Basler ace

AREA SCAN CAMERAS

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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

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OVERVIEW

All You Need is ace

The Basler ace camera series offers the broadest selection ever, covering the entire spectrum of advantages, including cost-effectiveness, ultra-fast speeds and superior image quality in a very small housing. The camera's price-driven design upholds our quality commitment by applying the technical knowledge we've acquired from former camera designs. This high quality level, combined with a very good price/performance ratio, makes 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 Gigabit Ethernet interface with 100 meter cable length, the USB 3.0 interface with plug and play capability and the field-proven Camera Link interface with a wide bandwidth. All of these interfaces are standardized and offer the option to provide power and data to the camera via one single cable. The cameras also offer separate input/output ports for triggering or flash control.

This ace of cameras is available with sensors from all leading manufacturers, so you can easily find the right ace camera model for your application. With this variety of sensors and interfaces, combined with the extensive features offered, the ace is a fit for a wide range of vision applications. Basler ace is all you need.

The latest additions to the ace series include models with Sony Pregius sensors and PYTHON sensors from ON Semiconductor. Besides their inherent sensor performance, these cameras also come with a new feature set developed by Basler: PGI is a powerful in-camera image optimization that improves your images at the full speed of your camera. It is a unique combination consisting of 5x5 debayering, color-anti-aliasing, denoising and improved sharpness. This gives you the opportunity to get the best pictures directly from your camera without any additional processor load. Use the options of the Basler pylon Camera Software Suite to enable PGI, or change settings for selected PGI components for optimal results. Learn more about PGI at *www.baslerweb.com/PGI*.

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

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TECHNICAL DETAILS

Specifications

Basler ace	acA640-90gm/gc	acA640-120gm/gc	acA640-300gm/gc	acA645-100gm/gc
Camera				
Resolution (H × V pixels)	659 × 494	659 × 494	640 × 480	659 × 494
Sensor	Sony ICX424	Sony ICX618	ON Semiconductor PYTHON 300	Sony ICX414
Sensor Size (optical)	1/3″	1/4″	1/4″	1/2″
Sensor Technology	Progressive Scan CCD	Progressive Scan CCD	CMOS, global shutter	Progressive Scan CCD
Pixel Size [µm²]	7.4 × 7.4	5.6 × 5.6	4.8 × 4.8	9.9 × 9.9
Frame Rate [fps]*	90	120	376	100
Mono/Color	Mono/Color	Mono/Color	Mono/Color	Mono/Color
Video Output Format	Mono (8, 12, 12 Packed), Bayer BG (8, 12, 12 Packed), YUV 4:2:2 (Packed, YUYV Packed)	Mono (8, 12, 12 Packed), Bayer BG (8, 12, 12 Packed), YUV 4:2:2 (Packed, YUYV Packed)	Mono (8, 10, 10 Packed), Bayer BG (8, 10, 10 Packed), YUV 4:2:2 (Packed, YUYV Packed)	Mono (8, 12, 12 Packed), Bayer BG (8, 12, 12 Packed), YUV 4:2:2 (Packed, YUYV Packed)
Interface	Fast Ethernet (100 Mbit/s) or Gigabit Ethernet (1000 Mbit/s)			
Synchronization	Via hardware trigger, via software trigger or free run			
Exposure Control	Via hardware trigger or programmable via the camera API			
Mechanical/Electrical				
Housing Size (L × W × H)	42 mm × 29 mm × 29 mm			
Housing Temperature	Up to 50 °C			
Lens Mount	C, CS	C, CS	C	C
Digital I/O	1 opto-isolated input + 1 opto-isolated output (+ 1 GPIO for acA640-300gm/gc)			
Power Requirements	Via Power over Ethernet (IEEE 802.3af) or + 12VDC (±10%) via the camera´s 6-pin Hirose connector (+ 24 VDC for acA640-300gm/gc)			
Power Consumption (PoE/AUX)	3.1 W/2.7 W	2.3 W/2.0 W	3.5 W/3.1 W	3.6 W/3.3 W
Weight (typical)	<90 g			
Conformity	CE, FCC, IP30, RoHS, PoE (IEEE 802.3af), UL (in preparation for acA640-300gm/gc)			
Software Environment				
Driver	Basler pylon Camera Software Suite or 3rd party GigE Vision Software			
Operating System	Windows, Linux, Mac OS X			
Conformity	GigE Vision, GenICam			

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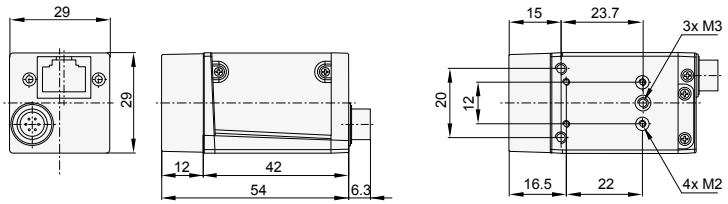
Dimensions (in mm)



