



## “Analog Goes Digital” with Basler IEEE 1394 Cameras



By introducing a wide range of cost-effective, compact FireWire® cameras,

Basler Vision Components pioneered the trend among analog camera users to switch from analog to digital technology. Basler IEEE 1394 cameras based on CCD and CMOS technology are designed for industrial users. The product portfolio includes 15 models with frame rates between 14 and 100 fps and resolutions from VGA to 2 megapixels. Most camera models are available in both monochrome and color.



**Excellent image quality, easy integration, and a compact housing characterize Basler IEEE 1394 camera lines.**

Basler-VC uses a sophisticated, fully automatic Camera Test Tool (CTT+) to ensure that you get high-quality, calibrated cameras. Basler customers know that the cameras they receive have been 100 percent quality tested.

To highlight the superb image quality and to provide a fair basis for comparison between Basler and the competition, sensitivity and signal-to-noise characteristics are measured according to the new EMVA 1288 standard. You can compare cameras that comply to the 1288 standard simply by using data sheets.

With National Instruments software, you can access the different models and features in Basler IEEE 1394 cameras. NI software exceeds the capabilities of typical software drivers and makes the combined performance of NI software and the Basler cameras unique in the market.

### New 1.45 and 2 Megapixel Cameras

The new 1.45 megapixel A631f runs at nearly 19 fps, while the new 2 megapixel A641f runs at 14 fps. With a housing size comparable to a typical analog camera, these new models represent another step forward in the “Analog Goes Digital” trend.



Basler	Color / Mono	Sensor	Resolution [Pixels]	Frame Rate [fps]	Pixel Size [µm²]	Optical Size	Bit Depth
A311f/A311fc	Color or mono	CCD	659 x 494	73	9.9 x 9.9	1/2"	8/12/Y
A312f/A312fc	Color or mono	CCD	782 x 582	53	8.3 x 8.3	1/2"	8/12/Y
A601f/A601fc	Color or mono	CMOS	656 x 491	60	9.9 x 9.9	1/2"	8/10/Y
A602f/A602fc	Color or mono	CMOS	656 x 491	100	9.9 x 9.9	1/2"	8/10/Y
A622f	Mono	CMOS	1280 x 1024	25	6.7 x 6.7	2/3"	8/10
A102f/A102fc	Color or mono	CCD	1392 x 1040	15	6.45 x 6.45	2/3"	8/12/Y
A631f/A631fc	Color or mono	CCD	1392 x 1040	19	4.65 x 4.65	1/2"	8/12/Y
A641f/A641fc	Color or mono	CCD	1624 x 1236	14	4.4 x 4.4	1/1.8"	8/12/Y

Y = 8 bit raw; 16 bit YUV 4:2:2 (on color versions only)

## Why FireWire?



FireWire, or IEEE 1394, is a PC bus standard that is ideally suited for machine vision. With digital image quality, simple cabling, standard software, and a lower cost, FireWire cameras are quickly taking the place of analog cameras in machine vision applications. In fact, nearly all major vision companies, including NI and Basler, offer FireWire products.



### NI Compact Vision System

The National Instruments Compact Vision System is a stand-alone embedded vision system designed for machine vision and industrial inspection. With its multiple IEEE 1394 ports and powerful processor, one NI Compact Vision System can take the place of three smart cameras. With a wide variety of digital I/O and communication options, you can easily integrate the Compact Vision System with triggers, lighting, actuators, and existing automation controllers.

For quick application development, you can configure your inspection with Vision Builder AI. For more complex inspections, you can program the Compact Vision System with NI LabVIEW and the NI Vision Development Module.



### NI FireWire Board with Reconfigurable DIO

The new NI PCI-8254R image acquisition board combines a FireWire host adapter with isolated and TTL digital I/O, similar to the Compact Vision System. You can access all 29 digital lines for synchronizing vision components such as cameras, triggers, and lights. You can also use quadrature encoder inputs, product selection lines, and general-purpose digital I/O for communicating with actuators, PLCs, and NI programmable automation controllers (PACs).

As with the Compact Vision System, you can extend the functionality of the PCI-8254R with NI reconfigurable I/O (RIO) technology. Using the NI LabVIEW FPGA Module, you can customize the personality of all 29 digital I/O lines to perform a wider variety of packaging inspection, assembly verification, and robot control applications. It includes NI-IMAQ for IEEE 1394 cameras software, for easy image acquisition in various software environments such as NI LabVIEW, NI Vision Builder AI, Visual Basic, and C/C++.



### NI FireWire Host Adapters

The NI 8252 provides PCI and PXI connectivity to a wide range of IEEE 1394 cameras. The NI 8252 has three IEEE 1394 ports, delivers 12 W of power and supports data rates up to 400 Mb/s. It includes NI-IMAQ for IEEE 1394 Cameras software, for easy image acquisition in various software environments such as NI LabVIEW, NI Vision Builder AI, Visual Basic, and C/C++.