

Quectel LC79H

Ultracompact Dual-Band Multi-Constellation GNSS Module



LC79H features a concurrent multi-constellation GNSS receiver: LC79H (AL) is a dual-band GNSS module supporting concurrent reception of GPS, GLONASS, Galileo, BDS, and QZSS signals by default, while the single band LC79H (BA) supports L1/B1 band for GPS, BDS, and QZSS satellites by default. With the integrated AGNSS function and the ability to receive SBAS broadcast signals, LC79H provides users with a fast, accurate, and high-performance positioning experience.

Compared to single constellation GPS receivers, by enabling multiple GNSS constellations, the LC79H(BA) 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, LC79H (AL) 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 LNAs 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.

Due to the low power consumption and high precision, LC79H 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, BDS, Galileo, and QZSS
- ✓ Dual-band (L1 + L5) and single band (L1) options
- ✓ Integrated AGNSS function
- Built-in LNA and SAW filter for better sensitivity
- UART and I2C*







EASY[™] Technology

Ultra Low Power Consumption

Ultracompact Size





Operating Temperature Anti-jamming Range: -40 to +85 °C



Tracking Sensitivity:

-166 dBm



Multi-constellation System

Version: 1.2 | Status: Released

Quectel LC79H

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Dimensions10.1 mm × 9.7 mm × 2.4 mm10.1 mm × 9.7 mm × 2.4 mmWeightApprox. 0.28 gApprox. 0.28 gComparative fanger	Region	Global	Global
WeightApprox. 0.28 gApprox. 0.28 gTemperature Range-40 °C to +85 °COperating Temperature-40 °C to +85 °CAlor Co +90 °C-40 °C to +89 °CStorage Temperature-40 °C to +90 °CAlor Sc featuresEPS/QZSS LI C/A, Galleo E1: 1575.42 MHzSupported BandsCPS/QZSS LI C/A, Galleo E5: 0, 255 LS, BIS B2a: 1176.45 MHzDefault ConstellationsCPS + CIONASS LI: 1598.06231605.375 MHzSensition Accuracy @Without Aid: 0.1 m/sConstellationsCPS + CIONASS LI: 1598.06231605.375 MHzAcceration Accuracy @Without Aid: 0.1 m/sAcceration Accuracy @Without Aid: 0.1 m/sAcceration Accuracy @Without Aid: 0.1 m/sCold Start: 1.2 sCold Start: 2.3 http:Martin Art: 2.3 http:Without Aid: 0.1 m/sCold Start: 2.5 http:Warm Start: 2.8 http:Martin Art: 2.5 http:Warm Start: 2.8 http:Martin Art: 2.5 http:Warm Start: 2.8 http:Cold Start: 2.6 dHmTracking: -164 dHmTracking: 1.60 dHmTracking: -164 dHm <t< td=""><th>Dimensions</th><td>10.1 mm × 9.7 mm × 2.4 mm</td><td>10.1 mm × 9.7 mm × 2.4 mm</td></t<>	Dimensions	10.1 mm × 9.7 mm × 2.4 mm	10.1 mm × 9.7 mm × 2.4 mm
