

# RES720™ Multi-GNSS Timing Module on Carrier Board

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

### Resilient Timing

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 nanosecond 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 multi-path 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 nanosecond 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 signals meaconing, Trimble's timing module offers automatic detection and failover with highly reliable anti-jamming and anti-spoofing capabilities.

### Advanced Security Features

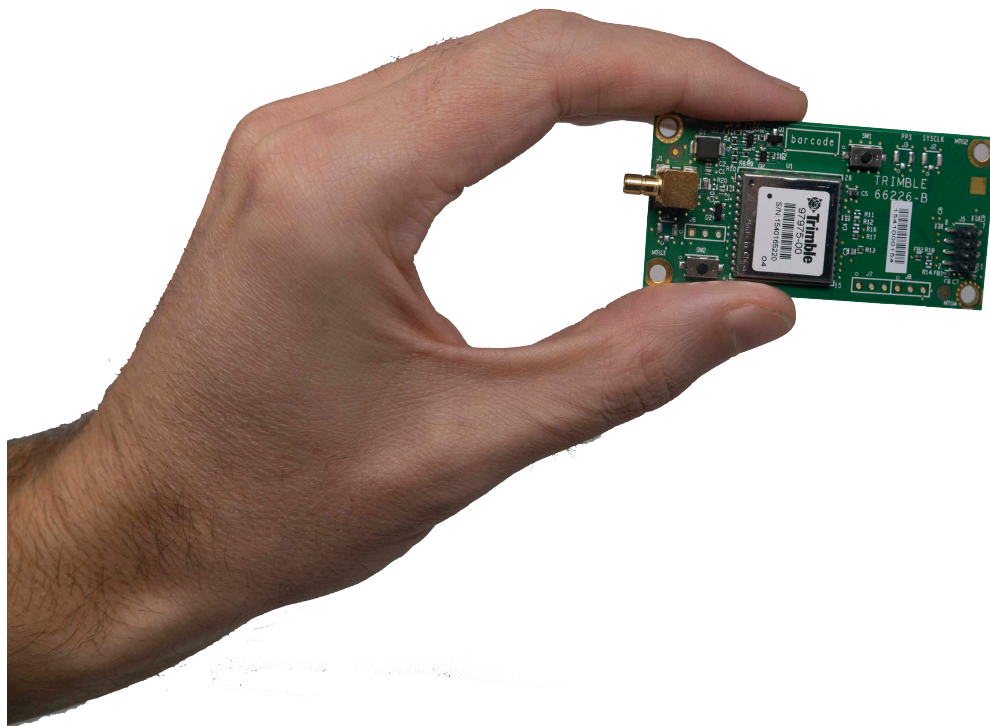
With the ideals of zero trust security, the RES720 provides secure boot and anti-tampering features by default. Additionally, RES720 offers T-RAIM to provide the highest level timing integrity.

### Protocols & Configuration

Trimble's timing modules support industry standard NMEA (National Marine Electronics Association) and TSIP (Trimble Standard Interface Protocol) for configuration and control.

## Key Features

- ▶ Nanosecond-level timing accuracy (5 ns 1-sigma).
- ▶ Dual Band (L1 and L5) Multi-constellation GNSS timing module.
- ▶ Protection against jamming and spoofing with Trimble's 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.



## Timing Output

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

## Constellations & Bands

Bands	Frequency	Constellations
L1	1602MHz & 1575.42 MHz	GPS, GLONASS, QZSS, Galileo
	1561.098 MHz	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

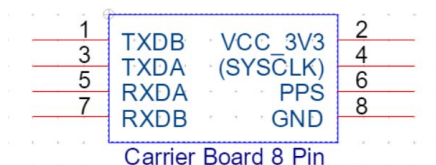
- Anti-Jamming: Active CW detection and removal
- Anti-Spoofing: Advanced anti-spoofing algorithms
- Advanced Multi-path Mitigation
- Secure Boot
- Secure Firmware Update

## Protocol

- NMEA
- TSIP

## Pin Assignments

RES720 Carrier Board Supports both 8 pin and 16 Pin configurations.  
The 16PIN configuration will be provided upon request.



## Trimble P/N

122970-00

## Interface Characteristics

- 1 Serial Port
- RF input Connector: Right Angle SMB

## Dimension

Length: 2.6"  
Wide: 1.25"  
Mounting hole size: 0.125"

## 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 Complaint

## Electrical Data

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

## Backward Compatibility

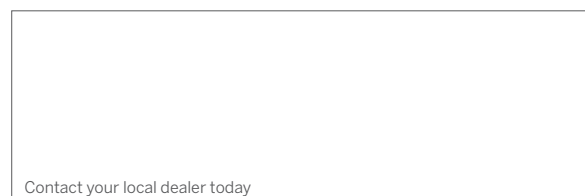
This carrier card is compatible with brownfiled deployments.

Visit [www.trimble.com/timing](http://www.trimble.com/timing) for part numbers and information about where to buy.

- Starter Kits Available.
- Parts of the product are patent protected.
- Trimble has relied on representations made by its suppliers in certifying this product as RoHS-II compliant.
- Specifications subject to change without notice.
- Trimble is not responsible for the operation or failure of operation of GPS/GNSS satellites or the availability of GPS/GNSS satellite signal.

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