GR-8031, u-blox NEO-M8T-Based GNSS Smart Antenna w/ Precise Positioning Capability

RoHS Compliant



Overview

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

GR-8031 supports multiple satellite positioning systems – GPS, GLONASS, Galileo, QZSS and SBAS. In addition, it also supports either USB or TTL/RS232 interface.

Applications

- High-precision timing service
- Small cell, femtocell
- Precise positioning applications+
- Vehicle navigation device

+ RTKLIB supports cm-level RTK fix very well.

Features

- Performance maximized design with big antenna (35x35x6 mm^3) and ground plane (70x70 mm^2).
- Flexible fixing
  - Fixed with the built-in strong magnet or
  - Pole mounting with an extension fixture
- Robust, compact, long-lasting, waterproof design
- 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
- Precise positioning capability via raw data
- 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
- Connector: USB, PS2, RJ45, DB9, Micro-fit etc.
- Cable length: 0.1m ~ 15m.
- Power supply options: 12V/24V
- Electrical interface support: USB, RS232 or TTL
- Backup battery support for faster position fix
- LED for position fix indication
- IPX7 waterproof
- Windows location sensor support
- Linux/Android support
- Fully EMI shielded
- Industrial operating temperature range: -40 ~ 85℃

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

Technical Specifications

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Receiver Performance Data+

Receiver Type	72-channel u-blox M8 engine 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 B1: 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, GNSS & 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

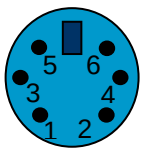
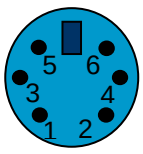
Operating temperature	-40 ~ 85℃ except battery: -20~60℃
Storage temperature	-40 ~ 85℃ except battery: -20~60℃
Operating humidity	5% ~ 95% non-condensing

Mechanical Data

Φ116*24.6 (mm) for body

Cable Length	1.5m for GR-8031U 3m for GR-8031R <1m for GR-8031T

Interfaces

	GR-8031T	GR-8031R	GR-8031U
			
Pin	Mini-Din 6-pin PS/2 Male Plug	Mini-Din 6-pin PS/2 Male Plug	USB A type Male Plug
1	GND	GND	VDD 5V
2	VCC	VCC	D-

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3	TXD-TTL	TX-RS232	D+
4	RXD-TTL	RX-RS232	GND
5	$PPS	$:PPS	
6	$#TP2	$#TP2	

$:TTL signal level.

#TP2 is by default disabled.

RTK demo

Click this link to watch the video, or
Scan the QR code below to watch the full video (for mobile devices).

Ordering Information

GR-8031X:

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

*This document is subject to change without notice.

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