

### Which Software for Prosilica GigE Cameras?

page 1

### Prosilica GC1020 and GE4900 Read Datamatrix Bar Codes

page 2

### Very High Resolution: 11 and 16 Megapixel Cameras

page 6

### The Vision Show

page 7



## Which Software for Prosilica GigE Cameras?

Thanks to their GigE Vision compliant interface, Prosilica cameras are compatible with a wide range of machine vision software. Whether it is Prosilica's own software or a third-party software, there are many available options for your application.

### Prosilica Software

Widely used by Prosilica customers, the Prosilica *GigE sample viewer* and *Software Development Kit (SDK)* are available free of charge.

### Ease of use and integration

The GigE Sample Viewer is an application that allows users to operate Prosilica cameras and explore their features right out of the box. The customer-acclaimed SDK allows programmers to set and control all functions of the image capturing process including image mode, image format, acquisition control, feature control (exposure, white balance, auto-iris, etc ...), IO control and much more. In addition, the SDK includes sample code to help programmers quickly and

easily integrate Prosilica cameras into their applications using C++ and other programming languages such as .NET, Visual Basic 6 and Java. The Sample Viewer also includes Prosilica GigE Filter driver as an optional component, which can be used to reduce CPU loading on the host computer.

### Windows, Linux, QNX and MAC OS

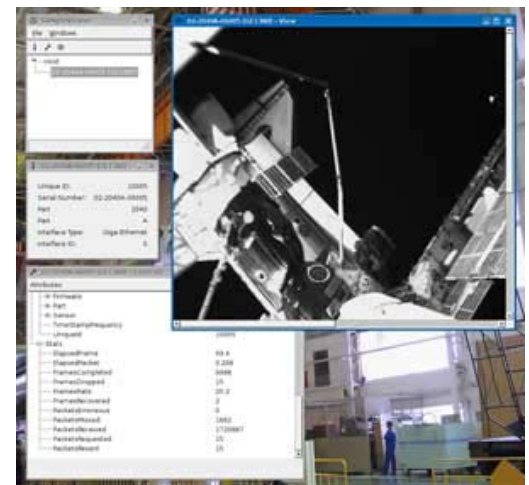
The Prosilica SDK supports Windows, MAC OS X, and Linux and QNX on Intel, PowerPC and even ARM9 platforms enabling users to run our GigE Vision cameras on low-cost SBC computers for embedded and OEM applications.

### Excellent support

Because the Prosilica software is entirely developed in-house, we are able to provide excellent support and customer service to our clients.

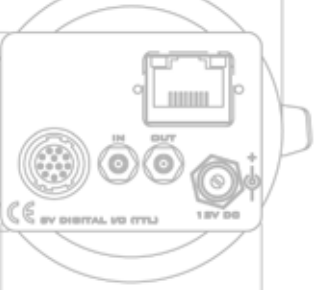
### Third-party software

Prosilica's Gigabit Ethernet cameras conform to the AIA GigE Vision standard and are compatible with all industry-



leading GigE Vision-compliant software. These include National Instruments' *Vision Acquisition Software*, Matrox's *MIL*, Stemmer Imaging's *Common Vision Blox*, Norpix's *Streampix*, Tordivel's *Scorpion™*, A&B Software's *ImageWarp*, Southern Vision Systems' *ProStream*, Cognex' *VisionPro®*, MVTec's *Halcon* and more.

» For further information, please visit [http://www.prosilica.com/support/third\\_party\\_ge.html](http://www.prosilica.com/support/third_party_ge.html)



## Prosilica GC1020 and GE4900 Read Datamatrix Bar Codes

Operating since 1993, Matrix Systems & Solutions provides process manufacturers with packaging execution and warehouse management system applications, as well as consulting and professional services.