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TECHNICAL DETAILS

Specifications

Basler ace	acA750-30gm/gc	acA780-75gm/gc	acA800-200gm/gc	acA1300-22gm/gc
Camera				
Resolution (H × V pixels)	752 × 580	782 × 582	800 × 600	1296 × 966
Sensor	Sony ICX409	Sony ICX415	ON Semiconductor PYTHON 500	Sony ICX445
Sensor Size (optical)	1/3″	1/2″	1/3.6″	1/3″
Sensor Technology	Interlaced Scan CCD	Progressive Scan CCD	CMOS, global shutter	Progressive Scan CCD
Pixel Size [µm²]	6.5 × 6.25	8.3 × 8.3	4.8 × 4.8	3.75 × 3.75
Frame Rate [fps]*	30	75	240	22
Mono/Color	Mono/Color	Mono/Color	Mono/Color	Mono/Color
Video Output Format	Mono (8, 12, 12 Packed), YUV 4:2:2 (Packed, YUYV Packed)	Mono (8, 12, 12 Packed), Bayer BG (8, 12, 12 Packed), YUV 4:2:2 (Packed, YUYV Packed)	Mono (8, 10, 10 Packed), Bayer BG (8, 10, 10 Packed), YUV 4:2:2 (Packed, YUYV Packed)	Mono (8, 12, 12 Packed), Bayer BG (8, 12, 12 Packed), YUV 4:2:2 (Packed, YUYV Packed)
Interface	Fast Ethernet (100 Mbit/s) or Gigabit Ethernet (1000 Mbit/s)			
Synchronization	Via hardware trigger, via software trigger or free run			
Exposure Control	Via hardware trigger or programmable via the camera API			
Mechanical/Electrical				
Housing Size (L × W × H)	42 mm × 29 mm × 29 mm			
Housing Temperature	Up to 50 °C			
Lens Mount	C	C	C	CS
Digital I/O	1 opto-isolated input + 1 opto-isolated output (+ 1 GPIO for acA800-200gm/gc)			
Power Requirements	Via Power over Ethernet (IEEE 802.3af) or + 12VDC (±10%) via the camera´s 6-pin Hirose connector (+ 24 VDC for acA800-200gm/gc)			
Power Consumption (PoE/AUX)	2.6 W/2.4 W	3.6 W/3.3 W	3.5 W/3.1 W	2.5 W/2.2 W
Weight (typical)	<90 g			
Conformity	CE, FCC, IP30, RoHS, PoE (IEEE 802.3af), UL (in preparation for acA800-200gm/gc)			
Software Environment				
Driver	Basler pylon Camera Software Suite or 3rd party GigE Vision Software			
Operating System	Windows, Linux, Mac OS X			
Conformity	GigE Vision, GenICam			

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TECHNICAL DETAILS

Specifications

Basler ace	acA1300-30gm/gc	acA1280-60gm/gc	acA1300-60gm/gc	acA1300-60gmNIR
Camera				
Resolution (H × V pixels)	1296 × 966	1280 × 1024	1280 × 1024	1280 × 1024
Sensor	Sony ICX445	E2V EV76C560	E2V EV76C560	E2V EV76C661
Sensor Size (optical)	1/3″	1/1.8″	1/1.8″	1/1.8″
Sensor Technology	Progressive Scan CCD	CMOS, rolling shutter	CMOS, global and rolling	CMOS, global and rolling
Pixel Size [µm²]	3.75 × 3.75	5.3 × 5.3	5.3 × 5.3	5.3 × 5.3
Frame Rate [fps]*	30	60	60	60
Mono/Color	Mono/Color	Mono/Color	Mono/Color	Mono NIR-enhanced
Video Output Format	Mono (8, 12, 12 Packed), Bayer BG (8, 12, 12 Packed), YUV 4:2:2 (Packed, YUYV Packed)	Mono (8, 12, 12 Packed), Bayer RG (8, 12, 12 Packed), YUV 4:2:2 (Packed, YUYV Packed)	Mono (8, 12, 12 Packed), Bayer RG (8, 12, 12 Packed), YUV 4:2:2 (Packed, YUYV Packed)	Mono (8, 12, 12 Packed), YUV 4:2:2 (Packed, YUYV Packed)
Interface	Fast Ethernet (100 Mbit/s) or Gigabit Ethernet (1000 Mbit/s)			
Synchronization	Via hardware trigger, via software trigger or free run			
Exposure Control	Via hardware trigger or programmable via the camera API	Programmable via the camera API	Programmable via the camera AP	Programmable via the camera AP
Mechanical/Electrical				
Housing Size (L × W × H)	42 mm × 29 mm × 29 mm			
Housing Temperature	Up to 50 °C			
Lens Mount	C, CS	C	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)	2.5 W/2.2 W	2.4 W/2.0 W	2.4 W/2.0 W	2.4 W/2.0 W
Weight (typical)	<90 g			
Conformity	CE, FCC, IP30, RoHS, PoE (IEEE 802.3af), UL			
Software Environment				
Driver	Basler pylon Camera Software Suite or 3rd party GigE Vision Software			
Operating System	Windows, Linux, Mac OS X			
Conformity	GigE Vision, GenICam			

