



GT-730F

Fast Acquisition high-Sensitivity

65 Channels USB GPS Receiver Dongle

FEATURES

- **Acquire and track 65 satellites simultaneously**
- SKYTRAQ low power chipset
- **Signal detection better than -160dBm**
- Reacquisition sensitivity -155dBm
- Cold start < 30 seconds at -147dBm
- Hot start $< 1\text{sec}$ under open sky
- 5m CEP accuracy
- **Support A-GPS function**
- **SBAS (WAAS, EGNOS) support**
- USB version 1.1/2.0 interface
- Easy-plug-in Notebook
- Easy-installation USB driver
- **Super mini size: 73.5x27x10 mm**

DESCRIPTION

The GT-730F is a single board of Bluetooth-GPS receiver for customers who require easy system integration and minimal development risk.

The GT-730F is optimized for good performance and low cost. Its 65 parallel channels and Venus 6 search bins provide short start-up time and fast signal acquisition. Having fast time-to-first-fix and high sensitivity, the GT-730F offers good navigation performance even in urban canyons.

Satellite-based augmentation systems, such as WAAS and EGNOS, are supported to yield improved accuracy. Besides it also supports A-GPS function and fixed in the short time.

The onboard patch antenna provides good signal reception. It provides fast satellite signal acquisition and short startup time. Acquisition sensitivity of -155dBm and tracking sensitivity of -160dBm offers good navigation performance even in urban canyons having limited sky view.

USB interface are provided on the interface connector. Supply voltage of 3.8V~8.0V is supported.



SPECIFICATIONS

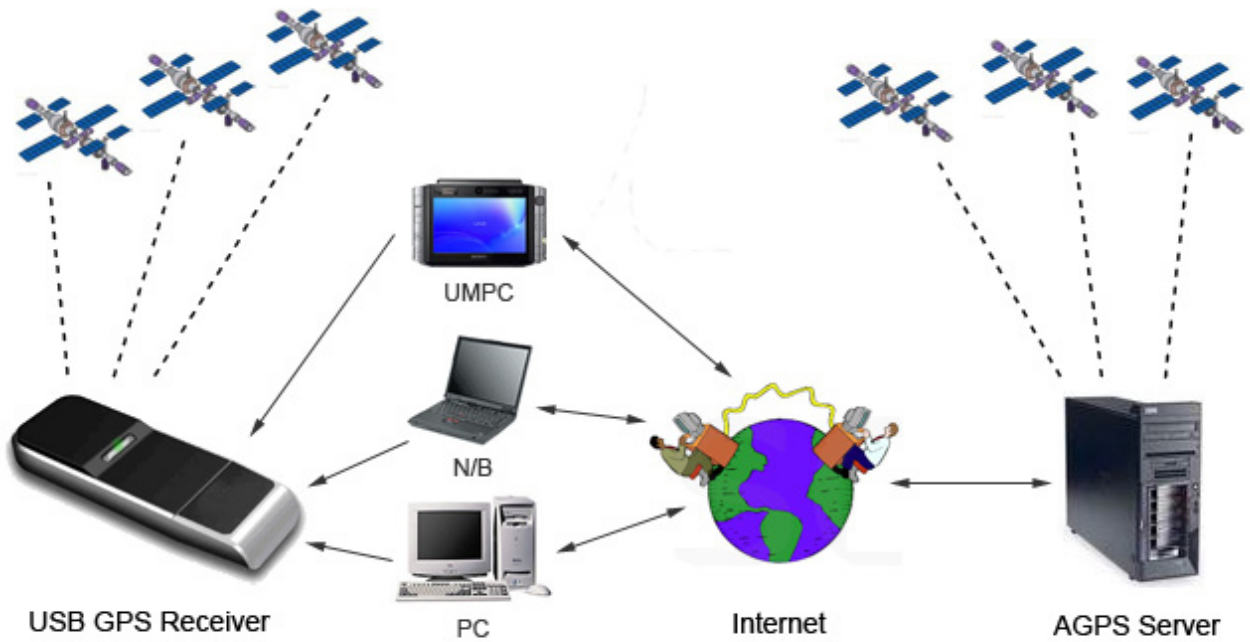
| | |
|---------------------------|---|
| Receiver Type | 65 parallel channels, L1 C/A code |
| Accuracy | Position 5m CEP Velocity 0.1m/sec |
| Startup Time (average) | < 1sec hot start < 30sec cold start |
| Signal Reacquisition | 1s |
| Sensitivity | -155dBm Re-acquisition -160dBm tracking -147dBm Cold Start |
| Update Rate | 1Hz standard |
| Dynamics | 4G (39.2m/sec ²) |
| Operational Limits | Altitude < 18,000m or velocity < 515m/s (COCOM limit, either may be exceeded but not both) |
| Protocol | NMEA-0183 V3.01 GPGGA, GPGLL, GPGSA, GPGSV, GPRMC, GPVTG, GPZDA 4800/9600/19200/38400 baud, 8, N, 1 (The baudrate of production is 38400) |
| Datum | Default WGS-84 User definable |
| Input Voltage | 3.8~8V DC |
| Power Consumption | < 42mA (1Hz standard version) |
| Dimension | 73.5mm L x 27mm W x 10mm H |
| Weight | 18g (Including Battery) |
| Operating Temperature | -40oC ~ +85oC |
| Humidity | 5% ~ 95% |

