Allied Vision

GigE Vision Cameras

Prosilica GT

Technical Manual

V3.2.0

Prosilica GT at a glance

Read this manual carefully

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

Prosilica GT cameras are constructed to cope with harsh environments, extreme temperature variations, and constantly changing light conditions. They have a GigE port and work with Gigabit Ethernet hardware and cable lengths up to 100 meters. Prosilica GT cameras are GigE Vision V1.2 and GenICam SFNC V1.2.1 compliant.

Scope of delivery

Your Allied Vision camera is delivered with the following components:

- Prosilica GT GigE Vision camera
- Download instructions to gain access to the Prosilica GT Quickstart Guide. The Quickstart Guide is available in 12 languages including Chinese, Danish, Dutch, English, Finnish, French, German, Italian, Japanese, Norwegian, Spanish, and Swedish.

What else do you need?

Content	URL
GigE Features Reference, camera data sheets, Modular Concept, 3D CAD STEP files	www.alliedvision.com/en/support/technical-documentation/prosilica-gt-documentation
Technical papers and knowledge base	www.alliedvision.com/en/support/technical-papers-knowledge-base
Camera lenses and accessories	www.alliedvision.com/en/products/accessories
Download Vimba and software tools	www.alliedvision.com/en/support/software-downloads
Download the latest GigE firmware loader and release notes.	www.alliedvision.com/en/support/firmware
For details about camera warranty duration and sensor warranty terms.	www.alliedvision.com/en/support/warranty

Table 1: Additional resources

Contact Allied Vision

Website

To directly contact Allied Vision with any inquiry, go to:

www.alliedvision.com/en/meta-header/contact

To find an Allied Vision office or distribution partner, go to:

www.alliedvision.com/en/about-us/where-we-are

Support and general inquiries

For all camera-related queries contact us at support@alliedvision.com

For all general inquiries, contact us at info@alliedvision.com

Sales offices

• Europe, Middle East, and Africa	T// +49 36428 677-230
• North and South America	Toll-free: +1 877 USA-1394 California: +1 408 721-1965 T// +1 978 225-2030
• Allied Vision Asia-Pacific	T// +65 6634 9027
• Sales Office China	T// +86 21 64861133

Headquarters

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07646 Stadtroda
Germany

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Document history and conventions

This chapter includes:

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

Document history

Version	Date	Remarks
V3.2.0	2019-Nov-14	• Initial commercial release: Prosilica GT4400 series - Sony IMX367 CMOS sensor - Specifications, absolute QE plot, spectral response plot, ROI frame rate, image data flow • Initial commercial release: Prosilica GT5400 series - Sony IMX387 CMOS sensor - Specifications, absolute QE plot, spectral response plot, ROI frame rate, image data flow • Initial commercial release: Prosilica GT6400 series - Sony IMX342 CMOS sensor - Specifications, absolute QE plot, spectral response plot, ROI frame rate, image data flow • Changed the IR cut filter section to Optical filters and included all optical filters available for the Prosilica GT camera family • New IR pass filters for standard and extended format cameras
V3.1.1	2019-Mar-08	• Editorial changes
V3.1.0	2019-Jan-31	• Updated Prosilica GT1930 and GT1930L series specifications (firmware version 00.01.54.20343), see the GigE Firmware Release Notes for details on the changes • Updated Prosilica GT2460 series specifications (firmware version 00.01.54.20343), see the GigE Firmware Release Notes for details on the changes • Updated Prosilica GT4090, GT4096, and GT5120 series specifications (firmware version 00.01.54.20443), see the GigE Firmware Release Notes for details on the changes • Corrected Prosilica GT2050NIR exposure time control minimum value (changed from 34 µs to 50 µs) • Corrected defect pixel masking feature type in the camera feature comparison table • Added content in Installation chapter: Powering the camera via PoE • Added technical drawings for Prosilica GT extended housing models - CS-Mount - Birger EF-Mount - M42-Mount • Added technical drawing for Prosilica GT standard housing models - CS-Mount • Added technical drawing for Prosilica GT1930 standard housing - CS-Mount • Added StreamHoldCapacity values for Prosilica GT1380, GT1920, GT2300, GT3400, GT4090, GT4096, GT4905, GT5120, and GT6600 series • Added Mounting the camera to Hardware and Installation chapter

Table 2: Document history (sheet 1 of 7)

Version	Date	Remarks
V3.1.0	2019-Jan-31	• Added Supplier Declaration of Conformity to Compliance and intended use chapter • Added EMC compliance statement to Installation and hardware chapter • Added shock and vibration information • Various other minor improvements and corrections
V3.0.1	2018-Jun-19	• Corrected lens tool- adjustment wrench part number • Updated RoHS statement to include amendment 2015/863/EU
V3.0.0	2018-May-01	• Initial commercial release: Prosilica GT2460 series - Sony IMX264 CMOS sensor - Specifications, absolute QE plot, spectral response plot, ROI frame rate, image data flow • Simplified the Contact us section, click the link to find contact information for your region or email us at one of the provided email addresses. • Added Specifications common to all models to simplify the model specific tables • Removed references to Order code: 2685 Adlink GIE62+PCI ex4, two ports. For more information see the Product Change Notification. • Various other minor improvements and corrections • Added acronyms and abbreviations used in this manual • Updated symbols used in this manual • Updated Prosilica I/O table
V2.9.0	2017-Aug-04	• Initial commercial release: Prosilica GT4090 series - ON Semi PYTHON 12K CMOS sensor - Specifications, absolute QE plot, ROI frame rate, image data flow • Initial commercial release: Prosilica GT4096 series - ON Semi PYTHON 16K CMOS sensor - Specifications, absolute QE plot, ROI frame rate, image data flow • Initial commercial release: Prosilica GT5120 series - ON Semi PYTHON 25K CMOS sensor - Specifications, absolute QE plot, ROI frame rate, image data flow • Corrected the Out3 and Out4 trigger circuit specification from 20 mA to 8 mA • Added Piecewise Linear HDR mode option to Exposure Mode for the Prosilica GT2000 and GT2050 series. For more information, see the GigE Features Reference • Changed the Prosilica GT1930L standard mount to EF-Mount PA • Updated absolute QE plot for Prosilica GT cameras with CMOSIS/ams CMOS sensors • Updated all ON Semi absolute QE plots to reflect the Gen 2 CFA material change • 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 • Updated camera I/O connector pin assignment, input triggers, and output signals section • Added note to Specifications chapter for lens support with heavy lens load and high vibration environments • CMOSIS renamed to CMOSIS/ams following the acquisition of CMOSIS by ams Sensors Belgium

Table 2: Document history (sheet 2 of 7)

Version	Date	Remarks
V2.9.0	2017-Aug-04	• Corrected exposure value range for Prosilica GT2000 • Changed Cell size terminology to Pixel size • Various other minor improvements and corrections
V2.8.1	2016-Aug-16	• Added optical filter information to specification tables • Trigger over Ethernet Action Command feature • Updated absolute QE plot for Prosilica GT cameras with Sony CCD sensors • Updated specification notes section • Various other minor improvements and corrections • New features for Prosilica GT2450 series including: - New PTP implementation - Temperature readout (main board and sensor board) - Look-up tables - Decimation X/Y - DeviceUserID
V2.8.0	2016-Jul-07	• Added spectral response plot for Prosilica GT1930, GT1930L, and GT3400 series • Updated the absolute QE plot for GT1930 and GT1930L series • Added spectral response plot for Prosilica GT cameras with Sony CCD sensors • Updated absolute QE plot for Prosilica GT cameras with Sony CCD sensors • Updated the image flow diagrams • Trigger over Ethernet Action Command feature to select models • New features for Prosilica GT2000 and GT2050 series - Decimation X/Y - Reverse X/Y - DeviceUserID • Feature change for Prosilica GT2000 and GT2050 series - Column defect masking has been replaced by pixel defect masking
V2.7.0	2016-May-11	• Changed all instances of RegionY to OffsetY • Changed all instances of BinningY to BinningVertical • Aligned the information in the specification tables with the information on the webpages • New features for various Prosilica GT models including: - 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) • Added sensor tap mode note in the Specifications chapter • Updated frame rate information plots • Various other minor improvements and corrections

Table 2: Document history (sheet 3 of 7)

Version	Date	Remarks
V2.6.0	2016-Mar-04	• Initial commercial release: Prosilica GT1930 series - Sony IMX174 CMOS sensor - Specifications, absolute QE plot, spectral response plot, ROI frame rate, image data flow • Updated compliance statements • Various minor corrections • Added installation chapter
V2.5.0	2015-Dec-21	• Changed the technical manual layout • Changed chapter name from Camera data path to Image data flow and updated the figures • Changed chapter name from Camera dimensions to Mechanical dimensions • Merged the Resolution and ROI frame rates chapter into Specifications chapter • Added Prosilica GT at a glance section • Added General safety notes section • Added Regulations section in Safety and regulations chapter to replace Legal notice and Conformity sections • Moved Sensor position accuracy section from Appendix to Mechanical dimensions chapter and deleted Appendix • Added Camera features comparison section in Specifications chapter to replace Camera smart features and Camera features sections • Added Cleaning optical components chapter to replace Camera cleaning and updated information • Added Contact us section to replace Contacting Allied Vision section • Updated Prosilica GT Large Format lens mount drawings
V2.4.1	2015-Sep-15	• Added a note on removal of 4.75 KΩ resistors from PCBA in Out 3 and 4 in Opto-isolated section
V2.4.0	2015-Aug-25	• Updated color formats specification in Specifications chapter • Updated camera I/O connector pin assignment, Input triggers and output signals sections • Added camera feature comparison section to replace Camera smart features section of V2.3.0
V2.3.0	2015-Mar-20	• Replaced old links with new Allied Vision website links • Changed file name from GigE Camera and Driver Features to GigE Features Reference • Changed chapter name from Description of data path to Camera data path

Table 2: Document history (sheet 4 of 7)

Version	Date	Remarks
V2.2.0	2015-Mar-11	• Initial commercial release: Prosilica GT1930L series - Sony IMX174 CMOS sensor - Specifications, absolute QE plot, spectral response plot, ROI frame rate, EF lens control, image data flow • Updated Allied Vision logo • Changed AVT and Allied Vision Technologies references to Allied Vision • Updated additional references section • Added Prosilica GT3300 with ON Semi KAI-08050 sensor information • Renamed Truesense references to ON Semi • Updated lens control port wiring • Updated temperature monitoring specification for Prosilica GT2300 series • Updated image data flow diagrams for color Prosilica GT cameras in Description of the image data flow section • Updated the defect masking information for the following: - Prosilica GT monochrome cameras - Prosilica GT color cameras
V2.1.1	2014-Jul-14	• Updated frame rate specification for Prosilica GT2000, GT2050, GT3400, and GT4905 series • 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 • Corrected the sensor and pixel size for Prosilica GT6600 series • Added a note on binning in block diagram of Prosilica GT color cameras with CCD sensors • Added link to the technical drawing for Prosilica GT Large Format camera with M42-Mount and M58-Mount • Updated sensor position accuracy section • Updated minimum exposure time for Prosilica GT2000 and GT2050 series • Updated specifications for Prosilica GT4905 series • Updated the power consumption specification in the Specifications chapter • Replaced the optical flange focal distance section with the following sections: - C-Mount flange focal distance - F-Mount flange focal distance • Updated information on Prosilica GT Out 3 and Out 4 trigger circuit and in section Output: Opto-isolated internal circuit • Updated temperature monitoring information in the Specifications chapter • Updated filter and lenses section • Replaced A/D and bit depth with Max. image bit depth in the Specifications chapter • Added M42-Mount technical drawing links for Prosilica GT standard and extended cameras
V2.1.0	2013-Oct-28	• Added description of the image data flow chapter • Added section Adjustment of F-Mount

Table 2: Document history (sheet 5 of 7)

