Getting Started

microEnable IV AQ4-GE
microEnable IV AQ4-GPoE
microEnable IV VQ4-GE
microEnable IV VQ4-GPoE

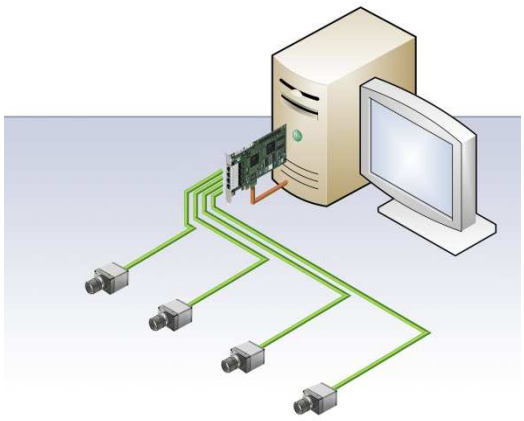
Content

- Introduction
- Scope of operation and highlight of the microEnable GigE Vision frame grabber family
- Important usage notes
- Frame grabber, power supply for Power over Ethernet (only microEnable IV AQ4-GPoE/VQ4-GPoE) and Runtime Software installation
- Camera configuration and quick acquisition check
- Why we are pleased to get you feedback

1 Introduction

Welcome to the microEnable IV GigabitEthernet frame grabber family, the powerful, intelligent and purposive GigE VISION based frame grabbers with real-time image processing capabilities. Key features are:

- Image acquisition of up to 4 asynchronous GigE Vision compliant cameras - 1 camera per physical GigabitEthernet port



- **Direct Acquisition** – Transfer of on-board reconstructed images directly into the PC memory.
- **Camera port assignment**: 1:1

- Supports more than 100 MB/s data bandwidth per physical GigabitEthernet port
- Up to 512 MByte onboard frame buffer
- PCIe x4 interface with a max. data throughput of 1 GB/s, typically 760 MB/s
- Vision processor for customized real-time image processing functions: Xilinx FPGA XC3S4000 (only microEnable IV VQ4-GE and -VQ4-GPoE)
- Parallel real-time image processing on all channels at full speed
- Support of AcquisitionApplets and SmartApplets
- Support of VA Applets, programmable with VisualApplets (supported frame grabber models: microEnable IV VQ4-GE and -VQ4 GPoE)
- GigE Vision compliant
- Addons: Digital I/O-modules and PixelPlant devices (only for VA Applets) for extending onboard processing power
- Power supply module: Addon for microEnable IV AQ4-GPoE / VQ4-GPoE: appr. 30 Watt
- Operating system support: Windows XP (32bit/64bit), Windows Vista (32bit/64bit), Windows 7 (32bit/64bit), Linux (32bit/64bit)

	An applet is a (re-)loadable hardware configuration, that defines the specific behavior and programming of the vision processor on the frame grabber. It covers specific camera ports (e.g. support for area, monochrome cameras) and a set of real-time image data processing functions. Applet (re-) loading and parameter adjustment can be done with microDisplay or the SDK. VisualApplets enables the fast and flexible development of powerful custom real-time preprocessing applications. Please note, in the context of VisualApplets we term hardware applets “VA Applets”, in contrast to the other class of ready-to-run hardware applets, termed “Acquistion-Applets” or “SmartApplets”, respectively (with a predefined and fixed functionality).

The Runtime Software Package version 5.2 covers:

- **microDiagnostics** (supports all A-Series and V-Series frame grabber)
  Running system and performance tests, firmware updates

- **microDisplay** (supports all A-Series and V-Series frame grabber)
  GUI tool for acquiring and displaying images with the microEnable frame grabber

- **GenICam Explorer**
  Vendor independent controlling and configuring of GigE Vision compliant cameras, that are connected to the microEnable IV AQ4-GE / AQ4-GPoE / VQ4-GE / VQ4-GPoE. It replaces the necessity of handling several tools from different camera manufacturers.