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TECHNICAL DETAILS

Specifications

Basler ace	acA1300-75gm/gc	acA1600-20gm/gc	acA1600-60gm/gc	acA1920-25gm/gc
Camera				
Resolution (H × V pixels)	1280 × 1024	1626 × 1236	1600 × 1200	1920 × 1080
Sensor	ON Semiconductor PYTHON 1300	Sony ICX274	E2V EV76C570	Aptina MT9P
Sensor Size (optical)	1/2″	1/1.8″	1/1.8″	1/3.7″
Sensor Technology	CMOS, global shutter	Progressive Scan CCD	CMOS, global and rolling	CMOS, rolling shutter
Pixel Size [µm²]	4.8 × 4.8	4.4 × 4.4	4.5 × 4.5	2.2 × 2.2
Frame Rate [fps]*	88	20	60	25
Mono/Color	Mono/Color	Mono/Color	Mono/Color	Mono/Color
Video Output Format	Mono (8, 10, 10 Packed), Bayer BG (8, 10, 10 Packed), YUV 4:2:2 (Packed, YUYV Packed)	Mono (8, 12, 12 Packed), Bayer BG (8, 12, 12 Packed), YUV 4:2:2 (Packed, YUYV Packed)	Mono (8, 12, 12 Packed), Bayer RG (8, 12, 12 Packed), YUV 4:2:2 (Packed, YUYV Packed)	Mono (8, 12, 12 Packed), Bayer BG (8, 12, 12 Packed), YUV 4:2:2 (Packed, YUYV Packed)
Interface	Fast Ethernet (100 Mbit/s) or Gigabit Ethernet (1000 Mbit/s)			
Synchronization	Via hardware trigger, via software trigger or free run			
Exposure Control	Via hardware trigger or programmable via the camera API	Via hardware trigger or programmable via the camera API	Programmable via the camera API	Programmable via the camera API
Mechanical/Electrical				
Housing Size (L × W × H)	42 mm × 29 mm × 29 mm			
Housing Temperature	Up to 50 °C			
Lens Mount	C	C	C	C
Digital I/O	1 opto-isolated input + 1 opto-isolated output (+ 1 GPIO for acA1300-75gm/gc)			
Power Requirements	Via Power over Ethernet (IEEE 802.3af) or + 12VDC (±10%) via the camera´s 6-pin Hirose connector (+24 VDC for acA1300-75gm/gc)			
Power Consumption (PoE/AUX)	3.5 W/3.1 W	3.4 W/2.9 W	2.5 W/2.1 W	2.5 W/2.2 W
Weight (typical)	<90 g			
Conformity	CE, FCC, IP30, RoHS, PoE (IEEE 802.3af), UL (in preparation for acA1300-75gm/gc)			
Software Environment				
Driver	Basler pylon Camera Software Suite or 3rd party GigE Vision Software			
Operating System	Windows, Linux, Mac OS X			
Conformity	GigE Vision, GenICam			

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TECHNICAL DETAILS

Specifications

Basler ace	acA1920-40gm/gc	acA1920-48gm/gc	acA1920-50gm/gc	acA2000-50gm/gc
Camera				
Resolution (H × V pixels)	1920 × 1200	1920 × 1200	1920 × 1200	2048 × 1088
Sensor	Sony IMX249	ON Semiconductor PYTHON 2000	Sony IMX174	CMOSIS CMV2000
Sensor Size (optical)	1/1.2"	2/3"	1/1.2"	2/3"
Sensor Technology	CMOS, global shutter	CMOS, global shutter	CMOS, global shutter	CMOS, global shutter
Pixel Size [µm²]	5.86 × 5.86	4.8 × 4.8	5.86 × 5.86	5.5 × 5.5
Frame Rate [fps]*	42	50	50	50
Mono/Color	Mono/Color	Mono/Color	Mono/Color	Mono/Color
Video Output Format	Mono (8, 12, 12 Packed), Bayer RG (8, 12, 12 Packed), YUV 4:2:2 (Packed, YUYV Packed)	Mono (8, 10, 10 Packed), Bayer BG (8, 10, 10 Packed), YUV 4:2:2 (Packed, YUYV Packed)	Mono (8, 12, 12 Packed), Bayer RG (8, 12, 12 Packed), YUV 4:2:2 (Packed, YUYV Packed)	Mono (8, 12, 12 Packed), Bayer GR (8, 12, 12 Packed), YUV 4:2:2 (Packed, YUYV Packed)
Interface	Fast Ethernet (100 Mbit/s) or Gigabit Ethernet (1000 Mbit/s)			
Synchronization	Via hardware trigger, via software trigger or free run			
Exposure Control	Via hardware trigger or programmable via the camera API			
Mechanical/Electrical				
Housing Size (L × W × H)	42 mm × 29 mm × 29 mm			
Housing Temperature	Up to 50 °C			
Lens Mount	C	C	C	C
Digital I/O	1 opto-isolated input + 1 opto-isolated output (+ 1 GPIO for acA1920-40gm/gc, acA1920-48gm/gc, acA1920-50gm/gc)			
Power Requirements	Via Power over Ethernet (IEEE 802.3af) or + 12VDC (±10%) via the camera´s 6-pin Hirose connector (+24 VDC for acA1920-40gm/gc, acA1920-48gm/gc, acA1920-50gm/gc)			
Power Consumption (PoE/AUX)	3.4 W/3.1 W	4.1 W/3.6 W	3.6 W/3.2 W	~3.5 W
Weight (typical)	<90 g			
Conformity	CE, FCC, IP30, RoHS, PoE (IEEE 802.3af), UL (in preparation for acA1920-40gm/gc, acA1920-48gm/gc, acA1920-50gm/gc)			
Software Environment				
Driver	Basler pylon Camera Software Suite or 3rd party GigE Vision Software			
Operating System	Windows, Linux, Mac OS X			
Conformity	GigE Vision, GenICam			

