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New GS-Series Periscope-type CCD Cameras

Prosilica will unveil its compact GS-Series periscope-type cameras at the forthcoming VISION 2008 in Stuttgart on 4-6 November 2008.

The GS-Series are based on Prosilica's GB-Series single-board cameras. These high performance cameras with Gigabit Ethernet interface (GigE vision™) are aimed at industrial inspection, general machine vision and microscopy.

Very rugged and compact design

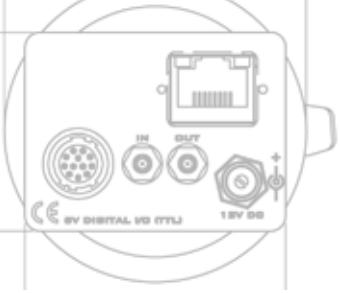
The first four models to be released are the GS650, GS660, GS1380, GS2450, ranging from VGA to 5 megapixel resolution and full resolution frame rates to 120 fps.

This new series of compact CCD cameras combines high performance, high reliability, and versatility, into a rugged, solid aluminum, compact housing (55mm x 90mm x 25mm). The GS-Series are

available in color or monochrome models, with landscape or portrait orientation and with ¼ mounts built right into the housing to add even further flexibility to the set-up process.

The GS-Series cameras feature progressive scan Sony CCD sensors for high image quality and excellent sensitivity. Applications include machine vision, industrial inspection, microscopy, traffic monitoring, license plate reading,





public security, intelligent transportation systems (ITS), character recognition, biometrics, robotics and surveillance.

Cameras are fitted with a C-mount with adjustable back focus or an optional CS-mount. The GigE Vision compliant gigabit Ethernet interface allows cable lengths of up to 100m (300ft) long using conventional network cables, and up to tens of kilometers using fiber optics.

Advanced camera features

Like all Prosilica cameras the GS-Series incorporates a rich set of advanced features including snapshot/global

shutter, pixel binning, area of interest readout, external trigger and sync I/O, auto-iris control, RS-232 peripheral port, exposure, gain and offset controls, non-volatile configuration memory, event recorder capability, pre-trigger recording, programmable strobe functions, multicasting, configurable IP addresses, autoexposure and autowhite balance controls.

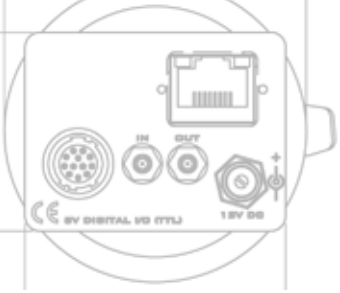
Plug-and-play

Prosilica's customer-acclaimed SDK is available free of charge. It supports Windows (2000, XP and Vista), Linux and QNX operating systems on both

Intel and Power PC platforms. For users that prefer third party imaging libraries and applications, Prosilica's GigE Vision cameras are plug-and-play compatible with software from Matrox, National Instruments, Stemmer Imaging, Norpix, MVTec, and others.

» **For further information, please visit www.prosilica.com**





Prosilica Releases HD Resolution Camera with GigE Interface

GE1910 features new generation of High Definition sensor

Prosilica will launch the GE1910 high performance HD resolution industrial CCD camera with Gigabit Ethernet interface at VISION 2008 in Stuttgart, on November 4-6.

2/3" optical format for High Definition industrial market

Running at 30 frames per second at full 1920 x 1080 resolution, and even faster using Area of Interest Readout (AOI), the GE1910 features the Kodak KAI-02150, a new generation of 2/3" optical format progressive scan CCD sensors that bring High Definition to the industrial imaging market.

The GE1910 improves upon the GE1900 in several ways: 40% greater quantum efficiency, very low smear, low noise and superior image quality. The 2/3" sensor is compatible with a very wide range of lenses.

The GE1910 has a C-mount lens mount with adjustable back focus and is available in color or monochrome models. The camera is ideally suited for applications such as industrial inspection, machine vision, LCD panel inspection, medical imaging, ophthalmology, aeronautical and aerospace, public security, surveillance, traffic imaging, and OEM applications.



The Prosilica Advantage

Rich set of camera features

The GE-Series cameras incorporate an advanced set of rich camera features including snapshot/global shutter, pixel binning, area of interest readout, external trigger and sync I/O, RS-232 peripheral port, exposure, gain and offset controls, non-volatile configuration memory, event recorder capability, pre-trigger recording, programmable strobe functions, multicasting, configurable IP addresses, autoexposure and autowhite balance controls.

Ease of integration and third-party compatibility

Thanks to their GigE Vision™ compliant gigabit Ethernet interface, the GE-Series cameras 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. The Prosilica GigE sample viewer and the customer-acclaimed SDK are both available free of charge. The SDK supports Windows (2000, XP and Vista), Linux and QNX operating systems on both Intel and Power PC platforms. For users that prefer third party imaging libraries and applications, Prosilica's GigE Vision cameras are plug-and-play compatible with software from Matrox, National Instruments, Stemmer Imaging, Norpix, MVTec, and others.

