GT-730F(L)

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 < 1sec under open sky
- 5m CEP accuracy
- Support A-GPS function
- SBAS (WAAS, EGNOS) support
- 2M Bytes flash memory for data logging, with 16 bytes binary data per record that stores up to 256K data records
- Log data can be exported to mapping software suchas Google Earth and TrackMaker
- Logging data interval programmable: by time or distance
- 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(L) is a single board of Bluetooth-GPS receiver for customers who require easy system integration and minimal development risk.

The GT-730F(L) 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(L) offers good navigation performance even in urban canyons.

The GT-730F(L) is capable of keeping up to 256K recordsor positions, including longitude, latitude, speed, UTC,and tag data. The location histories can be exported to mapping software such as Google Earth or TrackMaker.

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.

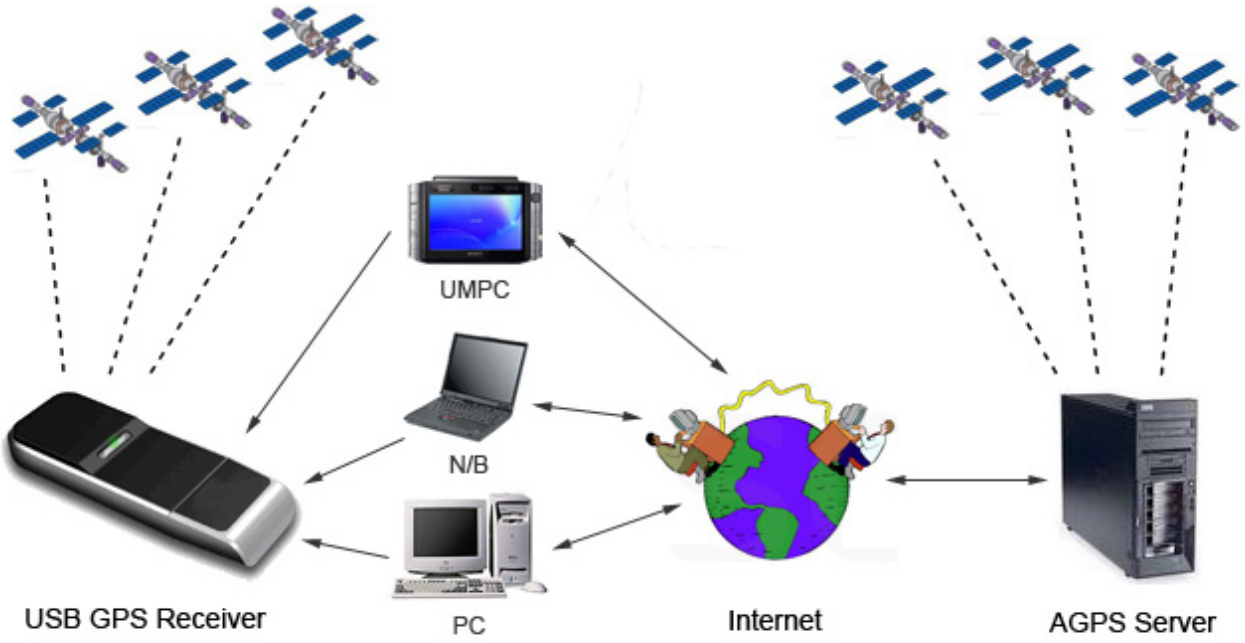
SPECIFICATIONS

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/sec2)
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%
Log Data	256,000 records in flash memory (2M bytes) in log data NMEA format (Longitude, Latitude, Speed, UTC, Tag)
Output data format	WGS84 2-degree transverse mercator
Mapping software	1. Google Earth 2. TrackMaker 3. LOGG extension
Log interval	by time 5sec/point

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 TTFF 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,xx,xx,x.x,x.x,x.x*hh<CR><LF>
1 2 3 3 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 zimuth angle in degress,(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,ddmmyy,,,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.

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