

## GM-801, u-blox8

### Ultra-High Performance

### GNSS Smart Antenna Module

#### Overview

GM-801 is an easy to use, ultra-high performance, low power GNSS smart antenna module with patch antenna for AVL/handheld applications. The built-in u-blox8 chip and our experienced design provide fast acquisitions and excellent tracking performance.

GM-801 supports multiple satellite positioning systems – GPS, GLONASS, Beidou, QZSS and SBAS.

GM-801 supports not only RS232/TTL/USB options; the built-in battery could also be omitted if external backup power is preferred.

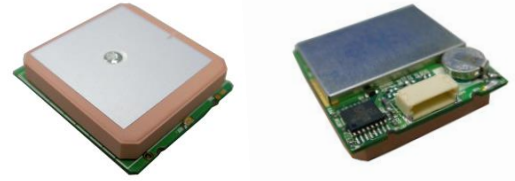
#### Applications

- Automatic vehicle location
- Driving recorder
- Navigation
- GPS clock and digital camera
- Child/elderly/personal locator and security system

#### Features

- Based on u-blox M8 low power single chip
- Multi-satellite positioning systems support
  - GPS/QZSS/GLONASS (GM-8013)
  - GPS/QZSS/Beidou (GM-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

RoHS  
Compliant



- Tracking: -167dBm
- Low power: 40mA at continuous tracking
- RTCM 2.3 support
- A-GPS support, OMA SUPL/3GPP TS25.171 (GSM/UMTS) compliant
- Easy to use: built-in antenna & digital connector
- Built-in 25x25x4 (mm) patch antenna [Option of 25x25x2 (mm) patch available]
- Backup battery support for faster position fix
- External backup power option via I/O pin is available for special application of high working temperature.
- LED for position fix indication
- 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 M8 engine GPS & QZSS: L1 C/A, 1575.42MHz, GLONASS: L1OF, 1598.0625~1605.375MHz BEIDOU (or BD): B1 1561.098 MHz SBAS: WAAS, EGNOS, MSAS
Horizontal Position	2.5m (Autonomous) 2.0m (WAAS)

Accuracy	(including SBAS & QZSS; CEP, 50% 24hr static, -130dBm, >6 SVs)
Velocity	0.05 m/s (speed)
Accuracy	<0.3° (heading) (50%@30m/s)
Time Pulse	30ns (RMS)
Signal Accuracy	<60ns (99%)
Time Pulse	0.25 Hz ~ 10 MHz
Frequency	
Time To First Fix	Autonomous,
Hot start	1 s GPS&GLONASS, 1s GPS & BD
Cold start	26 s GPS&GLONASS, 27s GPS & BD (50% -130dBm)
Sensitivity (Autonomous)	GPS&GLONASS -148dBm (acquisition) -167dBm (tracking) GPS&BD -148dBm (acquisition) -165dBm (tracking)
Navigation. Update Rate	Max. 10Hz, GPS & GLONASS or GPS & Beidou Max. 18Hz, GPS/DGPS only Default 1Hz
Max. Altitude	50,000 m
Max. Velocity	<1,852 km/hr or 515 m/s
Protocol Support	UART: N,8,1; bauds 1200, 2400, 4800, 9600 (default), 19200, 38400, 57600, 115200 bps; NMEA 0183 v2.3 and V4.x GGA, GLL, GSA, GSV, RMC, VTG, TXT
SBAS Support	WAAS, EGNOS, MSAS
RTCM 2.3	Messages 1, 2, 3, 9
Dynamics	<4g

Power Supply	3.3 ~ 5.5 V
Power Consumption	40mA/average tracking
Backup power	3.3 V
TTL I/O	V <sub>IH</sub> : 2.31~3.8V, V <sub>IL</sub> : 0~0.66V V <sub>OH</sub> : ≥ 2.8V, V <sub>OL</sub> : ≤ 0.4V
USB I/O	V <sub>IH</sub> : 2.0~3.3V, V <sub>IL</sub> : 0~0.8V V <sub>OH</sub> : ≥ 2.9V, V <sub>OL</sub> : ≤ 0.3V
Protocols	NMEA, u-blox Binary

### Environmental Data

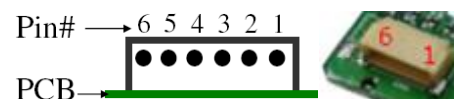
Operating temperature	-40 ~ 85°C except battery: -20~60°C
Storage temperature	-40 ~ 85°C except battery: -40~60°C
Vibration	5Hz to 500Hz, 5g
Shock	Half sine 30g/11ms

### Mechanical Data

26\*28\*7.9 mm or 26\*28\*5.9 mm



### 6-pin Interface, pitch 1.0mm



Pin	Name	Function	I/O
1	GND	Ground	Input
2	VCC	Power supply	Input
3	TX/D+	Serial data output or USB D+	Output
4	RX/D-	Serial data input or USB D-	Input
5	TIMEPULSE (VBAT, option)	TIMEPULSE signal (External backup power)	Output (Input)
6	PWR_CTRL	Power control, high/floating: ON, low: OFF	Input

§: Signal level is RS232 only for RS232 version.

\*: according to GNSS IC spec using GPS & GLONASS

### Electrical Data

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## Ordering Information, GM-8013X, 8014X

Built-in backup battery

Where X=	R	T	U
RS232	Y	-	-
TTL	-	Y	-
USB	-	-	Y

External backup power via option of pin VBAT:

Where X=	Q	S		V
RS232	Y	-		-
TTL	-	Y		-
USB	-	-		Y

\* Models other than R/T/U require MOQ.

\*This document is subject to change without notice.