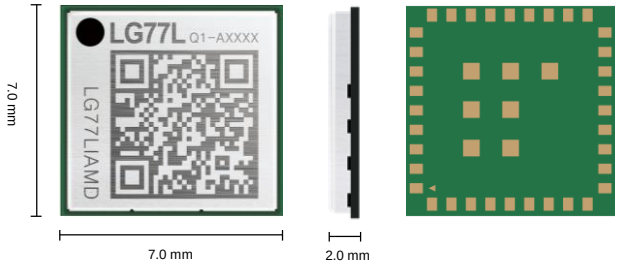
Quectel LG77L

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



Quectel LG77L GNSS module supports concurrent reception of GPS, GLONASS (or BeiDou) and QZSS. With 33 tracking channels, 99 acquisition channels and 210 PRN channels, the module can acquire and track any mix of GPS, GLONASS (or BeiDou) and SBAS signals.

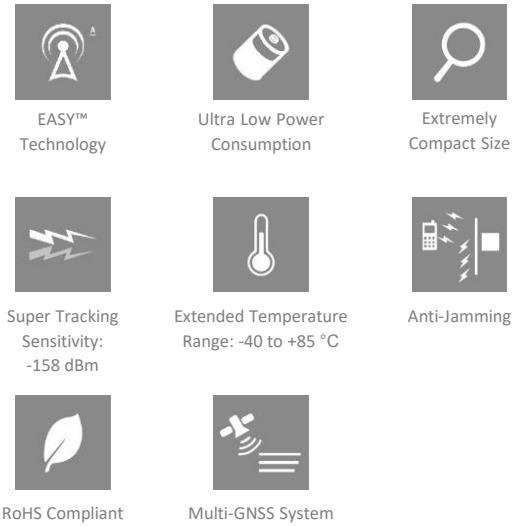
Compared with single GPS systems, enabling multiple GNSS systems increases the number of visible satellites, reduces the time to a first fix and increases the positioning accuracy, especially when driving in rough urban environments.

By combining EASY™ (Embedded Assist System), an advanced AGNSS feature, with GLP (GNSS Low Power), a low-power mode, the LG77L module achieves high performance, low power consumption and fully meets the industrial standards. The EASY™ technology allows the module to calculate and predict orbits automatically by using the ephemeris data (of up to 3-day duration) which are stored in the internal RAM. As a result, the LG77L can fix a position quickly, even at lower signal levels with low power consumption. With the GLP technology, on the other hand, the LG77L can adaptively adjust the on/off time based on the environmental and motion conditions to achieve a balance between the positioning accuracy and power consumption.

Its super performance makes the LG77L ideal for the industrial PDA, consumer and industry applications. Extremely low-power consumption makes it a great solution for power-sensitive applications, especially portable devices.

Key Features

- Extremely compact size: 7.0 mm × 7.0 mm × 2.0 mm
- Multi-GNSS engine for GPS, GLONASS (or BeiDou), and QZSS
- Supports anti-jamming technology and a multi-tone active interference canceller
- Multiple low-power modes ensure ultra-low power consumption
- Supports UART and I2C Interfaces
- Maximum update rate: up to 10 Hz
- Supports SDK commands developed by Quectel
- Supports AGNSS



Version: 1.0 | Status: Released

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GNSS Module	LG77L
Region	Global
Dimensions	7.0 mm × 7.0 mm × 2.0 mm
Weight	Approx. 0.2 g
Temperature Range	
Operating Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +90 °C
GNSS Features	
Supported Bands	GPS L1 C/A: 1575.42 MHz GLONASS L1 C/A: 1602.5625 MHz BeiDou B1 C/A: 1561.098 MHz
Default GNSS Constellation ①	GPS + GLONASS, or GPS + BeiDou
Channels	33 Tracking Channels 99 Acquisition Channels 210 PRN Channels
SBAS	WAAS, EGNOS, MSAS, and GAGAN
Horizontal Position Accuracy	Autonomous: < 2.5 m CEP
Velocity Accuracy ②	Without Aid: < 0.1 m/s
Acceleration Accuracy	Without Aid: < 0.1 m/s²
Timing Accuracy	1PPS < 100 ns
TTFF @ -130 dBm with EASY™ ②	Cold Start: < 14 s Warm Start: < 4 s Hot Start: < 2 s
TTFF @ -130 dBm without EASY™ ②	Cold Start: < 26 s Warm Start: < 24 s Hot Start: < 2 s
Sensitivity	Acquisition: -146 dBm Tracking: -161 dBm Reacquisition: -158 dBm
Dynamic Performance	Maximum Altitude: Max. 18000 m Maximum Velocity: Max. 515 m/s Maximum Acceleration: 4g
Certifications	
Regulatory	CE
Others	RoHS
Interfaces	
I2C Interface ③	Up to 400 kbps
UART Interface	Adjustable: 9600 bps to 921600 bps Default: 9600 bps Update Rate: 1 Hz (Default), up to 10 Hz
Protocols	NMEA 0183, PMTK, PQ
External Antenna Interface	
Antenna Type	Active or Passive
Antenna Power Supply	External
Active Antenna Protection	Short-Circuit Protection and Open-Circuit Detection
Electrical Characteristics	
Supply Voltage Range	2.8–4.3 V, Typ. 3.3 V
I/O Voltage	1.8 V or 2.8 V (I/O Voltage = VCC_IO. The VCC_IO pin requires an external power supply.)
Current Consumption (@ 3.3 V)	Normal Operation: 27 mA @ Acquisition (GPS + GLONASS) 26 mA @ Tracking (GPS + GLONASS) Power Saving Modes: 8 μA @ Backup Mode 1.2 mA @ Standby Mode

Notes:
1. ①: Depending on the firmware version.
2. ② : Measured in GPS + GLONASS systems under outdoor static mode.
3. ③ : Only certain firmware versions support the I2C interface.

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