

SoarPilot

Soaring Flight Computer

Version 3.4.0

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Welcome to SoarPilot

Introduction



SoarPilot was designed with both the sport and competition sailplane/paraglider pilots in mind. It enhances a pilot's sectional information helping him/her to make informed speed & distance decisions when flying around the local airfield or going cross-country. In addition, using an attached GPS and the logger function, the pilot can download and plot the flight track information after flying for further analysis or just for fun!

It will run on the popular PalmOS compatible devices with PalmOS 3.0 or higher as well as most Windows WinMobile/PocketPC devices using **StyleTap®** support, and is available free of charge. It uses the McCready theory to calculate the speed-to-fly/final glide and the altitude required to fly a certain distance assuming a given head/tailwind and airmass movement. If a GPS is not available, the distance to fly can be entered manually. However if one is available, SoarPilot can process GPS data using the PalmPilot's serial interface. The GPS must be capable of outputting data which is compatible with the NMEA-0183 version 1.5 or 2.0+ (auto-select) standards.

The program makes use of the GPRMB, GPRMC, GPGGA & PGRMZ sentences. The PGRMZ sentence is used for NMEA-183 version 1.5 to get GPS altitude from a Garmin GPS. Altitude is taken from the standard GPGGA sentence for version 2.0+.

It can also now parse the proprietary sentences from the Volkslogger, LX, Filser Cambridge 302/302A/GPSNAV, Garmin (select models), PosiGraph, Zander and other loggers for pressure altitude information. In addition, if connected to a Borgelt B50 or Cambridge 302/302A, all additional information from both units is used to enhance the accuracy of many of the calculated values.

Features

- **FREE for the Soaring/Paragliding Community!**
- Runs on wide range of Palm devices due to very modest hardware requirements
- Also Fully Functional on most WinMobile/PocketPC/WinCE devices using the **StyleTap®** Platform PalmOS Emulator
- Excellent & Timely Support via the SoarPilot Yahoo Group forum (<http://groups.yahoo.com/group/soaringpilot>)
- Still VERY actively developed
- Final Glide Computer Including Final Glide around Tasks, Final Glide Over Terrain. Takes into account wind as well.
- Moving Map support for In Range/Out-of-Range Waypoints, SUA display, Task Display, Track Trail
- Waypoint/Turnpoint Support including Area Turnpoints
- Flight Logger - SoarPilot is on the "Approved Software" list for submission to the OLC
- Highly configurable with 10+ setup screens
- Special Use Airspace Display and Alerting Support
- Polar database + editor
- Import/Export of Configuration, Waypoints, SUA, Flight Logs, etc.
- Wind Display
- Flight Info - Both during and after flight information is provided.
- Task Editor including Assigned Area Task support as well as other Paragliding Competition Task Support.
- Can process pressure altitude and other enhanced information from GPS, Volkslogger, Cambridge 302/GPSNAV, LX/Filser, SN10, Borgelt B50, PosiGraph, Zander SR940/GP941 and other Loggers/Computers
- Can send configuration, waypoints and declaration to an attached Volkslogger, Cambridge 302/302A/GPSNAV, EW or LX/Filser Logger
- Flight Download Support for the Volkslogger, Cambridge 302/302A, GPSNAV, LX/Filser and other Loggers
- MANY, MANY Other Features.

The index to the right covers the various functions and capabilities in much greater depth.

For a list of detailed changes please look at the Detailed Change History page for latest details.

Hardware Requirements



See Example Setups for more information.

- PDA running PalmOS 3.0 or better or WinMobile/PocketPC/WinCE with the **StyleTap^Â**® Platform PalmOS Emulator Loaded
- Minimum of 2Mb memory, however to avoid a constant need for deleting the flight logs, more memory is recommended
- Sufficient battery life time for long flight or use an external power solution
- Free serial/BT/IR port if you want to use SoarPilot with GPS (**extremely highly recommended** 😊)
- Desktop requirements:
 - ♦ **Windows**
 - ◇ Intel Pentium processor
 - ◇ Microsoft Windows 98, Windows Millennium Edition, Windows NT 4.0, Windows 2000, or Windows XP
 - ◇ 16MB of RAM
 - ◇ 20MB of available hard-disk space
 - ◇ Palm Desktop 4.0 or 4.01, download here.
 - ♦ **Macintosh**
 - ◇ PowerPC processor
 - ◇ Mac OS X v.10.2, Mac OS 9, *Mac OS 8*, *Mac OS 7 1*)
 - ◇ 16MB of RAM
 - ◇ 20MB of available hard-disk space
 - ◇ Palm Desktop 4.0, download here.
 - ♦ **Linux**
 - ◇ Desktop requirements similar to **Windows** desktop above
 - ◇ KPilot, PilotManager, J-Pilot are replacements for the Palm Desktop (Win/MAC only) software for linux
- Serial or USB HotSync® cradle and cable 2) (technically speaking HotSync® via IrDA or Bluetooth is possible and does not require a cradle)

Recommended Hardware

- GPS unit with NMEA-183 output (see intro above for required sentences)
- SD Card for easy file transfer

PDF Manual Version

A PDF version of the manual can be downloaded at the following link. However, this is a large file (~4Meg) and about 250 pages. It does not contain any active links or URL's. However, you can search it using the Acrobat Reader's search function.

- SP 3.3.1 PDF Manual

Related Pages

- Getting Started
- Installing SoarPilot
- GPS input
- Soarpilot Basics

1) check Palm Desktop download page for Mac OS for availability

2) usually included when you buy a Palm PDA

Table of Contents

- Getting Started
 - ◆ The Basics
 - ◆ The Details
 - ◆ Other Useful Information

Getting Started



Welcome to SoarPilot. It aims to maximise your soaring enjoyment and performance.

It has been developed as a group project with many contributors adding ideas for functions and displays. This is one of the SoarPilot's strengths. It's written for glider pilots, by glider pilots.

The Basics

- Introduction
- Hardware Requirements
- Installing
- GPS Input
- Example Setups
- SoarPilot Basics
- SoarPilot Menu Structure
- Final Glide Screen
- Moving Map Screen
- Waypoints

The Details

Please use the index on the right side of the screen to further browse the manual in greater detail. You can also use the search field in the upper right corner of the screen to search by keywords.

If you have any questions not answered here we strongly recommend you join the SoarPilot Yahoo Group. This is a very active and friendly group and you will find many people there to answer your questions.

There is a **Frequently Asked Question (FAQ)** section here.

Other Useful Information

- SoarPilot website
- SoarPilot Yahoo Group
- Links page

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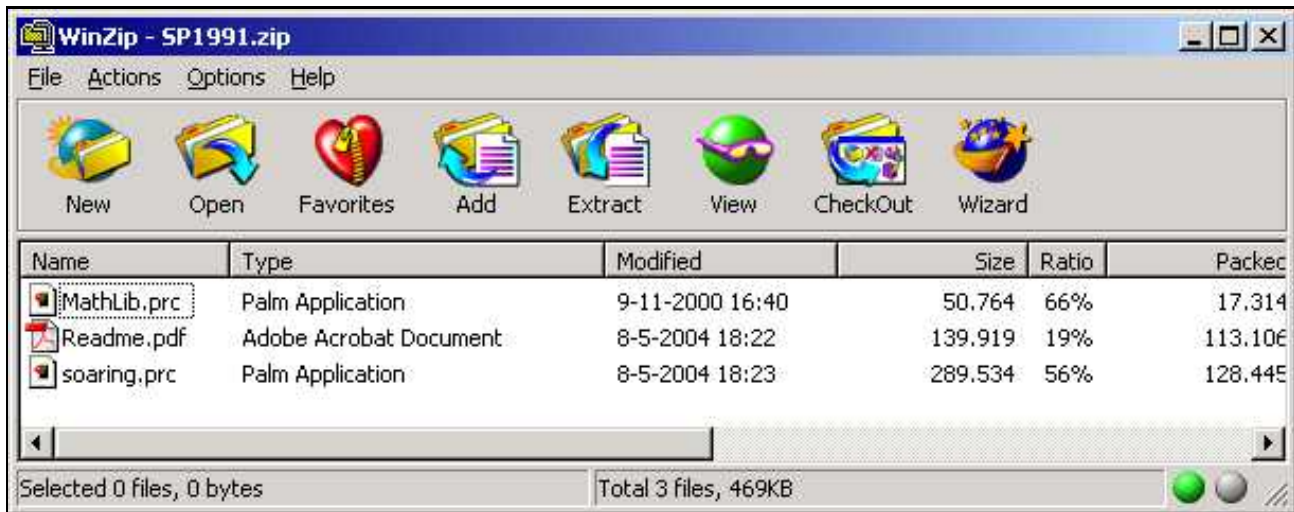
- Download
- Installation
 - ◆ Related Pages

Download

The latest released version of Soaring Pilot program can be downloaded for free 1) from the main site <http://www.soaringpilot.org>.

However, it is **HIGHLY** recommended you join the SoaringPilot Yahooogroup and use the latest 3.0 beta version. The versions are stable and **MANY** improvements have been made since the stable release version. Once the beta testing is completed (soon), it will be made available via the main download page as well.

The program is distributed as a ZIP archive, so you'll need a program like WinZip or similar to unpack the archive.

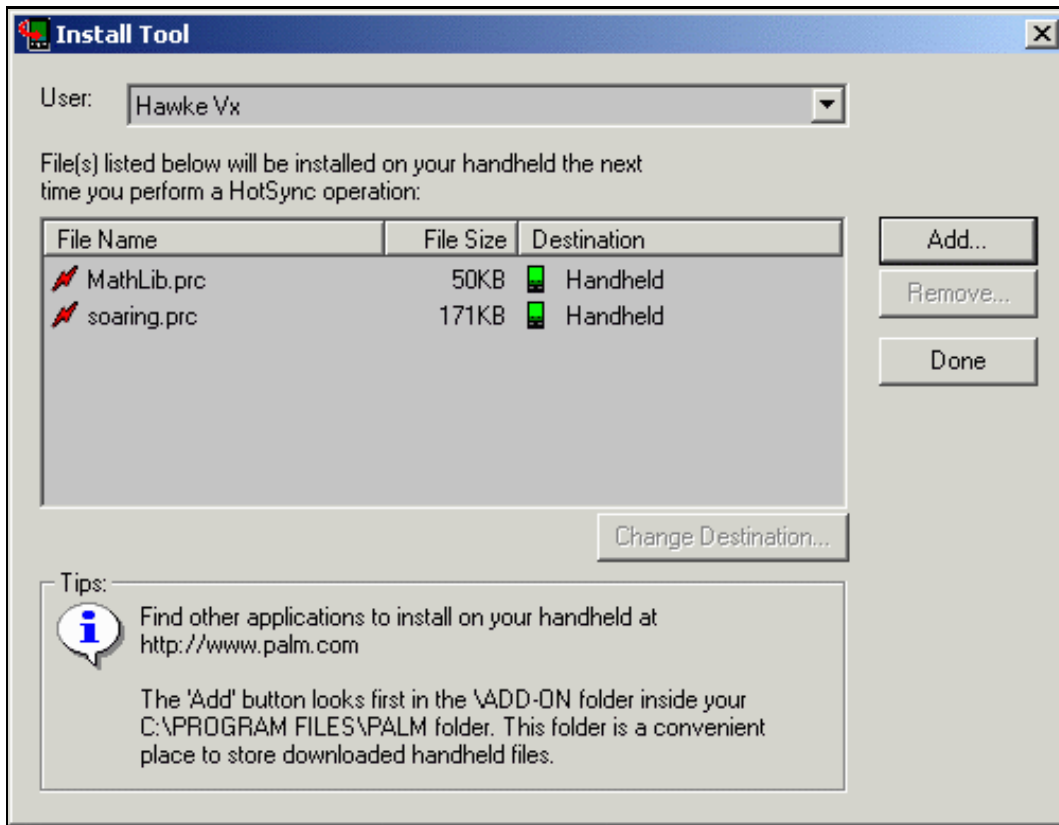


The archive contains two files that must be installed on your Palm, **soaring.prc** and **MathLib.prc**. The **Readme.pdf** 2) file contains additional information about the program and the changes from previous versions. Read this file **PRIOR** to installing the software!

Installation

SoaringPilot should be installed using the PalmDesktop Install Tool or similar install programs. You must also install the included **Mathlib.prc** if you do not already have it installed on your PalmPilot. This library is required by SoaringPilot.

Note: MathLib is a free shared library that can be used by any OS 2.0+ Pilot program that needs IEEE 754 double precision math functions. It's distributed under the terms of the GNU Library General Public License, and is freely available with full source code and documentation at the MathLib Information web page. It's not a part of the MathPad program, and you're not paying anything for its use; a copy is simply included in this archive for your convenience.



Once both files have been installed on the Palm by performing a Hotsync ®, just select the SoarPilot Icon from the Applications Screen to run the program. However, to make full use of SoarPilot, Waypoints, Terrain Elevation Data for the area you're in and SUA (Special Use Airspace) Data should be loaded as well.

Related Pages

- GPS Input
- Creating and Loading Terrain Data
- Load & Save Waypoints
- Load SUA Data

1) Although the program is free, you must agree to the License agreement

2) in BETA versions also a text file

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- GPS Input
 - ◆ Related Pages

GPS Input

SoarPilot can process GPS data using the PalmPilot's serial, infrared (IR), bluetooth (BT) or USB 1) interface. The GPS must be capable of outputting data which is compatible with the NMEA-0183 version 1.5 or 2.0+ (auto-select) standards.

The program makes use of the GPRMB, GPRMC, GPGGA & PGRMZ sentences. The PGRMZ sentence is used for NMEA-183 version 1.5 to get GPS altitude from a Garmin GPS. Altitude is taken from the standard GPGGA sentence for version 2.0+.

What is NMEA 0183?

The NMEA (National Marine Electronics Association) 0183 Standard for Interfacing Marine Electronics Devices is a voluntary industry standard, first released in March of 1983. The NMEA 0183 Standard defines electrical signal requirements, data transmission protocol, timing and specific sentence formats for a 4800 baud serial data bus.

Overview

NMEA has become a standard protocol for interfacing navigational devices, e.g. GPS and DGPS receivers. It is based on the RS232 interface. NMEA settings for the RS232 are:

Baudrate 4800
Data bits 8 2)
Stop bits 1 or 2
Parity none
Handshake none

NMEA informations are transmitted from a 'talker' device to a 'listener' device in 'sentences' with a maximum length of 80 characters. You may have read that the maximum length of a GPGSV sentence is 210 characters. Don't panic, GPGSV information is broken down into a whole sequence of GPGSV sentences. Each individual sentence is no longer than 80 characters, and every GPGSV sentence contains the total number of GPGSV sentences to be transmitted in this sequence. Each NMEA sentence starts with '\$' and ends with [CR][LF]. Example:

\$GPRMC,154232,A,2758.612,N,08210.515,W,085.4,084.4,230394,003.1,W*43[CR][LF]

The first 5 characters following the '\$' are called the address field. The rest of the line consists of the comma-delimited data fields. The first 2 characters of the address are the so called Talker-ID, in our example the sender identifies as a GPS device (GP = GPS device). The Talker-ID is followed by 3 characters describing the type of the sentence (type RMC = Minimum Navigation Information in our example). Data fields which are undefined at send time are left empty (two commas with nothing in between). An optional checksum can be added to the sentence. This checksum must be preceded by a '*'. It is the XOR-combination (in hexadecimal notation) of all characters between '\$' and '*'. Most devices send only a small subset of NMEA sentences. Their sequence and frequency depends on device type and device status.

This NMEA FAQ by Peter Bennett can be consulted if you want to know more about NMEA 183 protocol. This FAQ also dissects a few sample sentences.

Related Pages

- NMEA/Port Settings
- Hard-wired Connection
- Clip-on Connection
- Bluetooth Connection
- Infrared Connection

- Cambridge GPSNAV Connection
- Volkslogger Connection Info
- Other Connection Types
- User Reviews / Example Setups
- SoarPilot Basics

1) Special option for the USB port on a Tungsten E using a Kirrio cradle/cable GPS to USB interface

2) Bit 7 set to 0

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- ♦ User Reviews / Example Setups
 - ♦ Handspring Visor + GPS Companion
 - ♦ Tungsten T + Bluetooth GPS Mouse + Power Sled
 - ♦ Zire 71 + Garmin 12XL Handheld GPS
 - ♦ More Setups

User Reviews / Example Setups

This appendix contains user reviews of various Palm + GPS units running SoarPilot. Each solution is rated on a few criteria by the owner on a scale from 1 (awfull) to 10 (excellent) stars.

Handspring Visor + GPS Companion



I've been using SoarPilot with a Handspring Visor i.c.w. a GPS Companion by Magellan for over 2 years now. My first setup was with a Handspring DeLuxe which has 8Mb of memory and runs PalmOS 3.1 with a 20Mhz processor and 2 AAA batteries (either Alkeline, NiHm or NiCad). The batteries didn't last long enough for long flights so I've come up with a power solution with a 3V DC/DC converter and an external larger battery that is now posted in a PDF in the Files section of the SoarPilot group site. I found this unit a bit too slow with large waypoint and/or SUA databases, even when Afterburner was installed. The 160×160 B/W screen is excellent in bright sunlight though. The GPS Companion lasts for upto 8 hrs with 2 1000mA NiMh batteries. This unit is discontinued but is still available via eBay. A full review of this GPS can be found [here](#). Later I've acquired a Visor Pro (full review [here](#)) which has 16Mb of memory and a 33Mhz processor. With Afterburner I can overclock this unit running SoarPilot upto 52MHz without any noticable side effects. It has a Benchmark 3.0 index of 169%. The Visor Pro has a built-in Lion battery which lasts easy for over 8 hrs on a single charge. I don't own a Visor SD card springboard module, this means I must either use serial or DOC transfers. I'm still using this setup to date, but I must admit that a Tungsten T is tempting 😊

Performance	★★★★★☆☆☆☆
Battery Life Time	★★★★★☆☆☆☆
Screen Visibilty	★★★★★☆☆☆☆
Screen Resolution	★★★★★☆☆☆☆
Memory	★★★★★☆☆☆☆
GPS	★★★★★☆☆☆☆
SP PC	★★★★★☆☆☆☆
Overall	★★★★★☆☆☆☆

— Antoine Megens 2005/09/26 13:47

Tungsten T + Bluetooth GPS Mouse + Power Sled



I have found this an excellent setup for Soarpilot. The Tungsten T has a hi-res colour display of the REFLECTIVE type. This has superb visibility in sunlight. The later Tungsten models (T2, T3, T5) all have a TRANSFLECTIVE display, and this has visibility problems in sunlight. It has a 144mhz processor and 16mb memory, so is capable of running with complex airspace and many waypoints. I have up to 300 SUA items and 700 waypoints. The Tungsten T can also be used in flight in the closed position, as the 5-way navigator is used to replace the silk screen buttons.

Although the Tungsten T is not made any more, you can find them on eBay. To improve the battery life a Palm Power-To-Go battery

sled is used. This can be obtained from Expansys. This gives **9 hours** plus of power and therefore is a completely glider independent solution. Great for using club gliders. The suction mount has a simple velcro attachment to the back of the Power-To-Go sled.

Many Bluetooth GPS units will work. The one shown is a Holux GR230, another popular model is the Globalsat BT338 unit. The Tungsten T has an SD Card slot, so I use this for data and flight transfers.

Note: Remove the PDA from the Power-to-go sled after flying, otherwise the sled drains the battery and the PDA eventually loses SoarPilot and its databases!

Performance	
Battery Life Time	
Screen Visibilty	
Screen Resolution	
Memory	
GPS	
SP PC	
Overall	

— Paul Gleeson 2005/09/27









Zire 71 + Garmin 12XL Handheld GPS

– No Picuture yet

The Zire71 has the same CPU and RAM amount as the TungstenT mentioned above. The only drawback is the transfective (as opposed to reflective) display which is harder to see in direct sunlight. But it is still possible to see everything important in flight.

I have used this setup in conjunction with some self-built cables too hook up both the GPS and Palm to the club-gliders batteries. So power-consumption is no problem. Speed is just fine, even for a lot of SUA data, and Transfers to the PC are very easy with the SD-Card.

You can get this unit very easily on ebay. However, i would also suggest looking into a used TungstenT, to which i sidegraded a month ago. Its display, while worse indoors, is noticeably better outdoors in sunlight. And they should cost nearly the same on ebay.

Performance	
Battery Life Time	
Screen Visibilty	
Screen Resolution	
Memory	
GPS	
SP PC	
Overall	

— Markus Gayda 2005/09/29

More Setups

Some more example setups (without a review) can be seen in the Photos section of the Soaring Pilot Yahoo group site.

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- SoarPilot Basics
 - ◆ Disclaimer!
 - ◆ Recommended Steps
 - ◆ Become familiar with SoarPilot
 - ◆ Main Screens
 - ◆ Using Lists in SoarPilot
 - ◆ How to Exit Soarpilot

SoarPilot Basics

Disclaimer!

SoarPilot is intended as an aid to the pilot only. It should not be relied upon as the pilot's sole means of navigation. As with all computer programs the result is dependent on the data supplied. Great care must be taken in the setup of and data supplied to SoarPilot. However, once setup correctly SoarPilot has been found to be a very valuable tool to pilots of all standards from local flying to National championships.

Having a PDA in the cockpit adds a distraction. The pilot (that's you!) must be very aware of this and care must be taken at all times to operate the software without sacrificing basic safety rules. **ALWAYS remember to keep a good lookout at all times !**

Recommended Steps

It is a good idea to read the Introduction (if you have not done so already) to get an idea of what SoarPilot can do.

- Make sure you meet the hardware requirements
- Follow the Installation Procedure to install Soaring Pilot on your PDA.
- Start Soaring Pilot on your PDA, this will display the SoarPilot version, current Polar selected, and the Pilot name and glider Type from the IGC information screen. Also displayed are the file names of the latest Waypoint, Configuration and SUA files you have loaded in SoarPilot.
- After a few seconds the Final Glide Screen will show.
- Configure Soaring Pilot with the settings screens, recommended order:
 - ◆ Units settings, so the various displays show results in a familiar format.
 - ◆ NMEA/Port settings to get GPS working and setup data transfer.
 - ◆ Now configure the Final Glide and Moving Map displays.
 - ◆ Save your initial config.
- Load waypoints and SUA data
- Configure SUA warning
- Configure IGC information
- Check the Flight Logger settings 1).
- Save your config again and Hotsync@ your Palm to make a backup on your desktop PC.

When you've completed all these steps, you can continue to get familiar with the Soaring Pilot program as described in the following section.

Become familiar with SoarPilot

Then, get SoarPilot connected up to a GPS or to a simulator program as below. It is - for safety reasons - highly recommended you become familiar with SoarPilot **on the ground** or as a passenger. This can be done by:

- Attaching your GPS in simulator mode (see your GPS manual)
- Using tools like **gpsfeed+** or **GPSSIMUL** (see Links page)
- By replaying a IGC flight log into SoarPilot using a program like SeeYou
- A glider simulator like Sailors of the Sky or Condor that can output NMEA data.
- Flying in a dual glider, if possible on a cross country task. Dual flying can also be a lot of fun, and a good way to learn from other pilots.
- Creating and "flying" a task using SoarPilot in your car (as a passenger), and in this way become familiar with the behaviour and sounds of SoarPilot.
- Page through the available menus, to see the displays and settings available.

See the Tip & Tricks section on a useful way to reply IGC files or use a NMEA simulator into SoarPilot without the need for 2 serial ports on your PC.

Main Screens

There are 2 main screens used in-flight. They are

Final Glide Screen

The Final Glide Screen shows information on your altitude, course and speed, recent lift, the wind strength, and the target waypoint. Most importantly it gives you information on your arrival height at your target waypoint at various speeds, allowing you to choose the most appropriate speed to fly.

SoarPilot can use a single Goto waypoint selected on a GPS unit, or use it's own database of waypoints. SoarPilot is much more powerful when using it's own waypoint database. See the section on Loading and Saving Waypoints to find out where to find and how to load a waypoint database for your area.

Moving Map Screen

The Moving Map Screen shows a map centered on your current location. It can be configured to show the waypoints and airspace located within the map range 2), display similar information to the Final Glide screen. For the waypoints and airspace to be visible you need to load this data for the area in which you will be flying. See the section on Loading and Saving Data.

Using Lists in SoarPilot

There are the following lists used to display data in SoarPilot

- Waypoint List
- Task List
- SUA List
- Polar List
- External Logger Flight List
- Task Editor (List of waypoints in the task)

Items are highlight by tapping the required item, and they all share the same buttons to scroll and highlight an item.

Using the buttons is easier than tapping the screen to select an item in-flight.

Button	Function
Calendar	Move one item up in the list. Moving to the previous page if required, but not past the start of the list
Phone	Move one item down in the list. Moving to the next page if required, but not past the end of the list
Page-Down	Move a page up in the list. Or to the last page if at the start of the list
Page-Up	Move a page down in the list. Or to the first page if at the end of the list

How to Exit Soarpilot

Tap on the **Menu** silk screen button, or the window title bar and select the Flight menu and select **Exit SP**.

You will be asked if you want to continue running SoarPilot.



You must tap the **No** button to exit Soarpilot.

Tapping the **Continue** button will return to the program.³⁾

1) usually defaults are OK

2) The map can be zoomed in and out using the *Page-Up* and *Page-Down* keys

3) This is the default button when using the 5-Way Navigator

Table of Contents

- SoarPilot Menu Structure
 - ◆ Flight Menu
 - ◆ Navigation Menu
 - ◆ Settings Menu

SoarPilot Menu Structure

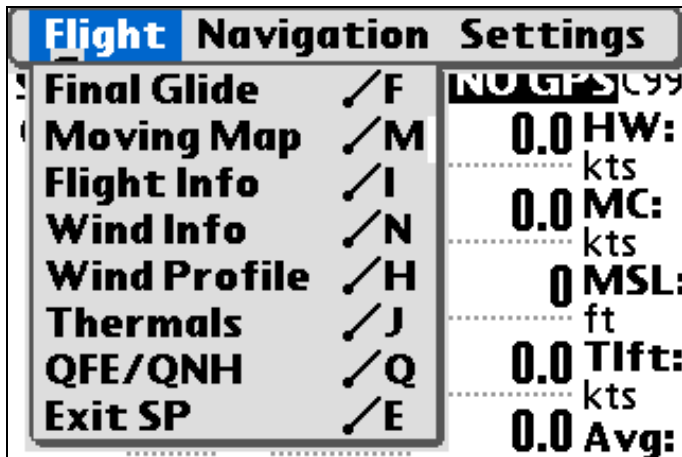
You can access the menu by tapping the *Menu* silk screen button, tapping in the title bar or if you have a Palm with a 5-way Navigator pressing the *Center* button.

There are 3 main sections

- Flight
- Navigation
- Settings

Flight Menu

These are the screens most commonly used in flight.



- Final Glide
- Moving Map
- Flight Info
- Wind Info
- Wind Profile
- Thermals
- QFE/QNH
- Exit SP

Navigation Menu

These screens are used to manage navigation databases in the form of Waypoints, Tasks, and airspace(SUA).

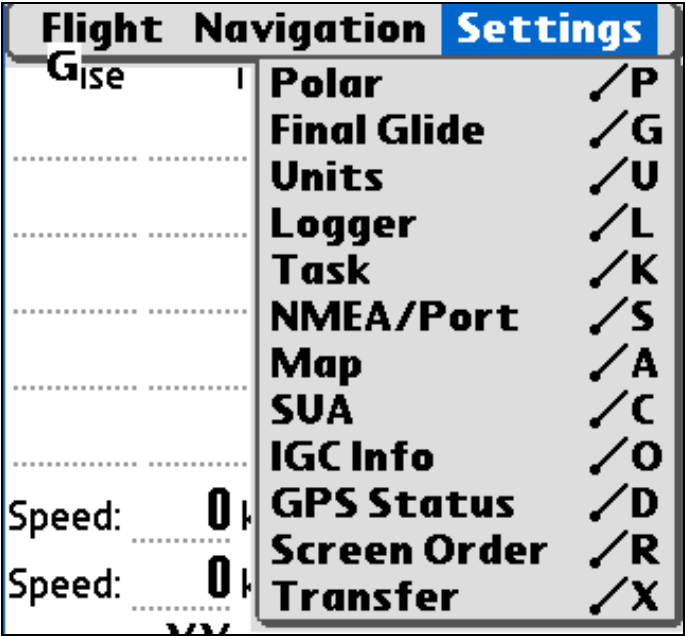


- Waypoint List
- Active Task

- Task list
- SUA List

Settings Menu

These screens allow access to the many configuration options and settings in SoarPilot



- Polar
- Final Glide
- Units
- Logger
- Task
- NMEA/Port
- Map
- SUA
- IGC Info
- GPS Status
- Screen Order
- Transfer

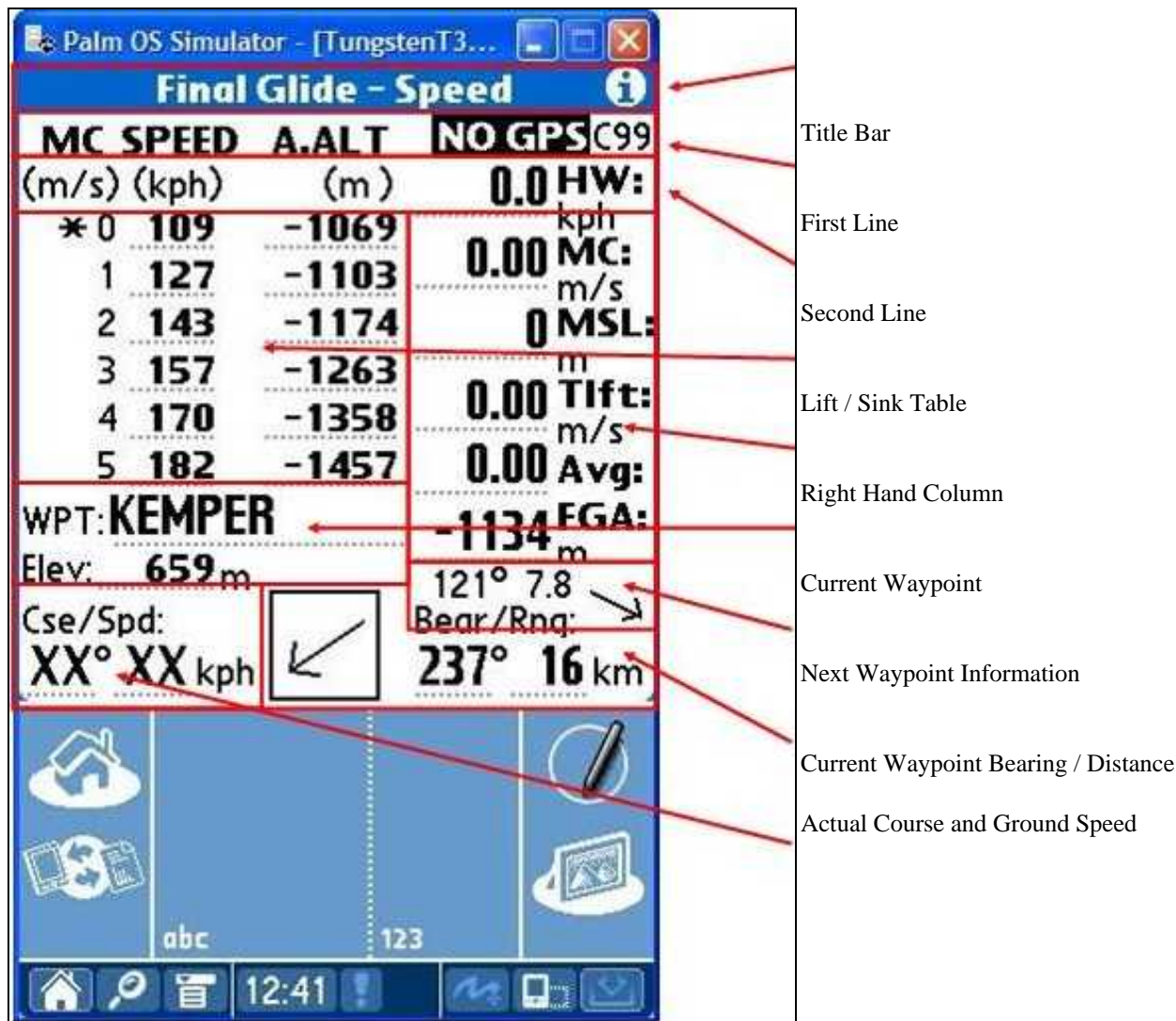
Table of Contents

- Final Glide Screen
 - ◆ Title Bar
 - ◆ First Line
 - ◆ Second Line
 - ◆ Lift / Sink Table
 - ◆ Right Hand Column
 - ◆ Current Waypoint
 - ◆ Next Waypoint Information
 - ◆ Current Waypoint Bearing / Distance
 - ◆ Actual Course / Ground Speed

Final Glide Screen

This screen 1) will appear when SoarPilot starts. It can also be accessed from the "Flight" menu, and by pressing the *Home* button.

Lets dissect the screen in smaller digestible chunks and you'll find that it's not as bad as it looks 2).



Title Bar



The title bar shows not only the name of the screen **Final Glide** but also in which mode it's calculating. This mode can be configured in the Final Glide Settings under the "Settings" menu by checking/unchecking the **Optimize STF for Speed** check box:


Mode	Description	Option
Distance	The screen is optimized for maximum distance with the available height	<input type="checkbox"/> Optimize STF for Speed
Speed	The screen is optimized for the best possible speed to fly	<input checked="" type="checkbox"/> Optimize STF for Speed

On the top right hand side of the title bar a small “i” is visible. This can be tapped to show the version of SoarPilot. When the title bar itself is tapped, the SoarPilot Menu will show.

First Line



From left to right:

- SINK** This label can be tapped and toggles the scale of the below lift/sink table (f.i. from 0-5 m/s to 0-10 m/s).
- or*
- MC** This label shows **SINK** in **Distance** mode and **MC** in **Speed** mode.
- SPEED** Speed to fly
- R.ALT**
- or*
- A.ALT** This label can be tapped to switch the altitude column of the lift/sink table between **R.ALT** (Required Altitude), **A.ALT** (Arrival Altitude) and **D.ALT** (Delta Altitude) 3), see table below for explanation.
- or*
- D.ALT**
-  This label is only visible when the Palm backlight is switched on 4) You can toggle the backlight on and off by pressing the power button twice in quick succession.
- GPS** This label shows the GPS status, see table below for possible values
- LW** Logger status, “LW” means the the logger is enabled and that the logger is currently in the ON or writing mode. The “LS”
- or* status means the the logger is enabled and that the logger is currently in the OFF or stopped mode. This label is only visible
- LS** when the GPS has a satellite fix 5). When the logger function is disabled then this label is left blank.
- The last label on this line shows the battery status of the Palm in percent.
- Battery** The first letter can be **B** for battery, or **C** for Charging/Cradle. When the battery capacity gets to 10% or less, the battery status will be displayed in inverse video. A popup warning will be displayed if the battery is critically low before the program is forced to exit due to a low battery condition.

Altitude Modes

The altitude list defaults to R.ALT or Required Altitude. When in R.ALT or D.ALT mode, the altitude displayed includes the “Safety Altitude” setting described below as well as the field elevation if using the internal Soaring Pilot waypoints.

Tapping the Altitude Mode will cycle through the available modes described below.

Altitude Mode	Description
R.ALT	Required altitude to reach selected waypoint
A.ALT	Computed altitude when A rriving at selected waypoint
D.ALT	D elta Altitude is the difference between current GPS altitude and the required altitude with a negative value meaning you are under the glide slope.

Note: The safety altitude (set on the Final Glide Settings screen) is included in the R.Alt and D.Alt values. The A.Alt with the actual arrival altitude with no safety added.

GPS Indicator

GPS indication	Description
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NO GPS	No NMEA data from GPS
NO SATS	GPS has no satellite fix
GXX	GPS has a fix and XX shows number of satellites in use when you GPS is outputting NMEA 2.0 sentences. For NMEA 1.5 this label will stay at GXX during a fix

A note about the **NO GPS** status, this can be caused by a number of reasons:

- GPS is not transmitting (f.i. it's battery is dead)
- GPS Palm communication problems, check the cabling (if appropriate) and/or the NMEA/Port settings. Also check the GPS Status Screen, on a slow Palm you may have to tap the "Connect GPS" button.
- There really is NO GPS 😊

Second Line

(m/s) (kph)	(m)	0.0 HW:
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This line is mainly used to display the units of the columns in the table on lines 3 to 8. These units are fully user configurable using the Units setup screen.

Lift/Sink unit	This shows the unit of the lift/sink column, can be kts, fpm/fps or m/s. Tapping this label has the same effect as tapping the SINK or MC label of the first line.
Speed unit	This shows the unit of the speed to fly column, can be kts, mph or kph
Altitude unit	This shows the unit of the altitude column, can be ft or m. Tapping this label rotates to the next altitude mode (see first line)
HW	This label shows the head wind value as computed by SoarPilot. Tapping the label will show the Wind Info screen.

Lift / Sink Table

✖ 0	109	-1091
1	126	-1123
2	141	-1193
3	155	-1280
4	167	-1374
5	179	-1473

As mentioned above SoarPilot has two modes of altitude calculation, Speed optimized and Distance optimized. The values in these two columns contain the speed-to-fly (SPEED) and the altitude (**Required**, **Arrival** or **Delta**) needed to glide the current waypoint distance shown in the lower right hand corner of the screen with the given head/tail wind (**HWnd**), the McCready (**MC**) setting and the glider Polar Curve.

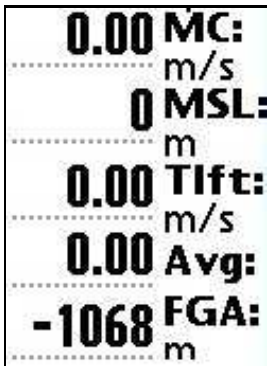
If set to Distance optimization mode, the top left corner will display **SINK** and represents the current sink being encountered. In this mode, the "✖" will be placed next to a recommended value which is based on both the current **MC** setting as well as the current lift/sink value.

If set for Speed optimization, the top left corner will display **MC** and represents the same value as is entered into the **MC:** field on the right side of the screen.

For gliders without an airspeed indicator, see the Required Ground Speed option.

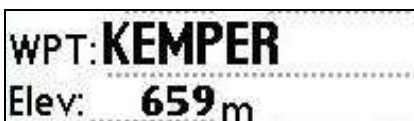
With several speeds shown in the table, the pilot is able to judge how much energy they have in reserve to reach the target waypoint, by slowing the glider and flying closer to the best glide speed. If you can only just reach your target waypoint at the slowest speed in the table, you have no excess energy to make your goal. Be careful, this is a marginal final glide!

Right Hand Column



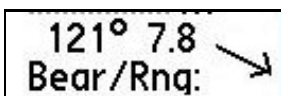
MC	McReady value. <i>Todo</i> button will increase and <i>Memo</i> button will decrease MC value
MSL or AGL or QFE or FL	Altitude indication, tap the label to switch between modes. These different modes are explained here.
Tift	The Thermal Lift value is an average lift value for the current thermal if in THERMAL mode or the previous thermal if in CRUISE mode. This is the true thermal average, from starting to circle to flying straight again, and not just the last 30 seconds. Tapping this field takes you to the Thermal History screen.
Avg	Current average Lift or Sink. Tapping this field takes you to the Thermal History screen.
FGA	Final Glide Around waypoint. This is the total altitude required to complete the currently active task, flying around all remaining turnpoints, or if no task is active, it is the total altitude required to fly to the current waypoint and return to the “Home” waypoint. (see Waypoint Types)

Current Waypoint



WPT	Current Waypoint Name. Tapping this field takes you to the Waypoint Additional Information screen.
Elev	Current Waypoint Elevation and altitude units. If there is another number on the right in brackets, then this is the Finish Height, and the number in brackets is the original waypoint elevation.

Next Waypoint Information



No Active Task	This shows the bearing and distance to the “Home” waypoint. (see Waypoint Types)
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With Active Task This shows the bearing and distance to the next waypoint in the task or a Control Point

The option to control displaying the next waypoint information is on the Final Glide Settings screen.

For more information on Tasks, click [here](#).

Current Waypoint Bearing / Distance



This shows the bearing and distance to the current waypoint

If a task is active, tapping the bearing arrow takes you to the Waypoint Sector screen.

Tapping the Bearing / Distance fields takes you to the Task Editor for the active task.

For more information on Tasks, click [here](#).

Actual Course / Ground Speed



This shows your current ground track and ground speed.

If there is significant wind, then this will be different from your airspeed. For gliders without an airspeed indicator, see the Required Ground Speed option.

Tapping on the Course / Speed fields takes you to the Waypoint Select screens.

- 1) This screen can be intimidating at first glance, at least that was my first impression 😊
- 2) actually this screen is very good
- 3) **D.ALT** = Difference between actual and required altitude, or how much you are below or over glide path
- 4) For the night fliers amongst us 😊
- 5) for obvious reasons, there's not much point in logging when there is no position data...

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 - ◆ Orientation Modes
 - ◆ Waypoint Types
 - ◆ Distance & Direction Arrows
 - ◆ Example SUA
 - ◆ Wind Arrow
 - ◆ Panning Around the Map

Moving Map Basics

The moving map is one of two main “in flight” screens (the other is Final Glide) of SoarPilot.



The screenshots show what the moving map looks like on a HiRes Color Palm on the left and a LowRes (160×160) B&W Palm on the right. As you can see the HiRes has more labels on the bottom and also show two command buttons to select a new waypoint and to switch to Final Glide screen.

Features

Almost everything visible on the Moving Map can be controlled via the Map Display Settings screen.

- Displays Special Use Airspace (SUA), fully configurable via SUA display config screen.
- Displays various type of waypoints 1) with user configurable number of characters.
- Displays two configurable range rings
- Displays above/below glideslope arrows.
- Displays distance and direction arrows to target waypoint.
- Displays flight parameters at bottom of screen

- Configurable map orientation for both CRUISE and THERMAL mode.
- Optional zoom in when thermaling for easier centering in a thermal, and displaying a coloured track that indicates the strong lift.
- Optional zoom in to waypoint when task is active to facilitate rounding the waypoint in the correct zone
- Display task lines and sectors
- Optional display a “bread crumb” Track Trail
- Optional wind arrow showing wind direction and speed
- De-clutter option to switch off waypoint names when zoom scale is over user configurable value
- Tapping the glider symbol will create a temporary thermal waypoint.
- Colour/Hi-Res Palm only:
 - ◆ The SUA, Task and Sector line colors and thickness are user configurable
 - ◆ Waypoints that are within reach are plotted in green, out of reach are red.
 - ◆ Additional flight parameters @ bottom of screen
 - ◆ Large buttons **Select Way** and **Final Glide** for easy switching to waypoint selection and final glide screen

Note: Even with a terrain database installed, the moving map screen does not show a coloured terrain map. This is to keep the display as clear as possible and maximize the contrast for readability in strong sunlight.

Button Functions

Button	Function
<i>Calendar</i>	Create a new waypoint at your current position. By default these are named WP0, WP1, Wp2 etc but can be renamed later from the waypoints list
<i>Phone</i>	Override the thermal mode map settings and return to the normal map zoom and orientation
<i>Page-Up</i>	Increase the map scale
<i>Page-Down</i>	Decrease the map scale
<i>To-Do</i>	Increase the current MC value
<i>Memo</i>	Decrease the current MC value

Active Screen Areas

Tapping the top left corner (Waypoint Bearing) will take you to the Waypoint Sector screen for the currently active task waypoint.

Tapping the top right corner (Waypoint Distance) will take you to the Task Edit screen for the active task.

Tapping the glider symbol at the center of the screen records a Thermal Waypoint.

In addition, many of the values in the bottom label boxes are active and can be tapped. See the details below.





Flight Parameters

Near the bottom of the screen, the moving map will display some flight parameters:

Label	Description
Cse:	Current course. Tapping this label will load the Waypoint List, which is identical to the <i>Select Way</i> and/or <i>Calculator</i> button
Spd:	Current speed
STF or RGS	Speed To Fly suggestion, or Required Ground Speed
RAlt	Altitude for target waypoint, can be R.ALT, D.ALT or A.ALT, explained here.

	Tapping this box changes the mode
Alt	Current Altitude. Tapping this box cycles thru the altitude references (MSL, AGL, FL, QFE)
Scale:	Map scale and orientation (Track , Course or North Up). Use the hardware <i>Up</i> and <i>Down</i> buttons of your PDA to change the zoom scale. Tapping the label rotates to the next orientation mode.
HiRes Palm PDA's will also display:	
MC:	McReady value. This label will also show some arrows, explained below. On LoRes Palm's the MC: label and arrows are drawn inside the map area 2)
FGA:	F inal G lide A round waypoint. See Final Glide Display for details
Lft:	Current Lift/Sink (Vario)
AVG:	Average Lift/Sink
Tlft:	Average Thermal Lift

Above/Below Glideslope Arrows

Arrows	Description
	Above 2 Times the Safety Altitude
	Between Safety Altitude and 2 Times the Safety Altitude
	Between Zero A.Alt (Arrival Altitude) and the Safety Altitude (marginal final glide)
	Negative A.Alt

Orientation Modes


The orientation modes are:

Mode	Description
T	Track Up, the glider symbol is stationary and the map is rotated in the direction you're flying. This requires the most CPU power, but the map is always showing what is "in front"
N	North Up, the magnetic North is at the top of the map and the glider symbol is drawn in the direction you're flying
C	Course Up, the currently selected or task waypoint is at the top of the map. If no target waypoint is selected, this mode is identical to "North Up"

The default orientation mode can be setup for both *Cruise* and *Thermal* mode in the Map Settings and can be changed by tapping the **Scale:** label.

Waypoint Types

The various waypoint types (see Waypoint Edit) are displayed as follows on the Moving Map:

Type	Example	Description
Airport		An airway with a runway, displayed as a circled dot

Turn		A turning point, displayed as a dot (same for Start, Finish and Home types)
Land		“Land-able”, displayed as airport but with noticable smaller circle
Mark		For compatibility with the Cambridge format, has no special function in Soarpilot
ThrmL		Temporary thermal waypoint, displayed as circled T
Area		Area type waypoint - Used in Assigned Area Tasks
Ref Pt		See Waypoint Edit for details.

The highlighting of reachable, landable and airports is in the table below to help to distinguish between the types of waypoints and if they are within gliding range.

Waypoint Type	Colour Palm	Black & White Palm
Reachable Waypoints	Green	Bold
Reachable Landing Places	Green + Bold	Bold + Uppercase
Reachable Airports	Green + Bold + Uppercase	Bold + Uppercase

In addition to the above displayed waypoint representation, the current selected target waypoint will be displayed with a small circle around it.

Distance & Direction Arrows

The course and distance to fly to the target waypoint is displayed in both numeric format as with the familiar direction arrows as can be seen in the next table:

Direction Arrows	Meaning
	More than 10 degrees off course in the direction of the arrows
	Between 5 and 10 degrees off course in the direction of the arrows
	Less than + or -5 degrees off course
	Between 5 and 10 degrees off course in the direction of the arrows

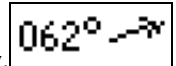


More than 10 degrees off course in the direction of the arrows

10.2

The distance to the target waypoint is displayed in the upper right corner.

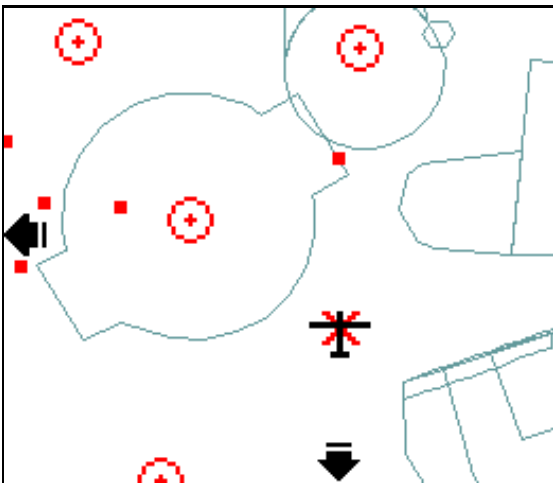
Also, when the Next Waypoint Info is displayed this is shown as smaller numbers with a small direction arrow.



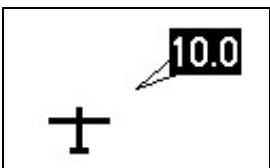
next to

Example SUA

This screenshot shows an example Special Use Airspace as displayed on the Moving Map 3)



Wind Arrow

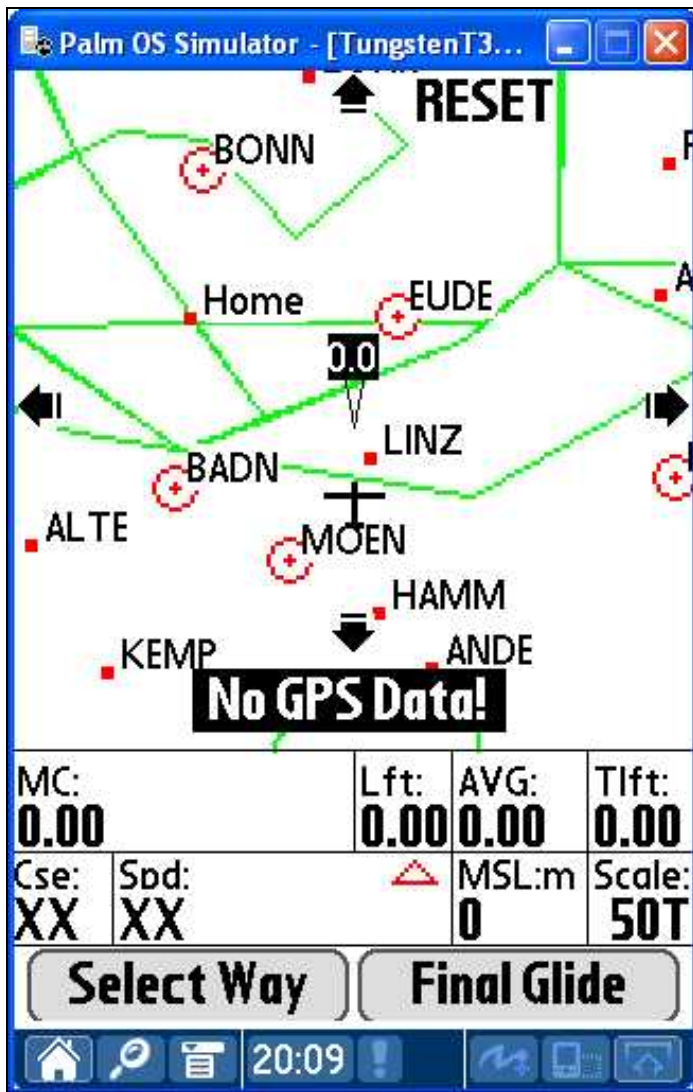


In this case it shows a head/cross wind coming from the right, with a speed of 10 wind units 4).

