

## USB3 Vision



USB3 Vision is the newest image processing standard introduced at the VISION 2012 in Stuttgart and published in February 2013.

### Why is a USB3 Vision standard important?

Without standards every manufacturer does their own thing and many advantages customers learned to love with the [GigE Vision standard](#) would be lost. Like GigE Vision, USB3 Vision defines

1. a transport layer, which controls the detection of a device ("Device Detection"),
2. the configuration ("Register Access"),
3. the data streaming ("Streaming Data"), and
4. the handling of events ("Event Handling")

and establishes the interface to GenICam. GenICam again abstracts the access to the camera features for the user. The features are standardized (name and behavior) by the "Standard Feature Naming Convention" (SFNC). Additionally, it is possible to create specific features in addition to the SFNC to differentiate from other vendors ("Quality of Implementation"). In contrast to GigE Vision, this time the mechanics (e.g. lockable cable connectors) are part of the standard which all in all leads to a more robust interface.

USB3 Vision is defined "on-the-wire" like all important standards. Everybody is familiar with the advantages of "on-the-wire" standards: USB sticks, USB mice or USB hard disks – just plug and play them.

It will also be easier for producers of image processing libraries. As soon as the software supports USB3 Vision, it can be used with all USB3 Vision compliant cameras. Thus, the proprietary bindings between hardware and software manufacturers will be a thing of the past. For the customers there will be an easy to integrate and wide range of software.

## Products of the mvBlueFOX3 series

- [mvBlueFOX3](#) - USB3 Vision camera with e2v / Aptina sensors
- [mvBlueFOX3-M1](#) - USB3 Vision board-level camera with e2v / Aptina sensors
- [mvBlueFOX3-2](#) - USB3 Vision camera with Sony Pregius CMOS sensors
- [mvBlueFOX3-M2](#) - USB3 Vision board-level camera with Sony Pregius CMOS sensors
- [mvBlueFOX3-3M](#) - Compact USB3 Vision board-level camera for embedded vision
- [mvBlueFOX3-4](#) - USB3 Vision camera with hi-res Sony CMOS sensors

## About USB 3

The consumer interface USB 3 was introduced in 2010 and is very popular not only for the USB 2.0 backwards compatibility. In the meantime, every new PC hardware is shipped with USB 3. There are several other advantages: the USB 3 interface supports a **gross bandwidth of 5000 MBit/s**, however, the draft of version 3.1 announced a bandwidth of 10000 MBit/s. A **max. cable length of 3.5 m (using consumer cables)** is supported (8 m is possible with good cables). The interface is suitable for applications

1. with high resolutions,
2. high frame rates, and
3. short distances between the camera and the processing unit.

Optical cables extend the distance to 100 m. However, this is not expensive, because USB 3 as a consumer interface provides a wide range of cost-effective accessories.

	USB 2.0	USB 3.2 Gen 1	Gigabit Ethernet	Dual Gigabit Ethernet
Gross bandwidth [MBit/s]	480	5000	1000	2000
Net bandwidth [MB/s]	30	300 + x	120	240
Max. cable length [m]	3,5	8 (100 with optical cables)	100	100
Introduction interface	2000	2010	2004	2008
Introduction image -		2013	2006	2012

processing standard