



GPS-1210 Bluetooth GPS

User's Manual V1.0



The equipment version marketed in US is restricted to usage of the channels 1-11 only.

This document is subject to change without notice.
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YOUNGTEK ELECTRONICS CORP. 2006



GPS-1210 Bluetooth GPS

YTEC Bluetooth GPS Receiver



SiRFstarIII
Ultra High Sensitivity
GPS SOC chip

- Dual Mode(Wireless And Wired Navigation Mode)
- 20 Parallel Satellite-Tracking Channels
- Built-in WAAS/EGNOS Demodulator
- Superior Navigation Performance
- NMEA 0183 v3.00

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Revision History

Ver.	Date	Description
1.0	Apr. 26 th , 2006	Initial Release

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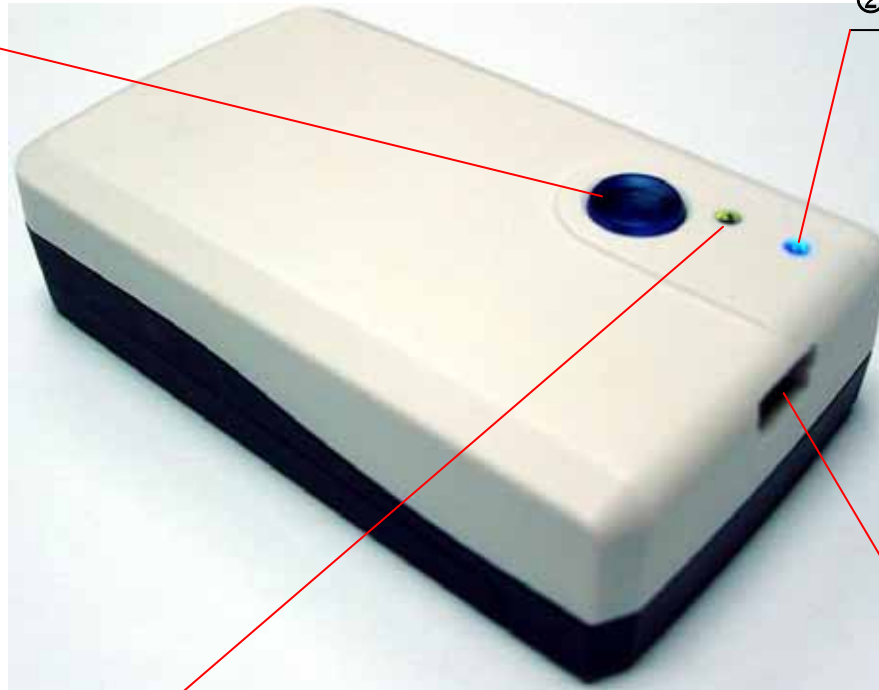
1. Overview

1. GPS-1210 provides GPS data to location service device via both wireless and wired connections (**dual mode**).
2. GPS-1210 adopts electronic switch, supports intelligent **power saving, battery low** power indication. It saves battery power and thus extends usable time.
3. The GPS-1210 Bluetooth GPS receiver relieves user from wired constraint connecting GPS-1210 and electronic map display device by employing the newest **Bluetooth** wireless technology.
4. **(optional)** At the same time, it also meets the demand of wired connection using **USB** connector and UART serial communication interfaces.
5. In addition, the **built-in battery** and **charging capability** relieves user from the constraint of power cord being always connected.
6. Easy to charge using the ubiquitous USB connector.

2.Designation(1 / 2)

③ Power Button

② Bluetooth Status LED (blue)



① GPS/Power Status LED
(green/orange)

