GR-M03, L1/L5 Dual-band, Multi-satellite Systems, GNSS Receiver to Support NavIC

RoHS Compliant



Overview

Based on the AG3335 chip by 12nm technology, GR-M03 is able to concurrently track L1 band signals from all civil navigation systems, i.e. GPS, GLONASS, GALIELO, BEIDOU, QZSS. In addition, L5 band NavIC signal is also concurrently tracked. Thanks to this capability, positioning becomes easy and accurate even in the typical GPS difficult environments.

GR-M03 is a plug-and-play GNSS smart antenna that includes antenna, LED, connector, and all circuits necessary for GNSS high quality positioning.

Applications

- Navigation (autos, trains, boats, pedestrians etc.)
- ELD (Electronic Logging Device)
- Timing (precise clock, FEMTO cell, traffic lights etc.)

Features

- Based on the 12nm technology AG3335 chip
- 135 channels, tracks all civil navigation systems
- Concurrent tracking of positioning satellites
  - L1: GPS, GLONASS, GALILEO, BEIDOU, QZSS, SBAS
  - SBAS ranging (WAAS, EGNOS, MSAS, GAGAN)
  - L5: NAVIC
- High performance: -165dBm tracking sensitivity
- Support of smart jammer detection on GPS, GLONASS, Galileo, BEIDOU bands.
- 12 multi-tone AIC (active interference canceller) 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
  - Built-in L1/L5 GNSS antenna
  - Connector, cable length could be customized
  - Built-in LED for position fix indication
  - Built-in UART/RS232/USB option
- Industrial operating temperature range: -40 ~ 85℃

Note: ™ Airoha trade mark

Technical Specifications

Receiver Performance Data+

Receiver Type	135 channels, L1: 1602 MHz: GLONASS:L1OF 1575.42 MHz GPS & QZSS: L1 C/A

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, 30844, Taiwan (R.O.C.)

	SBAS: L1 QZSS L1 SAIF Galileo: E1 (E1B+E1C) 1561.098 MHz BEIDOU B1I L5: 1176.45 MHz NAVIC SPS
Horizontal Position Accuracy	2.5m (50% 24hr static, -130dBm)
Vertical Position Accuracy	3.75m (50% 24hr static, -130dBm)
Velocity Accuracy	<0. 05 m/s (speed, autonomous) (50%@30m/s)
Time To First Fix Cold start	Autonomous (50% -130dBm) 24sec
Sensitivity (Autonomous)	Acquisition: -148dBm Tracking: -165dBm
Max. Update Rate	10Hz (default 1Hz)
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 38400/115200(default)/921600bps 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

Electrical Data

Power Supply (VCC)	3 ~ 5 V
Power Consumption	75±5mA/USB, 50 SVs used in fix
Backup Power (V_BAT)	2~5 V
TTL I/O	V_{IH}: 2~3.15V, V_{IL}: 0~0.8V V_{OH}: >2.1V, V_{OL}< 0.72V

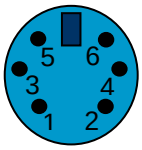
Environmental Data

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

Mechanical Data (mm)

40 x 45 x 18.5

Interfaces

	GR-M03 T/R/Q			GR-M03U
	 			 
Pin	Mini-Din 6-pin PS/2 Male Plug			USB type A Male Plug
	GR-M03T	GR-M03R	GR-M03Q	
1	GND	GND	GND	VDD 5V
2	VCC	VCC	VCC	D-
3	TXD-TTL	NC	TX-RS232	D+
4	PWR_CTL	RX-RS232	RX-RS232	GND
5	1PPS_TTL	TX-RS232	1PPS-RS232[&]	
6	RXD-TTL	NC	NC	

[&] Please be noted that the RS232 line transceiver would introduce 0.3 us pulse skew to the 1PPS signal of RS232 model.

Ordering Information[%]

GR-M03X, X=T, R, U etc.

T	TTL; mini-din 6-pin male connector
R,Q	RS232; mini-din 6-pin male connector
U	USB; type A connector

[%] Customization of firmware/hardware are welcome.

* 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, 30844, Taiwan (R.O.C.)