

IMX477_Z1_LEGACY

IMX477 SENSOR BOARD DESIGNED FOR MOTORIZED
ZOOM LENSES

DATASHEET

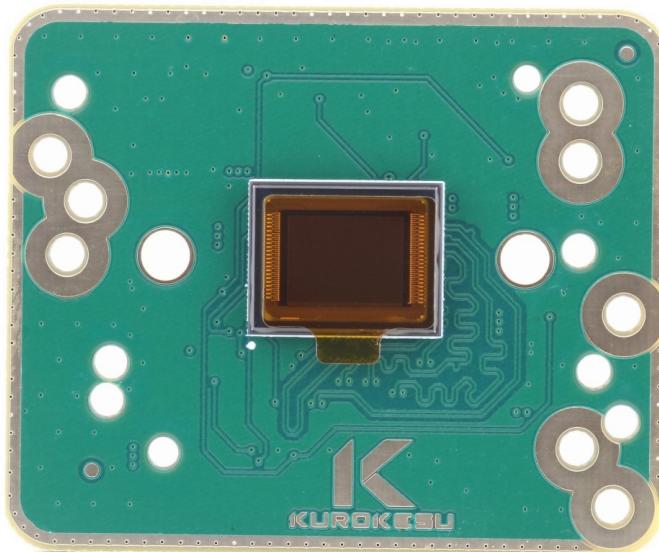


KUROKESU

2025-11-07, Rev. #19

Overview

Kurokesu IMX477 image sensor (1/2.3", 12.3MP) board with MIPI CSI-2 interface is designed to match motorized zoom lenses.



Features

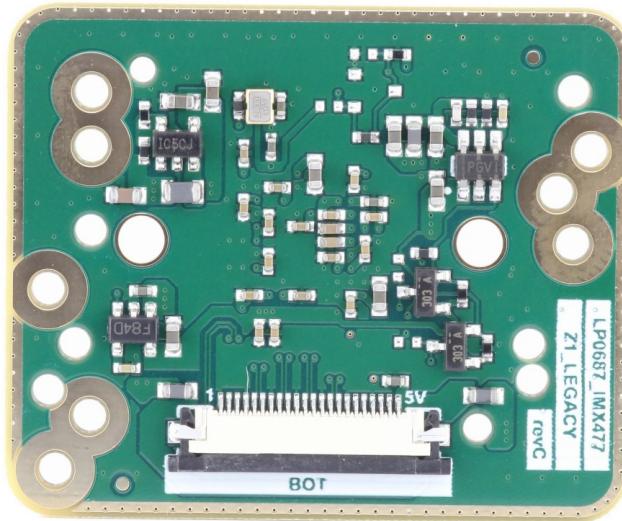
- Sensor: IMX477
- Optical Format: 1/2.3" (diagonal 7.857mm)
- Resolution: 4056(H) x 3040(V) 12.3MP
- Pixel Size: 1.55µm x 1.55µm
- Lane MIPI CSI-2
- Lens Mount: Board mount
- Multiple mounting options (designed to match [motorized zoom lenses](#))
- 4 lanes routed to FFC connector

Specifications

Pixels	4056 H x 3040 V
Sensor size	7.564 x 5.476 mm
Shutter	Electronic Rolling Shutter
Sensor pixel size	1.5µm x 1.5µm
Scan	Progressive
Rated power	2W max
Sensor	Sony IMX477-AACK
Weight	4g
Lens mount	Board mount
Operational temperature	TBD
Weight	30.5x37x4.17mm

FFC connector pin-out

IMX477 camera board has 22pin 0.5mm spaced pitch FFC connector 687122183722 from [Würth Elektronik](#). Cable orientation is bottom (see notes on the PCB).



