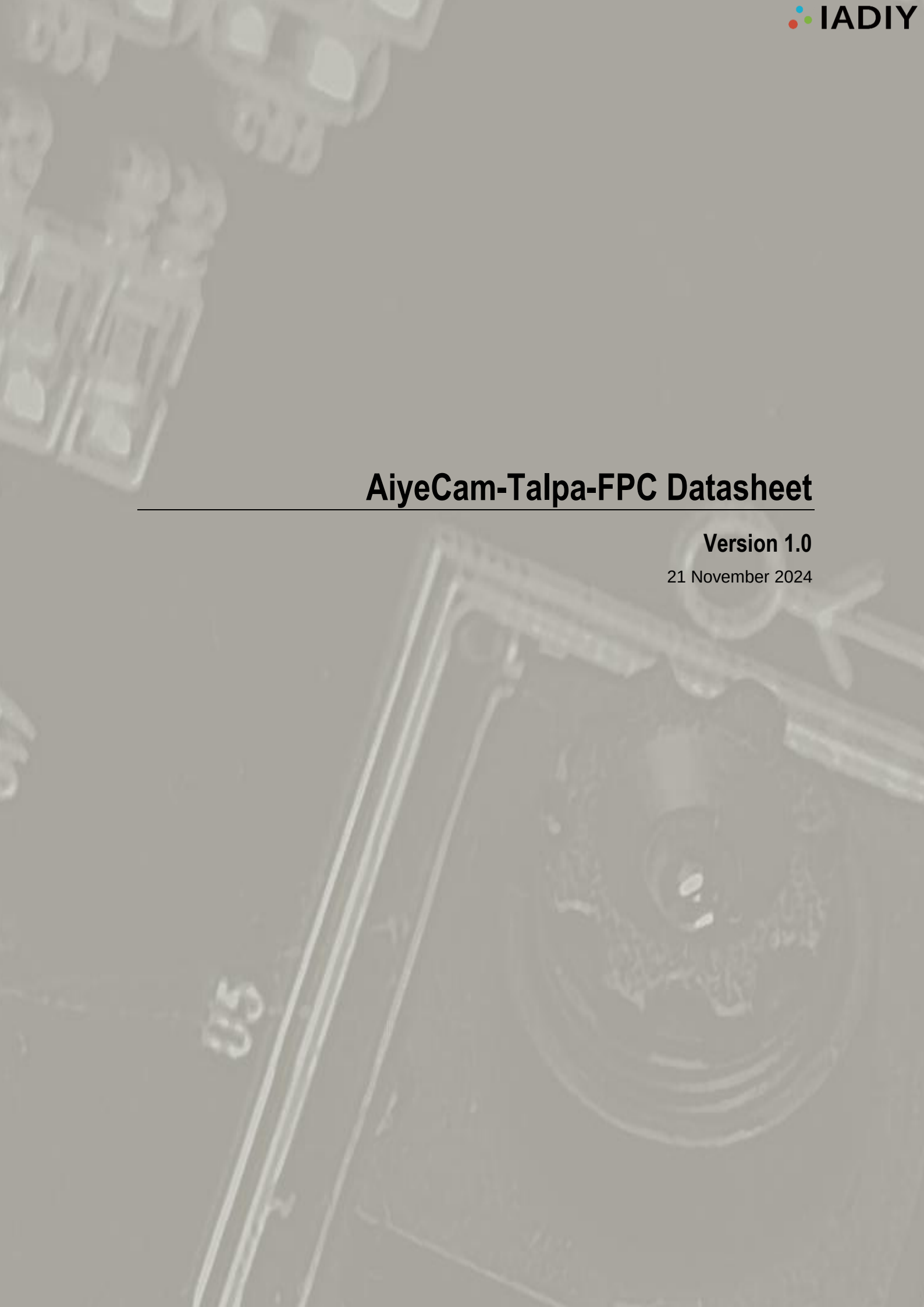

AiyeCam-Talpa-FPC Datasheet

Version 1.0

21 November 2024

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1. About AiyeCam-Talpa-FPC

1.1 Overview

The AiyeCam-Talpa-FPC is an FPC camera module in IADIY's AiyeCam-Talpa series, which is specifically designed for machine vision applications that require less stringent precision, it utilizes the AI SoC, NB1001. The AiyeCam-Talpa-FPC can be used not only for development purposes but also in commercial products, thanks to its compact size, which differentiates it from other products in the AiyeCam-Talpa series, as its small volume increases its potential for use in various application focusing on vision-based AI tasks that prioritize compact dimensions, high-volume production, and limited computational demands, including consumer electronics, IoT devices, AI toys, embedded systems, and robots.

