ximea

xiX

Compact cameras with PCIe interface
for embedded applications and deep integrations

xiX cameras with PCIe interface

The system integrators dream

Facts

- Compact, semi-housed cameras and board level units for volume OEMs
- Available sensors: various Sony Pregius, all AMS/CMOSIS
- 3.1 Mpix at over 200 fps
- 4K at over 180 fps
- 47 Mpix at 30 fps
- PCIe Gen2/Gen3, with 2 or 4 lane interface:
  X2G2 - 10 Gbps, X4G2 - 20 Gbps, X4G3 - 32 Gbps
- Flat ribbon cable connections for constrained spaces supported
- Distances over 100 m using fiber-optic cables
- Two form factors: 26 x 26 mm with C/CS-mount or 60 x 60 mm with optional EF-mount

Features

- Compatible with the xiFLY platform
- Power and GPIO is fed through the ribbon cable reducing the need for extra cables
- Super compact form factor
- Connector options to fit your needs
- Ideal for embedded applications and tight spaces
- No frame grabber required, DMA transfer with no CPU load
- Direct GPU transfer with selected NVIDIA boards under Linux
- Data transmission with functionally zero latency
- Flexible GPIO with optoisolated and TTL options
- Low power consumption
- Rugged and lightweight, aluminum alloy CNC machined housing

Ideal for system integrators

These cameras are the backbone of the xiFLY platform. They are small, lightweight cameras with flexible ribbon cable interfaces. Alternatively, they can be adapted to fiber optic cabling. The small board stack in these cameras makes for fantastic flexibility in systems with tight spatial requirements. Together with the xiFLY accessories, the xiX cameras drive performance in small spaces, from great distances, and at high speed. For embedded solutions, have a look at our carrier boards xEC2 for the computing platforms by NVIDIA (Jetson TX2, Xavier in preparation). With these and other 3rd party vendors, it is possible to build extremely compact subsystems, even mobile units, supporting multiple cameras.

Ideal for multi-camera systems

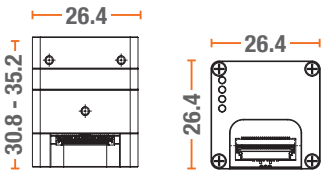
The real power of these cameras is unleashed when combined with an xSwitch – a central component of the xiFLY platform: data streams from multiple cameras are multiplexed together into a single high bandwidth data interface for simple output (and routing) to the controlling computer. Add to that, the ability to replicate power and trigger signals through the switch allows for hassle-free synchronous data acquisition. This reduces the number and complexity of the camera to host connections drastically. Clustered camera approaches are benefited explicitly by the reduction of set up and tear down efforts and maintenance. Map for example 12 cameras at 12 Mpix and 60 fps to one computer or any other combination of camera number, resolution and framerate within a 64 Gbps bandwith budget (expect this number to increase soon).

No trade-off: high speed and high resolution

xiX cameras are some of the very few in the industry that can simply and effectively take advantage of the real speed offered by the sensors they contain. The PCIe interface brings the advantages of raw speed, low latency and high robustness. We has enabled this technology in small, variegated and convenient camera bodies. Unlimited and unhampered by bandwidth restrictions and with the possibility of tight integration or a host located far away, these cameras truly offer a unique solution space for many applications.

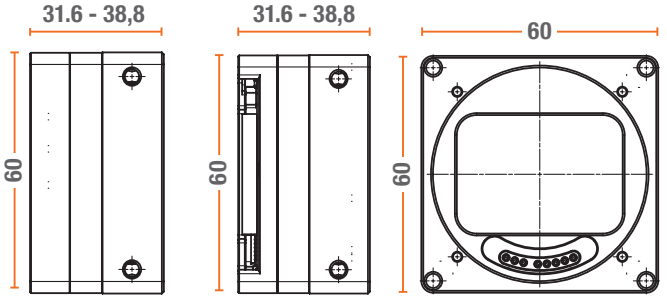
PCIe Gen2 x2, C/CS-mount

- Sony Pregius and fast CMOSIS CMV sensors, up to 1.1" optical format
- 2 PCIe lanes for up to 10 Gbit/s bandwidth
- Standard C-mount, convertible to CS-mount
- Single flat ribbon cable including data, power and IOs



PCIe Gen2 x4, Canon EF-mount

- Large format CMOSIS CMV sensors
- 4 PCIe lanes for up to 20 Gbit/s bandwidth
- Optional active Canon EF-lens adapter for dynamic control of aperture and focus
- Single flat ribbon cable including data, power and IOs