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TECHNICAL DETAILS

Specifications

Basler ace	acA2000-50gmNIR	acA2040-35gm/gc (NEW)	acA2040-25gm/gc	acA2040-25gmNIR
Camera				
Resolution (H × V pixels)	2048 × 1088	2048 x 1536	2048 × 2048	2048 × 2048
Sensor	CMOSIS CMV2000 NIR-enhanced	Sony IMX265	CMOSIS CMV4000	CMOSIS CMV4000 NIR-enhanced
Sensor Size (optical)	2/3"	1/1.8"	1"	1"
Sensor Technology	CMOS, global shutter	CMOS, global shutter	CMOS, global shutter	CMOS, global shutter
Pixel Size [µm²]	5.5 × 5.5	3.45 × 3.45	5.5 × 5.5	5.5 × 5.5
Frame Rate [fps]*	50	35	25	25
Mono/Color	Mono NIR-enhanced	Mono/Color	Mono/Color	Mono NIR-enhanced
Video Output Format	Mono (8, 12, 12 Packed), YUV 4:2:2 (Packed, YUYV Packed)	Mono (8, 12, 12 Packed), YUV 4:2:2 (Packed, YUYV Packed), Bayer RG (8, 12, 12 Packed)	Mono (8, 12, 12 Packed), Bayer GR (8, 12, 12 Packed), YUV 4:2:2 (Packed, YUYV Packed)	Mono (8, 12, 12 Packed), YUV 4:2:2 (Packed, YUYV Packed)
Interface	Fast Ethernet (100 Mbit/s) or Gigabit Ethernet (1000 Mbit/s)			
Synchronization	Via hardware trigger, via software trigger or free run			
Exposure Control	Via hardware trigger or programmable via the camera API			
Mechanical/Electrical				
Housing Size (L × W × H)	42 mm × 29 mm × 29 mm			
Housing Temperature	Up to 50 °C			
Lens Mount	C	C	C	C
Digital I/O	1 opto-isolated input + 1 opto-isolated output (+ 1 GPIO for acA2040-35gm/gc)			
Power Requirements	Via Power over Ethernet (IEEE 802.3af) or + 12VDC (±10%) via the camera´s 6-pin Hirose connector (+24 VDC for acA2040-35gm/gc)			
Power Consumption (PoE/AUX)	2.8 W/2.5 W	~ 4.0 W	2.8 W/2.5 W	2.9 W/2.6 W
Weight (typical)	<90 g			
Conformity	CE, FCC, IP30, RoHS, PoE (IEEE 802.3af), UL (in preparation for acA2040-35gm/gc)			
Software Environment				
Driver	Basler pylon Camera Software Suite or 3rd party GigE Vision Software			
Operating System	Windows, Linux, Mac OS X			
Conformity	GigE Vision, GenICam			

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TECHNICAL DETAILS

Specifications

Basler ace	acA2440-20gm/gc (NEW)	acA2500-14gm/gc	acA2500-20gm/gc	acA3800-10gm/gc	acA4600-7gc
Camera					
Resolution (H × V pixels)	2448 x 2048	2592 × 1944	2590 × 2048	3856 × 2764	4608 × 3288
Sensor	Sony IMX264	Aptina MT9P031	ON Semiconductor PYTHON 5000	Aptina MT9J003	Aptina MT9F002
Sensor Size (optical)	2/3″	1/2.5″	1″	1/2.3″	1/2.3″
Sensor Technology	CMOS, global shutter	CMOS, rolling shutter	CMOS, global shutter	CMOS, rolling shutter	CMOS, rolling shutter
Pixel Size [µm²]	3.45 × 3.45	2.2 × 2.2	4.8 × 4.8	1.67 × 1.67	1.4 × 1.4
Frame Rate [fps]*	20	14	21	10	7
Mono/Color	Mono/Color	Mono/Color	Mono/Color	Mono/Color	Color
Video Output Format	Mono (8, 12, 12 Packed), Bayer RG (8, 12, 12 Packed), YUV 4:2:2 (Packed, YUYV Packed)	Mono (8, 12, 12 Packed), Bayer GB (8, 12, 12 Packed), YUV 4:2:2 (Packed, YUYV Packed)	Mono (8, 10, 10 Packed), Bayer BG (8, 10, 10 Packed), YUV 4:2:2 (Packed, YUYV Packed)	Mono (8, 12, 12 Packed), Bayer BG (8, 12, 12 Packed), YUV 4:2:2 (Packed, YUYV Packed)	Mono 8, Bayer BG (8, 12, 12 Packed), YUV 4:2:2 (Packed, YUYV Packed)
Interface	Fast Ethernet (100 Mbit/s) or Gigabit Ethernet (1000 Mbit/s)				
Synchronization	Via hardware trigger, via software trigger or free run				
Exposure Control	Via hardware trigger or programmable via the camera API	Programmable via the camera API	Via hardware trigger or programmable via the camera API	Programmable via the camera API	Programmable via the camera API
Mechanical/Electrical					
Housing Size (L × W × H)	42 mm × 29 mm × 29 mm				
Housing Temperature	Up to 50 °C				
Lens Mount	C	C, CS	C	C	C
Digital I/O	1 opto-isolated input + 1 opto-isolated output (+ 1 GPIO for acA2440-20gm/gc, acA2500-20gm/gc)				
Power Requirements	Via Power over Ethernet (IEEE 802.3af) or + 12VDC (±10%) via the camera´s 6-pin Hirose connector (+24 VDC for acA2440-20gm/gc, acA2500-20gm/gc)				
Power Consumption (PoE/AUX)	~ 4.0 W	2.5 W/2.2 W	4.1 W/3.6 W	3.5 W/3.3 W	3.5 W/3.3 W
Weight (typical)	<90 g				
Conformity	CE, FCC, IP30, RoHS, PoE (IEEE 802.3af), UL(in preparation for acA2440-20gm/gc, acA2500-20gm/gc)				
Software Environment					
Driver	Basler pylon Camera Software Suite or 3rd party GigE Vision Software				
Operating System	Windows, Linux, Mac OS X				
Conformity	GigE Vision, GenICam				