Version	Date	Remarks
V2.0.9	2013-Sep-16	• Updated the Mechanical dimensions 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 series • Added temperature monitoring information in the Specifications chapter • Updated specifications for Prosilica GT2000 and GT2050 series • Added frame rate tables in the Specifications chapter
V2.0.8	2013-Jul-05	• Updated the absolute QE plot for Prosilica GT1910 • Added links to Allied Vision GigE Camera and Driver Features document
V2.0.7	2013-May-16	• Updated the bit depth and exposure control camera specifications in the Specifications chapter • Updated pixel format naming according to the GenICam naming convention • Corrected camera dimensions and mass for Prosilica GT3400 • Corrected the absolute QE plot for Prosilica GT3400 • Added Vimba SDK link • Added ROI frame rate plots for Prosilica GT3400, GT4905, and GT4907 • Updated ROI frame rate plots in Specifications chapter • Updated Allied Vision recommended cabling to CAT6 or higher in Gigabit Ethernet port section
V2.0.6	2013-Feb-12	• Added status LEDs section • Updated the RoHS directive
V2.0.5	2013-Jan-14	• Initial commercial release: Prosilica GT3400 series - Sony ICX814 CCD sensor - Specifications, absolute QE plot, spectral response, ROI frame rate, image data flow • Initial commercial release: Prosilica GT4905 series - ON Semi KAI-16050 CCD sensor - Specifications, absolute QE plot, ROI frame rate, image data flow • Initial commercial release: Prosilica GT4907 series - ON Semi KAI-16070 CCD sensor - Specifications, absolute QE plot, ROI frame rate, image data flow • 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

Table 2: Document history (sheet 6 of 7)

Version	Date	Remarks
V2.0.4	2012-Sep-21	• Initial commercial release: Prosilica GT2000 series - CMOSIS/ams CMV2000 CMOS sensor - Specifications, absolute QE plot, ROI frame rate, image data flow • Initial commercial release: Prosilica GT2050 series - CMOSIS/ams CMV4000 CMOS sensor - Specifications, absolute QE plot, ROI frame rate, image data flow • Initial commercial release: Prosilica GT6600 series - ON Semi KAI-29050 CCD sensor - Specifications, absolute QE plot, ROI frame rate, image data flow • Link added to RS232 application note • Added lens control port wiring • Renamed camera IO signals
V2.0.3	2012-Jun-21	• Added DC-Iris information
V2.0.2	2012-May-31	• Initial commercial release: Prosilica GT1660 series - ON Semi KAI-02050 CCD sensor - Specifications, absolute QE plot, ROI frame rate, image data flow • Initial commercial release: Prosilica GT3300 series - ON Semi KAI-08050 CCD sensor - Specifications, absolute QE pot, ROI frame rate, image data flow
V2.0.1	2012-Mar-08	• Added absolute QE plots • Added Prosilica GT1910, GT1920, GT2300, and GT2750 frame rate plots
V2.0.0	2011-Dec-12	• New manual release status

Table 2: Document history (sheet 7 of 7)

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 (example)	Function
Emphasis	Some important parts or items of the text are emphasized to make them more visible.
`Feature names`	GigE features names are displayed as monospaced text.
`Feature options`	Features options and register's options that are selectable by the user are displayed as monospaced italicized text.
UI Element	Text that is displayed, or output, by the system for the user, like parts of the GUI, dialog boxes, buttons, menus, important information, windows titles.
Web Reference	References to other documents or webpages, like web links, hypertext links, emails, but also cross references, that include a link the user can follow by clicking.

Table 3: Markup conventions used in this manual

Symbols and notes

NOTICE

Property damage message

This symbol addresses important information to avoid material damage; however, is not related to physical injury.

NOTICE

Material damage by electrostatic discharge (ESD)

Precautions as described.

CAUTION

Safety message

Note to prevent physical injury.

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.

Product naming

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

Official company name	Naming in this document	Manufacturer website
Sony Semiconductor Solutions	Sony	Sony-semicon.co.jp
ON Semiconductor	ON Semi	ONsemi.com
ams Sensors Belgium	CMOSIS/ams	ams.com/cmos-imaging-sensors

Table 4: Third-party product naming

Acronyms and terms

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

Acronym or term	Description
ADC	Analog-to-digital converter
AIA	Automated Imaging Association
CAD	Computer aided design
CCD	Charge-coupled device
CMOS	Complementary metal-oxide semiconductor
CRA	Chief Ray Angle

Table 5: Acronyms and terms used in this document (sheet 1 of 2)

Acronym or term	Description
EMVA	European Machine Vision Association
ESD	Electrostatic discharge
FIFO	First-in first-out
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
MSDS	Material safety data sheet
NIC	Network interface card
NIR	Near Infrared
PA	Planarity adjusted
PSE	Power sourcing equipment
PTP	Precision Time Protocol
QE	Quantum efficiency
ROI	Region of interest
SDK	Software Development Kit
ToE	Trigger over Ethernet Action Command
TTL I/O	Transistor-transistor logic input/output
TxD and RxD	Transmit and receive

Table 5: Acronyms and terms used in this document (sheet 2 of 2)

Compliance and intended use

This chapter includes:

- Compliance notifications for the following areas:
  - Europe (CE)
  - US (FCC)
  - Canada (ICES)
- Information about application and intended use of the camera
- Copyright and trademark statement

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)

For customers in the US

Supplier Declaration of Conformity

Prosilica GT GigE cameras comply with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

Responsible Party – US Contact Information

Allied Vision Technologies, Inc.
102 Pickering Way – Suite 502
Exton, PA 19341
United States

T// +1 (978) 225-2030

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-3 (A) / NMB-3 (A)

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-3 (A) / NMB-3 (A)

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 produces 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.
- For usage in product with specific safety requirements a Quality Assurance Agreement with Allied Vision is required.
- The camera is intended for use in a commercial, industrial, or business environment. The test phase and programming should be carried out by advanced users.

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. For usage in medical product, a Quality Assurance Agreement with Allied Vision is required. Users who integrate the camera into an application must comply with the rules and regulations concerning medical devices.

Copyright and trademarks

Installation and hardware

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

Precautions

Electrical connections

NOTICE

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

Don’t 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 an operating temperature as specified in the Specifications chapter.

NOTICE

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

NOTICE

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

NOTICE

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

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 holes.
  - 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 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

Some cleaning agents can damage this product. Avoid cleaning the image sensor unless absolutely necessary. See instructions on optics cleaning in this document.

We can clean your camera as a service for you, if necessary. For more information, contact Allied Vision support.

NOTICE

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

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

NOTICE

As monochrome and NIR models don't 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.

Mounting the camera

Standard and extended format housing

You can attach the camera to a base using the M3 thread mounting holes built into the top, bottom, and front of the Prosilica GT camera housing. Optionally, you can use the tripod adapter to mount your Prosilica GT camera to a tripod.

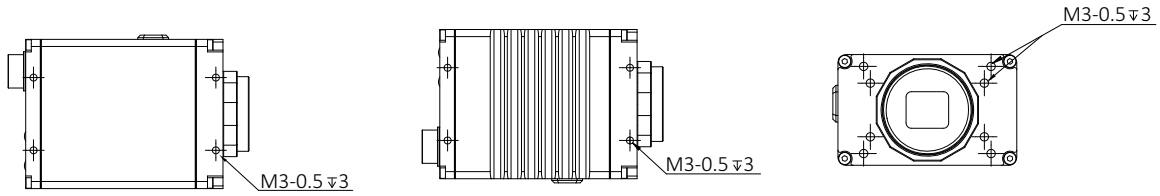


Figure 1: Mounting holes in top, bottom, and front of camera

Large Format housing

You can attach the camera to a base using the M3 thread mounting holes built into the top, bottom, sides, and front of the Prosilica GT camera housing and lens mount. Prosilica GT Large Format cameras also have a built-in 1/4-20 tripod mounting hole on two sides.

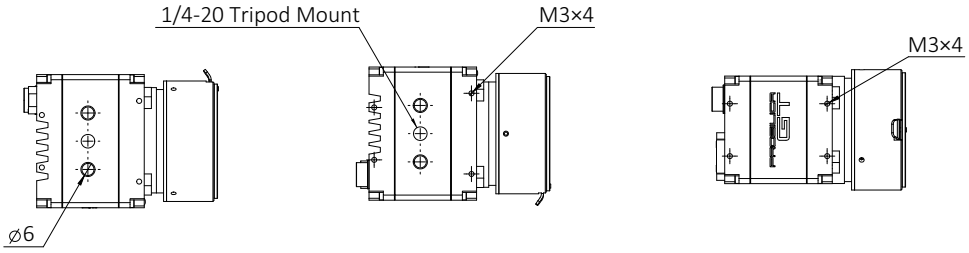


Figure 2: Mounting holes in top, bottom, and sides of camera

Configuring the host computer

Prosilica GT cameras can operate on 10/100 or Gigabit speed NICs. In order to reach the maximum camera frame rate, a Gigabit speed NIC with jumbo packet support is required.

If your host computer has an available Ethernet port, this can be used with your Prosilica GT camera. 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 NIC is unable to operate at Gigabit Ethernet speeds, installing additional hardware may be required.

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

Installing the NIC 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 NIC, 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 NIC IP address

After the initial NIC hardware installation, connect the NIC 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 NIC address to minimize the time required for a camera to be recognized by the host application.

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

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

When systems employ multiple NICs connected to multiple cameras the address of the NICs should be set. Each NIC or NIC card port requires a unique IP address.

For example:

NIC 1:

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

NIC 2:

- IP Address: 169.254.100.2
- Subnet mask: 255.255.0.0
- Default gateway: blank

NIC driver settings

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

Property	Value
Packet size or maximum transmission unit	8228 bytes or larger
Interrupt moderation	Enable
Interrupt moderation rate	Extreme
Receive buffers	Maximum value configurable
Transmit buffers	256 bytes

Table 6: Network interface card driver settings

Default packet size

The default packet size of Prosilica GT cameras is 8228 bytes. The host NIC needs to support a packet size of equal or larger size to stream from the camera.

NIC settings

The NIC settings may also vary depending on your system configuration and the NIC manufacturer.

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

A list of recommended NICs is available on the Allied Vision website. See the Hardware Selection for Allied Vision GigE Cameras application note.

Enabling jumbo packets

The properties listed for the NIC 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 NIC 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 NIC, 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 CAT6 or higher rated Ethernet cable to connect the camera to the NIC. Crossover cabling is not required but does work. The camera has circuitry to determine if a crossover cable is being used.

We recommend CAT6 or higher rated Ethernet cables. A cable with a lower rating may not sustain peak interface bandwidth; leading to lost connectivity or dropped frames coming from the camera.

Optics

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 distribution partner. Users need to select the desired focal length of the lens 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. For information on available lenses and accessories for your camera, see the Accessories webpage.

Accessories

We offer a wide range of accessories for use with Prosilica GT cameras including:

- GigE accessories such as 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.

A list of recommended GigE components is available on the Allied Vision website. See the Hardware Selection for Allied Vision GigE Cameras application note at www.alliedvision.com/en/support/technical-papers-knowledge-base.

Software

Prosilica GT cameras work with the following software options:

- Vimba Viewer or Vimba SDK
- Third-party software solutions

Powering up the camera

A camera power adapter for each GigE camera is available from Allied Vision. See the Specifications chapter for connector definition and voltage specifications.

NOTICE

- Use only DC power supplies with insulated cases.
- For all power connections, use only shielded cables to avoid electromagnetic interference.
- Prosilica GT cameras can source power from:
  - IEEE 802.3at Type 1 (100 Mbps and 1000 Mbps)
  - IEEE 802.3at Type 1 compliant PoE power sourcing equipment devices such as switches, injectors, or NICs.

NOTICE

The camera is not intended to be connected to a DC distribution network. The maximum length for I/O cables must not exceed 30 meters.

Powering the camera via Hirose I/O port

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

Powering the camera via PoE

Note the following when using PoE accessories with PoE-capable GigE cameras:

- Prosilica GT cameras conform to the IEEE 802.3at Type 1 standard for GigE.
- Ensure that your Power Sourcing Equipment (PSE) provides data over all four pairs.
- If the PSE uses only two out of four pairs for data, operation is limited to 10/100 Mbps. This translates to lower frame rates.
- If the PSE uses all four pairs for data, operation is in Gigabit (1000 Mbps) mode. Thus, allowing you to achieve the maximum possible frame rate.

Connecting to host application

After you have installed **Vimba Viewer** or a third-party application to your host computer, connect your Prosilica GT 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 computer, 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:

- Applied standards
- Technical specifications
- Absolute QE plots
- Spectral response plots
- ROI frame rate plots
- Comparison of feature availability in various Prosilica GT camera model series

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.