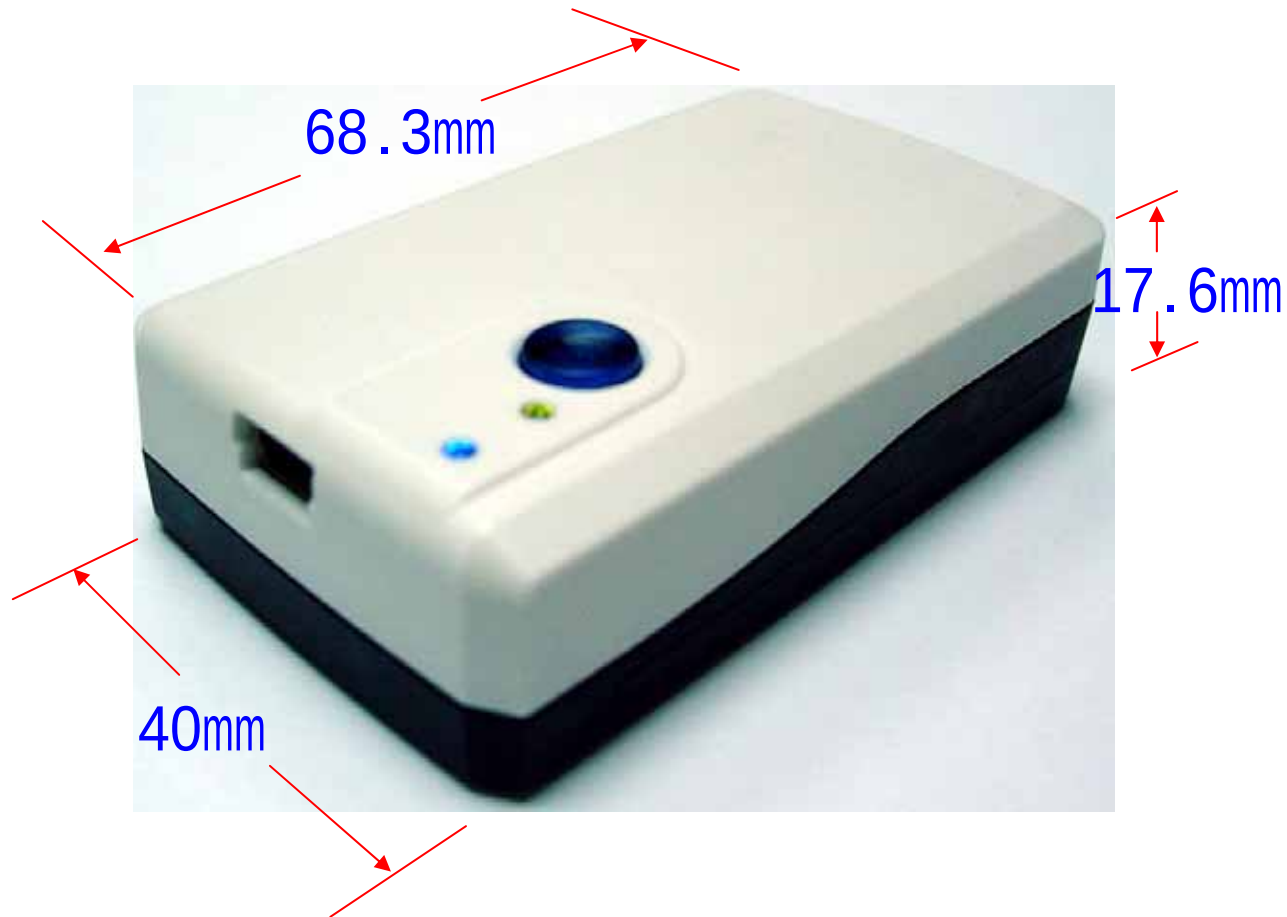
④ Power Jack / Data Port

2.Designation(2 / 2)

No.		Function
①	GPS / Power Status LED (Green / Orange)	Green light *GPS sky searching & Tracking mode: "Always on" *Fixed mode: "Blinking" Orange light **Charging state: "Blinking" during charging and off once battery has been fully charged. *Non-charging state: "Always on" once low battery has been detected.
②	Bluetooth Status LED (Blue)	*Stand-by: "Blinking" (duty cycle on : off = 0.32sec : 2.24sec) *Connection: "Blinking" (duty cycle on : off = 0.32sec : 0.64sec) *Power on: "Blinking" once power on process has completed. *Power off: "On" once power button is pushed, "Blinking" once power off has been recognized, and "Off" once power off process has completed.
③	Power Button	(turn on) Push and hold until blue light is blinking. (turn off) Push and hold until blue light is OFF.
④	Power Jack / Data Port	To recharge the internal battery / Connect to charging cable

** Blinking duty cycle of orange LED depends on power level of battery.
(Orange LED is off at full battery)

3. Dimensions



4. Mandatory Components(1 / 2)



1. Bluetooth GPS Receiver Module (GPS-1210-BODY1) x 1



2. Lithium Battery (GPS-1210-BTLI1) x 1



3. Car Charger with Female USB Plug (GPS-1210-ADCC1) x 1



4. Charging Cable (GPS-1210-CBCG1) x 1

5. Quick Guide (GPS-1210-QG001) x 1

- ★ In the Mandatory Components of GPS-1210, wireless navigation with Bluetooth is recommended.
- ★ Charging Cable is a standard USB cable without signal lines. You may “NOT” use a common one to replace the charging cable. However, you might use “Mini-USB to USB” data cable in the optional accessories if you want to do wired navigation on computing devices such as notebook.

