

ALTM-T

M.2 Alternative Location Timing Module

Alternative Location and Timing Module-T (ALTM-T) delivers reliable, continuous access to positioning, navigation, and timing (PNT) information, even in GPS/GNSS-challenged environments. The small-form-factor M.2 Iridium STL® receiver complements GNSS by leveraging a signal approximately 1,000 times stronger and is capable of penetrating indoors and other GNSS-obstructed areas.

ALTM-T is ideal for applications demanding precise timing and redundancy with other time sources. Typical timing accuracies are < 50 ns, RMS using its on-board oscillator and even greater accuracies can be achieved via the external oscillator input.

This compact module combines a satellite receiver, a UART serial port for data I/O, a power amplifier for a 3.3V active antenna, and a 1-PPS timing signal. For robust operation and easy integration, ALTM-T conforms to the M.2 3042 B-key standard form factor. ALTM-T provides standard NMEA-0183 messages.

General

- Integrated power amplifier for 3.3V active antenna
- Optional 10 or 26 MHz external 1.8V or 3.3V reference clock input
- USB 2.1 per M.2 specifications
- All input/output is 1.8V and via M.2 GPIO pins
- 1 PPS output and NMEA 0813 messaging
- 511mW power consumption and size < 13 cm²

Weight:	4g
Dimensions:	30 x 42 mm (1.1811" x 1.65") M.2 Type 3042-D5-B
Interface connector:	PCIe M.2 B-Key Standard
Mating connector:	TE Connectivity 2199230-3
STL RF connector:	U.FL Connector Receptacle. Male, Surface Mount
Mounting:	JAE Electronics SM3ZS067U410-NUT1-R1200
Operating temperature:	-21°C to +60°C
Input voltage range:	3.3V±5%
Average power w/ native timing:	511mW
Average power w/ external clock reference:	486mW
Recommended antenna:	Passive Iridium Helical
Position accuracy:	
Static position accuracy:	Typically < 10m*
Dynamic position accuracy:	Typically < 50m*
Timing accuracy:	
Native Oscillator:	48ns StdDev relative to GNSS PPS
External Reference:	34ns StdDev relative to GNSS PPS**

*With C/N0 > 70dB, 3-4SVs, 250+ BPM

**Using a Novus NR3606 GPSDO

Applications

- Precision Timing Synchronization
- Satellite Communications Terminals
- Assured PNT

Front View



Back View



About NAL Research

NAL Research is a pioneer in delivering trusted and resilient connectivity and PNT solutions—designed to meet the dynamic communications, data intelligence, location, and timing needs of the future. In 2024, NAL Research and Blue Sky Network strategically merged to optimize operations and provide a diverse enterprise and government customer base with transformative solutions and enhanced service and support. NAL and Blue Sky Network's combined portfolio now includes emerging satellite and mobile technology products, satellite-based tracking systems, powerful APNT modules, intelligent software applications, IoT tracking, and two-way devices enabling seamless global connectivity.

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