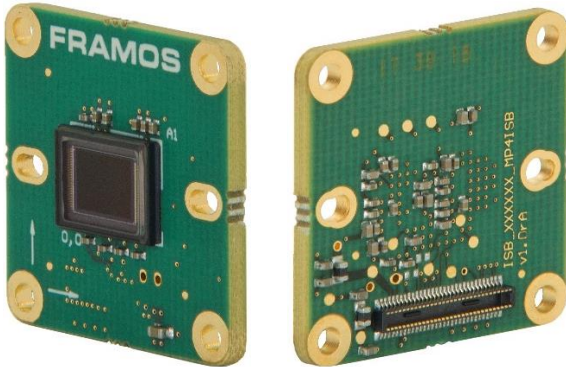




FSM-IMX335 Datasheet

Sony IMX335LQN-C / IMX335LLN-C Sensor Module

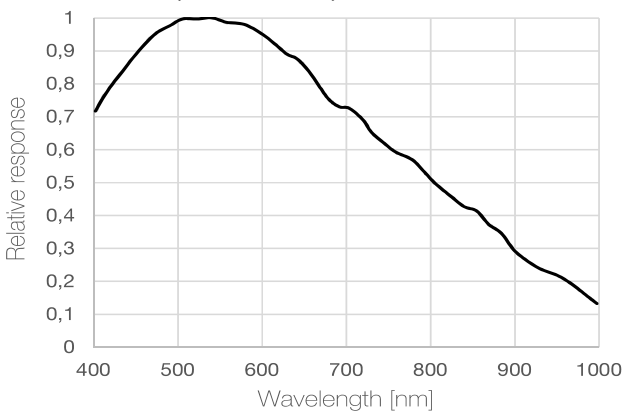
FRAMOS Sensor Module



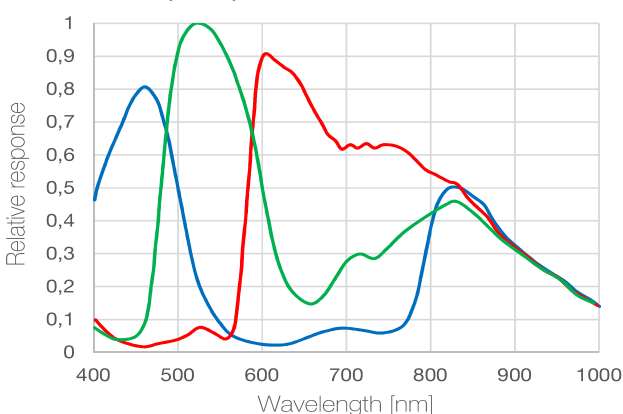
Key Benefits & Features:

- 5 Mpx Sony CMOS Rolling Shutter sensor module, ready to embed!
- All FSMs are part of a sophisticated rapid prototyping ecosystem, consisting of:
 - ✓ Sensor Board Adapters (FSA)
 - ✓ Processor Board Adapters (FPA)
 - ✓ Design Sources for Deep Embedding

FSM-IMX335M (Monochrome):



FSM-IMX335C (Color):



Specification

Model Name	FSM-IMX335M / FSM-IMX335C
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Image Sensor

Vendor / Name	Sony IMX335LQN-C / IMX335LLN-C
Technology	CMOS Rolling Shutter
Chromatics	Color / Mono
Optical Format	1/2.8"
Pixel Size	2 x 2 μm
Max. Resolution	5 Mpx / 2592 x 1944 px
Framerate (max.)	60 FPS (at max. resolution)
Bit Depth(s)	10 bit / 12 bit

Interface

Module Interface	MIPI CSI-2 (2/4 Lane)
Control Interface	I ² C
Clock Frequency(s)	6 - 27 / 37,125 / 74,25 / 54 MHz
Voltage Requirements	1,2V / 1,8V / 2,9V
Interface Connector	Hirose DF40C-60DP-0.4V(51)

Mechanical

Lens Mount (optional)	Sunex CMT821B, CMT168, CMT107
Lens Type (optional)	-
Dimensions (HxWxD)	26,5 mm x 26,5 mm x 3,48 mm

Environmental

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

Software Support

Driver	V2L2 Based Device Driver
Supported Platform(s)	NVIDIA Jetson TX2
Linux Version(s)	JetPack 3.2.1
API Languages	C / C++