- **Software Development Kit** (supports all A-Series and V-Series frame grabber)
  With the Software Development Kit (SDK) you are able to develop your own C/C++ applications, in order to exploit the microEnable functionality to its full extend. Additionally to the already existing functions, the SDK integrates further functions for the microEnable IV AQ4-GE / AQ4-GPoE / VQ4-GE / VQ4-GPoE

- **Device driver**
  There is simply one device driver supporting all (CameraLink and GigE Vision based) microEnable IV frame grabber cards

- **Documentation**

2 Scope of operation and highlights of the microEnable IV GigabitEthernet frame grabber family

The microEnable IV AQ4-GE / AQ4-GPoE (A-Series) and microEnable IV VQ4-GE / VQ4-GPoE (V-Series) are the currently available 4 models of the SILICONSOFTWARE frame grabber family with GigE Vision interface. The features of the frame grabber family will successively improved and extended. Highlights of the current release (Runtime 5.2.x) and global benefits are:

- Usage of 7 ready-to-run AcquisitionApplets including basic image processing functions with support for different camera types: Area scan (RGB, Bayer, monochrome) and line scan (RGB, monochrome): A- and V-Series Gige Vision frame grabber
- V-Series frame grabber: VisualApplets programming of custom applications with support for different camera types: Area scan (RGB, Bayer, monochrome) and line scan (RGB, monochrome). Functionality covers and Blob, LaserTriangulation,Trigger and others
- Transfer of reconstructed images directly into the host PC memory - avoiding CPU load
- Transfer of reconstructed frames that minimizes the interrupt load significantly - only one interrupt per image
- Power over Ethernet (PoE) support
- It is almost Plug and Play – no special driver (performance, filter, ..) are necessary
- All Silicon Software frame grabber models are controlled and handled by a single Runtime software environment, covering a powerful SDK and several GUI tools.

3 Important usage notes

Use of switches
The use of switches in the context „camera-port assignment: 1:1“ is not supported.

Multi Board access
The use of more than one GigabitEthernet frame grabber boards within one host PC is feasible. Since there are various types of mainboards and chip sets combinations available, SILICONSOFTWARE can basically not flatly ensure both the error-free operation of its frame grabber cards and the support of maximum possible PC-bus performance.

Running GenICam Explorer and microDisplay at the same time
Runtime Software Ver. 5.2 allows to run GenICam Explorer and microDisplay in parallel.

Running microDiagnostics and GenICam Explorer/microDisplay at the same time
With the introduction of Runtime Software Version 5.2 it is possible to run microDiagnostics and either GigE Explorer or microDisplay at the same time.

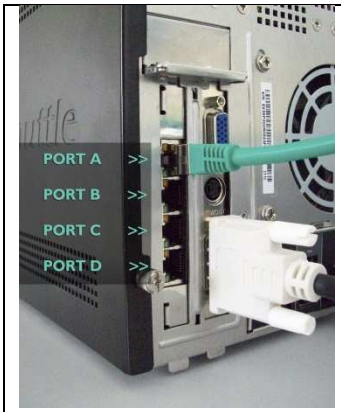
microDisplay and camera detection
If a camera is connected while microDisplay is running and an Applet is loaded, the camera will automatically be recognized. Please note that it lasts typically a couple of seconds between physically connecting a GigE Vision camera the point in time when the camera is listed.

Silicon Software GigabitEthernet network service
Within the setup procedure, the GigabitEthernet network service „SiSo Generic Service“ (Runtime Software Version 5.2) is installed. This network service is automatically started during the boot up process of your PC. It scans the network for connected cameras.

4 Frame grabber and Runtime Software installation

The following sections describe the hardware and software installation of the frame grabber and guide you through the first steps using the software tools. Before installing hardware, ensure the system power is OFF and unplugged from the power outlet, and that proper electrical grounding procedures have been followed.

4.1 Frame grabber installation



Installation of the frame grabber:

- Plug the frame grabber into an empty PCIe x4, x8 or x16 slot.
- Boot the system. Optionally install additionally the power supply module for PoE support (refer to section 4.2/4

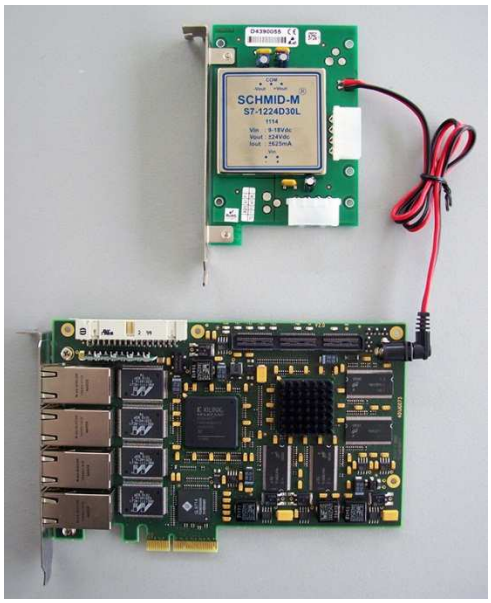
Take care, that you are grounded before you start the installation.

