Shenzhen Rakinda Technologies Co.,Ltd

M3 Facial Module

Document Version: V1.3

Secret Level: External Disclosure

Revision History

Revision Date	Version Number	Revision Description
2018/11/21	V1.0	First edition
2018/12/27	V1.1	Modify the frame rate of RGB output
2019/01/19	V1.2	1) The most recent distance to the white wall test is 0.35m; 2) Change the structural part drawing
2019/01/30	V1.3	3) Physical drawing update (shell color change) 4) Add specifications for 3m configuration 5) Add braid wire specification

目录

1、Product Description

RAKINDA M3 product is a miniaturized depth camera independently developed by Hangzhou Aixin Intelligent Technology Co., Ltd. It is a derivative product belonging to the M3 series. It has a more compact size and lower power consumption. It uses a standardized appearance size and is responsible for a unified interface. Data transmission and power supply are mainly applicable to scene applications such as face recognition and gesture recognition, which is more convenient for users' system integration.

The product integrates a TOF depth camera of 640 × 480 pixels and a 5-megapixel RGB camera. The product provides a complete SDK, and users can perform device integration and secondary development according to their own needs.

2、Product Introduction

2.1. Product Specifications

Product specifications are shown in Table 1：

Table 1：RAKINDA M3 Product Specifications

Specifications		Specifications
Model		M3
TOF	Resolution (horizontal x vertical)	640×480
	Field of view (horizontal and vertical)	80°× 60°
	Frame Rate (fps)	Maximum 30

R G B	Resolution (horizontal x vertical)	Support 1080P/960P/720P/VGA	
	Field of view (horizontal and vertical)	74°× 56° @960P（Default） 63°× 37° @1080P 74°× 42°@720P 74°× 56°@VGA	
	Frame Rate (fps)	Maximum 30fps @ 960P/720P/VGA Maximum 15fps @ 1080P	
	Video Coding	JPEG、RGB	
Detection range（unit：m）注 1		0.35-1.2	0.5-3
Measurement accuracy注 2		0.1%	0.3%
Measurement accuracy注 3		＜1%	
Light source		850nm VCSEL	
Data transmission interface		6Pin terminal interface to USB 2.0	
Power supply		6Pin terminal interface to 5V DC power interface	
Typical power consumption（W）		3.2	3.6
Operating temperature（℃）		0-50	
Operating system		Windows7 and above、Linux、Android	
Structure size (length × height × depth, single Bit: mm)		85.5×23.5×18（No steel sheet installed） 96.3×23.5×18（ with mounting steel sheet）	

Note 1: Measurement distance: For the small whiteboard test with 90% reflectivity, the detection distance in the center area; the reflectivity has an influence on the measurement distance, accuracy and accuracy.

Note 2: Measurement accuracy: For 90% reflectance small white board test, the root mean square error of repeated tests in the center area.

