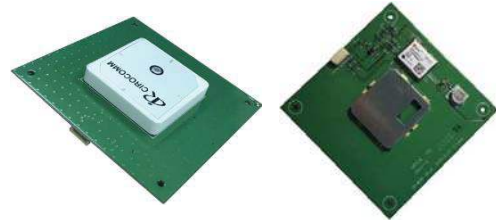




# GM-8031, u-blox NEO-M8T- Based GNSS Smart Antenna Module

RoHS  
Compliant



## w/ IMES Support

### Overview

GM-8031 is an easy to use, ultra-high performance, low power, industrial grade GNSS smart antenna module. The built-in NEO-M8T engine board provides precise timing. Its raw data also enables precise positioning with external software.

GM-8031 supports multiple satellite positioning systems – GPS, GLONASS, Galileo, QZSS and SBAS. In addition, it also supports either USB or TTL/RS232 interface.

### Applications

- High-precision timing service
- Small cell, femtocell
- Precise applications with **raw data**
- Vehicle navigation device

### Features

- Performance maximized design with big antenna (35x35x6 mm<sup>3</sup>) and ground plane (70x70 mm<sup>2</sup>).
- Based on u-blox NEO-M8T engine board
- Precise timing for both outdoors and indoors
  - Dual configurable time pulses
  - Receiver Autonomous Integrity Monitoring
- Multi-satellite positioning systems support
  - GPS/QZSS/**Galileo/GLONASS/Beidou** &
- SBAS (WAAS, EGNOS, MSAS, GAGAN) support
- IMES (Indoor Messaging System) support
- Higher update rate option (default 1Hz), up to
  - 4 Hz for dual-GNSS constellation

- 10 Hz for GPS only
- Sensitivity
  - Acquisition: -148dBm
  - Tracking & Navigation: -167dBm
- Low power: 33mA at continuous tracking (USB)
- RTCM 2.3 support
- A-GPS support, OMA SUPL/3GPP TS25.171 (GSM/UMTS) compliant
- W2B (Wire to Board) connector support
- Power supply options: 12V/24V
- Electrical interface support: USB, RS232 or TTL
- Backup battery support for faster position fix
- LED for position fix indication
- Windows **location sensor** support
- Linux/Android support
- Fully EMI shielded
- Industrial operating temperature range: -40 ~ 85°C

& GM-8031 by default supports GPS+BeiDou. For GPS+GLONASS, explicit instruction is required..

### Technical Specifications

#### Receiver Performance Data<sup>+</sup>

Receiver Type	72-channel u-blox M8 engine GPS L1 C/A, SBAS L1 C/A, QZSS L1 C/A, QZSS L1-SAIF Galileo E1 B/C L1, E1: 1575.42MHz, GLONASS: L1OF:1598.0625~1605.375MHz
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	BeiDou BI1: 1561.098 MHz
SBAS Support	WAAS, EGNOS, MSAS, GAGAN
Horizontal Position Accuracy	2.5m (Autonomous) 2m (SBAS) (CEP, 50% 24hr static, -130dBm, >6 SVs)
Velocity Accuracy	0.05 m/s (speed) 0.3° (heading); (50%@30m/s)
Time Pulse Signal Accuracy	≤ 20 ns clear sky, 1-sigma ≤ 500 ns indoor, 1-sigma
Time Pulse	0.25 Hz ~ 10 MHz
Time To First Fix	Autonomous, GPS&BeiDou (50%, -130dBm)
Hot start	1 sec
Cold start	28 sec
Sensitivity (Autonomous)	GPS&BeiDou -148dBm (acquisition) -166dBm (tracking & navigation)
Navigation. Update Rate	Max. 4Hz, GPS & BeiDou, Max. 10Hz, GPS only Default 1Hz
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 2.3	Messages 1, 2, 3, 9

\*: according to GNSS IC spec

### Electrical Data

Power Supply	3.3 ~ 5.5 VDC
Power Consumption	33mA/average tracking (USB)
Protocols	NMEA, u-blox Binary

### Environmental Data

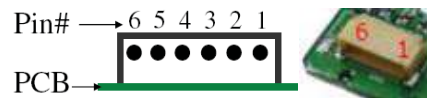
Operating temperature	-40 ~ 85°C except battery: -20~60°C
Storage temperature	-40 ~ 85°C except battery: -20~60°C
Operating humidity	5% ~ 95% non-condensing

### Mechanical Data

70\*70\*11 mm



### 6-pin W2B Interface, pitch 1.0mm



Pin	Name	Function	I/O
1	GND	Ground	Input
2	VCC	Power supply, 3.3~5.5V	Input
3	TX/TXD/D+	Serial data output or USB D+	Output
4	RX/RXD/D-	Serial data input or USB D-	Input
5	TIMEPULSE	1 pulse per second signal (default)	Output
6	nBOOT/TP2	Boot control or Time pulse 2 Not to hold low during start-up. TP2 disabled (could be enabled)	Input Output,

### Ordering Information

GM-8031X:

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

\*This document is subject to change without notice.