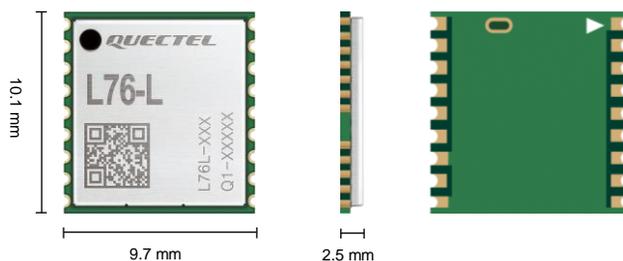


# Quectel L76-L

## Compact GNSS Module



Quectel L76-L GNSS module supports concurrent reception of GPS, GLONASS (or BeiDou), Galileo and QZSS. It can acquire and track any mix of GPS, GLONASS (or BeiDou), Galileo and SBAS signals. The L76-L is designed to be compatible with Quectel L70, L76 and L76-LB modules, allowing convenient migration between them.

The integrated LNA provides an improved sensitivity, as well as improved accuracy, fast tracking and acquisition of signals, and can keep enhanced performance under challenged environment. Compared with single GPS system, multiple GNSS systems increase the number of visible satellites, reduce the time to first fix and improve positioning accuracy, even in dense urban canyons.

By combining EASY™ (Embedded Assist System), an advanced AGNSS feature, with GLP (GNSS Low Power), a low-power mode, the L76-L module achieves high performance, low power consumption and fully meets the industrial standards. The EASY™ technology allows the module to automatically calculate and predict orbits by using the ephemeris data (up to 3 days) which are stored in the internal RAM. As a result, the L76-L fixes a position quickly with low power consumption, even at lower signal levels. With the GLP technology, the L76-L can adaptively adjust the on/off time based on the environmental and motion conditions to strike a balance between the positioning accuracy and power consumption.

Its enhanced performance makes the L76-L ideal for industrial PDA, consumer and industry applications. Extremely low-power consumption makes it a great solution for power-sensitive applications, such as portables.



### Key Features

- ✓ Multi-GNSS engine for GPS, GLONASS (or BeiDou), Galileo and QZSS, ensuring fast and accurate fix in any environment
- ✓ Footprint compatible with L70, L76 and L76-LB modules
- ✓ High I/O voltage (2.8 V) and low I/O voltage (1.8 V) available for option
- ✓ Industrial leading sensitivity of -167 dBm during tracking and -149 dBm during acquisition
- ✓ Integrated LNA for high sensitivity
- ✓ PPS VS. NMEA used for time service
- ✓ Supports EASY™, an advanced AGNSS technology for quick positioning
- ✓ Supports anti-jamming and multi-tone active interference canceller
- ✓ Supports multiple low-power modes to ensure ultra-low power consumption
- ✓ Supports UART and I2C Interfaces
- ✓ SDK commands developed by Quectel



EASY™ Technology



Ultra Low Power Consumption



Extremely Compact Size



Super Tracking Sensitivity: -167 dBm



Operating Temperature Range: -40 to +85 °C



Anti-jamming



RoHS Compliant



Multi-GNSS System

# Quectel L76-L

GNSS Module	L76-L	L76-L (L) *
<b>Region</b>	Global	Global
<b>Dimensions</b>	10.1 mm × 9.7 mm × 2.5 mm	10.1 mm × 9.7 mm × 2.5 mm
<b>Weight</b>	Approx. 0.6 g	Approx. 0.6 g
<b>Temperature Range</b>		
<b>Operating Temperature</b>	-40 °C to +85 °C	-40 °C to +85 °C
<b>Storage Temperature</b>	-40 °C to +90 °C	-40 °C to +90 °C
<b>GNSS Features</b>		
<b>Supported Bands</b>	GPS L1 C/A: 1575.42 MHz GLONASS L1: 1602.5625 MHz BeiDou B1I : 1561.098 MHz Galileo E1: 1575.42 MHz	GPS L1 C/A: 1575.42 MHz GLONASS L1: 1602.5625 MHz BeiDou B1I : 1561.098 MHz Galileo E1: 1575.42 MHz
<b>Default GNSS Constellation</b>	GPS + GLONASS	GPS + GLONASS
<b>Number of Concurrent GNSS</b>	3	3
<b>Channels</b>	33 Tracking Channels 99 Acquisition Channels 210 PRN Channels	33 Tracking Channels 99 Acquisition Channels 210 PRN Channels
<b>SBAS</b>	WAAS, EGNOS, MSAS, GAGAN	WAAS, EGNOS, MSAS, GAGAN
<b>Horizontal Position Accuracy</b> <sup>①</sup>	Autonomous: < 2.5 m CEP	Autonomous: < 2.5 m CEP
<b>Velocity Accuracy</b> <sup>①</sup>	Without Aid: < 0.1 m/s	Without Aid: < 0.1 m/s
<b>Acceleration Accuracy</b> <sup>①</sup>	Without Aid: < 0.1 m/s <sup>2</sup>	Without Aid: < 0.1 m/s <sup>2</sup>
<b>Timing Accuracy</b>	1PPS < 100 ns	1PPS < 100 ns
<b>TTFF @ -130 dBm with EASY™</b>	Cold Start: < 15 s Warm Start: < 5 s Hot Start: < 2 s	Cold Start: < 15 s Warm Start: < 5 s Hot Start: < 2 s
<b>TTFF @ -130 dBm without EASY™</b> <sup>①</sup>	Cold Start: < 32 s Warm Start: < 30 s Hot Start: < 2 s	Cold Start: < 32 s Warm Start: < 30 s Hot Start: < 2 s
<b>Sensitivity</b> <sup>③</sup>	Acquisition: -149 dBm Tracking: -167 dBm Reacquisition: -161 dBm	Acquisition: -149 dBm Tracking: -167 dBm Reacquisition: -161 dBm
<b>Dynamic Performance</b> <sup>①</sup>	Maximum Altitude: Max. 10000 m Maximum Velocity: Max. 515 m/s Maximum Acceleration: 4g	Maximum Altitude: Max. 10000 m Maximum Velocity: Max. 515 m/s Maximum Acceleration: 4g
<b>Interfaces</b>		
<b>I2C Interface</b> <sup>②</sup>	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
<b>Protocols</b>	NMEA 0183, PMTK, PQ	NMEA 0183, PMTK, PQ
<b>External Antenna Interface</b>		
<b>Antenna Type</b>	Active or passive	Active or passive
<b>Antenna Power Supply</b>	External power supply, or through the VCC_RF pin	External power supply, or through the VCC_RF pin
<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
<b>I/O Voltage</b>	2.7–2.9 V, Typ. 2.8 V	1.7–1.9V, Typ. 1.8 V
<b>Current Consumption (@ 3.3 V)</b>	Normal Operation: 31mA @ Acquisition (GPS + GLONASS) 31 mA @ Tracking (GPS + GLONASS) Power Saving Modes: 8 μA @ Backup Mode 0.5 mA @ Standby Mode	Normal Operation: 31 mA @ Acquisition (GPS + GLONASS) 31 mA @ Tracking (GPS + GLONASS) Power Saving Modes: 8 μA @ Backup Mode 0.5 mA @ Standby Mode

Note:

- ①: Measured in GPS + GLONASS systems, room temperature, all satellites at -130 dBm.
- ②: Only certain firmware versions support the I2C interface.
- ③: Room temperature, demonstrated with good LNAs.
- \*: Under development / Ongoing.