Temperature Range -40 °C to +85 °C -40 °C to +85 °C Operating Temperature -40 °C to +90 °C -40 °C to +90 °C Surgate Temperature -40 °C to +90 °C -40 °C to +90 °C GNSS Features GPS/QZSS L1 C/A, Gallieo E1: 1575.42 MHz BOS B1: 1561.028 MHz GPS/QZSS L1 C/A, Gallieo E1: 1575.42 MHz GLONASS L1: 1598.0625-1005.375 MHz Default Constellations GPS + 610NASS + 63lleo + 80S + 02SS GPS + 80S + 02S Number of Tracking Channels 135 3 SRAS WAAS, EGNOS, MSA, and GAGAN WAAS, EGNOS, MSA, and GAGAN Horitontal Position Accuracy @ Without Adi: 0.1 m/s Without Adi: 0.1 m/s Accuracy of 1PPS Signal @ 100 ns 100 ns 100 ns Cold Start: 2.5 Cold Start: 2.5 Warm Start: 2.5 Hot Start: 1.5 TFF (with AGNSS) @ Without Adi: 0.1 m/s ⁴ Warm Start: 2.5 Hot Start: 1.5 TFF (with AGNSS) @ Warm Start: 2.5 Cold Start: 2.5 Hot Start: 1.5 Maximum Altrude: 10000 m Maximum Altrude: 10000 m Maximum Altrude: 10000 m Maximum Altrude: 10000 m Maximum Altrude: 10000 m Maximum Altrude: 10000 m Maximum Altrude: 1	Weight	Approx. 0.28 g	Approx. 0.28 g
Operating Temperature-40 °C to +85 °C-40 °C to +85 °CStorage Temperature-40 °C to +90 °C-40 °C to +90 °COCNS FeaturesCPS CasturesSupported BandsCPS Castures CPS CPS CAST LI C/A, Calleo E1: 1575 42 MHz dPS LS 51: 086 DS2: 1175 085 DS2: 1175 085 DS2: 1175 085 DS2: 1175 085 DS3: 1155 085 DS3: 1155 DS3 DS3Default ConstellationsGPS + 610 NASS + 6alleo + BDS + 025SGPS + 80S + 025SDumber of Tracking Channels13575SDASWAAS, EGNOS, MSAS, and GAGANWAAS, EGNOS, MSAS, and GAGANHorizontal Position Accuracy ©Without Add: 0.1 m/sWithout Add: 0.1 m/sCold Start: 135COld Start: 12 SCOld Start: 23Accuracy of 1PPS Signal ©100 nsCOld Start: 24Cold Start: 25Cold Start: 28Warm Start: 38Horizontal Position - Accuracy ©Without Add: 0.1 m/s ² Cold Start: 28Warm Start: 38Warm Start: 38Horizontal Position - 156 dBm Reacquistion: -148 dBmAccuracy 0.10 rsCold Start: 28Warm Start: 38Warm Start: 38Horizontal Position - 156 dBm Reacquistion: -158 dBmMaximum Acceleration: 49Pref (without Admost)Pref Ct*Warm Start: 38Horizontal Position: -158 dBm Maximum Acceleration: 49Maximum Acceleration: 49Pref (without Admost)Pref Ct*Warm Start: 28Horizontal Position: -156 dBm Maximum Acceleration: 49Maximum Acceleration: 49Pref (without Admost)Pref Ct*Warm Start: 18Horizontal Position: -156 dBm Maximum Acceleration: 49Maximum Acc	Temperature Range		
Storage Temperature -40 °C to +90 °C -40 °C to +90 °C GNSS Features GPS/QZSS L1 C/A, Galileo E1: 1575.42 MHz GPS/QZSS L1 C/A, Galileo E3: 1575.42 MHz GDNASS L1: 1598.06231005.375 MHz BDS B11: 1561.098 MHz ACCoreary © Without Adt: 0.1 m/s ⁴ Without Adt: 0.1 m/s ⁴ Without Adt: 0.1 m/s ⁴ Without Adt: 0.1 m/s ⁴ Cold Start: 2.1 s HDS Start: 2.5 Warm Start: 2.5 HDS Start: 3.5 HDS Start	Operating Temperature	-40 °C to +85 °C	-40 °C to +85 °C
