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Basler ace

AREA SCAN CAMERAS

- Broadest selection in the industry
- Best price/performance ratio
- Latest sensor technology
- High value-add features

BASLER
the power of sight

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. Since its introduction in 2009, the ace series has grown to more than 130 models, making it the largest series in the market.

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 – in all its variants - is a fit for a wide range of Vision applications. Basler ace is all you need.

Choose the camera model that best suits your requirements from our three ace product lines: ace classic, ace U and ace L.

ace classic

The ace classic is the starting point of our ace series and offers a very cost-effective and reliable camera selection, with a standard feature set for a wide range of applications. The ace classic includes camera models with CMOS sensors from CMOSIS, e2V and ON Semiconductor (MT line) as well as CCD sensors from Sony. It offers a broad selection of interfaces (USB 3.0, GigE, Camera Link) and covers resolutions from VGA to 14 MP.

Highlights of the ace classic

- First of its kind and the most successful camera series in the Machine Vision market
- CMOS and CCD sensors, including NIR-enhanced versions with an extensive variety of pixel sizes
- Wide interface selection: USB 3.0, GigE, Camera Link
- Standard Feature Set

ace U

With speeds of up to 751 fps and the latest CMOS sensors from Sony (Pregius, STARVIS, Exmor R) and ON Semiconductor (PYTHON), the ace U represents the next evolution of the ace in the areas of sensor

Highlights of the ace U

- State-of-the-art sensors from Sony (Pregius, STARVIS, Exmor R) and ON Semiconductor (PYTHON)
- Fast speeds of up to 751 fps

PGI Feature Set

All cameras within the ace U and ace L product line come with Basler's powerful in-camera image optimization PGI that improves your images at the full speed of your camera. It is a unique combination of 5 × 5 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*

technology and firmware features. It offers state-of-the-art CMOS technology and interface standards combined with advanced firmware features such as PGI.

- USB3 Vision, GigE Vision 2.0 (IEEE1588, PTP)
- Advanced Feature Set

ace L

The ace L profits from the same evolutionary steps in firmware features as the ace U. Furthermore, it is capable of carrying high resolution 9 and 12 MP Sony Pregius CMOS sensors with optical formats above 1".

To accommodate these larger sensors, the camera housing is slightly larger than other ace models and has a footprint of 40 mm × 30 mm.

Highlights of the ace L

- 1.1" sensors
- Brilliant image quality at speeds of up to 42 fps
- USB3 Vision, GigE Vision 2.0 (IEEE1588, PTP)
- Advanced Feature Set

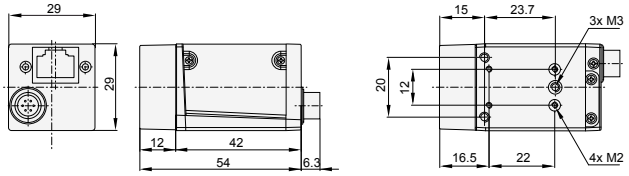
All specifications in this brochure are subject to change without notice.
Latest specifications and availability can be found on our website *www.baslerweb.com/ace*. Please visit *www.baslerweb.com/manuals* for the detailed camera User's Manual and *www.baslerweb.com/thirdparty* for information on third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

TECHNICAL DETAILS

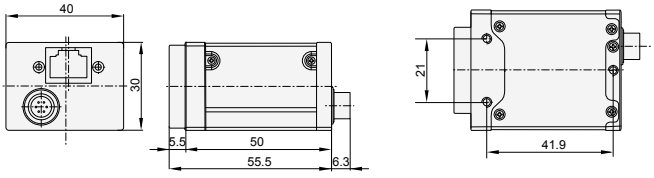
Basler ace GigE	
Product Group Specifications	
Interface	Fast Ethernet (100 Mbit/s) or Gigabit Ethernet (1000 Mbit/s)
Housing Size (L × W × H)	ace classic/ace U: 42 mm × 29 mm × 29 mm, ace L: 50 mm × 40 mm × 30 mm
Housing Temperature	0 °C – 50 °C
Typical Weight	< 90 g
Power Requirements	ace classic: Power over Ethernet (IEEE 802.3af) or 12 VDC (+/- 10%) ace U/ace L: Power over Ethernet (IEEE 802.3af) or 12-24 VDC (+/- 10%)[1]
Synchronization	Via hardware trigger, via software trigger, or free-run
Exposure Control	Via hardware trigger[2] or programmable via the camera API
Conformity	CE, RoHS, GenICam, GigE Vision, IP30, UL[3], FCC, IEEE 802.3af (PoE)
Driver	Basler pylon Camera Software Suite or 3rd party GigE Vision Software
Operating System	Windows, Linux, macOS

