

GIGE VISION CAMERAS

Prosilica GT

Technical Manual

V3.0.1

Prosilica GT at a glance

Prosilica GT cameras have a GigE port and work with Gigabit Ethernet hardware and cable lengths up to 100 m. Prosilica GT cameras are GigE Vision V1.2 and GenICam SFNC V1.2.1 compliant.

Applied standards

- GigE Vision®** The GigE Vision standard is an interface standard for digital machine vision cameras administered by the AIA that is widely supported in the machine vision industry. In contrast, Gigabit Ethernet is the network GigE Vision is built upon.
- GenICam™** GenICam is a machine vision standard hosted by the EMVA. The aim of GenICam is to provide a generic configuration interface for cameras and devices independent of the used interface technology (for example, GigE Vision, USB3 Vision, DCAM IEEE 1394, Camera Link). This approach enables proper interoperability between GenICam compliant hardware and software solutions without the need for customization.
- The GenICam standard consists of multiple modules that specify tasks to be solved. Allied Vision cameras and software make use of these modules, like the SFNC that standardizes feature names and types via an XML file or the transport layer interface (GenTL) that is used to grab images.

What else do you need?

Content	URL
Camera data sheets GigE Features Reference Modular Concept 3D CAD STEP files Software and firmware downloads	https://www.alliedvision.com/en/support/technical-documentation/prosilica-gt-documentation.html
Technical papers and knowledge base	https://www.alliedvision.com/en/support/technical-papers-knowledge-base.html



Read this manual carefully

Learn how to protect your camera from damage and fully understand its functions.

Contact us

Connect with Allied Vision by function

<https://www.alliedvision.com/en/meta-header/contact.html>

Find an Allied Vision office or Allied Vision distribution partner

<https://www.alliedvision.com/en/about-us/where-we-are.html>

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Document history and conventions



This chapter includes:

- Document history
- Layout styles and symbols used in this manual
- Acronyms and abbreviations used in this manual

Document history

Version	Date	Remarks
V2.0.0	2011-Dec-12	New manual release status
V2.0.1	2012-Mar-08	Added absolute QE plots Added Prosilica GT1910, GT1920, GT2300, and GT2750 frame rate plots
V2.0.2	2012-May-31	Initial commercial release: Prosilica GT1660 and GT1660C <ul style="list-style-type: none"> ON Semi KAI-02050 CCD sensor Specifications, absolute QE plot, ROI frame rate, data path Initial commercial release: Prosilica GT3300 and GT3300C <ul style="list-style-type: none"> ON Semi KAI-08050 CCD sensor Specifications, absolute QE pot, ROI frame rate, data path
V2.0.3	2012-Jun-21	Added DC-Iris information
V2.0.4	2012-Sep-21	Initial commercial release: Prosilica GT2000 and GT2000C <ul style="list-style-type: none"> CMOSIS/ams CMV2000 CMOS sensor Specifications, absolute QE plot, ROI frame rate, data path Initial commercial release: Prosilica GT2050 and GT2050C <ul style="list-style-type: none"> CMOSIS/ams CMV4000 CMOS sensor Specifications, absolute QE plot, ROI frame rate, data path Initial commercial release: Prosilica GT6600 and GT6600C <ul style="list-style-type: none"> ON Semi KAI-29050 CCD sensor Specifications, absolute QE plot, ROI frame rate, data path Link added to RS232 application note Added lens control port wiring Renamed camera IO signals
V2.0.5	2013-Jan-14	Initial commercial release: Prosilica GT3400 and GT3400C <ul style="list-style-type: none"> Sony ICX814 CCD sensor Specifications, absolute QE plot, spectral response, ROI frame rate, data path Initial commercial release: Prosilica GT4905 and GT4905C <ul style="list-style-type: none"> ON Semi KAI-16050 CCD sensor Specifications, absolute QE plot, ROI frame rate, data path Initial commercial release: Prosilica GT4907 and GT4907C <ul style="list-style-type: none"> ON Semi KAI-16070 CCD sensor Specifications, absolute QE plot, ROI frame rate, data path Updated the circuits diagrams in the camera trigger section Updated the Prosilica GT trigger circuit values Removed the supported P-Iris section Updated the exposure control values
V2.0.6	2013-Feb-12	Added status LEDs section Updated the RoHS directive

Table 1: Document history

Version	Date	Remarks
V2.0.7	2013-May-16	Updated the bit depth and exposure control camera specifications in the <i>Specifications</i> chapter Updated pixel format naming according to the GenICam naming convention Corrected body dimensions and mass for Prosilica GT3400 Corrected the absolute QE plot for Prosilica GT3400 Added Vimba SDK link Added frame rate vs. height plots for Prosilica GT3400, GT4905, and GT4907 Updated frame rate vs. height plots in <i>Specifications</i> chapter Updated Allied Vision recommended cabling to Category 6 or higher in Gigabit Ethernet port section
V2.0.8	2013-Jul-05	Updated the absolute QE plot for Prosilica GT1910 Added links to Allied Vision <i>GigE Camera and Driver Features</i> document
V2.0.9	2013-Sep-16	Updated the <i>Mechanical dimensions</i> chapter Updated lens control section Updated color cameras with IR cut filter section Updated the specifications for Prosilica GT2000C and GT2050C Added a note on the locking screw cables Added optical flange focal distance and maximum lens protrusion information for C-Mount and F-Mount Added 1 inch lens format recommendation for Prosilica GT2000 cameras Added temperature monitoring information in the <i>Specifications</i> chapter Updated specifications for Prosilica GT2000, GT2000C, GT2000NIR, GT2050, GT2050C, and GT2050NIR models Added frame rate tables in the <i>Specifications</i> chapter
V2.1.0	2013-Oct-28	Added Description of the data path chapter Added section Adjustment of F-Mount

Table 1: Document history (continued)

Version	Date	Remarks
V2.1.1	2014-Jul-14	<p>Updated frame rate specification for Prosilica GT2000, GT2000C, GT2000NIR, GT2050, GT2050C, GT2050NIR, GT3400, GT3400C, GT4905, and GT4905C</p> <p>Added defect mask note in block diagram of Prosilica GT monochrome cameras with CCD sensors and block diagram of Prosilica GT color cameras with CCD sensors</p> <p>Corrected the sensor and pixel size for Prosilica GT6600 and GT6600C</p> <p>Added a note on binning in block diagram of Prosilica GT color cameras with CCD sensors</p> <p>Added link to the technical drawing for Prosilica GT Large Format camera with M42-Mount and M58-Mount</p> <p>Updated sensor position accuracy section</p> <p>Updated minimum exposure time for Prosilica GT2000, GT2000C, GT2000NIR, GT2050, GT2050C, and GT2050NIR</p> <p>Updated specifications for Prosilica GT4905 and GT4905C</p> <p>Updated the power consumption specification in the <i>Specifications</i> chapter</p> <p>Replaced the optical flange focal distance section with the following sections:</p> <ul style="list-style-type: none"> - C-Mount flange focal distance - F-Mount flange focal distance <p>Updated information on Prosilica GT Out 3 and Out 4 trigger circuit and in section Output: Opto-isolated internal circuit</p> <p>Updated temperature monitoring information in the <i>Specifications</i> chapter</p> <p>Updated filter and lenses section</p> <p>Replaced A/D and bit depth with Max. image bit depth in the <i>Specifications</i> chapter</p> <p>Added M42-Mount technical drawing links for Prosilica GT standard and extended cameras</p>
V2.2.0	2015-Mar-11	<p>Initial commercial release: Prosilica GT1930L and GT1930LC</p> <ul style="list-style-type: none"> • Sony IMX174 CMOS sensor • Specifications, absolute QE plot, spectral response plot, ROI frame rate, EF lens control, data path <p>Updated Allied Vision logo</p> <p>Changed AVT and Allied Vision Technologies references to Allied Vision</p> <p>Updated additional references section</p> <p>Added Prosilica GT3300 with ON Semi KAI-08050 sensor information</p> <p>Renamed Truesense references to ON Semi</p> <p>Updated lens control port wiring</p> <p>Updated temperature monitoring specification for Prosilica GT2300 and GT2300C</p> <p>Updated data path diagrams for color Prosilica GT cameras in <i>Description of the data path</i> section</p> <p>Updated the defect masking information for the following:</p> <ul style="list-style-type: none"> - Prosilica GT monochrome cameras - Prosilica GT color cameras

Table 1: Document history (continued)

Version	Date	Remarks
V2.3.0	2015-Mar-20	Replaced old links with new Allied Vision website links Changed file name from <i>GigE Camera and Driver Features</i> to <i>GigE Features Reference</i> Changed chapter name from <i>Description of data path</i> to <i>Camera data path</i>
V2.4.0	2015-Aug-25	Updated color formats specification in <i>Specifications</i> chapter Updated camera I/O connector pin assignment, Input triggers and output signals sections Added camera feature comparison section to replace <i>Camera smart features</i> section of V2.3.0
V2.4.1	2015-Sep-15	Added a note on removal of 4.75 K Ω resistors from PCBA in Out 3 and 4 in Opto-isolated section
V2.5.0	2015-Dec-21	Changed the technical manual layout Changed chapter name from <i>Camera data path</i> to <i>Image data flow</i> and updated the figures Changed chapter name from <i>Camera dimensions</i> to <i>Mechanical dimensions</i> Merged the <i>Resolution and ROI frame rates</i> chapter into <i>Specifications</i> chapter Added Prosilica GT at a glance section Added General safety notes section Added Regulations section in <i>Safety and regulations</i> chapter to replace <i>Legal notice</i> and <i>Conformity</i> sections Moved <i>Sensor position accuracy</i> section from <i>Appendix</i> to <i>Mechanical dimensions</i> chapter and deleted <i>Appendix</i> Added Camera features comparison section in <i>Specifications</i> chapter to replace <i>Camera smart features</i> and <i>Camera features</i> sections Added <i>Cleaning optical components</i> chapter to replace <i>Camera cleaning</i> and updated information Added <i>Contact us</i> section to replace <i>Contacting Allied Vision</i> section Updated Prosilica GT Large Format lens mount drawings
V2.6.0	2016-Mar-04	Initial commercial release: Prosilica GT1930 and GT1930C <ul style="list-style-type: none"> Sony IMX174 CMOS sensor Specifications, absolute QE plot, spectral response plot, ROI frame rate, data path Updated compliance statements Various minor corrections Added installation chapter

Table 1: Document history (continued)

Version	Date	Remarks
V2.7.0	2016-May-11	<p>Changed all instances of RegionY to OffsetY</p> <p>Changed all instances of BinningY to BinningVertical</p> <p>Aligned the information in the specification tables with the information on the web pages</p> <p>New features for various Prosilica GT models including:</p> <ul style="list-style-type: none"> • Decimation X/Y (single-tap and quad-tap cameras only) • Look-up tables • Reverse X/Y • Binning • Sensor digitization taps (single-tap and quad-tap cameras only) <p>Added sensor tap mode note in <i>Specifications</i> chapter</p> <p>Updated frame rate information plots</p> <p>Various other minor improvements and corrections</p>
V2.8.0	2016-July-07	<p>Added spectral response plot for Prosilica GT1930, GT1930L, and GT3400</p> <p>Updated the absolute QE plot for GT1930 and GT1930L</p> <p>Added spectral response plot for Prosilica GT cameras with Sony CCD sensors</p> <p>Updated absolute QE plot for Prosilica GT cameras with Sony CCD sensors</p> <p>Updated the image flow diagrams</p> <p>Trigger over Ethernet Action Command feature to select models</p> <p>New features for Prosilica GT2000 and GT2050 series</p> <ul style="list-style-type: none"> • Decimation X/Y • Reverse X/Y • DeviceUserID <p>Feature change for Prosilica GT2000 and GT2050 series</p> <ul style="list-style-type: none"> • Column defect masking has been replaced by pixel defect masking
V2.8.1	2016-Aug-16	<p>Added optical filter information to specification tables</p> <p>Trigger over Ethernet Action Command feature</p> <p>Updated absolute QE plot for Prosilica GT cameras with Sony CCD sensors</p> <p>Updated specification notes section</p> <p>Various other minor improvements and corrections</p> <p>New features for Prosilica GT2450 and GT2450C including:</p> <ul style="list-style-type: none"> • New PTP implementation • Temperature readout (main board and sensor board) • Look-up tables • Decimation X/Y • DeviceUserID

Table 1: Document history (continued)

Version	Date	Remarks
V2.9.0	2017-Aug-04	<p>Initial commercial release: Prosilica GT4090 and GT4090NIR</p> <ul style="list-style-type: none"> ON Semi PYTHON 12K CMOS sensor Specifications, absolute QE plot, ROI frame rate, data path <p>Initial commercial release: Prosilica GT4096 and GT4096NIR</p> <ul style="list-style-type: none"> ON Semi PYTHON 16K CMOS sensor Specifications, absolute QE plot, ROI frame rate, data path <p>Initial commercial release: Prosilica GT5120 and GT5120NIR</p> <ul style="list-style-type: none"> ON Semi PYTHON 25K CMOS sensor Specifications, absolute QE plot, ROI frame rate, data path <p>Corrected the Out3 and Out4 trigger circuit specification from 20 mA to 8 mA</p> <p>Added Piecewise Linear HDR mode option to Exposure Mode for the Prosilica GT2000 and GT2050 series. For more information, see the <i>GigE Features Reference</i></p> <p>Changed the Prosilica GT1930L standard mount to EF-Mount PA</p> <p>Updated absolute QE plot for Prosilica GT cameras with CMOSIS/ams CMOS sensors</p> <p>Updated all ON Semi absolute QE plots to reflect the Gen 2 CFA material change</p> <p>Added cable color to camera I/O connector pin assignment including pin assignment figure and cross reference to the Allied Vision I/O cable data sheet</p> <p>Updated camera I/O connector pin assignment, input triggers, and output signals section</p> <p>Added note to Specifications chapter for lens support with heavy lens load and high vibration environments</p> <p>CMOSIS renamed to CMOSIS/ams following the acquisition of CMOSIS by ams Sensors Belgium</p> <p>Corrected exposure value range for Prosilica GT2000</p> <p>Changed Cell size terminology to Pixel size</p> <p>Various other minor improvements and corrections</p>
V3.0.0	2018-May-01	<p>Initial commercial release: Prosilica GT2460 and GT2460C</p> <ul style="list-style-type: none"> Sony IMX264 CMOS sensor Specifications, absolute QE plot, spectral response plot, ROI frame rate, data path <p>Simplified the <i>Contact us</i> section, please click the link to find contact information for your region or email us at one of the provided email addresses.</p> <p>Added Specifications common to all models to simplify the model specific tables</p> <p>Removed references to Order code: 2685 Adlink GIE62+PCI ex4, 2 ports. For more information see the <i>Product Change Notification</i>.</p> <p>Various other minor improvements and corrections</p> <p>Added acronyms and abbreviations used in this manual</p> <p>Updated symbols used in this manual</p> <p>Updated Prosilica I/O table</p>

Table 1: Document history (continued)

Version	Date	Remarks
V3.0.1	2018-June-19	Corrected lens tool- adjustment wrench part number on page 131 Updated RoHS statement to include amendment 2015/863/EU

Table 1: Document history (continued)

Manual conventions

To give this manual an easily understood layout and to emphasize important information, the following typographical styles and symbols that are used.

Styles

Style	Function	Example
Bold	Program names, UI elements, highlighting important things	bold
Italics	Publication names, UI non-interactive elements	<i>Italics</i>
Courier New	Code listings, feature names	Input
Courier New Italics	Feature options	<i>Mode</i>
Blue	Cross references, web page links (URLs), email links	Link

Table 2: Styles used in this technical manual

Symbols



NOTICE

Material damage

Precautions as described.



NOTICE

Material damage by electrostatic discharge (ESD)

Precautions as described.



CAUTION

Personal injuries

Precautions as described.



Instructions to avoid malfunctions

This symbol indicates important or specific instructions or procedures that are related to product safety. You have to follow these instructions to avoid malfunctions.



Practical hint

This symbol highlights a practical hint that helps to better understand the camera's features and functions, and to make better use of it.



Further information available online

This symbol highlights URLs for further information. The URL itself is shown in blue. Example: <https://www.alliedvision.com>

Product naming

Names of third-party products in this document are shortened to ease reading. Nevertheless, we respect all manufacturer rights and trademarks.

Official product name	Naming in this document	Manufacturer website
Sony Semiconductor Solutions	Sony	http://www.sony-semicon.co.jp/
ON Semiconductor	ON Semi	http://www.onsemi.com/
ams Sensors Belgium	CMOSIS/ams	http://www.cmosis.com/

Table 3: Third-party product naming

Abbreviations and acronyms

The following table provides a list of abbreviations and acronyms used in this document.

Abbreviation or acronym	Description
°C	Degrees Celsius
ADC	Analog-to-digital converter
AIA	Automated Imaging Association
CAD	Computer aided design
CAT-6	Category 6, Ethernet cable
CCD	Charge-coupled device
cm	Centimeter
CMOS	Complementary metal-oxide semiconductor
dB	Decibel

Table 4: Abbreviation and acronyms used in this document

Abbreviation or acronym	Description
EMVA	European Machine Vision Association
ESD	Electrostatic discharge
FIFO	First-in first-out
fps	Frames per second
g	Grams
Gbps	Gigabits per second
GigE	Gigabit Ethernet
GND	Ground (power)
GVSP	GigE Vision Streaming Protocol
H × V	Horizontal × Vertical (sensor resolution measurement)
I/O	Input/Output
KΩ	Kiloohm
LUT	Look-up table
m	Meter
mA	Milliampere
MB	Megabyte
Mbps	Megabits per second
mm	Millimeter
MP	Megapixel
MSDS	Material safety data sheet
NIC	Network interface controller
NIR	Near Infrared
nm	Nanometer
ns	Nanosecond
PA	Planarity adjustable
PoE	Power over Ethernet
PSE	Power sourcing equipment
psi	Pound per square inch (atmospheric pressure)
PTP	Precision Time Protocol
QE	Quantum efficiency
ROI	Region of interest
s	Second
SDK	Software Development Kit
ToE	Trigger over Ethernet Action Command

Table 4: Abbreviation and acronyms used in this document (continued)

Abbreviation or acronym	Description
TTL I/O	Transistor-transistor logic input/output
TxD and RxD	Transmit and receive
V	Volts
VDC	Volts of direct current
W	Watts
XML	Extensible Markup Language
μA	Microampere
μm	Micrometer or micron
μs	Microsecond

Table 4: Abbreviation and acronyms used in this document (continued)

Compliance and intended use



This chapter includes:

- Information about the legal requirements and restrictions for Prosilica GT cameras based on current and relevant regulations
- Particular emphasis has been given to Europe, the U.S., and Canada
- Intended use statements

Compliance notifications

For customers in Europe



Allied Vision has demonstrated the fulfillment of the requirements relating to the Prosilica GT camera family:

- Directive 2014/30/EU (Electromagnetic compatibility)
- Directive 2011/65/EU, including amendment 2015/863/EU (RoHS)
- Directive 2012/19/EU (WEEE)

For customers in the U.S.



Class A digital device

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

We caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

For customers in Canada

This apparatus complies with the Class A limits for radio noise emissions set out in the Radio Interference Regulations.

CAN ICES-003 Issue 4/5

Pour utilisateurs au Canada

Cet appareil est conforme aux normes classe A pour bruits radioélectriques, spécifiées dans le Règlement sur le brouillage radioélectrique.

CAN ICES-003 Issue 4/5

Avoid electromagnetic interferences

For all power and interface connections, only use shielded cables or cables recommended by Allied Vision.

Camera applications and intended use

General use

- The user is responsible for operating the camera within the specifications that are defined in this document, and within appropriate environmental conditions and technical prerequisites, to ensure trouble-free camera operation.
- The camera is compliant with current data communication standards; however, those standards do not allow for self-monitoring. Thus, the camera cannot be used as a standalone device for security-related monitoring operations.
- The camera is a hardware product. Only when used with appropriate accompanying software, the camera will produce the desired results. The realization of intelligent solutions requires additional software that is suitable to run with the camera.
- The camera is a component, it is neither a complete product, nor is it a ready-made technical solution.
- The camera-supporting software can be obtained and installed separately from the camera. Usage of the software is solely the responsibility of the user.
- The camera must not be opened. For all repair tasks, contact Allied Vision or one of Allied Vision's authorized representatives.
- Observe the intended use. The camera must only be used for purposes that are in conformity with the stated intended use.
- Additionally, refer to the warranty information on the Allied Vision website.

Use in medical devices

The camera provides basic adequacy to be used in medical devices as well, however, is not specially designated for operation in medical devices. When used as part of a medical device, a review of the specific application is necessary. Users who integrate the camera into an application must comply with the rules and regulations concerning medical devices.

Copyright and trademarks

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Installation and hardware



This chapter describes the components required for your vision system including configuring the host computer, Ethernet adapter settings, and connecting your Prosilica GT camera.

Precautions

Electrical connections



NOTICE

ESD

The phenomenon is commonly known: when walking on a carpet, we get charged. Touching a door handle, we get an electric shock. ESD is dangerous for electronic devices, especially when tools or hands get in contact with connectors. We recommend measures to avoid damage by ESD:

- Unpacking: Remove the camera from its anti-static packaging only when your body is grounded.
- Workplace: Use a static-safe workplace with static-dissipative mat and air ionization.
- Wrist strap: Wear a static-dissipative wrist strap to ground your body.
- Clothing: Wear ESD-protective clothing. Keep components away from your body and clothing. Even if you are wearing a wrist strap, your body is grounded but your clothes are not.



NOTICE

Do not operate the camera beyond the environmental specifications

See environmental specifications limits in the Specifications section of this document. Special care must be taken to maintain a reasonable operating temperature.



NOTICE

Maximum power via PoE

The maximum power supplied via PoE is 13 W. EF lens power requirements will vary from lens to lens; however, typical ratings are in the 3 to 4 W range. Should your lens plus camera power requirements exceed 13 W, it will be necessary to power the camera via Hirose I/O port.



NOTICE

Verify all external connections

Verify all external connections in terms of voltage levels, power requirements, voltage polarity, and signal integrity prior to powering the device.

**NOTICE****Heat dissipation**

Operation outside the allowed temperature range can damage the camera. For best performance and to protect the camera from damage, keep the housing temperature between the specified operating temperature.

Observe the following:

- To avoid camera crashes, operate the camera with a lens or lens adapter attached only.
- For maximum heat dissipation, affix the camera to a heat sink, using the mounting threads.
 - Use mounting base and heat sink with large surface areas.
 - Use a mounting base with a high thermal conductivity.
- Reduce ambient temperature. For example, in an outdoor application with direct sunlight, provide shading by an enclosure.

Provide ventilation or other active cooling of camera, mounting base, and heat sink.

Optical components

**NOTICE****Image sensor**

Image sensors are sensitive to excessive radiation: focused sunlight, lasers, and X-rays can damage the sensor. Monochrome and NIR models are not fitted with filter or protection glass. Consider, when removing the lens or dust cap on these cameras, the sensor is not protected against dirt or scratches.

**NOTICE****Cleaning optical components**

This product can be damaged by some volatile cleaning agents. Avoid cleaning the image sensor unless absolutely necessary. See instructions on optics cleaning in this document.

Allied Vision can clean your camera as a service for you, if necessary. For more information, contact Allied Vision support at <https://www.alliedvision.com/en/support/contact-support-and-repair.html>.

**NOTICE****Lenses**

Provide the following conditions to keep dirt and droplets out of the optical system of camera and lens:

- Dust-free environment
- Low relative humidity
- No condensation

To keep dirt out of the lens mount, hold the camera with the lens mount facing the ground. Keep filter and camera back lens clean, because dirt becomes more visible the closer it gets to the sensor.

**NOTICE****Lens support for heavy lens load**

Many of the lens mount styles available such as M42, F, EF-Mount are not designed for high vibration environments with a heavy lens load. Allied Vision recommends supporting the lens externally in these environments.

**NOTICE****Monochrome and NIR models**

As monochrome and NIR models do not have an optical filter always attach a dust cap when a lens is not attached to minimize the possibility of contaminants falling on the sensor surface.

Configuring the host computer

Allied Vision GigE Vision cameras can operate on 10/100 or Gigabit speed Ethernet adapters. In order to reach the maximum camera frame rate, a Gigabit speed Ethernet adapter with jumbo packet support is required.

If your host computer has an available Ethernet port, this can be used with Allied Vision GigE cameras. We recommend that your camera system uses a dedicated Ethernet port not shared with Internet or local area networks. If more ports are required, or your existing Ethernet adapter is unable to operate at Gigabit Ethernet speeds, installing additional hardware may be required.



Usage on mixed-use networks (with printers, Internet, email) is possible but may impact camera performance (for example, framerate). Check with your IT administrator if required for network configuration.

Installing the Ethernet adapter driver

Install the network card driver from your network card manufacturer. If no installation application is provided, update the driver manually.

To update the driver manually

1. Click the **Start icon** and select *Control Panel* in the menu.
2. Click **View by Large Icons** and select *Device Manager* in the list.
3. Under *Network Adapters*, locate the Ethernet network adapter, right-click the entry, and select *Update Driver Software* in the menu.
4. Select the *Search automatically for updated driver software* or *Browse my computer for driver software*.
5. Click **Close** after the driver has been installed.

Optional: Modifying Ethernet adapter IP address

After initial Ethernet adapter hardware installation, connect the Ethernet adapter directly to the camera. The default configuration assigns an IP address automatically using the Link-Local Address range of 169.254.xxx.xxx or an address defined by the DHCP server, if present.

Users can fix the adapter address to minimize the time required for a camera to be recognized by the host application. Systems that employ multiple Ethernet adapters connected to multiple cameras will also be required to fix the address of the Ethernet adapter.



To connect to the camera, edit the host PC's adapter settings and configure the following settings:

- IP Address: 169.254.100.1
- Subnet mask: 255.255.0.0
- Default gateway: blank

Ethernet adapter driver settings

The Ethernet adapter should be adjusted to improve system performance when using a GigE Vision camera. This performance is related to minimizing CPU usage and dropped or resent packets.

Edit the Ethernet adapter driver properties according to the values in the following table. The names and availability of the properties listed may vary depending on adapter manufacturer and model.

Property	Value
Packet size or maximum transmission unit (MTU)	8228 bytes or larger
Interrupt Moderation	Enable
Interrupt Moderation Rate	Extreme

Property	Value
Receive Buffers	Maximum value configurable
Transmit Buffers	256 bytes



Default packet size

The default packet size of Allied Vision GigE cameras is 8228 bytes. The host network adapter needs to support a packet size of equal or larger size to stream from the camera.



Ethernet adapter

For desktop systems, use a PCI Express bus Ethernet adapter. For laptops, use an expansion slot via an ExpressCard®.

A list of Allied Vision recommended Ethernet adapters is available on the Allied Vision website. See the *Hardware Selection for Allied Vision GigE Cameras* application note at <https://www.alliedvision.com/en/support/technical-papers-knowledge-base.html>.



Ethernet adapter settings

The Ethernet adapter settings may also vary depending on your system configuration and the network adapter manufacturer.

Enabling jumbo packets



Jumbo Frames or Jumbo Packets

The properties listed for the network adapter may include either **Jumbo Packet** or **Jumbo Frames** depending on the manufacturer. If neither is listed under properties, your network card may not support this feature. You must use a network adapter that supports Jumbo Frames or Jumbo Packets.

To enable jumbo packets

1. Click the **Start** icon and select *Control Panel* in the menu.
2. Click **View by Large Icons** and select *Device Manager* in the list.
3. Under *Network Adapters*, locate the Ethernet network adapter, right-click the entry, and select *Properties* in the menu.
4. Select the *Advanced* tab.
5. Select the property *Jumbo Packet* and set the value to *9014 Bytes*.
6. Click **OK** to save the setting.

Connecting your camera

Use a CAT-6 or higher rated Ethernet cable to connect the camera to the host adapter. Crossover cabling is not required but does work. The camera has circuitry to determine if a crossover cable is being used.



Allied Vision recommends CAT-6 or higher rated Ethernet cables. A cable with a lower rating may not sustain peak interface bandwidth; leading to lost connectivity or image data coming from the camera.



Contact your Allied Vision Sales representative or your local Allied Vision distribution partner for information on accessories, see <https://www.alliedvision.com/en/about-us/where-we-are.html>.

Optics

Allied Vision Prosilica GT cameras offer various lens mounts for installing a lens including C-Mount, CS-Mount, F-Mount, F-Mount PA, M42-Mount, M42-Mount, M58-Mount PA, M58-Mount PA, and Canon EF-Mount PA depending on the model. Lenses can be purchased directly from Allied Vision or from an Allied Vision distributor. Users need to select the desired focal length and appropriate optical format for the target camera model.



For more information on lens mount options for your Prosilica GT camera, see the *Modular Concept* at <https://www.alliedvision.com/en/support/technical-documentation.html>.



Contact your Allied Vision Sales team or your local Allied Vision distribution partner for information on accessories and lens recommendations: <https://www.alliedvision.com/en/about-us/where-we-are.html>

Accessories

Allied Vision offers a wide range of accessories for the use of Allied Vision GigE cameras and the easy integration in already existing applications including:

- GigE accessories including standard GigE components and PoE capable GigE components.

- Lenses for corresponding sensor sizes and resolutions.



Contact your Allied Vision Sales team or your local Allied Vision distribution partner for information on accessories and lens recommendations:

<https://www.alliedvision.com/en/about-us/where-we-are.html>



Recommended accessories

A list of Allied Vision recommended accessories is available on the Allied Vision website. See the *Hardware Selection for Allied Vision GigE Cameras Application Note* at <https://www.alliedvision.com/en/support/technical-papers-knowledge-base.html>.

Downloading camera drivers

Allied Vision GigE cameras work with any or all of the following software options.



Vimba Viewer or Vimba SDK, see
<https://www.alliedvision.com/en/products/software>

Third-party software solutions, see
<https://www.alliedvision.com/en/products/software/third-party-libraries.html>

Powering up the camera

A camera power adapter for each GigE camera is available from Allied Vision. See [Specifications](#) on page 31 for connector definition and voltage specifications.



NOTICE

Powering Prosilica GT cameras

- Use only DC power supplies with insulated cases.
- For all power connections use only shielded cables to avoid electromagnetic interferences.
- Prosilica GT cameras can source power from:
 - IEEE 802.3af (100 Mbps and 1000 Mbps), and
 - IEEE 802.3at compliant PoE PSE devices such as switches, injectors, or NICs.

Connecting to host application

After you have installed the **Vimba Viewer** or third-party application to your host computer, you must connect your Allied Vision GigE camera via an Ethernet cable. If your camera is not PoE powered, connect the Hirose cable to power the camera.

Allied Vision software

All software packages provided by Allied Vision are free of charge and contain the following components:

- Drivers
- SDK for camera control and image acquisition
- Examples based on the provided APIs of the SDK
- Documentation and release notes
- Viewer application to operate and configure the cameras



Vimba Viewer documentation

Vimba Viewer documentation is included with the software download. After Vimba Viewer is installed on your host PC, documentation is located under *\Program Files\Allied Vision\Vimba*.

Third-party software

In addition to the software provided by Allied Vision, there are numerous GigE Vision standard compliant third-party software options available. In general, third-party software provides increased functionality such as image processing and video recording.

Allied Vision's Vimba SDK is based on the GenICam standard. GenICam-based third-party software automatically connects with Vimba's transport layers. Additionally, Vimba includes the Cognex Adapter for VisionPro.

Specifications



This chapter provides:

- Technical specifications
- Absolute QE plots
- Spectral response plots (select models)
- ROI height vs. frame rate plots
- Comparison of feature availability in various Prosilica GT camera models

Notes on specifications



Dimensions and mass

Dimensions include connectors but not the tripod and lens.

Mass does not include the tripod and lens.

Both dimensions and mass values in the specification tables are for the default configuration of the camera (default housing and lens mount).



Modular options

Prosilica GT and Prosilica GT Large Format cameras can be ordered with several modular options including lens mount, optical filter, and sensor options. For more information, see the *Modular Concept* at <https://www.alliedvision.com/en/support/technical-documentation.html>.



Mono8 pixel format

Prosilica GT color models include the Mono8 monochrome pixel format in addition to color and RAW pixel formats.



ON Semi sensor change

Prosilica GT color models with ON Semi sensors now use sensors with the new generation 2 CFA materials. For more information, see the *Product Change Notification* on the Allied Vision website.

Frame memory

Normally, an image is captured and transported in consecutive steps. The image is taken, read out from the sensor, digitized and sent over the GigE network. Prosilica GT cameras are equipped with an image buffer. The memory operates according to the FIFO principle. Specification tables show how many frames can be stored by each model.



Number of frames

The number of frames (`StreamHoldCapacity`) depends on resolution, pixel format, and GVSP packet size. The stated number of frames is typical for full resolution, 8-bit pixel format (Mono8 or Bayer8), and a `GevSCPSPacketSize = 8192` bytes per packet.

Resolution and ROI frame rate

Resolution and ROI frame rate is listed after the specification table. The resulting frame rate from changing sensor height from full image to a single line. Unless otherwise noted, sensors do not give an increase in readout speed with a reduction in width. However, in cases where a camera is limited by frame rate due to bandwidth restrictions, a reduction in width will give a frame rate increase.

Cameras with a “burst mode” frame rate are able to output more data than the maximum available bandwidth (124 Mbps), and will see a frame rate increase with a reduction in width.



Resolution and ROI measurements

- Data was generated using `StreamBytesPerSecond = 124 Mbps` (full bandwidth), minimum exposure, full resolution, and an 8-bit pixel format. Frame rate may be lower if using network hardware incapable of 124 Mbps.
- For maximum speed advantage on quad-tap CCD sensors, ROIs are center image, where `feature OffsetY = (full sensor height – ROI height)/2`.
- `BinningVertical` is vertical row summing of charge on CCD sensors before readout. The frame rate for an ROI at the same effective height as binning is slower because the CCD still needs to read out the “fast readout rows” in ROI mode.



Frame rate and readout

Although the sensor is capable of higher frame rates, readout is limited by GigE bandwidth and exposure value. You can improve frame rates with an ROI and shorter exposure values.

Sensor tap mode (CCD models only)

With quad-tap sensor mode you can achieve a higher frame rate than with single-tap mode. With single-tap sensor mode, you can achieve an image certain to be free of any tap-boundary artifacts. You can also use single-tap mode if you experience tap imbalance issues with your camera. You can change the sensor digitization tap mode in *Vimba Viewer 2.0* or later. Sensor tap mode is applicable to quad-tap cameras only.



Image acquisition must be stopped before changing sensor tap mode.

Affected features

This table lists features which are affected when switching from quad-tap to single-tap sensor mode.

Feature	Four-tap mode	One-tap mode
ReverseX	Available	Not available
ReverseY	Available	Not available
DecimationHorizontal	Available	Not available
DecimationVertical	Available	Not available

Table 5: Affected features

Model	Sensor taps
GT1290, GT1290C	Single-tap
GT1380, GT1380C	Single-tap
GT1600, GT1600C	Single-tap
GT1660, GT1660C	Quad-tap, Single-tap switchable in Vimba 2.0 or later
GT1910, GT1910C	Quad-tap, Single-tap switchable in Vimba 2.0 or later
GT1920, GT1920C	Quad-tap, Single-tap switchable in Vimba 2.0 or later
GT2300, GT2300C	Quad-tap, Single-tap switchable in Vimba 2.0 or later
GT2450, GT2450C	Dual-tap
GT2750, GT2750C	Quad-tap, Single-tap switchable in Vimba 2.0 or later
GT3300, GT3300C	Quad-tap, Single-tap switchable in Vimba 2.0 or later
GT3400, GT3400C	Quad-tap, Single-tap switchable in Vimba 2.0 or later
GT4905, GT4905C	Quad-tap, Single-tap switchable in Vimba 2.0 or later
GT4907, GT4907C	Quad-tap, Single-tap switchable in Vimba 2.0 or later
GT6600, GT6600C	Quad-tap, Single-tap switchable in Vimba 2.0 or later

¹ Frame rate reflects four-tap mode. See the specification tables for the frame rate for one-tap mode.

Table 6: Sensor tap mode for CCD models

Absolute QE plots



Important notice before reading the specifications tables

All measurements were done without protection glass or IR cut filter. With protection glass or filters, QE decreases by approximately 10%.

The uncertainty in measurement of the QE values is $\pm 10.25\%$. This is mainly due to uncertainties in the measuring apparatus itself (Ulbricht sphere, optometer). Manufacturing tolerance of the sensor increases overall uncertainty.



Sony CCD and CMOS monochrome sensors

The curve in the absolute QE plots shown in this chapter were calculated from a single measured quantum efficiency for monochrome sensors. The shape of the curve is from the sensor data sheet but the values have been adjusted based on this measured value.



Sony CCD and CMOS color sensors

The curves in the absolute QE plots shown in this chapter were calculated from three measured quantum efficiency values for color sensors. The shape of the curves are from the sensor data sheet but the values have been adjusted based on these measured values.



ON Semi CCD and CMOS sensors

The curve in the absolute QE plots shown in this chapter is from the sensor manufacturer data sheet.

The information was correct at the time of publishing.



Wavelength

The wavelength range in the absolute QE plots reflects the information available in the sensor manufacturer data sheet at the time of publishing. Many color sensors are documented by the sensor manufacturer only for wavelengths from 400 nm to 700 nm.

For additional wavelength information, contact the sensor manufacturer.

Spectral response plots



For select models

The curves in the spectral response plots shown in this chapter were calculated from measured quantum efficiencies at 448 nm, 529 nm, and 632 nm. The shape of the curve is from the sensor data sheet but the values have been adjusted based on these measured values.

Specifications common to all models

Feature	Specification
TTL (non-isolated) I/Os	1 input, 2 outputs
Opto-isolated I/Os	1 input, 2 outputs
RS232	1 TxD, 1 RxD
Power requirements	7 to 25 VDC; PoE
Operating humidity	20 to 80% non-condensing
Interface	IEEE 802.3 1000BASE-T (GigE), IEEE 802.3af (PoE)
Interface standard	GigE Vision® Standard V1.2
Camera control standard	GenICam SFNC V1.2.1

Table 7: Specifications common to all Prosilica GT models

Prosilica GT1290, GT1290C

Feature	Specification	
	Prosilica GT1290	Prosilica GT1290C
Resolution	1280 (H) × 960 (V) 1.2 MP	
Sensor	Sony ICX445ALA with EXview HAD CCD™ technology	Sony ICX445AQA with EXview HAD CCD™ technology
Sensor type	Interline CCD, Progressive Scan	
Shutter type	Global	
Sensor format	Type 1/3	
Sensor size	6.0 mm diagonal	
Pixel size	3.75 µm × 3.75 µm	
Lens mount	Default: C-Mount Optional: See the <i>Modular Concept</i>	
Housing	Standard format housing	
Optical filter	Default: No optical filter Optional: See the <i>Modular Concept</i>	Default: IRC30 IR cut filter Optional: See the <i>Modular Concept</i>
Maximum frame rate at full resolution	33.3 fps	
Maximum image bit depth	12/14 bit	
Image buffer	128 MB	
StreamHoldCapacity	Up to 53 frames at full resolution	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed, Mono14	Mono8
YUV color pixel formats		YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats		RGB8Packed, BGR8Packed
RAW pixel formats		BayerRG8, BayerRG12, BayerRG12Packed
Exposure time control	12 µs to 77.3 s; 1 µs increments	
Gain control	0 to 29 dB; 1 dB increments	
Binning	Horizontal: 1 to 8 columns Vertical: 1 to 14 rows	
Decimation X/Y	Horizontal and vertical: 1, 2, 4, 8 factor	
Sensor taps	Single-tap	
Power consumption	2.9 W at 12 VDC; 3.5 W PoE	
Trigger latency	2 µs	
Trigger jitter	±20 ns	

Table 8: Prosilica GT1290, GT1290C model specifications

Feature	Specification	
	Prosilica GT1290	Prosilica GT1290C
Propagation delay (t_{pd})	30 ns for non-isolated I/O; 70 ns for isolated I/O	
Operating temperature	-20 °C to +65 °C ambient temperature (without condensation)	
Storage temperature	-20 °C to +70 °C ambient temperature (without condensation)	
Operating humidity	20 to 80% non-condensing	
Body dimensions (L × W × H)	86 × 53.3 × 33 mm	
Mass (typical)	211 g	
Temperature monitoring	Available for main board and sensor board. Resolution: 0.031; Accuracy: ±1 °C	

Table 8: Prosilica GT1290, GT1290C model specifications (continued)

Absolute QE

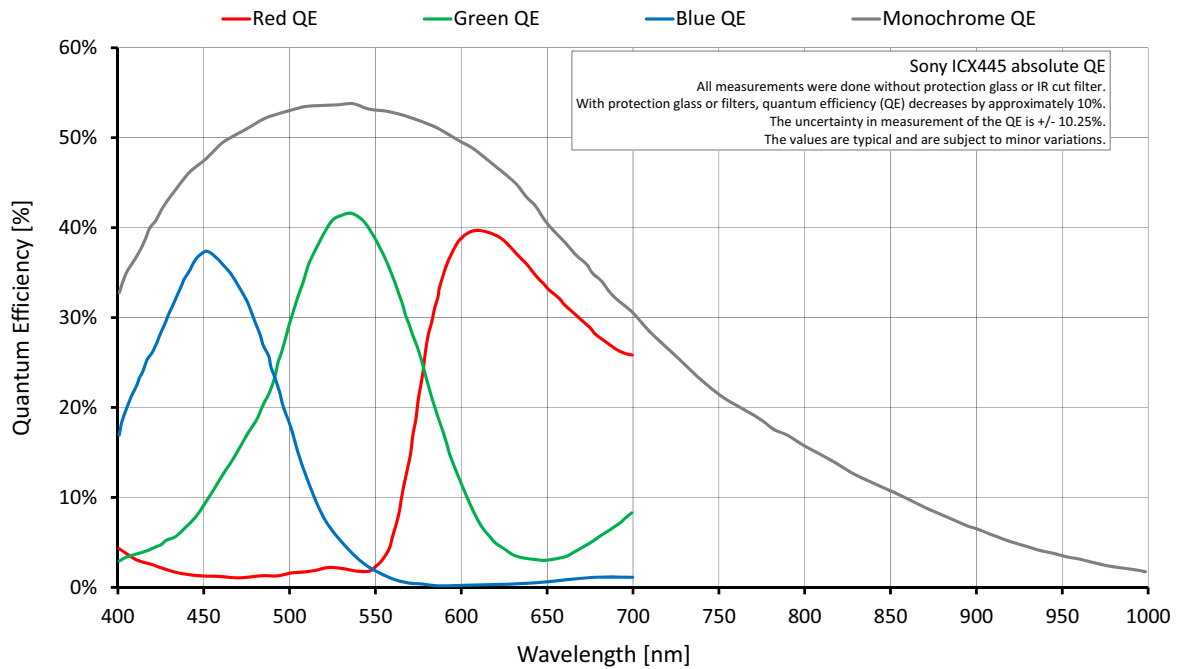


Figure 1: Prosilica GT1290, GT1290C (Sony ICX445) absolute QE

Spectral response

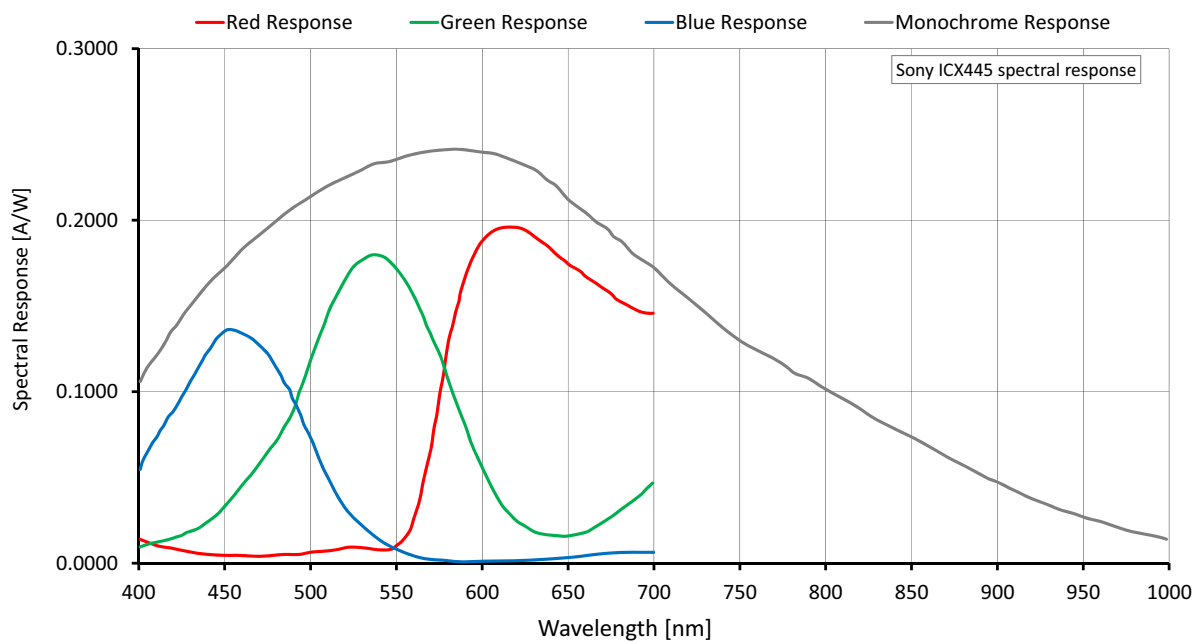


Figure 2: Prosilica GT1290, GT1290C (Sony ICX445) spectral response

ROI frame rate

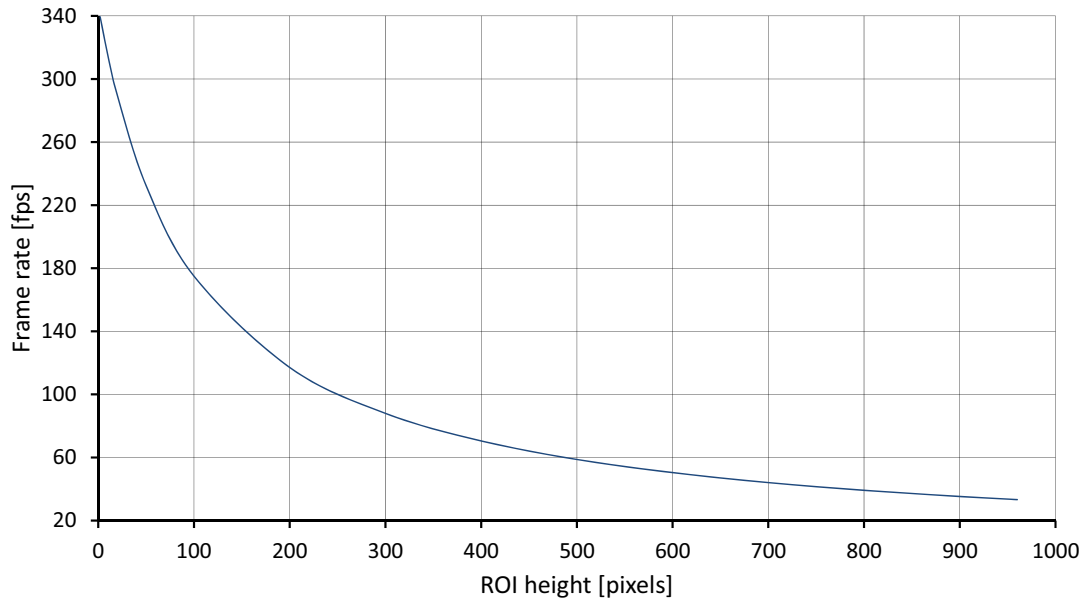


Figure 3: Frame rate as a function of ROI height [width=1280 pixels]

Height (pixels)	Frame rate	Height (pixels)	Frame rate	Height (pixels)	Frame rate
960	33.3	500	58.8	50	232.4
900	35.3	400	70.5	20	289.5
800	39.2	300	88	10	315.2
700	44.1	200	117.1	2	339.4
600	50.4	100	175		

Table 9: Frame rate as a function of ROI height [width=1280 pixels]

The following table shows how binning affects frame rate.

