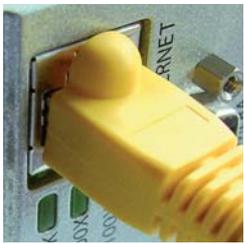
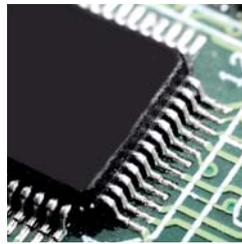


GIGE VISION IN PRACTICE



GiGE[®]
VISION
GEN<i>CAM



IMAGING IS OUR PASSION

GIGE VISION ESTABLISHED IN PRACTICE

► In GigE Vision and GenICam, two new standards have been defined that fully meet the demands of the imaging industry and offer the flexibility for long-lasting success.



Gigabit-Ethernet for Machine Vision (GigE Vision) is the interface standard for cameras that uses the proven, cost-effective Ethernet network technology

for communication between the camera and PC. GigE Vision provides an open framework for transmission of images and control signals between cameras and PCs over standard Gigabit Ethernet cables.

Along with the obvious advantage of cable length, GigE Vision enables data security that no other protocol can offer. The future of GigE Vision is also assured since a growth route is clearly mapped out with 10GigE.

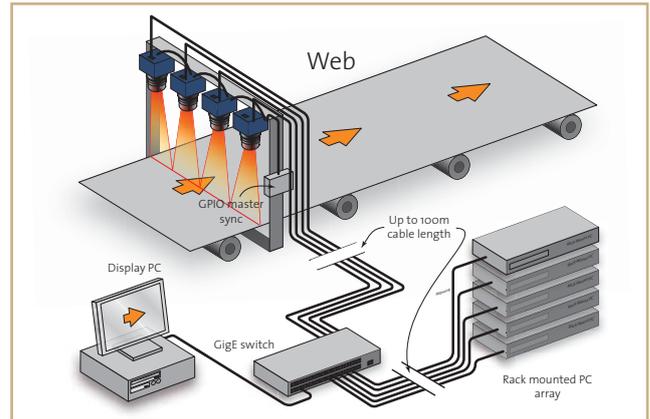


GenICam is a universal camera control interface for all cameras, regardless of the interface and camera features. It can be used together

with the most interfacing technologies, such as GigE, CameraLink, FireWire etc. The objective here is that the camera itself informs the system of what functions are available and ensures consistent access to the configuration and acquisition without the need for specific software from the manufacturer. GenICam is therefore a key component of GigE Vision, but is not limited to this aspect alone.

The two standards GigE Vision and GenICam offer the greatest possible independence when selecting and developing your imaging solutions. GigE Vision provides interesting options for machine vision users implementing complex topologies which haven't been feasible so far. GigE Vision guarantees the greatest possible performance, data security and short design-in times.

The focus in optimum industrial-compliant configurations is not to exploit the GigE properties of fast image transmission over long distances, but rather to enable fast, flexible control of all parameters of all participating devices, because GigE Vision serves more than just camera technology.



Typical GigE network topology

► GIGE VISION SUPPORT FROM SPECIALISTS

Avail yourself of the support of imaging experts to tap the full potential of the technology. As a founding member on both the GigE Vision and GenICam standardisation committees, STEMMER IMAGING was crucially involved from the very beginning in the definition of the standards, and the company - as a system solution provider - can therefore support users with an enormous wealth of expert know-how.

Building on over 30 years experience in imaging and machine vision and as Europe's largest independent provider in the imaging market, STEMMER IMAGING naturally offers an extensive portfolio of GigE Vision products suitable for industrial use, including line and area scan cameras from leading manufacturers, switches, network adapter cards, flash controllers, trigger and I/O controllers, cables and digital video recorders. Furthermore, Common Vision Blox (CVB), the hardware-independent and GigE Vision compatible software, developed by STEMMER IMAGING is one of the most powerful on the imaging market.

On the following pages we will give you an overview of our wide range of GigE Vision components.

GIGE VISION PRODUCT RANGE

► CAMERAS

Our product portfolio covers area and line scan cameras in mono-chrome and colour models with different designs and resolutions. Our suppliers are among the world's leading providers of cameras on the cutting edge of technology.

