xiX

XIMEA

MX377

Cooled cameras with PCIe interface

and Gpixel GSENSE6060 sensors

MX377 large sensor sCMOS cameras

Setting new standards in imaging

Facts

- Gpixel GSENSE6060 and GSENSE6060BSI sensors
- 61 x 61 mm large format sCMOS
- 37.7 Mpix, 6144 (H) x 6144 (V), 10µm pixels
- 95% QE from backside illuminated variants
- Native HDR, up to 90dB, 16 bits
- Full well 110ke-, Readout noise 3e-
- Low dark current, cooling down to -25°C
- PCIe Gen3, with 4 lanes interface: 32 Gbps of raw bandwidth
- 46 fps in full resolution, STD mode

Features

- CCD-like performance
- CMOS data rates
- Super compact form factor compared to sensor size
- Multiple sensor grades for best price/performance ratio
- Peltier with air or liquid cooled backend options
- MTP fiber interface with up to 100m cable length
- 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
- Rugged aluminum alloy, copper and steel based CNC machined housing

Extending prevailing performance characteristics for image quality

Featuring one of the largest sCMOS sensors available today: The Gpixel GSENSE6060 with 37.7 million 10 µm pixels offers imaging performance on par with the best CCDs in a high-speed CMOS architecture. Existing CCDs have thus far remained the go-to technology for scientific measurements, in spite of being unable to match the pace of CMOS innovation. The MX377 camera delivers scientific imaging capabilities with high dynamic range and low noise – at high speed. The camera was also designed with cooling for low light level applications. Several versions of the GSENSE6060 sensor can be provided, including frontside (FSI) or backside (BSI) illuminated models.

With the sCMOS BSI sensor, the camera reaches a maximum quantum efficiency of 95 percent. Due to the large sensor format of 60 x 60 mm, 6 k by 6 k resolution and 10 µm pixel size, it is a perfect fit for applications demanding a medium to large format sensor. The output signal from the GSENSE6060 pixels is processed by two readout amplifiers (hi and lo) allowing an HDR readout (2 x 12 or 2 x 14 bit ADC) with up to 90 dB dynamic range. All this with a frame rate of up to 46 fps and a full well capacity of 110 Ke-.
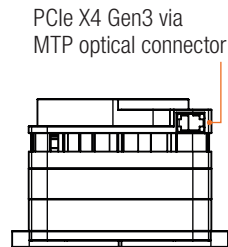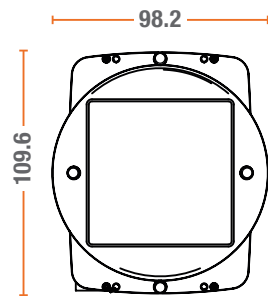
Groundbreaking efficiency in a compact, cooled package

Utilizing a multi-lane PCIe interface which is able to deliver data at the maximum rates the sensor is capable of. The PCIe interface delivers data with near zero latency from the sensor to the operating computer's RAM (or GPU) for optimum processing capability and speed. The sensor itself has a number of groundbreaking properties with high dynamic range (FWC close what is expected from CCDs) and dual amplifiers for simultaneous integration of the imagery to deliver high bit depth information on the contents of the image.
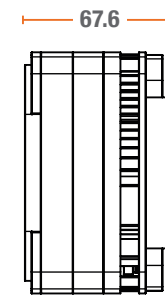
The MX377 camera model was primarily designed for astronomy and space situational awareness (SSA) applications. In addition, its extraordinary performance makes it a perfect fit for other fields of material and life science like high energy physics, medical imaging, biological research, TEM and others. These and other applications will benefit from the combination of high-speed CMOS performance with CCD like data quality in dynamic range and noise, further improved by the availability of either air or water-based cooling options to reduce thermal noise for long exposures.

This large format sensor and all its capabilities comes in a very compact package, compatible with M95 lenses. The compact CNC machined camera housing is designed with XIMEA's core principles of remaining small and fast in mind.
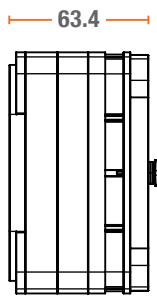
MX377 housings

98.2

109.6

PCIe X4 Gen3 via MTP optical connector

Air cooled backend, with fan — 67.6

Liquid cooled backend (-W) — 63.4

Supported operating systems

Windows · Linux · macOS

Language support

C · C++ · C# · 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

Specialized large format models		Sensor	Resolution	Pix. size [μm]	Sensor size / diagonal [mm]	Optical size	ADC [bits]	DR [dB]	FWC [ke-]	Fps	QE [%]	Dark noise [e-]	Cooling type	Cooling temp [°C]
MX377MR-GP-F**x** [1] -X4G3-MTP	b/w	GPixel GSENSE6060	6144 x 6144 37.7 Mpix	10	61.4 x 61.4 86.8	60mm	2 x 12 2 x 14	90	110	46 [2]	72	1	air	-10 [3]
MX377MR-GP-F**x** [1] -X4G3-MTP-W	b/w	GPixel GSENSE6060					2 x 12 2 x 14	90	110	46 [2]	72	<1	water	-25 [3]
MX377MR-GP-B**x** [1] -X4G3-MTP	b/w	GPixel GSENSE6060-BSI					2 x 12 2 x 14	90	110	46 [2]	95	1	air	-10 [3]
MX377MR-GP-B**x** [1] -X4G3-MTP-W	b/w	GPixel GSENSE6060-BSI					2 x 12 2 x 14	90	110	46 [2]	95	<1	water	-25 [3]

Notes
[1] In the model name please replace „x" for different sensor grades. For further information on specification and ordering please see website or inquire with our sales teams.
[2] Full resolution, RAW 12 bit STD mode
[3] Depending on ambient temperature, power supply and chiller performance in case of liquid cooling

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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