MiniGPS v1.4

User Manual

Release Date: 2009/6/8

PRELIMINARY, SUBJECT TO CHANGE WITHOUT NOTICE

1. Overview

MiniGPS is a tool which helps people to view the status of gps receiver more conveniently. MiniGPS is also an interface between people and gps receivers and could change the setting of gps receivers. For example, know the version of firmware, enable SBAS correction, change NMEA sentences, baudrate, fix update rate and so on.
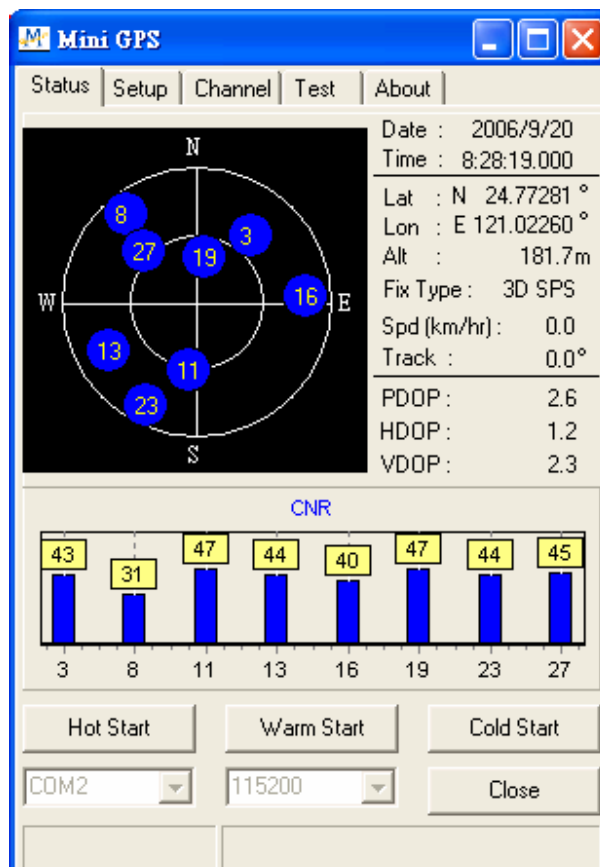
2. Interface

MiniGPS has 5 function pages. Each page has its own feature. Now introduce MiniGPS depends on each page in the following.
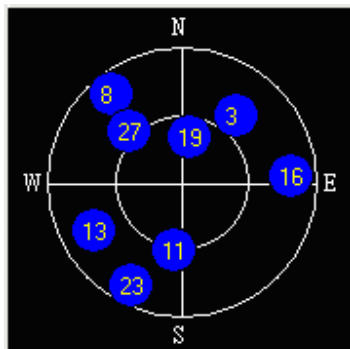
2.1. Status Page

Status Page shows the status of the gps receiver. After set up com port and baudrate, NMEA message would translate into the gps status of MiniGPS. Users could know the time, the position of receiver, the signal level of reiceiver and so on. Status Page also offers users TTFF commands to use. Users could verify the performance of receiver via these commands.

GPS Viewer

2.1.1. Sky Chart

Sky Chart shows the constellation of SV. ⑧ stands for the SV with PRN 8. If the position of SV is near the center of sky chart, the elevation angle of SV is closed to 90°. On the other hand, SV is near the horizon. Besides, character 'N' means north direction whose azimuth angle is 0°.   The azimuth angle increases clockwise, the range is from 0 to 360. A satellite is spread depends on its azimuth also.

2.1.2. GPS Status

The status of receiver which includes time, position and speed of receiver, and so on. Time is UTC time and the unit of latitude and longitude is degree only. Altitude is the height based on WGS84 Datum. PDOP, HDOP and VDOP are the DOP (Dilution Of Precision) based on position, horizontal position, and vertical position separately. DOP is often used to measure user position accuracy. The value of DOP is larger, the accuracy of position is worse.

2.1.3. Signal Level
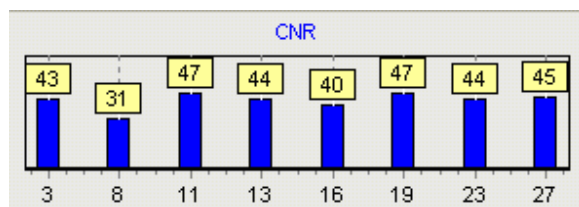
There are 2 modes here, NMEA mode and Channel mode. Blue bar means it is NMEA mode, Red bar means it is Channel mode. Users could double click CNR chart to change mode. In NMEA mode, CNR means the signal level of SV. The number under CNR chart is the PRN of SV. In channel mode, CNR chart will show the status of internal channels. Since the view of CNR chart is too small, users couldn't view total SV once. Click mouse could view the other channel status.