Figure 1: AiyeCam-Talpa-FPC

1.2 Features

- Chip Overview
  - clock rate up to 96 Mhz
  - 288kB on-chip SRAM
  - Resolution: 320x320
  - Embedded Monochrome CIS
    - Sensitivity: 1.2v/lux-sec
    - Pixel Size: 3µm x 3µm
    - Sensor Size: 1108µm x 1024µm
  - 1 UART
  - 1 SPI controller
  - 1 I2C controller
  - 1 I2S controller
  - 8 PWM channels
  - 21 GPIO Pins
- FPC Camera Module Overview
  - 32Pin 0.5 pitch FPC
  - Comprehensive SDK and documentation
  - Module Unit Weight: 0.55g
  - Compact size: 24.00mm x 16.50mm x 4.90mm (LxWxH)
  - Optical lens with different FOV can be selected
- Various pre-trained AI Model
  - Human Detection
  - Face Detection

  Contact us for customization.

2. Hardware Specifications

2.1 Technical Overview

FPC Camera Module Specification:

Electrical				
Description	**Min**	**Typical**	**Max**	**Unit**
Operating Voltage		3.3		V
Operating Current		120		mA
I/O Voltage	-0.3		3.7	V
I/O Output Current		10		mA
I/O Input High Level	0.7**xVio**			V
I/O Input Low Level			**0.3xVio**	V
I/O Output High Level	**Vio-0.45**			V
I/O Input Low Level			0.45	V
Reset Pin Internal pull-up Resistance		100		kΩ
Environmental:				
Ambient Operating Temperature	0°C~70°C			
Storage Temperature	-50°C~150°C			

Table 1: Electrical Characteristic

Core Specification:

CPU	NB1001@up to 96 Mhz
Memory	288kB on-chip SRAM
Image Sensing Processor	• Grayscale • Resolution: 320x320 • Sensitivity: 1.2v/lux-sec • Pixel Size: 3µm x 3µm • Sensor Size: 1108µm x 1024µm
Peripherals	• 1 UART • 1 SPI controller • 1 I2C controller • 1 I2S controller • 8 PWM channels • 21 GPIO Pins

Table 2: CPU Characteristic

Lens Specification:

EFL	1.05mm
Total Track Length	4.40±0.1mm
BFL	1.05mm
F Number	2.8
FOV	55° ±5%
Barrel Thread	M5x0.35P

Table 3: Lens Characteristic

2.2 Dimensions

The following image shows the mechanical dimensions of the Talpa-FPC, measured in millimeters (**mm**).

