


QUECTEL
IMU 3G LTE
Module



QUECTEL IMU 3G LTE Module Installation Guide

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QUECTEL IMU 3G LTE Module



Product Specifications

- Product Name: IMU Module Series
- Version: 1.0
- Date: 2024-12-09
- Status: Released

Product Usage Instructions

Legal Notices

Ensure to adhere to the use and disclosure restrictions, license agreements, copyright, trademarks, third-party rights, privacy policy, and disclaimer provided by Quectel.

Safety Information

Follow these safety precautions:

- Use the product in the designated country and environment complying with local regulations.
- Avoid using the product near explosive or flammable materials to prevent accidents.

Frequently Asked Questions (FAQ)

- **Q: How can I get technical support for the IMU Module Series?**
 - A: For technical support, visit <http://www.quectel.com/support/technical.htm> or email support@quectel.com.
- **Q: Where can I find more information about sales and support?**
 - A: Visit <http://www.quectel.com/support/sales.htm> for sales information or contact the headquarters at +86 21 5108 6236 or info@quectel.com.
- **Q: What should I do if I encounter inaccuracies or omissions in the documentation?**
 - A: Contact Quectel Wireless Solutions Co., Ltd. for reporting documentation errors.

Safety Information

The following safety precautions must be observed during all phases of operation, such as usage, service, or repair of any terminal or mobile incorporating the module. Manufacturers of the terminal should notify users and operating personnel of the following safety precautions by incorporating them into all product manuals. Otherwise, Quectel assumes no liability for customers' failure to comply with these precautions.

- Ensure that the product may be used in the country and the required environment, as well as that it conforms to the local safety and environmental regulations.
- Keep away from explosive and flammable materials. The use of electronic products in extreme power supply conditions and locations with potentially explosive atmospheres may cause fire and explosion accidents.
- The product must be powered by a stable voltage source, and the wiring shall conform to security precautions and fire prevention regulations.
- Proper ESD handling procedures must be followed throughout the mounting, handling and operation of any devices and equipment that incorporate the module to avoid ESD damages.

About the Document

Document Information

- **Title** IMU Module Installation Guide
- **Subtitle** IMU Module Series
- **Document Type** Installation Guide
- **Document Status** Released

Revision History

Version	Date	Description
–	2024-11-05	Creation of the document
1.0	2024-12-09	First official release

Installation Instructions

Introduction

IMU (Inertial Measurement Unit), equipped with a three-axis accelerometer and a three-axis gyroscope, is a sensor designed to measure the angular velocity and acceleration of objects in three-dimensional space. Quectel IMU module is essential in applications including navigation, control and dynamic measurement, due to its precision in measurement. Particularly in automotive navigation systems, the accuracy of IMU module is vital for the navigation precision. However, the IMU module performance is largely dependent on its installation. Improper installation can cause inaccurate data output. For this reason, this document provides instructions on the IMU module installation to ensure its best performance.

Factors Affecting IMU Module Operation in PCB Layout

In the PCB layout, ensure that the IMU module is installed horizontally and the factors affecting IMU module operation are shown in the following table:

Table 1: Factors Affecting IMU Module Operation and Their Impacts

Influence Factors Impacts

- **Stress** Stress causes deformation and errors, and even damage to the internal MEMS structure and pad removal.
- **Heat Source** Proximity to devices that generate excessive heat can lead to chip errors and increased noise.
- **Compression** Placing the IMU module too close to the epoxy or shielding cover can result in a deformation of the material that can compress the IMU module and produce errors.

Cautions:

- Keep away from heat. Temperature spikes may cause a sudden change in the data.
- Keep away from vibration sources such as the motor, fan, keys, switches, and other PCB components that produce periodic interference, as these will greatly affect IMU output accuracy.
- Position the module away from stress concentration areas, such as, zones susceptible to external mechanical contact, extrusion and pulling. In addition, maintain adequate spacing from the PCB fixing points to reduce the stress caused by the fastening screws.
- Avoid areas of the PCB that are prone to resonance.
- Place the module on the PCB edges rather than on the central area, because the central area is more susceptible to Z-direction acceleration.