Detailed wind information is available on the Wind Info screen.

Panning Around the Map

If you goto the Moving Map screen without a GPS input, you will see 4 arrows at the edges of the screen and a **RESET** button at the top.



If you have an active task you will be in the task preview mode. Otherwise, you will be able to pan around the map using the 4 arrows. Tapping the **RESET** button restores you to your "Home" waypoint.

- 1) provided "Use SoarPilot Waypoints" options is checked in Final Glide Settings
 - 2) see screen shots at top of page
 - 3) for clarity only SUA and waypoints without names are selected
 - 4) The wind units (knots, mph, kph or m/s) are selected on the Units Setup screen
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 - ◆ Waypoint List
 - ◆ Waypoint Edit
 - ◆ Waypoint Additional Information

Waypoint Basics

SoarPilot uses its own waypoint database 1). Waypoints can be imported from various sources and a few popular formats are supported. This chapter does not describe howto import waypoints, it merely describes the various waypoints screens that are currently implemented in SoarPilot.

Waypoint List

<u>Dist</u>	Airport	Name	Last
FRANH	62.2	179°	-2120
BACHAB	62.3	144°	-1700
SIEGE	63.2	069°	-2244
BERGNE	63.2	027°	-1898
DUERE	63.3	289°	-2004
WITTLC...	63.8	204°	-1658!
ARGENB	63.9	157°	-2142

Records: 784 Page: 12 of 112

Edit New Search GO

abc 123

12:34

This screen will show when you select from the **Navigation** menu the **Waypoint List** command or use the shortcut **/W**. It shows a listing of waypoints in SP database. The title bar will show the selected sort order and the distance settings as set in the Final Glide screen. The top row shows 4 command buttons that can be used to control the order of the list as described below. The active button will have it's label name underlined.

The waypoint list itself will show in the first column the waypoint name, the 2nd column is the distance to that waypoint from your current , the 3rd column is location the course to fly from your current location and the last column depends on the altitude setting of the Final Glide screen and can be the **R.ALT** 2), **D.ALT** 3), **A.ALT** 4) for each waypoint with safety height already taken into account. The full waypoint name of the selected waypoint, and the altitude setting are shown in the title bar.

Notes:

If there is a **!** after the altitude value, this means that the waypoint has a zero value entered into the elevation field, and therefore may not be valid.

If there is a **~** before the waypoint name, this indicates that this has been marked as a “Land” type waypoint. i.e. landable, but not a full airport. This is useful to see the difference when you have the list sorted in Airport order. (See below)

You can scroll through the list using the following hardware buttons

Button	Function
Calendar	Move one item up in the list. Moving to the previous page if required, but not past the start of the list
Phone	Move one item down in the list. Moving to the next page if required, but not past the end of the list
Page-Down	Move a page up in the list. Or to the last page if at the start of the list
Page-Up	Move a page down in the list. Or to the first page if at the end of the list

If you tap the **Calc** button (or the **Voice Memo** button on the side of a Tungsten T) while in the waypoint list this will set the sort order to nearest airport and goto the first page. This is useful to quickly find the nearest landable places.

Pressing the **Memo** button is the same as tapping the screen **Go** button and will select the waypoint as the current waypoint.

Waypoint List Command Buttons

Button	Description
Dist	Sort all waypoints on distance from current location
Airport	Only waypoints that are tagged Airport will be visible in the list, they are automatically sorted on distance. 5)
Name	Sort the waypoint list alphabetical on name, hit it again to toggle between ascending/descending sort
Last	List all waypoints that have been used recently

For the **Last** sort order, the time stamp is set when you goto a waypoint, or activate a task which contains the waypoint. Waypoints without a time stamp i.e. not used yet, are not shown on the list. The last used time stamp for each waypoint can be viewed and edited on the additional waypoint info screen. The time stamps can be reset by deleting and reloading the waypoint data.

Button	Description
Edit	Load selected waypoint into Waypoint Editor. The same can be accomplished by double tapping on a waypoint in the list.
New	Start Waypoint Editor and create a new waypoint from scratch
Search	Start a search in the waypoint list. The bottom row will show an edit field where a (partial) waypoint name can be entered using the grafiti area on your palm. Then tap the Search button again to search to list.

Search

Records: 209	Page: 1 of 30
Wpt: 	Search

GO	Set selected waypoint as destination. SP will switch to the Final Glide or Moving Map screen.
-----------	---

Waypoint Edit

Waypoint Edit

Name: **MENDI**

Dist: **16.4** km **Bearing:** **165** °

A.Alt: **-632** m **Elev:** **183** m

Airport	Turn	Land	Mark	Thrml
Area	Start	Finish	Home	Ref Pt

Radial1: **N/A** ° **M** **Radial2:** **N/A** ° **M**

Max R: **N/A** km **T** **Min R:** **N/A** km **T**

Remark: **Mendig Mil**

Lat: **50:21.950N** ddd:mm.mmmc

Lon: **007:18.916E** ddd:mm:ss.ssc

Save
Quit
Info
Delete

Command Buttons

Button	Description
Save	Save the modifications for the waypoint from the editor screen into the database
Quit	Leave the editor without saving modifications
Info	Open the additional information screen for the current waypoint
Delete	Delete the current visible waypoint from the database

The waypoint editor screen contains the following information:

Name	The name of the waypoint as it appears on the Map display. Tap anywhere in this edit field to change the name of the waypoint.
Dist	Distance to this waypoint from current location, <i>informational only</i>
Bearing	Course to fly to get to this waypoint from current location, <i>informational only</i>
R.Alt	Required Altitude to reach this waypoint, <i>informational only</i> . This field will change to R.ALT , D.ALT or A.ALT depending on the distance mode as set in the Final Glide screen.
Elev	Elevation of the waypoint. Tap in this edit field to change this value
Type	The next two rows define the type of waypoint, see table below
Radial1	Only used for waypoints of type Area , otherwise N/A .
Radial2	Only used for waypoints of type Area , otherwise N/A .
Max.R	Only used for waypoints of type Area , otherwise N/A .
Min.R	Only used for waypoints of type Area , otherwise N/A .
Remark	Can be used for additional (short) information for this waypoint
Lat:	The latitude for this waypoint, can be in format ddd.mm.mmmc or dd:mm:ss.ssc
Lon:	The longitude for this waypoint, same format rules apply as for latitude.

Waypoint Types

The **Waypoint Type** fields are toggles and define what type of waypoint this is. A combination of fields can be toggled, but of course some of these combinations just don't make sense 😊. To see how the various waypoint types are displayed on the moving map, go here.

Type	Description
Airport	An airport with a runway
Turn	A turning point
Land	"Land-able"
Mark	For compatibility with the Cambridge format, has no function in Soarpilot
Thrm1	A temporary thermal waypoint. Displayed on Map display as a circled T
Area	Area type waypoint - Used in assigned area tasks, see description below.
Start	Start of a task
Finish	Finish of a task
Home	When checked this waypoint marks your "Home" airfield. Only one waypoint in the database can be marked as a Home airfield. The Moving Map screen will also centre on this Home waypoint when no GPS is connected
Ref Pt	If selected, the program will display the Bearing or Radial and Distance to the waypoint independent of an active task or selected waypoint. This is displayed at the bottom of the Moving Map screen.

Area Waypoint Type - Using a format similar to the Cambridge dataport guide's definition of this data for the Remarks of their internal 'Câ' line, if the waypoint is designated as an AREA waypoint, when the data is output into a .dat file, an additional field will be added to the end of the line for that waypoint. This information is output with both the Waypoint and Task output formats. I will be submitting these additions to the various display programs so they will hopefully add support for displaying these area waypoints/turnpoints. The format for this additional data is:

003000000000030270

Character	Meaning	Example
1 - 4	Radius in nautical miles - In this case 3.0 nautical miles	0030
5 - 8	Floor of the area (not used by Soaring Pilot at this time)	0000
9 - 12	Ceiling of the area (not used by Soaring Pilot at this time)	0000
13 - 15	Left Radial of the area (use 000 if not needed)	030
16 - 18	Right Radial of the area (use 000 if not needed)	270

Waypoint Additional Information

Waypoint Additional Info

Name: **MENDI**

Dist: **16.4** km **Bearing:** **165 °**

A.Alt: **-632** m **Elev:** **183** m

Remark: **Mendig Mil**

Runway Direction: **080°**

Runway Length: **1630** m

Radio Frequency: **122.100** Mhz

Gen Info:

Airport

.....

.....

.....

Back

Used:

This screen shows the additional information that can be stored for each waypoint:

Remark	Identical to remark from waypoint edit screen
Runway Direction	Compass course for runway in degrees 0-360
Runway Length	The length of the runway in meters of feet (depending on your units setup)
Radio Frequency	Self explanatory
General Info	Room for some personal notes 😊
Used	Date stamp when this waypoint was last used as destination or in a task

- 1) when the option “Use SoarPilot Waypoints” is checked in the Final Glide settings
 - 2) R.ALT = Required Altitude
 - 3) D.ALT = Difference between Current and Required Altitude
 - 4) A.ALT = Arrival Altitude
 - 5) Great function when you’re out of thermals and need a place to land.
- [Table of Contents](#)

- Selecting A Waypoint
 - ◆ Task not Active
 - ◆ With a Task Active

Selecting A Waypoint

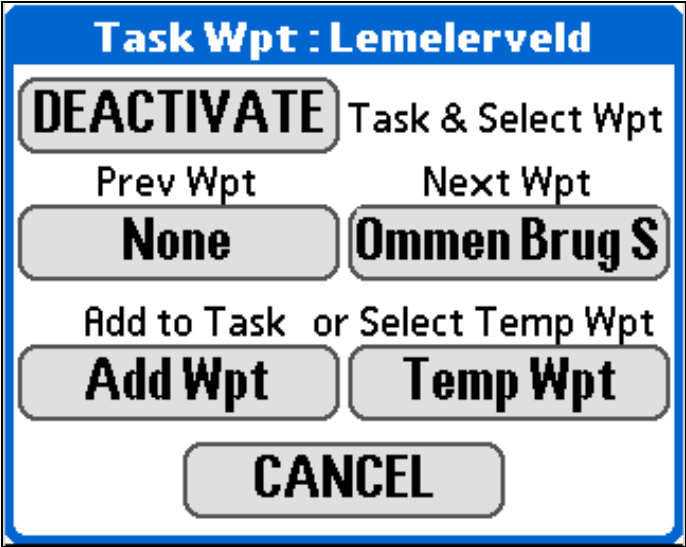
Task not Active

With either the Final Glide or Moving Map screen active, tap the *Calculator* button or the **Cse:** field. This will activate the Waypoint List. The current active waypoint (if any) will be visible and selected. In the Waypoint List screen you can use its sort, scroll, search, etc. capabilities to locate a new waypoint. Finally tap the **GO** button and SP will return to either the Final Glide or Moving Map screen (depending where you came from) with the newly selected waypoint as the destination.

When you are the lucky owner of a Palm with a HiRes display, a command button **Select Way** will be visible below the Moving Map screen. Tapping this button has the same effect as the *Calculator* button.

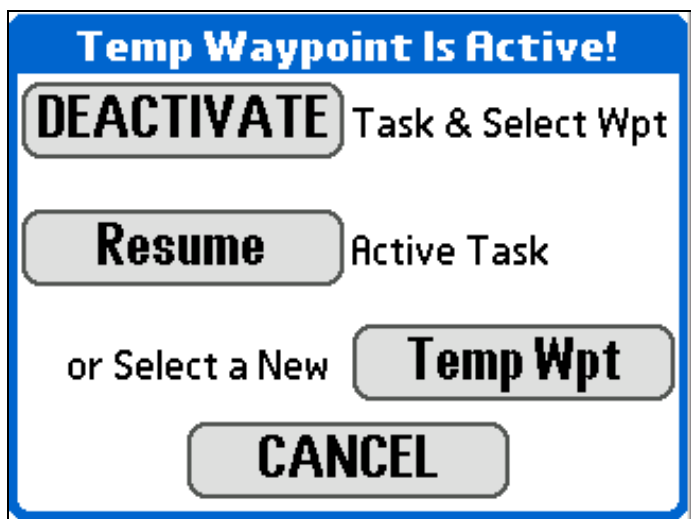
With a Task Active

If a Task is active when you perform this procedure, a warning dialog will popup:



Screen Button	Hardware Button	Description
DEACTIVATE		Deactivate Active Task and proceed with the select new waypoint procedure
Add Wpt	<i>ToDo</i>	Add new waypoint to current active task
Temp Wpt	<i>Memo</i>	Leave task active, but set a new temporary destination. The task is not changed.
Prev Wpt	<i>Calendar</i>	Move to the previous waypoint in the task, the name of this waypoint is shown as the button text
Next Wpt	<i>Phone</i>	Move to the next waypoint in the task, the name of this waypoint is shown as the button text
CANCEL		Abort select waypoint procedure and continue with current active task/waypoint

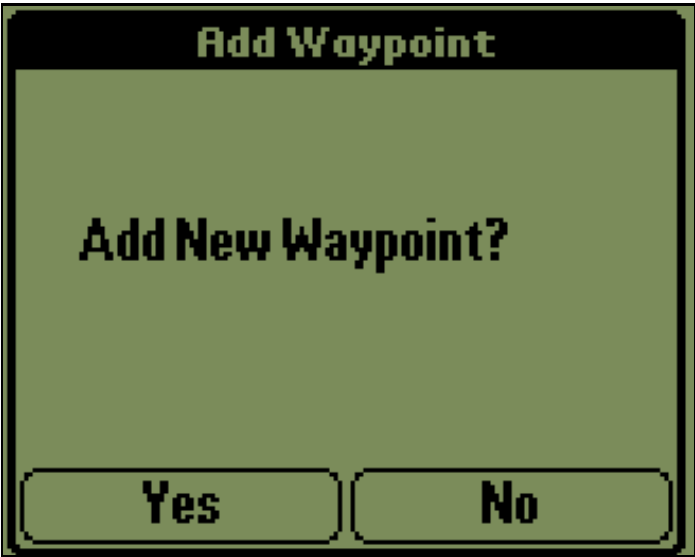
When **Temp Wpt** is active and you want to select another waypoint, the next dialog will show:



Screen Button	Hardware Button	Description
DEACTIVATE		Deactivate Active Task and proceed with the select new waypoint procedure
Resume	<i>Calendar</i>	Resume active task
Temp Wpt	<i>Memo</i>	Set a new temporary destination. The task is not changed.
CANCEL		Abort select waypoint procedure and continue with current active task/waypoint

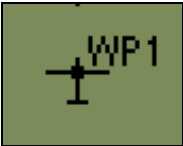
Creating On-The-Fly Waypoints

To add a new waypoint at the current location, must switch to the moving map screen. Then simply press the far left hardware button (Calendar/Schedule). A confirmation window will open asking you if you want to add a new waypoint.



If you hit the hardware button again or touch the YES button in the confirmation window, a waypoint will be added with a name of “_WP?” where the question mark is an ever increasing number (_WP0, _WP1, _WP2, etc.). It will not duplicate the waypoint name. The waypoints is saved with the current lat/long and altitude and the Turnpoint attribute set.

The sort order on the waypoint list places the temporary waypoints at the bottom of the list when sorted in name ascending order. This means they can be accessed quickly either by sorted by name descending, or paging up from the first page of the name in ascending order.



Waypoint Edit

Name: WP1

Dist: 0.0 nm Bearing: 000 °

R.Alt: 0 ft Elev: 0 ft

Airport	Turn	Land	Mark	ThrmI
Area	Start	Finish	Home	AirLnd

Radial1: N/A ° M Radial2: N/A ° M

Max R: N/A nm T Min R: N/A nm T

Remark: Temp Waypt 1

Lat: 37:04.632N ddd:mm.mmmc

Lon: 076:09.357W ddd:mm:ss.ssc

Save

Quit

Add. Info

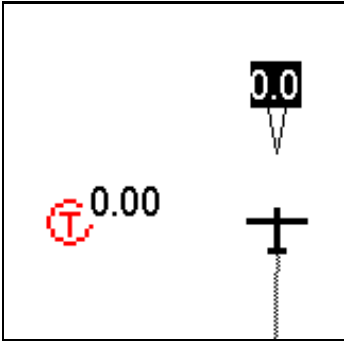
WP1 as visible on the Map display The newly added waypoint in the waypoint editor

Tip: If you like to mark a Thermal for later use, you should use Creating Temporary Thermal Points instead.

Creating Temporary Thermal Points

To create this type of waypoint, tap the glider symbol on the Moving Map screen. A new waypoint of type **Thrm1** (Thermal) is created. The waypoint will have a name of: d.dd n, where d.dd is the average climb rate and n is a number 0,1,2, etc. for each new thermal waypoint. The new waypoint will also have the word “Thermal” in the remark field.

Thermal waypoints are displayed on the Moving Map display as a circled “T” with the average climb rate next to it as well as the number.



It's obvious that the above displayed thermal isn't any good. I was having difficulty getting any lift while running SoarPilot on the simulator 😊

Thermal waypoints are deleted upon termination of SoarPilot. For creation of a permanent waypoint, see Creating On-The-Fly Waypoints

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- Flying with Tasks
 - ◆ Related Pages

Flying with Tasks

Related Pages

- [Creating a Task](#)
- [Activating a Task](#)
- [Flying a Task](#)
- [Task Rules](#)
- [Using Control Points](#)
- [Creating an Assigned Area Task](#)
- [Planning an Assigned Area Task](#)
- [Flying an Assigned Area Task](#)

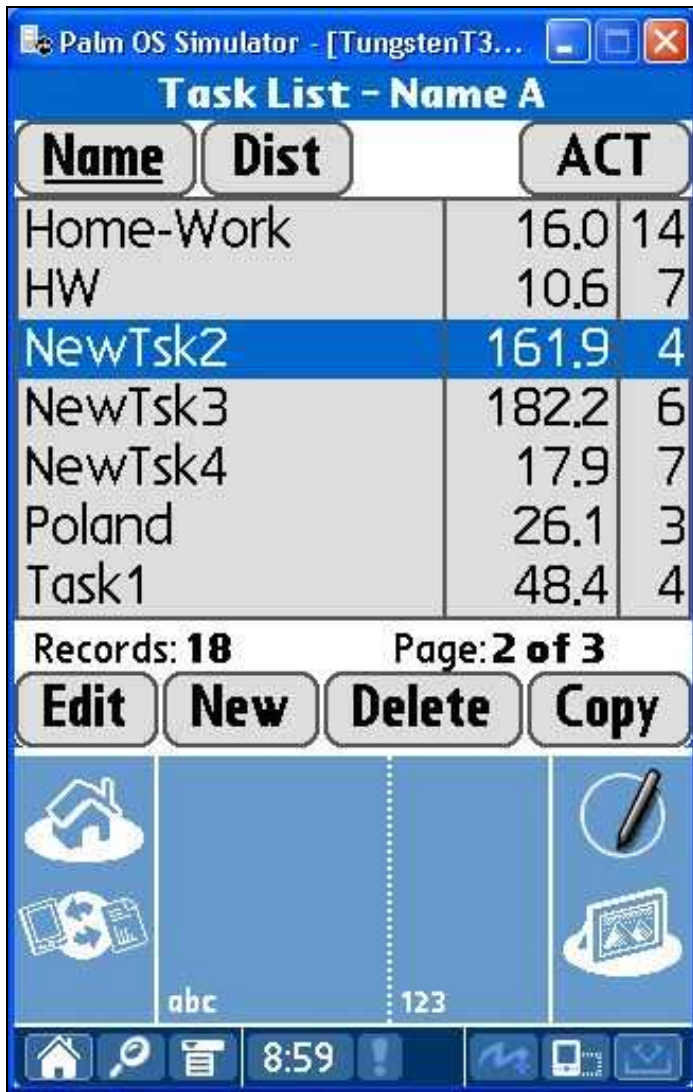
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- [Creating A Task](#)
 - ◆ [Task List](#)
 - ◆ [Task Editor](#)
 - ◆ [How to add/delete waypoints to the task:](#)
 - ◆ [Editing a Task Waypoint](#)
 - ◆ [Previewing a Task on the Moving Map](#)

Creating A Task

Task List

This screen is accessed from the “Navigation” menu.



Name	Dist	ACT
Home-Work	16.0	14
HW	10.6	7
NewTsk2	161.9	4
NewTsk3	182.2	6
NewTsk4	17.9	7
Poland	26.1	3
Task1	48.4	4

Records: 18 Page: 2 of 3

Edit New Delete Copy

abc 123

8:59

This screen shows a 3-column list of stored tasks, sorted by either Name in the left-hand column or Dist(ance) in the middle column. The right hand column shows the number of waypoints in the task.

Records shows the total number of tasks, while **Page X of Y** shows the what screen number of the total list you see.

You can scroll through the list using the following hardware buttons

Button	Function
<i>Calendar</i>	Move one item up in the list. Moving to the previous page if required, but not past the start of the list
<i>Phone</i>	Move one item down in the list. Moving to the next page if required, but not past the end of the list
<i>Page-Down</i>	Move a page up in the list. Or to the last page if at the start of the list
<i>Page-Up</i>	Move a page down in the list. Or to the first page if at the end of the list

A task is selected by tapping on it, and is then shown in inverse (in this case, the task called “NewTsk2” is selected). You can **Edit**, **Delete** or **Copy** the selected task by tapping the buttons respectively or simply create a new task by tapping **New**

Task Editor

In this case the task called “300km17Jun” has been selected and is now in edit mode:



The 4-column list shows each waypoint in the task, with the name of the waypoint in the left-hand column, the distance (again, from the previous waypoint) to the waypoint in the 2nd, the bearing to this waypoint (from the previous waypoint) in the 3rd column, and the type of waypoint is shown in the 4th. column. The different types of waypoints are Startpoint (S), Turnpoint (T), Area (A) and Finish (F).

The **Rules** button allows you to setup certain kind of criteria for the task, like max. start gate height etc. See Task Rules for a detailed description. If any task rules are active, the button text will be in uppercase. i.e **RULES**

The title of the task (in this case “300km17Jun”) can be edited as you like. Tip: using date or similar in the names of the tasks helps you later on..

The **ACT**(ivate) button is used to declare and activate the task. Once this is done, the **Arrow** on the Final Glide screen will guide you to the start point of the task.

If the checkbox **T/O** is checked it means that the first waypoint is used as a Take Off. In similar way the **Land** checkbox is used to indicate that the last waypoint is used for landing.

Dist Total distance of task. If one or both of checkboxes **T/O** and **Land** is checked, the 2nd. and/or the last but one waypoint is used as start and/or finish waypoint in the task, thereby reducing the total distance of the task.

Tapping the Total Distance field will toggle the display between showing the distances for each leg and the percentage of the total distance for each leg. This is useful if you want to make a task that complies with the FAI 28% triangle rule.

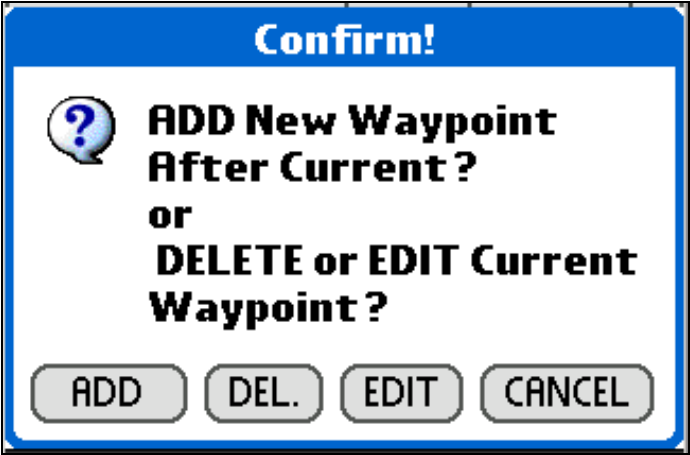


Note: All the distances are rounded down to ensure a 99,96km task is not shown as 100km. Also to ensure the task distance matches the FAI calculated distance you must select the FAI earth model from the Units Setup screen.

Tasks that are defined as 2 concentric cylinders on the same waypoint, with the first radius being larger than the second radius are also supported. This type of task is used in some paragliding competitions. The larger radii must be defined as a circle area, or a start cylinder if the larger radius is the start.

You can scroll through the list using the following hardware buttons

Button	Function
<i>Calendar</i>	Move one item up in the list. Moving to the previous page if required, but not past the start of the list
<i>Phone</i>	Move one item down in the list. Moving to the next page if required, but not past the end of the list
<i>Page-Down</i>	Move a page up in the list. Or to the last page if at the start of the list
<i>Page-Up</i>	Move a page down in the list. Or to the first page if at the end of the list

How to add/delete waypoints to the task:

Button	Description
Edit	<div><p>Tapping Edit (or the <i>Calculator</i> silk button) will bring up a window that ask you whether you want to ADD a new waypoint <i>after</i> the selected one, DELETE or EDIT the current waypoint. The EDIT waypoint function is used when creating Assigned Area Task by setting the Area attribute. Note: This does not affect the original waypoint in the waypoint database, but only a local task copy of the waypoint. For further details on handling of Assigned Area Task, see this description.</p></div>
	Move the selected waypoint up, while the...
	...moves it down in the task. The total distance is then recalculated.
Rev	Reverse the whole task.
List	bring up the Task List screen.

Note that waypoints in the task are not linked to the waypoints in the waypoint list. This means that if you first create a task, and there after edit the waypoint(s) in the waypoint list that you originally included in the task - you have separate waypoints in the task and in the waypoint list. Even if they are named the same. So you cannot first create a task, and then edit it simply by editing the waypoints in

the waypoint list. You have to either edit them in task as well, or delete them and add them again from the waypoint list.

Editing a Task Waypoint

You can edit the individual waypoints in a task. 1) For example, if you have need a task waypoint that is not actually in your waypoint database, you can add the nearest waypoint, then edit the waypoint in the task to the details you need.

To access the Task Waypoint Editor, double tap the waypoint name, or select it and tap the **Edit** button.

Task Waypoint Edit

Name: **KELL**

In: **Active Task** Elev: **535 m**

Dist: **106.4 km** Bearing: **192 °**

Airport	Turn	Land	Mark	Thrml
Area	Start	Finish	Home	AirLnd

Radial1: **000 °** M Radial2: **000 °** M

Max R: **5.00 km** T Min R: **0.00 km** T

Remark: **Kell**

Lat: **49:37.300N** ddd:mm.mm.mc

Lon: **006:50.416E** ddd:mm:ss.ssc

Save **Quit** **View**

You can change the waypoint details and then

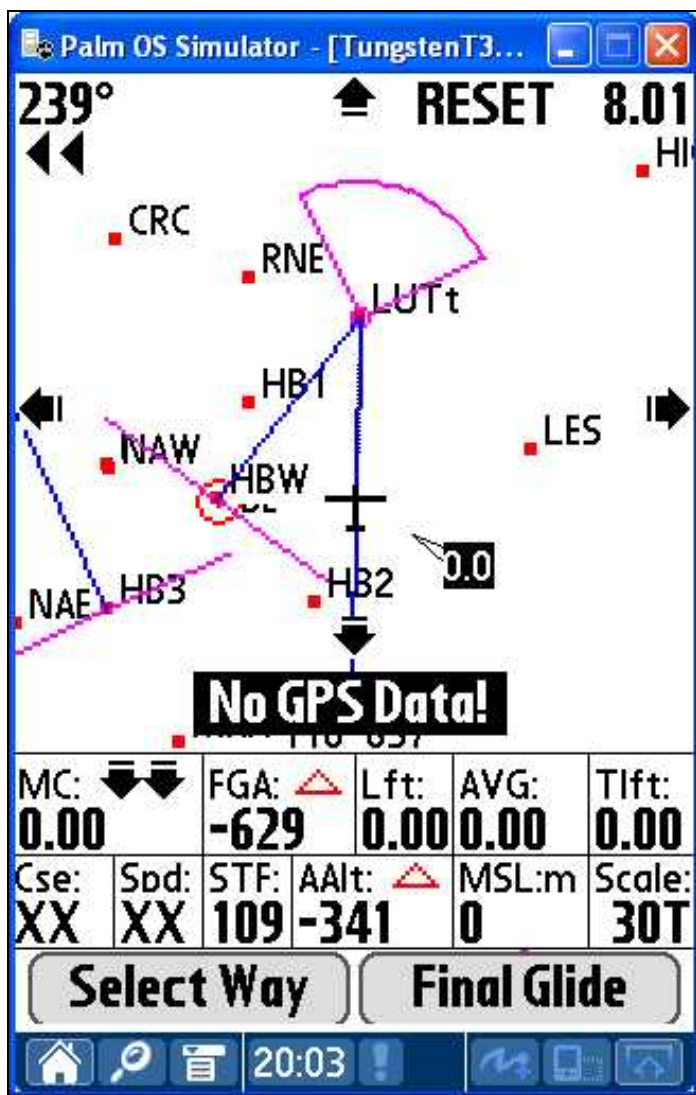
Tap **Save** to save your changes, or tap **Quit** to exit without saving your changes.

You will be returned to the Task Editor

The **View** button takes you to the Waypoint Sector screen.

Previewing a Task on the Moving Map

There is a task preview feature which allows you to quickly review each leg of the task and each turnpoint. This feature is available when you activate a task without any GPS input.



The Arrows and Reset button on the Moving Map screen have the functions below.

- RESET - This moves you to the first turnpoint in the task
- RIGHT - Moves you to the next turnpoint in the task
- LEFT - Moves you to the previous turnpoint in the task
- UP - Moves you forward along the task leg
- DOWN - Moves you backward in the task leg

The map can be set in Track-up or Course-up modes to rotate the map to the task leg direction. In Course-up mode, the glider symbol points north.

1) This does not change the original copy of the waypoint in the waypoint database

Activating A Task

The Task Edit screen for the active task can be accessed from the “Navigation” menu.



Tapping the **ACT** screen button or the *Memo* hardware button will activate the task for the coming flight. If one of the supported IGC flight loggers 1) is used, you’ll be asked whether you want to declare the task to the that logger as well.

The task details will be displayed on the Flight Info screen and on the Moving Map screen.

If the task has already been activated the button will read **REACT**. This is used to activate changes made to the task after the first activation.

Achieved turnpoints in the active task will be shown with a line through the name.

If you are currently in-flight, you will be asked if you wish to make a “New Flight” or “Continue” with the current flight.

- Selecting a new flight will terminate the current flight log and start another.
- Selecting to continue will continue with the current flight log, but not record the new task in the flight log.2)

See the Flying a Task section for more information.

1) **Note** : by declaring the task to an IGC logger, the information from the IGC Information screen is written to the logger as well. Be sure that information like pilotname, registration, glider type etc. is correct. Otherwise the taskdeclaration might be invalid ..

2) This is done to ensure only the first task declaration will be recorded in the flight log file. This is to confirm the IGC requirements.

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- Flying A Task
 - ◆ Related Pages

Flying A Task



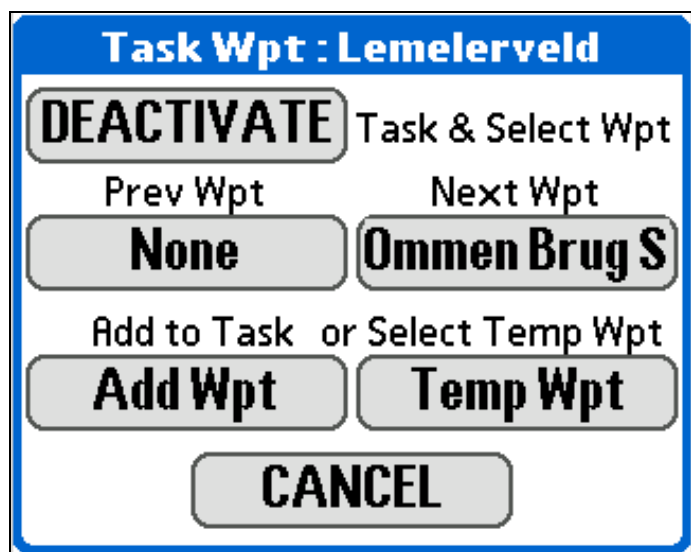
SoarPilot helps the Pilot during the task by keeping track of the waypoints in the task, and directing the Pilot to each one in turn. You must log at least 2 GPS fixes in a sector, cylinder or crossing a line to trigger a valid turn and move to the next turnpoint in the task.

It also provides estimates of the time to reach each turnpoint, and to complete the task.

On the Final Glide screen you can also see the height required to complete the remaining portion of the task in the Final Glide Around remaining turnpoints field (FGA).

SoarPilot will move to the next waypoint in the task automatically when the Pilot flies into the sector defined for the Start, each Turnpoint and the Finish. There will be a beep to indicate the turnpoint has been achieved. The type of sector is selected on the Task Settings screen.

Or the Pilot can decide to change the active task waypoint by pressing the *Calc* silk screen button. This will bring up this dialog box.



The description of each option can be found [here](#).

Related Pages

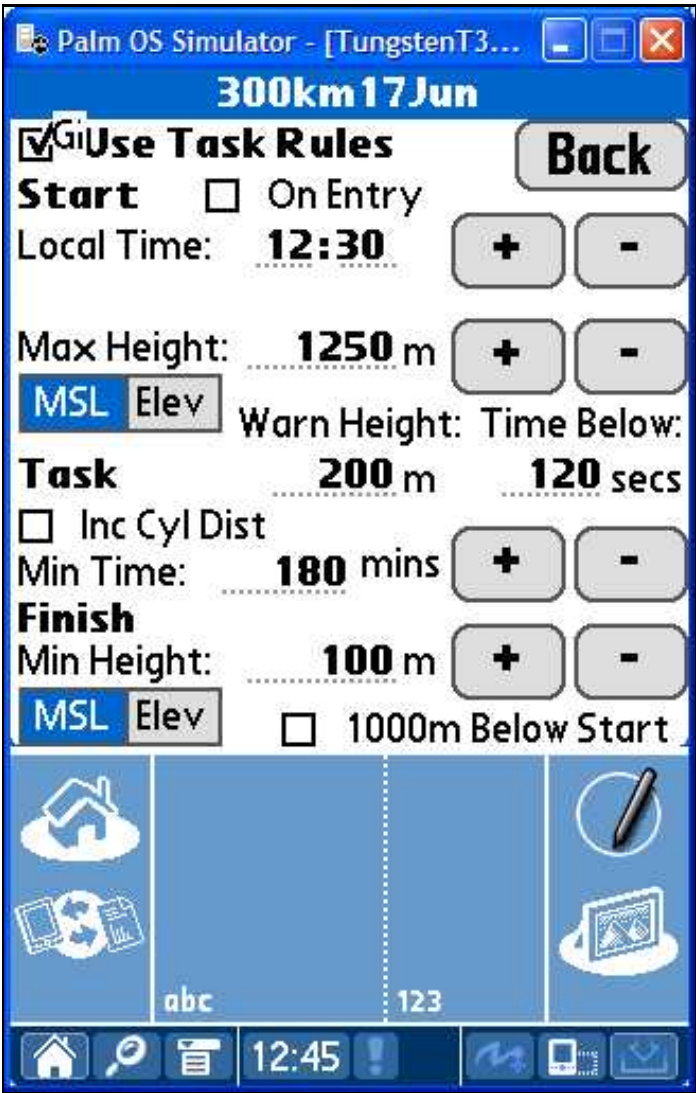
- [Creating A Task](#)
- [Activating A Task](#)
- [Task Rules](#)
- [Using Control Points](#)
- [Assigned Area Tasks](#)
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- [Task Rules](#)
 - ◆ [Start Rules](#)
 - ◆ [Duration of Task](#)
 - ◆ [Finish Rules](#)

Task Rules

This screen is accessed from the Task Edit Screen by tapping the **Rules** button.



The Task Rules screen is accessed by tapping the new “Rules” button on the Task Edit screen. You can decide to active the task rules by checking the *Task Rules Active* box.

The purpose of the Task Rules screen is to ensure you meet any rules set in a competition for start time and height, or length of task (typically in an assigned area task). Or to ensure you do not loose more then 1000m from your start height to avoid any distance penalty in an FAI distance task.

The “+” and “-” buttons next to the main values can be used to increase or decrease a value for a particular rule. Note: Warn height and Time Below cannot be changed in this way. These rules are unlikely to change in flight, in a competition, start time / height and length of task may change after launch.

Button	Function
<i>Calendar</i>	Earlier Start Time
<i>Phone</i>	Later Start Time
<i>Page-Up</i>	Increase Maximum Start Height
<i>Page-DOWn</i>	Decrease Maximum Start Height
<i>Todo</i>	Increase Minimum Task Time

If you attempt a start that breaks these rules, a warning will popup. You can close the warning by tapping in the window or the **OK** button. Alternatively you can tap the **Force** button to start the task anyway.

The rules below will then be activated for that task once it has been activated. The rules are

The option “Inc Cyl Dist” is to include or exclude the distance from the edge of a start/turn/finish cylinder to the waypoint in the total distance calculation.

Start Rules

- On Entry - This option will consider the task started on entry (rather than exit) of the start cylinder or FAI sector. (This option has no effect for a line or arc start type)
- Local Time - This sets the earliest time you are allowed to start the task. This is in local time, depending on the time set in your Palm. A zero value turns this rule off.
- Start Height - Sets the maximum start height allowed for a valid start. A zero value turns this rules off.
- Warn Height - When you are within this height of your start height, and again if you are over your start height you will receive a warning if you have not started the task already. A zero value turns this rules off.
- Time Below - Sets the time you need to be below the max start height before starting for a valid start. A zero value turns this rules off.

If the task rule of earliest start time is being used, the time to go before the start mins:secs) is now displayed as a count down above the direction arrow on the Final Glide screen, and at the top centre of the Moving Map screen. “Start!” will be displayed if the starting time as passed.

Duration of Task

- Task Time - Sets the minimum task time, used in assigned area tasks. A zero value turns this rules off. If you are predicted to arrive too early, the **TOT** fields on the Flight Info and Waypoint Sector screens will be inverted.

Finish Rules

- Finish Height - Sets the minimum finish height, this will update all your final glide calculations to arrive at the finish at this height. A zero value turns this rules off. This height is always added to your finish point elevation.
- Final Glide to 1000m Below Start - sets the finish height to be 1000m below the start height. This is useful when completing FAI distance tasks to avoid any distance penalties. If the finish point is less than 1000m below the start height, no change is made.

If either of the finish height rules are used, the finish point elevation will be calculated when you start the task. The original elevation of the finish point will be shown on the Final Glide screen in brackets next to the current waypoint elevation.

The heights can be either **MSL** or when the **Elev** box selected the heights are relative to the start or finish point elevation.

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- Using Control Points
 - ◆ Control Points in a Task
 - ◆ Control Points in an Assigned Area Task

Using Control Points

Control Points in a Task

Control points in the task can be set by double tapping in the waypoint type on the Task Edit screen. Only waypoint type “T” for turnpoint can be set to a control point. The takeoff, start, finish, landing and area points cannot be set as control points. The leg distance to the control point is ignored.

The task distance is from the turnpoint before the control point(s) to the turnpoint after. Control points are excluded from the task distance, task declaration and FGA (Final Glide Around all turnpoints) calculation.

You can choose if the legs to and from the control points are shown on the Moving Map screen by the **Control Lines Visible** option on the Task Settings screen.

Control points will be considered rounded and the program move to the next waypoint when you pass a line perpendicular to the task leg, running through the control point. Or of course you can go to the next waypoint at any time by tapping the **Cse:** button on the Final Glide or Moving Map screens and Select another Waypoint.

Control Points in an Assigned Area Task

Control points are used when flying assigned area tasks to give the pilot information of the Minimum, Target and Maximum distance points in the area.

When approaching an area, the control point is set to the Minimum distance point. When entering the area, the control point is set to the Target point in the area, until you achieve this distance or better, then the control point is set to the Maximum distance point.

Note: The exact sequence of control points depends on the **AAT: Update Legs** option on the Final Glide Settings screen and is described here.

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- Assigned Area Tasks
 - ◆ Related Pages

Assigned Area Tasks

An Assigned Area Task (or AAT) is a task where the exact turn-point can be chosen by the Pilot in flight within a defined area. The Pilot must fly through each defined area in order, and be in the air for the specified minimum task time or more. If the Pilot lands early the task time is taken to be the specified minimum task time. The object of the assigned area task is to record the fastest speed. The speed is the distance flown divided by the time taken, or the minimum task time if the Pilot arrived early.

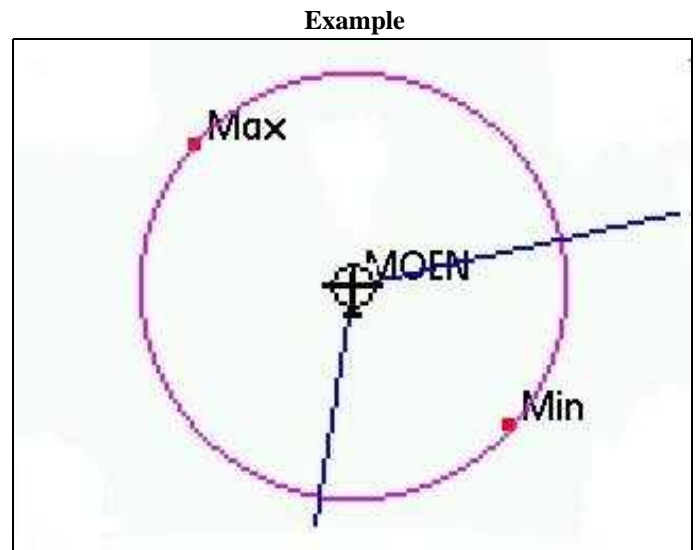
This link show a good example of an assigned area task.

AAT are often used in competitions when the soaring conditions are not certain, so allowing the Pilot to maximise the conditions actually found on the task. They require a certain amount of planning by the Pilot to avoid arriving early, or not making it back, and to achieve the best speed possible.

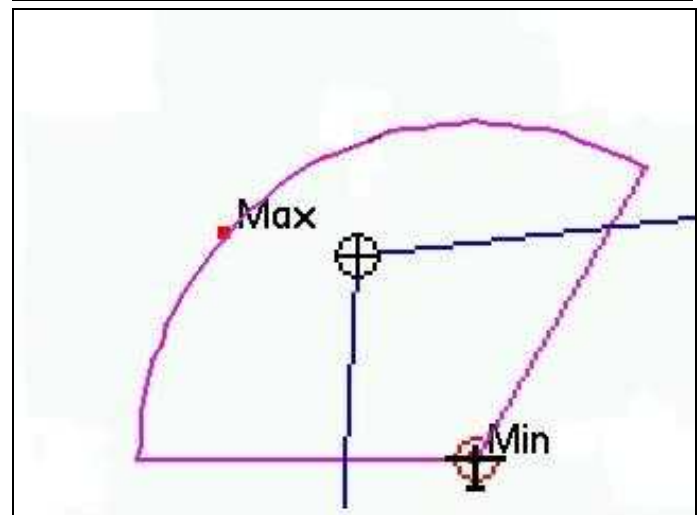
Areas are defined with relation to a specified waypoint and can be a:

Area Type

Circle - Defined by a Max Radius



Sector - Defined by a Max Radius plus Start and End Bearings



Part Sector - Defined by Max and Min Radii plus Start and End Bearings

Creating An Assigned Area Task

The task is created in the Task Editor as normal, adding the reference waypoint to be used by each area.

To create an area, you must tap on the **Area** button in the waypoint types.

Task Waypoint Edit

Name: **KELL**

In: **Active Task** Elev: **535 m**

Dist: **106.4 km** Bearing: **192 °**

Airport	Turn	Land	Mark	Thrml
Area	Start	Finish	Home	AirLnd

Radial1: **000 °** M Radial2: **000 °** M

Max R: **5.00 km** T Min R: **0.00 km** T

Remark: **Kell**

Lat: **49:37.300N** ddd:mm.mmmmc

Lon: **006:50.416E** ddd:mm:ss.ssc

Save **Quit** **View**

You can then edit the start bearing (**Radial1**), end bearing (**Radial2**), maximum radius (**Max R**) and minimum radius (**Min R**). In the case above this is a 5km radius circle centred on the waypoint Kell.

To define a circle make sure the **Radial1** and **Radial2** are the same value.

You can see examples of the different areas in the Introduction page to this section.

Tapping the **Save** button will save these changes and return the to Task Editor where you will see the waypoint now marked with a “A” for Area.

KELL 192° 106.3 A

Tapping the **Quit** button will return to the Task Editor without saving your changes.

Tapping the **View** button will bring up the Waypoint Sector screen where you can check the area, and plan for the task ahead.

Related Pages

- Planning an Assigned Area Task
- Flying an Assigned Area Task

Table of Contents

- Planning an Assigned Area Task
 - ◆ Waypoint Sector Screen
 - ◆ Related Pages

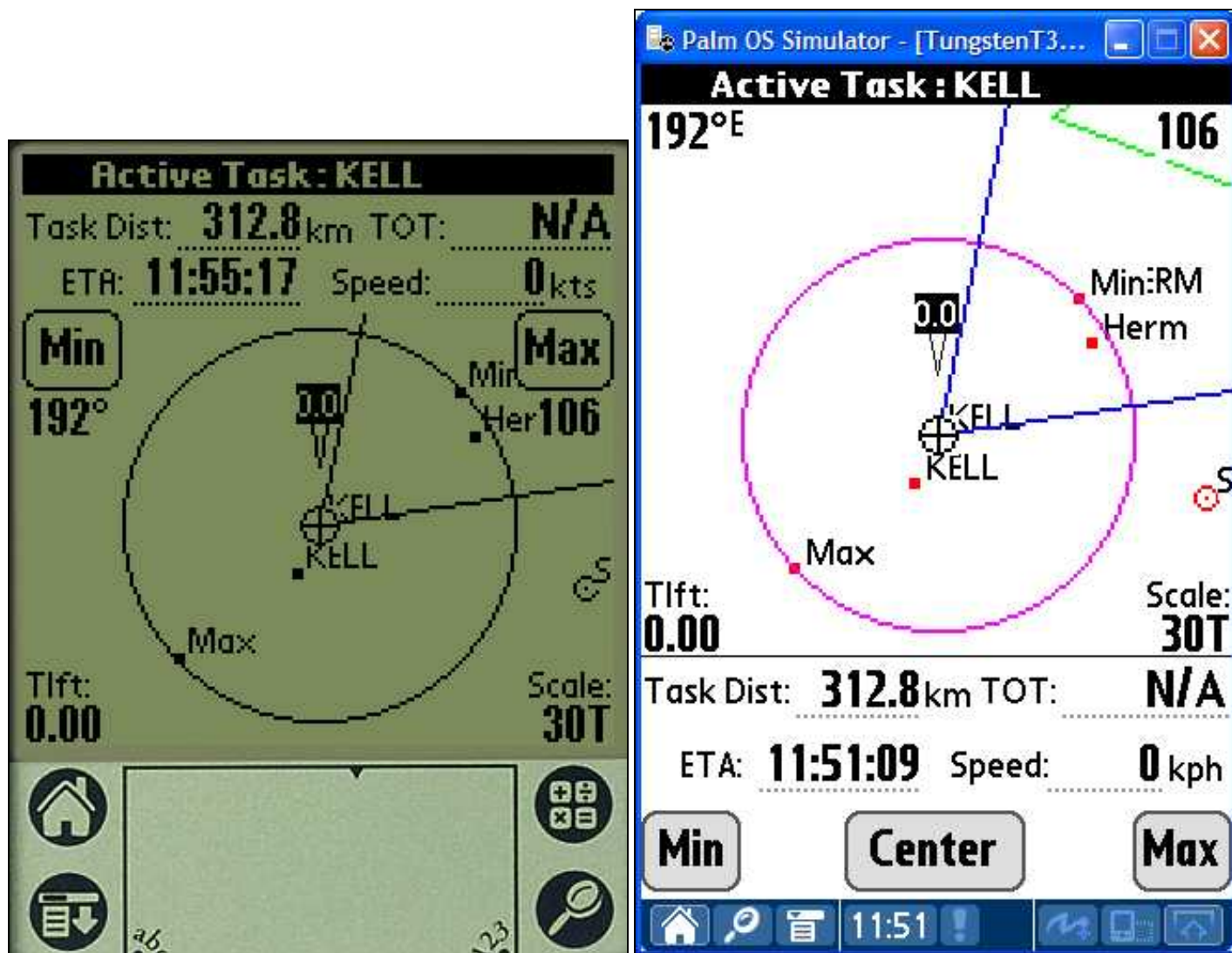
Planning an Assigned Area Task

A certain amount of planning is required to judge the weather conditions, decide what cross-country speed you think you can achieve and set a target distance to fly into each area.

The Waypoint Sector screen below, will allow you to move your target points in each area to adjust your expected total task distance, and based on your expected task speed from your MC value, plan how far to go into each sector.