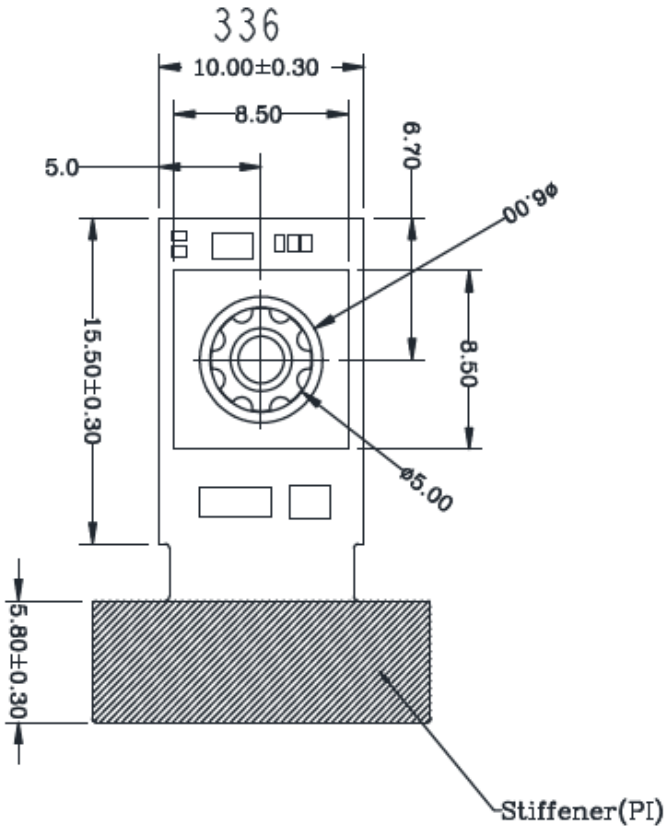

Figure 2: Dimensions

2.3 Pin Assignment

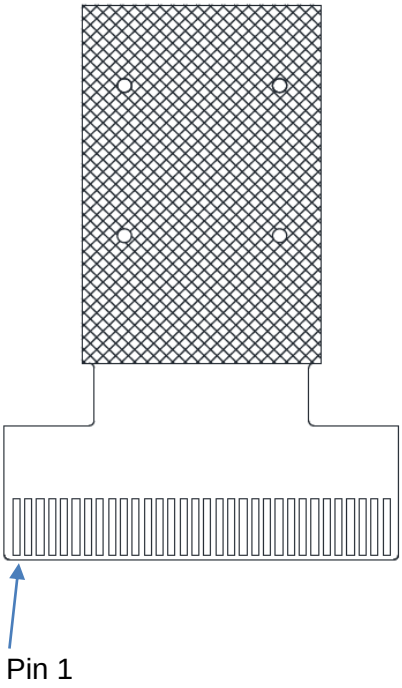

Figure 3: AiyeCam-Talpa-FPC, Bottom View

Pin Number	Name	Description
1	Power	power supply
2	NC	
3	VDDIO	
4	NC	
5	GND	
6	IOA0	
7	IOA1	
8	IOA2	
9	IOA3	
10	IOA4	
11	IOA5	
12	IOA6	
13	IOA7	
14	GND	Ground
15	IOB1	
16	IOB2	
17	IOB3	
18	IOB4	
19	IOB5	
20	IOB6	
21	IOB7	
22	GND	Ground
23	IOC1	
24	IOC2	
25	IOC3	
26	IOC4	
27	IOC5	
28	IOC6	
29	IOC7	
30	GND	Ground
31	RESET	Reset Pin, active low
32	INT	Interrupt

Table 4: Pin Assignment

3. Development

3.1 Software Development Kit and AI models

The AiyeCam-Talpa SDK is used for software development with AiyeCam-Talpa series products. For more details about the AiyeCam-Talpa SDK, please visit the Github repository. https://github.com/IADIY/AiyeCam-Talpa/

The current available AI models will be keep updating in our Github repository. If your desired AI model have not been listed in our Github repository, please feel free to contact us for customization.

3.2 AiyeCam-Talpa-FPC Extension Board

The extension board shown in the image below is designed for AiyeCam-Talpa-FPC camera module for testing or prototyping purpose. It allows developer to connect each pin with 2.54mm connector and flash the program into the memory by wiring an external CH341 programmer. An LED on the board also serves as an indicator during the development. For more details please visit IADIY online store.

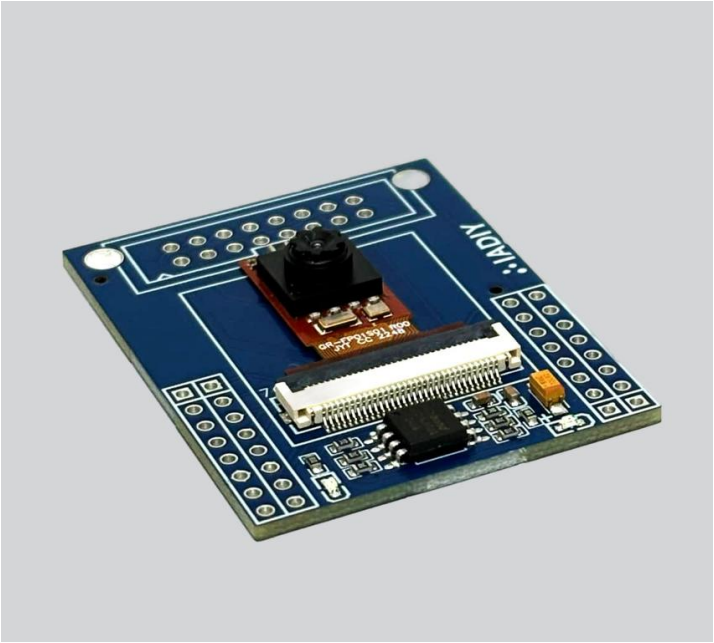

Figure 4: Extension Board for AiyeCam-Talpa-FPC