Quectel L76-L

Compact GNSS Module

10.1 mm
9.7 mm
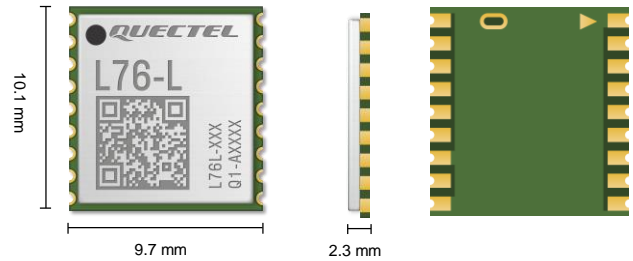2.3 mm

Quectel L76-L GNSS module supports concurrent reception of GPS, GLONASS (or BDS), Galileo and QZSS. It can acquire and track any mix of GPS, GLONASS (or BDS), 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 BDS), 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

Version: 1.6 | Status: Released

Quectel L76-L

GNSS Module	L76-L	L76-L (L)
Region	Global	Global
Dimensions	10.1 mm × 9.7 mm × 2.3 mm	10.1 mm × 9.7 mm × 2.3 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 +90 °C	-40 °C to +90 °C
GNSS Features		
Supported Bands	GPS L1 C/A GLONASS L1 BDS B1I Galileo E1	GPS L1 C/A GLONASS L1 BDS B1I Galileo E1
Default GNSS Constellation	GPS + GLONASS + QZSS	GPS + GLONASS + QZSS
Number of Concurrent GNSS	3 + QZSS	3 + QZSS
Channels	33 Tracking Channels 99 Acquisition Channels 210 PRN Channels	33 Tracking Channels 99 Acquisition Channels 210 PRN Channels
SBAS	WAAS, EGNOS, MSAS, GAGAN	WAAS, EGNOS, MSAS, GAGAN
Horizontal Position Accuracy[1]	Autonomous: 2.5 m	Autonomous: 2.5 m
Velocity Accuracy[2]	Without Aid: 0.1 m/s	Without Aid: 0.1 m/s
Acceleration Accuracy[2]	Without Aid: 0.1 m/s²	Without Aid: 0.1 m/s²
Accuracy of 1PPS Signal[2]	100 ns	100 ns
TTFF (with EASY)[3]	Cold Start: 15 s Warm Start: 5 s Hot Start: 2 s	Cold Start: 15 s Warm Start: 5 s Hot Start: 2 s
TTFF (without EASY)[2]	Cold Start: 32 s Warm Start: 30 s Hot Start: 2 s	Cold Start: 32 s Warm Start: 30 s Hot Start: 2 s
Sensitivity	Acquisition: -149 dBm Tracking: -167 dBm Reacquisition: -161 dBm	Acquisition: -149 dBm Tracking: -167 dBm Reacquisition: -161 dBm
Dynamic Performance[1]	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
Interfaces		
I2C Interface[4]	Up to 400 kbps	-
UART Interface	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
Protocol	NMEA 0183 V4.10	NMEA 0183 V4.10
External Antenna Interface		
Antenna Type	Active or passive	Active or passive
Antenna Power Supply	External power supply, or through the VDD_RF pin	External power supply, or through the VDD_RF pin
Electrical Characteristics		
Supply Voltage Range	2.8–4.3 V, Typ. 3.3 V	2.8–4.3 V, Typ. 3.3 V
I/O Voltage	2.7–2.9 V, Typ. 2.8 V	1.7–1.9 V, Typ. 1.8 V
Current Consumption (@ 3.3 V)	Normal Operation: 31 mA (102.3 mW) @ Acquisition (GPS + GLONASS) 31 mA (102.3 mW) @ Tracking (GPS + GLONASS) Power Saving Modes: 0.5 mA (1.65 mW) @ Standby Mode 8 μA (26.4 μW) @ Backup Mode	Normal Operation: 31 mA (102.3 mW) @ Acquisition (GPS + GLONASS) 31 mA (102.3 mW) @ Tracking (GPS + GLONASS) Power Saving Modes: 0.5 mA (1.65 mW) @ Standby Mode 8 μA (26.4 μW) @ 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. [3]: Open-sky, active high-precision GNSS antenna.
4. [4]: I2C interface is only supported by partial firmware versions.

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