GNSS Features GPS/QZSS L1 C/A, Gailleo E3: 1575.42 MHz GPS/QZSS L1 C/A, Gailleo E3: 1575.42 MHz Supported Bands GPS/QZSS L1 C/A, Gailleo E3: 1575.42 MHz GPS/QZSS L1 C/A, Gailleo E3: 1575.42 MHz GDN SD 11: 1561.098 MHz GDN SD 11: 1561.098 MHz BDS B31: 1561.098 MHz Default Constellations GPS + GLO NASS + Gailleo + BDS + QZSS GPS + BDS + QZSS Number of Tracking Channels 135 75 Number of Tracking Channels 135 75 SBAS WAAS, FGNOS, MSAS, and GAGAN WAAS, EGNOS, MSAS, and GAGAN Velocity Accuracy @ Without Aid: 0.1 m/s Without Aid: 0.1 m/s Cacceleration Accuracy @ Without Aid: 0.1 m/s 100 ns Cold Start: 12 S Cold Start: 12 S Cold Start: 12 S Velocity Accuracy @ Without Aid: 0.1 m/s ² Cold Start: 24 S TFFF (with AGNSS) @ Cold Start: 12 S Cold Start: 24 S Warm Start: 2 S Cold Start: 24 S Warm Start: 2 S Mot Start: 1 S Cold Start: 24 S Cold Start: 24 S Warm Start: 2 S Cold Start: 24 S Cold Start: 24 S Warm Start: 2 S Cold Start: 24 S Cold Start: 24 S Maximum Velocity: 200 n/S Maximum Acceleration: 48 dBm Acquisition: -148 dBm Paramic Performance @ Rot S Maximum Acceleration: 48 </td <th>Storage Temperature</th> <td>-40 °C to +90 °C</td> <td>-40 °C to +90 °C</td>	Storage Temperature	-40 °C to +90 °C	-40 °C to +90 °C
Supported BandsGPS/Q2SS L1 C/A, Gallieo E1: 1575.42 MHz GPS L5, Galleo E5: 0,02S http: BDS B1: 1561.098 MHz GLONASS L1: 1598.0625-1605.375 MHz BDS B1: 1561.098 MHz GLONASS L1: 1578.075 WHAT SLOVEN MAX5.CENNOS, MSAS, and GAGAN WAX5.EENNOS, MSAS, and GAGAN WASENTI 1000 M Maximum Attitude: 1000 M Maximum Attitude: 10000 M Maximum Maximum Attitu	GNSS Features		
Default constellationsGPS + GLONASS + Galileo + BDS + QZSSGPS + BDS + QZSSNumber of Tracking Channels13575Number of Concurrent GNSS53SBASWAAS, EGNOS, MSAS, and GAGANWAAS, EGNOS, MSAS, and GAGANVelocity Accuracy [©] Autonomous: 1.0 mAutonomus: 2.0 mVelocity Accuracy [©] Without Aid: 0.1 m/sWithout Aid: 0.1 m/sAcceleration Accuracy [©] Without Aid: 0.1 m/s ² 00 nsCold Start: 12 sCold Start: 12 sCold Start: 12 sWarm Start: 2 SWarm Start: 2 SWarm Start: 2 SHot Start: 1 sHot Start: 1 sHot Start: 1 sCold Start: 26 sCold Start: 24 sWarm Start: 2 SWarm Start: 1 sHot Start: 1 sHot Start: 1 sAccusition: -158 dBmReacquisition: -147 dBmParachy (@ Default Constellation)Tracking: -166 dBmReacquisition: -159 dBmReacquisition: -158 dBmMaximum Atelocteration: 4gMaximum Atelocteration: 4gVeloctif Start: 1 SHot Start: 1 SPynamic Performance [®] Kaliselie: 9600-921600 bpsMaximum Acceleration: 4gAdjustable: 9600-921600 bpsVeloctif Start: 152 obsUp to 400 kbpsUpdate Rate: 1 Hz (Default)Update Rate: 1 Hz (Default)ProtocolNMEA 0183NMEA 0183ProtocolNMEA 0183NMEA 0183ProtocolNMEA 0183NMEA 0183External Attenna InterfaceLifter or PassiveProtocolNMEA 0183AcquisitionProtocolNMEA 0183 <t< td=""><th>Supported Bands</th><td>GPS/QZSS L1 C/A, Galileo E1: 1575.42 