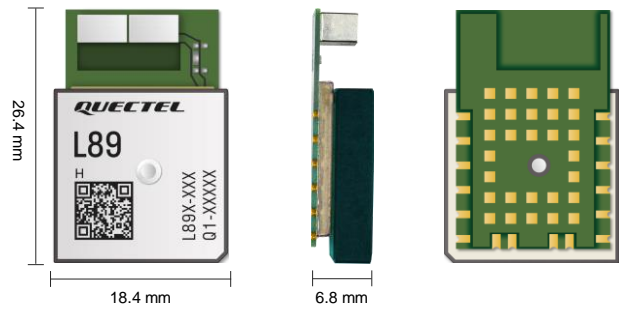


Quectel L89 R2.0

Compact NAvIC-enabled GNSS Module



The L89 R2.0 is a dual-band, multi-constellation GNSS module. It features a GNSS chipset engine that achieves exceptional performance by supporting concurrent reception of four GNSS constellations (GPS L1 C/A + Galileo E1 + QZSS L1 C/A + NAvIC L5) by default. It is compatible with Quectel L89 NAvIC-enabled GNSS module.

Compared with GNSS modules that track only GPS, GLONASS, or BDS signals, L89 R2.0 can receive and track more visible satellites, thereby significantly mitigating the multipath effect in deep urban canyons, reducing signal acquisition times, and improving positioning accuracy. With integrated LNAs and SAW filters, the module achieves higher sensitivity and increased anti-interference capability.

L89 R2.0 supports advanced power management enabling low-power GNSS sensing and position fix, which makes the module an ideal solution for power-sensitive and battery-powered systems.

By virtue of its reliable performance and low power consumption, L89 R2.0 is perfectly suited for applications such as real-time tracking systems and sharing economy services.



Key Features

- ✓ Multi-GNSS engine for GPS, GLONASS, Galileo, BDS, QZSS and NAvIC
- ✓ Reception of SBAS broadcast signals
- ✓ Integrated patch antenna and chip antenna
- ✓ Automatic antenna switching function
- ✓ Antenna detection and antenna short-circuit protection functions
- ✓ Improved sensitivity through integrated LNAs
- ✓ Integrated SAW filters for noise cancellation
- ✓ UART and I2C interfaces
- ✓ Integrated AGNSS function



EASY Technology



Low Power Consumption



Multi-constellation System



Tracking Sensitivity: -165 dBm



Operating Temperature Range: -40 to +85 °C



Anti-jamming



RoHS Compliant



Compact Size

Quectel L89 R2.0

GNSS Module	L89 R2.0
Dimensions	26.4 mm × 18.4 mm × 6.8 mm
Weight	Approx. 8.2 g
Temperature Range	
Operating Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +90 °C
GNSS Features	
Supported Bands	GPS/QZSS L1 C/A: 1575.42 MHz GLONASS L1: 1602.5625 MHz Galileo E1: 1575.42 MHz BDS B1I: 1561.098 MHz NAVIC L5: 1176.45 MHz
Default Constellations	GPS (L1 C/A) + Galileo (E1) + QZSS (L1 C/A) + NAVIC (L5)
Number of Tracking Channels	L1: 75 L5: 60
Number of Concurrent GNSS	4
SBAS	WAAS, EGNOS, MSAS, and GAGAN
Horizontal Position Accuracy ^①	Autonomous: 1.8 m
Velocity Accuracy ^②	Without Aid: 0.1 m/s
Acceleration Accuracy ^②	Without Aid: 0.1 m/s ²
Accuracy of 1PPS Signal ^②	100 ns
TTFF (with EASY) ^③	Cold Start: 15 s Warm Start: 5 s Hot Start: 1 s
TTFF (with EPO) ^③	Full Cold Start: 5 s
TTFF (without AGNSS) ^②	Cold Start: 35 s Warm Start: 28 s Hot Start: 1 s
Sensitivity	Acquisition: -148 dBm Tracking: -165 dBm Reacquisition: -157 dBm
Dynamic Performance ^②	Maximum Altitude: 10000 m Maximum Velocity: 500 m/s Maximum Acceleration: 4g
Certifications	
Regulatory	Europe: CE
Others	RoHS
Interfaces	
I2C	Up to 400 kbps
UART	Adjustable: 9600–921600 bps Default: 9600 bps Update Rate: 1 Hz (Default)
Protocol	NMEA 0183
Antenna Interface	
Antenna Type	Integrated or External Active
Antenna Power Supply	Internal (through EX_ANT)
Active Antenna Protection	Short-Circuit Protection and Open-Circuit Detection
Electrical Characteristics	
Supply Voltage Range	3.1–4.3 V, Typ. 3.3 V
I/O Voltage	Typ. 3.0 V
Current Consumption (@ Default Constellations, 3.3 V) ^②	Normal Operation: 32 mA @ Acquisition 32 mA @ Tracking Power Saving Mode: 51 µA @ Backup Mode

NOTE:

- ①: CEP, 50 %, 24 hours static, -130 dBm, more than 6 SVs.
- ②: Room temperature, all satellites at -130 dBm.
- ③: Open-sky, active high-precision GNSS antenna.