

GPS Monitor 2.0

What is it?

GPS Monitor is a small freeware application designed for checking GPS satellite navigation receivers for compatibility with *GPS Map*® and *GPS Map Lite*®, the powerful moving map based navigation applications running on *Apple Newton*™ compatible PDAs. You may use the application for monitoring your GPS receiver's output and for copying displayed data to the clipboard and to other applications.

More information and demo versions of *GPS Map* and *GPS Map Lite* are available at www.soaring.de/gps/GPS_Map.html.

What's new in Version 2.0?

- *GPS Monitor* is now a NOS 2.x savvy application. It will no longer work on PDAs with an OS version previous to 2.0.
- added lots of new interface options, such as diverse baud rates, support for PC-cards with serial interface or GPS onboard, IR connections and possibility for initialising the GPS receiver.

What else do I need?

- an *Apple Newton*™ compatible PDA with an operating system (NOS) version of at least 2.0. If you have a PDA running NOS version 1.x please look for *GPS Monitor 1.2* instead.
- a GPS receiver, either hand-held, OEM module or active antenna with a serial interface (e.g. *Garmin* series receiver), or a PC-card based GPS receiver.
- a data cable for connecting the GPS receiver to the PDA (external device only).

There are no special requirements to the GPS receiver because it will be used only as a position sensor.

The GPS receiver must comply with the following requirements:

- either have a serial interface with TTL, RS232 or RS422 level (external device only) or emulation of a serial interface type PC-Card (PC-Card receivers only)

The NMEA protocol has many different implementations, but *GPS Monitor* will adapt to them automatically.

GPS Monitor supports the following NMEA message combinations:

1. \$GPGGA and \$GPVTG
2. \$GPGGA and \$GPRMC
3. \$GPGLL and \$GPVTG
4. \$GPRMC only

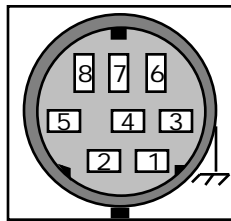
If the message types to be sent are selectable at your GPS receiver you should prefer the combinations 1 or 2, because of 3 and 4 don't contain information about altitude and data quality.

If the receiver sends additional messages they will be ignored.

How do I connect a GPS receiver?

1. Using the built-in Interface with external GPS Receivers

The *Newton*TM compatible PDA has a mini DIN 8 female connector with RS422 levels. Most receivers have RS232 or TTL only interfaces. Simply connect the ground lines of the PDA and the GPS receiver, and the RXD- line of the PDA to the TX line of the GPS receiver.



Pin Assignment (by looking to the PDA's connector from outside)

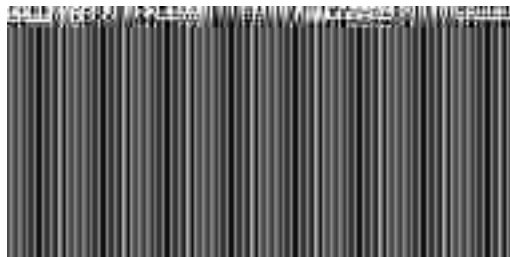
Pin 1	HSK _o	/DTR
Pin 2	HSK _i	/CTS
Pin 3	TxD-	/TD
Pin 4	GND	ground, must be connected to the GPS receiver's ground
Pin 5	RxD-	/RD, must be connected to the GPS receiver's data output
Pin 6	TxD+	
Pin 7	GPi	
Pin 8	RxD+	

2. Using a PC-Card

If you are using a serial PC card please refer to its documentation for correct wiring to the GPS receiver.

How does it work?

After starting up *GPS Monitor* will listen to a GPS receiver by using the NMEA defaults (4800 baud, 8 bits, 1 stop bit) and the built-in serial interface.



If you have another connection to your GPS please tap onto the info button and select „Prefs“.