BinningVertical	Height (pixels)	Frame rate	BinningVertical	Height (pixels)	Frame rate
2	480	60.8	8	120	158.3
3	320	83.8	9	106	168.7
4	240	103.3	10	96	176.9
5	192	120	11	86	185.1
6	160	134.5	12	80	191.9
7	136	147.8			

Table 10: Frame rate as a function of ROI height with vertical binning enabled

Prosilica GT1380, GT1380C

Feature	Specification	
	Prosilica GT1380	Prosilica GT1380C
Resolution	1360 (H) × 1024 (V) 1.4 MP	
Sensor	Sony ICX285AL with EXview HAD CCD™ technology	Sony ICX285AQ with EXview HAD CCD™ technology
Sensor type	Interline CCD, Progressive Scan	
Shutter type	Global	
Sensor format	Type 2/3	
Sensor size	11.0 mm diagonal	
Pixel size	6.45 µm × 6.45 µm	
Lens mount	Default: C-Mount Optional: See the <i>Modular Concept</i>	
Housing	Standard format housing	
Optical filter	Default: No optical filter Optional: See the <i>Modular Concept</i>	Default: IRC30 IR cut filter Optional: See the <i>Modular Concept</i>
Maximum frame rate at full resolution	30.5 fps	
Maximum image bit depth	12/14 bit	
Image buffer	128 MB	
StreamHoldCapacity	T.B.D	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed, Mono14	Mono8
YUV color pixel formats		YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats		RGB8Packed, BGR8Packed
RAW pixel formats		BayerRG8, BayerRG12, BayerRG12Packed
Exposure time control	10 µs to 77.3 s; 1 µs increments	
Gain control	0 to 34 dB; 1 dB increments	
Binning	Horizontal: 1 to 8 columns Vertical: 1 to 14 rows	
Decimation X/Y	Horizontal and vertical: 1, 2, 4, 8 factor	
Sensor taps	Single-tap	
Power consumption	3.4 W at 12 VDC; 4.2 W PoE	
Trigger latency	2.2 µs	
Trigger jitter	±20 ns	

Table 11: Prosilica GT1380, GT1380C model specifications

Feature	Specification	
	Prosilica GT1380	Prosilica GT1380C
Propagation delay (t_{pd})	30 ns for non-isolated I/O; 70 ns for isolated I/O	
Operating temperature	-20 °C to +65 °C ambient temperature (without condensation)	
Storage temperature	-20 °C to +70 °C ambient temperature (without condensation)	
Operating humidity	20 to 80% non-condensing	
Body dimensions (L × W × H)	86 × 53.3 × 33 mm	
Mass (typical)	211 g	
Temperature monitoring	Available for main board and sensor board. Resolution: 0.031; Accuracy: ±1 °C	

Table 11: Prosilica GT1380, GT1380C model specifications (continued)

Absolute QE

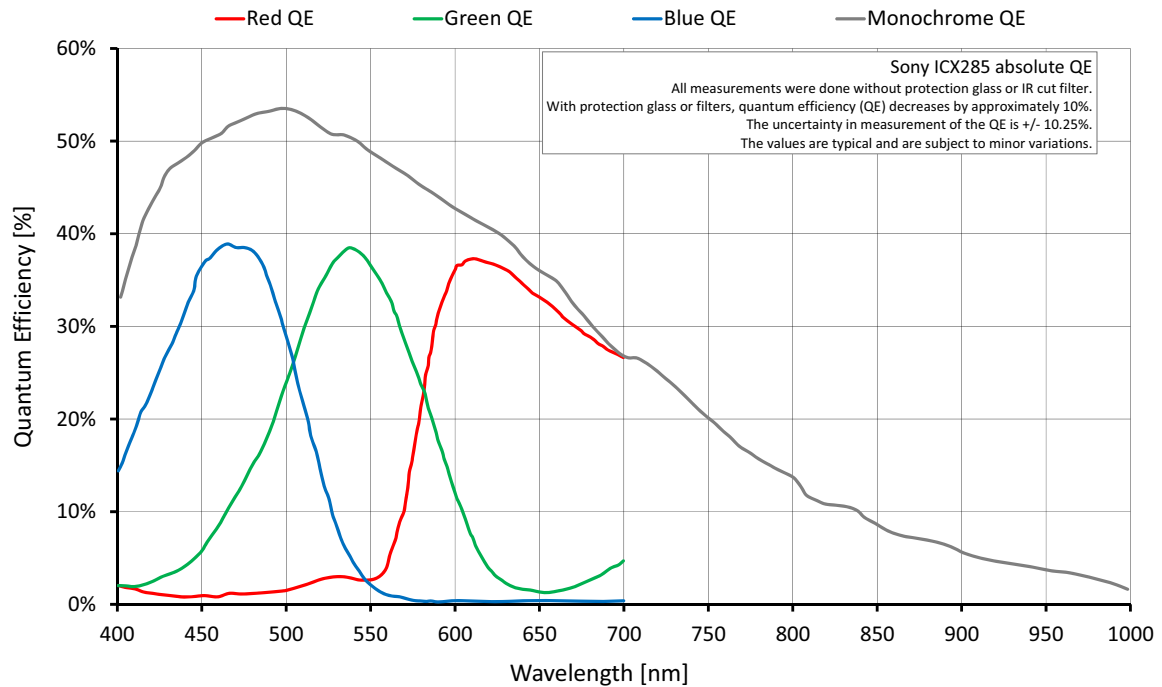


Figure 4: Prosilica GT1380, GT1380C (Sony ICX285) absolute QE

Spectral response

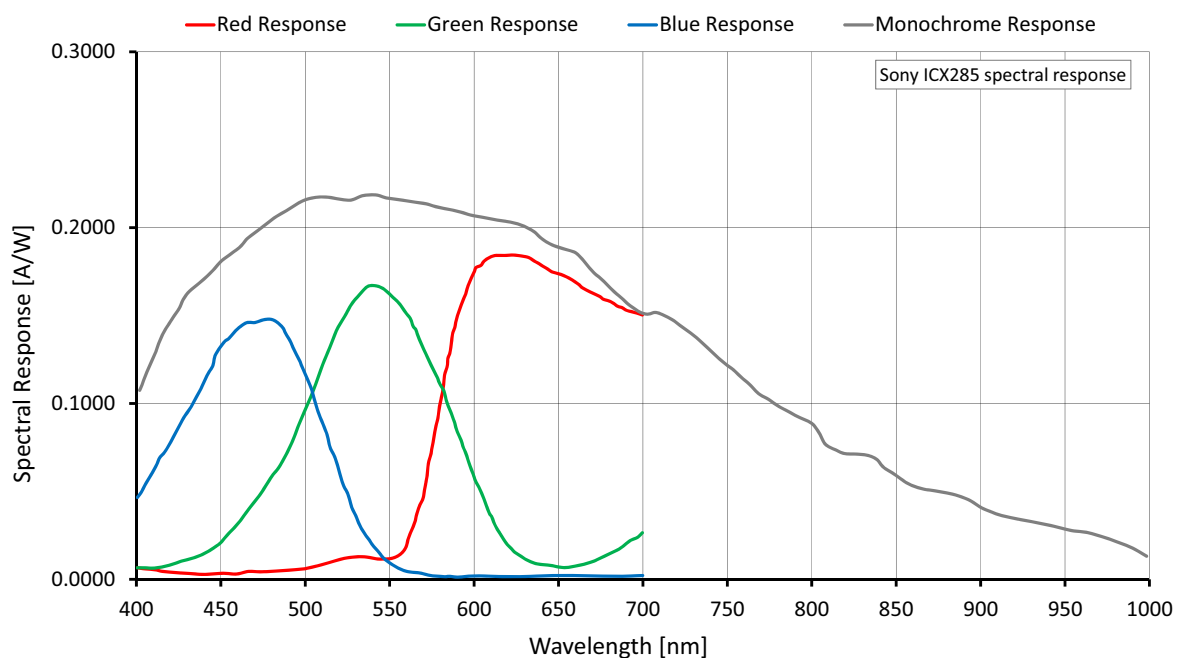


Figure 5: Prosilica GT1380, GT1380C (Sony ICX285) spectral response

ROI frame rate

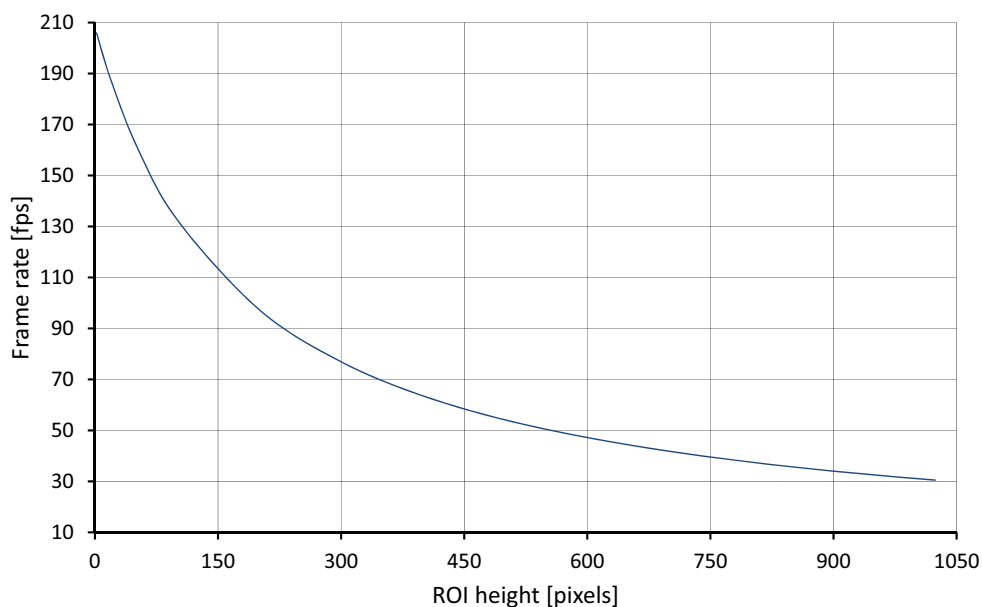


Figure 6: Frame rate as a function of ROI height [width=1360 pixels]

Height (pixels)	Frame rate	Height (pixels)	Frame rate	Height (pixels)	Frame rate
1024	30.5	600	47.2	100	132.7
1000	31.1	500	54.1	50	162.1
900	34	400	63.5	20	186.9
800	37.5	300	76.9	10	197
700	41.8	200	97.4	2	205.9

Table 12: Frame rate as a function of ROI height [width=1360 pixels]

The following table shows how binning affects frame rate.

BinningVertical	Height (pixels)	Frame rate	BinningVertical	Height (pixels)	Frame rate
2	512	53.2	9	113	125.6
3	341	70.7	10	102	130.4
4	256	84.6	11	93	134.6
5	204	96.0	12	85	138.5
6	170	105.4	13	78	142.1
7	146	113.1	14	73	144.7
8	128	119.6			

Table 13: Frame rate as a function of ROI height with vertical binning enabled

Prosilica GT1600, GT1600C

Feature	Specification	
	Prosilica GT1600	Prosilica GT1600C
Resolution	1620 (H) × 1220 (V) 2 MP	
Sensor	Sony ICX274AL with Super HAD CCD™ technology	Sony ICX274AQ with Super HAD Wfine CCD™ technology
Sensor type	Interline CCD, Progressive Scan	
Shutter type	Global	
Sensor format	Type 1/1.8	
Sensor size	8.923 mm diagonal	
Pixel size	4.4 μm × 4.4 μm	
Lens mount	Default: C-Mount Optional: See the <i>Modular Concept</i>	
Housing	Standard format housing	
Optical filter	Default: No optical filter Optional: See the <i>Modular Concept</i>	Default: IRC30 IR cut filter Optional: See the <i>Modular Concept</i>
Maximum frame rate at full resolution	25.8 fps	
Maximum image bit depth	12/14 bit	
Image buffer	128 MB	
StreamHoldCapacity	Up to 33 frames at full resolution	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed, Mono14	Mono8
YUV color pixel formats		YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats		RGB8Packed, BGR8Packed
RAW pixel formats		BayerRG8, BayerRG12, BayerRG12Packed
Exposure time control	10 μs to 68.7 s, 1 μs increments	
Gain control	0 to 26 dB; 1 dB increments	
Binning	Horizontal: 1 to 8 columns; Vertical: 1 to 14 rows	
Decimation X/Y	Horizontal and vertical: 1, 2, 4, 8 factor	
Sensor taps	Single-tap	
Power consumption	3.3 W at 12 VDC; 4.0 W PoE	
Trigger latency	1.4 μs	
Trigger jitter	±20 ns	

Table 14: Prosilica GT1600, GT1600C model specifications

Feature	Specification	
	Prosilica GT1600	Prosilica GT1600C
Propagation delay (t_{pd})	30 ns for non-isolated I/O; 70 ns for isolated I/O	
Operating temperature	-20 °C to +65 °C ambient temperature (without condensation)	
Storage temperature	-20 °C to +70 °C ambient temperature (without condensation)	
Operating humidity	20 to 80% non-condensing	
Body dimensions (L × W × H)	86 × 53.3 × 33 mm	
Mass (typical)	211 g	
Temperature monitoring	Available for main board and sensor board. Resolution: 0.031; Accuracy: ±1 °C	

Table 14: Prosilica GT1600, GT1600C model specifications (continued)

Absolute QE

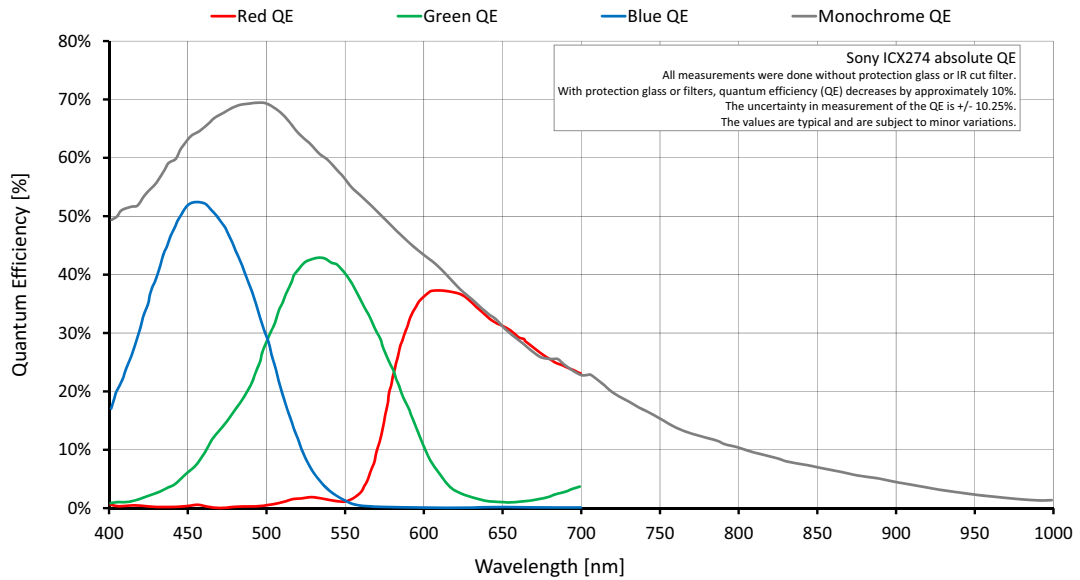


Figure 7: Prosilica GT1600, GT1600C (Sony ICX274) absolute QE

Spectral response

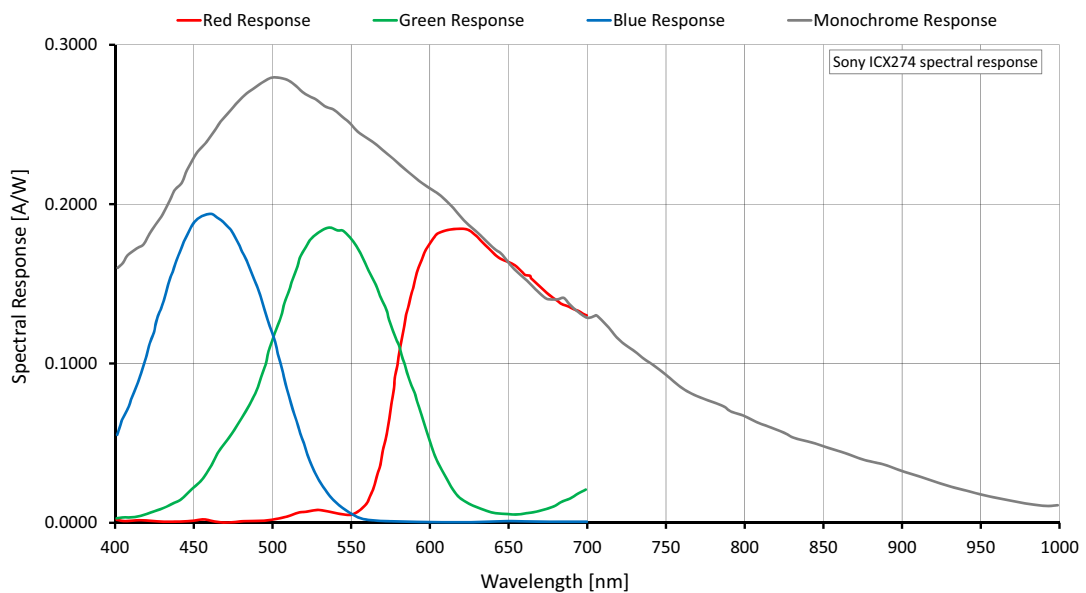


Figure 8: Prosilica GT1600, GT1600C (Sony ICX274) spectral response

ROI frame rate

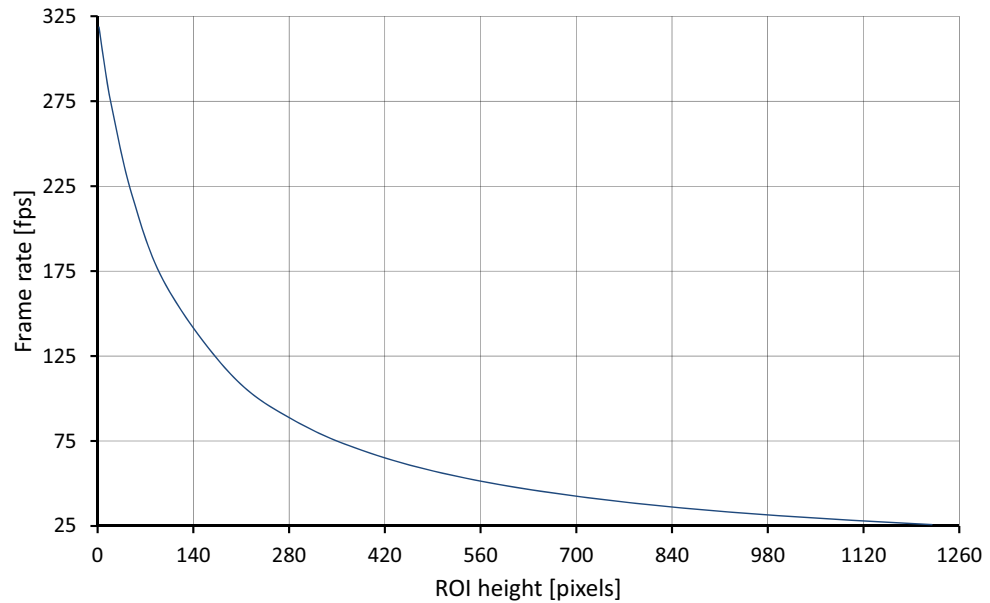


Figure 9: Frame rate as a function of ROI height [width=1620 pixels]

Height (pixels)	Frame rate	Height (pixels)	Frame rate	Height (pixels)	Frame rate
1220	25.8	600	48.5	50	220.2
1100	28.4	500	56.5	20	272.9
1000	31	400	67.7	10	296.5
900	34	300	84.4	2	318.6
800	37.8	200	112.1		
700	42.5	100	116.6		

Table 15: Frame rate as a function of ROI height [width=1620 pixels]

The following table shows how binning affects frame rate.

BinningVertical	Height (pixels)	Frame rate	BinningVertical	Height (pixels)	Frame rate
2	610	47.9	9	134	142.2
3	406	66.9	10	122	149.6
4	304	83.5	11	110	157.7
5	244	97.8	12	100	165.2
6	202	111.0	13	92	171.7
7	174	122.1	14	86	176.9
8	152	132.4			

Table 16: Frame rate as a function of ROI height with vertical binning enabled

Prosilica GT1660, GT1660C

Feature	Specification	
	Prosilica GT1660	Prosilica GT1660C
Resolution	1600 (H) × 1200 (V) 1.9 MP	
Sensor	ON Semi KAI-02050 TRUESENSE Gen 2	
Sensor type	Interline CCD, Progressive Scan	
Shutter type	Global	
Sensor format	Type 2/3	
Sensor size	11.0 mm diagonal	
Pixel size	5.5 µm × 5.5 µm	
Lens mount	Default: C-Mount Optional: See the <i>Modular Concept</i>	
Housing	Extended format housing	
Optical filter	Default: No optical filter Optional: See the <i>Modular Concept</i>	Default: IRC30 IR cut filter Optional: See the <i>Modular Concept</i>
Maximum frame rate at full resolution	Four-tap mode: 62.1 fps One-tap mode: 17.9 fps	
Maximum image bit depth	12/14 bit	
Image buffer	128 MB	
StreamHoldCapacity	Up to 68 frames at full resolution	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed, Mono14	Mono8
YUV color pixel formats		YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats		RGB8Packed, BGR8Packed, RGBA8Packed, BGRA8Packed
RAW pixel formats		BayerGR8, BayerGR12, BayerRG12Packed
Exposure time control	10 µs to 26.8 s, 1 µs increments	
Gain control	0 to 32 dB; 1 dB increments	
Binning	Horizontal: 1 to 8 columns Vertical: 1 to 8 rows	
Decimation X/Y	Horizontal and vertical: 1, 2, 4, 8 factor	
Sensor taps	Four-tap Single-tap switchable in Vimba Viewer 2.0 or later	
Power consumption	5.1 W at 12 VDC; 6.3 W PoE	
Trigger latency	2.1 µs	

Table 17: Prosilica GT1660, GT1660C model specifications

Feature	Specification	
	Prosilica GT1660	Prosilica GT1660C
Trigger jitter	± 20 ns	
Propagation delay (t_{pd})	30 ns for non-isolated I/O; 70 ns for isolated I/O	
Operating temperature	-20 °C to +60 °C ambient temperature (without condensation)	
Storage temperature	-20 °C to +70 °C ambient temperature (without condensation)	
Operating humidity	20 to 80% non-condensing	
Body dimensions (L × W × H)	92 × 53.3 × 33 mm	
Mass (typical)	224 g	
Temperature monitoring	Available for main board and sensor board. Resolution: 0.031; Accuracy: ± 1 °C	

Table 17: Prosilica GT1660, GT1660C model specifications (continued)

Absolute QE

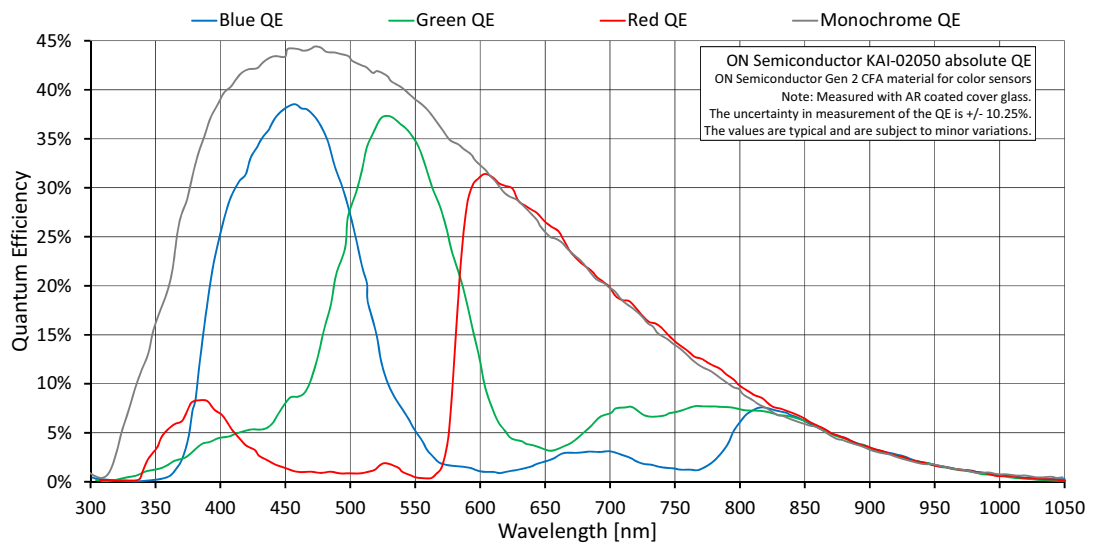


Figure 10: Prosilica GT1660, GT1660C (ON Semi KAI-02050 Gen 2) absolute QE

ROI frame rate

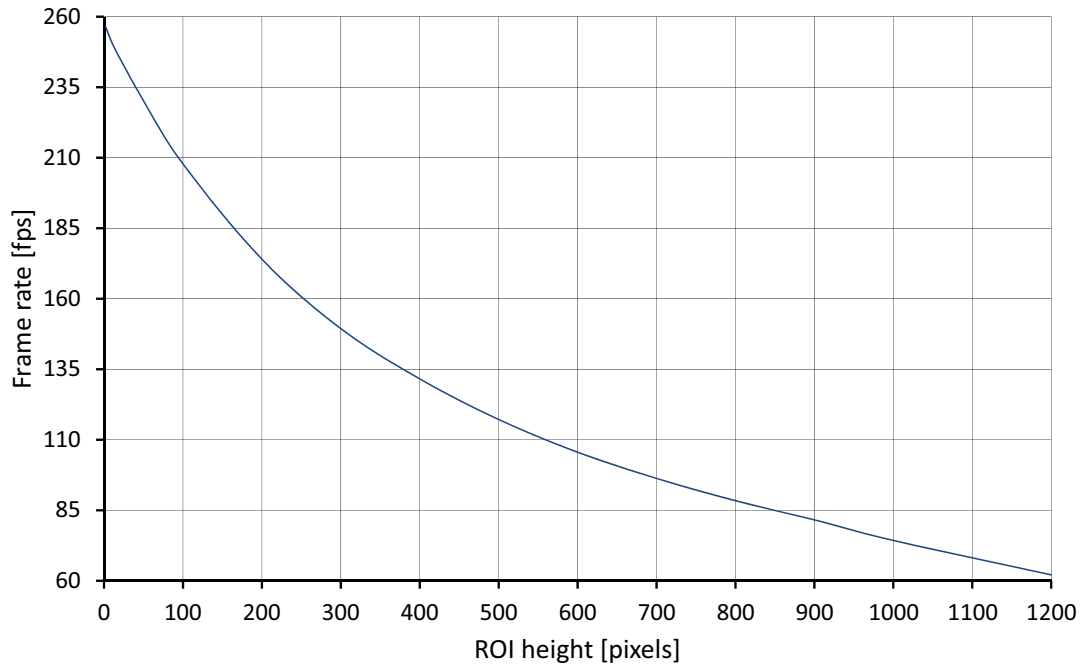


Figure 11: Frame rate as function of ROI height [width=1600 pixels]

Height (pixels)	Frame rate	Height (pixels)	Frame rate	Height (pixels)	Frame rate
1200	62.1	600	105.6	100	207.8
1000	74.3	500	117.2	50	230.2
900	81.6	400	131.6	20	245.3
800	88.4	300	149.4	10	250.8
700	96.3	200	174	2	256.5

Table 18: Frame rate as a function of ROI height [width=1600 pixels]

The following table shows how binning affects frame rate.

BinningVertical	Height (pixels)	Frame rate	BinningVertical	Height (pixels)	Frame rate
2	600	121	6	200	260.8
3	400	165.4	7	170	284.0
4	300	202.8	8	150	303.1
5	240	234.2			

Table 19: Frame rate as a function of ROI height with vertical binning enabled

Prosilica GT1910, GT1910C

Feature	Specification	
	Prosilica GT1910	Prosilica GT1910C
Resolution	1920 (H) × 1080 (V) 2.1 MP	
Sensor	ON Semi KAI-02150 TRUESENSE Gen 2	
Sensor type	Interline CCD, Progressive Scan	
Shutter type	Global	
Sensor format	Type 2/3	
Sensor size	12.1 mm diagonal	
Pixel size	5.5 µm × 5.5 µm	
Lens mount	Default: C-Mount Optional: See the <i>Modular Concept</i>	
Housing	Extended format housing	
Optical filter	Default: No optical filter Optional: See the <i>Modular Concept</i>	Default: IRC30 IR cut filter Optional: See the <i>Modular Concept</i>
Maximum frame rate at full resolution	Four-tap mode: 57.5 fps One-tap mode: 16.9 fps	
Maximum image bit depth	12/14 bit	
Image buffer	128 MB	
StreamHoldCapacity	Up to 63 frames at full resolution	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed, Mono14	Mono8
YUV color pixel formats		YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats		RGB8Packed, BGR8Packed, RGBA8Packed, BGRA8Packed
RAW pixel formats		BayerGR8, BayerGR12, BayerRG12Packed
Exposure time control	10 µs to 26.8 s, 1 µs increments	
Gain control	0 to 32 dB; 1 dB increments	
Binning	Horizontal: 1 to 8 columns Vertical: 1 to 8 rows	
Decimation X/Y	Horizontal and vertical: 1, 2, 4, 8 factor	
Sensor taps	Four-tap Single-tap switchable in Vimba Viewer 2.0 or later	
Power consumption	5.1 W at 12 VDC; 6.3 W PoE	
Trigger latency	2.2 µs	

Table 20: Prosilica GT1910, GT1910C model specifications

Feature	Specification	
	Prosilica GT1910	Prosilica GT1910C
Trigger jitter	± 20 ns	
Propagation delay (t_{pd})	30 ns for non-isolated I/O; 70 ns for isolated I/O	
Operating temperature	-20 °C to +60 °C ambient temperature (without condensation)	
Storage temperature	-20 °C to +70 °C ambient temperature (without condensation)	
Operating humidity	20 to 80% non-condensing	
Body dimensions (L × W × H)	92 × 53.3 × 33 mm	
Mass (typical)	224 g	
Temperature monitoring	Available for main board and sensor board. Resolution: 0.031; Accuracy: ± 1 °C	

Table 20: Prosilica GT1910, GT1910C model specifications (continued)

Absolute QE

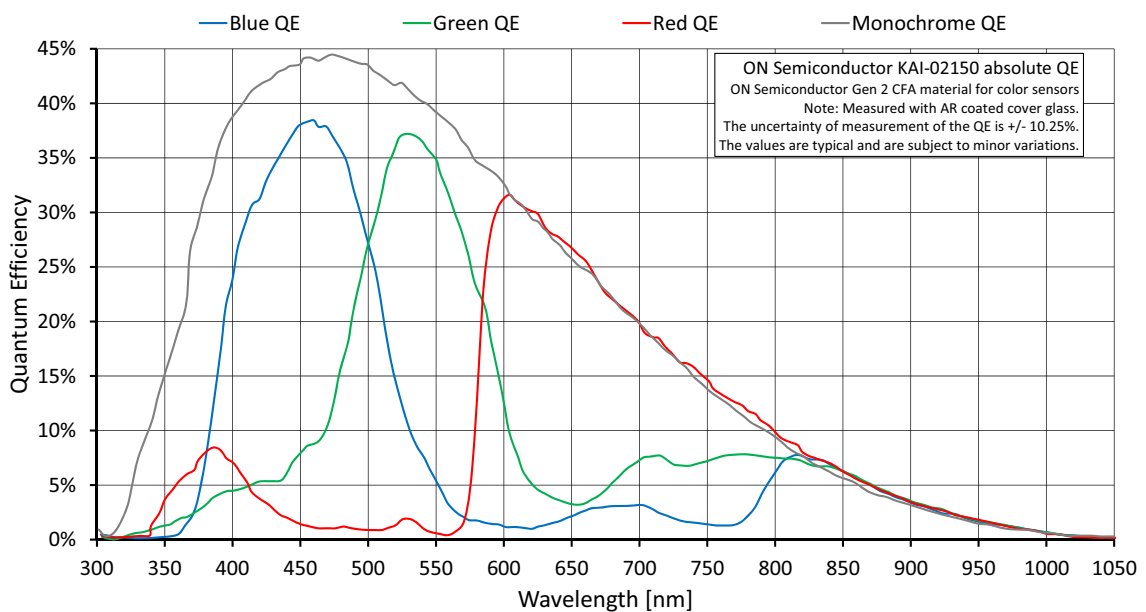


Figure 12: Prosilica GT1910, GT1910C (ON Semi KAI-02150 Gen 2) absolute QE

ROI frame rate

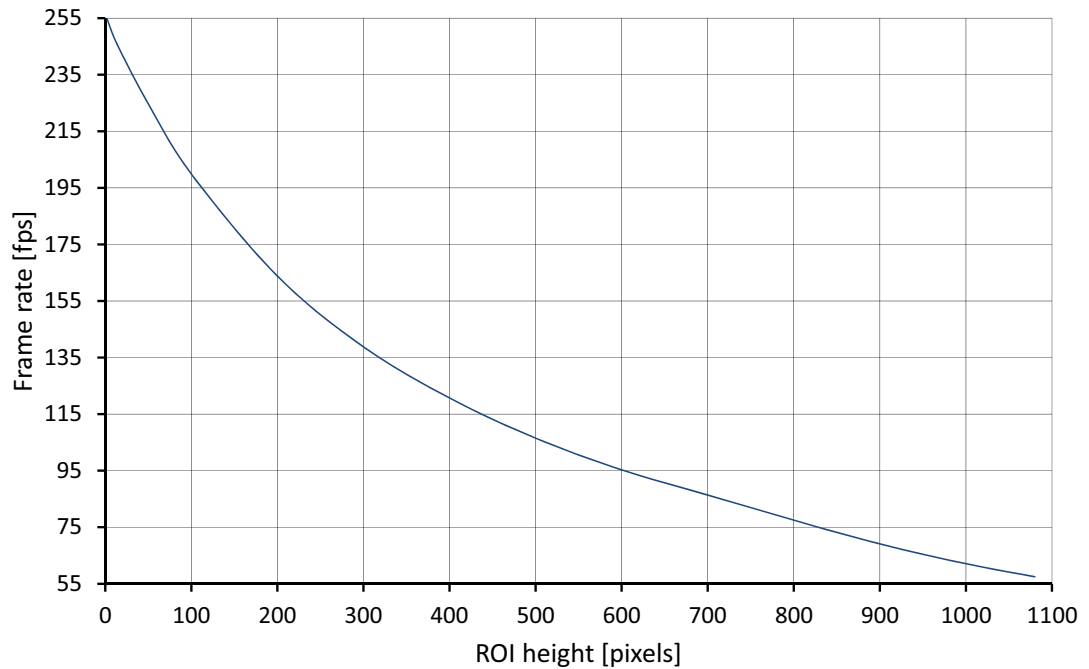


Figure 13: Frame rate as a function of ROI height [width=1920 pixels]

Height (pixels)	Frame rate	Height (pixels)	Frame rate	Height (pixels)	Frame rate
1080	57.5	600	95.3	100	199.9
1000	62.1	500	106.5	50	224.7
900	69.1	400	120.7	20	241.9
800	77.5	300	138.8	10	248.3
700	86.4	200	163.8	2	254.8

Table 21: Frame rate as a function of ROI height [width=1920 pixels]

The following table shows how binning affects frame rate.

BinningVertical	Height (pixels)	Frame rate	BinningVertical	Height (pixels)	Frame rate
2	540	114.1	6	180	258.5
3	360	160.8	7	154	282.6
4	270	198.7	8	134	304.0
5	216	230.8			

Table 22: Frame rate as a function of ROI height with vertical binning enabled

Prosilica GT1920, GT1920C

Feature	Specification	
	Prosilica GT1920	Prosilica GT1920C
Resolution	1936 (H) × 1456 (V) 2.8 MP	
Sensor	Sony ICX674ALG with EXview HAD II™ microlens technology	Sony ICX674AQG with EXview HAD II™ microlens technology
Sensor type	Interline CCD, Progressive Scan	
Shutter type	Global	
Sensor format	Type 2/3	
Sensor size	10.972 mm diagonal	
Pixel size	4.54 μm × 4.54 μm	
Lens mount	Default: C-Mount Optional: See the <i>Modular Concept</i>	
Housing	Extended format housing	
Optical filter	Default: No optical filter Optional: See the <i>Modular Concept</i>	Default: IRC30 IR cut filter Optional: See the <i>Modular Concept</i>
Maximum frame rate at full resolution	Four-tap mode: 40.7 fps One-tap mode: 11.6 fps	
Maximum image bit depth	12/14 bit	
Image buffer	128 MB	
StreamHoldCapacity	T.B.D	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed, Mono14	Mono8
YUV color pixel formats		YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats		RGB8Packed, BGR8Packed, RGBA8Packed, BGRA8Packed
RAW pixel formats		BayerGR8, BayerGR12, BayerRG12Packed
Exposure time control	10 μs to 26.8 s, 1 μs increments	
Gain control	0 to 33 dB; 1 dB increments	
Binning	Horizontal: 1 to 8 columns Vertical: 1 to 8 rows	
Decimation X/Y	Horizontal and vertical: 1, 2, 4, 8 factor	
Sensor taps	Four-tap Single-tap switchable in Vimba Viewer 2.0 or later	
Power consumption	4.9 W at 12 VDC; 6.0 W PoE	

Table 23: Prosilica GT1920, GT1920C model specifications

Feature	Specification	
	Prosilica GT1920	Prosilica GT1920
Trigger latency	2 μ s	
Trigger jitter	\pm 20 ns	
Propagation delay (t_{pd})	30 ns for non-isolated I/O; 70 ns for isolated I/O	
Operating temperature	-20 °C to +60 °C ambient temperature (without condensation)	
Storage temperature	-20 °C to +70 °C ambient temperature (without condensation)	
Operating humidity	20 to 80% non-condensing	
Body dimensions (L \times W \times H)	92 \times 53.3 \times 33 mm	
Mass (typical)	224 g	
Temperature monitoring	Available for main board and sensor board. Resolution: 0.031; Accuracy: \pm 1 °C	

Table 23: Prosilica GT1920, GT1920C model specifications (continued)

Absolute QE

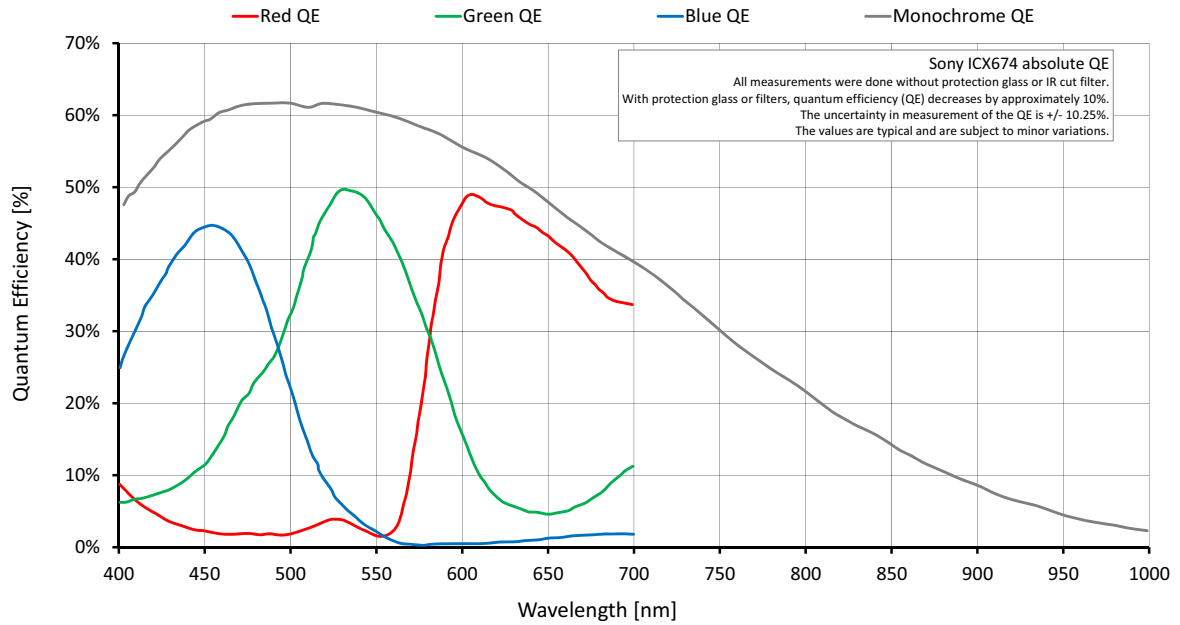


Figure 14: Prosilica GT1920, GT1920C (Sony ICX674) absolute QE

Spectral response

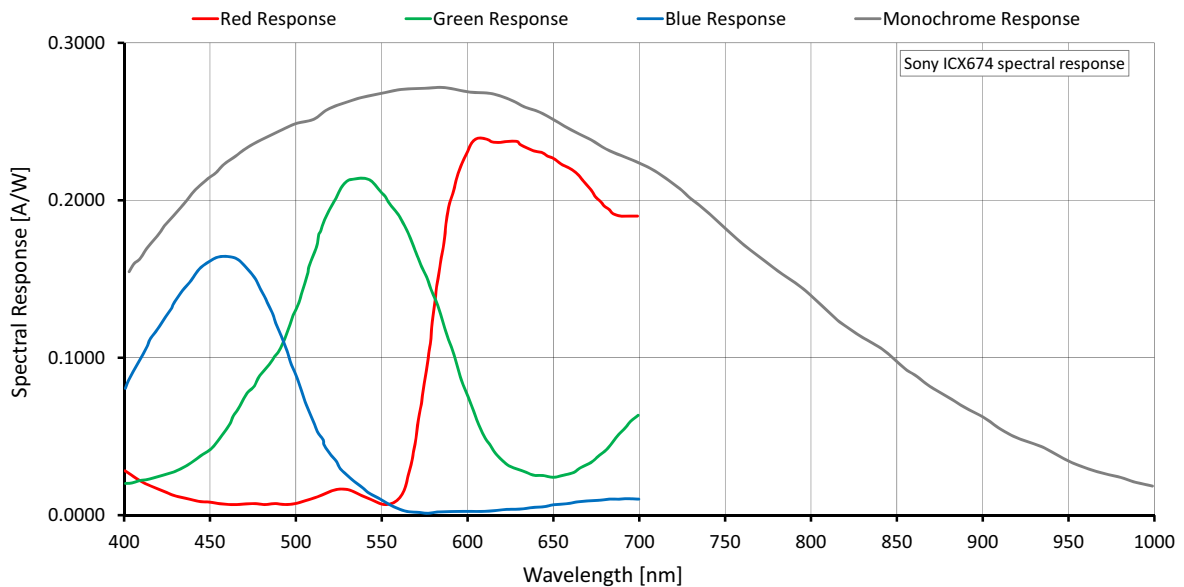


Figure 15: Prosilica GT1920, GT1920C (Sony ICX674) spectral response

ROI frame rate

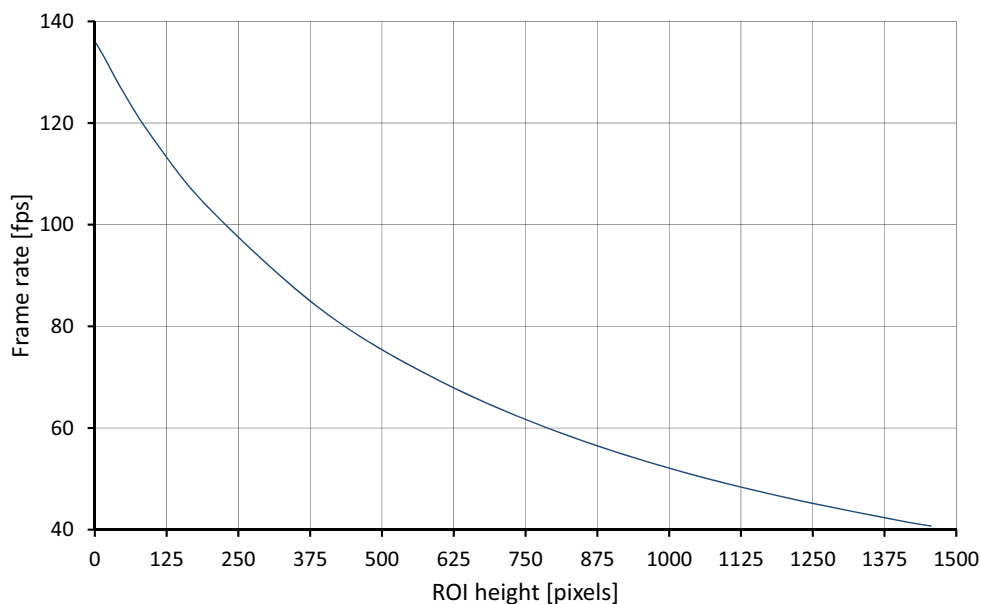


Figure 16: Frame rate as function of ROI height [width=1936 pixels]

Height (pixels)	Frame rate	Height (pixels)	Frame rate	Height (pixels)	Frame rate
1456	40.7	600	69.3	20	132.2
1400	41.8	400	82.8	10	134.2
1200	46.4	200	103.1	2	135.7
1000	52.1	100	117.2		
800	59.5	50	126		

Width=1936 pixels

Table 24: Frame rate as a function of ROI height

The following table shows how binning affects frame rate.