MHz GPS L5, Galileo E5a, QZSS L5, BDS B2a: 1176.45 MHz BDS B1I: 1561.098 MHz GLONASS L1: 1598.0625–1605.375 MHz</td><td>GPS/QZSS L1 C/A, Galileo E1: 1575.42 MHz GLONASS L1: 1598.0625–1605.375 MHz BDS B1I: 1561.098 MHz</td></t<>	Supported Bands	GPS/QZSS L1 C/A, Galileo E1: 1575.42 MHz GPS L5, Galileo E5a, QZSS L5, BDS B2a: 1176.45 MHz BDS B1I: 1561.098 MHz GLONASS L1: 1598.0625–1605.375 MHz	GPS/QZSS L1 C/A, Galileo E1: 1575.42 MHz GLONASS L1: 1598.0625–1605.375 MHz BDS B1I: 1561.098 MHz
Number of Tracking Channels13575Number of Concurrent NSS53SBASWAAS, EGNOS, MSAS, and GAGANWAAS, EGNOS, MSAS, and GAGANHorizontal Position Accuracy (*)Autonomous: 1.0 mAutonomous: 2.0 mVelocity Accuracy (*)Without Adi: 0.1 m/s*Without Adi: 0.1 m/s*Acceleration Accuracy (*)Without Adi: 0.1 m/s*Without Adi: 0.1 m/s*Accuracy of 1PPS Signal (*)Ioon (*)Ioon (*)Cold Start: 12 sWarm Start: 2 sWarm Start: 2 sHort Start: 15Cold Start: 2 sWarm Start: 2 sHort Start: 15Cold Start: 2 sWarm Start: 2 sHort Start: 15Hort Start: 1 sAccuracitor: 150 dBmReacquisition: -158 dBmReacquisition: -158 dBmReacquisition: -159 dBmReacquisition: -158 dBmReacquisition: -158 dB	Default Constellations	GPS + GLONASS + Galileo + BDS + QZSS	GPS + BDS + QZSS
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Acceleration Accuracy (a) Without Aid: 0.1 m/s ² Without Aid: 0.1 m/s ³ Accuracy of 1PPS Signal (a) 100 ns 100 ns TTFF (with AGNSS) (a) Cold Start: 2 s Warm Start: 2 s Hot Start: 1 s Hot Start: 1 s Hot Start: 1 s Cold Start: 2 f s Cold Start: 2 f s Warm Start: 2 s Hot Start: 1 s Hot Start: 1 s Hot Start: 1 s Cold Start: 2 f s Warm Start: 2 s Warm Start: 2 s Hot Start: 1 s Hot Start: 1 s Hot Start: 1 s Sensitivity (@ Default Constellation) Acquisition: -148 dBm Acquisition: -148 dBm Reacquisition: -159 dBm Reacquisition: -158 dBm Reacquisition: -158 dBm Maximum Altitude: 10000 m Maximum Altitude: 10000 m Maximum Altitude: 10000 m Maximum Velocity: 500 m/s Maximum Altitude: 10000 m Maximum Altitude: 10000 m Maximum Altitude: 10000 m/s Maximum Altitude: 10000 m Maximum Altitude: 10000 m Maximum Altitude: 10000 m/s Maximum Altitude: 10000 m Maximum Altitude: 10000 m Maximum Altitude: 10000 m/s Maximum Altitude: 10000 m Maximum Altitude: 10000 m Maximum Acceleration: 4g Europe: CE* Europe: CE* Cottifications Regulatory Adjustable: 9600-921600 bps UART Adjustable: 9600-921600 bps	Velocity Accuracy ^②	Without Aid: 0.1 m/s	Without Aid: 0.1 m/s
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CertificationsRegulatoryEurope: CE*Europe: CE*OthersRoHSRoHSInterfacesUp to 400 kbpsUp to 400 kbpsI2C*Up to 400 kbpsAdjustable: 9600–921600 bps Default: 115200 bps Default: 115200 bps Default: 9600 bps 	Dynamic Performance ^②	Maximum Altitude: 10000 m Maximum Velocity: 500 m/s Maximum Acceleration: 4g	Maximum Altitude: 10000 m Maximum Velocity: 500 m/s Maximum Acceleration: 4g
