

# Basler ace

## AREA SCAN CAMERAS

This information is brought to you by:



- Ground-breaking price on all interfaces
- USB 3.0 – easiest way for plug and play
- Gigabit Ethernet interface with PoE
- Camera Link interface with PoCL
- Broad sensor selection: CCD, CMOS, NIR versions

## 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 €299 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 driver package with advanced drivers
- Outstanding price/performance ratio



# TECHNICAL DETAILS

## Specifications



Basler ace	Resolution (H x V pixels)	Sensor	Sensor Technology	Sensor Size (optical)	Pixel Size (µm)	Frame Rate	Power Consumption (PoE/AUX)	Weight (typical)
acA640-90gm/gc	659 x 494	Sony ICX424	Progressive Scan CCD	1/3"	7.4 x 7.4	90	3.1 W/2.7 W	<90g
acA640-100gm/gc	659 x 494	Sony ICX618	Progressive Scan CCD	1/4"	5.6 x 5.6	100	2.3 W/2.0 W	<90 g
acA645-100gm/gc	659 x 494	Sony ICX414	Progressive Scan CCD	1/2"	9.9 x 9.9	100	3.6 W/3.3 W	<90g
acA750-30gm/gc	752 x 580	Sony ICX409	Interlaced Scan CCD	1/3"	6.5 x 6.25	30	2.5 W/2.3 W	<90 g
acA780-75gm/gc	782 x 582	Sony ICX415	Progressive Scan CCD	1/2"	8.3 x 8.3	75	3.6 W/3.3 W	<90g
acA1300-30gm/gc	1296 x 966	Sony ICX445	Progressive Scan CCD	1/3"	3.75 x 3.75	30	2.5 W/2.2 W	<90 g
<b>NEW</b> acA1300-60gm/gc*	1280 x 1024	EV76C560	CMOS, global shutter	1/1.8"	5.3 x 5.3	60	<3.0W	<90 g
<b>NEW</b> acA1300-60gm NIR*	1280 x 1024	EV76C661	CMOS, global shutter	1/1.8"	5.3 x 5.3	60	<3.0W	<90 g
acA1600-20gm/gc	1628 x 1236	Sony ICX274	Progressive Scan CCD	1/1.8"	4.4 x 4.4	20	3.4 W/2.9 W	<90 g
<b>NEW</b> acA1600-60gm/gc*	1600 x 1200	EV76C570	CMOS, global shutter	1/1.8"	4.5 x 4.5	60	<3.0W	<90 g
acA2000-50gm/gc	2048 x 1088	CMOSIS CMV2000	CMOS, global shutter	2/3"	5.5 x 5.5	50	3.4 W/2.9 W	<90 g
acA2000-50gm NIR	2048 x 1088	CMOSIS CMV2000 NIR-enhanced	CMOS, global shutter	2/3"	5.5 x 5.5	50	3.4 W/2.9 W	<90 g
acA2040-25gm/gc	2048 x 2048	CMOSIS CMV4000	CMOS, global shutter	1"	5.5 x 5.5	25	3.4 W/2.9 W	<90 g
acA2040-25gm NIR	2048 x 2048	CMOSIS CMV4000	CMOS, global shutter	1"	5.5 x 5.5	25	3.4 W/2.9 W	<90 g
acA2500-14gm/gc	2592 x 1944	Aptina MT9P	CMOS, rolling shutter	1/2.5"	2.2 x 2.2	14	2.5 W/2.2 W	<90 g

\*Available Q2/2013

## Specifications Applicable For All ace GigE Models:

Mono / Color	Mono / Color (NIR models: Mono only)
Interface	Fast Ethernet (100 Mbit/s) or Gigabit Ethernet (1000 Mbit/s)
Video Output Format	Mono 8, Mono 12, Mono 12 Packed, YUV 4:2:2 Packed, YUV 4:2:2 (YUYV) Packed, Bayer BG 8, Bayer BG 12, Bayer BG 12 Packed / in addition: Bayer GB (Aptina), Bayer GR (CMOSIS)
Synchronization	acA750-30gc: Mono 8, YUV 4:2:2 Packed, YUV 4:2:2 (YUYV) Packed only
Exposure Control	Via external trigger, via the Ethernet connection or free run
Housing Size (L x W x H)	42 mm x 29 mm x 29 mm
Housing Temperature	Up to 50 °C
Lens Mount	C-mount, CS-mount (except models with CMOSIS or e2v sensors)
Digital I/O	1 opto-isolated input / 1 opto-isolated output
Power Requirements	Via Power over Ethernet (802.3af) or + 12VDC (±10%) via the camera's 6-pin Hirose connector
Conformity	CE, FCC, IP30, RoHS, PoE (802.3af), UL, GigE Vision, GenICam
Driver	Basler pylon driver package
Operating System	Windows, Linux - 32 bit and 64 bit