All specifications are subject to change without notice.



Assisted GPS

With Assisted GPS technology, GPS Data (ephemeris data) will be downloaded from an A-GPS Server through internet and transferred to the GT-730F GPS via Bluetooth. This will greatly reduce the TTFB since the positions of the satellites are known. The downloaded GPS data will expire in few days if the GPS is not being used. If GPS receiver is being used on daily basis, GPS data will also be downloaded from satellites.





NMEA MESSAGES

The full descriptions of supported NMEA messages are provided at the following paragraphs.

GGA - Global Positioning System Fix Data

Time, position and fix related data for a GPS receiver.

Structure:

```
$GPGGA,hhmmss.sss,ddmm.mmmm,a,dddmm.mmmm,a,x,xx,x.x,x.x,M,,,,,xxxx*hh<CR><LF>
```

1 2 3 4 5 6 7 8 9 10 11

Example:

```
$GPGGA,111636.932,2447.0949,N,12100.5223,E,1,11,0.8,118.2,M,,,,,0000*02<CR><LF>
```

| Field | Name | Example | Description |
|-------|-----------------------|------------|--|
| 1 | UTC Time | 111636.932 | UTC of position in hhmmss.sss format, (000000.000 ~ 235959.999) |
| 2 | Latitude | 2447.0949 | Latitude in ddmm.mmmm format Leading zeros transmitted |
| 3 | N/S Indicator | N | Latitude hemisphere indicator, 'N' = North, 'S' = South |
| 4 | Longitude | 12100.5223 | Longitude in dddmm.mmmm format Leading zeros transmitted |
| 5 | E/W Indicator | E | Longitude hemisphere indicator, 'E' = East, 'W' = West |
| 6 | GPS quality indicator | 1 | GPS quality indicator 0: position fix unavaila 1: valid position fix, SPS m 2: valid position fix, differential GP 3: GPS PPS Mode, fix valid 4: Real Time Kinematic. Syst 5: Float RTK. Satellite system used in RTK mode. Floating integers 6: Estimated (dead reckoning) Mode 7: Manual Input Mode 8: Simulator Mode |
| 7 | Satellites Used | 11 | Number of satellites in, (00~12) |
| 8 | HDOP | 0.8 | Horizontal dilution of precision, (00.0 ~ 99.9) |
| 9 | Altitude | 108.2 | mean sea level (geoid), (-9999.9 ~ 17999.9) |
| 10 | DGPS Station ID | 0000 | Differential reference station ID, 0000 ~ 1023 NULL when DGPS not used |
| 11 | Checksum | 02 | |



GLL – Latitude/Longitude

Latitude and longitude of current position, time, and status.