Prosilica To Unveil 2 Megapixels GE1660

2/3" optical format

The new GE1660 is a 2 megapixels camera that runs at 34 frames per second at full resolution, and even faster using Area of Interest Readout (AOI). The GE1660 features the new Kodak KAI-02050, 2/3" optical format, progressive scan interline CCD that offers a higher image quality, high sensitivity, low noise and improved smear performance, and further compatibility with a much wider range of lenses.

The GE1660 has a C-mount lens mount with adjustable back focus and is available in color or monochrome models. This camera is ideally suited for applications such as industrial inspection, machine vision, LCD panel inspection, medical imaging, ophthalmology, aeronautical and aerospace, public security, surveillance, traffic imaging, and OEM applications.

GC1380C GigE Camera in Coral Reef Fish Study

Recent studies¹ have shown that a third of the world's coral reef-building species are facing extinction. According to researchers, climate change, coastal development, overfishing, and pollution are the major threats. It is strongly believed that threats to this particular ecosystem could also endanger the various species of fish which live their entire lives on reefs or those who use them as nurseries.

In August 2007, principal investigator (PI) Gareth J. Russell (Department of Biological Sciences, New Jersey Institute of Technology) and co-PIs Joseph Wilder (Center for Advanced Information Processing, Rutgers University) and Paul Boyle (New York Aquarium, Wildlife Conservation Society) joined forces to develop an underwater multi-camera system to observe, identify, count and, over time, track fish species found near coral reefs to understand the effects

of environmental changes on those populations.

System set-up and configuration

The system consists of two Prosilica GC1380C color cameras fitted inside water-tight tubes equipped with housings for LED lighting. The cameras are located 3 feet away from each other and at a 90 degree angle to overlook an area of one cubic yard of water. Two side panels opposite each camera provide a uniform background for clearer image data. The cameras are connected to a PC via Cat5e cabling. Both GC1380C cameras are fitted with 8.5mm wide-angle lens and operate at full resolution (1360 x 1024) over the entire field. The cameras are triggered to capture images in pairs.

The Prosilica GC1380C is a very sensitive, high-resolution CCD camera with Gigabit Ethernet interface running at 20 fps at full resolution. It incorporates

the incomparable Sony ICX285 CCD sensor with ExView technology providing high-sensitivity, low noise, excellent anti-blooming, and superb image quality, attributes necessary for underwater and low-light applications.

Implementation and tests

Currently nearing the end of year one, the system will be undergoing a series of tests over a three-year period to assess its performance and reliability.

Year one

The system is currently set-up in a small aquarium at the Rutgers Institute for Marine and Coastal Sciences (IMCS) in New Jersey. Built by the team at the IMCS, the 1,000 liter (265 gallon) aquarium is filled with sea water and simulated coral reef to recreate a nature-like habitat. During the course of year one, project members have been working on building the system hardware with



Image pair taken simultaneously with two Prosilica GC1380C cameras set at right angles.

Case Study

optics, illumination and image sensing appropriate to the underwater reef environment, as well as developing the necessary software to operate both Prosilica cameras and capture and analyze images.

In order to obtain clear images for the study of the various species of coral reef fish, the team is working on several complex algorithms which will enable reliable segmentation of fish from their background (while distinguishing true fish images from floating debris), features extraction from pose-corrected images of fish (using size, shape, color and texture), and species classification.

Year two

In late 2008, the system will be moved to the Glover's Reef exhibit at the New York aquarium. Opened in June 2005, the 623,000 liter (165,000 gallon) tank display recreates the ecosystem of a Caribbean coral reef and features over 25 different species of fish which can be found off the coast of Belize where the system will be moved to in year three. The team will focus on testing the system in this larger and more realistic environment with a wider array of species. The set-up will also be used to develop an educational image display for the aquarium.

Year three

In year three the system will be moved to the Glover's Reef Marine Research Station in Belize for field trials in a natural environment where it will be tested for stability, robustness, power supply and data transmission. Extensive image data

of free-swimming fish will be collected and analyzed to evaluate and adapt the algorithms if necessary, and assess the overall viability of the system.

In the long-term, and if successful, the team will be looking to duplicate the system to extend the research to other areas with similar ecosystems.