In general, you want to make sure you go deep enough into the first area to ensure you don't arrive early if the weather improves, and plan to be starting your final glide not before the minimum task time.

Waypoint Sector Screen



This screen can be accessed by tapping the direction arrow box on Final Glide screen, top left corner on Moving Map screen, (both only when active task, goes to active waypoint) and **View** button on Task Waypoint Edit screen. The left example above is for a PDA that has an unchangable silkscreen button area. The right example is from a PDA that has a Dynamic Input Area (DIA). In this case, the additional area normally occupied by the silkscreen button and input area is lowered. The task-related information is then moved down into this area to provide better map clarity.

Pressing the **Calendar** or **Phone** buttons will display the previous or next waypoints. You cannot display a waypoint before the active waypoint if a task is active.

This screen zooms in on the waypoint sector and gives you information on the total task distance and estimated time on task (**TOT**) based on your average speed. If you have set a minimum task time in the Task Rules screen and the predicted time on task is shorter than this, the **TOT** field will be highlight.

If you are flying an active task, this speed and **TOT** is based on your MC setting and your average speed on the task so far. Also displayed is the estimated time of arrival (**ETA**) at the active waypoint.

If you are not viewing the active task, then the screen calculates your task speed using your MC setting for the expected thermal strength. You can use this to set your expected thermal strength and therefore average task speed. The **ETA** has changed to an estimated time elapsed (**ETE**) calculation and gives the expected time elapsed to reach the waypoint following the task.

Note: if your MC setting is zero, N/A will appear in the **TOT** and **ETA/ETE** fields as it is not possible to stay airbourne with a thermal strength of zero!

If an area waypoint is displayed, you can move the target point within the area by tapping the 4 edges of the map area. The map scale and map orientation keys work as per the Moving Map screen.

You also have a **Min** and **Max** button, which will move your target point to the min or max distance in the sector.

If you are currently in-flight, viewing the active area, and your glider is in the area, tapping the centre of the screen moves your target point to the current glider position.

Tapping the centre of the screen (or the **Center** button if displayed) when you are not viewing the active area will move your target point to the centre of the area.

Changing the target point changes the task distance and the expected **TOT** and **ETA/ETE**. This allows you to do some task planning on a fixed time task and determine how far to fly into each sector.

Related Pages

- [Creating an Assigned Area Task](#)
- [Flying an Assigned Area Task](#)

Table of Contents

- [Flying An Assigned Area Task](#)
 - ◆ [With the AAT: Update Legs option ENABLED](#)
 - ◆ [With the AAT: Update Legs option DISABLED](#)
 - ◆ [Related Pages](#)

Flying An Assigned Area Task

SoarPilot has some features designed to help the Pilot when flying an assigned area task.

The **AAT: Update Legs** on the Task Settings screen has an important effect on the information displayed. See the 2 sections below for the differences.

To see the next waypoint information on the Final Glide or moving Map screens the **Next Wpt Info** option must be set to “ALL” or “CTL” on the Final Glide Settings screen.

On the Moving Map screen, under the distance values in the top right corner, a label will be displayed to tell the Pilot which control point in the area is indicated. They are

- “Min” - For the Minimum distance point
- “Max” - For the Maximum distance point
- “Tgt” - For the Target point

The information is designed to help the Pilot decide when to turn in each area to achieve a good distance and speed score.

During the time you are in an area, the Task Distance (**Dist**) and Time on Task (**TOT**) fields on the Waypoint Sector and Flight Info screens are updated with the latest distance scored in the area. So initially you will see the task distance and time on task reduce as you have just entered the area, then you can fly as deep into the area as required until the distance and time on task are at the required values.

With the AAT: Update Legs option ENABLED

Approaching the Area

- The main waypoint points to the Target point set-up during the planning stage.
- the next waypoint points to the Minimum distance point of the area.

Entering the Area

- At the point of entry into the area the Target point will “jump” to the entry point and follow the glider’s position in the area.
- The main waypoint points to the next turnpoint (or target point in the next area) so you can always see the direction to leave the area.
- The next waypoint points to the Maximum distance point of the area.
- The Target point continues to follow the glider until the distance scored in this area reduces. At this point the Target point remains fixed at the maximum distance scored. The next waypoint now points to the Target point.

Leaving the Area

- The main waypoint points continues to point to the next turnpoint (or target point in the next area)
- The next waypoint points to the Minimum distance point in the next area, if there is one.

With the AAT: Update Legs option DISABLED

Approaching the Area

- The main waypoint points to the Target point set-up during the planning stage.
- the next waypoint points to the Minimum distance point of the area.

Entering the Area

- The main waypoint points to the next turnpoint (or target point in the next area) so you can always see the direction to leave the area.
- The next waypoint points to the Target point in the area (set at the planning stage)
- If you continue to fly into the area, once you achieve a scoring distance greater than the Target point, the next waypoint points to the Maximum distance point of the area.

Leaving the Area

- The main waypoint points continues to point to the next turnpoint (or target point in the next area)
- The next waypoint points to the Minimum distance point in the next area, if there is one.

Related Pages

- Creating an Assigned Area Task
- Planning an Assigned Area Task

Flight Logging

SoarPilot can act as a flight logger when connected to a GPS. These logged flights can be exported to so called IGC files for later analysis using programs like SeeYou or CouTraCi (see Links page) or uploading to the Online Contest (OLC) server.

Because of the requirements, SoarPilot is **not** an approved IGC logger and it's not likely it will ever become one, see this FAQ, however SoarPilot is since 2006 on the list of "Approved Software" of the OLC.

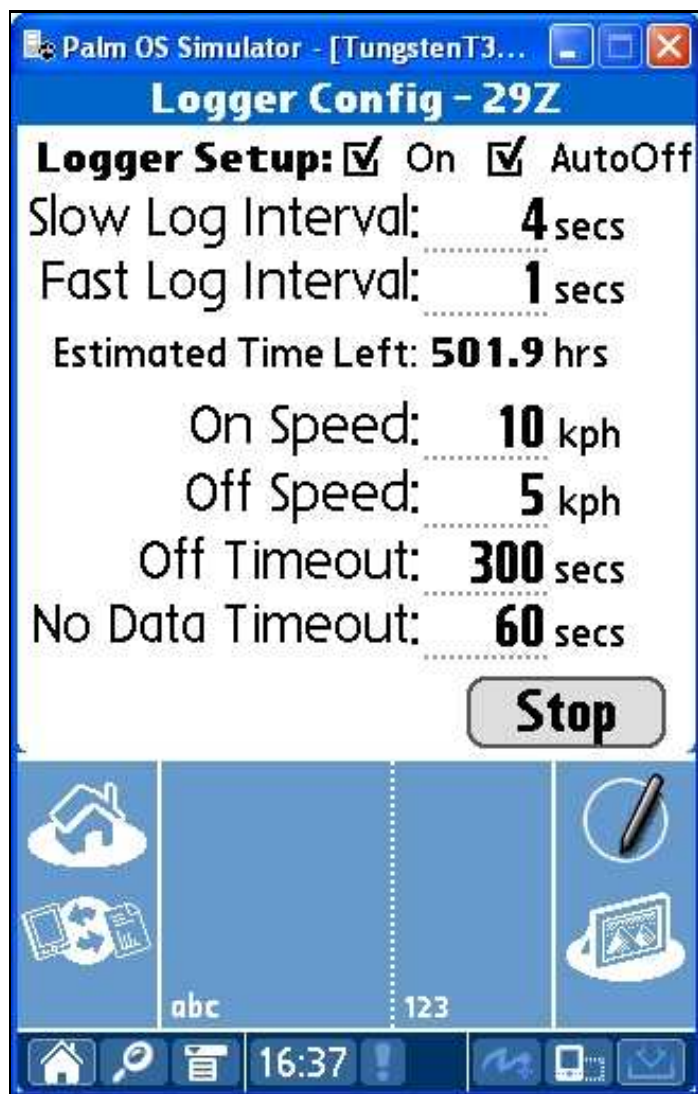
- Flight Logger Configuration
- IGC information setup
- Flight/Task Info Screen
- Exporting the Flight Log

Table of Contents

- Flight Logger Configuration
 - ◆ Wave Flying

Flight Logger Configuration

This screen as accessed from the “Settings Menu”



Option	Description
<div> <div> </div> <div> On </div> </div>	When this option is checked the logger is enabled
<div> <div> </div> <div> AutoOff </div> </div>	When this checkbox is enabled the logger will auto shutoff when the speed has dropped below the Off Speed as set below. When not checked the STOP button must be used to close the log file.
Slow Log Interval	This is the normal log interval when not thermalling. Don't set it too fast as it may increase the logger database for long flights beyond the available memory of your Palm. The default of 4 secs is a good starting point.
Fast Log Interval	This is the interval when in a thermal. Default of 1 sec is fine in most cases.
Estimated Time Left	This estimates the maximum length of log file that can be created with the amount of free memory in the Palm device. 1)
On Speed	This is the speed to fly to start the logger recording your flight
Off Speed	When AutoOff is checked this speed setting is used to close a flight, also see next setting.
Off TimeOut	The speed must be below the Off Speed for this period of time to close the flight.
No Data Timeout	When no data is received from the GPS for this period of time, the flight is closed.

If you have a C302, C302A, ReCo, GPSNAV or Flarm configured in the **Comp** field on the NMEA/Port Settings screen, then an additional button is visible on the bottom left of the screen which allows you to set various logger specific items.

Wave Flying

In order to keep the flight log contiguous while flying in wave, it is suggested that you turn off the *AutoOff* option. Otherwise the logger may stop if the gliders ground speed drops below the **Off Speed**. An alternative would be to leave *AutoOff* enabled but set the **Off Speed** to a small value (ex. 3-5 knots) and the **Off Time** to a larger value (several minutes) using the assumption that the glider will never be completely setting still especially over a long duration. That way the logger will still stop once you get on the ground and sit still for a while.

1) In addition a startup check is performed and a warning displayed if there are less than 5 hours remaining
Table of Contents

- Flight/Task Info Screen
 - ◆ Flight Info:
 - ◆ Task Info:
 - ◆ Glide Ratios:
 - ◆ Flight Display Buttons:

Flight/Task Info Screen

There are three parts to the screen. Everything from the words “Flight” to “Task” is information related to the overall flight. Everything from the “Task” label down to either the “Glide Ratios” label or the view buttons (depending on whether the logger is active or not) is related to any task assigned to this flight. Finally the bottom of the screen will show either Glide Ratio values if the flight logger is active or it will show the “Baro”, “% Thermal” & “Map” buttons.

Flight Info:

Flight / Task Info

Flight: ▼ Current

Start: 11:23:51 Stop: 11:48:50

Time: 00:24:59 Max Alt: 893m

%Thrml: 13.6 TerElev: N/A m

Task: Dist: 0.0 of 0.0 km

Start: 00:00:00 Stop: 00:00:00

MSL: 0 m TOT: 00:00:00

Elap: 00:00:00 Speed: 0.0 kts

Baro

%Thermal

Map

If the logger is active, the drop down list will not be active. The Start time will be the time that the current flight started, the Stop time will update with the current time and the “Time” field is the current duration of the flight. Max Alt is the updated with the highest altitude value of the flight. %Thrml shows the percentage of the entire flight that you spent thermalling. Finally, if there is terrain data loaded for the location that you are flying in then the TerElev value will show you the current ground elevation. If there isn’t and terrain data loaded or you have flown out of it’s coverage, the field will show a “N/A” value.

If the logger isn’t active, the drop down list will then be active. In this case, with the exception of the terrain elevation value, the values displayed will be for the overall. You can then switch between the various logged flights to view their information.

Task Info:

The information in this are shows current task-related information if the logger is active.

Field	Description
Dist	Show how much of the total task distance you have accomplished
Start	Shows when the current task was started
Stop	Shows the current time if the task is actively being flown (and the logger is still active). If the logger is stopped, the value shows the time you completed the task or the flight stopped, whichever came first.
MSL or Elev	Shows the altitude at the point the task was started
TOT	Shows the estimated Time On Task. ie. The expected time to complete the task. If you have set a Min Task Time in the Task Rules screen and you are predicted to be early, this field will be highlighted

- Elap** Shows how long you have been flying the task
- Speed** Shows the current overall speed for the assigned task. If the logger isn't active, then the values displayed are the final values for the assigned task. Tapping this field will change the units

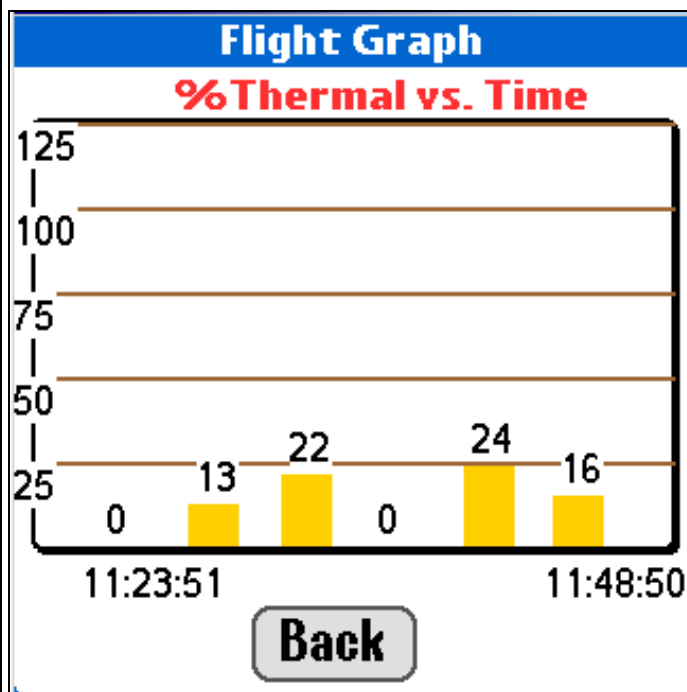
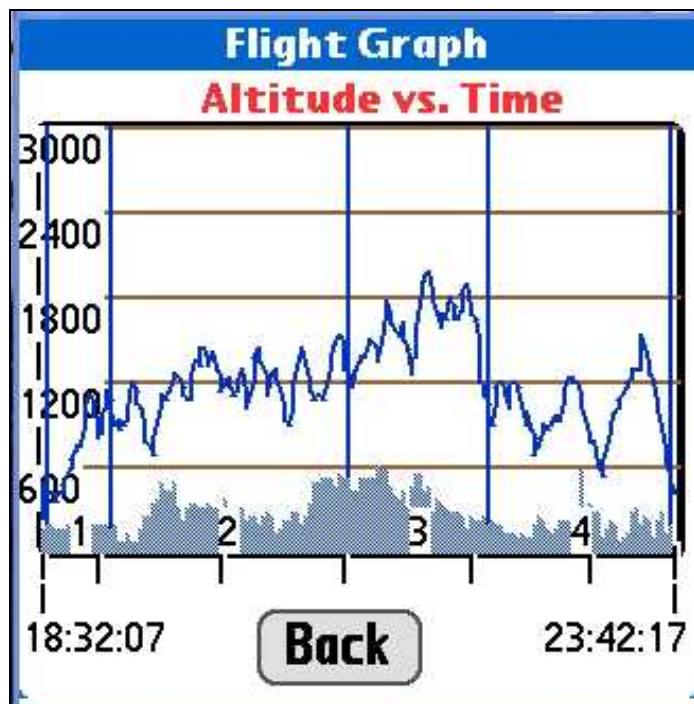
Glide Ratios:

These values show various calculated glide ratio or L/D values. They are of particular interest to the paragliding community. The "Rest" text on the screen can be touched to reset the current calculations for these values at any time. I hope that other people more knowledgeable about these values will provide more detail here.

Flight Display Buttons:

These buttons ONLY become active when the logger is not active. This is done on purpose as there is no reason for them to be displayed while flying.

- **Task** - This button displays the task declared and stored in the flight log. This is read-only and cannot be modified. You can however, copy the task (once) to the task database and edit and re-use it there.
- **Baro** - This button displays the standard altitude vs. time display showing the altitude profile of the flight, and the grounded level 1). If no task is active, it shows just the flight altitude profiles. If a task was assigned for the selected flight, vertical lines will be drawn to indicate when each task turnpoint was marked as accomplished. The tick marks on the horizontal time axis mark each hour. Press the "Back" button to return to the Flight/Task Info screen.
- **% Thermal** - If no task is assigned to the selected flight, this will break the flight into six parts and then display a bar graph indicating the percentage of that period that you spent thermalling. If a task is assigned, each bar will represent each task leg. Press the "Back" button to return to the Flight/Task Info screen.
- **Map** - This button will display the entire flight in a map representation. As with the normal moving map, the PageUP and PageDown hardware buttons can be used to zoom the in and out. The arrows on the sides of the screen can be used to move the center of the map around so you can see the flight. If a task was assigned to the selected flight, it will also be displayed on the moving map. To return to the Flight/Task Info screen, touch the "Home" silkscreen button.



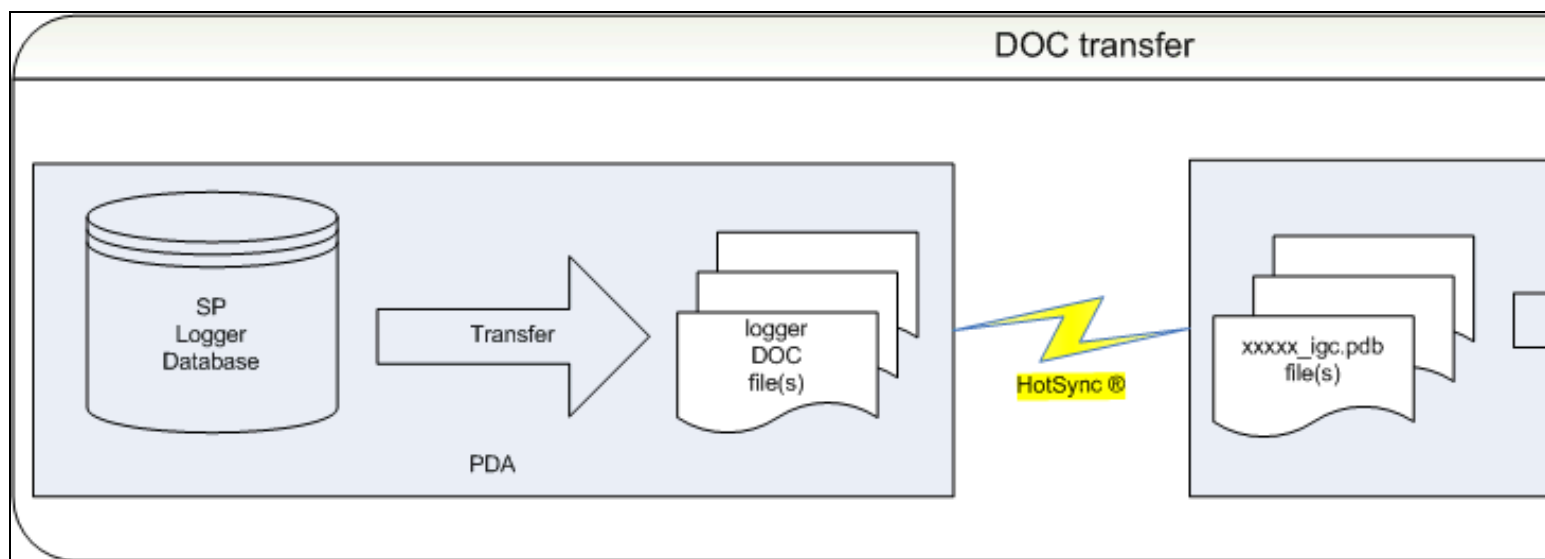
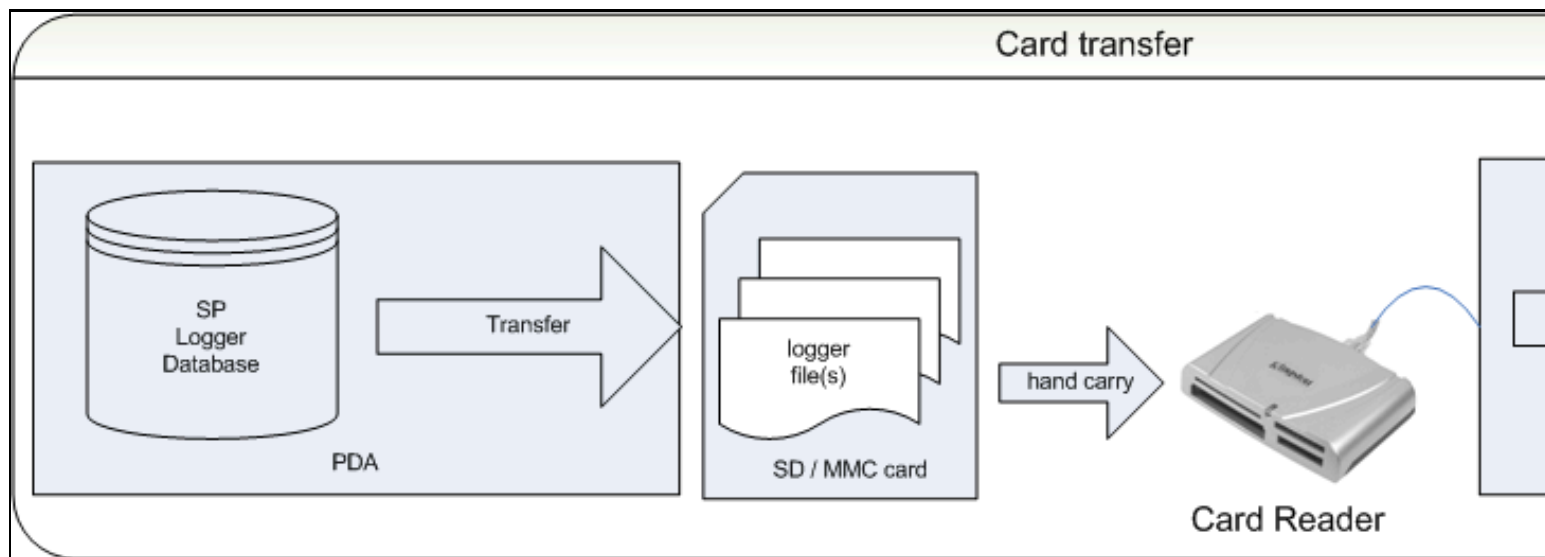
1) provided you have a terrain database loaded

Saving/Exporting The Flight Log

This section describes methods to export the flights from SP to IGC files so you can f.i. analyze your flights with SeeYou or upload to the OLC server. IGC is a file format defined by the International Gliding Commitee (IGC) as described in this PDF document.

There are several methods to get your flights out of SP, but I will discuss only the Card, DOC and SPTerm methods here.

- Card method
- DOC method
- SPTerm method



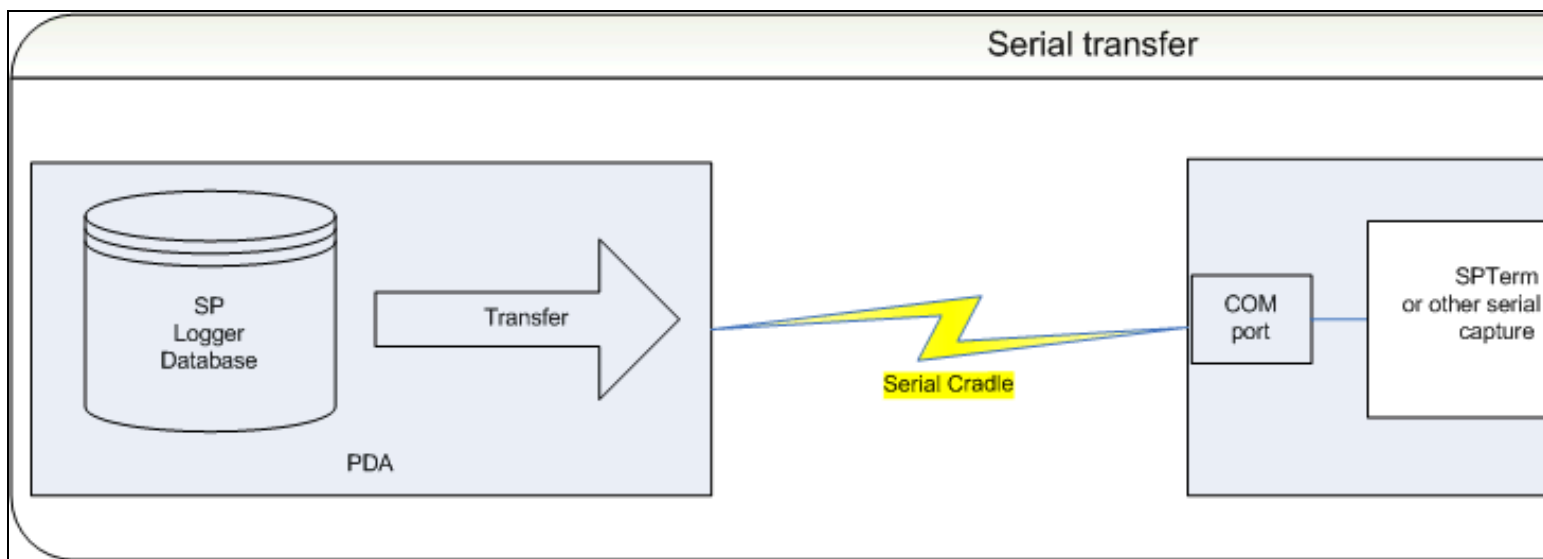


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- ♦ Special Use Airspace
- ♦ Related Pages

Special Use Airspace

SoarPilot has support for Special Use Airspace or SUA for the Moving Map display. Since version 2.0 a SUA warning system has been implemented¹).

Features

- SUA import via Transfer screen
- SUA list editor to activate/deactivate a SUA area
- Configurable SUA for both Moving Map display and SUA Warning

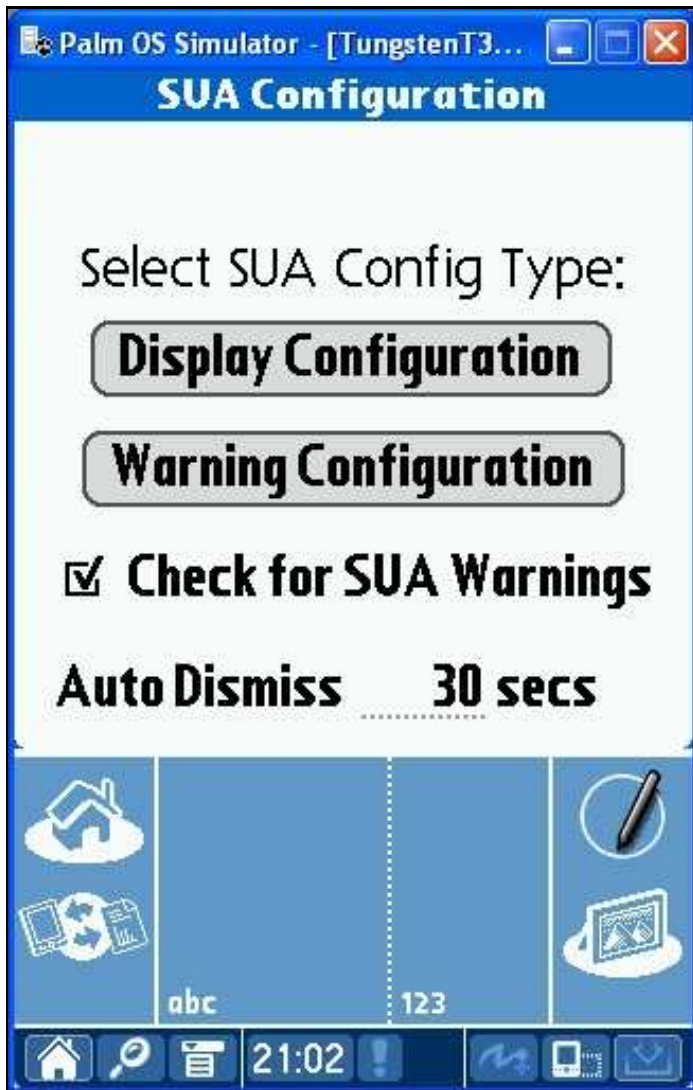
Related Pages

- Load SUA Data
- SUA List Editor
- Displaying SUA items on the Moving Map
- SUA Warnings Setup
- General Warning Order and Display

1) Make sure to read the disclaimer

SUA Warning & Display Settings

This page is accessed from the “Settings” menu.



You can select one of the main buttons to go to

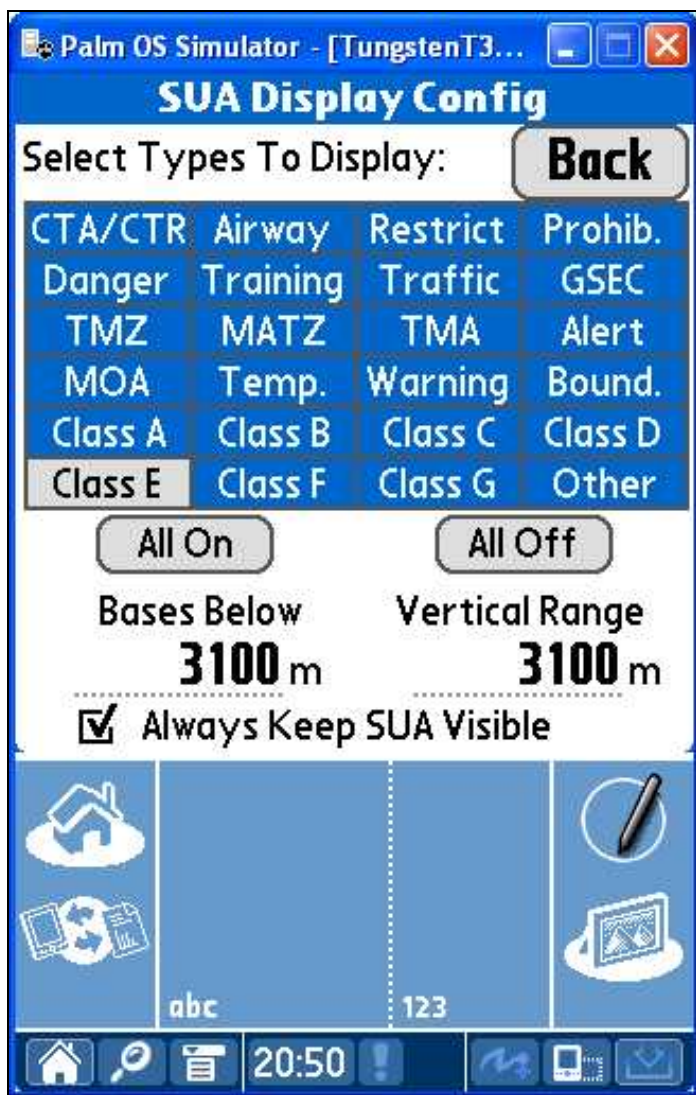
- Display Configuration
- Warning Configuration

The **Check for SUA Warnings** option controls if checks will be made for SUA warnings or not. This is a master switch to any options on the Warning Configuration page.

The **Auto Dismiss** field is used to set a time to automatically dismiss SUA and other warning screens without interaction from the Pilot.

Displaying SUA items on the Moving Map

This page is accessed from the SUA option on the “Settings” menu, and tapping the **Display Configuration** button.



This page controls which SUA items are displayed on the moving map page. You can select the SUA items by type in the grid, or by altitude.

- Bases Below - Will display only SUA items with a base below the altitude specified.
- Vertical Range - Will display only SUA items are are within this altitude (above and below) from your current altitude.
- Keep SUA Visible - On slower Palms with OS 4 or earlier, this option controls is SUA items are displayed on the moving map when it is in thermal mode. It is also used on all Palms to control if SUA items are shown on the View Waypoint Sector screen.

Table of Contents

- ♦ SUA Warnings Setup
- ♦ Disclaimer!

SUA Warnings Setup

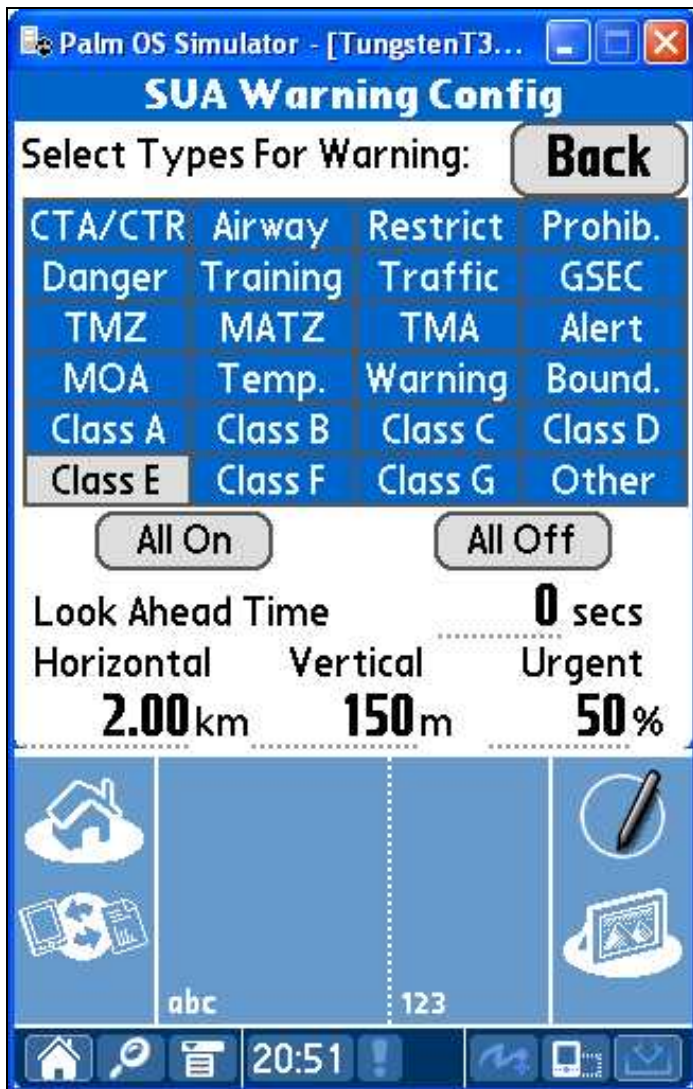
Soaringpilot supports both visual and audible SUA Warnings.

Disclaimer!

Especially with regard to airspace, the pilot must carry an up-to-date map showing the airspace, and must obey the rules and regulations in force at the time of the flight. It is also the pilot's responsibility to ensure the SUA data loaded into Soarpilot is accurate.

If you are travelling fast, you may enter airspace without being warned, particularly if you are using an older, slower palm PDA with extensive/complex SUA data, as not all the SUA items maybe checked in time!!! It is the pilot's responsibility to be aware of airspace at all times, and not rely totally on SoarPilot to provide warnings.

This page is accessed from the SUA option on the "Settings" menu, and tapping the **Warning Configuration** button.



Soarpilot includes SUA warnings based on horizontal and vertical separation from SUA items, as well as a prediction of the gliders position after a set time. Note: using the Look Ahead Time option will double the number of SUA checks to be made, and therefore it will take longer for a complete sweep of the SUA database to be done.

The horizontal distance units will use the distance units setting on the Units configuration page. The vertical height units will either be feet or meters and are also dependant on the distance units setting. If you have Statute or Nautical miles selected, the units will be in feet. If you have kilometers selected, it will be in meters. In addition, there is an Urgent parameter. This parameter controls at what percentage of the original warning distance / height you will receive an urgent reminder. If you set this to 0% you will normally only receive one warning before entering airspace.

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- General Warning Order and Display
 - ◆ Warning Display
 - ◆ Warning Priority

General Warning Order and Display

Warning Display

If you are within the horizontal distance and/or vertical height set from an SUA item you will receive an NON-URGENT warning informing you that you are near an SUA item. A single tone will sound and a dialog box will be displayed with the SUA details.



You can dismiss this warning by tapping the *5 mins*, *1 Hour* or *Today* buttons on the screen or pressing either of the two hardware buttons to the left of the **PageUp/PageDown** buttons or 5-Way navigator (depending on your PDA). These are normally the **Calendar** and **Address Book** buttons. Either one will work. I wanted to make it as easy as possible for your to find the buttons and dismiss the window while flying. In addition you can tap anywhere inside the warning window to dismiss it, until the warning is more serious.

If you are within the Urgent % parameter of the horizontal distance and/or vertical height from an SUA item you will receive an URGENT warning again informing you of your proximity to an SUA item. A three tone warning will sound, and a dialog box will be displayed with the SUA details.



As before, you can dismiss this warning for the time shown in the button on the screen or by tapping anywhere in the warning screen or pressing either of the two hardware buttons to the left of the **PageUp/PageDown** buttons or 5-Way navigator (depending on your PDA). These are normally the **Calendar** and **Address Book** buttons.

If you actually enter the SUA item you will receive another URGENT warning informing you that you are now Inside the SUA item. A three tone warning will sound, and a popup box will be displayed with the SUA details. As before, you can dismiss this warning.

The SUA Warning does not stop all other processing in the program. So, if you do not dismiss a warning and leave it displayed, the program continues to log data, and do other calculations. In addition, if a more urgent warning occurs, the Warning window will be updated with the more urgent information. In addition, you will always get the warning tones for all warnings.

You will only receive warnings as you approach and enter the airspace, but not as you fly away from the SUA item. If you return and approach the same SUA again you will receive warnings again, as long as it is after the time you dismissed the previous warning for this item.

Warning Priority

There are various levels of SUA warning, and these are in the following priority order. If a higher priority warning occurs while another warning is displayed, the higher priority warning updates the warning dialog.



LOWEST Priority

Non-Urgent Warnings

Warning Type	Description
APPROACHING	At the present course and speed (and altitude) you will be inside the airspace in the number of seconds specified in the Look Ahead Time field on the SUA Warnings Setup screen
NEAR BELOW	Below the airspace and horizontally near it
BELOW	Directly below the airspace and vertically near it
NEAR ABOVE	above the airspace and horizontally near it
ABOVE	Directly above the airspace and vertically near it
NEAR	Within the altitude limits of the airspace and horizontally near it

Urgent Warnings

Warning Type	Description
URGENT NEAR BELOW	Below the airspace and horizontally <i>Very</i> near it
URGENT BELOW	Directly below the airspace and vertically <i>Very</i> near it
URGENT NEAR ABOVE	above the airspace and horizontally <i>Very</i> near it
URGENT ABOVE	Directly above the airspace and vertically <i>Very</i> near it
URGENT NEAR	Within the altitude limits of the airspace and horizontally <i>Very</i> near it
URGENT INSIDE	<i>Inside</i> the airspace - be sure you are allowed to be!



HIGHEST Priority

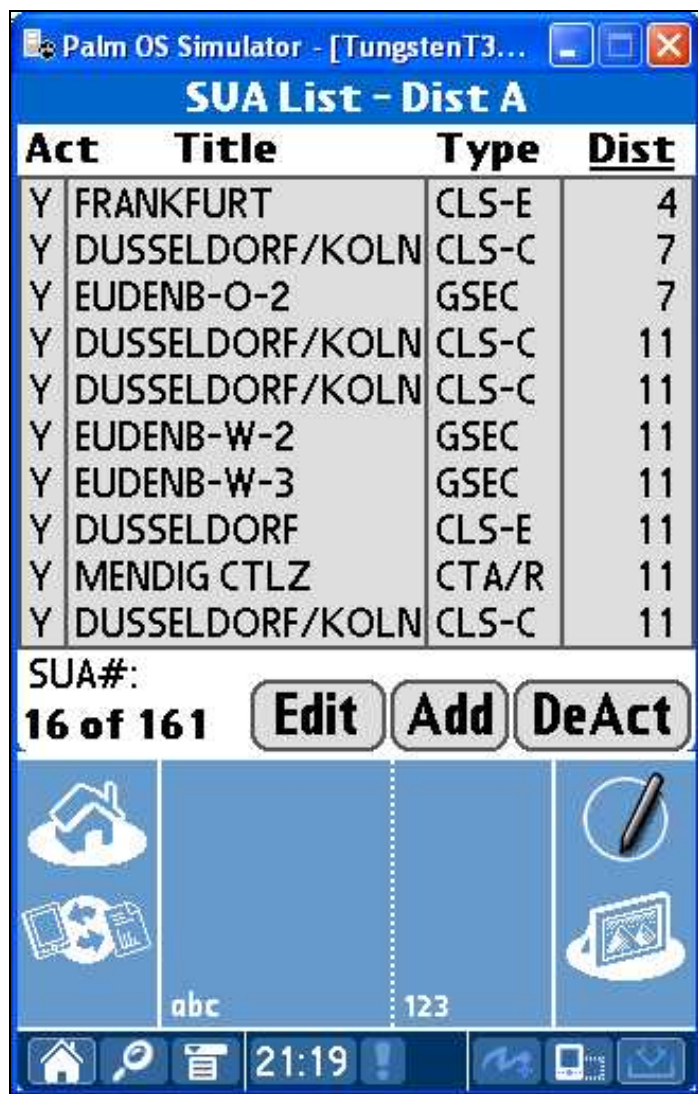
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- SUA Item List and Display
 - ◆ The SUA List Screen
 - ◆ The SUA Item Edit Screen
 - ◆ Adding Manual Temporary Flight Restrictions (TFR's)

SUA Item List and Display

This is accessed from the “Navigation” Menu.

The SUA List Screen



Act	Title	Type	Dist
Y	FRANKFURT	CLS-E	4
Y	DUSSELDORF/KOLN	CLS-C	7
Y	EUDENB-O-2	GSEC	7
Y	DUSSELDORF/KOLN	CLS-C	11
Y	DUSSELDORF/KOLN	CLS-C	11
Y	EUDENB-W-2	GSEC	11
Y	EUDENB-W-3	GSEC	11
Y	DUSSELDORF	CLS-E	11
Y	MENDIG CTLZ	CTA/R	11
Y	DUSSELDORF/KOLN	CLS-C	11

SUA#: 16 of 161

Edit **Add** **DeAct**

abc 123

21:19

This screen lists all the SUA items loaded into SoarPilot. It can be sorted by tapping on any of the headings. If you tap the same heading again, it will be sorted in descending order.

The distance displayed is the shortest distance to the SUA item. This takes some time to calculate, so there maybe a short pause while opening this screen as the program calculates the distance for each SUA item from your current position.

Tapping the **SUA#: 16 of 161** changes if just the selected SUA item is affected by the **Deact** or **Act** button, or if all SUA items should be affected

The **Edit** button opens the selected SUA item in the SUA Item Edit screen below.

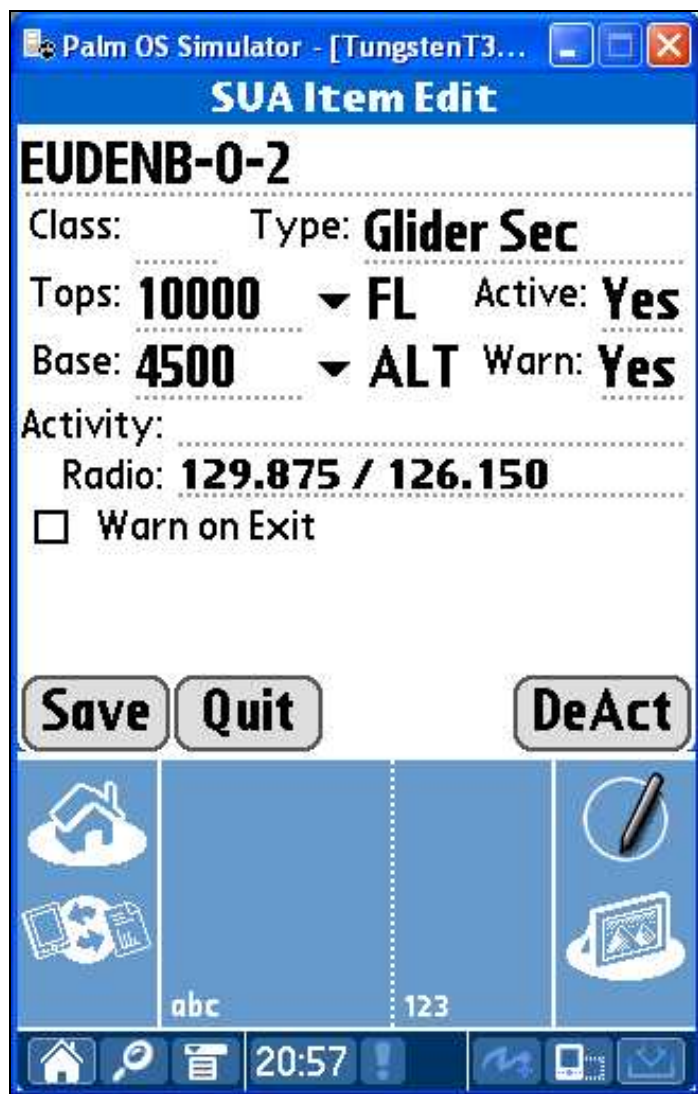
The **Add** button opens the SUA item display screen to add a Manual Temporary Flight Restriction.

The **Deact** or **Act** button will activate or deactivate SUA items according to the setting of the **One** or **All** button. (See above)

You can scroll through the list using the following hardware buttons

Button	Function
Calendar	Move one item up in the list. Moving to the previous page if required, but not past the start of the list
Phone	Move one item down in the list. Moving to the next page if required, but not past the end of the list
Page-Down	Move a page up in the list. Or to the last page if at the start of the list
Page-Up	Move a page down in the list. Or to the first page if at the end of the list

The SUA Item Edit Screen



This screen shows the details for a particular SUA Item.

The **Save** button saves any changes made. 1)

The **Back** button returns to the SUA List.

The **Deact** or **Act** button will activate or deactivate the SUA item.2)

Warn On Exit with this option checked, you will be warned as you approach the edges of the SUA item from the inside. (as well as the normal warnings as you approach the SUA item from the outside). This is useful for Wave windows where you must stay within the SUA item as you climb.

Adding Manual Temporary Flight Restrictions (TFR's)

SUA Item Edit

Manual TFR

Class: Type: **TFR**

Tops: **3000** ALT Active: **Yes**

Base: **Surface** SFC Warn: **Yes**

Activity: _____

Radio: _____

☒ Warn on Exit Radius: **5.00** km

Lat: **52:26.442N** ddd:mm.mmmc

Lon: **001:02.818W** ddd:mm:ss.ssc

Save **Quit** **Delete** **DeAct**

abc 123

20:56

You are able to manually add (ie: without having to load SUA data from a file) temporary flight restrictions in the form of a cylinder, centered on a point with a specific radius and height limits.

When viewing a TFR a **Delete** button is available to delete the item.

- 1) Note: you can only change the **Title**, **Activity** and **Radio** fields for a normal SUA item read from an SUA data file.
- 2) This button label will indicate the effect it will have

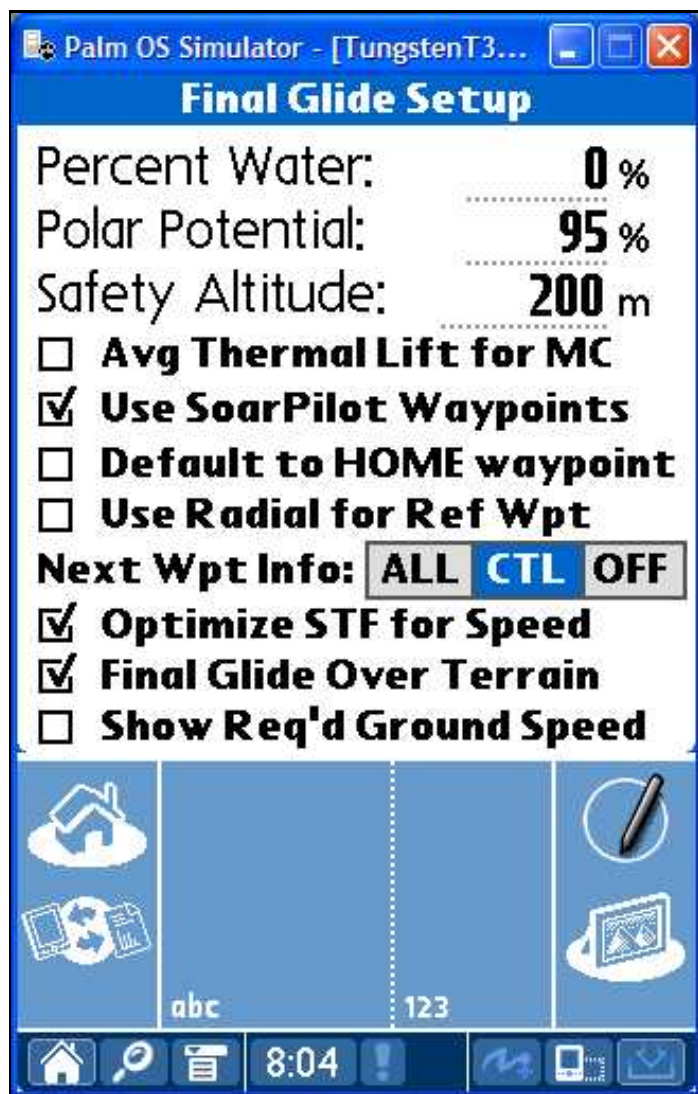
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- Final Glide Settings
 - ◆ Percent Water
 - ◆ Polar Potential
 - ◆ Safety Altitude
 - ◆ Avg Thermal Lift for MC
 - ◆ Use Soarpilot Waypoints

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- ◆ Use Radial for Ref Wpt
- ◆ Next Wpt Info
- ◆ Optimize STF for Speed
- ◆ Final Glide Over Terrain
- ◆ Show Req'd Ground Speed

Final Glide Settings

This screen as accessed from the “Settings Menu”



Percent Water

This value is used to represent the amount of water ballast being carried by the glider. 100% = Full ballast, 0% = None. The effect of ballast is included in the final glide calculations. The amount of ballast allowed is shown on the currently selected Polar page.

This value can be changed by pressing the *Page-Up* and *Page-Down* buttons.