### 1. Mail Verification (GC1020)

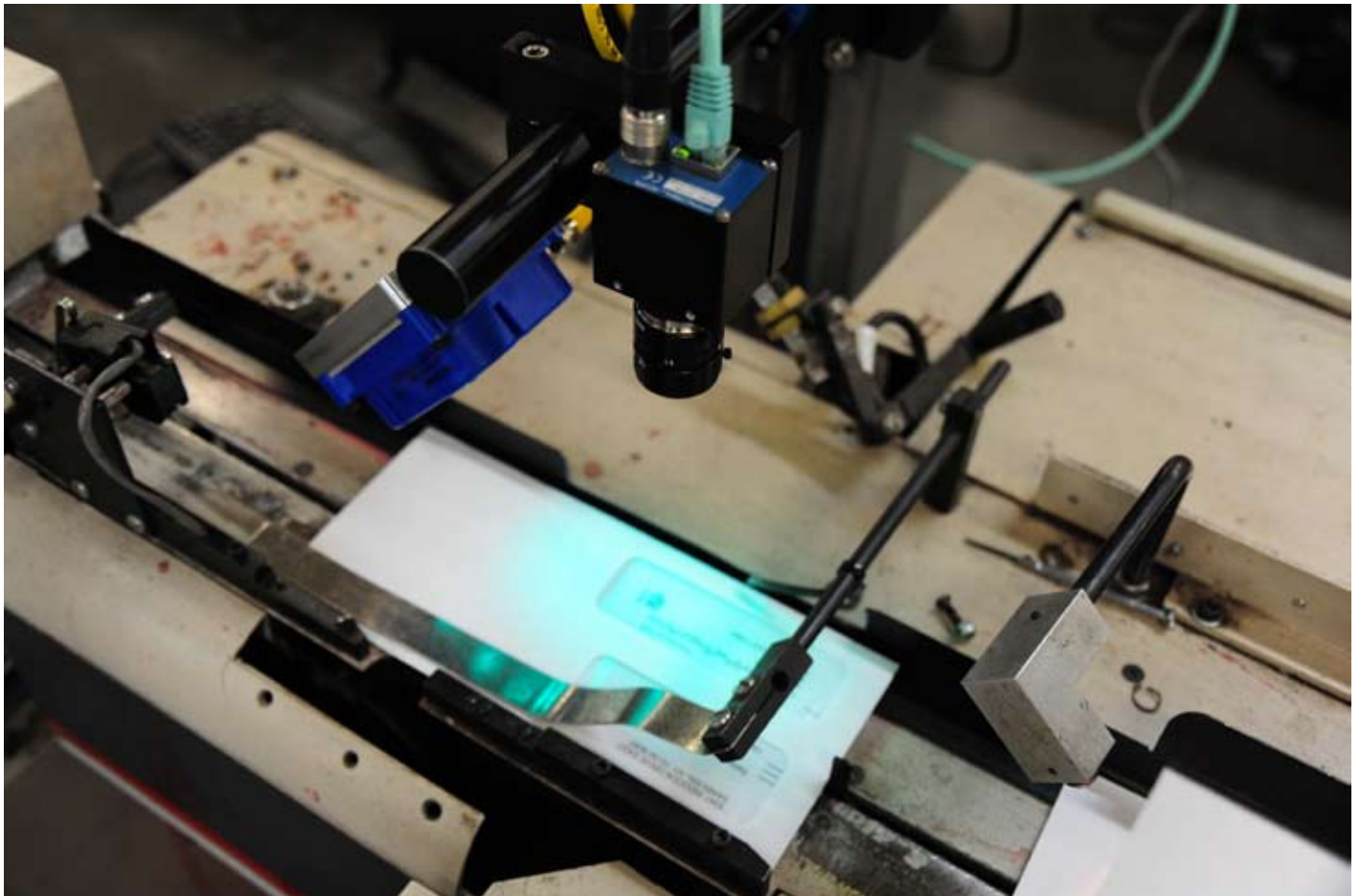
Matrix Systems & Solutions were asked to design and deliver a turnkey solution for a document mailer that processes around 10 million documents on a

monthly basis. The system is required to track and verify extremely sensitive medical documents as they are machine inserted. Because of the nature of these documents, the system is required to be error-free in order to prevent any costly lawsuit; a 0.5% error rate would be unacceptable.

