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
• 47.5 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 bandwidth 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, varied 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.

Supported operating systems
- Windows
- Linux
- macOS

Language support
- C
- C++
- Python

Standards
- GenICam
- PCIe Express
- HALCON
- MATLAB
- OpenCV

Supported vision libraries
- and many more …
### Sensors and models

#### Small format models

<table>
<thead>
<tr>
<th>Sensor</th>
<th>Resolution</th>
<th>Pix. size (µm)</th>
<th>ADC [bits]</th>
<th>DR [dB]</th>
<th>FWC [ke-]</th>
<th>Sensor size / diagonal (mm)</th>
<th>Optical size</th>
<th>Fps</th>
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</thead>
<tbody>
<tr>
<td>MX022MG-CM-X2G2-FL</td>
<td>b/w</td>
<td>CMOSIS CMV2000</td>
<td>2048 x 1088</td>
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<td>60</td>
<td>11.3 x 6.0</td>
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<td>2048 x 2048</td>
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<td>10, 12</td>
<td>71.7</td>
<td>11.3 x 7.1</td>
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<td>3.45</td>
<td>8, 10, 12</td>
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<td>7.1 x 5.3</td>
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#### Large format models

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<tr>
<th>Sensor</th>
<th>Resolution</th>
<th>Pix. size (µm)</th>
<th>ADC [bits]</th>
<th>DR [dB]</th>
<th>FWC [ke-]</th>
<th>Sensor size / diagonal (mm)</th>
<th>Optical size</th>
<th>Fps</th>
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<tbody>
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<td>CMOSIS CMV12000</td>
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<td>4096 x 4096</td>
<td>5.5</td>
<td>8, 10, 12</td>
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<td>35mm</td>
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#### Specialized large format models

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<th>DR [dB]</th>
<th>FWC [ke-]</th>
<th>Sensor size / diagonal (mm)</th>
<th>Optical size</th>
<th>Fps</th>
<th>QE [%]</th>
<th>Dark noise [e-]</th>
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<td>GPixel</td>
<td>6144 x 6144</td>
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<td>2 x 12</td>
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<td>45 ^*</td>
<td>72</td>
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<td>MX377MR-GP-FF-X4G3-MTP-6</td>
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<td>GPixel</td>
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<td>61.4 x 61.4</td>
<td>60mm</td>
<td>45 ^*</td>
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### Notes

1. In the model name please replace -FL with -FF 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 -FX 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, 10 bits and 12 bits.
5. Full resolution, RAW 8 bits, 10 bits and 12 bits.
6. 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.
7. Full resolution, RAW 8 bits.
8. Full resolution, RAW 10 bits.
9. Full resolution, RAW 12 bits.
10. -FF stands for FireFly™ PCIe interface with micro connector, -MTP stands for FireFly™ PCIe interface with fiber optical MTP/MPO connector.

### Further information

Please visit us at [www.ximea.com](http://www.ximea.com) for complete and up-to-date specifications. Get in touch with our teams at [sales@ximea.com](mailto:sales@ximea.com). We will be glad to assist!