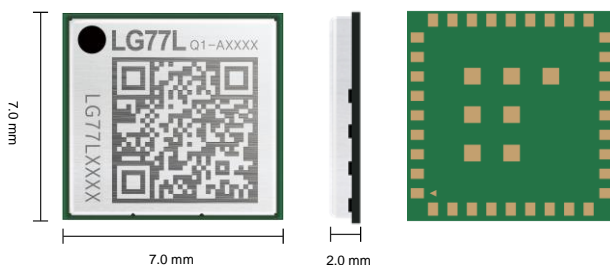




# Quectel LG77L Series

Extremely Compact  
Multi-Constellation GNSS Module  
with Ultra-Low Power Consumption



Quectel LG77L series GNSS module is a single-band multi-constellation module, which can acquire and track any mix of GPS, GLONASS, Galileo, BDS and QZSS. It also supports multiple SBAS signals.

Compared with single constellation receivers, by enabling multiple GNSS constellations, the LG77L series module increases the number of visible satellites, reduces the time to first fix, and improves positioning accuracy, especially in dense urban canyons.

By integrating EASY (Embedded Assist System), an advanced AGNSS feature, and GLP (GNSS Low Power), the LG77L series module achieves a combination of high performance and low power consumption, meeting industrial standards. The EASY technology enables automatic orbit calculation and prediction using ephemeris data stored in the internal RAM for up to 3 days. In addition, the module supports downloading orbit prediction data for up to 30 days through EPO technology. As a result, the LG77L series can fix a position quickly, even under low signal levels, while maintaining low power consumption. Furthermore, the GLP technology enables adaptive adjustment of the on/off time based on the environmental and motion conditions, striking a balance between positioning accuracy and power consumption.

The low power consumption significantly extends the battery life of wearable products and tracking devices, such as smart watches, pet trackers, small portable goods trackers, anti-theft devices, student ID cards and elderly frail care devices. With its enhanced performance, the LG77L series module is ideal for industrial PDA, consumer and industry applications, such as, electronic dog collars, shared bicycles, electric motorcycle tracking devices, asset tracking devices, and fleet management systems.



## Key Features

- ✓ Extremely compact size: 7.0 mm × 7.0 mm × 2.0 mm
- ✓ Multi-GNSS engine for GPS, GLONASS, Galileo (only supported by LG77L (C)), BDS and QZSS
- ✓ Supports anti-jamming technology and a multi-tone active interference canceller
- ✓ Multiple low-power modes ensure ultra-low power consumption
- ✓ UART and I2C interfaces
- ✓ Maximum update rate: 10 Hz
- ✓ SDK commands developed by Quectel
- ✓ AGNSS technology



