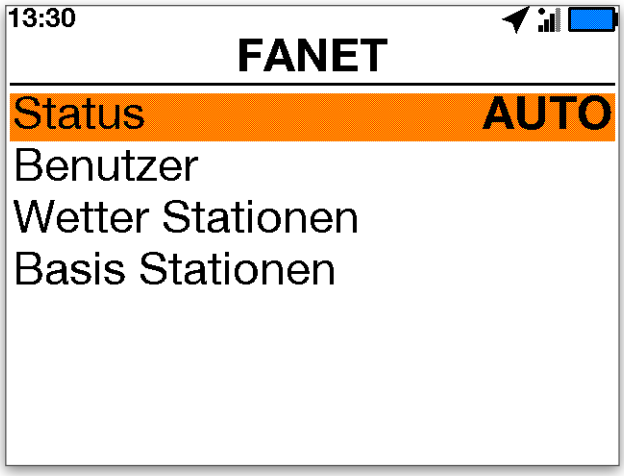
✓ If you don't want to transmit your name in clear text, disable the option Transmit Names at >Main Menu >Settings >FANET

FANET Status

The SKYTRAXX 4.0 automatically recognizes whether you are flying or moving slowly on the ground or your position remains constant and it sends the corresponding FANET status flying or hiking.

You can also send other status messages via >main menu >FANET.





List FANET status

- Auto - automatically detects if you are flying
- Wander - set automatically when not flying
- Vehicle - on the move with fast movement, but not in flight.
- Take me with you
- Well landed - safety feature: the SKYTRAXX 4.0 asks after landing whether it should send the status. This allows others to see that - if the device stays on and you don't change position - no accident happened.
- Need technical help
- Need medical help
- SOS call - all FANET participants in the reception area are informed and can continuously see the SOS signal in the user list and in the FANET radar (flight screen). The SOS status also appears in live tracking (if the online platform recognizes it as such). With another FANET device you can easily find the SOS transmitter using the follow function.

Live-Tracking

Hybrid live tracking from Fanet (if activated) and GSM (if activated).

>Main menu >Settings >FANET - activate online tracking.

This results in almost complete live tracking in almost real time.

There are now numerous Internet portals through which live tracking can be followed with more or less time delay and comfort, e.g.

- www.burnair.cloud - currently the best optimized system for paraglider pilots with numerous additional features. See also www.burnair.ch as well as the Burnair chapter in this manual
- openglidermap.org
- glidertracker.org

FANET thermals

By evaluating the flight data of other FANET participants, the SKYTRAXX 4.0 can recognize when they are successfully gaining altitude in the updraft.

With the FANET thermals option (activate with >Main menu >Settings >Flight screens, then select the appropriate flight screen), these participants are visible on flight screens with a map display and on the thermal assistant flight screen as red dots (map) or circles (thermal assistant and Map visible with high zoom).

If you are looking for thermals, simply fly to the nearest FANET thermal circuit. The SKYTRAXX 4.0 reliably calculates and uses the circle to mark the spot where you have to get on the updraft to catch the thermals.

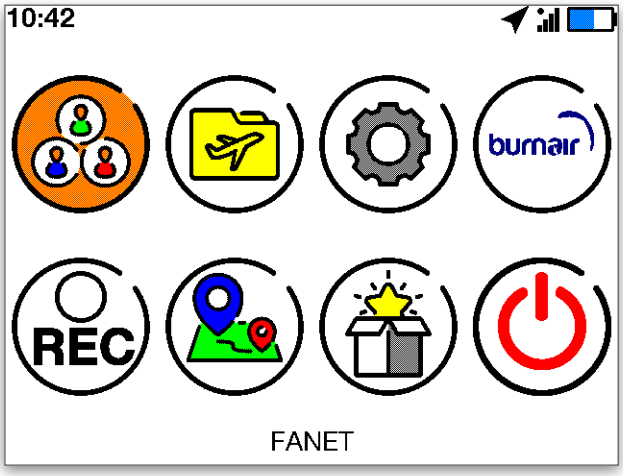
The device takes into account both the wind offset and your current sinking or rising.

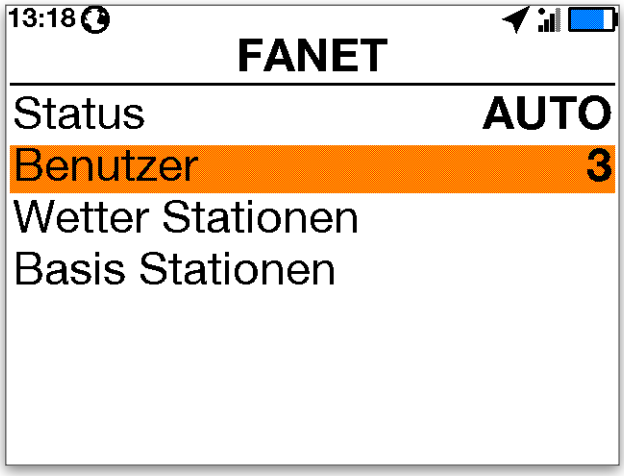
FANET friend

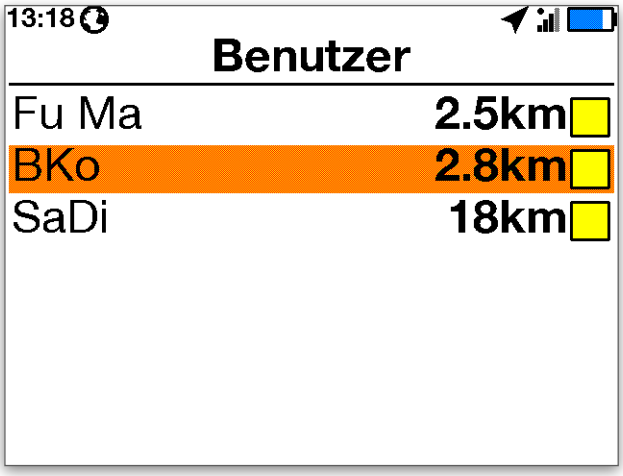
If many FANET users are active in a flight area such as Bassano, a map display can quickly become confusing with all the FANET displays.

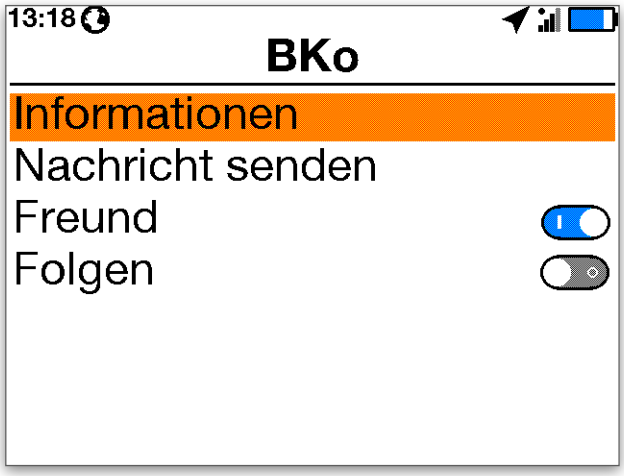
You can therefore limit visibility to those you want to see (FANET friends).

In order for you to be able to define a FANET friend as such, it must be active once in your reception area. He will then remain your friend until you remove him from the friends list.









Set FANET friend:

>Main Menu >FANET >Users

then select the desired participant from the list of active users

Enable friend option

FANET participants defined as friends appear green in the user list (default: yellow).

follow function

Going on a route together is a special flying experience. FANET offers an interesting option to stay in touch even beyond visual line of sight: the follow function.

Analogous to the friend definition, you can activate follows. On each map display you will now find a straight line between your position and that of the other FANET participant (regardless of whether they are FANET friends or not).

You can also use the display in the freely definable fields of the flight screens to display the altitude MSL, distance, climb rate, etc. of your partner (see chapter Configuration of flight screens).

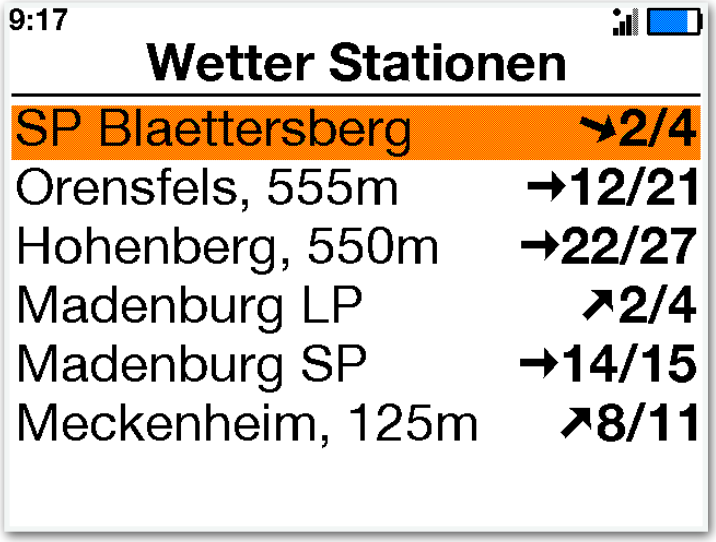
Information from ground stations (e.g. weather stations)

There are already weather stations at numerous locations, mostly launch sites, that send their data via FANET. These values are usually available on the Internet at the same time.

The SKYTRAXX 4.0 recognizes weather stations and, if the option (anemometer) is activated, displays them as windsocks on flight screens with map display.

(See also the chapter Configuration flight screens)

With >main menu >FANET you get to the list of active users / weather stations / base stations. Select Weather Stations or Base Stations to get information about each station.



short messages

Send short messages to other FANET participants:

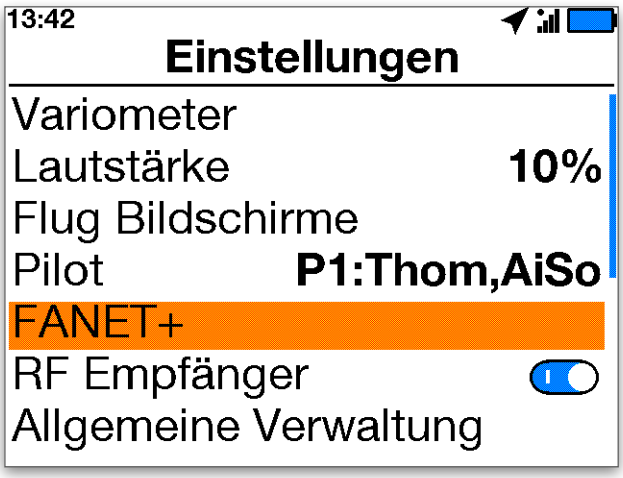
- >Main Menu >FANET >Users
- select user
- Select send message

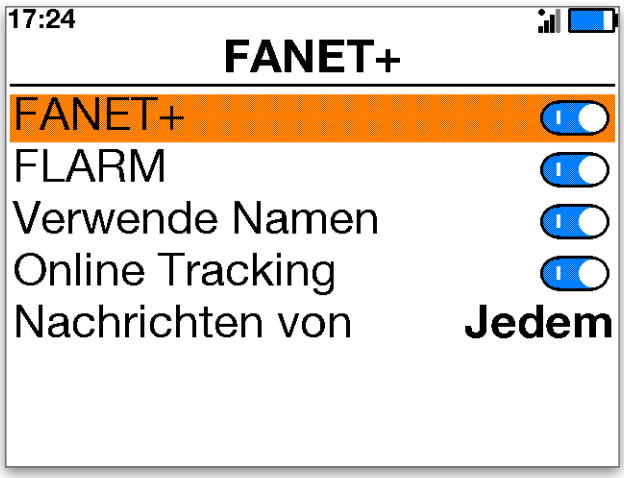
You can select the message from a list of predefined texts or edit it using the input function.

✓ The fanetMsg.txt file is in the SKYTRAXX 4.0 directory. Edit this file with any text editor (attention: pure text without formatting!) to create your own message templates quickly and easily.

FANET settings

You configure the general settings for FANET via >main menu >FANET+





- **FANET+ - basic enabling or disabling of the FANET functions**
- **FLARM - send FLARM signal to avoid collision with others**
- **Use names - Publish names from pilot profile in clear text. If deactivated, only the FANET ID is displayed for others.**
- **Online tracking - If deactivated, the position will not be displayed publicly on the internet.**
- **Messages from - receive messages from all participants or just friends**

Besides the general settings for FANET+, there are FANET options on the flight screens:

- **Display fields with information about other participants, e.g. altitude MSL, rate of climb, distance, course etc.**
- **FANET users - show all or only FANET friends**
- **FANET thermals - see chapter FANET thermals above**.

Configuration with >Main Menu >Settings >Flight Screens
Then select the desired flight screen.

Navigation, cross country flying and competition

The SKYTRAXX provides you with extensive functions for navigation, to support cross-country flying and for competitions:

navigation:

- Flight screens with map display
- GoTo: Target flight to a selected waypoint
- Route: Navigation to a destination via any number of waypoints

cross country flying:

- In-flight calculation of XC kilometers, XC points, XC speed and XC type with selectable OLC factors
- Triangle Assistant to optimize FAI triangles during flight

competition:

- Complex competition routes with TakeOff, Start of Speed Section, Waypoints, End of Speed Section and Goal according to current FAI competition rules
- Approach calculator for required glide ratio / departure altitude to the next waypoint, AGL on arrival at the waypoint, time calculation
- task timer

Foto: Urs Lötscher

Navigation - map

The classic and simplest tool for navigation is the map. Various flight screens on the SKYTRAXX 4.0 therefore offer you map displays:

- map page
- Shared Page
- navigation
- Triangle Assistant
- airspace
- transverse view

The topographic details appear depending on the current zoom factor (change the zoom factor with the arrow keys):

- **Topology: roads, bodies of water, terrain (forest, meadow, buildings, contour lines...)**
- **Places: place names**
- **Waypoints: (see next chapter)**
- **Airspaces: (see chapter Airspaces)**

For orientation, you can choose whether north is pointing up (as with the classic paper map) or whether the map display is aligned with the direction of flight (course up).

Navigation - waypoints

Distinctive fixed points in the terrain (peaks, towers, small lakes, bridges, etc.) have proven useful for orientation when cross-country flying.

You can also use virtual fixed or waypoints in addition or instead. If these are stored with their geographic coordinates in your flight instrument, you can fly to them with the GPS-controlled navigation functions of the SKYTRAXX 4.0.

Your SKYTRAXX 4.0 already contains a database with the coordinates and names of the take-off and landing sites for almost all airfields worldwide. The device automatically updates this database if you have activated the mobile data. You can also update the file manually (see chapter Update / Update).

You can enter additional waypoints on the device or import them as a file.

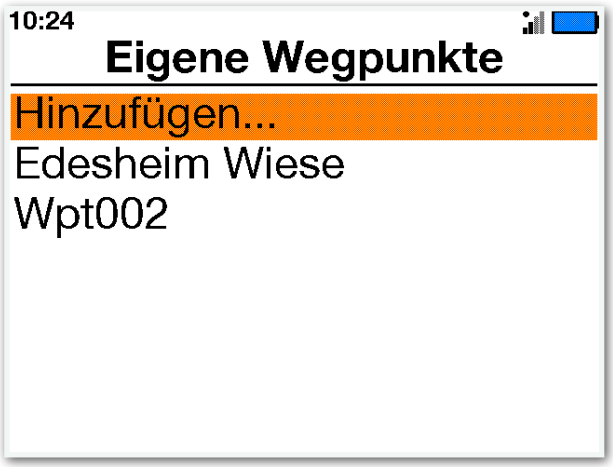
See also the USB connection / internal memory chapter.