Polar Potential

This value is used to degrade the theoretical performance of the glider. It can be used to allow for dirty or wet wings and other imperfections. A typical value is 95% i.e. 5% performance loss. This is a way of introducing a safety factor in the final glide calculations.

This value can be changed by pressing the *Calendar* and *Phone* buttons

Safety Altitude

This value is used in the calculation of the required altitude (R.Alt) and the delta altitude (D.Alt) These values will display the altitude required to arrive at your target waypoint exactly at the safety altitude. This value is also used when calculating terrain clearance of the Final Glide Over Terrain option is being used.

Note: the Arrival Altitude (A.Alt) value is an exact arrival altitude and does NOT allow for this safety altitude.

This value can be changed by pressing the *To Do* and *Memo* buttons

Avg Thermal Lift for MC

When checked this option will update the MC (McCready) setting to the lift encountered in the last 5 thermals. This updated value will then be used in all Soarpilot's calculations. You can see details of the last 5 thermals on the Thermal History screen.

If you prefer a manually input of the MC value instead, uncheck this checkbox. Then *ToDo* button increases the MC value and the *Memo* button decreases it when you are on the Final Glide or Moving Map screen. This is useful for ridge and wave soaring.

Use Soarpilot Waypoints

When checked Soarpilot will use internal waypoints as the waypoint. This is the normal setting. When un-checked a single GOTO waypoint received from the GPS will be used.

Default to HOME Waypoint

When checked Soarpilot will by default select the HOME waypoint as the target as soon as the program starts. You must have the "Use Soarpilot Waypoints" option checked. Note: If you select this option, a waypoint will automatically be selected, so you will not be able to use SoarPilot without a GPS by using the *Page-Up* or *Page-Down* buttons to manually enter a distance.

Use Radial for Ref Wpt

This option controls if the Reference Waypoint information is displayed as a Radial From and Distance rather than a Bearing To and Distance. This information is display at the bottom center of the Moving Map screen if a Reference Waypoint is selected. Only 1 waypoint can be the Reference Waypoint.

Next Wpt Info

This option controls the display of the next waypoint information on the Final Glide screen and Moving Map screen. You must have the "Use Soarpilot Waypoints" option checked.

- "ALL" means next waypoint information will always be displayed.
- "CTL" means next waypoint information will only be displayed for Control Waypoints entered into a task, or the Min/Max points in a target area in an assigned area task.
- "OFF" means next waypoint information will never be displayed.

Optimize STF for Speed

When checked Soarpilot will display MC (McCready) values on the Final Glide and Moving Map screens. This is the normal mode for cross country flight. When un-checked Soarpilot will display Total Sink values which can be read from your variometer in flight.

Final Glide Over Terrain

When checked Soarpilot will check if you can safely to your target waypoint, and glide completely round the remaining waypoints in a task (if active) without encountering high terrain that would block your path. This option requires a terrain database to be loaded for the area round your target waypoint or task. See Creating & Loading Terrain Elevation Data for details.

Show Req'd Ground Speed

When checked this option will display your Speeds To Fly (STF) as the Required Ground Speed (RGS) not required airspeed taking into account any wind that may be present. This option is useful for paragliders or hanggliders with no airspeed indicator as it allows the GPS ground speed to be used.

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- Wind Information Features and Screen
 - ◆ Wind Features
 - ◆ Wind Info Screen
 - ◆ Wind Profile

Wind Information Features and Screen

Wind is very important to a glider pilot. It can dramatically effect the glide angle over the ground, and if you can reach your target waypoint or not. For example, a 10 knot head wind can reduce the glide angle of a typical club class glider by 20% or more.

Wind Features

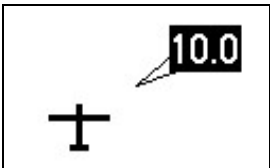
SoarPilot is able to calculate the wind from the GPS data 1) when you are thermalling, then can use this data in the calculations it makes.

The wind data is used to:

- Adjust the final glide calculations to the target waypoint
- Adjust the Speed To Fly (STF) values
- Display the Required Ground Speed (RGS) rather than airspeed for speed to fly values
- Adjust which waypoints are in-range from the glider's current position
- Adjust the Final glide Around (FGA) remaining turnpoints calculation in a task
- Adjust the Final Glider Over Terrain calculations

The wind information is displayed on the:

- the Wind Info screen described below
- Final Glide screen in the **HW** field
- Moving Map screen as an arrow displayed around the glider symbol showing the direction and number showing the wind speed.



In this case it shows a head/cross wind coming from the right, with a speed of 10 wind units. The wind units (knots, mph, kph or m/s) are selected on the Units Setup screen.

Wind Info Screen



This screen displays the detailed wind information and also has options to control the calculation and display of the wind values in the program. Pressing the **Profile** button takes you to the Wind Profile Screen.

Field	Description
Mode	CRUISE or THERMAL depending on current flight pattern of the glider
Turn Dir	Shows the current / last turn direction of the glider
Speed/Dir	Speed and direction of the current wind calculation
Avg Spd/Dir	Average wind speed and direction used in the calculations
Avg Thermal Lift	Last average lift while thermalling

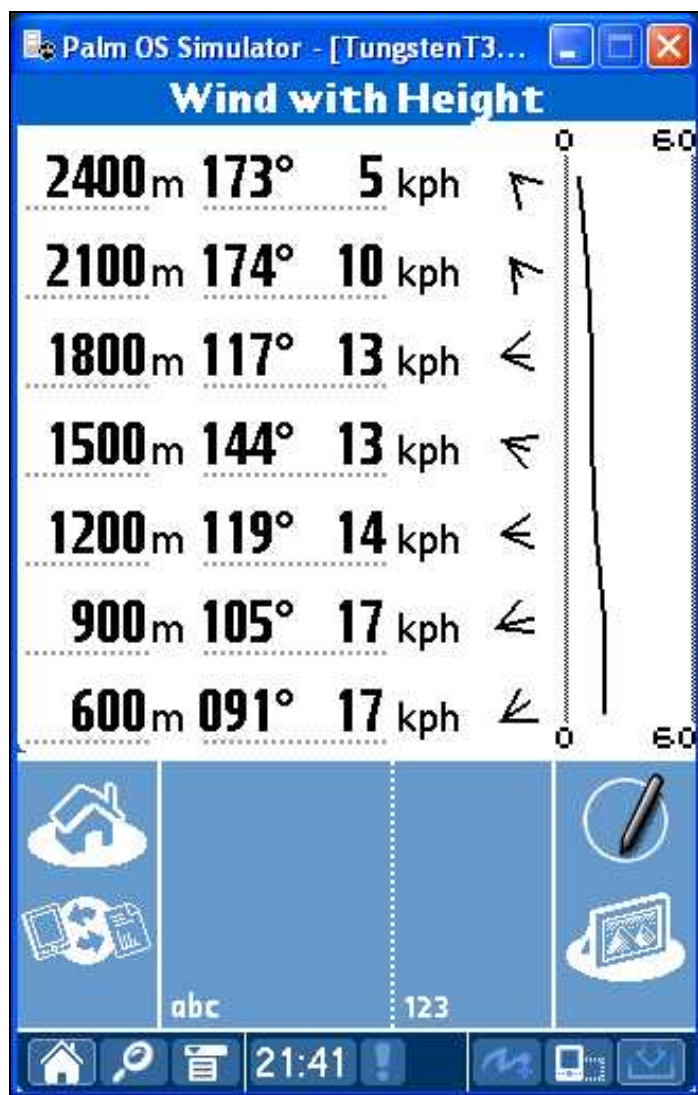
Option	Description
Wind Profile	Controls if the arrows on the Wind Profile screen are in North-Up or Track-Up orientation
Wind Calc	Controls if the wind calculations will be done by SoarPilot, or the data will be accepted from a logger that provides this information
Calculate Wind Info	Option to calculate the wind information or not. This option should normally be selected
Update Final Glide Headwind	Option to use the calculated value in the final glide calculations. This option should normal be selected
Headwind as Positive Value	Option to show a headwind as a positive value i.e. +10 knots. If this is not selected, a 10 knot headwind would be displayed as -10 knots.

You can also adjust manually the wind speed and direction. These adjusted values will be overwritten when the system calculates the wind again unless you turn the calculate wind option off. This is useful on a long final glide, or when you don't expect the thermal again for a while and have some better wind reports.

The on-screen buttons are replicated by the hardware buttons for ease of use in-flight.

Manual Control	Effect	Button
<	Rotate wind direction 10deg to the Left	<i>Calendar</i>
>	Rotate wind direction 10deg to the Right	<i>Phone</i>
Reset	Reset the wind speed and direction	
+	Increase the wind speed	<i>Todo</i>
-	Reduce the wind speed	<i>Memo</i>

Wind Profile



This screen displays the changing wind strength and direction with height. You can access this directly from the Flight menu, or from the Wind Info screen above. The values are built up during the flight as the program calculates the wind at various heights.

The arrows represent the wind direction and strength, the longer the arrow, the stronger the wind. The line on the right of the screen shows the wind strength in a graph form. If the wind strength is off the scale of the graph (a very strong wind) this is shown with an arrow in the right of the graph.

The following buttons can be used to change the range of the Wind Profile being viewed.

Button	Function
<i>ToDo</i>	Move up in the Wind Profile
<i>Memo</i>	Move down in the Wind Profile
<i>Page-Down</i>	Decrease the interval size
<i>Page-Up</i>	Increase the interval size

Tapping in the graph area on the right of the screen will toggle the display to show the latest sample in each band and how many samples a band contains. This is useful to be able to judge how accurate this information may be.

1) If you have a C302, B50 or LX in the **Comp** field on the NMEA/Port Setting screen, then wind information is taken from flight computer

Altitude References used by SoarPilot

There are 4 altitude references and 1 pressure reference that SoarPilot can display and use. These are explained on the diagram below.

- MSL - Altitude above Mean Sea Level
- AGL - Height above the ground (requires a Terrain database to be loaded)
- FL - Flight level altitude (assumes sea level pressure is 1013.2mb or 29.92 in Hg)
- QFE - Height above an specific reference. See the QFE/QNH Settings Screen.
- QNH - The local air pressure at sea level. See QFE/QNH Settings Screen.

This most important of these is the MSL setting. This is the height of a point above the Mean Sea Level. All the elevations of waypoints should be a MSL height. **All SoarPilot final glide calculations are based on MSL height.**

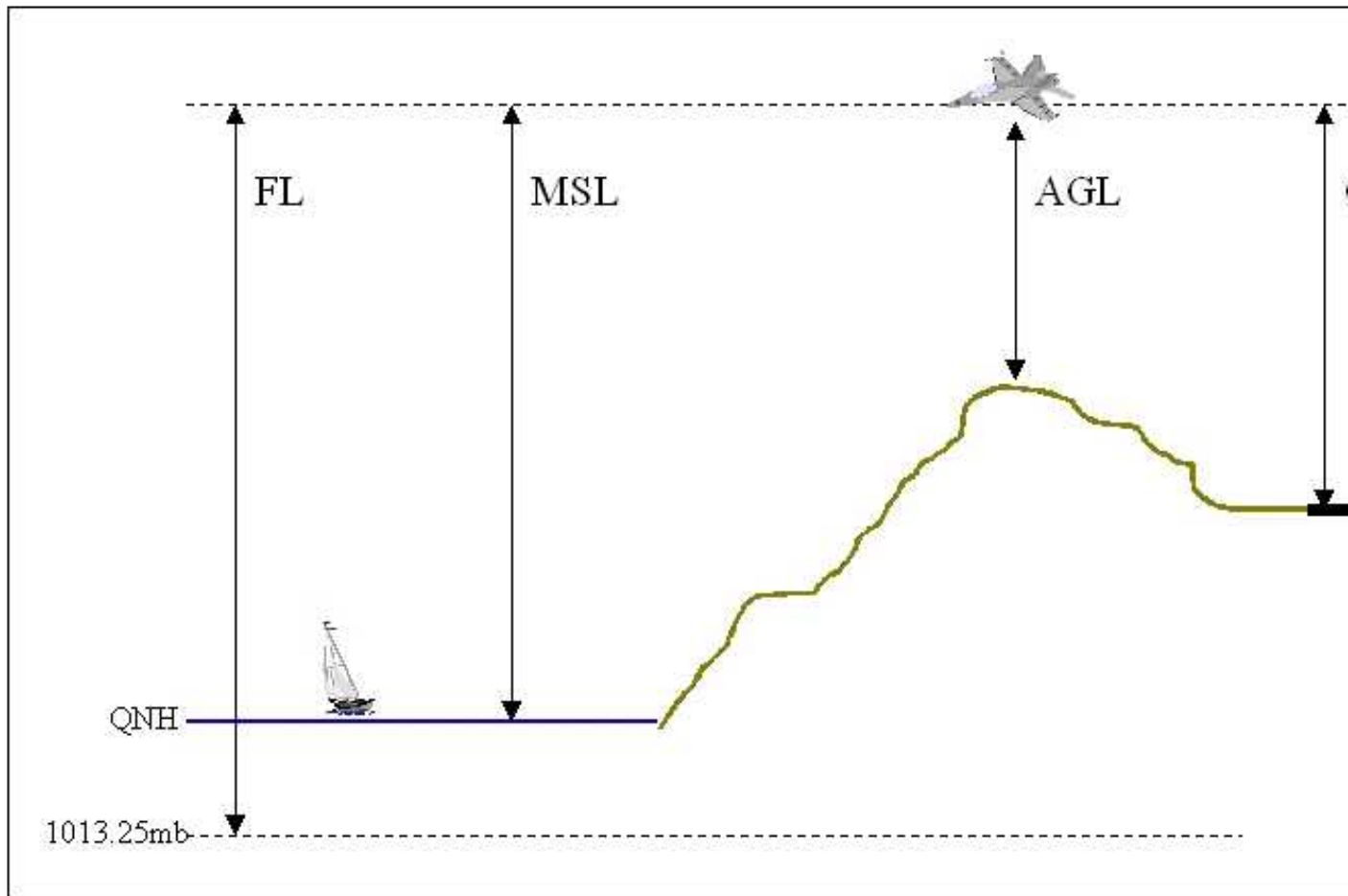
Also important for airspace display and warnings is FL or flight level. This is the altitude shown on an altimeter with the sub-scale set at 1013.2mb or 29.92 in Hg. Many airspace areas have FL altitudes, and the pilot needs to be aware that the actual MSL height of these areas will change with the local air pressure at the time of the flight.

At first this may seem strange, but if you are flying long distances across weather systems, the local air pressure on the ground will change, so a constant reference is required to ensure that everyone has the same understanding for the altitude.

If the local pressure is high, the flight levels will be higher. So FL45 will be greater than 4500ft MSL. Conversely if the pressure is low, the flight levels will be lower.

Flight levels are always in feet.

Altitude References used by Soarpilot



In this case the sea level pressure is lower than the standard pressure of 1013.25mb. So $QNH < 1013.25$. This means that 5000ft MSL is higher than FL50. (Lower pressure means Flight levels are lower)

The QFE reference assumes this was set to zero on the ground.

QNH is a pressure, and the difference between this and 1013.25mb defines the difference between FL

QFE/QNH Settings Screen

This screen is accessed from the Flight menu.

Set QFE/QNH

MSL: 0 m AGL: -192 m

FL: 0 ft QFE: 0 m

Zero QFE Field Elev: 0 m

☒ **Auto Zero QFE at Start**

1013.2 mb QNH used for FL

Reset QNH ++ + -- -

abc 123

8:03

This screen is used to set the QFE altitude and the QNH pressure. For more information see the Altitude References used by SoarPilot screen.

The upper part of the screen displays the 4 altitude values SoarPilot is currently using. The **Zero QFE** button will set the QFE altitude reference to the current MSL altitude.

The QFE reference can be zeroed at take-off and then you have height above the airfield. If you are flying to another airfield, if you input the height of the airfield in the **Field Elev** field, the QFE reference will be set to zero at that height, so QFE values now show height above that airfield.

The **Auto Zero QFE at Start** option will zero the QFE altitude reference setting it to your takeoff altitude as soon as the logger starts.

The lower part of the screen displays the current QNH pressure. The **Reset QNH** button will set the QNH pressure to 1013.2mb or 29.92 in Hg, or it can be changed using the “++”, “-“, “+” and “-” buttons.

If you have configured to **Use Pressure Alt for Final Glide** field on the NMEA/Port Screen screen, then the QNH pressure will be used to calculate your current MSL altitude. Otherwise the MSL altitude from the GPS will be used.

If you have this option un-checked and have a pressure altitude source selected in the **Alt** field on the NMEA/Port Screen screen, then the QNH pressure is not used. The MSL altitude comes from the GPS, and the flight level from the pressure altitude source.

Between the adjust buttons you will see a comment regarding what is being calculated from the QNH pressure.

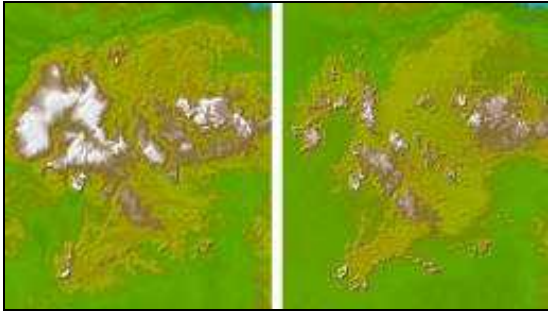
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Terrain Elevation Data Usage

SoarPilot has the ability to load and read terrain elevation data in order to provide a display of the current terrain elevation as well as an “above ground” (AGL) altitude approximation value. It also allows Soarpilot to check if any terrain will interfere with your glide path to your target waypoint, or around your task if you have one active. See the Final Glide Over Terrain option for details.

This terrain data will come from a .pdb file that you will have to hotsync into your PDA (explained below). When the program is running, it uses this terrain elevation data to determine the elevation of the ground at your current location. You can see the current terrain elevation on the Flight Info screen. (**Note:** The moving map screen does not show a coloured terrain map. This is to keep the display as clear as possible and maximise the contrast for readability in strong sunlight) The upper part has a new field which is always updated with this info. If there is no terrain data loaded or you have traveled off of the loaded data, “N/A” will be displayed in the field. In addition, the current terrain elevation is saved with the current flight information.



Old (GTOPO30)

New (SRTM30)

The terrain information originates from GTOPO30-formatted data which is readily available via the internet. GTOPO30 is a global digital elevation model (DEM) with a horizontal grid spacing of about 30 arc seconds which equates to about 1 km. I’ve played around with looking at several places both in the UK and in the US comparing the GTOPO elevation with the reported field elevation for the airfield. With a 1km resolution, it’s not perfect of course but it does seem to average around 10-20 feet of the actual value for the airfield I checked. That’s not too bad I think. Actually putting in support for reading this information was not too difficult. Also because of the way the data is laid out (every grid square is .0833333333 of a degree on each side) it is a simple/fast calculation to take the current lat/long and go directly to the correct row and column in the terrain file for the elevation information. While a PalmIIIx may not have enough RAM to hold the data it would certainly in no way make the unit any slower. It was very nice that it worked out that way. What took longer though was creating a PC-based conversion program to read in the .DEM information which is HUGE (40deg x 50 deg = ~57Meg), allow people to specify a smaller area (and thus smaller size) and then package that into a .pdb file which can be easily loaded and used by SoaringPilot.

To support this, there is a new version of SPTerm (1.3.3) available through the webpage as well. When you run the new version of SPTerm you will find there is a “;Terrain” menu item now with one menu item which says “Generate”. Selecting this option will open the terrain generation window. The first field on the screen allows you to enter the filename of the terrain .pdb file to be outputted. By default it suggests a filename of “SoaringPilot_terrain_db.pdb” and I would suggest not changing that name. However it really doesn’t matter what you call it because the internal filename is the only one that matters when loading it on the Palm and that name is hardcoded to the proper value. This allows you to have multiple terrain .pdb files with different names to differentiate the area they correspond to. Then you just have to load the one you want to use before you head out to the airfield.

Next, you must enter the upper and lower latitudes’s and the left and right longitude’s, both in decimal degrees with S and W being negative. Then when you select the Generate button, it will produce the .pdb file in the “terrain” directory. However, this will of course give you an error when you first try this because you won’t have the required .dem data. However, it will create the required “terrain” directory under the SPTerm install directory.

To download the GTOPO30 data and make things work properly, you will need to go to:

<http://edcdaac.usgs.gov/topo30/topo30.html>

click on the sector(s) you want to download and do so. Each sector you download will be a .zip file of about 8 or 9 Meg. Inside these zip file are several files however you only need to extract the .dem file into the “terrain” directory under the SPTerm directory. This is the largest file in the .zip file and is about 57Meg. If the area you want to define for terrain information covers more than one sectors/.dem file, you will need to download all required files and place the .dem files into the terrain directory. (NOTE: If you use

WinZip please see the note on the download screen for each sector. If you are using WinZip to uncompress the .dem file, please turn off (uncheck) the TAR File Smart conversion found under Options / Configuration (or under Misc. if using Winzip 8.0) The terrain generation allows using a maximum of 4 .dem files. Once the .dem file(s) is in the terrain directory, the generator will work properly and will place the newly created .pdb file in the terrain directory as well. You simply have to hotsync this .pdb file onto your Palm PDA.

Finally, as a result of NASA's SRTM (Shuttle Radar Topography Mission) last year, a new topographical dataset is also available in the same GTOPO30 format. It is called SRTM30. SRTM data was used to update the older USGS GTOPO30 global DEM, by averaging the data to 30 arc-sec resolution and replacing GTOPO30 heixels between the latitudes of 60° North and 56° South. The resulting data can be directly downloaded and is now the best available global elevation dataset. The above examples screenshots show the improvements. The left image is the old data. The right is after being updated with SRTM data. As you can see, the right is much more accurate. This is because SRTM30 replaces the wild guesswork of previous data with actual measured values.

The new data uses the same names as the previous GTOPO30 data so once you find the filename you want to download from the GTOPO30 site, go to the following URL and download the same file: <ftp://e0srp01u.ecs.nasa.gov/srtm/version1/SRTM30>.

Related Pages

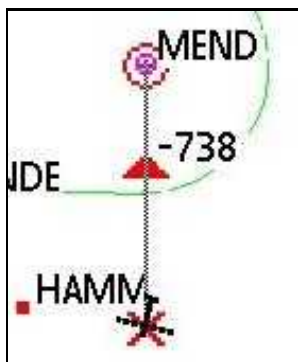
- [Creating & Loading Terrain Elevation Data](#)
- [Final Glide Over Terrain](#)
- [Final Glide Screen](#)
- [Final Glide Setup](#)

Final Glide Over Terrain

The feature is designed to detect the situations when you will not be able to reach your waypoint at the calculated arrival altitude because of high terrain in your path.

This is a new checkbox on the Final Glide Settings screen. It replaces the Altitude Reference as this can be set easily from the Final Glide or Moving Map screens. When this option is active the program checks the terrain map approx every kilometer to see if the predicted glide path will conflict with high terrain thus making your target waypoint un-reachable. The safety altitude is added to the terrain elevations in all cases.

If there is a conflict, the A.Alt / R.Alt / D.Alt figures are always adjusted to reflect the extra altitude required to clear the terrain. Also the point of highest ground will be marked on the moving map with a solid triangle and the label will show how much lower you are predicted to be at that point than the terrain. The Altitude box on the moving map is also marked with a solid triangle (red on colour palms). In addition on the Moving Map screen an “X” (red on colour palms) will mark your predicted landing point on the map.



On the Final Glide screen, a solid triangle (red on colour palms) appears next to each of the speed values if there is a terrain conflict for this speed / MC setting.

Final Glide - S		
MC SPEED	A.ALT	
(m/s) (kph)	(m)	
✖ 0 109	-588	
1 126	-602	
2 141	-634	

If you fly off the terrain map or select a waypoint off the terrain map, open triangles (red on colour palms) will be displayed to alert you of this fact. These are shown in the altitude field on the Moving Map screen, and under the altitude label (A.Alt / D.Alt / R.Alt) on the Final Glide screen.

Final Glide - S	
SPEED	A.ALT
(kph)	(m)
109	-17458

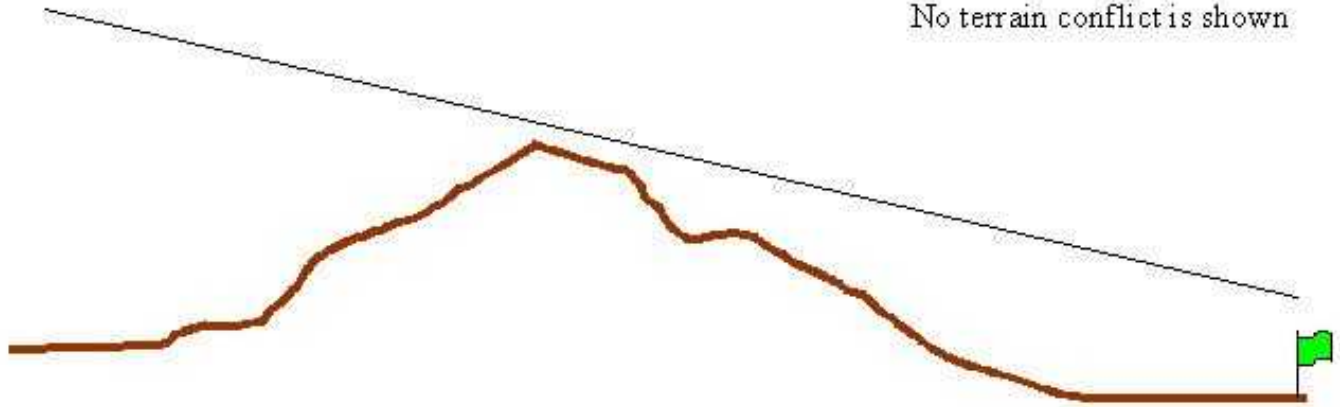
This feature also works for active tasks. The program works out the worst terrain conflict over the legs in the task and adjusts the Final Glide Around (FGA) as required. You may see 2 terrain conflicts as one is on the task, and one on the current leg. A triangle is displayed in the FGA field if the program detects a terrain conflict on the remaining task legs.

This feature can produce some surprising results. Please see the diagram below.

Final Glide Over Terrain

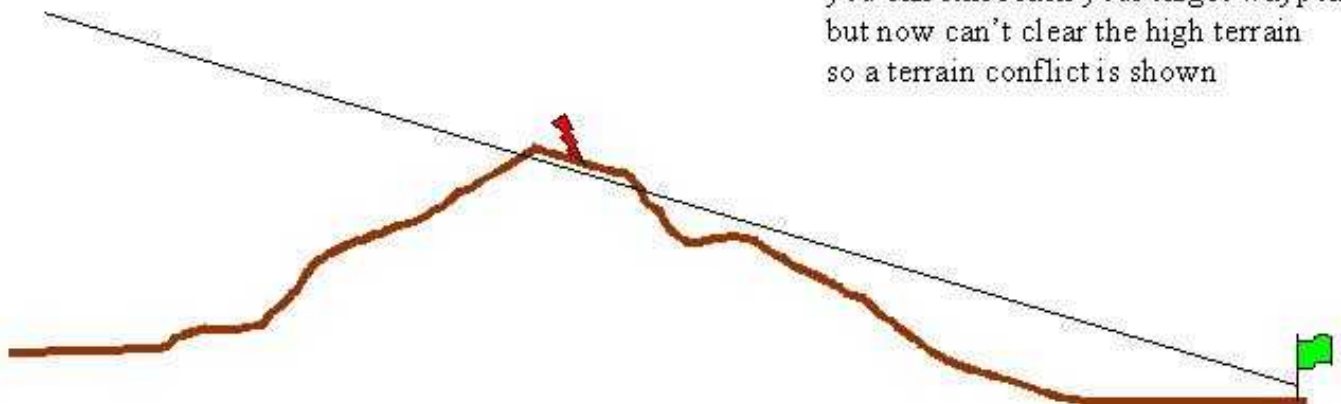
Case 1: Low MC Setting

Your glide path is shallow enough to reach your target waypoint and clear the high terrain. No terrain conflict is shown.



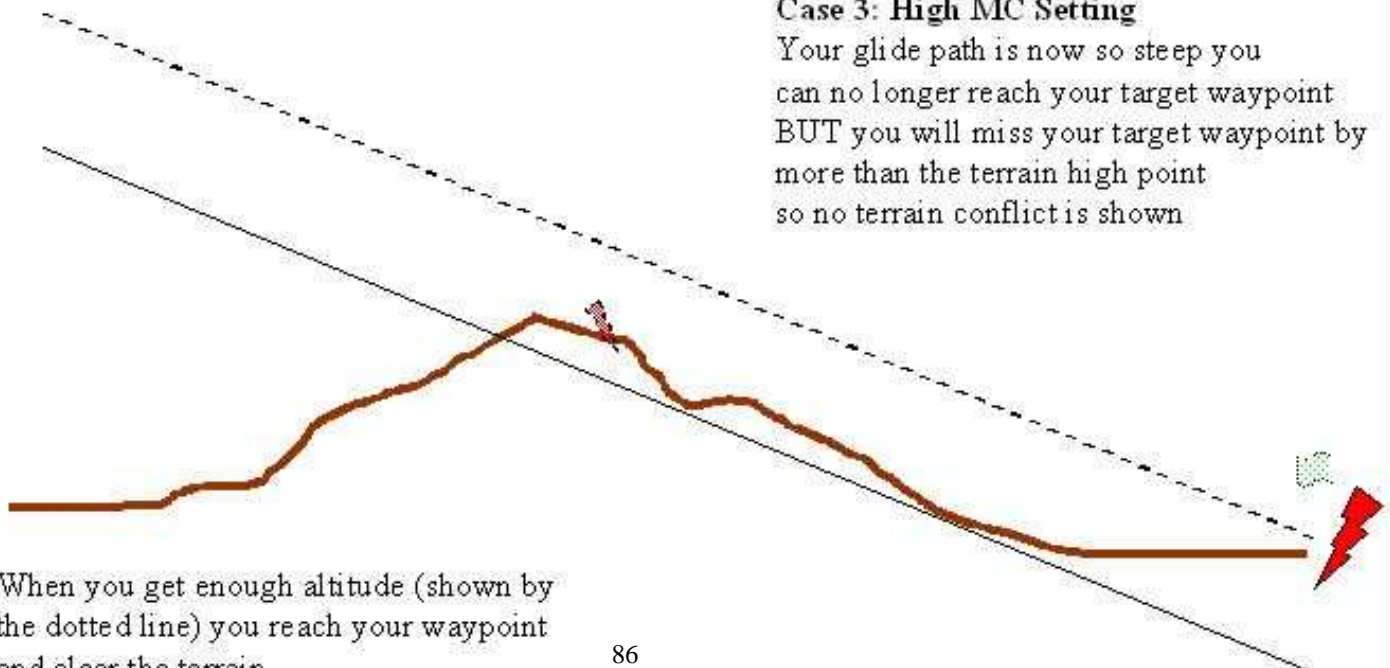
Case 2: Medium MC Setting

As your glide path is steeper you can still reach your target waypoint but now can't clear the high terrain so a terrain conflict is shown.



Case 3: High MC Setting

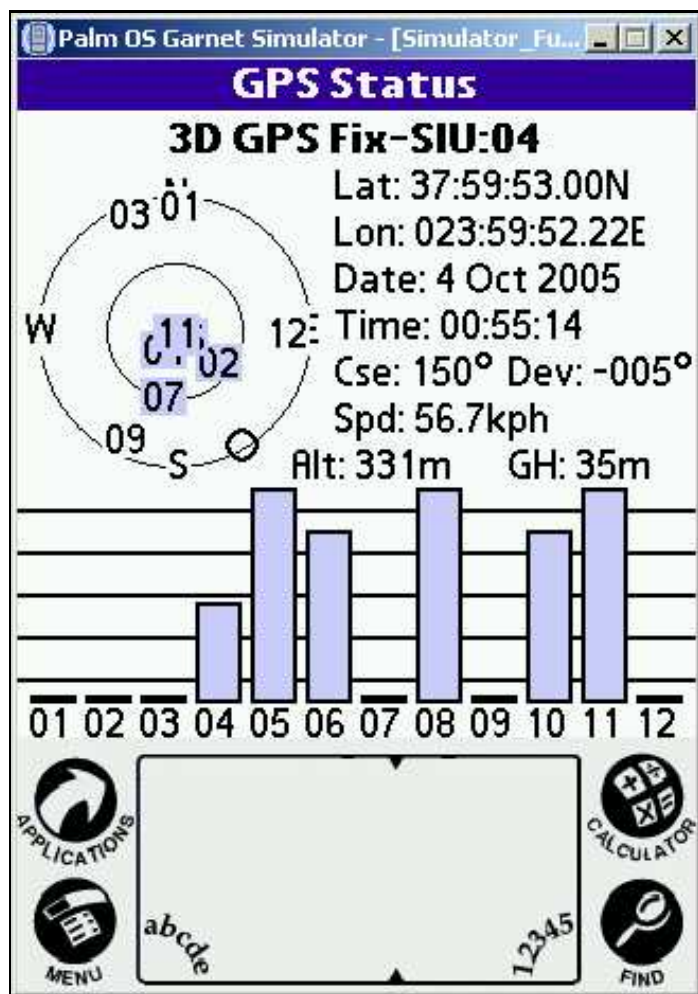
Your glide path is now so steep you can no longer reach your target waypoint BUT you will miss your target waypoint by more than the terrain high point so no terrain conflict is shown.



When you get enough altitude (shown by the dotted line) you reach your waypoint and clear the terrain.

1. At the low MC setting you will be at or close to best glide, therefore you maintain enough height to clear the terrain on you glide to the waypoint.
2. At medium MC values, your glide path is steeper and you do not have then same altitude as you cross the terrain giving you a conflict.
3. At High MC values, your glide path is much steeper, so much so that your waypoint is not in reach anymore. However, there is no terrain conflict show anymore. This is because you will arrive at your waypoint lower (below ground) than when you passed over the terrain high point. The program does not consider not having enough altitude to reach your waypoint as a terrain conflict.

GPS Status Screen



This screen displays the GPS status. It does so by parsing some of the NMEA 0183 sentences (GGA, GSA, GLL). In addition to the information shown in the above screen shot (which is taken after a fix has been acquired) the battery status of a GPS Companion 1) is displayed in the title bar as remaining time. The satellite positions are displayed in the circles, and their signal strength in the bars near the bottom of the screen.

SIU: Satellites In Use followed by the number of satellites

Lat: Latitude

Lon: Longitude

Date Date from GPS satellites

Time Time in UTC from GPS satellites

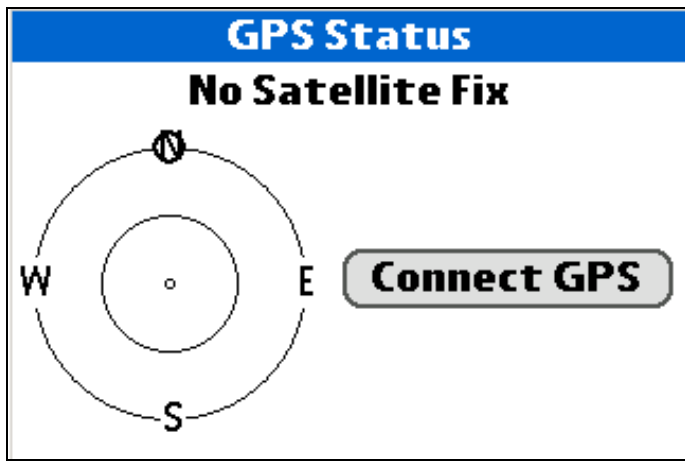
Cse: Course

Dev: magnetic deviation 2)

Spd: Current speed

Alt: GPS Altitude, directly from the NMEA GGA sentence

GH: Geoidal Height, (see NMEA/Port Settings screen for more information)



If no GPS connection is present, a button marked **Connect GPS** will be visible. Tapping this button triggers another attempt to connect to a GPS. On slow PDA's this may be necessary after starting SoarPilot because the first attempt has timed out.

- 1) this battery level is provided in a proprietary sentence
- 2) If your GPS doesn't provide this info, the SoarPilot can compute it, see the **Calc Dev** option on the NMEA/Port Settings screen

Which Version of SoarPilot Is Loaded?

Tapping on the “i” in the top right of the Final Glide screen title bar, will bring up a window showing you the current version loaded.



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 - ◆ Polar Edit

Polar Configuration

For the calculations in the Final Glide screen SoarPilot needs the polar of your glider. This section describes the screens that are implemented in SoarPilot to maintain the polar database.

Polar List



This screen can be accessed from the main **Settings** menu under **Polar** or by using the shortcut P. The active selected polar is displayed on top of the list. Tap on the name of a polar to make it the active polar to use.

You can scroll through the list using the following hardware buttons

Button	Function
<i>Calendar</i>	Move one item up in the list. Moving to the previous page if required, but not past the start of the list
<i>Phone</i>	Move one item down in the list. Moving to the next page if required, but not past the end of the list
<i>Page-Down</i>	Move a page up in the list. Or to the last page if at the start of the list
<i>Page-Up</i>	Move a page down in the list. Or to the first page if at the end of the list

The command buttons at the bottom are:

Button	Description
Edit	Open the polar in the Polar Editor (see below)
New	Open the Polar Editor to create a new polar from scratch
Delete	Remove the selected polar from the database

Polar Edit

This screen can be used to input a polar using a 3 coefficient algorithm to approximate the actual polar. Also see this FAQ.

On this site a spreadsheet can be downloaded to calculate these 3 coefficients for WinPilot, but I'm sure those values work nicely with SoarPilot too.

You can also enter a total dry weight (including the pilot(s)) and the amount of possible water ballast. This allows SoarPilot to calculate changes in wing loading, and therefore glider performance, if you fly with water ballast.

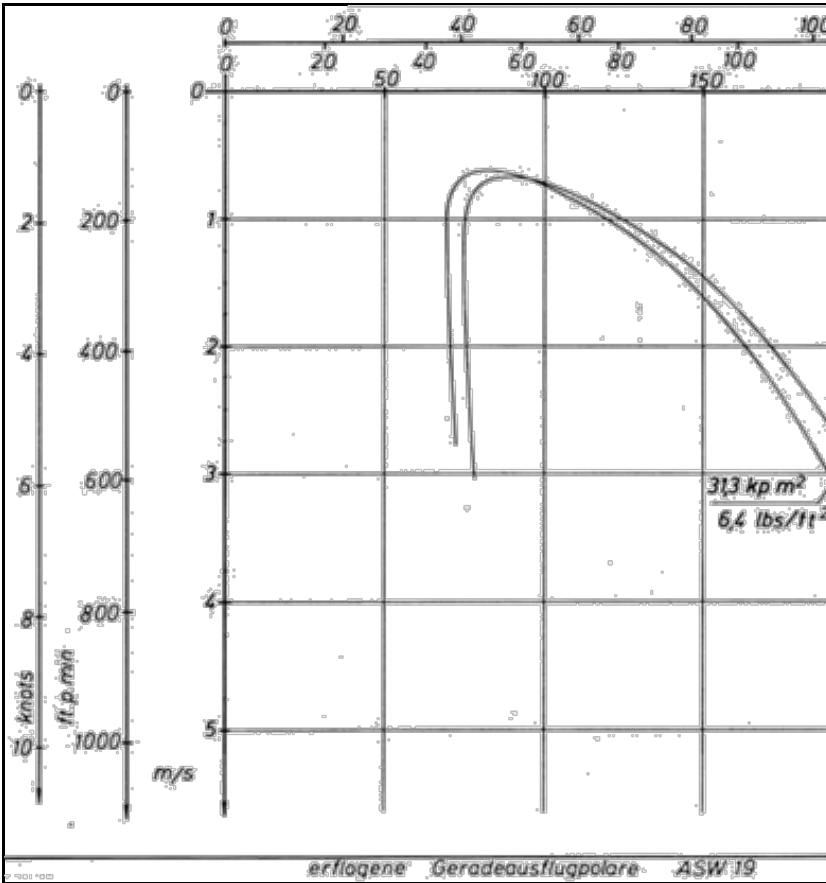
The pictures below show some sample polars in the editor and the actual polar.

ASW-19



SZD51-1 Junior

Polar



Polar

Polar

Name: Junior

	SPEED	SINK
Point #1:	70 kph	-0.576 m/s
Point #2:	130 kph	-1.600 m/s
Point #3:	160 kph	-2.665 m/s
Max. Dry Gross Wt:	225 kg	
Max. Water:	0.0 ltr	
L/D: 34 @ 78kph MinSnk: 58kph		

Save
Quit

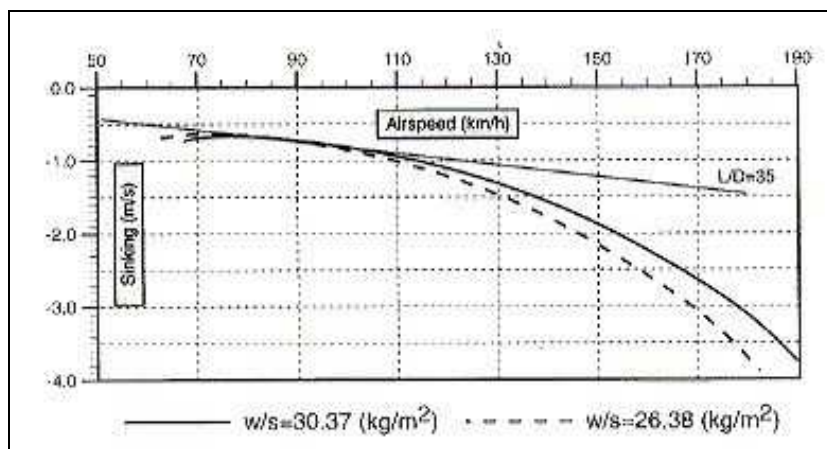
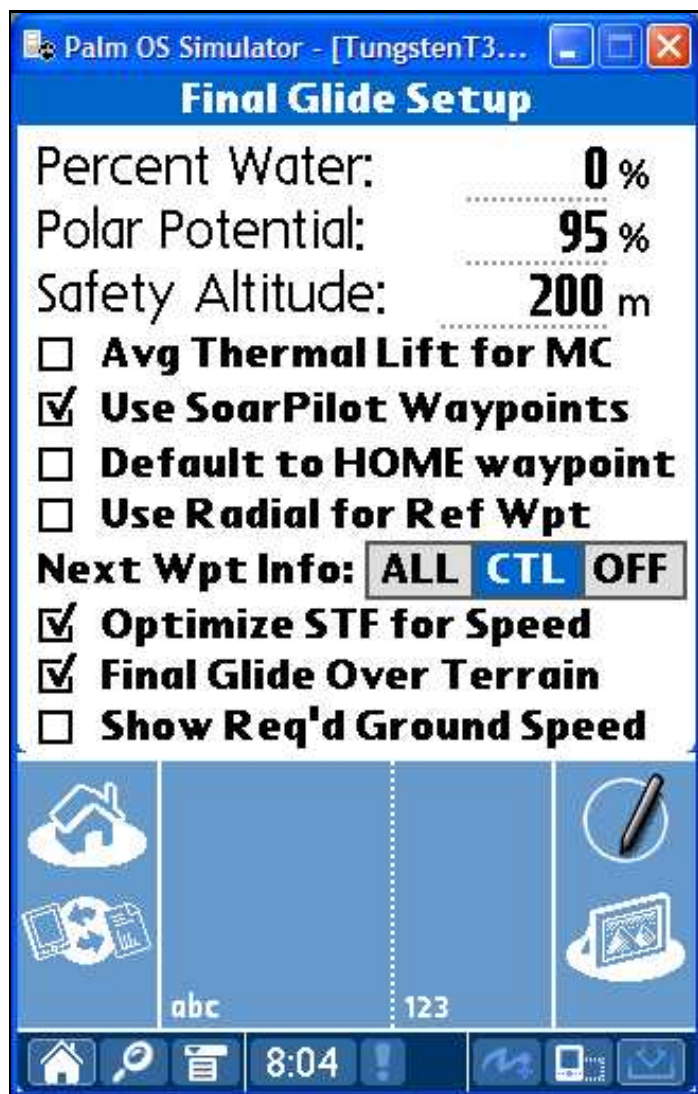


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 - ◆ Show Req'd Ground Speed

Final Glide Settings

This screen as accessed from the “Settings Menu”



Percent Water

This value is used to represent the amount of water ballast being carried by the glider. 100% = Full ballast, 0% = None. The effect of ballast is included in the final glide calculations. The amount of ballast allowed is shown on the currently selected Polar page.

This value can be changed by pressing the *Page-Up* and *Page-Down* buttons.

Polar Potential

This value is used to degrade the theoretical performance of the glider. It can be used to allow for dirty or wet wings and other imperfections. A typical value is 95% i.e. 5% performance loss. This is a way of introducing a safety factor in the final glide calculations.

This value can be changed by pressing the *Calendar* and *Phone* buttons

Safety Altitude

This value is used in the calculation of the required altitude (R.Alt) and the delta altitude (D.Alt) These values will display the altitude required to arrive at your target waypoint exactly at the safety altitude. This value is also used when calculating terrain clearance of the Final Glide Over Terrain option is being used.

Note: the Arrival Altitude (A.Alt) value is an exact arrival altitude and does NOT allow for this safety altitude.

This value can be changed by pressing the *To Do* and *Memo* buttons

Avg Thermal Lift for MC

When checked this option will update the MC (McCready) setting to the lift encountered in the last 5 thermals. This updated value will then be used in all Soarpilot's calculations. You can see details of the last 5 thermals on the Thermal History screen.

If you prefer a manually input of the MC value instead, uncheck this checkbox. Then *ToDo* button increases the MC value and the *Memo* button decreases it when you are on the Final Glide or Moving Map screen. This is useful for ridge and wave soaring.

Use Soarpilot Waypoints

When checked Soarpilot will use internal waypoints as the waypoint. This is the normal setting. When un-checked a single GOTO waypoint received from the GPS will be used.

Default to HOME Waypoint

When checked Soarpilot will by default select the HOME waypoint as the target as soon as the program starts. You must have the "Use Soarpilot Waypoints" option checked. Note: If you select this option, a waypoint will automatically be selected, so you will not be able to use SoarPilot without a GPS by using the *Page-Up* or *Page-Down* buttons to manually enter a distance.

Use Radial for Ref Wpt

This option controls if the Reference Waypoint information is displayed as a Radial From and Distance rather than a Bearing To and Distance. This information is display at the bottom center of the Moving Map screen if a Reference Waypoint is selected. Only 1 waypoint can be the Reference Waypoint.

Next Wpt Info

This option controls the display of the next waypoint information on the Final Glide screen and Moving Map screen. You must have the "Use Soarpilot Waypoints" option checked.

- "ALL" means next waypoint information will always be displayed.
- "CTL" means next waypoint information will only be displayed for Control Waypoints entered into a task, or the Min/Max points in a target area in an assigned area task.
- "OFF" means next waypoint information will never be displayed.

Optimize STF for Speed

When checked Soarpilot will display MC (McCready) values on the Final Glide and Moving Map screens. This is the normal mode for cross country flight. When un-checked Soarpilot will display Total Sink values which can be read from your variometer in flight.

Final Glide Over Terrain

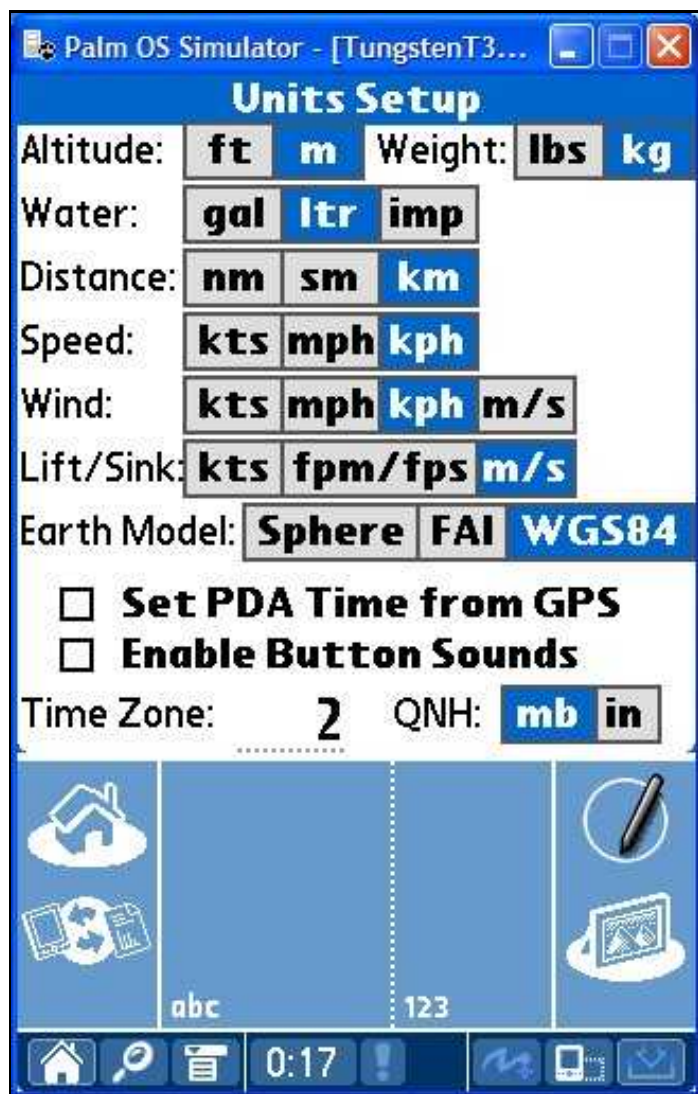
When checked Soarpilot will check if you can safely to your target waypoint, and glide completely round the remaining waypoints in a task (if active) without encountering high terrain that would block your path. This option requires a terrain database to be loaded for the area round your target waypoint or task. See [Creating & Loading Terrain Elevation Data](#) for details.