Allied Vision Technologies (AVT): AVT's comprehensive portfolio of GigE cameras ranges from simple cameras with excellent price/performance ratio to the worlds fastest Gigabit Ethernet camera, AVT GX. The GX series has two Gigabit Ethernet ports that can be configured as a Link Aggregation Group (LAG) to provide a sustained maximum data rate of 240MBytes per second. Another highlight is AVT's Manta series featuring a variety of available sensors and a modular concept.

AT Automation Technology: Depending on the model, AT's C4 high-speed triangulation cameras deliver 58 million 3D points per second with a resolution of 2352 x 1728 pixels resp. more than 104 million 3D points per second with a resolution of 1280 x 1024 pixels.

CVC GE family: The combination of Sony's FCB cameras with the GigE interface, developed by STEMMER IMAGING, allows the user to benefit from the numerous advantages of GigE vision technology in conjunction with the established FCB cameras. Full control of the camera is possible through the Gigabit Ethernet, GigE Vision and GenICam-compliant interface.



The AVT GX transfers with double bandwidth



Automation Technology's Triangulation camera for 3D imaging



The CVC GE family: Sony's FCB cameras with STEMMER IMAGING's GigE interface

Teledyne DALSA: The Genie camera models combine Teledyne DALSA's expertise in image acquisition and sensor development with their long experience in both camera and state-of-the-art transmission technology. The cameras are based on high quality, highly sensitive CCD and CMOS sensors and are available in a variety of resolutions ranging from VGA to 1600x1200 in both colour and monochrome versions. DALSA's Spyder3 line-scan camera series is available in both monochrome and colour with linear resolutions of 1024, 2048 and 4096 pixels.

JAI: Thanks to its modularity JAI's C3 camera series is the perfect solution for vision applications with varying demands, requiring excellent image quality, accurate triggering and long-term reliability. The cameras include CCD models in a variety of resolutions in both monochrome and colour versions, all based on the same design. All models in the C3 series are interfaced and controlled in precisely the same way, allowing users to quickly switch among the models effortlessly from the simplest to the most complex applications. Users can choose from a variety of models, with resolutions ranging from VGA to 16 million pixels.



Teledyne DALSA's Genie camera series



JAI's modular C3 camera series

GIGE VISION PRODUCT RANGE

► FRAME GRABBER

Our range of GigE frame grabbers includes products of leading manufacturers on the cutting edge of technology. In the following section we present you only a small selection.

Adlink GIE 62+

The PCI Express x4 Frame Grabber GIE62+ by Adlink supports two Power-over-Ethernet cameras and enables data transfer rates of up to 2 GBit/s with cables of up to 100m long. The Link Aggregation configuration allows easy and cost-effective connection of network devices with double data rate. Due to the different I/Os and the screw lock connectors the GIE62+ is ideal for applications in the automation industry.

Silicon Software microEnable IV VQ4-GE/AQ4-GE

The frame grabber and pre-processing card from Silicon Software uses the PCI Express interface and supports simultaneous image capture from up to four Gigabit Ethernet inputs, each with 100 Mbyte input. Switches support up to 32 cameras in multiplex operation. The card allows simultaneous real-time pre-processing on all channels with full speed and free programming using Visual Applets, a graphics-based tool for FPGA programming.



Adlink GIE 62+



*Silicon Software
microEnable IV VQ4-GE*

► CABLING TECHNOLOGY

Without additional hardware Gigabit Ethernet cables support up to maximum transmission length of 70 to 80 meters. Special cables can reach lengths of up to 100 meters. The cables are available in a variety of connector options and cable types.

Besides the standard CAT6 cables and CAT5e cables, we can also now offer high quality robot-friendly CAT6 data cables for industrial use. Along with these structural advantages, our IND cables meet the highest requirements for torsion and bending loads, making them ideal for use with multi-axis robots with up to six axes. The outer sheath is made from polyurethane which guarantees a high level of mechanical resistance with respect to notch strength and scuff resistance. It also ensures sound thermal resilience, resistance to oil and coolant as well as high resistance to UV light. Moreover, the cable is UI certified, free of paint-wetting impairment substances and has a halogen-free sheathing.

