



MD_FT63 Optical Engine

V1.20 Datasheet

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Change History

Version	Release Date	Changes	Author
V1.00	2024/9/20	Initial Release	Bin Yan
V1.10	2025/5/27	Update USB 2.0/3.0 Adaptive Support	Bin Yan
V1.20	2026/4/2	Correction Block Diagram and description	Jackie Chu

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1 Product Introduction

1.1 Product Description

MD_FT63 Optical Engine is a binocular + RGB visual 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 and RGB image output. 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

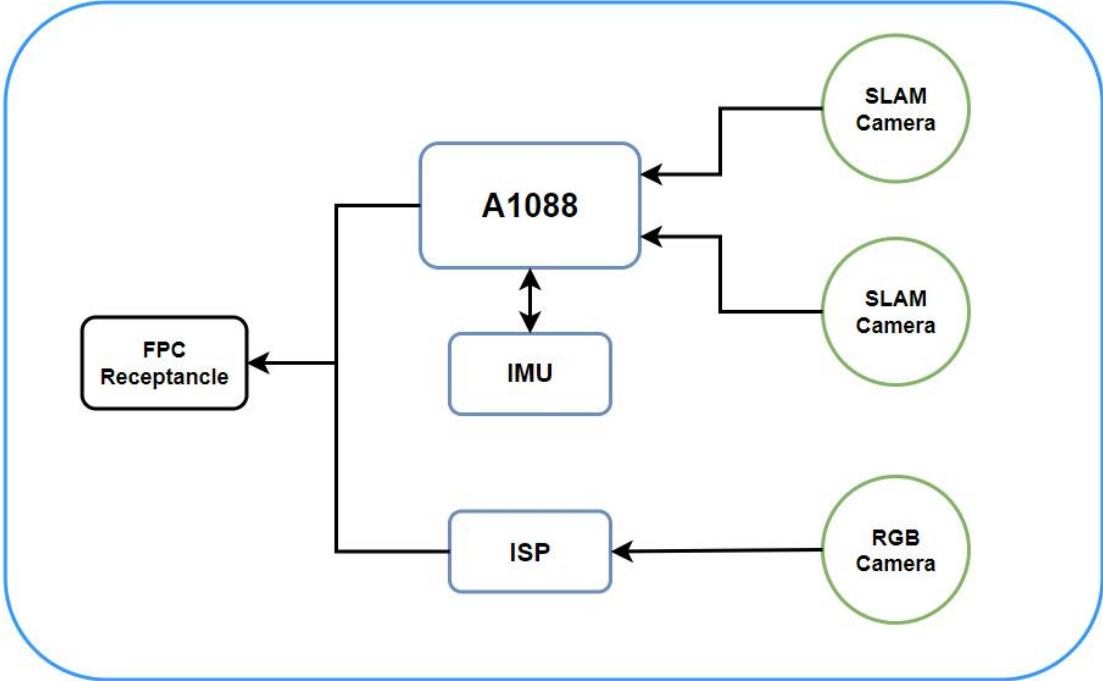
- Centimeter-level accuracy: 1% drift, APE(Absolute Position Error) \leq 30mm.
- FPC interface for USB3.0 (Please inform us before ordering if USB2.0 is required), FPC to Type-C adapter board is offered in engineering sample stage.
- Lightweight, low power consumption, high frame rate, and low latency.
- Support Android / Linux / ROS/ Windows/Mac OS.
- The structure and interface can be customized according to your requirements.