4. Mandatory Components(2 / 2)



5. Getting Started

1. Charge the battery

- The battery ought to be fully charged before using GPS-1210.
 1. Please connect the charging cable (GPS-1210-CBCG1) to the power jack and car (or optionally, travel) charger first, and then plug charger into an electrical outlet. Orange LED is "OFF" if battery is fully charged.
 2. Instead of car/travel charger, GPS-1210 can also be charged automatically by connecting charging cable to USB port of computing devices, such as that of PC/Notebook.

2. Turn on the GPS-1210

- Push the power button and hold it until the blue light flashes. If the power level of battery is enough, the blue light keeps flashing and the system turn on process has completed.

3. Connect to Bluetooth-enabled PDA or computing devices

- Perform Bluetooth device discovery from your PDA or computing devices. Input PIN code (default: 0000) if necessary, and choose Bluetooth Serial Port service to establish the Bluetooth link. Refer to the user manual of your Bluetooth-enabled PDA or computing devices for Bluetooth connection instructions.

4. (optional) Connect to PDA or computing devices by mini-USB

- GPS-1210 supports wired and wireless mode to transfer GPS data to PDA or computing devices. If one wants to do wired navigation simultaneously, mini-USB transmission line (mini-USB to USB) could be connected.

6. User Tips(1 / 2)

1. Some environments, such as in tunnels, high buildings etc., may affect signal receptions.
2. For people who turns off the receiver and turns it on at place far away from previous location, e.g. having an overseas traveling, it is suggested to put the receiver at open sky environment to fix the position before use. This allows a receiver having best performance.
3. Some principles are suggested to use GPS-1210 efficiently.
 1. Please place the GPS-1210 in the good reception environment, such as open sky.
 2. Once low battery indicator is on (Orange LED is ON), please recharge the GPS battery immediately.
 3. To avoid damage, please remove the battery if GPS-1210 will not be used for quite long time.
 1. Remove the battery and install it again will hard reset GPS-1210.
4. Some e-mapping application may turn off Bluetooth connection when operate e-mapping functions. In this case, one needs to re-establish the Bluetooth connection manually before continuing the navigation. Please also note, most newly designed navigation application do not have this interruption.
5. To save the battery power, if the Bluetooth connection has been lost for **15** minutes, GPS function will be turned off automatically. GPS continues to function, as Bluetooth connection is re-established. If the Bluetooth connection keeps lost for another **15 more** minutes, the system power will be fully turned off automatically.

6. User Tips(2 / 2)

6. As the battery low condition is detected during usage and before the battery power is fully used up, system may try to disable GPS function firstly (green light is off) and then fully turns off the system power. Before the system power is turned off, charging the battery will resume the GPS function. Please note that if battery power is used up, system will be off immediately.
7. As the battery level is too low during power on procedure, GPS & Bluetooth could not normally function. Charge it immediately to resume normal functions.
8. The Bluetooth wireless and wired connection could be established individually or simultaneously. Please note that the wired communication accessory is optional. They are not included in the standard package.
9. Please do not leave the GPS-1210 Bluetooth GPS receiver at high temperature environment beyond system specification.
10. Use only power charger and USB charging cable provided by the manufacturer.
11. If the position can not be fixed within, say 5 minutes, suggest turning off GPS-1210, moving to a better signal reception location, turning on and fixing the position again.
12. Interval of 1 second is required between power off and power on. That is to say, after power off and immediately press power button within 1 second could not turn it on. In this case, just release the power button, wait 1 second, and follow power on procedure to turn it on.

7. Optional Accessories(1 / 2)



1. Travel Charger with Female USB Plug (GPS-1210-ADTC1) x 1



2. Mini-USB(UART) to USB Data Cable(GPS-1210-CBDU1) x 1

★ If you want to do wired navigation with “Mini-USB(UART) to USB Data Cable”
 , you should install USB data cable driver first.