Shock and vibration

Prosilica GT standard and extended format cameras were successfully tested according to the following standards:

- IEC 60068-2-6, Sinusoidal vibration testing
- IEC 60068-2-27, Non-repetitive shock testing
- IEC 60068-2-27, Repetitive shock testing
- IEC 60068-2-64, Random vibration testing

Prosilica GT Large Format cameras were successfully tested according to the following standards:

- IEC 60068-2-6, Sinusoidal vibration testing
- IEC 60068-2-27, Non-repetitive shock testing
- IEC 60068-2-27, Repetitive shock testing
- IEC 60068-2-64, Random vibration testing

Notes on specifications

Dimensions and mass

Dimensions include lens mount and 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).

Mono8 pixel format

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

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.

ON Semi sensor change

Prosilica GT color models with ON Semi sensors now use sensors with the latest 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 provides 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 have 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 sensor sensors before readout. The frame rate for an ROI at the same effective height as binning is slower because the sensor 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 more 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	Quad-tap mode	Single-tap mode
`ReverseX`	Available	Not available
`ReverseY`	Available	Not available
`DecimationHorizontal`	Available	Not available
`DecimationVertical`	Available	Not available

Table 7: Features affected when switching sensor tap mode

Tap modes

Model series	Sensor tap mode
Prosilica GT1290	Single-tap
Prosilica GT1380	Single-tap
Prosilica GT1600	Single-tap
Prosilica GT1660	Quad-tap, Single-tap switchable in Vimba 2.0 or later
Prosilica GT1910	Quad-tap, Single-tap switchable in Vimba 2.0 or later
Prosilica GT1920	Quad-tap, Single-tap switchable in Vimba 2.0 or later
Prosilica GT2300	Quad-tap, Single-tap switchable in Vimba 2.0 or later
Prosilica GT2450	Dual-tap
Prosilica GT2750	Quad-tap, Single-tap switchable in Vimba 2.0 or later
Prosilica GT3300	Quad-tap, Single-tap switchable in Vimba 2.0 or later
Prosilica GT3400	Quad-tap, Single-tap switchable in Vimba 2.0 or later

Table 8: Sensor tap modes for CCD model series (sheet 1 of 2)

Model series	Sensor tap mode
Prosilica GT4905	Quad-tap, Single-tap switchable in Vimba 2.0 or later
Prosilica GT4907	Quad-tap, Single-tap switchable in Vimba 2.0 or later
Prosilica GT6600	Quad-tap, Single-tap switchable in Vimba 2.0 or later

Table 8: Sensor tap modes for CCD model series (sheet 2 of 2)

Absolute QE plots

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 percent.

The uncertainty in measurement of the QE values is ±10 percent. 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 sensors

Sony provides relative response curves in their sensor data sheets. To create the absolute QE plots shown in this chapter, the relative response was converted to a normalized QE response and then adjusted as per three measured QE values (at 448 nm, 529 nm, 632 nm) for color sensors and one measured QE value (at 529 nm) for monochrome sensors.

ON Semi CCD and CMOS sensors

The curve in the absolute QE plots shown in this chapter is taken 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.

Spectral response plots

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 taken from the sensor data sheet, but the values have been adjusted based on these measured values.

The uncertainty in measurement of the spectral response values is ±10 percent.

Specifications common to all models

The following table provides specifications common to all Prosilica GT models.

Feature	Specification
Optional lens mount	• Standard and Extended housing models: C-Mount, CS-Mount, Birger EF-Mount, M42-Mount • Large Format models: C-Mount[1], EF-Mount PA, F-Mount, F-Mount PA, M42-Mount, M42-Mount PA, M58-Mount, M58-Mount PA, TFL-Mount[2]
Default optical filter	• Monochrome and NIR models: No optical filter • Color models: IRC30 type IR cut filter
Optional optical filters	• IRC30 type IR cut filter • B 270 ASG protection glass • Schneider 486 IR cut filter[3] • RG780 type IR pass filter[4] • RG715 type IR pass filter[4]
Image buffer	128 MB
TTL (non-isolated) I/O	1 input, 2 outputs
Opto-isolated I/O	1 input, 2 outputs
RS232	1 TxD, 1 RxD
Power requirements	7 to 25 VDC AUX
Power requirements (PoE)	IEEE 802.3at Type 1
Operating humidity	20 to 80% non-condensing
Interface standards	• IEEE 802.3 1000BASE-T (GigE) and IEEE 802.3at Type 1 (PoE) • GigE Vision® Standard V1.2
Camera control standard	GenICam SFNC V1.2.1

[1] Prosilica GT4400 and GT5400 only.

[2] Prosilica GT4400, GT5400, and GT6400 only.

[3] IRC Filter Schneider 486 filters are available for Large Format models only. For more information, see the Modular Concept.

[4] RG780 and RG715 type IR pass filters are available for Prosilica GT standard and extended format models only. For more information, see the Modular Concept.

Table 9: Specifications common to all Prosilica GT models

Prosilica GT1290 series

The following table provides model series specifications. The values are valid for Prosilica GT1290 and GT1290C models. For specifications common to all models, see Specifications common to all Prosilica GT models.

Feature	Specification	
	Prosilica GT1290	**Prosilica GT1290C**
Sensor model	Sony ICX445ALA	Sony ICX445AQA
Resolution	1280 (H) × 960 (V); 1.2 MP	
Shutter type	Global shutter	
Sensor type	Interline CCD, Progressive Scan	
Sensor format	Type 1/3	
Sensor size	6.0 mm diagonal	
Pixel size	3.75 µm × 3.75 µm	
Housing	Standard format housing	
Default lens mount	C-Mount	
Maximum frame rate at full resolution	33.3 fps	
Maximum image bit depth	12/14 bit	
StreamHoldCapacity	Up to 53 frames at full resolution	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed, Mono14	Mono8
YUV color pixel formats	Not applicable	YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats	Not applicable	RGB8Packed, BGR8Packed
RAW pixel formats	Not applicable	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	External power: 2.9 W at 12 VDC Power over Ethernet: 3.5 W	
Trigger latency	2 µs	
Trigger jitter	±20 ns	

Table 10: Prosilica GT1290 model series specifications (sheet 1 of 2)

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)	
Camera 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 10: Prosilica GT1290 model series specifications (sheet 2 of 2)

Absolute QE

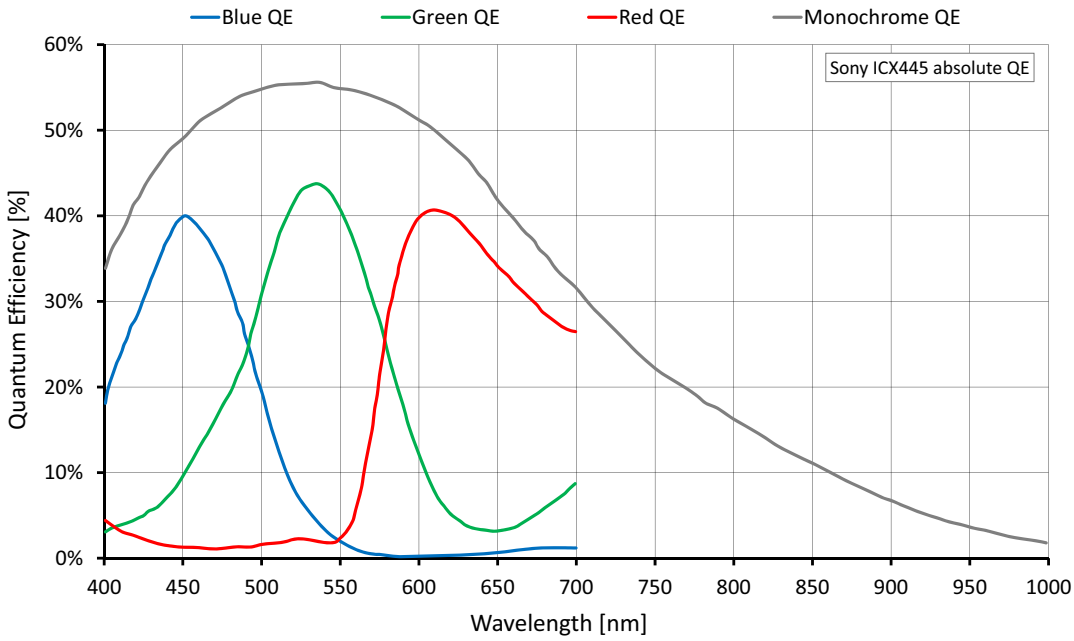


Figure 3: Prosilica GT1290 (Sony ICX445) absolute QE

Spectral response

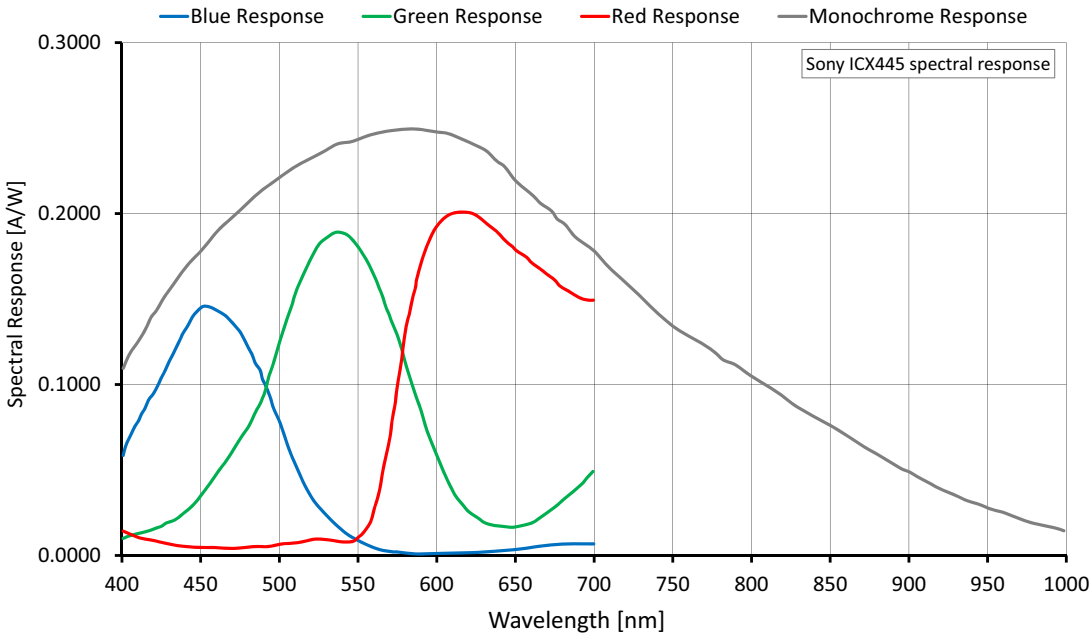


Figure 4: Prosilica GT1290 (Sony ICX445) spectral response

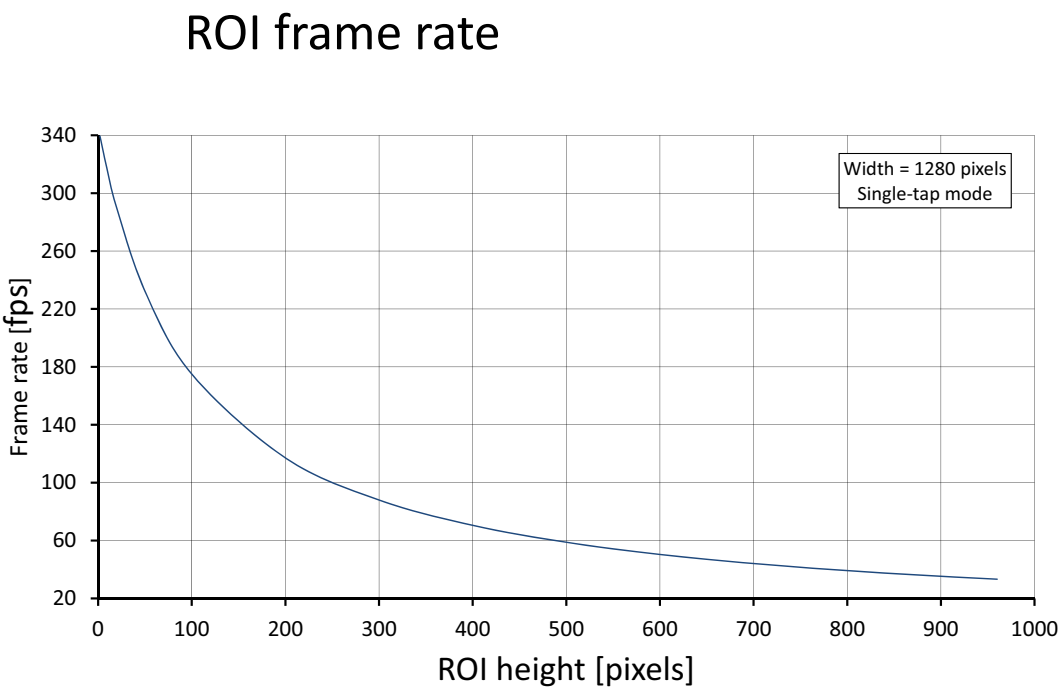


Figure 5: Prosilica GT1290 frame rate as a function of ROI height

Height	Frame rate
960	33.3
900	35.3
800	39.2
700	44.1
600	50.4

Height	Frame rate
500	58.8
400	70.5
300	88.0
200	117.1
100	175.0

Height	Frame rate
50	232.4
20	289.5
10	315.2
2	339.4

Table 11: Frame rate as a function of ROI height (Width=1280 pixels)

The following table shows how binning affects ROI frame rate.

