

COMPACT INERTIAL NAVIGATION SYSTEMS

FEATURES

- Compact, Low Power & Light Weight
- Shock Survival up-to 20g
- Advanced Statistical Filtering
- Excellent bias stability (1°/hr) MEMS gyro
- MIL-STD-461F & MIL-STD-810G compliant

CNP NS200S L/H
CNP NS500T L/H

APPLICATIONS

- UAV & Aircraft Navigation
- Unmanned Vehicle Navigation
- Vehicle Electronics
- Robotics
- Dynamic motions of UUV, UGV, AGV, ROV
- Personal Tracking



DESCRIPTION

Canopus family consists of compact, rugged, GNSS aided and high performance MEMS Inertial Navigation Systems and AHRS. The device incorporates MEMS based sensors : tri-axial accelerometers, tri-axial gyroscopes and magnetometer, which are thermally compensated and calibrated for misalignment, bias and scaling errors, using state of the art calibration facilities. With the integration of these MEMS sensors, extended Kalman filter, air data sensor and highly sensitive GNSS receiver, the device delivers accurate estimations of position, velocity, attitude and heading information in dynamic environments.

The device samples raw sensors at 1000 Hz and filtered data can be obtained at flexible update rates.

Canopus devices are suitable for airborne as well as land applications.

Variants:

Several variants of INS are available in the CANOPUS family, depending on the end application. The **NS200S** has a single L1 GNSS receiver, suitable for standalone applications. **NS500T** has twin L1 GNSS receivers (dual antenna system). It gives better heading accuracy, redundancy in GNSS and is suitable for antenna/platform stabilization and other similar applications.

Depending on the dynamics expected in the application, the higher versions of the CANOPUS family **NS200S** and **NS500T** are available in low dynamics (suffix L) and high dynamics (suffix H) versions.

TECHNICAL SPECIFICATIONS

Technical Specifications				
Parameter Value	CANOPUS			
	NS200SL	NS200SH	NS500TL	NS500TH
Acceleration				
Range	±2 g	±6 g	±2 g	±6 g
Noise Density	3 mg /√Hz	5 mg /√Hz	3 mg /√Hz	5 mg /√Hz
Resolution	0.1 mg	0.1 mg	0.1 mg	0.1 mg
Bias Stability	< 4 mg	< 4 mg	< 4 mg	< 4 mg
Angular Rate				
Range	±100 °/s	±300 °/s	±100 °/s	±300 °/s
Noise Density	0.01 °/s/√Hz	0.02 °/s/√Hz	0.01 °/s/√Hz	0.02 °/s/√Hz
Resolution	0.02 °/s	0.05 °/s	0.02 °/s	0.05 °/s
Bias Instability	1°/hr	< 2°/hr	1°/hr	< 2°/hr
Position/ Velocity Accuracy				
Position	<2.5m CEP with single freq. GPS <25m / min without GPS		<2.5m CEP with single freq. GPS <25m / min without GPS	
Velocity	<0.2 m/s with GPS <0.8 m/s (in 1 min) without GPS		<0.2 m/s with GPS <0.8 m/s (in 1 min) without GPS	
Air Speed				
Range	0 - 300 m/s		0 - 300 m/s	
Accuracy	2 m/s		2 m/s	
Altitude				
Range	0 – 15 km	0 – 15 km	0 – 15 km	0 – 15 km
Accuracy ¹	< 2 m	< 2 m	< 2 m	< 2 m
Attitude				
Roll Range	±180°	±180°	±180°	±180°
Pitch Range	±90°	±90°	±90°	±90°
Roll, Pitch Accuracy*	< 0.2° (static), 0.3° (dynamic) (1σ)		< 0.2° (static), 0.3° (dynamic) (1σ)	
Heading Range	±180°	±180°	±180°	±180°
Heading Accuracy ^{2,3,4,5}	< 0.5° (1σ)	< 0.5° (1σ)	< 0.33° (1σ)	< 0.33° (1σ)
Angle Resolution	< 0.01°	< 0.01°	< 0.01°	< 0.01°
Magnetometer Range	± 4 gauss		± 4 gauss	
GPS				
Type	72 channels L1, GNSS (GPS, GLONASS, Beidou, GAGAN, Galileo, SBAS)		72 channels L1, GNSS (GPS, GLONASS, Beidou, GAGAN, Galileo, SBAS)	
TTFB* Cold Start	26 s	26 s	26 s	26 s
Requisition Time	< 1 s	< 1 s	< 1 s	< 1 s
GPS Modules	1	1	2	2

