GR-8017, u-blox M8 NEO-M8U-Based UDR GNSS Mouse Receiver w/ L1S SLAS, IMES Support

RoHS Compliant



Overview

GR-8017 is an easy to use, ultra-high performance, low power, industrial grade GNSS smart antenna with support of QZSS L1S and **UDR** (Untethered Dead Reckoning with built-in accelerometer and gyroscope sensors).

QZSS L1S **SLAS** (**Sub-meter** Level Augmentation Service) supports sub-meter accuracy application.

UDR is particularly useful under poor signal conditions, where it brings continuous positioning in environments even during complete signal loss such as basement parking garages and short tunnels. With UDR, positioning starts as soon as power is applied to the module, before the first GNSS fix is available.

GR-8017 supports multiple satellite positioning systems – GPS, GLONASS, Galileo, QZSS and SBAS. In addition, it also supports either USB or TTL/RS232-based mini-DIN interface.

Applications

- Vehicle navigation device
- Fleet management

Features

- Based on u-blox NEO-M8U engine board
- Multi-satellite positioning systems support
  - GPS/Galileo/QZSS/SBAS/**GLONASS**#
- SBAS (WAAS, EGNOS, MSAS, GAGAN) support
- QZSS L1S SLAS support
- IMES (Indoor Messaging System) support
- Dead Reckoning without cable wiring from cars
  - Built-in IMU (Inertial Measurement Unit)
- Sensitivity
  - Acquisition: -148dBm
  - Tracking & navigation: -160Bm
- Low power: 30mA at continuous tracking (USB)
- RTCM 2.3 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℃

NEO-M8U is able to support other GNSSs such as BeiDou. To achieve best performance, separate antenna customization is suggested for GPS+BeiDou support.

Technical Specifications

Receiver Performance Data+

Receiver Type	72-channel u-blox M8 engine GPS L1 C/A, SBAS L1 C/A,

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	QZSS L1 C/A, QZSS L1-SAIF Galileo E1 B/C L1, E1: 1575.42MHz, GLONASS: L1OF:1598.0625~1605.375MHz BeiDou BI1: 1561.098 MHz
SBAS Support	WAAS, EGNOS, MSAS, GAGAN
Horizontal Position Accuracy	2.5m (Autonomous) 1.5m (SBAS) (CEP, 50% 24hr static, -130dBm, >6 SVs)
Velocity Accuracy	0.5 m/s (speed) 1° (heading) (50%@30m/s)
Position Error (< 60s GNSS Loss)	Typical 10% distance travelled
Time Pulse Signal Accuracy	RMS 30 ns 99% 60ns
Time Pulse Frequency	0.25 Hz ~ 10 MHz
Time To First Fix Hot start Cold start	Autonomous, GPS & GLONASS 1.5 sec 26 sec (50% -130dBm)
Sensitivity (Autonomous)	GPS&GLONASS -148dBm (acquisition) -160dBm (tracking & navigation)
Navigation. Update Rate	● Max. 2Hz, GNSS & IMU, NMEA, default 1Hz ● Max. 30Hz, u-blox binary message, default no output.
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 default: 115200 bps N,8,1; RMC, VTG, GNS, GGA, GSA, GSV, GLL, GST, ZDA
RTCM 2.3	Messages 1, 2, 3, 9

+: according to GNSS IC spec

Electrical Data

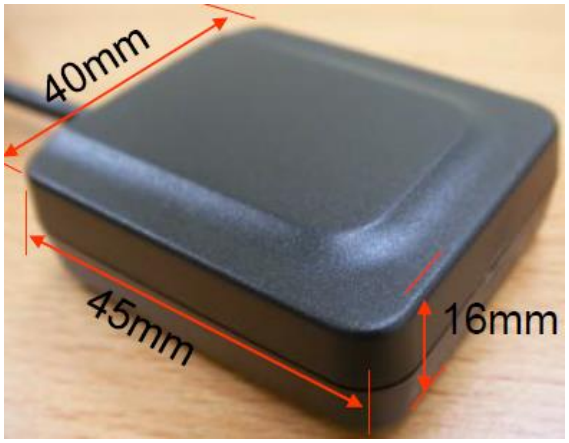
Power Supply	3.3 ~ 5.5 VDC
Power Consumption	30mA/average tracking (USB)
Protocols	NMEA, u-blox Binary

Environmental Data

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

Other Data

Cable Length	1.5m for GR-8017U 3m for GR-8017R <1m for GR-8017T
Dimension	40 x 45 x 16 (mm)



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Interfaces

	GR-8017T	GR-8017R	GR-8017U
			
			
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-8017X, 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

* 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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