

# Basler Components



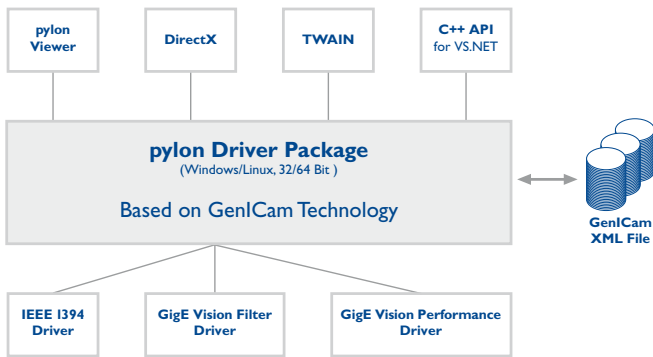
## Product Line Overview



# Basler pylon Camera Driver Package

The Basler pylon Driver Package is designed to operate with Basler cameras that have an IEEE 1394a, an IEEE 1394b, or a GigE Vision interface. This includes the new scout, pilot, and runner area scan and line scan camera families. Basler's older A100, A310, and A600 cameras are also well supported. One hundred percent compatibility with the GenICam standard provides the benefit of a unified C++ camera API for both the 1394a/b and the GigE interfaces. You can select the best fit for your application, or you can use both interface technologies simultaneously. The pylon GigE drivers quickly separate incoming packets carrying image data from other traffic on the network and make the data available for your vision applications. The pylon GigE Vision Performance Driver requires the lowest amount of CPU resources, but can only be used with specific Intel network adapter cards. The

pylon GigE Vision Filter Driver supports many kinds of hardware including GigE ports on your computer's mother board. The pylon IEEE 1394 driver works with the lowest CPU load on all 1394 adapters and provides full S800 speed on all Windows systems without the need for OS patches. "Silent" installation packages for each pylon driver let you easily install the drivers on your system. The Basler pylon Viewer is an easy-to-use application for testing and evaluating Basler cameras. The new tree structure of the Viewer's graphical user interface lets you quickly find the best camera parameter setup, lets you adjust image quality, and gives you complete control of the camera's advanced features. Comprehensive documentation and an extensive set of sample programs will minimize your learning time for the pylon Driver Package.



Basler pylon	
Supported Interfaces:	Gigabit Ethernet, IEEE 1394a/b, Camera Link Configuration*
Supported Basler Cameras:	scout, scout light, pilot, runner, ace, aviator*, A102f/fc, A31xf/fc and A6xxf/fc
Supported IDEs:	MS Visual Studio 6.0*, 7.0, 8.0; Borland*
Supported Languages:	C++, MS Direct Show, TWAIN, VB 6.0*, C*, C#*, VB.NET*
System Requirements:	Windows XP, Windows Vista, Windows 7*, 32 and 64 Bit Linux (only GigE Vision), Kernel 2.6; 32 and 64 Bit

\*Available Q1/2010

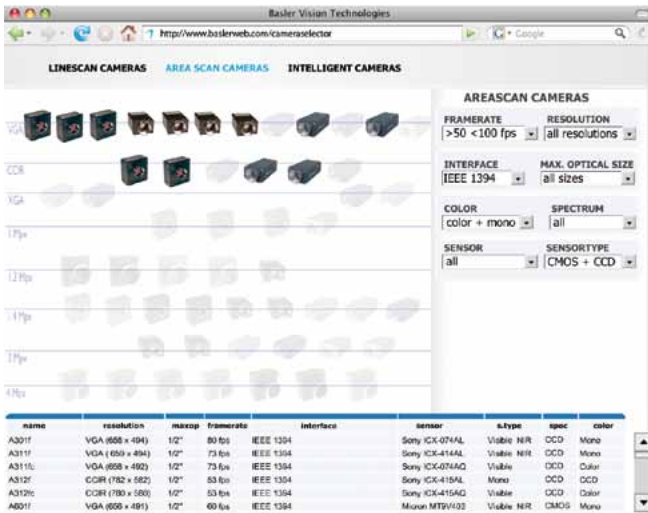


Our website, [www.baslerweb.com](http://www.baslerweb.com), has tools to help you find the right camera.

## Camera Selector

Our camera selector gives you the ability to find the right camera for your application by entering different criteria such as interface, resolution, or speed.

