Basler ace

AREA SCAN CAMERAS

GigE Vision USB3 Vision Camera Link

- Best price/performance ratio
- USB 3.0 – easiest way for plug and play
- Gigabit Ethernet – 100 m cable length
- Camera Link – highest throughput
- Broad sensor selection:
  CCD, CMOS, NIR versions

BASLER
the power of sight

OVERVIEW

All You Need is ace

The Basler ace camera line covers the entire spectrum including cost sensitivity, ultra-fast speeds and high tech in a very small housing. The camera's price-driven design underpins our quality commitment by applying the technical knowledge we've acquired from former camera designs. High quality and performance levels combined with a low starting list price of only €199 make Basler ace cameras one of the world's best selling cameras with thousands of satisfied customers.

With the ace series, you can choose from the most popular data interfaces in the vision market: the popular Gigabit Ethernet interface with 100-meter cable length, the new USB 3.0 interface with plug and play capability, and the field-proven Camera Link interface with wide bandwidth. All Basler ace cameras come with an option to provide camera power and data via a single cable. They also offer separate input/output ports for triggering or flash control. And like all Basler cameras, the ace family comes with a long list of firmware features.

Analog cameras are very easy to replace because the Basler ace offers the same 29 x 29 mm footprint and the same bottom mounting options that have been standard on analog cameras for many years. Some existing Camera Link, FireWire, and USB 2.0 cameras with the same 29 x 29 mm footprint can also be replaced. The Basler ace matches most of these cameras in terms of mechanics, and often beats them on price and ease of use.

Want to do things better? Then get yourself one of these innovative digital cameras that are specifically targeted at industrial, medical, and traffic applications – and profit from a convincing price/performance ratio to boot. This ace of cameras is available with several resolutions and speeds, and with sensors from all leading manufacturers so you can easily find the right ace camera model for your application. Basler ace is all you need.

Your benefits include:

- Support for standard vision interfaces GigE Vision, USB3 Vision, and Camera Link
- Broadest sensor portfolio ever: CMOS and CCD including NIR-enhanced versions, I/O flexibility with minimum delay and jitter time
- One cable solutions: Gigabit Ethernet with PoE, Camera Link with PoCL, USB 3.0
- Field-proven Basler pylon Camera Software Suite with advanced drivers
- Outstanding price/performance ratio

