GR-8016, u-blox8 NEO-M8P Based Ultra-High Performance GNSS Mouse Receiver

RoHS Compliant



Overview

GR-8016 is an easy to use, ultra-high performance, low power, industrial grade GNSS smart antenna. The built-in u-blox NEO-M8P engine board and our experienced design provide fast acquisitions and excellent tracking performance.

GR-8016 supports multiple satellite positioning systems – GPS, GLONASS, and QZSS. In addition, it also supports either USB or TTL/RS232-based mini-DIN interface.

Applications

- Centimeter level GNSS positioning
- Automatic vehicle location
- Vehicle navigation device
- Drone

Features

- Based on u-blox NEO-M8P engine board
- Multi-satellite positioning systems support
  - GPS/QZSS/**GLONASS**
- Higher update rate option (default 1 Hz), up to
  - RTK 2 Hz for GPS & GLONASS
  - RTK 5 Hz for GPS only
- Sensitivity
  - Acquisition: -14 8dBm
  - Tracking: -160 dBm
- Low power: 33 mA at continuous tracking (USB)
- RTCM 3.2 support
- A-GPS support, OMA SUPL/3GPP TS25.171 (GSM/UMTS) compliant
- Electrical interface support: USB, RS232, TTL
- Connector: PS2, Microfit, RJ45, DB9, USB etc.
- Cable length: 0.1m ~ 15m.
- Power supply options: 12V/24V
- Backup battery support for faster position fix
- LED for position fix indication
- IPX7 Waterproof
- Built-in magnet
- Windows **location sensor** support
- Linux/Android support
- Fully EMI shielded
- Industrial operating temperature range: -40 ~ 85℃

Technical Specifications

Receiver Performance Data+

Receiver Type	72-channel u-blox M8 engine GPS & QZSS:L1 C/A,1575.42MHz, GLONASS: L1OF,1598.0625~1605.375MHz
Horizontal Position Accuracy	2.5 cm + 1 ppm (RTK) 2.5 m (Autonomous) (including QZSS; CEP, 50% 24hr static, -130dBm, > 6 SVs)
Velocity Accuracy	0.05 m/s (speed) < 0.3° (heading) (50%@30m/s)
Time Pulse Signal Accuracy	30 ns (RMS), < 60 ns (99%)
Time Pulse	0.25 Hz ~ 10 MHz

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Frequency	
Time To First Fix Hot start Cold start	Autonomous 1 sec 26 sec (50% -130 dBm)
Sensitivity (Autonomous)	GPS&GLONASS -148 dBm (acquisition) -160 dBm (tracking)
Navigation. Update Rate	Max. 2 Hz, RTK GPS & GLONASS Max. 5 Hz, RTK GPS only Default 1 Hz
Max. Altitude	50,000 m
Max. Velocity	500 m/sec
Protocol Support	NMEA 0183 v4.0 (V2.3 or 4.1 configurable) UART: 9600 bps N,8,1; GGA, GLL, GSA, GSV, RMC, VTG, TXT
RTCM	RTCM 10403.2, RTCM 3.2 Messages

+: according to GNSS IC spec

Electrical Data

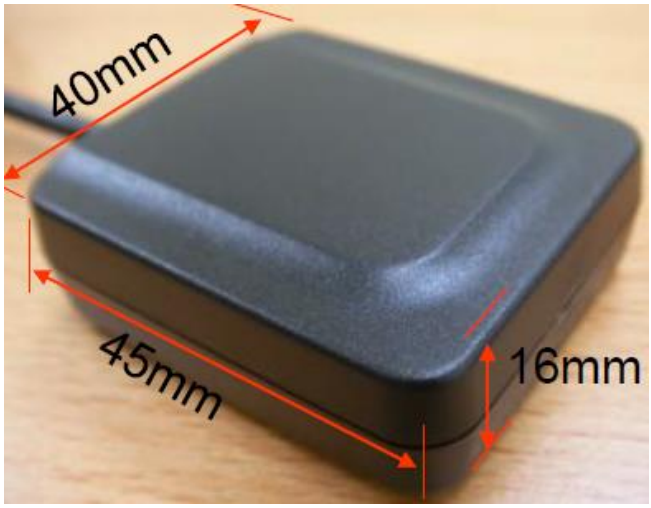
Power Supply	3.3 ~ 5.5 VDC
Power Consumption	33 mA/average tracking (USB)
Protocols	NMEA, UBX, RTCM 3.2

Environmental Data

Operating temperature	-40 ~ 85℃ except battery: -20~60℃
Storage temperature	-40 ~ 85℃ except battery: -20~60℃
Operating humidity	5% ~ 95% non-condensing
Waterproof	IPX7

Other Data

Cable Length	1.5 m for GR-8016U 3 m for GR-8016R 1 m for GR-8016T
Dimension	40 x 45 x 16 (mm)



Interfaces

	GR-8016T	GR-8016R	GR-8016U
			
			
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-
3	TXD-TTL	TX-RS232	D+
4	RXD-TTL	RX-RS232	GND
5	$PPS	$PPS	
6	$TP2	$TP2	

$: TTL signal level

Ordering Information

GR-8016X, X=T, R, U etc.

T	TTL; mini-din 6-pin male connector
R	RS232; mini-din 6-pin male connector
U	u-blox USB; type A connector

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* MOQ-based customizations are welcome.

* For non-standard demand (12V/24V power supply, connector, cable length, baud rate etc.), please specify them when ordering.

*This document is subject to change without notice.

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