

GR-801, u-blox8

Ultra-High Performance

GNSS Mouse Receiver

Overview

GR-801 is an easy to use, ultra-high performance, low power, industrial grade GNSS smart antenna. The built-in u-blox8 chip and our experienced design provide fast acquisitions and excellent tracking performance.

GR-801 supports multiple satellite positioning systems – GPS, GLONASS, Beidou, QZSS and SBAS. In addition, it also supports either USB or TTL/RS232-based mini-DIN interface.

Applications

- High-precision PPS time service
- Automatic vehicle location
- Vehicle navigation device
- Fleet management

Features

- Based on u-blox M8 low power single chip
- Multi-satellite positioning systems support
 - GPS/QZSS/GLONASS (GR-8013)
 - GPS/QZSS/Beidou (GR-8014)
- SBAS (WAAS, EGNOS, MSAS) support
- Higher update rate option (default 1Hz), up to
 - 10 Hz for GPS&GLONASS or GPS&BEIDOU
 - 18 Hz for GPS only
- Sensitivity
 - Acquisition: -148dBm
 - Tracking: -167dBm
- Low power: 40mA at continuous tracking
- RTCM 2.3 support

RoHS
Compliant



- A-GPS support, OMA SUPL/3GPP TS25.171 (GSM/UMTS) compliant
- Backup battery support for faster position fix
- LED for position fix indication
- IPX7 Waterproof
- Built-in magnet
- Compatible with GPSD PPS support
- Windows **location sensor** support
- Linux/Android support
- Fully EMI shielded
- Industrial operating temperature range: -40 ~ 85°C

Technical Specifications

Receiver Performance Data*

Receiver Type	72-channel u-blox 8 engine GPS & QZSS:L1 C/A,1575.42MHz, GLONASS: L1OF,1598.0625~1605.375M Hz BEIDOU: B1 1561.098 MHz SBAS: WAAS, EGNOS, MSAS
Horizontal Position Accuracy	2.5m (Autonomous) 2.0m (WAAS) (including SBAS & QZSS; CEP, 50% 24hr static, -130dBm, >6 SVs)
Velocity Accuracy	0.05 m/s (speed) <0.3° (heading) (50%@30m/s)

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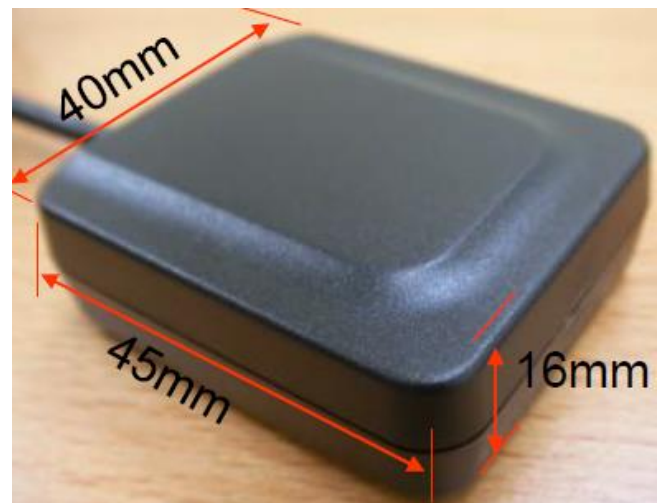
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Time Pulse	30ns (RMS), <60ns (99%)
Signal Accuracy	0.5ms for PPS over USB
Time Pulse	0.25 Hz ~ 10 MHz
Frequency	
Time To First Fix	Autonomous
Hot start	1.5 sec
Cold start	26 sec (50% -130dBm)
Sensitivity (Autonomous)	GPS&GLONASS -148dBm (acquisition) -167dBm (tracking) GPS&BEIDOU -148dBm (acquisition) -165dBm (tracking)
Navigation. Update Rate	Max. 10Hz, GPS & GLONASS or GPS & Beidou Max. 18Hz, GPS only Default 1Hz
Max. Altitude	50,000 m
Max. Velocity	< 515m/sec (1,852 km/hr)
Protocol Support	NMEA 0183 v2.3 and V4.x UART: 9600 bps N,8,1; GGA, GLL, GSA, GSV, RMC, VTG, TXT
SBAS Support	WAAS, EGNOS, MSAS
RTCM 2.3	Messages 1, 2, 3, 9

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

Other Data

Cable Length	1.5m for GR-801U 3m for GR-801R <1m for GR-801T
Dimension	40 x 45 x 16 (mm)



†: according to GNSS IC spec

Electrical Data

Power Supply	3.3 ~ 5.5 VDC
Power Consumption	40mA/average tracking (RS232)
Protocols	NMEA, u-blox Binary

Environmental Data

Operating temperature	-40 ~ 85°C except battery: -20~60°C
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Interfaces

	GR-801T	GR-801R	GR-801U/W
Pin	Mini-Din 6-pin PS/2 Male Plug	Mini-Din 6-pin PS/2 Male Plug	USB A type Male Plug

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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	PWR_CTRL	PWR_CTRL	

[§]:RS232 signal level for longer distance transmission

The GR-801W makes PPS events visible to a compatible USB host system; they appear as DCD state changes to the PL2303 driver. Time precision will be limited by the USB polling interval, usually 0.5 millisecond

Ordering Information

GR-8013X, GR-8014X

T	TTL; mini-din 6-pin male connector
R	RS232; mini-din 6-pin male connector
U	u-blox USB; type A connector
W	Prolific USB, PPS connected to DDC; type A connector

*This document is subject to change without notice.