GM-M20, L1 band Multi-GNSS Navigation Systems





RoHS Compliant

Overview

Based on the AG3352Q chip, GM-M20 is able to track signals from all civil navigation systems, i.e. GPS, GLONASS, Galileo, BeiDou, and QZSS. Concurrently tracking multiple constellations, GM-M20 receives signals from plenty of visible satellites, resulting in better fixing geometry and stronger signal availability, both of which help achieve better positioning accuracy. Combined with high tracking sensitivity and smart interference cancellation, GM-M20 delivers reliable and accurate positioning even in typical GPS-difficult environments. In addition, compass provides heading assistance.

The exceptional performance is carried out by the well-designed antenna, LED, connector, compass, and all circuits necessary for high-precision positioning.

This compact GM-M20 is a plug-and-play GNSS smart antenna module allowing you to enjoy high performance GNSS plus compass functions with minimum adoption efforts.

Applications

- UAV (Unmanned Aerial Vehicle)
- ADAS (Advanced Driver Assistance System)
- Navigation (autos, trains, boats, pedestrians etc.)
- ELD (Electronic Logging Device)
- Timing (precise clock, FEMTO cell, traffic lights etc.)

Features

- Based on AG3352Q chip
- Tracks all civil navigation systems
- Concurrent tracking of positioning satellites
  - L1 single-band
  - Multi-constellation: GPS, GLONASS, Galileo, BeiDou, QZSS
  - SBAS ranging (WAAS, EGNOS, MSAS, GAGAN)
- SLAS (Sub-meter Level Augmentation) support in Japan
- High performance: -165dBm tracking sensitivity
- Support of smart jammer detection on GPS, GLONASS, Galileo, BeiDou bands.
- 12 multi-tone AIC (active interference canceller) in L1 band for removing unwanted signals.
- Indoor and outdoor multi-path detection and compensation
- PPS of ±10ns accuracy with adjustable duty cycle
- Up to 10Hz update rate
- RTCM ready (v2.3 and v3.3)
- AGPS/AGNSS
  - EPO™ (Extended Prediction Orbit) orbit prediction
  - EASY™ (Embedded Assist System) self-generated orbit prediction
- LOCUS™ logger function
- All-in-one, plug-n-play smart antenna module
  - Built-in L1 band G3B= GNSS antenna

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- Built-in wire-to-board digital connector
- Built-in backup battery for faster position fix
- Built-in LED for position fix indication
- Built-in compass, BMM350

- Fully EMI shielded
- Industrial operating temperature range: -40 ~ 85℃

Note: ™ Airoha trade mark

=G3B: GPS/GLONASS/Galileo/BeiDou

Technical Specifications

Receiver Performance Data+

Receiver Type	AG3352 L1: 1602 MHz: GLONASS:L1OF 1575.42 MHz GPS & QZSS: L1 C/A SBAS: L1 QZSS L1 SAIF Galileo: E1 (E1B+E1C) BeiDou B1C 1561.098 MHz BEIDOU B1I Note: Only support BeiDou B1C at GNSS “GPS+BeiDou” Mode.
Horizontal Position Accuracy	1.5m (L1 single-band) (50% 24hr static, -130dBm)
Vertical Position Accuracy	2.25m (L1 single-band) (50% 24hr static, -130dBm)
Velocity Accuracy	<0. 05 m/s (speed, autonomous) (50%@30m/s)
Time Pulse Signal Accuracy	± 10 ns clear sky, 1-sigma
Time To First Fix Hot start Warm start Cold start	Autonomous (50% -130dBm) 1sec <25sec <25sec
Sensitivity (Autonomous)	Acquisition: -148dBm Tracking: -165dBm
Max. Update Rate	10Hz (default 5Hz)
Max. Altitude	<18,000 m
Max. Velocity	<1,852 km/hr
Protocol Support	NMEA V3.01 & V4.10 GGA, GSA, GSV, RMC, VTG UART: N-8-1 Baud Rate: 38400/115200(default)/921600 bps Default update rate: 5Hz Proprietary PAIR command Proprietary Binary sentence
SBAS Support	WAAS, EGNOS, MSAS,GAGAN
AGPS/AGNSS	● EPO data: GPS, GLONASS ● QEPO data: GPS, GLONASS, Galileo, BeiDou ● EASY: GPS
Dynamics	<4g

+ Note. According to IC Spec

Compass BMM350

Magnetic Field Range (Typical)	±2000 μT (all axes)
Resolution	16-bit
Maximum Sample Rate	400Hz (Normal mode)

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Electrical Data

Power Supply (VCC)	3.3 ~ 5 V (TTL)
Power Consumption (Average Tracking)	34mA/TTL 26~36 SVs used in fix
Backup Power (V_BAT)	2~3.63 V
TTL I/O	V_{IH}: 2~3.3V, V_{IL}: 0~0.8V V_{OH}: ≥2.4V, V_{OL}≤ 0.4V

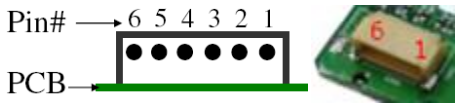
Environmental Data

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

Others

Dimension	20*20*8 mm^3
Weight	TBD

6-pin Interface, pitch 1.0mm



Ordering Information

GM-M20B

Pin Assignment

Pin	Name	Function	I/O
1	GND	Ground	Input
2	VCC	Power supply	Input
3	TXD-TTL	TTL level serial data output	Output
4	RXD-TTL	TTL level serial data input	Input
5	I2C_SCL	I2C clock of compass	Input
6	I2C_SDA	I2C data of compass	I/O

* This document is subject to change without notice.