BinningVertical	Height (pixels)	Frame rate	BinningVertical	Height (pixels)	Frame rate
2	728	70.3	6	242	135.1
3	484	92.8	7	208	144.1
4	364	110.0	8	182	151.7
5	290	124.1			

Table 25: Frame rate as a function of ROI height with vertical binning enabled

Prosilica GT1930, GT1930C

	Specification			
Feature	Prosilica GT1930		Prosilica GT1930C	
Resolution	1936 (H) × 1216 (V) 2.4 MP			
Sensor	Sony IMX174LLJ Exmor with Pregius® global shutter		Sony IMX174LQJ Exmor with Pregius® global shutter	
Sensor type	CMOS			
Shutter type	Global			
Sensor format	Type 1/1.2			
Sensor size	13.4 mm diagonal			
Pixel size	5.86 μm × 5.86 μm			
Lens mount	Default: C-Mount Optional: See the <i>Modular Concept</i>			
Housing ¹	Standard format housing			
Optical filter	Default: No optical filter Optional: See the <i>Modular Concept</i>		Default: IRC30 IR cut filter Optional: See the <i>Modular Concept</i>	
Maximum frame rate at full resolution	50.7 fps 55.8 fps burst mode ²			
Maximum image bit depth	12-bit			
Image buffer	128 MB			
StreamHoldCapacity	Up to 56 frames at full resolution			
Monochrome pixel formats	Mono8, Mono12, Mono12Packed		Mono8	
YUV color pixel formats			YUV411Packed, YUV422Packed, YUV444Packed	
RGB color pixel formats			RGB8Packed, BGR8Packed	
RAW pixel formats			BayerRG8, BayerRG12	
Exposure time control	Pixel format	Range	Pixel format	Range
	Mono8, Mono12, Mono12Packed	42 μs to 88 s	Mono8, BayerRG8, BayerRG12, YUV411Packed, YUV422Packed	28 μs to 88 s 14 μs increments
			RGB8Packed, BGR8Packed, YUV444Packed	56 μs to 88 s 28 μs increments
Gain control	0.0 to 40.0 dB, 0.1 dB increments			

Table 26: Prosilica GT1930, GT1930C model specifications

	Specification	
Feature	Prosilica GT1930	Prosilica GT1930C
Binning	Horizontal: 1 to 4 pixels Vertical: 1 to 4 rows	
Decimation X/Y	Horizontal and vertical: 1, 2, 4, 8 factor	
Power consumption	3.4 W at 12 VDC; 4.2 W PoE	
Trigger latency ³	50.1 μs	
Trigger jitter ³	±7.2 μs	
Propagation delay (t_{pd})	30 ns for non-isolated I/O; 70 ns for isolated I/O	
Operating temperature	-20 °C to +65 °C ambient temperature (without condensation)	
Storage temperature	-20 °C to +70 °C ambient temperature (without condensation)	
Operating humidity	20 to 80% non-condensing	
Body dimensions (L × W × H)	86 × 53 × 33 mm	
Mass (typical)	211 g	
Temperature monitoring	Available for main board and sensor board. Resolution: 0.031; Accuracy: ±1 °C	

¹ The Prosilica GT1930, GT1930C housing lens protrusion is 2.3 mm shorter than a regular standard housing.

² These values are calculated directly from the microcontroller source. These values are only valid for pixel formats ≤16 bit per pixel.

³ GigE host controller card with jumbo packets is required. See *Hardware Selection for Allied Vision GigE Cameras* application note for a list of recommended GigE host controller cards.

Table 26: Prosilica GT1930, GT1930C model specifications (continued)

Absolute QE

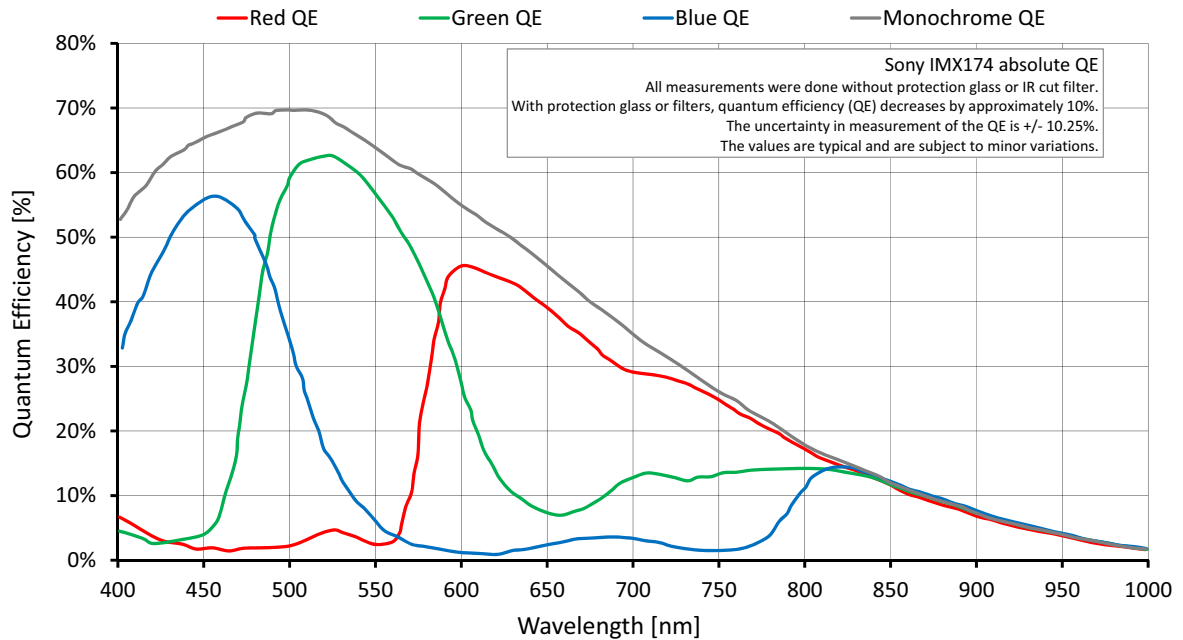


Figure 17: Prosilica GT1930, GT1930C (Sony IMX174) absolute QE

Spectral response

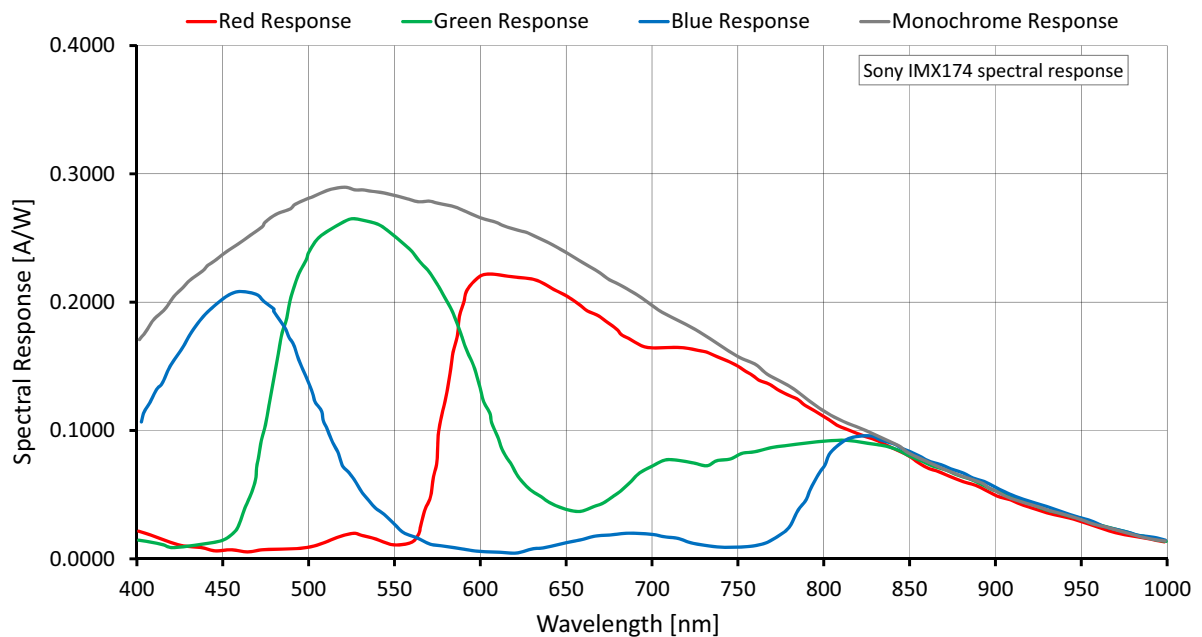


Figure 18: Prosilica GT1930, GT1930C (Sony IMX174) spectral response

ROI frame rate

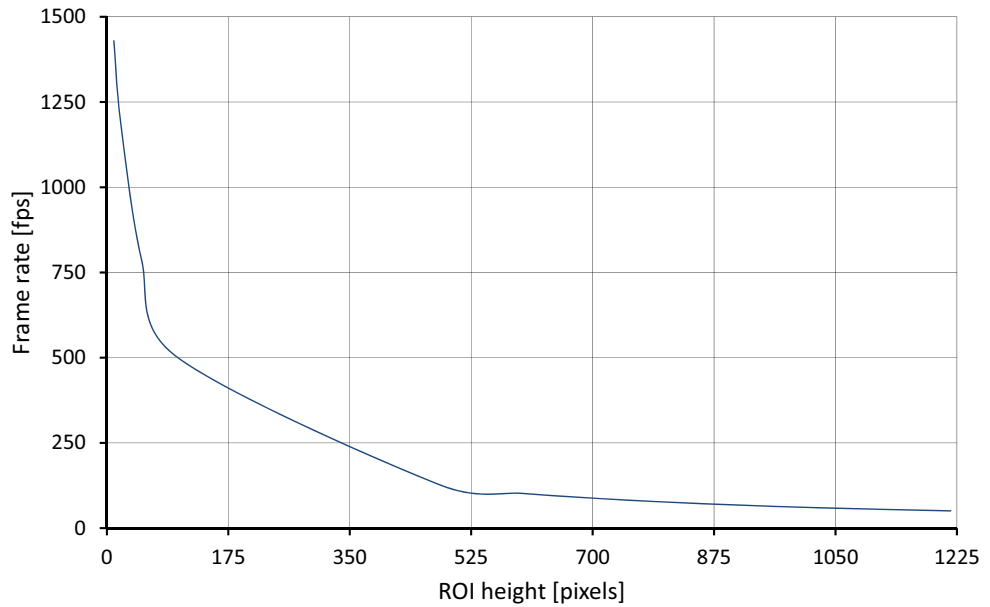


Figure 19: Frame rate as a function of ROI height [width=1936 pixels]



There will be an increase in frame rate with reduced width if the camera is bandwidth limited.

Height (pixels)	Frame rate
1216	50.7
1200	51.4
1080	57
1024	60

Width=1936 pixels

Height (pixels)	Frame rate
960	64
768	80.1
600	102
480	126.9

Height (pixels)	Frame rate
100	503.6
50	787
20	1187.2
10	1429.4

Table 27: Frame rate as a function of ROI height

Prosilica GT1930L, GT1930LC

	Specification			
Feature	Prosilica GT1930L		Prosilica GT1930LC	
Resolution	1936 (H) × 1216 (V) 2.4 MP			
Sensor	Sony IMX174LLJ Exmor with Pregius® global shutter		Sony IMX174LQJ Exmor with Pregius® global shutter	
Sensor type	CMOS			
Shutter type	Global			
Sensor format	Type 1/1.2			
Sensor size	13.4 mm diagonal			
Pixel size	5.86 μm × 5.86 μm			
Lens mount ¹	Default: EF-Mount PA Optional: See the <i>Modular Concept</i>			
Housing	Large format housing			
Optical filter	Default: No optical filter Optional: See the <i>Modular Concept</i>		Default: IRC30 IR cut filter Optional: See the <i>Modular Concept</i>	
Maximum frame rate at full resolution	50.7 fps 55.8 fps burst mode ²			
Maximum image bit depth	12-bit			
Image buffer	128 MB			
StreamHoldCapacity	Up to 56 frames at full resolution			
Monochrome pixel formats	Mono8, Mono12, Mono12Packed		Mono8	
YUV color pixel formats			YUV411Packed, YUV422Packed, YUV444Packed	
RGB color pixel formats			RGB8Packed, BGR8Packed	
RAW pixel formats			BayerRG8, BayerRG12	
Exposure time control	Pixel format	Range	Pixel format	Range
	Mono8, Mono12, Mono12Packed	42 μs to 88 s	Mono8, BayerRG8, BayerRG12, YUV411Packed, YUV422Packed	28 μs to 88 s 14 μs increments
			RGB8Packed, BGR8Packed, YUV444Packed	56 μs to 88 s 28 μs increments
Gain control	0.0 to 40.0 dB, 0.1 dB increments			
Binning	Horizontal: 1 to 4 pixels; Vertical: 1 to 4 rows			
Decimation X/Y	Horizontal and vertical: 1, 2, 4, 8 factor			

Table 28: Prosilica GT1930L, GT1930LC model specifications

Feature	Specification	
	Prosilica GT1930L	Prosilica GT1930LC
Power consumption	3.24 W at 12 VDC; 3.88 W PoE	
Trigger latency ³	50.1 μ s	
Trigger jitter ³	\pm 7.2 μ s	
Propagation delay (t_{pd})	30 ns for non-isolated I/O; 70 ns for isolated I/O	
Operating temperature ⁴	-30 to +75 °C DeviceTemperatureSelector = <i>Sensor</i> , -30 to +80 °C DeviceTemperatureSelector = <i>Main</i> , -30 to +70 °C housing temperature (without condensation), -30 to +65 °C ambient temperature (without condensation)	
Storage temperature	-40 °C to +80 °C ambient temperature (without condensation)	
Operating humidity	20 to 80% non-condensing	
Body dimensions (L × W × H)	96 × 66 × 53.3 mm	
Mass (typical)	372 g	
Temperature monitoring	Available for main board and sensor board. Resolution: 0.031; Accuracy: \pm 1 °C	

¹ To enable EF lens control on Prosilica GT cameras you must update firmware to version 01.54.14263 or later.

² GigE host controller card with jumbo packets is required. See the *Hardware Selection for Allied Vision GigE Cameras* application note for a list of recommended GigE host controller cards.

³ These values are calculated directly from the microcontroller source. These values are only valid for pixel formats \leq 16 bit per pixel.

⁴ Selects the site which temperature is reported. For more information on DeviceStatus, see the *GigE Features Reference*.

Table 28: Prosilica GT1930L, GT1930LC model specifications (continued)

Absolute QE

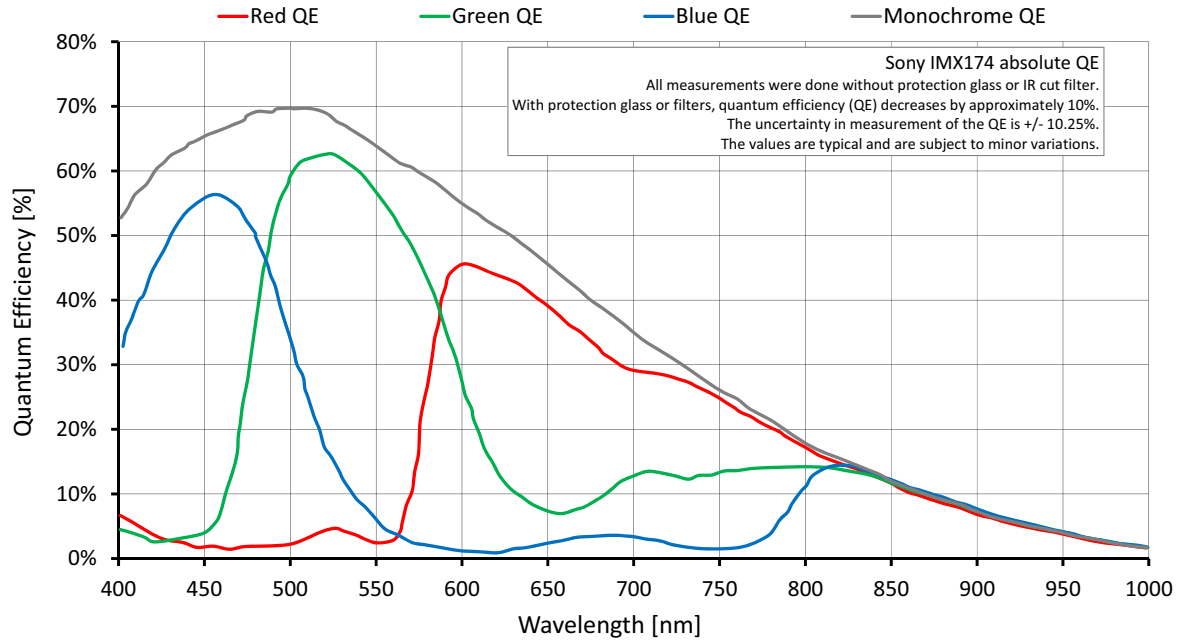


Figure 20: Prosilica GT1930L, GT1930LC (Sony IMX174) absolute QE

Spectral response

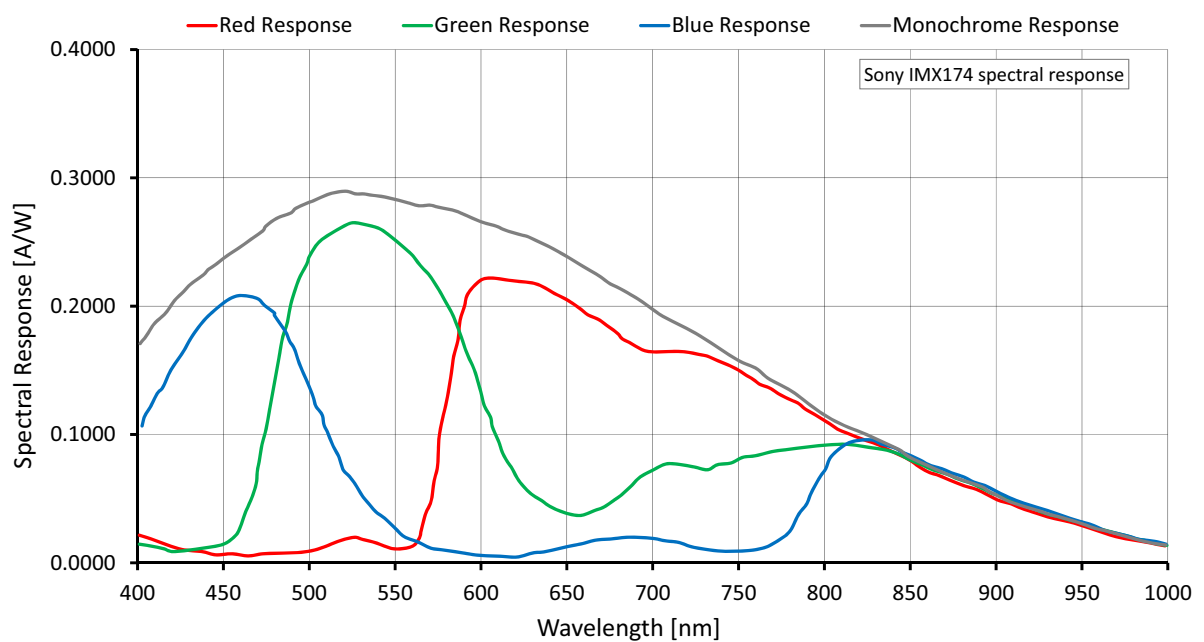


Figure 21: Prosilica GT1930L, GT1930LC (Sony IMX174) spectral response

ROI frame rate

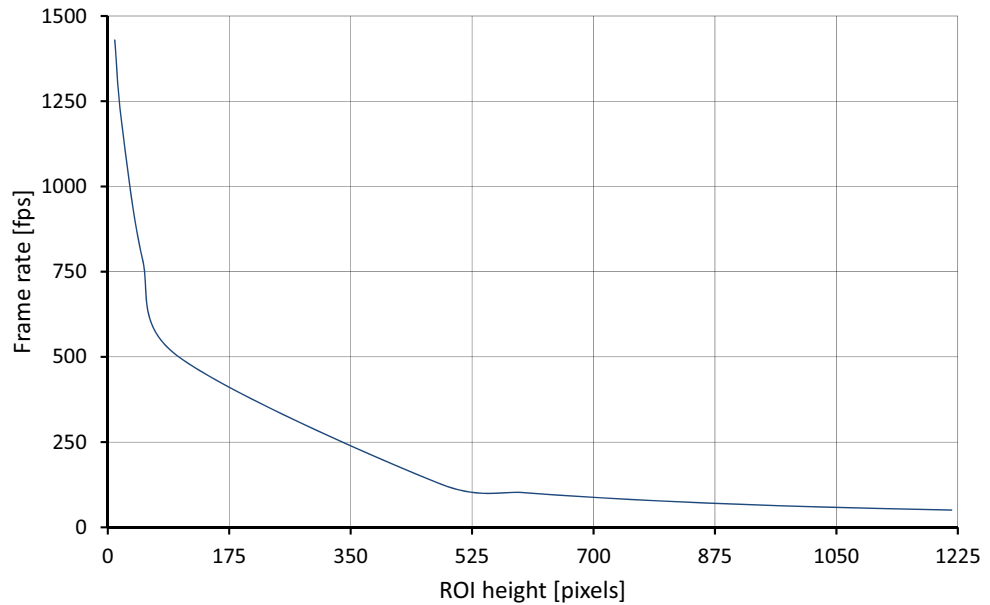


Figure 22: Frame rate as a function of ROI height [width=1936 pixels]



There will be an increase in frame rate with reduced width if the camera is bandwidth limited.

Height (pixels)	Frame rate
1216	50.7
1200	51.4
1080	57
1024	60

Width=1936 pixels

Height (pixels)	Frame rate
960	64
768	80.1
600	102
480	126.9

Height (pixels)	Frame rate
100	503.6
50	787
20	1187.2
10	1429.4

Table 29: Frame rate as a function of ROI height

Prosilica GT2000, GT2000NIR, GT2000C

Feature	Specification	
	Prosilica GT2000, GT2000NIR	Prosilica GT2000C
Resolution	2048 (H) × 1088 (V) 2.2 MP	
Sensor	CMOSIS/ams CMV2000	
Sensor type	CMOS	
Shutter type	Global	
Sensor format	Type 2/3	
Sensor size	12.7 mm diagonal	
Pixel size	5.5 μm × 5.5 μm	
Lens mount ¹	Default: C-Mount Optional: See the <i>Modular Concept</i>	
Housing	Standard format housing	
Optical filter	Default: No optical filter Optional: See the <i>Modular Concept</i>	Default: IRC30 IR cut filter Optional: See the <i>Modular Concept</i>
Maximum frame rate at full resolution	53.7 fps 60.1 fps burst mode ²	
Maximum image bit depth	12-bit	
Image buffer	128 MB	
StreamHoldCapacity	Up to 29 frames at full resolution	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed	Mono8
YUV color pixel formats		YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats		RGB8Packed, BGR8Packed, RGBA8Packed, BGRA8Packed
RAW pixel formats		BayerGB8, BayerGB12, BayerGB12Packed
Exposure time control ³	25 μs to 122 s, 1 μs increments	
Gain control	0 to 26 dB; 1 dB increments	
Decimation X/Y	Horizontal and vertical: 1, 2, 4, 8 factor	
Power consumption	3.4 W at 12 VDC; 4.2 W PoE	
Trigger latency	700 ns	
Trigger jitter	±20 ns	
Propagation delay (t_{pd})	30 ns for non-isolated I/O; 70 ns for isolated I/O	
Operating temperature	-20 °C to +65 °C ambient temperature (without condensation)	
Storage temperature	-20 °C to +70 °C ambient temperature (without condensation)	

Table 30: Prosilica GT2000, GT2000NIR, GT2000C model specifications

Feature	Specification	
	Prosilica GT2000, GT2000NIR	Prosilica GT2000C
Operating humidity	20 to 80% non-condensing	
Body dimensions (L × W × H)	86 × 53.3 × 33 mm	
Mass (typical)	210 g	
Temperature monitoring	Available for main board only. Resolution: 0.031; Accuracy: ±1 °C	
¹ 1 inch format lens recommended		
² GigE host controller card with jumbo packets is required. See the <i>Hardware Selection for Allied Vision GigE Cameras</i> application note for a list of recommended GigE host controller cards.		
³ Camera firmware version 01.52.8151 shows minimum exposure values without frame overhead time, that is, 1 μs. See the sensor data sheet for details on frame overhead time.		

Table 30: Prosilica GT2000, GT2000NIR, GT2000C model specifications (continued)

Absolute QE

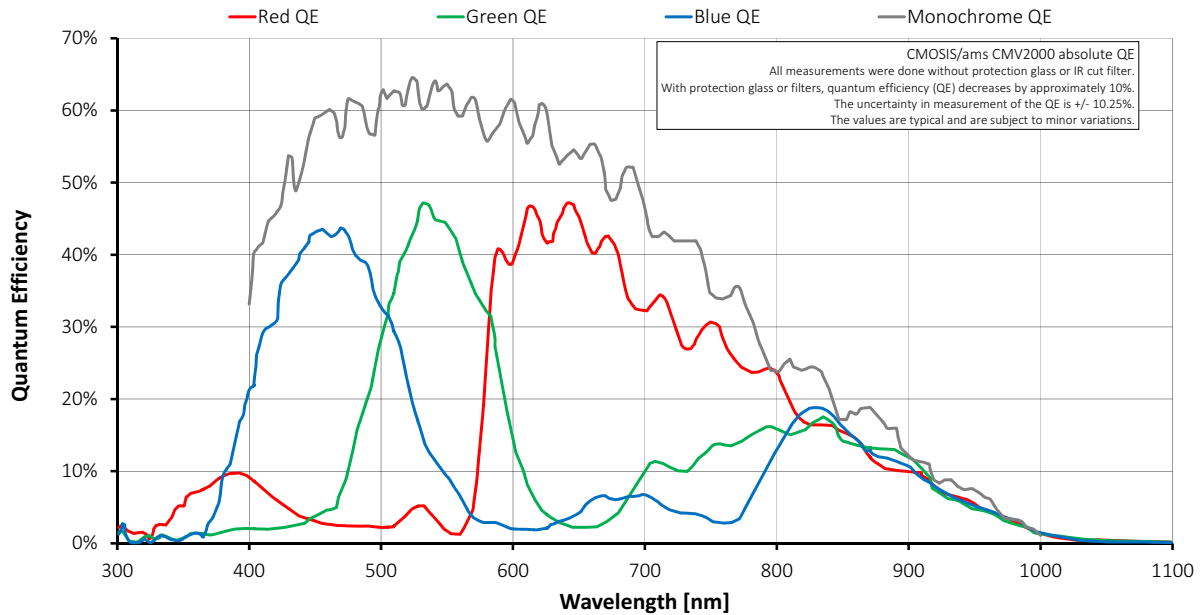


Figure 23: Prosilica GT2000, GT2000C (CMOSIS/ams CMV2000) absolute QE

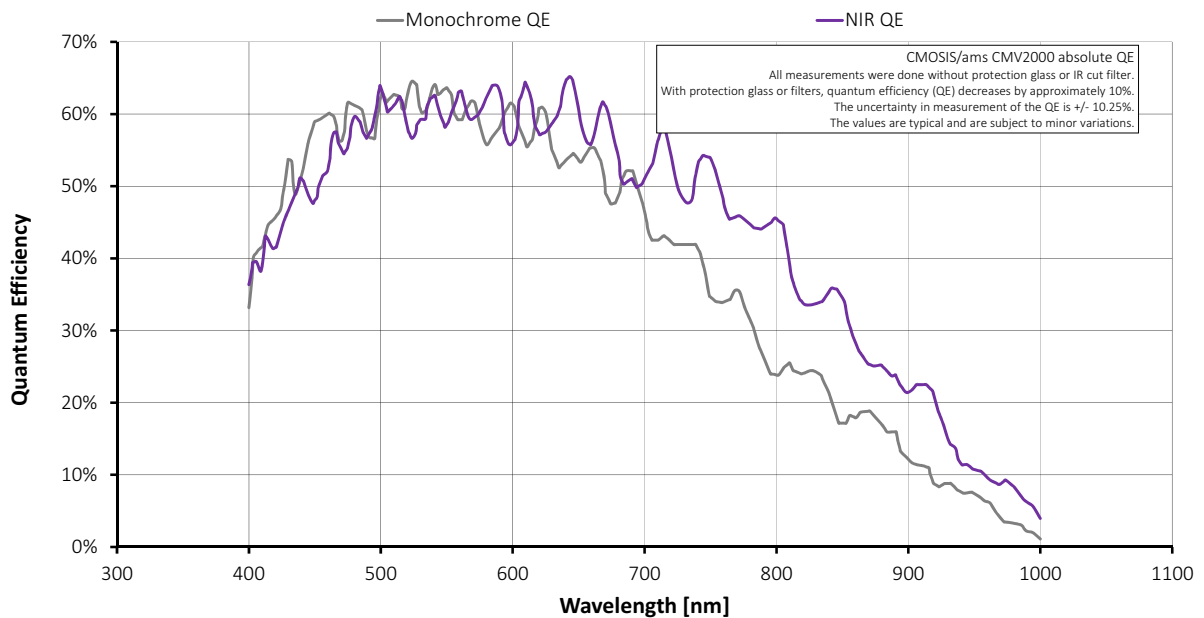


Figure 24: Prosilica GT2000, GT2000NIR (CMOSIS/ams CMV2000) absolute QE

ROI frame rate

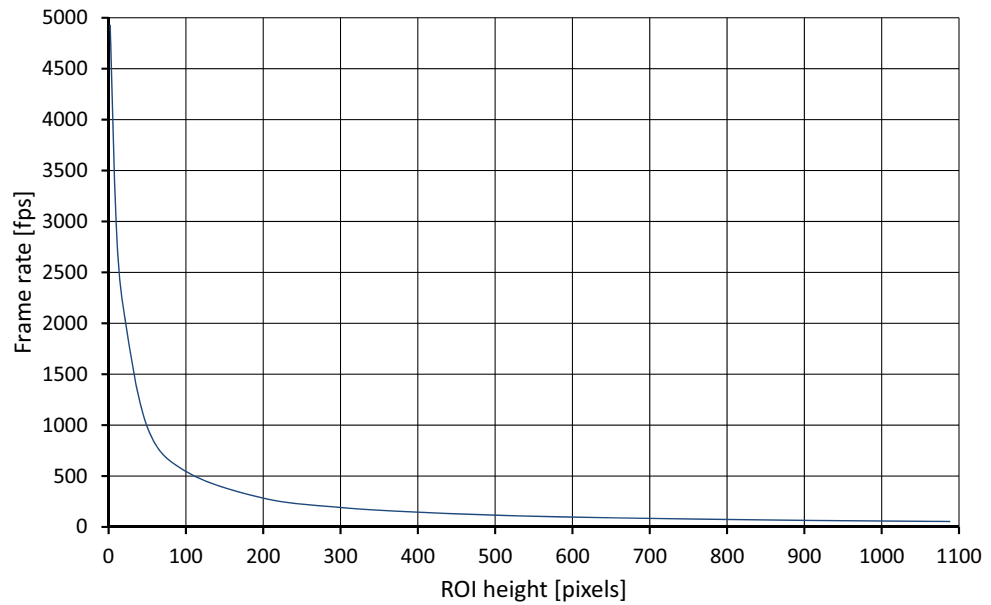


Figure 25: Frame rate as a function of ROI height [width=2048 pixels]

Height (pixels)	Frame rate	Height (pixels)	Frame rate	Height (pixels)	Frame rate
1088	53.7	600	96.8	100	545.3
1000	58.4	500	115.9	50	981.4
900	64.8	400	144.3	20	2105.3
800	72.9	300	191.2	10	2949.9
700	83.2	200	283.1	2	4926.1

Width=2048 pixels

Table 31: Frame rate as a function of ROI height



There will be an increase in frame rate with reduced width if the camera is bandwidth limited.

Prosilica GT2050, GT2050NIR, GT2050C

Feature	Specification	
	Prosilica GT2050, GT2050NIR	Prosilica GT2050C
Resolution	2048 (H) × 2048 (V) 4.2 MP	
Sensor	CMOSIS/ams CMV4000	
Sensor type	CMOS	
Shutter type	Global	
Sensor format	Type 1	
Sensor size	16.0 mm diagonal	
Pixel size	5.5 μm × 5.5 μm	
Lens mount	Default: C-Mount Optional: See the <i>Modular Concept</i>	
Housing	Standard format housing	
Optical filter	Default: No optical filter Optional: See the <i>Modular Concept</i>	Default: IRC30 IR cut filter Optional: See the <i>Modular Concept</i>
Maximum frame rate at full resolution	28.6 fps 32.0 burst mode ¹	
Maximum image bit depth	12-bit	
Image buffer	128 MB	
StreamHoldCapacity	Up to 15 frames at full resolution	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed	Mono8
YUV color pixel formats		YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats		RGB8Packed, BGR8Packed, RGBA8Packed, BGRA8Packed
RAW pixel formats		BayerGB8, BayerGB12, BayerGB12Packed
Exposure time control ²	34 μs to 126.2 s, 1 μs increments	
Gain control	0 to 26 dB; 1 dB increments	
Decimation X/Y	Horizontal and vertical: 1, 2, 4, 8 factor	
Power consumption	3.5 W at 12 VDC; 4.3 W PoE	
Trigger latency	700 ns	
Trigger jitter	±20 ns	
Propagation delay (t_{pd})	30 ns for non-isolated I/O; 70 ns for isolated I/O	
Operating temperature	-20 °C to +65 °C ambient temperature (without condensation)	
Storage temperature	-20 °C to +70 °C ambient temperature (without condensation)	

Table 32: Prosilica GT2050, GT2050NIR, GT2050C model specifications

Feature	Specification	
	Prosilica GT2050, GT2050NIR	Prosilica GT2050C
Operating humidity	20 to 80% non-condensing	
Body dimensions (L × W × H)	86 × 53.3 × 33 mm	
Mass (typical)	210 g	
Temperature monitoring	Available for main board only. Resolution: 0.031; Accuracy: ±1 °C	
¹ GigE host controller card with jumbo packets is required. See the <i>Hardware Selection for Allied Vision GigE Cameras</i> application note for a list of recommended GigE host controller cards.		
² Camera firmware version ≤ 01.52.8151 shows minimum exposure values without frame overhead time, that is, 1 μs. See the sensor data sheet for details on frame overhead time.		

Table 32: Prosilica GT2050, GT2050NIR, GT2050C model specifications (continued)

Absolute QE

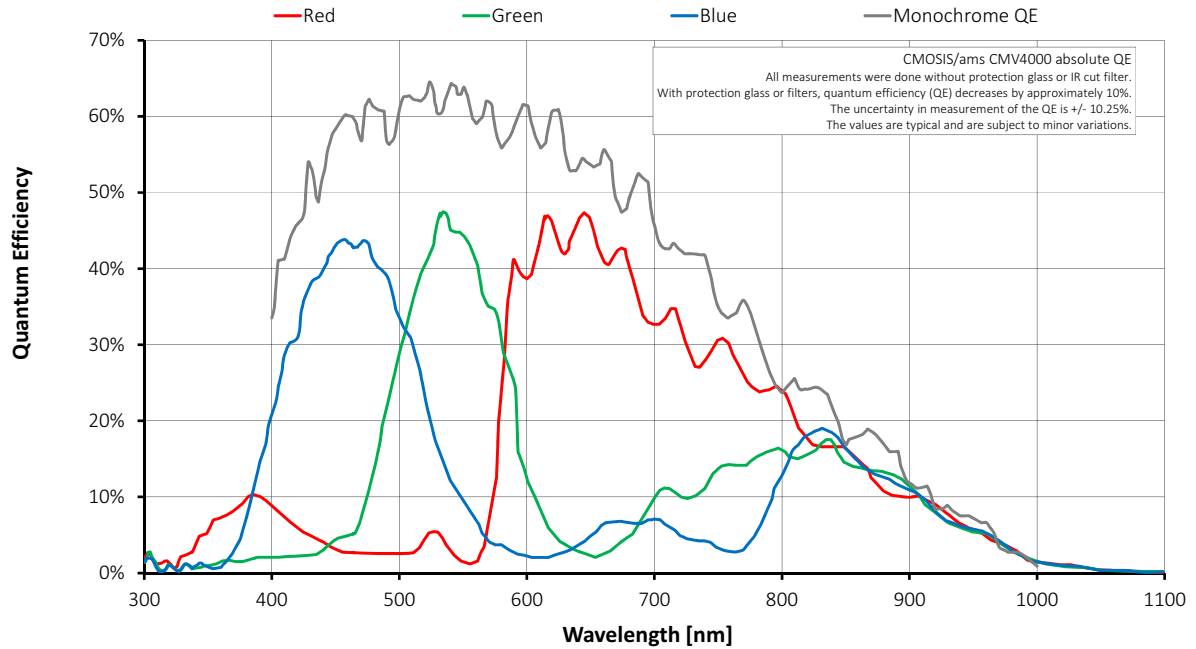


Figure 26: Prosilica GT2050, GT2050C (CMOSIS/ams CMV4000) absolute QE

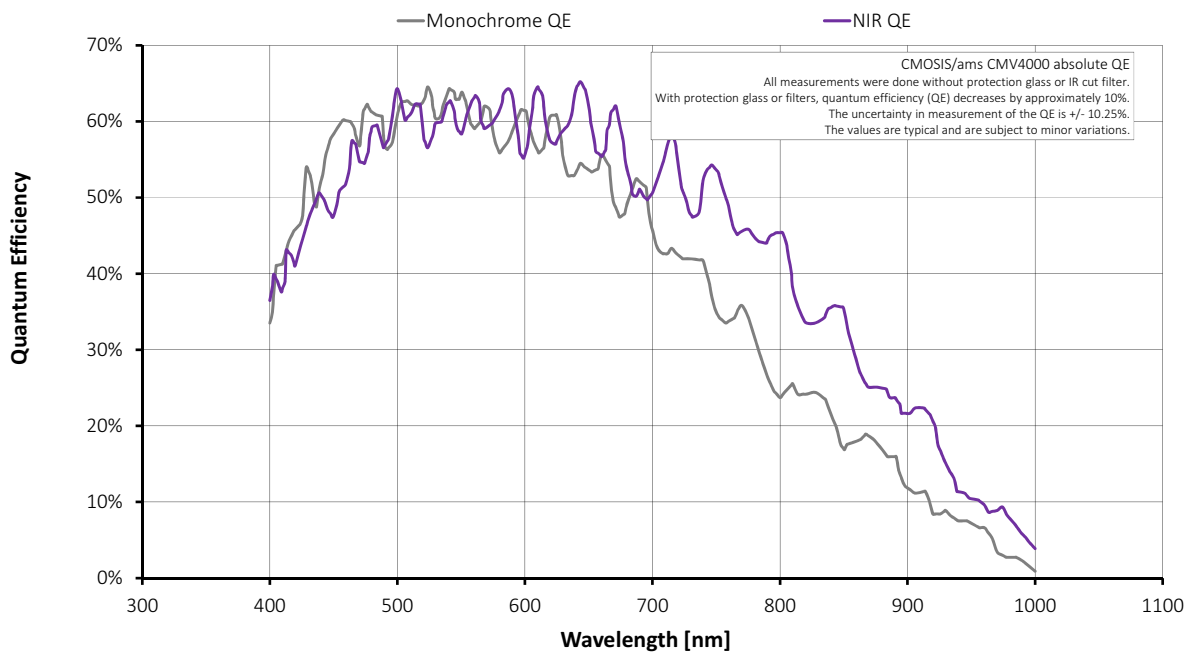


Figure 27: Prosilica GT2050, GT2050NIR (CMOSIS/ams CMV4000) absolute QE

ROI frame rate

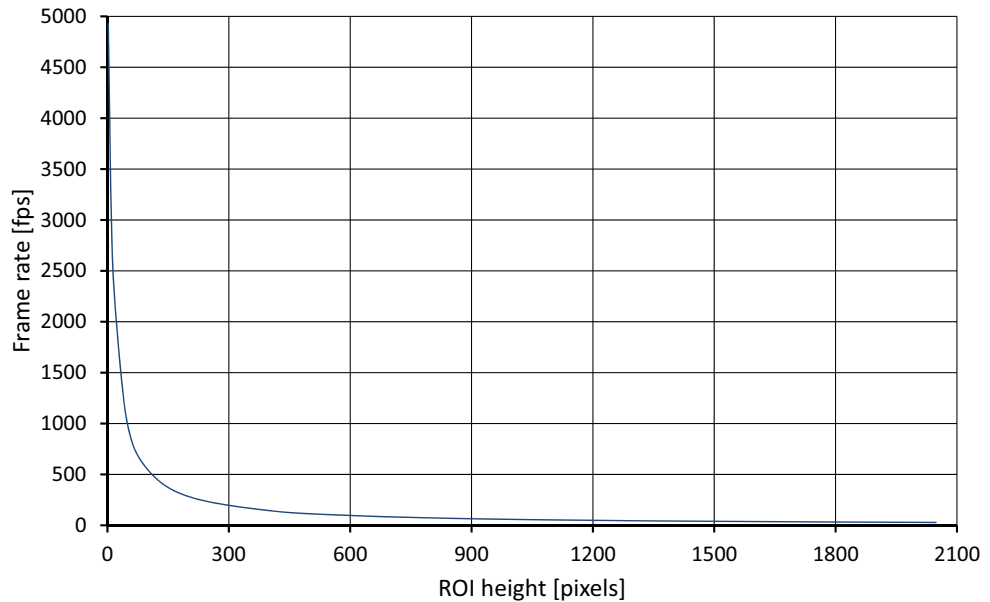


Figure 28: Frame rate as a function of ROI height [width=2048 pixels]

Height (pixels)	Frame rate
2048	28.6
2000	29.3
1800	32.6
1600	36.6
1400	41.8
1200	48.7

Height (pixels)	Frame rate
1000	58.4
800	72.9
600	96.8
400	144.3
200	283.1
100	545.3

Height (pixels)	Frame rate
50	981.4
20	2105.3
10	2949.9
2	4926.1

Width=2048 pixels

Table 33: Frame rate as a function of ROI height



There will be an increase in frame rate with reduced width if the camera is bandwidth limited.

Prosilica GT2300, GT2300C

Feature	Specification	
	Prosilica GT2300	Prosilica GT2300C
Resolution	2336 (H) × 1752 (V) 4.1 MP	
Sensor	ON Semi KAI-04050 TRUESENSE Gen 2	
Sensor type	Interline CCD, Progressive Scan	
Shutter type	Global	
Sensor format	Type 1	
Sensor size	16.06 mm diagonal	
Pixel size	5.5 µm × 5.5 µm	
Lens mount	Default: C-Mount Optional: See the <i>Modular Concept</i>	
Housing	Extended format housing	
Optical filter	Default: No optical filter Optional: See the <i>Modular Concept</i>	Default: IRC30 IR cut filter Optional: See the <i>Modular Concept</i>
Maximum frame rate at full resolution	Four-tap mode: 29.3 fps One-tap mode: 8.7 fps	
Maximum image bit depth	12/14 bit	
Image buffer	128 MB	
StreamHoldCapacity	T.B.D	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed, Mono14	Mono8
YUV color pixel formats		YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats		RGB8Packed, BGR8Packed, RGBA8Packed, BGRA8Packed
RAW pixel formats		BayerGR8, BayerGR12, BayerRG12Packed
Exposure time control	10 µs to 26.8 s, 1 µs increments	
Gain control	0 to 32 dB; 1 dB increments	
Binning	Horizontal: 1 to 8 columns Vertical: 1 to 8 rows	
Decimation X/Y	Horizontal and vertical: 1, 2, 4, 8 factor	
Sensor taps	Four-tap Single-tap switchable in Vimba Viewer 2.0 or later	
Power consumption	4.9 W at 12 VDC; 6.0 W PoE	
Trigger latency	2.2 µs	

Table 34: Prosilica GT2300, GT2300C model specifications

Feature	Specification	
	Prosilica GT2300	Prosilica GT2300C
Trigger jitter	± 20 ns	
Propagation delay (t_{pd})	30 ns for non-isolated I/O; 70 ns for isolated I/O	
Operating temperature	-20 °C to +60 °C ambient temperature (without condensation)	
Storage temperature	-20 °C to +70 °C ambient temperature (without condensation)	
Operating humidity	20 to 80% non-condensing	
Body dimensions (L × W × H)	92 × 53.3 × 33 mm	
Mass (typical)	229 g	
Temperature monitoring	Available for main board and sensor board. Resolution: 0.031; Accuracy: ± 1 °C	

Table 34: Prosilica GT2300, GT2300C model specifications (continued)

Absolute QE

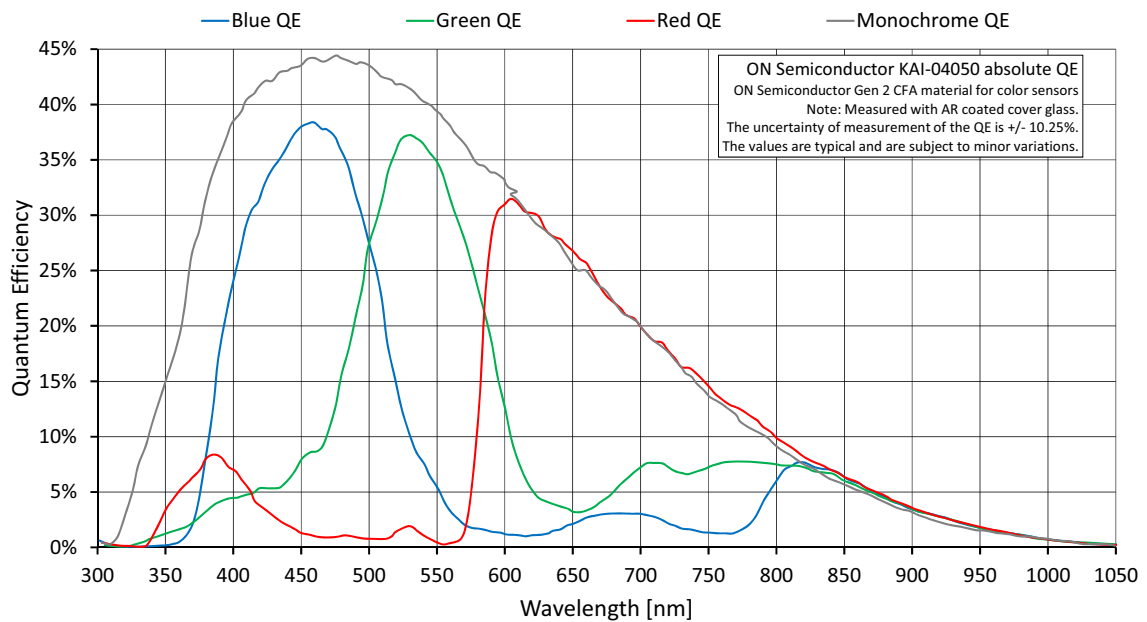


Figure 29: Prosilica GT2300, GT2300C (ON Semi KAI-04050 Gen 2) absolute QE

ROI frame rate

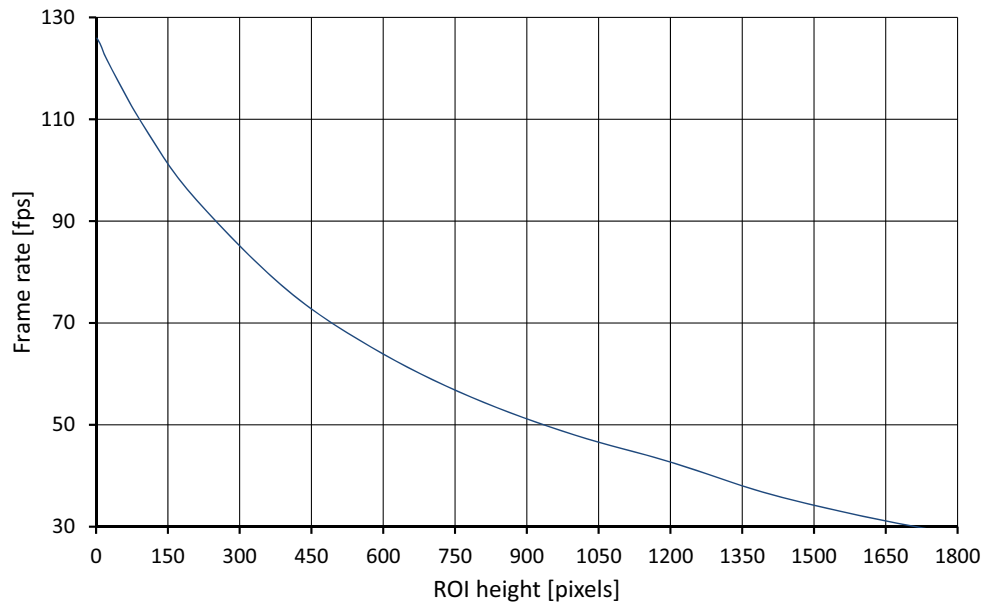


Figure 30: Frame rate as a function of ROI height [width=2336 pixels]

Height (pixels)	Frame rate	Height (pixels)	Frame rate	Height (pixels)	Frame rate
1752	29.3	800	54.8	50	116.8
1600	32.1	600	63.9	20	122.2
1400	36.6	400	76.4	10	124.5
1200	42.7	200	95.2	2	125.9
1000	48	100	108.6		

Width=2336 pixels

Table 35: Frame rate as a function of ROI height

The following table shows how binning affects frame rate.

