

CAM-IMX577-12MP



Date	Version
2025/11/06	V1.0

1. Product Description

1.1 Overview

The CAM-IMX577-12MP is a high-performance MIPI CSI-2 camera module featuring the Sony IMX577 12.3-megapixel back-illuminated CMOS image sensor, designed to deliver exceptional 4K imaging capabilities with high dynamic range and low-light performance.

To ensure optimal compatibility and performance, please note that this module is presently supported exclusively on the NVIDIA Jetson Orin Nano platform, Raspberry Pi

The module leverages the existing IMX477 driver in JetPack 6.2, eliminating the need for separate driver installation; we provide guidance on configuration via the Jetson-IO tool.

Under the latest NVIDIA JetPack SDK, it supports high frame rates including full resolution 4056×3040 (true 12MP) @ up to 60 fps in RAW10 format, ideal for AI vision, high-resolution surveillance, industrial AOI, machine vision, scientific imaging, and long-term time-lapse projects on the Jetson Orin Nano.

1.2 Key Features

- Genuine Sony STARVIS IMX577 sensor – real hardware 12MP with 1/2.3" optical format
- Supported modes: 4056×3040 @ 60 fps (full resolution), 1920×1080 @ 120 fps
- Starlight-level full-color imaging down to 0.01 Lux
- Wide lens field of view: HFOV 97.43°, VFOV 80.97°, DFOV 109.82°
- Built-in IR filter
- Native support through NVIDIA Argus / GStreamer (leverages IMX477 driver in JetPack 6.2); to manage expectations, please be aware that, in contrast to our other offerings, this module is currently optimized solely for the Jetson Orin Nano, with Raspberry Pi compatibility.
- Full 4-lane MIPI CSI-2 bandwidth utilization on Jetson Orin Nano
- DOL-HDR up to 110 dB
- Low power consumption, engineered for 7×24 h continuous operation

2. Technical Specifications

2.1 Sensor

Please note that, in line with our commitment to providing reliable solutions, this module is currently supported only on the Jetson Orin Nano platform, Raspberry Pi

Item	Specification
Sensor Model	Sony IMX577 (STARVIS series)
Sensor Type	1/2.3" Back-illuminated stacked CMOS
Total Pixels	4056 (H) × 3040 (V) = 12.3 Megapixels
Jetson Orin Nano Usable Area	4056 × 3040
Pixel Size	1.55 μm × 1.55 μm
Shutter Type	Electronic rolling shutter
Output Format	RAW10 (default) / RAW12
Max SNR	37.1 dB
Dynamic Range	71.3 dB (standard), up to 110 dB (DOL-HDR)

2.2 Lens Optics

Item	Specification
Horizontal FOV (HFOV)	65.6°
Vertical FOV (VFOV)	51.3°
Diagonal FOV (DFOV)	77.5°

2.3 Electrical

Item	Specification
Interface	MIPI CSI-2 (4-lane on Jetson Orin Nano)
Power Supply	3.3 V (directly from Jetson CSI port)
Operating Current	≈220 mA @ 4056×3040 60 fps

2.4 Mechanical

Item	Specification
Module Dimensions	38 × 38 mm
Weight	≈12–15 g (including flex cable)
Flex Cable	150 mm 15-pin 1.0 mm + 150 mm 22-pin 0.5 mm
Mounting Holes	4 × M2, compatible with Jetson cases & mounts