7. Optional Accessories(2 / 2)

①



②



Appendix A. Charging Illustration

1. Car charging
2. Travel charging
3. General charging
 - (plug to USB port of PC/NB)



Appendix B. Bluetooth Connection Guide

1. Turn on GPS-1210 and navigation device (e.g. PDA/Smart phone)
2. Discover Bluetooth device from PDA/Smart phone and input PIN code (default : 0000) if necessary.
3. Select device "BT-GPS" to set up connection.

Following illustrations are based on HP iPAQ PDA as an example.

HP iPAQ PDA Connection Example

1. Power on PDA and see main screen
2. Click on iPAQ Bluetooth icon, then select "Manager".
3. Click "New" at the bottom bar.
4. Bluetooth Connection Wizard starts, click "Discover Bluetooth Device" and then click "Next".
5. Several steps require you to locate a device and connect it . Then, it automatically discovers Bluetooth devices placed around the PDA. Then, click "BT-GPS".
6. Select "Bluetooth Serial Port" of Service Selection and click "Next".
7. Connection shortcuts were successfully created. click "Finish".
8. To connect with BT GPS, double click "BT-GPS Bluetooth Serial Port" icon.
9. Once it is successfully connected, you will see the screen likes above.
10. Then, if you want to see more information, click "Active Connections".
11. You will see the connection status.

★To identify the Bluetooth COM port number for your PDA

1. Click the Bluetooth icon. Select “Bluetooth Setting”.
2. Select “Service” in the bottom and “Serial Port”.
3. Click “Advanced” button.
4. Use “Outbound COM Port” number for your navigation software environment setup.
5. iPAQ 22xx / 38xx / 39xx / 54xx / 55xx series : COM8

Appendix C. Mini-USB Connection Guide

Mini-USB to USB transmission lines can be used to connect GPS-1210 to navigation devices if Bluetooth device is not available. As following.



Appendix D. GPS-1210 Spec.

GPS receiver:	L1, C/A code, 20 channels
Tracking sensitivity:	-159dBm (average) or better
TTFF (Time to First Fix):	Cold Start: 42s (average) Warm Start: 35s (average) Hot Start: 1s (average)
Positioning accuracy:	Standard Positioning Service (SPS) 2DRMS: 10 meters 2DRMS: 5 meters (WAAS enabled)
Measurement data output:	Update time: 1 second NMEA output protocol: V.3.0 Baud rate: 38400 bps (8-N-1) Datum: WGS-84 Type: GPGGA(1), GPGSA(1), GPGSV(5), GPRMC(1)
Power consumption:	80mA (average)
Bluetooth:	Bluetooth version 1.2 compliant Class 2 operation (up to 10 meters range) Serial Port Profile (SPP)
Output terminal:	Type B Mini-USB
Antenna Type:	Built in Patch Antenna
Battery:	3.7V 900mAh Lithium battery, built-in charger
LED:	Power (orange), GPS (green) Bluetooth (blue)
Dimension:	68.3(L) x 40(W) x17.6(H) mm
Operating temperature:	-20°C ~ +60°C
Storage temperature:	-20°C ~ +60°C; Battery: -20 ~ 45°C

Appendix E. NMEA Protocol Spec.

GPS-1210 outputs 4 types of sentences: GPGGA, GPGSA, GPGSV, GPRMC

The NMEA-0183 Output Messages are shown as below:

NMEA Record	Descriptions
GPGGA	Global positioning system fixed data
GPGSA	GNSS DOP and active satellites
GPGSV	GNSS satellites in view
GPRMC	Recommended minimum specific GNSS data

Single message example

```
$GPGGA,145500.000,2446.9619,N,12100.2656,E,1,09,1.2,142.0,M,15.0,M,,0000*56
$GPGSA,A,3,16,01,07,20,25,23,03,14,19,,,,,2.2,1.2,1.8*33
$GPGSV,3,1,12,07,62,079,37,16,61,333,37,01,60,166,37,25,56,053,36*73
$GPGSV,3,2,12,03,43,193,33,23,32,316,34,14,17,152,30,20,16,263,33*73
$GPGSV,3,3,12,19,11,200,29,06,08,040,,15,06,117,27,21,05,092,27*79
$GPRMC,145500.000,A,2446.9619,N,12100.2656,E,0.00,,260406,,,A*75
```

GPS-1210 Bluetooth GPS

GPGLA data format:

The example of GPGLA:

\$GPGLA,161229.487,3723.2475,N,12158.3416,W,1,07,1.0,9.0,M,, , ,0000*18

Name	Example	Units	Description
Message ID	\$GPGLA		GGA protocol header
UTC Time	161229.487		hhmmss.sss
Latitude	3723.2475		ddmm.mmmm
N/S Indicator	N		N=north or S=south
Longitude	12158.3416		dddmm.mmmm
E/W Indicator	W		E=east or W=west
Position Fix Indicator	1		0: Fix not available or invalid, 1: GPS SPS Mode, fix valid 2: Differential GPS, SPS Mode, fix valid 3~5: Not supported, 6: Dead Reckoning Mode, fix valid
Satellites Used	07		Range 0 to 12
HDOP	1.0		Horizontal Dilution of Precision
MSL Altitude	9.0	meters	
Units	M	meters	
Geoid Separation		meters	
Units	M	meters	
Age of Diff. Corr.		second	Null fields when DGPS is not used
Diff. Ref. Station ID	0000		
Checksum	*18		
<CR> <LF>			End of message termination

GPGSA data format:

The example of GPGSA:

\$GPGSA,A,3,07,02,26,27,09,04,15,, , , ,1.8,1.0,1.5*33

Name	Example	Units	Descriptions
Message ID	\$GPGSA		GSA protocol header
Mode 1	A		M: Manual—forced to operate in 2D or 3D mode A: 2D Automatic—allowed to automatically switch 2D / 3D
Mode 2	3		1: Fix not available 2: 2D (<4 SVs used) 3: 3D (> 3 SVs used)
Satellite used in solution	07		Sv on Channel 1
Satellite used in solution	02		Sv on Channel 2
...			Display of quantity used(12 max)
PDOP	1.8		Position Dilution of Precision
HDOP	1.0		Horizontal Dilution of Precision
VDOP	1.5		Vertical Dilution of Precision
Checksum	*33		
<CR> <LF>			End of message termination

GPGLSV data format:

The example of GPGLSV:

\$GPGLSV,2,1,07,07,79,048,42,02,51,062,43,26,36,256,42,27,27,138,42*71

\$GPGLSV,2,2,07,09,23,313,42,04,19,159,41,15,12,041,42*41

Name	Example	Units	Explanation
Message ID	\$GPGLSV		GLSV protocol header
Number of messages	2		Range 1 to 3
Message number	1		Range 1 to 3
Satellites in view	07		Number of satellites visible from receiver
Satellite ID number	07		Channel 1 (Range 1 to 32)
Elevation	79	degrees	Elevation angle of satellite as seen from receiver Channel 1 (Maximum 90)
Azimuth	048	degrees	Satellite azimuth as seen from receiver Channel 1 (True, Range 0 to 359)
SNR (C/No)	42	dBHz	Range 0 to 99, null when not tracking
...			
Satellite ID number	27		Channel 4 (Range 1 to 32)
Elevation	27	degrees	Elevation angle of satellite as seen from receiver Channel 4 (Maximum 90)
Azimuth	138	degrees	Satellite azimuth as seen from receiver Channel 4 (True, Range 0 to 359)
SNR (C/No)	42	dBHz	Range 0 to 99, null when not tracking
Checksum	*71		
<CR> <LF>			End of message termination

GPRMC data format:

The example of GPRMC:

\$GPRMC, 161229.487,A,3723.2475,N,12158.3416,W,0.13,309.62,120598,,,A*5D

Name	Example	Unit	Explanation
Message ID	\$GPRMC		RMC protocol header
UTC Time	161229.487		Hhmmss.sss
Status	A		A: Data valid V: Data invalid
Latitude	3723.2475		ddmm.mmmm
N/S Indicator	N		N: North Latitude, S: South Latitude
Longitude	12158.3416		dddmm.mmmm
E/W Indicator	W		E: East Longitude, W: West Longitude
Speed over ground	0.13	Knots	Receiver's speed
Course over ground	309.62	Degrees	Receiver's direction of travel Moving clockwise starting at due north
Date	120598		ddmmyy
Magnetic variation		Degrees	This receiver does not support magnetic declination. All "course over ground" data are geodetic WGS84 directions.
Mode Indicator	A		A: Autonomous D: DGPS E: Dead Reckoning M: Manual S: Simulation N: Data Invalid
Checksum	*5D		
<CR> <LF>			End of message termination



Appendix F. FCC Statement - Bluetooth

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

FCC Caution:

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled portable environment. To maintain compliance with FCC RF exposure compliance requirements, please follow operation instruction as documented in this manual.