Suggested Accessories

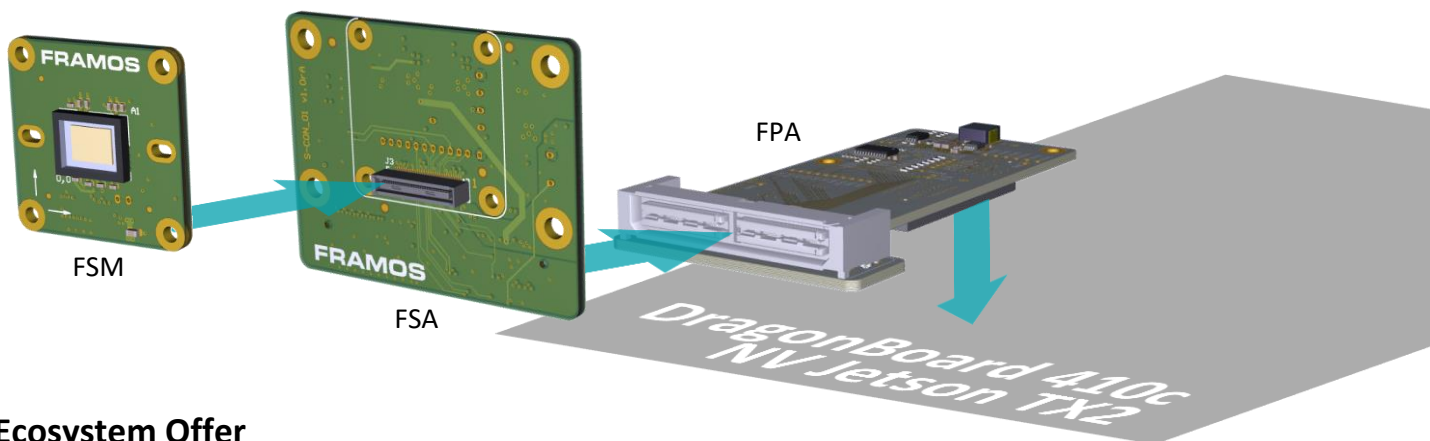
Sensor Module Adapter (FSA)	FSA-FT3 [int 37,125 MHz clk] FSA-FT4 [no int clk]
Processor Board Adapter (FPA)	FPA-TX2-FT1 [NV Jetson TX2] FPA-96B-FT1 [Dragonboard 410c]
Flex Cable 150 mm (FSM to FSA)	FMA-FC-150/60
Tripod Adapter (1/4")	FMA-MNT-TRP1/4

FRAMOS Sensor Module Ecosystem

The FSM lineup provides one solution from evaluation of different sensor modules to cost and performance optimized mass production. This combination is achieved by placing only the minimum on the FSM itself – most image sensor signals are directly routed to the connector. The advantage?

During the research and proof-of-concept phase this provides a plug and play solution with standard connectors and mechanics to get started without prototype design and production – to find the perfect fit of sensor for your application. This flexibility creates less risk and freedom to “just try something” - and is the best driver for innovation!

Designing a very cost optimized system, this allows a smart usage of mandatory function blocks. Various power supplies and oscillators are either already existing on the target processor board, or can easily be generate on it. Beside the technical advantages moving heat sources and unnecessary components away from the image sensor, there are huge commercial advantages reducing cost on a product that might be produced thousands- or even hundreds of thousands of times.



Ecosystem Offer

Hardware:

- Ready to use FRAMOS Sensor Modules (FSM), ready for evaluation and mass production
- Adapter framework (FSA / FPA) for flexible testing of different FRAMOS Sensor Modules
- All needed imaging accessories from one hand – including lenses, holders and cables

Software Package:

