

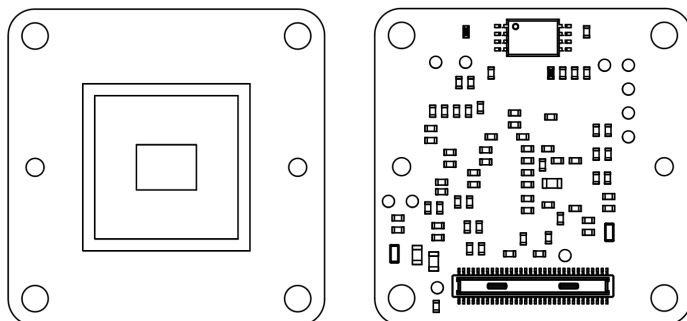


FRAMOS Sensor Module

2023-04-14

Version v1.2e

FRAMOS Datasheet



Contact Information

FRAMOS GmbH

Technical Support:
support@framos.com
Website:
<https://www.framos.com>

FSM-IMX296

a Sony® IMX296LLR / IMX296LQR Sensor Module

General Description:

This FRAMOS Sensor Module (FSM) provides the Sony IMX296 sensor on a very compact 26.5 mm x 26.5 mm module. The Global Shutter sensor has a native resolution of 1.6 [MP] and an optical format of 1/2.9 at a pixel size of 3.45 x 3.45 μm . The Module has a MIPI CSI-2 interface with up to 1-data lanes.

FRAMOS Sensor Modules enable users to seamlessly plug the latest image sensor technology into common processing platforms. These modules feature a fully modular design that utilizes standardized connectors and mechanicals. The modules include image sensors on a PCB and have resolutions from 0.4 MP to 24 MP with both rolling and global shutter options. FRAMOS Sensor Modules are ideal in evaluating a sensor as part of a proof-of-concept design. The modules also can compare and contrast multiple sensors using a common backend and integrate them into third-party processor boards.

Targeted Use:

Applications for industry, security and surveillance, and consumer cameras.

Specifications:

Model Name	FSM-IMX296M / FSM-IMX296C (V1A-V1B)
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Image Sensor

Vendor	Sony IMX296LLR / IMX296LQR
Shutter Type	CMOS Rolling Shutter

Technology / Grade	Pregius (Gen2) / Sensing
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Chromacity	Mono
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Optical Format	1/2.9"
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Pixel Size	3.45 µm x 3.45 µm
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Maximum Resolution	1.6 Mpx / 1456 x 1088 px
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Framerate (Maximum)	60.4 FPS (1-Lane)
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Bit Depth	10 bit
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Interface

Data Interface	MIPI CSI-2 (1 Lane)
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Communication Interface	I ² C (4-wire serial)
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Drive Frequency	37.125 / 74.25 / 54 MHz
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Input Voltages	1.2V, 1.8V, 3.3V
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Interface Connector	Hirose DF40C-60DP-0.4V(51)
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EEPROM (Sensor ID)	No
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Mechanical

Dimensions (H x W)	26.5 mm x 26.5 mm
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Environmental

Operating Temperature	-30°C to +75°C (function) -10°C to +60°C (performance)
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Storage Temperature	-40°C to +85°C
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Ambient Humidity	20% to 95% RH, non condensing
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Software Support

Driver	V4L2 Based Device Driver Libargus / Argus Camera (ISP Tuned) Isaac ROS compliant
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Supported Platforms	NVIDIA Jetson Family: AGX Xavier, Xavier NX, AGX Orin. Qualcomm DragonBoard 410C
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Software Version(s)	NVIDIA JP5.1 / L4T35.2.1 DB410C: Linaro 18.01 / Kernel 4.14
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Suggested Accessories and Adapters

Compatible FSA Type	FSA-FT6/A
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Recommended Devkit(s)	FSM-IMX296x/TXA_Devkit (AGX) FSM-IMX296x/NVN_Devkit (NX)
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Lens Mounts	M12 or C/CS-Mount options
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Features:

- Image sensors on a PCB with connector, available off-the-shelf.
- Large lineup of products with resolutions from 0.4MP to 24MP, available with either rolling or global shutter imagers
- Available with MIPI CSI-2 (D-PHY) output.
- Converter boards for SubLVDS and SLVS imagers
- Standardized mechanicals with small footprints of 26.5 x 26.5 mm and 28 x 28 mm

Applications:

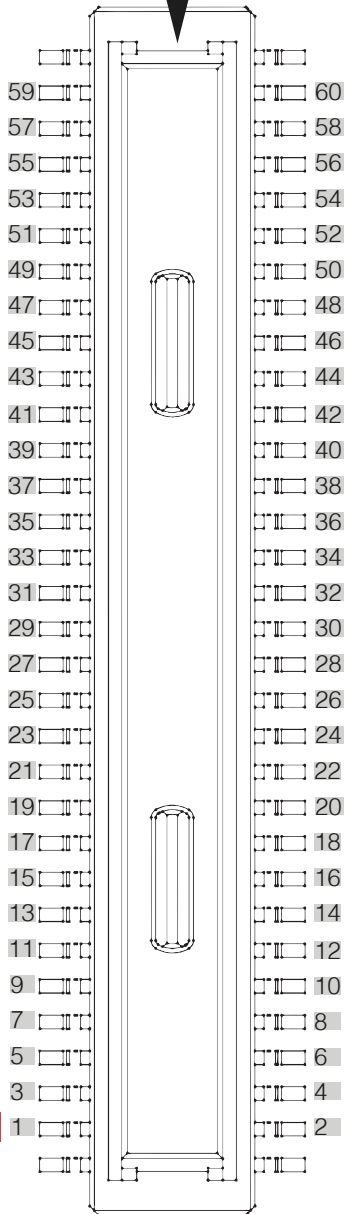
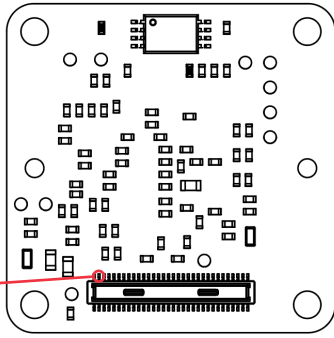
- Engineers looking to reduce their time-to-market with a rapid prototyping module, ready to integrate to various third party processing platforms.
- Embedded vision projects which benefit from an open platform by diving down to the component level. Gauge implementations against Sony's reference.
- Make educated "build vs buy" decisions and benefit from FRAMOS's long-term camera development experience for your tailored productization.

Note Some modules are compatabile with earlier versions of Jetpack. Contact us for further available options.

Note A matrix with compatible Sensor Adapters (FSA) and Processor Board Adapters (FPA) for various setups can be found in the FSM Ecosystem User Manual.

PixelMate™ Connector Pinout and Signal Description

WARNING Pin 1 is identified on the board. Orient accordingly, paying close attention to the pin number in reference to the locator view illustrated below. Failure to align correctly will cause permanent damage.

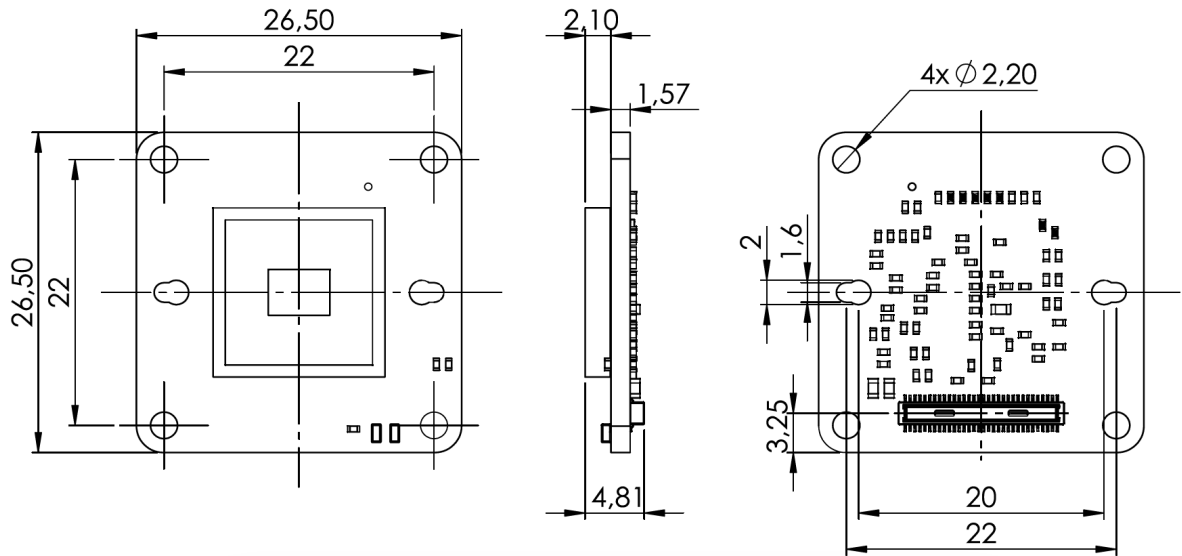


Note Signals are routed directly from image sensor to connector. Details on specific signals are described in the respective Sony® image sensor datasheet.