[1] also applies to ace classic models acA3800-10gm/gc, acA4600-7gc
[2] not applicable for acA1280-60gm/gc, acA1300-60gm/gc, acA1600-60gm/gc, acA3800-10gm/gc, acA4600-7gc
[3] UL in preparation for acA5472-5gm/gc

Dimensions (in mm): ace classic & ace U



Dimensions (in mm): ace L



Basler ace classic	acA640-90gm/gc	acA640-120gm/gc	acA780-75gm/gc
Model Specifications			
Resolution (H×V pixels)	659 × 494	659 × 494	782 × 582
Sensor	Sony ICX424	Sony ICX618	Sony ICX415
Sensor Size (optical)	1/3"	1/4"	1/2"
Sensor Technology	CCD, global shutter		
Pixel Size [µm²]	7.4 × 7.4	5.6 × 5.6	8.3 × 8.3
Frame Rate [fps]	90	120	75
Mono/Color	Mono/Color		
Pixel Format	Mono (8, 12, 12 Packed), Bayer BG (8, 12, 12 Packed), YUV 4:2:2 (Packed, YUYV Packed)		
Lens Mount	C, CS	C, CS	C, CS*
Digital I/O	1 opto-isolated input + 1 opto-isolated output		
Power Consumption (PoE/AUX)	3.1 W/2.7 W	2.3 W/2.0 W	3.6 W / 3.3 W

*only available for color model

TECHNICAL DETAILS

Basler ace classic	acA1300-22gm/gc	acA1300-30gm/gc	acA1280-60gm/gc
Model Specifications			
Resolution (H×V pixels)	1296×966	1296×966	1282×1026
Sensor	Sony ICX445	Sony ICX445	E2V EV76C560
Sensor Size (optical)	1/3″	1/3″	1/1.8″
Sensor Technology	CCD, global shutter	CCD, global shutter	CMOS, rolling shutter
Pixel Size [µm²]	3.75×3.75	3.75×3.75	5.3×5.3
Frame Rate [fps]	22	30	60
Mono/Color	Monor/Color		
Pixel Format	Mono (8, 12, 12 Packed), Bayer RG (8, 12, 12 Packed), YUV 4:2:2 (Packed, YUYV Packed)		
Lens Mount	CS	C, CS	C
Digital I/O	1 opto-isolated input + 1 opto-isolated output		
Power Consumption (PoE/AUX)	2.5 W/2.2 W	2.5 W/2.2 W	2.4 W/2.0 W

Basler ace classic	acA1300-60gm/gc	acA1300-60gmNIR	acA1600-20gm/gc
Model Specifications			
Resolution (H×V pixels)	1282×1026	1282×1026	1626×1236
Sensor	E2V EV76C560	E2V EV76C661	Sony ICX274
Sensor Size (optical)	1/1.8″		
Sensor Technology	CMOS, global and rolling shutter	CMOS, global and rolling shutter	CCD, global shutter
Pixel Size [µm²]	5.3×5.3	5.3×5.3	4.4×4.4
Frame Rate [fps]	60	60	20
Mono/Color	Mono/Color	Mono NIR-enhanced	Mono/Color
Pixel Format	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)	Mono (8, 12, 12 Packed), Bayer BG (8, 12, 12 Packed), YUV 4:2:2 (Packed, YUYV Packed)
Lens Mount	C, CS	C, CS	C, CS**
Digital I/O	1 opto-isolated input + 1 opto-isolated output		
Power Consumption (PoE/AUX)	2.4 W/2.0 W	2.4 W/2.0 W	3.4 W/2.9 W