BinningVertical	Height	Frame rate
2	480	60.8
3	320	83.8
4	240	103.3
5	192	120.0
6	160	134.5
7	136	147.8

BinningVertical	Height	Frame rate
8	120	158.3
9	106	168.7
10	96	176.9
11	86	185.1
12	80	191.9

Table 12: Frame rate as a function of ROI height with vertical binning enabled (Width=1280 pixels)

Prosilica GT1380 series

The following table provides model series specifications. The values are valid for Prosilica GT1380 and GT1380C models. For specifications common to all models, see Specifications common to all Prosilica GT models.

Feature	Specification	
	Prosilica GT1380	**Prosilica GT1380C**
Sensor model	Sony ICX285AL	Sony ICX285AQ
Resolution	1360 (H) × 1024 (V); 1.4 MP	
Shutter type	Global shutter	
Sensor type	Interline CCD, Progressive Scan	
Sensor format	Type 2/3	
Sensor size	11.0 mm diagonal	
Pixel size	6.45 µm × 6.45 µm	
Housing	Standard format housing	
Default lens mount	C-Mount	
Maximum frame rate at full resolution	30.5 fps	
Maximum image bit depth	12/14 bit	
StreamHoldCapacity	Up to 47 frames at full resolution	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed, Mono14	Mono8
YUV color pixel formats	Not applicable	YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats	Not applicable	RGB8Packed, BGR8Packed
RAW pixel formats	Not applicable	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	External power: 3.4 W at 12 VDC Power over Ethernet: 4.2 W	
Trigger latency	2.2 µs	

Table 13: Prosilica GT1380 model series specifications (sheet 1 of 2)

Feature	Specification	
	Prosilica GT1380	**Prosilica GT1380C**
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)	
Camera 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 13: Prosilica GT1380 model series specifications (sheet 2 of 2)

Absolute QE

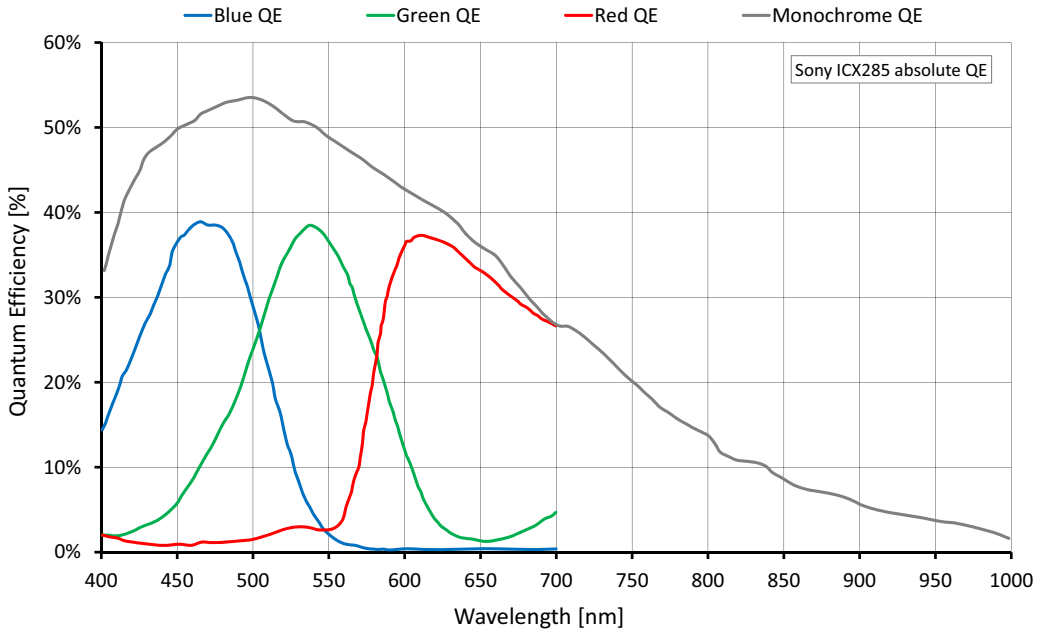


Figure 6: Prosilica GT1380 (Sony ICX285) absolute QE

Spectral response

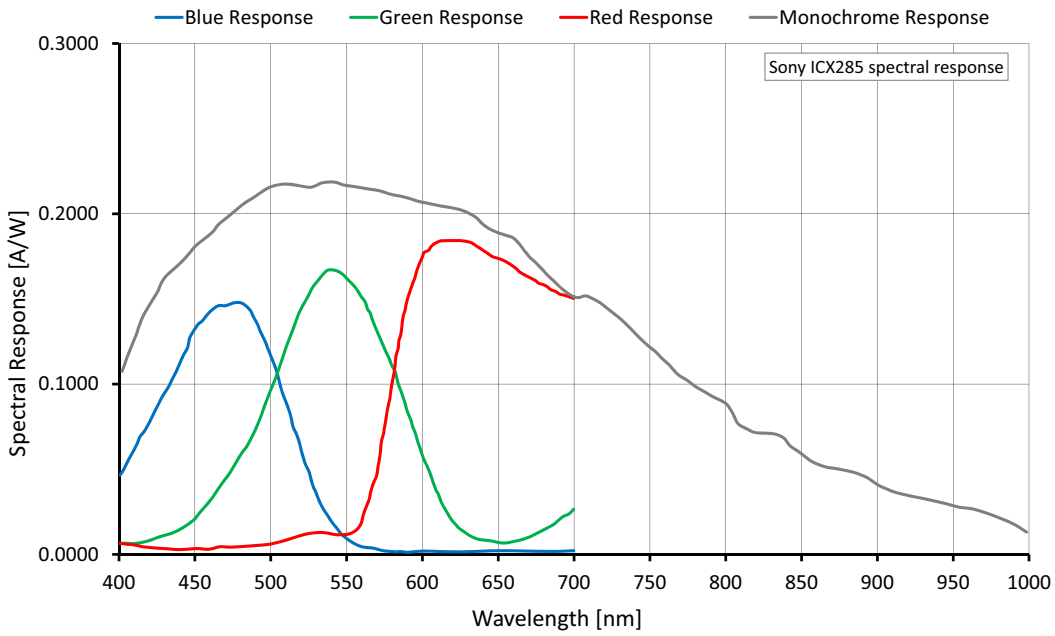


Figure 7: Prosilica GT1380 (Sony ICX285) spectral response

ROI frame rate

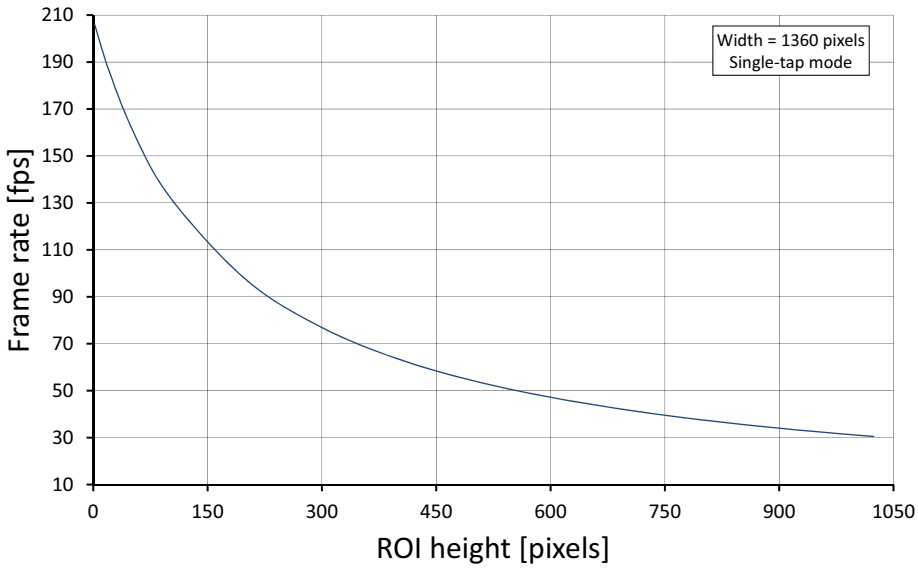


Figure 8: Prosilica GT1380 frame rate as a function of ROI height

Height	Frame rate
1024	30.5
1000	31.1
900	34.0
800	37.5
700	41.8

Height	Frame rate
600	47.2
500	54.1
400	63.5
300	76.9
200	97.4

Height	Frame rate
100	132.7
50	162.1
20	186.9
10	197.0
2	205.9

Table 14: Frame rate as a function of ROI height (Width=1360 pixels)

The following table shows how binning affects ROI frame rate.

BinningVertical	Height	Frame rate
2	512	53.2
3	341	70.7
4	256	84.6
5	204	96.0
6	170	105.4
7	146	113.1
8	128	119.6

BinningVertical	Height	Frame rate
9	113	125.6
10	102	130.4
11	93	134.6
12	85	138.5
13	78	142.1
14	73	144.7

Table 15: Frame rate as a function of ROI height with vertical binning enabled (Width=1360 pixels)

Prosilica GT1600 series

The following table provides model series specifications. The values are valid for Prosilica GT1600 and GT1600C models. For specifications common to all models, see Specifications common to all Prosilica GT models.

Feature	Specification	
	Prosilica GT1600	**Prosilica GT1600C**
Sensor model	Sony ICX274AL	Sony ICX274AQ
Resolution	1620 (H) × 1220 (V); 2 MP	
Shutter type	Global shutter	
Sensor type	Interline CCD, Progressive Scan	
Sensor format	Type 1/1.8	
Sensor size	8.923 mm diagonal	
Pixel size	4.4 µm × 4.4 µm	
Housing	Standard format housing	
Default lens mount	C-Mount	
Maximum frame rate at full resolution	25.8 fps	
Maximum image bit depth	12/14 bit	
StreamHoldCapacity	Up to 33 frames at full resolution	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed, Mono14	Mono8
YUV color pixel formats	Not applicable	YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats	Not applicable	RGB8Packed, BGR8Packed
RAW pixel formats	Not applicable	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	External power: 3.3 W at 12 VDC Power over Ethernet: 4.0 W	
Trigger latency	1.4 µs	
Trigger jitter	±20 ns	

Table 16: Prosilica GT1600 model series specifications (sheet 1 of 2)

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)	
Camera 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 16: Prosilica GT1600 model series specifications (sheet 2 of 2)