We can also fulfil customer-specific demands and implement a wide range of bespoke cable lengths. For quality assurance purposes, our specialists subject every manufactured cable to a certified cable check before delivery, which can be traced back by means of the serial number of the cable and the corresponding measurement report.



*All cables are subjected to
a certified cable check
before delivery*



*Examples of different
connector types*

GIGE VISION PRODUCT RANGE

► GIGE VISION SOFTWARE

Although GigE Vision is a manufacturer independent standard the SDKs of the different camera manufacturers are normally bound to their own brand. Only few SDKs support GigE Vision cameras manufacturer independent and bring out the full benefit of this comprehensive standard.

Common Vision Blox (CVB)

Common Vision Blox is an independent software library fully compatible to GigE Vision and GenICam. Windows 32-/64-bit and Linux operating systems are supported. The GigE Vision driver developed by STEMMER IMAGING has already proven its performance and reliability in extensive independent tests. In addition to connecting over a socket link, this driver also contains a high performance filter driver that forwards the camera data directly to the application without any loops. This independent development guarantees the most effective implementation and supports all future GigE technologies. Of course, Common Vision Blox also provides a dual port LAG support.

CVB Camera Suite

A sophisticated hardware-independent SDK CVB CameraSuite for Windows 32-/64-bit and Linux operating systems is delivered free of charge with all GigE Vision cameras from STEMMER IMAGING.

CVB CameraSuite is based on the most comprehensive and powerful implementation of the GigE Vision and GenICam standards and is certified by the standards committee.



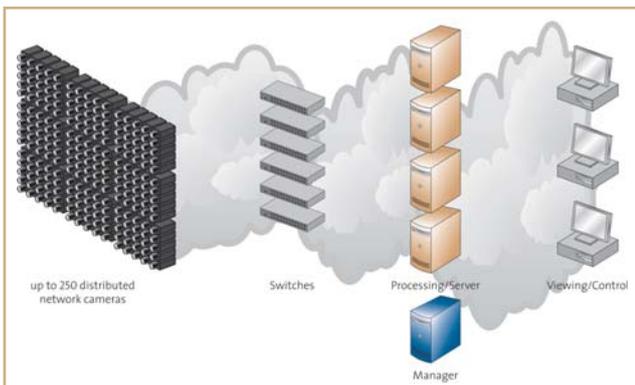
The fully featured hardware-independent SDK is the preferred engine for acquisition from any GigE Vision compatible camera. This SDK allows the benefits of the GigE Vision technology to be fully exploited. The independent toolkit offers unprecedented versatility in camera interfacing and includes everything a customer needs to develop his imaging application quickly and easily.

CVB GEV Server

With the certified CVB GigE Vision Server, a suitably equipped computer acts like a complete GigE Vision and GenICam compatible camera, with freely configurable features. At the same time CVB remains true to the principle of hardware independence. The data output by the CVB GigE Vision Server conforms to the GigE Vision and GenICam standards and is therefore compatible with any standards compliant software interfaces from other providers.

The GigE Vision server can freely define, create and control image data and GenICam features and commands. Systems can be controlled via GigE Vision functionality by any GigE Vision compliant software. Image data can be served to single or multiple computing or monitoring devices simultaneously and complex system topologies for distributed and pipelined computing can be realised.

Available in two versions our certified GigE Vision Server enables either point to point image transmission and system control or multicast for distributed processing and viewing applications.



The CVB GigE Vision Server also supports complex multi-camera-applications.

GIGE VISION PRODUCT RANGE

► GIGE VISION ACCESSORIES

Our extensive portfolio of industrial GigE Vision products covers all the components required for implementing complete applications. This includes components such as network cards, switches, illumination controllers, I/O controllers and cables, plus many more. In addition we can provide advice in defining the optimum network topology for your application and can also provide network testing and validation with our state of the art network diagnostic equipment.

Controllers

The smooth operation of an application is often due to technical subtleties. To guarantee this we offer an extensive range of different controllers. We also develop customised solutions especially tailored to your application, such as the **CVX Real-Time Manager**:

This controller is a stand alone module and provides timing, lighting and lens control in addition to supplying the camera with power. Controlled via Ethernet, the unit appears as a GigE Vision device and is controlled via the standard GenICam node map from any GigE Vision compliant software.