**only available for monochrome model

TECHNICAL DETAILS

Basler ace classic	acA1600-60gm/gc	acA1920-25gm/gc	acA2000-50gm/gc
Model Specifications			
Resolution (H×V pixels)	1602×1202	1920×1080	2048×1088
Sensor	E2V EV76C570	ON Semiconductor MT9P031	CMOSIS CMV2000
Sensor Size (optical)	1/1.8″	1/3.7″	2/3″
Sensor Technology	CMOS, global and rolling shutter	CMOS, rolling shutter	CMOS, global shutter
Pixel Size [µm²]	4.5×4.5	2.2×2.2	5.5×5.5
Frame Rate [fps]	60	25	50
Mono/Color	Mono/Color		
Pixel 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 BG (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)
Lens Mount	C, CS*	C,CS*	C,CS
Digital I/O	1 opto-isolated input + 1 opto-isolated output		
Power Consumption (PoE/AUX)	2.5 W/2.1 W	2.5 W/2.2 W	2.8 W/2.5 W

*only available for color model

Basler ace classic	acA2000-50gmNIR	acA2040-25gm/gc	acA2040-25gmNIR
Model Specifications			
Resolution (H×V pixels)	2048×1088	2048×2048	2048×2048
Sensor	CMOSIS CMV2000 NIR-enhanced	CMOSIS CMV4000	CMOSIS CMV4000 NIR-enhanced
Sensor Size (optical)	2/3″	1″	1″
Sensor Technology	CMOS, global shutter		
Pixel Size [µm²]	5.5×5.5		
Frame Rate [fps]	50	25	25
Mono/Color	Mono NIR-enhanced	Mono/Color	Mono NIR-enhanced
Pixel Format	Mono (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)	Mono (8, 12, 12 Packed), YUV 4:2:2 (Packed, YUYV Packed)
Lens Mount	C		
Digital I/O	1 opto-isolated input + 1 opto-isolated output		
Power Consumption (PoE/AUX)	2.8 W/2.5 W	2.8 W/2.5 W	2.9 W/2.6 W

*only available for color model

TECHNICAL DETAILS

Basler ace classic	acA2500-14gm/gc	acA3800-10gm/gc	acA4600-7gc
Model Specifications			
Resolution (H×V pixels)	2592×1944	3840×2748	4608×3288
Sensor	ON Semiconductor MT9P031	ON Semiconductor MT9J003	ON Semiconductor MT9F002
Sensor Size (optical)	1/2.5″	1/2.3″	1/2.3″
Sensor Technology	CMOS, rolling shutter		
Pixel Size [µm²]	2.2×2.2	1.67×1.67	1.4×1.4
Frame Rate [fps]	14	10	7
Mono/Color	Mono/Color	Mono/Color	Color
Pixel Format	Mono (8, 12, 12 Packed), Bayer GB (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, Bayer BG (8, 12, 12 Packed), YUV 4:2:2 (Packed, YUYV Packed)
Lens Mount	C, CS	C	C
Digital I/O	1 opto-isolated input + 1 opto-isolated output		
Power Consumption (PoE/AUX)	2.5 W/2.2 W	3.5 W/3.3 W	3.5 W/3.3 W

Basler ace U	NEW acA640-121gm	acA640-300gm/gc	acA720-290gm/gc
Model Specifications			
Resolution (H×V pixels)	659 × 494	640×480	720 x 540
Sensor	ICX618 Replacement	ON Semiconductor PYTHON 300	Sony IMX287
Sensor Size (optical)	1/4″	1/4″	1/2.9″
Sensor Technology	CMOS, global shutter		
Pixel Size [µm²]	5.6×5.6	4.8×4.8	6.9×6.9
Frame Rate [fps]	130	376	291
Mono/Color	Mono	Mono/Color	Mono/Color
Pixel Format	Mono (8, 12, 12 Packed)	Mono (8, 10, 10 Packed), Bayer BG (8, 10, 10 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)
Lens Mount	C		
Digital I/O	1 opto-isolated input + 1 opto-isolated output + 1 GPIO		
Power Consumption (PoE/AUX)	~ 3 W	3.5 W/3.1 W	3.2 W/2.9 W