Show Req'd Ground Speed

When checked this option will display your Speeds To Fly (STF) as the Required Ground Speed (RGS) not required airspeed taking into account any wind that may be present. This option is useful for paragliders or hanggliders with no airspeed indicator as it allows the GPS ground speed to be used.

Units Setup

This screen as accessed from the “Settings Menu”



This screen is used to select the units you wish to use in Soarpilot.

You can choose the units for:-

Setting	Units Options
Altitude	Feet(ft) or Meters(m)
Weight	Pounds(lbs) or Kilograms(kg)
Water	US Gallons(gal), Liters(ltr) or Imperial Gallons(imp)
Distance	Nautical Miles(nm), Statute Miles(sm) or Kilometers(km)
Speed	Knots(kts), Miles per Hour(mph), Kilometers per Hour(kph)
Wind	as the Speed setting plus Meters per Second(m/s)
Lift/Sink	Knots(kts), Feet per Minute/Feet per Second (fpm/fps) or Meters per Second(m/s)
QNH	Millibars(mb) or Inches of Mercury(in)

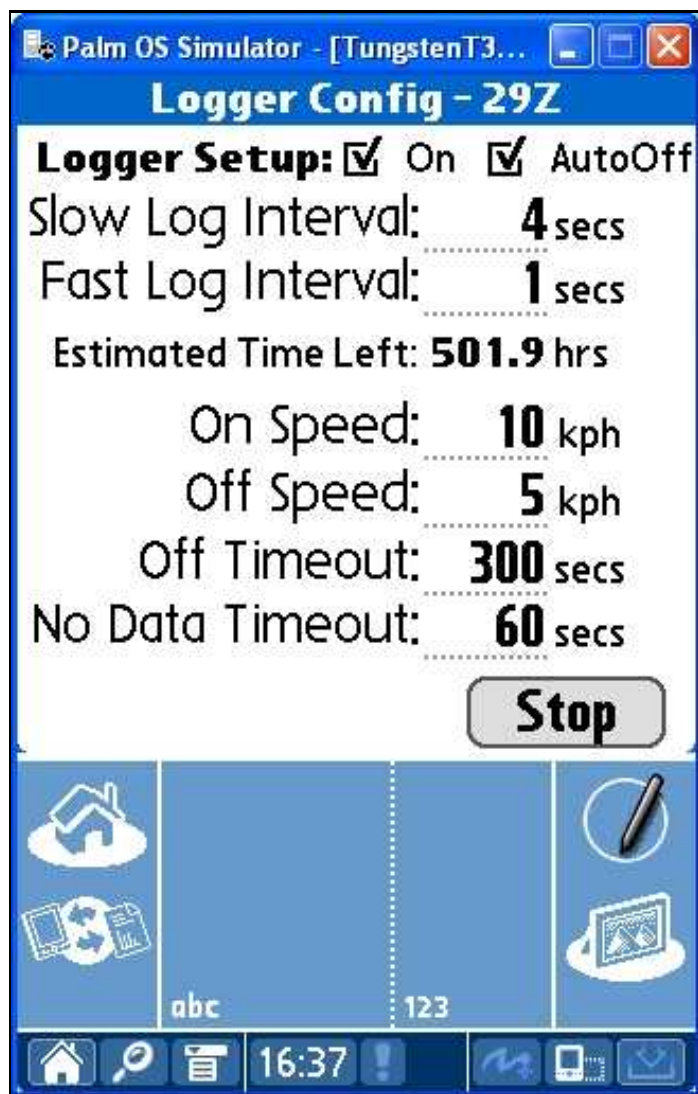
- Set PDA Time from GPS - If checked, this will update the internal Palm clock from the GPS, adjusting it based on the Time Zone value below.
- Enable Button Sounds - If checked the program will Beep every time a button (hardware, silkscreen or on screen) is pressed.
- Time Zone (or Timezone) - This is used to convert the Universal Time (UTC) received from the GPS into local time for display. Times are still stored in GMT but will be displayed with the offset added in.

Table of Contents

- Flight Logger Configuration
 - ◆ Wave Flying

Flight Logger Configuration

This screen as accessed from the “Settings Menu”



Option	Description
Logger Setup <input checked="" type="checkbox"/> On <input checked="" type="checkbox"/> AutoOff	<p>When this option is checked the logger is enabled</p> <p>When this checkbox is enabled the logger will auto shutoff when the speed has dropped below the Off Speed as set below. When not checked the STOP button must be used to close the log file.</p>
Slow Log Interval	<p>This is the normal log interval when not thermalling. Don't set it too fast as it may increase the logger database for long flights beyond the available memory of your Palm. The default of 4 secs is a good starting point.</p>
Fast Log Interval	<p>This is the interval when in a thermal. Default of 1 sec is fine in most cases.</p>
Estimated Time Left	<p>This estimates the maximum length of log file that can be created with the amount of free memory in the Palm device. 1)</p>
On Speed	<p>This is the speed to fly to start the logger recording your flight</p>
Off Speed	<p>When AutoOff is checked this speed setting is used to close a flight, also see next setting.</p>
Off TimeOut	<p>The speed must be below the Off Speed for this period of time to close the flight.</p>
No Data Timeout	<p>When no data is received from the GPS for this period of time, the flight is closed.</p>

If you have a C302, C302A, ReCo, GPSNAV or Flarm configured in the **Comp** field on the NMEA/Port Settings screen, then an additional button is visible on the bottom left of the screen which allows you to set various logger specific items.

Wave Flying

In order to keep the flight log contiguous while flying in wave, it is suggested that you turn off the *AutoOff* option. Otherwise the logger may stop if the gliders ground speed drops below the **Off Speed**. An alternative would be to leave *AutoOff* enabled but set the **Off Speed** to a small value (ex. 3-5 knots) and the **Off Time** to a larger value (several minutes) using the assumption that the glider will never be completely setting still especially over a long duration. That way the logger will still stop once you get on the ground and sit still for a while.

1) In addition a startup check is performed and a warning displayed if there are less than 5 hours remaining

Table of Contents

- Task Settings
 - ◆ Start
 - ◆ Turnpoint
 - ◆ Finish

Task Settings

This screen as accessed from the “Settings Menu”

Task Settings

Start: ☒ **>1** Radius: **1.000** km
☒ **Line** ☐ **FAI** ☒ Auto Dir Calc?
☐ **Cyl** ☐ **Arc** Dir: **220°** **M** **T**

Turnpoint: ☒ Control lines visible
☒ **FAI Sector** Radius: **5.000** km
☐ **Cylinder** Radius: **0.500** km
☐ **Both** ☐ AAT: Update legs

Finish: Radius: **1.000** km
☒ **Line** ☐ **FAI** ☒ Auto Dir Calc?
☐ **Cyl** Dir: **286°** **M** **T**

abc 123

4:31

Note:

The task settings can be changed in flight and the changes are immediately reflected into the task.

When Cylinder sectors are used for start, finish or turnpoints, the task distance is reduced by 1 x radius for start and finish, and 2 x radius for each turnpoint.

Start

>1

This options controls is you allow more than 1 start for the task. If checked the program will ask if you want to re-start the task when you cross the start line, or leave the start sector for the second or more time. Sometimes if you are thermalling near the start line this can produce many requests for re-start confirmations. If your do not dismiss this re-start request, it will remain on the screen for the time set in the Auto Dismiss field on the SUA settings screen.

Radius

This field controls the dimensions of the start line or sector. Note: for a Line or Arc the total length is twice the radius.

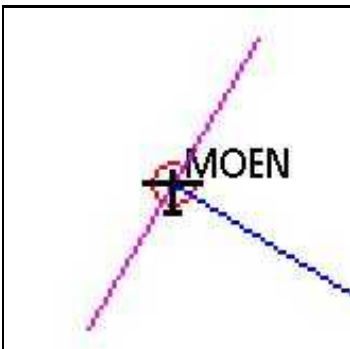
Direction controls

When Auto Dir Calc checked, this option will automatically align the start line to sector to be 90 degrees to the first leg of the task. If this is not checked, you can set the direction in the Dir field and set if this is a Magnetic or True bearing.

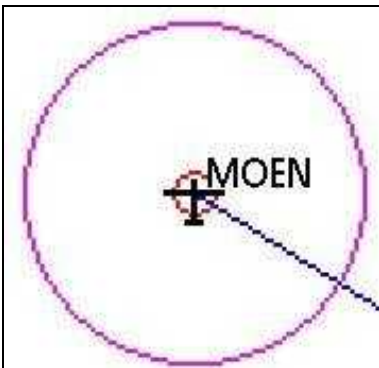
Line, FAI, Cyl, Arc

This group of check boxes choose the type of start line or sector. Only one can be active. The Start is achieved by entering and then leaving a FAI sector or cylinder, or by crossing a line or arc in the direction of the first leg.

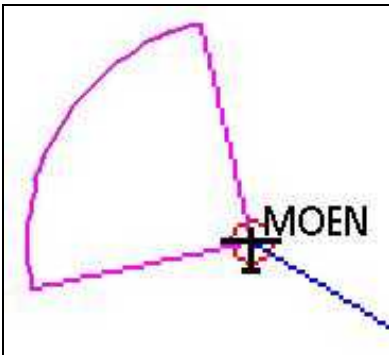
- Line - A straight line.



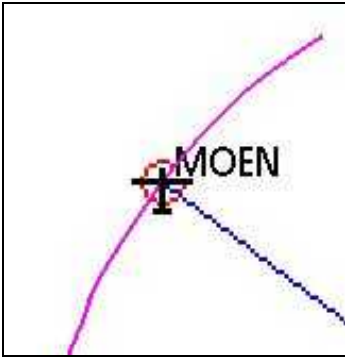
- Cyl - A Cylinder.



- FAI - A 90 degree sector.



- Arc - An arc with a radius of the distance to the first turnpoint, with a circumference of twice the radius field.



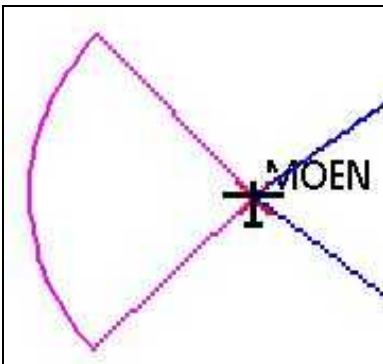
Turnpoint

Control Lines Visible

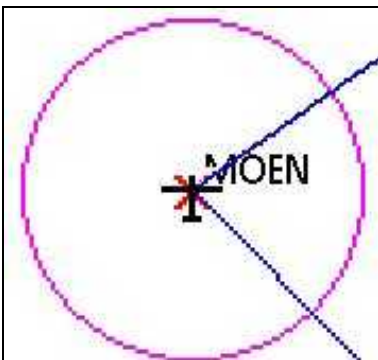
This option controls if dotted lines are shown on the moving map screen to show the route to and from Control Points.

FAI Sector, Cylinder, Both

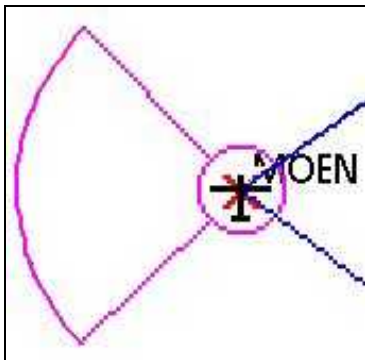
- FAI Sector - A 90 degree sector.



- Cylinder - A Cylinder



- Both - A combination of a cylinder and FAI sector



The FAI Sector and Cylinder have separate radii. If you select Both the turnpoint will be achieved as soon as you enter either the FAI Sector or the Cylinder. You do not need to enter both to achieve the turnpoint.

AAT: Update Legs

This option controls how the target point is updated inside an area of an assigned area task. See Flying An Assigned Area Task for more information.

Finish

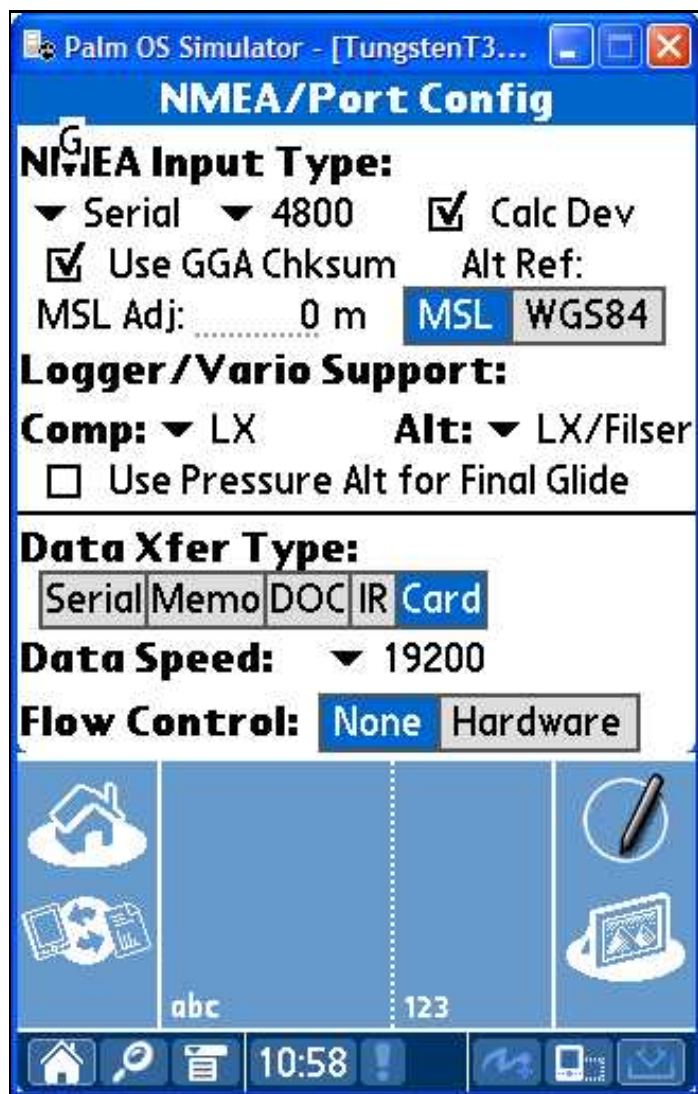
These settings are identical to the Start sector, but there is no Arc finish. The Finish is achieved by entering a FAI sector or cylinder, or by crossing the finish line.

Table of Contents

- NMEA/Port Settings
 - ◆ NMEA Input Config
 - ◆ Logger / Vario Support
 - ◆ Data Transfer Config

NMEA/Port Settings

This screen as accessed from the “Settings Menu”



The screen is split into 2 sections.

- NMEA Input Config - to configure the GPS input
- Data Transfer Config - to configure the transmitting and receiving of soarpilot data (Waypoints, Tasks, flight logs)

NMEA Input Config

NMEA Input Type

This sets the communication type and speed between Soarpilot and the GPS unit. Options are

- Serial - GPS connected via the serial port.
- IR - GPS connected via the Infrared port.
- BT - GPS connected via Bluetooth.
- USB - Special option for the USB port on a Tungsten E using a Kirrio cradle/cable GPS to USB interface.
- STap - Special option for running SoarPilot on the StyleTap platform.

The speed is selectable from 1200 to 115200 baud.

Calc Dev

Is used for GPS units that do not calculate the magnetic deviation. When checked, Soarpilot calculates the deviation based on the position information from the GPS.

Use GGA Checksum

Is used to get Soarpilot to check the checksum on the GGA NMEA sentence for altitude, to ensure correct data is being receive.

MSL Adjust

This field is used to make a fixed offset from the GPS altitude information from the GPS. Normally, using a the **MSL** or **WGS84** options below will produce an accurate result.

Alt Ref

- **MSL** - is the standard setting and is what 95% of the people will use. **MSL** is what the GPS GGA line is supposed to output for the altitude value.
- The **WGS84** option is for some GPS units (Sirf II-based) do not output **MSL** but output the height above the **WGS84** ellipsoid. In this case, it uses the correction value being outputted in the GGA line along with the height to correct the altitude value back to **MSL**.

See the GPS Status screen to see actual values from your GPS unit.

For example - If you have a Holux 230 Bluetooth GPS, you want to set it to **WGS84**. If you have it set to **MSL** and the altitude ALWAYS looks WAY off, check the GPS Status screen and see if the **GH** value has a value and is approximately the amount that is off. The **GH** value for your area will not change much as you move around. If there isnâ€™t a value for **GH** and likely your GPS isnâ€™t outputting a correction value. In that case, youâ€™ll have to use the **MSL Adjust** field (above) to make the correction manually.

Logger / Vario Support

Comp

Used to select the type of flight computer connected to Soarpilot. Connection to the flight computers below gives the following features and benefits to Soarpilot:

Computer	Wind Data	True Airspeed	Use MC	Polar Potential (Bugs)	Ballast	Pressure Alt	Lift Data	Alt. Setting
B50	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
B50/Volks	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
C302	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
C302A						<input checked="" type="checkbox"/>		
LX/Filser	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>		
EW								
ReCo						<input checked="" type="checkbox"/>		

B50/LX	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
iQue							<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Tasman	Tasman	Development	Use	Only				
Volks						<input checked="" type="checkbox"/>		
Flarm						<input checked="" type="checkbox"/>		
GPSNAV								
SN10	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SR940/GP941						<input checked="" type="checkbox"/>		
PosiGraph						<input checked="" type="checkbox"/>		

In addition SoarPilot will automatically display the traffic data from the Flarm device, even if Flarm is not selected as your flight computer.

Also the following data transfer functions are available

Computer	Declare Tasks	Clear Declaration	Download Flights	Delete Flights	Transfer of Waypoint, Pilot, Glider data
B50					
B50/Volks	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
C302	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
C302A	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
LX/Filser	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		
EW	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
ReCo					
B50/LX					
iQue					
Tasman					
Volks	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Flarm			<input checked="" type="checkbox"/>		
GPSNAV	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>

Alt

Used to set the source of the altitude information used in Soarpilot. See also the QFE/QNH screen. Choose from one of the following options

- GPS Altitude - receive the MSL altitude from the GPS
- Volks - receive the pressure altitude from a Garrecht Volkslogger
- C302 - receive the pressure altitude from a Cambridge C302 vario
- C302A - receive the pressure altitude from a Cambridge C302A Secure Recorder
- Garmin - receive the pressure altitude from a Garmin GPS unit equipped with an pressure sensor
- LX/Filser - receive the pressure altitude from an LX logger
- ReCo - receive the pressure altitude from a ReCo Logger
- Tasman - receive the pressure altitude from a Tasman vario
- GPSNAV - receive the pressure altitude from a GPSNAV vario

Use Pressure Alt for Final Glide

This option controls if Soarpilot should use the pressure altitude received from the logger/vario for the primary altitude reference, rather than the MSL altitude data received from the GPS. Note: This option is only visible with a pressure altitude source selected in the **Alt** field, but not the C302 , as this provides an very accurate MSL reference, and the QNH value required to adjust to Flight Level (FL)

Data Transfer Config

Data Xfer Type

This sets the communication type and for transferring data into and out of Soarpilot

- Serial - Use the serial port. A program SPTerm is then required on the PC to handle the data transfer
- Memo - Use the Palm internal Memo format. This is not recommended as long files need to be split over several memos. Using Memo to transfer flights is not supported.
- DOC - Use the Palm DOC format.
- IR - Use the IR serial port.
- Card - Use an SD memory card.
- BT - Use the Bluetooth serial connection.

Note: Card and BT option are only visible when your PDA supports this.

Data Speed

Sets the speed of the serial data connection. The speed is selectable from 1200 to 115200 baud.

Flow Control

Options to use no flow control, or hardware flow control on serial connections. Note: Hardware flow control requires a fully wired serial cable.

To see more information on how to use these transfer methods, see Exporting the Flight Log.

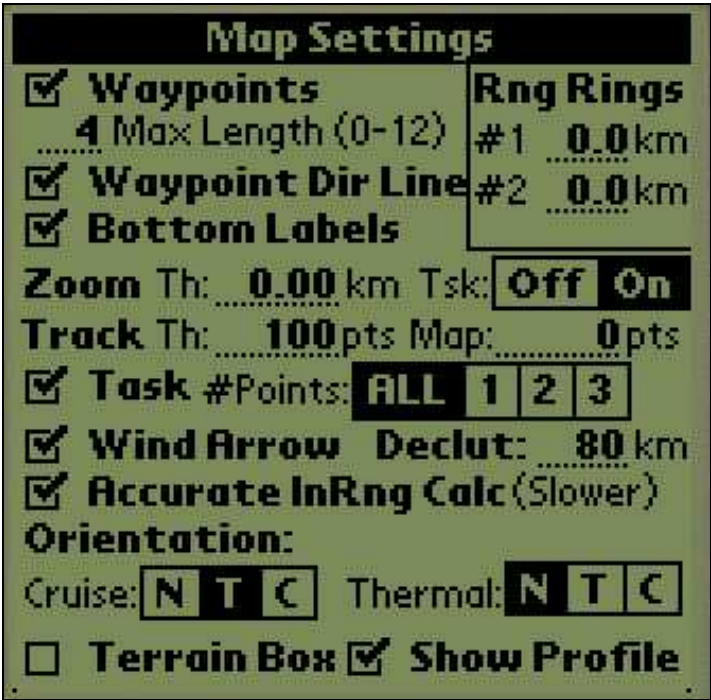
Table of Contents

- Map Display Settings
 - ◆ Main Map Settings
 - ◆ Map Line Settings
 - ◆ Track Line Settings for Thermal Mode

Map Display Settings

This screen as accessed from the “Settings Menu”

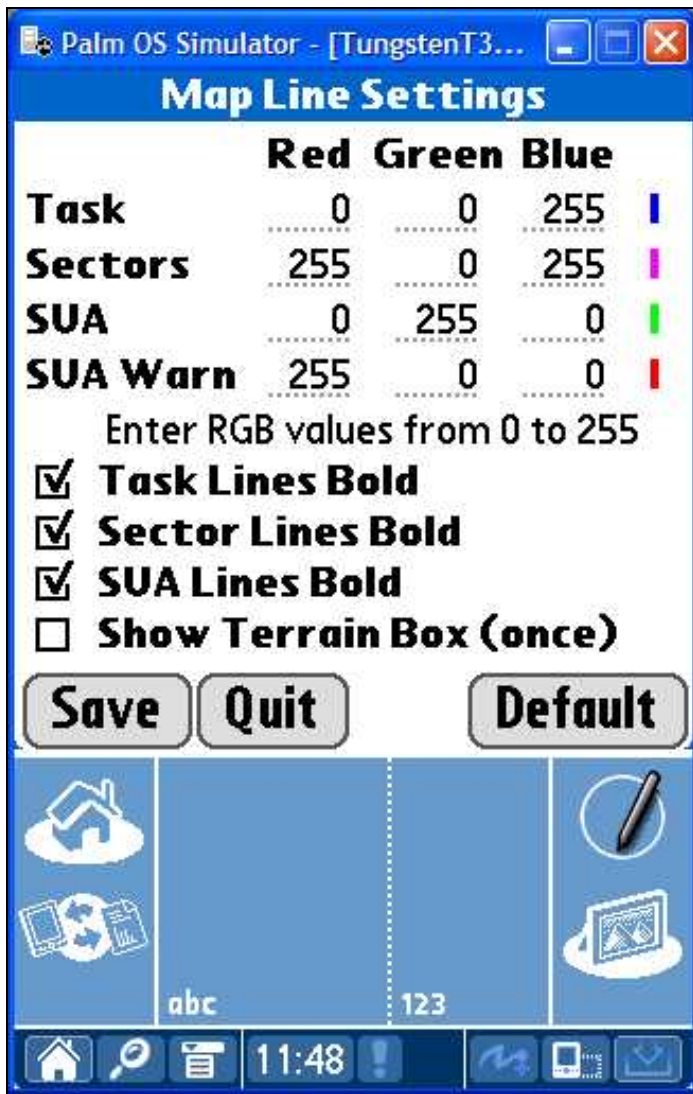
Main Map Settings



Setting	Description
Rng Rings	Allows you to display 2 circles of a set range from your current position on the map. Zero means do not display
Waypoints	Display the Soarpilot waypoints
Max Length	Truncates the waypoint name to the specified number of characters
Waypoint Dir Line	Display a line from your current position to the target waypoint
Bottom Labels	Display various flight information e.g. altitude, speed, on the screen. See Moving Map Screen for details
Zoom Th	Field for the pilot to enter their own choice of fixed thermal zoom value. A zero value turns the fixed thermal zoom off. You can change the zoom level whilst in thermal mode. If you have a fixed value (non-zero) any changes to the zoom level are temporary. If the value is zero, any zoom level changes are saved for the next time you are in thermal mode.
Zoom Tsk	Zoom in when approaching a turnpoint in a task

Track	Draw a line showing the path of the glider. You can choose the length of the track in Thermal mode and normal Map mode separately. A zero setting turns the track off in that mode only. Maximum number of track points is 2725. At a 4 second interval, the track will be over 3 hours long! The track will record a point at the fast logging interval. Note: A long track will slow down the map re-draw speed.
Task	Display the task lines and sectors
#Points	Controls how many of the task sectors are drawn on the map. ALL = Draw all sectors, 1 = Draw only the next waypoint, the one you are currently headed for, 2 = Draw the next waypoint plus the previous, 3 = Draws the next and previous waypoint plus the one after the current waypoint
Wind Arrow	Display an arrow showing wind direction and speed. See the Wind Info screen
Declut	Remove the waypoint labels when the map scale reaches the specified value
Accurate InRng Calc	Makes Soarpilot do an accurate altitude+wind calculation for each waypoint to determine if it is in range. If this is not selected, the program calculates the minimum range you can reach with your current altitude, i.e. directly into wind, and uses this simpler calculation. Recommended to have this option on
Orientation Cruise	Sets the map orientation when in cruise mode. N = North up, T = Track up, C = course up
Orientation Thermal	Sets the map orientation when in thermal mode. N = North up, T = Track up, C = course up
Lines	Available on colour/hi-res palms only. See below for details
Track	Available on colour/hi-res palms only. See below for details
Show Terrain Box	Available on black&white/lo-res palms only. When selected, if there is terrain data loaded, a rectangle will be displayed on the moving map showing the coverage area of the loaded terrain data. This is just to help validate that the loaded did will meet your needs. This item defaults to off when the program is run and the setting is not saved when the program exits. However, once selected, the setting will remain in affect until the program exits
Show Profile	Displays the Thermal Profile on the moving map when in thermal mode.

Map Line Settings



This screen is used to choose the colours and boldness for various lines on the map.

The colours are set by entering 3 numbers between 0 and 255 for Red, Green and Blue. A small sample of the colour is displayed on the right of the screen.

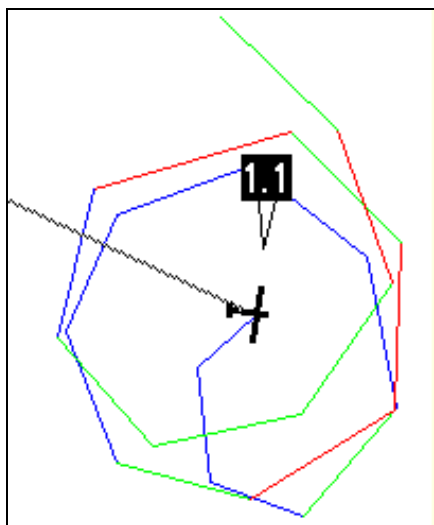
The Show Terrain Box, when selected and if there is terrain data loaded, a rectangle will be displayed on the moving map showing the coverage area of the loaded terrain data. This is just to help validate that the loaded did will meet your needs. This item defaults to off when the program is run and the setting is not saved when the program exits. However, once selected, the setting will remain in affect until the program exits.

Button	Decsription
<i>Save</i>	Save the changes and return to the Map Settings screen above
<i>Quit</i>	Do not save the changes and return to the Map Settings screen above
<i>Default</i>	To return to the program default values

You can also select on hi-res palms if the lines are drawn bold or normal.

Note: The SUA Warn lines to highlight SUA items with warnings are always drawn in bold.

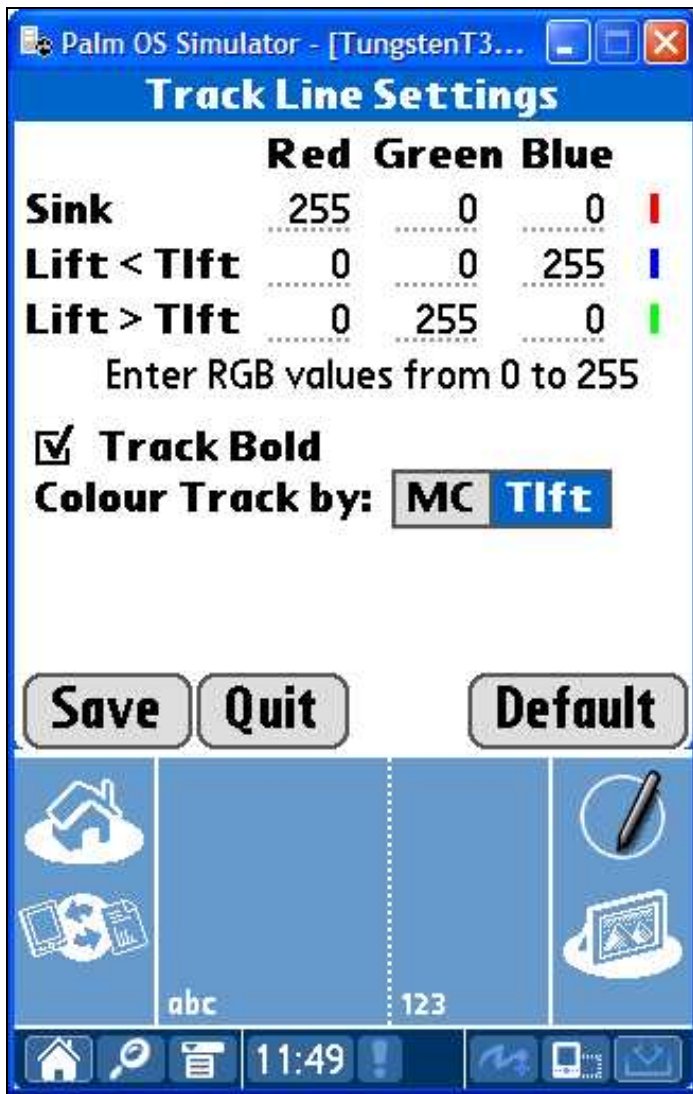
Track Line Settings for Thermal Mode



These colours help you to find the best lift in a thermal, when zoomed in thermal mode.

Default Colour	Meaning
RED	In sink
BLUE	In lift, but less then the lift value
GREEN	In Lift, and equal to or great than the lift value

This screen is used to choose the colours and boldness for track lines.



The colours are set by entering 3 numbers between 0 and 255 for Red, Green and Blue. A small sample of the colour is displayed on the right of the screen.

You can also choose to colour the track by comparing the current lift value to the currently set MC value, or the average thermal lift value.

Button	Description
Save	Save the changes and return to the Map Settings screen above
Quit	Do not save the changes and return to the Map Settings screen above
Default	To return to the program default values

You can also select on hi-res palms if the track lines are drawn bold or normal.

IGC Information Configuration

This screen as accessed from the “Settings Menu”

Palm OS Simulator - [TungstenT3...]

Pilot/Glider/GPS Info

Pilot: **Paul Gleeson**

Type: **Duo Discus**

Reg#: **D-KFF0**

ID: **N1** Class: **20m**

Site: **Moensheide**

OO ID:

GPS Info

Model: **Holux GR-211**

Ser#: **P306860**

abc 123

0:20

This page allows the pilot to enter details about the Pilot, Aircraft, Registration, GPS used. It's sole purpose is to be included in the IGC file, and in the task declaration to a logger if used.

This information is recorded in the logger file when it starts, and although the screen information can be edited during flight, this will not change the information recorded in the log file.

The “OO ID” field is for the Official Observer identification.

Table of Contents

- Main Transfer Screen
 - ♦ Default Filenames used for Data Transfer
 - ♦ Choosing a Filename
 - ♦ SoaringDotNet

Main Transfer Screen

SoarPilot offers functions to exchange information between the PDA and your desktop PC and to save your data onto an SD card or internally on the Palm in DOC format.

This screen which is accessed from the “Settings” menu can be used to start a file exchange. See below for details about the default filenames SoarPilot is using for each type of file, and how to choose a different filename. The transfer method is selected on the NMEA Port Settings screen and is displayed in the title bar of the transfer screen.



transfer method is from/to SD Card

Tap one of the buttons on the screen to select the data you wish to transfer

- Flight/Logs
- Waypoints
- Polars
- Tasks
- Configuration
- SUA

Additionally if you have either a C302, C302A, GPSNAV, Volklogger, LX or Filser selected in the **Comp** field on the NMEA Port Settings screen, then there will be an additional button to select data transfer with an external logger.

Default Filenames used for Data Transfer

Data Type	Default Filename	Receive	Transmit	Format	Extension
Configuration	config.scg	X	X	SoarPilot	.scg
Waypoints	waypoints.dat	X	X	Cambridge	.dat
	waypoints.cup	X	X	SeeYou	.cup
	waypoints.wpl	X	X	\$GPWPL NMEA Sentence	.wpl
Polars	polars.spl	X	X	SoarPilot	.spl
Tasks	tasks.spt	X	X	SoarPilot	.spt
Flight	IGC Name		X	IGC Format	.igc
SUA	suadata.sua	X		Tim Newton-Pierce	.sua

These are all plain text files.

Choosing a Filename

If you use the SD Card method or Palm DOC method you will be given the option to choose a filename to Receive or Transmit. The file extension is fixed according to the file types above.

Receiving a File



Tap on the item in the list to select it, or use *Page-Up* or *Page-Down* to view other pages in the list

Receive Will start the receiving process for the file selected.

Delete will delete the selected file.

Cancel will return to the Main Transfer Screen.

Transmitting a File



Tap on the item in the list to select it, or use *Page-Up* or *Page-Down* to view other pages in the list

You can enter the filename you want in the **Filename** field.

Transmit Will start the transmitting process for the file selected

Default will put the default filename for that file type in the filename field.

Cancel will return to the Main Transfer Screen.

SoaringDotNet

SoaringDotNet is a program on the PC to partner SoarPilot and to make the process of preparing SUA, Terrain, Task, and Waypoint files for uploading into SoarPilot, and to download flights from SoarPilot much easier.

SoaringDotNet can be found under **Files** on the Soaring Pilot Yahoo group site or on the SoaringDotNet website.

Details on the SoaringDotNet program can be found here. More documentation will be available on the SoaringDotNet website.

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- Load & Save Configuration Data
 - ◆ SD Card Method
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 - ◆ Serial Method
 - ◆ IrDA Method
 - ◆ Bluetooth Method
 - ◆ Sample Config File
 - ◆ LISTLINES Feature

Load & Save Configuration Data

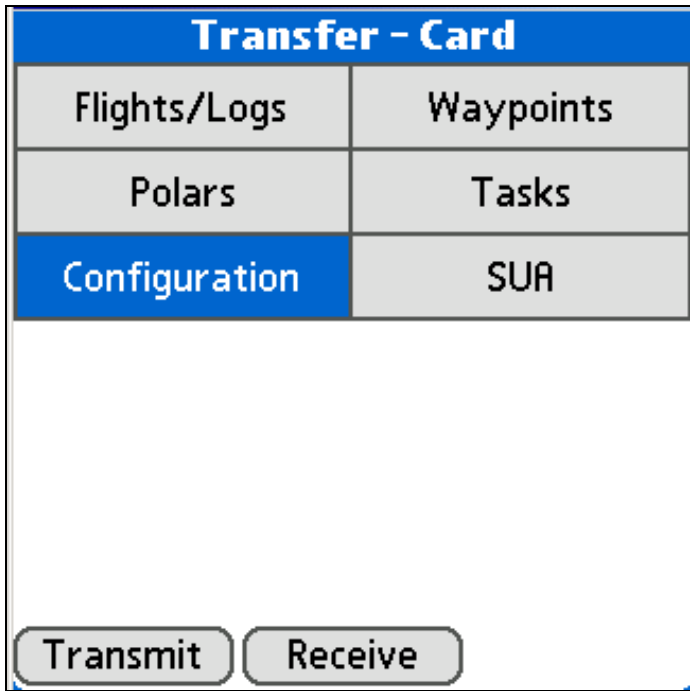
The SoarPilot settings can be saved to either a Palm Memo or DOC file 1), to a SD Card or exported to a text file on your desktop PC via serial or IrDA transfer using SPTerm on Windows or standard command line tools on Linux. Bluetooth is also supported, but I have no experience with BT, so please write that section if you know how.

Personally I always use the DOC transfer method for the configuration settings, but if your Palm supports SD Card that is the preferred method.

Procedure

1. Make sure to use the Data Transfer Config to select the preferred transfer option first.
2. Read this FAQ to find out what the name of the import/export file should/will be. For the configuration settings that name is defaulted **config.scg**
3. Use the **Home** softkey to open the SoarPilot menu and then go to Settings Transfer or use the shortcut X. This will show the Main Transfer screen.
4. Pick your transfer method from the list, if you select the SD Card or DOC methods you can choose the filename, otherwise SoarPilot will use the default filenames.
 1. SD Card method
 2. Palm DOC method
 3. Palm MEMO method
 4. Serial method
 5. IrDA method
 6. Bluetooth method

SD Card Method



Confirm that the title of the screen shows **Transfer - Card**. If not, correct in the Data Transfer Config first.

Tap **Configuration**. The screen should look like the sample on the left.

To Save

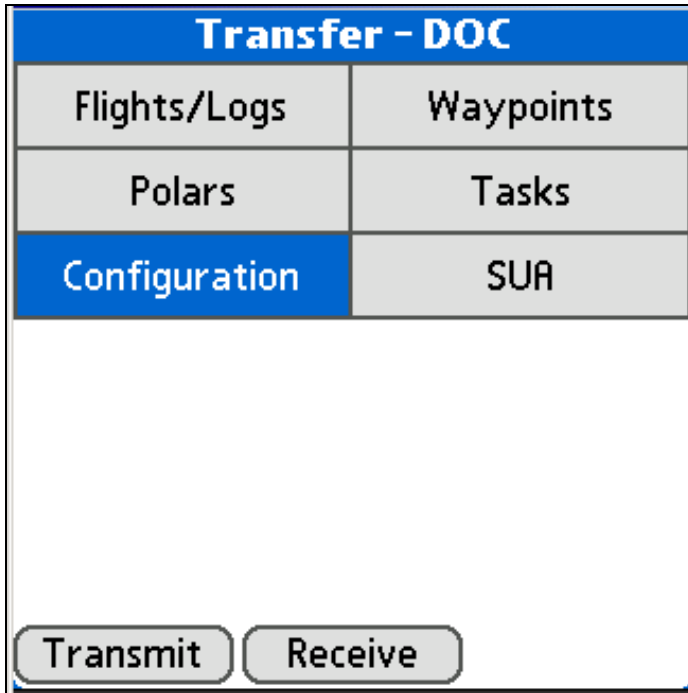
To Load

Tap **Transmit** to write your current SP settings to a file on the SD Card. This file will be written to /PALM/Programs/SoarPilot

Tap **Receive** to load SP settings from the SD Card. The files are expected to be found on the SD Card in directory /PALM/Programs/SoarPilot. Your current settings will be

overwritten by the settings in the file!

DOC Method



Confirm that the title of the transfer screen shows **Transfer - DOC**. If not, correct in the Data Transfer Config first.

Tap **Configuration**. The screen should look like the sample on the left.

To Save

Tap **Transmit** to write your current SP settings to a DOC file in Palm memory. You can then exit SP and Hotsync® to make a backup on your desktop PC.

To Load

Tap **Receive** to load SP settings from a DOC file in Palm memory. Your current settings will be overwritten by the settings in this file!

MEMO Method

Confirm that the title of the screen shows **Transfer - Memo**. If not, correct in the Data Transfer Config first.

Tap **Configuration**. The screen should look like the sample on the left.

Transfer - Memo	
Flights/Logs	Waypoints
Polars	Tasks
Configuration	SUA
<div>Transmit</div> <div>Receive</div>	

To Save

Tap **Transmit** to write your current SP settings to a Memo called ***config.scg** in Palm memory. You can then exit SP and Hotsync® to make a backup on your desktop PC.

Memo
1. *config.scg

To Load

Tap **Receive** to load SP settings from a Memo in Palm memory. A memo called ***config.scg** is expected to be found. Your current settings will be overwritten by the settings in this memo!

Serial Method

First make sure to disable overclocking hacks like Afterburner on your PC.

Confirm that the title of the transfer screen shows **Transfer - Serial** followed by the transfer method. If not, correct in the Data Transfer Config first.

Data Xfer Type:						
Serial	Memo	DOC	IR	Card	BT	
Data Speed:		▼ 19200				
Flow Control:		None Hardware				

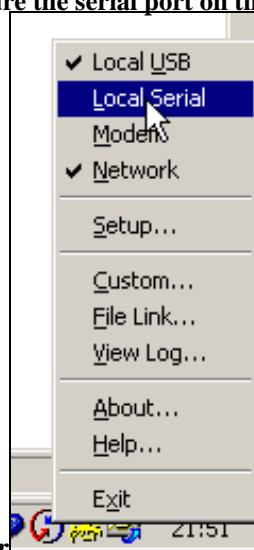
Only use **Hardware** handshake if you use a fully wired serial cable.

Tap **Configuration**. The screen should look like the sample on the left.

Transfer - Serial:19200	
Flights/Logs	Waypoints
Polars	Tasks
Configuration	SUA
<div>Transmit</div> <div>Receive</div>	

Windows:

Make sure the serial port on the PC isn't locked by f.i. your HotSync ®



PC Side

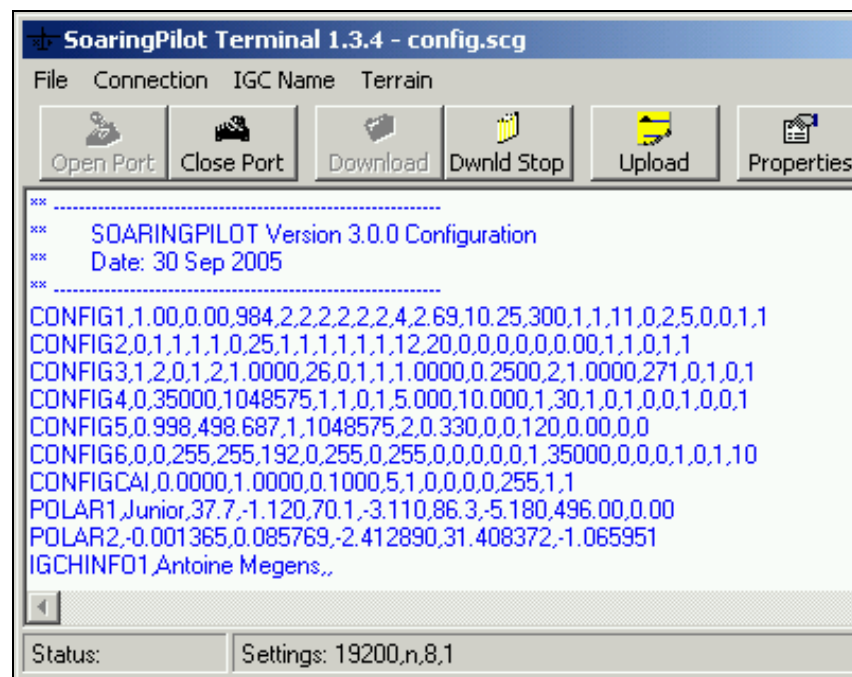
Manager

Then hook up your Palm via a **serial cradle** with a free COM port on the PC and
 Use SPTerm menu command **Connection Properties** and match the COM port
 one on the Palm. Click OK and then the **Open Port** button in SPTerm.

To Save

SPTerm: use the **Download** button, this will popup a file dialog where you must select the **Config Files(*.scg)** file type using the combo box labeled 'Files of type'. Then select the appropriate directory and provide a file name and click the **'Open'** button.

Palm: Tap **Transmit** to transmit your current SP settings over the serial line to the PC.



screenshot of SPTerm after succesfull completion of the transfer.

Finally use the **Dwnl Stop** to close the config file on the PC. All done!

Tap **Receive** to load SP settings over the serial line from a file transmitted by SP. The icon of the button will change into **Stop**.

To Load

In SPTerm, use the **Upload** button and in the 'Select File to Upload to SoaringPilot' dialog, browse for the desired config file you want to load into SP and click 'Open'. The file will be transferred to SP.

Linux:

PC Side

Make sure the serial device on the PC isn't used by other processes and you have write permission to the serial device

Then hook up your Palm via a **serial cradle** with a free serial device on the PC.

The following description of down- and uploads makes use of basic commands that should be installed on all linux boxes. Run them from the command line in a terminal. Communication programmes like **minicom** or **kermit** offer another approach.

Configure the serial device with **stty**. Match the serial device settings with those of the Palm. Hardware handshake on the first serial device and 19200bps can be set with:

```
$ stty -F /dev/ttyS0 19200 -local crtscts
```

If hardware handshake is doing fine, there is nothing wrong about using a transfer rate of 115200bps on the Palm- and on the PC-side. At least PalmOS-3.5.1 on my m105. If hardware handshake does not work! Uploads to the m105 are limited to 2400bps.

hardware handshake. Palm offers a free upgrade to PalmOS-3.5.3 which cures the problem. The upgrade is not recommended for the m105 by Palm. I was brave and installed it anyway and got a working hardware handshake.

You can display the major current settings of the first serial device with:

```
$ stty -F /dev/ttyS0
```

And you can display all settings of the first serial device with:

```
$ stty -F /dev/ttyS0 -a
```

PC: Enter the directory where you want to save the data. Download the configuration **cat** from SP to a file on the PC. In this example it is named SP-config-file.txt.

```
$ cat /dev/ttyS0 > SP-config-file.txt
```

Palm: Tap **Transmit** to transmit your current SP settings over the serial line.

PC: Finally hit **Ctrl-C** in the linux terminal to stop **cat**. All done!

Palm: Tap **Receive** to load SP settings over the serial line from a file on the PC. The **Receive** button will change into **Stop**.

PC: Enter the directory where you have the data file for upload. Upload for example SP-config-file.txt with the **cat** command:

```
$ cat SP-config-file.txt > /dev/ttyS0
```

Palm: Tap **Stop** to stop SP listening on the serial line.

To Save

To Load

IrDA Method

Windows:

This method is basically identical to serial transfer. On the PC install IrCOMM2k if you have Win2K or WinXP. For Win9x IrDA may already be available as a generic serial port, but YMMV. Use Google. The idea is to assign the IrDA port to a (pseudo) serial COM port so SPTerm can be fooled to believe it's talking to a serial port. Once you have that up and running, select **IR** in the Data Transfer Config and a suitable baudrate (don't pick a too high baudrate!). You do not need a cradle, simply line up the IR port of the Palm with the IrDA of your PC/laptop. The **Save** and **Load** procedures are identical to the serial method.

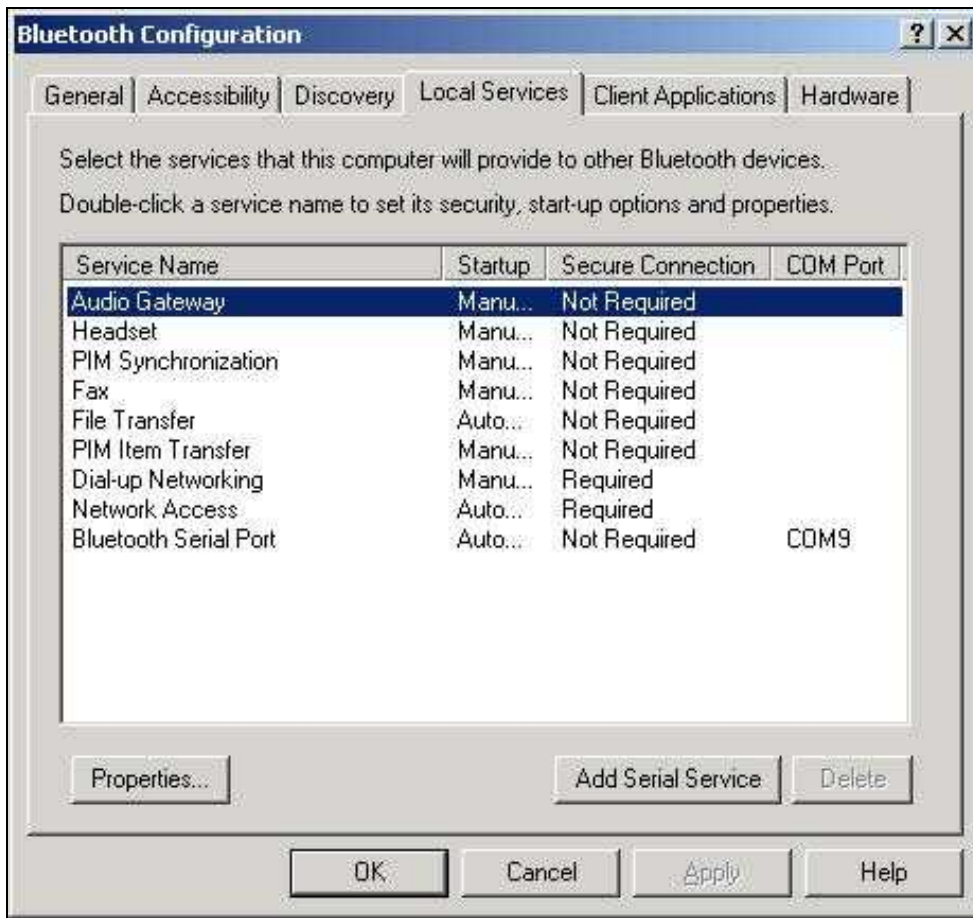
Linux:

This method is basically identical to serial transfer. You need to have your IrDA hardware up and running at this point. The serial communication has to be enabled for IrDA. Every thing is fine, if the device `/dev/ircomm0` is present and usable for the first IrDA interface. If not, loading the module `ircomm_tty` enables the serial communication for IrDA or use your local configuration procedure for this purpose. Once you have `/dev/ircomm0` up and running, select **IR** in the Data Transfer Config and a suitable baudrate. You do not need a cradle, simply line up the IR port of the Palm with the IrDA of your PC/laptop. The **Save** and **Load** procedures are identical to the Serial method. You just have to replace the serial device name `/dev/ttyS0` by your serial ir-device name like `/dev/ircomm0` for the first IrDA interface.

