

MIPI CSI2 camera modules

MIPI CSI-2 camera modules for Raspberry Pi & Jetson platforms. Cameras share same dimensions and 4 lane 22pin connector along with extra 5 pin connector for synchronization signals.

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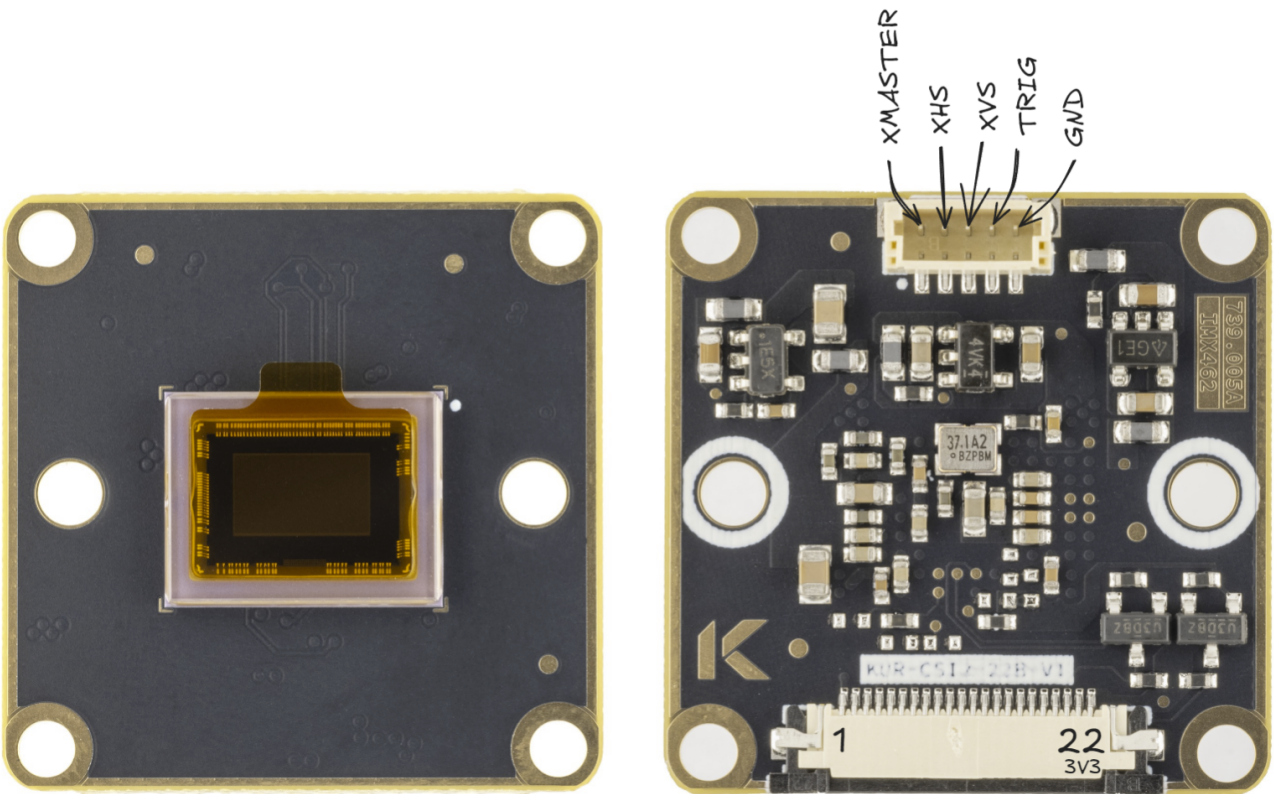
Overview

- RGB or Mono sensor.
- M12/M12L/bare board.
- Global / Rolling shutter.
- High speed.
- Wide dynamic range.
- 22-pin FFC (0.5mm) standard connector.
- Small footprint.
- Extra connector for synchronization signals.
- <1 W typical - perfect for edge-AI, robotic vision, surveillance, and many more applications.

462x-CSI

Camera variants

SKU	Lens mount	Chroma	Note
462C-CSI-M12	9.5mm for wide angle lenses	RGB Color	Most common use for wide angle and fish-eye lenses.
462C-CSI-M12L	14.7mm for regular and telephoto lenses	RGB Color	Modification for lenses above 6mm (typical)
462M-CSI-M12	9.5mm for wide angle lenses	Mono	Same as 462C-M12 but Mono sensor for better light sensitivity
462M-CSI-M12L	14.7mm for regular and telephoto lenses	Mono	Same as 462C-M12L but Mono sensor for better light sensitivity



MIPI CSI2 wiring

Interface connector 22pin 0.5mm pitch 687122183622 from Würth Elektronik. Top facing pins.