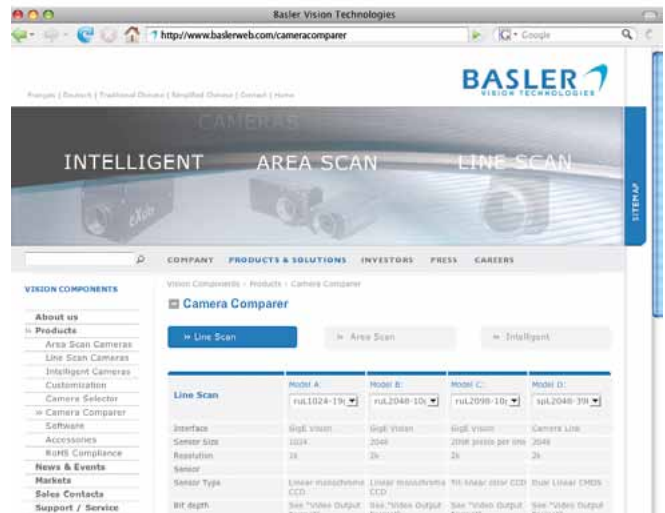
Please enter [www.baslerweb.com/camerasselector](http://www.baslerweb.com/camerasselector) to access the camera selector.



## Camera Comparer

Another useful feature is the camera comparer. You can choose up to four different models and compare specifications at a glance.

Please enter [www.baslerweb.com/camera comparer](http://www.baslerweb.com/camera comparer) to access the camera comparer.



## Accessories for Basler Cameras

Basler Components offers a wide variety of accessories 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 proven for industrial conditions by our support team.

Our portfolio includes several accessories in each of the following categories:

- Cables
- Connectors
- Frame Grabbers and Cards
- Lens Mounts
- Optics
- Power Supplies
- Tripod Mounts
- Others

You can view the entire accessories portfolio, including order numbers and data sheets, at our website: [www.baslerweb.com/accessories](http://www.baslerweb.com/accessories).



# Gigabit Ethernet Area Scan Cameras



Basler scout	Resolution	Frame Rate [Hz]	Mono / Color	Bit Depth	Interface	Pixel Size [ $\mu\text{m}^2$ ]	Sensor Size [ $\text{mm}^2$ ]	Optical Size
scA640-70gm/gc	659 × 494	70	m/c	8/12	Gigabit Ethernet	7.4 × 7.4	4.88 × 3.66	1/3"
scA640-74gm/gc	659 × 494	79	m/c	8/12	Gigabit Ethernet	9.9 × 9.9	6.52 × 4.89	1/2"
scA640-120gm/gc	659 × 494	120	m/c	8/12	Gigabit Ethernet	5.6 × 5.6	3.69 × 2.77	1/4"
scA750-60gm/gc	752 × 480	60	m/c	8	Gigabit Ethernet	6.0 × 6.0	4.51 × 2.88	1/3"
scA780-54gm/gc	782 × 582	55	m/c	8/12	Gigabit Ethernet	8.3 × 8.3	6.49 × 4.83	1/2"
scA1000-20gm/gc	1034 × 779	20	m/c	8/12	Gigabit Ethernet	4.65 × 4.65	4.81 × 3.62	1/3"
scA1000-30gm/gc	1034 × 779	31	m/c	8/12	Gigabit Ethernet	4.65 × 4.65	4.81 × 3.62	1/3"
scA1300-32gm/gc	1296 × 966	32	m/c	8/12	Gigabit Ethernet	3.75 × 3.75	4.86 × 3.62	1/3"
scA1390-17gm/gc	1392 × 1040	17	m/c	8/12	Gigabit Ethernet	4.65 × 4.65	6.47 × 4.84	1/2"
scA1400-17gm/gc*	1392 × 1040	17	m/c	8/12	Gigabit Ethernet	6.45 × 6.45	8.98 × 6.71	2/3"
scA1400-30gm/gc*	1392 × 1040	30	m/c	8/12	Gigabit Ethernet	6.45 × 6.45	8.98 × 6.71	2/3"
scA1600-14gm/gc*	1628 × 1236	14	m/c	8/12	Gigabit Ethernet	4.4 × 4.4	7.16 × 5.44	1/1.8"

All scout cameras are available with C or CS-mount. 90° angled head versions are available with C-mount.