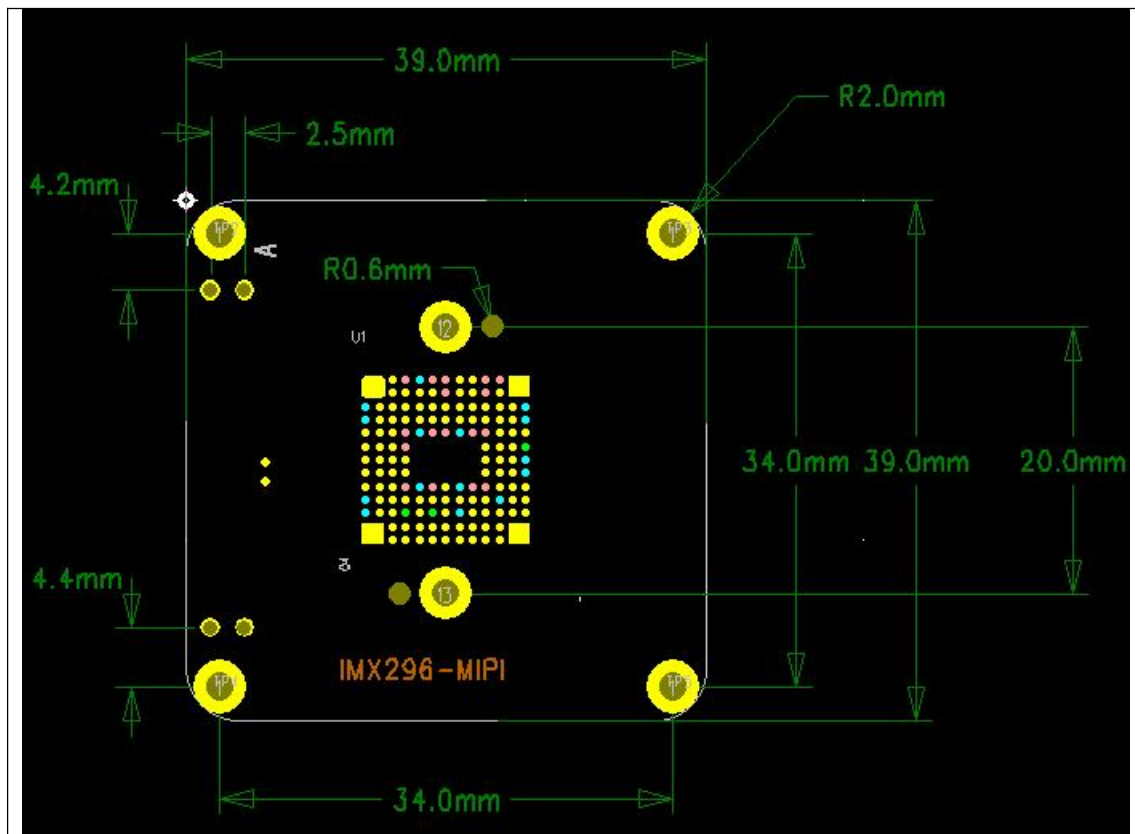
2.5 Environmental

Item	Specification
Operating Temperature	−20 °C to +70 °C

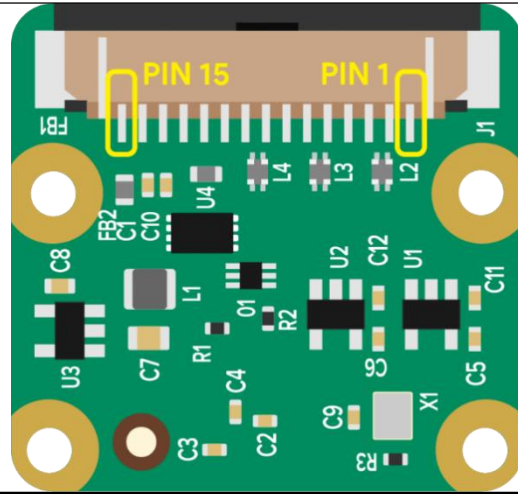
Storage Temperature	-30 °C to +85 °C
Humidity	20 %–85 % RH (non-condensing)

3 Hardware

3.1 Camera Size



3.2 Camera Module Pins Out



Pin #	Name	Description
1	GND	Ground
2	CAM_D0_N	MIPI Data Lane 0 Negative
3	CAM_D0_P	MIPI Data Lane 0 Positive
4	GND	Ground
5	CAM_D1_N	MIPI Data Lane 1 Negative
6	CAM_D1_P	MIPI Data Lane 1 Positive
7	GND	Ground
8	CAM_CK_N	MIPI Clock Lane Negative
9	CAM_CK_P	MIPI Clock Lane Positive
10	GND	Ground

3.4 Camera Lens

Default: CW-8MP

5 主要参数 (Main Items)

M12 4mm 1/1.8

5.1 光学参数规格 (Optical Specifications)

NO.	项目 (Items)		具体规格 (Specification)		
1	F No.		1.65±10%		
2	焦距(Focal-Length)		4.9±5%		
3	光学后焦 (Optical Back Focal Length)		6.41±0.2 (in air)		
4	机械后焦 (Mechanical Back Focal Length)		6.17±0.2 (in air)		
5	镜头总长(TTL)		22.28±0.2 (in air)		
6	像面大小 (Image circle)		Φ9.2 (MAX)		
7	镜片构成 (Lens structure)		4G4P		
8	接口 (Mount)		M12*P0.5		
9	镜头与底座螺纹配合扭力 (Clamp Force)		60-600gf.cm		
10	视场角(FOV)	sensor型号	H(水平)	V(垂直)	D(对角)
		1/1.8"(16:9)	86.7°	48.8°	99.5°
		1/2.5"(16:9)	70.2°	39.5°	80.6°
		1/2.7"(16:9)	65°	36.6°	74.6°
11	光学畸变 (Optical Distortion)	1/1.8"	1/2.5"	1/2.7"	
		-25.6%	-17.6%	-14.8%	
12	相对亮度 (Relative Illumination)	1/1.8"	1/2.5"	1/2.7"	
		40%	58%	60%	
13	最大主光线夹角 (CRA)	1/1.8"	1/2.5"	1/2.7"	
		16.2°	12.3°	11.9°	
14	近摄距 (M.O.D)		0.6m		
15	解像标准 (Resolution)		分辨率 (Resolution): 3840*2160 (8MP)		
16	重量 (Weight)		/		
17	操作方法 (Operation)	聚焦 (Focus)	手动 (Manual)		
		光圈 (Iris)	固定 (Fixed)		
18	环保&安全 (HSF&Safety)		RoHS		