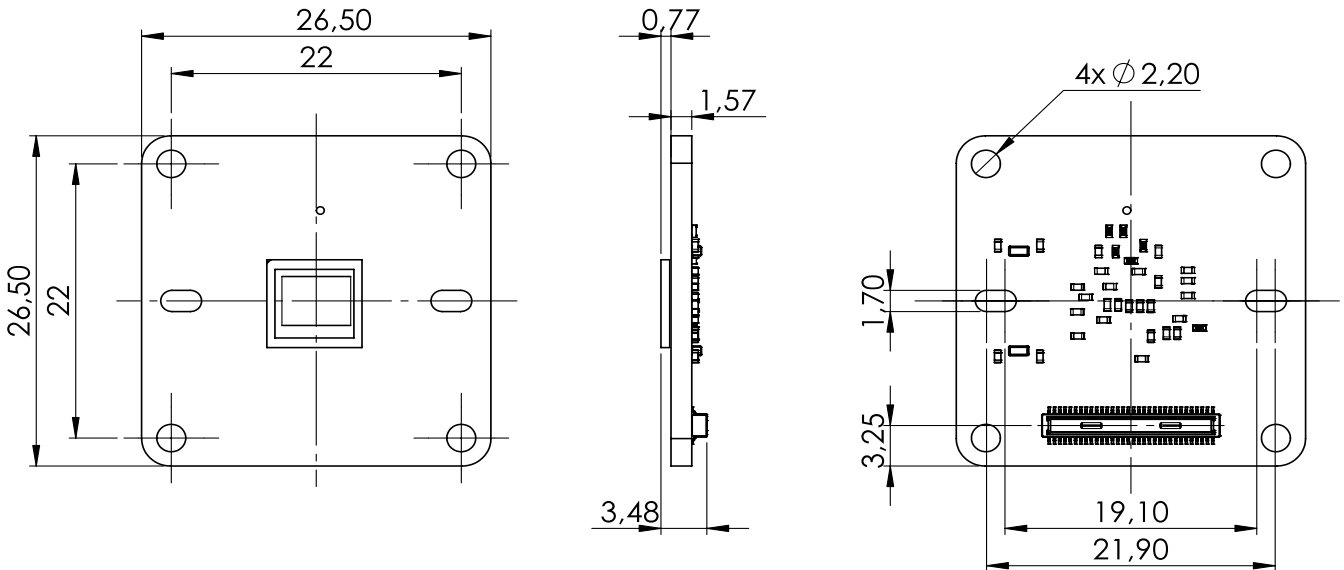
- Device drivers showing base level sensor integration to get started
 - Platform specific device driver
 - V4L2 Subdevice drivers for specific image sensors (low-level C API)
- Streamlined V4L2 library (LibSV) with comfortable and generic C/C++ API
- Example application demonstrating initialization, basic configuration and image stream processing

Project Based Integration Support:

- Software and driver sources allowing fast entrance into application specific needs
- Electrical references for FSA and FPA for quick and optimized embedding of FSMs
- Engineering services via FRAMOS and its partners, allowing you to focus on your product’s unique value!

FRAMOS Sensor Module (FSM)

Mechanical Drawing



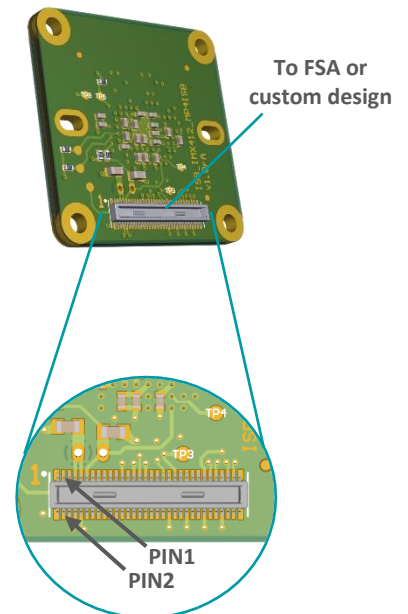
Sensor image center is in mechanical board center.

Connector Pinout

Type: Hirose DF40C-60DP-0.4V(51)

Mating Type: Hirose DF40HC(4.0)-60DS-0.4V(51)

Pin #	Name	Pin #	Name	Pin #	Name
1	NC	21	SCL	41	NC
2	NC	22	NC	42	NC
3	NC	23	NC	43	GND
4	NC	24	NC	44	GND
5	2V9	25	XVS	45	NC
6	1V2	26	NC	46	D_DATA_3_P
7	2V9	27	SDA	47	NC
8	1V2	28	NC	48	D_DATA_3_N
9	1V8	29	XHS	49	GND
10	NC	30	TENABLE	50	GND
11	GND	31	NC	51	D_DATA_0_N
12	GND	32	TOUT	52	D_DATA_1_N
13	GND	33	NC	53	D_DATA_0_P
14	GND	34	NC	54	D_DATA_1_P
15	XCLR	35	SLAMODE	55	GND
16	NC	36	NC	56	GND
17	NC	37	GND	57	D_DATA_2_P
18	NC	38	GND	58	D_CLK_0_P
19	XMASTER	39	INCK	59	D_DATA_2_N
20	TEST1	40	NC	60	D_CLK_0_N



All signals are routed directly from image sensor to connector. Details on specific signals are described in the respective image sensor datasheet.