\* Only available with C-mount

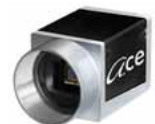
# Gigabit Ethernet Area Scan Cameras



Basler pilot	Resolution	Frame Rate [Hz]	Mono / Color	Bit Depth	Interface	Pixel Size [ $\mu\text{m}^2$ ]	Sensor Size [ $\text{mm}^2$ ]	Optical Size
piA640-210gm/gc	648 × 488	210	m/c	8/12	Gigabit Ethernet	7.4 × 7.4	4.80 × 3.61	1/3"
piA1000-48gm/gc	1004 × 1004	48	m/c	8/12	Gigabit Ethernet	7.4 × 7.4	7.43 × 7.43	2/3"
piA1000-60gm/gc	1004 × 1004	60	m/c	8/12	Gigabit Ethernet	7.4 × 7.4	7.43 × 7.43	2/3"
piA1600-35gm/gc	1608 × 1208	35	m/c	8/12	Gigabit Ethernet	7.4 × 7.4	11.90 × 8.94	1"
piA1900-32gm/gc	1920 × 1084	32	m/c	8/12	Gigabit Ethernet	7.4 × 7.4	14.21 × 8.02	1"
piA2400-17gm/gc	2456 × 2058	17	m/c	8/12	Gigabit Ethernet	3.45 × 3.45	8.47 × 7.10	2/3"

All pilot cameras are available with C-mount and 90° angled head.

# Gigabit Ethernet Area Scan Cameras



Basler ace	Resolution	Frame Rate [Hz]	Mono / Color	Bit Depth	Interface	Pixel Size [ $\mu\text{m}^2$ ]	Sensor Size [ $\text{mm}^2$ ]	Optical Size
acA640-100gm/gc	659 × 494	100	m/c	8/12	Gigabit Ethernet, PoE*	5.6 × 5.6	3.69 × 2.77	1/4"
acA750-30gm/gc	752 × 582	30	m/c	8/12	Gigabit Ethernet, PoE*	6.5 × 6.25	4.89 × 3.64	1/3"
acA1300-30gm/gc	1296 × 966	30	m/c	8/12	Gigabit Ethernet, PoE*	3.75 × 3.75	4.86 × 3.62	1/3"
acA1600-20gm/gc	1628 × 1236	20	m/c	8/12	Gigabit Ethernet, PoE*	4.4 × 4.4	7.16 × 5.44	1/1.8"

All cameras are available Q2/2010. All cameras are available with C-mount adapter. \*PoE - Power over Ethernet versions available.

# IEEE 1394b Area Scan Cameras



Basler scout	Resolution	Frame Rate [Hz]	Mono / Color	Bit Depth	Interface	Pixel Size [µm <sup>2</sup> ]	Sensor Size [mm <sup>2</sup> ]	Optical Size
scA640-70fm/fc	659 × 494	71	m/c	8/12	IEEE 1394b	7.4 × 7.4	4.88 × 3.66	1/3"
scA640-74fm/fc	659 × 494	74	m/c	8/12	IEEE 1394b	9.9 × 9.9	6.52 × 4.89	1/2"
scA640-120fm/fc	659 × 494	120	m/c	8/12	IEEE 1394b	5.6 × 5.6	3.69 × 2.77	1/4"
scA750-60fm/fc	752 × 480	60	m/c	8	IEEE 1394b	6.0 × 6.0	4.51 × 2.88	1/3"
scA780-54fm/fc	782 × 582	54	m/c	8/12	IEEE 1394b	8.3 × 8.3	6.49 × 4.83	1/2"
scA1000-20fm/fc	1034 × 779	20	m/c	8/12	IEEE 1394b	4.65 × 4.65	4.81 × 3.62	1/3"
scA1000-30fm/fc	1034 × 779	30	m/c	8/12	IEEE 1394b	4.65 × 4.65	4.81 × 3.62	1/3"
scA1300-32fm/fc	1296 × 966	32	m/c	8/12	IEEE 1394b	3.75 × 3.75	4.86 × 3.62	1/3"
scA1390-17fm/fc	1392 × 1040	17	m/c	8/12	IEEE 1394b	4.65 × 4.65	6.47 × 4.84	1/2"
scA1400-17fm/fc*	1392 × 1040	17	m/c	8/12	IEEE 1394b	6.45 × 6.45	8.98 × 6.71	2/3"
scA1400-30fm/fc*	1392 × 1040	30	m/c	8/12	IEEE 1394b	6.45 × 6.45	8.98 × 6.71	2/3"
scA1600-14fm/fc*	1628 × 1236	14	m/c	8/12	IEEE 1394b	4.4 × 4.4	7.16 × 5.44	1/1.8"

All scout cameras are available with C or CS-mount. 90° angled head versions are available with C-mount.

