

# Quectel QLM29HxAA-GM

Dual-Band  
Multi-Constellation  
G-Mouse with RTK & DR Functions



The QLM29HBAA-GM and QLM29HCAA-GM, collectively referred to as QLM29HxAA-GM are dual-band, multi-constellation G-Mouse receivers that support the concurrent reception of global and regional GNSS constellations such as GPS, GLONASS, Galileo, BDS, and NavIC\* as well as QZSS and SBAS. Unlike GNSS receivers that track only L1 signals, QLM29HxAA-GM can receive and track a higher number of visible satellites across multiple bands, thereby significantly mitigating the multipath effect in deep urban canyons and improving positioning accuracy.

The internal LNA, diplexer and SAW filters enhance the receivers' sensitivity and anti-interference capability. Featuring dual frequency support, the receivers deliver enhanced accuracy of 1 m in autonomous mode and centimeter level in the RTK-capable variant. The DR function ensures the module's superior positioning performance even in weak signal areas or when GNSS signals are not available.

The high-precision positioning capability of QLM29HxAA-GM makes them perfectly suited for applications such as micromobility, tractor steering systems, precision agriculture and enables easy upgrading of existing legacy L1 only systems that have a spare RS232 port without complete product re-design.

## 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



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

G-Mouse	QLM29HBAA-GM	QLM29HCAA-GM
<b>Dimensions (mm)</b>	72.0 × 57.6 × 22.3	72.0 × 57.6 × 22.3
<b>Weight (g)</b>	Approx. 220	Approx. 220
<b>Temperature Range</b>		
<b>Operating Temperature</b>	-40 °C to +85 °C	-40 °C to +85 °C
<b>Storage Temperature</b>	-40 °C to +105 °C	-40 °C to +105 °C
<b>GNSS Features</b>		
<b>Supported Bands</b>	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
<b>Default GNSS Constellations</b>	GPS + GLONASS + Galileo + BDS + QZSS	GPS + GLONASS + Galileo + BDS + QZSS
<b>Number of Concurrent GNSS</b>	4 + QZSS	4 + QZSS
<b>SBAS</b>	WAAS, EGNOS, MSAS and GAGAN	WAAS, EGNOS, MSAS and GAGAN
<b>Function(s)</b>	RTK + DR (integrated IMU)	DR (integrated IMU)
<b>Horizontal Position Accuracy</b>	Autonomous <sup>①</sup> : 1 m RTK <sup>②</sup> : < 0.1 m + 1 ppm	Autonomous <sup>①</sup> : 1 m
<b>DR Position Error (ADR)</b>	4-wheeler: < 2 % of distance traveled without GNSS	4-wheeler: < 2 % of distance traveled without GNSS
<b>DR Position Error (UDR)</b>	4-wheeler: < 3 % of distance traveled without GNSS	4-wheeler: < 3 % of distance traveled without GNSS
<b>Velocity Accuracy<sup>③</sup></b>	0.03 m/s	0.03 m/s
<b>Accuracy of 1PPS Signal (RMS)<sup>③</sup></b>	20 ns	20 ns
<b>RTK Convergence Time</b>	RTK <sup>②</sup> : < 10 s	-
<b>Quick Positioning After Power Off-On</b>	Supported	Supported
<b>TTF (with AGNSS)<sup>④</sup></b>	Full Cold Start: 5 s	Full Cold Start: 5 s
<b>TTF (Without AGNSS)<sup>③</sup></b>	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
<b>Sensitivity (@ Default GNSS Constellations)</b>	Acquisition: -145 dBm Tracking: -165 dBm Reacquisition: -157 dBm	Acquisition: -145 dBm Tracking: -165 dBm Reacquisition: -157 dBm
<b>Dynamic Performance<sup>③</sup></b>	Maximum Altitude: 10000 m Maximum Velocity <sup>⑤</sup> : 500 m/s Maximum Acceleration <sup>⑥</sup> : 4g	Maximum Altitude: 10000 m Maximum Velocity <sup>⑤</sup> : 500 m/s Maximum Acceleration <sup>⑥</sup> : 4g
<b>Nav. Update Rate</b>	1 Hz/2 Hz/5 Hz/10 Hz	1 Hz/2 Hz/5 Hz/10 Hz
<b>Raw Data Update Rate</b>	GNSS: 1 Hz IMU: 100 Hz (max.)	GNSS: 1 Hz IMU: 100 Hz (max.)
<b>Certifications</b>		
<b>Regulatory</b>	Europe: CE*	Europe: CE*
<b>Others</b>	RoHS	RoHS
<b>Interface</b>		
<b>RS-232</b>	× 1 Default: 115200 bps	× 1 Default: 115200 bps
<b>Protocols</b>		
<b>Protocols</b>	NMEA 0183/RTCM 3.x	NMEA 0183/RTCM 3.x
<b>Antenna</b>		
<b>Antenna Type</b>	Active integrated antenna: (45 × 45 × 6) mm + (40 × 40 × 4) mm	Active integrated antenna: (45 × 45 × 6) mm + (40 × 40 × 4) mm
<b>Electrical Characteristics</b>		
<b>Supply Voltage Range</b>	3.3–5.5 V, typ. 5.0 V	3.3–5.5 V, typ. 5.0 V
<b>Anti-Static Properties</b>	Energized state: Contact ±8 kV, Air ±15 kV De-energized state: Contact ±15 kV, Air ±25 kV RS-232 pins: VCC/GND/RXD/TXD	Energized state: Contact ±8 kV, Air ±15 kV De-energized state: Contact ±15 kV, Air ±25 kV RS-232 pins: VCC/GND/RXD/TXD
<b>Other Features</b>	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: Room temperature, all satellites at -130 dBm.

- ④: Open-sky.
- ⑤: ITAR limits.
- \* : Under development/in progress.