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TECHNICAL DETAILS

Specifications

Basler ace	acA640-90um/uc	acA640-120um/uc	acA640-750um/uc	acA800-510um/uc
Camera				
Resolution (H×V pixels)	659×494	659×494	640×480	800×600
Sensor	Sony ICX424	Sony ICX618	ON Semiconductor PYTHON 300	ON Semiconductor PYTHON 500
Sensor Size (optical)	1/3″	1/4″	1/4″	1/3.6″
Sensor Technology	Progressive Scan CCD	Progressive Scan CCD	CMOS, global shutter	CMOS, global shutter
Pixel Size [µm²]	7.4×7.4	5.6×5.6	4.8×4.8	4.8×4.8
Frame Rate [fps]*	90	120	751	511
Mono/Color	Mono/Color	Mono/Color	Mono/Color	Mono/Color
Video Output Format	Mono (8, 12, 12 Packed), Bayer BG (8, 12, 12 Packed), YCbCr422_8, RGB8, BGR8	Mono (8, 12, 12 Packed), Bayer BG (8, 12, 12 Packed), YCbCr422_8, RGB8, BGR8	Mono (8,10,10 Packed), Bayer BG (8,10,10 Packed), YCbCr422_8, RGB8, BGR8	Mono (8,10,10 Packed), Bayer BG (8,10,10 Packed), YCbCr422_8, RGB8, BGR8
Interface	USB 3.0			
Synchronization	Via hardware trigger, via software trigger or free run			
Exposure Control	Via hardware trigger or programmable via the camera API			
Mechanical/Electrical				
Housing Size (L×W×H)	29.3 mm×29 mm×29 mm			
Housing Temperature	Up to 50 °C			
Lens Mount	C, CS	C, CS	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	3 W	3 W	3.4 W	3.4 W
Weight (typical)	<80 g			
Conformity	CE, FCC, IP30, RoHS, UL (in preparation for acA640-750um/uc, acA800-510um/uc)			
Software Environment				
Driver	Basler pylon Camera Software Suite or 3rd party USB3 Vision Software			
Operating System	Windows, Linux, Mac OS X			
Conformity	USB3 Vision, GenICam			

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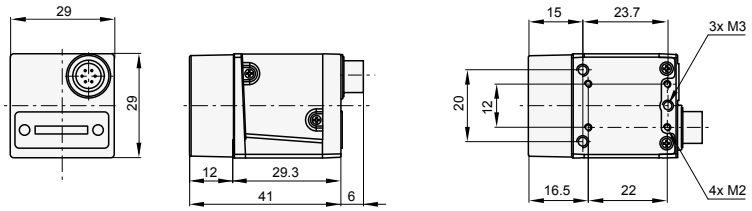
Latest specifications and availability can be found on our website *www.baslerweb.com/ace*. Please visit *www.baslerweb.com/manuals* for the detailed camera User's Manual and *www.baslerweb.com/thirdparty* for information on third party software.

*For definition of Frame Rate, please see User's Manual

Dimensions (in mm)



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TECHNICAL DETAILS

Specifications

Basler ace	acA1300-30um/uc	acA1300-200um/uc	acA1600-20um/uc	acA1920-25um/uc
Camera				
Resolution (H × V pixels)	1296 × 966	1280 × 1024	1628 × 1236	1920 × 1080
Sensor	Sony ICX445	ON Semiconductor PYTHON 1300	Sony ICX274	Aptina MT9P031
Sensor Size (optical)	1/3″	1/2″	1/1.8″	1/3.7″
Sensor Technology	Progressive Scan CCD	CMOS, global shutter	Progressive Scan CCD	CMOS, rolling shutter
Pixel Size [µm²]	3.75 × 3.75	4.8 × 4.8	4.4 × 4.4	2.2 × 2.2
Frame Rate [fps]*	30	203	20	25
Mono/Color	Mono/Color	Mono/Color	Mono/Color	Mono/Color
Video Output Format	Mono (8, 12, 12 Packed), Bayer BG (8, 12, 12 Packed), YCbCr422_8, RGB8, BGR8	Mono (8,10,10 Packed), Bayer BG (8,10,10 Packed), YCbCr422_8, RGB8, BGR8	Mono (8, 12, 12 Packed), Bayer BG (8, 12, 12 Packed), YCbCr422_8, RGB8, BGR8	Mono (8, 12, 12 Packed), Bayer GB (8, 12, 12 Packed), YCbCr422_8
Interface	USB 3.0			
Synchronization	Via hardware trigger, via software trigger or free run			
Exposure Control	Via hardware trigger or programmable via the camera API	Via hardware trigger or programmable via the camera API	Via hardware trigger or programmable via the camera API	Programmable via the camera API
Mechanical/Electrical				
Housing Size (L × W × H)	29.3 mm × 29 mm × 29 mm			
Housing Temperature	Up to 50 °C			
Lens Mount	C, CS	C, CS	C	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	2.5 W	3.4 W	3.5 W	2.2 W
Weight (typical)	<80 g			
Conformity	CE, FCC, IP30, RoHS, UL (in preparation for acA1300-200um/uc)			
Software Environment				
Driver	Basler pylon Camera Software Suite or 3rd party USB3 Vision Software			
Operating System	Windows, Linux, Mac OS X			
Conformity	USB3 Vision, GenICam			