# TECHNICAL DETAILS

## Specifications



Basler ace	Resolution (H x V pixels)	Sensor	Sensor Technology	Sensor Size (optical)	Pixel Size (µm)	Frame Rate	Power Consumption (typical)	Weight (typical)
acA640-90um/uc*	659 x 494	Sony ICX424	Progressive Scan CCD	1/3"	7.4 x 7.4	90	2.7 W	<80g
acA640-120um/uc*	659 x 494	Sony ICX618	Progressive Scan CCD	1/4"	5.6 x 5.6	120	2.0 W	<80g
acA1300-30um/uc*	1296 x 966	Sony ICX445	Progressive Scan CCD	1/3"	3.75 x 3.75	30	2.2 W	<80g
acA1600-20um/uc*	1628 x 1236	Sony ICX274	Progressive Scan CCD	1/1.8"	4.4 x 4.4	20	2.9 W	<80g
acA2500-14um/uc*	2592 x 1944	Aptina MT9P	CMOS, rolling shutter	1/2.5"	2.2 x 2.2	14	2.2 W	<80g

\*Available Q2/2013

## Specifications Applicable For All ace USB 3.0 Models:

**PRELIMINARY**

Mono / Color Interface	Mono / Color USB 3.0
Video Output Format	Mono 8, Mono 12, Mono 12 Packed, YUV 4:2:2 Packed, YUV 4:2:2 (YUYV) Packed, Bayer BG 8, Bayer BG 12, Bayer BG 12 Packed, RGB8, BGR8
Synchronization	Via external trigger or free run
Exposure Control	Via external trigger or programmable via the camera API
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-mount, CS-mount
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
Conformity	CE, FCC, IP30, RoHS, UL (in preparation) USB3 Vision, USB IF (in preparation), GenICam
Driver	Basler pylon driver package
Operating System	Windows 32 and 64bit

# TECHNICAL DETAILS



## Specifications

Basler ace	Resolution (H x V pixels)	Sensor	Sensor Technology	Sensor Size (optical)	Pixel Size (µm)	Frame Rate	Power Consumption (typical)	Weight (typical)
acA2000-340km/kc	2048 x 1088	CMOSIS CMV2000	CMOS, global shutter	2/3"	5.5 x 5.5	340	<3.0 W	<90 g
acA2000-340km NIR*	2048 x 1088	CMV2000 NIR-enhanced	CMOS, global shutter	2/3"	5.5 x 5.5	340	<3.0 W	<90 g
acA2040-180km/kc	2048 x 2048	CMOSIS CMV4000	CMOS, global shutter	1"	5.5 x 5.5	180	<3.0 W	<90 g
acA2040-180km NIR*	2048 x 2048	CMV4000 NIR-enhanced	CMOS, global shutter	1"	5.5 x 5.5	180	<3.0 W	<90 g

