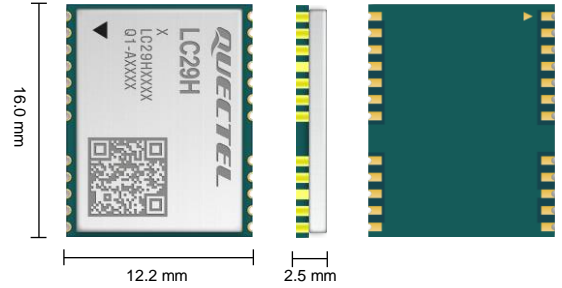


# Quectel LC29H

## Dual-Band Multi-Constellation GNSS Module with RTK and DR Functions



LC29H is a dual-band, multi-constellation GNSS module that supports the concurrent reception of five GNSS constellations: GPS, BDS, Galileo, QZSS and GLONASS.

Compared to GNSS modules that track only L1 signals, the LC29H series can receive and track a higher number of visible satellites, thereby significantly mitigating the multipath effect in deep urban canyons, reducing signal acquisition times and improving positioning accuracy. By having an internal LNA and SAW filter, the module achieves better sensitivity and anti-interference capability. The optional DR\* function ensures its superior positioning performance even in weak signal areas or when GNSS signals are not available.

LC29H provides advanced power management enabling low-power GNSS sensing and position fix, which makes the module an ideal solution for power-sensitive and battery-powered systems.

Featuring high-precision positioning and low power consumption makes the LC29H perfectly suitable for applications such as real time tracking and sharing economy related devices.



## Key Features

- ✓ Multi-GNSS engine for GPS, GLONASS, BDS, Galileo and QZSS
- ✓ Reception of L1 and L5 GNSS bands signals
- ✓ Integrated DR function (optional)
- ✓ RTK (optional) providing sub-meter accuracy with fast convergence time and outstanding performance
- ✓ Integrated LNA for high sensitivity
- ✓ Integrated SAW filter for noise cancellation
- ✓ UART and I2C interfaces
- ✓ Integrated AGNSS function



