

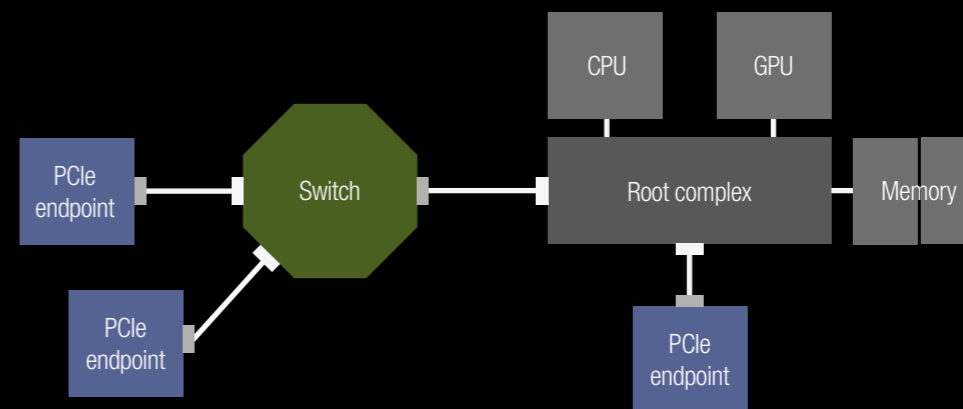
xSWITCH

Utilizing PCIe as a camera interface offers unique camera aggregation options, at extremely high bandwidths: multiple cameras can be efficiently connected and their respective data streams bundled into a single copper or fiber optic cable connection to a host computer, writing directly to memory (DMA) at 64 Gbit/s. Flat-flex cables between the cameras and the xSWITCH allow the most compact integration in tight spaces.

xiTECH

As a xiTECH category device, XIMEA offers a PCB design called xSWITCH, where quantity, type, location and orientation of PCIe connectors can be varied to optimize the building of multi-camera systems. Multiple reference instances of this PCB already exist based on this concept, which creates a solution space for rapid customization and enables customer applications.

