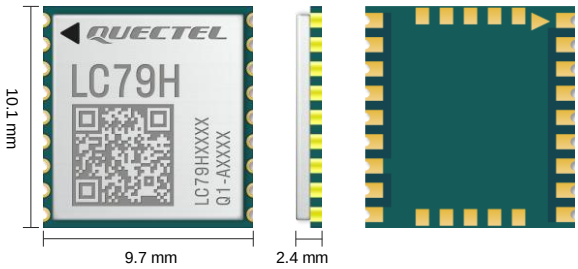
Quectel LC79H Series

Ultracompact Dual-Band Multi-Constellation GNSS Module with RTK Function



The LC79H is a series of concurrent multi-constellation GNSS modules. LC79H (AL) is a dual-band GNSS module supporting reception of GPS, GLONASS, Galileo, BDS, NavIC and QZSS signals. LC79H (EL) provides enhanced capability by utilizing dual-band positioning combined with RTK technology, delivering centimeter- and decimeter-level high-precision positioning. With the integrated AGNSS function and the ability to receive SBAS broadcast signals, the LC79H series provides users with a fast, accurate, and high-performance positioning experience.

Compared to single constellation GPS receivers, by enabling multiple GNSS constellations, the LC79H series increases the number of visible satellites and improves the positioning reliability, in particular in dense urban environments. As a dual-band, multi-constellation GNSS module, the LC79H series tracks a higher number of satellites on dual frequencies, thereby significantly reducing the multipath effect caused by high-rise buildings in urban areas, reducing signal acquisition time and improving positioning accuracy.

Embedded LNA and SAW filters serve to ensure better positioning in challenging signal conditions.

The advanced low-power management solution enables low-power GNSS sensing and positioning and makes the module an ideal solution for power-sensitive and battery-powered systems.

With the low power consumption and high precision, the LC79H series is a popular choice for real-time tracking systems, ideal for sharing economy applications, and its superior performance makes it ideal for vehicle, personnel and asset tracking.

Key Features

- Multi-GNSS engine for GPS, GLONASS, Galileo, BDS, NavIC and QZSS
- Dual-band (L1 + L5)
- Support fast convergence dual-band RTK technology (optional)
- Integrated LNA for high sensitivity
- Integrated SAW filter for noise cancellation
- Integrated AGNSS function
- UART and I2C

AGNSS Technology

Ultra Low Power Consumption

Ultracompact Size

Tracking Sensitivity: -166 dBm

Operating Temperature Range: -40 to +85 °C

Anti-jamming

RoHS Compliant

Multi-constellation System

Version: 1.4 | Status: Released

Quectel LC79H Series

GNSS Module	LC79H (AL)	LC79H (EL)
Region	Global	Global
Dimensions	10.1 mm × 9.7 mm × 2.4 mm	10.1 mm × 9.7 mm × 2.4 mm
Weight	Approx. 0.5 g	Approx. 0.5 g
Temperature Range		
Operating Temperature	-40 °C to +85 °C	-40 °C to +85 °C
Storage Temperature	-40 °C to +95 °C	-40 °C to +95 °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 Constellations	GPS + GLONASS + Galileo + BDS + QZSS	GPS + GLONASS + Galileo + BDS + QZSS
Number of Tracking Channels	135	135
SBAS	WAAS, EGNOS, MSAS and GAGAN	WAAS, EGNOS, MSAS and GAGAN
Function	-	RTK
Horizontal Position Accuracy	Autonomous①: 1 m	Autonomous①: 1 m RTK②: 1 cm + 1 ppm
Vertical Position Accuracy	Autonomous①: 2 m	Autonomous①: 2 m RTK②: 2.5 cm + 1 ppm
Velocity Accuracy③	0.03 m/s	0.03 m/s
Accuracy of 1PPS Signal (RMS)③	20 ns	20 ns
RTK Convergence Time	-	RTK②: < 10 s
TTFF (with AGNSS) ④	Cold Start: 12 s Warm Start: 2 s Hot Start: 1 s	Cold Start: 12 s Warm Start: 2 s Hot Start: 1 s
TTFF (without AGNSS) ③	Cold Start: 26 s Warm Start: 18 s Hot Start: 1 s	Cold Start: 26 s Warm Start: 18 s Hot Start: 1 s
Sensitivity (@ Default Constellations) ③	Acquisition: -148 dBm Tracking: -166 dBm Reacquisition: -159 dBm	Acquisition: -148 dBm Tracking: -165 dBm Reacquisition: -158 dBm
Dynamic Performance ③	Maximum Altitude: 10000 m Maximum Velocity: 500 m/s Maximum Acceleration: 4g	Maximum Altitude: 10000 m Maximum Velocity: 500 m/s Maximum Acceleration: 4g
PVT Update Rate	GNSS: 1–10 Hz	RTK: 1–10 Hz
Raw Data Update Rate	GNSS: 1 Hz	GNSS: 1/2/5 Hz
Certifications		
Regulatory	**Europe**: CE	**Europe**: CE*
Others	RoHS	RoHS
Interfaces		
I2C	Up to 400 kbps	Under development
UART	Adjustable: 9600–3000000 bps Default: 115200 bps	Adjustable: 9600–3000000 bps Default: 460800 bps
Protocols		
Protocols	NMEA 0183/RTCM 3.x	NMEA 0183/RTCM 3.x
External Antenna Interface		
Antenna Type	Active⑤ or Passive	Active⑤ or Passive
Antenna Power Supply	External or VDD_RF pin of module	External or VDD_RF pin of module
Electrical Characteristics		
Supply Voltage Range (VCC)	1.75–1.98 V, typ. 1.8 V	1.75–1.98 V, typ. 1.8 V
I/O Voltage	Following VCC	Following VCC
Current Consumption (@ Default Constellations, 1.8 V) ②	**Normal Operation:** 33 mA (59.4 mW) @ Acquisition 33 mA (59.4 mW) @ Tracking **Power Saving Mode:** 20 μA (36 μW) @ Backup Mode	**Normal Operation:** 41 mA (73.8 mW) @ Acquisition 41 mA (73.8 mW) @ Tracking **Power Saving Mode:** 28 μA (50.4 mW) @ Backup Mode

NOTE:
1. ①: CEP, 50 %, 24 hours static, -130 dBm, more than 6 SVs.
2. ②: CEP, 50 %, with active high-precision antennas in an open-sky environment and within 1 km from the base station.
3. ③: Tested at room temperature, with typical operating voltage, and satellite signal of -130 dBm configured by the instrument.
4. ④: Open-sky, active high-precision GNSS antenna.
5. ⑤: To further mitigate the impact of out-of-band signals on the GNSS module, you must choose the active antenna whose SAW filter is placed in front of the LNA in the internal framework. DO NOT place the LNA in the front.
6. * : In progress.

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