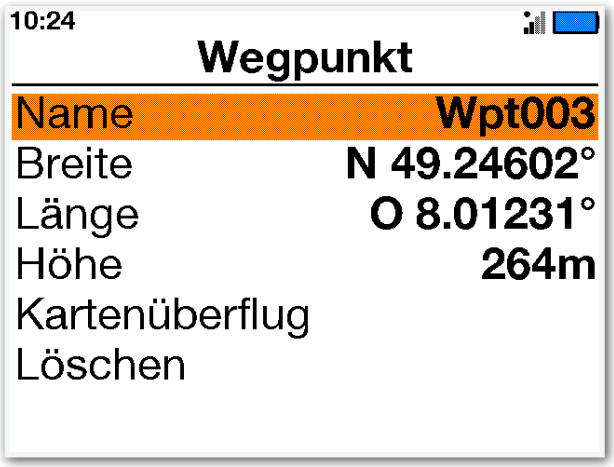
Use current location as waypoint

In the >main menu you will find >Navigation >Own waypoints

Select >Add...

The geographic coordinates correspond to your current location. You can edit the individual parameters (name, coordinates, height).





With >Menu / back (left button) the entry is saved as a waypoint.

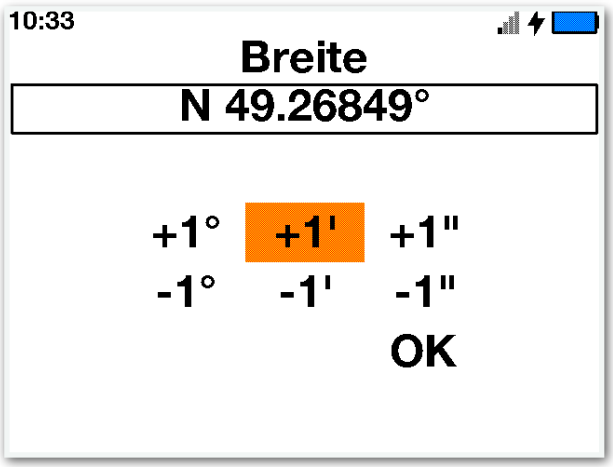
Internally, the SKYTRAXX 4.0 creates the user.gpx file in the waypoints directory for its own waypoints.

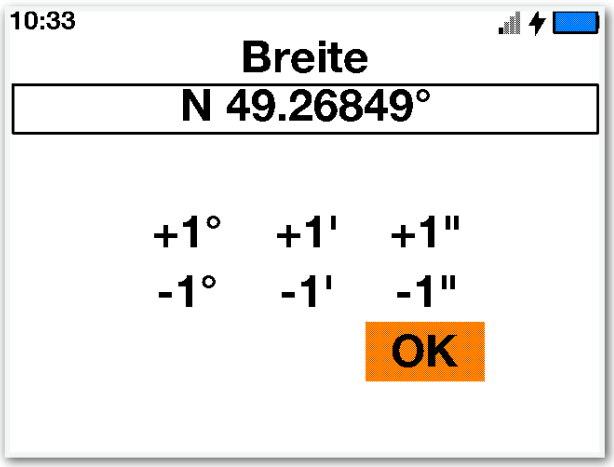
Enter waypoint with coordinates

Create a new waypoint as described above with

>Menu >Navigation >My Waypoints >Add...

Edit the name or the coordinates, confirm with OK and leave the input menu with >Menu / Back.





Import waypoints via file

Connect your SKYTRAXX 4.0 to a computer with a cable via the USB-C interface. Copy your waypoints file to the waypoints directory on the SKYTRAXX 4.0.

The file must be saved in CompeGPS format as .wpt or in GarminGPX format as .gpx.

✓ If you want to see the imported waypoints all and always on your map display, use user.gpx as the file name on the SYKYTRAXX 4.0

✓ If you use other file names for the file(s), only the waypoints of a currently active route are visible on the map display (see below, destination flight and route).

✓ In this way you can avoid overloading your map display with the names of waypoints that you do not need for the current navigation.

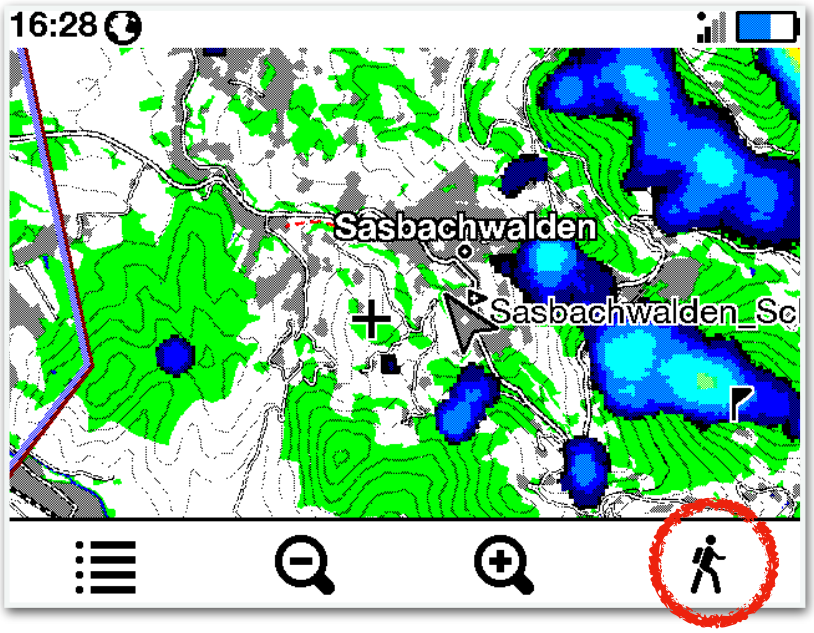
Set waypoint by position on map

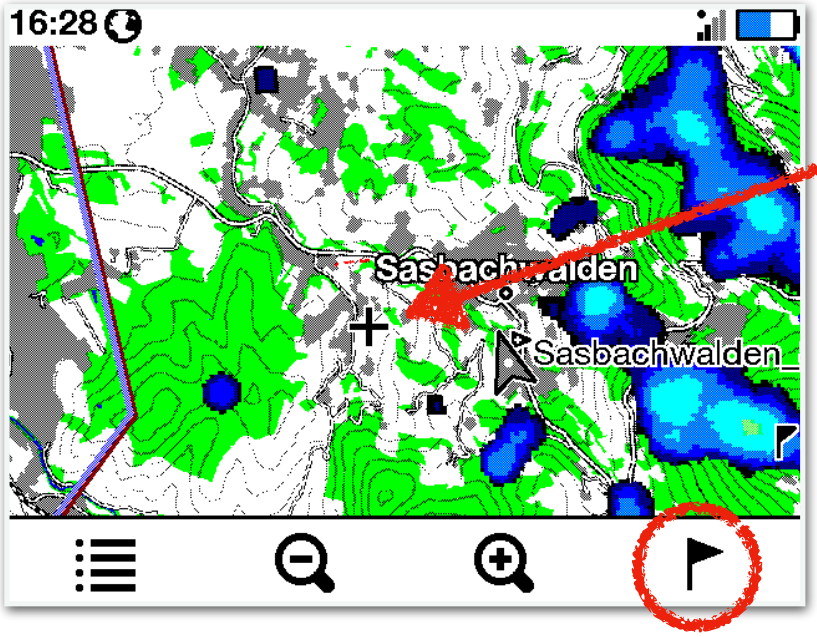
When you fly over the map, you move the position cursor over the map by tilting the SKYTRAXX 4.0.

>Menu > Navigation >My Waypoints >Add... >Position on Map

✓ When activating the map scan, first hold the device horizontally.

- First, the »Hike« symbol appears in the status bar at the bottom of the screen.
- With the button below (>OK) you activate the possibility to move the cursor position.





- Move the position cursor on the map by slowly tilting the device.
- You will now see the »Waypoint« symbol in the status bar.
- With >OK you stop the movement of the position cursor.
- To save the cursor position as a waypoint, press the >Menu button.

✓ After a while, the status bar will disappear. However, the buttons remain active. Press any key to show the status bar again.

✓ The colored areas on the map are thermal sources of the kk7 thermal map. You can define thermally suspect waypoints for cross-country flight support.

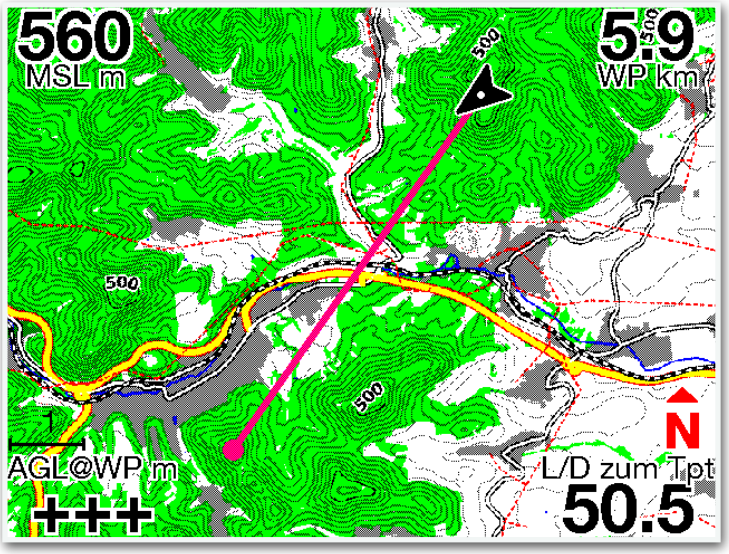
Move waypoint by position on map

The easiest way to move an already defined waypoint from one of your waypoint lists is to fly over the map.

- Select the appropriate WP file under >Navigation >Waypoints
- Select the waypoint
- The >Position on map option takes you to the mode described above to redefine the position on the map
- Proceed as described above

Navigation - GoTo (destination flight)

When flying to a destination, a permanent guideline on the map display shows you the shortest route between your current position and the destination.

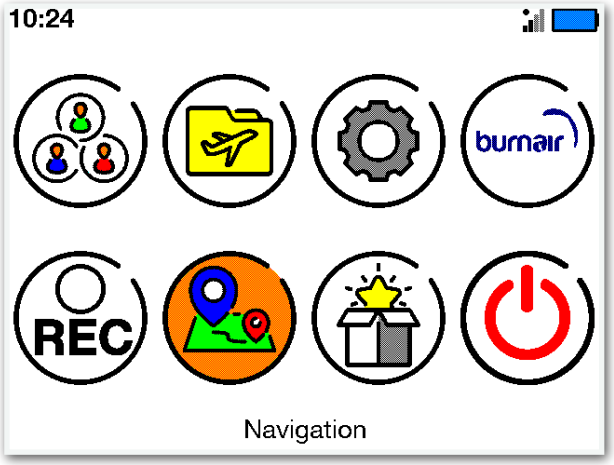


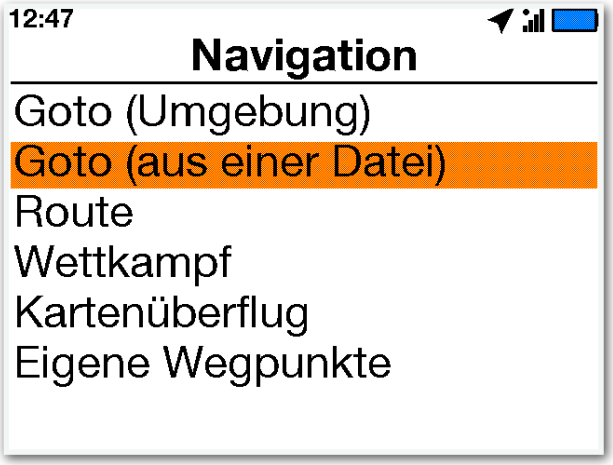
✓ For destination and route flights, define a flight screen (navigation type) with the display fields WPkm (distance to waypoint/destination), AGL@WPm (expected arrival altitude at WP/destination if conditions remain the same) and L/D to Tpt (required glide ratio to to reach the WP / the goal).

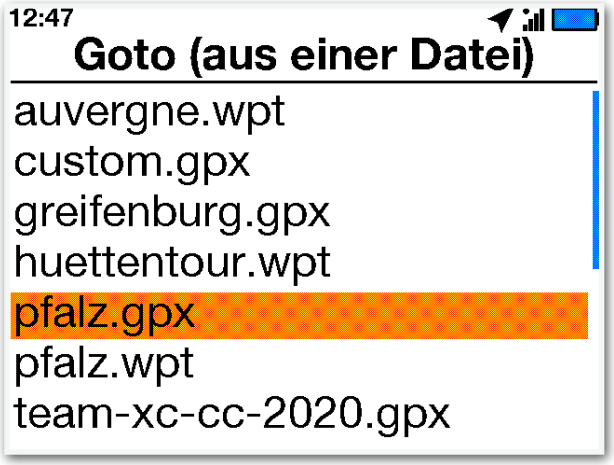
For more information on configuring the display panels, see the Flight Screens chapter.

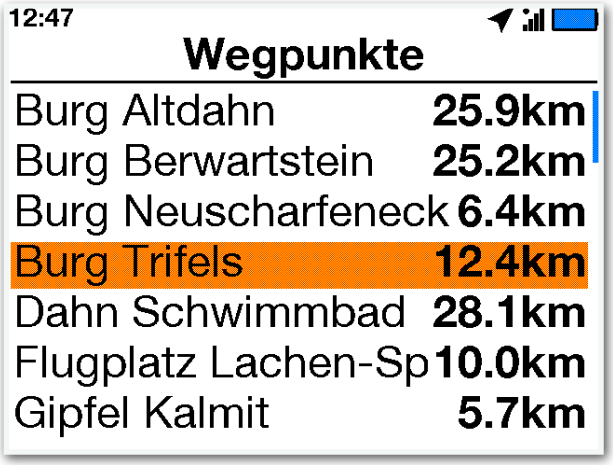
Choose a destination

Choose the destination for your flight from your current environment (shows a list of waypoints near you) or from a special file that you previously loaded onto your device or with the so-called map overflight.









After selecting the desired waypoint, the navigation is activated.

It remains active until you have reached your destination or until you have deactivated it with >Menu >Navigation >End navigation.

Switching off your SKYTRAXX 4.0 also deactivates the navigation.

Destination entry by map overflight

When you fly over the map, you move the position cursor over the map by tilting the SKYTRAXX 4.0. Select >Menu > Navigation >GoTo >Fly Over Map

✓ When activating the map scan, first hold the device horizontally.

Choose the desired position by slowly tilting the device. Then press >OK and >back. Confirm or cancel saving the position.

! Entering a destination by flying over the map is only possible if there is sufficient GPS reception.

Navigation - route

Similar to the direct target flight, you can also navigate along a flight route via waypoints (turnpoints) to a target.

Waypoints (turnpoints) on routes

Waypoints determine the course of the route. Strictly speaking, the term "waypoint" is somewhat misleading, because it is a matter of vertical virtual cylinders. The waypoint or turnpoint defined as a pair of coordinates is the intersection of the central axis with the earth's surface.

Each cylinder is therefore defined by its geographic coordinates and a radius, which varies in size from a few meters to a few kilometers.