1: Post user calibration

2: Accuracy after magnetic calibration and setting correct declination / offset angle

3: After proper magnetic calibration for Hard Iron and Soft Iron disturbances, and in static magnetic field

4: with internal magnetometer

5: 50% at 30m/s with GPS

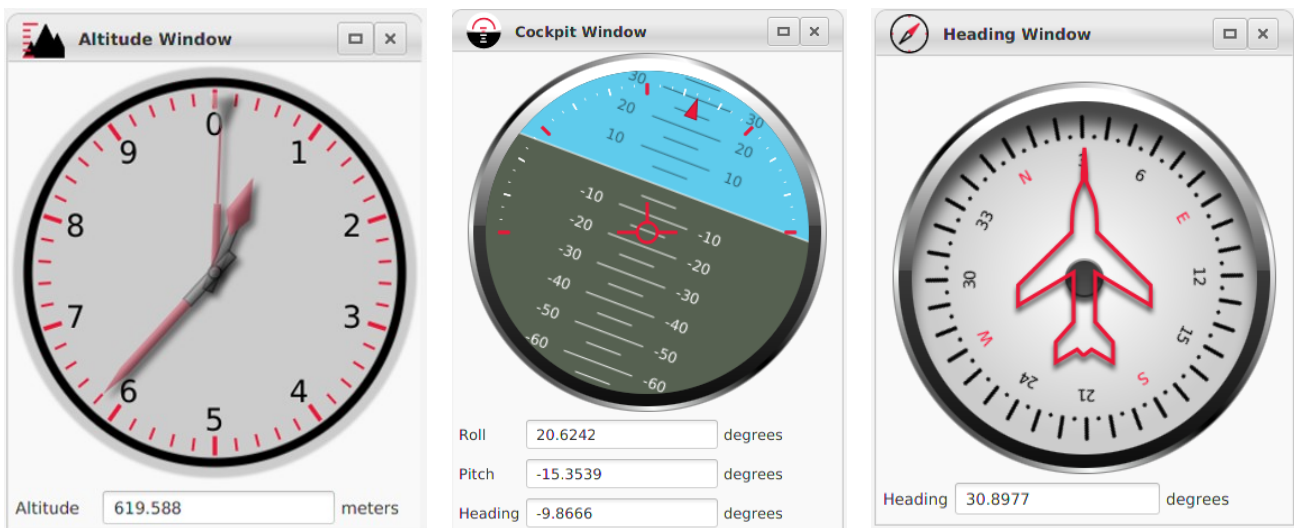
* : availability of GPS fix or with external velocity aiding

TECHNICAL SPECIFICATIONS

Parameter Names	Parameter Values			
	CANOPUS			
	NS200SL	NS200SH	NS500TL	NS500TH
Electrical				
Input Voltage	+9 to +36 VDC	+9 to +36 VDC	+9 to +36 VDC	+9 to +36 VDC
Current Consumption	400mA @ 12V	400mA @ 12V	450mA @ 12V	450mA @ 12V
Physical				
Weight	385 gms	385 gms	390 gms	390 gms
Size	64 mm (W) x 90 mm (B) x 45 mm (H)	64 mm (W) x 90 mm (B) x 45 mm (H)	64 mm (W) x 90 mm (B) x 45 mm (H)	64 mm (W) x 90 mm (B) x 45 mm (H)
Update rate	Up to 50 Hz	Up to 50 Hz	Up to 50 Hz	Up to 50 Hz
Interfaces	RS232, RS422, 1PPS		RS232, RS422, 1PPS	
Environment (As per JSS55555)				
Operating Temperature	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C
Storage Temperature	-45°C to +90°C	-45°C to +90°C	-45°C to +90°C	-45°C to +90°C
Humidity	10% to 90% RH (non - condensing)	10% to 90% RH (non - condensing)	10% to 90% RH (non - condensing)	10% to 90% RH (non - condensing)
Survival Shock	20g	20g	20g	20g
IP Protection	IP67	IP67	IP67	IP67
Vibration	0.02 g ² /VHz		0.02 g ² /VHz	
EMI/EMC	As per MIL-STD-461F		As per MIL-STD-461F	
Environmental Tests	As per MIL-STD-810G		As per MIL-STD-810G	