\* Only available with C-mount

# IEEE 1394b Area Scan Cameras



Basler scout light	Resolution	Frame Rate [Hz]	Mono / Color	Bit Depth	Interface	Pixel Size [µm <sup>2</sup> ]	Sensor Size [mm <sup>2</sup> ]	Optical Size
slA750-60fm	752 × 480	60	m	8/12	IEEE 1394b	6.0 × 6.0	4.51 × 2.88	1/3"
slA1000-30fm	1034 × 779	30	m	8/12	IEEE 1394b	4.65 × 4.65	4.81 × 3.62	1/3"
slA1390-17fm	1392 × 1040	17	m	8/12	IEEE 1394b	4.65 × 4.65	6.47 × 4.84	1/2"
slA1600-14fm	1628 × 1236	14	m	8/12	IEEE 1394b	4.4 × 4.4	7.16 × 5.44	1/1.8"

All scout light cameras are available with C-mount.

# IEEE 1394a Area Scan Cameras



Basler Area Scan	Resolution	Frame Rate [Hz]	Mono / Color	Bit Depth	Interface	Pixel Size [µm <sup>2</sup> ]	Sensor Size [mm <sup>2</sup> ]	Optical Size
A102f/fc	1392 × 1040	15	m/c	8/12	IEEE 1394a	6.45 × 6.45	8.98 × 6.71	2/3"
A311f/fc	659 × 494	73	m/c	8/12	IEEE 1394a	9.9 × 9.9	6.52 × 4.89	1/2"
A312f/fc	782 × 582	53	m/c	8/12	IEEE 1394a	8.3 × 8.3	6.49 × 4.83	1/2"
A601f/fc	656 × 491	60	m/c	8/10	IEEE 1394a	9.9 × 9.9	6.49 × 4.86	1/2"
A602f/fc	656 × 491	100	m/c	8/10	IEEE 1394a	9.9 × 9.9	6.49 × 4.86	1/2"
A622f	1280 × 1024	25	m	8/10	IEEE 1394a	6.7 × 6.7	8.58 × 6.86	2/3"
A631f/fc	1392 × 1040	18.7	m/c	8/12	IEEE 1394a	4.65 × 4.65	6.47 × 4.84	1/2"
A641f/fc	1624 × 1236	14	m/c	8/12	IEEE 1394a	4.4 × 4.4	7.15 × 5.44	1/1.8"

These cameras are available with C-mount.

# Camera Link® Area Scan Cameras

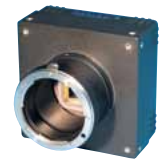


Basler aviator	Resolution	Frame Rate [Hz]	Mono / Color	Bit Depth	Interface (# of taps)	Pixel Size [ $\mu\text{m}^2$ ]	Sensor Size [mm $^2$ ]	Optical Size
avA1000-120km/kc	1024 x 1024	120	m/c	8/12	Camera Link (2)	5.5 x 5.5	5.63 x 5.63	1/2"
avA1600-65km/kc	1600 x 1200	67	m/c	8/12	Camera Link (2)	5.5 x 5.5	8.8 x 6.6	2/3"
avA1900-60km/kc	1920 x 1080	62	m/c	8/12	Camera Link (2)	5.5 x 5.5	10.56 x 5.94	2/3"

**NEW**

Please check our website for recommended framegrabbers. aviator cameras are available with C-mount.

