Quectel L96

Extremely Compact GNSS Module with Chip Antenna

L96 is a concurrent multi-GNSS receiver module with embedded chip antenna. With 33 tracking channels, 99 acquisition channels and 210 PRN channels, L96 supports concurrent reception of up to three GNSS systems (GPS+GLONASS+Galileo). The built-in LNA provides the module with better performance under weak signal areas. The embedded chip antenna reduces the total size of customers' applications. To meet varied application demands, L96 also provides an external antenna interface.

Compared with using GPS only, enabling multiple GNSS systems generally increases the number of visible satellites, reduces the time to first fix and increases positioning accuracy, especially when driving in rough urban environments.

Combining advanced AGPS called EASY™ (Embedded Assist System) and proven AlwaysLocate™ technology, L96 fully meets the industrial standard and provides greatly reduced TTFF and ultra-low power consumption. EASY™ technology allows L96 to calculate and predict orbits automatically using the ephemeris data (up to 3 days) stored in internal flash memory, so the module can fix position quickly even at low signal levels and provide low power consumption. With AlwaysLocate™ technology, L96 can adaptively adjust the ON/OFF time to achieve balance between positioning accuracy and power consumption according to the environmental and motional conditions.

Its super performance makes L96 ideal for automotive, industrial and consumer applications. Extremely low power consumption makes it easier to be applied to power sensitive devices, especially portable applications.

Key Benefits

- Ultra-compact size: 14.0mm × 9.6mm × 2.0mm
- Multi-GNSS engine for GPS, GLONASS, BeiDou, Galileo (RLM supported) and QZSS
- Embedded, omnidirectional and wideband antenna
- Built-in LNA for better sensitivity
- Dual SAW filters for better noise cancellation
- Support EASY™ and EPO advanced AGPS technologies without the need of any external memory
- AlwaysLocate™, an intelligent algorithm for power saving
- Ultra low tracking power consumption: 20mA
- LOCUS, embedded log saving function without the need of host or any external flash
- Support DGPS/SBAS (WAAS/EGNOS/MSAS/GAGAN)
- Great anti-jamming performance due to multi-tone active interference canceller
- Balloon mode, for high altitude up to 80km
- PPS VS. NMEA can be used in time service
- GLP/geo-fence/jamming detection/odometer functions

EASY™ Technology

Ultra Low Power Consumption

Extremely Compact Size

Super Tracking Sensitivity: -165dBm

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

Anti-Jamming

RoHS Compliant

Multi-GNSS Systems

Rev.: V1.2 | Status: Released

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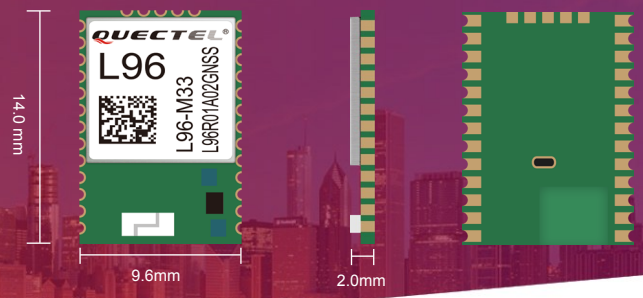

GNSS Features

Receiving Bands [Note 1]:

GPS/Galileo L1 C/A: 1575.42MHz

GLONASS L1 C/A: 1602.5625MHz

BD2 B1 C/A: 1561.098MHz

Channel Numbers:

33 Tracking Channels

99 Acquisition Channels

210 PRN Channels

SBAS:

WAAS, EGNOS, MSAS, GAGAN

Horizontal Position Accuracy:

Autonomous: <2.5m CEP

Velocity Accuracy:

Without Aid: <0.1m/s

Acceleration Accuracy:

Without Aid: <0.1m/s²

Timing Accuracy: ≤ 10ns

TTFF @-130dBm with EASY™:

Cold Start: <15s

Warm Start: <5s

Hot Start: <1s

TTFF @-130dBm without EASY™:

Cold Start: <35s

Warm Start: <30s

Hot Start: <1s

Sensitivity:

Acquisition: -148dBm

Tracking: -165dBm

Reacquisition: -160dBm

Dynamic Performance:

Maximum Altitude: Max. 18000m

Maximum Velocity: Max. 515m/s

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: 2.7V~2.9V

GPIO Interfaces:

3D_FIX Interface: 3D Fix Indicator

JAM_DET Interface: Jamming Detection Indicator

GEO_FENCE Interface: Geo-fence Boundary Indicator

External Antenna Interface:

Antenna Type: Passive or Active

Antenna Power Supply: External

Electrical Characteristics

Power Supply:

2.8V~4.3V, typical 3.3V

Power Consumption @Acquisition:

22mA @3.3V, -130dBm (GPS)

25mA @3.3V, -130dBm (GPS+GLONASS)

Power Consumption @Tracking:

20mA @3.3V, -130dBm (GPS)

20mA @3.3V, -130dBm (GPS+GLONASS)

Power Saving Modes:

2.8mA @AlwaysLocate™

7uA @Backup Mode

500uA @Standby Mode

4.8mA @Periodic Mode [Note 2]

General Features

Temperature Range: -40°C ~ +85°C

Dimension: 14.0mm × 9.6mm × 2.0mm

Weight: approx. 0.6g

Protocols: NMEA 0183/PMTK/PQ

Note 1:

GPS+GLONASS is the default GNSS configuration.

Note 2:

Average power consumption under periodic mode of 3s tracking mode & 12s standby mode

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