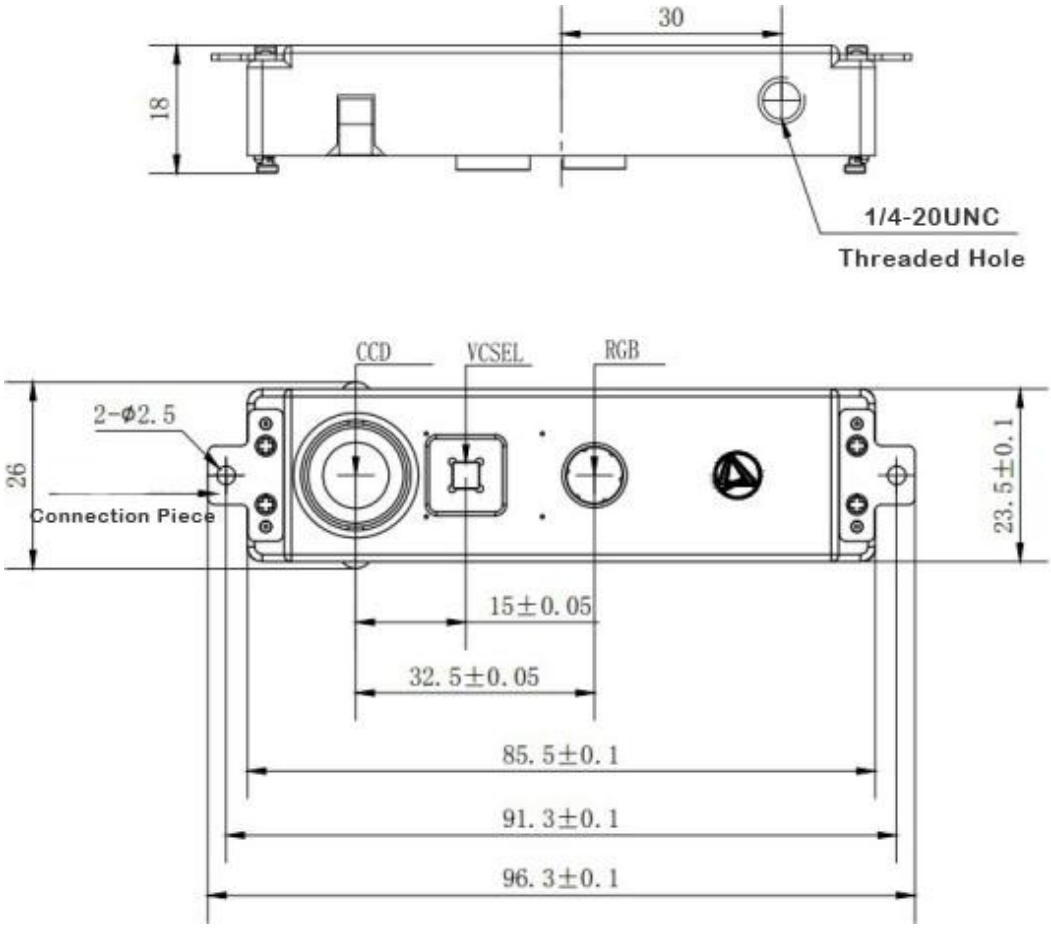
Note 3: Measurement accuracy: For the small whiteboard test with 90% reflectance, the error between the measurement distance and the true distance.

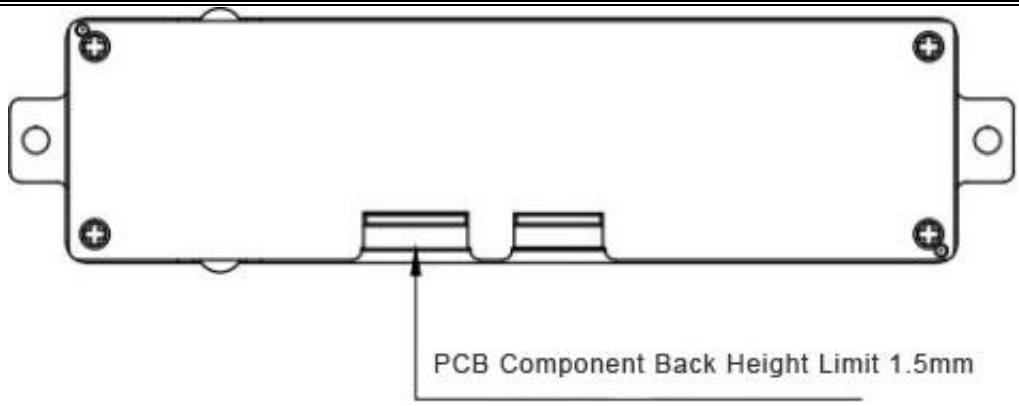
2.2. The Main Components Of The Product Hardware

- A TOF camera module;
- A VCSEL laser;
- One RGB camera module
- A dedicated ASIC processing chip;
- A control motherboard (including CPU, DDR, FLASH, etc.);
- A 6pin to USB + power interface cable (5V);

2.3. Product Structure Size

（Unit：mm）





PCB board back component height limit 1.5mm

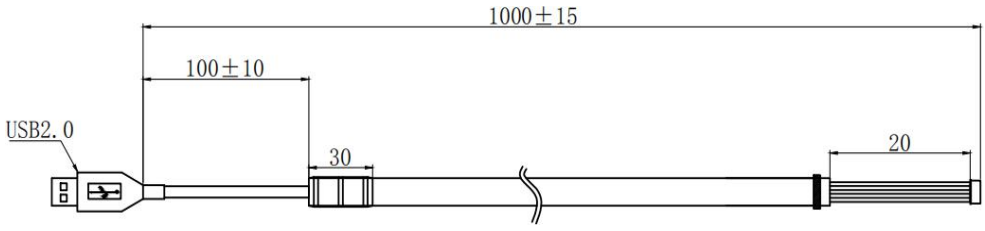
2.4. Interface Definition

Motherboard terminal interface definition：

Wire Number	Color	Junction	Wire diameter
1	Black	GND	28AWG
2	Red	5V	
3		NC	
4	Green	DP	21AWG
5	White	DM	
6	Black	GND	