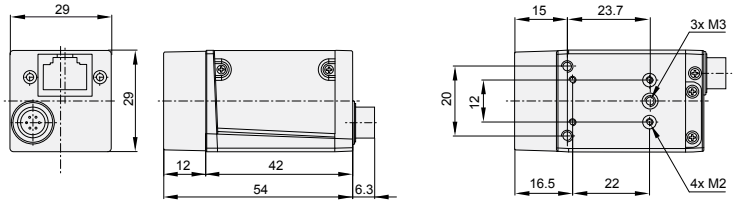
TECHNICAL DETAILS

Specifications

Basler ace	acA640-90gm/gc	acA640-120gm/gc	acA645-100gm/gc	acA750-30gm/gc	acA780-75gm/gc	acA1300-22gm/gc	acA1300-30gm/gc
Camera							
Resolution (H x V pixels)	659 x 494	659 x 494	659 x 494	752 x 580	782 x 582	1296 x 966	1296 x 966
Sensor	Sony ICX424	Sony ICX618	Sony ICX414	Sony ICX409	Sony ICX415	Sony ICX445	Sony ICX445
Sensor Size (optical)	1/3"	1/4"	1/2"	1/3"	1/2"	1/3"	1/3"
Sensor Technology	Progressive Scan CCD	Progressive Scan CCD	Progressive Scan CCD	Interlaced Scan CCD	Progressive Scan CCD	Progressive Scan CCD	Progressive Scan CCD
Pixel Size (µm)	7.4 x 7.4	5.6 x 5.6	9.9 x 9.9	6.5 x 6.25	8.3 x 8.3	3.75 x 3.75	3.75 x 3.75
Frame Rate	90	120	100	30	75	22	30
Mono / Color	Mono / Color						
Video Output Format	Mono 8, Mono 12, Mono 12 p, YUV 4:2:2 p, YUV 4:2:2 (YUYV) p, Bayer BG 8, Bayer BG 12, Bayer BG 12 p / in addition: Bayer GB (Aptina), Bayer GR (CMOSIS)						
	acA750-30gc: Mono 8, YUV 4:2:2 p, YUV 4:2:2 (YUYV) p only						
Interface	Fast Ethernet (100 Mbit/s) or Gigabit Ethernet (1000 Mbit/s)						
Synchronization	Via external trigger, via the Ethernet connection or free run						
Exposure Control	Via external trigger or programmable via the camera API						
Mechanical / Electrical							
Housing Size (L x W x H)	42 mm x 29 mm x 29 mm						
Housing Temperature	Up to 50 °C						
Lens Mount	C, CS	C, CS	C, CS	C, CS	C, CS	CS	C, CS
Digital I/O	1 opto-isolated input / 1 opto-isolated output						
Power Requirements	Via Power over Ethernet (IEEE 802.3af) or + 12VDC (±10%) via the camera´s 6-pin Hirose connector						
Power Consumption (PoE/AUX)	3.1 W/2.7 W	2.3 W/2.0 W	3.6 W/3.3 W	2.6 W/2.4 W	3.6 W/3.3 W	2.5 W/2.2 W	2.5/2.2 W
Weight (typical)	90 g						
Conformity	CE, FCC, IP30, RoHS, PoE (IEEE 802.3af), UL						
Software / Driver							
Driver	Basler pylon Camera Software Suite or 3rd party GigE Vision Software						
Operating System	Windows, Linux - 32 bit and 64 bit						
Conformity	GigE Vision, GenICam						

Specifications are subject to change without prior notice. Latest specifications can be found on our website. Please visit www.baslerweb.com/manuals for the detailed camera User's Manual and www.baslerweb.com/thirdparty for information on third party software.

Dimensions (in mm)



TECHNICAL DETAILS

Specifications

Basler ace	acA1280-60gm/gc	acA1300-60gm/gc	acA1300-60gmNIR	acA1600-20gm/gc	acA1600-60gm/gc (NEW)	acA1920-25gm/gc	acA2000-50gm/gc
Camera							
Resolution (H x V pixels)	1280 x 1024	1280 x 1024	1280 x 1024	1628 x 1236	1600 x 1200	1920 x 1080	2048 x 1088
Sensor	EV76C560	EV76C560	EV76C661	Sony ICX274	EV76C570	Aptina MT9P	CMOSIS CMV2000
Sensor Size (optical)	1/1.8"	1/1.8"	1/1.8"	1/1.8"	1/1.8"	1/3.7"	2/3"
Sensor Technology	CMOS, rolling shutter	CMOS, global shutter	CMOS, global shutter	Progressive Scan CCD	CMOS, global shutter	CMOS, rolling shutter,	CMOS, global shutter
Pixel Size (µm)	5.3 x 5.3	5.3 x 5.3	5.3 x 5.3	4.4 x 4.4	4.5 x 4.5	2.2 x 2.2	5.5 x 5.5
Frame Rate	60	60	60	20	60	25	50
Mono / Color	Mono / Color	Mono / Color	Mono	Mono / Color	Mono / Color	Mono / Color	Mono / Color
Video Output Format	Mono 8, Mono 12, Mono 12 p, YUV 4:2:2 p, YUV 4:2:2 (YUYV) p, Bayer BG 8, Bayer BG 12, Bayer BG 12 p / in addition: Bayer GB (Aptina), Bayer GR (CMOSIS)						
Interface	Fast Ethernet (100 Mbit/s) or Gigabit Ethernet (1000 Mbit/s)						
Synchronization	Via external trigger, via the Ethernet connection or free run						
Exposure Control	Via external trigger or programmable via the camera API						
Mechanical / Electrical							
Housing Size (L x W x H)	42 mm x 29 mm x 29 mm						
Housing Temperature	Up to 50 °C						
Lens Mount	C, CS	C, CS	C, CS	C, CS	C, CS	C, CS	C
Digital I/O	1 opto-isolated input / 1 opto-isolated output						
Power Requirements	Via Power over Ethernet (IEEE 802.3af) or + 12VDC (±10%) via the camera´s 6-pin Hirose connector						
Power Consumption (PoE/AUX)	<3.0 W	<3.0 W	<3.0 W	3.4 W/2.9 W	<3.0 W	2.5 W/2.2 W	2.8 W/2.5 W
Weight (typical)	90 g						
Conformity	CE, FCC, IP30, RoHS, PoE (IEEE 802.3af), UL						
Software / Driver							
Driver	Basler pylon Camera Software Suite or 3rd party GigE Vision Software						
Operating System	Windows, Linux - 32 bit and 64 bit						
Conformity	GigE Vision, GenICam						