Pin	Signal	Description
1	GND	
2	D0_N	
3	D0_P	
4	GND	
5	D1_N	
6	D1_P	
7	GND	
8	CLK_N	
9	CLK_P	
10	GND	
11	D2_N	
12	D2_P	
13	GND	
14	D3_N	
15	D3_P	
16	GND	
17	ENABLE	Wired to sensor XCLR
18	N.C.	
19	GND	
20	SCL	
21	SDA	

22	+3.3V	
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AUX wiring

Interface connector 5 pin 1mm pitch 665305124022 from Würth Elektronik.

Pin	Signal	Description
1	XMASTER	Master / Slave selection
2	XHS	Horizontal sync signal
3	XVS	Vertical sync signal
4	TRIG	Trigger mode input
5	GND	

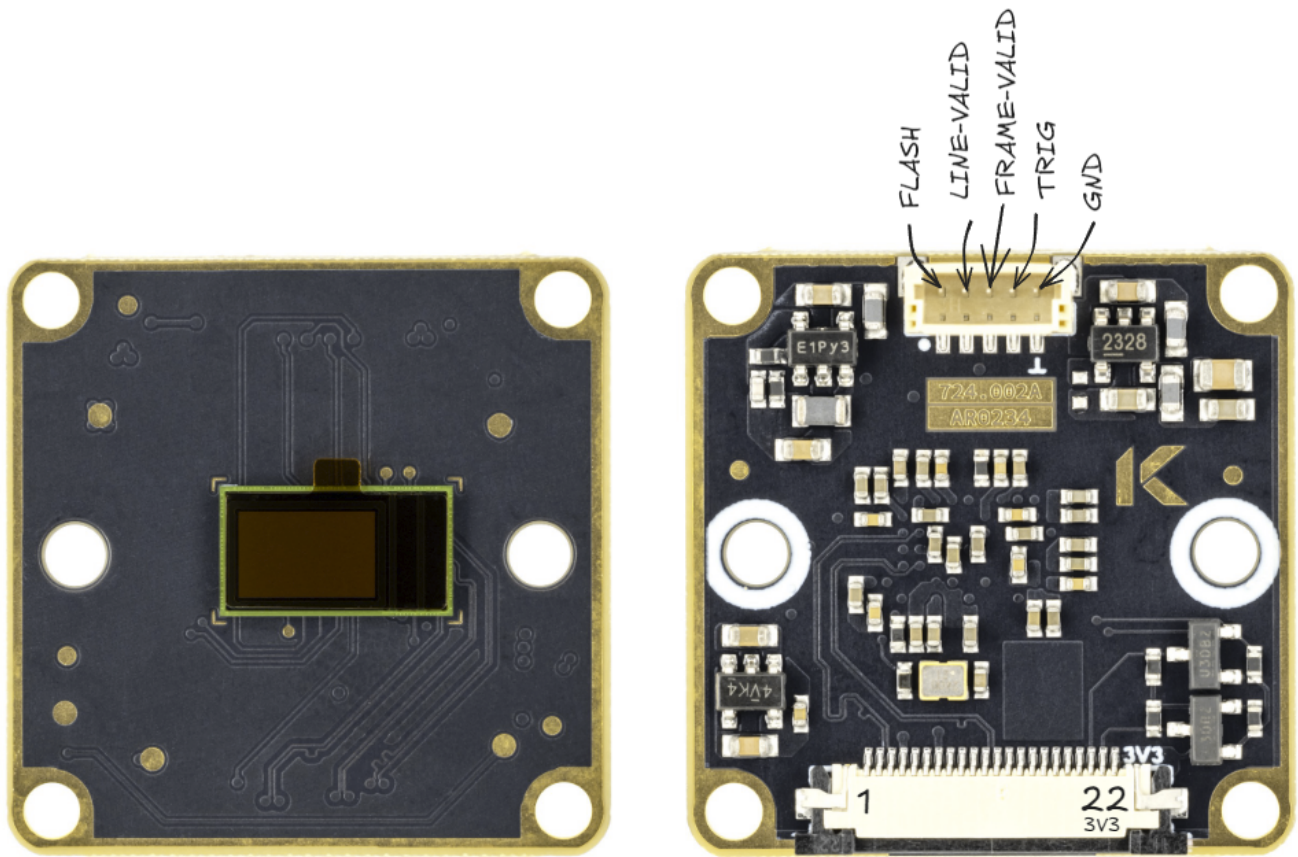
234x-CSI

The AR0234CS is a 2.3-megapixel global shutter CMOS sensor that uses a 3.0µm pixel array of 1920 x 1200, giving a 1/2.6" (6.8mm diagonal) optical format. It outputs 8 or 10 bit RAW through up to four MIPI CSI-2 lanes at 900 Mb/s per lane. Default streaming reaches 120 fps at full resolution, while a 2x2 binned 960 x 600 window delivers 237fps. Best suitable for: bar-code scanners, gesture-recognition devices, 3D scanners, positional tracking systems, iris scanning terminals, augmented reality headsets, virtual reality headsets, biometric sensors, machine-vision cameras, and industrial-inspection equipment.

Camera variants

SKU	Lens mount	Chroma	Note
234C-CSI-M12	9.5mm for wide angle lenses	RGB Color	Most common use for wide angle and fish-eye lenses.
234C-CSI-M12L	14.7mm for regular and telephoto lenses	RGB Color	Modification for lenses above 6mm (typical)

Pinout



Interface connector 22pin 0.5mm pitch 687122183622 from Würth Elektronik. Top facing pins.

Pin	Signal	Description
1	GND	
2	D0_N	
3	D0_P	
4	GND	
5	D1_N	
6	D1_P	
7	GND	
8	CLK_N	
9	CLK_P	
10	GND	

11	D2_N	
12	D2_P	
13	GND	
14	D3_N	
15	D3_P	
16	GND	
17	ENABLE	Wired to sensor RESET_N
18	N.C.	
19	GND	
20	SCL	
21	SDA	
22	+3.3V	

AUX wiring

Interface connector 5 pin 1mm pitch 665305124022 from Würth Elektronik.