TECHNICAL DETAILS

Basler ace U	acA800-200gm/gc	acA1300-75gm/gc	acA1440-73gm/gc
Model Specifications			
Resolution (H×V pixels)	800×600	1280×1024	1440 x 1080
Sensor	ON Semiconductor PYTHON 500	ON Semiconductor PYTHON 1300	Sony IMX273
Sensor Size (optical)	1/3.6″	1/2″	1/2.9″
Sensor Technology	CMOS, global shutter		
Pixel Size [µm²]	4.8×4.8	4.8×4.8	3.45×3.45
Frame Rate [fps]	240	88	73
Mono/Color	Mono/Color		
Pixel Format	Mono (8, 10, 10 Packed), Bayer BG (8, 10, 10 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)
Lens Mount	C		
Digital I/O	1 opto-isolated input + 1 opto-isolated output + 1 GPIO		
Power Consumption (PoE/AUX)	3.5 W/3.1 W	3.5 W/3.1 W	3.2 W/2.9 W

Basler ace U	acA1920-40gm/gc	acA1920-48gm/gc	acA1920-50gm/gc
Model Specifications			
Resolution (H×V pixels)	1920×1200		
Sensor	Sony IMX249	ON Semiconductor PYTHON 2000	Sony IMX174
Sensor Size (optical)	1/1.2″	2/3″	1/1.2″
Sensor Technology	CMOS, global shutter		
Pixel Size [µm²]	5.86×5.86	4.8×4.8	5.86×5.86
Frame Rate [fps]	42	50	50
Mono/Color	Mono/Color		
Pixel 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)
Lens Mount	C		
Digital I/O	1 opto-isolated input + 1 opto-isolated output + 1 GPIO		
Power Consumption (PoE/AUX)	3.4 W/3.1 W	3.7 W/3.3 W	3.6 W/3.2 W

TECHNICAL DETAILS

Basler ace U	acA2040-35gm/gc	acA2440-20gm/gc	acA2500-20gm/gc
Model Specifications			
Resolution (H×V pixels)	2048×1536	2448×2048	2592×2048
Sensor	Sony IMX265	Sony IMX264	ON Semiconductor PYTHON 5000
Sensor Size (optical)	1/1.8″	2/3″	1″
Sensor Technology	CMOS, global shutter		
Pixel Size [µm²]	3.45×3.45	3.45×3.45	4.8×4.8
Frame Rate [fps]	36	23	21
Mono/Color	Mono/Color		
Pixel 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 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)
Lens Mount	C		
Digital I/O	1 opto-isolated input + 1 opto-isolated output + 1 GPIO		
Power Consumption (PoE/AUX)	3.2 W/2.7 W	3.3 W/2.7 W	4.1 W/3.6 W

Basler ace U	acA3088-16gm/gc	acA4024-8gm/gc	NEW acA5472-5gm/gc
Model Specifications			
Resolution (H×V pixels)	3088×2064	4024×3036	5472×3648
Sensor	Sony IMX178	Sony IMX226	Sony IMX183
Sensor Size (optical)	1/1.8″	1/1.7″	1″
Sensor Technology	CMOS, rolling shutter		
Pixel Size [µm2]	2.4×2.4	1.85×1.85	2.4×2.4
Frame Rate [fps]	16	8	5
Mono/Color	Mono/Color		
Pixel Format	Mono (8, 12, 12 Packed), Bayer RG (8, 12, 12 Packed), YUV 4:2:2 (Packed, YUYV Packed)		
Lens Mount	C		
Digital I/O	1 opto-isolated input + 1 opto-isolated output + 1 GPIO		
Power Consumption (PoE/AUX)	2.9 W/2.5 W	2.9 W/2.5 W	3.0 W/2.6 W

TECHNICAL DETAILS

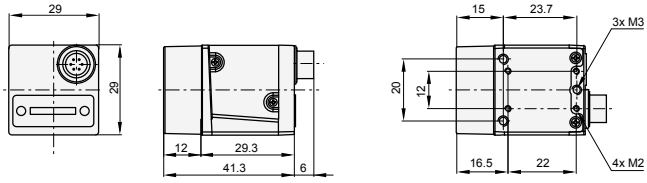
Basler ace L	acA4096-11gm/gc	acA4112-8gm/gc
Model Specifications		
Resolution (H×V pixels)	4096×2160	4096×3000
Sensor	Sony IMX267	Sony IMX304
Sensor Size (optical)	1″	1.1″
Sensor Technology	CMOS, global shutter	
Pixel Size [µm²]	3.45×3.45	
Frame Rate [fps]	12	8
Mono/Color	Mono/Color	
Pixel Format	Mono (8, 12, 12 Packed), Bayer RG (8, 12, 12 Packed), YUV 4:2:2 (Packed, YUYV Packed)	
Lens Mount	C	
Digital I/O	1 opto-isolated input + 1 opto-isolated output + 1 GPIO	
Power Consumption (PoE/AUX)	3.2 W / 2.7 W	

