GR-801, u-blox M8

Ultra-High Performance

GNSS Mouse Receiver

RoHS Compliant



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
- 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
- IP67 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℃

Technical Specifications

Receiver Performance Data+

Receiver Type	72-channel u-blox 8 engine GPS & QZSS:L1 C/A,1575.42MHz, GLONASS: L1OF,1598.0625~1605.375MHz 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)

NaviSys Technology Corp. https://www.navisys.com.tw/
Tel : +886-3-5632598 Fax: +886-3-5632597
Sales contact: sales@navisys.com.tw Technical support: service@navisys.com.tw
Address: 2F, No.56, Park Ave. II, Hsinchu Science Park, Hsinchu, 30844, Taiwan (R.O.C.)

Velocity Accuracy	0.05 m/s (speed) <0.3° (heading) (50%@30m/s)
Time Pulse Signal Accuracy	30ns (RMS), <60ns (99%) 0.5ms for PPS over USB
Time Pulse Frequency	0.25 Hz ~ 10 MHz
Time To First Fix Hot start Cold start	Autonomous 1.5 sec 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

+: according to GNSS IC spec

Electrical Data

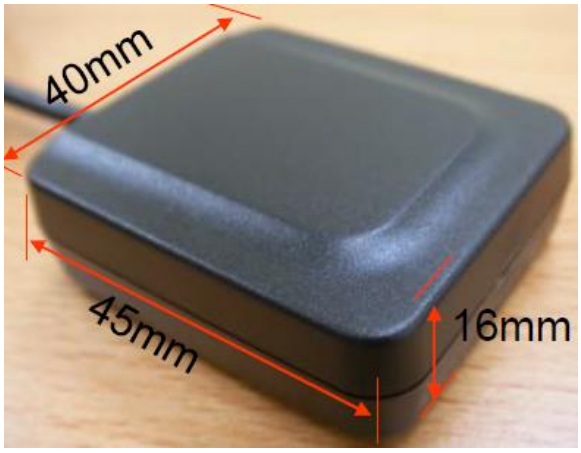
Power Supply	3.3 ~ 5.5 VDC
Power Consumption	40mA/average tracking (RS232)
Protocols	NMEA, u-blox Binary

Environmental Data

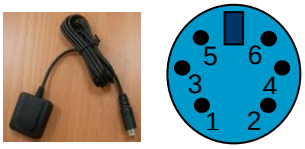
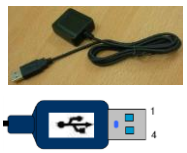
Operating temperature	-40 ~ 85℃ except battery: -20~60℃
Storage temperature	-40 ~ 85℃ except battery: -20~60℃
Operating humidity	5% ~ 95% non-condensing
Waterproof	IP67

Other Data

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



Interfaces/ Ordering Information%

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

Pin	GR-801P	GR-801R	GR-801T	GR-801U/W
1	GND	GND	GND	VDD 5V
2	VCC	VCC	VCC	D-
3	TX-RS232	TX-RS232	TXD-TTL	D+
4	RX-RS232	RX-RS232	RXD-TTL	GND
5	PPS-TTL	PPS-RS232$	PPS-TTL	-
6	PWR_CTRL	PWR_CTRL	PWR_CTRL	-

% Customization of firmware (such as baud) /hardware

NaviSys Technology Corp.
Tel : +886-3-5632598
Sales contact: sales@navisys.com.tw
Address: 2F, No.56, Park Ave. II, Hsinchu Science Park, Hsinchu, 30844, Taiwan (R.O.C.)
https://www.navisys.com.tw/
Fax: +886-3-5632597
Technical support: service@navisys.com.tw

(such as 12/24V, connectors) etc., are welcome.

$: Please be noted that the RS232 line transceiver would introduce 0.3us pulse skew to the PPS signal of RS232 model. TTL level customization is available.

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 0.5millisecond

Ordering Information

GR-8013X, GR-8014X, X=T, R, U, W etc.

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

* 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.

NaviSys Technology Corp. https://www.navisys.com.tw/
Tel : +886-3-5632598 Fax: +886-3-5632597
Sales contact: sales@navisys.com.tw Technical support: service@navisys.com.tw
Address: 2F, No.56, Park Ave. II, Hsinchu Science Park, Hsinchu, 30844, Taiwan (R.O.C.)