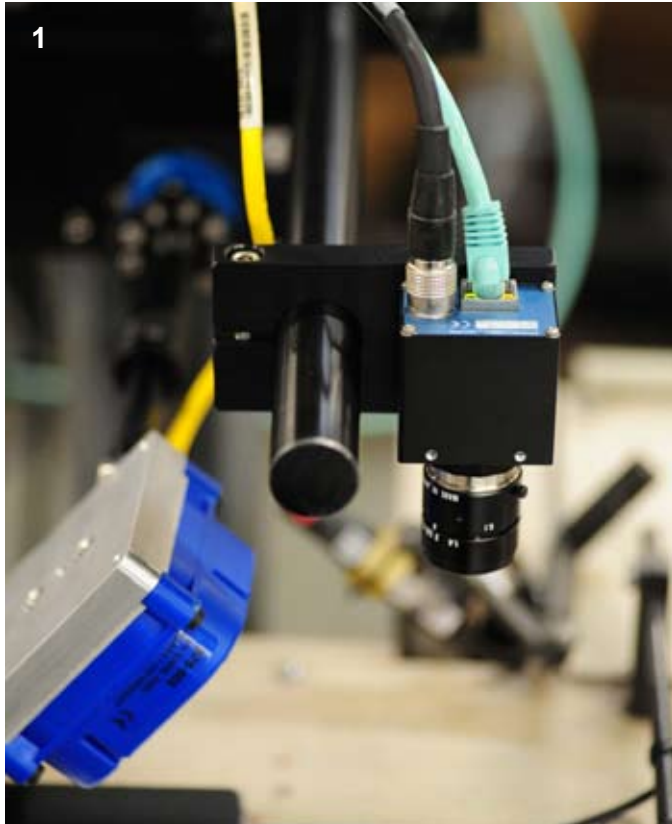
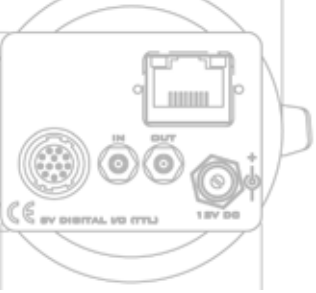
#### “Freezing” the Shots

The system consists of a Prosilica **GC1020** monochrome camera mounted

15cm (6 inches) above the inserter and looking down. The camera images continuously at 30 frames per second to capture still images of the documents as they are pulled in a pre-defined sequence and fed on to a conveyor belt. The images are transmitted to a PC operating a Datamatrix decoder and OCR software that read the bar codes to spot any breaks in the sequence, and therefore any errors.



*The Prosilica GC1020 and strobe lighting in the Matrix system*



1. Close-up of the Prosilica GC1020 and strobe lighting, 2. Operator standing in front of the Matrix system, 3. Shot of a Datamatrix bar code on an envelope (taken with the GC1020)

The system requires a very accurate camera capable of “freezing” the shot of the envelopes that are in constant motion. In addition, the Datamatrix bar codes can prove difficult to read due to their small size (less than 6mm - ¼ inch square) and because they must be read through a plastic window which creates unpredictable shadows, hotspots and glare. Strobe lighting at a low angle is used to help with this issue.

The GC1020 is an XGA resolution (1024x768) ultra-compact CCD camera that was chosen for a combination of factors: speed, resolution, price, GigE interface, free SDK and Linux support.