Structure:

```
$GPGLL,ddmm.mmmm,a,dddmm.mmmm,a,hhmmss.sss,A,a*hh<CR><LF>
```

1 2 3 4 5 6 7 8

Example:

```
$GPGLL,2447.0944,N,12100.5213,E,112609.932,A,A*57<CR><LF>
```

| Field | Name | Example | Description |
|-------|----------------|------------|--|
| 1 | Latitude | 2447.0944 | Latitude in ddmm.mmmm format Leading zeros transmitted |
| 2 | N/S Indicator | N | Latitude hemisphere indicator 'N' = North 'S' = South |
| 3 | Longitude | 12100.5213 | Longitude in dddmm.mmmm format Leading zeros transmitted |
| 4 | E/W Indicator | E | Longitude hemisphere indicato 'E' = East 'W' = West |
| 5 | UTC Time | 112609.932 | UTC time in hhmmss.sss format (000000.000 ~ 235959.999) |
| 6 | Status | A | Status, 'A' = Data valid , 'V' = Data not valid |
| 7 | Mode Indicator | A | Mode indicator 'N' = Data not valid 'A' = Autonomous mode 'D' = Differential mode 'E' = Estimated (dead reckoning) mode 'M' = Manual input mode 'S' = Simulator mode |
| 8 | Checksum | 57 | |



GSA – GNSS DOP and Active Satellites

GPS receiver operating mode, satellites used in the navigation solution reported by the GGA or GNS sentence and OP values.

Structure:

```
GPGSA,A,x,xx,xx,xx,xx,xx,xx,xx,xx,xx,xx,x.x,x.x,x.x*hh<CR><LF>
  1 2 3 3 3 3 3 3 3 3 3 4 5 6 7
```

Example:

```
$GPGSA,A,3,05,12,21,22,30,09,18,06,14,01,31,,1.2,0.8,0.9*36<CR><LF>
```

| Field | Name | Example | Description |
|-------|---------------------|---------------------------------------|--|
| 1 | Mode | A | Mode 'm' = Manual, forced to operate in 2D or 3D mode 'A' = Automatic, allowed to automatically switch 2D/3D |
| 2 | Mode | 3 | Fix type 1 = Fix not available 2 = 2D 3 = 3D |
| 3 | Satellite used 1~12 | 05,12,21,22,30,09,18,06,14,01,31 " | Satellite ID number, 01 to 32, of satellite used in solution, up to 12 transmitted |
| 4 | PDOP | 1.2 | Position dilution of precision (00.0 to 99.9) |
| 5 | HDOP | 0.8 | Horizontal dilution of precision (00.0 to 99.9) |
| 6 | VDOP | 0.9 | Vertical dilution of precision (00.0 to 99.9) |
| 7 | Checksum | 36 | |



GSV – GNSS Satellites in View

Number of satellites (SV) in view, satellite ID numbers, elevation, azimuth, and SNR value. Four satellites maximum per transmission.

Structure:

```
$GPGSV,x,x,xx,xx,xx,xxx,xx,...,xx,xx,xxx,xx *hh<CR><LF>
  1 2 3 4 5 6 7 4 5 6 7 8
```

Example:

```
$GPGSV,3,1,12,05,54,069,45,12,44,061,44,21,07,184,46,22,78,289,47*72<CR><LF>
$GPGSV,3,2,12,30,65,118,45,09,12,047,37,18,62,157,47,06,08,144,45*7C<CR><LF>
$GPGSV,3,3,12,14,39,330,42,01,06,299,38,31,30,256,44,32,36,320,47*7B<CR><LF>
```

| Field | Name | Example | Description |
|-------|--------------------|---------|---|
| 1 | Number of message | 3 | Total number of GSV messages to be transmitted(1-3) |
| 2 | Sequence number | 1 | Sequence number of current GSV message |
| 3 | Satellites in view | 12 | Total number of satellites in view (00-12) |
| 4 | Satellite ID | 05 | Satellite ID number, GPS:01~32, SBAS:33~64(33 = PRN120) |
| 5 | Elevation | 54 | Satellite elevation in degrees,(00-90) |
| 6 | Azimuth | 069 | Satellite azimuth angle in degrees,(000~359) |
| 7 | SNR | 45 | C/No in dB(00~99) |
| 8 | Checksum | 72 | Null when not tracking |



RMC – Recommended Minimum Specific GNSS Data

Time, date, position, course and speed data provided by a GNSS navigation receiver.