1.3 Scenario

- XR device
- Robot
- UAV/Drone
- Location surveillance
- Data acquisition

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1.4 Block Diagram

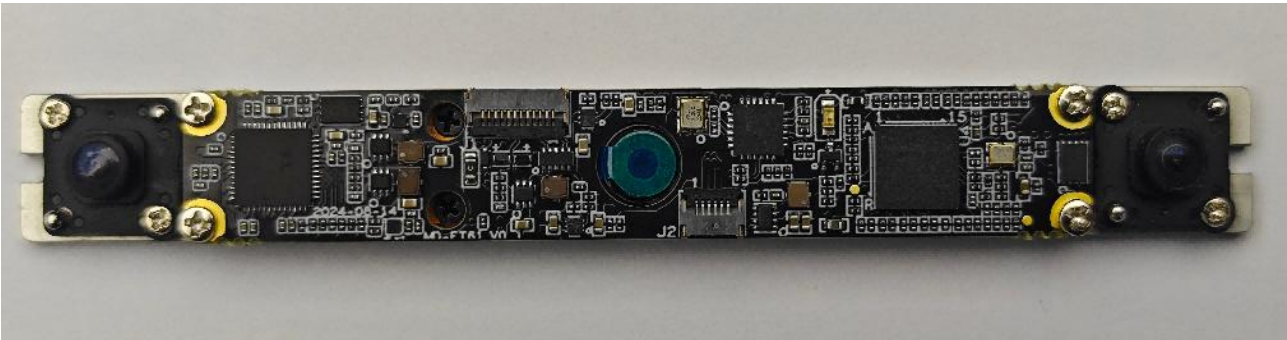


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Specification

2.1 Product Picture



MD_FT63 Front View

2.2 Product Specification

MD_FT63 Specification	
Baseline	84 mm
Power Consumption	Average: 0.5W (SLAM); 1.2W (SLAM+RGB)
Camera Exposure Modes	Global
FOV	D151° (640*480 30fps)

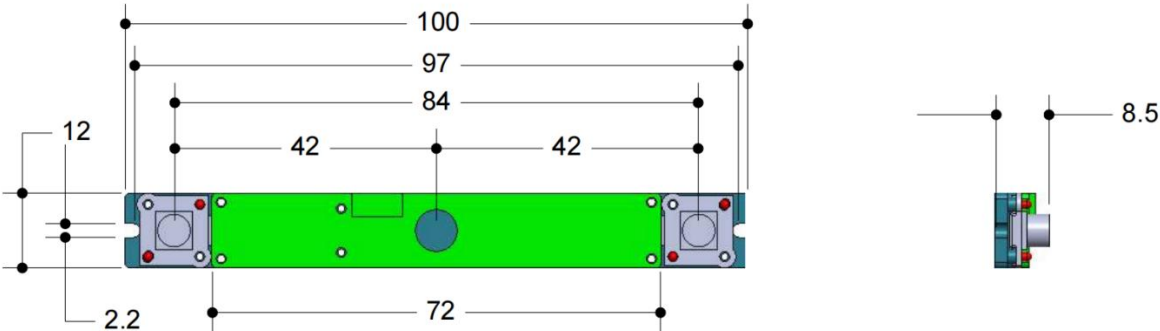
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Color Camera Exposure Modes	Rolling
Color Image Resolution	2592*1944@30FPS, 1920*1080@60FPS
Color FOV	Diagonal 84°, Horizontal 71.7°, Vertical 56.8°
IMU	6-axis acc&gyro
IMU Frequency	1000Hz
SLAM	6 DoF
6DoF FPS	1000Hz
vSLAM Accuracy	Centimeter-level accuracy: 1% drift;APE(Absolute Position Error)≤30mm
Relocation Time	< 1 second
Latency	1ms
Camera Synchronization	Hardware synchronization
Data Transfer	FPC interface USB 2.0/3.0 adaptive
Power Supply	FPC Interface
Operating Temperature	-10°C ~ 55°C
Supported Operating Systems	Android / Linux / ROS / Windows/Mac OS
Applicable Scenarios	XR device/Robot/UAV/Location surveillance/Data acquisition
Dimensions (mm)	12mm(Width) x 100mm(Length) x 8.5mm(Height)
Weight	13.4g including mechanical metal base structure

