User Guide
Version 3.5

Disclaimer and liability limitations

ProLine Systems assumes no responsibility for any damages or losses resulting in the use of SlantAlpha software or this user guide.

Important

Please read the End User Licence Agreement supplied with SlantAlpha before using the program. Any use of the software indicates that you accept the terms of the End User Licence Agreement.

Warning	*SlantAlpha* should be used only as an aid to prudent VFR navigation. The regional databases are not certified and therefore must not be relied on for primary navigation.

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Chapter 1: Introduction

In this chapter

About SlantAlpha

SlantAlpha helps you quickly and accurately determine and communicate your position. The screen displays the three airports nearest to you, and your distance and bearing from them. You can also choose to view nearby navaids and VFR waypoints.

SlantAlpha runs on a PDA (Personal Digital Assistant) device driven by a GPS (Global Positioning System) receiver. SlantAlpha continuously displays the names, distances and relative bearings for nearby airports, radio navigation aids, and other points of interest to pilots. All fifty states in the United States are covered.

Warning	SlantAlpha should be used only as an aid to prudent VFR navigation. The regional databases are not certified and therefore must not be relied on for primary navigation.

Theory of operation

You connect your GPS to your PDA. The GPS reports your position to SlantAlpha, which runs on your PDA.

SlantAlpha finds the nearest airport, navaids, and VFR waypoints from the data base you selected to load. SlantAlpha computes your great circle distance and relative bearing from and to the closest airports, navaids, and VFR waypoints. SlantAlpha continually recomputes and updates the display as your position changes.

Magnetic bearing *from* a facility or waypoint is displayed using compass points. This is the natural way you communicate position from an airport, navaid, or VFR waypoint.

Magnetic bearing *to* a facility or waypoint is expressed in degrees. As you fly, you can home in on the airport, navaid, or VFR waypoint, much as you would using a movable card ADF.

The regional databases are derived from data obtained from the National Aeronautical Charting Office.

For more information about the databases, see About the regional databases, page 13

Requirements

SlantAlpha was extensively tested with the Palm OS® v 3.5 on a Palm™ m100 device, connected to a Garmin® GPS III Pilot.

To run this program you need:

- Any Palm device with:

  - the Palm operating system v 2.0 or later

  - an RS-232 serial interface

  - 500k free memory space

- A GPS receiver that:

  - has an RS-232 serial interface

  - generates NMEA 0183 Version 2 sentences – ($GPGGA specifically)

  Set the GPS receiver to generate NMEA sentences at 4800 baud, no parity, and 1 stop bit – Refer to your GPS manufacturers documentation for instructions.

- Any interface cables and adapters needed to connect your GPS to your palm device
- A cable to connect your palm device to a computer (to load this program)

Package contents

SlantAlpha is shipped as a zipped folder with these files:

- Readme.html
- SlantAlpha.prc
- SlantAlphaGuide.pdf
- mathLib.prc
- mathLib.zip
- Four regional databases:

  - a.051802.pdb: all 50 states, 10N, 179W to 74N, 60W

  - e.051802.pdb: eastern states, 20N, 95W to 50N, 60W

  - c.051802.pdb: central states, 20N, 110W to 50N, 85W

  - w.051802.pdb: western states,10N, 179W to 74N, 100W

Buy SlantAlpha

SlantAlpha is a high quality program, with pristine diamond-hard code written by one of the world's premier software engineers.

(And the documentation set was designed and written by one of the world's premier information designers.)

What we are saying is, although SlantAlpha is shareware, SlantAlpha is a class act.

We allow you to try SlantAlpha for free, because you need to do the work of finding the right cables and hooking up your GPS and PDA correctly. We don't have the resources to purchase and test all the combinations of equipment that are possible. And we want you to be sure you are happy with SlantAlpha before you pay us.

Once you have put forth the effort of putting your system together and installing the software, you'll have a powerful tool at a remarkably low price.

Try SlantAlpha for free. If you like it and keep using it, please send us $25 dollars.

Why?

If you pay for the copy of SlantAlpha you use, we'll be able to write great upgrades and develop other high-quality, low-cost tools.

