

# Innalabs<sup>®</sup>

## Attitude and Heading Reference System

GPS aided

### INN-400-5

Datasheet

November, 2009

This document contains information proprietary to Innalabs<sup>®</sup>

The **INN-400-5** series of **Innalabs**<sup>®</sup> **Attitude and Heading Reference Systems (AHRS)** is a high-performance inertial system incorporating precision micromechanical gyroscopes, quartz accelerometers and magnetometer. It is embedded with GPS receiver and a navigation computer. It is designed for applications requiring high accuracy, long life and high reliability.

### Features

- Heading Dynamic Accuracy of 0.8 deg
- Kalman Filter Algorithm
- High Stability Solid-state Sensors
- EMI & Vibration Resistant
- Engineering Support

### Applications

- UAV Control
- Land Vehicle Guidance
- Platform Stabilization
- Avionics Systems

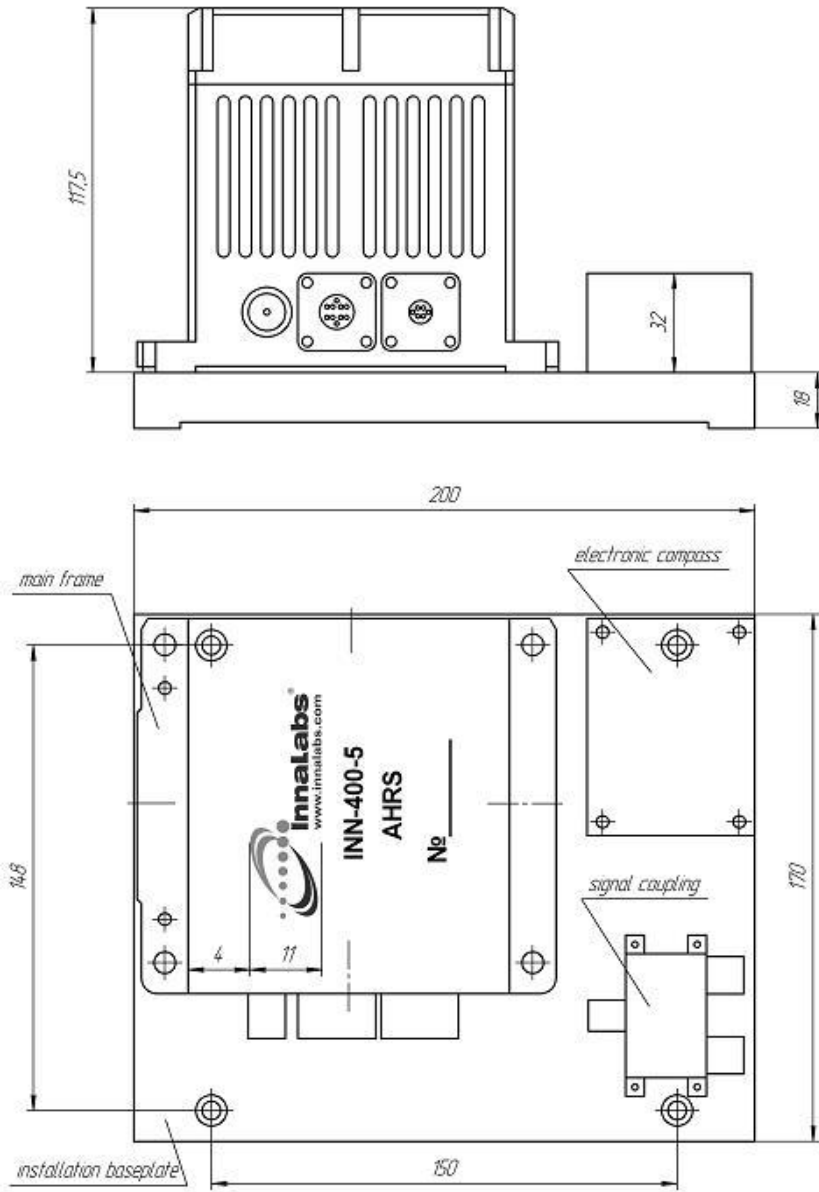


The **INN-400-5 AHRS** determines the full angular orientation of any vehicle or other carrier in the 3D space, and estimates vehicle orientation angles with high accuracy for both motionless and moving vehicles. EMI & Vibration resistance makes it an ideal navigation and control system for UAV applications.

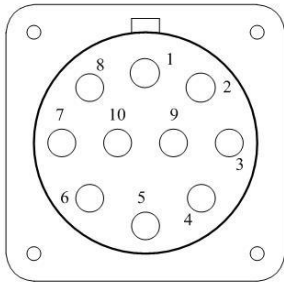
## SPECIFICATIONS

Parameter	Unit	Value
Update Rate	Hz	<100
Startup Time	sec	< 1
Full Accuracy Data	sec	180
<b>Heading</b>		
Range	deg	0 ... 360
Static Accuracy over Temperature Range	deg RMS	0.5
Dynamic Accuracy	deg	0.8
Resolution	deg	0.1
<b>Attitude</b>		
Range: Pitch, Roll	deg	±90, ±180
Static Accuracy over Temperature Range	deg	0.3
Dynamic Accuracy	deg RMS	0.5
Resolution	deg	0.1
<b>Angular Rate</b>		
Input Range: Yaw, Pitch, Roll (optional)	deg/sec	±300
Bias stability in Temperature Range	deg/sec RMS	0.05
Scale Factor Accuracy	% FS	0.1
Non Linearity	% FS	0.1
Random Walk	deg/vhr	6
<b>Linear acceleration</b>		
Input Range: X/Y/Z	g	±10
Bias Stability over Temperature Range	mg, RMS	1.0
Scale Factor Accuracy	% FS	< 0.1
NonLinearity	% FS	0.1
Random Walk	m/s/vhr	0.06
<b>Environment</b>		
Operating Temperature	deg C	-40 to +60
Vibration (random)	g <sup>2</sup> /Hz	0.04
Shock	g	100, /2 sine
<b>Electrical</b>		
Input Voltage	VDC	+27±9
Power Consumption	W	8
Digital Output Format	-	RS-232,RS422,CAN2.0 Option
<b>Physical</b>		
Dimensions (L*W*H)	mm	200 * 170 * 135.5
Weight	kg	≤1.5

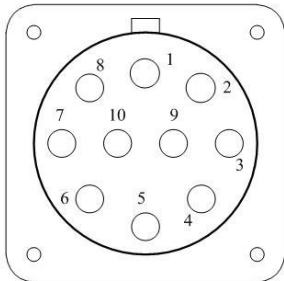
**Dimensions drawing (mm):**



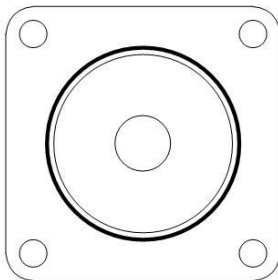
**Connector pin description:**



PIN	Signal	PIN	Signal
1	Input power	6	RS422 RXD+
2	NC	7	RS422 RXD-
3	Ground	8	RS232 TX
4	RS422 TXD+	9	RS232 RX
5	RS422 TXD-	10	RS232 GND



PIN	Signal	PIN	Signal
1	Input power	6	COMPASS – RS232 GND
2	NC	7	NC
3	Ground	8	NC
4	COMPASS – RS232 TX	9	NC
5	COMPASS – RS232 RX	10	NC



SMA-MMCX

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