

Quectel QLM29HxAA-GM

Dual-Band
Multi-Constellation
Smart Antenna with RTK & DR Functions



QLM29HxAA-GM (QLM29HBAA-GM and QLM29HCAA-GM) is a dual-band multi-constellation smart antenna device with a built-in Quectel dual-band high-precision LC29H module and L1 + L5 high-performance ceramic dual-band antennas. Concurrent reception of L1 and L5 GNSS band signals enhances satellite visibility, reduces multipath interference, and improves positioning accuracy of QLM29HxAA-GM, even in challenging environments like urban canyons, while its plug-and-play design eliminates the need for onboard integration.

QLM29HxAA-GM supports concurrent reception of global and regional GNSS constellations such as GPS, GLONASS, Galileo, BDS, NavIC*, as well as QZSS and SBAS. Integrated LNA, diplexer and SAW, improve sensitivity and enable anti-interference capability. Dual frequency support provides enhanced positioning accuracy of 1 m in autonomous mode and centimeter-level precision in the RTK capable model. The DR function delivers superior positioning performance in areas with weak or absent GNSS signals.

With its storage temperature of up to 105 °C and IP67 waterproof protection, QLM29HxAA-GM offers exceptional reliability in harsh working environments. It is especially suitable for micromobility, agricultural navigation, mining, driving recorders, vehicle insurance data collection, rugged tablets, and golf carts. It can easily upgrade traditional L1 systems via spare RS-232 or USB interface without the need for product redesign. This capability enables quick and efficient terminal upgrades, delivering faster, more stable, and higher-precision positioning results.



Key Features

- ✓ Multi-GNSS engine supporting GPS, GLONASS, Galileo, BDS, NavIC*, and QZSS
- ✓ Concurrent reception of L1 and L5 GNSS band signals
- ✓ Integrated DR function or DR + RTK function
- ✓ Integrated LNA for high sensitivity
- ✓ Integrated diplexer/SAW filters for noise cancellation
- ✓ RS-232 interface or USB 2.0 interface
- ✓ IP code: IP67



Multi-constellation System



Integrated Antenna



Dual-band GNSS



Tracking Sensitivity:
-165 dBm



Operating Temperature
Range: -40 to +85 °C



Anti-jamming



RoHS Compliant

Quectel QLM29HxAA-GM

Smart Antenna Device	QLM29HBAA-GM	QLM29HCAA-GM
Dimensions (mm)	72.0 × 57.6 × 22.3	72.0 × 57.6 × 22.3
Weight (g)	Approx. 220	Approx. 220
Temperature Range		
Operating Temperature	-40 °C to +85 °C	-40 °C to +85 °C
Storage Temperature	-40 °C to +105 °C	-40 °C to +105 °C
GNSS Features		
Supported Bands	GPS/QZSS: L1 C/A, L5 GLONASS: L1 Galileo: E1, E5a BDS: B1I, B2a NavIC*: L5	GPS/QZSS: L1 C/A, L5 GLONASS: L1 Galileo: E1, E5a BDS: B1I, B2a NavIC*: L5
Default GNSS Constellations	GPS + GLONASS + Galileo + BDS + QZSS	GPS + GLONASS + Galileo + BDS + QZSS
Number of Concurrent GNSS	4 + QZSS	4 + QZSS
SBAS	WAAS, EGNOS, MSAS and GAGAN	WAAS, EGNOS, MSAS and GAGAN
Function(s)	RTK + DR (integrated IMU)	DR (integrated IMU)
Horizontal Position Accuracy	Autonomous ^① : 1 m RTK ^② : < 0.1 m + 1 ppm	Autonomous ^① : 1 m
DR Position Error (ADR)	4-wheeler: < 2 % of distance traveled without GNSS	4-wheeler: < 2 % of distance traveled without GNSS
DR Position Error (UDR)	4-wheeler: < 3 % of distance traveled without GNSS	4-wheeler: < 3 % of distance traveled without GNSS
Velocity Accuracy ^③	0.03 m/s	0.03 m/s
Accuracy of 1PPS Signal (RMS) ^③	20 ns	20 ns
RTK Convergence Time	RTK ^② : < 10 s	-
Quick Positioning After Power Off-On	Supported	Supported
TTF (with AGNSS) ^④	Full Cold Start: 5 s	Full Cold Start: 5 s
TTF (Without AGNSS) ^⑤	Full Cold Start: 26 s Warm Start: 16 s Hot Start: 1 s	Full Cold Start: 26 s Warm Start: 16 s Hot Start: 1 s
Sensitivity (@ Default GNSS Constellations)	Acquisition: -145 dBm Tracking: -165 dBm Reacquisition: -157 dBm	Acquisition: -145 dBm Tracking: -165 dBm Reacquisition: -157 dBm
Dynamic Performance ^⑥	Maximum Altitude: 10000 m Maximum Velocity ^⑤ : 500 m/s Maximum Acceleration ^⑤ : 4g	Maximum Altitude: 10000 m Maximum Velocity ^⑤ : 500 m/s Maximum Acceleration ^⑤ : 4g
PVT Update Rate	1 Hz/2 Hz/5 Hz/10 Hz	1 Hz/2 Hz/5 Hz/10 Hz
Raw Data Update Rate	GNSS: 1 Hz IMU: 100 Hz (max.)	GNSS: 1 Hz IMU: 100 Hz (max.)
Certifications		
Regulatory	Europe: CE	Europe: CE
Others	RoHS	RoHS
Interfaces		
RS-232 (Optional)	× 1 Default: 115200 bps	× 1 Default: 115200 bps
USB (Optional)	× 1	× 1
Protocols		
Protocols	NMEA 0183/RTCM 3.x	NMEA 0183/RTCM 3.x
Antenna		
Antenna Type	Active integrated antenna: (45 × 45 × 6) mm + (40 × 40 × 4) mm	Active integrated antenna: (45 × 45 × 6) mm + (40 × 40 × 4) mm
Electrical Characteristics		
Supply Voltage Range	4.0–5.5 V, typ. 5.0 V	4.0–5.5V, typ. 5.0 V
Power Consumption (@ Default GNSS Constellations, 5.0 V) ^③	41 mA (205 mW)	39 mA (195 mW)
Anti-Static Properties	Energized state: Contact ±8 kV, Air ±15 kV De-energized state: Contact ±15 kV, Air ±25 kV	Energized state: Contact ±8 kV, Air ±15 kV De-energized state: Contact ±15 kV, Air ±25 kV
Other Features	Cable length: 5 m IP code: IP67	Cable length: 5 m IP code: IP67

NOTE:

- ①: CEP, 50 %, 24 hours static, -130 dBm, more than 6 SVs.
- ②: CEP, 50 %, open-sky, and within 1 km from the base station.
- ③: Tested at room temperature, with typical operating voltage, and satellite signal of -130 dBm configured by the instrument.

- ④: Open-sky.
- ⑤: ITAR limits.
- ⑥: *: Under development.