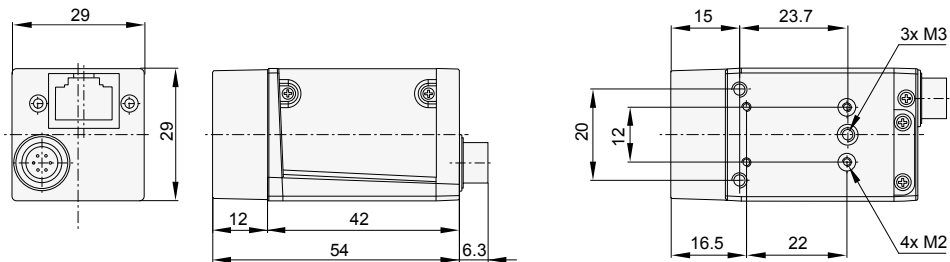
\*Available Q1/2013

## Specifications Applicable For All ace Camera Link Models:

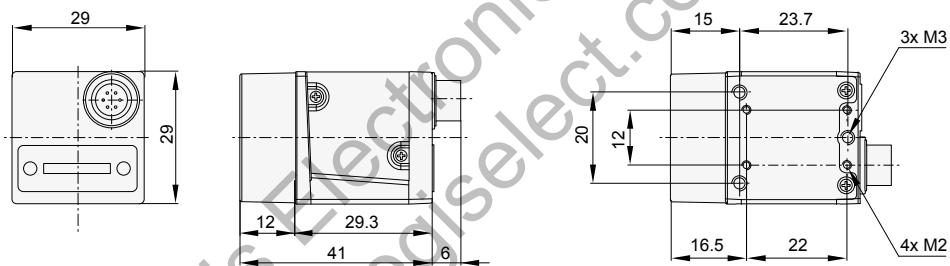
Mono / Color	Mono/Color (NIR models: Mono only)
Interface	Camera Link (base, medium, or full)
Synchronization	Via external trigger or free run
Exposure Control	Trigger width or timed
Housing Size (L x W x H)	43.5 mm x 29 mm x 29 mm
Housing Temperature	Up to 50 °C
Lens Mount	C-mount
Digital I/O	1 opto-isolated input or output
Power Requirements	12VDC (±10%), Power over Camera Link (PoCL) or via IO connector
Conformity	CE, FCC, RoHS, GenICam, Camera Link, UL (in preparation)
Driver	Basler pylon driver package
API Configuration	Register API for C and VB6 or Basler pylon C++ API

# TECHNICAL DETAILS

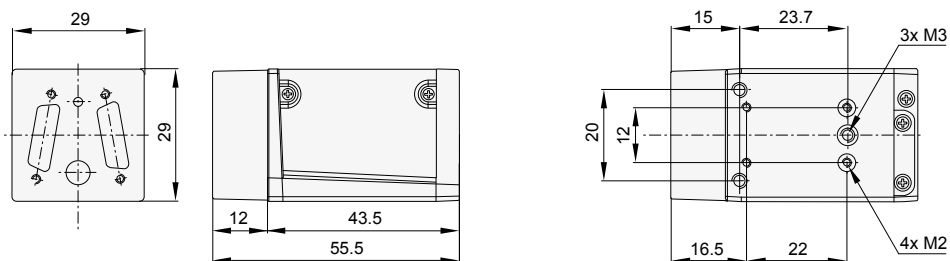
## Dimensions (in mm)



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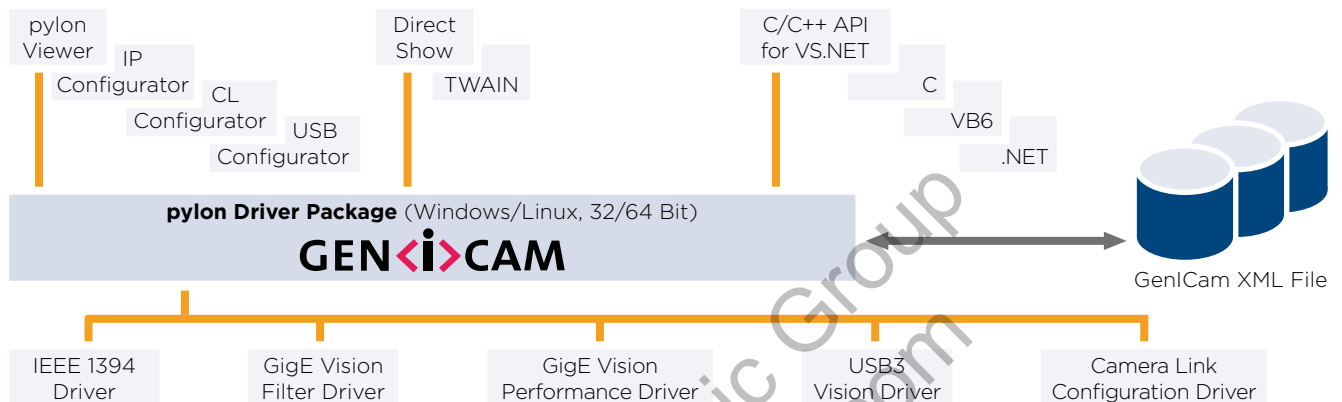
## Dimensions (in mm)



Specifications are subject to change without prior notice.  
 For detailed technical information, see the camera User's Manual that can be found at [www.baslerweb.com/manuals](http://www.baslerweb.com/manuals)

## Basler pylon Driver Package

The pylon driver package operates with all Basler line scan and area scan cameras. It offers stable, reliable and flexible data exchange between Basler cameras and PCs, at a very low CPU load.



The internal architecture of the pylon driver package 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.

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 Viewer offers you a convenient application for testing and evaluating Basler cameras. The pylon SDK 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
- pylon 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 driver package can be downloaded for free at [www.baslerweb.com/pylon](http://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 ISO9001, 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 some 300 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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