

An Integrated, Battle-Proven, Precise, and Reliable GNSS/IMU Tactical Navigator for Land, Sea, and Air Applications

ADVANTAGES

- Excellent navigation performance in GNSS-denied environments
- Embedded Kalman Filter based sensor fusion algorithm provides navigation solution using diverse sensor data in GNSS-denied environments
- Multiple communication interfaces
- Easy integration for Size, Weight, and Power (SWaP) constrained applications

FEATURES

- Tactical grade IMU (Ring Laser Gyroscope or MEMS options available)
- Commercial single and commercial dual frequency, SAASM, and M-Code GNSS receivers options
- GPS-based 1 PPS signal (RS-422 differential and 10V single-ended)
- Blended INS/GPS navigation data solution (position, velocity, attitude) at 100 Hz
- Raw ΔV and $\Delta \theta$ measurements available at rates up to 100 Hz

OVERVIEW

Providing high accuracy real-time Time Space Position Information (TSPI) on static and dynamic platforms, the Advanced Tactical Navigation System (ATACNAV™) system integrates a high-performance Global Navigation Satellite System (GNSS) receiver and a tactical grade Inertial Measurement Unit (IMU) to provide uninterrupted and continuous position, velocity, attitude (pitch, roll, heading), and timing information. For benign environments, the ATACNAV™ operates in Blended Navigation Mode, seamlessly combining the pin-point accuracy of a GNSS receiver and the stability of the IMU. In GNSS denied environments, the ATACNAV™ provides an unjammable navigation solution based upon the IMU, keeping the mission on-track and on-time.

DESCRIPTION

The ATACNAV™ is a configurable unit consisting of modular components tailorable to meet mission performance requirements. Available in a standard single enclosure or a mini enclosure paired with an external IMU, the ATACNAV™ is a small, lightweight, and low power navigation solution ready for integration on a variety of platforms. GNSS receiver options include a standard commercial model, a SAASM capable GPS receiver, or an M-Code receiver. The ATACNAV™ incorporates a tactical grade HG1700 or HG1930 IMU. For missions demanding a navigation grade IMU, see the ATACNAV-HA™ product line by ASEI.

INTERFACES

- Three (3) RS-422 serial data ports (921.6 bits/second)
- Dual 10/100 ethernet ports
- Four (4) discrete inputs and four (4) discrete outputs
- GPS 1 PPS in 10V single-ended and differential signaling

ADDITIONAL OPTIONS

- MIL-STD-1553 bus interface for host platform interoperability
- The GPS transcoder outputs an L1 C/A signal synchronizing all GPS receivers on the host platform to the ATACNAV navigation solution

CONFIGURATION GUIDE

GPS Receiver Options	Receiver Code
Commercial (L1)	1-0
Commercial (L1/L2)	2-0
SAASM—IEC	4-0
SAASM—Collins	4-R
M-Code	5-0
IMU & Enclosure Options	IMU/Encl Code
HG1700 with Std Encl	0
HG1930 with Mini Encl	3
Additional Options	Option Code
MIL-STD-1553	3
GPS transcoder	T

PART NUMBER CONFIGURATION

ASEI—AN—00X-

Receiver Code

IMU/Encl Code

Option Code

ELECTRICAL

Power

Power consumption	22 W (typical)
Input voltage (nom.)	+28 VDC
Input voltage (range)	+19 to +36 VDC

Antenna LNA Power

Output voltage	+5 VDC
Maximum current	100 mA

GPS Transcoder INTERFACES

RS-422 (921.6 bps)	3
Ethernet 10/100	2
Discrete inputs	4
Discrete outputs	4
GPS 1 PPS single-ended (10V)	1
GPS 1 PPS 5V differential	1
MIL-STD-1553 ¹	1
GPS transcoder output ²	1

ENVIRONMENTS

Temperature

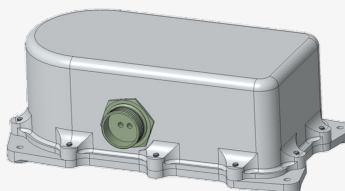
Operating	-40 to 85 °C
Storage	-40 to 85 °C

Humidity 95% non-condensing

Altitude 50,000 feet

PHYSICAL

Standard Enclosure



Standard enclosure

Dimensions	12.7 x 7.0 x 4.5 in
Weight	8.5 lbs
Connector	D38999/24WJ46PN

Mini Enclosure with External



Mini enclosure

Dimensions	4.23 x 5.11 x 4.85 in
Weight	3.4 lbs
Connector	D38999/24WJ46PN

External IMU

Volume	5 in ³
Weight	< 0.35 lbs

PERFORMANCE DURING GNSS OUTAGES

Outage Duration (seconds)	GPS/IMU	SBAS ³	Position Accuracy (m) RMS		Position Accuracy (m/s) RMS	Attitude Accuracy (mrad) RMS		
			Lat/Long	Altitude		Roll ⁶	Pitch ⁶	Azimuth ⁶
0 (No outage)	Commercial (L1, L1/L2)	Yes	< 1.5	< 3.0	< 0.1	< 1.5	< 1.5	< 3.0
	Commercial (L1, L1/L2)	No	< 3.0	< 8.0	< 0.1	< 1.5	< 1.5	< 3.0
	SAASM ^{4,5} (Y-Code)	N/A	< 5.0	< 8.0	< 0.1	< 1.5	< 1.5	< 3.0
60 ⁷	HG1700	N/A	< 5.0	< 7.5	< 0.2	< 1.0	< 1.0	< 1.5
	HG1930	N/A	< 5.0	< 7.5	< 0.2	< 1.0	< 1.0	< 1.5

NOTES

- Requires MIL-STD-1553 option
- Requires GPS transcoder option
- SBAS performance specification is for Continental United States (CONUS) only
- Authorized receiver with valid GPS key (i.e. tracking Y-Code)
- For position and velocity values Subject to Precise Positioning Service Signal in Space (PPS SIS) performance requirements
- After 30 g-seconds of maneuvering
- Accuracy based on at least 120 seconds of blended navigation operation and a minimum of 30 g-seconds of maneuvering

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