Absolute QE

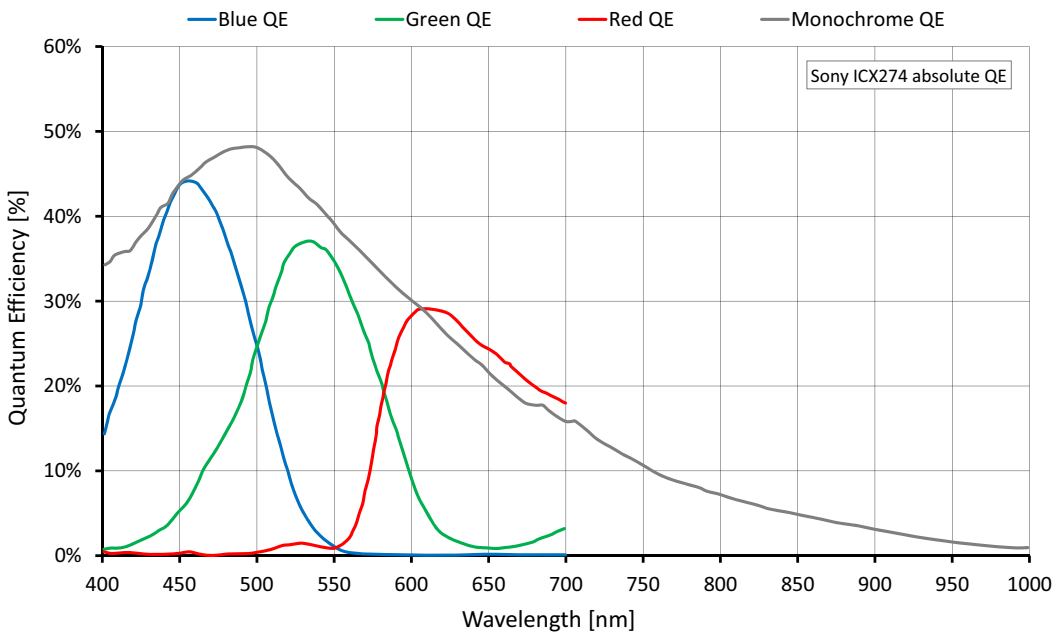


Figure 9: Prosilica GT1600 (Sony ICX274) absolute QE

Spectral response

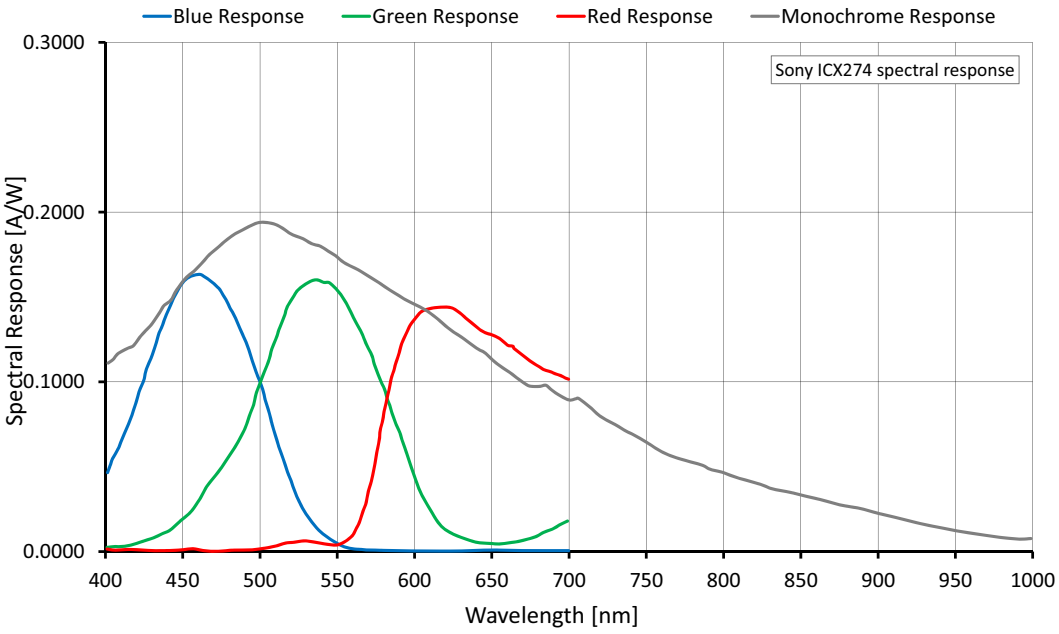


Figure 10: Prosilica GT1600 (Sony ICX274) spectral response

ROI frame rate

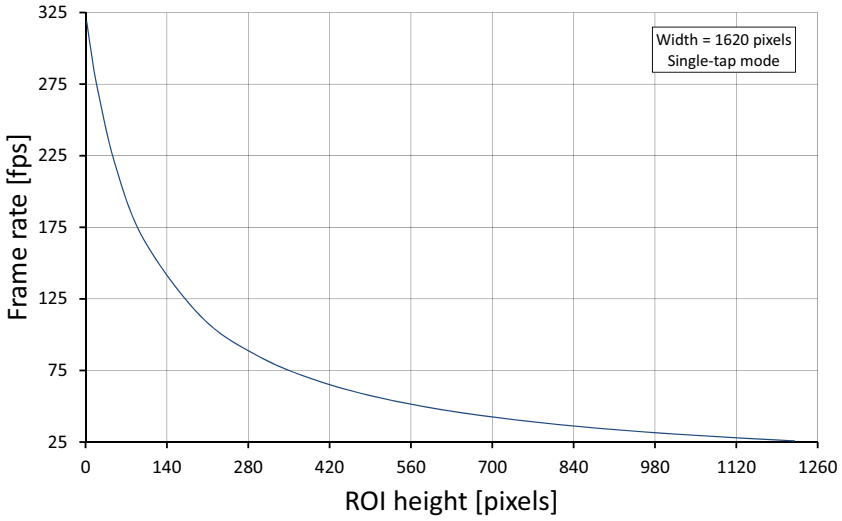


Figure 11: Prosilica GT1600 frame rate as a function of ROI height

Height	Frame rate
1220	25.8
1100	28.4
1000	31.0
900	34.0
800	37.8
700	42.5

Height	Frame rate
600	48.5
500	56.5
400	67.7
300	84.4
200	112.1
100	116.6

Height	Frame rate
50	220.2
20	272.9
10	296.5
2	318.6

Table 17: Frame rate as a function of ROI height (Width=1620 pixels)

The following table shows how binning affects ROI frame rate.

BinningVertical	Height	Frame rate
2	610	47.9
3	406	66.9
4	304	83.5
5	244	97.8
6	202	111.0
7	174	122.1
8	152	132.4

BinningVertical	Height	Frame rate
9	134	142.2
10	122	149.6
11	110	157.7
12	100	165.2
13	92	171.7
14	86	176.9

Table 18: Frame rate as a function of ROI height with vertical binning enabled (Width=1620 pixels)

Prosilica GT1660

The following table provides model series specifications. The values are valid for Prosilica GT1660 models. For specifications common to all models, see Specifications common to all Prosilica GT models.

Discontinuation

Prosilica GT1660C was previously discontinued and the last time buy period ended on September 15, 2019. Due to ON Semi's discontinuation of this sensor the Prosilica GT1660 is also discontinued with the last time buy period ending on March 1, 2020. For more information, see the Product change notice webpage at www.alliedvision.com/en/support/product-change-notifications.

Feature	Specification Prosilica GT1660
Sensor model	ON Semi KAI-02050 TRUESENSE Gen 2
Resolution	1600 (H) × 1200 (V); 1.9 MP
Shutter type	Global shutter
Sensor type	Interline CCD, Progressive Scan
Sensor format	Type 2/3
Sensor size	11.0 mm diagonal
Pixel size	5.5 µm × 5.5 µm
Housing	Extended format housing
Default lens mount	C-Mount
Maximum frame rate at full resolution	Quad-tap mode: 62.1 fps Single-tap mode: 17.9 fps
Maximum image bit depth	12/14 bit
StreamHoldCapacity	Up to 68 frames at full resolution
Monochrome pixel formats	Mono8, Mono12, Mono12Packed, Mono14
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	Quad-tap Single-tap switchable in Vimba Viewer 2.0 or later
Power consumption	External power: 5.1 W at 12 VDC Power over Ethernet: 6.3 W
Trigger latency	2.1 µs

Table 19: Prosilica GT1660 model specifications (sheet 1 of 2)

Feature	Specification Prosilica GT1660
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)
Camera 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 19: Prosilica GT1660 model specifications (sheet 2 of 2)

