



MEMS IMU AIST-330 / AIST-330-G

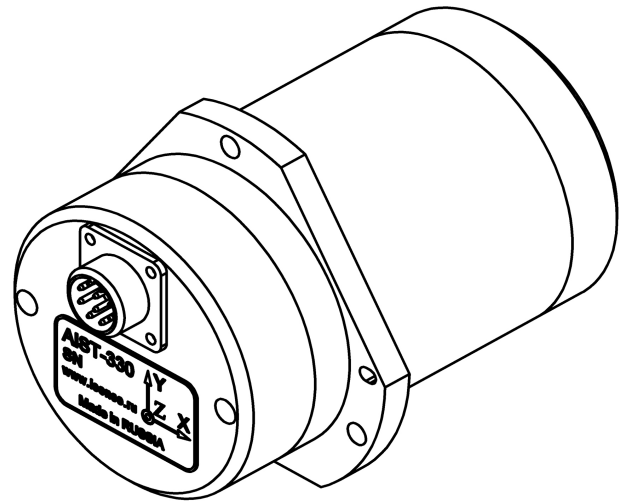
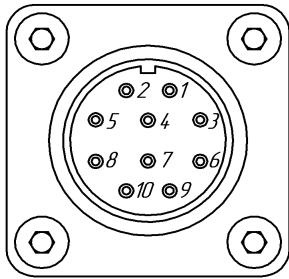
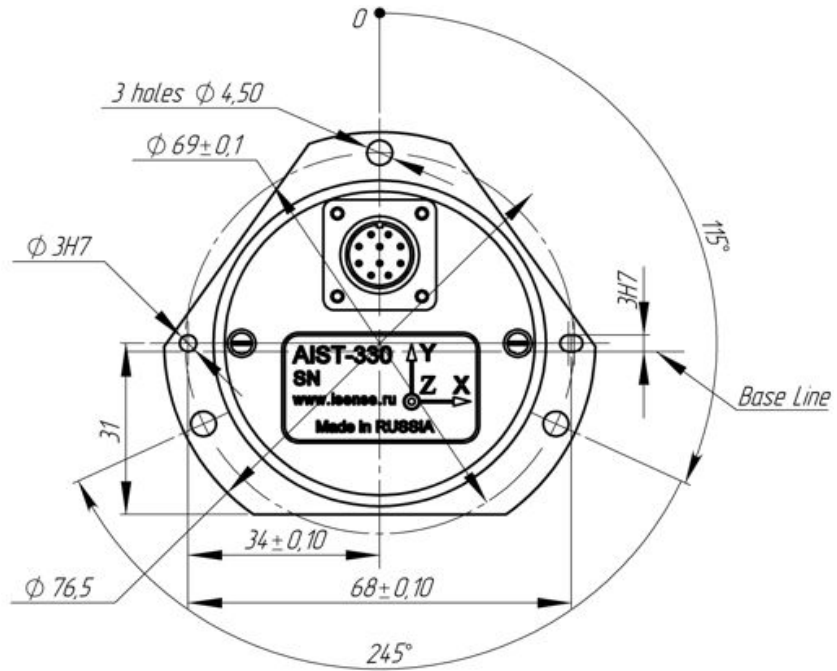
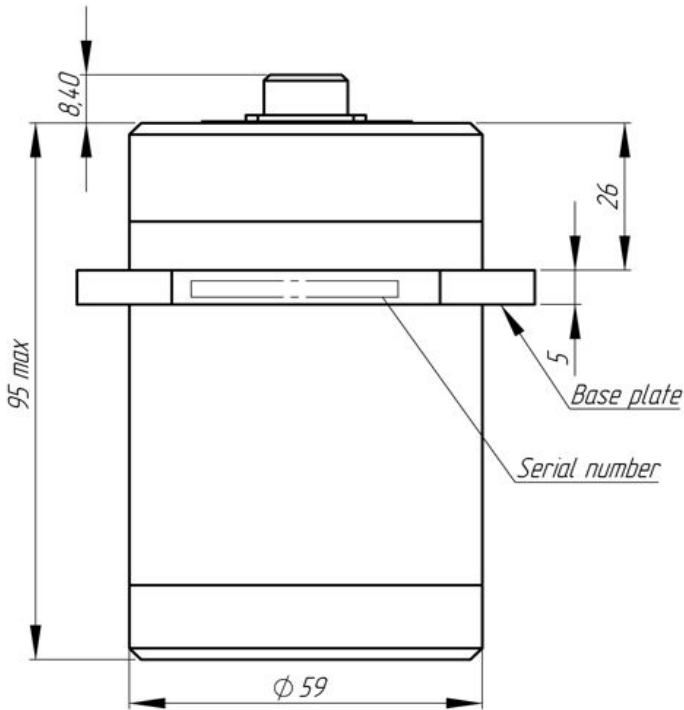
AIST-330 is a 6 DOF, fully factory calibrated unit built with three AIST-120 gyrochips and one 3-axis ADXL-326 MEMS (Analog Devices) accelerometer. The sensors inside the IMU are ovenized with a miniature and smart oven that keeps the temperature of the sensors stable with accuracy of 0.05C if the outside temperature change rate (measured on the mounting flange) is less than 1C/min. If the unit temperature is -40C while initial turn-on, the oven reaches its stable operating temperature in less than 2 minutes provided needed power supply is given. In order for the oven to operate properly, the outside temperature should not be more than +55C. The IMU needs to be mounted via the mounting flange (please, refer to the drawing) and positioned accurately with 2 alignment pins (please, refer to the installation guide). The unit is sealed and filled with drained gas with the dew point of -40C. The unit can be supplied without accelerometers as a 3-axis gyro - AIST-330G.