TECHNICAL DETAILS

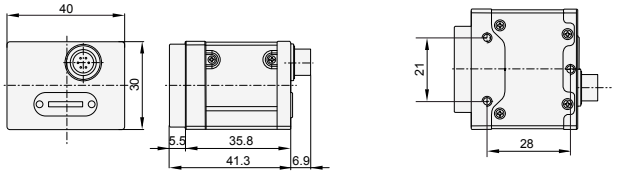
Basler ace USB			
Product Group Specifications			
Interface	USB 3.0		
Housing Size (L × W × H)	ace classic/ace U: 29.3 mm × 29 mm × 29 mm, ace L: 35.8 mm × 40 mm × 30 mm		
Housing Temperature	0 °C - 50 °C[1]		
Typical Weight	< 80 g		
Power Requirements	Via USB 3.0 interface		
Power Suspend Mode	Yes, less than 0.02 W, configurable		
Synchronization	Via hardware trigger, via software trigger or free-run		
Exposure Control	Via hardware trigger[2] or programmable via the camera API		
Conformity	CE, RoHS, GenICam, USB3 Vision, IP30, UL[3], FCC		
Driver	Basler pylon Camera Software Suite or 3rd party USB3 Vision Software		
Operating System	Windows, Linux, macOS		

[1] 0 °C - 60 °C for acA2040-90um/uc, acA2040-90umNIR
[2] not applicable for ace models with sensors of the MT line from ON Semiconductor
[3] UL in preparation for acA5472-17um/uc

Dimensions (in mm): ace classic & ace U



Dimensions (in mm): ace L



Basler ace classic	acA640-90um/uc	acA640-120um/uc	acA1300-30um/uc
Model Specifications			
Resolution (H×V pixels)	659 × 494	659 × 494	1296 × 966
Sensor	Sony ICX424	Sony ICX618	Sony ICX445
Sensor Size (optical)	1/3"	1/4"	1/3"
Sensor Technology	CCD, global shutter		
Pixel Size [µm²]	7.4 × 7.4	5.6 × 5.6	3.75 × 3.75
Frame Rate [fps]	90	120	30
Mono/Color	Mono/Color		
Pixel Format	Mono (8, 12, 12 Packed), Bayer BG (8, 12, 12 Packed), YCbCr422_8, RGB8, BGR8		
Lens Mount	C, CS*	C, CS	C
Digital I/O	1 opto-isolated input + 1 opto-isolated output + 2 Fast-GPIO (configurable as In/Out)		
Power Consumption	3.0 W	3.0 W	2.5 W

*only available for color model

TECHNICAL DETAILS

Basler ace classic	acA1600-20um/uc	acA1920-25um/uc	acA2000-165um/uc
Model Specifications			
Resolution (H×V pixels)	1626×1236	1920×1080	2048×1088
Sensor	Sony ICX274	ON Semiconductor MT9P031	CMOSIS CMV2000
Sensor Size (optical)	1/1.8″	1/3.7″	2/3″
Sensor Technology	CCD, global shutter	CMOS, rolling shutter	CMOS, global shutter
Pixel Size [µm²]	4.4×4.4	2.2×2.2	5.5×5.5
Frame Rate [fps]	20	26	165
Mono/Color	Mono/Color		
Pixel Format	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	Mono (8, 12, 12 Packed)**, Bayer BG (8, 12, 12 Packed)
Lens Mount	C, CS**	C	C
Digital I/O	1 opto-isolated input + 1 opto-isolated output + 2 Fast-GPIO (configurable as In/Out)		
Power Consumption	3.5 W	2.2 W	3.2 W