Absolute QE

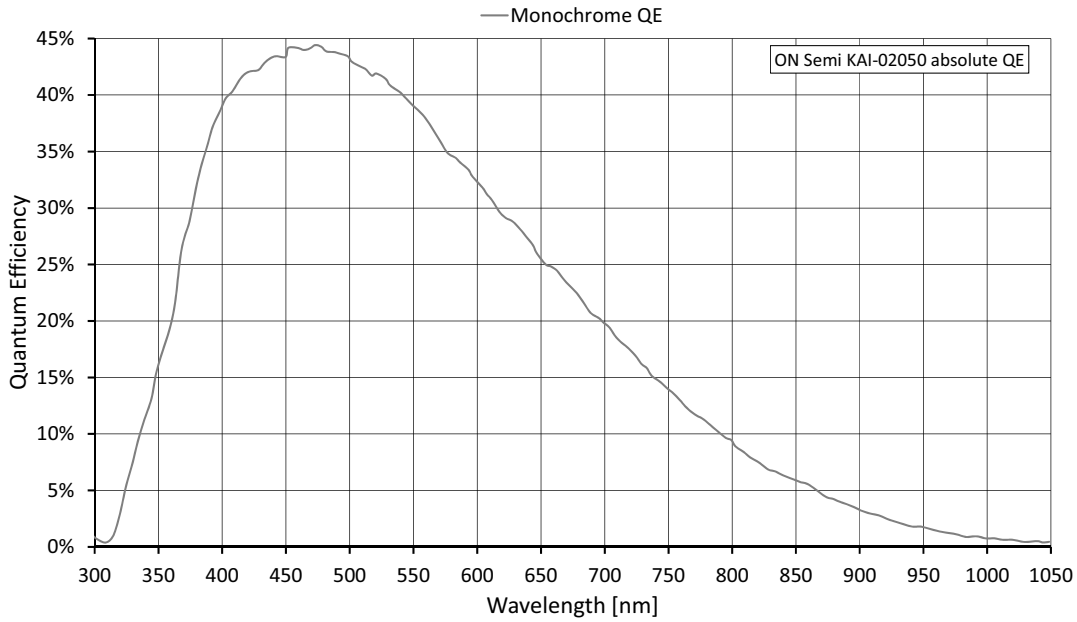


Figure 12: Prosilica GT1660 (ON Semi KAI-02050 Gen 2) absolute QE

Spectral response

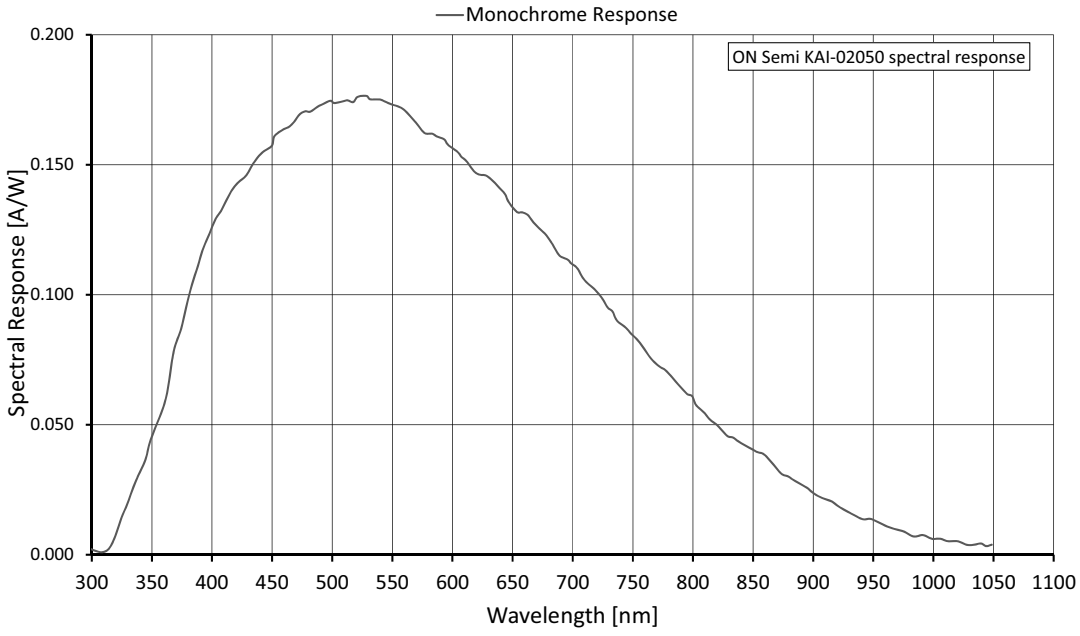


Figure 13: Prosilica GT1660 (ON Semi KAI-02050 Gen 2) spectral response

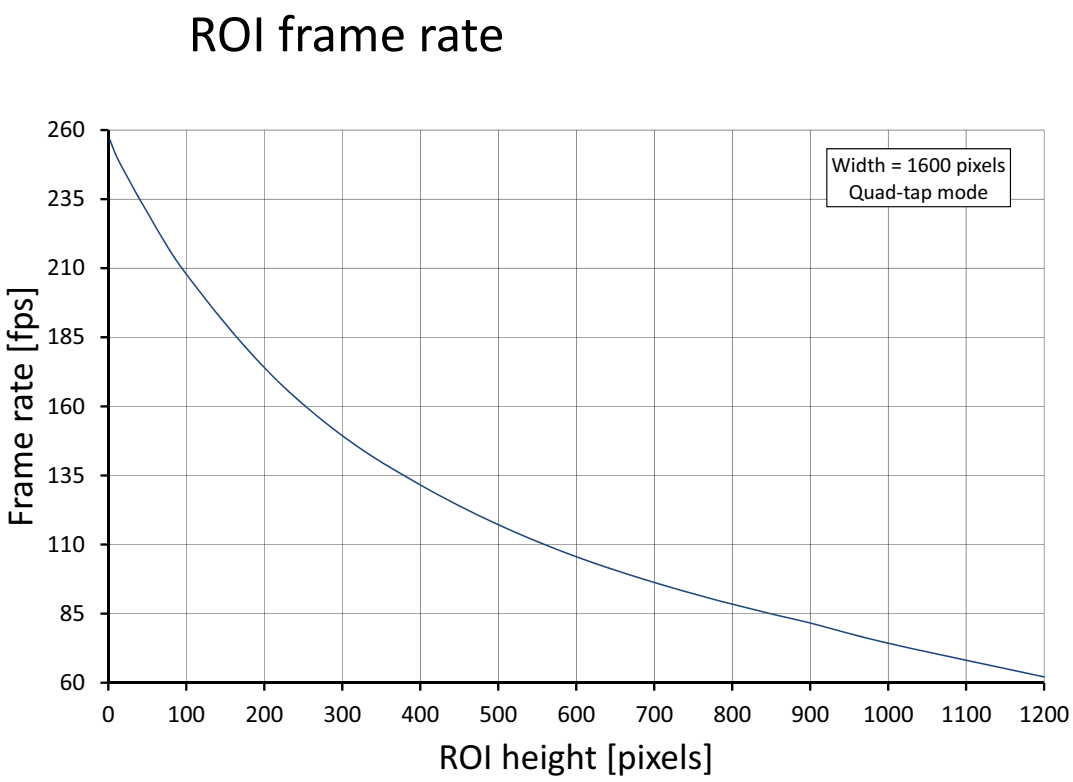


Figure 14: Prosilica GT1660 frame rate as function of ROI height

Height	Frame rate
1200	62.1
1000	74.3
900	81.6
800	88.4
700	96.3

Height	Frame rate
600	105.6
500	117.2
400	131.6
300	149.4
200	174.0

Height	Frame rate
100	207.8
50	230.2
20	245.3
10	250.8
2	256.5

Table 20: Frame rate as a function of ROI height (Width=1600 pixels)

The following table shows how binning affects ROI frame rate.

BinningVertical	Height	Frame rate
2	600	121.0
3	400	165.4
4	300	202.8
5	240	234.2

BinningVertical	Height	Frame rate
6	200	260.8
7	170	284.0
8	150	303.1

Table 21: Frame rate as a function of ROI height with vertical binning enabled (Width=1600 pixels)

Prosilica GT1910 series

The following table provides model series specifications. The values are valid for Prosilica GT1910 and GT1910C models. For specifications common to all models, see Specifications common to all Prosilica GT models.

Discontinuation

Due to ON Semi's discontinuation of this sensor the Prosilica GT1910 series has been discontinued with the last time buy period ending on March 1, 2020. For more information, see the Product change notice webpage at www.alliedvision.com/en/support/product-change-notifications.

Feature	Specification	
	Prosilica GT1910	**Prosilica GT1910C**
Sensor model	ON Semi KAI-02150 TRUESENSE Gen 2	
Resolution	1920 (H) × 1080 (V); 2.1 MP	
Shutter type	Global shutter	
Sensor type	Interline CCD, Progressive Scan	
Sensor format	Type 2/3	
Sensor size	12.1 mm diagonal	
Pixel size	5.5 µm × 5.5 µm	
Housing	Extended format housing	
Default lens mount	C-Mount	
Maximum frame rate at full resolution	Quad-tap mode: 57.5 fps Single-tap mode: 16.9 fps	
Maximum image bit depth	12/14 bit	
StreamHoldCapacity	Up to 63 frames at full resolution	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed, Mono14	Mono8
YUV color pixel formats	Not applicable	YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats	Not applicable	RGB8Packed, BGR8Packed, RGBA8Packed, BGRA8Packed
RAW pixel formats	Not applicable	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	

Table 22: Prosilica GT1910 model series specifications (sheet 1 of 2)

Feature	Specification	
	Prosilica GT1910	**Prosilica GT1910C**
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	External power: 5.1 W at 12 VDC Power over Ethernet: 6.3 W	
Trigger latency	2.2 µs	
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)	
Camera 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 22: Prosilica GT1910 model series specifications (sheet 2 of 2)

Absolute QE

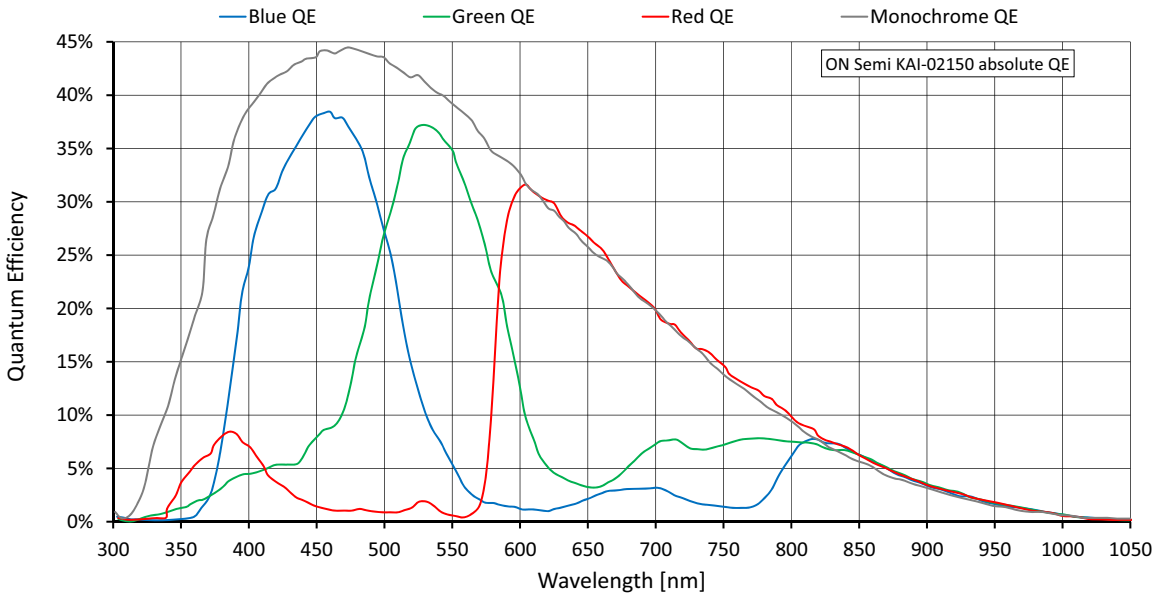


Figure 15: Prosilica GT1910 (ON Semi KAI-02150 Gen 2) absolute QE

Spectral response

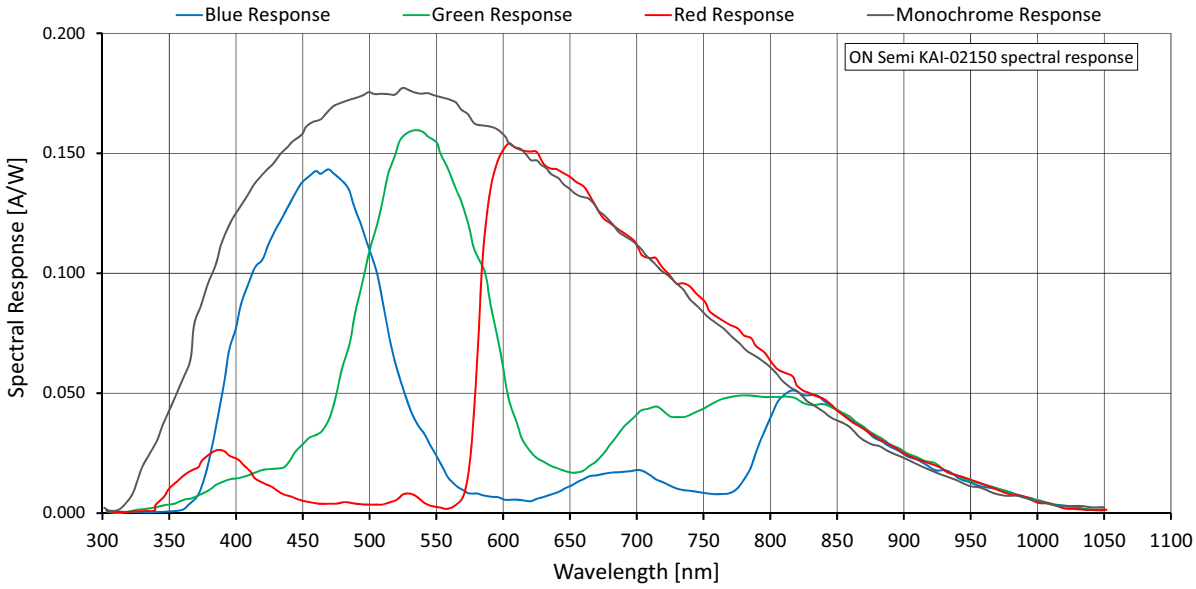


Figure 16: Prosilica GT1910 (ON Semi KAI-02150 Gen 2) spectral response

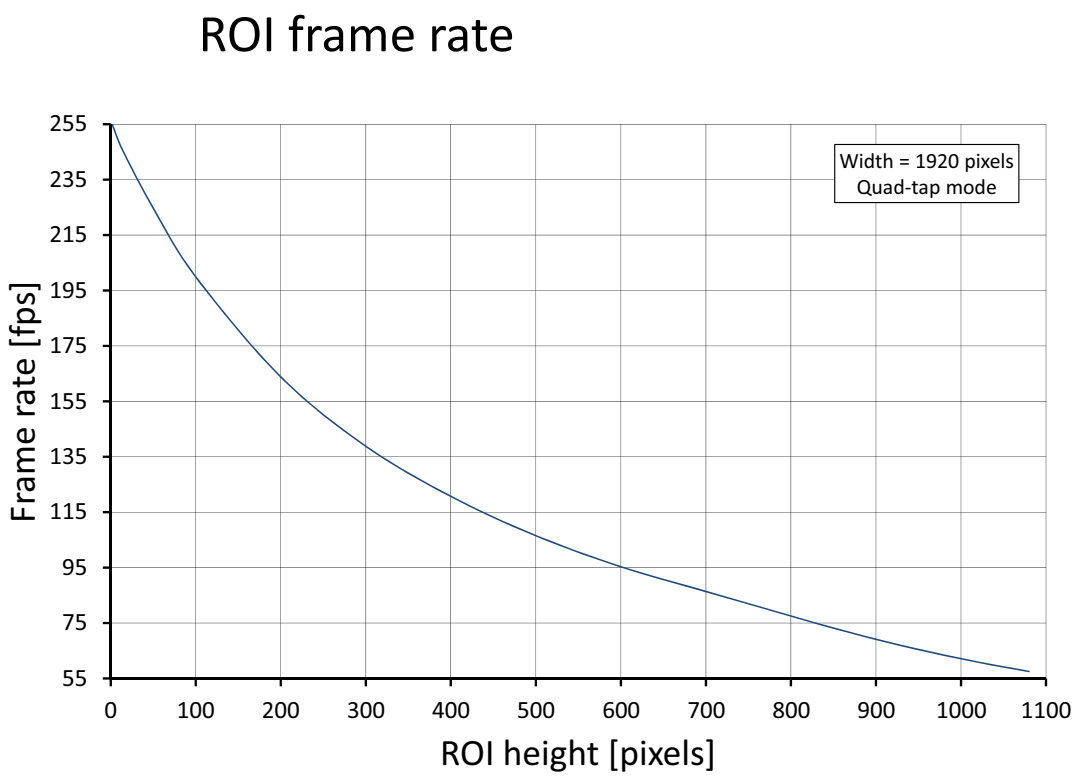


Figure 17: Prosilica GT1910 frame rate as a function of ROI height

Height	Frame rate
1080	57.5
1000	62.1
900	69.1
800	77.5
700	86.4

Height	Frame rate
600	95.3
500	106.5
400	120.7
300	138.8
200	163.8

Height	Frame rate
100	199.9
50	224.7
20	241.9
10	248.3
2	254.8

Table 23: Frame rate as a function of ROI height (Width=1920 pixels)

The following table shows how binning affects ROI frame rate.