4.2 Installation of the power supply module with mounted slot bracket (for microEnable IV AQ4-GPoE / - VQ4-GPoE)

The total power of the power supply is 30 Watt aggregated via all four GigabitEthernet ports.

Safety Precautions

- Remove any metallic objects or jewelry from your hands and wrists
- Make sure to use only insulated or nonconducting tools
- Verify that the system is powered OFF and unplugged before accessing internal components.
- Installation or removal of power modules must be performed in a staticfree environment. The use of a properly grounded wrist strap or other personal antistatic devices and an antistatic mat is strongly recommended.



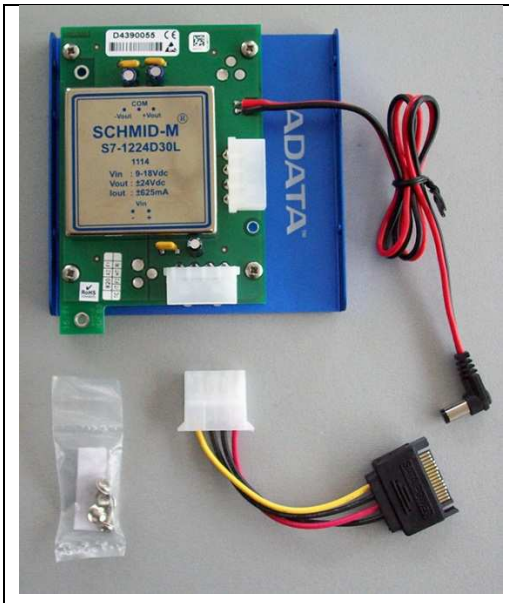
Installation of the power supply module with mounted slot bracket:

- Install the power supply to a slot opening at the back of the chassis
- Connect the power supply cable of the power supply module with the corresponding connector at the microEnable IV AQ4-GPoE / VQ4-GPoE
- Connect a 4pin Molex power cable of the PC power supply with the 4pin Molex connector of the power supply module. Optionally connect the included power cable (SATA connector -> 4pin Molex connector) with the PC power supply and the Molex connector of the power supply.
- Boot the system

Take care, that you are grounded before you start the installation.

4.3 Installation of the power supply module into a 3.5“ HDD slot (for microEnable IV AQ4-GPoE / - VQ4-GPoE)

The total power of the power supply is 30 Watt aggregated via all four GigabitEthernet ports.



Safety Precautions

- It is strongly recommend to review the safety precautions in section 4.2.

Replacing the bracket

The power supply module is basically shipped with a mounted slot bracket. For usage in a 3.5“ HDD slot the slot bracket has to be removed and replaced by the 3.5“ adaptor bracket.

- Remove the screws that attach the slot bracket to the power supply
- Align the 4 corresponding holes of the power supply to 4 spacer mounted on the adaptor bracket. Fasten the screws onto the spacer of the adaptor bracket.

Installation of the power supply module with mounted 3.5” adaptor bracket:

- Install the power supply into a free 3.5“ HDD slot; use the screws provided in the shipment.
- Connect the power supply cable of the power supply module with the corresponding connector at the microEnable IV AQ4-GPoE / VQ4-GPoE
- Connect a 4pin Molex power cable of the PC power supply with the 4pin Molex connector of the power supply module. Optionally connect the included power cable (SATA connector -> 4pin Molex connector) with the PC power supply and the Molex connector of the power supply.
- Boot the system

Take care, that you are grounded before you start the installation.

4.4 Runtime Software Installation – brief (Runtime Software 5.2 or newer)

- Boot the system

- Run the Runtime Software installer or insert the installation DVD:
  Setup will be started automatically, otherwise start the setup within the windows folder of the installation DVD

- Install the software and follow the installation instructions

  STEP1: The installation starts to collect information for the procedure. Press „Next“

  STEP2: Select the destination folder. Confirm the default setting with „Next“ or edit the path manually or use the browser functionality with the „Browse“ button to select the destination folder interactively

  STEP3: Select the installation components by predefined installation profiles and confirm with „Next“ or select certain components for installation

  Final STEP: Finally after further instruction windows you are asked to restart the system