» **For more information:**

Prosilica GC1380C camera

New Jersey Institute of Technology
<http://www.njit.edu/>

Rutgers University
<http://www.rutgers.edu>

New York Aquarium
<http://www.nyaquarium.com/>

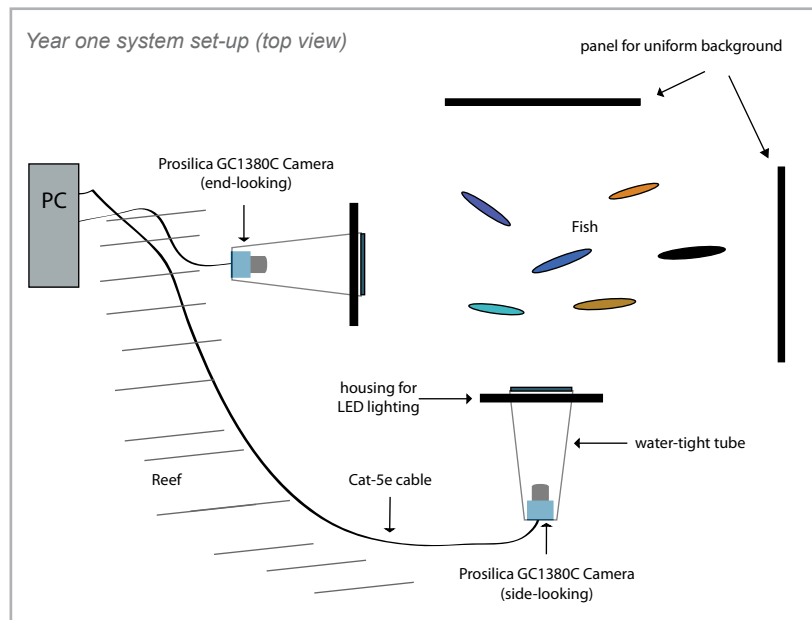
Acknowledgements (other team members)

Institute for Marine and Coastal Sciences:
Fred Grassle, Charlotte Fuller, Frank Natale, Piotr Nawrot

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Selected Camera Feature: RS232 Port

One of the many features which make Prosilica cameras so versatile is the inclusion of an RS232 port on all our models (GC, GE, GB and the new GS-Series) for controlling peripheral devices.

Tx and Rx lines are available via connections on the back of the camera (see figures 1-3). The user can send and receive serial commands via the camera's GigE interface and control peripheral devices, such as lighting, lens control or PZT. Commands that are sent and received by the port are routed via the same ethernet cable interface used for image data transmission. Enabling and controlling serial communication is performed by writing to serial I/O registers on the camera. When receiving communication, users can also enable the SerialRxControl feature which includes most recent timestamp data with every frame. This feature is supported with the Prosilica SDK 1.14 and higher.

The long cable length of Gigabit Ethernet (potential kilometers long) makes it sometimes impossible for the host computer to control devices located near the camera. The use of the RS232 port greatly reduces cost of cabling that could be associated with routing to the peripheral device. It can also reduce system complexity associated with device control and programming.

» **For further information on how to use the RS232 port, please visit <http://www.prosilica.com/support.html>**



Figure 1

GE-Series, General Purpose I/O Port

Pin 4: RS-232 RXD

Pin 5: RS-232 TXD



Figure 2

GC-Series, General Purpose I/O Port

Pin 8: RS-232 TXD

Pin 9: RS-232 RXD

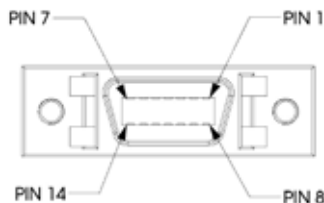
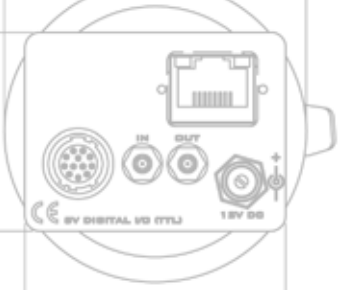


Figure 3

GB and GS-Series, General Purpose I/O Port

Pin 10: RS-232 TXD

Pin 11: RS-232 RXD



We are Recruiting

Prosilica are currently looking for qualified people for our engineering, sales and operations departments.

» **To view the full job descriptions and to apply, please visit:**
<http://www.prosilica.com/company/jobs.html>



Available Positions:

Engineering

- Firmware Electronics Engineer
- Senior Software Engineer
- Software Engineer
- Senior Firmware Engineer
- Firmware Engineer

Sales

- Software Support Engineer
- Technical Sales Engineer

Operations

- Operations Administrator
- System Administrator

Vision 2008, Stuttgart

Prosilica & Allied Vision Technologies
Hall 4, Booth D33

Rauscher GmbH
Hall 4, Booth C15

Vision 2008, to be held in Stuttgart from November 4-6th, is the world's premier event for the machine vision industry and is expected to attract over 6,000 visitors.

Prosilica will be sharing a booth with parent company Allied Vision Technologies. Prosilica will take this

opportunity to display its range of GigE Vision compliant digital cameras, including the new GS-Series, as well as the new GE1660 and GE1910 (*see page 1-3 for further information*).

Prosilica's German distributor, Rauscher GmbH will also be displaying a selection of our cameras.

» **For further information on how to attend please visit:**
<http://cms.messe-stuttgart.de>

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high resolution



GE4900: 16 Megapixel GigE Camera

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.

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