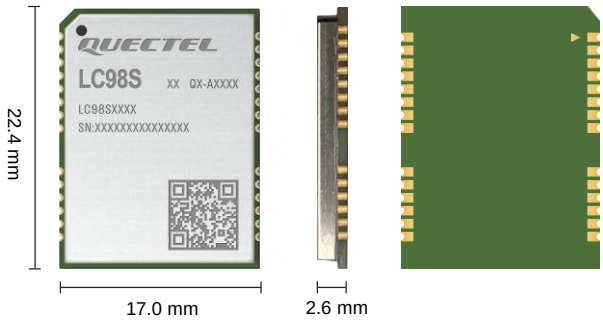
Quectel LC98S

High-precision Timing GNSS Module



The LC98S is a multi-constellation GNSS module that delivers high integrity, precision timing in demanding applications worldwide. It supports GPS, GLONASS, Galileo, BDS and QZSS constellations, and can acquire and track three GNSS systems and QZSS concurrently. Its timing functionality can be maintained even while tracking a single satellite.

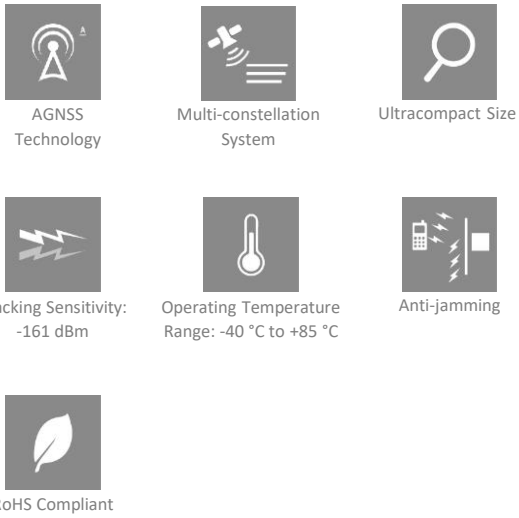
The LC98S satisfies the requirements for industrial timing applications on power grids and is an ideal solution for timing of 5G/O-RAN networks.

The integrated AGNSS feature can improve the signal acquisition process and shorten the time needed to achieve a first position fix and output an accurate and stable PPS pulse. The module also features a high dynamic range receiver with both analog and digital interference mitigation, enabling applications in wireless communications equipment.

The LC98S internal chip is compliant with the “AEC-Q100” qualification. Our strictly controlled manufacturing and testing processes guarantee the high quality of each module.

Key Features

- Ultracompact size: 22.4 mm × 17.0 mm × 2.6 mm
- Multi-GNSS engine for GPS, GLONASS, Galileo, BDS and QZSS
- Integrated AGNSS function
- Single-satellite timing feature
- Ideal for O-RAN, 5G and Industrial timing processes
- Ideal for LoRa base station timing applications



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GNSS Module	LC98S
Dimensions	22.4 mm × 17.0 mm × 2.6 mm
Weight	Approx. 1.68 g
Temperature Range	
Operating Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +90 °C
GNSS Features	
Supported Bands	GPS: L1 C/A GLONASS: L1 Galileo: E1 BDS: B1I QZSS: L1 C/A
Default Constellations	GPS + BDS
Number of Channels	48 (Tracking)/2 (Acquisition)
Number of Concurrent GNSS	3 + QZSS
SBAS	WAAS, EGNOS, MSAS and GAGAN
Horizontal Position Accuracy①	Autonomous: 1.5 m
Velocity Accuracy②	Without Aid: 0.1 m/s
Acceleration Accuracy②	Without Aid: 0.1 m/s²
Timing Accuracy②	1PPS < 13.6 (±6.8) ns @ 1σ
1PPS Jitter②	±6.0 ns
TTFF (with AGNSS)③	Warm Start: 2 s
TTFF (without AGNSS)②	Cold Start: 33 s Warm Start: 28 s Hot Start: 2 s
Sensitivity (@ Default Constellations)④	Acquisition: -146 dBm Tracking: -161 dBm Reacquisition: -155 dBm
Dynamic Performance②	Maximum Altitude: 18000 m Maximum Velocity: 515 m/s Maximum Acceleration: 4g
Certifications	
Regulatory	**Europe:** CE
Others	RoHS
Interface	
UART	Adjustable: 9600–921600 bps Default: 115200 bps Update Rate: 1 Hz (default), up to 5 Hz
Protocol	
Protocol	NMEA 0183
External Antenna Interface	
Antenna Type	Active or Passive
Antenna Power Supply	External
Electrical Characteristics	
Supply Voltage Range	3.0–3.6 V, Typ. 3.3 V
I/O Voltage	Same as VCC
Power Consumption (@ Default Constellations, 3.3 V)②	Normal Operation: 78 mA (257.4 mW) @ Acquisition 74 mA (244.2 mW) @ Tracking

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: Demonstrated with a good external LNA.

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