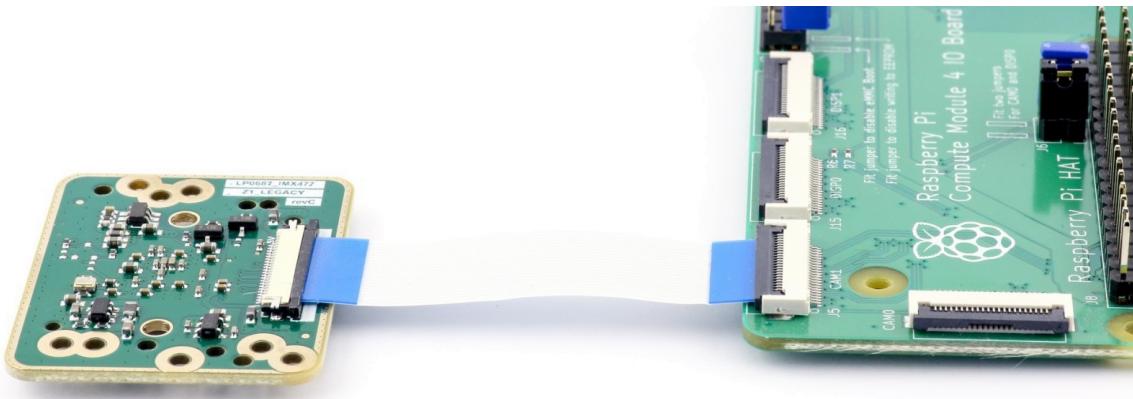
Pinout table

Pin nr	Signal	Note
1	GND	
2	MIPI_D1_N	
3	MIPI_D1_P	
4	GND	
5	MIPI_D2_N	
6	MIPI_D2_P	
7	GND	
8	MIPI_CLK_N	
9	MIPI_CLK_P	
10	GND	
11	MIPI_D3_N	
12	MIPI_D3_P	
13	GND	
14	MIPI_D4_N	

15	MIPI_D4_P	
16	GND	
17	SEN_PWR_2.8V	Sensor analog power supply
18	LED	Not used
19	GND	
20	SCL	
21	SDA	
22	3.3V	Logic power supply

Connectivity with Raspberry PI compute module

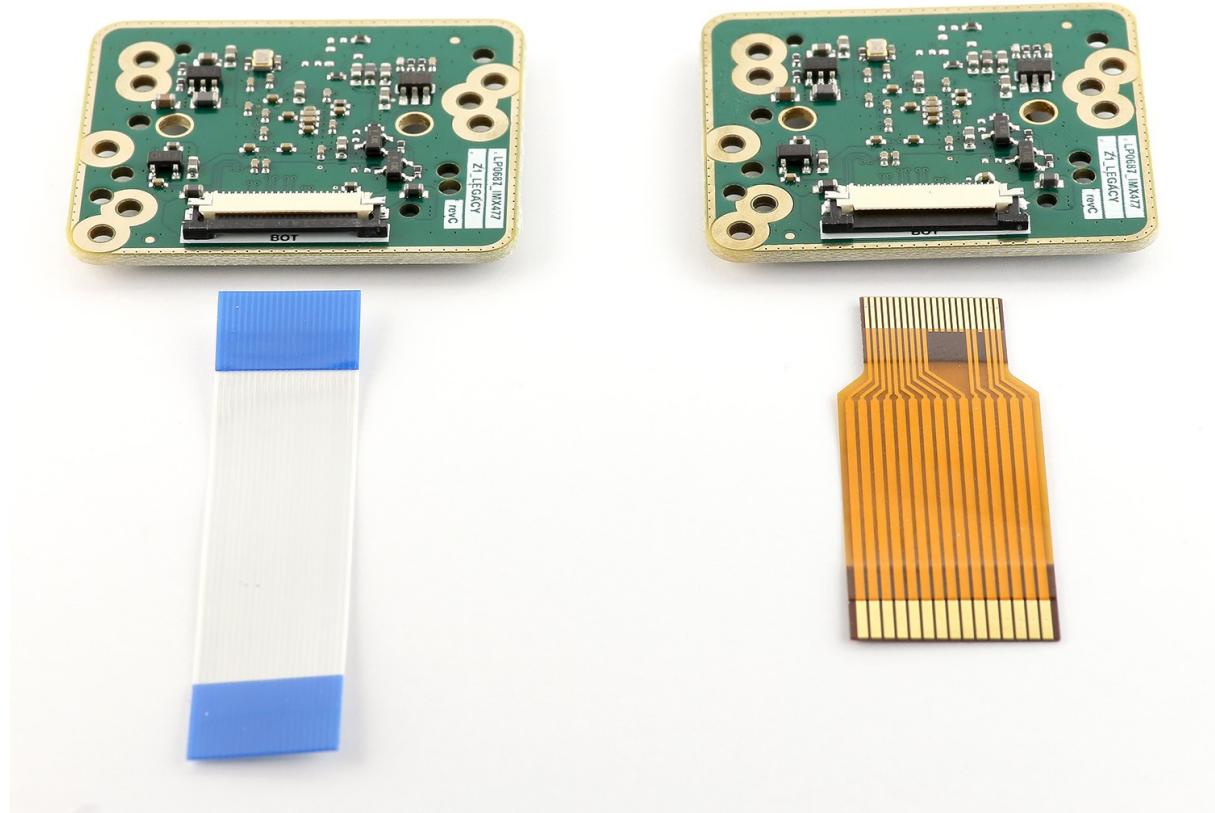
Use 22pin 0.5mm pitch FFC cable like 687622050002 (5cm) / 687622100002 (10cm) from [Würth Elektronik](#)



