GM-8031, u-blox NEO-M8T-Based GNSS Smart Antenna Module w/ IMES Support

RoHS Compliant



Overview

GM-8031 is an easy to use, ultra-high performance, low power, industrial grade GNSS smart antenna module. The built-in NEO-M8T engine board provides precise timing. Its raw data also enables precise positioning with external software, say RTKLIB freeware.

GM-8031 supports multiple satellite positioning systems – GPS, GLONASS/BeiDou, Galileo, QZSS and SBAS. It is performance-optimized so that the same hardware allows configuration of different satellite systems with great performance..

In addition, it also supports either USB or TTL/RS232 interface.

Applications

- High-precision timing service
- Small cell, femtocell
- Precise applications with **raw data**[+]
- Vehicle navigation device

[+] Based on raw data, the freeware RTKLIB supports cm-level RTK fix very well. See RTK demo at the end.

Features

- Performance maximized design with big antenna (35x35x6 mm^3) and ground plane (70x70 mm^2).
- Based on u-blox NEO-M8T engine board
- Precise timing for both outdoors and indoors
  - Dual configurable time pulses
  - Receiver Autonomous Integrity Monitoring
- Multi-satellite positioning systems support
  - GPS/QZSS/**Galileo**/**GLONASS**/**Beidou** [&]
- SBAS (WAAS, EGNOS, MSAS, GAGAN) support
- IMES (Indoor Messaging System) support
- Higher update rate option (default 1Hz), up to
  - 4 Hz for dual-GNSS constellation
  - 10 Hz for GPS only
- Sensitivity
  - Acquisition: -148dBm
  - Tracking & Navigation: -167dBm
- Low power: 33mA at continuous tracking (USB)
- RTCM 2.3 support
- A-GPS support, OMA SUPL/3GPP TS25.171 (GSM/UMTS) compliant
- W2B (Wire to Board) connector support
- Power supply options: 12V/24V
- Electrical interface support: USB, RS232 or TTL
- Backup battery support for faster position fix
- LED for position fix indication
- Windows **location sensor** support
- Linux/Android support
- Fully EMI shielded
- Industrial operating temperature range: -40 ~ 85℃

[&] GM-8031 by default supports GPS+BeiDou. For GPS+GLONASS, explicit instruction is required..

Technical Specifications

Receiver Performance Data[+]

Receiver Type	72-channel u-blox M8 engine

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	GPS L1 C/A, SBAS L1 C/A, QZSS L1 C/A, QZSS L1-SAIF Galileo E1 B/C L1, E1: 1575.42MHz, GLONASS: L1OF:1598.0625~1605.375MHz BeiDou B1I: 1561.098 MHz
SBAS Support	WAAS, EGNOS, MSAS, GAGAN
Horizontal Position Accuracy	2.5m (Autonomous) 2m (SBAS) (CEP, 50% 24hr static, -130dBm, >6 SVs)
Velocity Accuracy	0.05 m/s (speed) 0.3° (heading); (50%@30m/s)
Time Pulse Signal Accuracy	≦ 20 ns clear sky, 1-sigma ≦ 500 ns indoor, 1-sigma
Time Pulse	0.25 Hz ~ 10 MHz
Time To First Fix Hot start Cold start	Autonomous, GPS&BeiDou (50%, -130dBm) 1 sec 28 sec
Sensitivity (Autonomous)	GPS&BeiDou -148dBm (acquisition) -166dBm (tracking & navigation)
Navigation. Update Rate	Max. 4Hz, GPS & BeiDou, Max. 10Hz, GPS only Default 1Hz
Max. Altitude	50,000 m
Max. Velocity	< 500m/sec or 1,800 km/hr)
Max. Dynamics	≦ 4 g

Protocol Support	NMEA 0183 v4.0 (V2.3 or 4.1 configurable) UART: 115200 bps N,8,1; GGA, GLL, GSA, GSV, RMC, VTG, TXT UBX: u-blox proprietary binary message
RTCM 2.3	Messages 1, 2, 3, 9

+: according to GNSS IC spec

Electrical Data

Power Supply	3.3 ~ 5.5 VDC
Power Consumption	33mA/average tracking (USB)
Protocols	NMEA, u-blox Binary

Environmental Data

Operating temperature	-40 ~ 85℃ except battery: -20~60℃
Storage temperature	-40 ~ 85℃ except battery: -20~60℃
Operating humidity	5% ~ 95% non-condensing

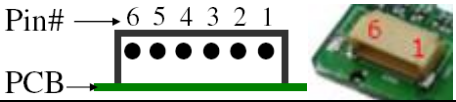
Mechanical Data

70*70*11 mm





6-pin W2B Interface, pitch 1.0mm



Pin	Name	Function	I/O
1	GND	Ground	Input
2	VCC	Power supply, 3.3~5.5V	Input
3	TX/TXD/D+	Serial data output or USB D+	Output
4	RX/RXD/D-	Serial data input or USB D-	Input
5	TIMEPULSE	1 pulse per second signal (default)	Output
6	nBOOT/TP2	Boot control or Time pulse 2	Input

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		Not to hold low during start-up. TP2 disabled (could be enabled)	Output,

Ordering Information

GM-8031X:

X=	RS-232	TTL	USB
R	V	-	-
T	-	V	-
U	-	-	V

RTK demo

Please see following link for a related RTK demo.

https://www.youtube.com/watch?v=8N30QyL5bdo

*This document is subject to change without notice.

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