Entering a route on the SKYTRAXX 4.0

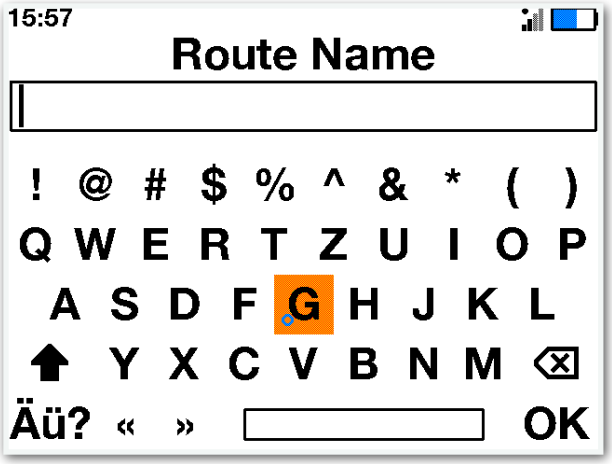
- Select >Menu >Navigation >Route
- to add a new route select >Add...
- to edit an existing route select it with the arrow keys and >OK

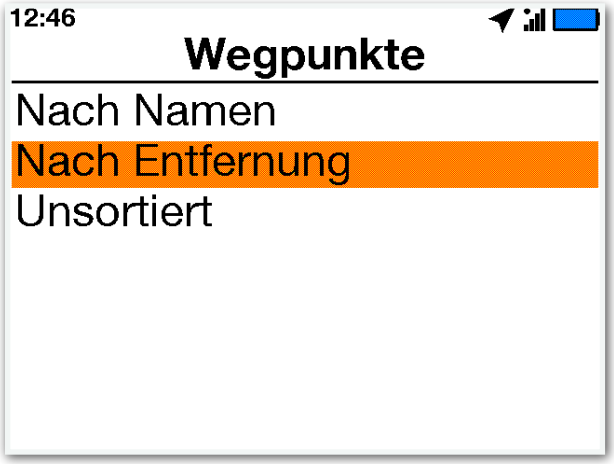
For each new route, you first assign a name, then enter any number of waypoints or turning points (turnpoints).

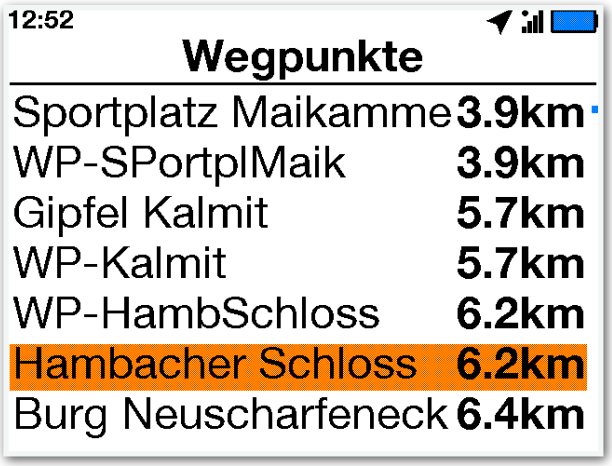
For each turnpoint you also define the cylinder radius (default: 500m). With the >Overview menu item, the SKYTRAXX 4.0 shows you the route with a map display.

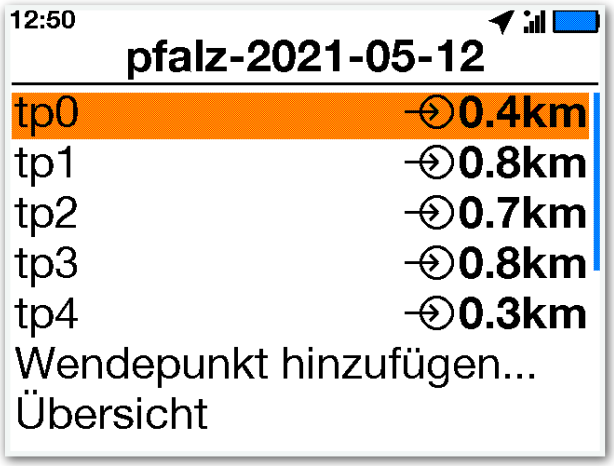
Activate the route in the route menu with >activate.

The route remains active until the last tour point is reached or the device is switched off. You can deactivate it prematurely with >Navigation >Stop navigation



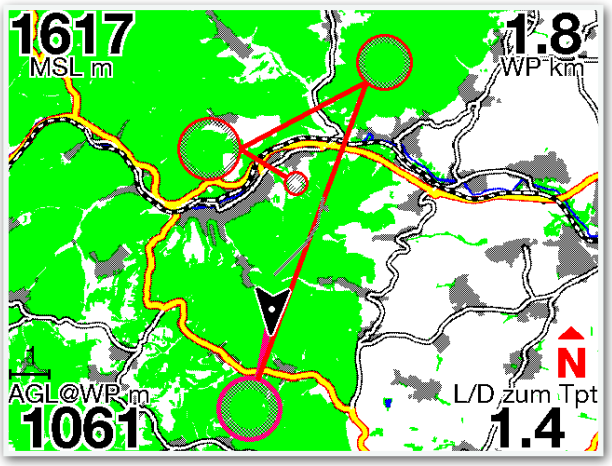






Route fly by waypoints

When a route is activated, a line shows from the current position to the next waypoint. When this is reached, an acoustic signal sounds and the waypoint disappears from the display.



XC flying with the SKYTRAXX 4.0

Cross country flying is a very popular variety of our sport. In addition to the sheer joy of discovering and being amazed, the sporting challenge is also attractive.

Distance flight rating according to the point system

A points system was developed as a "yardstick" for distance flight performance. The points result from the flown distance (km) multiplied by a rating factor). On the one hand, this depends on the general rating system (DHV-XC, XC Contest ...) and the type of route flown:

- **free route: a maximum of 3 further waypoints count between take-off and landing. (smallest rating factor)**
- **flat triangle: distance around three waypoints if take-off and landing are separated by a maximum of 20% of the total distance (medium weighting factor).**
- **FAI triangle: like a flat triangle, the length of the shortest leg is at least 28% of the total distance (largest scoring factor)**.

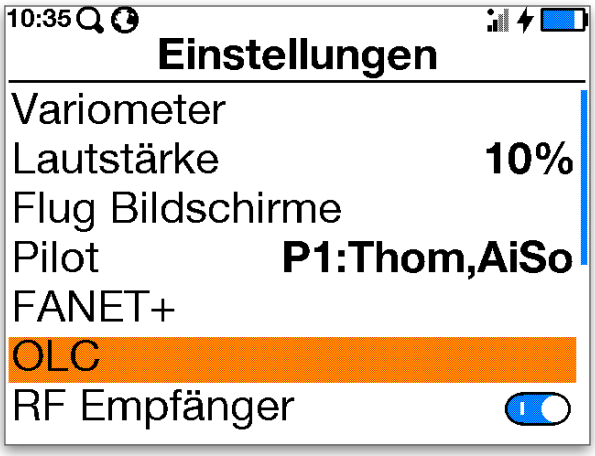
Points are calculated for cross-country flights using evaluation software. To do this, you load the track log of your flight (IGC file) into an electronic flight log or onto an online platform (Online Contest, OLC). For more information, see the chapters flight log and OLC.

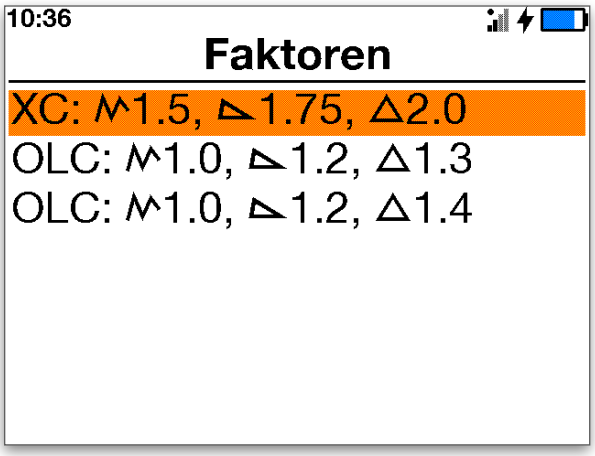
Distance flight calculations with the SKYTRAXX 4.0

The SKYTRAXX 4.0 continuously calculates during the flight:

- **distance to start**
- **XC kilometers (according to FAI distance flight rating)**
- **XC points (depending on the scoring factors set in the OLC profile)**
- **XC Type (Free Course, Flat Triangle, FAI Triangle)**

You can display these calculations on the flight screens (see chapter Flight Screens for configuration)





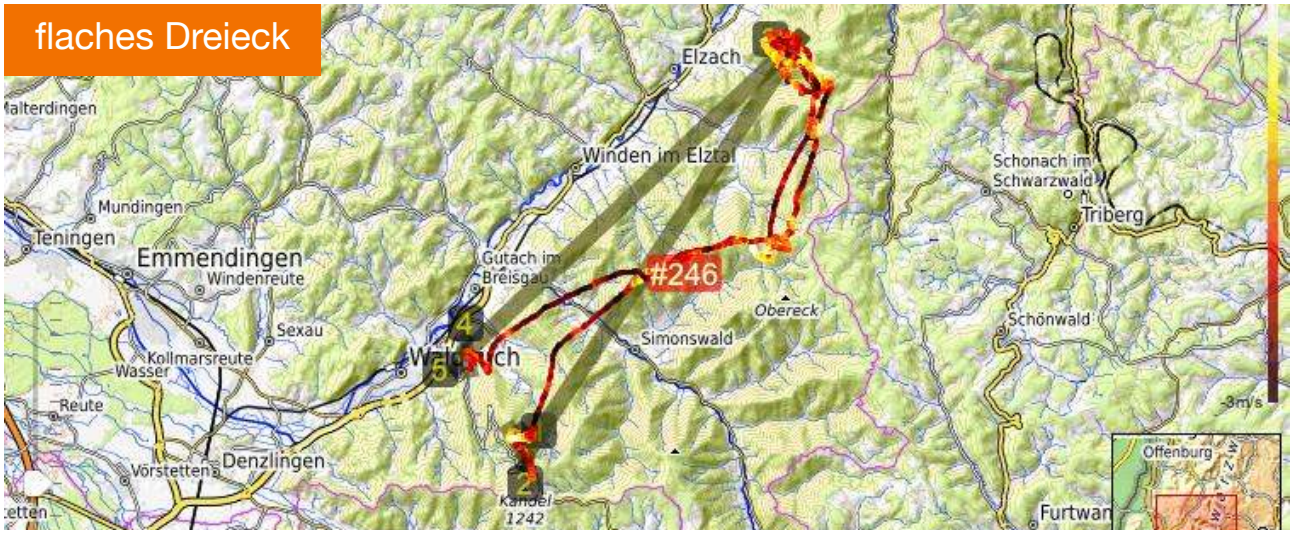
Flugbildschirme mit Kartendarstellung

Die Flugbildschirme mit **Kartendarstellung** helfen zur Orientierung im Gelände. Dafür stehen folgende **Informationen** zur Verfügung (aktivieren / ausschalten mit >Menü >Einstellungen >Flugbildschirme und anschließend die entsprechende Karten-Seite wählen):

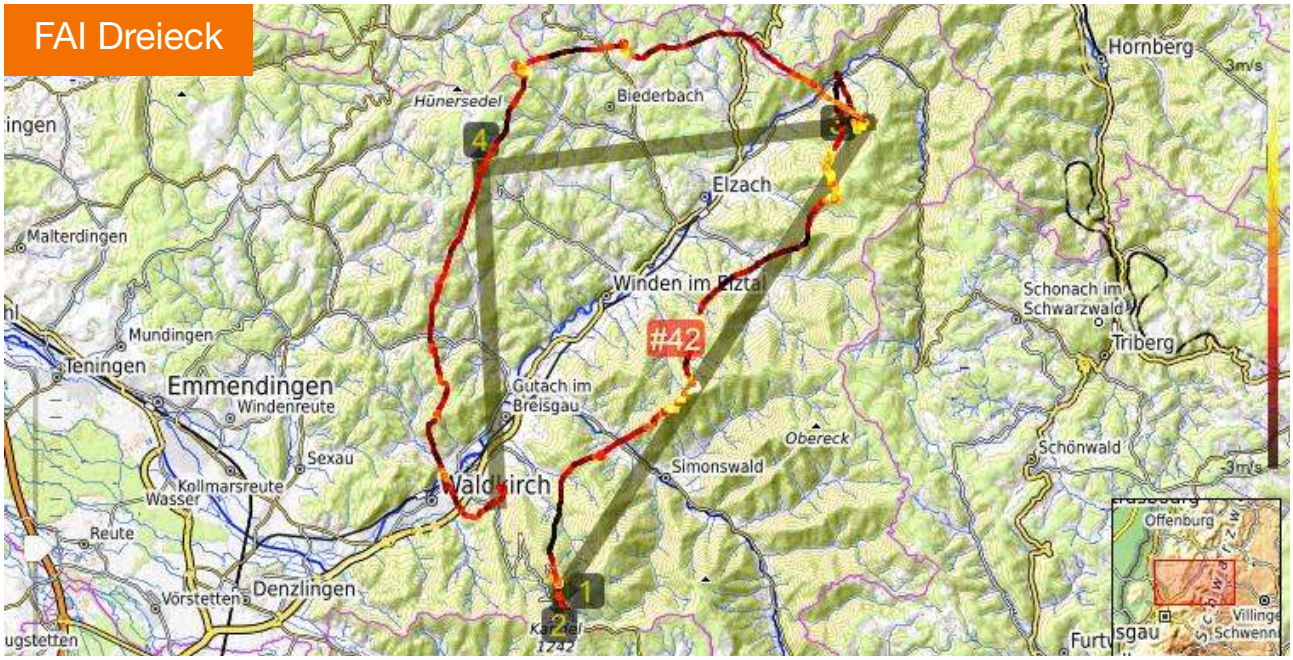
- **Topologie** (Gelände, Straßen, Ortschaften, Gewässer)
- **Orte** (Ortsnamen)
- **FAI / Navigation** (Anzeige der Dreiecks-Berechnung)
- **kk7 Thermik** (Anzeige der kk7 skyways)
- **Wegpunkte** (interne Gelände-Datenbank sowie eigene Wegpunkte-Dateien)
- **Lufträume**

freie Strecke

flaches Dreieck



FAI Dreieck

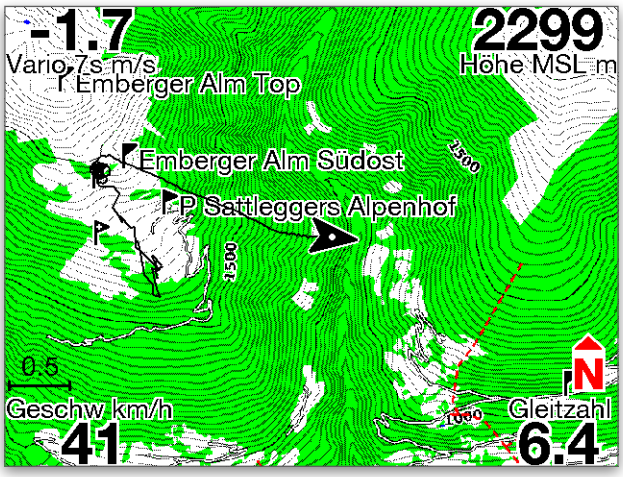


Navigation - Triangle Assistant

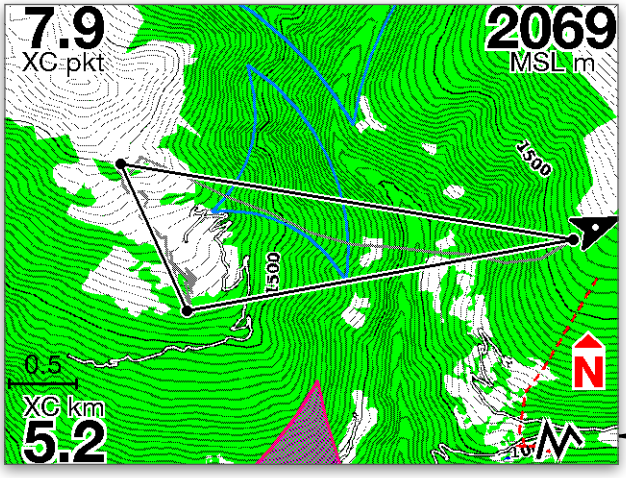
The FAI triangle results in the maximum number of points in relation to the distance flown. It is considered the supreme discipline in free cross-country flying, because it places high demands on navigation in the terrain and only succeeds under favorable flight conditions (wind influence!).

