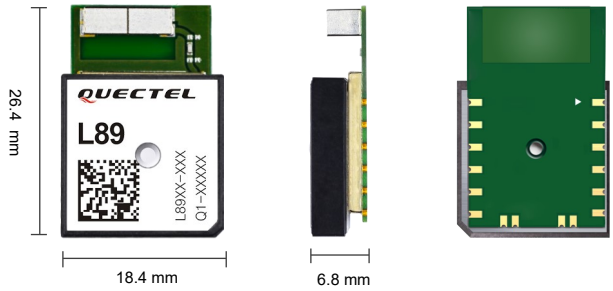
Quectel L89

Compact IRNSS-enabled GNSS Module



L89 is a high performance IRNSS-enabled GNSS module, capable of acquiring and tracking 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 make use of GPS, Galileo and IRNSS signals to increase the number of visible satellites, reduce TTFF and enhance positioning accuracy, especially when it is used in rough urban environments.

L89 can achieve exceptional performance both in acquisition and tracking, and fully meet the industrial standard. With two embedded LNAs, dual antennas and antenna switch function, it is an ideal product for automotive, consumer and industrial tracking applications.

Key Benefits

- Support IRNSS L5 band
- Embedded patch antenna and chip antenna
- Multi-GNSS engines for GPS, IRNSS, GLONASS, BeiDou, Galileo and QZSS
- Support DGPS, SBAS (WAAS/EGNOS/MSAS/GAGAN)
- Integrated LNAs for better sensitivity
- Great anti-jamming performance due to multi-tone active interference canceller
- Support SDK commands* developed by Quectel

IRNSS Signal Reception

Multi-GNSS System

Compact Size

Low Power Consumption

Anti-Jamming

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

RoHS Compliant

Rev.: V1.1 | Status: Released

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GNSS Features

Receiving Bands①:

GPS L1/Galileo E1 C/A: 1575.42 MHz

IRNSS L5 C/A: 1176.45 MHz

GLONASS L1 C/A: 1602.5625 MHz

BD2 B1 C/A: 1561.098 MHz

SBAS:

WAAS, EGNOS, MSAS, GAGAN

Horizontal Position Accuracy:

Autonomous: < 1.8 m CEP

Velocity Accuracy:

Without Aid: < 0.1 m/s

Acceleration Accuracy:

Without Aid: < 0.1 m/s^2

Timing Accuracy:

1PPS: 3.9 ns

Reacquisition Time: < 1.5 s

TTFF @-130dBm with AGPS:

Cold Start: < 13 s

Warm Start: < 5 s

Hot Start: < 2 s

TTFF @-130dBm without AGPS:

Cold Start: < 32 s

Warm Start: < 25 s

Hot Start: < 2 s

Sensitivity:

Acquisition: -147 dBm

Tracking: -163 dBm

Reacquisition: -156 dBm

Dynamic Performance:

Maximum Altitude: Max. 18000 m

Maximum Velocity: Max. 515 m/s

Maximum Acceleration: 4G

Interfaces

I2C Interface:

Max. bit rate up to 400 kbps

UART Interface:

Adjustable: 4800 bps to 921600 bps

Default: 9600 bps

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

I/O Port Power Domain:

3.0 V

External Antenna Interface:

Antenna Type: Active

Antenna Power Supply: External

Power Management

Power Supply:

3.1 V to 4.3 V, Typical 3.3 V

Power Consumption (GPS+Galileo+IRNSS):

Acquisition: 99 mA @3.3 V

Tracking: 95 mA @3.3 V

Backup: 7 μA @3.3 V

General Features

Temperature Range: -40°C to +85°C

Dimensions: 26.4 mm × 18.4 mm × 6.8 mm

Weight: Approx. 8.2 g

Protocols: NMEA 0183

① Default Configuration: GPS+Galileo+IRNSS

* Under Development

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