### 10,000 Bar Codes/hour

Matrix Systems & Solutions used the Prosilica GigE SDK for Linux to develop the operating software for this application. The software is designed so that it first reads the captured image pixel by pixel in order to locate the Datamatrix code and, once located, decode it at high speed (about 10,000 bar codes/hour). The Matrix system, including the Datamatrix decoder and the OCR software, was built from scratch without the use of any third-party tools and is compatible with all Prosilica cameras. Matrix also specified and fabricated custom-built bracketry and a controller

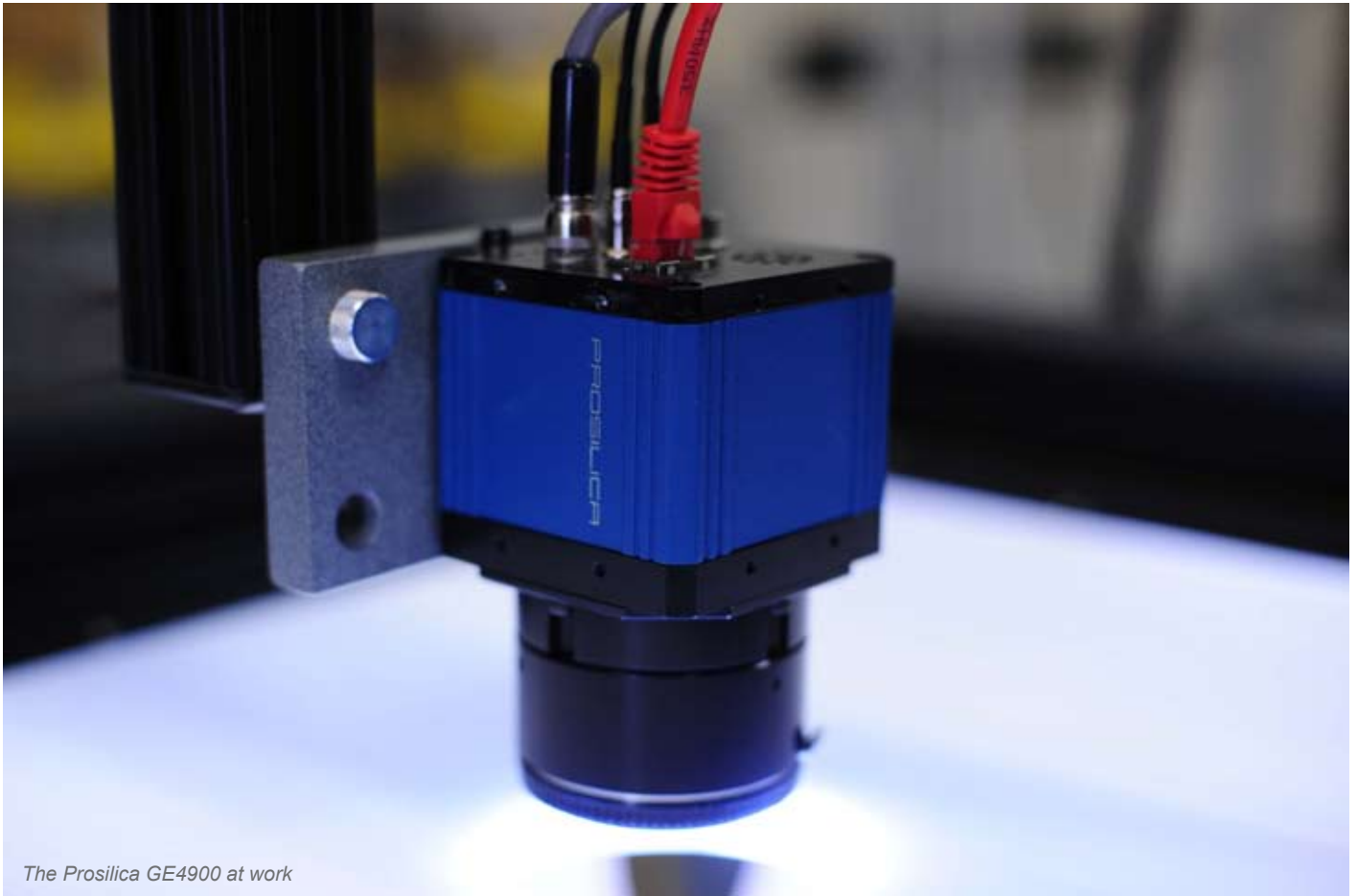
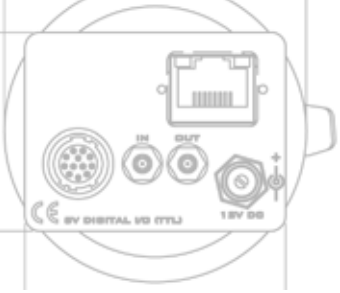
unit including strobe functionality, central power, a touch screen, I/O, as well as Linux and Windows support.