We cannot influence the weather, but the SKYTRAXX 4.0 provides an excellent assistant for navigation. Triangle Assist enables optimal route finding for FAI triangles during flight.

The explanation follows with an example:

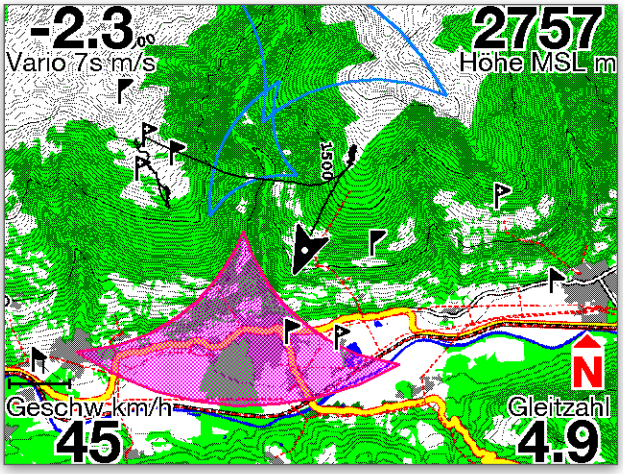


Start at Fichtenheim, Emberger Alm. Length of the route and destination are initially open.



The triangle wizard shows a possible flat triangle. However, it is currently a free route because the course is not closed.

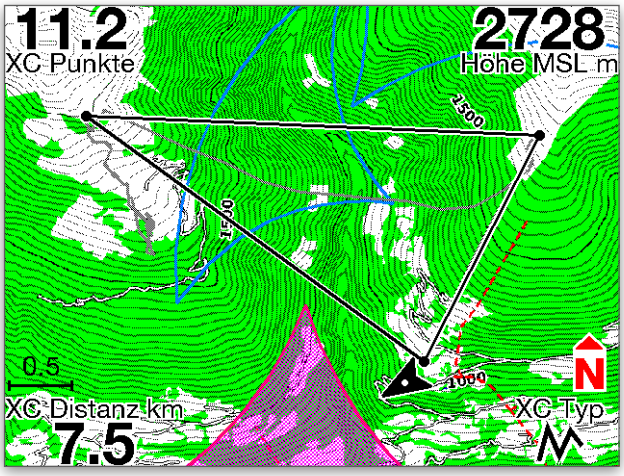
XC type free track



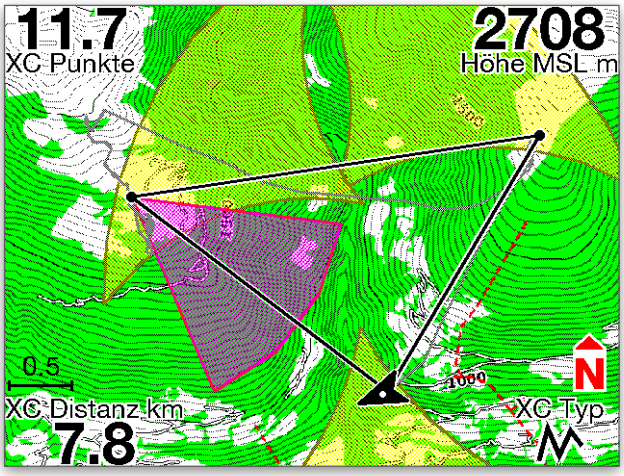
The triangle calculation shows two blue and one purple zone. When entering one of the three areas, an FAI triangle could arise from the previous flight path.

The best option would be to fly into the violet area.

Flight Screen: Map Page



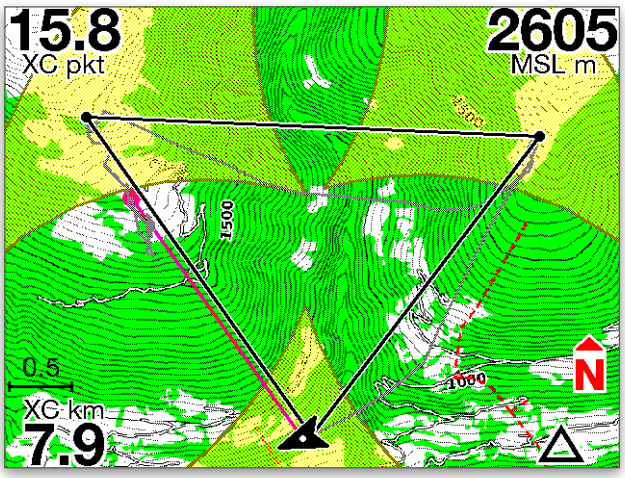
The identical situation on the flight screen: Triangle Assist.



After entering the purple area from the image above, three yellow zones and a new purple zone appear.

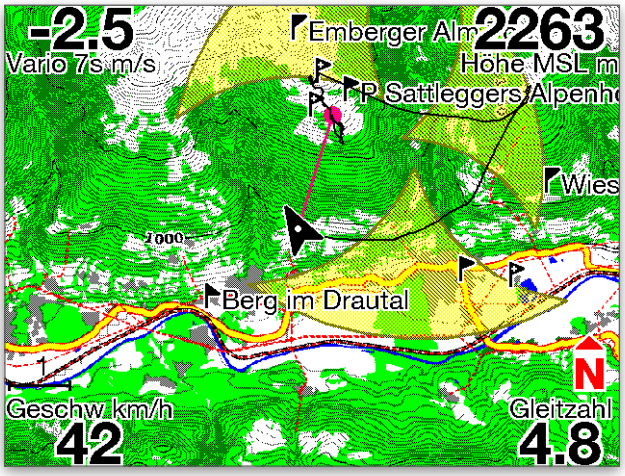
If the route is extended in the further flight so that the turning points remain in the yellow zones, then an FAI triangle results at the end.

However, it is still open. It is closed when entering the purple area (20% rule).



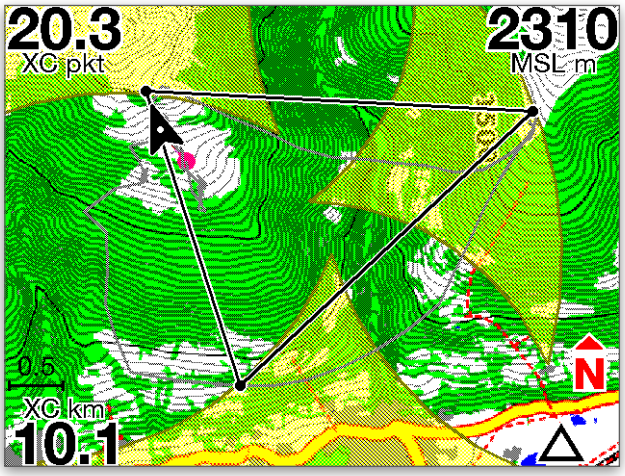
A short time later, the pilot reaches the violet zone, as this shifts as the route lengthens.

A red line will now appear. This marks the flight path to get back to the start position and to close the triangle completely.



The pilot flies towards the launch site to close the triangle.

Flight Screen: Map Page



The FAI triangle is completely closed.

Flight Screen: Triangle Assistant

XC type FAI triangle

✓ The FAI triangle sectors display is available on all charted flight screens.

✓ On the Triangle Assistant flight screen, the evaluated XC route is also visible as a black line, as well as the complete calculated triangle (zoom inactive).

competition flying

There are now a number of different competition formats. The "classic" variant is cross-country flying for a limited time. The aim is to fly a predefined course (flight route) in the shortest possible time.

Between take-off and landing, a flight task usually leads over several defined waypoints or turning points. You can imagine them like buoys in a sailing ragatta. However, these waypoints (turnpoints) are usually three-dimensional virtual cylinders with different radii, whose central axis is defined by geographic coordinates. The navigation from Tp to Tp is done with the GPS.

start

In the classic competition, a distinction is made between the starting place (takeoff) and the actual "starting line" - usually a starting cylinder a little apart from the takeoff. This form is called an "air started race" because the time measurement only begins after the start on the ground and spatially separated from the starting point in the air.

Competitors start from takeoff during a set time window (Window) and bounce in the air until timekeeping starts (Race Start, StartOpen).

A second start (restart) at the takeoff before the actual race start is often possible if pilots drown.

Task (daily task)

A task committee determines the daily task (task) depending on the current conditions. Each task has a takeoff (see above), a starting cylinder, one or more turnpoints and a goal. In high-level competitions, distances of up to 150km or more are flown.

Most competitions extend over several days with a corresponding number of tasks. The take-off and landing sites also usually vary depending on the task.

Turnpoints (cylinders) in competition

Turnpoints are flown to in a fixed order, whereby a turnpoint can also be set several times and with different cylinder radii (example of a route: Tp1 - Tp2 - Tp3 - Tp1 -Tp4 etc.).

To "tick off" the waypoints on the flight route, it is sufficient to touch the cylinder. There are two variants:

- **Enter: the cylinder or waypoint is passed when entering**
- **Exit: the cylinder or waypoint is considered passed when exiting**

Start cylinders (SSS) are usually exit cylinders, waypoints on the route are usually enter cylinders.

Start of Speed Section (SSS)

At the Start of Speed Section, time measurement begins at a specified time (Race Start, StartOpen). Between the start on the ground and the StartOpen, the participants try to find the best possible position on the starting cylinder and possibly "park" there until the race begins.

Start of speed sections are mostly exit cylinders.

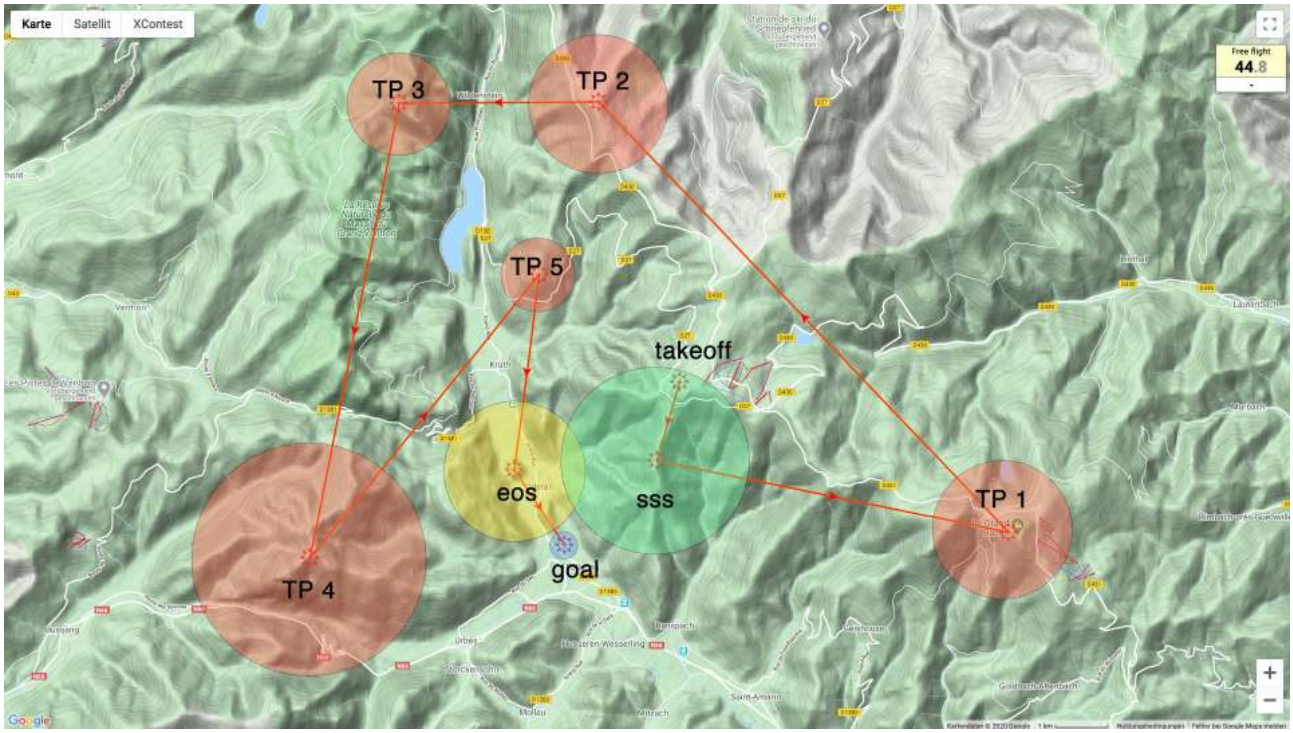
End of Speed Section (EOS)

The time measurement ends at the end of speed section. However, the task is only considered completed when the goal has been reached. The EOS is placed at some distance from the target in such a way that the target can be easily reached in gliding flight and the EOS is still significantly above the ground. This is for the following reason:

The last stretch until the end of the time measurement is usually flown at full throttle. With sufficient safety height you can still react appropriately to a possible collapse in this situation, at low altitude that would be critical. Therefore, the time measurement ends with the flight into the EOS cylinder and you can fly to the actual target at trim speed.

goal

Here the task ends. The goal can be a cylinder or a line.



task deadline

At a specified time, the task is considered finished for everyone, even if there are still pilots on the route. The time measurement ends for everyone at the latest by the task deadline.

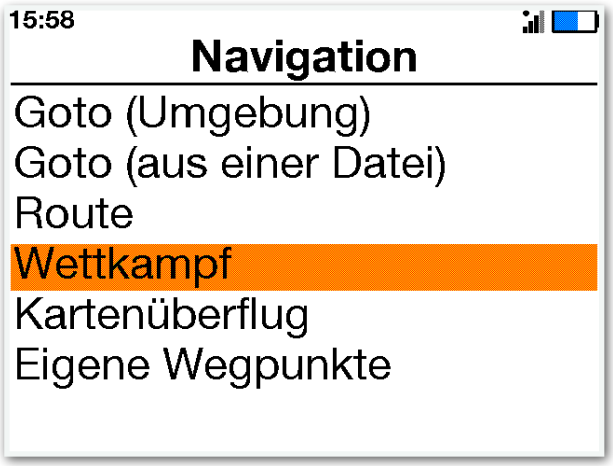
Competition with the Skytraxx 4.0

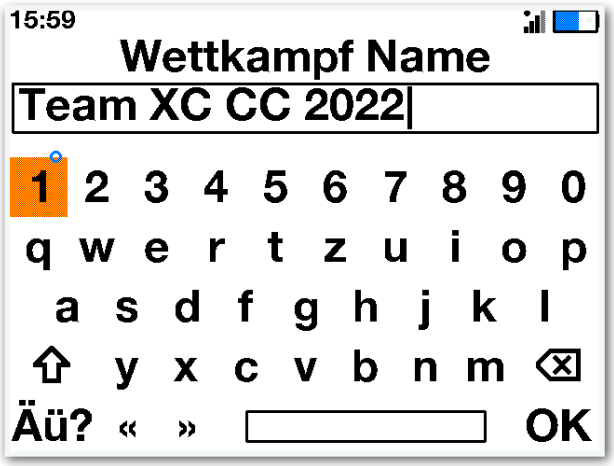
The competition functions of the SKYTRAXX 4.0 are based on the national and international FAI XC competitions (paragliding and hang-gliding).