Item	Specification
Horizontal FOV (HFOV)	65.6°
Vertical FOV (VFOV)	51.3°
Diagonal FOV (DFOV)	77.5°

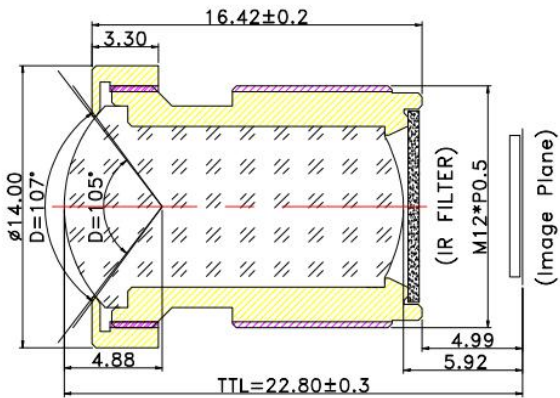
Options: D1326

PRODUCT NAME :D1326

1. SPECIFICATION:

1.RESOLUTION	16M
2.MAX IMAGE CIRCLE	ø7.86 mm
3.FOCAL LENGTH (EFL)	f= 3.56±5%
4.F/NO (INFINITE)	F/NO= 2.5±5%
5.BACK FOCAL LENGTH	BFL= 5.92±0.2
6.FLANGE BACK LENGTH	FB=4.99±0.2
7.Thread Size	M12*P0.5
8.Element	4G3P+IR650
9.IR FILTER SPEC.(BUILT-IN,Others available)	
Tavg>=90%	⊗ 440—620 nm
T=50%	⊗ 650±10 nm
Tavg<=3%	⊗ 700—1000 nm
T<5%	⊗ 1050 nm

NOTE	SPECIFICATION			
Sensor	1/2.3" IMX117	1/2.3" OV12896	1/2.3" IMX557	1/2.5"(JX-K08)
Vertical	69°y=2.338mm	70°	69.5°y=2.356mm	53.3°y=1.7496mm
Horizontal	88°y=3.115mm	89°	88.5°y=3.143mm	87.7°y=3.1104mm
Diagonal	105°y=3.879mm	107°	106°y=3.928mm	98.2°y=3.5687mm
DISTORTION	<-16.5%	<-17.6%	<-16.5%	<-13.1%
Relative Ill.	>59%	>55.3%	>59%	>72.42%
CRA	<9°	<10°	<9°	<10.33°