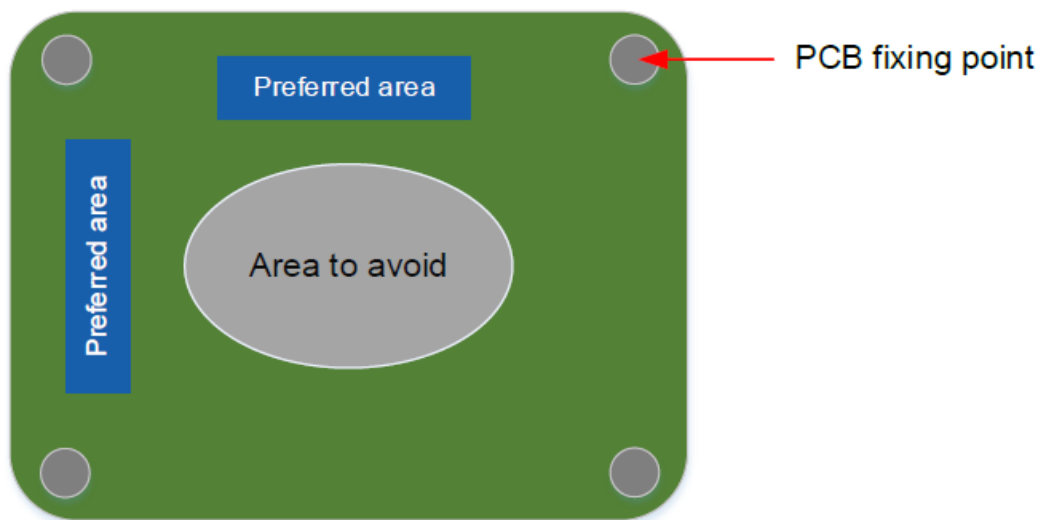


Figure 1: Recommended Installation Area for Module on PCB

- If you place the module near the center of a large PCB, consider adding more fixing points around the module to minimize PCB deformation. Additionally, ensure proper spacing between the module and the fixing points to reduce the stress generated during the installation process. Furthermore, note that the IMU module should stay away from the central area enclosed by the fixing points as much as possible.



Figure 4: Prohibited: Installation in Non-horizontal Orientation

3. Do not install the module suspended outside the mounting surface.

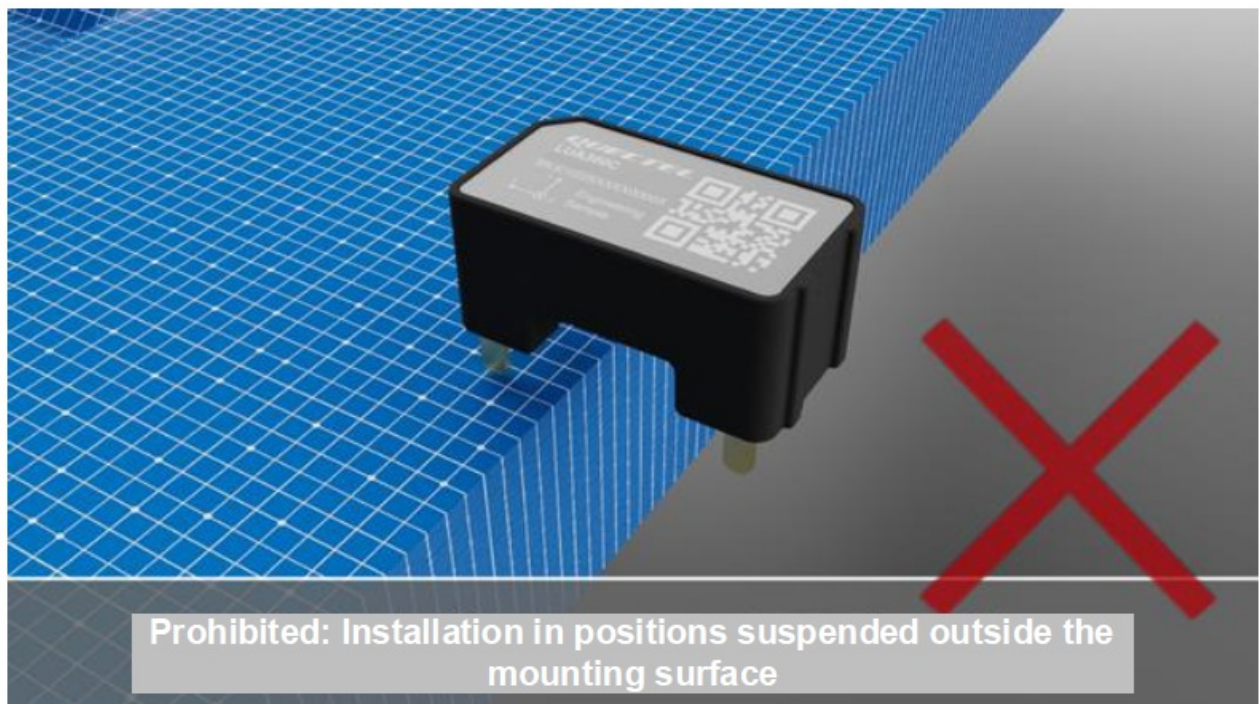


Figure 5: Prohibited: Installation in Positions Suspended Outside Mounting Surface

Appendix References

Table 2: Terms and Abbreviations

Abbreviation Description

- **IMU** Inertial Measurement Unit
- **MEMS** Micro-Electro-Mechanical System

- **PCB** Printed Circuit Board

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- **Tel:** +86 21 5108 6236
- **Email:** info@quectel.com
- Or our local offices. For more information, please visit:
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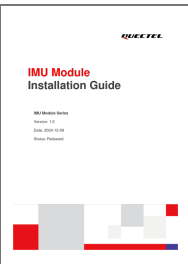
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Documents / Resources

	<p>QUECTEL IMU 3G LTE Module [pdf] Installation Guide</p> <p>IMU 3G LTE Module, IMU, 3G LTE Module, LTE Module, Module</p>
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References

- [User Manual](#)

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