A competition usually consists of several tasks. The organizers provide a waypoint list in GPX format for the flight area. It is usually online for download a long time before the event.

Create competition

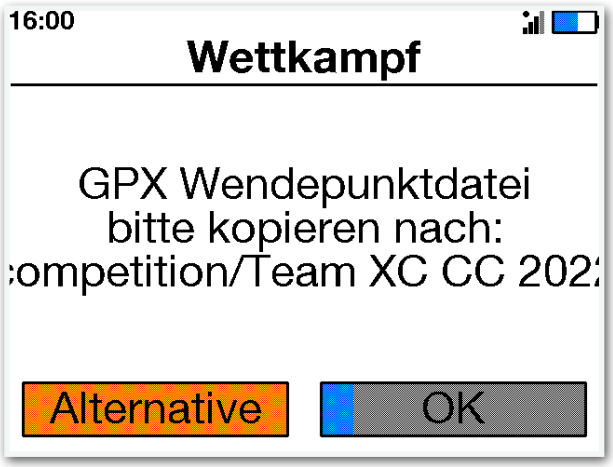
Select in the main menu >Navigation >Competition and >Create new competition...

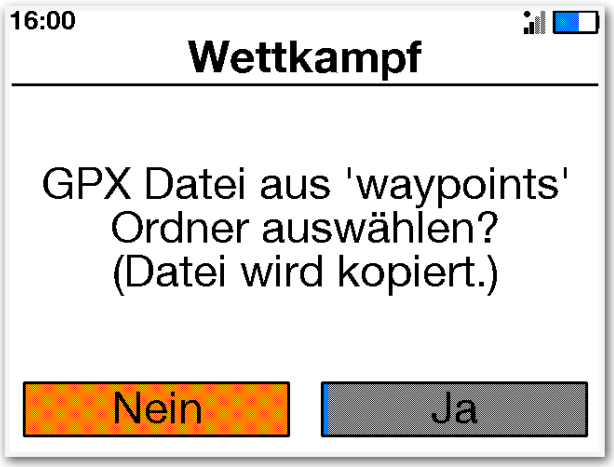




Internally, the SKYTRAXX 4.0 creates a subdirectory with the competition name in the competition directory.

Now copy the waypoints file for the competition (GPX format) into this subdirectory via a USB connection to a computer.





Alternatively, you can also transfer a file from the waypoints directory to your flight instrument. Follow the instructions on the screen of your SKYTRAXX 4.0.

Create task

With >Menu >Navigation >Competition you get to the overview of your created competitions. Choose the one you want.

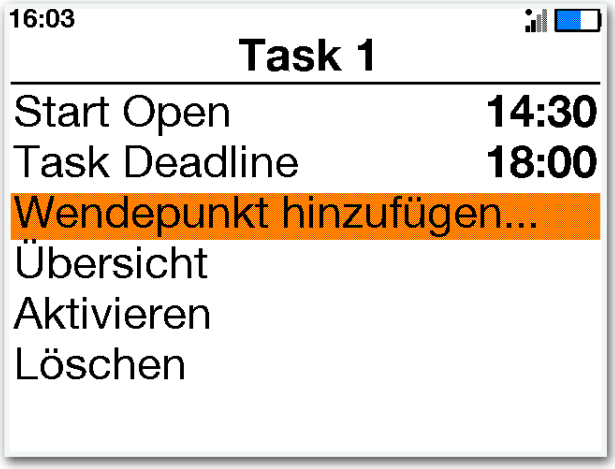
With >New Task... you create a new daily task.

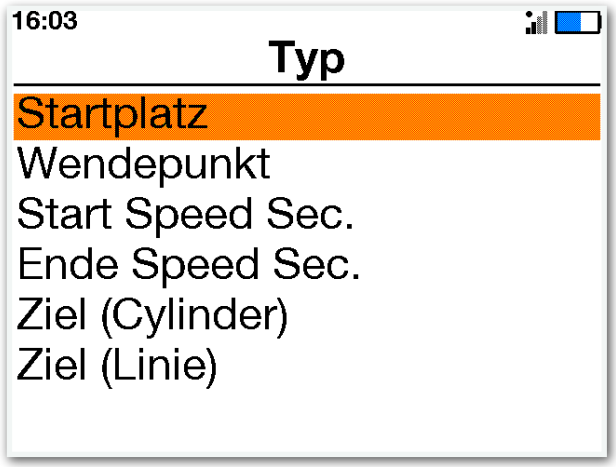
The SKYTRAXX 4.0 automatically names created tasks with »Task 1, Task 2, Task 3« etc. If you want to accept the name when creating the task, confirm with >OK. Otherwise change the task name with the edit function.

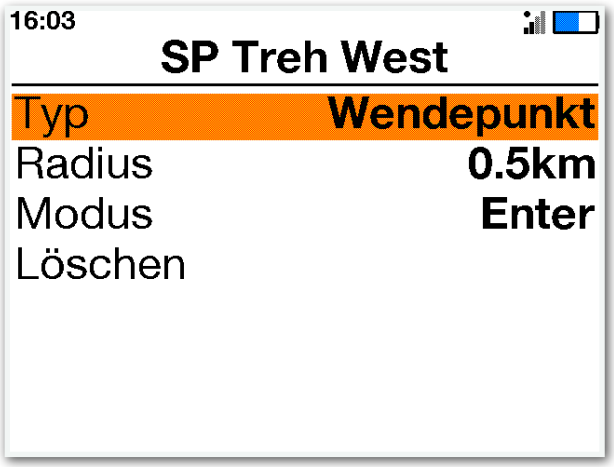
Now enter the start time and task deadline:

- **StartOpen: local time for the start of the time measurement (note, distinguish from »window open«)**
- **Task Deadline: Local time for the end of scoring**.

Add the waypoints:



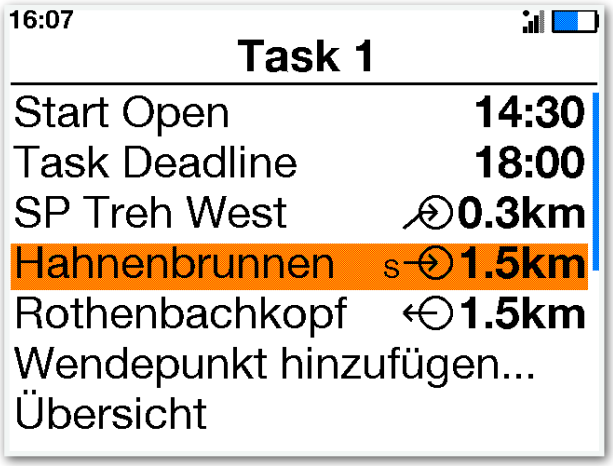




Specify the type of waypoint and then the radius of the cylinder:

Do this for each waypoint.

✓ You can move waypoints anywhere in the list.



Each task must contain the following elements:

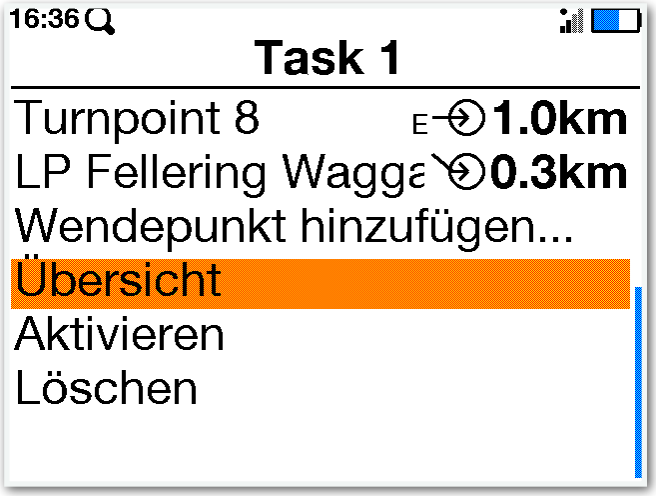
- StartOpen
- task deadline
- Starting place (takeoff)
- SSS (Start of Speed Section)
- at least one turning point
- EOS (End of Speed Section)
- goal

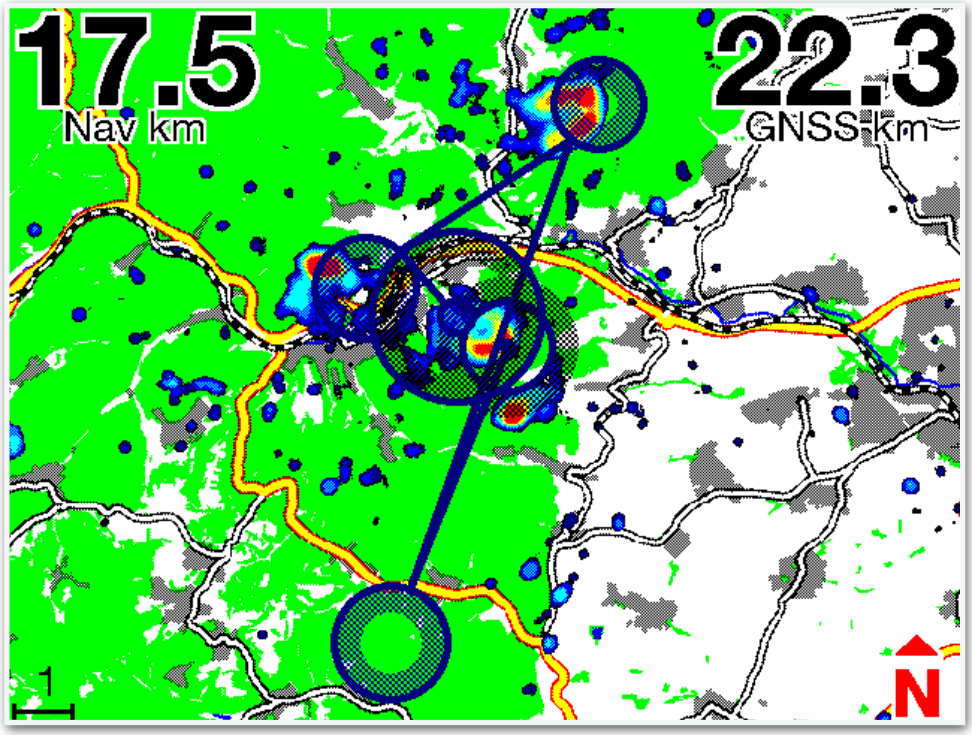
Make sure that the radii and exit or enter for the cylinders are entered correctly.

Task overview

- **Enter cylinders have hatching inside**
- **Exit cylinders have hatching on the outside**
- **Nav km is the shortest possible route for the task**
- **GNSS km is the distance from cylinder center to cylinder center**

Choose >Overview in the task menu to see the complete task.





Flight screens for competition

As soon as you have activated the task, the complete history including the cylinder is visible on flight screens of the navigation type.

Configure your flight screens with the following display fields:

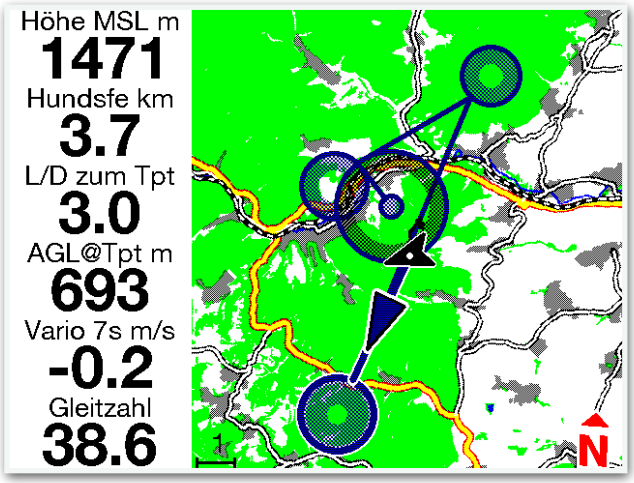
- **Task Timer: Countdown to StartOpen, then the time elapsed since StartOpen**
- **WP km: Distance to the next waypoint**
- **L/D to Tpt: required glide ratio to the next waypoint**
- **AGL@Wp m: Arrival height above ground at the next Wp based on the current flight situation (climb/sink, altitude MSL, glide ratio above ground, wind). The value is constantly readjusted by the device.**
- **Nav Distance: distance traveled by the entire task course so far**

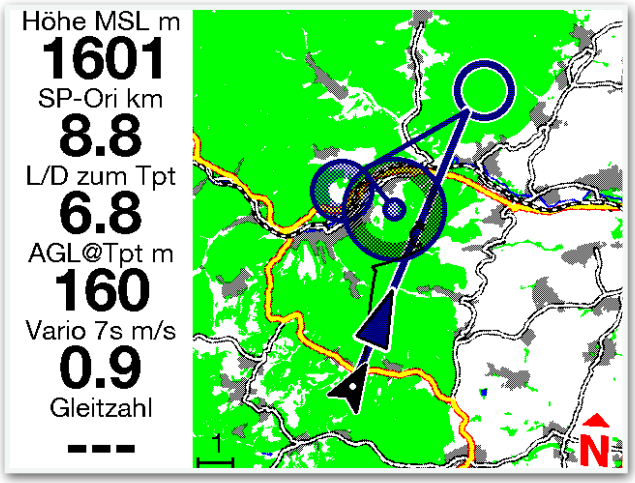
✓ Activate the airspace display on the flight screens.