EASY™ Technology



Ultra Low Power Consumption



Ultra-compact Size



Tracking Sensitivity:  
-165 dBm



Operating Temperature  
Range: -40 to +85 °C



Anti-jamming



RoHS Compliant



Multi-constellation System

# Quectel LC29H

GNSS Module	LC29H (AA)	LC29H (BA)*	LC29H (CA)*
Region	Global	Global	Global
Dimensions	12.2 mm × 16.0 mm × 2.5 mm	12.2 mm × 16.0 mm × 2.5 mm	12.2 mm × 16.0 mm × 2.5 mm
Weight	Approx. 0.9 g	Approx. 0.9 g	Approx. 0.9 g
<b>Temperature Range</b>			
Operating Temperature	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C
Storage Temperature	-40 °C to +90 °C	-40 °C to +90 °C	-40 °C to +90 °C
<b>GNSS Features</b>			
Supported Bands	GPS/QZSS: L1 C/A, L5 GLONASS: L1 Galileo: E1, E5a BDS: B1I, B2a	GPS/QZSS: L1 C/A, L5 GLONASS: L1 Galileo: E1, E5a BDS: B1I, B2a	GPS/QZSS: L1 C/A, L5 GLONASS: L1 Galileo: E1, E5a BDS: B1I, B2a
Default GNSS Constellations	GPS + GLONASS + Galileo + BDS + QZSS	GPS + GLONASS + Galileo + BDS + QZSS	GPS + GLONASS + Galileo + BDS + QZSS
Number of Concurrent GNSS	5	5	5
SBAS	WAAS, EGNOS, MSAS and GAGAN	WAAS, EGNOS, MSAS and GAGAN	WAAS, EGNOS, MSAS and GAGAN
RTK*/DR*	-	RTK + DR	DR
Horizontal Position Accuracy	Autonomous <sup>①</sup> : 1 m	Autonomous <sup>①</sup> : 1 m RTK <sup>②</sup> : TBD	Autonomous <sup>①</sup> : 1 m
Velocity Accuracy <sup>③</sup>	Without Aid: TBD	Without Aid: TBD	Without Aid: TBD
Acceleration Accuracy <sup>③</sup>	Without Aid: TBD	Without Aid: TBD	Without Aid: TBD
Accuracy of 1PPS Signal <sup>③</sup>	100 ns	100 ns	100 ns
Convergence Time	-	RTK <sup>②</sup> : 10 s	-
TTFF (with AGNSS) <sup>④</sup>	Full Cold Start: 16 s Warm Start: 2 s Hot Start: 1 s	Full Cold Start: TBD Warm Start: TBD Hot Start: TBD	Full Cold Start: TBD Warm Start: TBD Hot Start: TBD
TTFF (without AGNSS) <sup>③</sup>	Full Cold Start: 31 s Warm Start: 24 s Hot Start: 1 s	Full Cold Start: TBD Warm Start: TBD Hot Start: TBD	Full Cold Start: TBD Warm Start: TBD Hot Start: TBD
Sensitivity (@ Default Constellations)	Acquisition: -147 dBm Tracking: -165 dBm Reacquisition: -159 dBm	Acquisition: -147 dBm Tracking: -165 dBm Reacquisition: -159 dBm	Acquisition: -147 dBm Tracking: -165 dBm Reacquisition: -159 dBm
Dynamic Performance <sup>③</sup>	Maximum Altitude: 10000 m Maximum Velocity <sup>⑤</sup> : 500 m/s Maximum Acceleration <sup>⑤</sup> : 4g	Maximum Altitude: 10000 m Maximum Velocity <sup>⑤</sup> : 500 m/s Maximum Acceleration <sup>⑤</sup> : 4g	Maximum Altitude: 10000 m Maximum Velocity <sup>⑤</sup> : 500 m/s Maximum Acceleration <sup>⑤</sup> : 4g
Update Rate	1 Hz (Default); Max. 10 Hz	GNSS Raw Data: 1 Hz IMU Raw Data: 1 Hz (Default); Max. 10 Hz	IMU Raw Data: 1 Hz (Default); Max. 10 Hz
<b>Certifications</b>			
Regulatory	Europe: CE*	Europe: CE*	Europe: CE*
Others	RoHS*	RoHS*	RoHS*
<b>Interfaces</b>			
I2C	Up to 400 kbps	Up to 400 kbps	Up to 400 kbps
UART	Adjustable: 9600–921600 bps Default: 115200 bps	Adjustable: 9600–921600 bps Default: 115200 bps	Adjustable: 9600–921600 bps Default: 115200 bps
Protocol	NMEA 0183	NMEA 0183	NMEA 0183
<b>External Antenna Interface</b>			
Antenna Type	Active or Passive	Active or Passive	Active or Passive
Antenna Power Supply	External or Internal (through VDD_RF)	External or Internal (through VDD_RF)	External or Internal (through VDD_RF)
<b>Electrical Characteristics</b>			
Supply Voltage Range	3.1–3.6 V, Typ. 3.3 V	3.1–3.6 V, Typ. 3.3 V	3.1–3.6 V, Typ. 3.3 V
I/O Voltage	Typ. 2.8 V	Typ. 2.8 V	Typ. 2.8 V
Current Consumption (@ Default GNSS Constellations, 3.3 V) <sup>③</sup>	<b>Normal Operation:</b> 24 mA @ Acquisition 24 mA @ Tracking <b>Power Saving Modes:</b> 0.7 mA @ Standby Mode 25 µA @ Backup Mode	<b>Normal Operation:</b> 30 mA @ Acquisition 30 mA @ Tracking <b>Power Saving Modes:</b> 6.6 mA @ Standby Mode 25 µA @ Backup Mode	<b>Normal Operation:</b> 30 mA @ Acquisition 30 mA @ Tracking <b>Power Saving Modes:</b> 6.6 mA @ Standby Mode 25 µA @ Backup Mode

NOTE:

- ①: CEP, 50%, 24 hours static, -130 dBm, more than 6 SVs.
- ②: CEP, 50 %, with active high-precision antennas in an open-sky environment and within 1 km from the base station.
- ③: Room temperature, all satellites at -130 dBm.
- ④: Open-sky, active high-precision antennas; less than 1 km baseline length is also required for LC29H (BA, DA, EA). AGNSS refers to EASY™.
- ⑤: ITAR limits.
- \*: Under development/ongoing.