BinningVertical	Height	Frame rate
2	540	114.1
3	360	160.8
4	270	198.7
5	216	230.8

BinningVertical	Height	Frame rate
6	180	258.5
7	154	282.6
8	134	304.0

Table 24: Frame rate as a function of ROI height with vertical binning enabled (Width=1920 pixels)

Prosilica GT1920 series

The following table provides model series specifications. The values are valid for Prosilica GT1920 and GT1920C models. For specifications common to all models, see Specifications common to all Prosilica GT models.

Feature	Specification	
	Prosilica GT1920	**Prosilica GT1920**
Sensor model	Sony ICX674ALG	Sony ICX674AQG
Resolution	1936 (H) × 1456 (V); 2.8 MP	
Shutter type	Global shutter	
Sensor type	Interline CCD, Progressive Scan	
Sensor format	Type 2/3	
Sensor size	10.972 mm diagonal	
Pixel size	4.54 µm × 4.54 µm	
Housing	Extended format housing	
Default lens mount	C-Mount	
Maximum frame rate at full resolution	Quad-tap mode: 40.7 fps Single-tap mode: 11.6 fps	
Maximum image bit depth	12/14 bit	
StreamHoldCapacity	Up to 47 frames at full resolution	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed, Mono14	Mono8
YUV color pixel formats	Not applicable	YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats	Not applicable	RGB8Packed, BGR8Packed, RGBA8Packed, BGRA8Packed
RAW pixel formats	Not applicable	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	Quad-tap Single-tap switchable in Vimba Viewer 2.0 or later	
Power consumption	External power: 4.9 W at 12 VDC Power over Ethernet: 6.0 W	

Table 25: Prosilica GT1920 model series specifications (sheet 1 of 2)

Feature	Specification	
	Prosilica GT1920	**Prosilica GT1920**
Trigger latency	2 µs	
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)	
Camera 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 25: Prosilica GT1920 model series specifications (sheet 2 of 2)

Absolute QE

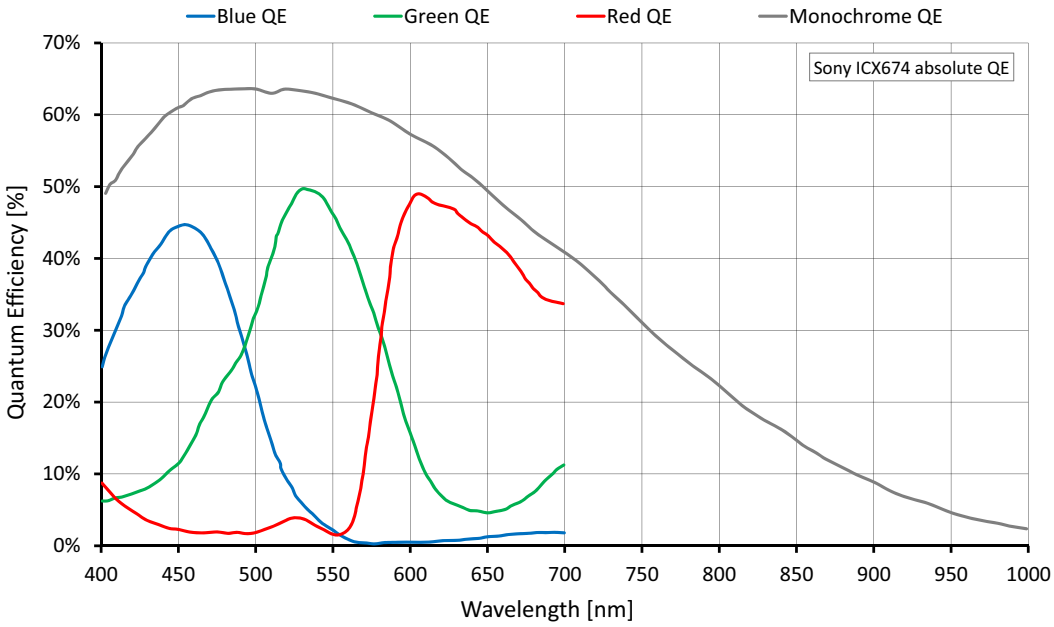


Figure 18: Prosilica GT1920 (Sony ICX674) absolute QE

Spectral response

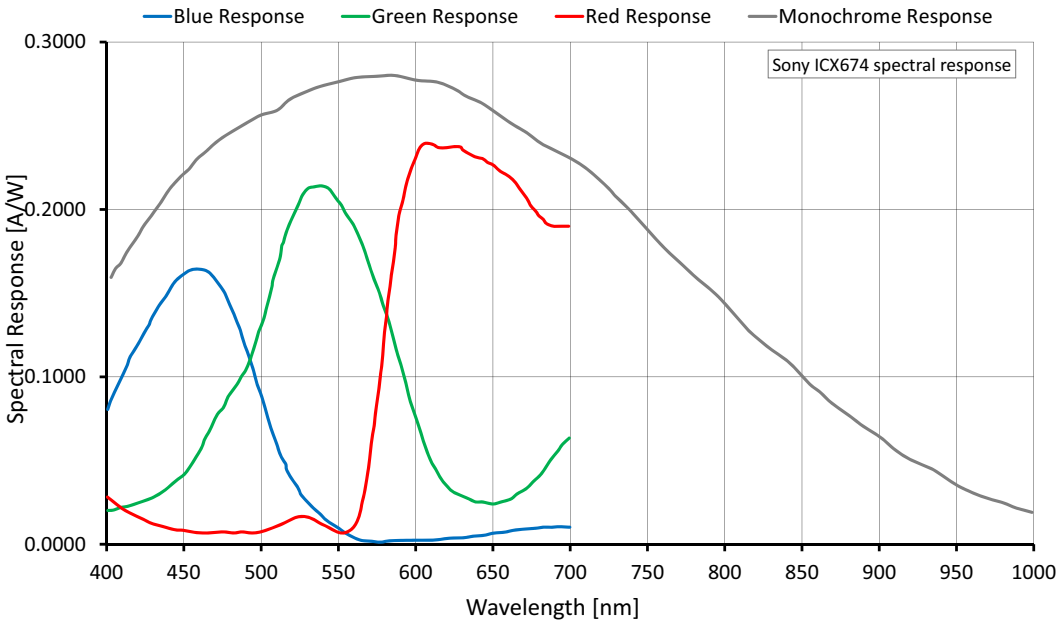


Figure 19: Prosilica GT1920 (Sony ICX674) spectral response

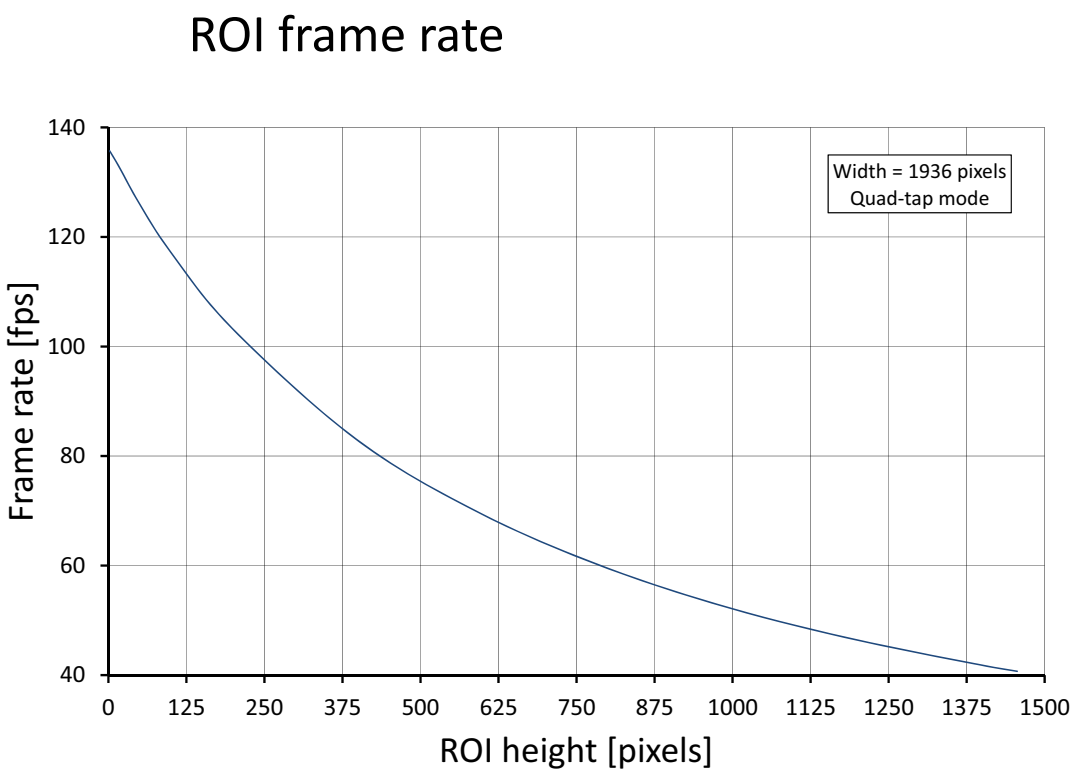


Figure 20: Prosilica GT1920 frame rate as function of ROI height

Height	Frame rate
1456	40.7
1400	41.8
1200	46.4
1000	52.1
800	59.5

Height	Frame rate
600	69.3
400	82.8
200	103.1
100	117.2
50	126.0

Height	Frame rate
20	132.2
10	134.2
2	135.7

Table 26: Frame rate as a function of ROI height (Width=1936 pixels)

The following table shows how binning affects ROI frame rate.

BinningVertical	Height	Frame rate
2	728	70.3
3	484	92.8
4	364	110.0
5	290	124.1

BinningVertical	Height	Frame rate
6	242	135.1
7	208	144.1
8	182	151.7

Table 27: Frame rate as a function of ROI height with vertical binning enabled (Width=1936 pixels)

Prosilica GT1930 series

The following table provides model series specifications. The values are valid for Prosilica GT1930 and GT1930C models. For specifications common to all models, see Specifications common to all Prosilica GT models.

Feature	Specification	
	Prosilica GT1930	**Prosilica GT1930C**
Sensor model	Sony IMX174LLJ	Sony IMX174LQJ
Resolution	1936 (H) × 1216 (V); 2.35 MP	
Shutter type	Pregius® global shutter	
Sensor type	CMOS	
Sensor format	Type 1/1.2	
Sensor size	13.4 mm diagonal	
Pixel size	5.86 µm × 5.86 µm	
CRA[1]	0.0 degrees	
Housing[2]	Standard format housing	
Default lens mount	C-Mount	
Maximum frame rate at full resolution	50.8 fps (59.2 fps burst mode)	
Maximum image bit depth	12-bit	
StreamHoldCapacity	Up to 56 frames at full resolution	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed	Mono8
YUV color pixel formats	Not applicable	YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats	Not applicable	RGB8Packed, BGR8Packed
RAW pixel formats	Not applicable	BayerRG8, BayerRG12,
Exposure time control	**Pixel format**	**Value**
	Mono8, BayerRG8, Mono12Packed, BayerRG12Packed, YUV411Packed	27 µs to 85.9 s; 13.44 µs increments
	Mono12, BayerRG12, YUV422Packed	31 µs to 85.9 s; 17.92 µs increments
	YUV444Packed, RGB8Packed, BGR8Packed	40 µs to 85.9 s; 26.88 µs increments
Gain control	0.0 to 40.0 dB, 0.1 dB increments	

Table 28: Prosilica GT1930 model series specifications (sheet 1 of 2)

Feature	Specification	
	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	External power: 3.4 W at 12 VDC Power over Ethernet: 4.2 W	
Trigger latency	**Pixel format**	**Value**
	Mono8, BayerRG8, Mono12Packed, BayerRG12Packed, YUV411Packed	40.32 µs
	Mono12, BayerRG12, YUV422Packed	53.76 µs
	YUV444Packed, RGB8Packed, BGR8Packed	80.64 µs
Trigger jitter	**Pixel format**	**Value**
	Mono8, BayerRG8, Mono12Packed, BayerRG12Packed, YUV411Packed	±6.72 µs
	Mono12, BayerRG12, YUV422Packed	±8.96 µs
	YUV444Packed, RGB8Packed, BGR8Packed	±13.44 µs
Time between exposures	**Pixel format**	**Value**
	Mono8, BayerRG8, Mono12Packed, BayerRG12Packed, YUV411Packed	188 µs
	Mono12, BayerRG12, YUV422Packed	256 µs
	YUV444Packed, RGB8Packed, BGR8Packed	390 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)	
Camera 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] For more information on CRA, contact Allied Vision support.