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*For definition of Frame Rate, please see User's Manual

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TECHNICAL DETAILS

Specifications

Basler ace	acA1920-40um/uc	acA1920-150um/uc	acA1920-155um/uc	acA2000-165um/uc
Camera				
Resolution (H × V pixels)	1920 × 1200	1920 × 1200	1920 × 1200	2048 × 1088
Sensor	Sony IMX249	ON Semiconductor PYTHON 2000	Sony IMX174	CMOSIS CMV2000
Sensor Size (optical)	1/1.2"	2/3"	1/1.2"	2/3"
Sensor Technology	CMOS, global shutter	CMOS, global shutter	CMOS, global shutter	CMOS, global shutter
Pixel Size [µm²]	5.86 × 5.86	4.8 × 4.8	5.86 × 5.86	5.5 × 5.5
Frame Rate [fps]*	41	150	164	165
Mono/Color	Mono/Color	Mono/Color	Mono/Color	Mono/Color
Video Output Format	Mono (8,12,12 Packed), Bayer RG (8,12,12 Packed), YCbCr422_8, RGB8, BGR8	Mono (8,10,10 Packed), Bayer BG (8,10,10 Packed), YCbCr422_8, RGB8, BGR8	Mono (8,12,12 Packed), Bayer RG (8,12,12 Packed), YCbCr422_8, RGB8, BGR8	Mono (8, 12, 12 Packed), Bayer BG (8, 12, 12 Packed)
Interface	USB 3.0			
Synchronization	Via hardware trigger, via software trigger or free run			
Exposure Control	Via hardware trigger or programmable via the camera API			
Mechanical/Electrical				
Housing Size (L × W × H)	29.3 mm × 29 mm × 29 mm			
Housing Temperature	Up to 50 °C			
Lens Mount	C	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	2.5 W/2.7 W	3.9 W	3.2 W/3.4 W	3.2 W
Weight (typical)	<80 g			
Conformity	CE, FCC, IP30, RoHS, UL (in preparation for acA1920-40um/uc, acA1920-150um/uc, acA1920-155um/uc)			
Software Environment				
Driver	Basler pylon Camera Software Suite or 3rd party USB3 Vision Software			
Operating System	Windows, Linux, Mac OS X			
Conformity	USB3 Vision, GenICam			

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*For definition of Frame Rate, please see User's Manual

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TECHNICAL DETAILS

Specifications

Basler ace	acA2000-165umNIR	NEW acA2040-55um/uc	NEW acA2040-120um/uc	acA2040-90um/uc
Camera				
Resolution (H × V pixels)	2048 × 1088	2048 x 1536	2048 x 1536	2048 × 2048
Sensor	CMOSIS CMV2000 NIR-enhanced	Sony IMX265	Sony IMX252	CMOSIS CMV4000
Sensor Size (optical)	2/3″	1/1.8″	1/1.8″	1″
Sensor Technology	CMOS, global shutter	CMOS, global shutter	CMOS, global shutter	CMOS, global shutter
Pixel Size [µm²]	5.5 × 5.5	3.45 x 3.45	3.45 x 3.45	5.5 × 5.5
Frame Rate [fps]*	165	55	120	90
Mono/Color	Mono NIR-enhanced	Mono/Color	Mono/Color	Mono/Color
Video Output Format	Mono (8, 12, 12 Packed)	Mono (8, 12, 12 Packed), Bayer RG (8, 12, 12 Packed), YCbCr422_8, RGB8, BGR8	Mono (8, 12, 12 Packed), Bayer RG (8, 12, 12 Packed), YCbCr422_8, RGB8, BGR8	Mono (8, 12, 12 Packed), Bayer BG (8, 12, 12 Packed)
Interface	USB 3.0			
Synchronization	Via hardware trigger, via software trigger or free run			
Exposure Control	Via hardware trigger or programmable via the camera API			
Mechanical/Electrical				
Housing Size (L × W × H)	29.3 mm × 29 mm × 29 mm			
Housing Temperature	Up to 50 °C	Up to 50 °C	Up to 50 °C	Up to 60 °C
Lens Mount	C	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	3.2 W	2.5 W/2.6 W	3.1 W/3.5 W	3.2 W
Weight (typical)	<80 g			
Conformity	CE, FCC, IP30, RoHS, UL (in preparation for acA2040-55um/uc, acA2040-120um/uc)			
Software Environment				
Driver	Basler pylon Camera Software Suite or 3rd party USB3 Vision Software			
Operating System	Windows, Linux, Mac OS X			
Conformity	USB3 Vision, GenICam			