Bluetooth Method

It's assumed you have already paired the Palm and your computer. Do so before you continue following this guide!

1. First you need to know exactly what COM port the Palm will use to establish a serial link with your computer. Right-click the Bluetooth icon in your System Tray, and select Advanced Configuration. Select the Local Services tab, and you'll see a dialog like the one below. Take note of the value in the Bluetooth Serial Port service. In this case it's COM9. You can close this dialog without changing any setting.



1. Configure SPTerm to use the same COM port.
2. Select **BT** in the Data Transfer Config of SP.
3. You do not need a cradle, simply hold the Palm in the vicinity of the your PC/laptop with Bluetooth enabled.
4. The **Save** and **Load** procedures are identical to the serial method.

Fix Me! because I don't have Bluetooth myself, can someone please verify the above procedure
Thanks — Antoine Megens 2005/09/30 16:00

Sample Config File

SoarPilot transfers the config data as a simple text file. Below a sample config text file, so you have an idea what it looks like:

```
** -----
**      SOARINGPILOT Version 3.0.0 Configuration
**      Date: 30 Aug 2005
** -----
CONFIG1,1.00,0.00,1148,2,2,2,2,2,4,37.25,30.23,20,1,1,12,2,2,5,0,0,1,1
CONFIG2,0,1,1,1,1,1,25,1,1,2,1,1,1,12,30,0,0,2,0,0,0.00,1,1,0,1,0
CONFIG3,1,0,0,1,0,1.0000,131,0,1,1,0.5000,0.2500,0,1.0000,131,0,1,0,1
CONFIG4,1,6561,786109,1,0,4,1,5.399,10.799,1,300,1,0,1,0,0,1,0,0,0
CONFIG5,0.988,498.687,0,0,2,0.330,0,0,20,43.19,1,0
CONFIG6,0,0,255,255,192,0,255,0,255,0,0,1,0,0,1,9842,2,1,0,1,30,0,10
CONFIGCAI,0.0000,1.0000,0.1000,5,1,0,0,0,1,255,1,1
POLAR1,Pegase,53.9,-1.450,75.5,-1.940,107.9,-4.850,1003.10,33.00
```

```
POLAR2,-0.001243,0.138177,-5.286169,55.575862,-1.446508
IGCHINFO1,Antoine Megens,,
IGCHINFO2,,,,
IGCHINFO3,GPS Companion,
LISTLINES,1,2
```

LISTLINES Feature

You can now configure horizontal and vertical lines in the waypoint list, active task, task list, SUA list, polar list and flight lists screens. This option is **not** available in a setup screen as the programming effort does not justify a new screen for an option that will be set very rarely. The procedure is:

1. Once you load a new SoarPilot version, re-load your config settings, then transmit out again.
2. Edit the config.scg file. This can be done on the Palm if you've used MEMO or DOC transfer. For editing DOC format, you need to install a DOC Reader/Editor, see Links page. For the other transfer methods you can use your favorite text editor. Make sure to use an editor that keeps EOL intact (CR+LF), specially if you edit on *NIX platform.
3. You will see a line LISTLINES. The first number controls the vertical lines, the second number the horizontal lines. (0 = no line, 1 = gray line, 2 = solid line)
4. Save changes and transfer modified config.scg file back to Palm and SoarPilot. Repeat edit if you don't like the result. Then stick to the line format you like most.

These screen shots were made using a Hi-Res Colour Palm, the results may look different on a Lo-Res B/W screen. These screenshots have also been resized a bit, which makes a bit harder to see the difference between the gray and solid line type. To only way to find out it to experiment with these settings.

LISTLINES Samples

LISTLINES.0.0

SELECT - Dist - R.Alt			
Name	Airport	Dist	Last
Lemele...	000°	0.0	303
Omme...	047°	8.2	740
Raalte Br	202°	9.3	809
Nijverdal	140°	14.8	1095

LISTLINES.0.2

SELECT - Dist - R.Alt			
Name	Airport	Dist	Last
Lemele...	000°	0.0	303
Omme...	047°	8.2	591
Raalte Br	202°	9.3	641
Nijverdal	140°	14.8	826

LISTLINES.1.0

SELECT - Dist - R.Alt			
Name	Airport	Dist	Last
Lemele...	000°	0.0	303
Omme...	047°	8.2	591
Raalte Br	202°	9.3	641
Nijverdal	140°	14.8	826

LISTLINES.2.0

SELECT - Dist - R.Alt			
Name	Airport	Dist	Last
Lemele...	000°	0.0	303
Omme...	047°	8.2	591
Raalte Br	202°	9.3	641
Nijverdal	140°	14.8	826

LISTLINES.2.1

SELECT - Dist - R.Alt			
Name	Airport	Dist	Last
Lemele...	000°	0.0	303
Omme...	047°	8.2	591
Raalte Br	202°	9.3	641
Nijverdal	140°	14.8	826

LISTLINES.2.2

SELECT - Dist - R.Alt			
Name	Airport	Dist	Last
Lemele...	000°	0.0	303
Omme...	047°	8.2	591
Raalte Br	202°	9.3	641
Nijverdal	140°	14.8	826

You get the idea...

1) A Palm Memo or DOC file can of course be transfered to your desktop via Hotsync® on Windows or pilot-xfer on Linux

Table of Contents

- Load & Save Glider Polars
 - ◆ Sample Polar File

Load & Save Glider Polars

The procedures are identical as described on the Load & Save Configuration page, except:

- the internal file for the polar database is **polars.spl**, so replace **config.scg** with **polars.spl**
- instead of tapping **Configuration** you need to tap the **Polars** button on the Main Transfer screen.
- Replace **Config Files(*.scg)** with **Polar Files (*.spl)** in SPterm if you use Serial, IR or BT transfer.
- It is not recommended to use MEMO transfers for a large Polar database, as it may result in multiple MEMO files on your Palm.

Sample Polar File

The SoarPilot polar database is transfered as a simple text file. Below a (partial) sample polar text file so you get an idea what it looks like:

```
** -----
**      SOARINGPILOT Version 2.0.0 Polars
**      Date: 28 Apr 2005
** -----
Duo Discus,57.7,-1.537,91.2,-2.999,109.0,-5.720,1384.5,52.8
1-26A,40.4,-1.825,57.7,-3.325,77.2,-6.656,575.4,0.0
1-26E,44.2,-2.012,63.7,-3.657,84.7,-7.318,694.4,0.0
1-34,44.2,-2.012,63.7,-3.657,84.7,-7.318,694.4,0.0
1-35A,53.4,-1.437,82.0,-3.490,109.6,-7.569,839.9,47.2
1-36 Sprite,41.0,-1.315,71.8,-3.874,92.3,-7.899,709.8,0.0
604,61.0,-1.402,81.5,-2.750,111.7,-7.981,1256.6,26.4
80,76.0,-1.600,97.0,-2.980,1607.0,44.000,44.0,44.0
Astir,51.2,-1.360,67.4,-2.138,86.3,-3.887,793.6,0.0
ASH-25-25m-Pas,57.0,-1.080,88.0,-2.610,114.0,-4.750,1528.0,32.0
ASH-25-25m-Pil,53.0,-1.010,82.0,-2.440,106.0,-4.440,1327.0,32.0
ASH-25M-Pas,70.0,-1.520,92.0,-2.720,119.0,-4.960,1653.0,32.0
ASH-25M-Pil,65.0,-1.420,86.0,-2.550,111.0,-4.649,1455.0,32.0
ASK-21,51.2,-1.555,75.5,-3.304,99.8,-6.609,1031.7,0.0
```

Table of Contents

- Load & Save Waypoints
- Data Transfer Procedures
 - ◆ Supported File Formats
 - ◆ GPWPL Support
- Where to obtain waypoints?

Load & Save Waypoints

Although SoarPilot can work with the goto waypoints of certain GPS units, it becomes a much more powerful tool if you use its built-in waypoint database.

Data Transfer Procedures

The procedures are identical as described on the Load & Save Configuration page, except as noted below:

- The proper filename for waypoint data is **waypoints.dat**, so replace **config.scg** with **waypoints.dat**
- Instead of tapping **Configuration** you need to tap the **Waypoints** button on the Main Transfer screen.
- Replace **Config Files (*.scg)** with **Waypoint Files (*.dat)** in SPTerm if you use Serial, IR or BT transfer.
- It is not recommended to use MEMO transfers for inputting waypoint data, as the data will probably be larger than one MEMO will hold.

Supported File Formats

SoarPilot supports two waypoint file formats:

Format	Description
Cambridge	The “Cambridge/WinPilot” format is one of most popular used waypoint formats. These files usually have extension .DAT 1)
SeeYou	SoarPilot can import the SeeYou2) waypoint file format. Files in this format usually have extension .CUP3)

Sample Cambridge Format

```
1,53:27.100N,005:40.633E,3M,TAL,AMELAND NETH,FLUGPLATZ
2,52:09.516N,005:25.133E,20M,T,AMERSFOORT A,A28 AB007
3,52:18.483N,004:45.850E,-2M,TAL,AMSTERDAM,FLUGPLATZ
```

Sample SeeYou Format

```
name,code,country,lat,lon,elev,style,rwdir,rwlen,freq,desc
"AMELAND NETHERLN",AMELA,NL,5327.100N,00540.633E,3.0m,2,90,800.0m,"118.350","AIRPORT"
"AMERSFOORT A28 A",AMERSF,NL,5209.516N,00525.133E,20.0m,1,,,,"A28 AB007"
"AMSTERDAM",AMSTE,NL,5218.483N,00445.850E,-2.0m,2,60,3490.0m,"118.100","AIRPORT"
```

As you can see both formats are human readable ASCII formatted files. This means you can edit your waypoints using any pure ASCII editor (like notepad), but always make sure to maintain the correct syntax!

GPWPL Support

In addition to importing waypoint files, SoarPilot now also supports importing/exporting waypoints in the \$GPWPL format. This is a special NMEA sentence that is supported by many GPS units on the market.

There is an **with Alt** option to encode/decode the waypoint altitude in the waypoint name in the format “NNNXXX” where NNN is the first 3 characters of the waypoint name and XXX is the waypoint altitude in meters divided by 10. If this option is not used, the waypoint name is 6 characters uppercase.

When receiving waypoints in the \$GPWPL format, the transfer will now stop as soon as a waypoint name is duplicated.

Where to obtain waypoints?

Basically the same sources as mentioned for the SUA data. On the links page a link to the WELT2000 program (German, but English version available) by Michael Meier can be found. This program is also capable of generating waypoints and/or SUA files in the formats supported by SoarPilot.

1) , 3) YMMV

2) flight analysis and planning software for the PC

Table of Contents

- Load & Save Tasks
 - ◆ Sample Tasks File

Load & Save Tasks

The procedures are identical as described on the Load & Save Configuration page, except:

- the internal file for the task database is **tasks.spt**, so replace **config.scg** with **tasks.spt**
- instead of tapping **Configuration** you need to tap the **Tasks** button on the Main Transfer screen.
- Replace **Config Files (*.scg)** with **Tasks Files (*.spt)** in SPTerm if you use Serial, IR or BT transfer.
- It is not recommended to use MEMO transfers if you have a large tasks database as it will create multiple MEMO files on your Palm.

Sample Tasks File

The tasks database is transferred as a text file. Below a very simple sample file:

```
** -----
**      SOARINGPILOT Version 3.0.0 Tasks
**      Date: 30 Sep 2005
** -----
TS,300km17Jun,5
TR,0,0F,0,0,0F,0,0,0,0,0
TW,50:30:30.00N,007:15:19.98E,221,673F,MOENH,Moenchsheide
TW,50:33:30.96N,007:08:12.00E,129,669F,BADNE,Bad Neuenahr
TW,49:37:18.00N,006:50:24.96E,129,1755F,KELL,Kell
TW,49:45:00.00N,008:06:34.98E,2,656F,ALZEYB,Alzey Bf
TW,50:30:30.00N,007:15:19.98E,221,673F,MOENH,Moenchsheide
TE
TS,500-22May04,5
TR,0,0F,0,0,0F,0,0,0,0,0
TW,52:26:26.52N,001:02:49.08W,199,505F,HUS HsbndsBs,CntrHngrcmpl
TW,51:23:49.92N,001:18:30.84W,131,249F,NEWburyRccrs,WsdGrndstnds
TW,52:53:14.82N,000:46:02.28W,2,138F,BVR Belvoir,BrgovrCstlLk
TW,51:37:17.82N,001:15:39.48W,2,189F,DIDcot,Pwr.StnChmny
TW,52:26:26.52N,001:02:49.08W,199,505F,HUS HsbndsBs,CntrHngrcmpl
TE
```

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- ♦ Where to Obtain SUA Data
- ♦ Where to Obtain DAFIF Files
- ♦ Checking What You Have
- ♦ How do I Load my Airspace Files into SoarPilot?
- ♦ Method A, Loading using the SoaringPilot Terminal Program and a Serial Cable
- ♦ Method B, Loading using an SD Expansion Card
- ♦ Method C, Loading SUA Data via the Palm Cradle using HotSync Manager.
- ♦ Checking the SUA Data
- ♦ Can I Save a Specific SUA Configuration Loaded into the Palm ?
- ♦ Can I keep more then one SUA file on my Palm?
- ♦ Latest SUA File Specification

Where to Obtain SUA Data

SoarPilot uses SUA data using the Tim Newport-Peace format. This is also the same format used by Cambridge's PocketNAV, GlideNav II and the Ilec SN-10. Obtaining SUA data for a specific geographic area can be obtained a different ways:

1. **World-Wide Soaring Turpoint Exchange** - There are actually three mirrors of this site now. Within this site, there are a couple of places that you may find the SUA files you are looking for. Here are all three sites for you to choose from:
 - ♦ Sterling, Massachusetts, USA (courtesy of GÃ¼nther Eichhorn, the new Soaring Server)
 - ♦ Wellington, New Zealand (courtesy of Philip Plane, XINQU)

◆ Fort Mill, South Carolina, USA (courtesy of Glenn Holden, Gahsys International)

1. **Special Use Airspace Area** - Once at the initial webpage, select “Special Use Airspace” link. You will be taken to the main SUA page where you can then select your geographic region. However, the files listed here normally cover large/general areas such as the entire country of Denmark for example. For the US and Europe, you will also find links to the “Airspace” and “Eurospace” programs from Carl Ekdahl. These programs are specific to the US (Airspace) and Europe (Eurospace). So if you are outside of those areas, you will not be able to use the programs. See below for more info on these programs.
2. **Turnpoint Exchange** - Also on the main page is a link to the Turnpoint Exchange. You will find that once you drill down to the specific area and perhaps specific location for which you are trying to find SUA data for, that in addition to the turnpoints for that location, there may be a “Special Use Airspace” link there as well. Selecting this link following by the link for the “Tim Newport-Peace” formatted files will give you a SUA file that someone has created for that specific soaring location.
2. **Airspace or Eurospace Programs** - As mentioned above, if you are in the US (Airspace) or Europe (Eurospace), you can use the programs created by Carl Ekdahl to create properly formatted Tim Newport-Peace files for a specific geographic area from DAFIF files. Follow the “Special Use Airspace” link from the main World Wide Turnpoint Exchange webpage then select either USA or Europe. The top of these pages has the download link for the program. There are also links for downloading the required DAFIF files. However, these links are very old and do not work. See the “Where to Obtain DAFIF Files” section below to get the latest version of these files.
3. **SoaringDotNet Program** - This program, written by Harald Maier 1), can be found under **Files** on the Soaring Pilot Yahoo group site or on the SoaringDotNet website. In addition to several other functions helpful to using SoarPilot, you can create SUA data from DAFIF files. Please see the instructions for this program for the proper method to create them using SoaringDotNet.
4. **WELT2000** - This (German) program + database, maintained by Michael Meier contains all soaring turning points of the world with WGS84 coordinates as well as SUA information of Europe collected from various sources. This program can create SUA and waypoints files that are compatible with Soaring Pilot.

Where to Obtain DAFIF Files

DAFIF or Digital Aeronautical Flight Information Files are needed by the Airspace, Eurospace and SoaringDotNet programs. They are available from US National Geospatial-Intelligence Agency (NGA) free of charge from their DAFIF webpage. Once at this webpage, you must scroll down to the area with a heading of “**DAFIF CD ROMs**”. There are two columns under this for the “Current” and “Next” releases of the DAFIF data. You should use the “Current” release. Under that they may also be multiple “Editions” of the data (ex. Ed. 6, Ed. 7, Ed. 8). You should select the lowest edition available as the higher editions are probably for testing use or do not contain all required information. You can then select the FTP or HTTP link as required and the download of the DAFIF data should begin. Once the file is downloaded, you should following the instructions from the respective programs as to how to properly extract the files required by each program.

Checking What You Have

T N-P airspace files can be viewed using a number of top end gliding flight analysis programs such as SeeYou. These enable you to check both the graphics and altitude limits etc. If you have access to such software it is highly recommended that you crosscheck what you have against your current map. After all, the integrity of your airspace data could be the most critical information in S.P. in terms of your safety and the safety of others.

T N-P files may also be opened and viewed using a conventional Windows based text editor (NotePad, WordPad) and this is useful for checking their age and status.

How do I Load my Airspace Files into SoarPilot?

We recommend that you select one of three preferred methods depending upon your particular hardware set-up :-

A) By using a serial cable and the dedicated P.C. application SoaringPilot Terminal, available from the web site.

B) By using an external SD expansion card and a card reader. This method is the simplest (provided you have the hardware) and is recommended if you want to upgrade single or multiple Palm units without the need to connect to a P.C. i.e. in your glider or at your gliding site.

C) By converting your airspace file into Palm Doc format (pdb) using a suitable application and then transferring it to your Palm RAM using serial/USB cradle and the HotSync Manager. This method is convenient if you are distributing airspace files via the web as it uses standard Palm set-ups.

Method A, Loading using the SoaringPilot Terminal Program and a Serial Cable

For this to work your T N-P file must have the file extension .sua. The file name itself is not critical so you could use, for example, myairspace.sua.

Firstly, check that the Palm works correctly in serial mode when connected to the P.C. A good way to confirm this is to perform a serial HotSync. When satisfied, exit the HotSync program and start SoaringPilot Terminal on the P.C. and S.P. on the Palm. Now proceed as follows:

1. Bring up the options highlight in S.P. by tapping the applications button in the Graffiti area or the navigator centre button if using a Palm T. Select 'Settings' and then 'NMEA/Port'.
2. From the NMEA/Port screen select 'Serial' in the Data Xfer Type section.
3. Reselect 'Settings' as for 1) above and select 'Transfer'
4. From the transfer screen select SUA. S.P. will now show the number of SUA items already loaded and the total points (connecting lines, circles etc).
5. If you want to clear out the existing airspace data select 'Delete all' and 'OK'
6. Go to the SoaringPilot Terminal program on your P.C. and check the settings using 'Connection' and 'Properties'. These should be the same as those used for the serial HotSync (e.g. your current COM port number with no flow control).
7. Press the 'Open Port' button, the light on the right hand side should go green.
8. Still on the P.C, select 'Upload' and SUA File(*.sua) for the file type. Browse to the directory containing your airspace file. On the Palm SUA screen select 'Receive' and go back to the P.C. and double click on your airspace file to open it in the window. The P.C. will transfer the data and the 'SUA Items' display on the Palm will count up. On completion the Visual Basic Terminal window on the P.C. will close and the airspace will have been loaded. Go to the checking instructions outline below.

Method B, Loading using an SD Expansion Card

For this to work the SUA file must have its file name changed (using Rename) to suadata.sua. The steps involved are:

1. If not in place, set up the following directory on your SD expansion card using a card reader and your P.C. so that S.P. can find the file: **Palm/Programs/SoarPilot/**
2. Copy your suadata.sua file to the SoarPilot/ directory on the card.
3. Place the card in your Palm and start S.P.
4. Bring up the options highlight by tapping the applications button in the Graffiti area or the navigator centre button if using a Palm T. Select 'Settings' and then 'NMEA/Port'.
5. From the NMEA/Port screen select 'Card' in the Data Xfer Type section.
6. Reselect 'Settings' as for 4) above and select 'Transfer'
7. From the transfer screen select SUA. S.P. will now show the number of SUA items already loaded and the total points (connecting lines, circles etc).
8. Either clear out the existing data by selecting 'Delete all' and then load using 'Receive' or add the information on the card to the existing data in S.P. by just selecting 'Receive'. Note: If you load the same data twice it is duplicated and just slows down the machine. Return to the FG screen by pressing Home or the navigator ring (Palm T). The data is now loaded and can be checked (see later).

Method C, Loading SUA Data via the Palm Cradle using HotSync Manager.

To load using the normal HotSync Manager you must first convert the file to the Palm PDB format. Various free applications exist on the web to do this, MakeDocW.exe being one that is reasonably user friendly. The set-up required will be described in the help file for the particular program, but the following general points should be noted:

- The output file name for HotSync must be: **suadata.sua.pdb** where suadata.sua is the name and .pdb the extension.
- Most conversion programs expect to see the input file as text so you may need to rename the T N-P file to suadata.txt. from suadata.sua
- If compression is an option, switch it off.
- When the new file suadata.sua.pdb has been saved to a chosen directory on your P.C. you can HotSync it to the Palm RAM in the normal way. It is recommended that you delete any existing version from the Palm before the HotSync using the normal Palm O.S. Delete function. The file to be deleted from RAM will show up as suadata.sua.

To load the Doc format airspace file from RAM, start S.P. and perform the following:

1. Bring up the options highlight by tapping the applications button in the Graffiti area or the navigator centre button if using a Palm T. Select 'Settings' and then 'NMEA/Port'.
2. From the NMEA/Port screen select 'DOC' in the Data Xfer Type section.
3. Reselect 'Settings' as for 1) above and select 'Transfer'
4. From the transfer screen select SUA. S.P. will now show the number of SUA items already loaded and the total points (connecting lines, circles etc).
5. Either clear out the existing data by selecting 'Delete all' and then load using 'Receive' or add the information on the card to the existing data by just selecting 'Receive'. Note :- As in the previous example, if you load the same data twice it is duplicated and slows down the machine. Return to the FG screen by pressing Home or the navigator ring. The data is now loaded and can be checked.

Checking the SUA Data

The SUA data can be checked as follows:

- Bring up the options highlight by tapping the applications button in the Graffiti area or the navigator centre button if using a Palm T. Select 'Navigation' and then 'SUA List'.
- You can now scroll through the list enabling or deactivating individual items as required. You can also check individual airspace blocks using the View feature.

Note: You will be alerted if any errors occur when loading in SUA data. Any items that had invalid co-ordinates, or did not make completely closed polygons (ie. the last points is the same as the first point) will be marked as type "Error" on the SUA List. The items in error can be found by sorting the list by Type. Items in Error cannot be activated. You can see the cause of the error by looking at the SUA Display screen for each item in error. You must correct the input file, delete all the items and re-load them.

- Go to the section in this manual dealing with SUA configuration and check the settings (SUA Display & Warning Configuration). Finally and most importantly, go to the Moving Map screen and check that your local airspace, as displayed, agrees with your paper map. Remember, if the paper map is current and disagrees, the paper map is correct!

Can I Save a Specific SUA Configuration Loaded into the Palm ?

You can save SUA data that has been combined in the Palm provided that you are using an expansion card and have enough space on it to store the whole S.P. program. Simply use the normal Palm save to card system and copy it across. If you delete/lose S.P. from the machine in the field, just load back from the card and all the SUA and it's configuration will be fully restored. This also applies for waypoints, terrain etc.

The same save and load-back operation can be performed using the HotSync Manager provided that the attributes have been correctly set up on the Palm for the individual S.P files.

Can I keep more then one SUA file on my Palm?

Yes. See the Loading and Saving Data section for information on how to do this.

Latest SUA File Specification

This can be found on Tim Newport-Pierce's site on the Specialist Systems Airspace page. The SUA file specification is contained in the USER.AIR file.

In addition to this specification, keywords of CLASS, RADIO and ACTIVITY are also support.

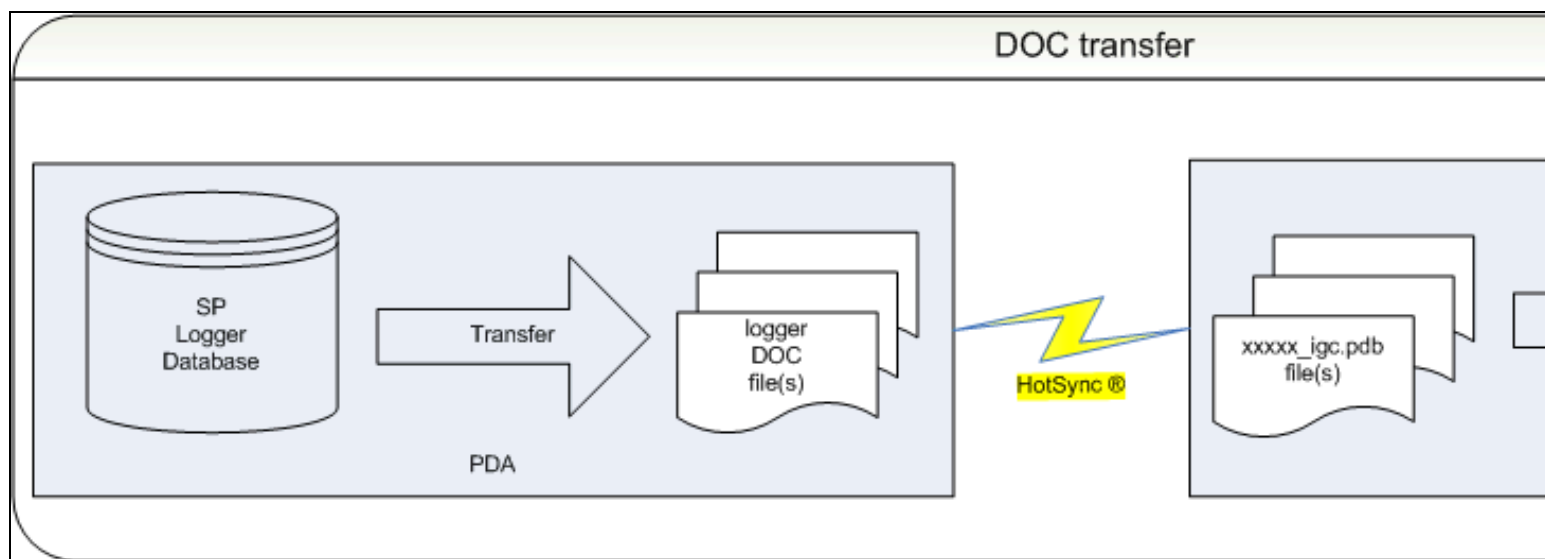
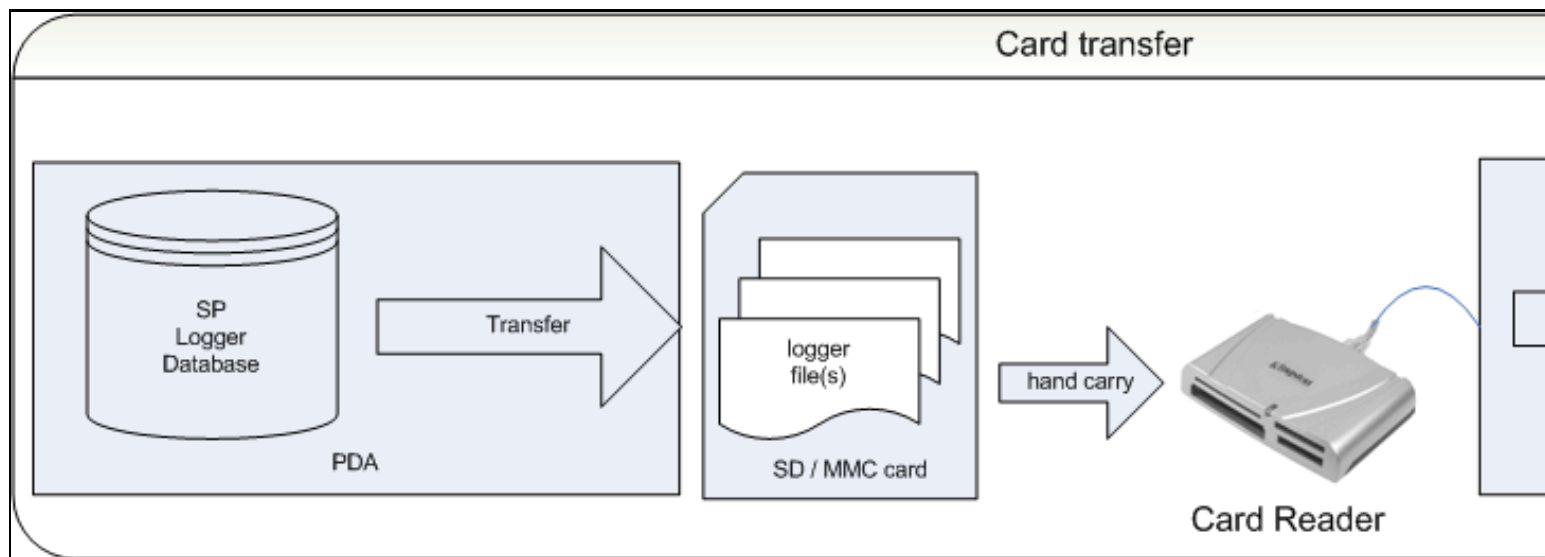
1) Harry for intimi 😊

Saving/Exporting The Flight Log

This section describes methods to export the flights from SP to IGC files so you can f.i. analyze your flights with SeeYou or upload to the OLC server. IGC is a file format defined by the International Gliding Commitee (IGC) as described in this PDF document.

There are several methods to get your flights out of SP, but I will discuss only the Card, DOC and SPTerm methods here.

- Card method
- DOC method
- SPTerm method



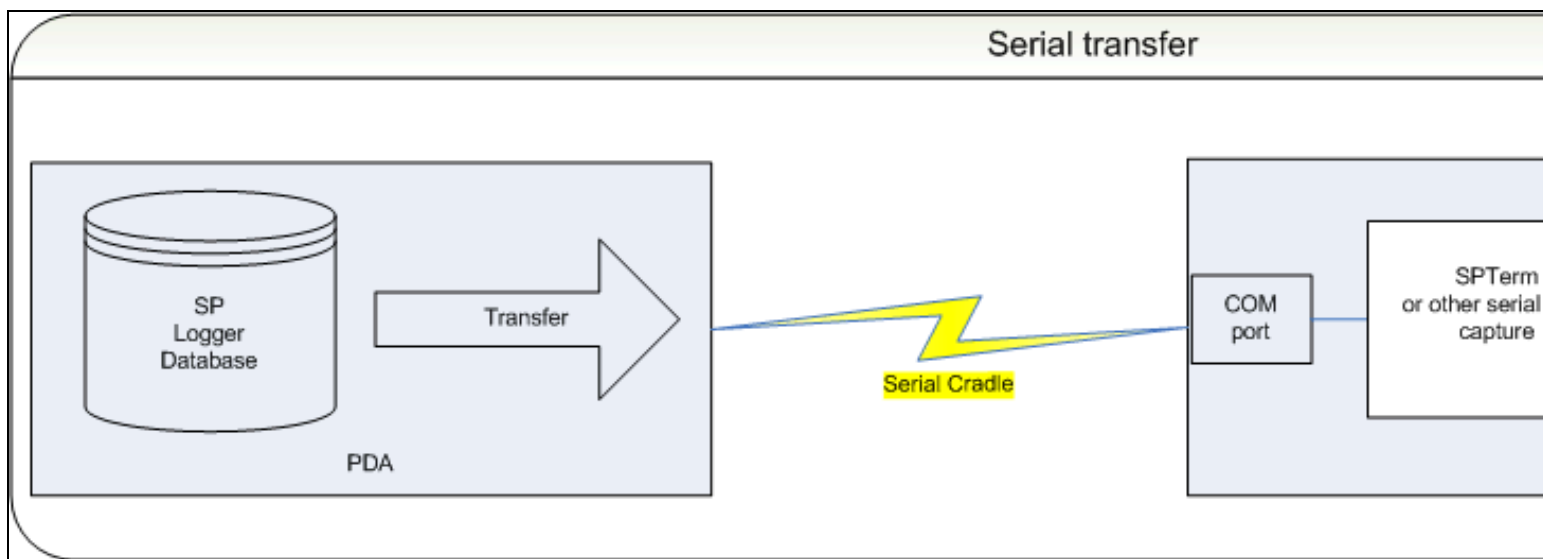


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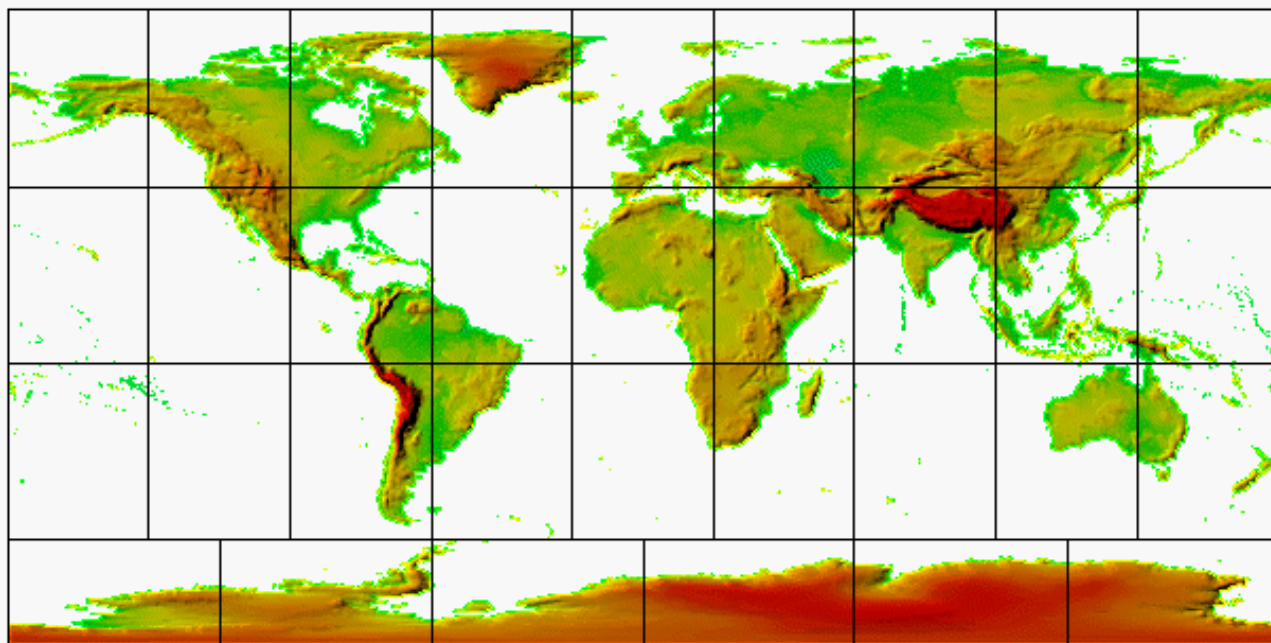
- Creating & Loading Terrain Elevation Data
 - ◆ Where do I get the terrain elevation .DEM files from for use with SPTerm?
 - ◆ Procedure to create terrain database using PC
 - ◆ Procedure to create terrain database using MAC OS X

Creating & Loading Terrain Elevation Data

See Also Terrain Elevation Data Usage

Where do I get the terrain elevation .DEM files from for use with SPTerm?

SoaringPilot uses 30 arc second .DEM formatted data to produce the sub-sampled terrain data. You can use the below image map to download the areas of the world that you wish to use. Instructions for creating the terrain data for SP with these .DEM files can be found in the Readme.pdf file included with software. They originate from <ftp://e0srp01u.ecs.nasa.gov/srtm/>



Click in the map above on the area of interest to download the DEM file for that area. The procedure to convert that DEM file to a SoarPilot terrain database is described in the next section.

You can also find a similar image map to the above, as well as some very useful utilities for working with and visualizing DEM data at <http://www.dgadv.com/srtm30/>

There are rumors that this format for the data may eventually not be available from the above NASA site. If that is the case, we will make the files available on our own server. Till that time, we will continue to use the NASA site.

Procedure to create terrain database using PC

This procedure is for Windows based PC using SPTerm 1.34 or later. SPTerm can be downloaded from the main Soaring Pilot web site.

- Download and place the DEM file in a sub directory **terrain** of where the SPTerm.exe program is located.
- Start SPTerm and select menu command Terrain Generate
- The next dialog will pop up:

Generate Terrain Elevation Data

Enter the Latitude and Longitude Values Below to define the desired output region. The format for the below values is (D)DD.D(DDD) with South and West values as negative numbers

Output Filename (.pdb)
SoaringPilot_terrain_db.pdb

Approx. Output Size(kb)
1578

Upper Latitude
55

Left Longitude
4

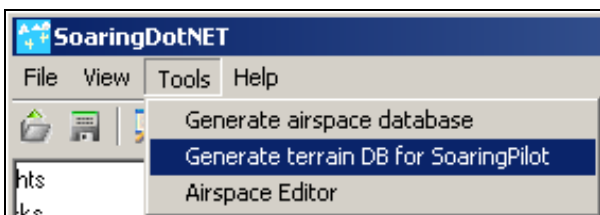
Right Longitude
12

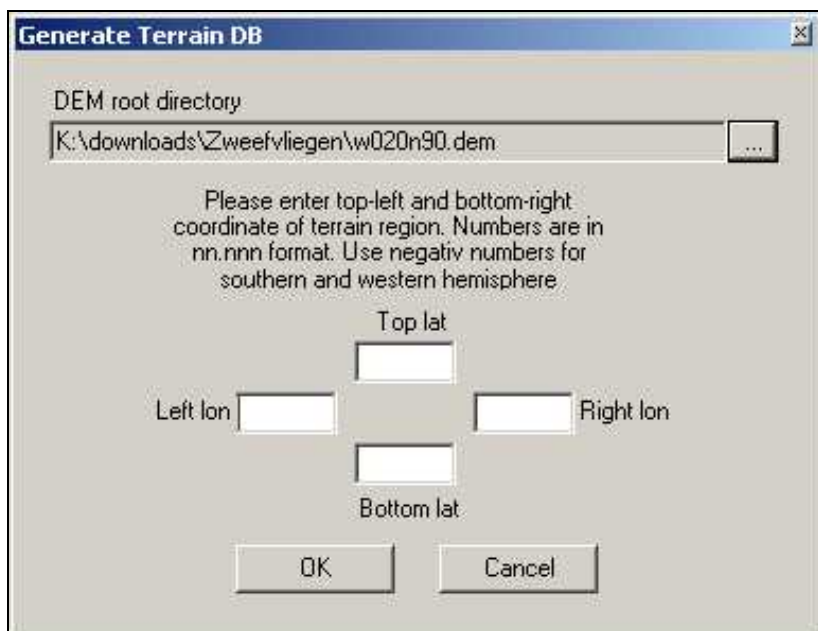
Lower Latitude
48

Generate

- In this dialog enter the upper, lower latitude and left and right longitude of the area you want terrain information generated. The dialog will show in the **Approx. Output Size** the estimated size of the resulting terrain database in Kb. In the sample screen shot above the area is from 4 to 12 degrees East and 48 to 55 degrees North (roughly NW of Europe). Make sure to keep the size small enough to fit in Palm memory and still leave room for a log file for a long flight.
- When you're satisfied with your inputs, use the **Generate** button. This will result in a terrain database in PDB format in the terrain directory.
- Double click this file and Hotsync® to load in your Palm. On next startup of SP this database will be loaded. You can verify this by checking the **Show Terrain Box** in the Map Settings screen and then switch to the Moving Map screen. An additional box around the area covered by the terrain database will be drawn (you may have to zoom out and pan left/right/up/down to get to see the lines of the box). The **Show Terrain Box** option is temporary of nature and is not saved, so when you exit SoarPilot the checkbox is cleared on restart.
- **Note:** There is a trick for Windows users (depends from your Windows system settings) If it doesn't work with (dot = .) try (comma = ,) as decimal separator.

SoaringDotNET also has a feature to generate an airspace database for Soaring Pilot so this can be used as an alternative for SPTerm.

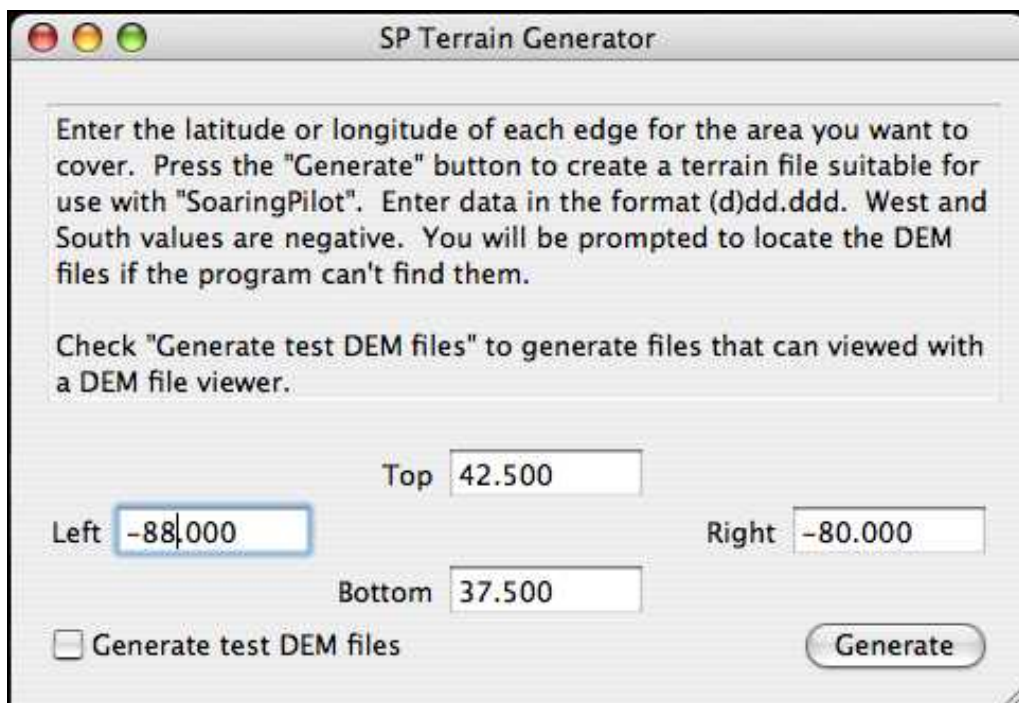




Procedure to create terrain database using MAC OS X

This procedure requires the **SPterrainGen.zip** file that can be downloaded from the Soaring Pilot Yahoo group site.

- Download the program to your MAC. Your browser might unarchive the application for you. If it doesn't, then something like unstuffit should.
- Double click on the application to launch it.



- You will see a dialog box that will allow you to enter the dimensions of the area you want to cover. Enter the Latitude of the top and bottom edge and the Longitude of the left and right edges. Top is to the north. The values must be in decimal degrees.

- Click on the Generate button to create the file. If the program can't find the needed DEM source files an "Open Files" dialog box will allow you to locate the directory that contains them. The program will remember the DEM file location from then on. You will also be presented with a "Save File" dialog box to allow you to select where and by what name you want the file saved as.
- If you want to check your work you can check the "Generate test DEM file" checkbox then click Generate. This option will generate two files that can be opened and viewed in a DEM file view such as SimpleDEMViewer. The first will be a DEM file with just the data for the area you selected. The second file is a text file that describes the parameters of the first.
- Transfer the file to your PALM device.

Some restrictions:

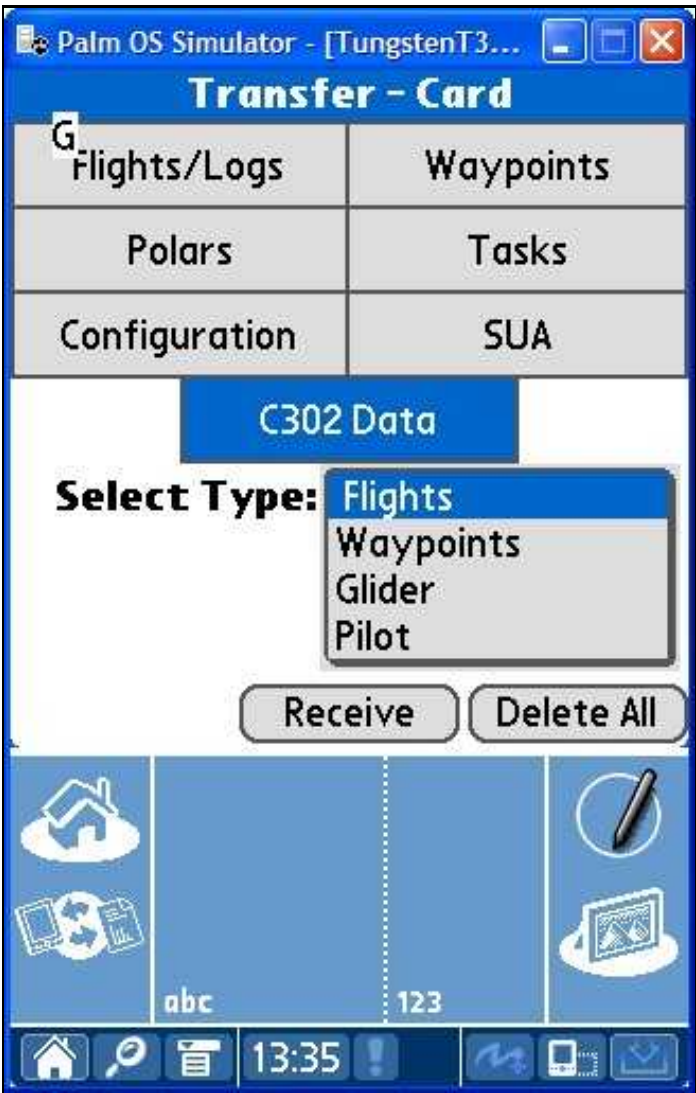
- The program has only been tested on OS-X version 10.3.x and 10.4.4.
- It should operate correctly on Intel based Macs but it hasn't been tested.
- The program can't deal with Latitudes below 60 degrees south so no soaring in Antarctica.
- It probably won't deal well with regions that cross the 180 degree meridian so no soaring in portions of Alaska.

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- Transferring External Logger Data
- Transferring Logged Flights

Transferring External Logger Data

If you have either a C302, C302A, GPSNAV, Volklogger, Flarm, LX or Filser selected in the **Comp** field on the NMEA Port Settings screen, then there will be an additional button to select transfer data with your logger. See below.



Tapping on the **Logger** button will display a drop down list, from which you can select the type of data you wish to transfer. The table below summarises the supported external loggers and data types.

Computer	Download Flights	Delete Flights	Transfer of Waypoint, Pilot, Glider data
C302/C302A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
LX/Filser	<input checked="" type="checkbox"/>		
Volks	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
GPSNAV			<input checked="" type="checkbox"/>
Flarm	<input checked="" type="checkbox"/>		

You can scroll through the list of flights using the following hardware buttons

Button	Function
<i>Calendar</i>	Move one item up in the list. Moving to the previous page if required, but not past the start of the list
<i>Phone</i>	Move one item down in the list. Moving to the next page if required, but not past the end of the list
<i>Page-Down</i>	Move a page up in the list. Or to the last page if at the start of the list
<i>Page-Up</i>	Move a page down in the list. Or to the first page if at the end of the list

Transferring Logged Flights

On the screen above, select **Flights** and tap the **Receive** button.

You must select either DOC or Card 1) for the **Data Xfer Type** on the NMEA Port/Settings screen.

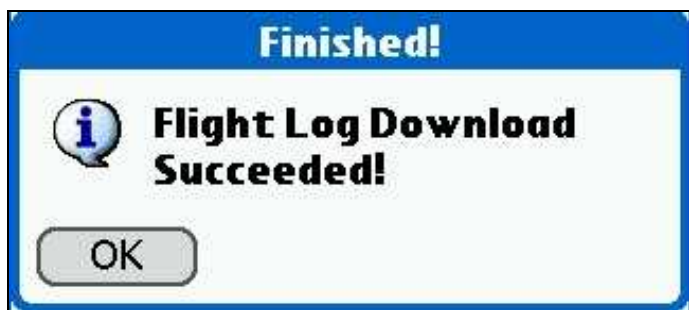
SoarPilot will then pull a list of available flights from the external logger. During this time you will see a Receiving Flights dialog box.



Then SoarPilot will display the list for you to select a flight to download. You can page up and down through the list as normal. Tap on the **Get Flight** button to download your selected flight. Or tap on the **Quit** button to return to the main transfer screen.



Once the flight download is complete, SoarPilot displays a confirmation dialog.



Tap on **OK** to return to the list to download more flights if you require.