**only available for monochrome model

Basler ace classic	acA2000-165umNIR	acA2040-90um/uc	acA2040-90umNIR
Model Specifications			
Resolution (H×V pixels)	2048×1088	2048×2048	2048×2048
Sensor	CMOSIS CMV2000 NIR-enhanced	CMOSIS CMV4000	CMOSIS CMV4000 NIR-enhanced
Sensor Size (optical)	2/3″	1″	1″
Sensor Technology	CMOS, global shutter		
Pixel Size [µm²]	5.5×5.5		
Frame Rate [fps]	165	90	90
Mono/Color	Mono NIR-enhanced	Mono/Color	Mono NIR-enhanced
Pixel Format	Mono (8, 12, 12 Packed)	Mono (8, 12, 12 Packed)**, Bayer BG (8, 12, 12 Packed)	Mono (8, 12, 12 Packed)
Lens Mount	C		
Digital I/O	1 opto-isolated input + 1 opto-isolated output + 2 Fast-GPIO (configurable as In/Out)		
Power Consumption	3.2 W		

**only available for monochrome model

TECHNICAL DETAILS

Basler ace classic	acA2500-14um/uc	acA3800-14um/uc	acA4600-10uc
Model Specifications			
Resolution (H×V pixels)	2592×1944	3840×2748	4608×3288
Sensor	ON Semiconductor MT9P031	ON Semiconductor MT9J003	ON Semiconductor MT9F002
Sensor Size (optical)	1/2.5″	1/2.3″	1/2.3″
Sensor Technology	CMOS, rolling shutter		
Pixel Size [µm²]	2.2×2.2	1.67×1.67	1.4×1.4
Frame Rate [fps]	14	14	10
Mono/Color	Mono/Color	Mono/Color	Color
Pixel Format	Mono (8, 12, 12 Packed), Bayer GB (8, 12, 12 Packed), YCbCr422_8	Mono (8, 12, 12 Packed), Bayer BG (8, 12, 12 Packed), YCbCr422_8	Mono 8, Bayer BG (8, 12, 12 Packed), YCbCr422_8
Lens Mount	C, CS	C	C
Digital I/O	1 opto-isolated input + 1 opto-isolated output + 2 Fast-GPIO (configurable as In/Out)		
Power Consumption	2.2 W	2.8 W	2.8 W

Basler ace U	acA640-750um/uc	acA720-520um/uc	acA800-510um/uc
Model Specifications			
Resolution (H×V pixels)	640×480	720×540	800×600
Sensor	ON Semiconductor PYTHON 300	Sony IMX287	ON Semiconductor PYTHON 500
Sensor Size (optical)	1/4″	1/2.9″	1/3.6″
Sensor Technology	CMOS, global shutter		
Pixel Size [µm²]	4.8×4.8	6.9×6.9	4.8×4.8
Frame Rate [fps]	751	525	511
Mono/Color	Mono/Color		
Pixel 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, RGB8, BGR8	Mono (8, 10, 10 Packed), Bayer BG (8, 10, 10 Packed), YCbCr422_8, RGB8, BGR8
Lens Mount	C		
Digital I/O	1 opto-isolated input + 1 opto-isolated output + 2 Fast-GPIO (configurable as In/Out)		
Power Consumption	3.3 W	3.0 W	3.3 W

Basler ace U	acA1300-200um/uc	acA1440-220um/uc	acA1920-40um/uc
Model Specifications			
Resolution (H×V pixels)	1280×1024	1440×1080	1920×1200
Sensor	ON Semiconductor PYTHON 1300	Sony IMX273	Sony IMX249
Sensor Size (optical)	1/2″	1/2.9″	1/1.2″
Sensor Technology		CMOS, global shutter	
Pixel Size [µm²]	4.8×4.8	3.45×3.45	5.86×5.86
Frame Rate [fps]	203	227	41
Mono/Color		Mono/Color	
Pixel 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, RGB8, BGR8	Mono (8, 12, 12 Packed), Bayer RG (8, 12, 12 Packed), YCbCr422_8, RGB8, BGR8
Lens Mount		C	
Digital I/O		1 opto-isolated input + 1 opto-isolated output + 2 Fast-GPIO (configurable as In/Out)	
Power Consumption	3.3 W	3.3 W	2.9 W

