MESIONTECH

MD_FT66 Optical Engine

V0.20 Datasheet

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Change History

Version	Release Date	Changes	Author
V0.10	2025/11/20	Preview version	Jackie Chu
V0.20	2025/12/02	Block diagram correction and optimize the description of tetraocular module advantage	Jackie Chu

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1 Product Introduction

1.1 Product Description

MD_FT66 Optical Engine is a tetraocular positioning module. By integrating 6 DoF gyroscope data and combining with A1088, a self-developed spatial positioning coprocessor of Mesiontech, the module can provide indoor and outdoor vSLAM visual positioning data. Through the Carina SDK provided by Mesiontech, the module can be easily integrated into the system and widely used in vSLAM/VIO systems and service robots.

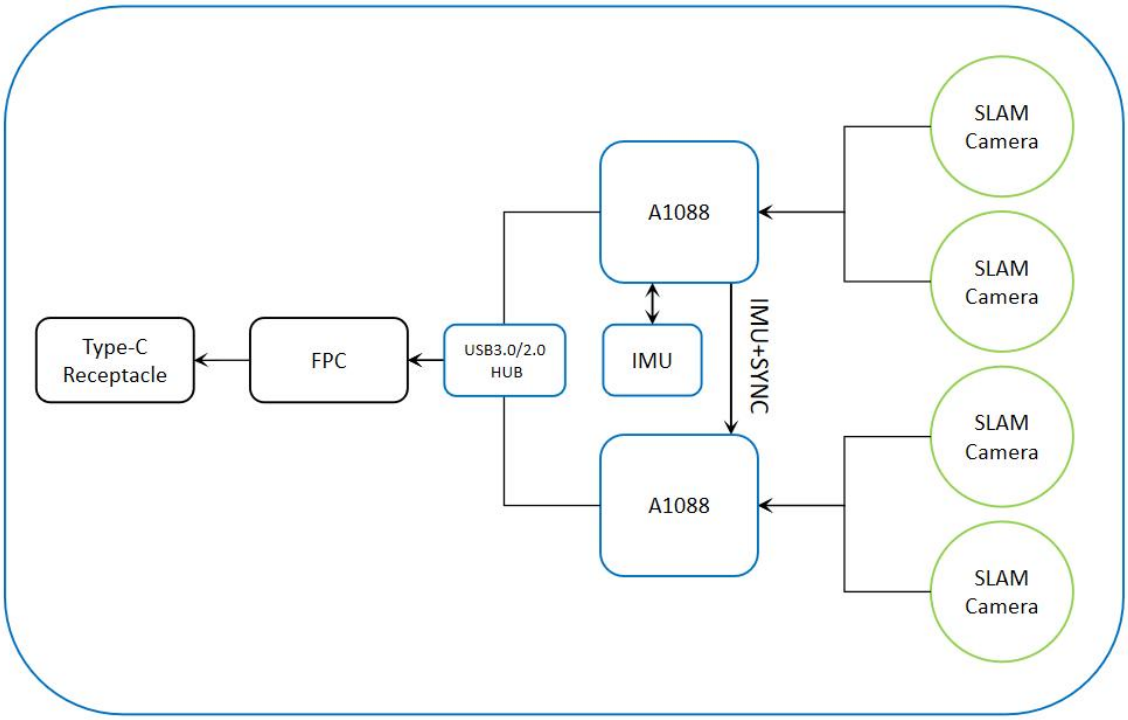
1.2 Feature

- Centimeter-level accuracy: 1% drift; also 0.3% drift for loopback/cloud map.The tetraocular module has better robustness and stability than the binocular module in complex and changeable environments.
- FPC interface for USB2.0/3.0 adaptive , both have FPC and Type-C connectors in the module.
- Lightweight, low power consumption, high frame rate, and low latency.
- Support Android / Linux / ROS/ Windows.
- The structure and interface can be customized according to your requirements.