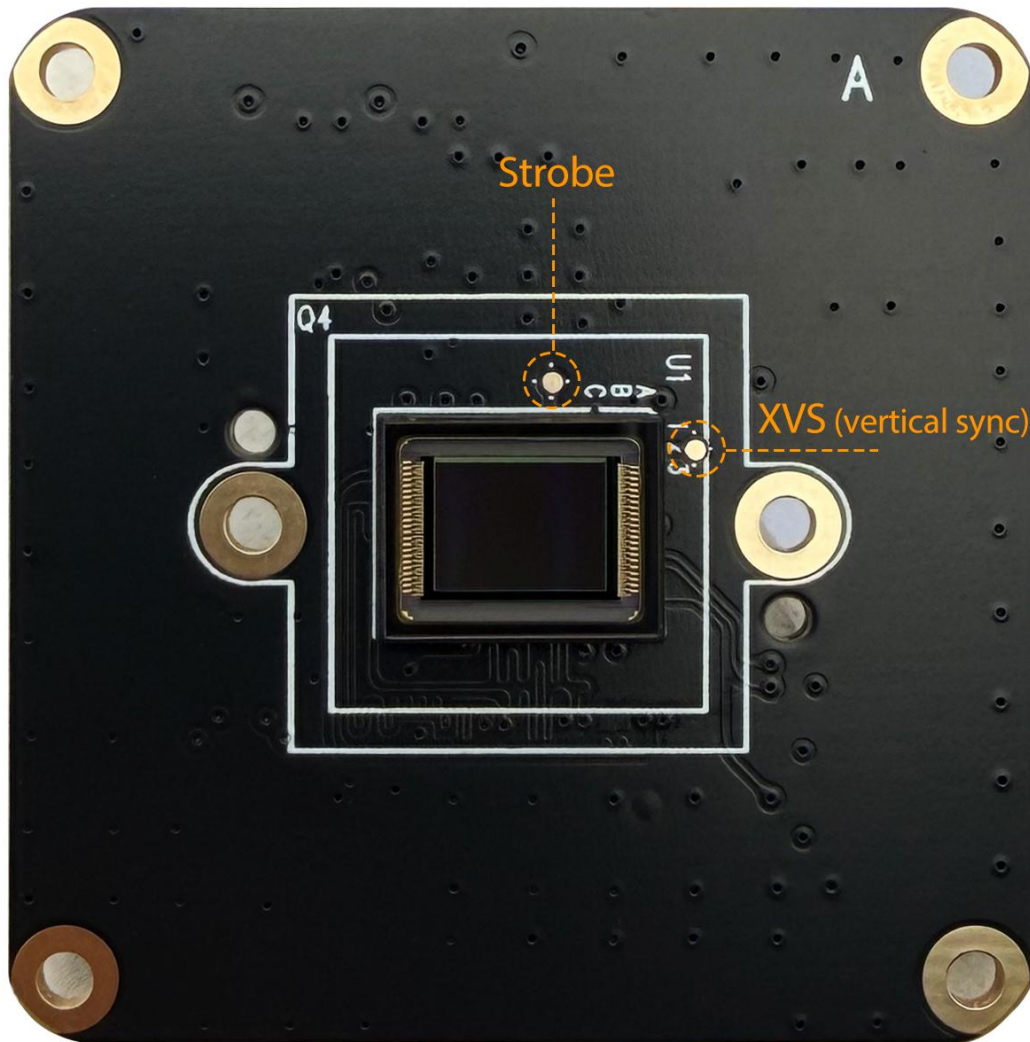


2. OPTICAL LAYOUT:

REV	DESCRIPTION	DATE	NAME	NAME	SCALE	DRAWN
①				VIEW	REV	00
②					DATE	CHECKED
③					BORDER	APPROVED
④						

Item	Specification
Horizontal FOV (HFOV)	97.43°
Vertical FOV (VFOV)	80.97°
Diagonal FOV (DFOV)	109.82°

3.5 Strobe&XVS(vertical sync)



5 User Guide On Raspberry PI

We provide pre-build driver and IPA package for customers, if customer could not find the packages for specific os or wish to build from source code.

Contact us by providing your purchase Order:

zoujy@inno-maker.com

support@inno-maker.com

5.1 Install Pre-build Driver And IPA

5.1.1 Download driver and IPA from below github link:

<https://github.com/INNO-MAKER/CAM-IMX577>

```
cd CAM-IMX577  
sudo chmod -R a+rw *x
```

5.1.2 Install the right pre-build Driver And IPA

```
cd prebuild-driver-ipa #pre-build driver and ipa  
# find the one fit to your os,below for trixie_pi5_k6.12.75  
sudo tar -xzf imx577_trixie_pi5_k6.12.75+rpt-rpi-2712_20260418-201631.tar.gz  
cd imx577_trixie_pi5_k6.12.75+rpt-rpi-2712_20260418-201631/scripts  
sudo ./install.sh  
sudo reboot
```

5.1.3 Modify config.txt

Note: scripts default set imx577 sensor module to cam0.If you connect to cam1, you need to change the config.txt

```
dtoverlay=imx577-overlay,cam0 # or dtoverlay=imx577-overlay,cam1
```

5.1.4 Test

```
rpical-hello -t 0
```

5.2 Libcamera&Rpicam Compiler And Install Guide (If 5.1 Not works)

```
sudo tar -zxvf libcamera_offline_build.tar.gz  
cd libcamera_offline_build  
sudo ./scripts/build_offline.sh
```

5.3 Driver Compiler And Install Guide

Comming Soon

6 User Guide On Jetson Orin Nano

6.1 Flash Jet Pack SDK 6.2

We recommend below method to write SD:

<https://developer.nvidia.com/embedded/learn/get-started-jetson-orin-nano-devkit>

6.2 Configure

6.2.1 Run the python scripts

```
sudo /opt/nvidia/jetson-io/jetson-io.py
```

6.2.2 Select the IMX477 option

6.2.3 Reboot the Jetson Orin Nano:

```
sudo reboot
```

6.3 Test the camera:

```
nvgstcapture --sensor-id=0 # Channel 0  
nvgstcapture --sensor-id=1 # Channel 1
```

6.3.1 Camera detect

6.3.2 Framerate and Resolutions

```
gst-launch-1.0 nvarguscamerasrc ! 'video/x-raw(memory:NVMM),width=4056,height=3040,framerate=60/1' ! nvvidconv ! xvimagesink # Live preview
gst-launch-1.0 nvarguscamerasrc ! 'video/x-raw(memory:NVMM),width=4056,height=3040,framerate=60/
```

7 Packing List

- 1x imx577 MIPI Camera
- 1x15pin fpc cable
- 1x 25pin fpc cable