2.1.4. TTFF Command

Hot Start	Warm Start	Cold Start
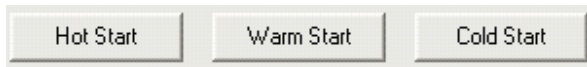
Force gps receiver to do Hot Start, Warm Start, and Cold Start via these command buttons.
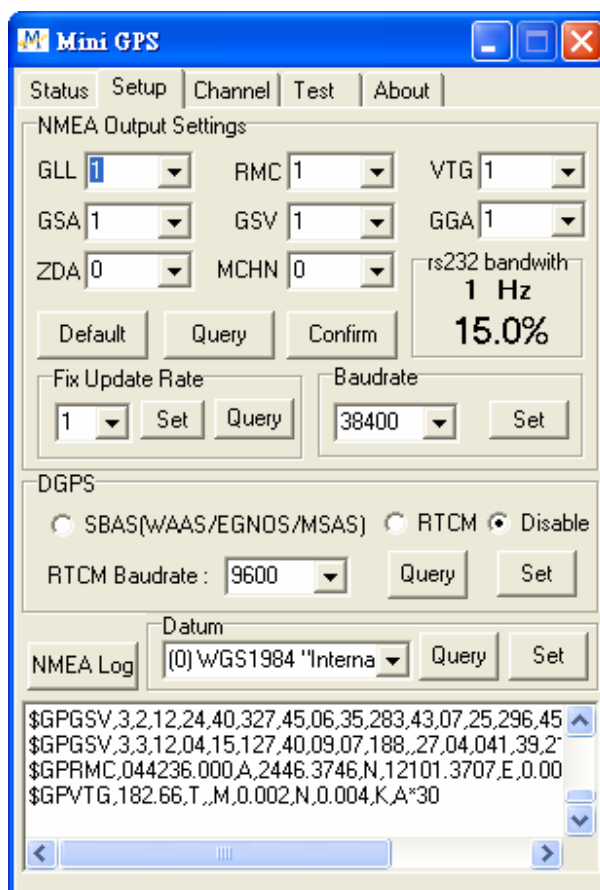
2.1.5. Message Bar

Cold Start	37.4 sec(s)

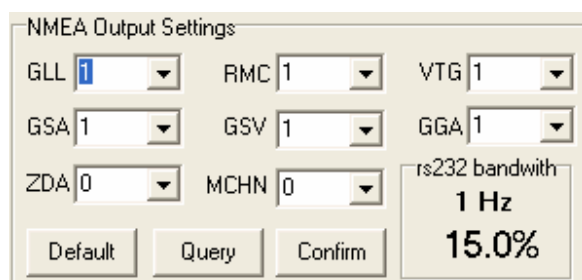While Hot Start, Warm Start, or Cold Start is issued, the second count will show in the message bar until fix.

2.2. Setup Page

MiniGPS also could change the setting of gps receivers. For example, the type or output frequency of NMEA sentences, Fix Update Rate, NMEA baudrate, and WAAS settings. MiniGPS could log NMEA sentences further.
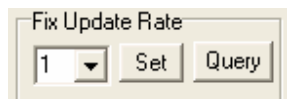

2.2.1. NMEA Message Type

There are 8 NMEA sentences could be set. Besides MCHN sentences, all of them are standard sentences of NMEA 0183. MCHN is a MTK NMEA sentence which shows the internal status of gps channels. If users want to know the status of channels, they have to enable MCHN (Section 2.1.3, Section2.3). The number beside NMEA type is the output frequency. The value is larger, the frequency is slower. For example, under the setting of 1 Hz fix update rate, 1 means output this sentence per second, 5 means output 1 time every 5 seconds. MiniGPS will check the RS232 bandwidth also. If the throughput of NMEA is over the bandwidth, it is prohibited to update NMEA settings.
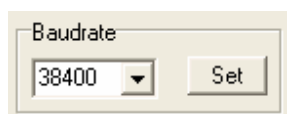
GPS Viewer

2.2.2. Fix Update Rate

In general, gps receiver output NMEA sentences once per second. If users want to use gps in special case, ex: racing car. MiniGPS could increase the fix update rate, the maximum value is 5. It means output NMEA sentences every 200 ms. MiniGPS will check the RS232 bandwidth also. If the throughput of NMEA is over the bandwidth, it is prohibited to update the setting of fix update rate.