1) You can also download the binary LXN format file from an LX / Filser logger if Card type has been selected
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- ♦ SoaringDotNet
- ♦ SUA
- ♦ Original Howto

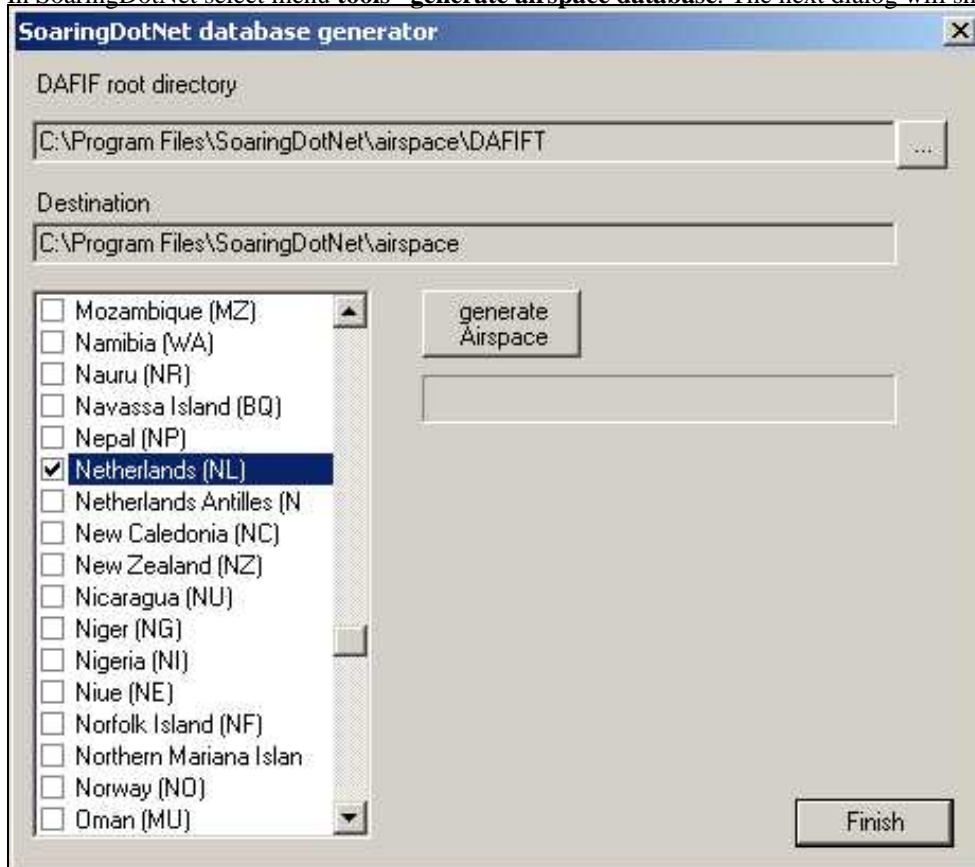
SoaringDotNet

This program, written by Harald Maier 1), can be found under **Files** on the Soaring Pilot Yahoo group site or on the SoaringDotNet website. The **Files** section contains a few screenshots of the program in action as well. The program is released for FREE under the GNU GENERAL PUBLIC LICENSE. The program is still maintained by Harald and further developments are to be expected, pending allocation of volunteers that are willing to assist in its development. The source code in C# of the current version can be downloaded from the Yahoo Soaring Pilot group site.

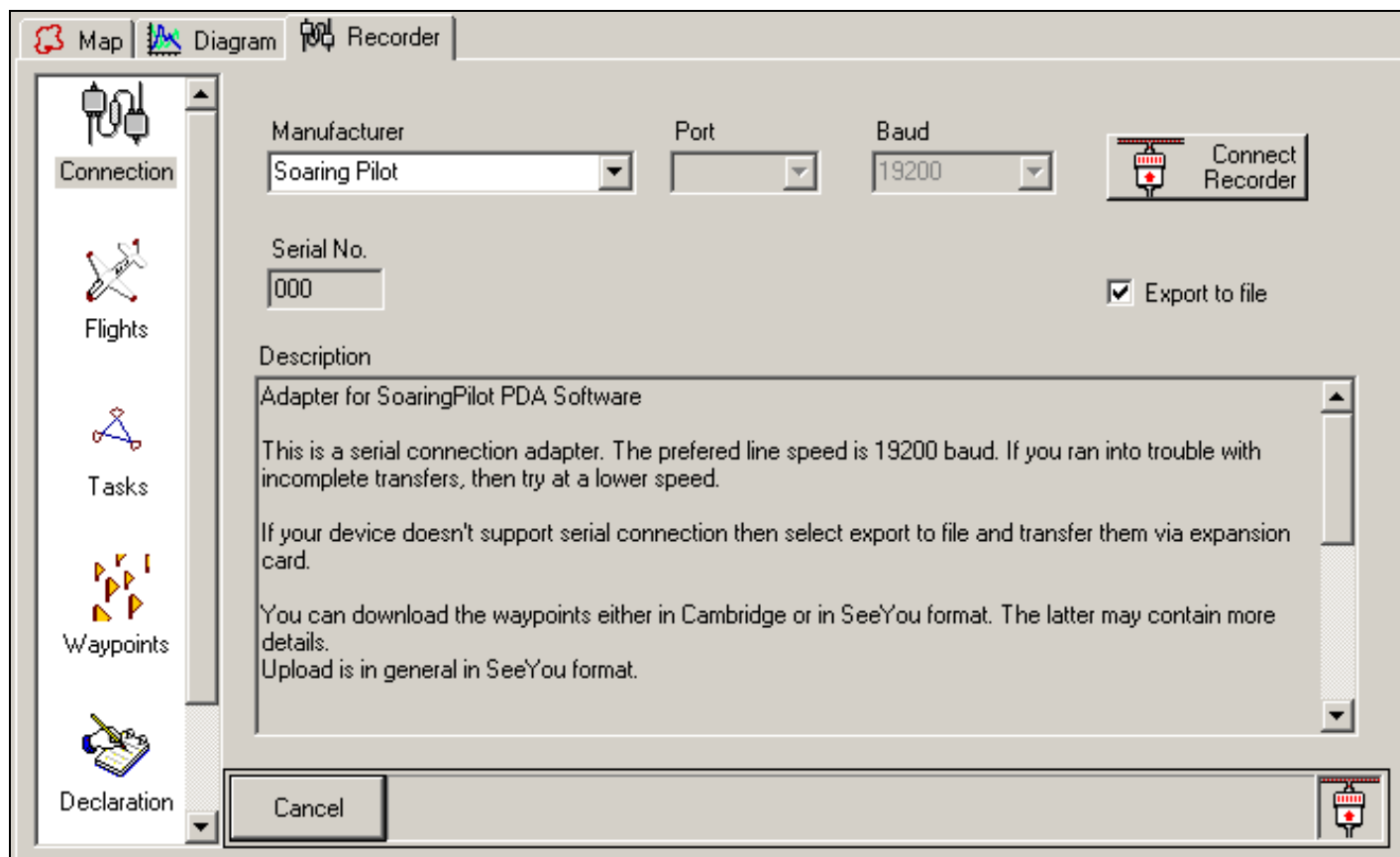
SUA

One of the features in this program is the ability to create SUA files from DAFIF input files. Here's how:

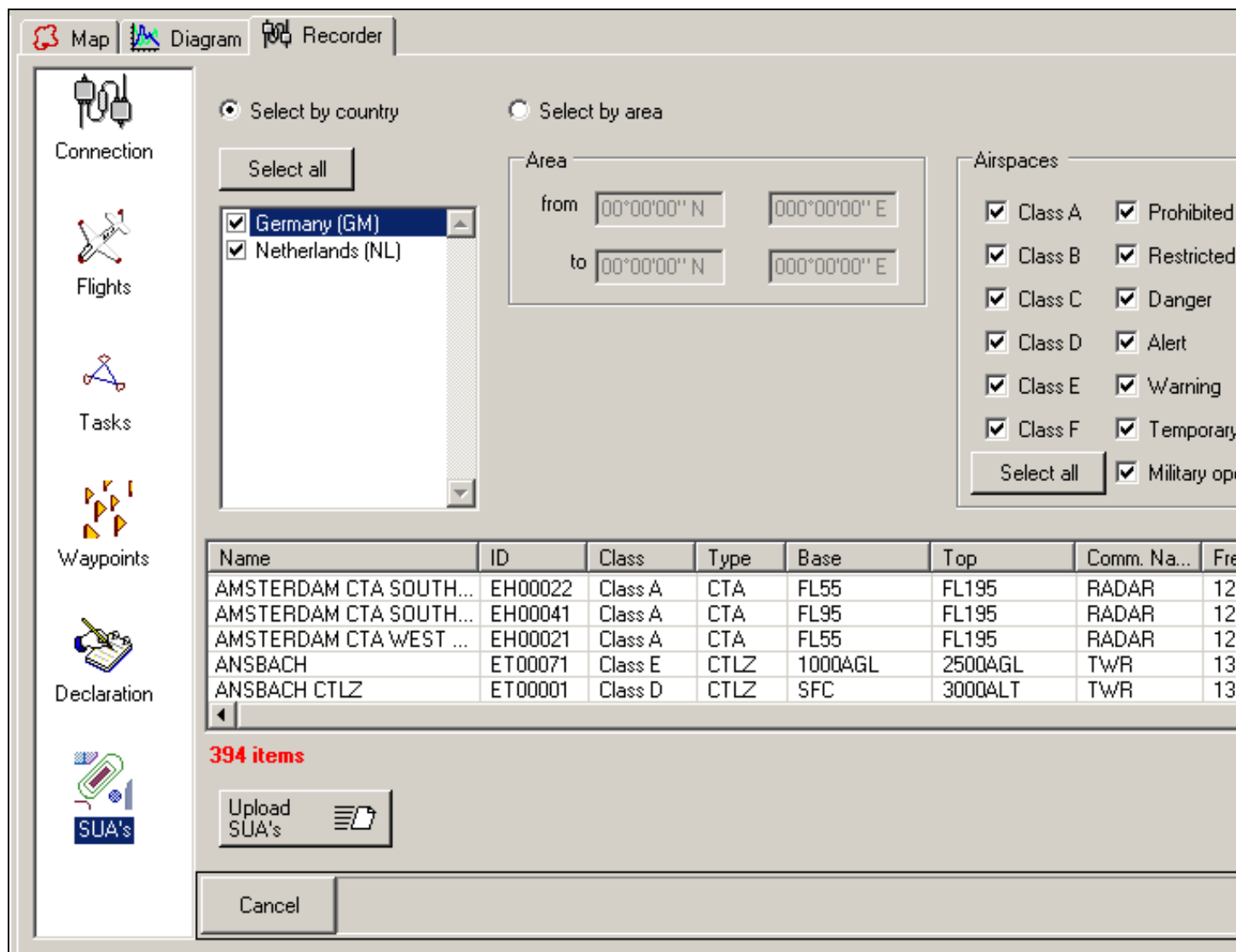
1. download DAFIF files **DAFIFT.ZIP** and **VERSION.ZIP** from the DAFIF web site 2). Unpack both and copy the VERSION file into the DAFIFT folder.
2. In SoaringDotNet select menu **tools generate airspace database**. The next dialog will show:



3. Browse for the DAFIF folder where you extracted the ZIP archives from first step.
4. Check the desired countries and use the **generate Airspace** button. This will result in the creation of one or more .SDN files in the airspace directory of SoaringDotNet. These files are in a binary format and useless for Soaring Pilot.
5. Close the database generator dialog and in SoaringDotNet main window, select the **Recorder** tab.
6. Select the 'Connection' icon in the main vertical toolbar window and as **Manufacturer** select 'Soaring Pilot':



7. If your PDA supports serial transfer and you have a serial cradle then you can upload the SUA directly to Soaring Pilot. This is similar to the SPTerm method as described at config file serial transfer, otherwise make sure to check the **export to file** checkbox.
8. Now select the SUA icon and check the countries and/or airspace types you want to upload. The total number of SUA items is displayed in red near the bottom of the screen.



9. Finally use the **Upload SUA's** button. When **export to file** is used, this will result in a 'Save As' dialog for a file **suadata.sua**. This file is in the correct format for transfer to Soaring Pilot.

Original Howto

Some usefull hints:

Always try the right mouse button, it brings up a lot of popup windows.

Moving the map: Move mouse cursor on side or edge of map, cursor change to arrow, click to move map

Zooming the map: Page up/Page Down Keys or scroll mouse or toolbar buttons

Task creation on map: Create new task or select a task. Hold down shift-key and click on first point. Click again and drag to next turnpoint. This will append turnpoints to task. Clicking without dragging will prepend turnpoints. Delete turnpoints with ctrl-key down and click on turnpoint
Note: Taskpoints are takeoff, start, turnpoints, finish, landing.

Moving turnpoints: Move mouse to turnpoint, cursor will change to hand. Click on turnpoint and drag to new pos.

When you first start SoaringDotNet, you will have no waypoints or SUA's. The map center is somewhere in the middle of europe. Make one waypoint to your home point and SoaringDotNet will start the next time with this point centered on the map.

Waypoints are organized in catalogues. You can use SeeYou (*.cub), Volkslogger (*.dbt) and CAI/WinPilot (*.dat) files. You can have more than one open catalogue, but only one "active". You can merge catalogues, move or copy waypoints between catalogues.

SUA files are generated from the DAFIF database, you need to download dafift.zip and version.zip from the DAFIF web site. Unpack both and copy the VERSION file into the dafift folder. Currently only dafif version 7 is supported.

In SoaringDotNet select menu tools/generate airspace database. Select your dafif folder and generate your requested airspaces.

>>OR<<

Tell me which country(s) you need and i will send it to you. ;-)

Have fun!
Harry

1) Harry
2) Currently only DAFIF version 7 is supported
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- ♦ WELT2000
- ♦ SUA
- ♦ Waypoints

WELT2000

WELT2000 is a program and database maintained by Michael Meier. The database contains 52800 1) soaring turning points of the world as well as SUA of (mainly) Europe. The program can generate both waypoints and SUA files that are compatible with Soaring Pilot.

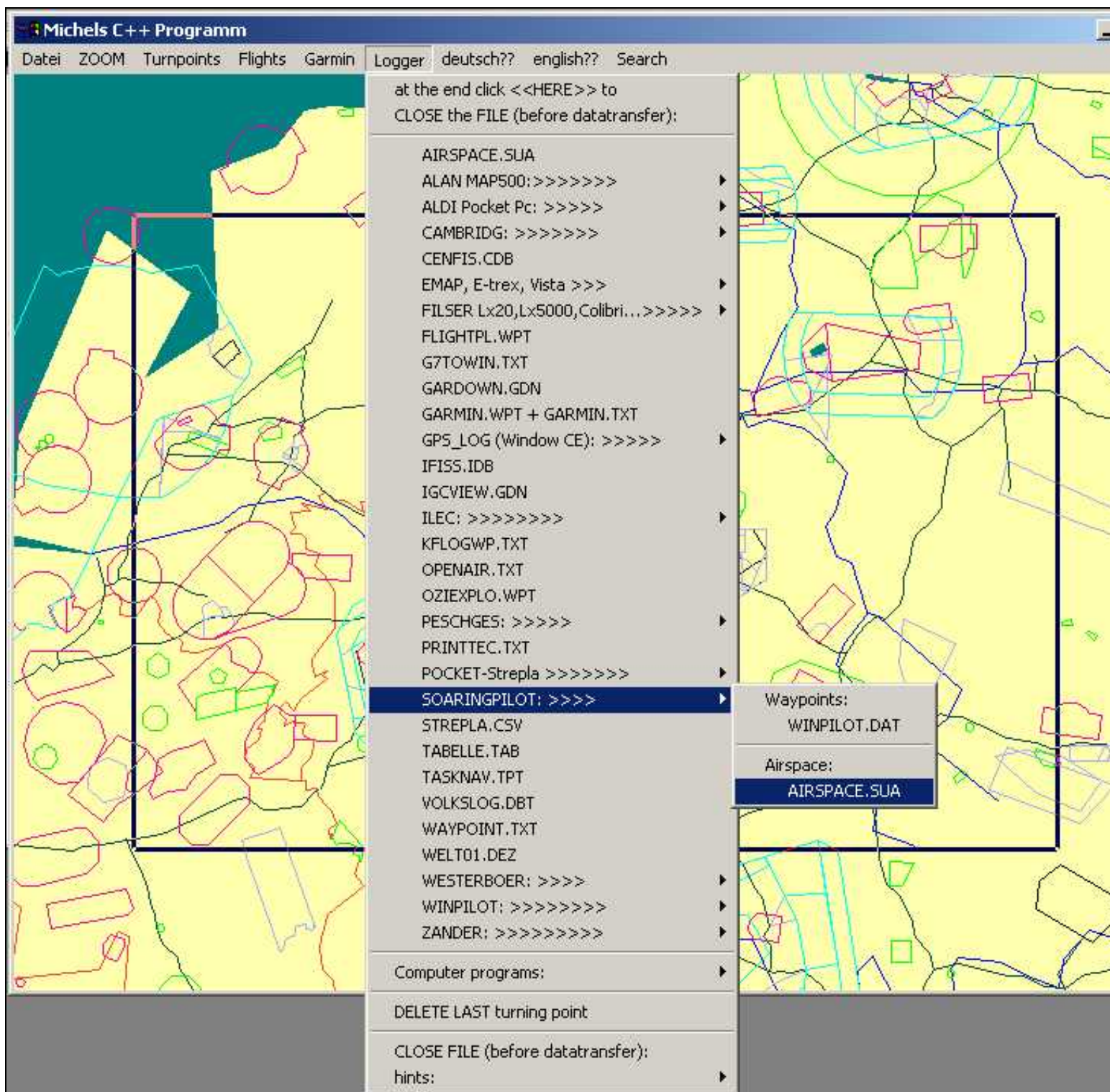
Installation

Download Welt200E.exe 2) and let it rip. If you prefer not to download an executable, then download the appropriate ZIP archive via the WELT2000 home page. The program will default install in C:\BOBERG, this is also the location where output files will be created. No shortcuts or anything are created in your Start menu or Desktop, so you need to browse to C:\BOBERG and create a shortcut to WORLD.EXE or simply double click it.

SUA

After starting the program, use your left mouse button and, while keeping left mouse button pressed, draw a rectangle of the area you need. Then select menu command **Logger SOARINGPILOT: »» AIRSPACE.SUA**. This will create a file C:\BOBERG\AIRSPACE.SUA.

Close the transfer with menu command **Logger Close File (Before datatransfer)**. Rename the file to **suadata.sua** and transfer to Soaring Pilot using your favorite transfer method as described in detail for the configuration.



Waypoints

Optionally use the **Turnpoints** menu to filter out certain turning points, then use menu command **Logger SOARINGPILOT: » WINPILOT.DAT**, followed by **Logger Close File (Before datatransfer)**. Rename the file to **waypoints.dat** and transfer to Soaring Pilot using your favorite transfer method as described in detail for the configuration.

- 1) update 08.11.2005
- 2) if you prefer the German version, download Welt200D.exe

Future Features of SoarPilot

In the Latest Beta Version

- Nothing at this time. More coming soon.

In the Next Version

- The above features in the latest beta version, plus....

Coming Soon....

- Sending SMS messages to be used for both to live tracking servers and for information to other people.
- “Goto Start” warning to indicate exactly when to head for the start sector/cylinder to arrive exactly on the start time.
- Flight log download in CAI format for GPSNAV.
- Westerboer VW921, VW922.
- Improved ETA calculations allowing selection of the average speed to use.

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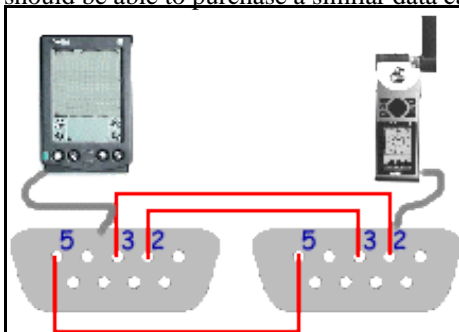
- Hard-wired Connection
 - ◆ Garmin Connection
 - ◆ Palm OS Hardware for Navigation
 - ◆ Sony Clie Connector Description
 - ◆ Handspring Visor + GPS

Hard-wired Connection


This chapter describes some so called hard wired PDA GPS solutions. Make sure to also checkout the links page and/or the user reviews / example setups.

Garmin Connection

The picture below shows what pins to connect together to allow the two devices to talk to each other. With my Garmin 12XL I use a standard HotSync cable on the pilot, then I bought a Garmin data cable without a PC-type connector on it (Garmin round connector on one end, wires on the other) and put my own DB9 male connector on it with the correct pinouts. If you have another type GPS, you should be able to purchase a similar data cable and make your own.



Thanks to Dominic Sexton &

<http://www.software-developing.de> 1) 

A more complex description of what the pin-out requirements are for connecting the GPS to a PC (including power) can be found at: <http://www.gpstom.de/GPS/garcon.htm>.

Pre-made cables

You can actually buy pre-made cables pretty cheap for connecting the PalmPilot (and most other handhelds) to Garmin GPS round and eTrex connectors at: Blue Hills Innovations. Just click on the “Pfrankly Speaking button”, then on the “Products” link, then scroll down to the “Handhelds” section.

PN Technologies also sells pre-made cables for a wide range of PDA’s and GPS combinations. Check out their Product Selector matrix.

Palm OS Hardware for Navigation

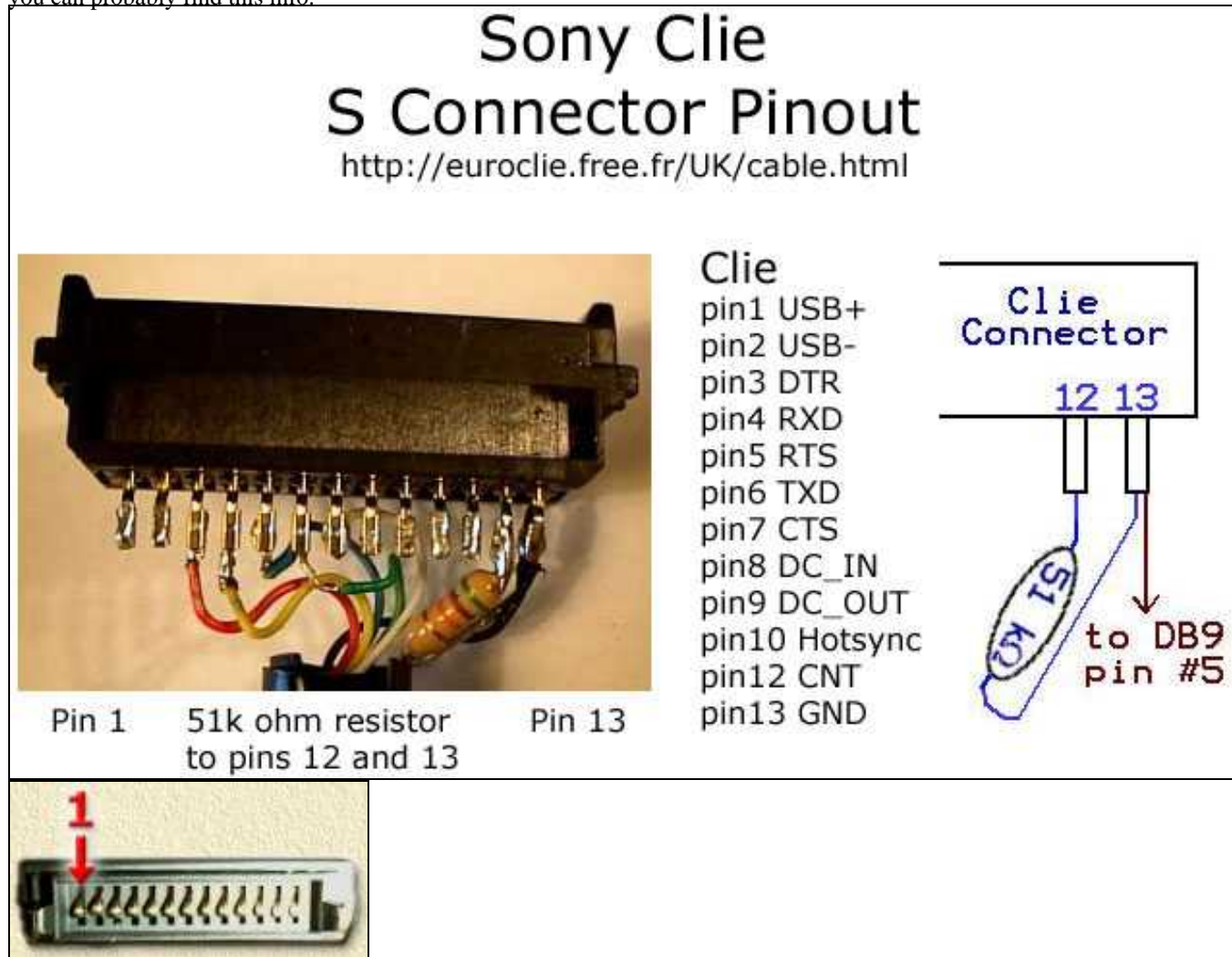
Dale DePriest also has a **lot** of information on his Palm OS Hardware for Navigation site howto hookup a GPS with a Palm PDA.



if you decide for a GPS mouse, make sure to select a model that supports RS232 output.

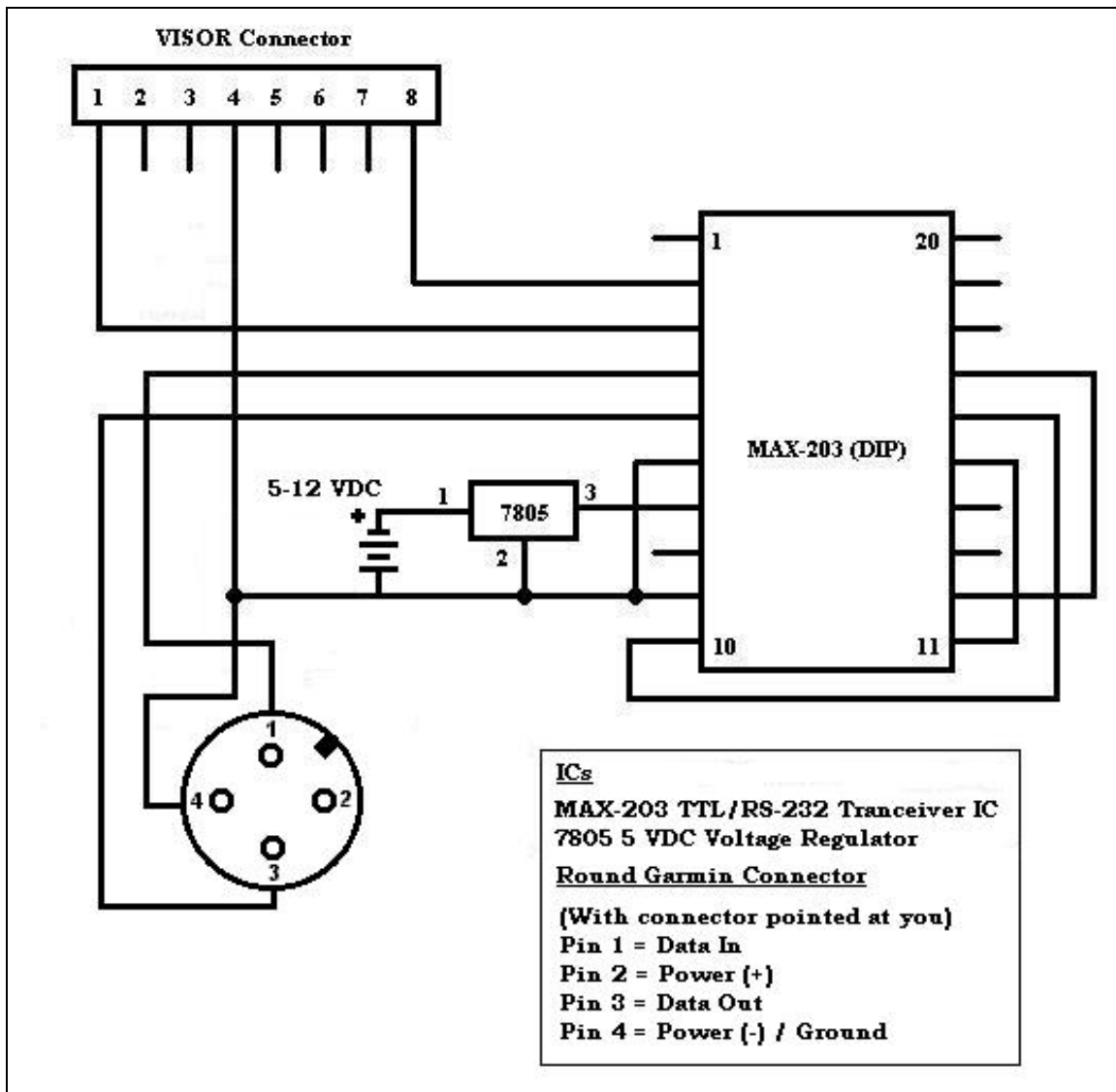
Sony Clie Connector Description

If building your own cable for a Sony Clie, make sure to use a resistor soldered between the appropriate pins in the Clie as this activates the serial port on the Clie. The schematic below how to do this for S series Clie's. I'm not sure about CLie's with N series connectors but if you Google "Clie serial port" you'll probably find what is needed. There is also a Clie users group on Yahoo where you can probably find this info.



Handspring Visor + GPS

Below is the schematic for a cable to hook a GPS to a Handspring Visor. It is specific for a round Garmin connector pin-out, but you can easily adapt it for any other GPS with ground and data-out.



The trick with GPS's and Visors is, the Visor is looking for the +5 VDC serial voltage to permit hardware handshaking. The GPS will NOT provide this and that is why a regular serial to TLL cable will not work. In order to fix this instead of trying to pull the +5 VDC from the GPS, you just add in a separate source of power. In this case a 7805 being fed by something between +5 and +12 VDC. The regulator can handle up to +25 VDC but there is no reason to worry about that since you are trying to keep it light and portable. I use a 9 VDC battery to do the job. By feeding the +5 VDC to the MAX chip, you can permit handshaking and the Visor should start seeing data from the GPS like a normal computer would on it's com port.

Source: <http://www.ke4nyv.com/gpsstuff.htm>

Handspring Links

- More Visor specific information (page suffers from "link-rot", but contains usefull info).
- Pre-made cables are available at PN Technologies.
- ATL Connect sells Handspring connectors.

1) link is dead?

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- Clip-on Connection
- Clip-on GPS solutions

Clip-on Connection

Several clip-on GPS solutions exist for the Palm platform. The benefits are clear, less cables means less problems. In almost all cases with a clip-on GPS, the serial port connection is automatically made when the GPS is inserted in either the expansion slot or simply via the hotsync connector of the Palm.

The NMEA Port settings for this type of GPS are therefore **NMEA Input Type: Serial**.

Baudrate and **Use GGA Checksum** depend on the GPS model, so refer the manual of the GPS for this.

To troubleshoot GPS Palm connectivity you can use tools like **ptelnet** or **NMEA Monitor** (see Links page where to find these tools).




Pros

- No cables

Cons

- Battery life time
- A lot of models are out of production, but can usually still be found on eBay.

Clip-on GPS solutions

Model	Description	Review
	<p>GPS Companion for Visor.</p> <ul style="list-style-type: none"> - Plugs into the expansion slot and connects (internally) to the serial port @ 4800 Bd. - Lasts for 7-8 hr with two rechargeable 1000 MAh NiMH AAA batteries. - Can also be powered via external plug with 12V board net. - Out of production but still available on eBay. <p>The Files section of Soaring Pilot group on Yahoo contains a PDF with a power solution for both Visor and GPS.</p>	<p>Review here</p> <p>SoarPilot User Review</p>
	<p>GPS Companion for Palm V.</p>	<p>Review here</p>
	<p>The StreetFinder GPS for the Palm V/Vx is a clip-on GPS module from Rand McNally.</p>	<p>Review here.</p>

Bluetooth Connection

 *More info howto setup*



SoarPilot with a Bluetooth (BT) GPS is a very nice combination because there is no need for a cable between the GPS and the Palm. Of course not all Palm devices support BT, but if yours does, then this may be a possible solution.

Pro

- No cables
- Fully supported in SP 1)
- GPS can be placed anywhere in the cockpit, unlike IR there is no need for line of sight.

Cons

- BT GPS cost more then a GPS with serial cable, but prices are dropping 😊
- Not supported by all Palm PDA's
- BT GPS usually requires seperate batteries, make sure to verify battery lifetime

A review of an example setup using Bluetooth can be found here.

<http://www.semsons.com/> sells solutions to turn your old Garmin or mouse GPS into one that supports BT.

1) provided your Palm supports BT

Infrared Connection

The Palm has an IR port to “Beam” data between two Palms. Using this GPSIRDA Converter you can turn any serial GPS unto one that “beams” the NMEA sentences to the Palm.

There may be GPS systems on the market that support IrDA, but I wasn’t able to find one, correct me if I’m wrong.

The advantage of such a solution is comparable with Bluetooth, namely no more cables between GPS and Palm. However the Infrared connection is “line of sight” and may suffer from sunlight and difficulty in finding suitable mounting positions.

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- Cambridge GPSNAV Connection
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 - ◆ Can the GPSNAV Provide Power To A PDA?
 - ◆ Is the GPSNAV Display Required To Work With SoarPilot?
 - ◆ Is it better to put waypoints and tasks in the GPS NAV or SoarPilot?

Cambridge GPSNAV Connection

Initial Cambridge GPSNAV Support

The following data transfer/information is supported:

- The GPSNAV output can be used to drive SoaringPilot completely and correctly. I have confirmed this definitively. However, to make this work correctly and make it so that you don't have change cables to send info to the GPSNAV, SoaringPilot **EXPECTS** to be connected to the port on the GPSNAV marked "Data Port (DCE)". It is the one with the DB9 plug. You cannot use the port marked "Datacom (NMEA-0183)". That port **ONLY** outputs basic NMEA data and allows no two-way interaction. You can see a diagram describing the pins for this connector at the bottom of this page. To get the PDA power, you must have a GPSNAV that has or has been upgraded to Version 6.0 or beyond. Note that the GPSNAV only outputs at 500 mAmps or 0.5 Amps. If your PDA is fully charged, this should be sufficient to power it properly. If the PDA is not charged, it may need more power than this to charge and power the device.
- For proper operation, SoaringPilot should be connected to the running GPSNAV **BEFORE** starting the program. If configured for the GPSNAV as the "Comp" on the NMEA/Port screen, when SoaringPilot starts, it sends the NMEA command to the GPSNAV that makes it begin sending NMEA data. The NMEA mode of the GPSNAV sends the NMEA GGA lines including the GPS altitude. It also outputs the GSA and GLL lines which properly drive the GPS Info screen if you have the latest/version 6.0 of the GPSNAV firmware installed..
- This version **DOES NOT** use the pressure altitude value from the GPSNAV yet. It turns out that in order to make the GPSNAV output the Cambridge pressure altitude sentence, the unit must be "activated". I have been working with Chip Garner and he is supposed to send me the code to do this. So I'm hoping to add this soon. However, since it does output GPS altitude, the additional pressure altitude may not make that much difference.
- **Waypoint Transfer To the GPSNAV** - You can transfer waypoints from the SoaringPilot to the GPSNAV. This can be done from the "Transfers" screen. In addition, when you declare a Task to the GPSNAV, the turnpoints are transferred to the GPSNAV first before the task is declared. Because of the way the GPSNAV task declarations work, this is required. The GPSNAV task declaration is simply the waypoint number for each of the turnpoints. So if the turnpoint numbers in the GPSNAV don't match those in SP then the declaration will not be correct. There are a couple of additional caveats to the waypoint transfer as well. First, when the transfer is done in either case, the waypoint database is first sorted into Ascending (0-9,A-Z) alphabetical order. Then the waypoints are transferred. Second, the GPSNAV can only hold a maximum of 250 waypoints. Thus, after they are sorted, only a maximum of the first 250 turnpoints are sent if there are more than that in the SP waypoints database. So if you want to ensure that your turnpoints get into the GPSNAV either have less than 250 or put numbers in front of the names to force them to the top of the list.
- **Task Declaration** - As with the other Logger types, when you activate a task, you will be asked if you want to declare it to the GPSNAV. If you answer yes, the waypoints will be transferred and then the task will be declare into the GPSNAV.
- **Configuration Transfer to the GPSNAV** - From the Transfer screen, you can select either "Glider" or "Pilot" from the drop down list and it actually does the same thing. These items are not separate in the GPSNAV as they are in the 302. They are transferred into the GPSNAV with the same command. The Glider info is the Glider Type and Contest ID. The Pilot Info is the pilot name. In addition, the Units are also transferred along with the other info. On the "Logger Data" screen off of the "Logger Config" screen, in addition to the Arrival and Approach radius values, there is a checkbox. If this is checked, the config info will also be sent when a task is Declared. This is an option but is highly recommended.
- There is one caveat to the units transfer. The GPSNAV supports 4 units setting groups for Distance, Height and Vertical Speed. These groups are Nautical miles, feet, knots or Kilometers, meters, meters/sec or Kilometers, feet, knots or Statute miles, feet, knots. So to accomodate this, the following rules are used for determining what units from SP to transfer into the GPSNAV If distance is set to NM, set the GPSNAV to Nautical miles, feet, knots. If distance is set to KM, check the altitude setting. Based on that set to either Kilometers, meters, meters/sec or Kilometers, feet, knots. If distance is set to SM , set the GPSNAV to Statute miles, feet, knots.
- There are other miscellaneous functions which can be done through the Transfer's screen. You can delete all of the flights in the GPSNAV. You can also delete all of the Turnpoints out of the GPSNAV. However, be aware that when you remove the turnpoints, it also deletes any task declaration and the Pilot Name. Since those get put back in at task declaration time, that's really not that big of an issue.
- I hope the above is acceptable to everyone. It's about the best that can be done with the limitations of the GPSNAV. The only items left that I want to add for the GPSNAV support are being able to activate the GPSNAV so that the pressure altitude is outputted and to be able to download flight logs from the GPSNAV. The flight transfer option is active in this version but it doesn't really do anything yet. Again, I am waiting on some additional technical information I'm waiting to get from Cambridge, Chip Garner and/or Guy Byers. Hopefully soon.

Can the GPSNAV Provide Power To A PDA?

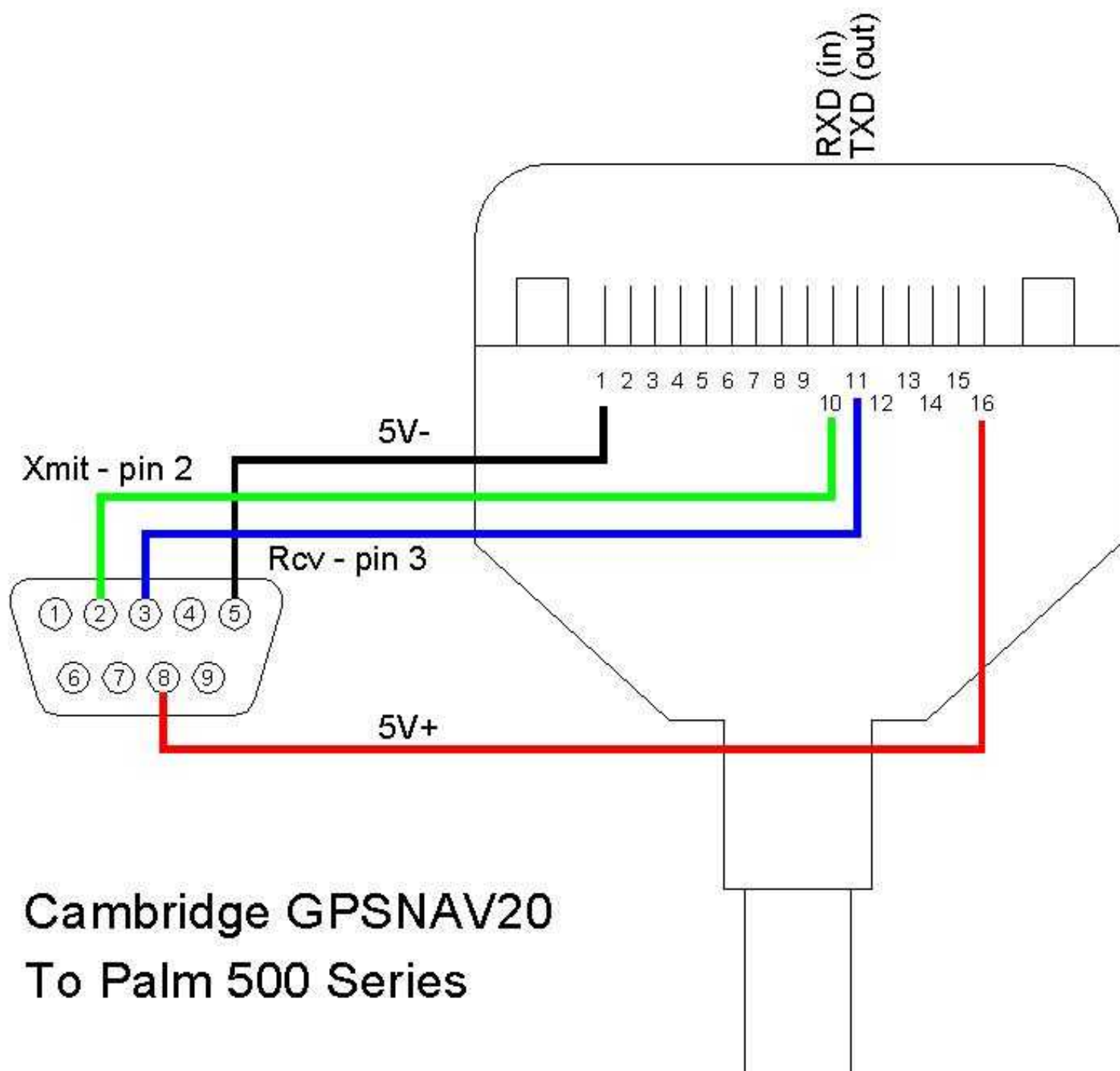
Technically, the answer to this is yes. As the diagram below shows, the GPSNAV with the latest update can supply 5 volts to a PDA. However, this is only 500mA. This should be fine if you start with a full or nearly fully charged PDA. However, if you attach a PDA that needs to be charged, some PDA's can draw more than 500mA. The 302 for instance outputs at 1 Amp. This is just something you want to keep in mind.

Is the GPSNAV Display Required To Work With SoarPilot?

No, SP doesn't require the GPSNAV display at all. In fact, I've found that when you change some info on the GPSNAV using their protocol, the changes don't always show up on the GPSNAV display unless it is restarted. This seems that it could cause some confusion if using both.

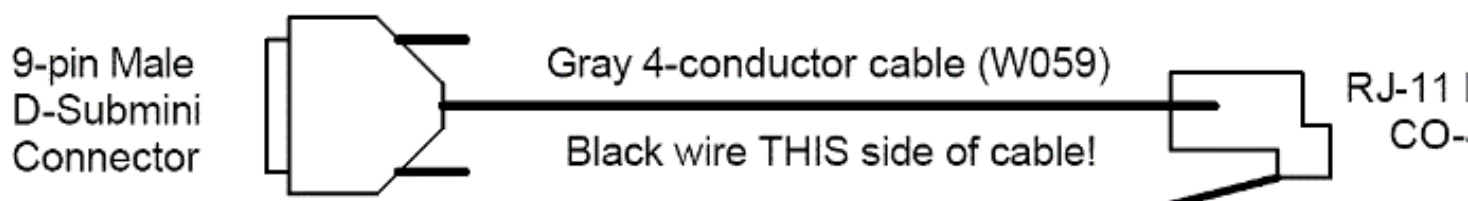
Is it better to put waypoints and tasks in the GPS NAV or SoarPilot?

The way it's implemented in SP, the waypoints (first 250 sorted alphabetically) will be sent to the GPSNAV. This required for the task declaration with the GPSNAV to work properly. Basically, SP treats the GPSNAV as just a source of positional info and then sends the GPSNAV what it needs to do proper logging and task declaration.



Cambridge Asynchronous Data Communication

The DDV has a 9-pin female D-Subminiature Datacom connector wired as DCE. Except for pins 6 and 8, Standard RS-232 data communication voltage levels, pin designations and protocols are used. Cambridge uses 4-conductor modular telephone cable for connecting the DDV to Pocket-PC mounts. The table shows pin numbers, the D-subminiature connector, and the cable color code.



Pin #	Wire color	Function
3	Yellow	Data transfer from connected device to 302/GPS-NAV
2	Green	Data transfer from 302/GPS-NAV to connected device
6,8	Red	+5 volt power from 302/GPS-NAV(pin 8 only) to connected device fuse-limited to 0.9 Amp(302) or 0.5 Amp(GPS-NAV)
5	Black	Ground for both logic and power

Volkslogger Connection Info

Wiring diagram of connection box for Palm Universal Connector and Volkslogger. The resistor of 7.5 k Ohm is mandatory in order to make OS4 generate signals for a serial port.

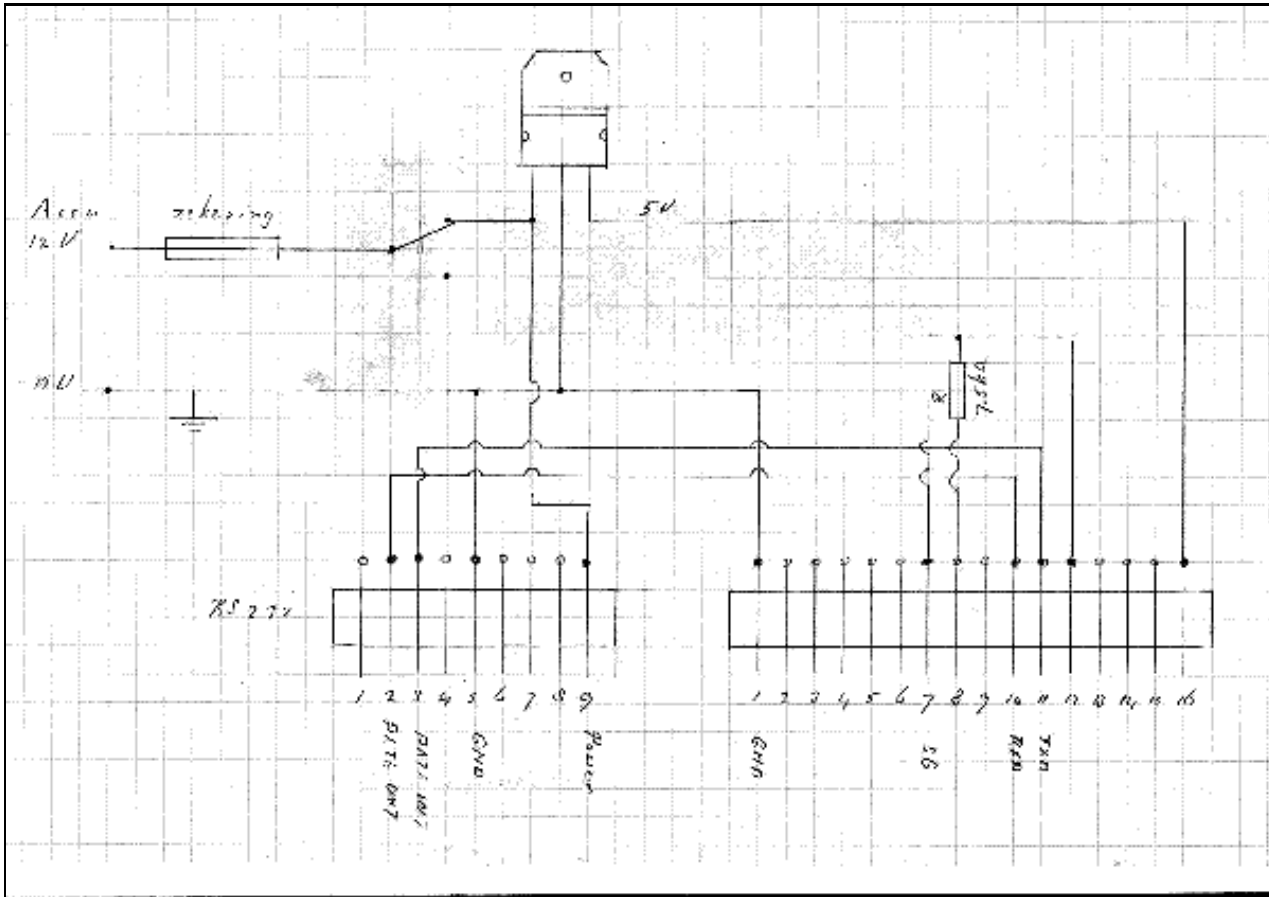


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- Flarm Anti-Collision Device
 - ◆ Flarm Traffic Display
 - ◆ Flarm Configuration

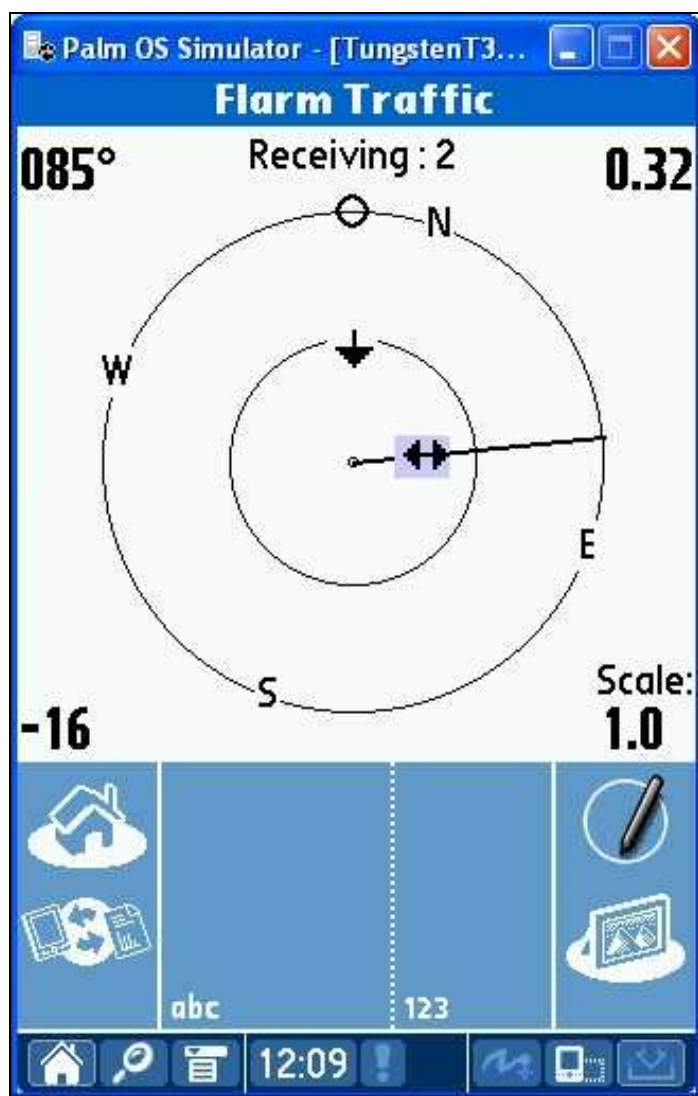
Flarm Anti-Collision Device

Flarm Traffic Display

For detailed information on the Flarm device goto the Flarm Homepage and ensure you read the manual fully.