Basler ace U	acA1920-150um/uc	acA1920-155um/uc	acA2040-55um/uc
Model Specifications			
Resolution (H×V pixels)	1920×1200	1920×1200	2048×1536
Sensor	ON Semiconductor PYTHON 2000	Sony IMX174	Sony IMX265
Sensor Size (optical)	2/3″	1/1.2″	1/1.8″
Sensor Technology		CMOS, global shutter	
Pixel Size [µm²]	4.8×4.8	5.86×5.86	3.45×3.45
Frame Rate [fps]	150	164	55
Mono/Color		Mono/Color	
Pixel Format	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 RG (8, 12, 12 Packed), YCbCr422_8, RGB8, BGR8
Lens Mount		C	
Digital I/O		1 opto-isolated input + 1 opto-isolated output + 2 Fast-GPIO (configurable as In/Out)	
Power Consumption	4.2 W	3.7 W	2.6 W

TECHNICAL DETAILS

Basler ace U	acA2040-120um/uc	acA2440-35um/uc	acA2440-75um/uc
Model Specifications			
Resolution (H×V pixels)	2048×1536	2448×2048	2448×2048
Sensor	Sony IMX252	Sony IMX264	Sony IMX250
Sensor Size (optical)	1/1.8″	2/3″	2/3″
Sensor Technology	CMOS, global shutter		
Pixel Size [µm²]	3.45×3.45		
Frame Rate [fps]	120	35	75
Mono/Color	Mono/Color		
Pixel Format	Mono (8, 12, 12 Packed), Bayer RG (8, 12, 12 Packed), YCbCr422_8, RGB8, BGR8		
Lens Mount	C		
Digital I/O	1 opto-isolated input + 1 opto-isolated output + 2 Fast-GPIO (configurable as In/Out)		
Power Consumption	3.5 W	2.7 W	3.4 W

Basler ace U	acA2500-60um/uc	acA3088-57um/uc	acA4024-29um/uc	NEW acA5472-17um/uc
Model Specifications				
Resolution (H×V pixels)	2592×2048	3088×2064	4024×3036	5472 × 3648
Sensor	ON Semiconductor PYTHON 5000	Sony IMX178	Sony IMX226	Sony IMX183
Sensor Size (optical)	1″	1/1.8″	1/1.7″	1″
Sensor Technology	CMOS, global shutter	CMOS, rolling shutter	CMOS, rolling shutter	CMOS, rolling shutter
Pixel Size [µm²]	4.8×4.8	2.4×2.4	1.85×1.85	2.4 x 2.4
Frame Rate [fps]	60	59	31	17
Mono/Color	Mono/Color			
Pixel Format	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), YCb-Cr422_8, RGB8, BGR8	Mono (8, 12, 12 Packed), Bayer RG (8, 12, 12 Packed), YCb-Cr422_8, RGB8, BGR8	Mono (8, 12, 12 Packed), Bayer RG (8, 12, 12 Packed), YCb-Cr422_8, RGB8, BGR8
Lens Mount	C			
Digital I/O	1 opto-isolated input + 1 opto-isolated output + 2 Fast-GPIO (configurable as In/Out)			
Power Consumption	4.2 W	3.0 W	3.0 W	~3 W

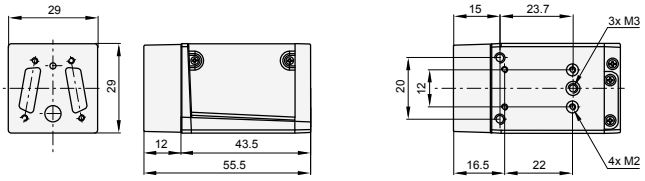
TECHNICAL DETAILS

Basler ace L	acA4096-30um/uc	acA4096-40um/uc	acA4112-20um/uc	acA4112-30um/uc
Model Specifications				
Resolution (H×V pixels)	4096 × 2168	4096 × 2168	4096 × 3000	4096 × 3000
Sensor	Sony IMX267	Sony IMX255	Sony IMX304	Sony IMX253
Sensor Size (optical)	1″	1″	1.1″	1.1″
Sensor Technology	CMOS, global shutter			
Pixel Size [µm²]	3.45 × 3.45			
Frame Rate [fps]	32	42	23	30
Mono/Color	Mono/Color			
Pixel Format	Mono (8, 12, 12 Packed), Bayer RG (8, 12, 12 Packed), YCbCr422_8, RGB8, BGR8			
Lens Mount	C			
Digital I/O	1 opto-isolated input + 1 opto-isolated output + 2 Fast-GPIO (configurable as In/Out)			
Power Consumption	3.0 W	3.6 W	3.0 W	3.6 W