BinningVertical	Height (pixels)	Frame rate	BinningVertical	Height (pixels)	Frame rate
2	876	58.3	6	292	128.5
3	584	81.4	7	250	140.0
4	438	99.7	8	218	148.9
5	350	115.3			

Table 36: Frame rate as a function of ROI height with vertical binning enabled

Prosilica GT2450, GT2450C

Feature	Specification	
	Prosilica GT2450	Prosilica GT2450C
Resolution	2448 (H) × 2050 (V) 5 MP	
Sensor	Sony ICX625ALA with Super HAD CCD™ technology	Sony ICX625AQA with Super HAD CCD™ technology
Sensor type	Interline CCD, Progressive Scan	
Shutter type	Global	
Sensor format	Type 2/3	
Sensor size	11.016 mm diagonal	
Pixel size	3.45 µm × 3.45 µm	
Lens mount	Default: C-Mount Optional: See the <i>Modular Concept</i>	
Housing	Standard format housing	
Optical filter	Default: No optical filter Optional: See the <i>Modular Concept</i>	Default: IRC30 IR cut filter Optional: See the <i>Modular Concept</i>
Maximum frame rate at full resolution	15 fps	
Maximum image bit depth	12/14 bit	
Image buffer	128 MB	
StreamHoldCapacity	Up to 13 frames at full resolution	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed, Mono14	Mono8
YUV color pixel formats		YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats		RGB8Packed, BGR8Packed
RAW pixel formats		BayerRG8, BayerRG12, BayerRG12Packed
Exposure time control	25 µs to 42.9 s, 1 µs increments	
Gain control	0 to 30 dB; 1 dB increments	
Binning	Horizontal: 1 to 8 columns; Vertical: 1 to 14 rows	
Decimation X/Y	Horizontal and vertical: 1, 2, 4, 8 factor	
Sensor taps	Dual-tap	
Power consumption	3.8 W at 12 VDC; 4.7 W PoE	
Trigger latency	1.1 µs	
Trigger jitter	±20 ns	

Table 37: Prosilica GT2450, GT2450C model specifications

Feature	Specification	
	Prosilica GT2450	Prosilica GT2450C
Propagation delay (t_{pd})	30 ns for non-isolated I/O; 70 ns for isolated I/O	
Operating temperature	-20 °C to +65 °C ambient temperature (without condensation)	
Storage temperature	-20 °C to +70 °C ambient temperature (without condensation)	
Operating humidity	20 to 80% non-condensing	
Body dimensions (L × W × H)	86 × 53.3 × 33 mm	
Mass (typical)	211 g	
Temperature monitoring	Available for main board and sensor board. Resolution: 0.031; Accuracy: ±1 °C	

Table 37: Prosilica GT2450, GT2450C model specifications (continued)

Absolute QE

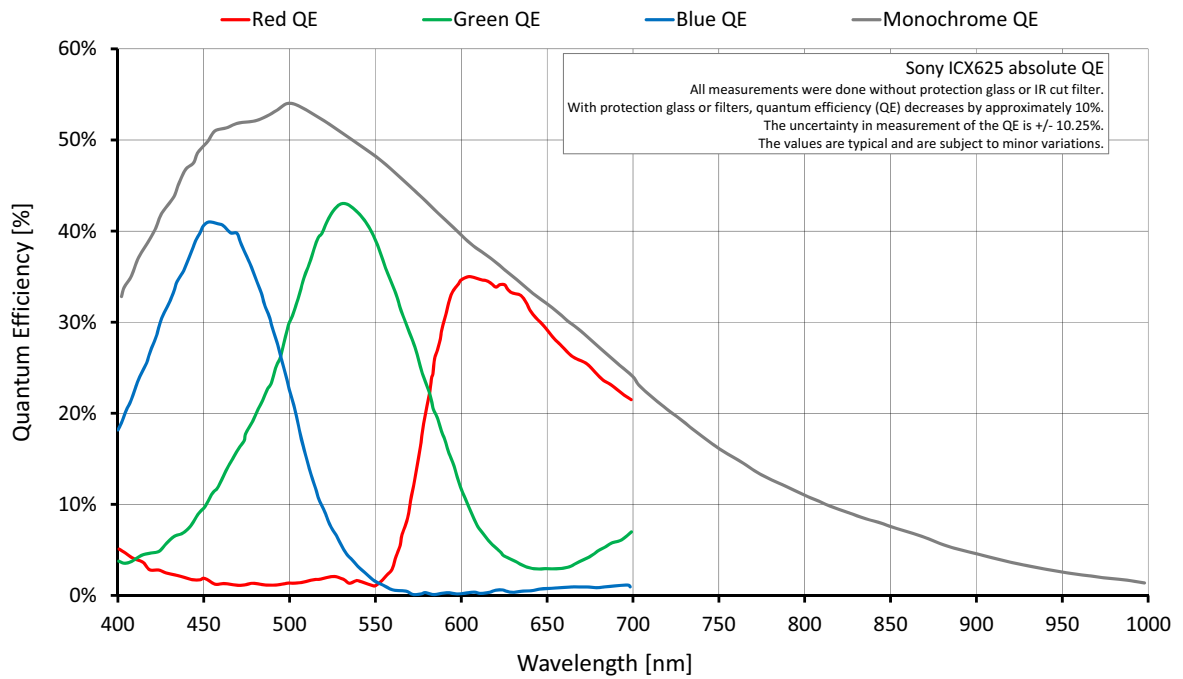


Figure 31: Prosilica GT2450, GT2450C (Sony ICX625) absolute QE

Spectral response

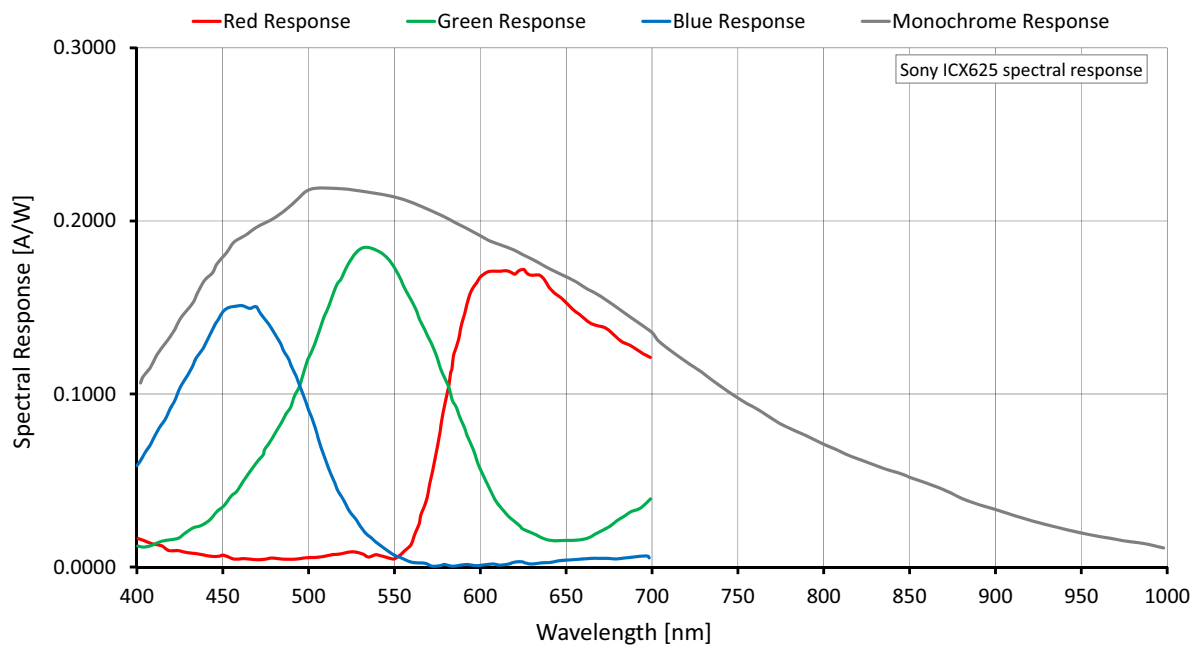


Figure 32: Prosilica GT2450, GT2450C (Sony ICX625) spectral response

ROI frame rate

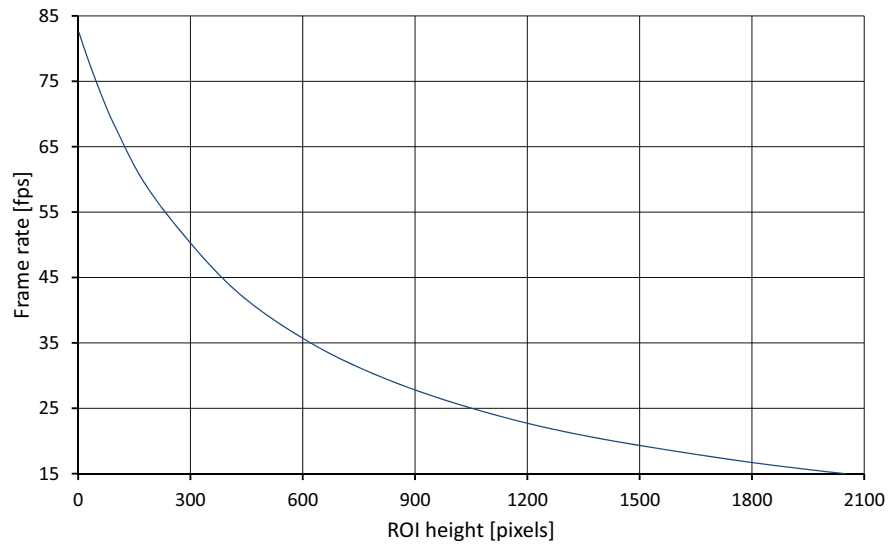


Figure 33: Frame rate as a function of ROI height [width=2448 pixels]

Height (pixels)	Frame rate	Height (pixels)	Frame rate	Height (pixels)	Frame rate
2050	15	1000	25.9	50	74.7
2000	15.3	800	30	20	79.4
1800	16.7	600	35.7	10	81.1
1600	18.4	400	44.1	2	82.5
1400	20.3	200	57.5		
1200	22.7	100	67.9		

Width=2448 pixels

Table 38: Frame rate as a function of ROI height

The following table shows how binning affects frame rate.

BinningVertical	Height (pixels)	Frame rate	BinningVertical	Height (pixels)	Frame rate
2	1025	25.4	9	227	54.8
3	683	33.1	10	205	56.6
4	512	38.9	11	186	58.2
5	410	43.4	12	170	59.6
6	341	47.1	13	157	60.8
7	292	50.2	14	146	61.8
8	256	52.7			

Table 39: Frame rate as a function of ROI height with vertical binning enabled

Prosilica GT2460, GT2460C

Feature	Specification	
	Prosilica GT2460	Prosilica GT2460C
Resolution	2464 (H) × 2056 (V) 5.1 MP	
Sensor	Sony IMX264LLR Exmor with Pregius® global shutter	Sony IMX264LQR Exmor with Pregius® global shutter
Sensor type	CMOS	
Shutter type	Global	
Sensor format	Type 2/3	
Sensor size	11.1 mm diagonal	
Pixel size	3.45 µm × 3.45 µm	
Lens mount	Default: C-Mount Optional: See the <i>Modular Concept</i>	
Housing	Standard format housing	
Optical filter	Default: No optical filter Optional: See the <i>Modular Concept</i>	Default: IRC30 IR cut filter Optional: See the <i>Modular Concept</i>
Maximum frame rate at full resolution	23.7 fps 27.4 fps burst mode ¹	
Maximum image bit depth	12-bit	
Image buffer	128 MB	
StreamHoldCapacity	Up to 26 frames at full resolution	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed	Mono8
YUV color pixel formats		YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats		RGB8Packed, BGR8Packed
RAW pixel formats		BayerRG8, BayerRG12, BayerRG12Packed
Exposure time control	Pixel format	Range
	Mono8, Mono12Packed, BayerRG8, BayerRG12Packed, YUV411Packed	48 µs to 85.9 s, 17.44 µs increments
	Mono12, BayerRG12, YUV422Packed	60 µs to 85.9 s, 23.2 µs increments
	RGB8Packed, BGR8Packed, YUV444Packed	83 µs to 85.9 s, 34.88 µs increments
Gain control	0.0 to 40.0 dB, 0.1 dB increments	
Binning	Horizontal: 1 to 4 pixels Vertical: 1 to 4 rows	
Decimation X/Y	Horizontal and vertical: 1, 2, 4, 8 factor	

Table 40: Prosilica GT2460, GT2460C model specifications

	Specification	
Feature	Prosilica GT2460	Prosilica GT2460C
Power consumption	3.4 W at 12 VDC; 4.2 W PoE	
Trigger latency ²	Pixel format	Value
	Mono8, Mono12Packed, BayerRG8, BayerRG12Packed, YUV411Packed	52.3 μs
	Mono12, BayerRG12, YUV422Packed	69.6 μs
	RGB8Packed, BGR8Packed, YUV444Packed	104.6 μs
Trigger jitter ²	Pixel format	Value
	Mono8, Mono12Packed, BayerRG8, BayerRG12Packed, YUV411Packed	8.72 μs
	Mono12, BayerRG12, YUV422Packed	11.6 μs
	RGB8Packed, BGR8Packed, YUV444Packed	17.44 μs
Propagation delay (t_{pd})	30 ns for non-isolated I/O; 70 ns for isolated I/O	
Operating temperature	-20 °C to +65 °C ambient temperature (without condensation)	
Storage temperature	-20 °C to +70 °C ambient temperature (without condensation)	
Operating humidity	20 to 80% non-condensing	
Body dimensions (L × W × H)	86 × 53.3 × 33 mm	
Mass (typical)	211 g	
Temperature monitoring	Available for main board and sensor board. Resolution: 0.031; Accuracy: ±1 °C	
¹ These values are calculated directly from the microcontroller source. These values are only valid for pixel formats ≤16 bit per pixel.		
² GigE host controller card with jumbo packets is required. See <i>Hardware Selection for Allied Vision GigE Cameras</i> application note for a list of recommended GigE host controller cards.		

Table 40: Prosilica GT2460, GT2460C model specifications (continued)

Absolute QE

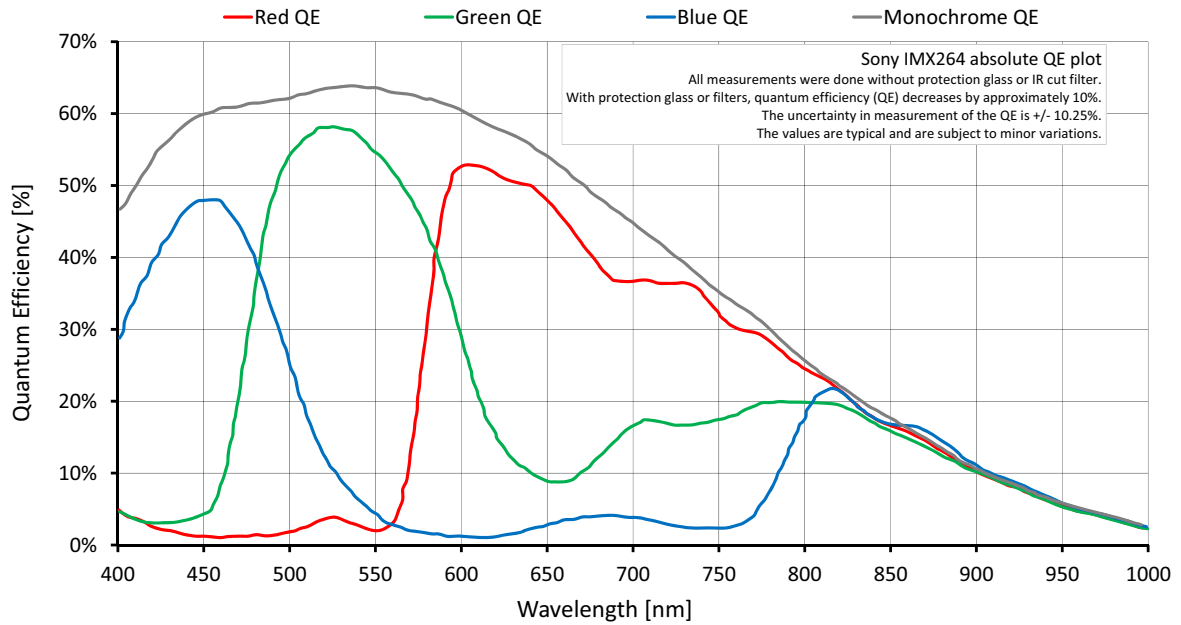


Figure 34: Prosilica GT2460, GT2460C (Sony IMX264) absolute QE

Spectral response

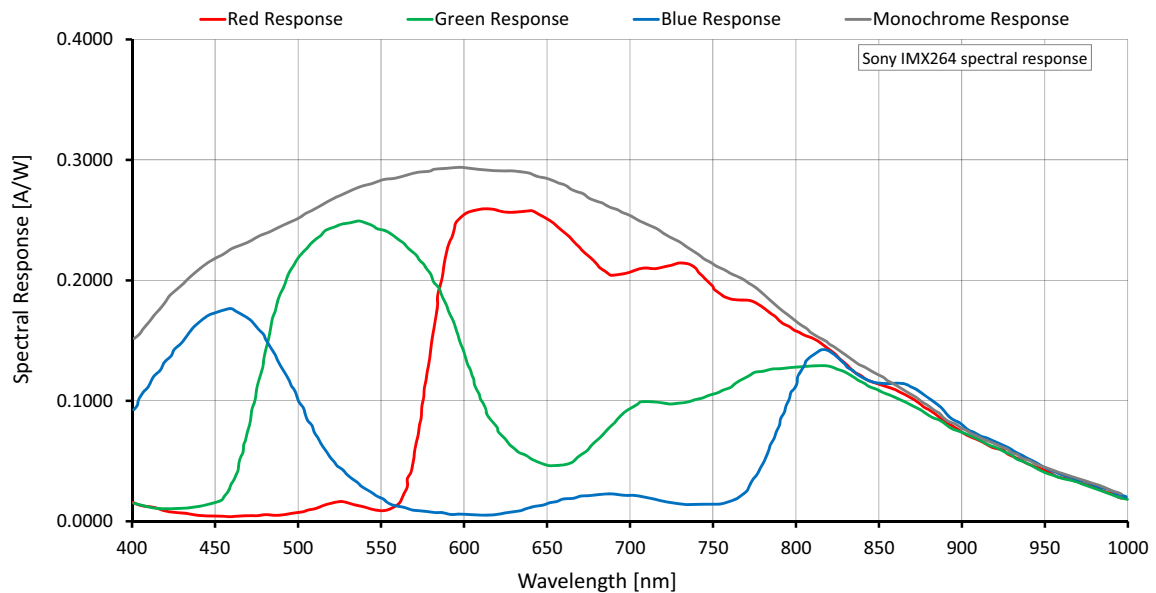


Figure 35: Prosilica GT2460, GT2460C (Sony IMX264) spectral response

ROI frame rate

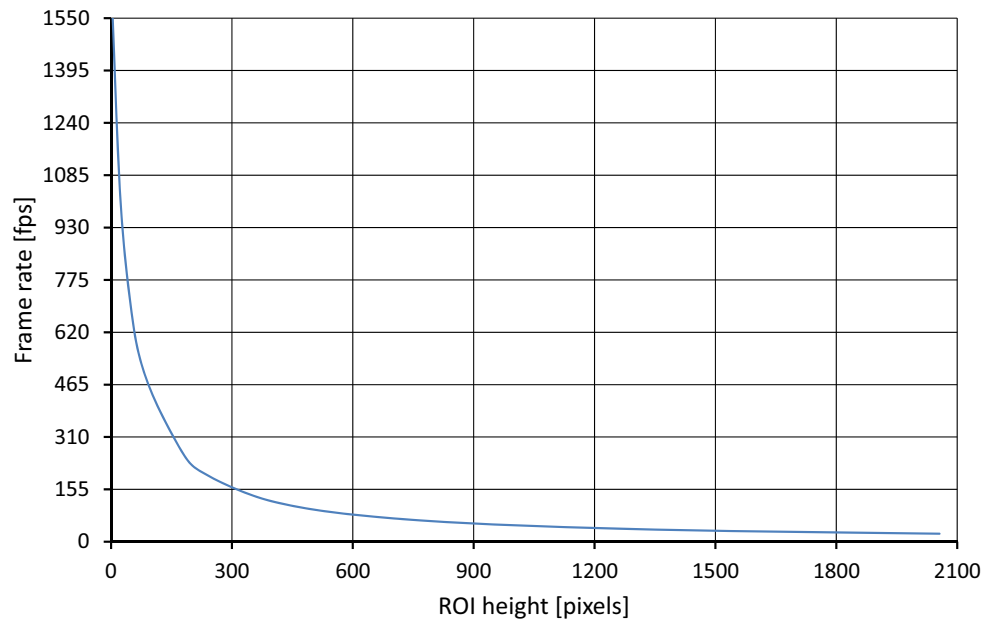


Figure 36: Frame rate as a function of ROI height [width=2464 pixels]



There will be an increase in frame rate with reduced width if the camera is bandwidth limited.

Height (pixels)	Frame rate
2056	23.7
1544	31.5
1324	36.7
1280	37.9
1024	47.4
960	50.5

Width=2464 pixels

Height (pixels)	Frame rate
768	63.0
600	80.3
480	99.7
360	133.3
240	196.3
180	258.3

Height (pixels)	Frame rate
80	507.4
40	785.4
20	1081.9
4	1549.7

Table 41: Frame rate as a function of ROI height

Prosilica GT2750, GT2750C

Feature	Specification	
	Prosilica GT2750	Prosilica GT2750C
Resolution	2750 (H) × 2200 (V) 6.1 MP	
Sensor	Sony ICX694ALG with EXview HAD CCD II™ technology	Sony ICX694AQG with EXview HAD CCD II™ technology
Sensor type	Interline CCD, Progressive Scan	
Shutter type	Global	
Sensor format	Type 1	
Sensor size	15.989 mm diagonal	
Pixel size	4.54 µm × 4.54 µm	
Lens mount	Default: C-Mount Optional: See the <i>Modular Concept</i>	
Housing	Extended format housing	
Optical filter	Default: No optical filter Optional: See the <i>Modular Concept</i>	Default: IRC30 IR cut filter Optional: See the <i>Modular Concept</i>
Maximum frame rate at full resolution	Four-tap mode: 19.8 fps One-tap mode: 5.7 fps	
Maximum image bit depth	12/14 bit	
Image buffer	128 MB	
StreamHoldCapacity	Up to 21 frames at full resolution	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed, Mono14	Mono8
YUV color pixel formats		YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats		RGB8Packed, BGR8Packed, RGBA8Packed, BGRA8Packed
RAW pixel formats		BayerGR8, BayerGR12, BayerRG12Packed
Exposure time control	10 µs to 26.8 s, 1 µs increments	
Gain control	0 to 33 dB; 1 dB increments	
Binning	Horizontal: 1 to 8 columns Vertical: 1 to 8 rows	
Decimation X/Y	Horizontal and vertical: 1, 2, 4, 8 factor	
Sensor taps	Four-tap Single-tap switchable in Vimba Viewer 2.0 or later	
Power consumption	5.4 W at 12 VDC; 6.6 W PoE	

Table 42: Prosilica GT2750, GT2750C model specifications

Feature	Specification	
	Prosilica GT2750	Prosilica GT2750C
Trigger latency	2.2 μ s	
Trigger jitter	\pm 20 ns	
Propagation delay (t_{pd})	30 ns for non-isolated I/O; 70 ns for isolated I/O	
Operating temperature	-20 °C to +60 °C ambient temperature (without condensation)	
Storage temperature	-20 °C to +70 °C ambient temperature (without condensation)	
Operating humidity	20 to 80% non-condensing	
Body dimensions (L \times W \times H)	92 \times 53.3 \times 33 mm	
Mass (typical)	224 g	
Temperature monitoring	Available for main board and sensor board Resolution: 0.031; Accuracy: \pm 1 °C	

Table 42: Prosilica GT2750, GT2750C model specifications (continued)

Absolute QE

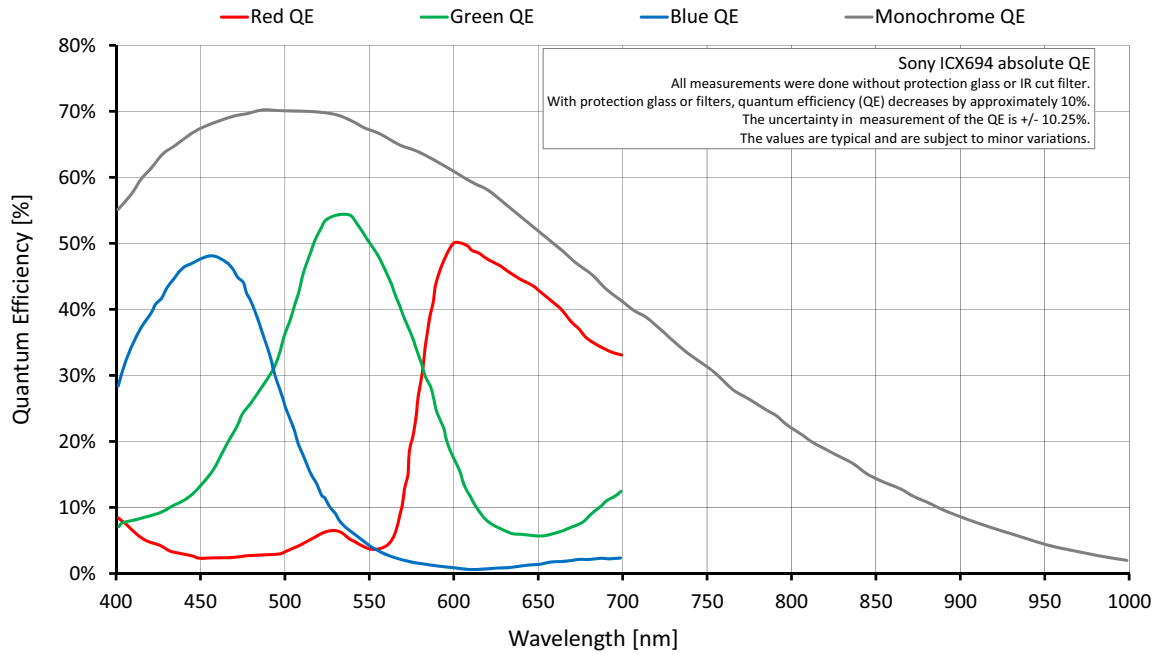


Figure 37: Prosilica GT2750, GT2750 (Sony ICX694) absolute QE

Spectral response

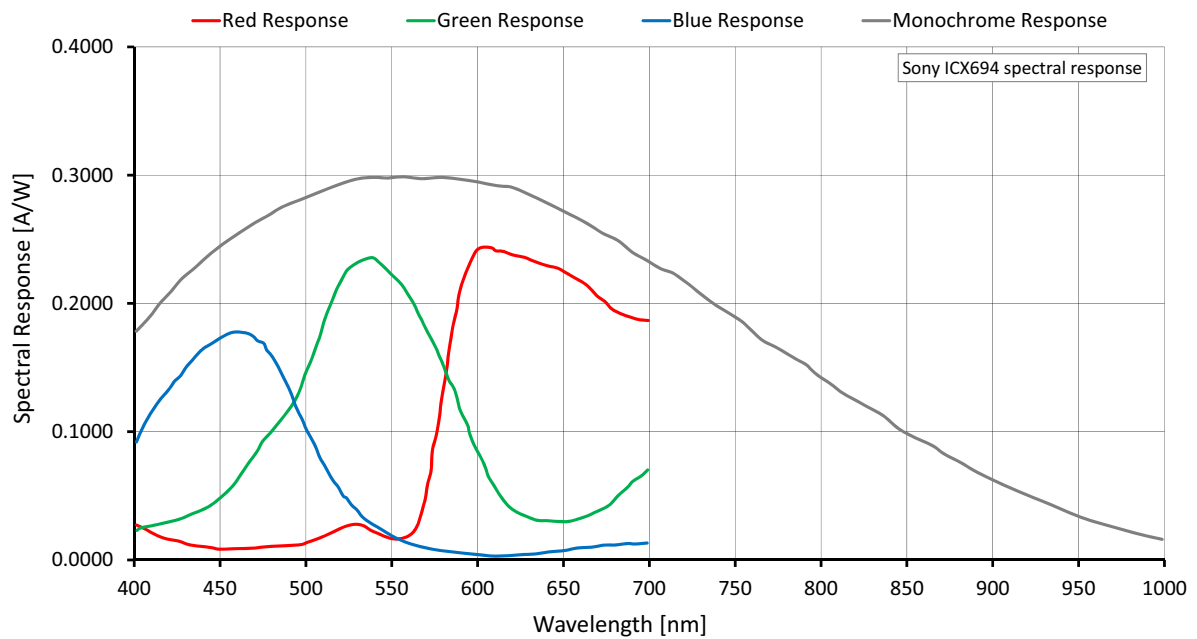


Figure 38: Prosilica GT2750, GT2750C (Sony ICX694) spectral response

ROI frame rate

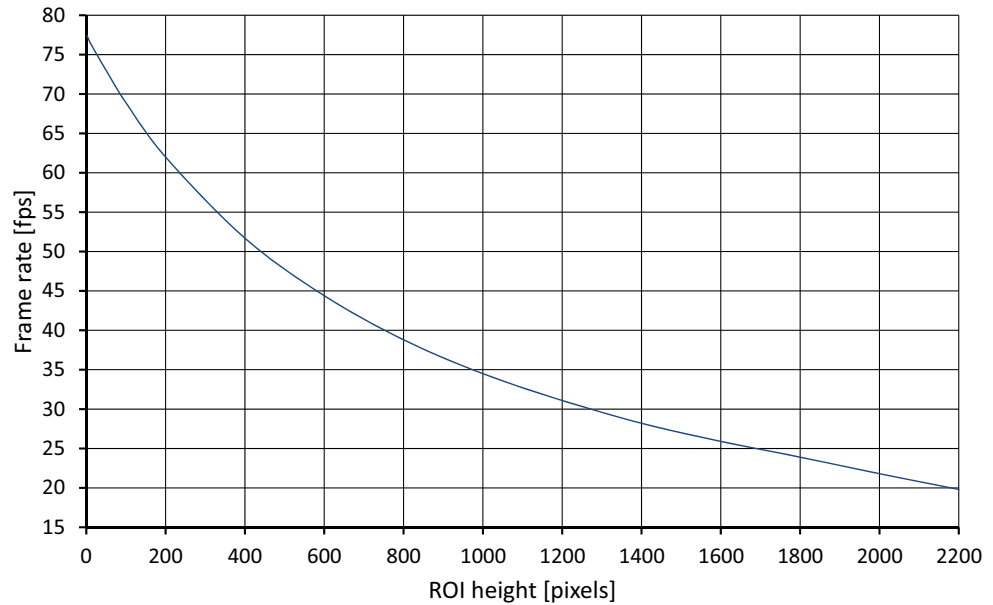


Figure 39: Frame rate as a function of ROI height [width=2750 pixels]

Height (pixels)	Frame rate	Height (pixels)	Frame rate	Height (pixels)	Frame rate
2200	19.8	1000	34.5	50	73
2000	21.8	800	38.8	20	75.6
1800	23.9	600	44.4	10	76.5
1600	25.9	400	51.7	2	77.4
1400	28.2	200	62		
1200	31.1	100	68.9		

Width=2750 pixels

Table 43: Frame rate as a function of ROI height

The following table shows how binning affects frame rate.

BinningVertical	Height (pixels)	Frame rate	BinningVertical	Height (pixels)	Frame rate
2	1100	37.0	6	366	77.4
3	732	50.2	7	314	83.8
4	550	60.9	8	274	88.9
5	440	70.0			

Table 44: Frame rate as a function of ROI height with vertical binning enabled

Prosilica GT3300, GT3300C

Feature	Specification	
	Prosilica GT3300	Prosilica GT3300C
Resolution	3296 (H) × 2472 (V) 8.1 MP	
Sensor	ON Semi KAI-08050 TRUESENSE Gen 2	
Sensor Type	Interline CCD, Progressive Scan	
Shutter type	Global	
Sensor format	Type 4/3	
Sensor size	22.66 mm diagonal	
Pixel size	5.5 µm × 5.5 µm	
Lens mount	Default: F-Mount Optional: See the <i>Modular Concept</i>	
Housing	Extended format housing	
Optical filter	Default: No optical filter Optional: See the <i>Modular Concept</i>	Default: IRC30 IR cut filter Optional: See the <i>Modular Concept</i>
Maximum frame rate at full resolution	Four-tap mode: 14.7 fps One-tap mode: 4.5 fps	
Maximum image bit depth	12/14 bit	
Image buffer	128 MB	
StreamHoldCapacity	Up to 16 frames at full resolution	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed, Mono14	Mono8
YUV color pixel formats		YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats		RGB8Packed, BGR8Packed, RGBA8Packed, BGRA8Packed
RAW pixel formats		BayerGR8, BayerGR12, BayerRG12Packed
Exposure time control	10 µs to 26.8 s, 1 µs increments	
Gain control	0 to 32 dB; 1 dB increments	
Binning	Horizontal: 1 to 8 columns Vertical: 1 to 8 rows	
Decimation X/Y	Horizontal and vertical: 1, 2, 4, 8 factor	
Sensor taps	Four-tap Single-tap switchable in Vimba Viewer 2.0 or later	
Power consumption	5.6 W at 12 VDC; 6.9 W PoE	
Trigger latency	2.2 µs	

Table 45: Prosilica GT3300, GT3300C model specifications

Feature	Specification	
	Prosilica GT3300	Prosilica GT3300C
Trigger jitter	± 20 ns	
Propagation delay (t_{pd})	30 ns for non-isolated I/O; 70 ns for isolated I/O	
Operating temperature	-20 to +60 °C ambient temperature (without condensation)	
Storage temperature	-20 to +70 °C ambient temperature (without condensation)	
Operating humidity	20 to 80% non-condensing	
Body dimensions (L × W × H)	121 × 59.7 × 59.7 mm	
Mass (typical)	314 g	
Temperature monitoring	Available for main board and sensor board. Resolution: 0.031; Accuracy: ± 1 °C	

Table 45: Prosilica GT3300, GT3300C model specifications (continued)

Absolute QE

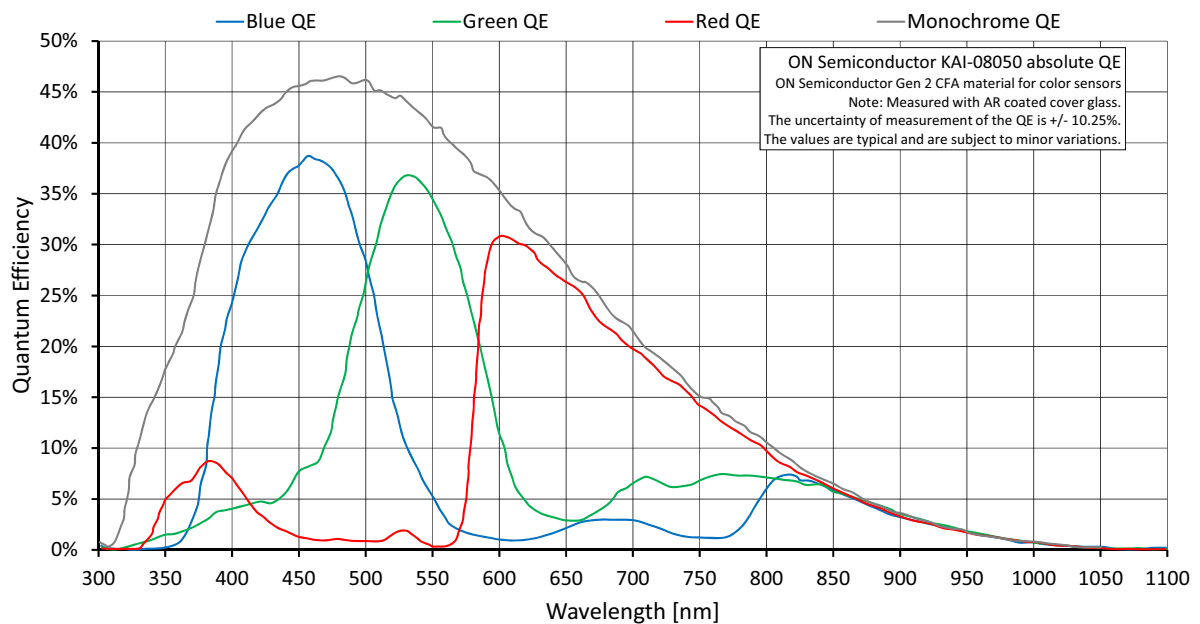


Figure 40: Prosilica GT3300, GT3300C (ON Semi KAI-08050 Gen 2) absolute QE

ROI frame rate

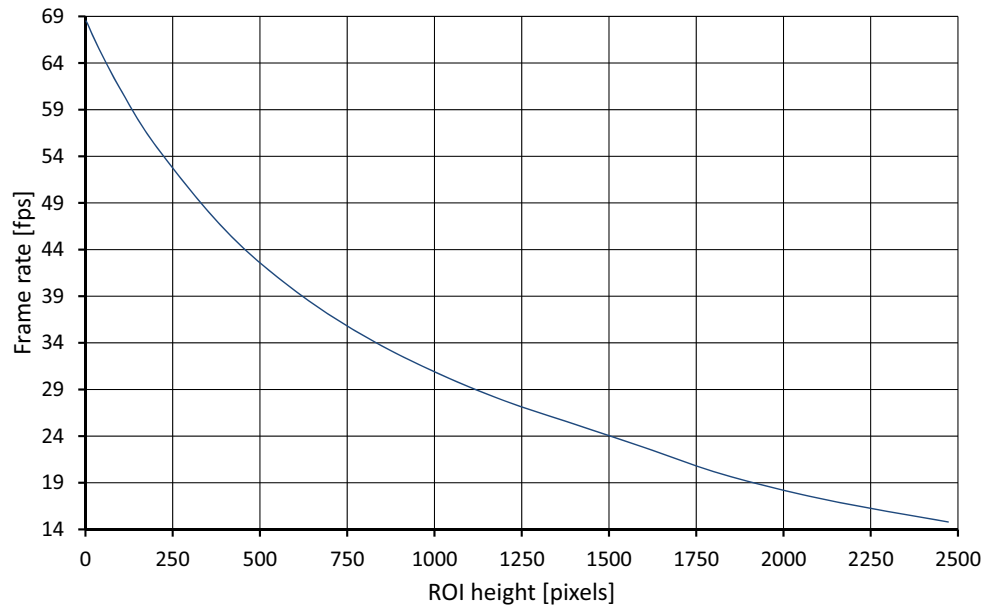


Figure 41: Frame rate as a function of ROI height [width=3296 pixels]

Height (pixels)	Frame rate	Height (pixels)	Frame rate	Height (pixels)	Frame rate
2472	14.8	1200	27.8	100	61.2
2200	16.6	1000	30.9	50	64.7
2000	18.2	800	34.7	20	67
1800	20.2	600	39.6	10	67.9
1600	22.8	400	46.1	2	68.5
1400	25.3	200	55.2		

Width=3296 pixels

Table 46: Frame rate as a function of ROI height

The following table shows how binning affects frame rate.

BinningVertical	Height (pixels)	Frame rate	BinningVertical	Height (pixels)	Frame rate
2	1236	29.4	6	412	69.5
3	824	43.1	7	352	75.8
4	618	53.2	8	308	81.4
5	494	62.0			

Table 47: Frame rate as a function of ROI height with vertical binning enabled

Prosilica GT3400, GT3400C

Feature	Specification	
	Prosilica GT3400	Prosilica GT3400C
Resolution	3384 (H) × 2704 (V) 9.2 MP	
Sensor	Sony ICX814ALG with EXview HAD II™ technology	Sony ICX814AQQ with EXview HAD II™ technology
Sensor type	Interline CCD, Progressive Scan	
Shutter type	Global	
Sensor format	Type 1	
Sensor size	15.972 mm diagonal	
Pixel size	3.69 µm × 3.69 µm	
Lens mount	Default: C-Mount Optional: See the <i>Modular Concept</i>	
Housing	Extended format housing	
Optical filter	Default: No optical filter Optional: See the <i>Modular Concept</i>	Default: IRC30 IR cut filter Optional: See the <i>Modular Concept</i>
Maximum frame rate at full resolution	Four-tap mode: 13.2 fps (14 fps burst mode ¹) One-tap mode: 3.8 fps	
Maximum image bit depth	12/14 bit	
Image buffer	128 MB	
StreamHoldCapacity	T.B.D.	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed, Mono14	Mono8
Color formats (YUV)		YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats		RGB8Packed, BGR8Packed, RGBA8Packed, BGRA8Packed
RAW pixel formats		BayerRG8, BayerRG12, BayerRG12Packed
Exposure time control	10 µs to 26.8 s, 1 µs increments	
Gain control	0 to 31 dB; 1 dB increments	
Binning	Horizontal: 1 to 8 columns; Vertical: 1 to 8 rows	
Decimation X/Y	Horizontal and vertical: 1, 2, 4, 8 factor	
Sensor taps	Four-tap Single-tap switchable in Vimba Viewer 2.0 or later	
Power consumption	5.4 W at 12 VDC; 6.6 W PoE	
Trigger latency	2.5 µs	

Table 48: Prosilica GT3400, GT3400C model specifications

Feature	Specification	
	Prosilica GT3400	Prosilica GT3400C
Trigger jitter	±20 ns	
Propagation delay (t_{pd})	30 ns for non-isolated I/O; 70 ns for isolated I/O	
Operating temperature	-20 °C to +60 °C ambient temperature (without condensation)	
Storage temperature	-20 °C to +70 °C ambient temperature (without condensation)	
Operating humidity	20 to 80% non-condensing	
Body dimensions (L × W × H)	92 × 53.3 × 33 mm	
Mass (typical)	224 g	
Temperature monitoring	Available for main board and sensor board. Resolution: 0.031; Accuracy: ±1 °C	
¹ GigE host controller card with jumbo packets is required. See <i>Hardware Selection for Allied Vision GigE Cameras</i> application note for a list of recommended GigE host controller cards.		

Table 48: Prosilica GT3400, GT3400C model specifications (continued)

Absolute QE

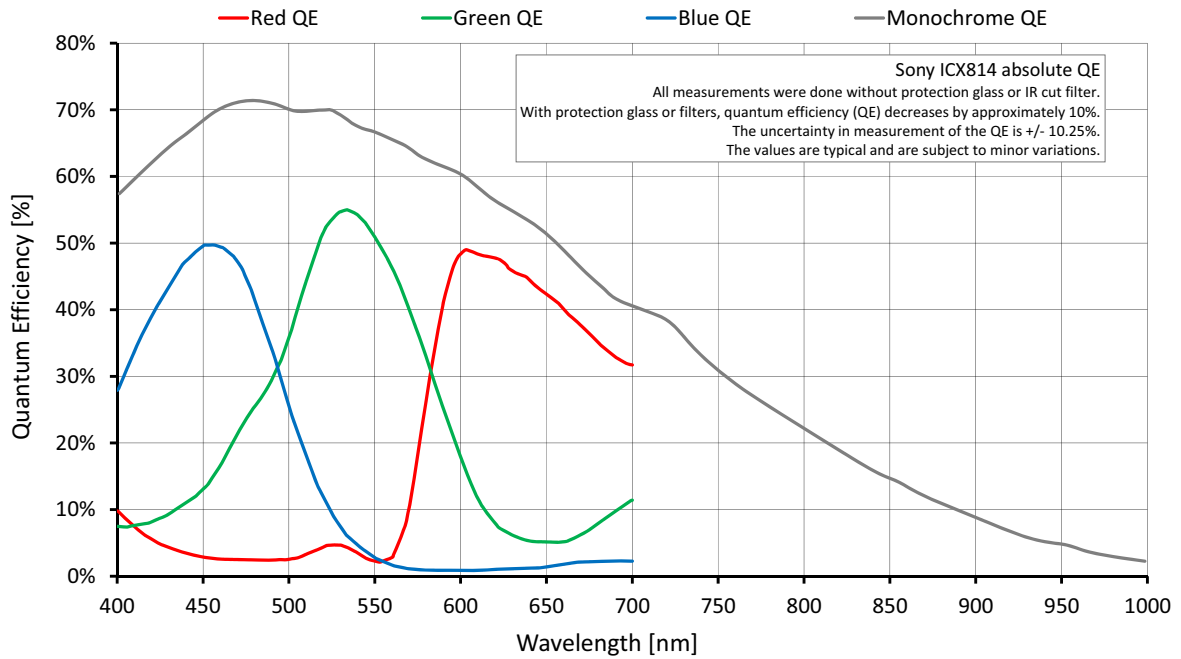


Figure 42: Prosilica GT3400, GT3400C (Sony ICX814) absolute QE

Spectral response

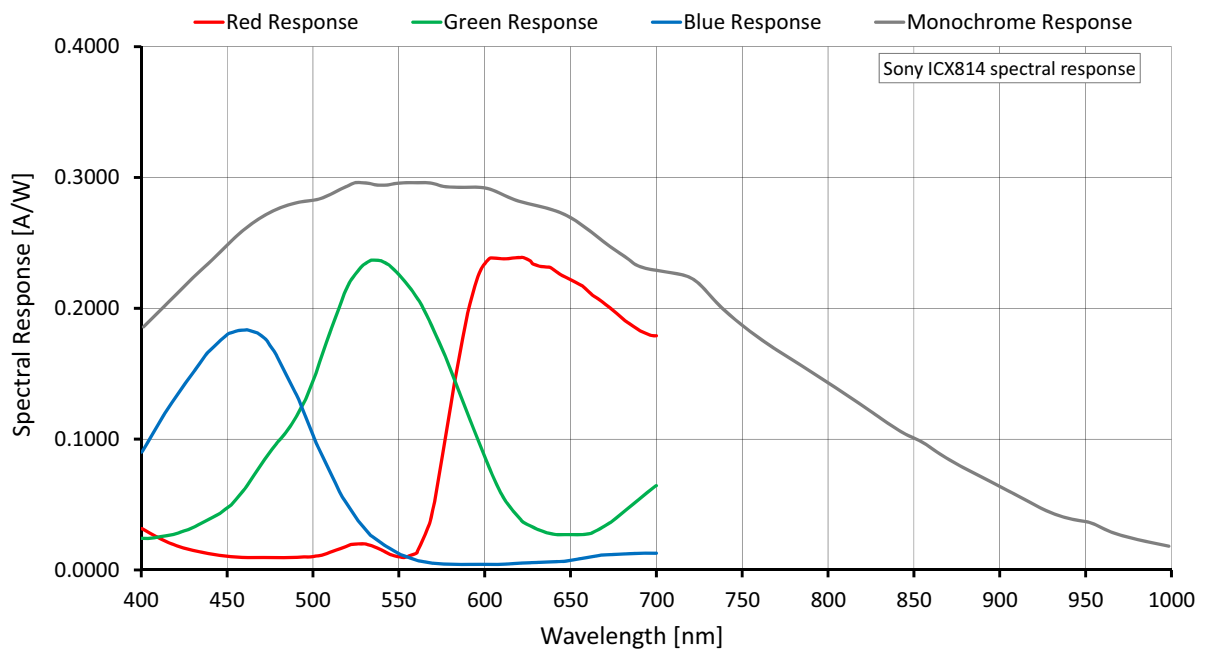


Figure 43: Prosilica GT3400, GT3400C (Sony ICX814) spectral response

ROI frame rate

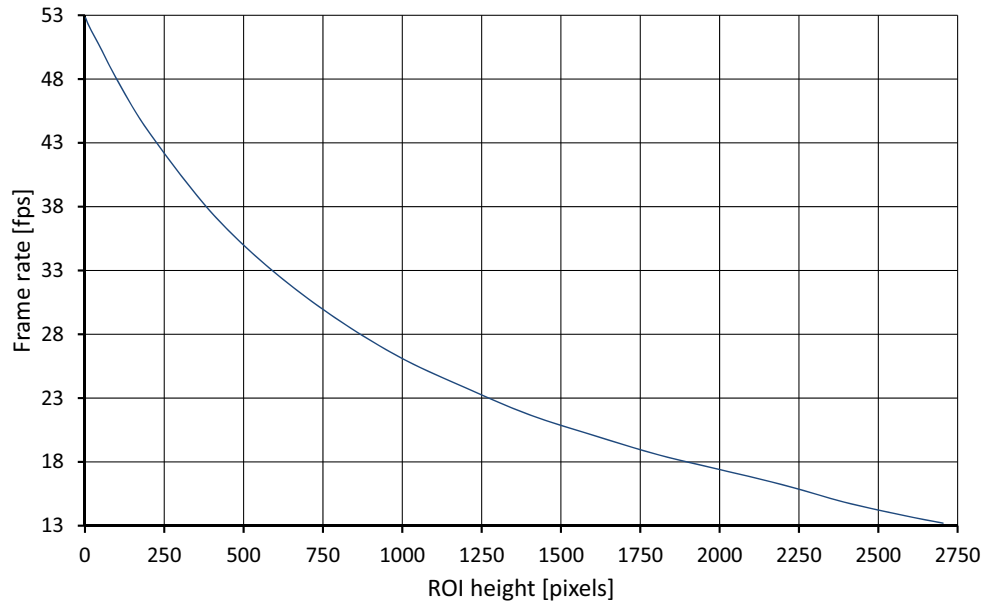


Figure 44: Frame rate as a function of ROI height [width=3384 pixels]

Height (pixels)	Frame rate	Height (pixels)	Frame rate	Height (pixels)	Frame rate
2704	13.2	1400	21.7	100	48
2600	13.7	1200	23.8	50	50.4
2400	14.8	1000	26.1	20	51.8
2200	16.2	800	29.1	10	52.3
2000	17.4	600	32.8	2	52.8
1800	18.6	400	37.5		
1600	20.1	200	43.9		

Width=3384 pixels

Table 49: Frame rate as a function of ROI height

The following table shows how binning affects frame rate.