GRAPHICAL USER INTERFACE

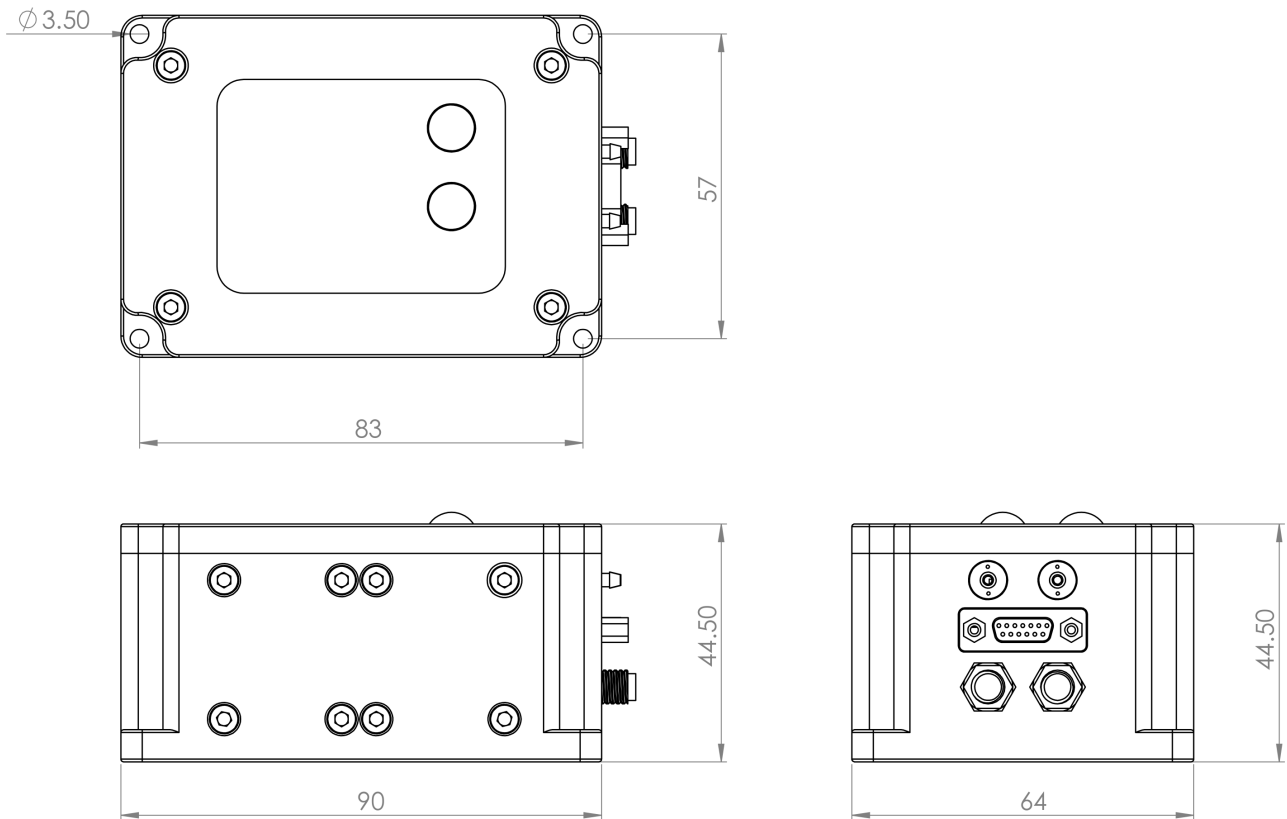
Below are some representational snapshots.



MECHANICAL DIMENSIONS

All dimensions in mm.

These are representational images. Dimensions may vary slightly depending on the version.



ORDERING INFORMATION

Ordering Part No.: **CNP NS200S - X**

200S - Navigation System Single L1 GNSS
500T - Navigation System Twin L1 GNSS

L - Low Dynamics
H - High Dynamics