And it's the nice thing to do.

To buy SlantAlpha

1 Go to the SlantAlpha.com website and click Purchase.

   http://www.slantalpha.com

2 Click Buy Now.

You will connect to PayPal™, which allows you to send secure payments. PayPal automatically encrypts your confidential information using the Secure Sockets Layer (SSL) protocol with an encryption key length of 128-bits (the highest level commercially available). You will not need to share your private financial information with us (e.g. credit card or bank account numbers) during the transaction.

Chapter 2: Instructions

In this chapter

Installing SlantAlpha

To install SlantAlpha, follow the instructions provided with your PDA.

For online information, see http://www.palmos.com/products/install/

1 Unzip the slantalpha3.5.zip file on your computer.

2 Connect the HotSync® cable to your PDA.

3 Follow the user guide instructions for installing add-on applications supplied with your PDA and install:

- SlantAlpha.prc
- MathLib.prc
- a.051802.pdb (Or one (*only one*) of the other .pdb regional database files described in the next section.)

4 After installing the files, disconnect the HotSync cable from your computer.

Note	The regional databases are large and may take up to 30 minutes to install onto your PDA. Make sure the batteries are fresh enough for 30 minutes of continuous operation before you begin the installation.

Running SlantAlpha

You may need to set your GPS receiver to generate NMEA sentences at 4800 baud, no parity, and 1 stop bit. Refer to your GPS manufacturers documentation for instructions.

Optional but recommended:

Program one of the hardware keys on your PDA to start SlantAlpha. This makes it quick and easy to return to SlantAlpha. See your PDA user guide for instructions.

Starting up

1 Connect your GPS to your PDA.

See Cables, page 16.

2 Turn on the GPS and allow it to initialize.

You may need to be outside in order to get a signal.

If your GPS has a simulator mode, you can use it to test your setup.

3 To start SlantAlpha, tap the SA icon on your screen.

Setting your preferences

The first time you run SlantAlpha you will be asked to set up your preferences.

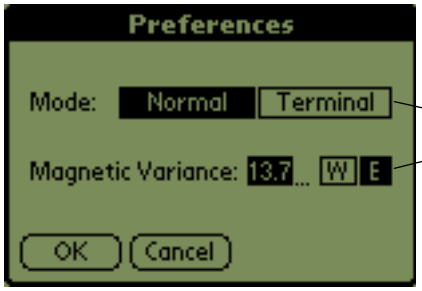
To edit those preferences anytime afterwords:

1 Tap the menu icon.

2 From the Options menu, tap Preferences.

3 Select your preferences. (See the next section).

4 Tap OK to accept the settings



Settings show normal mode,
with a magnetic variance of 13.7 East

Selecting Normal or Terminal mode

When you use SlantAlpha, you can choose between two modes of operation – normal and terminal mode.

Mode: { Normal, Terminal }

-Tap either Normal or Terminal.

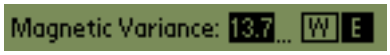
Entering the magnetic variance

Magnetic Variance: { dd.d } degrees West or East { W, E }

1 Convert the magnetic variance listed in your to aeronautical chart from degrees and minutes to fractional degrees. For an example, see Converting degrees, page 14