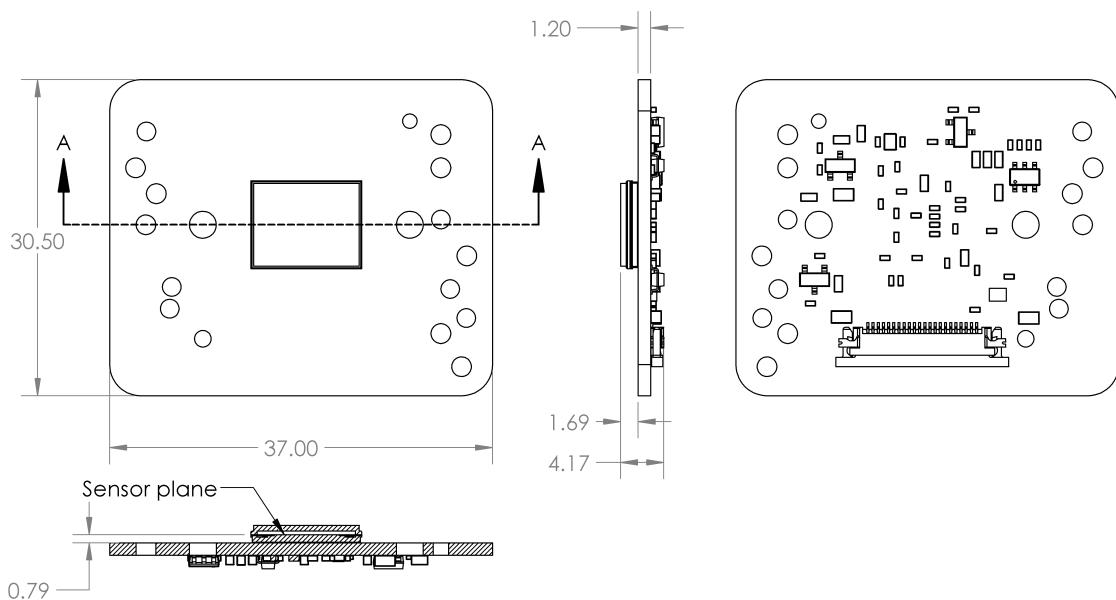
TOP / BOT connector

Initially, we designed an IMX477 board to be used with Raspberry Pi CM4 IO board and selected 22pin 0.5mm pitch connector contacts facing BOTTOM. It was a direct connection from IMX477 to the CM4 IO board with non reversed FFC cable.

We have replaced the connector facing the TOP side to be more flexible. It allows the same connection to CM4 IO board with reversed FFC cable. Also, standard 22pin 0.5mm to 15pin 1.0mm cables can be used to attach to more boards like NVIDIA Jetson, or other modifications of the Raspberry Pi compute modules.