# Camera Link® Area Scan Cameras



Area Scan	Resolution	Frame Rate [Hz]	Mono / Color	Bit Depth	Interface (# of taps)	Pixel Size [ $\mu\text{m}^2$ ]	Sensor Size [mm $^2$ ]	Optical Size
A102k/kc	1392 x 1040	14.8	m/c	8/10	Camera Link (1/3)	6.45 x 6.45	8.98 x 6.71	2/3"
A202k	1004 x 1004	48	m	8/10	Camera Link (2)	7.4 x 7.4	7.43 x 7.43	2/3"
A202k HG	1004 x 1004	43.2	m	8/10	Camera Link (2)	7.4 x 7.4	7.43 x 7.43	2/3"
A402k/kc	2352 x 1726	24	m/c	8/10	Camera Link (2)	7.0 x 7.0	16.46 x 12.08	1 1/4"
A403k/kc	2352 x 1726	48	m/c	8/10	Camera Link (4)	7.0 x 7.0	16.46 x 12.08	1 1/4"
A404k/kc	2352 x 1726	96	m/c	8/10	Camera Link (8)	7.0 x 7.0	16.46 x 12.08	1 1/4"
A405k*/kc*	2320 x 1726	167	m/c	8/10	Camera Link (8)	7.0 x 7.0	16.24 x 12.08	1 1/4"
A406k/kc	2320 x 1726	209	m/c	8	Camera Link (10)	7.0 x 7.0	16.24 x 12.08	1 1/4"
A501k/kc	1280 x 1024	74	m/c	8	Camera Link (2)	12.0 x 12.0	15.36 x 12.29	1 1/4"
A503k	1280 x 1024	402	m	8	Camera Link (8)	12.0 x 12.0	15.36 x 12.29	1 1/4"
A504k/kc	1280 x 1024	500	m/c	8	Camera Link (10)	12.0 x 12.0	15.36 x 12.29	1 1/4"

**NEW**

Please check our website for recommended framegrabbers. \* Available Q4/2009

# Gigabit Ethernet Line Scan Cameras



Basler runner	Resolution	Line Rate [kHz]	Mono / Color	Bit Depth	Interface (# of taps)	Pixel Size [ $\mu\text{m}^2$ ]	Sensor Length [mm]
ruL1024-19gm	1024	18.7	m	8/12	Gigabit Ethernet	10.0 x 10.0	10.24
ruL1024-36gm	1024	35.7	m	8/12	Gigabit Ethernet	10.0 x 10.0	10.24
ruL1024-57gm	1024	56.1	m	8/12	Gigabit Ethernet	10.0 x 10.0	10.24
ruL2048-10gm	2048	9.5	m	8/12	Gigabit Ethernet	10.0 x 10.0	20.48
ruL2048-19gm	2048	18.7	m	8/12	Gigabit Ethernet	10.0 x 10.0	20.48
ruL2048-30gm	2048	29.2	m	8/12	Gigabit Ethernet	10.0 x 10.0	20.48
ruL2098-10gc	3 x 2098	9.2	c	8/12	Gigabit Ethernet	14.0 x 14.0	29.37

# Camera Link® Line Scan Cameras



Basler sprint	Resolution	Line Rate [kHz]	Mono / Color	Bit Depth	Interface (# of taps)	Pixel Size [µm <sup>2</sup> ]	Sensor Length [mm]
spL2048-39kc	2048	38.6	c	8/10/12	Camera Link (2/3)	10.0 × 10.0	20.48
spL2048-70km	2048	70	m	8/10/12	Camera Link (2)	10.0 × 10.0	20.48
spL2048-70kc	2048	70	c	8/10/12	Camera Link (2/3/4/6/8)	10.0 × 10.0	20.48
spL2048-140km	2048	140	m	8/10/12	Camera Link (2/4/8)	10.0 × 10.0	20.48
spL4096-39km	4096	38.6	m	8/10/12	Camera Link (2/4)	10.0 × 10.0	40.96
spL4096-39kc	4096	38.6	c	8/10/12	Camera Link (2/3/4/6/8)	10.0 × 10.0	40.96
spL4096-70km	4096	70	m	8/10/12	Camera Link (2/4/8)	10.0 × 10.0	40.96
spL4096-70kc	4096	70	c	8/10/12	Camera Link (2/3/4/6/8)	10.0 × 10.0	40.96
spL4096-140km	4096	140	m	8/10/12	Camera Link (2/4/8)	10.0 × 10.0	40.96
spL8192-39kc	8192	38.6	c	8/10/12	Camera Link (2/3/4/6/8)	10.0 × 10.0	81.92
spL8192-70km	8192	70	m	8/10/12	Camera Link (2/4/8)	10.0 × 10.0	81.92

Please check our website for recommended framegrabbers.

