IMU340LA-B2

Automotive Grade 6DOF IMU

ACEINNA introduces IMU340LA-B2, a 3rd generation high performance surface mount (SMT) inertial measurement unit (IMU) which integrates a fully calibrated 6-axis MEMS Accelerometer and Gyroscope. Its accuracy and stability are significantly improved over the last generation by deploying our latest technology. The IMU340LA-B2 has been developed in accordance with the ISO26262:2018 Functional Safety standard, and fulfills the requirements of ASIL-B.

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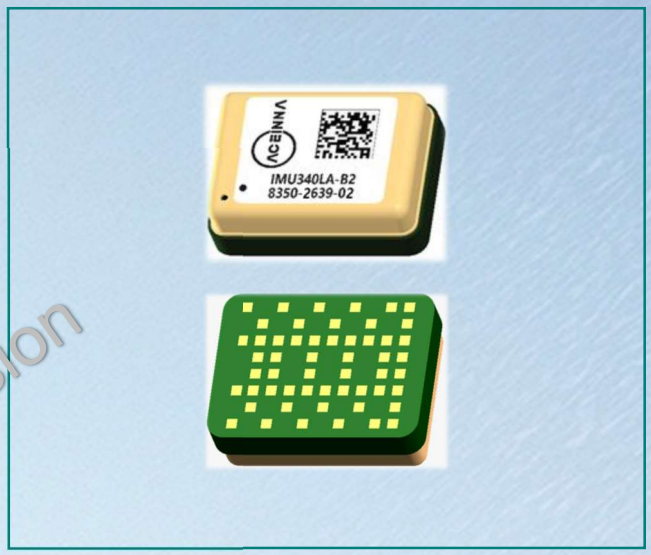
IMU340LA-B2 – Automotive Grade 6DOF IMU

The ACEINNA IMU340LA-B2 is designed for use in high volume automotive Level 3 autonomous vehicles and ADAS systems requiring calibrated inertial measurement data. The IMU340LA-B2 combines high-performance 6DOF IMU functionality with the small, low-cost and ceramic packaged ACC/GYRO sensor to meet the challenging performance, reliability and cost requirements of the automotive market.



Applications

- Autonomous Vehicles
- Self-Driving Taxis/Delivery Vehicles
- ADAS
- Electronic Stability Control
- Lane Keep Assist

Features

- Automotive Qualified – AEC-Q104
- ASIL-B assessment by ACEINNA
- Calibrated 3 axis MEMS Accelerometer with ± 8 g full scale range
- Calibrated 3 axis MEMS Angular Rate sensor with ± 400 dps full scale range
- LGA54 package
- SPI and UART interfaces
- Light Weight (< 2g)
- Small size (13.6*16.4*5.1 mm)
- Wide Temp Range, -40°C to +105°C
- High Reliability, MTBF > 50k hours

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Technical Characteristics

Ta = 25°C, VDC = 3.3V, unless otherwise stated

Ready-to Use Algorithms	**Outputs**		
IMU	Calibrated Accel, Gyro		
Angular Rate	**MIN**	**TYP[2]**	**MAX**
Range (°/s)	-400		400
Resolution UART (°/s/LSB)		1/64000	
Resolution SPI (°/s/LSB)		1/64000	
Scale Factor error （%）		0.1	
Bias Instability (°/hr)[1]		2	
Bias Stability over Temp (°/s)		0.1	
Axis to Axis Misalignment (Degree)		0.1	
Nonlinearity (%FSR)[3]		0.02	
Angle Random Walk (°/√hr)[1]		0.2	
Acceleration	**MIN**	**TYP[2]**	**MAX**
Range (g)	-8		+8
Resolution UART (g/LSB)		1/4000000	
Resolution SPI (g/LSB)		1/4000000	
Scale Factor error (%)		0.1	
Bias Instability (µg)[1]		25	
Bias Stability over Temp (mg)		1.5	
Axis to Axis Misalignment (Degree)		0.1	
Nonlinearity (±1g) (%FSR)[3]		0.02	
VRW (m/s/√hr)[1]		0.025	
Electrical	**MIN**	**TYP**	**MAX**
Input Voltage (V)(ASIL-B)	3.0	3.3	3.6
Current Consumption (mA)		70	
Interface	SPI and UART		
Output Data Rate – SPI (Hz)			200
Output Data Rate – UART (Hz)			200
Environment			
Calibrated Temperature (°C)	-40 °C to 85°C		
Operating Temperature (°C)	-40 °C to 105°C		
Non-Operating Temperature (°C)	-40 °C to 105°C		
Physical			
Size (mm)	13.6 x 16.4 x 5.1		
Weight (g)	<2		
Interface Connector	54LGA, land grid array LGA)		

Note 1: Performance improved over reflow, time and environment more than 50%

Note 2: Allan variance curve, constant temperature

Note 3: Typical values are 1 sigma values unless otherwise noted

Note 4: Best fitting straight line

EVALUATION KIT

EVALUATION KIT HARDWARE

- Evaluation Kit Includes an IMU340LA-B2 mounted in a cast Aluminum Housing with interface PCB for convenient connection and evaluation of the product.
- Virtual COM-port USB interface, providing connectivity to IMU340LA-B2 from PC
- Solder pads for connection to communication Interface
- Test terminals for connecting oscilloscope or logic analyzers to the dedicated IMU340LA-B2 signals

EVALUATION SOFTWARE

- Device-Connector provides an easy to use graphical interface to display, record, playback, and analyze all of the IMU340LA-B2 system parameters.
- Device-Connector can also be used to set a wide range of user-configurable fields in the IMU340LA-B2 to optimize the system performance for highly dynamic applications.
- Device-Connector software is available for download from ACEINNA's website at:

  Device-Connector Download address

Ordering Information

Part Ordering Information	
Model Number	**Description**
IMU340LA-B2	**Automotive Grade 6 DOF IMU, FSR = 400dps / ±8g**
IMU340LA-B2 EVK	**IMU340LA-B2 Evaluation Kit**

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