BinningVertical	Height (pixels)	Frame rate	BinningVertical	Height (pixels)	Frame rate
2	1352	25.1	6	450	52.8
3	900	34.1	7	386	57.2
4	676	41.4	8	338	61.0
5	540	47.6			

Table 50: Frame rate as a function of ROI height with vertical binning enabled

Prosilica GT4090, GT4090NIR

Feature	Specification	
	Prosilica GT4090	Prosilica GT4090NIR
Resolution	4096 (H) × 3072 (V) 12.5 MP	
Sensor	ON Semi PYTHON 12K (NOIP1SN012KA)	ON Semi PYTHON 12K (NOIP1FN012KA)
Sensor type	CMOS	
Shutter type	Global	
Sensor format	Type 4/3	
Sensor size	23.04 mm diagonal	
Pixel size	4.5 μm × 4.5 μm	
Lens mount ¹	Default: F-Mount Optional: See the <i>Modular Concept</i>	
Housing	Large format housing	
Optical filter	Default: No optical filter Optional: See the <i>Modular Concept</i>	
Maximum frame rate at full resolution	9.58 fps (Mono8); 10.15 fps burst mode 4.79 fps (Mono10); 10.15 fps burst mode	
Maximum image bit depth	10-bit	
Image buffer	128 MB	
StreamHoldCapacity	T.B.D	
Monochrome pixel formats	Mono8, Mono10	
Exposure control	100 μs to 1 s, 1 μs increments	
Gain control	0 to 22 dB	
Binning	Horizontal: 1 to 8 columns Vertical: 1 to 8 rows	
Decimation X/Y	Horizontal and vertical: 1, 2, 4, 8 factor	
Power consumption	4.96 W at 12 VDC; 6.7 W PoE	
Trigger latency	25.8 μs	
Trigger jitter	±100 ns	
Propagation delay (t_{pd})	30 ns for non-isolated I/O; 70 ns for isolated I/O	
Operating temperature	-20 °C to +50 °C ambient temperature (without condensation)	
Storage temperature	-20 °C to +70 °C ambient temperature (without condensation)	
Operating humidity	20 to 80% non-condensing	
Body dimensions (L × W × H)	96 × 66 × 53.3 mm	
Mass	372 g	

Table 51: Prosilica GT4090, GT4090NIR model specifications

Feature	Specification	
	Prosilica GT4090	Prosilica GT4090NIR
Temperature monitoring	Available for main board and sensor board. Resolution: 0.031; Accuracy: ±1 °C	
¹ EF lens control is only supported for cameras with EF lens mount (order option-18).		

Table 51: Prosilica GT4090, GT4090NIR model specifications

Absolute QE

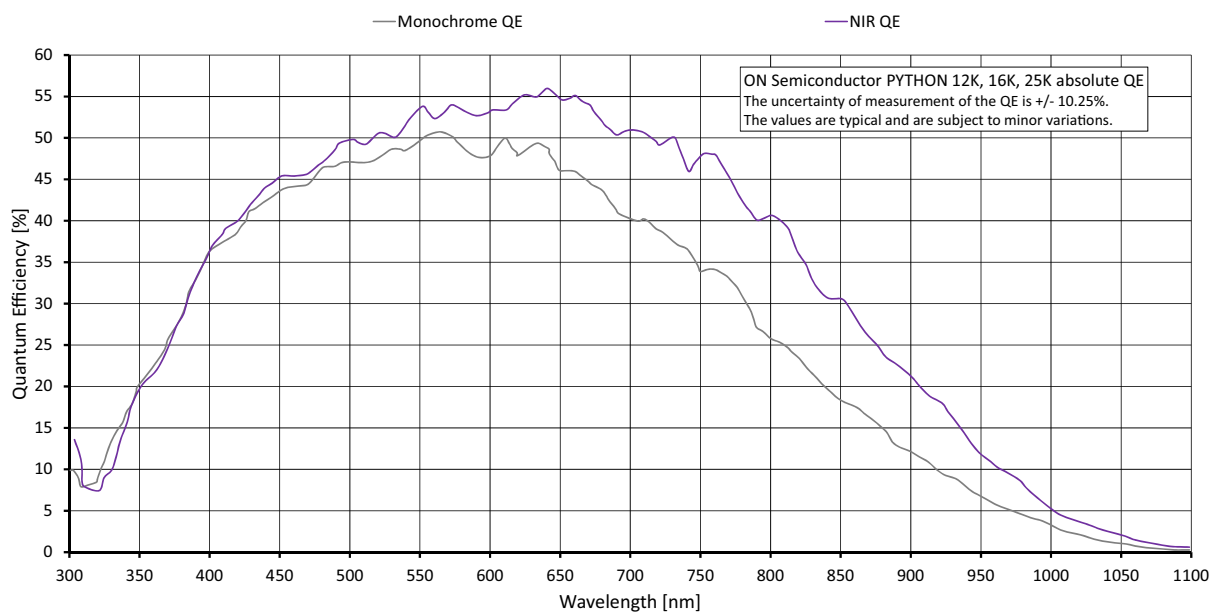


Figure 45: Prosilica GT4090, GT4090NIR (ON Semi PYTHON 12K) absolute QE

ROI frame rate

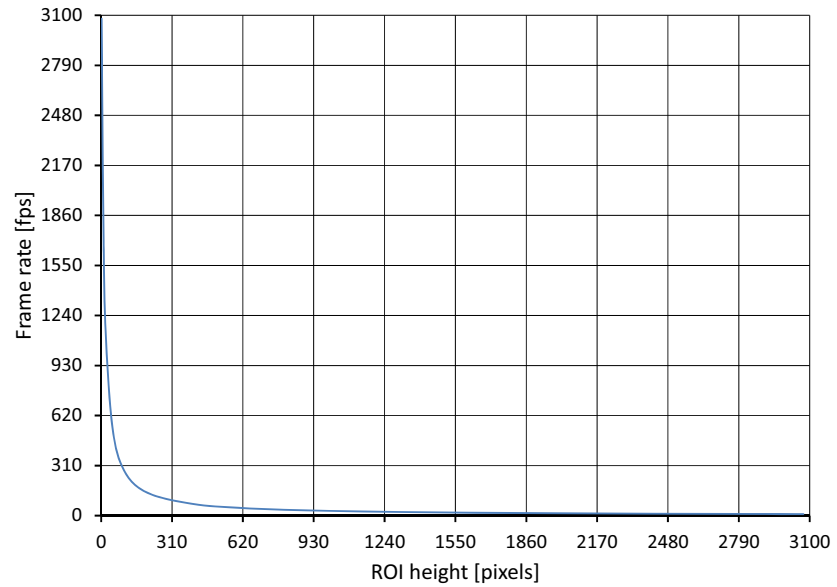


Figure 46: Frame rate as a function of ROI height [width=4096 pixels]

Height (pixels)	Frame rate	Height (pixels)	Frame rate	Height (pixels)	Frame rate
3072	9.6	1800	16.3	400	72.8
3000	9.8	1600	18.3	200	143.2
2800	10.5	1400	21.0	100	280.5
2600	11.3	1200	24.4	50	538.8
2400	12.3	1000	29.3	20	1122.5
2200	13.4	800	36.6	10	1759.0
2000	14.7	600	48.6	2	3078.8

Table 52: Frame rate as a function of ROI height at Mono8 [width=4096 pixels]

Height (pixels)	Frame rate	Height (pixels)	Frame rate	Height (pixels)	Frame rate
3072	4.8	1800	8.2	400	36.6
3000	4.9	1600	9.2	200	72.8
2800	5.3	1400	10.5	100	143.2
2600	5.7	1200	12.3	50	280.5
2400	6.1	1000	14.7	20	641.5
2200	6.7	800	18.3	10	1122.5
2000	7.4	600	24.4	2	3078.8

Table 53: Frame rate as a function of ROI height at Mono10 [width=4096 pixels]

Prosilica GT4096, GT4096NIR

Feature	Specification	
	Prosilica GT4096	Prosilica GT4096NIR
Resolution	4096 (H) × 4096 (V) 16.7 MP	
Sensor	ON Semi PYTHON 16K (NOIP1SN016KA)	ON Semi PYTHON 16K (NOIP1FN016KA)
Sensor type	CMOS	
Shutter type	Global	
Sensor format and size	Type APS-H	
Sensor size	26.067 mm diagonal	
Pixel size	4.5 μm × 4.5 μm	
Lens mount ¹	Default: F-Mount Optional: See the <i>Modular Concept</i>	
Housing	Large format housing	
Optical filter	Default: No optical filter Optional: See the <i>Modular Concept</i>	
Maximum frame rate at full resolution	7.18 fps (Mono8); 7.61 fps burst mode 3.59 (Mono10); 7.61 fps burst mode	
Maximum image bit depth	10-bit	
Image buffer	128 MB	
StreamHoldCapacity	T.B.D	
Monochrome pixel formats	Mono8, Mono10	
Exposure control	100 μs to 1 s, 1 μs increments	
Gain control	0 to 22 dB	
Binning	Horizontal: 1 to 8 columns Vertical: 1 to 8 rows	
Decimation X/Y	Horizontal and vertical: 1, 2, 4, 8 factor	
Power consumption	5.0 W at 12 VDC; 6.4 W PoE	
Trigger latency	25.8 μs	
Trigger jitter	±100 ns	
Propagation delay (t_{pd})	30 ns for non-isolated I/O; 70 ns for isolated I/O	
Operating temperature	-20 °C to +50 °C ambient temperature (without condensation)	
Storage temperature	-20 °C to +70 °C ambient temperature (without condensation)	
Operating humidity	20 to 80% non-condensing	
Body dimensions (L × W × H)	96 × 66 × 53.3 mm	
Mass	372 g	

Table 54: Prosilica GT4096, GT4096NIR model specifications

Feature	Specification	
	Prosilica GT4096	Prosilica GT4096NIR
Temperature monitoring	Available for main board and sensor board. Resolution: 0.031; Accuracy: ±1 °C	
¹ EF lens control is only supported for cameras with EF lens mount (order option-18).		

Table 54: Prosilica GT4096, GT4096NIR model specifications

Absolute QE

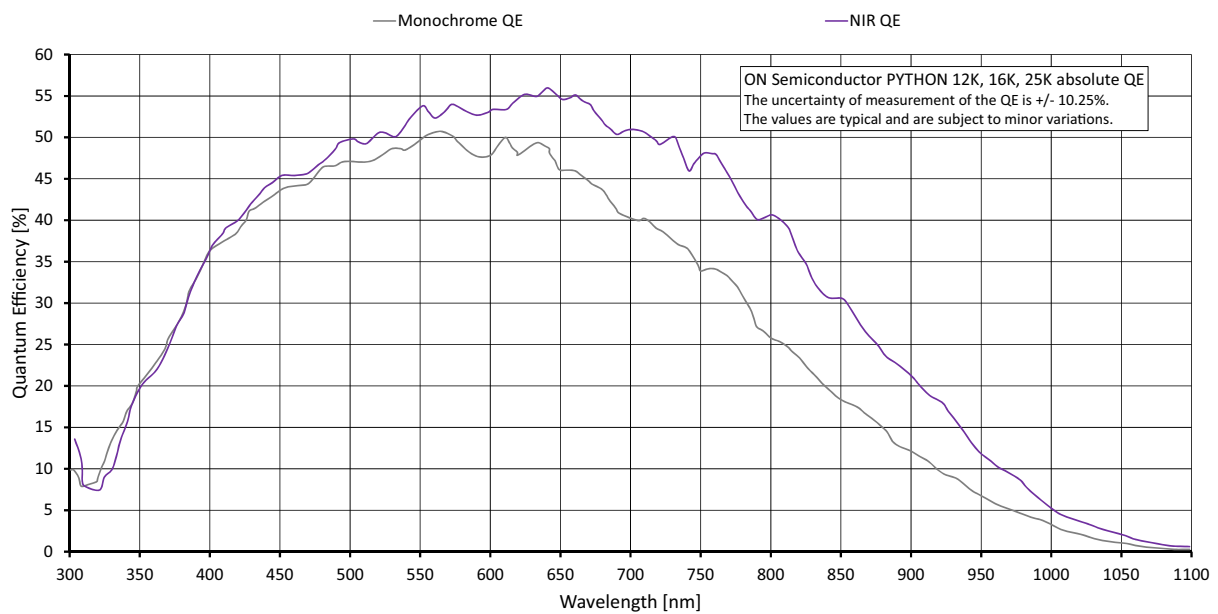


Figure 47: Prosilica GT4096, GT4096NIR (ON Semi PYTHON 16K) absolute QE

ROI frame rate

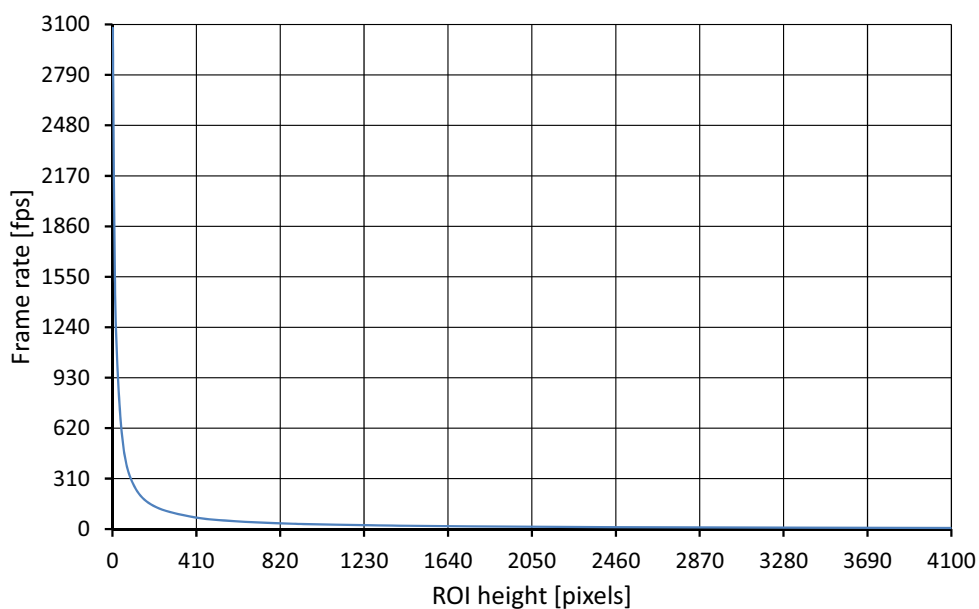


Figure 48: Frame rate as a function of ROI height [width=4096 pixels]

Height (pixels)	Frame rate	Height (pixels)	Frame rate	Height (pixels)	Frame rate
4096	7.2	1200	19.6	100	280.5
4000	7.4	1000	29.3	50	538.8
3500	8.4	800	36.6	20	1122.5
3000	9.8	600	48.6	10	1759.0
2500	11.8	400	72.8	2	3078.8
2000	14.7	200	143.2		

Table 55: Frame rate as a function of ROI height at Mono8 [width=4096 pixels]

Height (pixels)	Frame rate	Height (pixels)	Frame rate	Height (pixels)	Frame rate
4096	3.6	1200	9.8	100	143.2
4000	3.7	1000	14.7	50	280.5
3500	4.2	800	18.3	20	641.5
3000	4.9	600	24.4	10	1122.5
2500	5.9	400	36.6	2	3078.8
2000	7.4	200	72.8		

Table 56: Frame rate as a function of ROI height at Mono10 [width=4096 pixels]

Prosilica GT4905, GT4905C

Feature	Specification	
	Prosilica GT4905	Prosilica GT4905C
Resolution	4896 (H) × 3264 (V) 16 MP	
Sensor	ON Semi KAI-16050 TRUESENSE Gen 2	
Sensor type	Interline CCD, Progressive Scan	
Shutter type	Global	
Sensor format	Type APS-H	
Sensor size	32.36 mm diagonal	
Pixel size	5.5 µm × 5.5 µm	
Lens mount ¹	Default: F-Mount Optional: See the <i>Modular Concept</i>	
Housing	Large format housing	
Optical filter	Default: No optical filter Optional: See the <i>Modular Concept</i>	Default: IRC30 IR cut filter Optional: See the <i>Modular Concept</i>
Maximum frame rate at full resolution	Four-tap mode: 7.5 fps (8.5 fps burst mode ²) One-tap mode: 2.2 fps	
Maximum image bit depth	12/14 bit	
Image buffer	128 MB	
StreamHoldCapacity	T.B.D.	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed, Mono14	Mono8
YUV color pixel formats		YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats		RGB8Packed, BGR8Packed, RGBA8Packed, BGRA8Packed
RAW pixel formats		BayerGR8, BayerGR12, BayerRG12Packed
Exposure time control	15 µs to 26.8 s, 1 µs increments	
Gain control	0 to 32 dB; 1 dB increments	
Binning	Horizontal: 1 to 8 columns Vertical: 1 to 8 rows	
Decimation	Horizontal and vertical: 1, 2, 4, 8 factor	
Sensor taps	Four-tap Single-tap switchable in Vimba Viewer 2.0 or later	
Power consumption	7.3 W at 12 VDC; 9.0 W PoE	
Trigger latency	2.5 µs	

Table 57: Prosilica GT4905, GT4905C model specifications

Feature	Specification	
	Prosilica GT4905	Prosilica GT4905C
Trigger jitter	± 20 ns	
Propagation delay (t_{pd})	30 ns for non-isolated I/O; 70 ns for isolated I/O	
Operating temperature	-20 °C to +50 °C ambient temperature (without condensation)	
Storage temperature	-20 °C to +70 °C ambient temperature (without condensation)	
Operating humidity	20 to 80% non-condensing	
Body dimensions (L × W × H)	96 × 66 × 53.3 mm	
Mass (typical)	372 g	
Temperature monitoring	Available for main board and sensor board Resolution: 0.031; Accuracy: ± 1 °C	

¹ To enable EF lens control on Prosilica GT cameras you must update firmware to version 01.54.14263 or later. EF lens control is only supported for cameras with EF lens mount (order option-18).

² GigE host controller card with jumbo packets is required. See the *Hardware Selection for Allied Vision GigE Cameras* application note for a list of recommended GigE host controller cards.

Table 57: Prosilica GT4905, GT4905C model specifications (continued)

Absolute QE

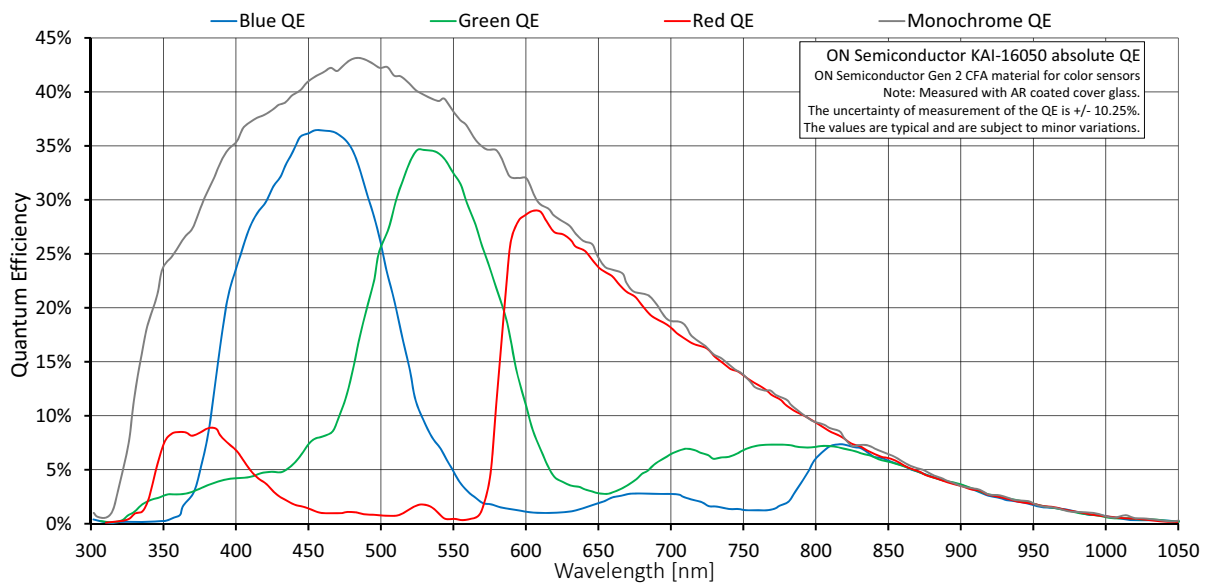


Figure 49: Prosilica GT4905, GT4905C (ON Semi KAI-16050 Gen 2) absolute QE

ROI frame rate

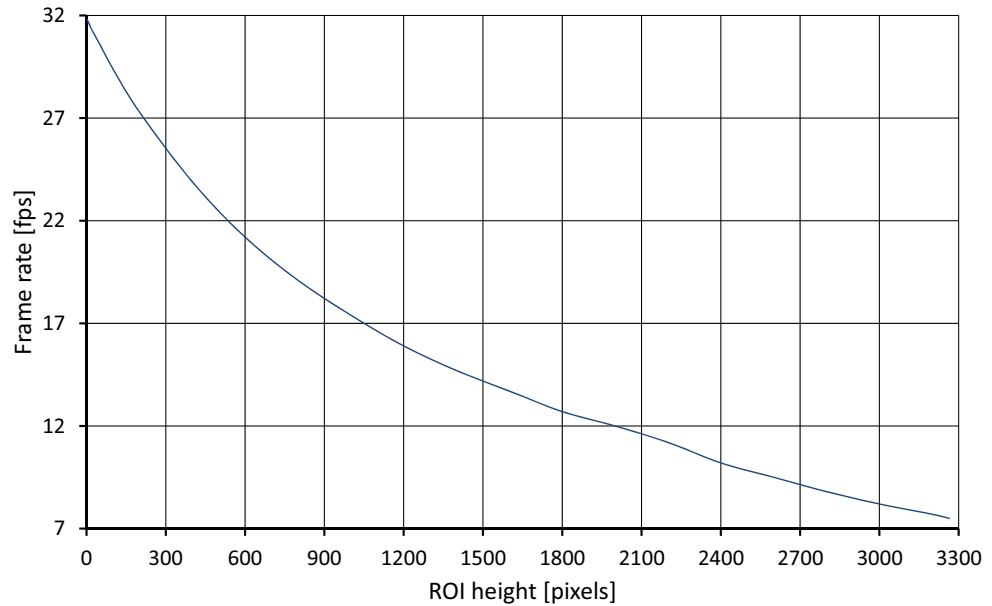


Figure 50: Frame rate as a function of ROI height [width=4896 pixels]

Height (pixels)	Frame rate	Height (pixels)	Frame rate	Height (pixels)	Frame rate
3264	7.5	1800	12.7	200	27.3
3200	7.7	1600	13.7	100	29.4
3000	8.2	1400	14.7	50	30.6
2800	8.8	1200	15.9	20	31.3
2600	9.5	1000	17.4	10	31.6
2400	10.2	800	19.1	2	31.8
2200	11.2	600	21.2		
2000	12	400	23.9		

Width=4896 pixels

Table 58: Frame rate as a function of ROI height

The following table shows how binning affects frame rate.

BinningVertical	Height (pixels)	Frame rate	BinningVertical	Height (pixels)	Frame rate
2	1632	15.1	6	544	31.8
3	1088	20.7	7	466	34.4
4	816	25.1	8	408	36.6
5	652	28.8			

Table 59: Frame rate as a function of ROI height with vertical binning enabled

Prosilica GT4907, GT4907C

Feature	Specification	
	Prosilica GT4907	Prosilica GT4907C
Resolution	4864 (H) × 3232 (V) 15.7 MP	
Sensor	ON Semi KAI-16070 TRUESENSE Gen 2	
Sensor type	Interline CCD, Progressive Scan	
Shutter type	Global	
Sensor format	Type 35mm	
Sensor size	43.2 mm diagonal	
Pixel size	7.4 µm × 7.4 µm	
Lens mount ¹	Default: F-Mount Optional: See the <i>Modular Concept</i>	
Housing	Large format housing	
Optical filter	Default: No optical filter Optional: See the <i>Modular Concept</i>	Default: IRC30 IR cut filter Optional: See the <i>Modular Concept</i>
Maximum frame rate at full resolution	Four-tap mode: 7.6 fps One-tap mode: 2.2 fps	
Maximum image bit depth	12/14 bit	
Image buffer	128 MB	
StreamHoldCapacity	Up to 8 frames at full resolution	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed, Mono14	Mono8
YUV color pixel formats		YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats		RGB8Packed, BGR8Packed, RGBA8Packed, BGRA8Packed
RAW pixel formats		BayerGR8, BayerGR12, BayerRG12Packed
Exposure time control	35 µs to 26.8 s, 1 µs increments	
Gain control	0 to 35 dB; 1 dB increments	
Binning	Horizontal: 1 to 8 columns Vertical: 1 to 8 rows	
Decimation X/Y	Horizontal and vertical: 1, 2, 4, 8 factor	
Sensor taps	Four-tap Single-tap switchable in Vimba Viewer 2.0 or later	
Power consumption	7.7 W at 12 VDC; 9.5 W PoE	
Trigger latency	2.5 µs	

Table 60: Prosilica GT4907, GT4907C model specifications

Feature	Specification	
	Prosilica GT4907	Prosilica GT4907C
Trigger jitter	± 20 ns	
Propagation delay (t_{pd})	30 ns for non-isolated I/O; 70 ns for isolated I/O	
Operating temperature	-20 °C to +50 °C ambient temperature (without condensation)	
Storage temperature	-20 °C to +70 °C ambient temperature (without condensation)	
Operating humidity	20 to 80% non-condensing	
Body dimensions (L × W × H)	96 × 66 × 53.3 mm	
Mass (typical)	372 g	
Temperature monitoring	Available for main board and sensor board. Resolution: 0.031; Accuracy: ± 1 °C	

¹ To enable EF lens control on Prosilica GT cameras you must update firmware to version 01.54.14263 or later. EF lens control is only supported for cameras with EF lens mount (order option-18).

Table 60: Prosilica GT4907, GT4907C model specifications (continued)

Absolute QE

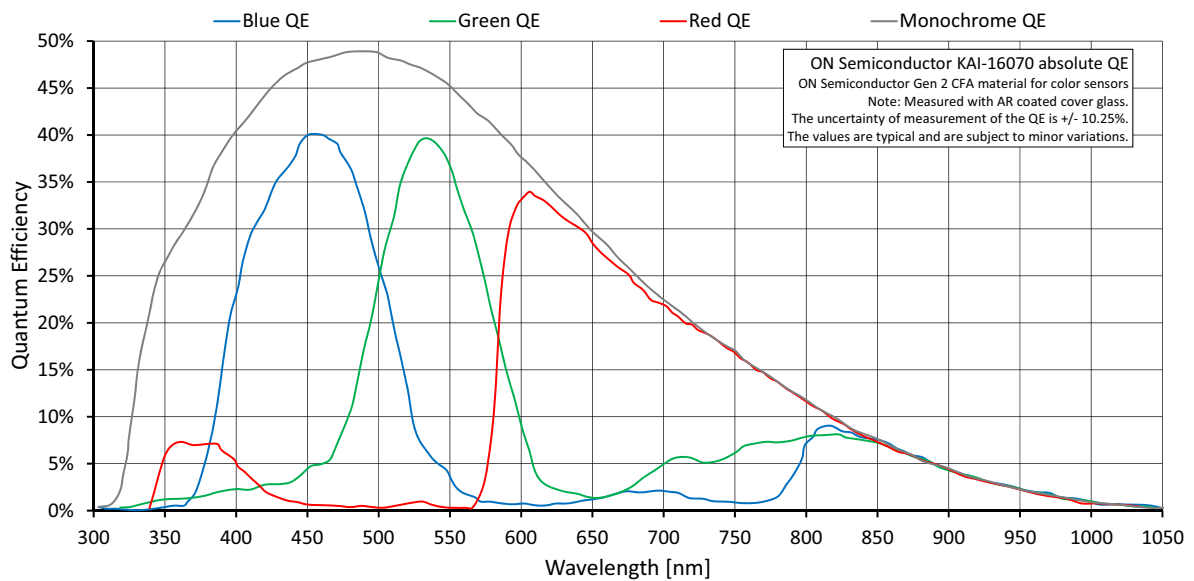


Figure 51: Prosilica GT4907, GT4907C (ON Semi KAI-16070 Gen 2) absolute QE

ROI frame rate

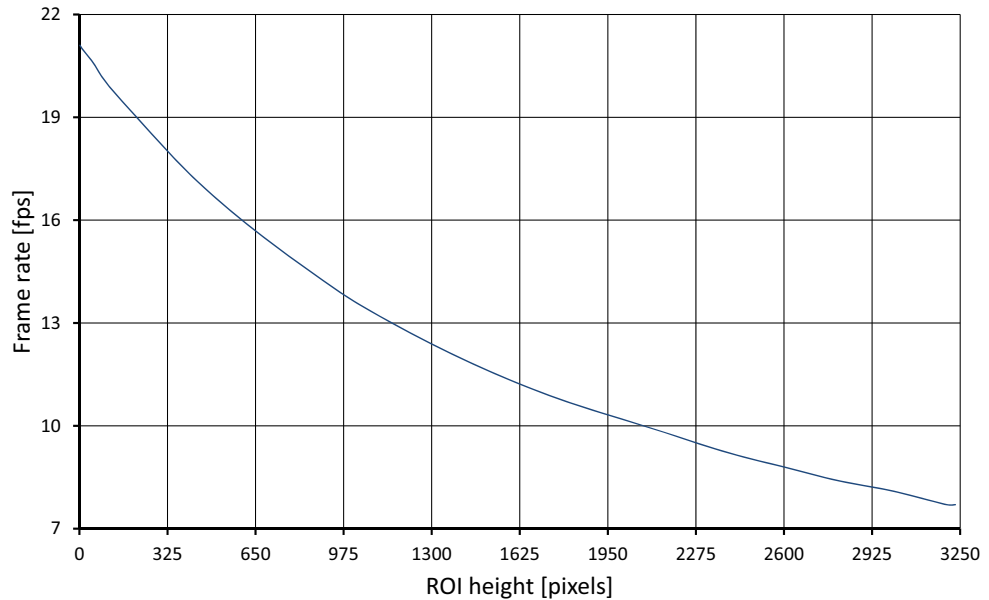


Figure 52: Frame rate as a function of ROI height [width=4864 pixels]

Height (pixels)	Frame rate	Height (pixels)	Frame rate	Height (pixels)	Frame rate
3232	7.7	1800	10.7	200	19.1
3200	7.7	1600	11.3	100	20
3000	8.1	1400	12	50	20.6
2800	8.4	1200	12.8	20	20.9
2600	8.8	1000	13.7	10	21
2400	9.2	800	14.8	2	21.1
2200	9.7	600	16		
2000	10.2	400	17.4		

Width=4864 pixels

Table 61: Frame rate as a function of ROI height

The following table shows how binning affects frame rate.

BinningVertical	Height (pixels)	Frame rate	BinningVertical	Height (pixels)	Frame rate
2	1616	12.5	6	538	21.0
3	1076	15.7	7	460	21.9
4	808	17.9	8	404	22.7
5	646	19.6			

Table 62: Frame rate as a function of ROI height with vertical binning enabled

Prosilica GT5120, GT5120NIR

Feature	Specification	
	Prosilica GT5120	Prosilica GT5120NIR
Resolution	5120 (H) × 5120 (V) 26.2 MP	
Sensor	ON Semi PYTHON 25K (NOIP1SN025KA)	ON Semi PYTHON 25K (NOIP1FN025KA)
Sensor type	CMOS	
Shutter type	Global	
Sensor format	Type APS-H	
Sensor size	32.6 mm diagonal	
Pixel size	4.5 μm × 4.5 μm	
Lens mount ¹	Default: F-Mount Optional: See the <i>Modular Concept</i>	
Housing	Large format housing	
Optical filter	Default: No optical filter Optional: See the <i>Modular Concept</i>	
Maximum frame rate at full resolution	4.59 fps (Mono8); 4.91 fps burst mode 2.30 fps (Mono10); 4.91 fps burst mode	
Maximum image bit depth	10-bit	
Image buffer	128 MB	
StreamHoldCapacity	T.B.D	
Monochrome pixel formats	Mono8, Mono10	
Exposure time control	100 μs to 1 s, 1 μs increments	
Gain control	0 to 22 dB	
Binning	Horizontal: 1 to 8 columns Vertical: 1 to 8 rows	
Decimation X/Y	Horizontal and vertical: 1, 2, 4, 8 factor	
Power consumption	5.02 W at 12 VDC; 6.3 W PoE	
Trigger latency	25.8 μs	
Trigger jitter	±100 ns	
Propagation delay (t_{pd})	30 ns for non-isolated I/O; 70 ns for isolated I/O	
Operating temperature	-20 °C to +50 °C ambient temperature (without condensation)	
Storage temperature	-20 °C to +70 °C ambient temperature (without condensation)	
Operating humidity	20 to 80% non-condensing	
Body dimensions (L × W × H)	96 × 66 × 53.3 mm	
Mass (typical)	372 g	

Table 63: Prosilica GT5120, GT5120NIR model specifications

Feature	Specification	
	Prosilica GT5120	Prosilica GT5120NIR
Temperature monitoring	Available for main board and sensor board. Resolution: 0.031; Accuracy: ±1 °C	
¹ EF lens control is only supported for cameras with EF lens mount (order option-18).		

Table 63: Prosilica GT5120, GT5120NIR model specifications

Absolute QE

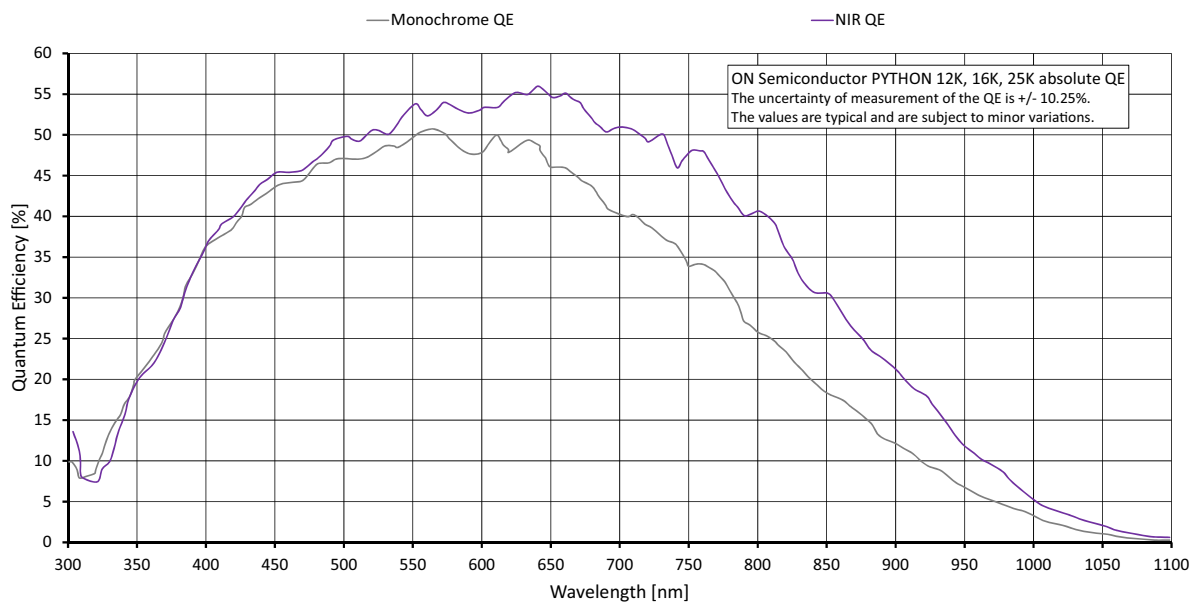


Figure 53: Prosilica GT5120, GT5120NIR (ON Semi PYTHON 25K) absolute QE

ROI frame rate

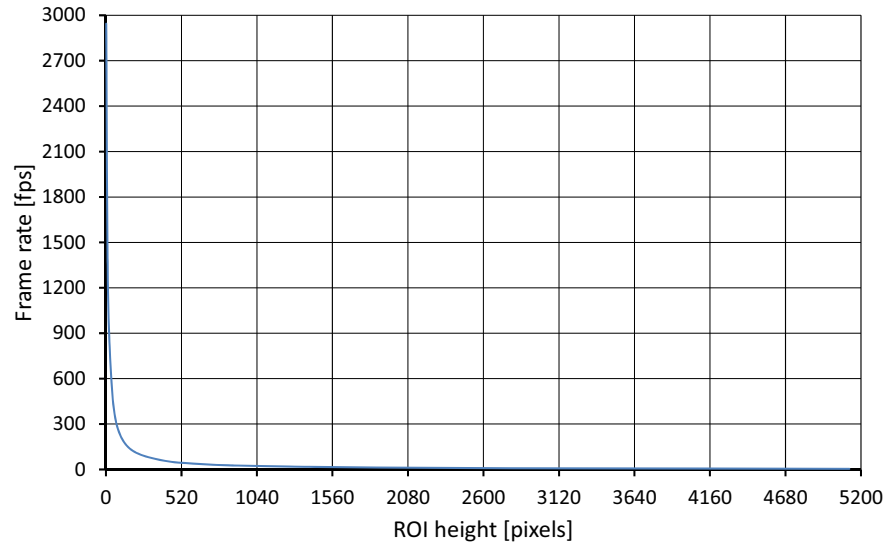


Figure 54: Frame rate as a function of ROI height [width=5120 pixels]

Height (pixels)	Frame rate	Height (pixels)	Frame rate	Height (pixels)	Frame rate
5120	4.6	2000	11.8	100	224.4
5000	4.7	1500	15.7	50	434.4
4500	5.2	1000	23.5	20	948.4
4000	5.9	800	29.3	10	1521.4
3500	6.7	600	39.0	2	2943.8
3000	7.9	400	58.3		
2500	9.4	200	115.1		

Table 64: Frame rate as a function of ROI height at Mono8 [width=5120 pixels]

Height (pixels)	Frame rate	Height (pixels)	Frame rate	Height (pixels)	Frame rate
5120	2.3	2000	5.9	100	115.1
5000	2.4	1500	7.9	50	224.4
4500	2.6	1000	11.8	20	538.8
4000	2.9	800	14.7	10	962.6
3500	3.4	600	19.6	2	2696.1
3000	3.9	400	29.3		
2500	4.7	200	58.3		

Table 65: Frame rate as a function of ROI height at Mono10 [width=5120 pixels]

Prosilica GT6600, GT6600C

Feature	Specification	
	Prosilica GT6600	Prosilica GT6600C
Resolution	6576 (H) × 4384 (V) 28.8 MP	
Sensor	ON Semi KAI-29050 TRUESENSE Gen 2	
Sensor type	Interline CCD, Progressive Scan	
Shutter type	Global	
Sensor format	Type 35mm	
Sensor size	43.47 mm diagonal	
Pixel size	5.5 µm × 5.5 µm	
Lens mount ¹	Default: F-Mount Optional: See the <i>Modular Concept</i>	
Housing	Large format housing	
Optical filter	Default: No optical filter Optional: See the <i>Modular Concept</i>	Default: IRC30 IR cut filter Optional: See the <i>Modular Concept</i>
Maximum frame rate at full resolution	Four-tap mode: 4 fps One-tap mode: 1 fps	
Maximum image bit depth	12/14 bit	
Image buffer	128 MB	
StreamHoldCapacity	T.B.D.	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed, Mono14	Mono8
YUV color pixel formats		YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats		RGB8Packed, BGR8Packed, RGBA8Packed, BGRA8Packed
RAW pixel formats		BayerGR8, BayerGR12, BayerRG12Packed
Exposure time control	30 µs to 33.5 s, 1 µs increments	
Gain control	0 to 32 dB; 1 dB increments	
Binning	Horizontal: 1 to 8 columns Vertical: 1 to 8 rows	
Decimation X/Y	Horizontal and vertical: 1, 2, 4, 8 factor	
Sensor taps	Quad-tap Single-tap switchable in Vimba Viewer 2.0 or later	
Power consumption	6.6 W at 12 VDC; 8.1 W PoE	
Trigger latency	2.5 µs	

Table 66: Prosilica GT6600, GT6600C model specifications

Feature	Specification	
	Prosilica GT6600	Prosilica GT6600C
Trigger jitter	± 20 ns	
Propagation delay (t_{pd})	30 ns for non-isolated I/O; 70 ns for isolated I/O	
Operating temperature	-20 °C to +50 °C ambient temperature (without condensation)	
Storage temperature	-20 °C to +70 °C ambient temperature (without condensation)	
Operating humidity	20 to 80% non-condensing	
Body dimensions (L × W × H)	96 × 66 × 53.3 mm	
Mass (typical)	372 g	
Temperature monitoring	Available for main board and sensor board. Resolution: 0.031; Accuracy: ± 1 °C	

¹ To enable EF lens control on Prosilica GT cameras you must update firmware to version 01.54.14263 or later. EF lens control is only supported for cameras with EF lens mount (order option-18).

Table 66: Prosilica GT6600, GT6600C model specifications (continued)

Absolute QE

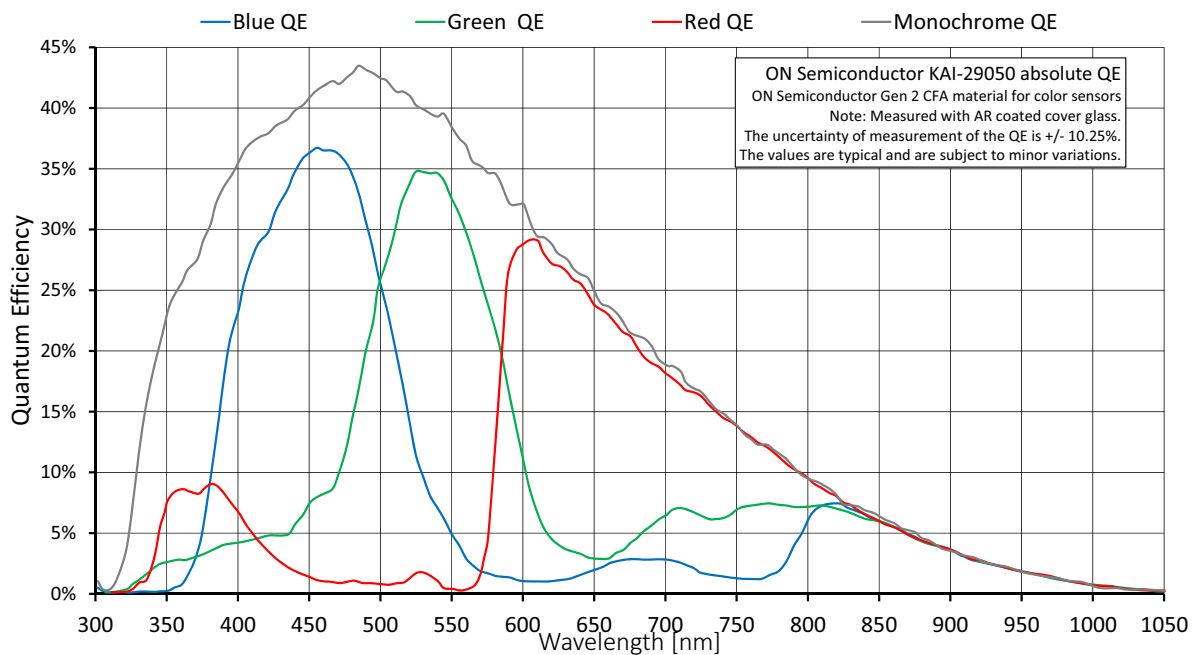


Figure 55: Prosilica GT6600, GT6600C (ON Semi KAI-29050 Gen 2) absolute QE

ROI frame rate

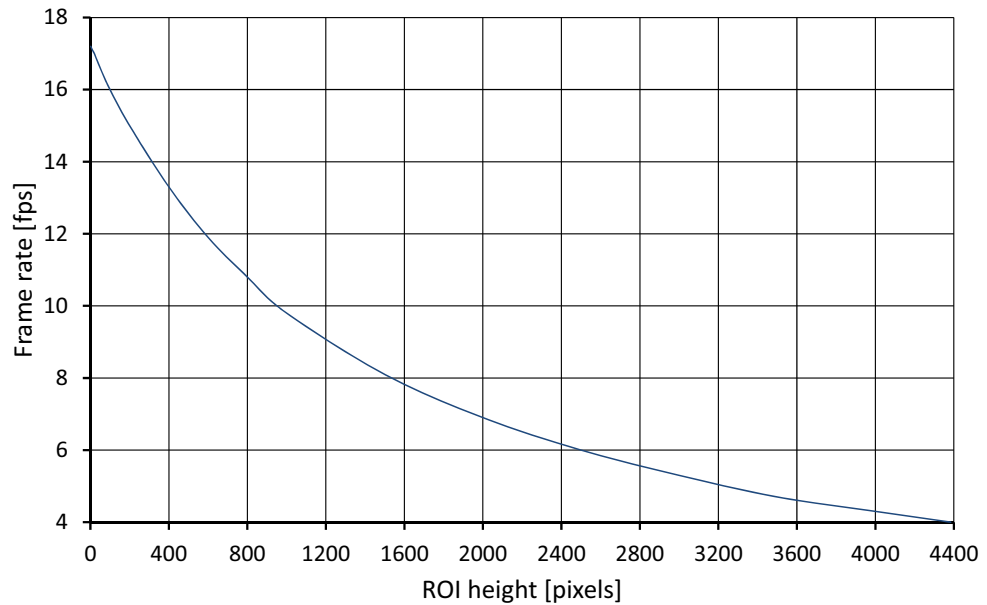


Figure 56: Frame rate as a function of ROI height [width=6576 pixels]

Height (pixels)	Frame rate	Height (pixels)	Frame rate	Height (pixels)	Frame rate
4384	4	1500	8.1	100	16
4000	4.3	1000	9.8	50	16.6
3500	4.7	800	10.8	20	17
3000	5.3	600	11.9	10	17.1
2500	6	400	13.3	2	17.2
2000	6.9	200	15		

Width=6576 pixels

Table 67: Frame rate as a function of ROI height

The following table shows how binning affects frame rate.