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TECHNICAL DETAILS

Specifications

Basler ace	acA2000-50gmNIR	acA2040-25gm/gc	acA2040-25gmNIR	acA2500-14gm/gc	acA3800-10gm/gc* NEW	acA4600-7gc* NEW
Camera						
Resolution (H x V pixels)	2048 x 1088	2048 x 2048	2048 x 2048	2592 x 1944	3856 x 2764	4608 x 3288
Sensor	CMOSIS CMV2000 NIR-enhanced	CMOSIS CMV4000	CMOSIS CMV4000 NIR-enhanced	Aptina MT9P031	Aptina MT9J003	Aptina MT9F002
Sensor Size (optical)	2/3"	1"	1"	1/2.5"	1/2.3"	1/2.3"
Sensor Technology	CMOS, global shutter	CMOS, global shutter	CMOS, global shutter	CMOS, rolling shutter	CMOS, rolling shutter	CMOS, rolling shutter
Pixel Size (µm)	5.5 x 5.5	5.5 x 5.5	5.5 x 5.5	2.2 x 2.2	1.67 x 1.67	1.4 x 1.4
Frame Rate	50	25	25	14	10	7
Mono / Color	Mono	Mono / Color	Mono	Mono / Color	Mono / Color	Color
Video Output Format	Mono 8, Mono 12, Mono 12 p, YUV 4:2:2 p, YUV 4:2:2 (YUYV) p, Bayer BG 8, Bayer BG 12, Bayer BG 12 p / in addition: Bayer GB (Aptina), Bayer GR (CMOSIS)					
Interface	Fast Ethernet (100 Mbit/s) or Gigabit Ethernet (1000 Mbit/s)					
Synchronization	Via external trigger, via the Ethernet connection or free run					
Exposure Control	Via external trigger or programmable via the camera API					
Mechanical / Electrical						
Housing Size (L x W x H)	42 mm x 29 mm x 29 mm					
Housing Temperature	Up to 50 °C					
Lens Mount	C	C	C	C, CS	C, CS	C, CS
Digital I/O	1 opto-isolated input / 1 opto-isolated output					
Power Requirements	Via Power over Ethernet (IEEE 802.3af) or + 12VDC (±10%) via the camera´s 6-pin Hirose connector					
Power Consumption (PoE/AUX)	2.8 W/2.5 W	2.9 W/2.6 W	2.9 W/2.6 W	2.5 W/2.2 W	3.5 W/3.3 W (preliminary)	3.5 W/3.3 W (preliminary)
Weight (typical)	90 g					
Conformity	CE, FCC, IP30, RoHS, PoE (IEEE 802.3af), UL					
Software / Driver						
Driver	Basler pylon Camera Software Suite or 3rd party GigE Vision Software					
Operating System	Windows, Linux - 32 bit and 64 bit					
Conformity	GigE Vision, GenICam					