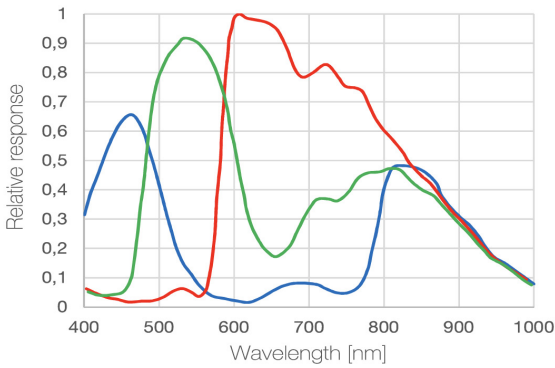
J1 Pin	Pin Description
Pin1	NC
Pin3	NC
Pin5	3V3
Pin7	3V3
Pin9	1V8
Pin11	GND
Pin13	GND
Pin15	XCLR
Pin17	NC
Pin19	XMASTER
Pin21	SCK_SCL
Pin23	XCE
Pin25	XVS
Pin27	SDI_SDA
Pin29	XHS
Pin31	XTRIG
Pin33	NC
Pin35	SLAMODE
Pin37	GND
Pin39	INCK
Pin41	NC
Pin43	GND
Pin45	NC
Pin47	NC
Pin49	GND
Pin51	CSI_D0_N
Pin53	CSI_D0_P
Pin55	GND
Pin57	NC
Pin59	NC

J1 Pin	Pin Description
Pin2	NC
Pin4	NC
Pin6	1V2
Pin8	1V2
Pin10	NC
Pin12	GND
Pin14	GND
Pin16	NC
Pin18	SDO
Pin20	TOUT1
Pin22	NC
Pin24	NC
Pin26	TOUT2
Pin28	NC
Pin30	NC
Pin32	TOUT0
Pin34	NC
Pin36	NC
Pin38	GND
Pin40	NC
Pin42	NC
Pin44	GND
Pin46	NC
Pin48	NC
Pin50	GND
Pin52	NC
Pin54	NC
Pin56	GND
Pin58	CSI_CLK_P
Pin60	CSI_CLK_N

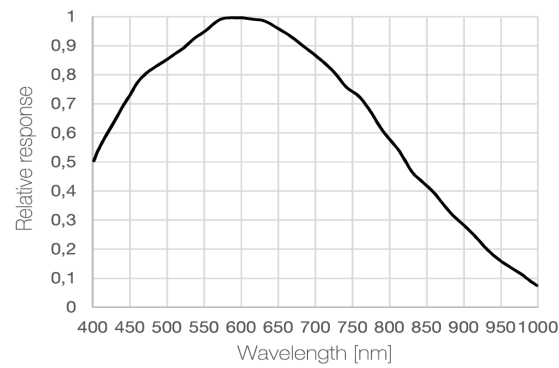
Physical Dimensions



FSM-IMX296C (Color)
Spectral Sensitivity

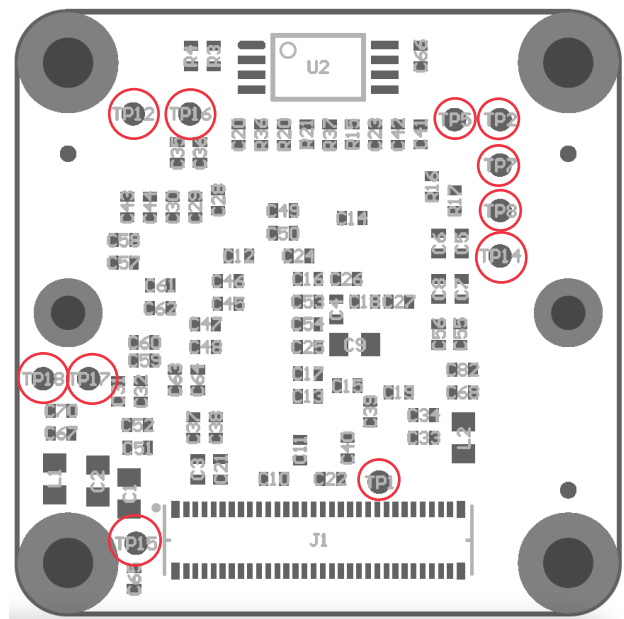


FSM-IMX296M (Mono)
Spectral Sensitivity



Note Additional information surrounding the image sensor can be found in the Sony® datasheets.

Testpoints



Test Point	Description
TP1	XHS
TP2	XVS
TP5	SCK SCL
TP7	SDI SDA
TP8	INCK
TP12	XCLR
TP14	GND
TP15	3V3
TP16	1V8
TP17	1V2
TP18	GND

Order Codes

FSM-IMX296M-000-V1B	No lens mount
FSM-IMX296M-01S-V1A	M12 Mount (DW LH-15.0)
FSM-IMX296M-01C-V1A	M12 Mount (CMT821B)
FSM-IMX296M-00G-V1A	M12 Mount (CMT168)
FSM-IMX296M-04G-V1A	C/CS-Mount (FMA-MNT-CCS/265-V1A)

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