1.3 Scenario

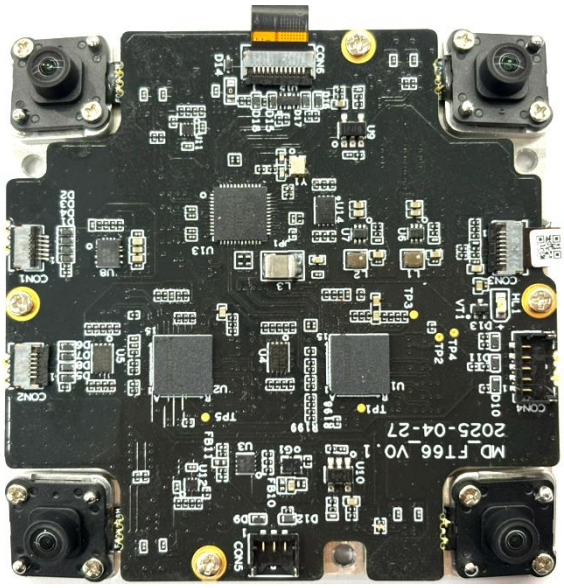
- AR Glass / VR HMD
- Service Robot
- Low-speed autonomous vehicle
- Sweeping Robot
- Robotic Lawn Mower
- Intelligent personnel management system and equipment
- Indoor and outdoor vSLAM applications