2.2.3. Baudrate

If the throughput of NMEA sentences is over the RS232 bandwidth, users could increase the baudrate speed. Users may want to meet the baudrate setting of GIS tool, it is possible to decrease the speed of baudrate. MiniGPS will check the RS232 bandwidth also. If the throughput of NMEA is over the bandwidth, it is prohibited to change the baudrate.

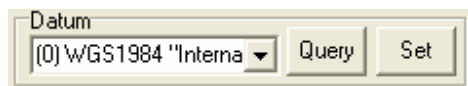### 2.2.4. DGPS Enable / Disable

Gps receiver could collect the correction data from SBAS satellites or some aiding sources. Users could enable DGPS function and then gps receiver will fix more accurately. Take SBAS for example, after enabling SBAS function, users could see a SV whose PRN number is larger than 32 if receiver acquire the signal from SBAS satellite. By the way, GPS receiver will acquire the SBAS satellite after fixing.

2.2.5. NMEA Log

MiniGPS could record NMEA sentences also.

2.2.6 Datum
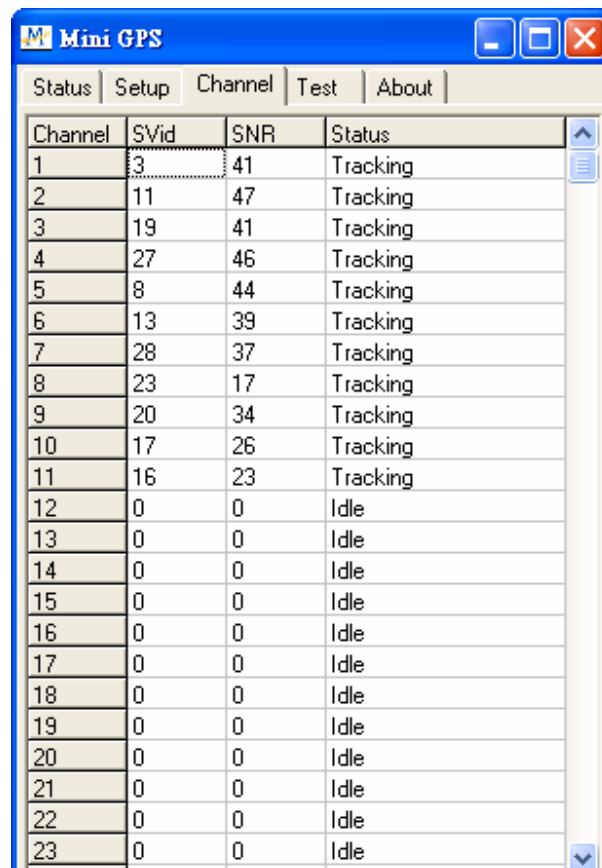
The GPS chip of MTK supports more than 200 Datum. Users could choice their-own coordinate system.

GPS Viewer

Channel Page

If gps receiver enable MCHN sentence, MiniGPS will show the interal status of channels. There are 3 status, Idle, searching, and tracking.

Channel	SVid	SNR	Status
1	3	41	Tracking
2	11	47	Tracking
3	19	41	Tracking
4	27	46	Tracking
5	8	44	Tracking
6	13	39	Tracking
7	28	37	Tracking
8	23	17	Tracking
9	20	34	Tracking
10	17	26	Tracking
11	16	23	Tracking
12	0	0	Idle
13	0	0	Idle
14	0	0	Idle
15	0	0	Idle
16	0	0	Idle
17	0	0	Idle
18	0	0	Idle
19	0	0	Idle
20	0	0	Idle
21	0	0	Idle
22	0	0	Idle
23	0	0	Idle

