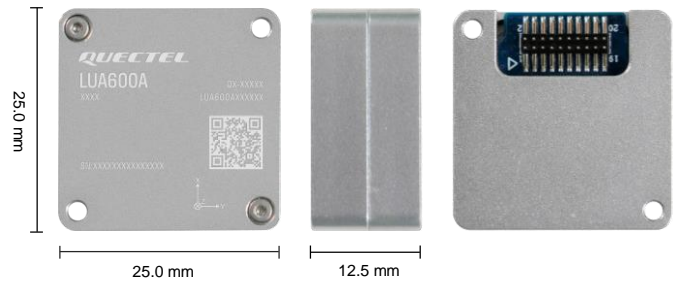


# Quectel LUA600A

## Automotive Grade 6-axis IMU Module



LUA600A is an automotive grade, high-performance IMU module based on Murata's SCHA634 chip. The module seamlessly integrates a 3-axis gyroscope and 3-axis accelerometer, leveraging Murata's reliable capacitive 3D-MEMS technology. Rigorously factory calibrated, the gyroscope and accelerometer parameters, such as bias error over temperature, scale factor error and misalignment error, undergo precision trimming during production. This meticulous calibration ensures consistent module performance, delivering continuous, stable and accurate sensor measurements across a wide temperature range.

Compared to intricate discrete designs, LUA600A offers a straightforward and cost-effective solution for integrating a high-performance IMU into both industrial and automotive systems. Calibration procedure is seamlessly executed during module production, streamlining the user integration experience. In contrast to board-mounted schemes, the module utilizes a connector connection scheme, which effectively reduces the impact of PCB stress and isolates heat conduction between the IMU sensing unit and the target board. This design choice effectively minimizes the impact of temperature changes on angular velocity and acceleration measurements.

The module supports various communication interfaces, such as, UART, SPI and CAN, providing more options for debugging, development and solution creation. In addition, the module's built-in MCU greatly increases the flexibility of software-related development functions, catering to diverse user needs.

The module's compact form factor ensures easy integration, which significantly reduces the product development cycle for users. Designed and manufactured according to the Quality Management System based on IATF 16949:2016 standard, it guarantees exceptional stability, precision, and a compact form factor, making it an ideal choice for applications such as ADAS, automated driving, high-precision navigation, and robotics.



## Key Features

- ✓ Factory calibrated 3-axis gyroscope and 3-axis accelerometer
- ✓ Compact size: 25.0 mm × 25.0 mm × 12.5 mm
- ✓ Wide temperature range: -40 °C to +105 °C
- ✓ Multiple interfaces: UART, SPI and CAN
- ✓ Easy to integrate, no complex configurations or commands required
- ✓ PPS + NMEA clock synchronization
- ✓ Designed and manufactured according to the Quality Management System based on IATF 16949:2016 standard



Factory Calibrated



High-performance



Automotive



3-axis Accelerometer



3-axis Gyroscope



Multiple Interfaces



Operating Temperature Range:  
-40 °C to +105 °C



RoHS Compliant

# Quectel LUA600A

IMU Module	LUA600A
Dimensions	25.0 mm × 25.0 mm × 12.5 mm
Weight	Approx. 11.3 g
Vibration Resistance	20 Grms
Temperature Range	
Operating Temperature	-40 °C to +105 °C
Storage Temperature	-40 °C to +105 °C
Gyroscope Specifications	
Range	±300 °/s
Bias Instability (Allan)	Typ. 1.8 °/h (X/Y axis ), 1.4 °/h (Z axis); Max. 2.6 °/h (X/Y axis), 2.1 °/h (Z axis)
Angular Random Walk	Typ. 0.09 °/√h (X/Y axis), 0.1 °/√h (Z axis); Max. 0.13 °/√h (X/Y axis), 0.15 °/√h (Z axis)
Bias Error over Temperature (-40 °C to +105 °C)	0.05 °/s (X/Y axis); 0.03 °/s (Z axis)
Scale Factor Error	0.15 % (X/Y axis); 0.05 % (Z axis)
Non-Linearity	0.01 % FS
Misalignment Error	0.02°
Accelerometer Specifications	
Range	±6g
Bias Instability (Allan)	Typ. 15 µg; Max. 18 µg
Velocity Random Walk	Typ. 0.035 m/s/√h; Max. 0.05 m/s/√h
Bias Error over Temperature (-40 °C to +105 °C)	1.5 mg
Scale Factor Error	0.05 %
Non-Linearity	0.02 % (±1g)
Misalignment Error	0.02°
Interfaces	
UART	Baud rate: 115200–921600 bps; Default: 460800 bps
SPI	Max. clock frequency: 8 MHz
CAN	Max. Baud Rate (CAN): 1 Mbps Max. Baud Rate (CAN FD): 2 Mbps
Update Rate	
Update Rate	10–400 Hz; Default: 100 Hz
Electrical Features	
Supply Voltage Range	3.0–3.6 V, typ. 3.3 V
I/O Voltage	Following VCC
Power Consumption (@ 3.3 V)	75 mA
Certification	
Others	RoHS
Quality & Reliability	
Quality & Reliability	Designed and manufactured according to IATF 16949:2016 standard