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* Available Q3/2014

TECHNICAL DETAILS

Specifications

Basler ace	acA640-90um/uc	acA640-120um/uc	acA1300-30um/uc	acA1600-20um/uc
Camera				
Resolution (H x V pixels)	659 x 494	659 x 494	1296 x 966	1628 x 1236
Sensor	Sony ICX424	Sony ICX618	Sony ICX445	Sony ICX274
Sensor Size (optical)	1/3"	1/4"	1/3"	1/1.8"
Sensor Technology	Progressive Scan CCD			
Pixel Size (µm)	7.4 x 7.4	5.6 x 5.6	3.75 x 3.75	4.4 x 4.4
Frame Rate	90	120	30	20
Mono / Color	Mono/Color			
Video Output Format	Mono 8, Mono 12, Mono 12 p, YCbCr 422_8, RGB 8, BGR 8, Bayer BG 8, Bayer BG 12, Bayer BG 12 p			
Interface	USB 3.0			
Synchronization	Via external trigger or free-run			
Exposure Control	Via external trigger or programmable via the camera API			
Mechanical / Electrical				
Housing Size (L x W x H)	29.3 mm x 29 mm x 29 mm			
Housing Temperature	Up to 50 °C			
Lens Mount	C, CS	C, CS	C, CS	C, CS
Digital I/O	1 opto-isolated input + 1 opto-isolated output + 2 Fast-GPIO (configurable as In/Out)			
Power Requirements	Via USB 3.0 interface			
Power Suspend Mode	Yes, less than 0.02 W, configurable			
Power Consumption (typical)	2.7 W	2.4 W	2.5 W	3.5 W
Weight (typical)	<80 g			
Conformity	CE, FCC, IP30, RoHS, UL (in preparation), USB3 Vision, USB-IF (in preparation)			
Software / Driver				
Driver	Basler pylon Camera Software Suite or 3rd party USB3 Vision Software			
Operating System	Windows 32 bit and 64 bit			
Conformity	USB3 Vision, GenICam			

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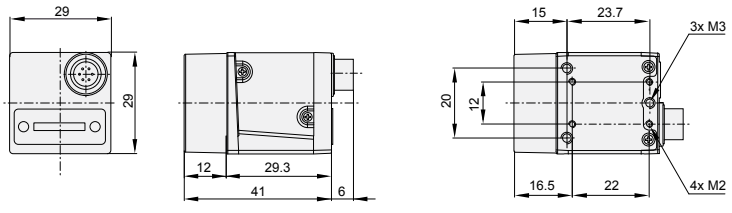
Dimensions (in mm)



TECHNICAL DETAILS

Specifications

Basler ace	acA1920-25um/uc	acA2000-165um/uc* NEW	acA2000-165umNIR* NEW	acA2040-90um/uc* NEW
Camera				
Resolution (H x V pixels)	1920 x 1080	2048 x 1088	2048 x 1088	2048 x 2048
Sensor	Aptina MT9P031	CMOSIS CMV2000	CMOSIS CMV2000 NIR-enhanced	CMOSIS CMV4000
Sensor Size (optical)	1/3.7“	2/3“	2/3“	1″
Sensor Technology	CMOS, rolling shutter	CMOS, global shutter	CMOS, global shutter	CMOS, global shutter
Pixel Size (µm)	2.2 x 2.2	5.5 x 5.5	5.5 x 5.5	5.5 x 5.5
Frame Rate	25	165	165	90
Mono / Color	Mono / Color	Mono / Color	Mono	Mono / Color
Video Output Format	Mono 8, Mono 12, Mono 12 p, YCbCr 422_8, RGB 8, BGR 8, Bayer BG 8, Bayer BG 12, Bayer BG 12 p			
Interface	USB 3.0			
Synchronization	Via external trigger or free-run			
Exposure Control	Via external trigger or programmable via the camera API			
Mechanical / Electrical				
Housing Size (L x W x H)	29.3 mm x 29 mm x 29 mm			
Housing Temperature	Up to 50 °C			
Lens Mount	C, CS	C	C	C
Digital I/O	1 opto-isolated input + 1 opto-isolated output + 2 Fast-GPIO (configurable as In/Out)			
Power Requirements	Via USB 3.0 interface			
Power Suspend Mode	Yes, less than 0.02 W, configurable			
Power Consumption (typical)	2.2 W	2.6 W	2.6 W	2.8 W
Weight (typical)	<80 g			
Conformity	CE, FCC, IP30, RoHS, UL (in preparation), USB3 Vision, USB-IF (in preparation)			
Software / Driver				
Driver	Basler pylon Camera Software Suite or 3rd party USB3 Vision Software			
Operating System	Windows 32 bit and 64 bit			
Conformity	USB3 Vision, GenICam			