2.3. Test Page

Test Page include some setting about output NMEA or not, current, and the mode of SBAS. These features aren't designed for general use, only for testing.
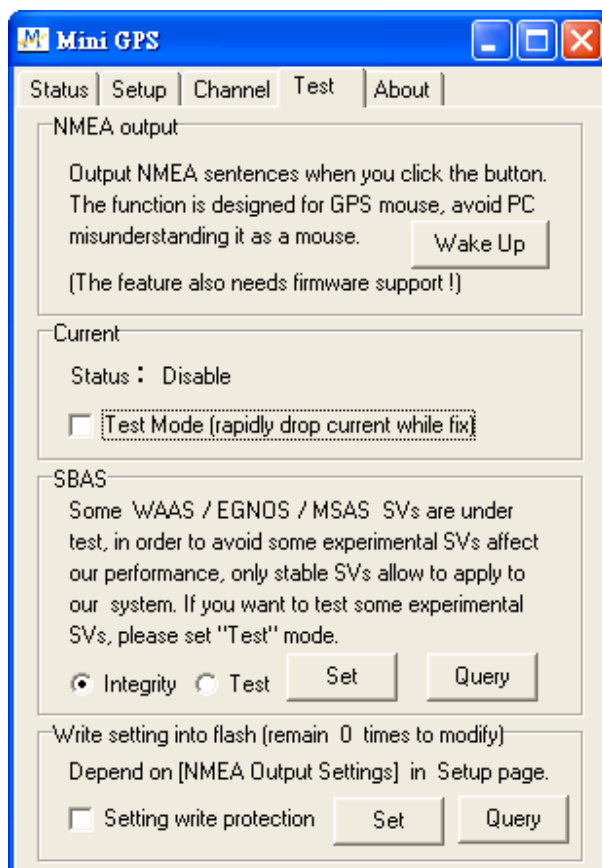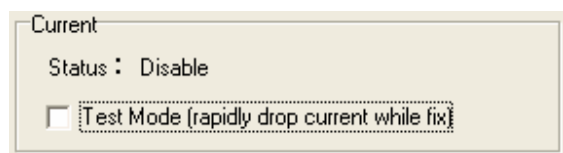

2.3.1. NMEA Output
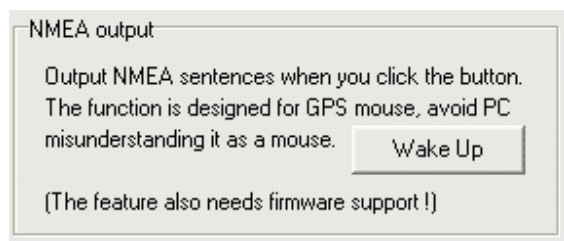
The feature of NMEA output is based on specified firmware. Regard to GPS mousse, PC usually misunderstands it as a mouse and make PC unstable since GPS mouse output NMEA sentences automatically. Depends on specified firmware, when a GPS mouse connects PC, it doesn't output NMEA sentences automatically. After pressing the "Wake Up" button, GPS mouse just output NMEA sentences.
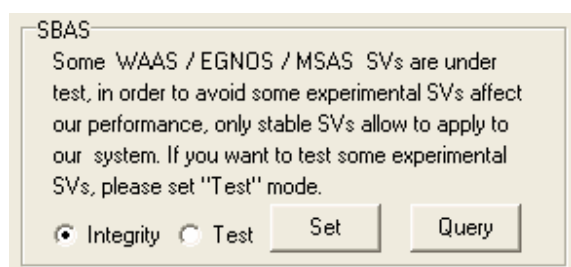
GPS Viewer

2.3.2. Current

Current
Status : Disable
☐ Test Mode (rapidly drop current while fix)

The current of MTK GPS chip will drop after a while. In order to verify this feature immediately, users enable the feature during fix and then the current of reciver will drop current rapidly.
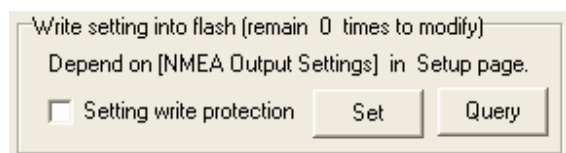
2.3.3. SBAS Mode

SBAS
Some WAAS / EGNOS / MSAS SVs are under test, in order to avoid some experimental SVs affect our performance, only stable SVs allow to apply to our system. If you want to test some experimental SVs, please set "Test" mode.
◉ Integrity ○ Test   Set   Query

Some WAAS, EGNOS, and MSAS satellites are under test. In order to avoid some experimental SVs affect performance, only stable SVs allow applying to system. If users want to test some experimental SVs, please set "Test" mode, otherwise keep the setting to "Integrity" mode.

2.3.4. User Setting in flash

Write setting into flash (remain 0 times to modify)
Depend on [NMEA Output Settings] in Setup page.
☐ Setting write protection   Set   Query

This feature needs firmware support. MiniGPS also could help users write their NMEA Settings into flash. In the beginning, users have 8 times to modify their settings and write their own settings into flash. If people already modified 8 times or check the [Setting write protection] check box before, people couldn't modify in the next time.

2.4. About Page

Users could know the version of MiniGPS and firmware here.

2.4.1. Firmware Version

After pressing the Query button, MiniGPS will show the version of firmware. Mcore_X.X is the version which MTK make. The other

number is made from factorys.