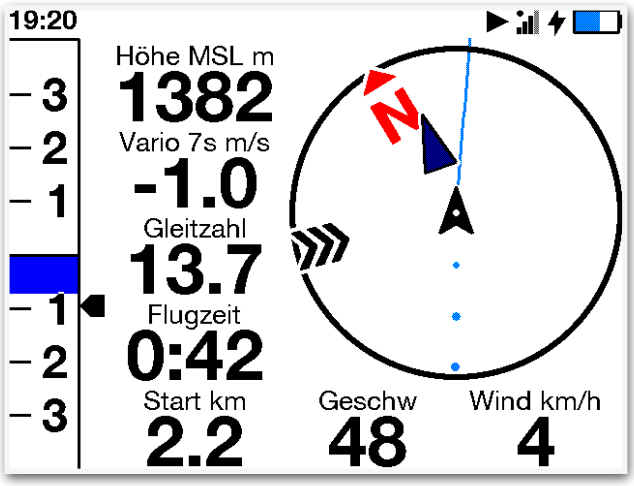
Fly competition task

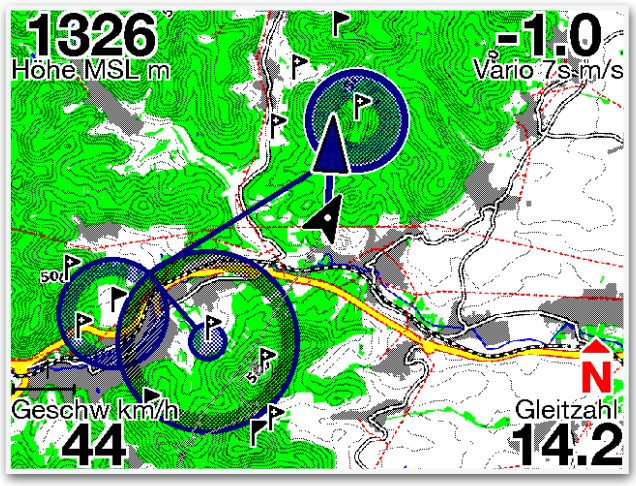
! **Activate the task before starting it in the task menu**

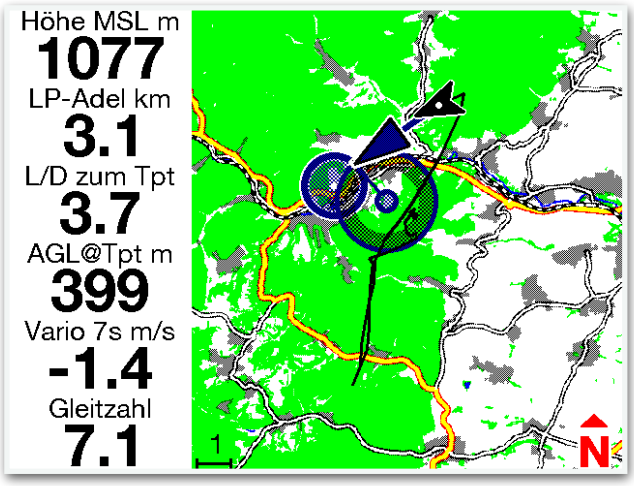
On the navigation flight screen, the next WP to fly to is outlined in white, as is the leg between the current position and the WP. On the screen displays, a blue arrow shows the course to the next waypoint

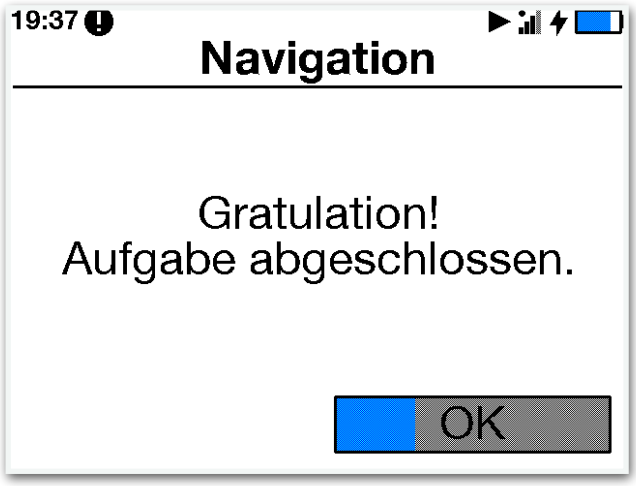












After you have successfully flown a turnpoint (Exit or Enter, depending on the definition), you will hear an acoustic signal and the voice message "Turnpoint reached", the WP disappears from the map and a blue arrow shows you the way to the next WP.

Define flight screens

You now know how your SKYTRAXX 4.0 flight instrument and its individual function modules work and you can decide which calculations your SKYTRAXX 4.0 should display in which flight situation and how.

We have already put together screen displays for many flight situations with the preconfigured flight screens. You can simply adopt these 1:1 or adapt them individually.

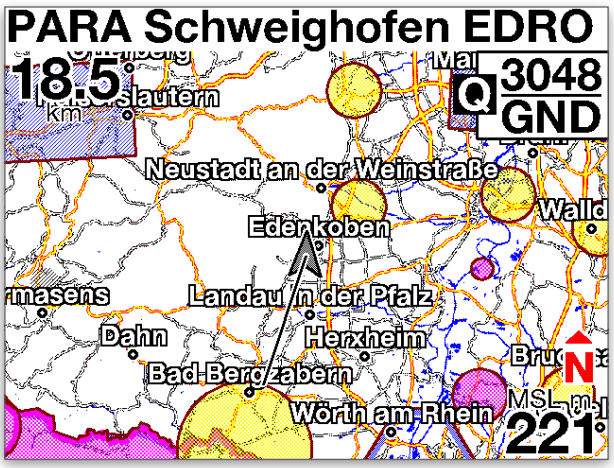
The idea behind it is to focus the screen display clearly and intuitively on what you specifically need, depending on the situation. You can get the necessary information with just a few glances at the device and have a clear view of the airspace and enjoy the landscape.

Screen information adapted to the situation

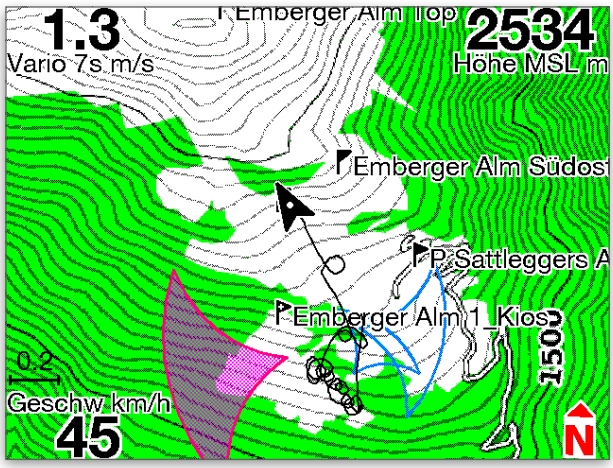
Below you will find some examples of flight situations with the corresponding most important information needed as well as some predefined SKYTRAXX 4.0 flight screens that meet these requirements.

Before the start

- Airspace Information -> Airspace
- (Ground) wind direction and strength -> FANET Radar, map page with anemometer
- Thermals nearby -> FANET Radar, chart page with FANET thermals active



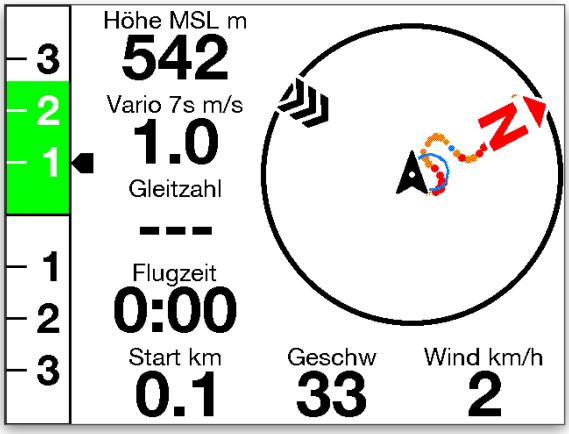
airspace



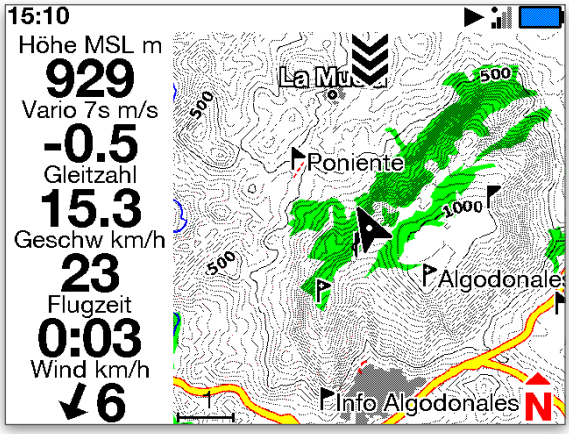
map page

After the start

- Height MSL -> classic side, split side
- Rise / Fall -> classic side, split side
- Speed over ground, -> classic rudder, split rudder
- Glide ratio over ground, -> classic side, split side
- Flight direction / course. -> classic page
- Wind direction and strength -> classic side, split side



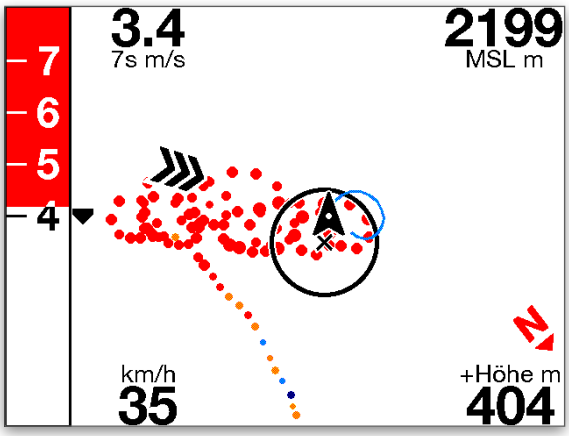
classic screen



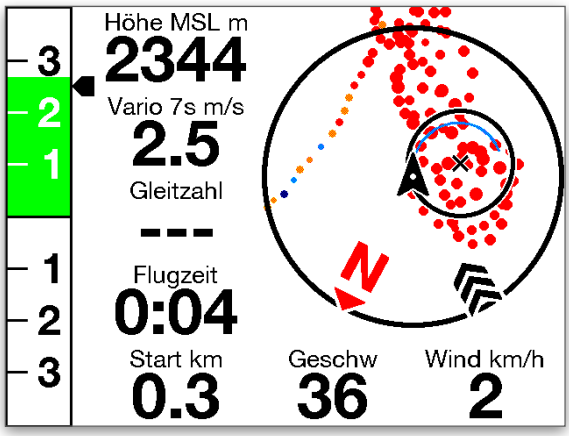
shared screen

Thermal flying, soaring

- Altitude MSL -> Thermal Assist, classic side
- Climb / Descend > Thermal Assist, Classic Page
- Wind direction and strength > Thermal assistant, classic side
- Altitude Gain > Thermal Assist, (split page)
- Near Thermal > Thermal Assist split page



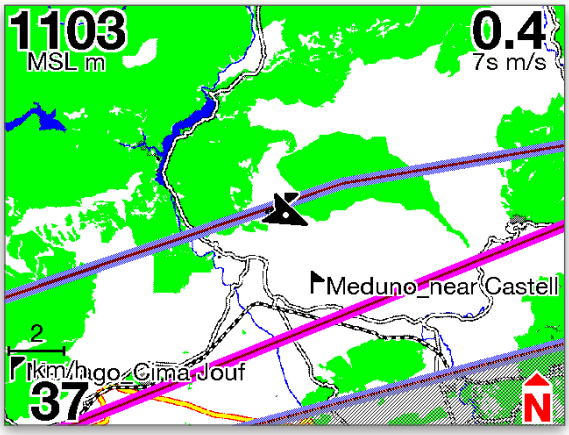
thermal assistant



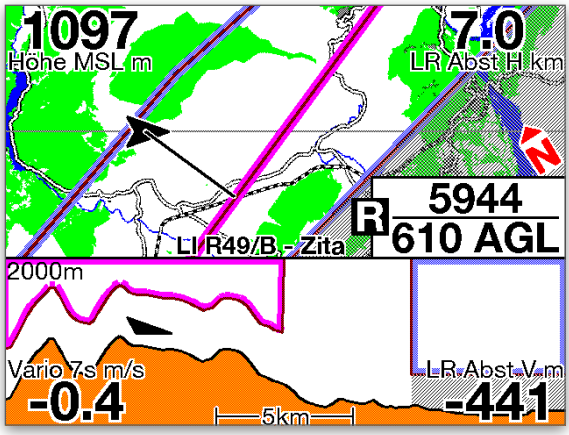
classic screen

Orientation between airspaces

- Airspace Info -> Airspace
- Airspace boundaries -> Airspace, transverse view, all pages with map display
- Altitude MSL -> airspace, transverse view, all pages with map display
- Height AGL -> landscape view, all sides with map display
- Distance airspace -> transverse view, all pages with map display
- Airspace Side View -> Cross View



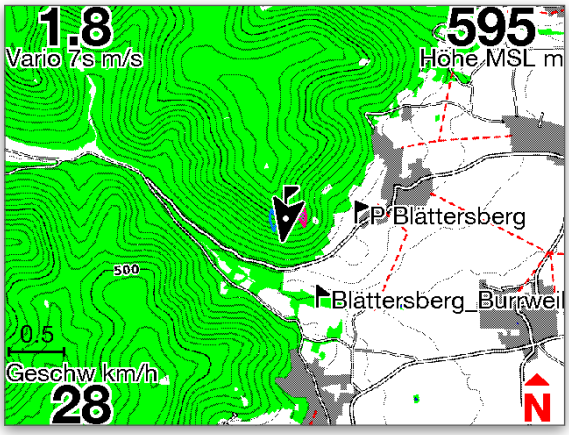
airspace screen



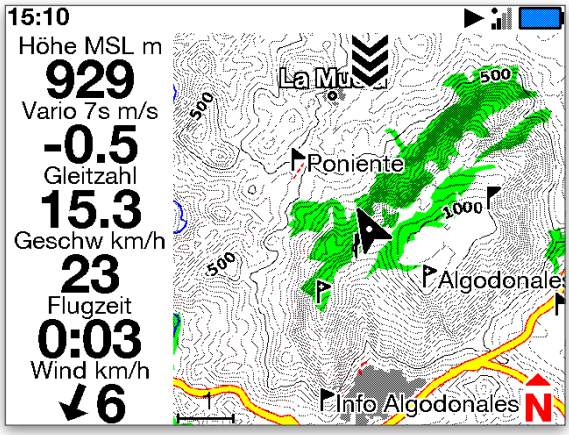
transverse view

Cross country flying - orientation in the field

- Topology, Places -> Map Page, Split Page
- Landing sites, stations -> map page, split page
- Altitude MSL -> chart side, split side
- Glide Ratio -> Chart Page, Split Page
- Speed Over Ground -> Chart Page, Split Page
- Thermals nearby -> chart page, split page, each with FANET thermals active



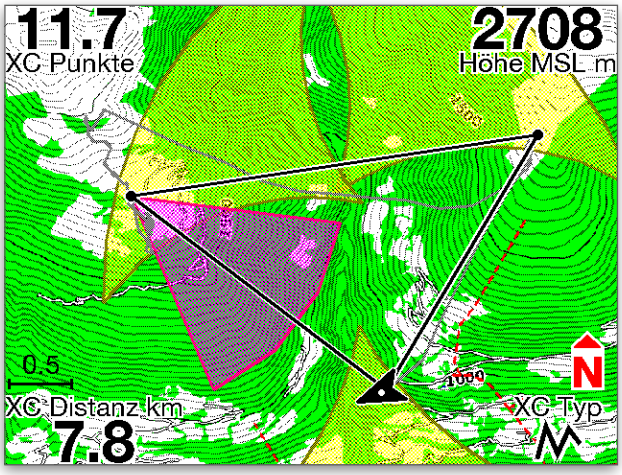
map screen



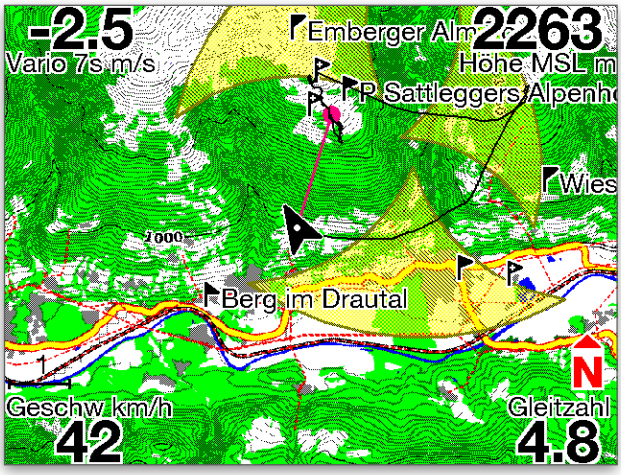
shared screen

XC flying - Optimizing the route for OLC

- Topology -> Triangle Assistant, Navigation, Maps page with FAI/Navigation active
- Triangle -> Triangle Assistant, Navigation, Maps page with FAI/Navigation active
- XC Points -> Triangle Assist, Navigation, Maps page with FAI/Navigation active
- XC-km -> triangle assistant, navigation, map page with FAI / navigation active
- XC Type -> Triangle Assist, Navigation, Maps page with FAI/Navigation active
- Time -> triangle assistant, navigation, map page with FAI / navigation active
- Thermals nearby -> Triangle Assist, Navigation, Map page with FAI/Navigation active and FANET thermals active