1.4 Block Diagram



2 Specification

2.1 Product Picture



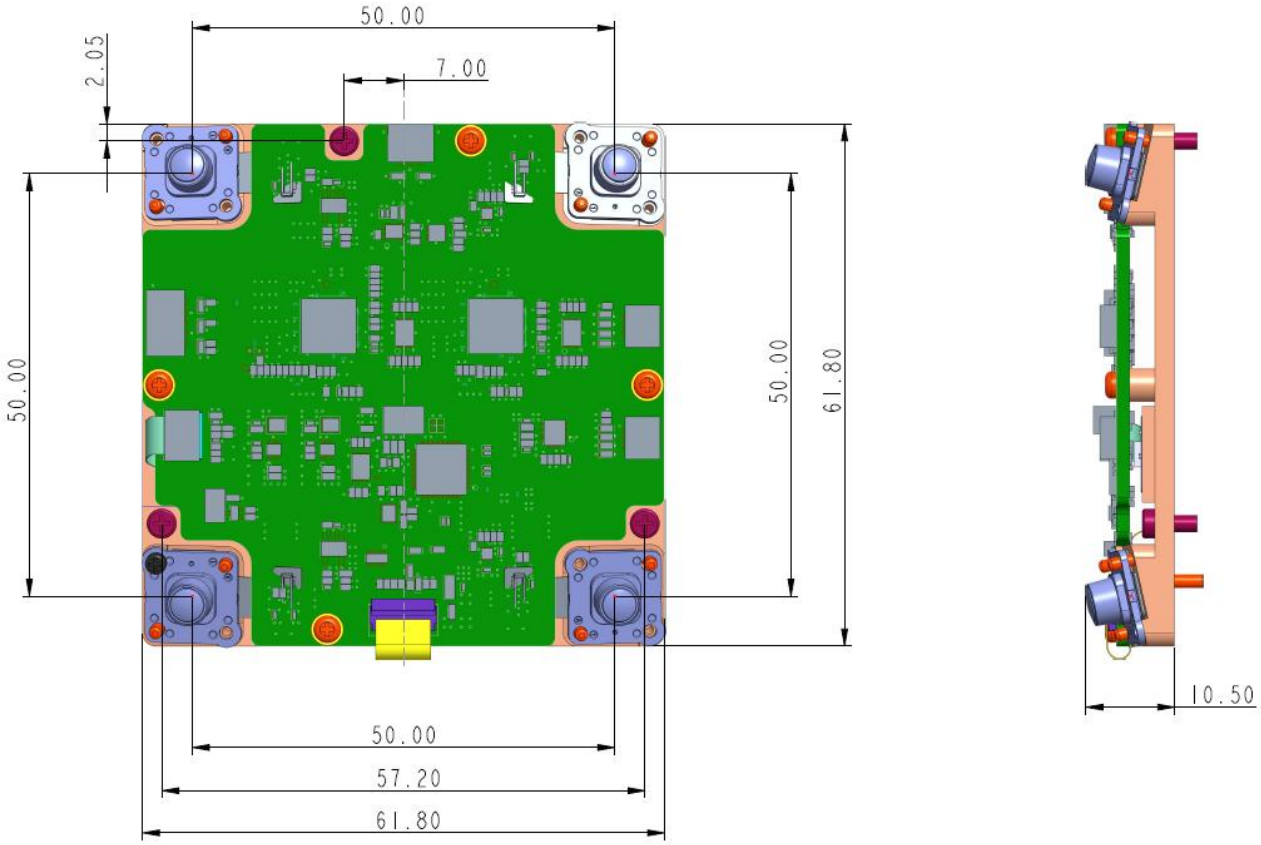
MD_FT66 Front View

2.2 Product Specification

MD_FT66 Specification	
Baseline	50 mm (T/B/L/R)
Power Consumption	Average < 1.65W
vSLAM Camera Exposure Modes	Global
vSLAM FOV	D151°,T/B angle outwardly +15° each，L/R angle +25° each
IMU	6-axis
IMU Frequency	1000Hz
SLAM	6 DoF
6DoF FPS	30-1000fps
vSLAM Accuracy	Centimeter-level accuracy: 1% drift; also 0.3% drift for loopback/cloud map
Relocation Time	< 1 second
Latency	1ms
Timestamp Synchronization	Hardware synchronization
Data Transfer	FPC/type-C interface USB 2.0/3.0 adaptive
Power Supply	FPC Interface/type-C
Operating Temperature	-10℃ ~ 55℃
Supported Operating Systems	Android / Linux / ROS / Windows
Applicable Scenarios	Indoor/Outdoor (Depending on the application scenario and related algorithm requirements)
Dimensions (mm)	61.8mm(Width) x 61.8mm(Length) x 10.5mm(Height)
Weight	47g including mechanical metal base structure

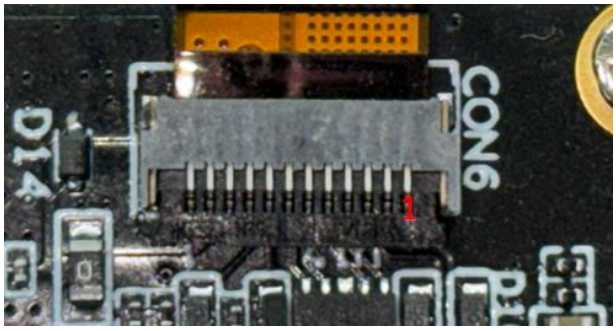
3 Mechanical and Installation

3.1 Mechanical Dimension (Unit: mm)



3.2 Connector and PIN Definition

The module uses type-c and FPC interface for power supply and data transmission. User could intend to choose type-c or FPC for specific use, The FPC interface is PIN 1 below, and the contacts use the 12 pins under the connector that are close to the PCB. The ZIF connector PN is FH34SRJ-12S-0.5SH(50)

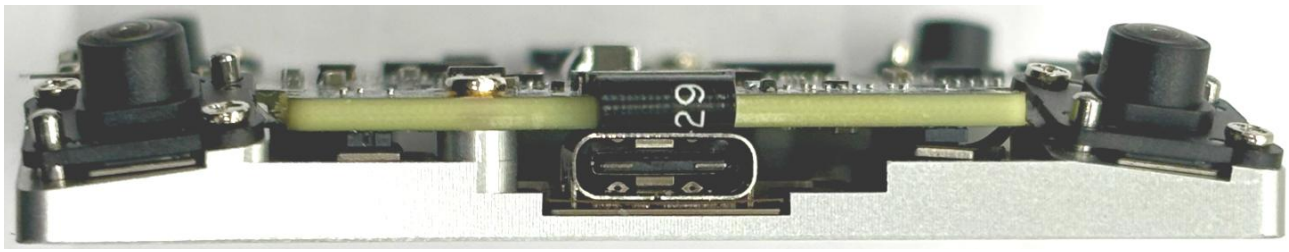


CON6. PIN	NET
CON6. 1	USB3_VBUS
CON6. 2	USB3_VBUS
CON6. 3	GND
CON6. 4	BOOT_OTA
CON6. 5	VSYNC_1V8
CON6. 6	USB3_RX_P
CON6. 7	USB3_RX_N
CON6. 8	USB3_TX_P
CON6. 9	USB3_TX_N
CON6. 10	USB3_D_N
CON6. 11	USB3_D_P
CON6. 12	GND

FPC PIN Definition

3.3 Installation and Test

To facilitate module testing, Mesiontech already provide an FPC-TYPE C interface adapter board inside the module which user could choose 1 of them for specific use.