An initialisation string may be needed by some GPS receivers to enable the output of NMEA data. You may enter both ASCII and binary data into the input field.

Each binary byte must be prefixed by a # sign, followed by two hexadecimal digits. If the # sign should occur as an ASCII character within the string you must type it twice.

Example: Entering „\$ASTRAL#0D#0A“ means the string „\$ASTRAL“, followed by a return and a linefeed character as needed for initialising the *TripMate* active antenna.

Please note: As it is difficult to recognise hexadecimal data (e.g. to distinguish between a O and a 0) it is preferable to use the keyboard by double-tapping into the input field.

Some receivers, e.g. the *Centennial SatNav GPS* offer the option to initialise them with the actual date and time for speeding up the time to the first fix. You may insert the strings #UD for Universal Date and #UT for Universal Time (UTC) into the initialisation string.

The example string as shown within the screen shot will initialise *the Centennial SatNav GPS Card* with date and time, and set ist update rate for both the \$GPGGA and \$GPVTG messages to once per five seconds for reducing power consumption.

Although *GPS Monitor* will calculate UTC automatically based on Newton's time and date, the current location as set within the Time Zones application and the actual daylight settings for that location you may check and correct it by clicking the „UTC Offset“ button.

After closing the preferences window *GPS Monitor* will switch to the new interface settings and again listen to your receiver.

If data is incomming for a few seconds *GPS Monitor* will adapt its driver to the best NMEA message combination found in the data stream and also report the driver setting in its data field.



Shortly after that the screen will change and display the GPS data. If a specific value is currently not available in the data stream it will be displayed as dashes.

Latitude
Track
Altitude (Meters)



Longitude
Speed (kilometers)
Position Quality (PDOP)

The small flashing symbol below the text field will change each time a GPS update occurs. That should happen at least all five seconds to be compatible with GPS Map or GPS Map Lite.

You may select the displayed text with the pen (by waiting some seconds and then dragging over the text as within the note pad) and then drag it to the clipboard or into another application running in background.

Hints for special Receivers

1. Delorme TripMate

After power-up the receiver sends the string „\$ASTRAL“ to the host computer and waits until it will be echoed. You must enter the same string as the initialisation string.

2. Centennial SatNav GPS Card

GPS Monitor only supports the NMEA version of that receiver. *GPS Map* and *GPS Map Lite* also support the binary version.

You must set the baud rate to 9600 bauds, 8 bits, no parity and no handshake. You should also enter the initialisation string as shown below for faster satellite acquisition and for reducing the power consumption from 2 watts to approx. 0,75 watts. Don't forget one of the commas!

```
$PRWIIINIT,V,A,A,,,,,,,,, #UT, #UD#0D#0A$PRWILOG,GGA,A,5#0D#0A$PRWILOG,  
VTG,A,5#0D#0A
```

Revision history

Version 1.0:

Initial release

Version 1.1:

Added support for some receivers with special protocol variants, i.e. Garmin 85. Those systems will be also supported by GPS Map 1.8.3 and GPS Map Lite 1.2.3.

Version 1.2:

Fixed a bug with displaying PDOP.

Version 2.0b1

Rewritten to be NOS2.x savvy. Added preferences for setting various interface options.

Version 2.0b2

Fixed some bugs which prevented the communication endpoint from correctly shutting down and re-initialising during a power off/on sequence.

Fixed some bugs which prevented the GPS timeout handling to work correctly after a power off/on sequence.

Version 2.0b9

Fixed some bugs again and added support for UTC initialisation. Changed the escape character from \$ to #. The initialisation string is now sent every time there is a timeout on the interface.

Disclaimer

GPS Monitor is copyrighted ©1996,97 by:
Gerd Staudenmaier
Software Development & Marketing
Friedrichshafener Strasse 24 b
D-88090 Immenstaad, Germany
email: <gerds@micronet.de>
web site: <www.soaring.de/gps/GPS_Map.html>

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