# Camera Link® Line Scan Cameras



Basler Line Scan	Resolution	Line Rate [kHz]	Mono / Color	Bit Depth	Interface (# of taps)	Pixel Size [µm <sup>2</sup> ]	Sensor Length [mm]
L101k	1024	18.7	m	8/10	Camera Link (1/2)	10.0 × 10.0	10.24
L101k	2048	9.5	m	8/10	Camera Link (1/2)	10.0 × 10.0	20.48
L103k	1024	35.7	m	8/10	Camera Link (1/2)	10.0 × 10.0	10.24
L103k	2048	18.7	m	8/10	Camera Link (1/2)	10.0 × 10.0	20.48
L104k	1024	58.5	m	8/10	Camera Link (1/2)	10.0 × 10.0	10.24
L104k	2048	29.2	m	8/10	Camera Link (1/2)	10.0 × 10.0	20.48
L301k/kc	3 × 2098	9.2	m/c	8/10	Camera Link (1/2/3)	14.0 × 14.0	29.37
L304k/kc	3 × 4080	7.2	m/c	8/10	Camera Link (2/3)	10.0 × 10.0	40.80
L401k	4080	7.1	m	8/10	Camera Link (1)	10.0 × 5.0	40.80
L402k	4080	14.1	m	8/10	Camera Link (2)	10.0 × 5.0	40.80
L801k	8160	4.7	m	8/10	Camera Link (1/2)	5.0 × 5.0	40.80
L802k	8160	9.4	m	8/10	Camera Link (1/2)	5.0 × 5.0	40.80
L803k	8160	14.1	m	8/10	Camera Link (1/2)	5.0 × 5.0	40.80

Please check our website for recommended framegrabbers.

Max. housing temperature for all cameras: Up to 50°C

Specifications are subject to change without prior notice.

For detailed technical information, please see the camera manuals that can be found on our website: [www.baslerweb.com/manuals](http://www.baslerweb.com/manuals)

# What Makes Basler Camera Quality So Special?

**1288**



EMVA Standard Compliant

## EMVA 1288 Compliancy

Basler Components is a leading company in the push for standardizing the measurement and

presentation of machine vision sensor and camera specifications. All measurements done by Basler will be 100% compliant with EMVA standard 1288 (Standard for Measurement and Presentation of Specifications for Machine Vision Sensors and Cameras). Basler has given this standard the strongest support. Basler helped to develop the unified way used to measure, compute and present the specification parameters for cameras and image sensors used in machine vision applications.

The EMVA 1288 standard includes a well defined method for measuring most common noise sources. It also includes a mandatory and detailed description of the measurement setup, environmental

conditions and test requirements. As a first step, only the standardization process for monochrome area scan cameras is covered. An expansion covering the standards for color area scan and line scan cameras is expected to follow.

The signal-to-noise ratio chart provides information on the image quality and sensitivity for a tested camera. The chart describes the development of the signal-to-noise ratio from a low level where noise overlays the signal, up to the point of saturation. It embeds the relevant camera parameters such as full well, dynamic range and the signal-to-noise ratio for selected values on the curve that are relevant for a specific application.

The EMVA 1288 standard is available at [www.emva.org](http://www.emva.org). A detailed technical whitepaper describing the used measurement methods in the standard can be downloaded from [www.baslerweb.com](http://www.baslerweb.com).



## Basler Camera Test Tool

To ensure consistently high product quality, we employ several quality inspection procedures during manufacturing. The following list describes some of the most essential actions we take to meet your highest requirements:

- The back focal length on each camera is carefully measured and adjusted. This guarantees an optimum distance between the lens flange and the sensor and ensures compliance with optics standards.

- Our advanced Camera Test Tool (CTT+), the first fully-automated inspection system for digital cameras, checks all of the significant quality aspects of each camera we produce. The CTT+ is a unique combination of optics, hardware, and software that can be quickly and efficiently used to calibrate a camera and to measure its performance against a set of standards. For defined sets of conditions, an automated software program examines the camera's output, makes any calibration adjustments necessary, and compares the output to a strictly defined set of performance criteria.



[www.baslerweb.com](http://www.baslerweb.com)

**Germany, Headquarters**  
 Phone +49 4102 463 500  
 Fax +49 4102 463 599  
[bc.sales.europe@baslerweb.com](mailto:bc.sales.europe@baslerweb.com)

**USA**  
 Phone +1 610 280 0171  
 Fax +1 610 280 7608  
[bc.sales.usa@baslerweb.com](mailto:bc.sales.usa@baslerweb.com)

**Singapore**  
 Phone +65 6425 0472  
 Fax +65 6425 0473  
[bc.sales.asia@baslerweb.com](mailto:bc.sales.asia@baslerweb.com)