Controller



Network card



GigE Vision Multicast Switch



*GigE Vision industrial
DIN mount switch*

Network cards

When selecting the network card it is important to know what bus system is connected to the PC network card and what driver concept is used. There are for example network cards with different sized buffer memory and driver concepts from manufacturers allowing load distribution on multicore CPUs.

Switches

One of the biggest causes of problems on GigE Vision implementations is the use of Ethernet switches that do not meet the demanding requirements of a high sustained bandwidth, Jumbo packets, multicasting and low latency. STEMMER IMAGING are constantly validating new equipment and can supply switches pre-configured and optimised for use with GigE Vision cameras.

Our managed GigE Vision validated switches ensure reliable operation in GigE Vision applications. Featuring support for Jumbo packets and layer 3 routing with full control (managed) these switches deliver the best GigE Vision performance at a competitive price. Support for Fibre Optic (SFT) and Power over Ethernet are also provided as well as support for Link Aggregation (LAG) to increase bandwidths.

GIGE VISION PRODUCT RANGE

► SPECIAL DEVELOPMENTS

In case none of our standard solutions meets your requirements we offer customised special solutions based on our modular OEM hardware GigE concept. This design concept includes all types of interfaces for data acquisition and transfer via Gigabit Ethernet. Below you will find some examples of these special solutions:

GigE Interface Boards

Our GigE experience is also reflected in our self-developed FGI (FCB GigE Interface). This interface board provides digital, uncompressed image data directly to a PC or network via industrial Ethernet cables with lengths of up to 100m. It is compatible with the latest Sony FCB series OEM camera modules and allows easy integration into customer applications. It is available in two versions, with and without Power-over-Ethernet (PoE).

GigE Vision Cores

Our GigE Vision compliant IP-cores for Xilinx and Altera FPGAs, in combination with our development framework, enable you to build FPGA-based products with Gigabit Ethernet interface. The concept allows a maximum in performance with a small footprint and offers enough flexibility to realise custom solutions.



*GigE interface for
Sony FCB series OEM
camera modules*



CVA VDRGRAB-Net

Customised Software

To get your GigE Vision data into your application we offer complete software modules and drivers using GigE Vision filter or socket drivers as well as a GenICam SDK. They range from simple GigE Vision implementation with no packet resend, no filter driver and single stream to professional implementations including packet resend, filter drivers, multiple stream. These software packages can also be completely customised or delivered in source code for OEM development.



Camera housings



Protective housings (IP68)

► HOUSINGS FOR GIGE VISION CAMERAS

Our portfolio includes various protection housings for indoor and outdoor use offering a variety of IP ratings. We offer both standard housings for diverse temperature ranges and dust and splash-proof housings. In case the required housing is not included in our standard product range, we are ready to offer you individual protective housings according to your needs.

TRUST THE SPECIALIST

► To take full advantage of GigE Vision and GenICam it requires far more than selecting the appropriate camera. Take advantage of our years of experience and our competence to find the ideal solution on the current state of the art. We offer you competitive advantages not only by saving time during implementation and testing, but also by suggesting the appropriate components.

Of course, our specialists will also assist you in setting up the optimal configuration. In addition, they offer an extensive testing equipment.

This is particularly important, because industrial environment require extensive know-how in network topologies due to the extremely high complexity, and troubleshooting is not trivial. Take advantage of the support through our specialists and our state of the art network diagnostic equipment to test, validate and troubleshoot complex topologies.

Take advantage of our specialists' know-how and Europe's largest range of imaging products for ground-breaking, high-performance vision solutions helping to make your processes faster, safer and more productive.

► RANGE OF SERVICES

Based on our expert knowledge we are ready to support you with extensive services, such as:



► OPTIMISED COMPONENT SELECTION



► FEASIBILITY STUDIES



► STEMMER IMAGING APPLICATION LABORATORY



► CUSTOM SOLUTIONS



► TRAINING



► COMPREHENSIVE SUPPORT SERVICES

► WWW.STEMMER-IMAGING.COM

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