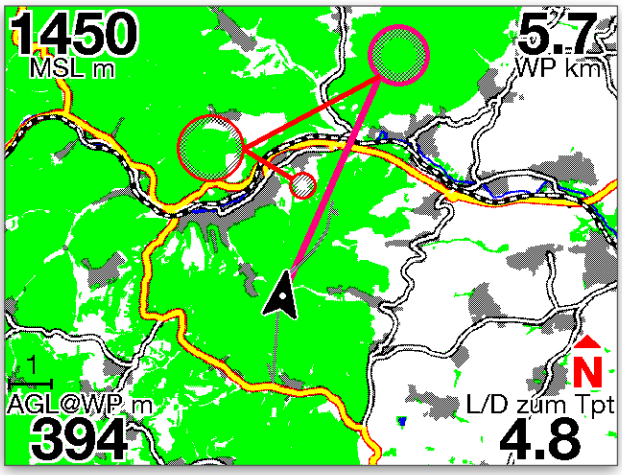


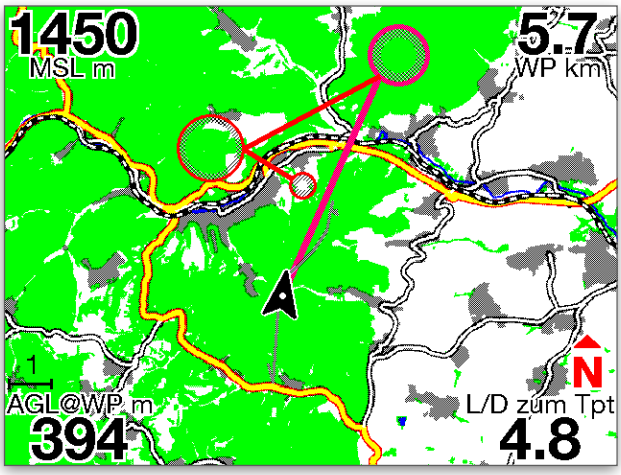
Triangle Assistant



map screen

navigation and competition flying





- Time -> Divided page with navigation active
- TaskTimer -> Split page, navigation active
- Altitude MSL -> Navigation, Maps page with navigation active
- Topology -> Navigation, Maps page with navigation active
- Wp km -> Navigation
- AGL@Wp -> Navigation
- L/D to Tpt -> Navigation
- Nav Distance -> Split Page, Navigation
- Airspace Info -> Airspace Page, Landscape View
- Distance to airspace -> transverse view, all pages with map display

Configure flight screens

In your SKYTRAXX 4.0 you will find a whole range of predefined flight screens that cover the requirements for most flight situations.

Via >Main Menu >Settings >Flight Screens

you can add additional flight screens to the predefined row, change the order and delete individual flight screens.

You can use any type of flight screen as often as you like, e.g. if you want to use several map or navigation pages for a better overview.

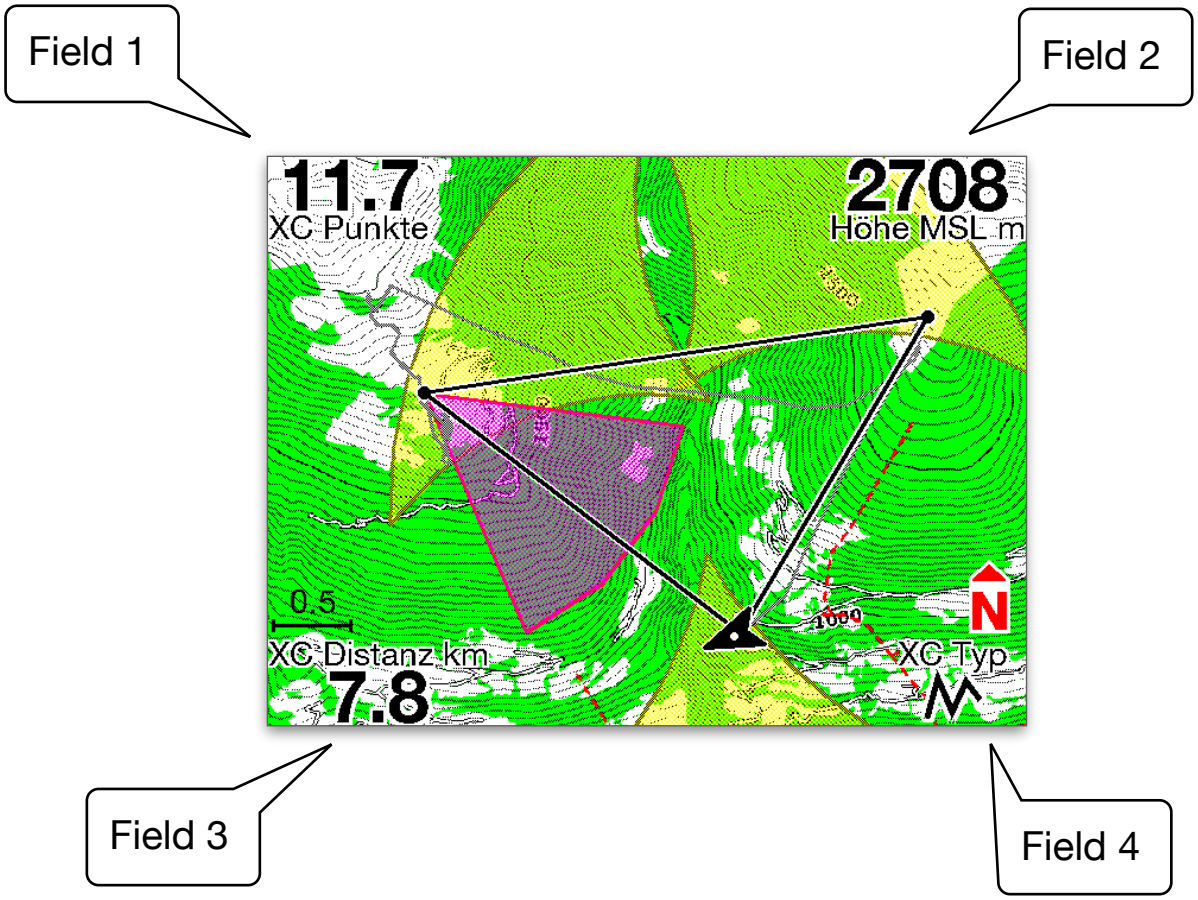
To switch flight screens during flight, use the >OK button.

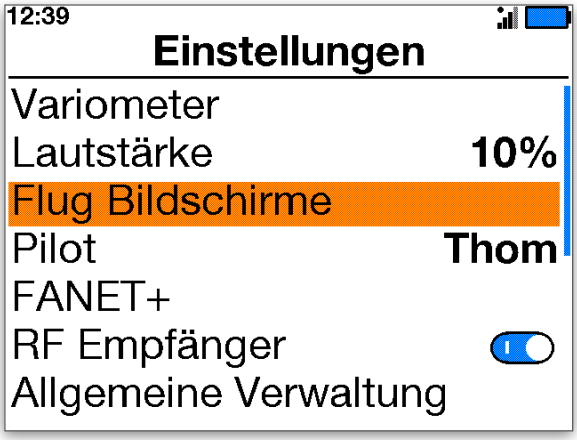
Each button press advances you one flight screen in the order that is set.

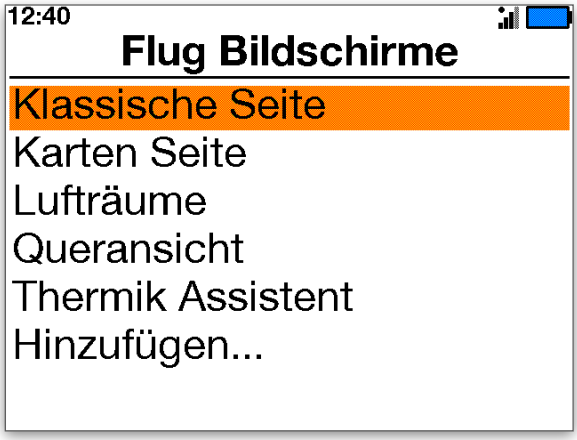
The arrow keys change the volume (classic page) or have a zoom function (pages with map display)

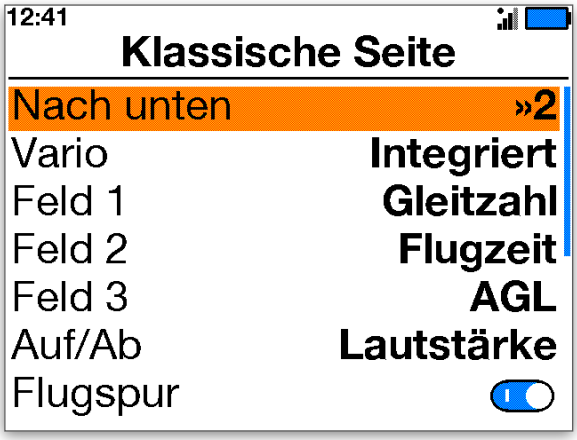
Define display fields

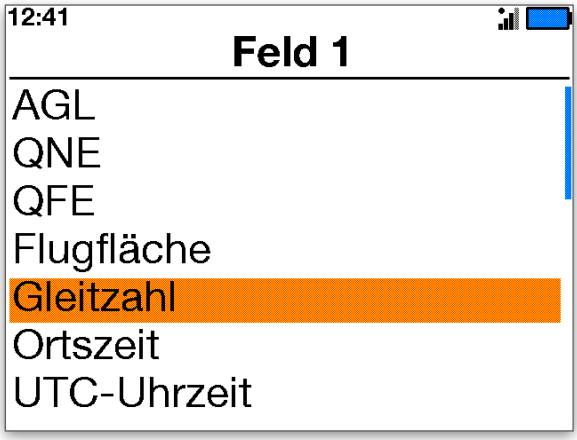
In addition to the specified content, several display fields (usually 4) can be freely defined on each screen page: >Main menu >Settings >Flight screens











Display fields (basic functions)

You have the following options for the content of the display fields:

- Vario - current or integrated value
- AGL - Height Above Ground Level (Caution! Inaccurate due to the system!)
- QNE - QFE expressed as an altitude value calculated according to ICAO standard atmosphere
- QFE - air pressure at current position
- flight level
- Glide ratio over ground
- local time
- UTC local time
- flight time
- WP Distance - Distance to the next waypoint
- L/D to Tpt - required glide ratio to the next turnpoint
- AGL@WP - Estimated arrival altitude at next waypoint
- Task Timer - Time to or Time since StartOpen (Competition)
- windsock
- Airspace Distance Horizontal
- Airspace Distance Vertical
- Start - distance to the starting place
- Acceleration sensor - acceleration value in g

Additional display fields

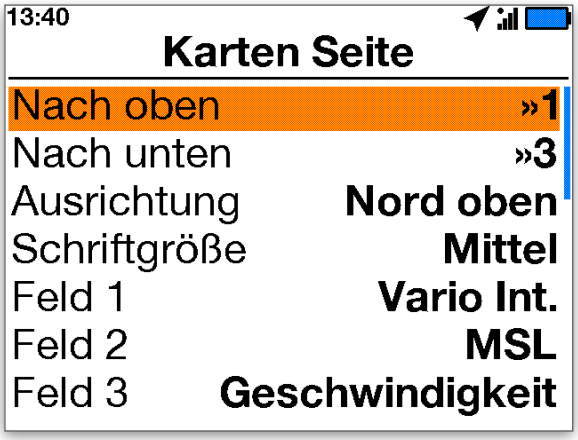
Additionally for thermal assistant and pages with map display

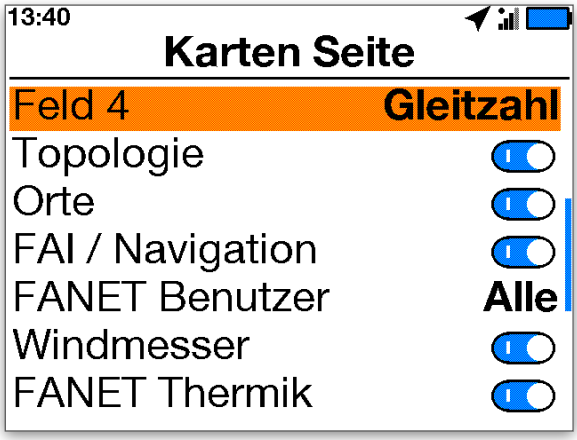
- flight time
- Wind - speed and direction
- Windsock - wind representation
- Consequences: distance
- Consequences: Course
- Consequences: height
- Consequences: rate of climb
- Consequences: speed
- XC points - calculated according to the rules of the online contest
- XC Distance - Calculation according to the rules of the online contest
- XC type - free course, flat triangle, FAI triangle according to FAI regulations
- XC Speed - Average speed over the XC distance
- Airspace Distance Horizontal
- Airspace Distance Vertical
- Altitude gain - since the last entry into the thermal
- Nav Distance - distance traveled on a defined route
- Friend(s) - Information about a FANET participant defined as a friend

Map display options

Additional content or options can also be selected on the pages with map displays:

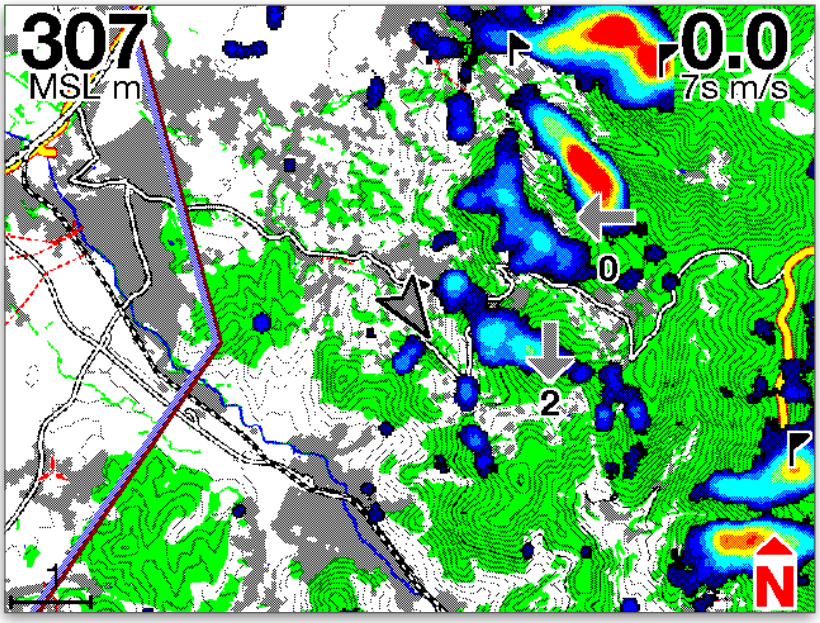
- Orientation: course or north up
- font size
- Topology - terrain (contour lines), bodies of water, roads, railway lines
- Places - place names
- FAI / Navigation - Display of triangle calculation, routes, competition cylinders
- FANET users
- Anemometer - FANET (or Burnair if license is active) wind stations
- FANET Thermals - Thermals that other FANET users are currently cranking successfully
- kk7 thermals - kk7 thermals map (thermal areas)
- Waypoints - takeoff and landing sites, custom waypoints
- airspaces



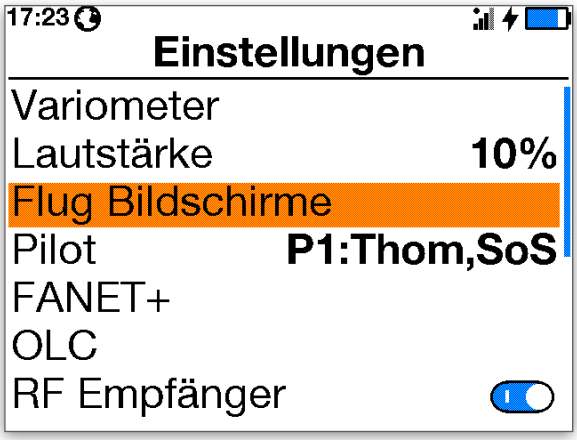


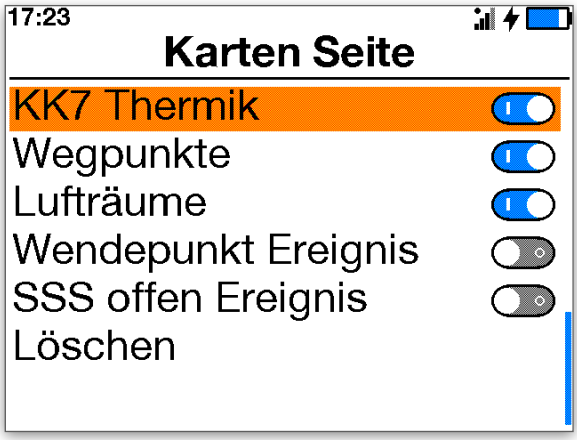
KK7 thermal on the map display

On all map displays you can display the possible thermal sources of the kk7 thermal map. The colors symbolize how often other pilots have already found and cranked out climbers at a certain point or in an area. The data basis for this comes from the online competitions, i.e. it is based on the flights that were entered there.