BinningVertical	Height (pixels)	Frame rate	BinningVertical	Height (pixels)	Frame rate
2	2192	7.5	6	730	17.3
3	1460	10.4	7	626	19.1
4	1096	13.0	8	548	20.7
5	876	15.3			

Table 68: Frame rate as a function of ROI height with vertical binning enabled

Prosilica GT model comparison

Model	Sensor	Sensor type	Sensor format	Resolution	Frame rate
GT1290, GT1290C	Sony ICX445	CCD	Type 1/3	1280 × 960	33.3 fps
GT1380, GT1380C	Sony ICX285	CCD	Type 2/3	1360 × 1024	30.5 fps
GT1600, GT1600C	Sony ICX274	CCD	Type 1/1.8	1620 × 1220	25.8 fps
GT1660, GT1660C	ON Semi KAI-02050	CCD	Type 2/3	1600 × 1200	62 fps ¹
GT1910, GT1910C	ON Semi KAI-02150	CCD	Type 2/3	1920 × 1080	57.5 fps ¹
GT1920, GT1920C	Sony ICX674	CCD	Type 2/3	1936 × 1456	40.7 fps ¹
GT1930, GT1930C	Sony IMX174	CMOS	Type 1/1.2	1936 × 1216	50.7 fps
GT1930L, GT1930LC	Sony IMX174	CMOS	Type 1/1.2	1936 × 1216	50.7 fps
GT2000, GT2000C	CMOSIS/ams CMV2000	CMOS	Type 2/3	2048 × 1088	53.7 fps
GT2000NIR	CMOSIS/ams CMV2000 NIR	CMOS	Type 2/3	2048 × 1088	53.7 fps
GT2050, GT2050C	CMOSIS/ams CMV4000	CMOS	Type 1	2048 × 2048	28.6 fps
GT2050NIR	CMOSIS/ams CMV4000 NIR	CMOS	Type 1	2048 × 2048	28.6 fps
GT2300, GT2300C	ON Semi KAI-04050	CCD	Type 1	2336 × 1752	29.3 fps ¹
GT2450, GT2450C	Sony ICX625	CCD	Type 2/3	2448 × 2050	15 fps
GT2460, GT2460C	Sony IMX264	CMOS	Type 2/3	2464 × 2056	23.7 fps
GT2750, GT2750C	Sony ICX694	CCD	Type 1	2750 × 2200	19.8 fps ¹
GT3300, GT3300C	ON Semi KAI-08050	CCD	Type 4/3	3296 × 2472	14.7 fps ¹
GT3400, GT3400C	Sony ICX814	CCD	Type 1	3384 × 2704	13.2 fps ¹
GT4090, GT4090NIR	ON Semi PYTHON 12K, 12K NIR	CMOS	Type 4/3	4096 × 3072	9.58 fps
GT4096, GT4096NIR	ON Semi PYTHON 16K, 16K NIR	CMOS	Type APS-H	4096 × 4096	7.18 fps
GT4905, GT4905C	ON Semi KAI-16050	CCD	Type APS-H	4896 × 3264	7.5 fps ¹
GT4907, GT4907C	ON Semi KAI-16070	CCD	Type 35mm	4864 × 3232	7.6 fps ¹
GT5120, GT5120NIR	ON Semi PYTHON 25K, 25K NIR	CMOS	Type APS-H	5120 × 5120	4.60 fps
GT6600, GT6600C	ON Semi KAI-29050	CCD	Type 35mm	6576 × 4384	4 fps ¹

¹ Frame rate reflects quad-tap mode. See the specification tables for the frame rate for single-tap mode.

Table 69: Prosilica GT model overview

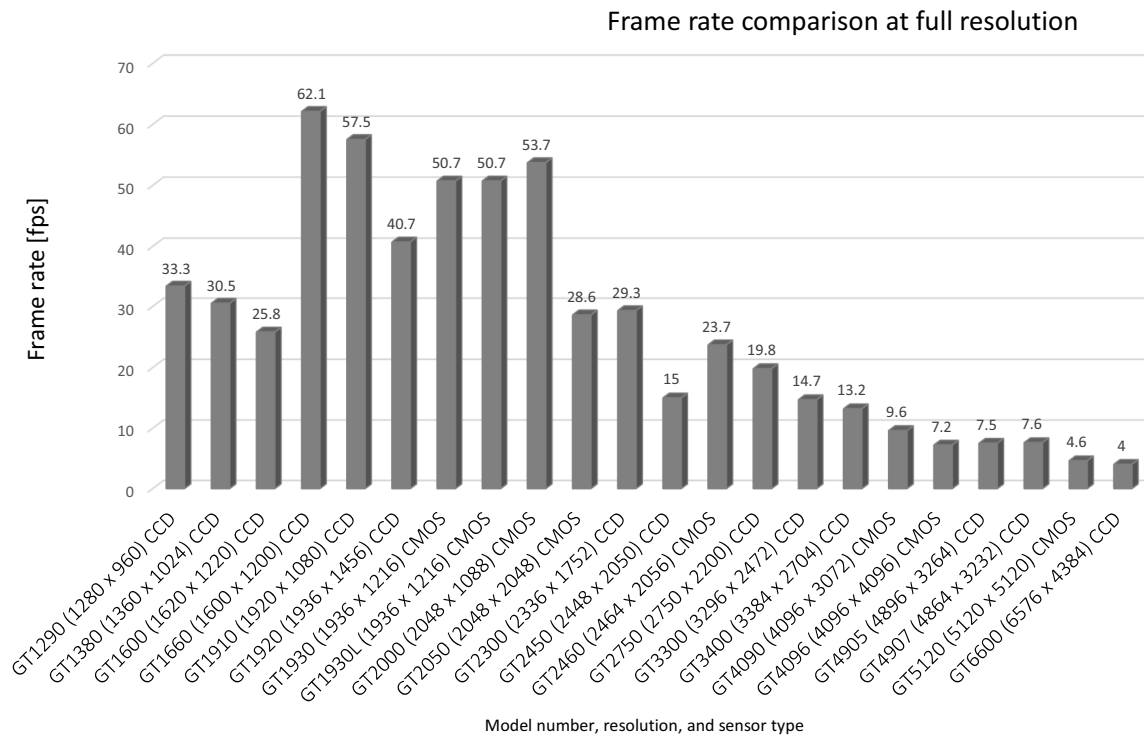


Figure 57: Frame rate comparison

Camera feature comparison

Allied Vision cameras support a number of standard and extended features. The following table identifies a selection of capabilities and compares the availability of features in Prosilica GT camera models.



Camera feature reference

A complete listing of camera features, including definitions can be found on the Allied Vision Technical Documentation web page, go to <https://www.alliedvision.com/en/support/technical-documentation.html>.

- Vimba and third-party users: *GigE Features Reference*
- PvAPI users: *GigE Camera and Driver Attributes* document



Some features are firmware dependent, please refer to the GigE Release Notes for more information.

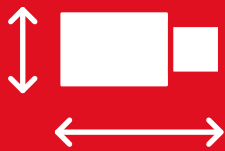
		GT1290	GT1380	GT1600	GT1660	GT1910	GT1920	GT1930	GT1930L	GT2000	GT2050	GT2300	GT2450	GT2460	GT2750	GT3300	GT3400	GT4090	GT4096	GT4905	GT4907	GT5120	GT6600
Image optimization features	Auto gain	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Auto exposure	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Auto white balance (color models only)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓		✓
	Binning	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓			✓	✓		✓
	Black level (offset)							✓	✓	✓	✓			✓									
	Hue, saturation, color correction (color models only)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓		✓
	Column Defect Masking ¹				✓	✓	✓					✓			✓	✓	✓			✓	✓		✓
	Defect Pixel Correction																	✓	✓			✓	
	Pixel Defect Masking									✓	✓												
	Decimation X/Y	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Fixed Pattern Noise Correction																	✓	✓			✓	
	Gamma correction	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Three look-up tables	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Piecewise Linear HDR mode									✓	✓												
	Reverse X				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓		✓
	Reverse Y				✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			✓	✓		✓
	ROI	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Table 70: Camera feature comparison

		GT1290	GT1380	GT1600	GT1660	GT1910	GT1920	GT1930	GT1930L	GT2000	GT2050	GT2300	GT2450	GT2460	GT2750	GT3300	GT3400	GT4090	GT4096	GT4905	GT4907	GT5120	GT6600
Camera control features	P-Iris and DC-Iris lens control	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓						
	EF lens control ²								✓									✓	✓	✓	✓	✓	✓
	Event channel	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Image chunk data	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IEEE 1588 Precision Time Protocol	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	RS232	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Storable user sets (config files)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Stream hold	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Sync out modes	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Tap mode switchable in Vimba Viewer 2.0 or later				✓	✓	✓					✓			✓	✓	✓			✓	✓		✓
	Temperature monitoring (main board and sensor board)	✓	✓	✓	✓	✓	✓	✓	✓	✓ ³	✓ ³	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Trigger over Ethernet (ToE)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
¹ CCD models only: Column defect masking supported for quad-tap cameras running in single-tap mode ² EF lens control is only supported for models with EF lens mount (order option-18). ³ Temperature readout only available on the main board and not on the sensor board.																							

Table 70: Camera feature comparison (continued)

Mechanical dimensions



This chapter includes:

- Mechanical drawings and dimensions of standard, extended, and Large Format housings, and tripod adapter
- Sensor position accuracy
- Maximum protrusion and filter diameter for C-Mount

The Prosilica GT family supports a range of sensor formats. To support this sensor variety, three housing formats are used:

- Prosilica GT standard format housing
- Prosilica GT extended format housing
- Prosilica GT Large Format housing



Prosilica GT cameras are available with various lens mount options. For more information, see the *Modular Concept* document at <https://www.alliedvision.com/en/support/technical-documentation.html>.



Mechanical drawings

This chapter does not include mechanical drawings for all available lens mount options for all Prosilica GT housing formats.

Prosilica GT standard format housing

Models: Prosilica GT1290, GT1380, GT1600, GT2000, GT2050, GT2450, GT2460
Mount: C-Mount (default)

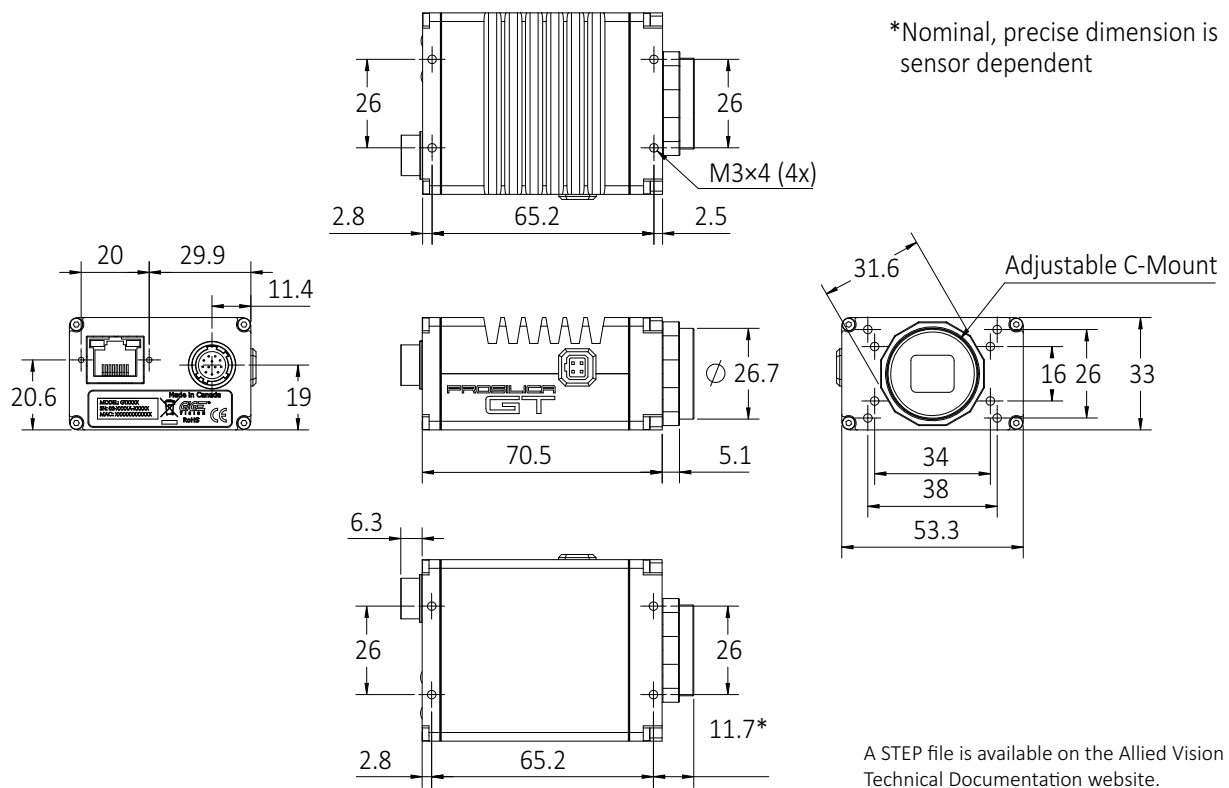


Figure 58: C-Mount standard format housing dimensions

Model: Prosilica GT1930
Mount: C-Mount (default)

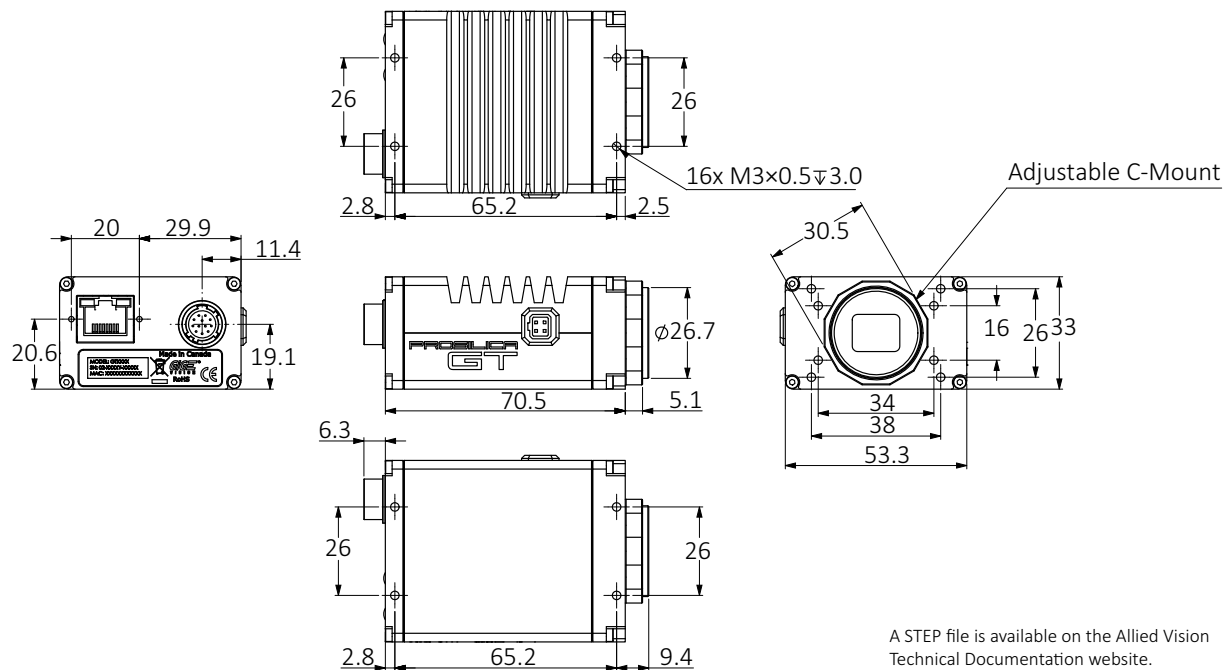


Figure 59: Prosilica GT1930 C-Mount standard format housing dimensions



M42-Mount

Prosilica GT standard cameras are available with M42-Mount, see [Technical Drawing: Prosilica GT standard Cameras](#) for M42-Mount for dimensions.

Prosilica GT extended format housing

Models: Prosilica GT1660, GT1910, GT1920, GT2300, GT2750, GT3400
Mount: C-Mount (default)

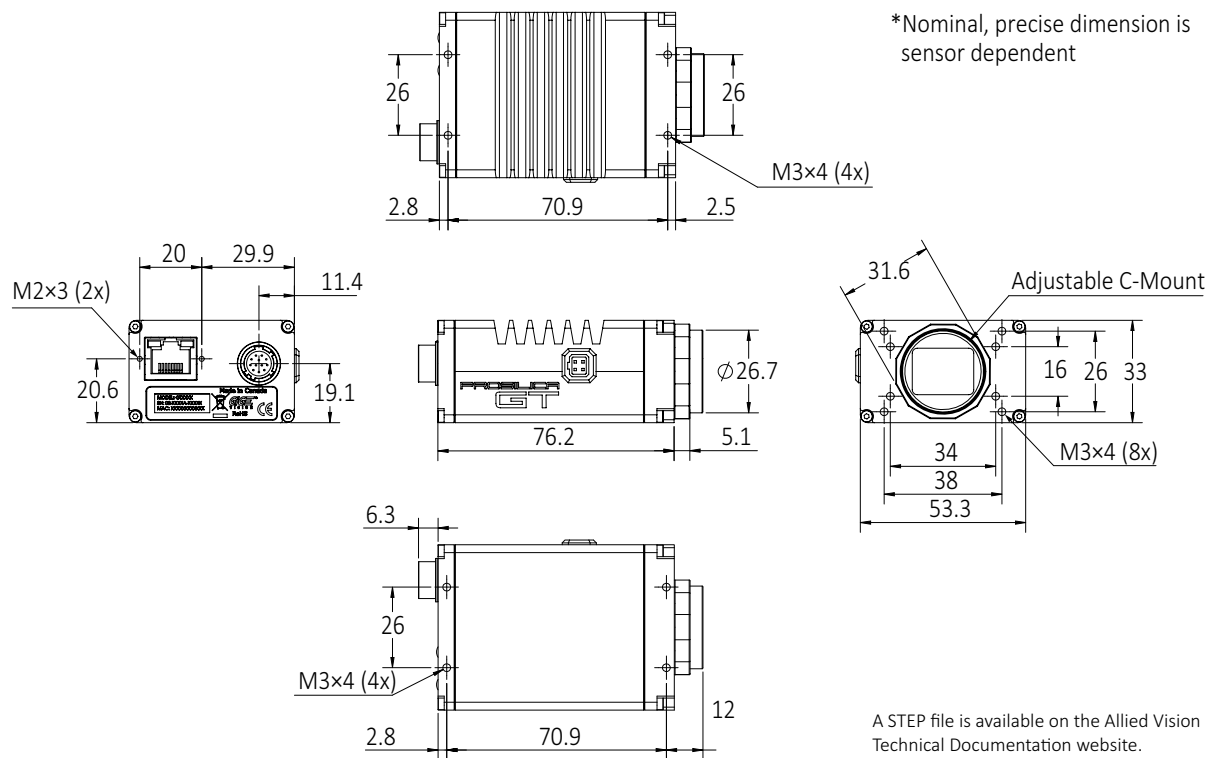


Figure 60: C-Mount extended format housing dimensions

Model: Prosilica GT3300
Mount: F-Mount (default)

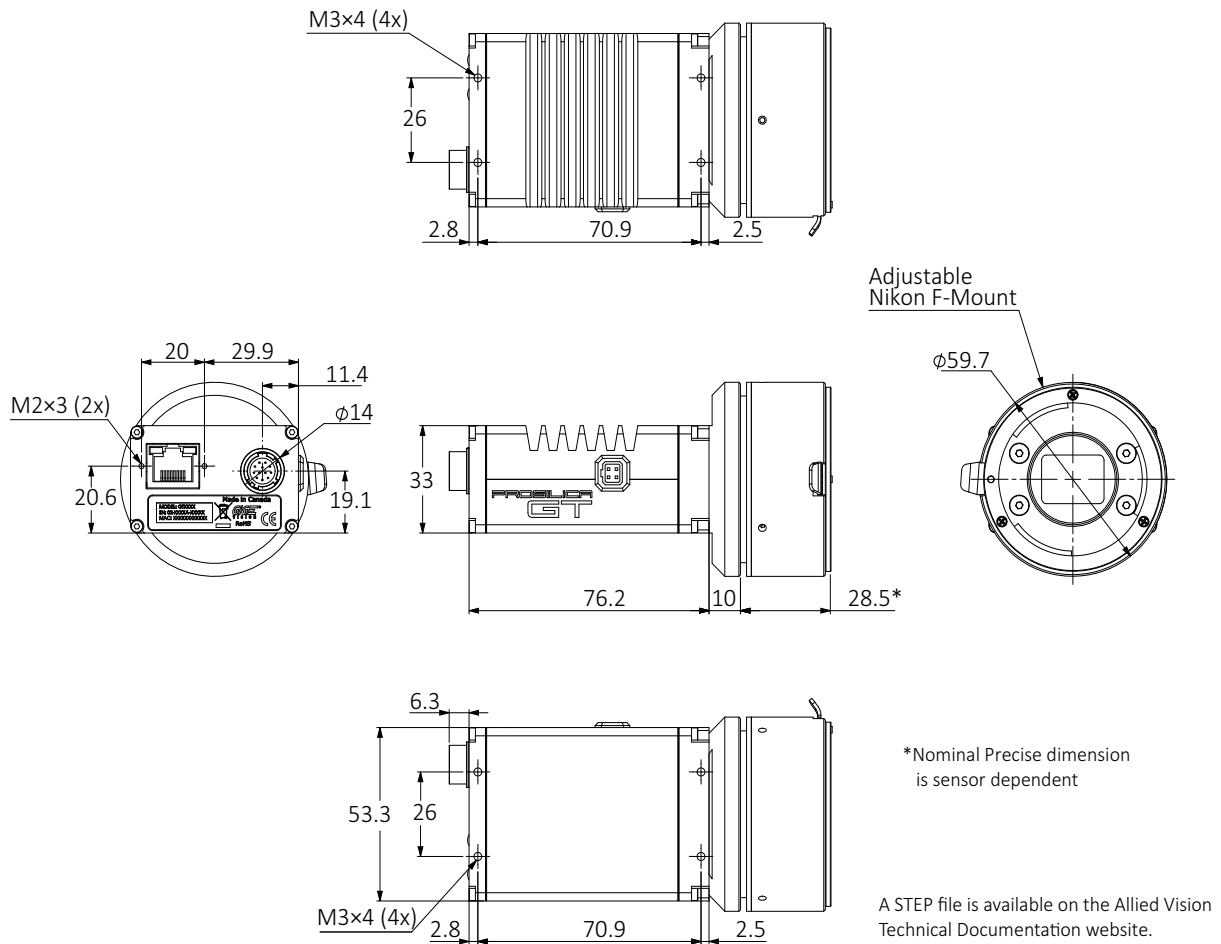


Figure 61: Prosilica GT3300 F-Mount extended format housing dimensions



M42-Mount

Prosilica GT standard cameras are available with M42-Mount, see [Technical Drawing: Prosilica GT standard cameras](#) for M42-Mount for dimensions.

Prosilica GT Large Format housing

EF-Mount PA

Models: Prosilica GT1930L, GT4090, GT4096, GT4905, GT4907, GT5120, GT6600

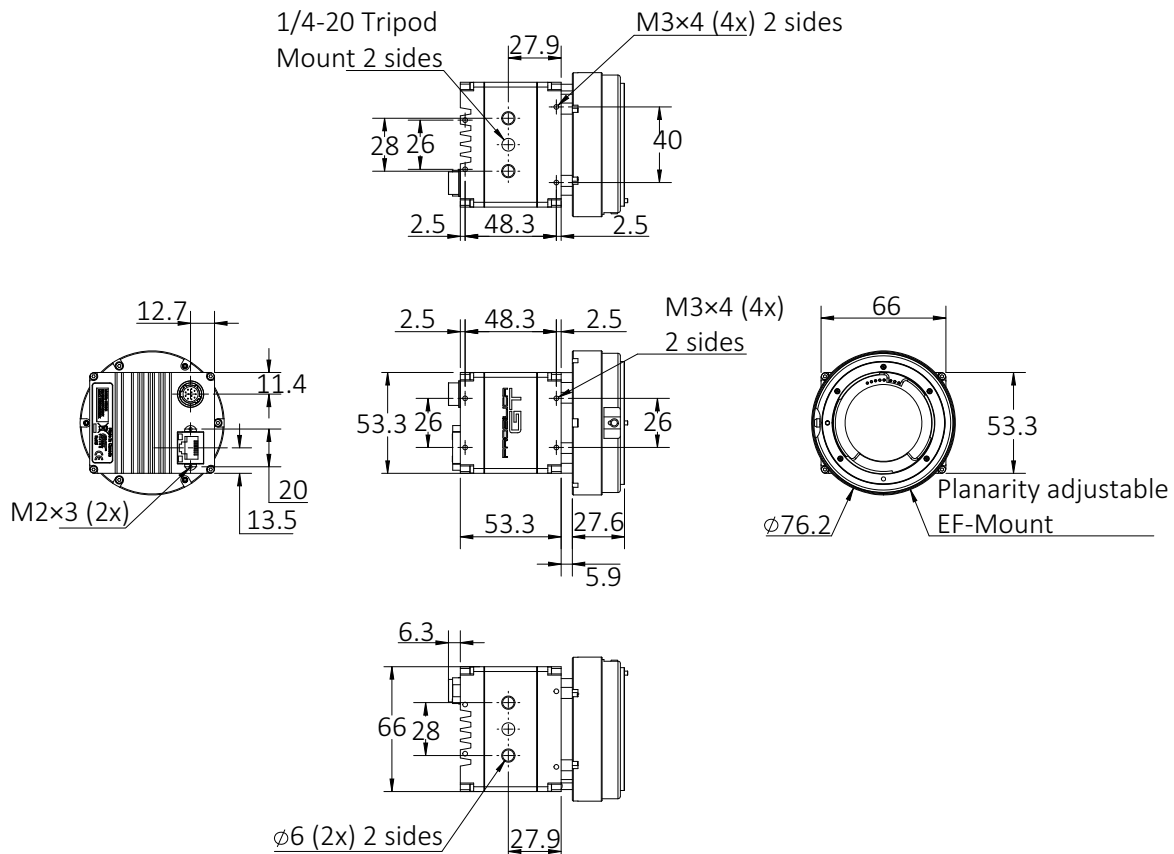


Figure 62: EF-Mount PA Large Format housing dimensions



NOTICE

Modifying the factory default adjustment is under the responsibility of the user. Exercise caution when modifying the planarity adjustment of the mount. Use a 1.5 mm hex ball driver to loosen the three spring loaded screws, adjust the tilt adjustment screws as required, then secure the screws.



EF-Mount PA order code

Contact the Allied Vision Sales team to purchase the Prosilica GT series camera with EF-Mount PA option (order code Prosilica GT...-18).

F-Mount (default)

Models: Prosilica GT1930L, GT4090, GT4096, GT4905, GT4907, GT5120, GT6600

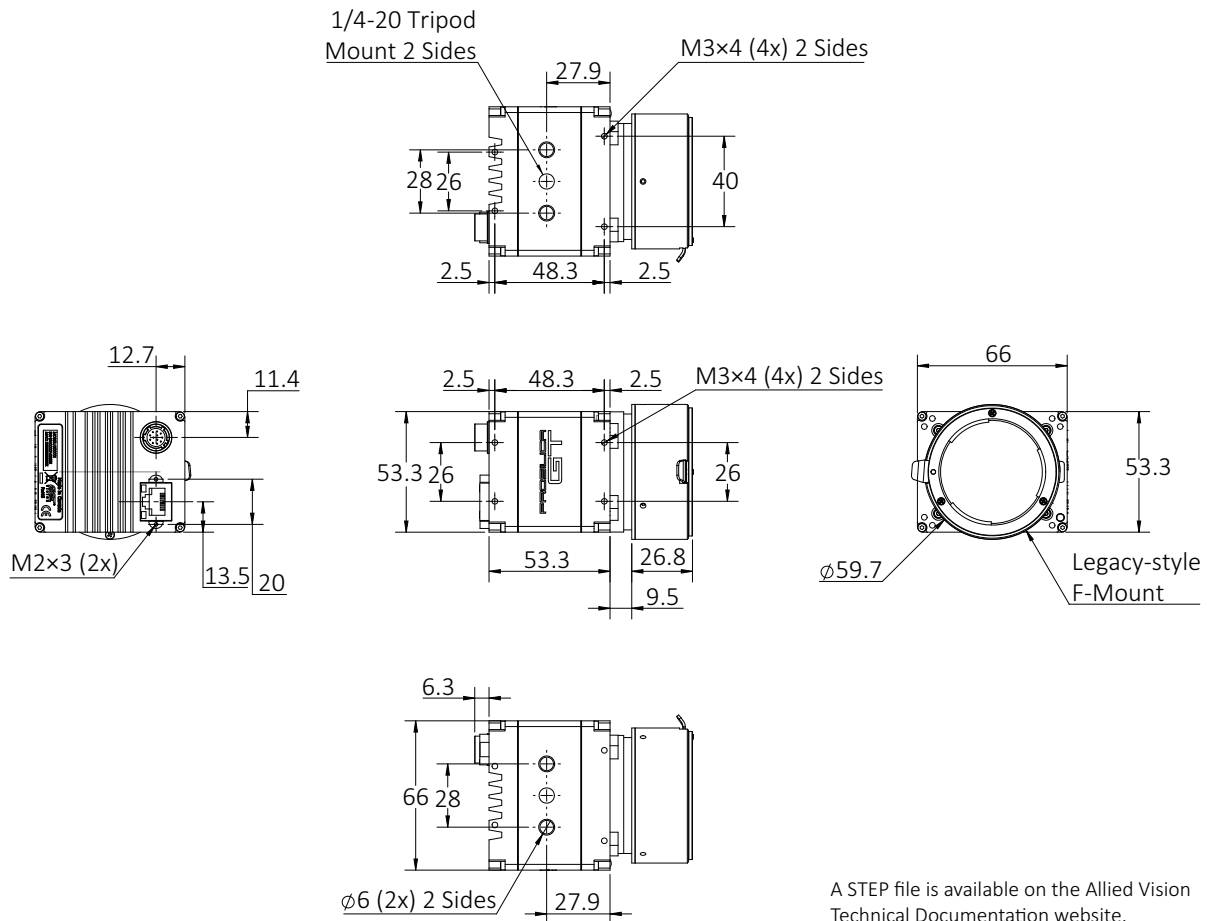


Figure 63: F-Mount Large Format housing dimensions

F-Mount PA

Models: Prosilica GT1930L, GT4090, GT4096, GT4905, GT4907, GT5120, GT6600

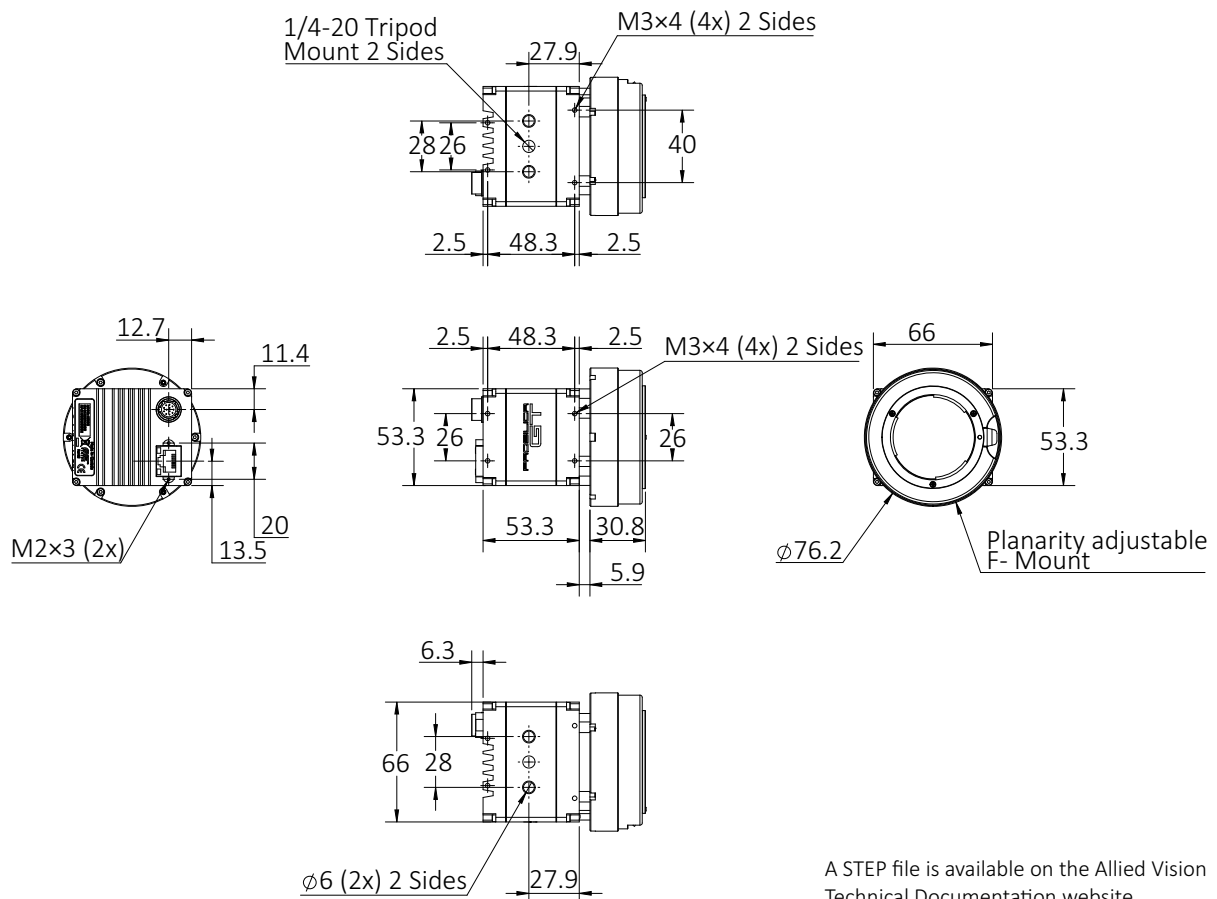


Figure 64: F-Mount PA Large Format housing dimensions



NOTICE

Modifying the factory default adjustment is under the responsibility of the user. Exercise caution when modifying the planarity adjustment of the mount. Use a 1.5 mm hex ball driver to loosen the three spring loaded screws, adjust the tilt adjustment screws as required, then secure the screws.

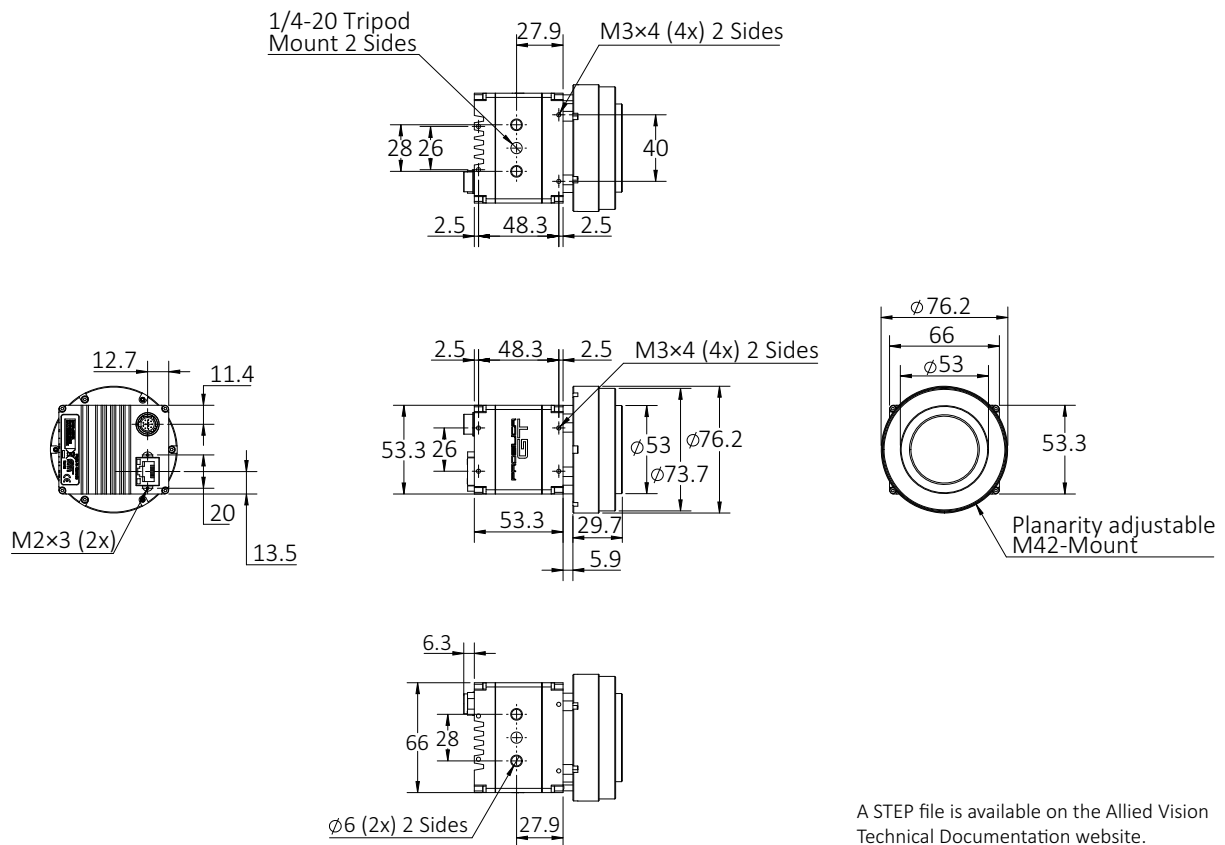


F-Mount PA order code

Contact the Allied Vision Sales team to purchase the Prosilica GT series camera with F-Mount PA option (order code Prosilica GT...-03).

M42-Mount PA

Models: Prosilica GT1930L, GT4090, GT4096, GT4905, GT4907, GT5120, GT6600



A STEP file is available on the Allied Vision Technical Documentation website.

Figure 65: M42-Mount PA Large Format housing dimensions



NOTICE

Modifying the factory default adjustment is under the responsibility of the user. Exercise caution when modifying the planarity adjustment of the mount. Use a 1.5 mm hex ball driver to loosen the three spring loaded screws, adjust the tilt adjustment screws as required, then secure the screws.



M42-Mount PA order code

Contact the Allied Vision Sales team to purchase the Prosilica GT series camera with M42-Mount PA option (order code Prosilica GT...-25).

M42-Mount

Models: Prosilica GT1930L, GT4090, GT4096, GT4905, GT4907, GT5120, GT6600

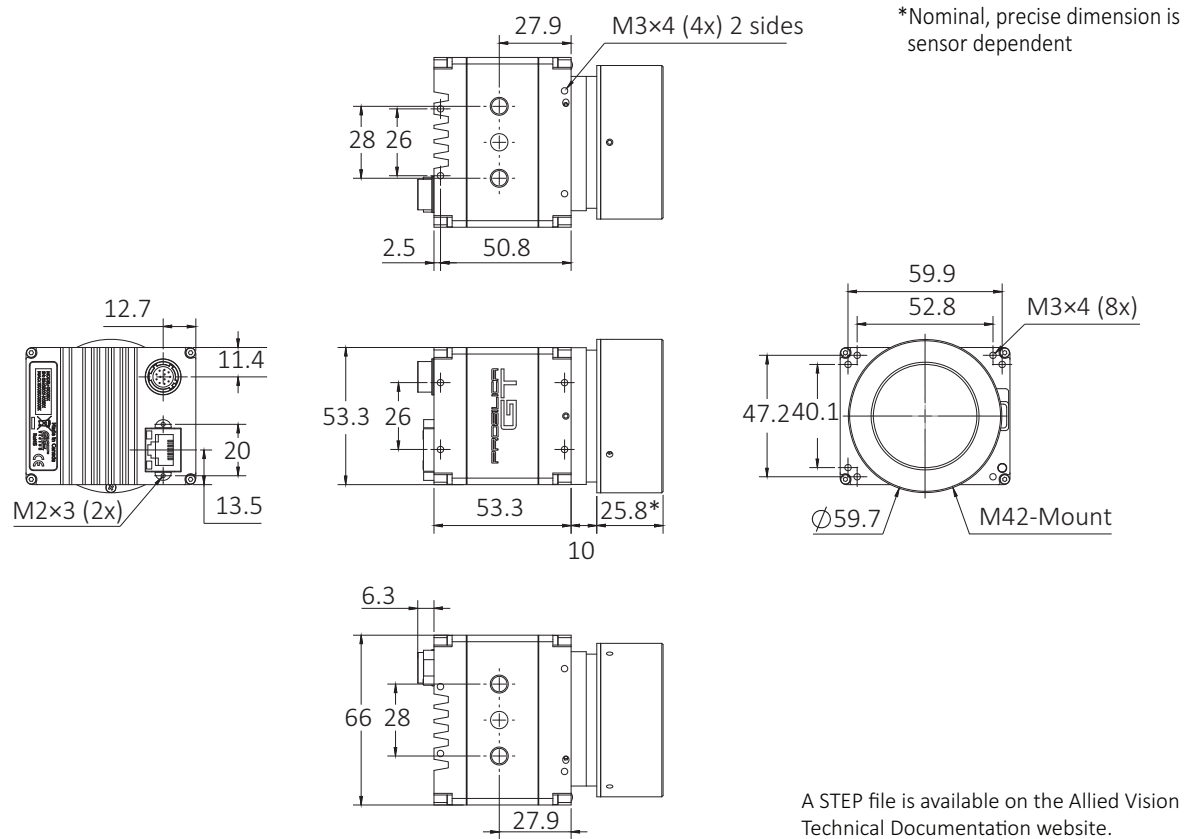


Figure 66: M42-Mount Large Format housing dimensions

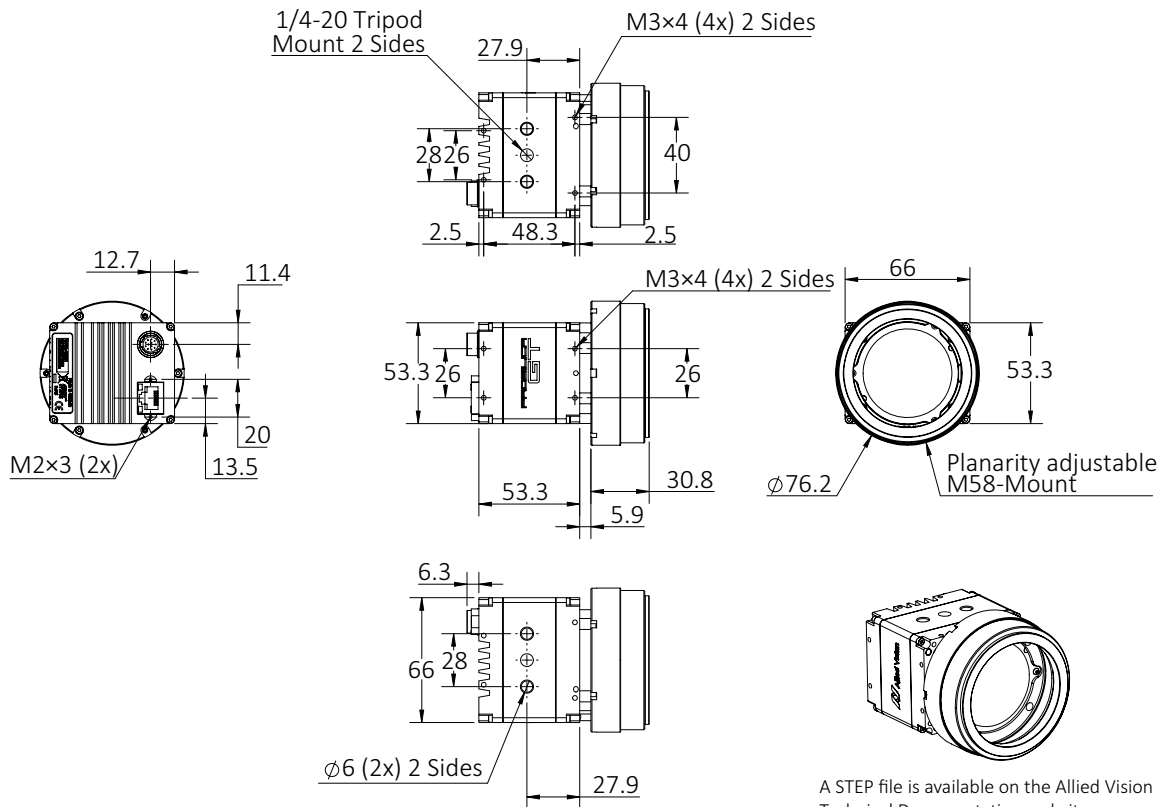


M42-Mount order code

Contact the Allied Vision Sales team to purchase the Prosilica GT series camera with M42-Mount option (order code Prosilica GT...-31).