Structure:

```
$GPRMC,hhmmss.sss,A,dddmm.mmmm,a,dddmm.mmmm,a,x.x,x.x,ddmmy,.,,a*hh<CR><LF>
```

1 2 3 4 5 6 7 8 9 10 11

Example:

```
$GPRMC,111636.932,A,2447.0949,N,12100.5223,E,000.0,000.0,030407,.,,A*61<CR><LF>
```

| Field | Name | Example | Description |
|-------|--------------------|------------|--|
| 1 | UTC time | 111636.932 | UTC time in hhmmss.sss format (000000.00 ~ 235959.999) |
| 2 | Status | A | Status 'V' = Navigation receiver warning 'A' = Data Valid |
| 3 | Latitude | 2447.0949 | Latitude in dddmm.mmmm format Leading zeros transmitted |
| 4 | N/S indicator | N | Latitude hemisphere indicator 'N' = North 'S' = South |
| 5 | Longitude | 12100.5223 | Longitude in dddmm.mmmm format Leading zeros transmitted |
| 6 | E/W Indicator | E | Longitude hemisphere indicator 'E' = East 'W' = West |
| 7 | Speed over ground | 000.0 | Speed over ground in knots (000.0 ~ 999.9) |
| 8 | Course over ground | 000.0 | Course over ground in degrees(000.0 ~ 359.9) |
| 9 | UTC Date | 030407 | UTC date of position fix, ddmmyy format |
| 10 | Mode indicator | A | Mode indicator 'N' = Data not valid 'A' = Autonomous mode 'D' = Differential mode 'E' = Estimated (dead reckoning) mode 'M' = Manual input mode 'S' = Simulator mode |
| 11 | Checksum | 61 | |



VTG – Course Over Ground and Ground Speed

The Actual course and speed relative to the ground.

Structure:

GPVTG,x.x,T,,M,x.x,N,x.x,K,a*hh<CR><LF>
1 2 3 4 5

Example:

\$GPVTG, 000.0,T,,M,000.0,N,0000.0,K,A*3D<CR><LF>

| Field | Name | Example | Description |
|-------|----------|---------|---|
| 1 | Course | 000.0 | True course over ground in degrees (000.0 ~ 359.9) |
| 2 | Speed | 000.0 | Speed over ground in knots (000.0 ~ 999.9) |
| 3 | Speed | 0000.0 | Speed over ground in kilometers per hour (0000.0 ~ 1800.0) |
| 4 | Mode | A | Mode indicator 'N' = not valid 'A' = Autonomous mode 'D' = Differential mode 'E' = Estimated (dead reckoning) mode 'M' = Manual input mode 'S' = Simulator mode |
| 5 | Checksum | 3D | |



Binary Messages

see Binary Message Protocol User's Guide for detailed descriptions.



FANTECH ELECTRONIC CO., LTD.

Address: 4f,No,154,An The St., Hsin Tien City. Taipei. Taiwan

Benson Lee

M/P: 886-953-336161

TEL: 886-2-22110569

FAX: 886-2-22117464

Email: bensonlee@martech.com.tw jcic168@gmail.com

Website: <http://www.fantech-electron.com>

© 2009 FANTECH ELECTRONIC CO., LTD. All rights reserved.

Not to be reproduced in whole or part for any purpose without written permission of FANTECH ELECTRONIC CO., LTD. ("FANTECH")
Information provided by FANTECH is believed to be accurate and reliable. These materials are provided by FANTECH as a service to its customers and may be used for informational purposes only. FANTECH assumes no responsibility for errors or omissions in these materials, nor for its use. FANTECH reserves the right to change specification at any time without notice.

These materials are provided "as is" without warranty of any kind, either expressed or implied, relating to sale and/or use of FANTECH products including liability or warranties relating to fitness for a particular purpose, consequential or incidental damages, merchantability, or infringement of any patent, copyright or other intellectual property right. FANTECH further does not warrant the accuracy or completeness of the information, text, graphics or other items contained within these materials. FANTECH shall not be liable for any special, indirect, incidental, or consequential damages, including without limitation, lost revenues or lost profits, which may result from the use of these materials.

FANTECH products are not intended for use in medical, life-support devices, or applications involving potential risk of death, personal injury, or severe property damage in case of failure of the product.