Pin	Signal	Description
1	FLASH	
2	LINE-VALID	
3	FRAME-VALID	
4	TRIG	
5	GND	

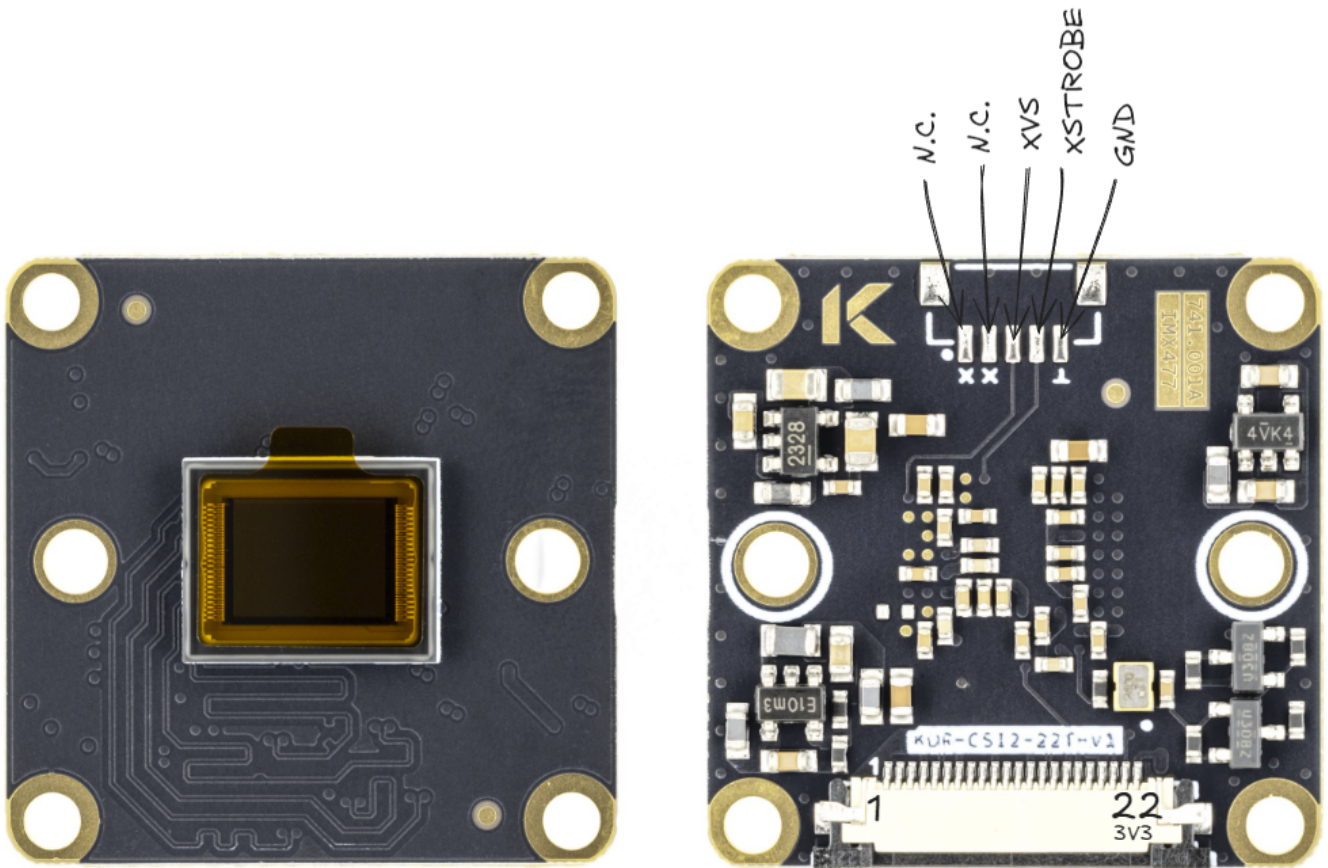
477x-CSI

The IMX477 is a stacked back side illuminated Exmor RS CMOS image sensor with a 7.857 mm (type 1/2.3”) optical format and 4056 × 3040 active square pixels at a 1.55µm pitch, giving 12.3-megapixel resolution. It uses an electronic rolling shutter with variable integration time, 10/12-bit ADCs that stream RAW12/10/8 over a 2 or 4-lane MIPI CSI-2 interface running up to 2.1Gb/s per lane. Normal mode delivers the full 4056 x 3040 picture at 60fps in 10-bit format and can stream up to 240fps in 1080 resolution. Auxiliary functions include pixel-binning and V-sub-sampling engines, ambient light and temperature sensors, flash strobe drive, HDR mode, independent image flip/mirror, power save mode and multi camera synchronization. Best suitable for: consumer 4K camcorders and other high speed, multi camera video systems.

Camera variants

SKU	Lens mount	Chroma	Note
477C-CSI-M12	9.5mm for wide angle lenses	RGB Color	Most common use for wide angle and fish-eye lenses.
477C-CSI-M12L	14.7mm for regular and telephoto lenses	RGB Color	Modification for lenses above 6mm (typical)

Pinout



Interface connector 22pin 0.5mm pitch 687122183622 from Würth Elektronik. Top facing pins.

Pin	Signal	Description
1	GND	
2	D0_N	
3	D0_P	
4	GND	
5	D1_N	
6	D1_P	
7	GND	
8	CLK_N	
9	CLK_P	

10	GND	
11	D2_N	
12	D2_P	
13	GND	
14	D3_N	
15	D3_P	
16	GND	
17	ENABLE	Wired to sensor RESET_N
18	N.C.	
19	GND	
20	SCL	
21	SDA	
22	+3.3V	

AUX wiring

Interface connector 5 pin 1mm pitch 665305124022 from Würth Elektronik.

Pin	Signal	Description
1	N.C.	Not connected
2	N.C.	Not connected
3	XVS	
4	XSTROBE	
5	GND	