PCI EXPRESS TOPOLOGY

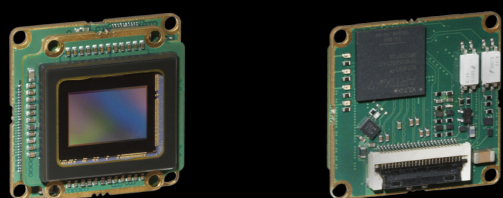


CAMERAS

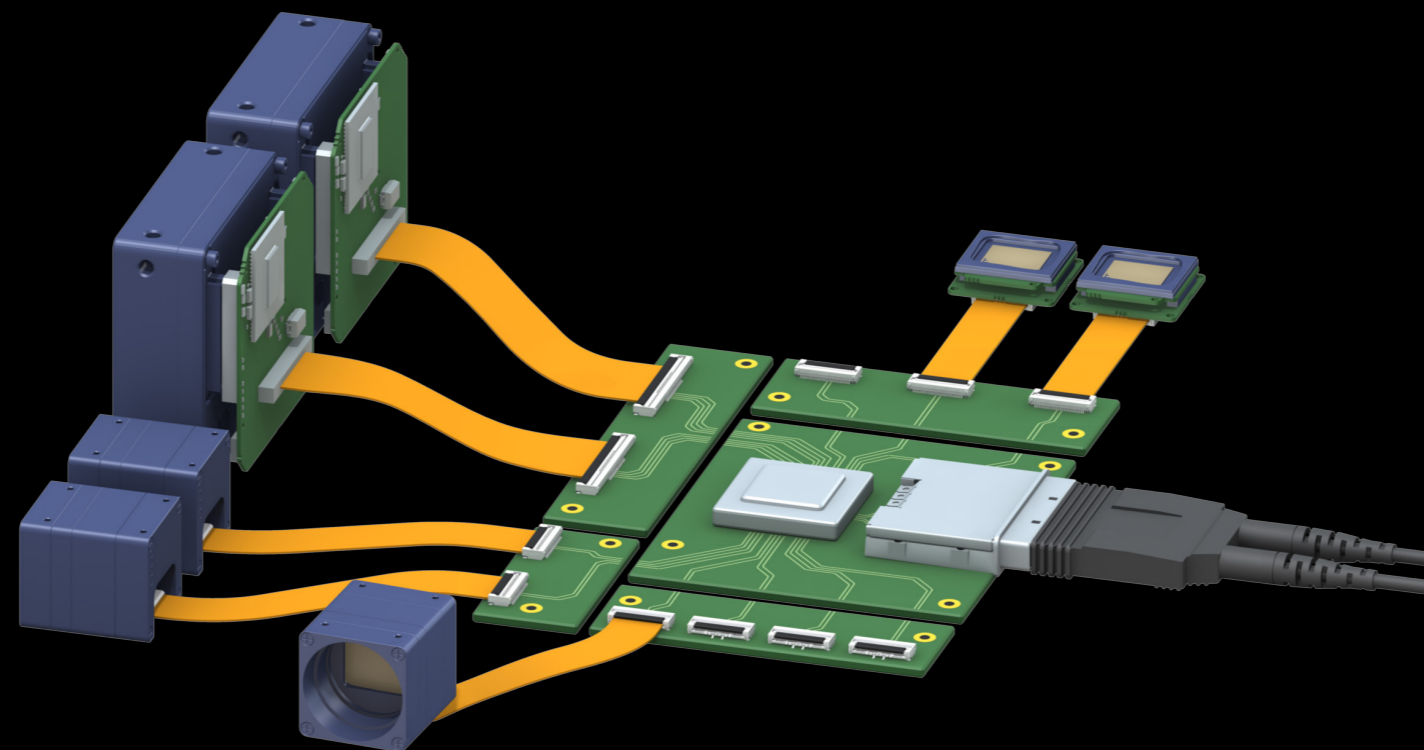
Housed



Board Level



Supported camera models refer to document: *xSwitch compatible cameras.*



HIGHLIGHTS

- **Maximum compactness:** smallest form factor cameras and compact connectors allow closest sensor-to-sensor proximity
- Aggregation into one **high bandwidth upstream** (up to 64Gbit/s)
- Full utilization of PCIe architecture with point to point connection and **direct memory access**
- Use of standard components allow simple assembly for the creation of a **custom platform**
- No need for external or additional expansion backplanes
- Support for **Windows, Linux** and **MacOS**
- Multiple **reference instances** of the xSWITCH already available
- **Board shape can be tailored** precisely to application requirements
- Benefit from XIMEA's **unique experience** and expertise in the field of PCIe

MIX AND MATCH

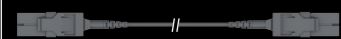
- Connect **multiple cameras** to a single PC
- Select from wide range of sensor **resolutions** and **frame rates**
- Combine **housed** and **board level** camera types
- Choice of **different number of PCIe lanes** and **PCIe standards** (2, 4, 8 lanes / Gen2 or Gen3)
- Choice of **various connectors:** flat-flex option, board to board or iPass
- Choose between flat-flex connectors with **vertical** or **horizontal** orientation
- Bridge small or large distances of >100 m by selecting copper cable or optical fiber cable

CONNECTION TO CAMERA

Flat-flex cables horizontal or vertical attached < 50 cm



Optical cable > 100 m



Copper cable < 7 m



CONNECTION TO HOST

Optical cable > 100 m

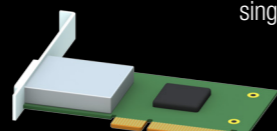


Copper cable < 7 m

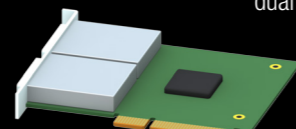


PCIe HOST-ADAPTER

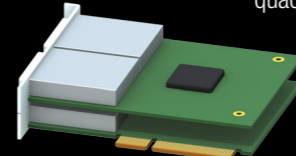
single



dual



quad



2, 4 and 8 lanes supported

PERFORMANCE

Examples	Cameras	Resolution [Mpix]	Speed [FPS]	Camera Model	Sensor	PCIe Interface
Setup 1	18	2.3	165	MX023xG-SY-X2G2	IMX174	Gen2, 2 Lanes
Setup 2	8	12.4	70	MX124xG-SY-X2G2	IMX253	Gen2, 2 Lanes
Setup 3	4	3.1	218	MX031xG-SY-X2G2	IMX252	Gen2, 2 Lanes
	4	5.0	165	MX050xG-SY-X2G2	IMX250	Gen2, 2 Lanes
Setup 4	5	12.0	100	MX120xG-CM-X2G4	CMV12000	Gen2, 4 Lanes
Setup 5	10	20.0	30	MX200xG-CM-X2G4	CMV20000	Gen2, 4 Lanes
Setup 6	6	8.9	95	MX089xG-SY-X2G2	IMX255	Gen2, 2 Lanes
	2	20.0	30	MX200xG-CM-X2G4	CMV20000	Gen2, 4 Lanes

OPTIMIZED INTEGRATION