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Antenna Power Supply External or Internal (through VDD_RF) External or Internal (through VDD_RF) Electrical Characteristics Supply Voltage Range 1.75–1.98 V, Typ. 1.8 V 3.1–3.6 V, Typ. 3.3 V I/O Voltage VCC Typ. 2.8 V Supply Coltage Range Normal Operation (@ 1.8 V): Normal Operation (@ 3.3 V): Supply Coltage Normal Operation (@ 1.8 V): Normal Operation (@ 3.3 V): Power Saving Mode (@ 1.8 V): Power Saving Mode (@ 3.3 V): Power Saving Mode (@ 3.3 V):	Antenna Type	Active or Passive	Active or Passive
Electrical Characteristics Supply Voltage Range 1.75–1.98 V, Typ. 1.8 V 3.1–3.6 V, Typ. 3.3 V I/O Voltage VCC Typ. 2.8 V Normal Operation (@ 1.8 V): Normal Operation (@ 3.3 V): 33 mA @ Acquisition 28 mA @ Acquisition 33 mA @ Tracking 28 mA @ Tracking Power Saving Mode (@ 1.8 V): Power Saving Mode (@ 3.3 V): 20 uA @ Backwa Mode 20 uA @ Dackwa Mode	Antenna Power Supply	External or Internal (through VDD_RF)	External or Internal (through VDD_RF)
Supply Voltage Range 1.75–1.98 V, Typ. 1.8 V 3.1–3.6 V, Typ. 3.3 V I/O Voltage VCC Typ. 2.8 V Current Consumption (@ Default Constellations) (2) Normal Operation (@ 1.8 V): 33 mA @ Acquisition 33 mA @ Tracking Power Saving Mode (@ 1.8 V): 20 wA @ Backwa Mode Normal Operation (@ 3.3 V): 28 mA @ Tracking Power Saving Mode (@ 1.8 V): 20 wA @ Backwa Mode	Electrical Characteristics		
I/O Voltage VCC Typ. 2.8 V Normal Operation (@ 1.8 V): Normal Operation (@ 3.3 V): 33 mA @ Acquisition 28 mA @ Acquisition 33 mA @ Tracking 28 mA @ Tracking Power Saving Mode (@ 1.8 V): Power Saving Mode (@ 3.3 V): 20 uA @ Packure Mode 20 uA @ Packure Mode	Supply Voltage Range	1.75–1.98 V, Тур. 1.8 V	3.1–3.6 V, Typ. 3.3 V
Current Consumption (@ Default Constellations) Normal Operation (@ 1.8 V): Normal Operation (@ 3.3 V): 33 mA @ Acquisition 33 mA @ Tracking Power Saving Mode (@ 1.8 V): 28 mA @ Acquisition 28 mA @ Tracking Power Saving Mode (@ 1.8 V): Power Saving Mode (@ 3.3 V): 20 uA @ Packure Mode 20 uA @ Packure Mode	I/O Voltage	VCC	Typ. 2.8 V
	Current Consumption (@ Default Constellations) ^②	Normal Operation (@ 1.8 V): 33 mA @ Acquisition 33 mA @ Tracking Power Saving Mode (@ 1.8 V): 20 uA @ Backup Mode	Normal Operation (@ 3.3 V): 28 mA @ Acquisition 28 mA @ Tracking Power Saving Mode (@ 3.3 V): 20 uA @ Backup Mode

NOTE:

1.^①: CEP, 50%, 24 hours static, -130 dBm, more than 6 SVs.

2.²: Room temperature, all satellites at -130 dBm.

3. $^{\odot}$: Open-sky, active high-precision GNSS antenna.

4. *: Under development / Ongoing.

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