3.4 Heat Dissipation

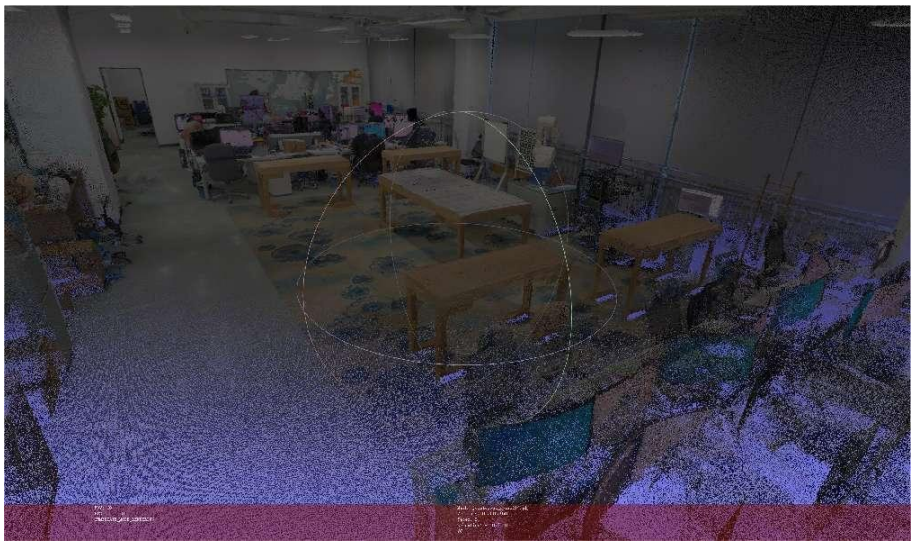
The module can dissipate heat naturally through the environment at the nominal operating temperature. However, it must be noted that the module (including the metal reinforcement part on the back) must not be close to other heat sources. The metal reinforcement plate on the back is conducive to the heat dissipation of the hardware and must not be removed without the consent of Mesiontech.

3.5 Module Integration and Usage Protection

- Operators must wear anti-static work clothes.
- Wear an anti-static wrist strap that is in good contact with the skin and is reliably grounded.
- All component operations must be performed on an electrostatically safe workbench.
- Any electrostatically sensitive components that fall to the floor during operation must be tested and re-confirmed before use.
- When holding a PCB, avoid touching component leads and lugs, and try to stay away from electrostatically sensitive component areas.

4 Cloud Map Building

If you have any cloud map building needs, you can send an email to the product support sales@mesiontech.com



5 System Integration

Before users choose the MD_FT66 optical engine for product development, they should contact Mesiontech to obtain the SDK development package. Mesiontech will confirm whether the solution meets the mass production requirements through evaluation, debugging and verification.

Mesiontech provides SDKs for the MD_FT66 optical engine module that are compatible with the corresponding platforms, and users can integrate and develop applications for the product based on this. The SDK supports Android, Linux, ROS, and Windows platforms.

Recommended Process:

Step 1: Read the MD_FT66 optical engine module product specification.
Step 2: Evaluate the feasibility of the project with relevant pre-sales personnel of Mesiontech.
Step 3: Purchase a sample and apply for the SDK development package for the corresponding platform.
Step 4: If you encounter any technical problems, please contact the sales staff of Mesiontech in time.
Step 5: Confirm the mass production plan, structure and interface requirements of the terminal product.
Step 6: If you need to customize the optical engine in the mass production plan, please contact Mesiontech

sales staff in time;
Step 7: Please evaluate the forecast before mass production.

6 Certification

- TBD

7 Notice

1. Please operate the module correctly according to the instructions. Illegal operation may cause damage to internal components.
2. This product is a precision device and must be protected from collision, drop, and vibration to prevent the mainboard components from falling off or the optical components from being damaged, which may cause functional problems or affect the performance of the product;
3. Do not attempt to modify or disassemble the module in any way to avoid damage to the module and reduced accuracy.
4. This module must not be heated by other heat sources; it is normal for the temperature of the product to rise after a period of use.
5. Do not touch the lens to avoid leaving foreign matter and affecting the image quality.
6. When using the product, ensure that the front of the camera lens is exposed to the outside to prevent transparent objects from blocking the camera and affecting the use effect.
7. When installing and using the product, please ensure that the assembly is stable and reliable to avoid shaking that may affect the use effect.
8. During use, ensure that all interfaces are in good contact. If the image frame rate is insufficient or the data stream cannot be obtained, it is recommended to reconnect the camera in the correct way. You can also contact Mesiontech technical support for assistance.