TECHNICAL DETAILS

Basler ace Camera Link	
Product Group Specifications	
Interface	Camera Link (base, medium or full)
Housing Size (L × W × H)	43.5 mm × 29 mm × 29 mm
Housing Temperature	0 °C - 50 °C
Typical Weight	≈ 100 g
Power Requirements	Power over Camera Link (PoCL) or 12VDC (+/- 10%)
Synchronization	Via hardware trigger, via software trigger or free-run
Exposure Control	Trigger width or timed
Conformity	CE, RoHS, GenICam, Camera Link, IP30, FCC
Driver	Basler pylon Camera Software Suite or 3rd party Camera Link Software
Operating System	Windows, Linux, macOS

Dimensions (in mm):



Basler ace classic	acA2000-340km/kc	acA2000-340kmNIR	acA2040-180km/kc	acA2040-180kmNIR
Model Specifications				
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			
Pixel Size [µm²]	5.5 × 5.5			
Frame Rate [fps]	340	340	180	180
Mono/Color	Mono/Color	Mono NIR-enhanced	Mono/Color	Mono NIR-enhanced
Lens Mount	C			
Digital I/O	1 opto-isolated input or output (GPIO)			
Power Consumption	3.0 W			

BASLER´S COMPONENTS

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.

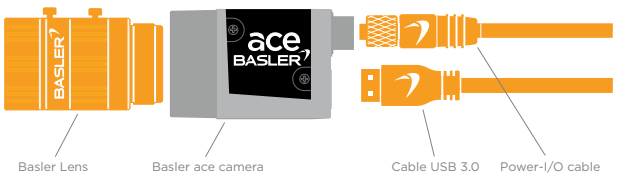
Our portfolio of USB 3.0 accessories covers a broad selection of cables, host adapter cards and a USB 3.0 hub.

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

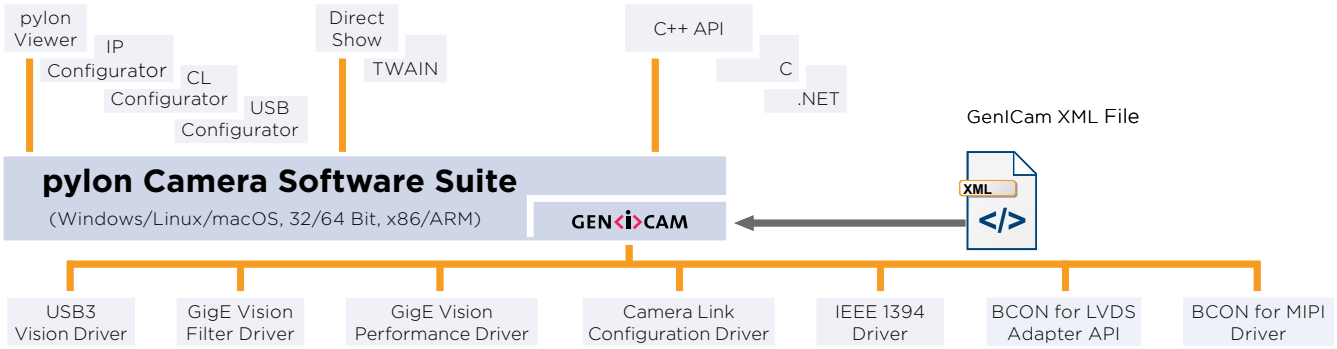
Typcial set-up of a camera system:



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, macOS, 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 **MIPI Driver Package** offers plug and play experience with Basler MIPI-CSI-2 camera modules for supported plaltforms

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
- MIPI Driver Package
- 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.

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 the Basler Lenses 1/2.5". 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

Basler is a leading manufacturer of high-quality cameras and camera accessories for industry, medicine, traffic and a variety of other markets. The company's product portfolio encompasses area scan and line scan cameras in compact housing dimensions, camera modules in board level variants for embedded solutions, and 3D cameras. The catalog is rounded off by our user-friendly pylon SDK and a broad spectrum of accessories, including several developed specially for Basler and optimally harmonized for our cameras.

Basler has three decades of experience in computer vision. The company is home to approximately 600 employees, at its headquarters in Ahrensburg, Germany, and at its subsidiaries and sales offices in Europe, Asia, and North America.

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ID 2000030025

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