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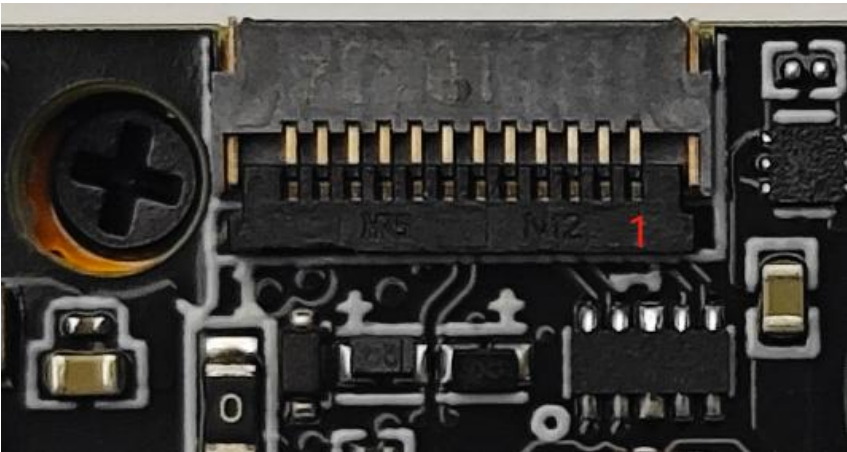
3 Mechanical and Installation

3.1 Mechanical Dimension (Unit: mm)



3.2 Connector and PIN Definition

The module uses an FPC interface for power supply and data transmission. The recommended use distance is no more than 10 cm. If other wires or wires with locking mechanisms are required, they must be customized. The FPC interface is PIN 1 below, and the contacts use the 12 pins under the connector that are close to the PCB.

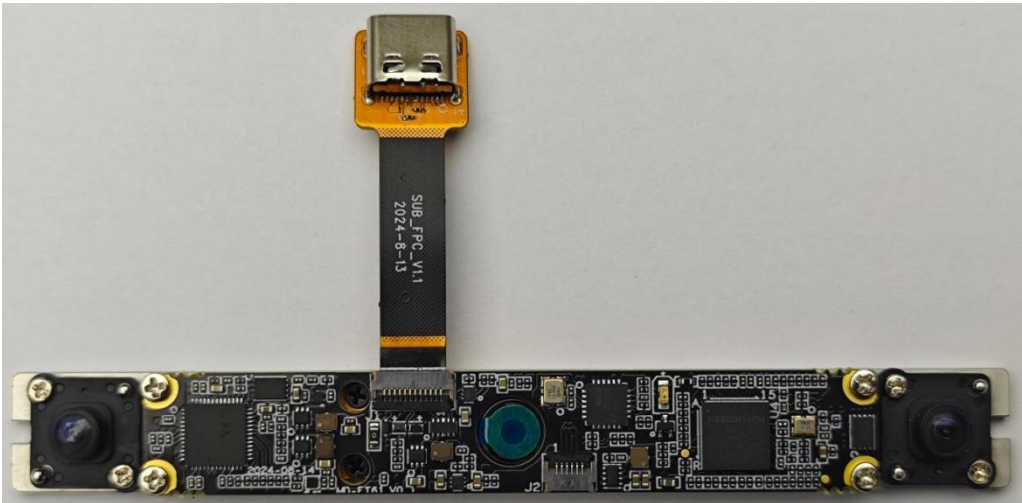


J1. PIN	NET
J1. 1	USB3_TX_P
J1. 2	USB3_TX_N
J1. 3	USB3_RX_P
J1. 4	USB3_RX_N
J1. 5	GND
J1. 6	USB3_D_N
J1. 7	USB3_D_P
J1. 8	VSYNC_1V8
J1. 9	BOOT_OTA
J1. 10	GND
J1. 11	USB3_VBUS
J1. 12	USB3_VBUS

FPC PIN Definition

3.3 Installation and Test

To facilitate module testing, Mesiontech can provide an FPC-TYPE C interface adapter board as shown below.



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.

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4 XR Large-Scale Spatial Feature

Support extend XR Large-Scale Spatial Feature, please contact sales@mesiontech.com



5 System Integration

Before users choose the MD_FT63 optical engine for product development, they should obtain the SDK development package from this website [Mesiontech release](#).

Mesiontech provides SDKs for the MD_FT63 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, Windows and Mac OS platforms.

Recommended Process:

Step 1: Read the MD_FT63 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 download the SDK development package for the corresponding platform.

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Step 4: If you encounter any technical problems, please contact the sales staff of Mesiontech in time.

6 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.