M58-Mount PA

Models: Prosilica GT1930L, GT4090, GT4096, GT4905, GT4907, GT5120, GT6600



A STEP file is available on the Allied Vision Technical Documentation website.

Figure 67: M58-Mount PA Large Format housing dimensions



NOTICE

Modifying the factory default adjustment is under the responsibility of the user. Exercise caution when modifying the planarity adjustment of the mount. Use a 1.5 mm hex ball driver to loosen the three spring loaded screws, adjust the tilt adjustment screws as required, then secure the screws.

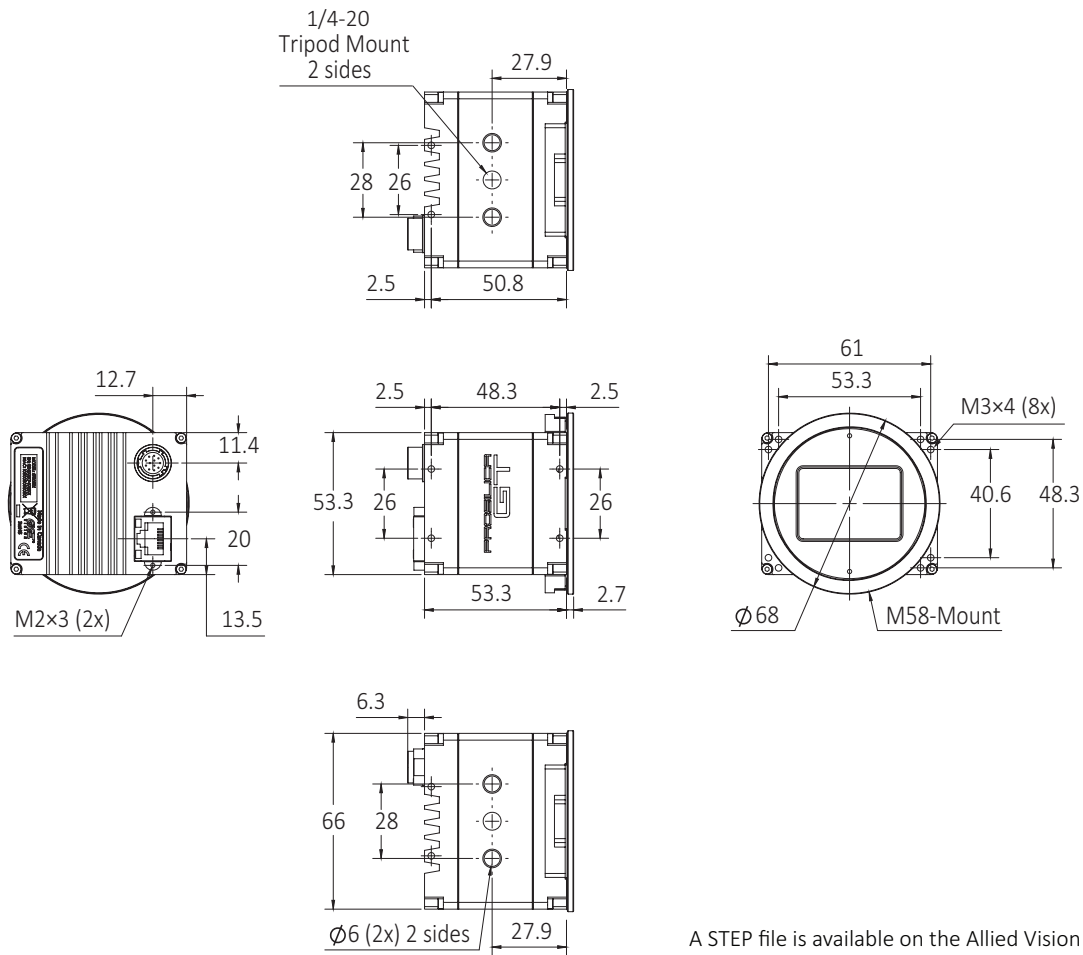


M58-Mount PA order code

Contact the Allied Vision Sales team to purchase the Prosilica GT series camera with M58-Mount PA option (order code Prosilica GT...-13).

M58-Mount

Models: Prosilica GT1930L, GT4090, GT4096, GT4905, GT4907, GT5120, GT6600



A STEP file is available on the Allied Vision Technical Documentation website.

Figure 68: M58-Mount Large Format housing dimensions



M58-Mount order code

Contact the Allied Vision Sales team to purchase the Prosilica GT series camera with M58-Mount option (order code Prosilica GT...-12).

Tripod adapter

Prosilica GT standard and extended housing cameras can be mounted on a camera tripod by using the Prosilica GT tripod adapter.



Prosilica GT tripod adapter

Contact the Allied Vision Sales team to purchase the Prosilica GT series tripod adapter (order code 02-5036A).

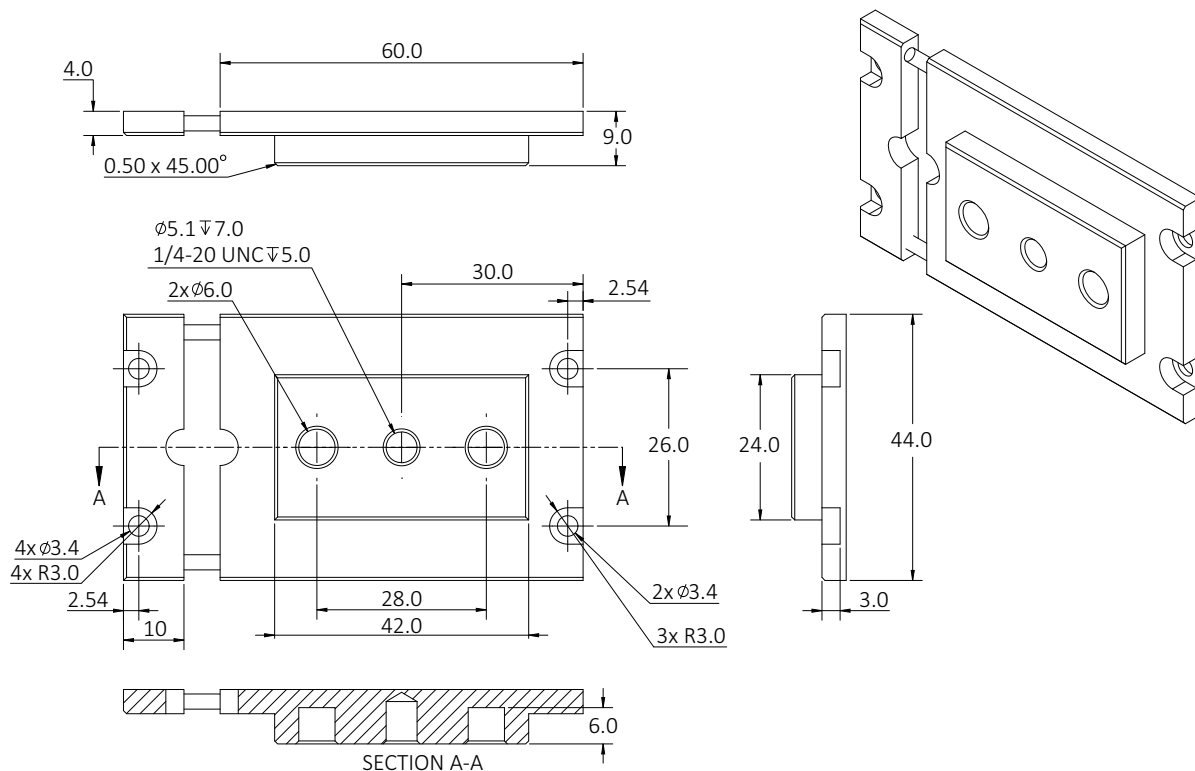


Figure 69: Tripod adapter for Prosilica GT standard and extended cameras

Prosilica GT Large Format cameras can be mounted on a camera tripod by using the 1/4-20 tripod mount hole integrated into the camera body.

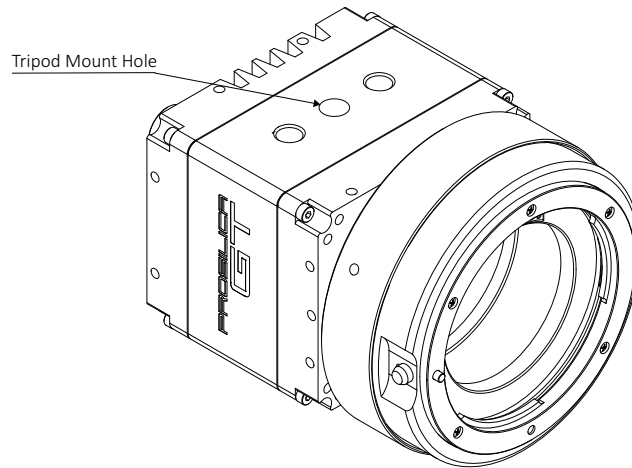


Figure 70: Integrated tripod mount holes for Prosilica GT Large Format cameras

Flange focal distance

C-Mount

Flange focal distance is the optical distance from the mounting flange to image sensor die. Prosilica GT C-Mount cameras are calibrated to a standard 17.526 mm flange focal distance, with a $\pm 10 \mu\text{m}$ tolerance.



CS-Mount

Prosilica GT cameras are shipped with adjustable C-Mount. Cameras can also be built with a CS-Mount with a standard 12.50 mm flange focal distance and a $\pm 10 \mu\text{m}$ tolerance. For more information, see the *Modular Concept*:

<https://www.alliedvision.com/en/support/technical-documentation.html>

Adjustment of C-Mount

If for some reason the lens mount requires adjustment, use the following method.

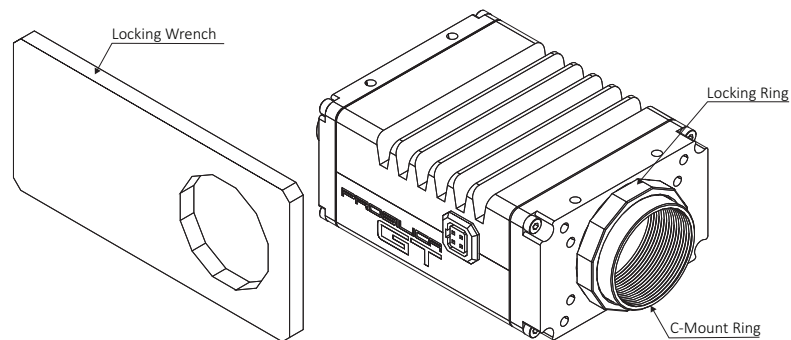


Figure 71: Prosilica GT camera and locking wrench

Loosen the locking ring

Use an adjustable wrench to loosen the locking ring. Be careful not to scratch the camera. When the locking ring is loose, unthread the ring a few turns from the camera face.



Lens tool - adjustment wrench

Contact the Allied Vision Sales team to purchase the hexagonal lens adjustment wrench for Prosilica GT cameras with C-Mount or CS-Mount locking ring (order code 02-5003A).

Adjusting the lens to infinity

Precondition: Use a C-Mount compatible lens that allows an infinity focus.

1. Set the lens to infinity and image a distant object (10 to 15 m). Make sure the lens is firmly threaded onto the C-Mount ring.
2. Rotate the lens and C-Mount ring until the image is focused.
3. Carefully tighten the locking ring and recheck focus.

Lens protrusion

Lens protrusion is the distance from outer edge of C-Mount ring to contact point of first surface internal to C-Mount ring. For color cameras, this surface is the IR cut or IR pass filter holder. For monochrome cameras, this surface is the internal camera front plate. Table 71 presents lens protrusion values for Prosilica GT cameras with C-Mount.

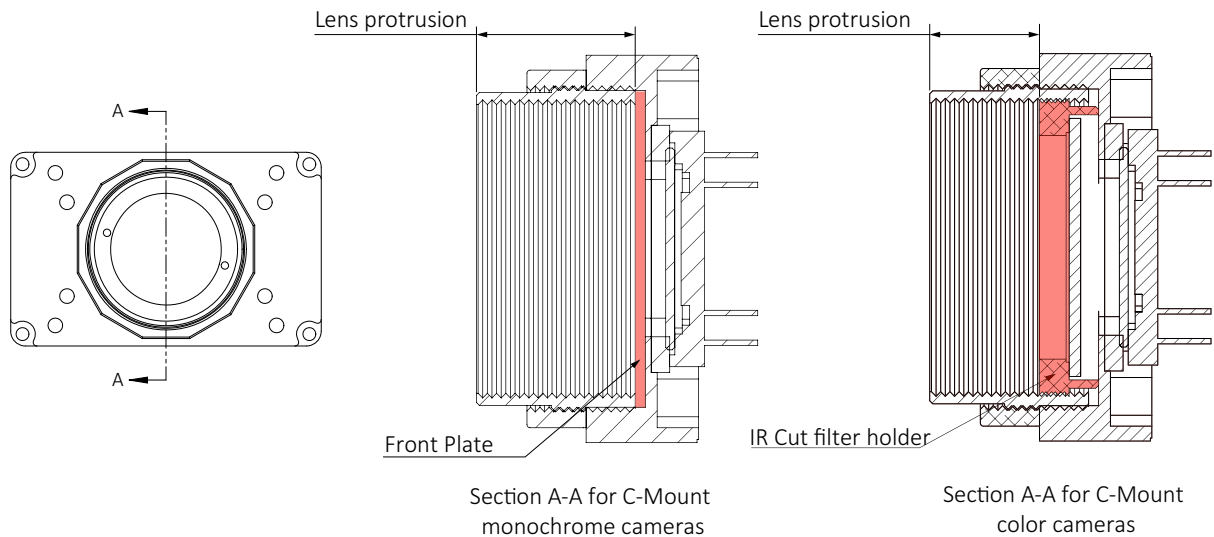


Figure 72: Cross section of typical Prosilica GT camera front assembly with C-Mount



NOTICE

Avoid damage from unsuitable lenses

To protect camera and lens, use lenses only up to the allowed maximum protrusion, as listed in the following tables.

Model	Lens protrusion [mm]
Prosilica GT1290	13.64
Prosilica GT1290C	9.32
Prosilica GT1380	13.64
Prosilica GT1380C	9.64
Prosilica GT1600	13.64
Prosilica GT1600C	9.32
Prosilica GT1660	13.64
Prosilica GT1660C	9.43
Prosilica GT1910	13.64

Model	Lens protrusion [mm]
Prosilica GT2000	13.64
Prosilica GT2000C	10.31
Prosilica GT2050	13.64
Prosilica GT2050C	10.31
Prosilica GT2300	13.64
Prosilica GT2300C	9.43
Prosilica GT2450	13.64
Prosilica GT2450C	9.27
Prosilica GT2460	14.404

Table 71: Lens protrusion for Prosilica GT models with C-Mount

Model	Lens protrusion [mm]
Prosilica GT1910C	9.43
Prosilica GT1920	13.64
Prosilica GT1920C	9.27
Prosilica GT1930	14.52
Prosilica GT1930C	9.44

Model	Lens protrusion [mm]
Prosilica GT2460C	9.324
Prosilica GT2750	13.64
Prosilica GT2750C	9.27
Prosilica GT3400	13.64
Prosilica GT3400C	9.27

Table 71: Lens protrusion for Prosilica GT models with C-Mount (continued)

F-Mount

Flange focal distance is the optical distance from the mounting flange to image sensor die. Prosilica GT F-Mount cameras are calibrated to a standard 46.50 mm flange focal distance.

Adjustment of F-Mount

The F-Mount is adjusted at the factory and should not require adjusting. If for some reason the lens mount requires adjustment, use the following method.

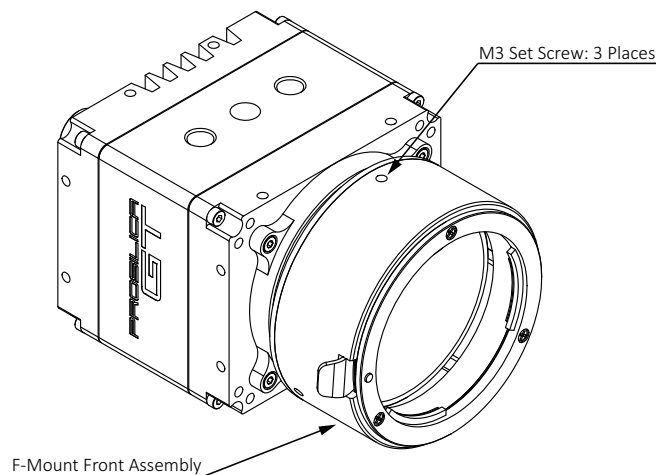


Figure 73: Prosilica GT Large Format with F-Mount isometric view

Adjusting the F-Mount

1. Attach F-Mount compatible lens
Use an F-Mount compatible lens that allows an infinity focus. Attach the lens to the camera using a counter-clockwise rotation of about a quarter turn. The lens snaps into place and the lens flange and camera flange mates over the full circumference.
2. Loosen F-Mount front assembly
Use a 1.5 mm hex ball driver to loosen the three set screws then hold the F-Mount front assembly to the camera body.

3. Image to infinity
Set the lens to infinity and image a distant object (10 to 15 m). Gently move the F-Mount front until focused and lock it in place.

Other mounts

Flange focal distance is the optical distance from the lens mounting flange to image sensor die.

Mount	Calibration variation	Flange focal distance
EF-Mount	< 70 μm (0.3°) Z-tilt and $\pm 10 \mu\text{m}$	44.00 mm
F-Mount	Not applicable	46.50 mm
M42-Mount	Not applicable	45.46 mm
M58-Mount	Not applicable	12.71 mm 46.50 mm

Table 72: Calibration variation from standard flange focal distance

PA mounts

Prosilica GT cameras allow planarity adjustment of the mount relative to the camera sensor. Adjustment can be made for overall flange focal distance (Z distance), and planarity (Z-tilt). The following steps describe Z adjustment using a standard EF lens and a target. However, measurement tools such as an optical depth micrometer could also be used.



NOTICE

Modifying the factory default adjustment is under the responsibility of the user. Exercise caution when modifying the PA. Use a 1.5 mm hex ball driver to loosen the three spring loaded screws, adjust the tilt adjustment screws as required, then secure the set screws.

1. Using a compatible lens, set the lens to infinity and image on a target (10 to 15 m). Target should highlight focus levels at center image and at the corners of the image, as shown in figure 74. A lens with a long focal length, or adjustable zoom lens, will allow more precision for this operation and reduce the overall size of your target.

2. Use a 1.5 mm hex ball head driver to loosen the screws.
Adjust the three tilt adjustment screws, as indicated in figure 74, until all targets are in focus.

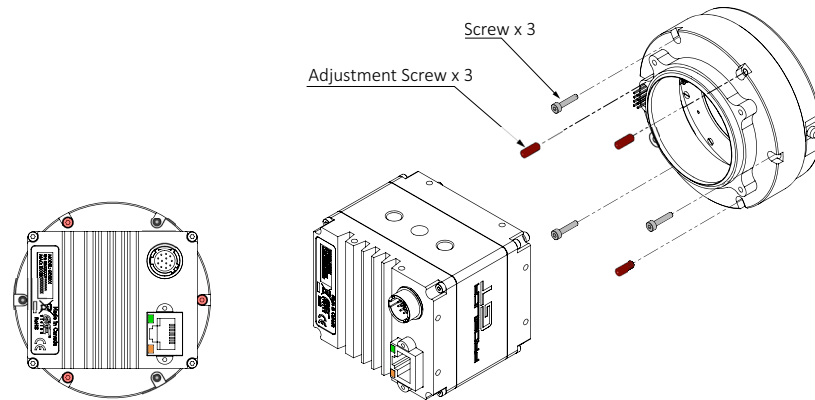


Figure 74: Back view (left) and exploded view (right) of Prosilica GT1930L camera assembly showing the adjustment screws and screws in the EF-Mount

3. Tighten the three screws and recheck the focus.

M42-Mount flange focal distance

M42-Mount PA

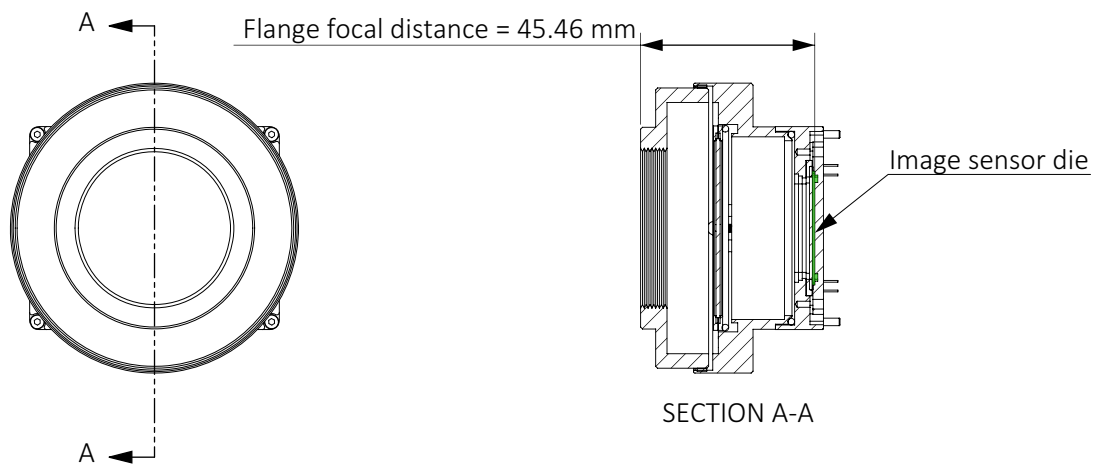


Figure 75: M42-Mount PA flange focal distance

M42-Mount

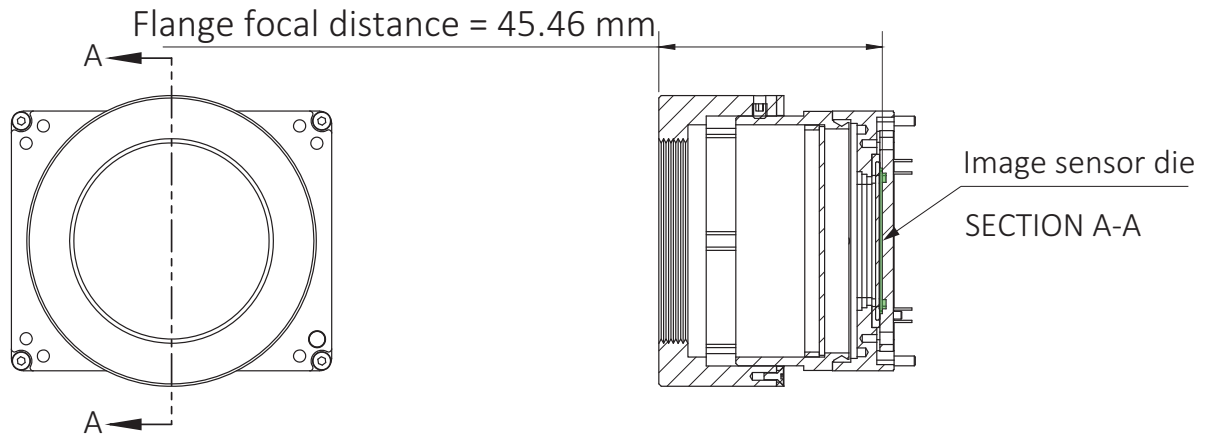
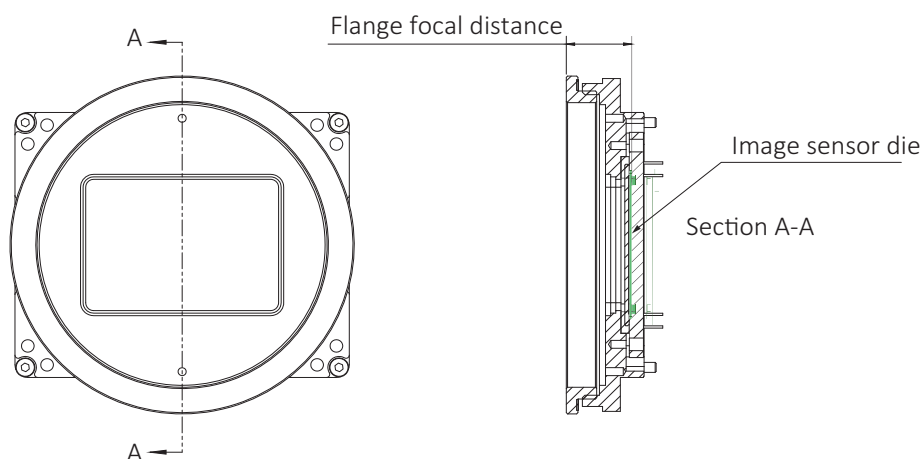


Figure 76: M42-Mount flange focal distance

M58-Mount flange focal distance

M58-Mount



Flange focal distance:

Monochrome cameras: [12.33 to 15.81 mm] adjustable, 12.71 mm nominal.

Color cameras: [11.54 to 15.81 mm] adjustable, 12.71 mm nominal.

Figure 77: M58-Mount flange focal distance


M58-Mount PA focal distance

The M58-Mount PA flange focal distance is 46.50 mm.

Sensor position accuracy

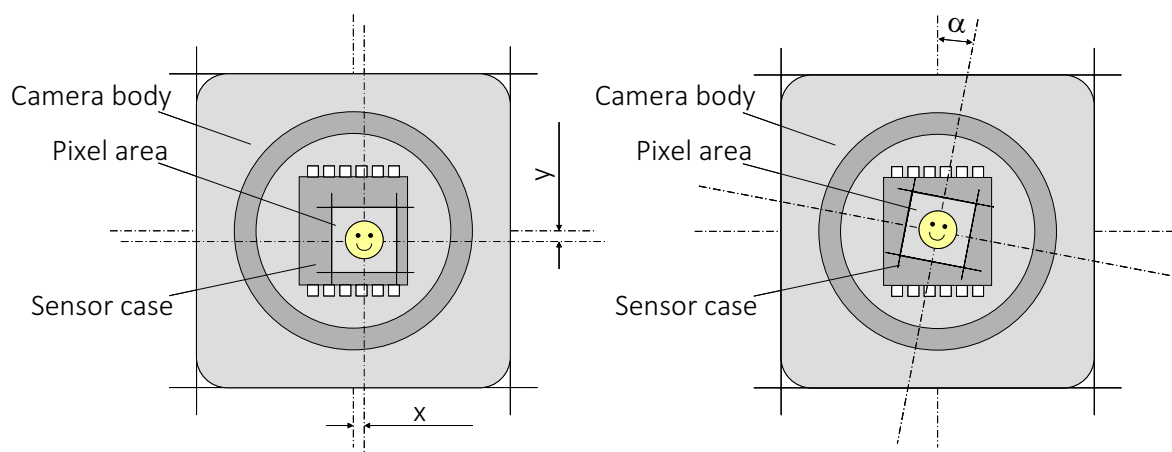


Figure 78: Sensor position accuracy

The following table defines the manufacturing accuracy of fitting sensors into Prosilica GT cameras.

Criteria	Subject	Properties
Reference Point	Sensor	Center of pixel area (photo sensitive cells)
	Camera	Center of camera front flange (outer case edges)
Accuracy	x-axis y-axis	$\pm 250 \mu\text{m}$ (sensor shift)
	z-axis	$\pm 10 \mu\text{m}$ (optical back focal length)
	α	$< 1^\circ$ (sensor rotation)
Alignment		Optical alignment of photo sensitive sensor area into camera front module (lens mount front flange).

Table 73: Sensor position accuracy criteria

IR cut filter

All Prosilica GT color models are equipped with an infrared block filter (IR cut filter). This filter is employed to prevent infrared light from passing to the sensor. In the absence of an IR cut filter, images are dominated by red and incapable of being properly color balanced. Monochrome cameras do not employ an IR cut filter.

Figure 79 shows the filter transmission response for the IRC30 filter employed in the Prosilica GT cameras.

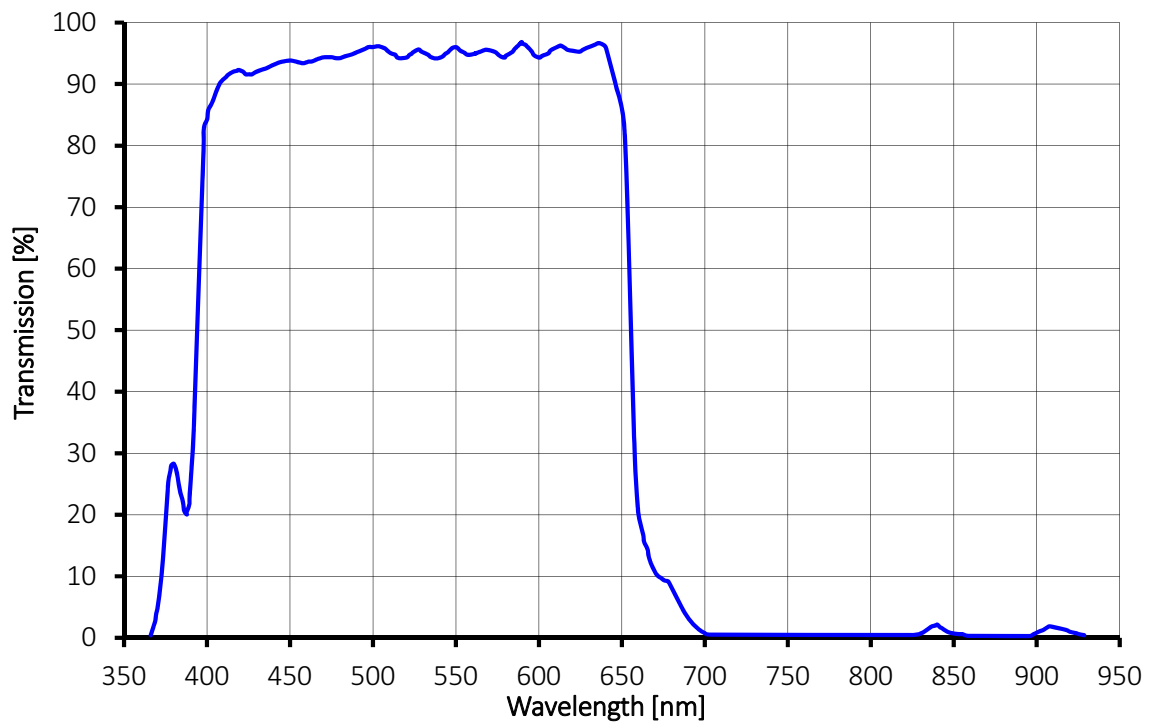


Figure 79: IRC30 cut filter transmission response

Camera interfaces



This chapter includes:

- A general description of the inputs and outputs (including trigger features)
- I/O connector pin assignments
- I/O block diagrams
- A general description of trigger rules including timing diagram and definitions

Back panel

This section provides information on Gigabit Ethernet port, Hirose port, and trigger features.



Accessories

Contact your Allied Vision Sales representative or your local Allied Vision distribution partner for information on accessories:

<https://www.alliedvision.com/en/about-us/where-we-are.html>

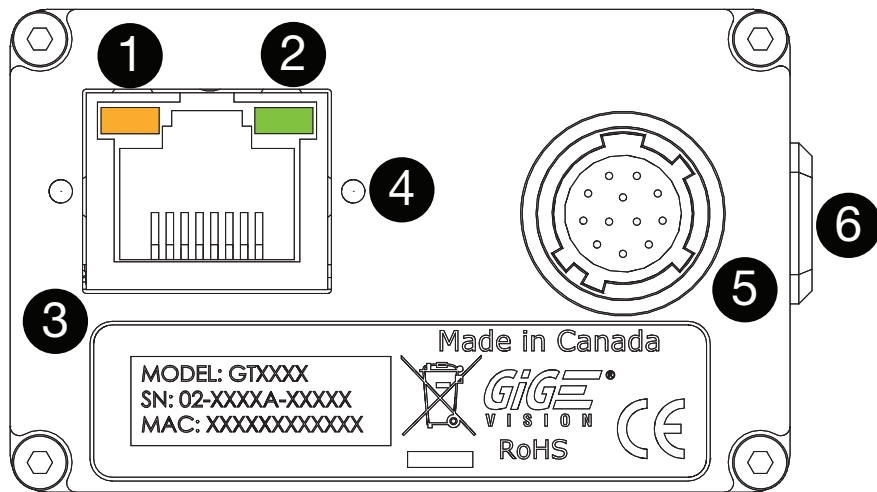


Figure 80: Ports and LEDs (standard and extended housing)

1	LED 1
2	LED 2
3	Gigabit Ethernet port
4	Gigabit Ethernet cable mounting holes
5	Hirose I/O port
6	Auto iris port Large Format cameras do not have an auto iris port.

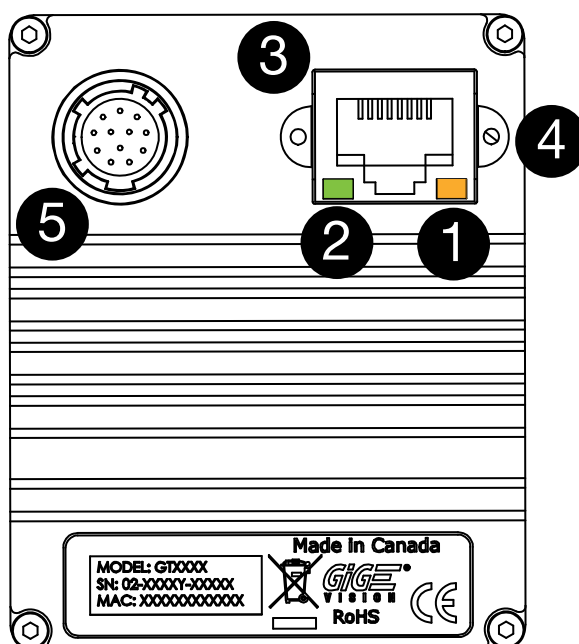


Figure 81: Port and LEDs (Large Format housing)

1	LED 1
2	LED 2
3	Gigabit Ethernet port
4	Gigabit Ethernet cable mounting holes
5	Hirose I/O port

Status LEDs

The color of the LEDs has the following meaning.

	LED Color	Status
LED1	Flashing orange or solid orange	Ethernet activity
LED2	Flashing green	Camera is powered
	Solid green	Camera is booted, and link with the host is established

Table 74: Status of LEDs

**LED 2**

After the camera is booted, **LED2** remains solid green as long as the camera is powered, even when connection with the host is lost.

Gigabit Ethernet port

The Prosilica GT is powered through the 12-pin Hirose I/O port, or the Gigabit Ethernet port by using any standard PoE supported NIC, switch, or injector. Allied Vision recommends using Category 6 or higher compatible cabling for best performance.

**Hardware Selection**

See *Hardware Selection for Allied Vision GigE Cameras* application note for a list of recommended GigE host controller cards, see <https://www.alliedvision.com/en/support/technical-papers-knowledge-base.html>.

**GigE host controllers**

A standard PCI GigE host controller card is available for purchase from Allied Vision. Order code: 02-3002A (Intel Pro 1000/GT, PCI, 1 port).

Contact the [Allied Vision Sales team](#) for additional GigE host controllers.

**Cable lengths**

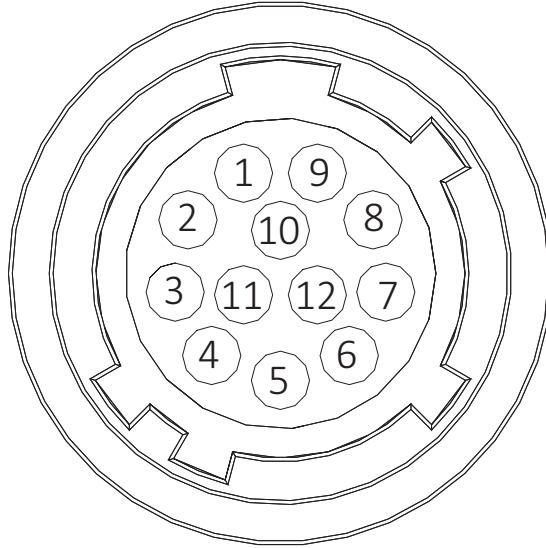
Cable lengths up to 100 m are supported. The 8-pin RJ45 jack has the pin assignment according to the IEEE 802.3 1000BASE-T Ethernet standard.

**Horizontal locking screw connector**

Prosilica GT cameras support cables with horizontal locking screw connector for a secured connection (see figure 80).

Allied Vision recommends using locking-screw cables from Components Express, Inc. for a perfect fit. Visit the [CEI product configurator](#) to customize the cable according to your needs.

Camera I/O connector pin assignment



Camera side Hirose HR10A-10R-12PB connector					I/O cable color code
Pin	Signal	Direction	Level	Description	
1	Camera GND	In	GND for RS232 and external power	Ground for camera power supply and RS232	Blue
2	Camera Power	In	7 to 25 VDC	Camera power supply	Red
3	Out 4	Out	Open emitter Nominal 5 mA; Maximum 8 mA	Opto-isolated Output 4 (SyncOut4)	Pink
4	In 1	In	LVTTL maximum 3.3 V	Non-isolated Input 1 (SyncIn1)	Gray
5	Out 3	Out	Open emitter Nominal 5 mA; Maximum 8 mA	Opto-isolated Output 3 (SyncOut3)	Yellow
6	Out 1	Out	3.3 V LVTTL maximum 50 μ A	Non-isolated Output 1 (SyncOut1)	Green
7	Isolated IN GND	In	Common GND for Input	Isolated input signal ground	Brown
8	RxD RS232	In	RS232	Terminal receive data	White
9	TxD RS232	Out	RS232	Terminal transmit data	Black
10	Isolated Out Power	In	Common VCC for outputs 5 to 24 VDC	Power input for opto-isolated outputs	Orange

Table 75: Camera I/O connector pin assignment and cable color coding

Camera side Hirose HR10A-10R-12PB connector					I/O cable color code
Pin	Signal	Direction	Level	Description	
11	In 2	In	$U_{in}(\text{high}) = 5 \text{ to } 24 \text{ V}$ $U_{in}(\text{low}) = 0 \text{ to } 0.8 \text{ V}$	Input 2 opto-isolated (SyncIn2)	White and Black
12	Out 2	Out	3.3 V LVTTTL maximum 50 μA	Non-isolated Output 2 (SyncOut2)	White and Brown

Table 75: Camera I/O connector pin assignment and cable color coding (continued)



Cable color and pin out

For cable color and pin out information, see the *Allied Vision I/O cable data sheet*, see <https://www.alliedvision.com/en/support/technical-documentation/accessories-data-sheets.html>.

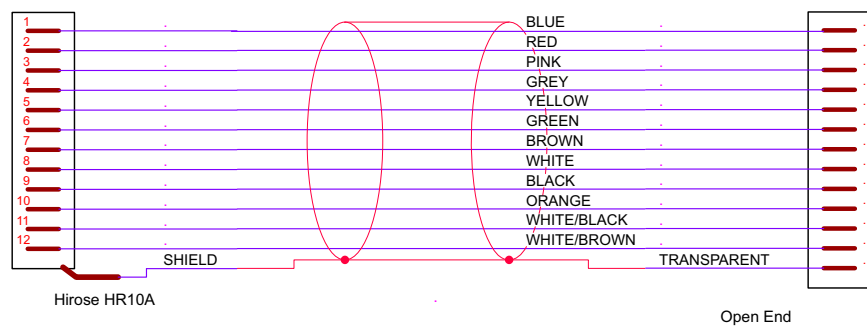


Figure 82: Cable color coding

The General Purpose I/O port uses a Hirose HR10A-10R-12PB connector on the camera side. The mating cable connector is Hirose HR10A-10P-12S.



Hirose I/O connector

The cable side Hirose 12-pin female connector is available for purchase from Allied Vision. Order code: K7600040.

I/O definition

Camera power

The Prosilica GT camera can be powered through the Hirose I/O port, via **Pin 1** Camera GND and **Pin 2** Camera Power, or through the Gigabit Ethernet port when using a PoE supported NIC, switch, or injector.

Cameras powered by both the Hirose I/O port and the Gigabit Ethernet port will use the power provided by Hirose I/O port only.

Pin 2, Camera Power, supports an input voltage range of 7 to 25 VDC. The camera will not power in reverse polarity. Exceeding the 25 V will damage the camera.



12 V power adapter

A 12 V power adapter with Hirose connector is available for purchase from Allied Vision:

- Order code: 02-8003D (Power supply, North America, Plug type B)
- Order code: 02-8004D (Power supply, Europe, Plug type F)

RxD RS232 and TxD RS232

These signals are RS232 compatible. These signals are not optically isolated. Tie RS232 ground to Camera GND to complete the RS232 circuit. Communication is at 11520 baud.



RS232

For complete RS232 description and usage, see the RS232 Port application note at <https://www.alliedvision.com/en/support/technical-papers-knowledge-base.html>

Input triggers

Input triggers allow the camera to be synchronized to an external event. The camera can be programmed to trigger on the rising edge, falling edge, both edges, or level of the signal. The camera can also be programmed to capture an image at some programmable delay time after the trigger event.

In 1 (Non-isolated)

In 1 is not electrically isolated and can be used when environmental noise is insignificant and faster trigger response is required. The required trigger signal is low voltage TTL 3.3 V. Tie trigger ground to Camera GND to complete the trigger circuit.



NOTICE

Power caution

Exceeding 5.1 V on **In 1** can permanently damage the camera.

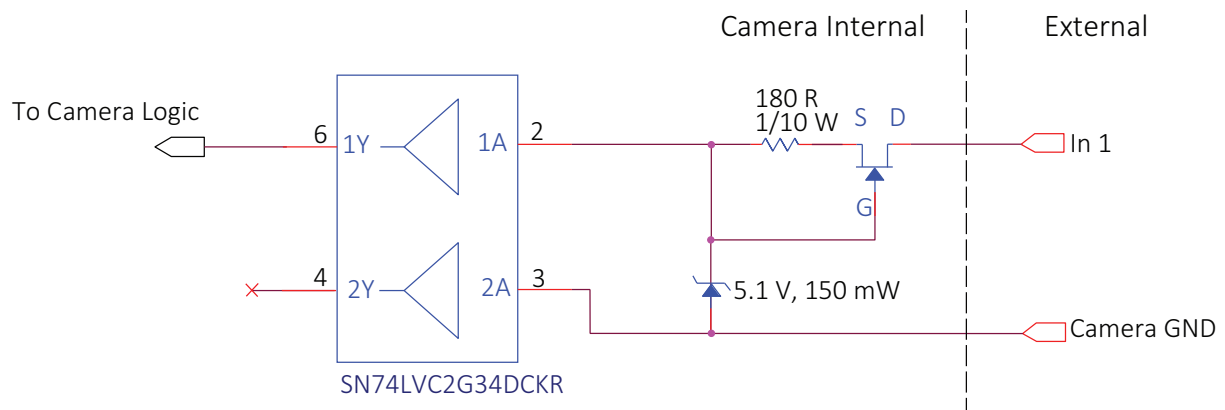


Figure 83: Internal circuit diagram for non-isolated input trigger

In 2 (Opto-isolated)

In 2 is optically isolated and can be used in electrically noisy environments to prevent false trigger events. Tie trigger ground to Isolated IO GND to complete the trigger circuit. Compared to the non-isolated trigger, **In 2** has a longer propagation time. It can be driven from 5 to 24 V with a minimum current source of 5 mA.

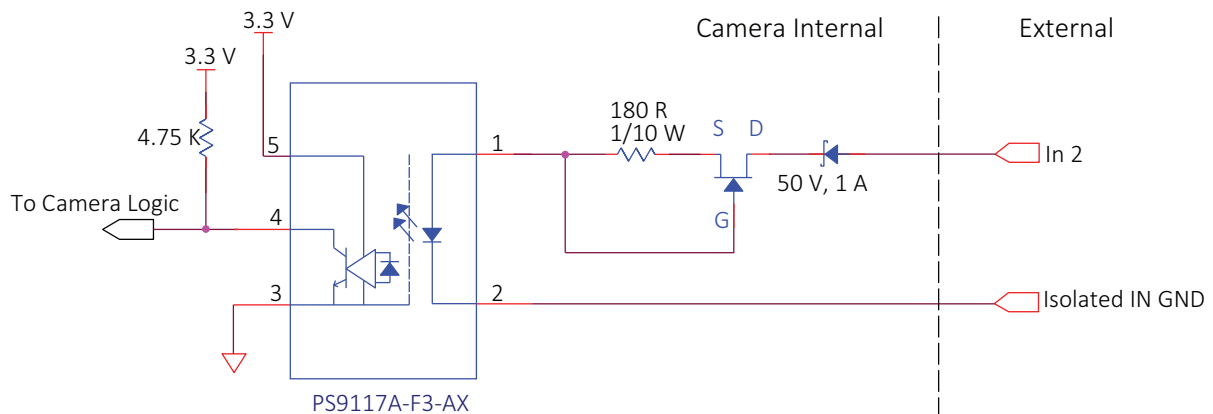


Figure 84: Internal circuit diagram for opto-isolated input trigger

Isolated IN GND

The Isolated IN GND connection provides the user ground reference and return path for **In 2**. It is recommended that the ground wiring be physically close to the **In 2** wiring to prevent parasitic coupling. For example, a good cable design connects **In 2** to one conductor of a twisted pair, Isolated IN GND to the second conductor of the same twisted pair.

Output signals

Output signals can be assigned to a variety of internal camera signals via software. They can be configured to active high or active low. The internal camera signals are listed as follows:

Exposing	Corresponds to when camera is integrating light.
Trigger Ready	Indicates when the camera is ready to accept a trigger signal.
Trigger Input	A relay of the trigger input signal used to daisy chain the trigger signal for multiple cameras.
Readout	Valid when camera is reading out data.
Imaging	Valid when camera is exposing or reading out.
Strobe	Programmable pulse based on one of the previous listed events.
GPO	User programmable binary output.

Isolated Out Power

The Isolated Out Power connection provides power for isolated signals **Out 3** and **Out 4**. The voltage requirement is 5 to 24 VDC. The current requirement for this supply is a function of the optical isolator collector current and the number of outputs used in the system. Isolated Out Power wiring should be physically close to **Out 3** or **Out 4** wiring to prevent parasitic coupling.

Out1 and Out2 (Non-isolated)

Out 1 and **Out 2** signals are not electrically isolated and can be used when environmental electrical noise is insignificant and faster trigger response is required. Tie signal ground to Camera GND to complete the external circuit. The output signal is a low voltage TTL, maximum 3.3 V. It is not suitable for driving loads in excess of 50 μ A.