Supported operating systems

Windows

Linux

macOS

Language support

python™

Standards

GEN<i>CAM TRANSPORT LAYER

PCI EXPRESS®

Supported vision libraries

MATLAB

POWERED BY NATIONAL INSTRUMENTS LabVIEW™

HALCON a product of MVTec

OpenCV

and many more …

Sensors and models

Small format models [1]		Sensor	Resolution	Pix. size [µm]	ADC [bits]	DR [dB]	FWC [ke-]	Sensor size / diagonal [mm]	Optical size	Fps
MX022MG-CM-X2G2-FL MX022RG-CM-X2G2-FL MX022CG-CM-X2G2-FL	b/w b/w NIR color	CMOSIS CMV2000	2048 x 1088 2.2 Mpix	5.5	10	60	13.5	11.3 x 6.0 12.8	2/3"	340 [7]
MX023MG-SY-X2G2-FL MX023CG-SY-X2G2-FL	b/w color	Sony IMX174	1936 x 1216 2.3 Mpix	5.86	10, 12	71,7	30.5	11.3 x 7.1 13.3	1/1.2"	166 [8]
MX031MG-SY-X2G2-FL MX031CG-SY-X2G2-FL	b/w color	Sony IMX252	2064 x 1544 3.1 Mpix	3.45	8, 10, 12	70,9	9.9	7.1 x 5.3 8.9	1/1.8"	218 [7]
MX042MG-CM-X2G2-FL MX042RG-CM-X2G2-FL MX042CG-CM-X2G2-FL	b/w b/w NIR color	CMOSIS CMV4000	2048 x 2048 4.1 Mpix	5.5	10	60	13.5	11.3 x 11.3 15.9	1"	180 [7]
MX050MG-SY-X2G2-FL MX050CG-SY-X2G2-FL	b/w color	Sony IMX250	2464 x 2056 5 Mpix	3.45	8, 10, 12	70,8	9.8	8.5 x 7.1 11.1	2/3"	165 [7]
MX089MG-SY-X2G2-FL MX089CG-SY-X2G2-FL	b/w color	Sony IMX255	4112 x 2176 8.9 Mpix	3.45	8, 10, 12	70,5	9.8	14.2 x 7.5 16	1"	95 [7]
MX124MG-SY-X2G2-FL MX124CG-SY-X2G2-FL	b/w color	Sony IMX253	4112 x 3008 12,3 Mpix	3.45	8, 10, 12	70,4	9.9	14.2 x 10.4 17.6	1.1"	69 [7]

Large format models [2]		Sensor	Resolution	Pix. size [µm]	ADC [bits]	DR [dB]	FWC [ke-]	Sensor size / diagonal [mm]	Optical size	Fps
MX120MG-CM-X4G2-FL MX120RG-CM-X4G2-FL MX120CG-CM-X4G2-FL	b/w b/w NIR color	CMOSIS CMV12000	4096 x 3072 12.5 Mpix	5.5	8, 10, 12	60	13.5	22.5 x 16.9 28.1	APS-C	133 / 103 / 86 [3]
MX200MG-CM-X4G2-FL MX200CG-CM-X4G2-FL	b/w color	CMOSIS CMV20000	5120 x 3840 19.6 Mpix	6.4	12	66	15	32.8 x 24.6 41	35mm	32 [9]
MX500MG-CM-X4G2-FL MX500CG-CM-X4G2-FL	b/w	CMOSIS CMV50000	7920 x 6004 47.5 Mpix	4.6	12	64	14.5	36.4 x 27.6 45.6	35mm	30 / 22 [4]

Specialized large format models		Sensor	Resolution	Pix. size [µm]	ADC [bits]	DR [dB]	FWC [ke-]	Sensor size / diagonal [mm]	Optical size	Fps	QE [%]	Dark noise [e-]
MX377MR-GP-**FX** [5]-X4G3-FF [6] MX377MR-GP-**FX** [5]-X4G3-MTP [6]	b/w	GPixel GSENSE6060	6144 x 6144 37.7 Mpix	10	2 x 12	90	120	61.4 x 61.4 86.8	60mm	45 [9]	72	4
MX377MR-GP-**BX** [5]-X4G3-FF [6] MX377MR-GP-**BX** [5]-X4G3-MTP [6]	b/w	GPixel GSENSE6060-BSI	6144 x 6144 37.7 Mpix	10	2 x 12	90	120	61.4 x 61.4 86.8	60mm	45 [9]	95	4

Notes

1 In the model name please replace -FL with -FV for flat-flex cable connecting perpendicular to the sensor, -FF for FireFly cable connecting from the bottom of the camera
2 In the model name please replace -FL with -FV for flat-flex cable connecting perpendicular to the sensor
3 Full resolution, RAW 8 bits, 10 bits and 12 bits
4 Full resolution, RAW 8 bits and 12 bits
5 In the model name please replace -BX with -B0, -B1 or -BE and -FX with -F0, -F1 or -FE for different sensor grades. For further information please inquire with our sales teams.
6 -FF stands for FireFly™ PCIe interface with micro connector, -MTP stands for FireFly™ PCIe interface with fiber optical MTP/MPO connector
7 Full resolution, RAW 8 bits
8 Full resolution, RAW 10 bits
9 Full resolution, RAW 12 bits

Further information

Please visit us at **www.ximea.com** for complete and up-to-date specifications. Get in touch with our teams at **sales@ximea.com.** We will be glad to assist!

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