GM-820, Compact, High Performance GNSS Smart Antenna Module

RoHS Compliant





Overview

GM-820 is a thin module equipped with the latest **u-blox M8** low-power, high-sensitivity engine, GNSS antenna, and wire-to-board connector. The all-in-one design allows quick plug and play.

GM-820 supports multiple satellite positioning systems – GPS, GLONASS, BEIDOU, Galileo[&], QZSS, IMES[&], and SBAS.

Based on our experienced design, GM-820 provides not only fast acquisitions with excellent tracking performance but also quality and delivery assurance.

Applications

- Driving Recorder
- Automatic vehicle location
- Vehicle navigation device
- School Bus / Transit / Police / Fleet / POS

Features

- Compact, small, all-in-one module
  - 20 x 20 x 6.5 (mm) only, including default patch antenna (18.2x18.2x4) and connector
  - Connect to main board via a 6-pin connector
- Backup power for faster position fix.
- Multi-satellite positioning systems support
  - GPS/QZSS/**GLONASS** (**GM-8203**)
  - GPS/QZSS/**BEIDOU** (**GM-8204**)
- SBAS (WAAS, EGNOS, MSAS, GAGAN[&]) support
- TTL or USB support

- High sensitivity[+]:-167dBm tracking/-148dBm acquisition (GPS)
- Up to 10Hz update rate (default 1Hz)
- OMA SUPL compliant A-GPS support
- Windows **location sensor** support
- Excellent EMI protection

Technical Specifications

Receiver Performance Data[+]

Receiver Type	72-channel u-blox M8 engine GPS & QZSS:L1 C/A,1575.42MHz, Galileo[&~]: E1B/C,1575.42MHz, GLONASS (GM-8203): L1OF,1598.0625~1605.375MHz BEIDOU (GM-8204): B1 1561.098 MHz SBAS: WAAS, EGNOS, MSAS, GAGAN[&]
Horizontal Position Accuracy	2.5m (Autonomous) 2.0m (SBAS) (CEP, 50%, 24-hour static, -130dBm)
Velocity Accuracy	<0.05 m/s (speed) <0.3° (heading) (50% @ 30 m/s)
Time Pulse Signal Accuracy	RMS: 30ns 99%: 60ns
Time To First Fix (TTFF) Hot start Cold start	Autonomous, (BD: BEIDOU) 1 s GPS&GLONASS, 1s GPS & BD 26 s GPS&GLONASS, 27s GPS & BD (50% -130dBm)
Sensitivity,	GPS&GLONASS

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dBm (Autonomous)	-148dBm (acquisition) -167dBm (tracking) GPS&BD -148dBm (acquisition) -165dBm (tracking)
Navigation. Update Rate	Max. 10Hz, GPS & GLONASS or GPS & BD Max. 18Hz, GPS only Default 1Hz
Max. Altitude	50,000 m
Max. Velocity	<1,852 km/hr or 515 m/s
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, GAGAN[&], IMES[&~]
RTCM 2.3	Messages 1, 2, 3, 9
Dynamics	< 4g

[+]: According to IC Spec
[&]: Since FW3.01
[~]: Default disabled

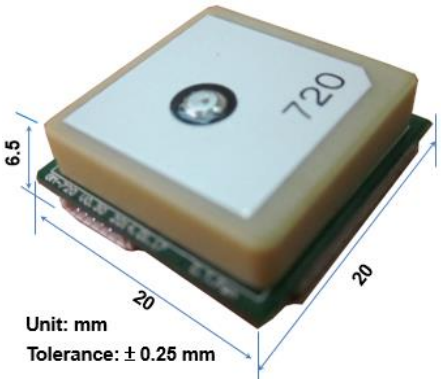
Electrical Data

Power Supply	3.1 ~ 5.5 V (TTL); 4.75~5.25V (USB)
Backup power	1.5 ~ 3.5V
Power Consumption	40 mA / average tracking 13.5uA / backup power (module disabled)
TTL I/O	V_{IH}: 2.17~3.6V, V_{IL}: 0~0.62V V_{OH}: >= 2.7V, V_{OL}<= 0.4V
USB I/O	V_{IH}: 2 ~ VCC, V_{IL}: 0 ~ 0.8 V_{OH}: >= 2.8, V_{OL}<= 0.3

Environmental Data

Operating temperature	-40 ~ 85℃
Storage temperature	-40 ~ 85℃

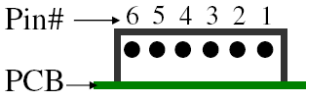
Mechanical Data – 20 x 20 x 6.5 (mm)



Application

There is an additional pad at the right of the 6-pin header. This pad is reserved for reducing potential electromagnetic noise. For that case, a shielded ground cable would be suggested to connect to motherboard depending on the noise condition.

6-pin Interface, pitch 0.8mm



GM-8203, GM-8204A/U

Pin	Name	Function	I/O
1	GND	Ground	Input
2	VCC	Power supply	Input
3	TXD/D+	TTL level serial data output (from GPS) / USB positive	Output / I/O
4	RXD/D-	TTL level serial data input (to GPS) / USB negative	Input / I/O
5	V_BAT	Backup power	Input
6	1PPS	Time Pulse Per Second	Output

GM-8203,GM-8204B/V

Pin	Name	Function	I/O
1	GND	Ground	Input
2	VCC	Power supply	Input
3	TXD/D+	TTL level serial data output (from GPS) / USB positive	Output / I/O
4	RXD/D-	TTL level serial data input (to GPS) / USB negative	Input / I/O
5	V_BAT	Backup power	Input
6	PWR_CTL	Power control; floating or high: ON Low : OFF	Input

Ordering Information

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GM-8203X, GM-8204X (X=A,B etc.)

Feature \ Model	A	B	U	V
TTL	Y	Y	-	-
USB	-	-	Y	Y
PPS	Y	-	Y	-
Power Control	-	Y	-	Y

*This document is subject to change without notice.

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