### Prosilica SDK for Linux

The Prosilica SDK covers many Linux distributions including: Ubuntu , Suse, MontaVista Linux, Redhat and Fedora Core and more.

» **Download Your Copy Now**





*The Prosilica GE4900 at work*

## 2. Chemical traceability (GE4900)

Matrix Systems & Solutions were also commissioned by a global chemical manufacturer in France to provide them with a 3-tier solution to improve the traceability of their products by associating units to cases and cases to pallets at high speed. This customer processes millions of bottles every year.

### **Prosilica's 16 Megapixel GE4900 at work**

Once the production line is activated, the system, built by Matrix Systems & Solutions, starts printing serial Datamatrix

bar codes with an inkjet printer on top of the bottles at a high speed rate. The bottles are then randomly picked up by a robot and packed into a case. The open case travels down the conveyor and passes under the Prosilica GE4900 camera to read and aggregate all serial numbers in order to generate an associated case ID. The same logic then applies to tying cases to pallets for optimum traceability.

The Datamatrix code were difficult to read because of varying depth of field on the

bottles, reflective caps and poorly printed codes that were randomly skewed. After experimenting with several cameras from various manufacturers, the Prosilica GE4900 (monochrome model) proved to be the only camera on the market that could read a very small micron Datamatrix code accurately and with one shot only. The GE4900 is Prosilica's highest resolution camera offering 16 Megapixels. The GE4900 incorporates the high-quality Kodak KAI-16000 CCD image sensor to provide exceptionally high resolution and excellent sensitivity. Other manufacturers

have used multiple lower resolution cameras on similar applications but with poor results.

Matrix Systems & Solutions used the same controller as per the document mailer system set-up. However, the decoder software had to be modified to accommodate the specific requirements of this application.

