



Secured Dual Band (L1/L5) GNSS Timing Module with Nanosecond Accuracy

Res720™ Multi-GNSS Timing Module

Interference Detection & Mitigation

The RES720 offers an industry-leading, Value-engineered solution for carrier grade timing products. It is designed to meet the resilient timing requirements mandated by the 2020 Executive Order for positioning, navigation, and timing (PNT) services.

The RES720 module offers unparalleled accuracy to meet the stringent synchronization needs of the next-generation networks in various industry verticals including 5G X-Haul, Smart Grid, Data Center, SATCOM, Calibration Services and Industrial Automation applications.

Dual Band

With dual-band multi-constellation capability, RES720 reduces the timing error under clear skies to < 5 nanoseconds without the need for an external GNSS correction service.

Additionally, the RES720 offers the benefit of higher power L5 signals (twice as much power as L1) with its greater bandwidth, and advanced signal design lowers the risk of interference and improves multipath protection. The multi-band capability of the RES720 allows it to compensate for the ionosphere error while reducing the timing error under clear skies to few nanoseconds without further need for correction.

The RES720 has a single RF input for all the GNSS bands to simplify host circuitry. It uses dual SAW filters for exceptional signal selectivity and out-of-band attenuation thus providing the best total cost to performance ratio.

Nanosecond-level Accuracy

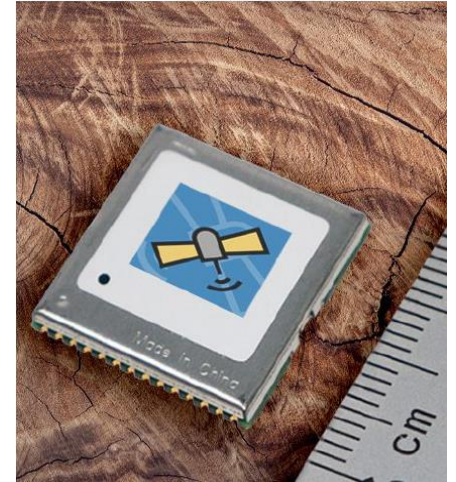
The RES720 offers precision time synchronization with 5 nanoseconds accuracy in normal mode of operation. RES720 is designed to meet stringent timing requirements of critical infrastructure and help operators maximize the performance of their networks and optimize the return on their infrastructure investments.

Smart GNSS Assurance™

To protect against today's sophisticated attacks and signal beaconing, Protempis' timing module offers automatic detection and failover with highly reliable anti-jamming and anti-spoofing capabilities.

Advanced Security Features

With the ideals of zero trust security, the RES720 provides secure boot and anti-tampering features by default. Additionally, RES720 offers T-RAIM to provide the highest-level timing integrity.



Key Features

- Nanosecond-level timing accuracy (< 5 ns 1-sigma).
- 1PPS/PP2S output.
- Dual Band (L1 and L5) Multi constellation GNSS timing module.
- Protection against jamming and spoofing with Protempis' Smart GNSS Assurance™
- Advanced Security features that includes secure boot, secure interface and T-RAIM.
- Supports industry standard protocols such as NMEA and TSIP for configuration and Control.
- Advanced Multi-path Mitigation capabilities to distinguish and process directly received signal from reflected signals.



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Protocols & Configuration

Protempis' timing modules support the industry standard NMEA (National Marine Electronics Association) and TSIP for configuration and control.

Timing Output

- 1 PPS(± 5 ns)/PP2S
- Accuracy - <5 ns (1-sigma, clear sky, absolute mode)

Constellations & Bands

BANDS	FREQUENCY	CONSTELLATIONS
L1	1602 MHz 1575.42 MHz 1561.098 MHz	GPS, GLONASS, QZSS, Galileo BeiDou
L5	1176.45 MHz	GPS, QZSS, Galileo & BeiDou, NavIC

Acquisition

- Cold Start 30s
- Hot Start 1s

Sensitivity

- Tracking & Nav: -166 dBm
- Reacquisition: -160 dBm
- Hot Starts: -157 dBm
- Cold Starts: -148 dBm

Smart GNSS Assurance™ & Security

- Anti-Jamming: Active CW detection and removal
- Anti-Spoofing: Advanced anti-spoofing algorithms
- Advanced Multi-path Mitigation
- Secure Boot
- Secure Firmware Update

Protocol

- NMEA
- TSIP

Package

- Edge Castellation
Constellations & Bands
19mm x 19mm x 2.5mm (L x W x H)

Integrity Report

- T-RAIM active, phase uncertainty
- Time pulse rate/duty-cycle,
Inter-constellation biases)

Environmental Data, Quality & Reliability

- Operating temp. -40 °C to $+85$ °C
- Storage temp. -50 °C to $+105$ °C
- Humidity 5%-95% (non-condensing)
- RoHS compliant (lead-free)
- Green (halogen-free)
- ETSI-RED compliant

Electrical Data

- Supply voltage: 3.3VDC to $\pm 5\%$
- Power consumption: 0.5W max.



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