2 Enter the magnetic variance in fractional degrees.

3 Tap W or E for your location.



Important

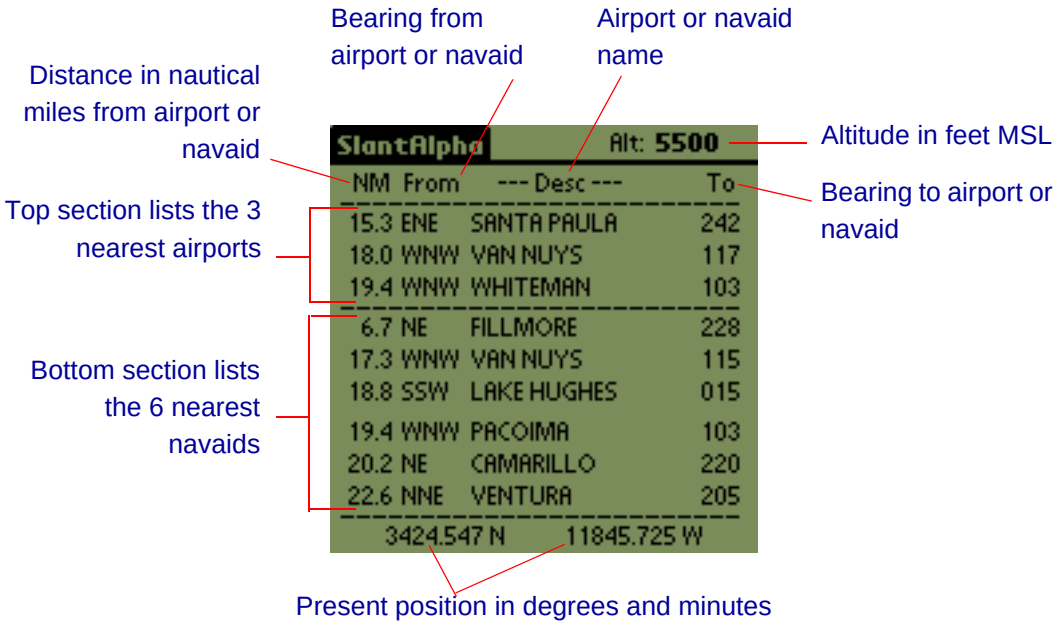
Make sure to properly select W or E when entering the variance. If it's not right, the bearing information will be skewed in the wrong direction by twice the variance value.

If you fly for significant distances, you should re-enter a corrected magnetic variance periodically as you proceed.

Using the SlantAlpha display

After setting your preferences, the SlantAlpha display appears.

SlantAlpha will update the display every few seconds.



Reporting your position accurately is now a snap!

“Van Nuys tower, Skyhawk four six eight romeo tango is eighteen miles west-northwest of the airport at five thousand five hundred, inbound for landing with information foxtrot.”

Warning	SlantAlpha should be used only as an aid to prudent VFR navigation. The regional databases are not certified and therefore must not be relied on for primary navigation.

Toggling between modes

Press the page up or page down hardware keys to toggle.

Use either button – wait a few seconds for SlantAlpha to respond.

Extra info

About the regional databases

The regional databases are developed from public data obtained from the FAA – National Aeronautical Charting Office (NACO).

The regional database files cover different sections of the United States. If your PDA has enough memory (427 k), you can load the data base that includes all of the United States including Alaska and Hawaii.

If your PDA memory is limited, you can load a regional database.

Look at your Sectional Aeronautical Chart and choose the regional database most appropriate for you. If you anticipate flight in more than one region, or if you're based within 10 degrees of a longitude boundary of the central region, choose the 50 states database.

See the table below for region descriptions and database sizes.

Regional databases

Area	SW corner	NE corner	File name	File size
All 50 states	10N, 179W	74N, 60W	a.051802.pdb	427 k
Western states	10N, 179W	74N, 100W	w.051802.pdb	135 k
Central states	20N, 110W	50N, 85W	c.051802.pdb	204 k
Eastern states	20N, 95W	50N, 60W	e.051802.pdb	231 k

The regional databases include all public use airports, radio navigation aids {VOR, VOR/DME, VORTAC, NDB, NDB/DME}, and VFR waypoints.

Three of the databases are smaller and provide overlapped coverage for eastern, central, and western states.

Note	Install only one regional database at a time on your PDA.

Converting degrees

Aeronautical charts list magnetic variation in degrees and minutes. SlantAlpha uses fractional degrees. Convert minutes to fractional degrees the dividing the minutes value by 60.

Examples:

45’ = 45/60 = .75

30’ = 30/60 = .5

15’ = 15/60 = .25

SlantAlpha will round to the nearest 10th degree so just get close – dd.0, dd.2, dd.5, dd.7 will be fine.

If magnetic variance is set to 0.0, all bearing information will be degrees true – what good is that?