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TECHNICAL DETAILS

Specifications

Basler ace	acA2040-90umNIR	NEW acA2440-35um/uc	NEW acA2440-75um/uc	acA2500-14um/uc
Camera				
Resolution (H × V pixels)	2048 × 2048	2448 x 2048	2448 x 2048	2590 × 1942
Sensor	CMOSIS CMV4000 NIR-enhanced	Sony IMX264	Sony IMX250	Aptina MT9P
Sensor Size (optical)	1″	2/3″	2/3″	1/2.5″
Sensor Technology	CMOS, global shutter	CMOS, global shutter	CMOS, global shutter	CMOS, rolling shutter
Pixel Size [µm²]	5.5 × 5.5	3.45 x 3.45	3.45 x 3.45	2.2 × 2.2
Frame Rate [fps]*	90	35	75	14
Mono/Color	Mono NIR-enhanced	Mono/Color	Mono/Color	Mono/Color
Video Output Format	Mono (8, 12, 12 Packed)	Mono (8, 12, 12 Packed), Bayer RG (8, 12, 12 Packed), YCbCr422_8, RGB8, BGR8	Mono (8, 12, 12 Packed), Bayer RG (8, 12, 12 Packed), YCbCr422_8, RGB8, BGR8	Mono (8, 12, 12 Packed), Bayer GB (8, 12, 12 Packed), YCbCr422_8
Interface	USB 3.0			
Synchronization	Via hardware trigger, via software trigger or free run			
Exposure Control	Via hardware trigger or programmable via the camera API	Via hardware trigger or programmable via the camera API	Via hardware trigger or programmable via the camera API	Programmable via the camera API
Mechanical/Electrical				
Housing Size (L × W × H)	29.3 mm × 29 mm × 29 mm			
Housing Temperature	Up to 60 °C	Up to 50 °C	Up to 50 °C	Up to 50 °C
Lens Mount	C	C	C	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	3.2 W	2.5 W/2.7 W	3.2 W/3.4 W	2.2 W
Weight (typical)	<80 g			
Conformity	CE, FCC, IP30, RoHS, UL (in preparation for acA2440-75um/uc, acA2440-35um/uc)			
Software Environment				
Driver	Basler pylon Camera Software Suite or 3rd party USB3 Vision Software			
Operating System	Windows, Linux, Mac OS X			
Conformity	USB3 Vision, GenICam			

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*For definition of Frame Rate, please see User's Manual

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Specifications

Basler ace	acA2500-60um/uc	acA3800-14um/uc	acA4600-10uc
Camera			
Resolution (H × V pixels)	2590 × 2048	3856 × 2764	4608 × 3288
Sensor	ON Semiconductor PYTHON 5000	Aptina MT9J003	Aptina MT9F002
Sensor Size (optical)	1″	1/2.3″	1/2.3″
Sensor Technology	CMOS, global shutter	CMOS, rolling shutter	CMOS, rolling shutter
Pixel Size [µm²]	4.8 × 4.8	1.67 × 1.67	1.4 × 1.4
Frame Rate [fps]*	60	14	10
Mono/Color	Mono/Color	Mono/Color	Color
Video Output Format	Mono (8,10,10 Packed), Bayer BG (8,10,10 Packed), YCbCr422_8, RGB8, BGR8	Mono (8, 12, 12 Packed), Bayer BG (8, 12, 12 Packed), YCbCr422_8	Mono 8, Bayer BG (8, 12, 12 Packed), YCbCr422_8
Interface	USB 3.0		
Synchronization	Via hardware trigger, via software trigger or free run		
Exposure Control	Via hardware trigger or programmable via the camera API	Programmable via the camera API	Programmable via the camera API
Mechanical/Electrical			
Housing Size (L × W × H)	29.3 mm × 29 mm × 29 mm		
Housing Temperature	Up to 50 °C		
Lens Mount	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	4.2 W	3.8 W	3.8 W
Weight (typical)	<80 g		
Conformity	CE, FCC, IP30, RoHS, UL (in preparation for acA2500-60um/uc)		
Software Environment			
Driver	Basler pylon Camera Software Suite or 3rd party USB3 Vision Software		
Operating System	Windows, Linux, Mac OS X		
Conformity	USB3 Vision, GenICam		

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*For definition of Frame Rate, please see User's Manual

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TECHNICAL DETAILS

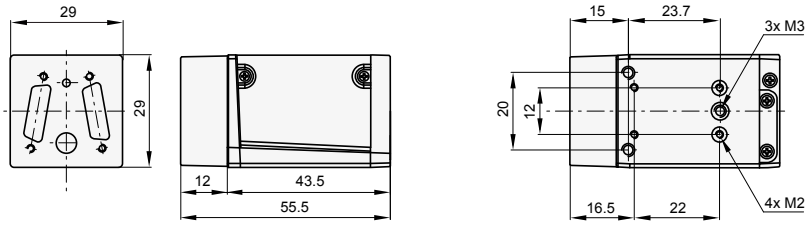
Specifications

Basler ace	acA2000-340km/kc	acA2000-340kmNIR	acA2040-180km/kc	acA2040-180kmNIR
Camera				
Resolution (H×V pixels)	2048×1088	2048×1088	2048×2048	2048×2048
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	CMOS, global shutter	CMOS, global shutter	CMOS, global shutter
Pixel Size [µm²]	5.5×5.5	5.5×5.5	5.5×5.5	5.5×5.5
Frame Rate [fps]*	340	340	180	180
Mono/Color	Mono/Color	Mono NIR-enhanced	Mono/Color	Mono NIR-enhanced
Interface	Camera Link (base, medium, or full)			
Synchronization	Via hardware trigger, via software trigger or free run			
Exposure Control	Trigger width or timed			
Mechanical/Electrical				
Housing Size (L×W×H)	43.5 mm × 29 mm × 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	3.0 W			
Weight (typical)	<90 g			
Conformity	CE, FCC, RoHS, GenICam, Camera Link			
Software/Driver				
Driver	Basler pylon Camera Software Suite or 3rd party Camera Link Software			
Operating System	Windows, Linux, Mac OS X			
Conformity	Camera Link, GenICam			

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

*For definition of Frame Rate, please see User's Manual

Dimensions (in mm)



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Basler´s Components Enhance Your Vision

Basler offers you extensively tested cables and lenses, which are optimized for use with our Basler cameras. Our cooperation with certified suppliers facilitates the operation of a high-performance image processing system.