Dimensions



● 3D model is maintained in our [official GitHub repository](#)

Using with Raspberry Pi

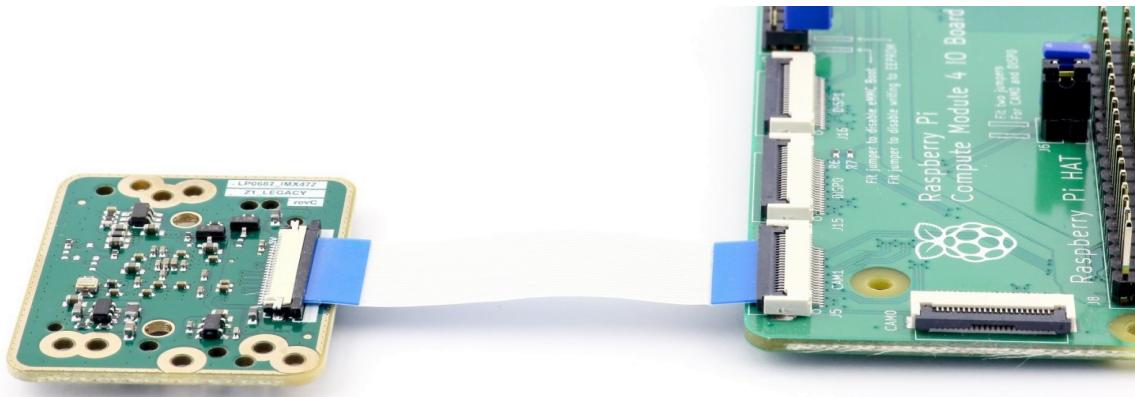
Raspberry Pi CM4 compute module

Quick guide how to use camera module with [Raspberry Pi compute module](#) and [IO board](#). Raspberry Pi software is in active development thus changes fairly quickly. We will touch preparation procedure very briefly.

⚠ Only compute modules support cameras without crypto chip.

Prepare board

- Fit jumpers J2 - disable EMMC boot
- Fit jumpers J6 - enable CAM0, DISPO
- Connect camera to CAM1 port



Install OS

- Install rpiboot
- Start rpiboot
- Use rpi-imager to flash OS

Boot

- Remove J2 jumper - disable EMMC boot
- Scan for IP on local network
- Connect monitor and keyboard, finish setup
- Expand system

Prepare camera

- Setup single camera mode

```
sudo wget https://datasheets.raspberrypi.org/cmio/dt-blob-cam1.bin -O /boot/dt-
blob.bin
sudo reboot
```

- Check if camera is detected after reboot

```
vcgencmd get_camera
```

Recipe #1 - show video in console as ASCII text

```
raspivid -t 0 -o - | gst-launch-1.0 fdsrc ! h264parse ! rtph264pay config-
interval=1 pt=96 ! decodebin ! videoconvert ! aasink
```

Recipe #2 - stream video over network

- Start streaming on Raspberry Pi

```
raspivid -o - -t 9999999 | cvlc -vvv stream:///dev/stdin --sout
'#rtp{sdः=rtsp://:8554/}' :demux=h264
```

- Start client on Windows computer (change Raspberry Pi IP address to match your setup)

```
set PATH=C:\gstreamer\1.0_1.18.3\bin\;C:
\gstreamer\1.0_1.18.3\lib\gstreamer-1.0\;C:
\gstreamer\1.0_1.18.4\libexec\gstreamer-1.0\
gst-launch-1.0 rtspsrc location=rtsp://192.168.0.86:8554/ latency=10 !
decodebin ! timeoverlay ! videoscale ! videoscale ! video/x-
raw,width=1280,height=720 ! autovideosink
```

Demo video with 40x motorized zoom lens

For more details check [blog post](#)



PCB revisions

RevA

- Proof of concept

RevB

- Route 4 MIPI lines
- Add lens holes

RevC

- Cleanup design
- Replace LDO with ones that can be purchased