About normal and terminal modes

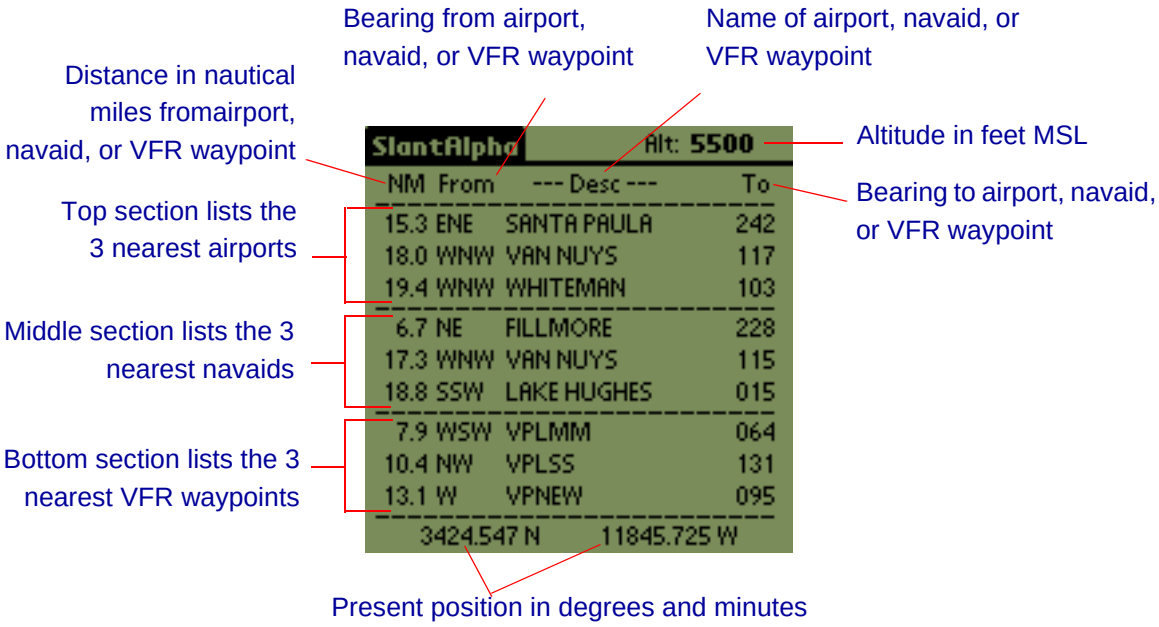
Normal mode

Normal mode displays the three nearest public use airports and the five nearest navaids.

Terminal mode

Terminal mode displays the three nearest public use airports, the three nearest navaids, and the three nearest other points including VFR waypoints.

Terminal mode display



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Terminal mode should be used when the user is navigating in an area covered by a Terminal Area Chart and that area has VFR waypoints listed in the Airport/Facility Directory

Choose terminal mode only you will be referring to a VFR Terminal Area Chart during your flight. If you find that displayed VFR waypoints are 10's, 100's or more miles away, or none are displayed at all, leave the setting on normal.

Some terminal areas that include VFR waypoints are Houston, Kansas City, Los Angeles, Salt Lake City, and San Diego.