EASY  
Technology



Ultra Low Power  
Consumption



Extremely  
Compact Size



Super Tracking  
Sensitivity:  
-163 dBm



Extended Temperature  
Range: -40 to +85 °C



Anti-Jamming



RoHS Compliant



Multi-GNSS System

# Quectel LG77L Series

GNSS Module	LG77L (A)	LG77L (B)	LG77L (C)
<b>Region</b>	Global	Global	Global
<b>Dimensions</b>	7.0 mm × 7.0 mm × 2.0 mm	7.0 mm × 7.0 mm × 2.0 mm	7.0 mm × 7.0 mm × 2.0 mm
<b>Weight</b>	Approx. 0.2 g	Approx. 0.2 g	Approx. 0.2 g
<b>Temperature Range</b>			
<b>Operating Temperature</b>	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C
<b>Storage Temperature</b>	-40 °C to +90 °C	-40 °C to +90 °C	-40 °C to +90 °C
<b>GNSS Features</b>			
<b>Supported Bands<sup>①</sup></b>	GPS L1 C/A GLONASS L1 BDS B1I QZSS L1 C/A	GPS L1 C/A GLONASS L1 BDS B1I QZSS L1 C/A	GPS L1 C/A GLONASS L1 Galileo E1 BDS B1I QZSS L1 C/A
<b>Default GNSS Constellation</b>	GPS + GLONASS + QZSS	GPS + GLONASS + QZSS	GPS + GLONASS + QZSS
<b>Number of Concurrent GNSS</b>	2 + QZSS	2 + QZSS	3 + QZSS
<b>SBAS</b>	WAAS, EGNOS, MSAS, and GAGAN	WAAS, EGNOS, MSAS, and GAGAN	WAAS, EGNOS, MSAS, and GAGAN
<b>Horizontal Position Accuracy<sup>②</sup></b>	Autonomous: 2.5 m	Autonomous: 2.5 m	Autonomous: 2.5 m
<b>Velocity Accuracy<sup>③</sup></b>	Without Aid: 0.1 m/s	Without Aid: 0.1 m/s	Without Aid: 0.1 m/s
<b>Acceleration Accuracy<sup>③</sup></b>	Without Aid: 0.1 m/s <sup>2</sup>	Without Aid: 0.1 m/s <sup>2</sup>	Without Aid: 0.1 m/s <sup>2</sup>
<b>Accuracy of 1PPS Signal (RMS)<sup>③</sup></b>	50 ns	50 ns	50 ns
<b>TTFF (with EASY)<sup>④</sup></b>	Cold Start: 14 s Warm Start: 4 s Hot Start: 2 s	Cold Start: 14 s Warm Start: 4 s Hot Start: 2 s	Cold Start: 17 s Warm Start: 5 s Hot Start: 2 s
<b>TTFF (without EASY)<sup>③</sup></b>	Cold Start: 26 s Warm Start: 24 s Hot Start: 2 s	Cold Start: 26 s Warm Start: 24 s Hot Start: 2 s	Cold Start: 25 s Warm Start: 23 s Hot Start: 2 s
<b>Sensitivity (@ Default Constellation)</b>	Acquisition: -146 dBm Tracking: -163 dBm Reacquisition: -156 dBm	Acquisition: -146 dBm Tracking: -163 dBm Reacquisition: -156 dBm	Acquisition: -146 dBm Tracking: -163 dBm Reacquisition: -156 dBm
<b>Dynamic Performance<sup>③</sup></b>	Maximum Altitude: 10000 m Maximum Velocity: 515 m/s Maximum Acceleration: 4g	Maximum Altitude: 10000 m Maximum Velocity: 515 m/s Maximum Acceleration: 4g	Maximum Altitude: 10000 m Maximum Velocity: 515 m/s Maximum Acceleration: 4g
<b>Certifications</b>			
<b>Regulatory</b>	CE	CE	CE
<b>Others</b>	RoHS	RoHS	RoHS
<b>Interfaces</b>			
<b>I2C Interface<sup>⑤</sup></b>	Up to 400 kbps	Up to 400 kbps	Up to 400 kbps
<b>UART Interface</b>	Adjustable: 9600–921600 bps Default: 9600 bps Update Rate: 1 Hz (Default), up to 10 Hz	Adjustable: 9600–921600 bps Default: 9600 bps Update Rate: 1 Hz (Default), up to 10 Hz	Adjustable: 9600–921600 bps Default: 9600 bps Update Rate: 1 Hz (Default), up to 10 Hz
<b>Protocols</b>	NMEA 0183	NMEA 0183	NMEA 0183
<b>External Antenna Interface</b>			
<b>Antenna Type</b>	Active or Passive	Active or Passive	Active or Passive
<b>Antenna Power Supply</b>	External	External	External
<b>Active Antenna Protection</b>	Short-Circuit Protection and Open-Circuit Detection	Short-Circuit Protection and Open-Circuit Detection	Short-Circuit Protection and Open-Circuit Detection
<b>Electrical Characteristics</b>			
<b>Supply Voltage Range</b>	2.8–4.3 V, Typ. 3.3 V	2.8–4.3 V, Typ. 3.3 V	2.8–4.3 V, Typ. 3.3 V
<b>I/O Voltage<sup>⑥</sup></b>	1.8 V or 2.8 V	1.8 V or 2.8 V	1.8 V or 2.8 V
<b>Integrated RTC</b>	-	Included	Included
<b>Current Consumption (GPS + GLONASS, @ 3.3 V)<sup>③</sup></b>	<b>Normal Operation:</b> 25 mA (82.5 mW) @ Acquisition 24 mA (79.2 mW) @ Tracking <b>Power Saving Modes:</b> 1 mA (3.3 mW) @ Standby Mode 6 μA (19.8 μW) @ Backup Mode	<b>Normal Operation:</b> 26 mA (85.8 mW) @ Acquisition 25 mA (82.5 mW) @ Tracking <b>Power Saving Modes:</b> 1 mA (3.3 mW) @ Standby Mode 6 μA (19.8 μW) @ Backup Mode	<b>Normal Operation:</b> 24 mA (79.2 mW) @ Acquisition 23 mA (75.9 mW) @ Tracking <b>Power Saving Modes:</b> 0.9 mA (2.97 mW) @ Standby Mode 6 μA (19.8 μW) @ Backup Mode

**NOTE:**

- ①: LG77L (A) and LG77L (B) cannot support GLONASS and BDS at the same time. LG77L (C) cannot support BDS and GLONASS/ Galileo at the same time.
- ②: CEP, 50 %, 24 hours static, -130 dBm, more than 6 SVs.
- ③: Room temperature, all satellites at -130 dBm.
- ④: Open-sky, active high precision GNSS antenna.
- ⑤: I2C interface is only supported by partial firmware versions.
- ⑥: I/O Voltage = VCC\_IO. The VCC\_IO pin requires an external power supply.