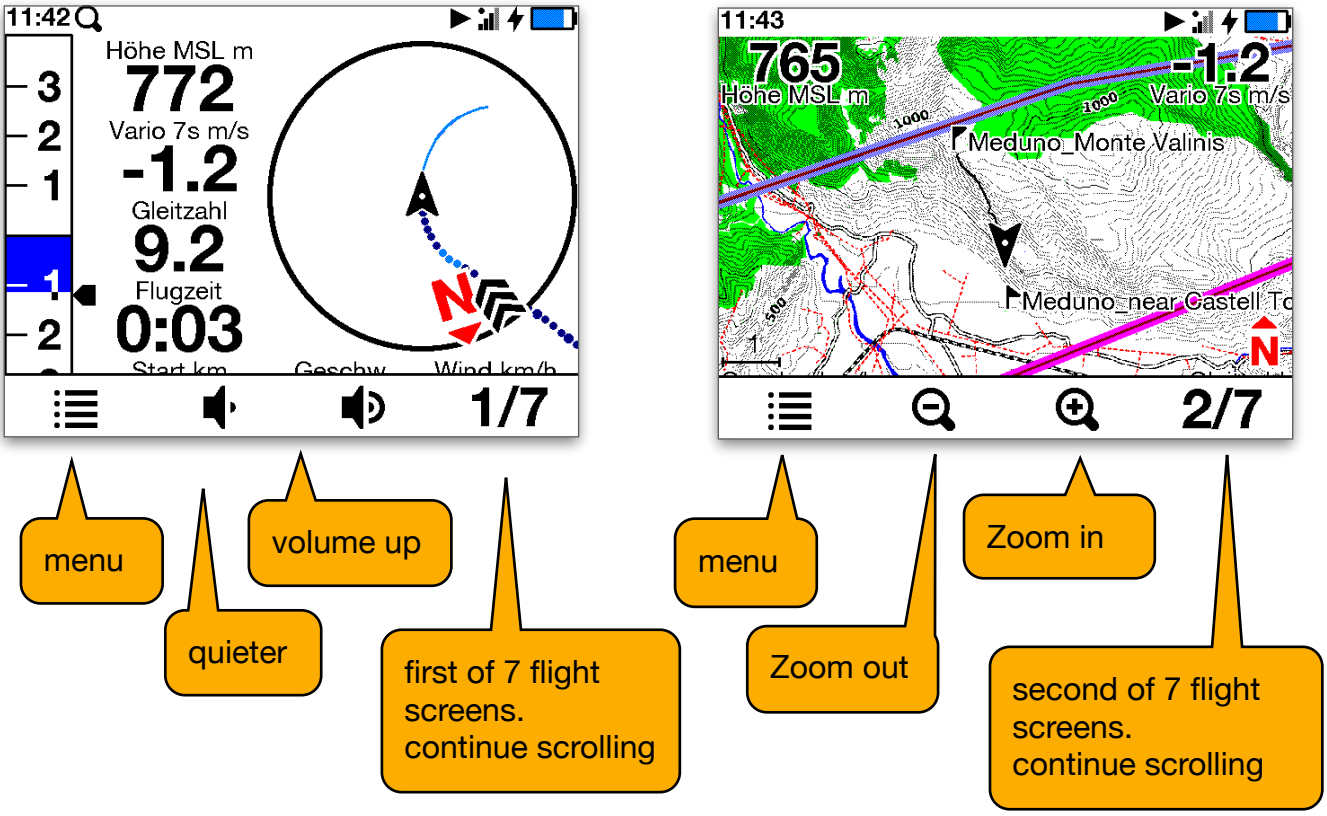
Activate the kk7 thermal map on the map displays:





Flight screen info

When switching between flight screens, information about the current meaning of the four buttons on the device appears at the bottom edge of the screen for a short time:



Burnair

Burnair is a very comprehensive flight information system. It is available on a web basis via internet browser or as an app for mobile devices.

You can find all the information about it at www.burnair.ch

Some of the Burnair services are also available on the SKYTRAXX 4.0 if you have booked and activated a corresponding subscription with Burnair and activated the mobile phone connection. You also have to register your SKYTRAXX 4.0 in your Burnair account with the device ID.

You can find the device ID (FANET identification) under >Menu >Extras >Device status.

Activate the Burnair services on the SKYTRAXX 4.0 at >Menu >Burnair.

The Premium Tracking, Wind Stations, Live Favorites, XC Flights and My XC Flights services are currently available.

- ✓ **Premium tracking allows you live tracking every 2 seconds on the burnair map**
- ✓ **Wind stations shows you all stations available on the Burnair map within a radius of approx. 30km via mobile connection, even if they do not send their data directly via FANET.**
- ✓ **Live favorites shows you your Burnair favorites within a 30 km radius.**
- ✓ **With XC-Flights you can download waypoints for proven cross-country flight routes for some well-known flight areas.**
- ✓ **With the Burnair Map or the Burnair App you can plan cross-country flights and download the waypoints to your SKYTRAXX 4.0 via My XC Flights**.

For more information please contact the website www.burnair.ch

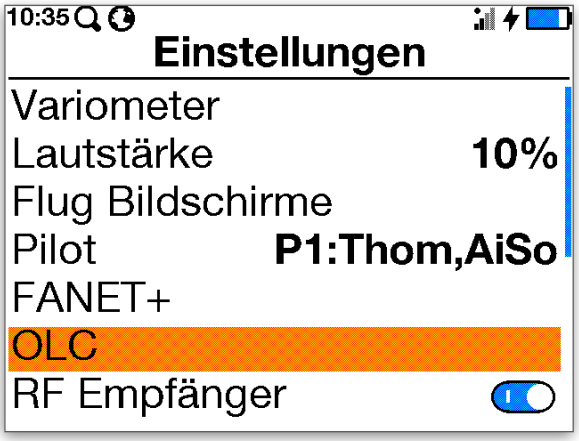
Online Contest (OLC)

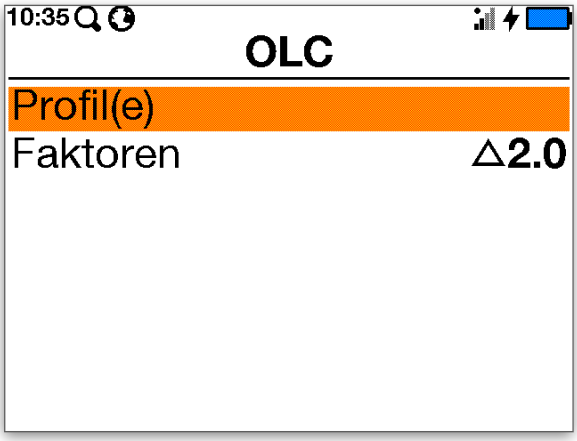
For many years, countless pilots have valued the various platforms of the online competitions as a sporting incentive or simply as a convenient flight log that is available everywhere.

You can upload your flights directly from the SKYTRAXX 4.0 to an online server via the integrated mobile phone connection (if activated). The device transmits the flight data and your pilot data that you have defined in the pilot profile.

To do this, first create an access profile for the relevant OLC server:

- Select >Main Menu >Settings >OLC and >Profiles >Add
- Then select the desired OLC server (DHV-XC or XC Contest)

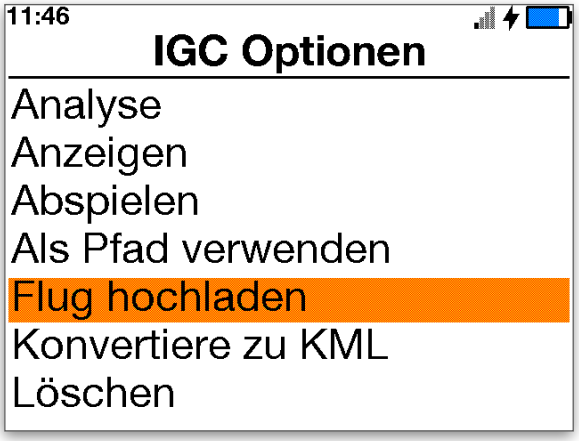


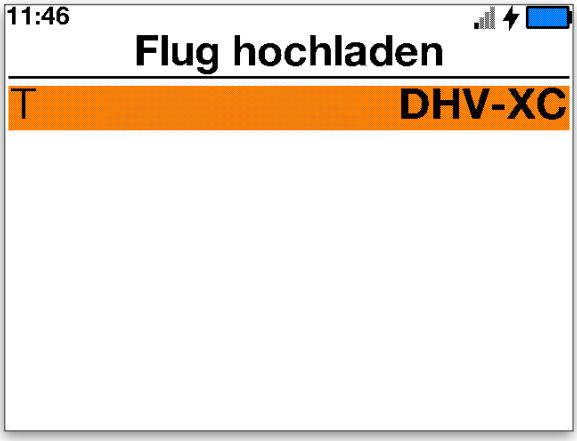


- choose any name for the profile
- Follow the on-screen instructions to enter the access data (username and password) for the online service.
- Save the profile.

✓ If necessary, create a separate profile for each online contest.

To upload a flight, select it in the flight log (see chapter Flight log) and select IGC options >Upload flight and the corresponding OLC profile. Finished!





USB port / internal memory

The SKYTRAXX 4.0 is equipped with a large internal flash memory. This memory can be easily connected to Windows, Mac (OSX 10.7 or higher) or Linux-based computer systems as an external drive via the USB-C port on the lower side of the device.

To do this, insert the supplied USB-C cable on the lower side of the device and connect it to a USB port on the computer. The symbol for a USB connection now appears on the display.

The »flights« folder is located in the SKYTRAXX file directory. Here the flight data are sorted as IGC files in subfolders by year and month, the file name consists of the date, time and flight area.

If the SKYTRAXX is no longer required as an external mass storage device on the computer, the connection to the computer should be disconnected again with »Eject drive«. This ensures that no data is lost or corrupted.

update / update

We constantly adapt the software of the SKYTRAXX 4.0 to the requirements of our pilots, we supplement it with practical experience and eliminate any weak points.

With the integrated GSM connection, the SKYTRAXX 4.0 automatically updates the system software, the airspace data and the terrain database.

For manual updating, download the system software or the airspace and terrain data from the Downloads / SKYTRAXX 4.0 area of the website www.skytraxx.eu. Then connect the device to a computer via the USB port and copy the files to the appropriate directories (“update”, “airspaces”, “waypoints”)..

system reset

By pressing and holding (10 seconds) the >Menu button, the SKYTRAXX 4.0 performs a system rest.

Disclaimer

In rare cases it can happen that the flight instrument delivers no data or incorrect data. SKYTRAXX GmbH rejects all claims for damage caused by incorrect behavior of your device.

The free and freely accessible data such as airspace[1], take-off and landing sites[2] and elevation data have been created with the greatest possible care. However, SKYTRAXX GmbH assumes no liability for the correctness and up-to-dateness of the free and freely accessible data provided. Simply by downloading the free and freely accessible content, no contractual relationship is established between the user and the provider; in this respect, the provider lacks the will to be legally binding.

The pilot alone is fully responsible for the safe conduct of his/her flights.

[1] Airspace data provided by: https://airspace.xcontest.org

[2] Take-off and landing sites provided by: http://www.paraglidingspots.com/default.aspx

safety instructions

The use of the SKYTRAXX flight instrument is at your own risk. The manufacturer assumes no liability for damage or loss of data.

In addition, the manufacturer expressly assumes no liability, especially for dangerous flight situations caused by possible incorrect displays of altitude, position and speed.

The instrument display may only be read if the current flight situation allows it.

Environmental Protection / Disposal

The SKYTRAXX 4.0 contains a battery that requires special disposal. As an end user, you are legally obliged to return all used batteries and accumulators (Battery Ordinance). Disposal with household waste is prohibited by law!

Removing the battery:

Loosen the 4 screws on the back of the device.

Lift the cover and remove the battery by pulling the battery socket.

The battery and the device can now be disposed of separately.

You can hand in your used batteries / accumulators free of charge at the collection points in your community or wherever batteries / accumulators are sold.

You thus fulfill the legal obligations and make your contribution to environmental protection

WEEE-Reg.-Nr. DE 97761594

The company SKYTRAXX GmbH is connected to the dual system.

Technical specifications

Power supply: lithium ion battery 2700 mAh 3.7 V, running time up to 30 hours

Memory: 32GB

Data connection: SIM card integrated

Sensors: pressure sensor, ACC sensor, gyro

Display: 640 x 480 pixels color

Interface: USB C

Weight: 180 grams light

Dimensions: 115mm x 106mm x 15mm

warranty

We grant a guarantee period of 24 months from the date of purchase for material and manufacturing defects on our devices. Mechanical damage, such as broken housing or display, is not covered by the warranty.

For warranty claims, please contact your retailer or the manufacturer directly. Opening the case will void any warranty claims.

support

Most of the answers to operating questions about your device can be found in the detailed operating instructions on the website www.skytraxx.eu under "Operation".

If your SKYTRAXX 4.0 is damaged due to a fall, landing in water or other influences or malfunctions occur, please contact our support via email:

support@skytraxx.eu

or please send us your device with a precise error description: SKYTRAXX GmbH, Im Bildstöckle 5, 79822 Titisee-Neustadt

We strive to process your request as quickly as possible.

Finally

We hope that these instructions will provide you with a good guide to the sensible use of your SKYTRAXX 4.0 flight instrument.

We make every effort to keep these instructions up to date and to supplement them if necessary. If you have any constructive suggestions for this manual, please send us an email thomas@gemeinsam-fliegen.de

We wish you many pleasant flights with the SKYTRAXX 4.0

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Photos (unless otherwise noted): Jutta Reiser, Thomas Latzel