GR-8030_8032, u-blox NEO-M8P-Based GNSS Smart Antenna

RoHS Compliant



Overview

GR-8030_8032 is an easy to use, ultra-high performance, low power, industrial grade GNSS smart antenna.

The built-in NEO-M8P engine board provides cm-level GNSS performance designed to meet the needs of unmanned vehicles and other machine control applications requiring accurate guidance.

GR-8032 plays the role of "base", sends corrections via the RTCM 3 messages to the "rover" (GR-8030) via a communication link enabling the rover to output its position relative to the base at cm-level accuracies.

GR-8030_8032 supports multiple satellite positioning systems – GPS, GLONASS, QZSS and BeiDou[&]. In addition, it also supports either USB or TTL/RS232 interface.

Applications

- Vehicle navigation device
- Fleet management

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-M8P engine board
- Centimeter-level GNSS positioning support
  - Integrated RTK (Real Time Kinematics) base
  - Stationary survey-in function support
  - Moving baseline support
- Base station static mode: Position could be
  - Explicitly given or from survey-in result
  - Monitoring position error, warn when > 100m
- Base station moving baseline (MB) mode
  - Both base and rover can move
  - Accurate vector between rover and base
  - E.g. for UAV follow me feature.
- Multi-satellite positioning systems support
  - GPS/QZSS/**GLONASS/Beidou**[&]
- Higher update rate option (default 1Hz), up to
  - 5 Hz for dual-GNSS constellation
  - 4 Hz for moving baseline RTK
  - 8 Hz for GPS only
- Sensitivity
  - Acquisition: -148dBm
  - Tracking & Navigation: -160dBm
- Low power: 35mA at continuous tracking (USB)
- RTCM 3.2 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

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- Industrial operating temperature range: -40 ~ 85℃

& GR-8030_8032 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 GPS L1 C/A, QZSS L1 C/A L1: 1575.42MHz, GLONASS L1OF L1OF:1598.0625~1605.375MHz BeiDou BI1 BI1: 1561.098 MHz
Horizontal Position Accuracy	2.5 cm + 1 ppm CEP (RTK) 2.5 m CEP (Autonomous) (50% 24hr static, -130dBm, > 6 SVs; baselines < 10km for RTK)
Velocity Accuracy	0.05 m/s (speed) 0.3° (heading); (50%@30m/s)
Time Pulse Signal Accuracy	RMS 30 ns 99% 60 ns
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) -160dBm (tracking & navigation)
Navigation. Update Rate (Default 1Hz)	Max. 5Hz, GPS & BeiDou, Max. 4Hz, moving baseline RTK Max. 8Hz, GPS only
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	RTCM 3.2 Messages

+: according to GNSS IC spec

Electrical Data

Power Supply	3.3 ~ 5.5 VDC
Power Consumption	35mA/average tracking (USB)
Protocols	NMEA, u-blox Binary

Environmental Data

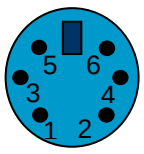
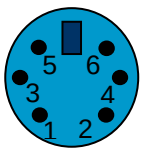
Operating temperature	-40 ~ 85℃ except battery: -20~60℃
Storage temperature	-40 ~ 85℃ except battery: -20~60℃
Operating humidity	5% ~ 95% non-condensing

Mechanical Data

Φ116*24.6 (mm) for body

Cable Length	1.5m for GR-8030_8032U 3m for GR-8030_8032R <1m for GR-8030_8032T

Interfaces

	GR-8030_8032T	GR-8030_8032R	GR-8030_8032U
			
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.

Ordering Information

GR-8030_8032X:

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

*This document is subject to change without notice.

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