Specifications of two types of braid：

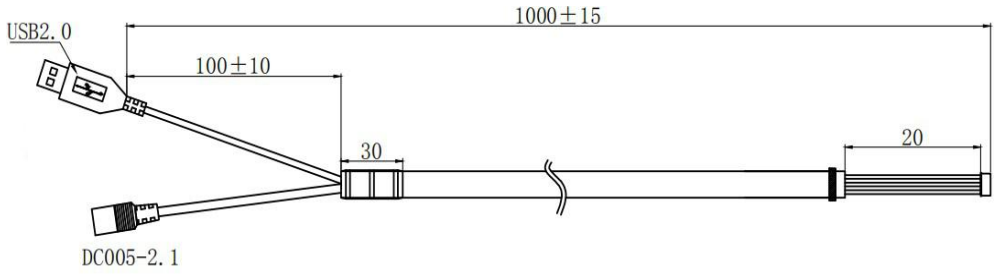
Braided wire 1 specification drawing：



Pin	Junction	Color	Wire Diameter
1	GND	Black	21AWG
2	NC		
3	5V	Red	28AWG

4	DP	Gree n	21AWG
5	DM	White	
6	GND	Black	

Braided wire 2 specification drawing：



Pin	Junction	Color	Wire Diameter
1	GND	Black	21AWG
2	5V	Red	28AWG
3	NC		
4	DP	Green	21AWG
5	DM	White	
6	GND	Black	

Description：

1. If the camera uses an M3 camera (0.35-1.2m), the power supply current of the USB motherboard.If it is greater than 1A, it is recommended to use braided cable 1. If the power supply current of the USB motherboard is less than 1A, use braided cable 2. The 5V power cable of USB does not need to be connected and needs to be disconnected. An external 5V power supply greater than 1A is required use.

2. If the camera uses an M3 camera (0.5-3m), use a braided cable 2, and use an external 5V power supply greater than 1A.

3、Function Introduction

1. Depth data output: output uint16 depth data;
2.IR image data output: output 8-bit infrared intensity map;
3.RGB image output: output JPEG or 24-bit RGB data.

4、Instructions For Use

This product is connected to the host through USB line, and can be connected to DC 5V power supply when the power supply interface of motherboard is insufficient. SDK currently supports the Windows,Linux,Android platform, and the recommended configuration is as follows：

A. **Operating System (OS)**

Windows:

Windows 7, 8, 10 on x86 (32/64 bit)；

Ubuntu:

Ubuntu 12.04 (32/64/arm)and above；

Android:

Android 5.0 the above；

B. **Processor**

Pentium 4, 1.4GHz and above；

AMD Athlon 64/FX 1GHz and above；

Arm Cortex A8 and above；

C. RAM

Greater than 64MB；

D. External Storage

More than 250MB；

E. Interface

Micro USB 2.0；

F. Development Environment

VS2010，VS2015，Eclipse，Android Studio；

G. Graphics Card

Some sample programs need to be higher than ATI RADEON x1300 or NVIDIA GeForce 7300;

For more detailed instructions, please refer to the Developer's Guide after purchasing the RAKINDA M3 device.

After obtaining the RAKINDA M3 prototype, please select the appropriate system platform, read the installation and diagnostic guides of AiXi smart devices, and use the AiXi smart client to perform product development according to the Developer Guide Staff contact.

5、Application Scenario

The RAKINDA M3 product can be widely used in various depth visual detection scenarios, mainly including：

Industry	Application
Somatosensory entertainment	Somatosensory games, bone extraction, 3D fitting, gesture recognition, etc.
Face Recognition	Face payment, face access control, witness integrated machine, etc.
Robot	Avoidance
Education	3D interactive teaching, TOF learning Demo

6、 Precautions

1. Please use this product in accordance with the standard operating procedures to avoid damage;

2. Please do not touch the lens directly, so as to avoid lens wear or dust, which will affect the use effect;

3. Pay attention to dust and water resistance during long-term use of this product;

4. The surface temperature of this product may increase after a period of use, which is a normal phenomenon and generally does not affect the use;

5. This product is recommended for use in indoor environments.