Build a Smarter World

Quectel L89

Compact GNSS Module with IRNSS

L89 is a high performance GNSS module supporting multi-constellation GNSS and dual GNSS bands. It can acquire and track GPS, IRNSS, GLONASS, BeiDou, Galileo and QZSS signals. With 2 embedded antennas, the module can work at L1 and L5 bands simultaneously.

Compared with the GNSS module working at L1 band only, L89 can generally increase the number of visible satellites, reduce TTFF and enhance positioning accuracy, especially when driving in rough urban environments.

L89 achieves exceptional performance both in acquisition and tracking, and fully meets the industrial standard. With embedded LNA, dual antennas and antenna switch function, it is an ideal product for automotive, consumer and industry tracking applications.

Key Benefits

- Extremely compact size: 25.0mm × 16.0mm × 6.8mm
- Multi-GNSS engine for GPS, IRNSS, GLONASS, BeiDou, Galileo and QZSS
- Support dual GNSS bands (L1, L5)
- Built-in LNA for better sensitivity
- Support DGPS, SBAS (WAAS/EGNOS/MSAS/GAGAN)
- Great anti-jamming performance due to multi-tone active interference canceller
- Support SDK command* developed by Quectel

IRNSS Signal Reception

Low Power Consumption

Extremely Compact Size

RoHS Compliant

Extended Operating Temperature: -40°C to +85°C

Anti-Jamming

Multi-GNSS Systems

Rev.: V1.0 | Status: Preliminary

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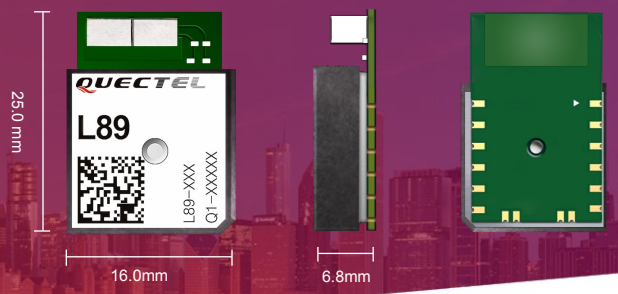

GNSS Features

Receiving Bands:

GPS L1/Galileo E1 C/A: 1575.42MHz

IRNSS L5 C/A: 1176.45MHz

GLONASS L1 C/A: 1602.5625MHz

BD2 B1 C/A: 1561.098MHz

SBAS:

WAAS, EGNOS, MSAS, GAGAN

Horizontal Position Accuracy:

Autonomous: <1.8m CEP

Velocity Accuracy:

Without Aid: <0.1m/s

Acceleration Accuracy:

Without Aid: <0.1m/s²

Timing Accuracy:

1PPS: 3.9ns

Reacquisition Time: <1.5s

TTFF @-130dBm with AGPS:

Cold Start: <TBD s

Warm Start: <TBD s

Hot Start: <TBD s

TTFF @-130dBm without AGPS:

Cold Start: <32s

Warm Start: <25s

Hot Start: <1.5s

Sensitivity:

Acquisition: -147dBm①

Tracking: -162dBm①

Reacquisition: -156dBm①

Dynamic Performance:

Maximum Altitude: Max. 18000m①

Maximum Velocity: Max. 515m/s①

Maximum Acceleration: 4G

Interfaces

I2C Interface:

Max. bit rate up to 400kbps

UART Interface:

Adjustable: 4800bps~115200bps

Default: 9600bps

Update Rate: 1Hz (Default), up to 10Hz

I/O Voltage: 3.0V

External Antenna Interface:

Antenna Type: Passive or Active

Antenna Power Supply: External

Power Management

Power Supply:

3.1V~4.3V, typical 3.3V

Power Acquisition:

90mA① @3.3V

Power Tracking:

70mA① @3.3V

Power Saving:

50uA① @Standby Mode

General Features

Temperature Range: -40°C ~ +85°C

Dimension: 25.0mm × 16.0mm × 6.8mm

Weight: 8.2g

Protocols: NMEA 0183

Approvals

RoHS Compliant

CE* (Europe)

① Preliminary test data for reference only.

* Under development

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