» **For further information**

**Prosilica GC1020**

<http://www.prosilica.com/products/gc1020.html>

**Prosilica GE4900**

<http://www.prosilica.com/products/ge4900.html>

**Prosilica Software Development Kit for Linux**

<http://www.prosilica.com/products/linuxsdk.html>

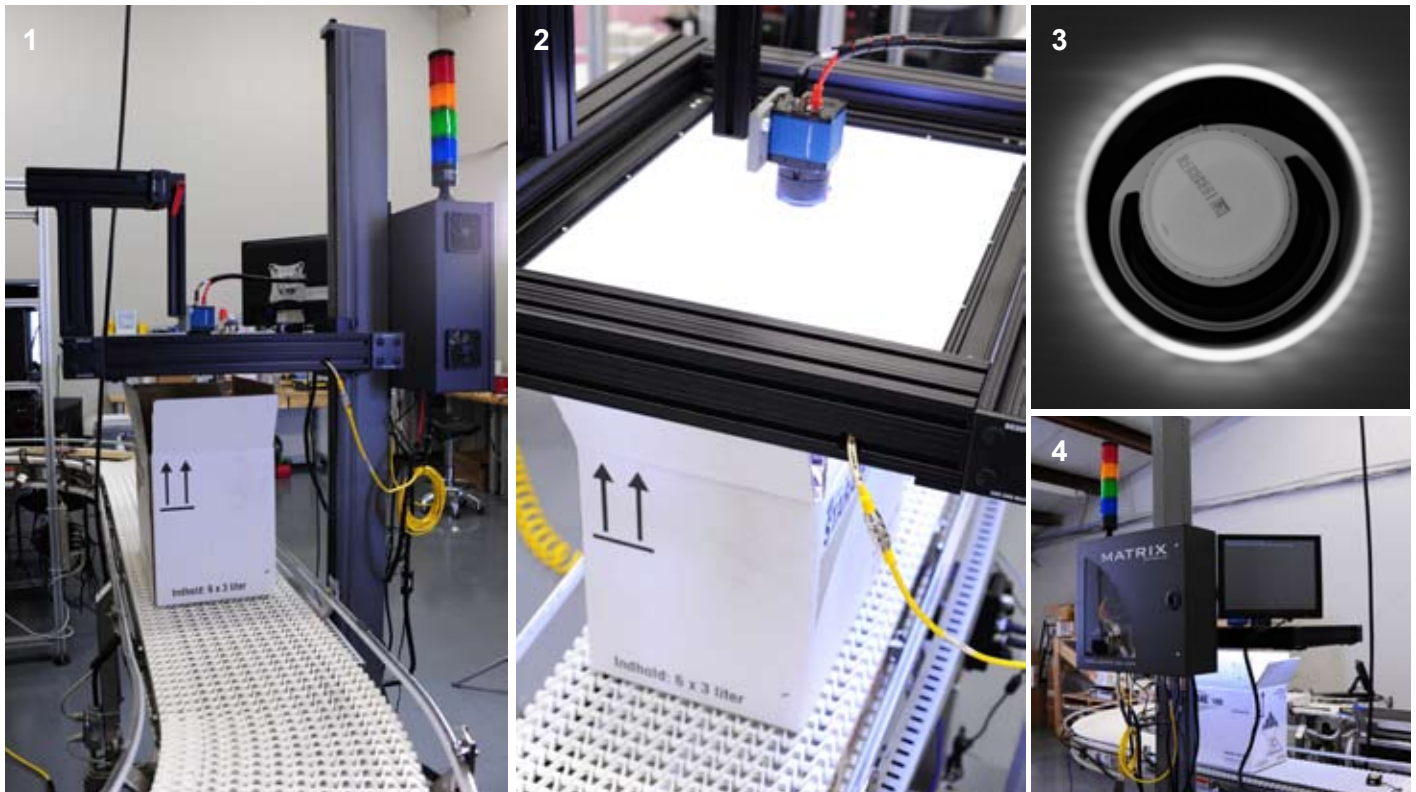
**Matrix Systems & Solutions**

<http://www.matrix-ssi.com/>

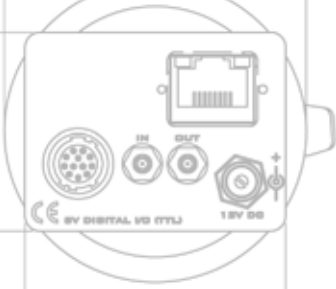


**Datamatrix** is a two-dimensional matrix barcode consisting of black and white square modules arranged in either a square or rectangular pattern. A Datamatrix symbol can store up to 2335 alphanumeric characters. The information to be encoded can be text or raw data. Usual data size is from a few bytes up to 2 kilobytes. It is most commonly used to mark small items such as integrated circuits and printed circuit boards.

The length of the encoded data depends on the symbol dimension used. Error correction codes are added to increase symbol strength: even if they are partially damaged, they can still be read. A Datamatrix symbol can store up to 2,335 alphanumeric characters.



1. Overall look of the system including the GE4900 camera, the Matrix controller and conveyor belt , 2. The GE4900 reads Datamatrix codes on bottles, 3. Shot of small micron Datamatrix bar code taken with the Prosilica GE4900 monochrome camera, 4. The Matrix controller and decoder.



## Very High Resolution: 11 and 16 Megapixel Cameras

Prosilica's wide range of GigE Vision compliant cameras features two very high resolution cameras: the 11 Megapixel GE4000 and the 16 Megapixel GE4900.