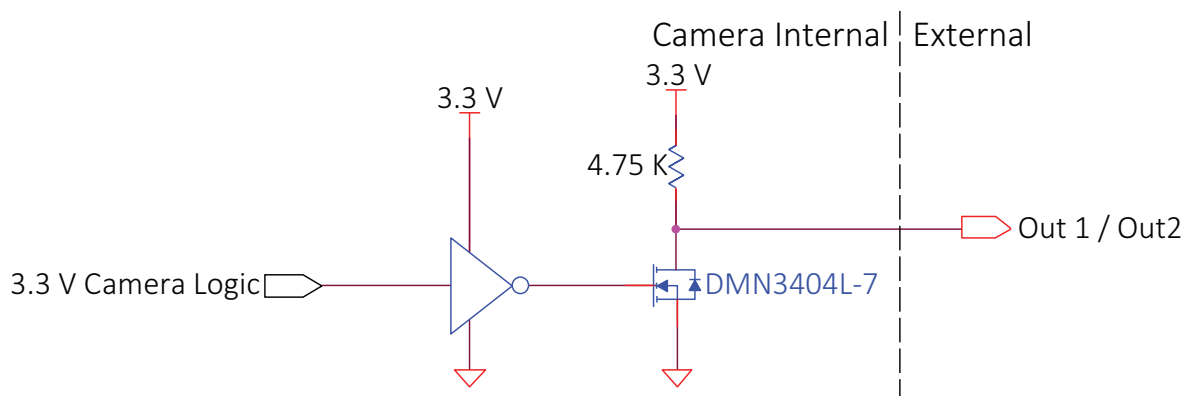


Figure 85: Out 1 and Out 2 trigger circuit

Out3 and Out4 (Opto-isolated)



Note on 4.75 K Ω resistors

Prosilica GT Technical Manual V2.1.1, V2.2.0, and V2.3.0 presented two 4.75 K Ω internal pull-down resistors in the opto-isolated output trigger circuit. In July 2012, these 4.75 K Ω resistors were removed from the printed circuit board assembly.

Regardless of whether your Prosilica GT camera has the two 4.75 K Ω internal pull-down resistors or not, implement the output trigger (Out3 and Out4) as described later.

Out 3 and **Out 4** signals are optically isolated and require the user to provide a voltage level, Isolated Out Power. The **Out3** and **Out4** signal should be grounded by adding an external load resistor as shown in figure 86 and table 76. Isolated Out Power can be configured between 5 to 24 V.

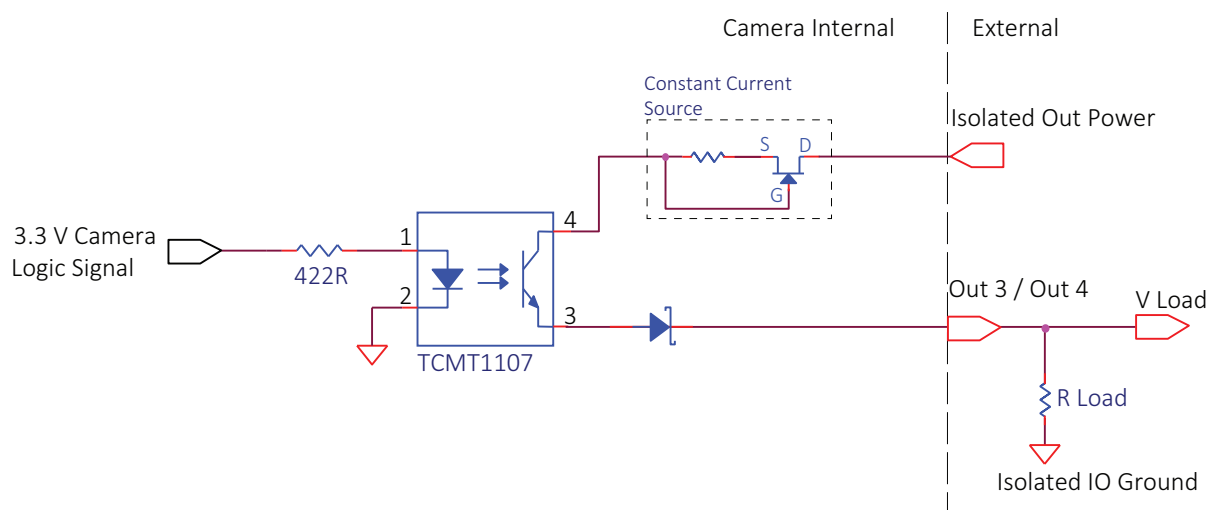


Figure 86: Out 3 and Out 4 trigger circuit

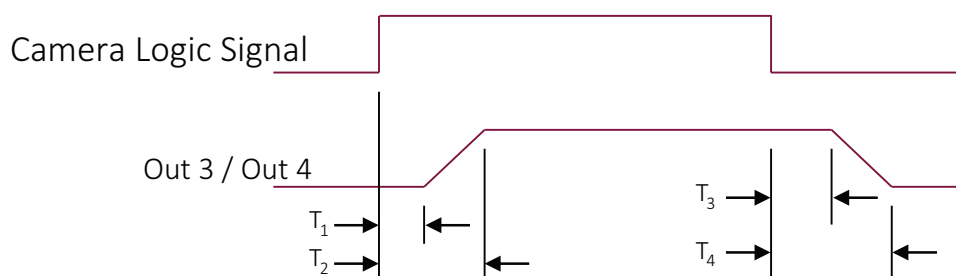


Figure 87: Out3 and Out4 timing diagram

The influence of various Isolated Out Power values and load values on the timing response of the trigger is indicated in table 76. Trigger current, Out ICC, is a function of Isolated Out Power voltage and Load resistor R.

Isolated Out Power	OUT ICC	R Load	V Load	R Power Dissipation	T ₁	T ₂	T ₃	T ₄
5 V	8 mA	500 Ω	4.2 V	35 mW	1.2 μ s	5.4 μ s	5.6 μ s	64 μ s
5 V	1.7 mA	2.4 K Ω	4.0 V	6.7 mW	1.2 μ s	5.4 μ s	4.4 μ s	34 μ s
12 V	2.1 mA	5 K Ω	10.4 V	21.6 mW	1.2 μ s	10 μ s	4.0 μ s	47 μ s
24 V	1.8 mA	10 K Ω	18.4 V	33.9 mW	1.2 μ s	15 μ s	3.4 μ s	70 μ s

Table 76: Trigger circuit values

Lens control

Prosilica GT standard and extended cameras



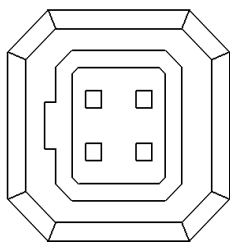
Lens support

Video-type auto-iris lenses are not supported.

Motorized CCTV lenses are not supported.

Read lens descriptions carefully before purchasing or contact your Allied Vision Sales representative.

For example, a motorized iris lens may be a bipolar single axis motorized lens, and not a DC-type auto iris or P-Iris lens



Prosilica GT cameras with standard and extended housings can be used with C-Mount and CS-Mount auto iris lenses of DC-Iris and P-Iris type.

Both DC-Iris and P-Iris lens types use the same standard connector, shown left, located on the side of the camera. Lens type is automatically determined by the camera on power-up. Connecting the lens after the camera is powered will not damage the lens, but it will not be recognized by the camera; therefore, the relevant camera control attributes will not function. If this occurs, disconnect and reconnect the camera power supply.

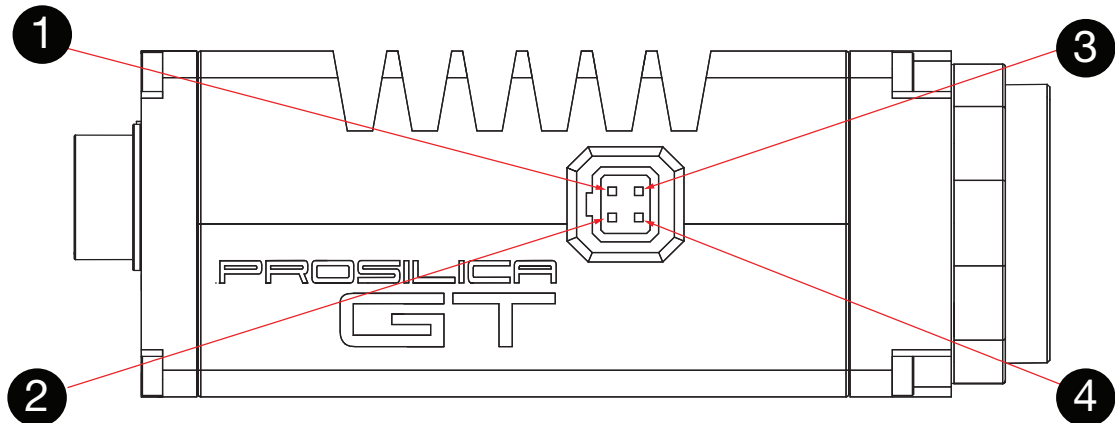


Figure 88: Lens control port

DC-Iris mode			
PIN number	PIN function	Voltage	Maximum current
1	D amp – (input)	Not applicable	Not applicable
2	D amp + (input)	Not applicable	Not applicable
3	Drive + (output)	3.3 V	50 mA
4	Drive – (output)	0 to 3.3 V	50 mA

Table 77: DC-Iris mode lens control pin assignment

P-Iris mode			
PIN number	PIN function	Voltage	Maximum current
1	Coil 1 A (output)	0 V or 3.3 V	200 mA
2	Coil 2 A (output)	0 V or 3.3 V	200 mA
3	Coil 2 B (output)	0 V or 3.3 V	200 mA
4	Coil 1 B (output)	0 V or 3.3 V	200 mA

Table 78: P-Iris mode lens control pin assignment

DC-Iris lenses

The Prosilica GT cameras with standard and extended housings operate with any standard DC-type auto iris lens. Allied Vision tested lenses include Fujinon DV10x8SA-SA1L, Computar HG2Z0414FC-MP, and Pentax C61227DCPS.

DC-type auto iris lenses are continuously driven by a voltage (0 to 3.3 V) from the camera lens control port. This voltage level determines whether the lens opens or closes, and is calculated based on the applicable iris camera attributes.

Operating DC-Iris lenses

1. Connect a DC-Iris lens to the camera before powering up the camera.
2. Power up the camera, and open the camera control software.
3. Set the camera to live image with desired `ExposureValue` and `GainValue` attributes.
4. Set `IrisMode = DCIris`. The camera uses an automatic algorithm to determine correct lens iris position based on the `IrisVideoLevel` attribute.
5. If lens operation is too slow or oscillates, see `LensDCDriveStrength`.



DC-Iris controls

DC-Iris controls are described further in the following documents:

- Vimba and third-party software users: GigE Features Reference
- PvAPI users: GigE Camera and Driver Attributes document

<https://www.alliedvision.com/en/support/technical-documentation.html>

P-Iris lenses

P-Iris (Precise iris) lenses allow the camera to adjust to an exact F-number without drift, through the usage of a stepper motor. The host system knows the exact position of the iris at all times, allowing for a closed loop feedback system.

Operating P-Iris lenses

1. Connect a P-Iris lens to the camera before powering up the camera.
2. Power up the camera, and open the camera control software.
3. Set the camera to live image with desired `ExposureValue` and `GainValue` attributes.
4. Set `LensPIrisFrequency` as specified by lens documentation, or in supported the P-Iris lens list, as described in the next section. All P-Iris lenses tested thus far operate well between [100 to 200].
5. Set `LensPIrisNumSteps` as specified by lens documentation, or in the supported P-Iris lens list, as described in the next section.
6. Set the `IrisMode` attribute to `PIrisAuto` or `PIrisManual`. `PIrisAuto` uses an automatic algorithm to determine the correct `LensPIrisPosition` based on the `IrisVideoLevel` attribute. `PIrisManual` allows manual control of `LensPIrisPosition`.



P-Iris controls

P-Iris controls are described further in the following documents:

- Vimba and third-party software users: GigE Features Reference
- PvAPI users: GigE Camera and Driver Attributes document

<https://www.alliedvision.com/en/support/technical-documentation.html>

**P-Iris supported lenses**

For a list of P-Iris supported lenses, along with their `LensPIrisFrequency` and `LensPIrisNumSteps` specifications, see the *P-Iris Lens* application note at <https://www.alliedvision.com/en/support/technical-papers-knowledge-base.html>

Prosilica GT Large Format cameras

EF lens control is available for the Prosilica GT1930L, GT4090, GT4096, GT4905, GT4907, GT5120, and GT6600 cameras. EF lens control allows focus and aperture control via host software.

**Lens mount options**

See the *Modular Concept* for information on lens mount options available with Prosilica GT Large Format cameras at <https://www.alliedvision.com/en/support/technical-documentation/prosilica-gt-documentation.html>

Operation

1. Connect an EF lens to the camera before powering up the camera.
2. Power up the camera, and open the camera control software.

**NOTICE****Maximum power via PoE**

The maximum power supplied via PoE is 13 W. EF lens power requirements will vary from lens to lens; however, typical ratings are in the 3 to 4 W range.

Should your lens plus camera power requirements exceed 13 W, power the camera via the Hirose I/O port.

3. Use `EFLensInitialize` command to initialize the EF lens. This command is automatically executed on power up and/or when lens is attached to camera.
4. Adjust the focus and aperture using `EFLensFocus` and `EFLensFStop` controls, respectively.
5. If the lens does not operate as expected, see `EFLensState` and `EFLensLastError`.

**EF lens controls**

EF lens controls are described further in the `EFLensControl` section of following documents:

- Vimba and third-party software users: GigE Features Reference
- PvAPI users: GigE Camera and Driver Attributes document

<https://www.alliedvision.com/en/support/technical-documentation.html>

Camera trigger

Trigger timing diagram

The following diagram explains the general trigger concept for CCD-sensor models.

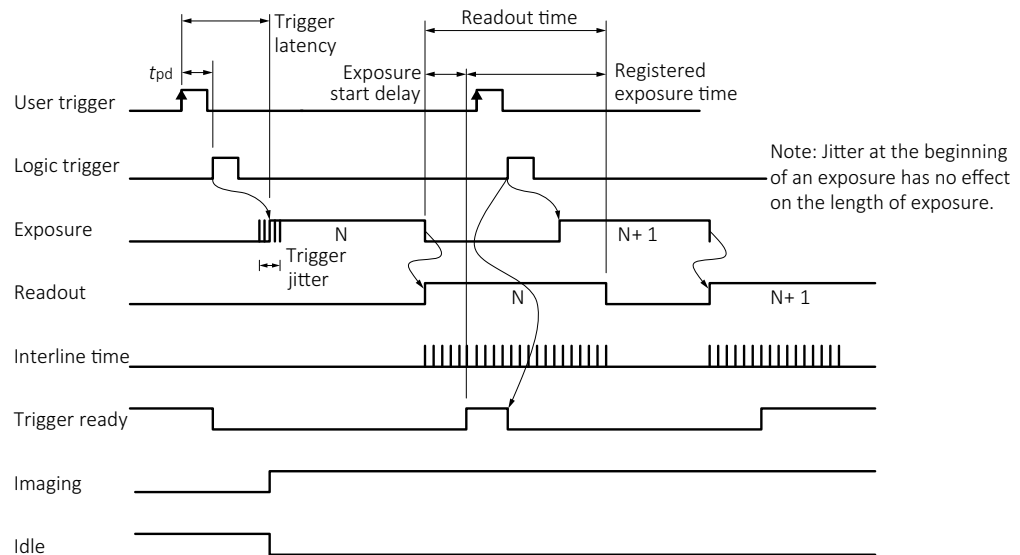


Figure 89: Internal signal timing waveforms (CCD-sensor models)

The following diagram explains the general trigger concept for CMOS-sensor models.

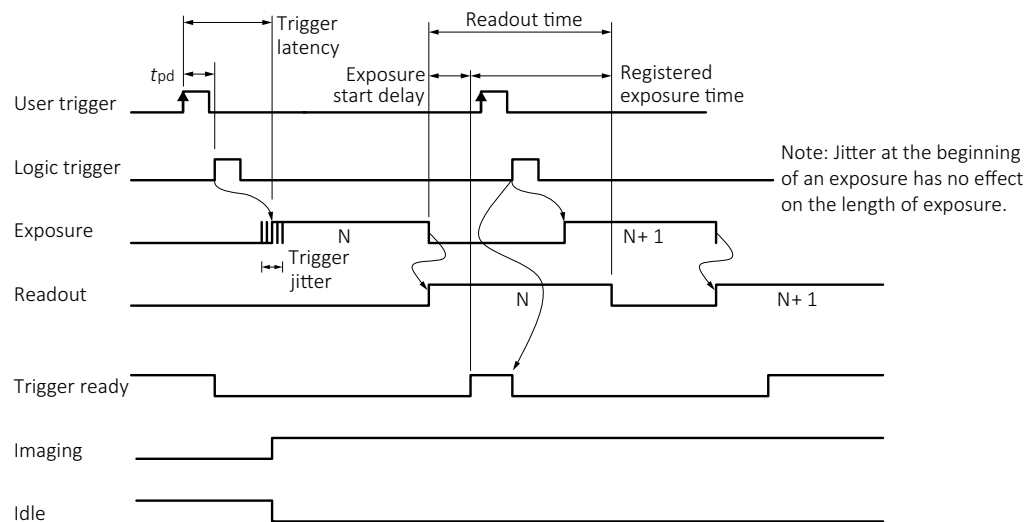


Figure 90: Internal signal timing waveforms (CMOS-sensor models)

Trigger definitions

Term	Definition
User trigger	Trigger signal applied by the user (hardware trigger, software trigger).
Logic trigger	Trigger signal seen by the camera internal logic (not visible to the user).
Tpd	Propagation delay (t_{pd}) between the user trigger and the logic trigger.
Exposure	High when the camera image sensor is integrating light.
Readout	High when the camera image sensor is reading out data.
Trigger latency	Time delay between the user trigger and the start of exposure.
Trigger jitter	Deviation from the trigger latency time.
Trigger ready	Indicates to the user that the camera will accept the next trigger.
Registered exposure time	Exposure time value currently stored in the camera memory.
Exposure start delay	Registered exposure time subtracted from the readout time and indicates when the next exposure cycle can begin such that the exposure will end after the current readout.
Interline time	Time between sensor row readout cycles.
Imaging	High when the camera image sensor is either exposing and/or reading out data.
Idle	High if the camera image sensor is not exposing and/or reading out data.

Table 79: Explanation of signals in timing diagram

Trigger rules



The user trigger pulse width should be at least three times the width of the trigger latency as indicated in [Specifications](#) on page 31.

- The end of exposure will always trigger the next Readout.
- The end of exposure must always end after the current Readout.
- The start of exposure must always correspond with the Interline Time if Readout is true.
- Exposure start delay equals the readout time minus the registered Exposure Time.

Triggering during the idle state

For applications requiring the shortest possible trigger latency and the smallest possible trigger jitter the user trigger signal should be applied when *Imaging* is false and *Idle* is true. In this case, trigger latency and trigger jitter are as indicated in [Specifications](#) on page 31.

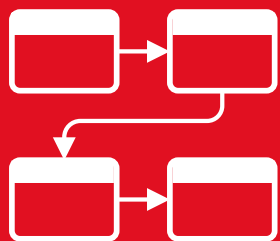
Triggering during the readout state

For applications requiring the fastest triggering cycle time whereby the camera image sensor is exposing and reading out simultaneously, apply the user trigger signal as soon as a valid trigger ready is detected. In this case, trigger latency and trigger jitter can be up to 1 row time because Exposure must always begin on an Interline boundary.



For a more detailed description of the trigger concept for advanced users and special scenarios, see the *Triggering Concept* application note at <https://www.alliedvision.com/en/support/technical-papers-knowledge-base.html>

Image data flow



This chapter presents diagrams that illustrate data flow and bit resolution of the image data.



Camera feature reference

A complete listing of camera features, including definitions can be found on the Allied Vision Technical Documentation web page, go to <https://www.alliedvision.com/en/support/technical-documentation.html>.

- Vimba and third-party users: *GigE Features Reference*
- PvAPI users: *GigE Camera and Driver Attributes* document

Prosilica GT models with CCD sensors

Prosilica GT1290, GT1380, GT1600, GT1660, GT1910, GT1920, GT2300, GT2450, GT2750, GT3300, GT3400, GT4905, GT4907, GT6600

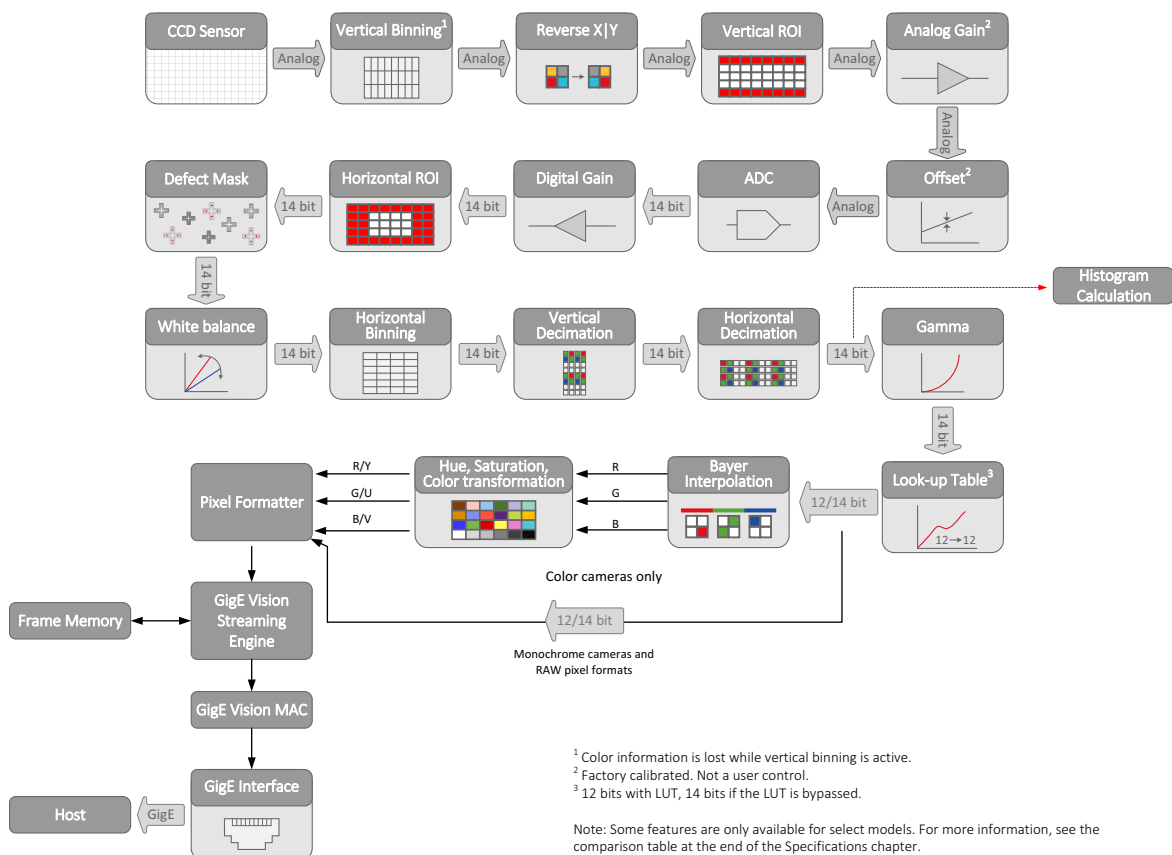


Figure 91: Image data flow for models with CCD sensors

Prosilica GT models with CMOS sensors

Prosilica GT1930, GT1930L, GT2460

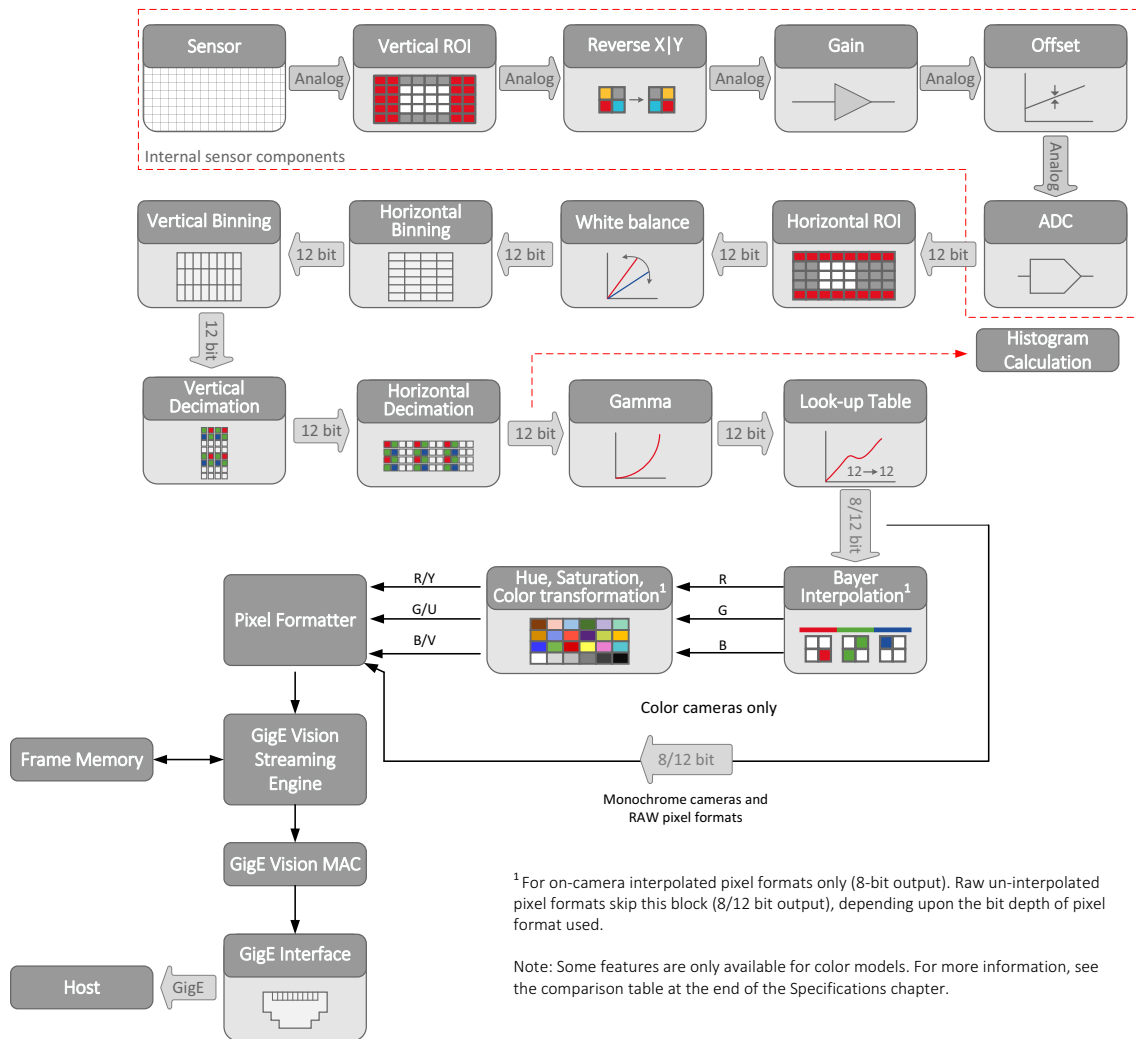


Figure 92: Image data flow for Prosilica GT1930 and GT1930L models

Prosilica GT2000, GT2050C

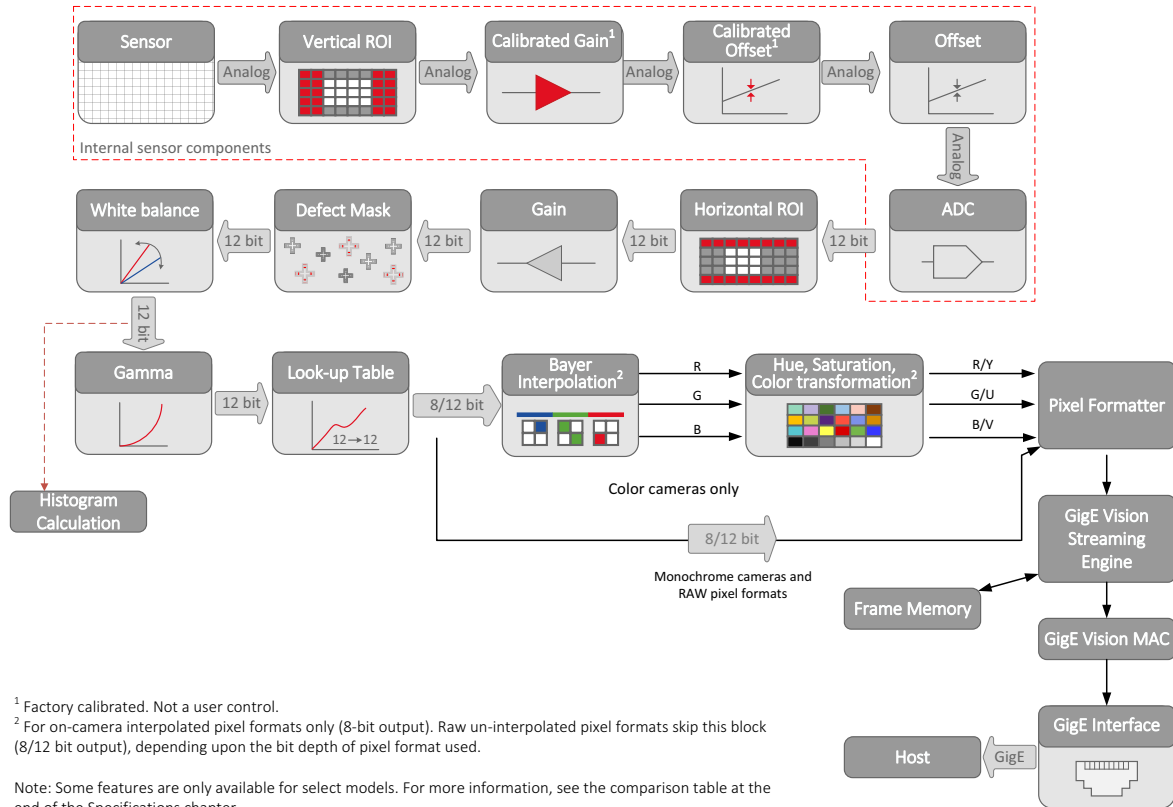


Figure 93: Image data flow for Prosilica GT2000 and GT2050 models

Prosilica GT4090, GT4096, GT5120

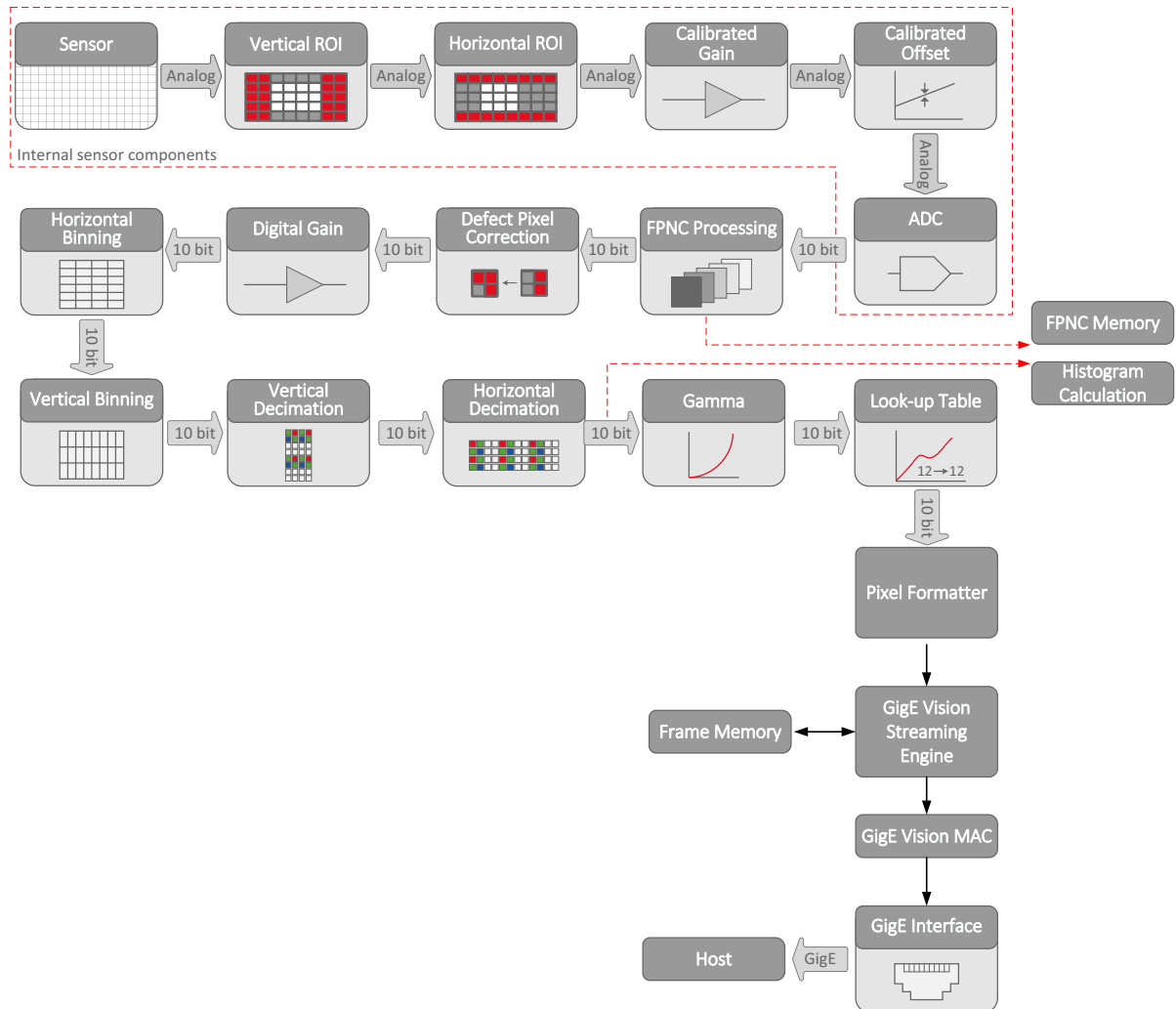
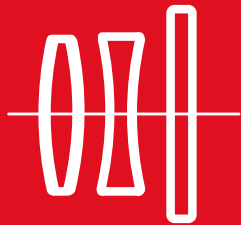


Figure 94: Image data flow for models with ON Semi PYTHON sensors

Cleaning optical components



This chapter describes safety instructions and cautions for cleaning lenses, optical filters, protection glass, or sensors.



Read these instructions before you contact Allied Vision or your Allied Vision distribution partner for assistance.

Contact Allied Vision or your Allied Vision distribution partner if you are not familiar with the procedures as previously described.

Warranty



For details about camera warranty duration and sensor warranty terms, go to:

<https://www.alliedvision.com/en/support/warranty>



To ensure your warranty remains in effect:

- Do not open the camera housing.
- Observe the following instructions.
- Use only optical quality tissue or cloth if you must clean a lens or filter.
- Use only optics cleaner. Do not use aggressive cleaners like benzine or spirit. Such cleaners may destroy the optical component's surface.
- Do not use compressed air which can push dust into camera and lens unless you are trained to clean a camera using this method.

Allied Vision does not warranty against any physical damage to the sensor, filter, protection glass, or lenses. Use utmost care when cleaning optical components.



Allied Vision does not warranty against any physical damage to the sensor, filter, protection glass, or lenses. Use utmost care when cleaning optical components.

Keep optical components clean

The best way to ensure the camera remains clean is to avoid penetration of foreign substances into the camera.

When screwing or unscrewing the camera lens or dust cap, hold the camera with the mount opening towards the floor. This minimizes the possibility of any contaminants falling on the glass surface. Always store cameras and lenses with dust-caps on.

Identifying impurities

If you observe any image artifacts in your video preview of your Prosilica GT camera you may have impurities either on the lens, filter or protection glass, or on the sensor protection glass. Every Prosilica GT camera is cleaned prior to sealing and shipment; however, impurities may develop due to handling or unclean environments.

As shown in figure 95, impurities (dust, particles or fluids) on the sensor or optical components appear as a dark area, patch or spot on the image and remain fixed in the preview window while you rotate the camera over the target.

Do not confuse this with a pixel defect which appears as a distinct point. Particles can either rest loosely or can be more or less stuck to the optical surface.

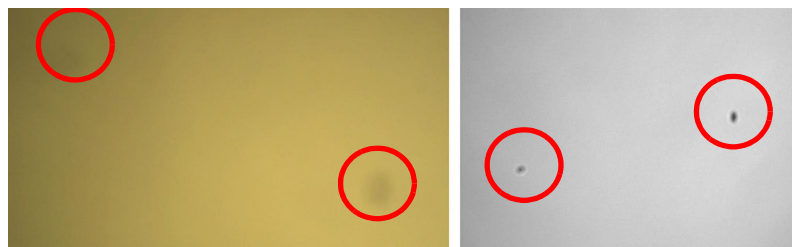


Figure 95: Image with tiny dust on the filter (left) and dust on the sensor (right)

Locating impurities

Before you dismount the lens you should find out if the impurity is on the filter, lens, or sensor.

1. Start acquiring a uniform image (for example, a white sheet of paper) with the camera.
2. To identify the affected surface, move the suspected optical component and see if the contamination follows this movement.
 - a. If you move only the lens (not the camera) and the impurity moves as well, the impurity is on the lens.

- b. If you move the IR cut filter or protection glass window and the impurity moves as well, the impurity is on the filter or protection glass. Carefully remove the filter or protection glass and clean it on both sides using the techniques explained in the next section. If the impurity is neither on the lens nor the IR cut filter or protection glass, it is probably on the sensor.

**NOTICE****Removing IR cut filter**

A pin spanner wrench (Allied Vision order code: E9020001) suitable for IR filter removal is available for purchase from Allied Vision for all Prosilica GT cameras except Prosilica GT Large Format cameras.

Do not attempt to remove the camera IR filter for Prosilica GT Large Format cameras. Contact support@alliedvision.com for assistance.

Materials for cleaning optical components

**Use only these cleaning materials for optical components**

- Optic approved lens cotton, cloth, or tissue that is chemically pure and free from silicones and other additives.
- Optic approved low residue cleaning liquid.

**NOTICE****Never use these cleaning materials for optical components**

- Dry swabs or tissue can cause scratches.
- Metal tools may cause scratches.
- Disposable cotton cosmetic swabs can contain contaminants harmful to optical glass.
- Cosmetic cotton may cause scratches or get caught in small gaps.
- Consumer eyeglass cleaning cloths can be pretreated with silicone which is harmful to optical glass.
- Aggressive cleaners like benzene, acetone, or spirits may damage the surface.

**Optical cleaning liquid material safety data sheets**

Read the material safety data sheet (MSDS) for the optical cleaning liquid before cleaning your camera and optics. The MSDS provides important information including hazard identification, first aid measures, handling and storage, and PPE.

Cleaning Instructions



Workplace conditions

- Perform all cleaning operations (lenses, filter or protection glass, and sensor) in a dust-free clean-room.
 - Avoid touching the optical components with your fingers or any hard material.
 - Nitrile cleanroom gloves or powder free latex gloves are recommended to maintain low particulate levels.
 - Use an ESD mat to prevent damage from an electrostatic discharge.
1. Unplug the camera from any power supply before cleaning.
 2. Apply a small amount of cleaning liquid to a new lens cleaning cotton, cloth, or tissue. The cotton, cloth, or lens tissue should be moist, but not dripping.



3. Hold the camera sensor diagonally upwards. Ensure that the camera is away from your body to prevent particles like skin flakes from falling on the sensor.
4. Wipe the glass surface with a spiral motion from the center to the rim. Normally, several spiral wipes are recommended. Wipe only on glass avoiding contact to metal surfaces, because microscopic dirt could be released and could cause scratches on the glass.
5. When you have finished cleaning, examine the surface in a strong light. Take an out-of-focus picture of a flat, illuminated surface to see if any dirt or dust remains.
6. If dust spots remain, repeat this procedure using new clean lens tissue.



Cleaning issues

If you notice that the camera lens or sensor is not clean after attempting to clean twice, or if you have any questions regarding cleaning your camera, contact your Allied Vision distribution partner.

Cleaning with compressed air

Allied Vision does not recommend cleaning Prosilica GT cameras with compressed air.



NOTICE

- Compressed air at high pressure and/or shorter operating distances may push dust into the camera or lens and physically damage the camera, sensor, or optical components.
- Propellant from non-optic approved compressed air products may leave a residue on the camera or lens and may physically damage the camera, sensor, or optical components.
- Compressed air may contain oil or moisture that could contaminate or damage the optical components.
- Use an air blower or compressed air only if you are familiar with cleaning a camera using this method.

If you chose to clean your camera with compressed air despite of all the warnings:

- Use an optic approved compressed air product or compressor.
- Use an anti-static ionizer attachment to reduce the risk of static-caused damage.
- Use a filter to remove moisture and oil from the air.
- Use short directed bursts of air to remove impurities.



Compressed air pressure and operating distance

- Keep the compressed air pressure at a moderate strength only. Pressure at the nozzle should be less than 1 bar (15 psi).
- Operating distance from the camera should be 5 to 30 cm.

Firmware update



This chapter includes instructions on updating the firmware on your Allied Vision Prosilica GT camera.



Download the latest GigE firmware loader from the Allied Vision website:

<https://www.alliedvision.com/en/support/firmware>



Saved camera user sets

If new firmware contains a new feature or control, saved camera UserSets or ConfigFiles will be invalidated and erased!

Before loading new firmware, backup your current camera settings.

Vimba Viewer: select the **Save Camera Settings** icon from the **Cameras** window to export the camera settings file (XML format) to the host PC.

GigE SampleViewer: select the **Disk** icon from the **Cameras** window to export camera settings file (XML format) to the host PC.

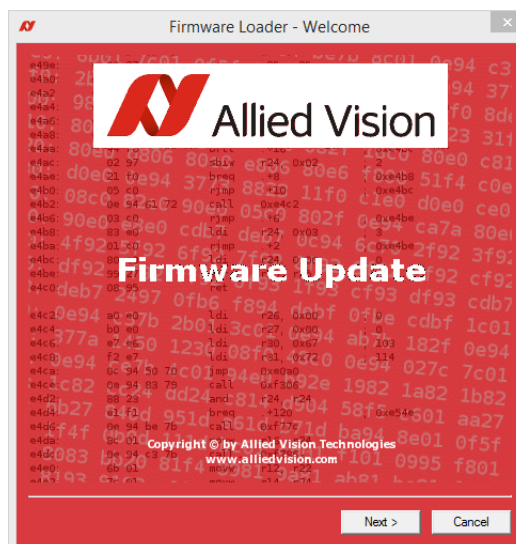


NOTICE

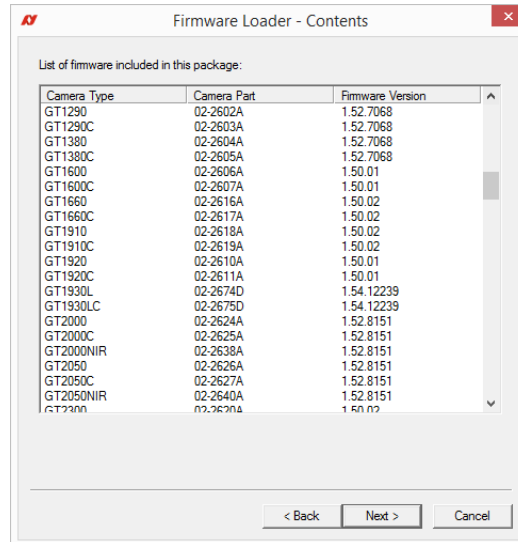
Do not unplug the GigE cable or camera power supply during the update procedure.

To update the firmware on your Allied Vision GigE camera

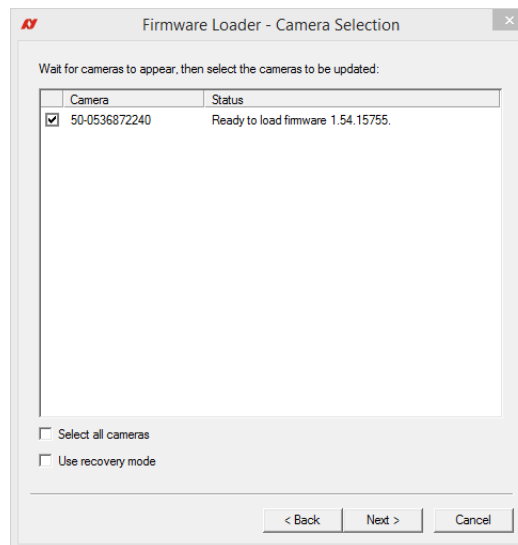
1. Launch the *Allied Vision Firmware Loader*.



- Click **Next**. The *Firmware Loader* displays a list of firmware included in the package.



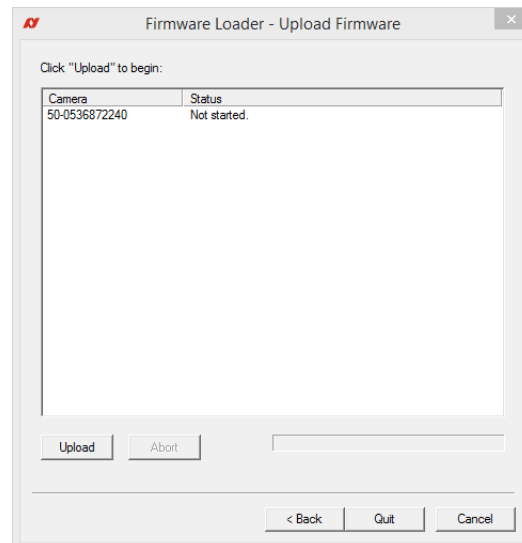
- Click **Next**. Select your camera model on this page.



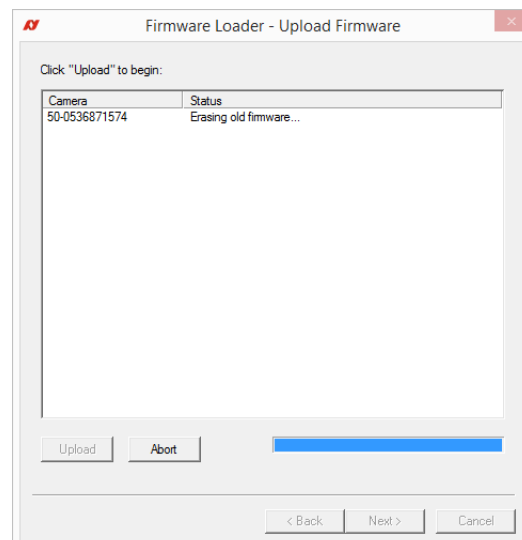
Recovery Mode

Select the **Use recovery mode** check box if the connected GigE camera is not found by the firmware loader, or if the GigE camera is listed as unavailable. When selected, power cycle the camera to enter the **Boot Loader** mode.

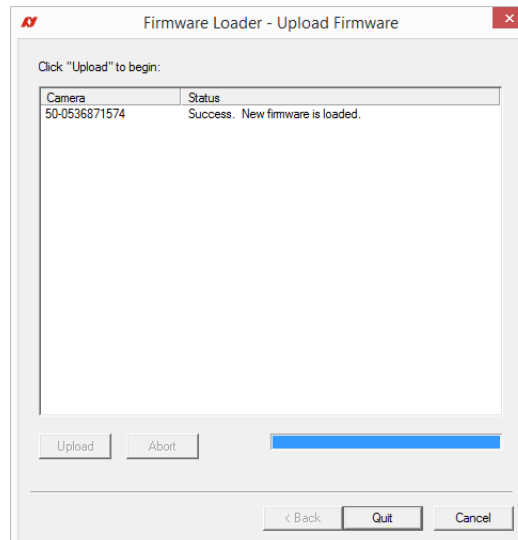
4. Click **Next**.



5. Click **Upload** to start the update. The existing firmware will be erased and the new firmware will be updated to the camera.



6. The *Firmware Loader* displays a success status upon completion. Click **Quit** to exit the loader.

**Power cycle after upgrade or downgrade**

You must always power cycle the camera after a firmware upgrade or downgrade.

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