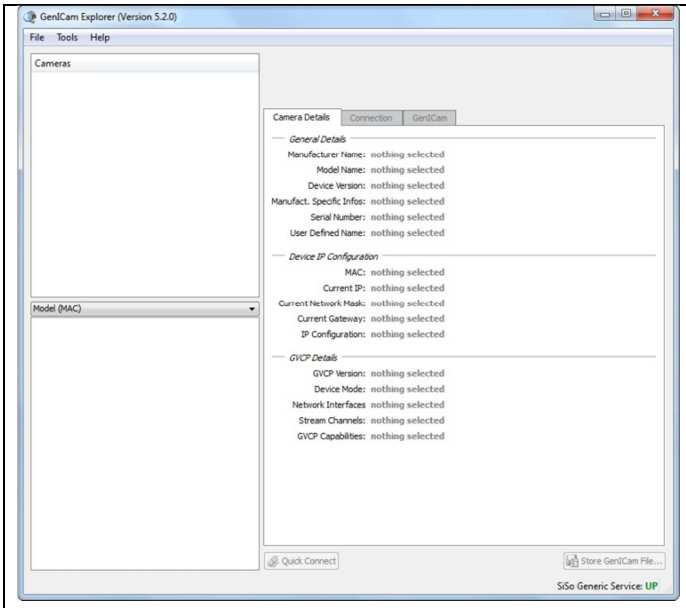
  After a restart of the system the proper installation of the framer grabber can be verified with the GUI tool microDiagnostics.

Important Note:
Update the firmware and/or the device driver if necessary. Please refer to the corresponding release note.

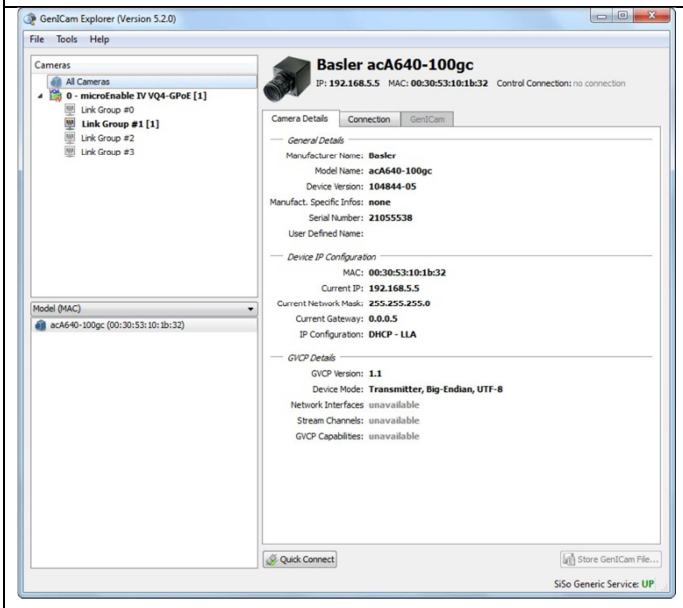
Information about the Software Development Kit (SDK) and the SDK examples can be found on according pages within the Runtime 5 documentation.