### High Performance

The GE4000 features the 35 mm format Kodak KAI-11002 (4000x2672) progressive scan CCD sensor while the GE4900 incorporates the high quality 35mm Kodak KAI-16000 (4872x3248) interline transfer CCD sensor. Two high-speed outputs allow up to 5 frames per second (GE4000) and up to 3 frames per second (GE4900) at full resolution and even faster using Area of Interest Readout (ROI). Both sensors include features such as progressive scan readout, electronic shutter, high sensitivity, high dynamic range, low noise, low smear, anti-blooming and precise exposure control to provide excellent image quality and performance.

### Features & Benefits

Both cameras are fitted with an F-mount (with optional M-mount) and offer advanced functionality such as asynchronous external trigger and sync, automatic gain, exposure and white-balance, region of interest read-out, advanced binning modes, snapshot/global shutter, RS-232 peripheral

port, non-volatile configuration memory, event recorder capability, pre-trigger recording, programmable strobe functions, multicasting and configurable IP addresses. Available in either monochrome or color models, the GE4000 and GE4900 provide uncompressed digital output in Mono8, Mono16, Bayer8, or Bayer16 image formats.

Thanks to their GigE Vision™ compliant Gigabit Ethernet interface, the GE4000 and GE4900 are virtually plug-and-play and do not require a frame-grabber to operate. The interface also allows cable lengths of up to 100m (300ft) long using conventional Ethernet cabling (Cat5e) and even longer lengths using fiber optic cables.

### Applications

The 12-bit A-to-D provides high-quality images to meet the most demanding applications including LCD panel inspection, semiconductor wafer inspection, solar panel inspection, high-resolution industrial inspection, aerial photography, 3-D metrology, general machine vision, public security, surveillance, traffic imaging (Intelligent Traffic Systems), embedded systems, and OEM applications.

» **For further information:**

#### GE4000

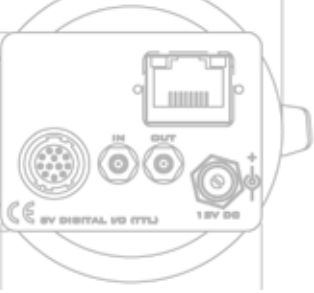
<http://www.prosilica.com/products/ge4000.html>

#### GE4900

<http://www.prosilica.com/products/ge4900.html>



**Application example:** Read how the GE4900 camera was used in a chemical traceability application on page 4 of this newsletter.



## The Vision Show

**Phoenix, AZ**

**Booth 309**

**March 31 - April 2, 2009**

Prosilica will be exhibiting its range of GigE Vision compliant cameras alongside sister company Allied Vision Technologies Inc. at this year's Vision Show in Phoenix, Arizona.

The Vision Show is North America's leading showcase of machine vision and imaging components and solutions. This year's edition will also feature a conference.

» **For further information**

<http://www.machinevisiononline.org/public/calendar/details.cfm?id=64>

**THE** *Vision*  
March 31- April 2, 2009 **SHOW**  
Phoenix Convention Center • Phoenix, Arizona USA

*Your connection to global machine vision and imaging technologies*

**Published by:**

**Prosilica Inc.**

101 - 3750 North Fraser Way  
Burnaby, BC  
V5J 5E9  
Canada

Tel: +1 604.875.8855

Fax: +1 604.875.8856

Editor: Laurette Perrard

[sales@prosilica.com](mailto:sales@prosilica.com)

[support@prosilica.com](mailto:support@prosilica.com)

**[www.prosilica.com](http://www.prosilica.com)**



# the World's smallest GigE cameras

## GC-Series: Concentrated Performance

Our cameras are designed and manufactured in-house to deliver a more robust and integrated product that meets the highest quality standards. Our products are noted for their high performance, ultra-compact size, light weight, fast frame rates, wide range of resolution (from VGA to 16 megapixel), advanced triggering, sophisticated controls, industrial ruggedness, rich set of camera features and extreme versatility.