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* Available Q3/2014

TECHNICAL DETAILS

Specifications

Basler ace	acA2040-90umNIR* (NEW)	acA2500-14um/uc	acA3800-14um/uc* (NEW)	acA4600-10uc* (NEW)
Camera				
Resolution (H x V pixels)	2048 x 2048	2592 x 1944	3856 x 2764	4608 x 3288
Sensor	CMOSIS CMV4000 NIR-enhanced	Aptina MT9P	Aptina MT9J003	Aptina MT9F002
Sensor Size (optical)	1"	1/2.5"	1/2.3"	1/2.3"
Sensor Technology	CMOS, global shutter	CMOS, rolling shutter	CMOS, rolling shutter	CMOS, rolling shutter
Pixel Size (µm)	5.5 x 5.5	2.2 x 2.2	1.67 x 1.67	1.4 x 1.4
Frame Rate	90	14	14	10
Mono / Color	Mono	Mono/Color	Mono/Color	Color
Video Output Format	Mono 8, Mono 12, Mono 12 p, YCbCr 422_8, RGB 8, BGR 8, Bayer BG 8, Bayer BG 12, Bayer BG 12 p			
Interface	USB 3.0			
Synchronization	Via external trigger or free-run			
Exposure Control	Via external trigger or programmable via the camera API			
Mechanical / Electrical				
Housing Size (L x W x H)	29.3 mm x 29 mm x 29 mm			
Housing Temperature	Up to 50 °C			
Lens Mount	C	C, CS	C, CS	C, CS
Digital I/O	1 opto-isolated input + 1 opto-isolated output + 2 Fast-GPIO (configurable as In/Out)			
Power Requirements	Via USB 3.0 interface			
Power Suspend Mode	Yes, less than 0.02 W, configurable			
Power Consumption (typical)	2.8 W	2.2 W	~3.0 W (preliminary)	~3.0 W (preliminary)
Weight (typical)	<80 g			
Conformity	CE, FCC, IP30, RoHS, UL (in preparation), USB3 Vision, USB-IF (in preparation)			
Software / Driver				
Driver	Basler pylon Camera Software Suite or 3rd party USB3 Vision Software			
Operating System	Windows 32 bit and 64 bit			
Conformity	USB3 Vision, GenICam			