An image processing system needs more than just a camera, lens and light source. A stable vision system also requires accessories for handling data transfer.

Basler offers a wide variety of accessories such as lenses, I/O cables, power supplies, data cables, host adapter cards, hubs or switches designed to help you get the most out of your camera. To ensure full compatibility, all accessories are tested with our cameras. Cables and power supplies are all EMC tested for industrial conditions by our support team.

Basler Original Equipment

The accessories market for machine vision cameras is broad and deep. Therefore, Basler offers products specially developed for our cameras, meaning camera and lens or cables harmonize perfectly with one another. The products are produced exclusively for us and are available only from Basler. All products with the Basler Original Equipment seal allow top performance when combined with Basler cameras.

Why Components from Basler?

- Perfect match with our Basler cameras
- Extensive and qualified portfolio
- One-stop-shopping for your image processing system
- Performance stability through premium quality standards
- Qualified selection of components avoids changes in existing systems
- Professional consultancy during preselection

USB 3.0 Accessories from Basler

Especially with a USB 3.0 interface, it is important to think about the right accessories to achieve stability in a system with one or more cameras. In particular USB 3.0 accessories from the consumer sector may lead to major disadvantages for the user, as they are not designed to handle the higher demands of machine vision applications.

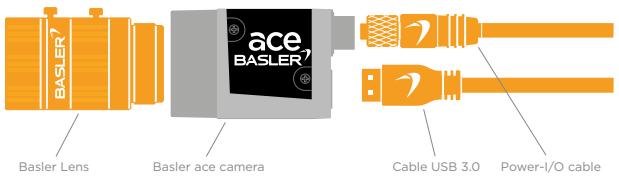
Our portfolio of USB 3.0 accessories covers a broad selection of cables, host adapter cards and a USB 3.0 hub.

Your Benefits Through USB 3.0 Accessories:

- High stability of your USB 3.0 set up
- Simple integration into all image processing applications
- Tested USB 3.0 accessories with reliable premium quality for industrial applications
- Carefully selected accessories for a perfect match
- Plug and play functionality

Have a look at the matching components for your camera model at
www.baslerweb.com/accessories

Typcial set-up of a camera system:



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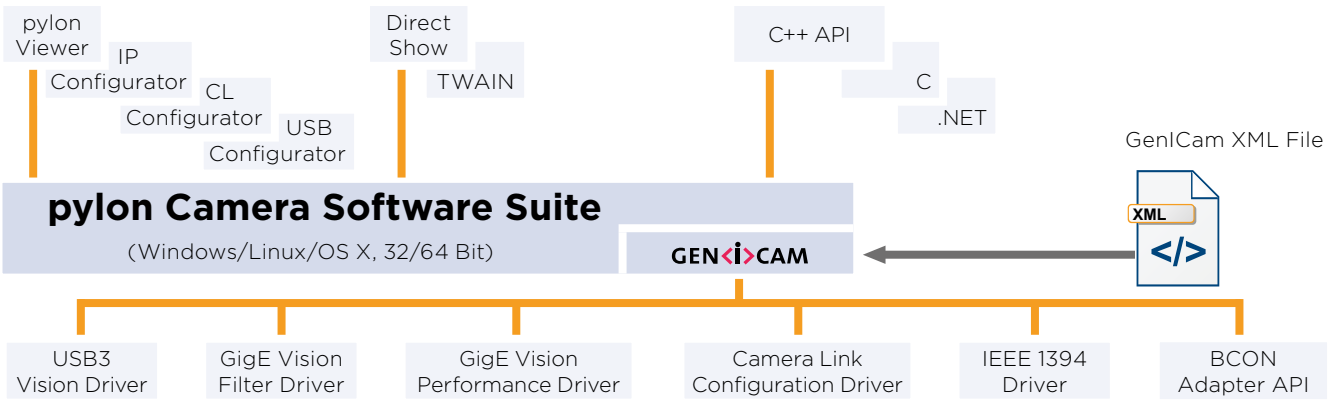
Get your free version: www.baslerweb.com/pylon

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, for Windows and Linux on x86 and ARM based systems – 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 Drivers** quickly separate incoming packets carrying image data from other traffic on the network and make the data available for use by your vision application while requiring the lowest CPU resources.

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 **BCON Adapter API** allows easy implementation of an adapter to communicate with the systems I^2C interface. A ready to use sample adapter implementation is also provided.

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
- BCON Adapter API
- Camera Link Serial Communication Driver
- pylon Viewer
- SDK for all cameras; C, C++, .NET (C#, VB.NET, ...); the 'pylon for Linux' version only supports the GigE and USB 3.0 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.

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OTHER INFORMATION

How Does Basler Measure and Define Image Quality?

1288 EMVA Standard Compliant

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 ensure powerful 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 their cameras and Basler Lenses. 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 and lenses for factory automation, medical & life sciences, retail and traffic applications. The company employs 500 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 as well as lenses. Today it includes some 300 camera models – and it's still growing. We're committed to developing technology that drives business results for our customers: cameras and lenses that are easy to use, easy to integrate, and deliver an exceptional price/performance ratio.

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