



IMU330RA

ASIL-B, 6DOF IMU with Ethernet and CAN-FD Interface



The ACEINNA IMU330RA is an easy-to-use high-performance 6-DOF inertial sensor packaged in a rugged sealed over-molded plastic housing at IP69K level. The IMU330RA features a redundant 3-Axis Accelerometer and 3-Axis Rate Gyroscope for excellent accuracy and reliability. It supports both 1000Base-T1 Automotive Ethernet and CAN-FD interfaces. The IMU330RA is designed as the automotive part with ASIL B qualification, which provides the solution of customer positioning system integration to ASIL D.

The ACEINNA IMU330RA is designed for use in Automotive Level 3 and higher ADAS systems. The unit provides encrypted data, at up to 1000Hz output rate over both Ethernet and CAN-FD interfaces, and support precise synchronization based on gPTP 802.1AS:2020 and Unified Diagnostic Services.

Applications

- Autonomous Vehicles
- Self-Driving Taxis/Delivery Vehicles
- ADAS Systems
- Precise Localization



Features

- 1000Base-T1 Automotive Ethernet and CAN-FD interfaces
- Supports gPTP 802.1AS:2020 time synchronization over Ethernet as a gPTP slave
- Supports UDS (Unified Diagnostic Services), defined in ISO 14229-1 and 14229-5 over Ethernet and CAN
- Automotive Grade with AEC Q-104 fulfillment
- Part Operating Temperature Grade 2: -40C to +105C
- Automotive Safety Integration Level: B
- IP69K, rugged, sealed, over-molded package
- Encrypted software updates and communication, with on board hardware security module (HSM)



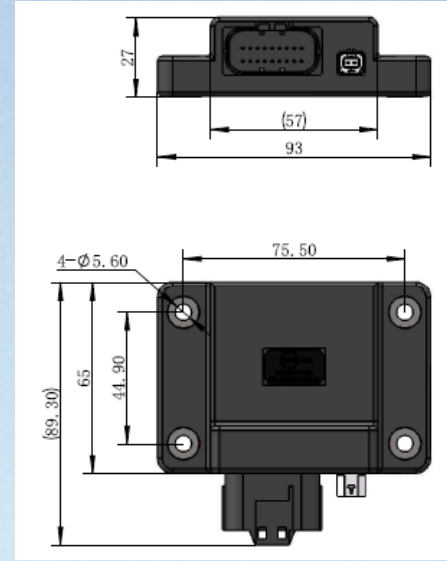
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Technical Characteristics

Ta = 25°C, VDC = 12V, unless otherwise stated

Angular Rate	MIN	TYP ²	MAX
Range (°/s)	-300		300
Bias Instability (°/hr) ¹		1.0	
Bias Stability over Temperature (°/s)		0.1	
Scale Factor Error (%FSR)		0.1	
Angle Random Walk (°/√hr) ¹		0.1	
Cross-Axis Error (%FSR)		0.1	
Non-linearity Error (%FSR)		0.1	
Acceleration	MIN	TYP ²	MAX
Range (g)	-6		6
Bias Instability (ug)		10	
Bias Stability over Temperature (mg)		1	
Scale Factor Error (%FSR)		0.1	
Velocity Random Walk (m/s/√hr) ¹		0.024	
Cross Axis Error (%FSR)		0.1	
Nonlinearity (%FSR) ³		0.1	
Electrical	MIN	TYP	MAX
Input Voltage (V)	9	12	24
Current Consumption (mA)		TBD	
Interface	1000Base-T1 Automotive Ethernet, and CAN-FD		
Output Data Rate – Eth/CAN (Hz)	10	100	1000
Environment			
Operating Temperature	-40 °C to 105°C		
Non-Operating Temperature	-40 °C to 105°C		
Physical			
Size (mm)	93 x 65 x 27mm		
Weight (g)	TBD		

Note 1: Allan variance curve, constant temperature
 Note 2: Typical values are 1 sigma values unless otherwise noted
 Note 3: Best line straight fit



EVALUATION KIT HARDWARE

- Evaluation Kit Includes an IMU330RA and interface cable.

EVALUATION SOFTWARE

- IMU330RA-SW provides an easy-to-use graphical interface to configure, display, record, playback, and analyze all the IMU330RA system parameters.

Ordering Information

Part Ordering Information	
High-Performance Automotive IMU Platform	
IMU330RA	Automotive Grade (ASIL B): Contact ACEINNA
IMU330RA EVK	IMU330RA with Cable