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* Available Q2/2014

TECHNICAL DETAILS

Specifications

Basler ace	acA2000-340km/kc	acA2000-340kmNIR	acA2040-180km/kc	acA2040-180kmNIR
Camera				
Resolution (H x V pixels)	2048 x 1088	2048 x 1088	2048 x 2048	2048 x 2048
Sensor	CMOSIS CMV2000	CMOSIS CMV2000 NIR-enhanced	CMOSIS CMV4000	CMOSIS CMV4000 NIR-enhanced
Sensor Size (optical)	2/3"	2/3"	1"	1"
Sensor Technology	CMOS, global shutter			
Pixel Size (µm)	5.5 x 5.5	5.5 x 5.5	5.5 x 5.5	5.5 x 5.5
Frame Rate	340	340	180	180
Mono / Color	Mono / Color	Mono	Mono / Color	Mono
Interface	Camera Link (base, medium, or full)			
Synchronization	Via external trigger or free run			
Exposure Control	Trigger width or timed			
Mechanical / Electrical				
Housing Size (L x W x H)	43.5 mm x 29 mm x 29 mm			
Housing Temperature	Up to 50 °C			
Lens Mount	C	C	C	C
Digital I/O	1 opto-isolated input or output (GPIO)			
Power Requirements	12VDC (±10%), Power over Camera Link (PoCL) or via IO connector			
Power Consumption (typical)	3.0 W			
Weight (typical)	96 g			
Conformity	CE, FCC, RoHS, GenICam, Camera Link, UL (in preparation)			
Software / Driver				
Driver	Basler pylon Camera Software Suite or 3rd party Camera Link Software			
Operating System	Windows, Linux - 32 bit and 64 bit			
Conformity	Camera Link, GenICam			

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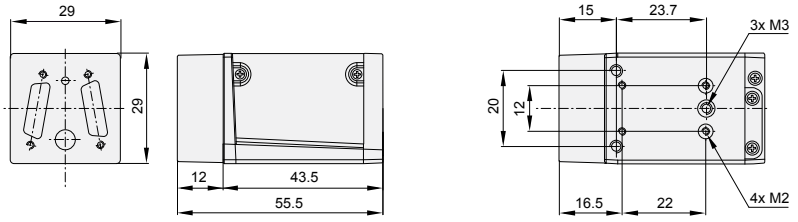
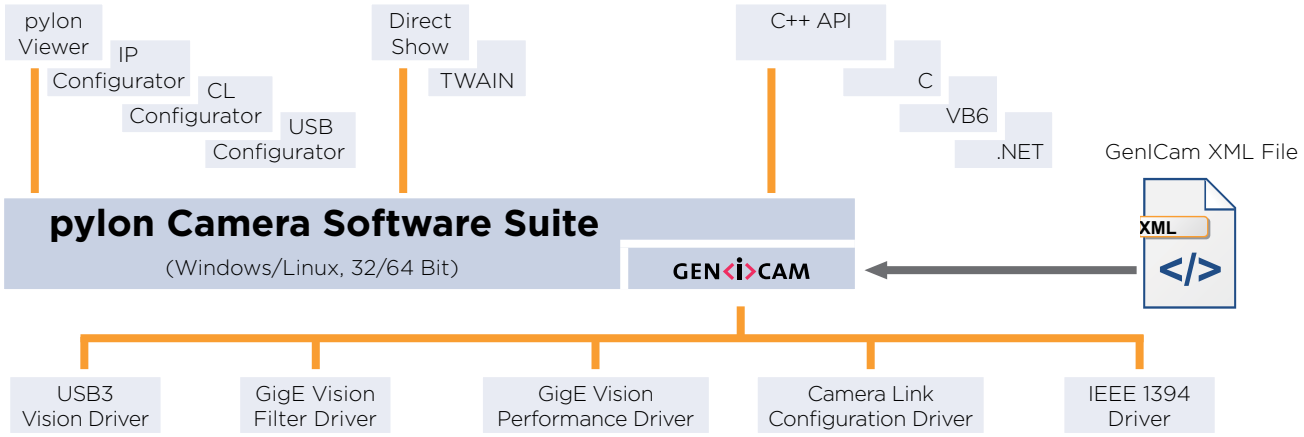
Dimensions (in mm)



Get your free version: www.baslerweb.com/pylon

Basler pylon Camera Software Suite

The pylon Camera Software Suite operates with all Basler line scan and area scan cameras - no matter what interface they use. It offers stable, reliable and flexible data exchange between Basler cameras and PCs, at a very low CPU load.