SoarPilot will support receiving the pressure altitude from the Flarm, as well as displaying the information on the surrounding traffic. These options can be configured on the NMEA/Port Settings screen by selected “Flarm” in the **Comp** and **Alt** fields.

The Flarm traffic screen is shown below



It can be accessed by pressing the **Find** button from the Final Glide screen. Or by pressing the new **Flarm** button on the GPS Status screen. **Note:** The Flarm device does not provide the satellite data to show on the GPS Status screen.

The screen can be zoomed in and out using the normal **Page-Up** and **Page-Down** keys, up to a maximum range of 3 kilometers or 2 miles. The Flarm units does not provide data of any traffic beyond this range.

The Screen is always in “Track-Up” mode and cannot be changed.

Obstacles are represented with an “X”, while aircraft are represented by arrows. An arrow pointing up is for an aircraft above you and visa versa. A double arrow indicates an aircraft at your level, defined as +5 deg and -10 deg to the horizontal.

The symbols are shaded according to the level of danger each presents.

When a warning is present, the bearing and distance are shown in the top left and right corners respectively. The vertical separation is shown in the bottom left corner. In addition, a line is drawn to indicate the warning direction.

Flarm Configuration



This screen is accessed from the Logger Configuration screen.

It allows you to set various Flarm parameters. Please refer to the manual before changing any of these in the top section of the screen.

The bottom section controls the Flarm internal logger. The checkbox **Copy IGC Header Info** when checked will copy the Pilot, Glider and Competition information from the IGC Information screen to the Flarm.

The **Save** button will write configuration to the Flarm, and the **Quit** button leaves the screen without making any changes.

If you receive a dialog box saying "Data Error!" there was a problem communicating with the Flarm. You should check the connection and port speed parameters in the NMEA Port Settings screen.







LX/Colibri/Filser Connection Info

1. Ensure that the serial connection/cable between the PDA and device is correct.
2. **NOTE:** The transfer is **ALWAYS** initiated from SP.
3. Ensure that the Data Xfer speed on the Port Settings screen in SP matches the serial speed in the logger. There is no auto-negotiation of transfer speeds.
4. Try to get the list of the flight logs. This is done through the Transfer Screen.
5. **NOTE:** When the Palm initiates the serial communication, the logger should beep 3 times.
6. If the flight logs are displayed correctly, you should be able to then transfer the selected flight log from the device.
7. This is how it works with the Colibri, but the transfer protocol is supposed to be the same for the other LX-loggers/devices as well.

Other Connection Types

This page describes a few, more obscure, solutions to hook up a GPS with your PDA. If anyone has experience with any of these products i.c.w. SoarPilot, feel free to add your comments here or on the user review page.

Product	Description
	<p>http://www.igolftech.com/ sells a SD GPS Package. The contents of Package include a SD GPS receiver, iGolfgps v.2 and a SDIO driver for Palm Tungsten 1/2/3/5/C/E, Zire 31/71/72, Treo 650, Tapwave Zodiac and most Pocket PC devices with an SDIO slot. At this time, the SD GPS receiver is not compatible with the Treo 600.</p> <p>It's unclear at this time if this driver works with SoarPilot!</p>
	<p>V.DOT CardHost Pro is a serial interface PCMCIA card host, used for connecting any PCMCIA adapter card containing a UART to any computer that has a serial port. The CardHost Pro has an onboard CPU that emulates card services and socket services, so that the PCMCIA card is initialized correctly.</p> <p>With this device you can thus use any PCMCIA GPS device and turn it into a serial GPS.</p>
	<p>The Palm Bluetooth SDIO Expansion Card (review) adds bluetooth to a Palm with SD slot. Then you can use SoarPilot with a BT GPS. You may have a hard time finding a company that still sells this item.</p>
	<p>hotsync.com.hk sells a device called Guyver. Guyver is a snap on / sled / slot / adapter with a universal PCMCIA card slot for Personal Digital Assistant (PDA) devices such as the Palm m500 series, Tungsten T and Tungsten W. Guyver comes with an ultra-thin and elegant metal jacket. It can accommodate a large selection of Type II PCMCIA cards and has it's own 1000mA 3.6V Lithium Polymer Battery</p> <p>It's unclear if Guyver supports PCMCIA GPS-es and how the NMEA data stream is to be fed into Soaring Pilot.</p>

5-Way Navigator Button Usage

The 5-Way Navigator is used in Soarpilot to replicate various other buttons

- **UP** - Same as the **Page-Up** button. eg: changing the mapscale on the moving map screen.
- **DOWN** - Same as the **Page-Down** button. eg: changing the mapscale on the moving map screen.
- **LEFT** - Same as the **Home** button.
- **RIGHT** - Same as the **Find** button.
- **CENTRE** - Opens the menu, after which the Up, Down, Left, Right buttons allow you to navigate around the menu, pressing again selects the item, OR selects the default button if a dialog is open.

Tungsten T Differences



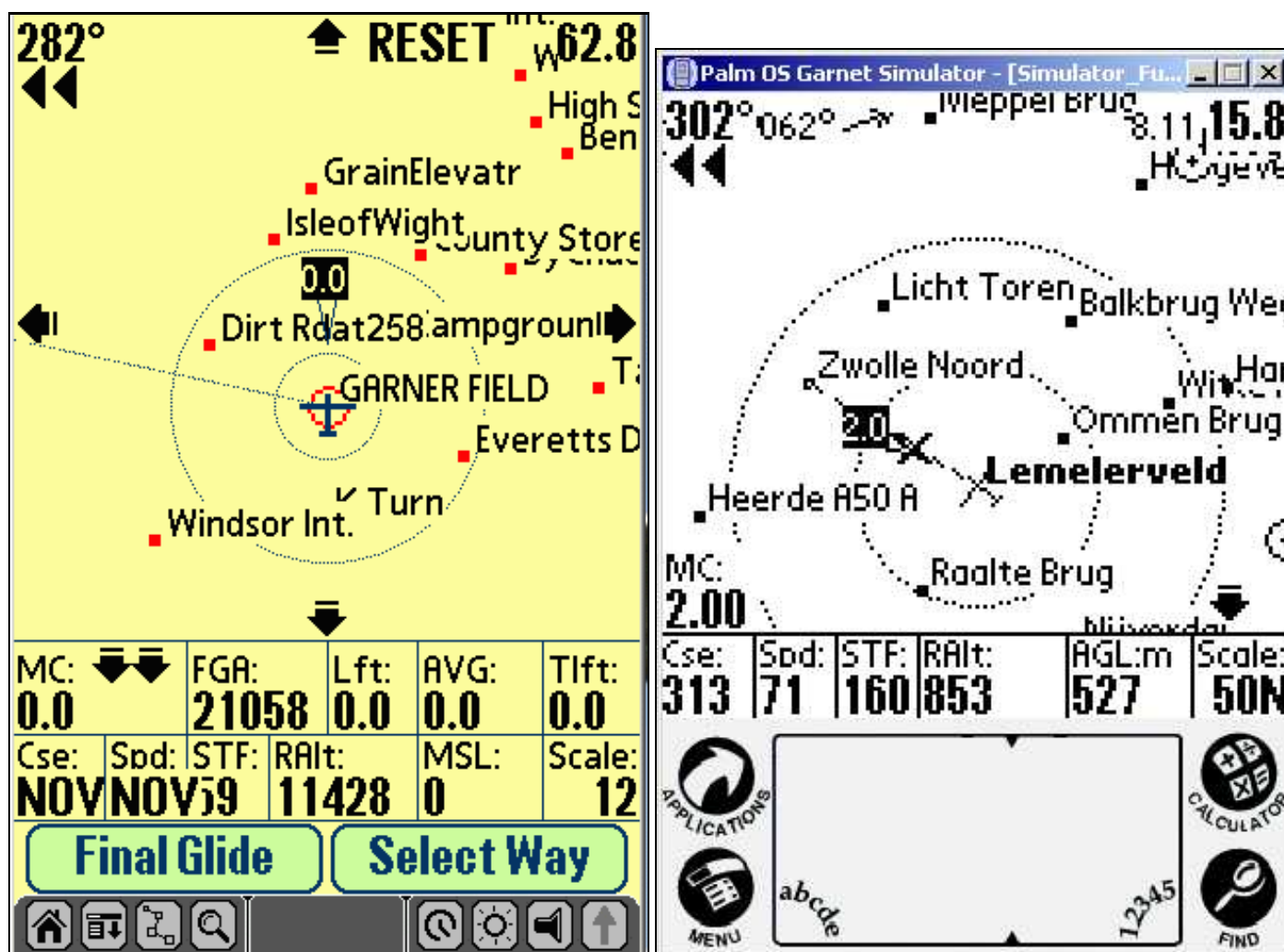
In addition to Tungsten T having a 5-Way Navigator, it also has a **Voice Recorder** button on the left hand side. This button performs the same action as the *Calc* silkscreen button. It only has a function when on the Final Glide, Moving Map and Task Edit screens when it will open the Waypoint list in “Select” mode allowing the operator to select a waypoint from the list for use in the function from which it was called.

Therefore the Tungsten T can be in-flight used with SoarPilot in the closed position. This has the advantage that the edges of the screen can be used as a guide for the Pilot’s finger to tap various parts of the screen around the edges.

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 - ◆ Additional Hardware Button Support

Garmin iQue Differences



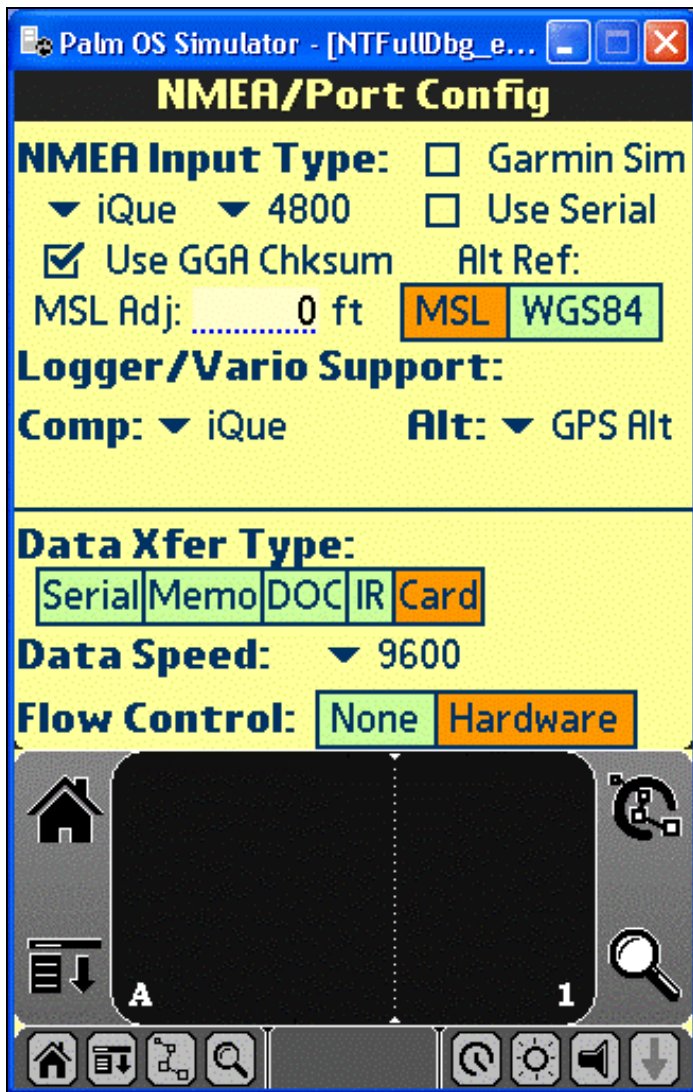
The Garmin iQue 3600 & 3200 are PalmOS 5.X-based PDA's which contain a built-in Garmin GPS. The internal GPS is accessed through a set of API's allowing a program running on the iQue to access the current positional information from the GPS. This is how SP accesses this information.

Moving Map DIA Support

The iQue 3600 has a Dynamic Input Area (DIA) which can be dropped to provide more screen area. The iQue 3200 does not have this DIA support. As the graphic on the left above shows, SP makes use of the additional screen area for the moving map display. In doing so, the actual map is the same size however, there is no text covering the bottom portions. Also, several additional values are displayed. The moving map screen on the right above is similar to what would be shown on the iQue 3200 and other non-DIA systems. It is shown for comparison.

NMEA/Port Config Screen iQue-Specific Configuration

The below graphic shows the proper configuration when using the iQue.



As the above shows, if you configured the **Comp** type to be “iQue”, SP will then use the lift/sink value coming from the iQue’s GPS engine rather than the value calculated by SP. Feel free to experiment with this to decide which value you believe is most accurate.

There are two additional checkboxes which appear once the NMEA Input Type is set to “iQue”.

- **Garmin Sim** - The iQue’s internal GPS is always outputting a positional value when the PDA is turned on no matter whether the antenna is up or down. When up, it outputs actual GPS information. However, when down, the output is in “Simulation” mode. By default, this checkbox will be unselected meaning that SP will ignore information coming from the GPS that is marked as “simulation” data and only use actual GPS data. If you check, this box, SP will begin reading and using this simulation data. This can be helpful in testing and getting used to SP with the iQue. With the GPS off (Antenna down) and before running SP, you can use the normal Garmin location find tools to select a place/location that you want to simulate going to. Once this item is selected and you tell the software to “Route To” the selection, the iQue pops up a window asking if you would like to “Simulate Driving To This Location?”. If you select the “Yes” option, the iQue will begin updating the simulated position to follow the selected route. If you then run the SP application, you will find that SP will be using this same positional information. You will still get the Garmin detailed turn windows which will have to be dismissed however you can also perform most SP functions with this simulated positional information.
- **Use Serial** - Because the iQue’s GPS is internal and accessed through the API’s, there normally is no need to activate the actual serial port on the PDA for use. This option is thus not checked by default. However, it is possible to get the positional information from the internal GPS and **ALSO** receive additional information from a device attached to the serial port. The Borgelt B50 is an example of such a device. By checking this box, the serial port will be opened on the PDA. While any positional NMEA information coming through the serial port will be ignored, any additional information will be parsed and used.

Additional Hardware Button Support



Finally, in addition to the normal four hardware buttons and up/down buttons on the front of the PDA, the iQue also has three hardware buttons/dial on the left side of the unit which have been mapped to specific functions in SP for convenience. These items are shown in the graphic above.

Rec Button - The Rec button performs the same action as the *Calc* silkscreen button. It only has a function when on the Final Glide, Moving Map and Task Edit screens when it will open the Waypoint list in “Select” mode allowing the operator to select a waypoint from the list for use in the function from which it was called.

Esc Button - The Esc button mirrors the function of the *Home* silkscreen button. If you are on any screen other than the Final Glide screen, pressing this button will take you to the Final Glide screen. If you are on the Final Glide screen when the button is pressed, you will be taken to the Moving Map screen. This also provides the ability to easily toggle between the Final Glide and Moving Map screens.

Jog Dial - The Jog Dial actually performs two functions.

- First, the up/down motion of the dial acts just like the **Page-Up** and **Page-Down** buttons. Depending on the screen being displayed this will have different actions sometimes increasing and decreasing values on the screen, sometimes changing a list of items up or down a page at a time.
- Second, if you are on the Final Glide or Moving Map screens and you press inward (toward the PDA) on the jog dial, the “Save Waypoint” dialog will be displayed. Pressing the jog dial again or selecting the “Ok” button on the screen will save a new waypoint at the current location. See Creating On-The-Fly Waypoints for a more detailed description of this function.

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StyleTap Differences



What is StyleTap?

The StyleTap® Platform is a PalmOS emulator that allows you to run applications (including **SoarPilot**) originally written for Palm OS® handhelds on your Windows Mobile® or PocketPC® handheld. It may also run on WindowsCE devices as well if they have 320×240 or better screen resolution. The above graphics show SoarPilot running on the Microsoft Device Emulator running PocketPC 2003 SE. The download at the webpage allows for a 14 day evaluation period. After that you must purchase the product to obtain a registration/unlock code. Currently the product is priced at \$29.00.

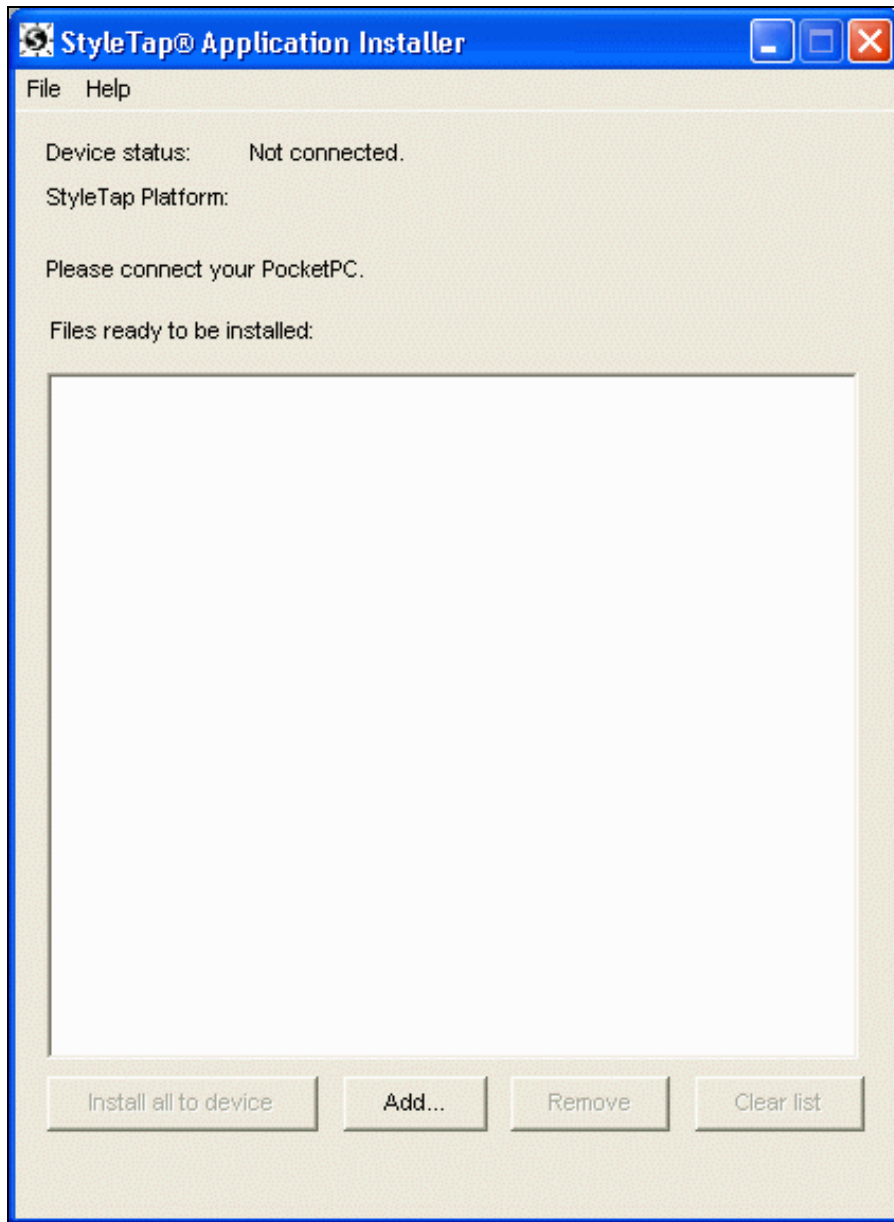
SP required very few modifications to run properly on StyleTap. In fact, unless you are running SP within StyleTap, you will not see the differences. However, to be fully functional, you need to be using StyleTap version 0.9.103 or higher. Previous version did not have support for the left & right actions of the 5-way hardware button. With the addition of this support, a pilot can fully utilize all of the in-flight related screens without having to access them through the menu.

Installing StyleTap

1. Download the StyleTap Installer from the StyleTap® webpage to your PC where ActiveSync is installed.
2. Connect your PDA to your PC with a hotsync cradle or cable and allow it to complete connection and synchronization with ActiveSync.
3. Run the installer. It will install the StyleTap Application Installer to your PC. It will also initiate the transfer and installation of the StyleTap application onto your PDA.
4. Once the StyleTap installation is complete, run the StyleTap Application Installer. This can be done by double-clicking on

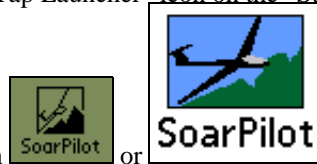


the StyleTap icon your desktop or from the Start/All Programs/StyleTap menu. This will open a window that looks like the following:



5. Use either the Add button or drag-and-drop programs to be installed to the installer window. They will appear in the “Files ready to be installed” area. You can refer to the **Installing** page for further details about what files need to be installed.
6. Once you have all required files to be installed listed in the StyleTap Application Installer, select the “Install all to device” button. This will transfer the files to the PDA and place them properly into the StyleTap application.

7. On the PDA, there should now be a “StyleTap Launcher” icon on the “Start/Programs” screen. If you have installed SP as



well, you will also see the standard SP icon or

8. Double-click on the SoarPilot icon and the StyleTap application will be launched immediately followed by the SoarPilot application.

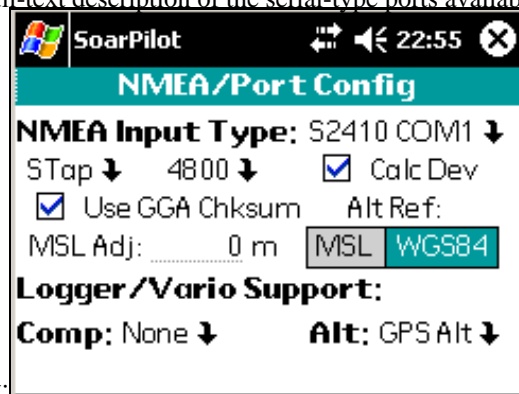
9. At that point, the interaction with SoarPilot is as described by this manual with the following exceptions & differences listed below.

Differences

There are minor differences with how you interact with SoarPilot when running under StyleTap. They are listed below:

• NMEA Port Selection

1. This is the biggest difference between a normal PalmOS installation and running under StyleTap. It is required due to the way interfaces are assigned on Windows-based PDA's as well as how those interfaces then get passed into the StyleTap application for PalmOS programs to access.
2. When running under StyleTap, you will find a new **STap** option on the NMEA Port Type drop-down list on the **NMEA/Port Settings** screen.
3. Once this option is selected, a new drop-down list will be displayed to the right of the “**NMEA Port Type:**” label. This new drop-down contains the full-text description of the serial-type ports available on the PDA. An example of



this new drop-down is shown below:

4. Simply select the port that you wish to use to access your GPS/NMEA data.
5. Typically this will be serial cradle port for using a serial cradle/cable.
6. If the device is Bluetooth capable, it could be the COM port assigned to the bluetooth serial profile. In this case you may find two COM ports assigned to bluetooth device. You will have to try both ports. The correct one will bring up the Bluetooth device search/selection screen allowing you to find and connect to your bluetooth gps.
7. Compact Flash and PDA's with built-in GPS' should find corresponding COM ports for these devices in the drop-down list enabling their use as well.
 - ◇ “**Home**” Silkscreen Button - In StyleTap, this function is mapped to the little “S” icon at the bottom of the screen.
 - ◇ “**Menu**” Silkscreen Button - In StyleTap, this function is mapped to the small drop-down menu icon at the bottom of the screen.
 - ◇ “**Find**” Silkscreen Button - In StyleTap, this function is mapped to the small magnifying glass icon at the bottom of the screen.
 - ◇ **5-Way Hardware Button Usage** - The center/5-Way navigation hardware button functions much the same as on a PalmOS device with a similar hardware button. This is described in **5-Way Navigator Button Usage** page. There is one exception though. Pressing the center of the button does not open the menu. Instead, acts like the “**Calc**” silkscreen button which is described on the **Selecting a Waypoint** page.
8. PocketPC With Square Screen - The below graphic shows a PocketPC device with a square screen. This kind of display lends itself very well to using SoarPilot through StyleTap. With this display orientation, both the PocketPC top window bar and the StyleTab bar at the bottom get hidden leaving only SoarPilot's screen. Note that when using this kind of screen, the only way to access the SoarPilot menu is by tapping the title bar of the screen. This will open

the programs menu.

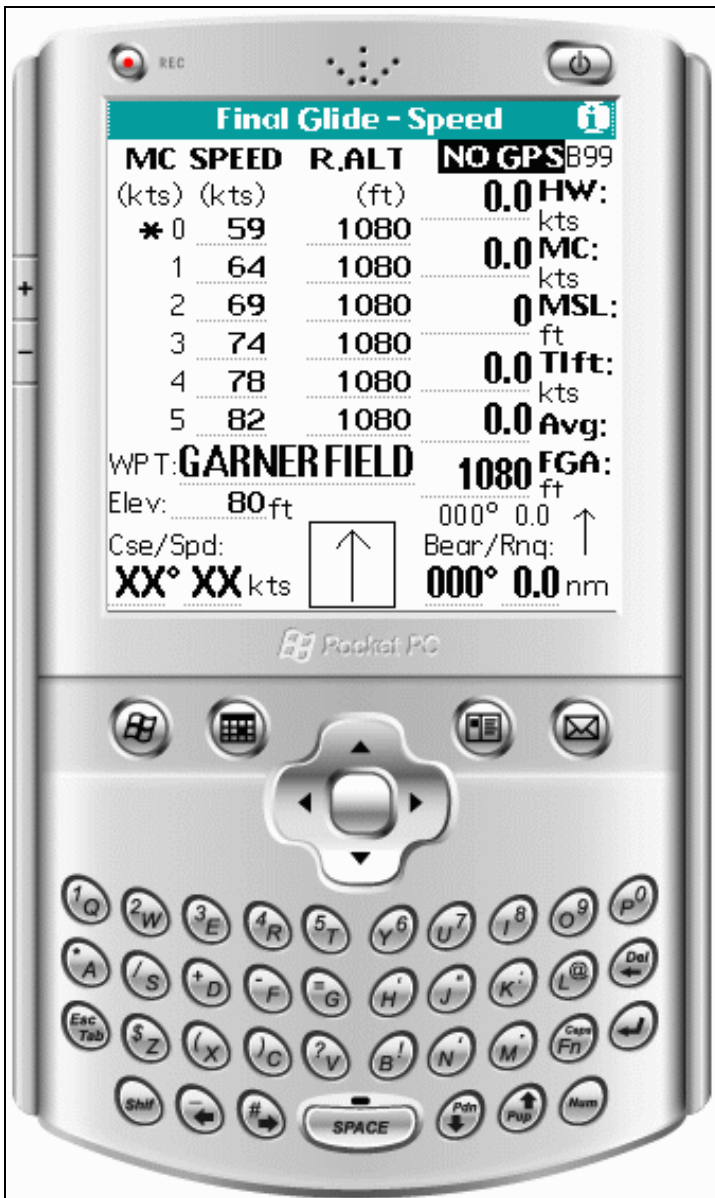


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- ◆ Zire 71 + Garmin 12XL Handheld GPS
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User Reviews / Example Setups

This appendix contains user reviews of various Palm + GPS units running SoarPilot. Each solution is rated on a few criteria by the owner on a scale from 1 (awful) to 10 (excellent) stars.

Handspring Visor + GPS Companion



I've been using SoarPilot with a Handspring Visor i.c.w. a GPS Companion by Magellan for over 2 years now. My first setup was with a Handspring DeLuxe which has 8Mb of memory and runs PalmOS 3.1 with a 20Mhz processor and 2 AAA batteries (either Alkeline, NiHm or NiCad). The batteries didn't last long enough for long flights so I've come op with a power solution with a 3V DC/DC converter and an external larger battery that is now posted in a PDF in the Files section of the SoarPilot group site. I found this unit a bit too slow with large waypoint and/or SUA databases, even when Afterburner was installed. The 160×160 B/W screen is excellent in bright sunlight though. The GPS Companion lasts for upto 8 hrs with 2 1000mA NiMh batteries. This unit is discontinued but is still available via eBay. A full review of this GPS can be found here. Later I've acquired a Visor Pro (full review here) which has 16Mb of memory and a 33Mhz processor. With Afterburner I can overclock this unit running SoarPilot upto 52MHz without any noticable side effects. It has a Benchmark 3.0 index of 169%. The Visor Pro has a built-in Lion battery which lasts easy for over 8 hrs on a single charge. I don't own a Visor SD card springboard module, this means I must either use serial or DOC transfers. I'm still using this setup to date, but I must admit that a Tungsten T is tempting 😊

Performance	★★★★★★★☆☆
Battery Life Time	★★★★★★★☆☆
Screen Visibilty	★★★★★★★☆☆
Screen Resolution	★★★★★★★☆☆
Memory	★★★★★★★☆☆
GPS	★★★★★★★☆☆
SP PC	★★★★★★★☆☆
Overall	★★★★★★★☆☆

— Antoine Megens 2005/09/26 13:47

Tungsten T + Bluetooth GPS Mouse + Power Sled



I have found this an excellent setup for Soarpilot. The Tungsten T has a hi-res colour display of the REFLECTIVE type. This has superb visibility in sunlight. The later Tungsten models (T2, T3, T5) all have a TRANSFLECTIVE display, and this has visibility problems in sunlight. It has a 144mhz processor and 16mb memory, so is capable of running with complex airspace and many waypoints. I have up to 300 SUA items and 700 waypoints. The Tungsten T can also be used in flight in the closed position, as the 5-way navigator is used to replace the silk screen buttons.

Although the Tungsten T is not made any more, you can find them on eBay. To improve the battery life a Palm Power-To-Go battery sled is used. This can be obtained from Expansys. This gives **9 hours** plus of power and therefore is a completely glider independent solution. Great for using club gliders. The suction mount has a simple velcro attachment to the back of the Power-To-Go sled.

Many Bluetooth GPS units will work. The one shown is a Holux GR230, another popular model is the Globalsat BT338 unit. The Tungsten T has an SD Card slot, so I use this for data and flight transfers.

Note: Remove the PDA from the Power-to-go sled after flying, otherwise the sled drains the battery and the PDA eventually loses SoarPilot and its databases!

Performance	★★★★★★★☆☆
Battery Life Time	★★★★★★★☆☆
Screen Visibilty	★★★★★★★☆☆
Screen Resolution	★★★★★★★☆☆
Memory	★★★★★★★☆☆
GPS	★★★★★★★☆☆
SP PC	★★★★★★★☆☆

Overall



— Paul Gleeson 2005/09/27

Zire 71 + Garmin 12XL Handheld GPS

– No Picuture yet

The Zire71 has the same CPU and RAM amount as the TungstenT mentioned above. The only drawback is the transfective (as opposed to reflective) display which is harder to see in direct sunlight. But it is still possible to see everything important in flight.

I have used this setup in conjunction with some self-built cables too hook up both the GPS and Palm to the club-gliders batteries. So power-consumption is no problem. Speed is just fine, even for a lot of SUA data, and Transfers to the PC are very easy with the SD-Card.

You can get this unit very easily on ebay. However, i would also suggest looking into a used TungstenT, to which i sidegraded a month ago. Its display, while worse indoors, is noticeably better outdoors in sunlight. And they should cost nearly the same on ebay.

Performance



Battery Life Time



Screen Visibilty



Screen Resolution



Memory



GPS



SP PC



Overall



— Markus Gayda 2005/09/29

More Setups

Some more example setups (without a review) can be seen in the Photos section of the Soaring Pilot Yahoo group site.

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 - ♦ Beam Receive Off
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Tips & Tricks

Beam Receive Off

To extend the battery life time of your Palm, make sure to switch off **Beam Receive**

Beam Receive: ▼ Off

To switch off open Palm Preference General settings 1). This saves power because the IR diode in your Palm is shutdown.

Enhance Performace

Install tools like **AfterBurner** and/or **QuickBits** (see links page) help to squeeze the most performance out of your Palm (may affect battery life time!).

Mixw COM port loopback

The MixW Serial Port Bridge driver emulates a software null-modem cable between two virtual COM ports on your PC. This driver works for Win2K and WinXP only. This software only null-modem (no hardware required!) can then be used to tie a Palm Emulator running Soaring Pilot and f.i. SeeYou in IGC playback mode with NMEA stream enabled to get acquainted with Soaring Pilot features. Of course other GPS emulators (see links page) can be used as well to provide an NMEA input stream to Soaring Pilot in POSE 2) or one of the Palm Simulators 3).

Resolving Bluetooth Problems

These steps may help resolve some Bluetooth problems when SoarPilot cannot connect, or crashes while doing so.

- Remove the SP config file. This can be done using the FileZ tool
- Check the list of known bluetooth devices. If this list is too long, SoarPilot has a problem (often this list grows because of mobile phones, that are near to your Palm)
- Remove the File "Bluetooth Device Cache" from your Palm
- Restart SoarPilot, and set to Bluetooth connection
- If you are using a **Tungsten T** ensure that you have installed the Tungsten T update that is available on the Palm webpage. There is only one for the "T". It has some bluetooth fixes that has allowed some people's connection problems to be resolved. It also fixes music play back/sound issues as well but that's obviously not related to this. Also, note that **if you reset your Tungsten T (hard reset)** of run the battery all the way down, the update **MUST** be reinstalled. The update is not a flash upgrade so it is lost when the device gets completely reset.

1) YMMV

2) The Palm OS Emulator is a hardware emulator program for the Palm Powered platform, emulating 68K-based device hardware in software. With it, you can test and debug Palm OS software on a Macintosh, Unix, or Windows-based desktop computer.

3) available for download from the Palm Developers site <http://www.palmsource.com/developers/>

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Frequently Asked Questions

Which Version of SoarPilot Is Loaded?

Here's how to find out.

Why does Soarpilot crash after I upgrade to a new version and Hotsync my old databases?

When you install a new version you cannot just hotsync the old databases to soarpilot. Sometimes the format of the database is changed to accommodate new features.

You must load your data using the Settings / transfer screen. This will load your data into the new format databases.

Details of which databases are reset is in the readme file. When you start the new version of Soarpilot for the first time, you will also receive a warning that a database has been reset.

Can SPTerm be used with a USB Connection to the PDA?

Unfortunately, no. SPTerm is made for a serial connection only. It would be easy to do a USB connection on the Palm with PalmOS. However, doing so with Microsoft Windows is MUCH more difficult. It would involve writing an SPTerm-specific USB driver that would plug into Windows. This is something that I do not wish to do right now. If you wish to use SPTerm, you will need to get a serial cable for your PDA to connect to your computer. If you want to do a USB transfer, you will need to use PalmDOC-formatted files or a Memory Card (if your PDA is capable). This process and naming convention is described in the Readme.pdf file under version 1.8.5 and in this FAQ. You can also read the PDF online by clicking [here](#).

Why do I get no information for all of the altitude values on the Final Glide Screen when I run the program?

If the altitude fields are empty, you either haven't selected an internal waypoint (if configured for internal use), manually entered a distance values (using the Pageup and Pagedown buttons) or, if you have a GPS properly attached and configured to NOT use internal waypoints, have not selected a target (GOTO) waypoint in the GPS.

Why do I get "XX" for all of the altitude values when I run the program?

"XX" means No Value, or an invalid value. It normally means that you have not entered any polar information or the information you have entered isn't valid. See the next item on getting polar information for further details.

Where do I get these three points for the polar information for my glider and what are the proper values to use?

It has been recommended that the three points should be the Best L/D, Vne & a point approximately halfway between the first two. Using this recommendation, you would then pull the speed and sink values for each of these points off of your glider polar. V1/S1 should be the Best L/D, V3/S3 should be Vne & V2/S2 should be the point in between.

Another useful repository of glider "3-point" polar information is the "Polars" area on the WinPilot homepage (www.winpilot.com).

How do I connect my GPS to my PalmPilot?

It depends on your GPS, check out one of these chapters:

- Hard-wired Connection
- Clip-on Connection
- Bluetooth Connection
- Infrared Connection
- Cambridge GPSNAV Connection
- Volkslogger Connection Info
- Other Connection Types

Is the GPS Altitude Accurate?

Now that SA (Selective Availability) has been turned off, the general answer to this is Yes. GPS altitude is at least as accurate as the reading from a barometric altimeter. However, to determine altitude a GPS MUST be receiving information from at least three satellites and the more it is tracking, the better. If you want more information on this subject, there have been NUMEROUS postings on the rec.aviation.soaring and sci.geo.satellite-nav newsgroups. I encourage you to check them out. In addition, the newest generation of handheld GPS' can now make use of the FAA's Wide Area Augmentation System (WAAS) in the United States. Using WAAS, accuracies of less than 3 meters.

Why does the altitude differ between my sailplanes altimeter and what Soaring Pilot shows and which one is correct?

Basically, the barometric pressure in the atmosphere does not decrease evenly as you climb. In addition, barometric pressure is not constant for given altitude everywhere. Given this, it is not uncommon for an altimeter to read around 200 feet lower than GPS altitude when flying at around 3000-4000 feet AGL. So, that means that technically GPS altitude is more accurate. However, as with the accuracy question above, there have been numerous discussions on this subject on the rec.aviation.soaring and sci.geo.satellite-nav newsgroups. In addition, GPS altitude is an MSL calculation. It has been said that the Height Above the Ellipsoid (HAE) will provide a value closer to pressure altitude. MSL is the default altitude reference but can be changed to HAE on the Final Glide settings page.

Can I use a clip-on or springboard GPS for my PalmPilot or Visor?

With version 1.7, use of the internal Soaring Pilot waypoints for all final glide/speed to fly calculations makes using these add-on GPS units possible. See Clip-on Connection page and the user review page for possible solutions.

How can I compile the SoaringPilot myself?

The source code for the most current version of Soaring Pilot is not available for download. However, a previous version is available. To compile the previous version of SoaringPilot yourself you need the pilrc (v2.0a or higher) resource compiler. A GCC cross-compiler for the PalmPilot and the PalmOS include files. I also used the POSE, a freely available PalmPilot simulator for Linux, Windows and other operating systems available from www.palmos.com in the developers area. The entire development environment is also freely available for Linux and Windows from www.palmos.com as well. Currently the program has been successfully compiled on both Linux and Windows. The following links might help finding the necessary software:

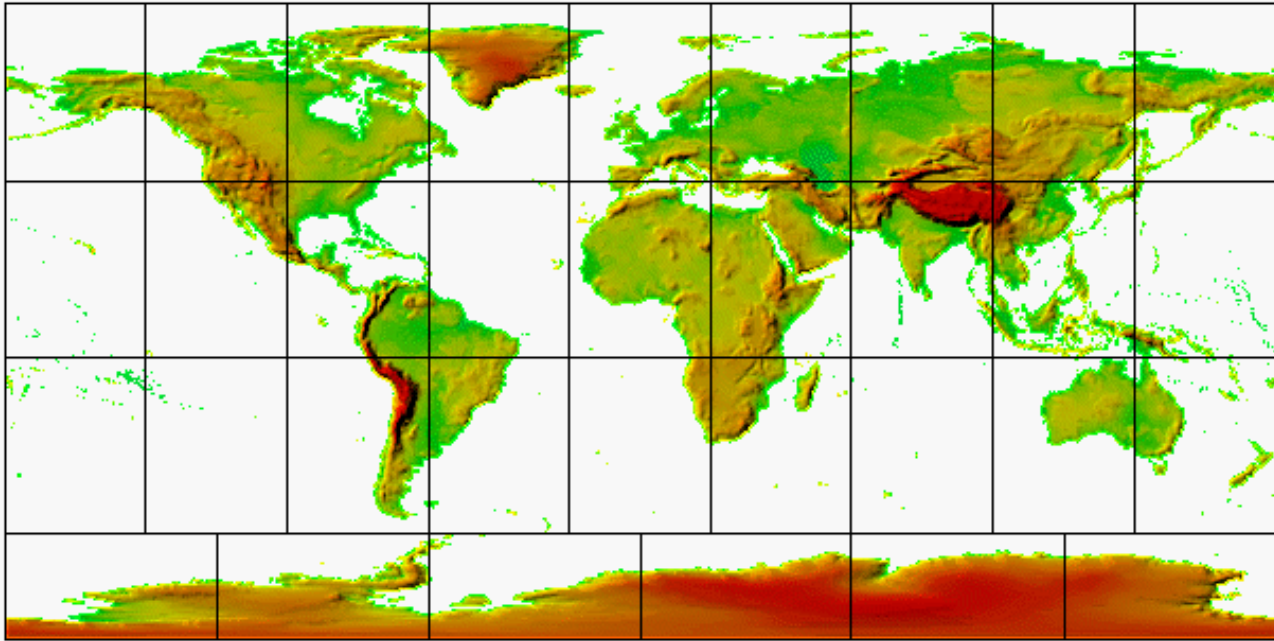
- Palm OS® Platform Developers
- Palm OS® Developer Tools
- PRC-Tools: GCC for Palm OS
- Pilot Programming FAQ

Why does the SoaringPilot not support foo?

Since the SoaringPilot is entirely developed by volunteers in their spare time features will be added as time allows. If you send the changes to help@soaringpilot.org they might be included in the next release.

Where do I get the terrain elevation .DEM files from for use with SPTerm?

SoaringPilot uses 30 arc second .DEM formatted data to produce the sub-sampled terrain data. You can use the below image map to download the areas of the world that you wish to use. Instructions for creating the terrain data for SP with these .DEM files can be found in the Readme.pdf file included with software.



What are the internal SP Datafile names? (Used for both DOC and CARD transfers)

SP uses some predefined DOC file names for import/export of certain data. The next table describes these names:

Data Type	Default Filename	Receive	Transmit	Format	Extension
Configuration	config.scg	X	X	SoarPilot	.scg
Waypoints	waypoints.dat	X	X	Cambridge	.dat
	waypoints.cup	X	X	SeeYou	.cup
	waypoints.wpl	X	X	\$GPWPL NMEA Sentence	.wpl
Polars	polars.spl	X	X	SoarPilot	.spl
Tasks	tasks.spt	X	X	SoarPilot	.spt
Flight	IGC Name		X	IGC Format	.igc
SUA	suadata.sua	X		Tim Newton-Pierce	.sua

Receive means from DOC into SP, **Transmit** means out of SP into a DOC file. Its recommended to install the Filez utility on your Palm. With this tool you can f.i. keep several waypoints DOC files in memory and rename the one you need to waypoints.dat. Also a

DOC reader can come in handy, several free DOC readers exist for the Palm platform.

From version 3.3.0 onwards you can choose the filenames for your data (but the extensions for each type remain the same). See Loading and Saving Data for details.

Is Soaring Pilot an IGC approved flight logger?

No. The list of approved flight recorders (FR) can be found here on the site of the FAI. According to the technical specifications for an approved FR:

2.7.2 Security of Data between GNSS Receiver and the FR Memory. The user, and particularly the flight crew, must be denied access to the line carrying the inbound signal containing the data to be used in the flight verification process (eg the NMEA protocol inbound signal), to the FR memory (the ingoing data line). See 2.7.3 for the principles to be adopted.

The GNSS receiver and the flight data memory module of the Flight Recorder must either be in a sealable enclosure with the connections between them entirely within the enclosure, or the GNSS receiver and flight data memory modules must be in separate sealable enclosures with positive security protection being included for data being transferred between them.

2.7.2.1 Type of seal. The enclosure must have a tamper-proof physical seal across a joint or screw, so that the seal will be broken if the case is opened. For the internal security mechanism, see para 2.8.4. (AL5)

So its not very likely that any PDA based logger solution will ever achieve approved FR status. However, since the start of the 2006 OLC season, SoarPilot is on the "Approved Software" list for submission to the OLC.

Does the Moving Map display support terrain details?

No, the Moving Map display of SoarPilot displays waypoints, SUA and course/task information. Because many SoarPilot users run SoarPilot on B/W low-res displays the screen would become too cluttered when roads, rivers, etc. would also be plotted, not to mention the additional CPU power required to do so. There may be plans to add this feature for high end Hi-Res colour Palms.

Where can I get a serial cable for the LifeDrive, Tungsten E2, Tungsten T5 and Tungsten T|X

These newer Palm devices do not present a true RS232 serial port through their connectors. The signals that are outputted need to be adjusted slightly to make them into correct RS232 voltages. The only place that I've found so far that has a good cable for these devices for connecting to a GPS or other serial device is PN Technologies.

Why cannot I not power down my PDA when SP is running?

You'll notice that you cannot switch off your PDA when SP is running. This is done on purpose so you do not switch off your PDA by mistake and loose your flight log. The power button can only be used to toggle the backlight of your PDA by pressing it twice in a short interval. To power off, you'll need to exit SoarPilot first.

Links

This page can be used to create a collection of usefull links to other sites.

PDA

Palm, Inc	Palm, Inc site
Sony CliÃ©	Sony CliÃ© handhelds
Compare PDA's	Feneric's PDA / Hand-held Computer Comparison
Google Compare Palm PDA	Google results for palm+pda+comparison

Palm Tools

Palm Text Sync	a DOC Text conduit.
DocReader	a tool to convert Palm DOC .pdb files to ASCII text and vica versa.
Filez	FileZ is a freely available file utility for Palm OS. It gives you full access to your handheld's files, system info, and preferences.
SiEd - Text Editor	SiEd - Free Text Editor for PalmOS
CSpotRun	CSpotRun is another free DOC editor for PalmOS
ptelnet	ptelnet can be used to verify GPS reception via the serial (RS232 or IR) port
QuickBits	QuickBits optimizes several common operations to improve their performance by as much as 8 times the original speed. However, QuickBits is not an overclock utility.
AfterBurner	AfterBurner is a "hack" to increase the clock speed (overclock) of your Palm's CPU. Lots of other speed up options as well. Highly recommended to squeeze more processing power out of low-end Palm devices.
X-Master	X-Master manages PalmOS system extensions (aka Hacks). FREE!
Quartus Benchmark	Benchmark 3.1 measures your Palm Powered handheld's speed and bus bandwidth utilization, and shows how your device measures up relative to other models or what the effects of overclock utilities are on the performance of your PDA.

SUA/Waypoints

Worldwide Soaring Turnpoint Exchange	Worldwide Soaring Turnpoint Exchange Special Use Airspace for various countries from various sources. Use at your own risk!
Welt 2000	(German) File of all soaring turning points of the world with WGS84 coordinates and a small program WELT2000 (starting from Windows starting from 3.1 to Windows XP).
CLR	Site of CLR with NOTAM's and Dutch and Belgium Airspace information and databases (Dutch)

GPS Tools

Cetus	Cetus GPS is the Swiss Army Knife of GPS tracking and field data collection for PalmOS.
NMEA Mon	a little NMEA monitor for PalmOS
VisualGPS	A desktop tool to visualize NMEA output from a GPS
gpsfeed+	gpsfeed+ is a utility that feeds the PC with continuous GPS data as if a GPS were moving in a car or airplane. NMEA 0183 GPS sentences are sent to the application through a socket (TCP/IP) connection or a UDP multicast message. It also outputs the same NMEA data to a serial port of the PC.
Sailsoft	NMEA products (\$\$\$) GPSSIMUL and NemaTalker can be used to test SoarPilot without a real GPS attached

GPS

GPS Comparison Database	Pocket GPS World Comparison Database
GPS Companion	GPS Companion review
Holux GR230	Holux GR230 Bluetooth GPS
Globalsat BT338	Globalsat BT338 Bluetooth GPS

PDA Cables & Cradles

<http://www.pc-mobile.net/>

Blue Hills Innovations

GPS City

GPSOZ

www.gpskabel.de

PN Technologies

Cypress Industries



Site specialized in PDA cables

Blue Hills Innovations offers a huge selection of interface cables for various handheld devices.

GPS City is a retailer of GPS and related electronic products with offices in the USA, Canada, and with sales to international countries.

Custom cables for various GPS to PalmOS devices. Features Garmin and Magellan specific interface cables. Will ship overseas from Australia.

German site with lots of cables and pinning info

PN Technologies has a great selector page to find the cable you need. Also lots of pinout info.

Cypress Industries sells PDA connectors for do-it-yourself cables

Get wired at pinouts.ru - Free handbook of more than 500 brief technical descriptions of connectors, cables, adapters.

Misc

SeeYou

SeeYou is flight analysis and planning software (\$\$\$)

CouTraci

The CouTraCi software is designed and created for the analysis of the GPS flight data recorder and optimized for gliding tasks (Free DEMO)

OLC

Online Contest

SP forum

Soaring Pilot Group Forum

Navigation with Palm OS

Navigation with Palm OS. **Excellent** site with lots and lots of information about GPS software, hardware, cables, etc.

NMEA sentence information

GPS - NMEA sentence information, by Glenn Baddeley

FlightTrack

FlightTrack is (FREE) flight analysis software for MacOS X

KFLog

KFLog is (FREE) flight analysis software for Linux

Sailors of the Sky

Sailors of the Sky is a Glider Simulator for the PC. It can also output NMEA data while flying in the simulator. Great to familiarize yourself with SP features.

Condor

Condor is another soaring simulator that supports NMEA output

SoaringDotNet

SoaringDotNet is (FREE) flight planning and analysis software for MS Windows with complete support for SoaringPilot

GPS Babel

GPS Babel is a nice tool that can convert waypoints, tracks and route files from one format to another.