Technical specifications

Modification of AIST-330	AIST-330	AIST-330-G
Performance		
Start up time		< 3 sec
Start up time to full performance ¹		< 2 min.
Axis misalignment		< 2 mrad
MTBF (λ-estimation)		> 50 000 hours
Gyro channels (AIST-120)		
Dynamic range		300 deg/sec
Scale factor nonlinearity (1σ)		0.1%
Scale factor day-to-day repeatability (1σ)		0.1%
In-run bias stability		5 deg/hour
Long-term bias stability (1σ)		50 deg/hour
Random walk ² (1σ)		0.15 deg/sqrt(h)
G-sensitive bias (RMS)		1 deg/h/g
Bandwidth		100 Hz
Accelerometer channels (Analog Devices ADXL-326)		
Dynamic range	16 g	–
Bias stability (1σ)	2 mg	–
Random walk	320 μg/sqrt(Hz)	–
Bandwidth	100 Hz	–
Interfaces and operating conditions		
Power supply		9..33 VDC; < 8 W
Interface		RS-232, 115 kbaud
Self-check		BIT status output
Vibration (random)		0.002 g ² /Hz, 20-2000 Hz (1σ)
Vibration (harmonic)		<1 g sin (20-150 Hz)
		<3 g sin (150-2000 Hz)
Shock		50 g, 6 ms
External connection		RSG-10
Operating Temperature		-40°C .. +55°C
Storage Temperature		-55°C .. +85°C
Dimensions		Ø 59 x 95 mm
Weight		< 690 g

¹ Unit turn on at -40°C.

² Allan variance estimation.



10-pin male power/output connector table

Pin	Description
1	9-33 VDC
2, 3	GND
5	RS-232 RXD
8	RS-232 TXD
9	SYS_RECOVERY (factory test and calibration. Do not connect!)
10	CAL_MODE (factory test and calibration. Do not connect!)
7	DEBUG-TX (factory test and calibration. Do not connect!)
4	DEBUG-RX (factory test and calibration. Do not connect!)
6	Reserved (factory test and calibration. Do not connect!)

• Dimensions are in millimeters.