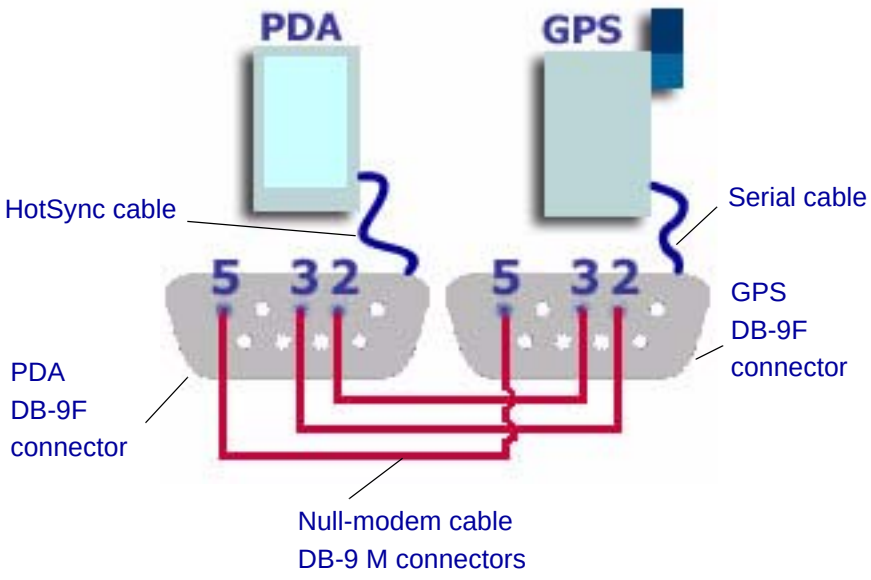
Cables

You need to find the right cables and hook up your GPS and PDA correctly. We aren't able to purchase and test all the combinations of equipment that are possible. However, here are the basic requirements.

Cable connections

You may need a combination of three cables:

- HotSync cable —connects:
  - the PDA to the computer (for program and regional database installation)
  - the PDA to the GPS (through the null-modem cable/adapter)
- Serial cable: connects the GPS to the PDA (through the null-modem cable/adapter)
- Null-modem (crossover) cable/adapter: connects between the PDA HotSync cable and the GPS serial cable



Usually the PDA and the GPS cables have 9 pin-female connectors designed to plug into a male connector on a PC.

For the null-modem or crossover cable, you will probably need a cable or adapter that has 2 DB-9 male connectors. These cables are available at many computer stores or from vendors accessible through the Internet.

(Male connectors have pins; female connectors have sockets – clever yes?)

The following table shows the typical configuration between the devices using DB-9 connectors.

PDA pin to GPS pin connections

PDA	GPS
2	3
3	2
5	5

Locating cables

Possible sources:

- HotSync cable from the Palm PDA device manufacturer
- Serial interface cable from the GPS manufacturer
- Null-modem (crossover) cable/adapter from a computer hardware reseller

Internet links:

http://www.gpscables.com

http://store.palm.com

http://www.handspring.com/products

http://shop.garmin.com

http://www.magellangps.com

http://www.lowrance.com

Chapter 3: Troubleshooting

In this chapter

Display problems

Symptom	Possible cause	Fix
All display fields are asterisks.	No communication from GPS.	This condition exists when SlantAlpha is initially invoked, but should clear after several seconds. If the condition does not clear: • Check that the interface cable(s) is/are correct and secure. • Check that the GPS is configured to output NMEA data at 4800 baud. See your GPS user guide for more information.
All display fields are asterisks except the Alt: field which displays ???? flashing at 8 - 10 second intervals.	GPS communication is established but the $GPGGA sentence has not been detected.	The GPS must send this sentence in order to work with SlantAlpha. All hope is not lost however. If you contact support@slantalpha.com we may be able to work with you and produce a version of SlantAlpha that works with your GPS.

Display problems (continued)

Symptom	Possible cause	Fix
There are less than three VFR waypoints displayed when you are using the terminal mode.	There are no VFR waypoints within 250 NM of your position.	Switch to normal mode.

Error Messages

SlantAlpa Notice	Possible cause	Fix
ROM version must be 2.0 or later.	ROM version is not 2.0 or later.	Bummer. Get a newer PDA.
Database missing or empty.	The data base did not get installed properly into your PDA.	Install one of the SlantAlpha regional database files. See Installing SlantAlpha, page 9. See also About the regional databases, page 13.
Can't find/load MathLib.	The math library did not get installed properly into your PDA.	Install MathLib.prc, v.1.1 See Installing SlantAlpha, page 9.
Can't open MathLib.	Your PDA may be using an old version of the Math Library.	You need to load the version of MathLib shipped with SlantAlpha, MathLib.prc, v.1.1
Can't find Serial Library.	The Palm serial library is probably not installed.	This program is normally pre-installed by the PDA manufacturer; try to find SerialLib and re-install it onto the PDA.
Serial port in use.	Another application is using the serial port.	Find and stop the application that is using the port.
Can't open serial port.	The PDA may not have a working serial port.	Bummer – does the PDA have a serial port?
Can't close MathLib.	MathLib didn't install correctly.	Reinstall the version of MathLib shipped with SlantAlpha, MathLib.prc, v.1.1