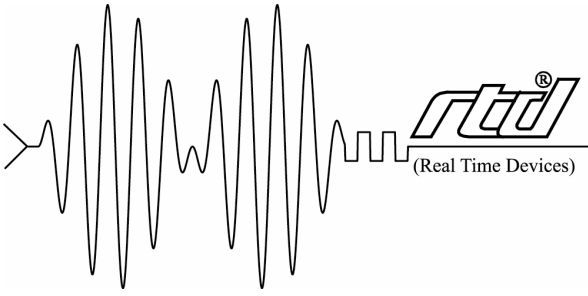
GPS140 DOS Application

User's Manual
Version 1.0.x



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"Accessing the Analog World"®

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Introduction

This manual describes the operation of the GPS140 DOS monitoring application. The program performs the following functions:

- Monitoring the current coordinates: Latitude, Longitude, altitude, speed and course over ground.
- Monitoring and configuring the device interface parameters such as the protocol and serial COM speed.

Fully commented source code for the application is also included. The program can be built using OpenWatcom Version 1.3

DOS Installation

Installation of the Board and Software

Before installing the application and source files, you need to install the GPS140 board in your PC. The jumper locations and meanings can be found in the GPS140 hardware manual. After the hardware is installed you can unzip the software to a new directory. The GPSMon application will be installed in the main directory. Below the main directory is a Source directory which contains all the source for the GPSMon application. The source can be compiled using OpenWatcom 1.3. Note the readme file in the GPMon project, it contains important information about building and running the GPSMon application.

Starting the Software

To Start the software, type in GPSMON followed by the base address you configured the board to. E.G:
gpsmon 298

When started, the program will attempt to communicate with the GPS card using the most common parameters (9600 Baud, ZNMEA protocol) If it is successful you will see data start to be displayed on the screen. If communication cannot be established with the card, the application will try another protocol (ZBinary). If communication still fails the application will go to the next highest baud rate and try both protocols again. This continues until successful communication is established with the card. The status message on the bottom line of the screen will tell you when the application is searching for the correct baud and when it has locked on to communications.

Using the Software

On the main screen you may change the baud rate, change the protocol or switch to the satellite list.

To change the baud rate you must be in ZBIN (ZBinary) protocol. Simply pressing B will cycle through the allowed baud rates.

To change the protocol, press the P key. There are two protocols the board supports, ZBinary and ZNMEA.

To see the list of satellites the board is currently using press the S key. Pressing the S key again will return you to the main screen.

The following information is displayed on the main dialog:

GPS Status – Indicates the status of the calculated position. If the value is ‘Valid’, then the position is valid. Otherwise the position is invalid.

Fix – Fix mode can be 2D or 3D or Invalid

Quality – Can be Invalid, GPS-Fix or DGPS Fix

Date and Time – Date and Time of the GPS receiver. The receiver gets the GMT date and time from the satellites

Num of Navigation Satellites – Number of satellites that are currently being used foer navigation. When this number is less than three, the position is invalid.

Num of Visible Satellites – This is the number of satellites the receiver can 'see'.

Position Dilution of Precision – A measure of how much the error in the position estimate produced from satellite range measurement is amplified by poor arrangement of satellites with respect to the receiver antenna.

Horizontal Dilution of Precision – A measure of how much the satellite geometry affects the position estimate

Vertical Dilution of Precision -- A measure of how much the satellite geometry affects the position estimate

Latitude – Position in Degrees, Minutes and fractions of minutes

Longitude -- Position in Degrees, Minutes and fractions of minutes

AMSL Alt – Altitude above mean sea level in meters.

Geoid Alt – Height of geoid (mean sea level) above WGS84 ellipsoid.

Speed – Speed over ground in Knots

Crse over Gnd – Course over ground in Degrees and fractions of degrees

Magnetic Variation – Difference between Magnetic north and true north at the current location

On the Satellite screen the following columns appear:

Ch # -- Receiver's channel number (1-12)

PRN # -- Satellites Pseudo Random Noise number.

Elevation

Azimuth

SNR – Signal to Noise ratio

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