Datasheet

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

ICM720™ Multi-GNSS Timing Module on Carrier Board

Resilient Timing

The ICM720 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 ICM720 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, ICM720 reduces the timing error under clear skies to < 10 nanoseconds without the need for an external GNSS correction service.

Additionally, the ICM720 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 ICM720 allows it to compensate for the ionosphere error while reducing the timing error under clear skies to a few nanoseconds without further need for correction.

The ICM720 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 ICM720 offers precision time synchronization with < 10 nanoseconds accuracy in normal mode of operation. ICM720 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, Protempis'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 ICM720 provides secure boot and antitampering features by default. Additionally, ICM720 offers T-RAIM to provide the highest-level timing integrity.

Protocols & Configuration

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

Embed in you design

Get your product to market faster by embedding the carrier board in your application. The carrier board is a proven design and fully tested.

Protempis is an industry leader in timing technology.

Key Features

- Nanosecond-level timing accuracy (< 10 ns 1-sigma).
- Dual Band (L1 and L5) Multiconstellation GNSS timing module.
- Antenna OPEN/SHORT Detection
- RF Input Surge Protection
- Protection against jamming and spoofing with Protempis'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.

Protempis
Precision Time. Perfected.

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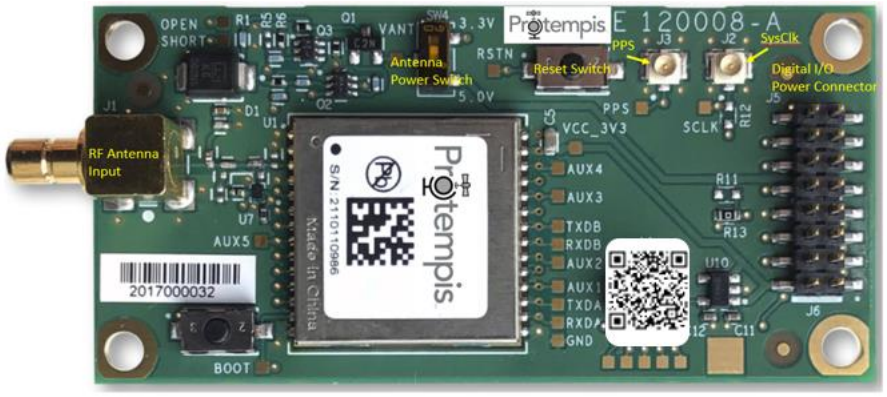

Timing Output

- 1 PPS (± 10ns)/PP2S
- Accuracy - < 10 ns (1-sigma, clear sky, absolute mode)

Protocol

- NMEA
- TSIP

Antenna Power Switch

+3.3 or + 5V

J3 Connector – PPS Output

U.FL (UMCC) Connector Receptacle, Male Pin

J2 Connector – 10MHz Frequency Output

U.FL (UMCC) Connector Receptacle, Male Pin

Digital I/O Power connector Pinout

Pin	Function	Description
1	TXDB	Port B transmit, CMOS 3.3 V
2	Prime power input	+3.3 V DC ±0.3 V DC
3	TXDA	Port A transmit, CMOS 3.3 V
4	Sysclk	10MHz Frequency Output
5	RXDA	Port A receive, CMOS 3.3 V
6	1PPS	One pulse-per-second, CMOS 3.3 V
7	RXDB	Port B receive, CMOS 3.3 V
8	GND	Ground, Power and Signal
9	Antenna power input	5 V DC, 55 mA max
10	Reset input	Reset
11	Reserved, do not connect	Reserved
12	Reserved, do not connect	Reserved
13	Reserved, do not connect	Reserved
14	Reserved, do not connect	Reserved
15	Reserved, do not connect	Reserved
16	Reserved, do not connect	Reserved

Interface Characteristics

- 2 Serial Ports
- RF input Connector: Right Angle SMB
- Digital I/O Connector
  single 16-pin (2×8) male header connector for both power and data I/O

Dimension

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

Integrity Report

- T-RAIM active, phase uncertainty
- Time pulse rate/duty cycle, Interconstellation 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 ±5%
- Power consumption: 0.5W max

Surge Protection

RF Input 6.0 V TVS diode with a peak pulse power dissipation of 600 W (10/1000 µs waveform)

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