The architecture of the pylon Camera Software Suite is based on GenICam Technology, which offers you easy access to the newest camera models and the latest features. Changes to an existing camera device in your application essentially become a plug-and-play process.

An easy-to-use set of tools lets you configure the camera's interface. Use the **pylon Viewer** to set camera parameters, to capture and display images, and to evaluate the camera.

The pylon **USB3 Vision Driver** fully supports the USB3 Vision standard. It allows Basler USB 3.0 cameras to use the full speed and bandwidth of USB 3.0 for image transmission while reducing resource load and using off-the-shelf hardware components.

The pylon **GigE Vision Performance Driver** quickly separates incoming packets carrying image data from other traffic on the network and makes the data available for use by your vision application while requiring the lowest CPU resources. This driver can only be used with network cards that include specific Intel chipsets. The pylon **GigE Vision Filter Driver** supports all kinds of hardware, common GigE network cards, and GigE ports on your motherboard as well.

The pylon **IEEE 1394b Driver** gives you access to a well-established interface technology, and the pylon **Camera Link Configuration Driver** offers comfortable access to all camera parameters of Basler's latest Camera Link families ace, aviator, and racer.

The pylon Camera Software Suite also contains a powerful SDK that supports any type of application development. The pylon package contains the following main modules. Each one can be individually selected/unselected during the installation process, preventing the installation of unneeded modules on your system:

- USB3 Vision Driver
- GigE Vision Filter Driver
- GigE Vision Performance Driver
- IEEE 1394 Driver
- Camera Link Serial Communication Driver
- pylon Viewer
- SDK for all cameras; C, C++, .NET (C#, VB.NET, ...), and VB6 (the 'pylon for Linux' version only supports the GigE interface via a C++ API)

The pylon Camera Software Suite can be downloaded for free at **www.baslerweb.com/pylon**. For more information on the installation process, refer to the pylon Installation Guide. The helpful pylon Release Notes contain all improvements and bug fixes since the first pylon version.

OTHER INFORMATION

How Does Basler Measure and Define Image Quality?

Basler is leading the effort to standardize image quality and sensitivity measurement for cameras and sensors. We are giving the EMVA 1288 standard our strongest support because it describes a unified method to measure, compute, and present the specification parameters for cameras and image sensors. Our cameras are characterized and measured in 100% compliance with the EMVA 1288 standard. Measurement reports can be downloaded from our website.

How Does Basler Ensure Superior Quality and Reliable High Performance?

Our approach to quality assurance is rigorous: we continually audit all facets of our business to guarantee performance, increase efficiency and reduce costs for our customers. We are compliant with all major quality standards including ISO 9001, CE, RoHS, and more. To ensure consistently high product quality, we employ several quality inspection procedures during manufacturing.

Every Basler camera is subjected to exhaustive optical and mechanical tests before leaving the factory. We have developed a unique combination of optics, hardware, and software tools that can quickly and efficiently calibrate a camera and measure its performance against a set of standard performance criteria. Regardless of what technology or camera model you choose you can be assured of consistent performance.

3-Year Warranty

Basler offers a 3-year warranty for our cameras. We make this unprecedented promise because we have unparalleled confidence in our products. We continually reinvest in research, development and superior manufacturing capabilities so that our customers can fully rely on the products we manufacture.

About Basler

Founded in 1988, Basler is a leading global manufacturer of high quality digital cameras for industrial, medical, traffic and video surveillance applications. The company employs more than 400 people at its headquarters in Ahrensburg, Germany and subsidiaries in the United States and Asia.

Basler's portfolio of products offers customers the vision industry's widest selection of industrial and network cameras. Today it includes some 300 models – and it's still growing. We're committed to developing technology that drives business results for our customers: cameras that are easy to use, easy to integrate, and deliver an exceptional price/performance ratio.

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BASLER
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