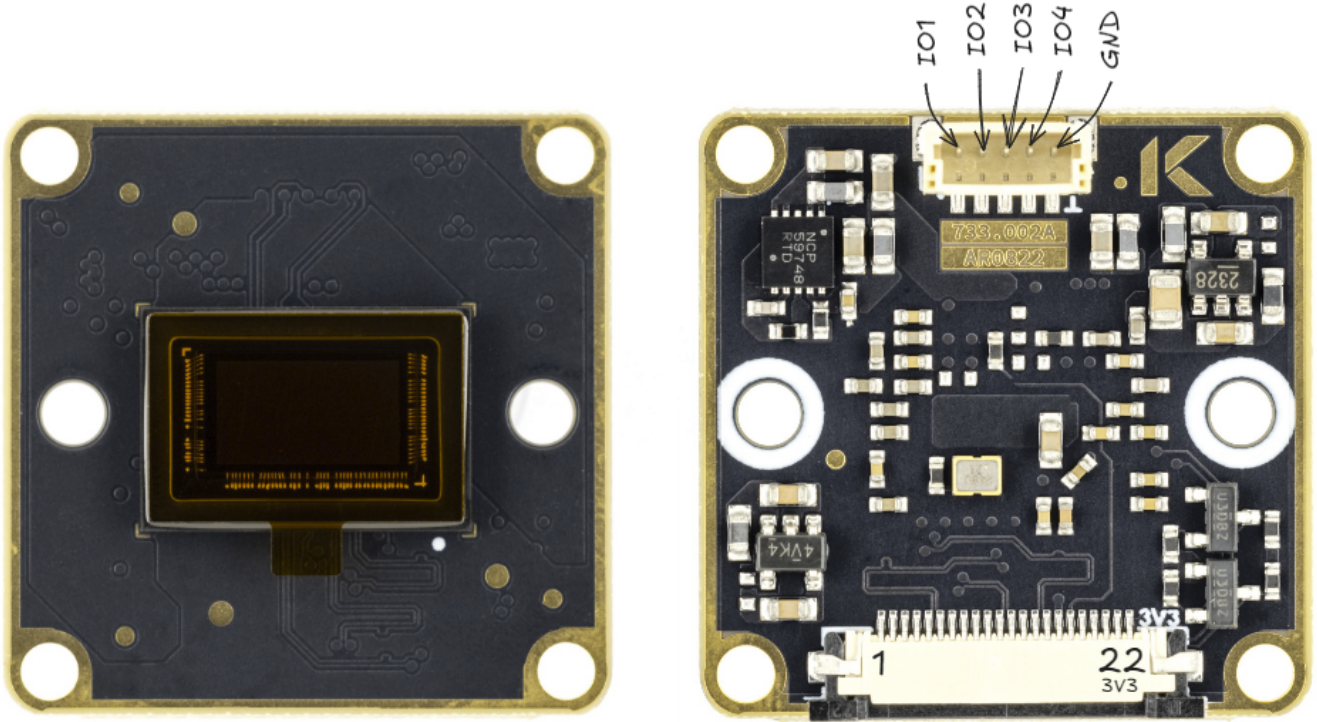
822x-CSI

The AR0822 is an 8-megapixel stacked back-side-illuminated CMOS image sensor that uses a 2.0µm pixel pitched array of 3840 x 2160 pixels, corresponding to a 1/1.8" (8.81 mm diagonal) optical format. It offers electronic rolling-shutter and global-reset-release readout, feeding up to 4-lane MIPI CSI-2 interface at 350 Mb/s to 2 Gb/s per lane via an 12-bit ADC. In linear mode the device streams native 4 K video at 60 frames per second; high-dynamic-range operation includes two-exposure line-interleaved HDR and three-exposure embedded HDR at up to 30 fps, producing a composite dynamic range of 120 dB, while a single-exposure extended-dynamic-range mode reaches 45 fps. In FullHD mode sensor can stream up to 120fps. Best suitable for: security camera systems, IoT imaging nodes and connected device cameras, vehicle car DVR (dash cam) recorders.

Camera variants

SKU	Lens mount	Chroma	Note
822C-CSI-M12	9.5mm for wide angle lenses	RGB Color	Most common use for wide angle and fish-eye lenses.
822C-CSI-M12L	14.7mm for regular and telephoto lenses	RGB Color	Modification for lenses above 6mm (typical)
822M-CSI-M12	9.5mm for wide angle lenses	Mono	Same as 822C-M12 but Mono sensor for better light sensitivity
822M-CSI-M12L	14.7mm for regular and telephoto lenses	Mono	Same as 822C-M12L but Mono sensor for better light sensitivity

Pinout



Interface connector 22pin 0.5mm pitch 687122183622 from Würth Elektronik. Top facing pins.

Pin	Signal	Description
1	GND	
2	D0_N	
3	D0_P	
4	GND	
5	D1_N	
6	D1_P	
7	GND	
8	CLK_N	
9	CLK_P	
10	GND	
11	D2_N	

12	D2_P	
13	GND	
14	D3_N	
15	D3_P	
16	GND	
17	ENABLE	Wired to sensor RESET_N
18	N.C.	
19	GND	
20	SCL	
21	SDA	
22	+3.3V	

AUX wiring

Interface connector 5 pin 1mm pitch 665305124022 from Würth Elektronik. IOx pins are defined with AR0822 registers.

Pin	Signal	Description
1	IO1	
2	IO2	
3	IO3	
4	IO3	
5	GND	

Dimensions

- Board dimensions: 26 x 26 x 8.31mm
- Weight: ~2.8g