# Quectel LC29H

GNSS Module	LC29H (DA)*	LC29H (EA)*
Region	Global	Global
Dimensions	12.2 mm × 16.0 mm × 2.5 mm	12.2 mm × 16.0 mm × 2.5 mm
Weight	Approx. 0.9 g	Approx. 0.9 g
<b>Temperature Range</b>		
Operating Temperature	-40 °C to +85 °C	-40 °C to +85 °C
Storage Temperature	-40 °C to +90 °C	-40 °C to +90 °C
<b>GNSS Features</b>		
Supported Bands	GPS/QZSS: L1 C/A, L5 GLONASS: L1 Galileo: E1, E5a BDS: B1I, B2a	GPS/QZSS: L1 C/A, L5 GLONASS: L1 Galileo: E1, E5a BDS: B1I, B2a
Default GNSS Constellations	GPS + GLONASS + Galileo + BDS + QZSS	GPS + GLONASS + Galileo + BDS + QZSS
Number of Concurrent GNSS	5	5
SBAS	WAAS, EGNOS, MSAS and GAGAN	WAAS, EGNOS, MSAS and GAGAN
RTK*/DR*	RTK	RTK
Horizontal Position Accuracy	Autonomous <sup>①</sup> : 1 m RTK <sup>②</sup> : TBD	Autonomous <sup>①</sup> : 1 m RTK <sup>②</sup> : TBD
Velocity Accuracy <sup>③</sup>	Without Aid: TBD	Without Aid: TBD
Acceleration Accuracy <sup>③</sup>	Without Aid: TBD	Without Aid: TBD
Accuracy of 1PPS Signal <sup>③</sup>	100 ns	100 ns
Convergence Time	RTK <sup>②</sup> : TBD	RTK <sup>②</sup> : TBD
TTFF (with AGNSS) <sup>④</sup>	Cold Start: TBD	Cold Start: TBD
	Warm Start: TBD	Warm Start: TBD
	Hot Start: TBD	Hot Start: TBD
TTFF (without AGNSS) <sup>③</sup>	Cold Start: TBD	Cold Start: TBD
	Warm Start: TBD	Warm Start: TBD
	Hot Start: TBD	Hot Start: TBD
Sensitivity (@ Default Constellations)	Acquisition: TBD	Acquisition: TBD
	Tracking: TBD	Tracking: TBD
	Reacquisition: TBD	Reacquisition: TBD
Dynamic Performance <sup>③</sup>	Maximum Altitude: 10000 m	Maximum Altitude: 10000 m
	Maximum Velocity <sup>⑤</sup> : 500 m/s	Maximum Velocity <sup>⑤</sup> : 500 m/s
	Maximum Acceleration <sup>⑤</sup> : 4g	Maximum Acceleration <sup>⑤</sup> : 4g
Update Rate	GNSS Raw Data: 1 Hz	GNSS Raw Data: 10 Hz
<b>Certifications</b>		
Regulatory	Europe: CE*	Europe: CE*
Others	RoHS*	RoHS*
<b>Interfaces</b>		
I2C	Up to 400 kbps	Up to 400 kbps
UART	Adjustable: 9600–921600 bps	Adjustable: 9600–921600 bps
	Default: 115200 bps	Default: 115200 bps
Protocol	NMEA 0183	NMEA 0183
<b>External Antenna Interface</b>		
Antenna Type	Active or Passive	Active or Passive
Antenna Power Supply	External or Internal (through VDD_RF)	External or Internal (through VDD_RF)
<b>Electrical Characteristics</b>		
Supply Voltage Range	3.1–3.6 V, Typ. 3.3 V	3.1–3.6 V, Typ. 3.3 V
I/O Voltage	Typ. 2.8 V	Typ. 2.8 V
Current Consumption (@ Default GNSS Constellations, 3.3 V) <sup>③</sup>	<b>Normal Operation:</b> TBD @ Acquisition TBD @ Tracking	<b>Normal Operation:</b> TBD @ Acquisition TBD @ Tracking
	<b>Power Saving Modes:</b> TBD @ Standby Mode TBD @ Backup Mode	<b>Power Saving Modes:</b> TBD @ Standby Mode TBD @ Backup Mode

NOTE:

- ①: CEP, 50%, 24 hours static, -130 dBm, more than 6 SVs.
- ②: CEP, 50 %, with active high-precision antennas in an open-sky environment and within 1 km from the base station.
- ③: Room temperature, all satellites at -130 dBm.
- ④: Open-sky, active high-precision antennas; less than 1 km baseline length is also required for LC29H (BA, DA, EA). AGNSS refers to EASY™.
- ⑤: ITAR limits.
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