5 Camera Configuration and Quick Acquisition Check

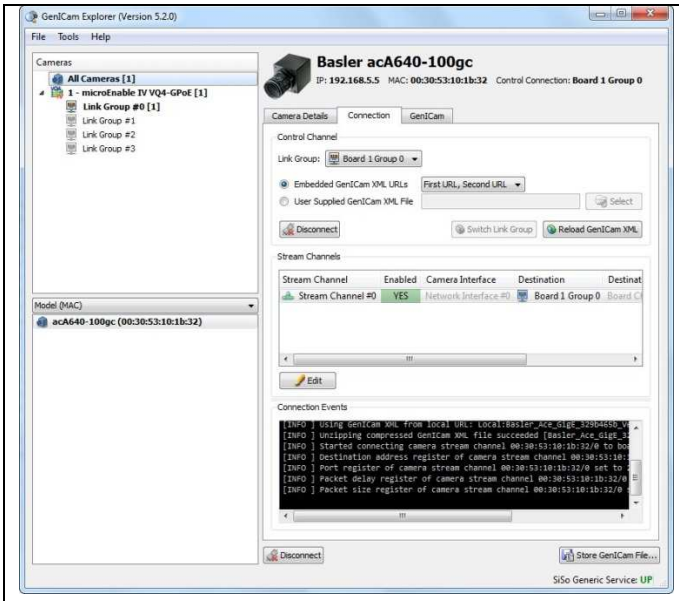
5.1 Camera Configuration



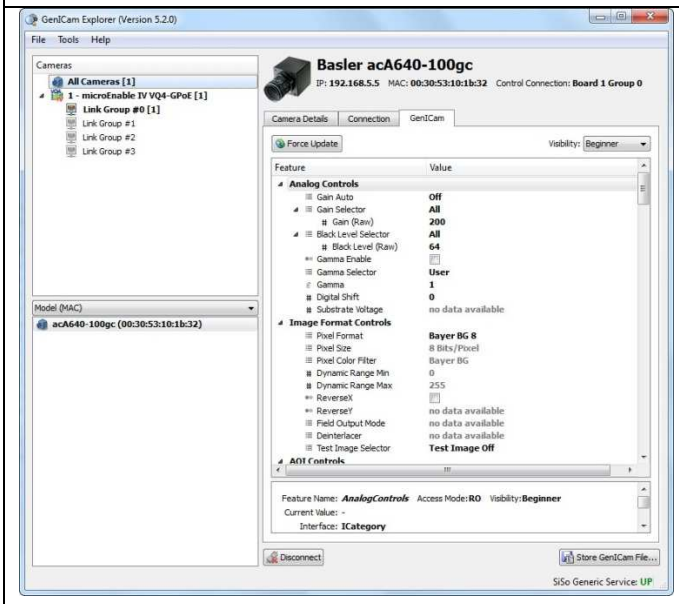
- Before using microDisplay, please use GenICam Explorer to discover one or more cameras connected to the frame grabber. The GenICam Explorer offers an overview of available cameras and a comfortable configuration interface of attached cameras.



- A camera is automatically detected, after plugged on one of the four GigE ports. Within the “Camera Details“ tab basic camera information is provided.

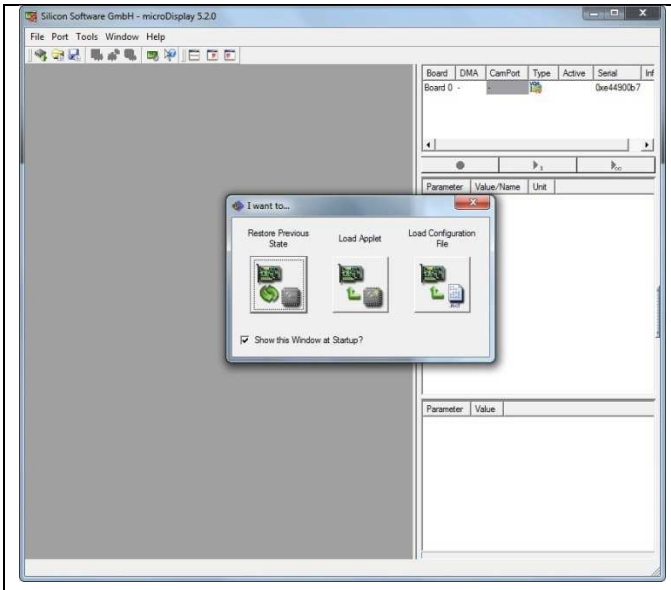


- When successfully connected by pressing the “connect“ or the “quick connect” button, the “GenICam” tab will be activated, too.



- Available features of the camera wil be displayed in the „GenICam“ view.
- Editable features are in black with „writable“ icon. Features which can‘t be changed are displayed in grey and with „read only“ icon.
- The value of a feature can be changed in the “GenICam” view with pull-down menus or by overwriting values in text fields.

5.2 Quick image acquisition check with the viewer software microDisplay



- When starting microDisplay, available Applets for a certain frame grabber will be listed in an applet selection window.
- microDisplay lists the applets with supported ports. Select the port you want to examine. The according window will be set in foreground and the list of available settings will be displayed.
- To start an acquisition, simply press the “Run” button. The image size values are automatically adjusted.

Further information on how to use microDisplay for image acquisition can be found within the Runtime 5 software documentation.

6 Why we are pleased to get your feedback

The GigE Vision market is still growing and developing very fast. New application areas are arising and existing application areas are changing at a significant frequency. On the other hand SILICONSOFTWARE has an unique technology platform to fulfill market and specific customer requests quickly. Considering these two facts, we are interested to know your specific needs, because this is a key to improve and extend our products into the right direction.

So we are happy to get your feedback and questions. Please contact us:

SILICONSOFTWARE
email: feedback@silicon-software.de
tel: +49-(0)621-789507-0
fax: +49-(0)621-789507-10