GE-5083/GE-5084, Easy Placement, Ultra-High Performance
Tiny GNSS Engine Board

Overview
GE-5083/GE-5084 is a tiny, ultra-high performance, GNSS engine. It is especially useful for size demanding device. It could be placed at free space in a product housing while reducing the main board size to just a small connector.

In addition, this low power engine supports multiple satellite positioning systems – GPS, GLONASS, Beidou, QZSS and SBAS.

Based on our experienced design, GE-5083/GE-5084 fully exhibits the excellent performance of MT3333 chip. It works in GNSS signal difficult environment, providing fast acquisitions and excellent tracking performance.

Applications
- Automatic Vehicle Location, Navigation
- Timing (GPS clock, FEMTO cell, traffic lights etc)
- Industrial PC, POS, ITS, Telematics
- Driving recorder, camera detector

Features
- Multi-satellite positioning systems support
  - GPS/QZSS/GLONASS (GE-5083)
  - GPS/QZSS/Beidou (GE-5084)
- SBAS (WAAS, EGNOS, MSAS, GAGAN) support
- High performance: -165dBm tracking sensitivity
- Low power: 22 mA at continuous tracking
- Tiny & low profile – including connectors
  - 8 (width) x 20 (length) x 2.7 (height) (mm)
- Built-in RF connector, reduce RF tuning efforts
  - Flexible antenna installation
- Built-in digital connector: flexible module installation
- Screw hole for fixing & performance enhancement
- External active antenna short circuit protection
- Backup power for faster position fix.
- 12 multi-tone active interference cancellers
- Indoor/outdoor multi-path detection & compensation
- Up to 10Hz update rate
- High accuracy 1PPS timing (10ns jitter)
- Self-Generated Orbit Prediction (EASY) 1
- AGPS support
- Fully EMI shielded
- Industrial operating temperature range: -40 ~ 85℃

Notes
1. Some features may not coexist and need special firmware or command programmed by customer
2. MOQ-based customization is welcome.

Technical Specifications

<table>
<thead>
<tr>
<th>Receiver Performance Data*</th>
<th>Receiver Type</th>
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<tbody>
<tr>
<td>GNSS Chipset: MT3333</td>
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<tr>
<td>GPS/QZSS: L1 1575.42MHz</td>
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<td>GLONASS (GE-5083):</td>
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<td>L1OF 1598.0625 ~ 1605.375 MHz</td>
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<td>BEIDOU (GE-5084):</td>
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<td>B1 1561.098 MHz</td>
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<td>Channels:</td>
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<tr>
<td>Tracking: 33 /acquisition: 99</td>
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Technical support: service@navisys.com.tw
Address: 2F, No.56, Park Ave. II, Science-Based Industrial Park, Hsinchu 300, Taiwan (R.O.C.)
Horizontal Position Accuracy
< 3m (Autonomous)
< 2.5m (WAAS)
(50% 24hr static, -130dBm)

Velocity Accuracy
<0.1 m/s (speed, autonomous)
<0.05 m/s (speed, SBAS)
(50%@30m/s)

Timing Accuracy
±10ns jitter (1PPS output)

Time To First Fix
Autonomous
<1sec
Warm start
<24sec
Cold start
<28sec
(50% -130dBm)

Sensitivity
(Autonomous)
-148dBm (acquisition)
-165dBm (tracking)
(-142dBm 28dB-Hz with 4dB noise figure)

Update Rate
Up to 10Hz, default 1Hz

Max. Altitude
<18,000 m

Max. Velocity
<1,852 km/hr

Datum
WGS-84(default)

Protocol Support
NMEA 0183 V4.1, MTK NMEA
4800/9600(default)/38400/115200
(bps N,8,1(No parity, 8 data bits, 1 stop
bit); Default: GEA, GSA, RMC,
VTG@1Hz, GSV@1/5Hz, GLL,
ZDA@0Hz

SBAS Support
WAAS, EGNOS, MSAS, GAGAN

Dynamics
<4g

* Note. According to IC Spec

Electrical Data
Power Supply
3 ~ 4.3 V

Power Consumption
22mA/average tracking

Backup Power (V_BAT)
2~4.3V; 15.5uA@3.1V

TTL I/O
V_hi: 2.1~3.1V, V_lo: 0~0.7V
V_oh: ≥2.38V, V_ol: ≤ 0.42V

Protocols
NMEA,

Environmental Data
Operating temperature
-40 ~ 85°C
Storage temperature
-40 ~ 85°C
Vibration
5Hz to 500Hz, 5g
Shock
Half sine 30g/11ms

Mechanical Data – 8 x 20 x 2.7 (mm)

Application
The screw hole could be used for fixing or
reducing potential ground noise if it is connected to
main board via a shielded ground cable.

6-pin Interface, pitch 0.8 mm

Pin# 6 5 4 3 2 1

PCB

RF Interface, I-PEX MHF4 connector

Ordering Information
GE-5083X, GE-5084X
X=A
9600bps,
GGA, GSA, RMC, VTG@1Hz, GSV@1/5Hz

*This document is subject to change without notice.