[2] The Prosilica GT1930 housing lens protrusion is 2.3 mm shorter than other standard housings.

Table 28: Prosilica GT1930 model series specifications (sheet 2 of 2)

Absolute QE

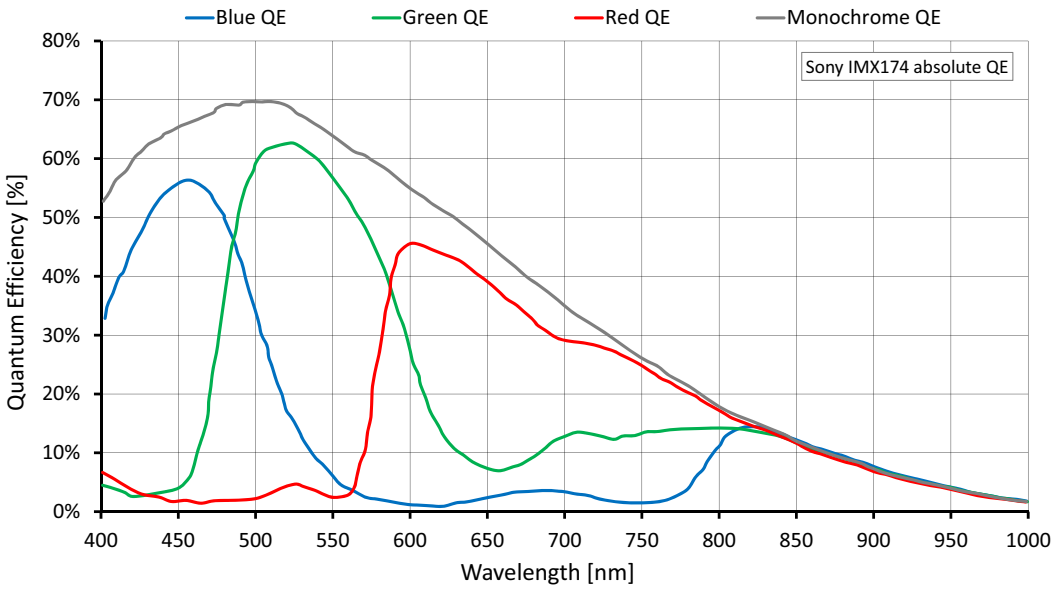


Figure 21: Prosilica GT1930 (Sony IMX174) absolute QE

Spectral response

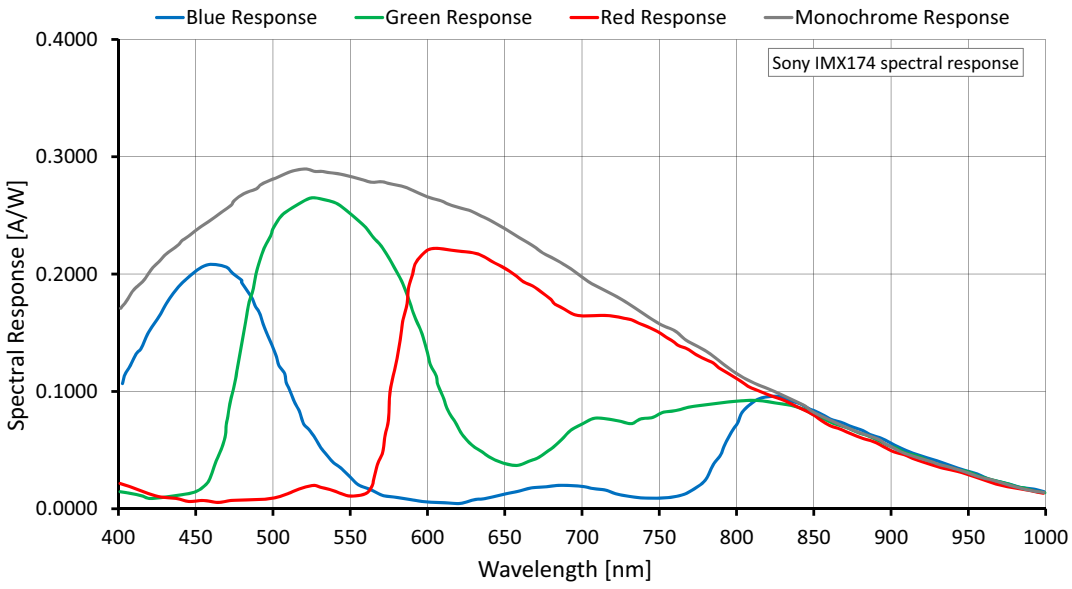


Figure 22: Prosilica GT1930 (Sony IMX174) spectral response

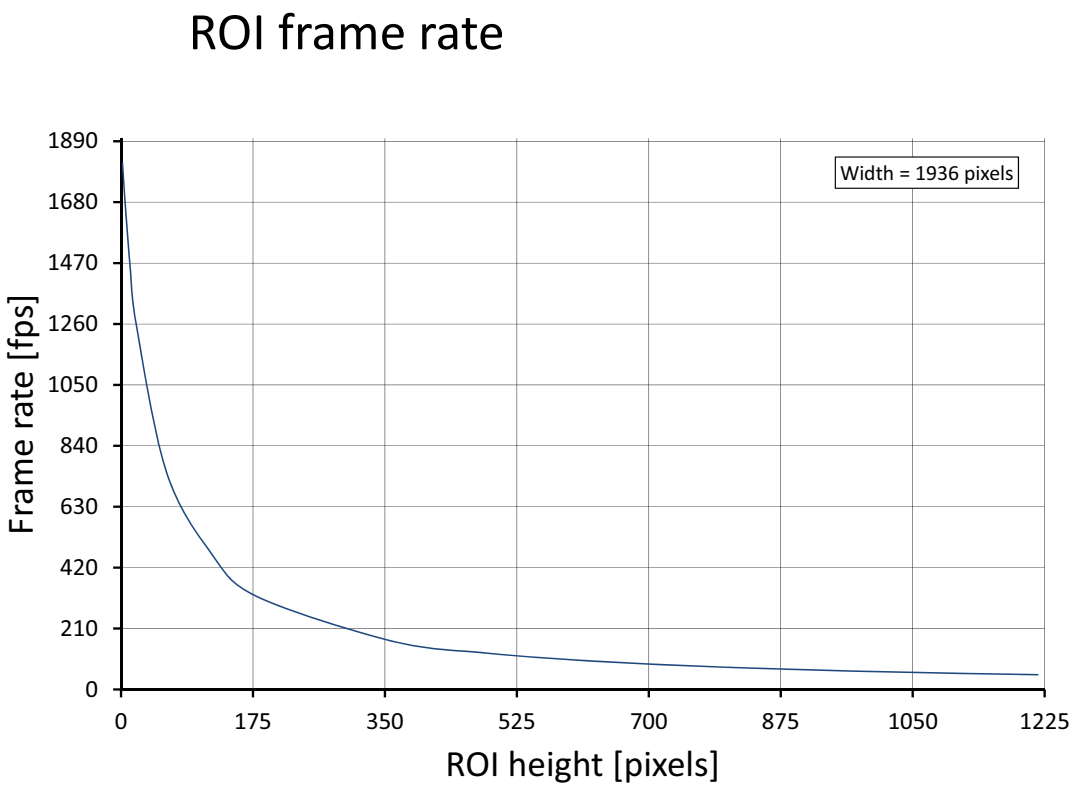


Figure 23: Prosilica GT1930 frame rate as a function of ROI height

Height	Frame rate
1216	50.8
1080	57.0
1024	60.1
960	64.2
768	79.8

Height	Frame rate
600	102.0
480	126.5
360	166.4
180	320.7
120	467.9

Height	Frame rate
60	751.5
20	1261.0
12	1458.8
4	1730.1
2	1814.5

Table 29: Frame rate as a function of ROI height (Width=1936 pixels)

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

Prosilica GT1930L series

The following table provides model series specifications. The values are valid for Prosilica GT1930L and GT1930LC models. For specifications common to all models, see Specifications common to all Prosilica GT models.

Feature	Specification	
	Prosilica GT1930L	**Prosilica GT1930LC**
Sensor model	Sony IMX174LLJ	Sony IMX174LQJ
Resolution	1936 (H) × 1216 (V); 2.35 MP	
Shutter type	Pregius® global shutter	
Sensor type	CMOS	
Sensor format	Type 1/1.2	
Sensor size	13.4 mm diagonal	
Pixel size	5.86 µm × 5.86 µm	
CRA[1]	0.0 degrees	
Housing	Large Format housing	
Default lens mount	EF-Mount PA	
Maximum frame rate at full resolution	50.8 fps (59.2 fps burst mode)	
Maximum image bit depth	12-bit	
StreamHoldCapacity	Up to 56 frames at full resolution	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed	Mono8
YUV color pixel formats	Not applicable	YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats	Not applicable	RGB8Packed, BGR8Packed
RAW pixel formats	Not applicable	BayerRG8, BayerRG12, BayerRG12Packed
Exposure time control	**Pixel format**	**Value**
	Mono8, BayerRG8, Mono12Packed, BayerRG12Packed, YUV411Packed	27 µs to 85.9 s; 13.44 µs increments
	Mono12, BayerRG12, YUV422Packed	31 µs to 85.9 s; 17.92 µs increments
	YUV444Packed, RGB8Packed, BGR8Packed	40 µs to 85.9 s; 26.88 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	

Table 30: Prosilica GT1930L model series specifications (sheet 1 of 2)

Feature	Specification	
	Prosilica GT1930L	**Prosilica GT1930LC**
Decimation X/Y	Horizontal and vertical: 1, 2, 4, 8 factor	
Power consumption	External power: 3.24 W at 12 VDC Power over Ethernet: 3.88 W	
Trigger latency	**Pixel format**	**Value**
	Mono8, BayerRG8, Mono12Packed, BayerRG12Packed, YUV411Packed	40.32 µs
	Mono12, BayerRG12, YUV422Packed	53.76 µs
	YUV444Packed, RGB8Packed, BGR8Packed	80.64 µs
Trigger jitter	**Pixel format**	**Value**
	Mono8, BayerRG8, Mono12Packed, BayerRG12Packed, YUV411Packed	±6.72 µs
	Mono12, BayerRG12, YUV422Packed	±8.96 µs
	YUV444Packed, RGB8Packed, BGR8Packed	±13.44 µs
Time between exposures	**Pixel format**	**Value**
	Mono8, BayerRG8, Mono12Packed, BayerRG12Packed, YUV411Packed	188 µs
	Mono12, BayerRG12, YUV422Packed	256 µs
	YUV444Packed, RGB8Packed, BGR8Packed	390 µs
Propagation delay (t_{pd})	30 ns for non-isolated I/O; 70 ns for isolated I/O	
Operating temperature[2]	-30 to +75 °C `DeviceTemperatureSelector` = *`Sensor`*, -30 to +80 °C `DeviceTemperatureSelector` = *`Main`*, -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)	
Camera 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] For more information on CRA, contact Allied Vision support.

[2] Selects the site which temperature is reported. For more information on `DeviceStatus`, see the GigE Features Reference.

Table 30: Prosilica GT1930L model series specifications (sheet 2 of 2)

Absolute QE

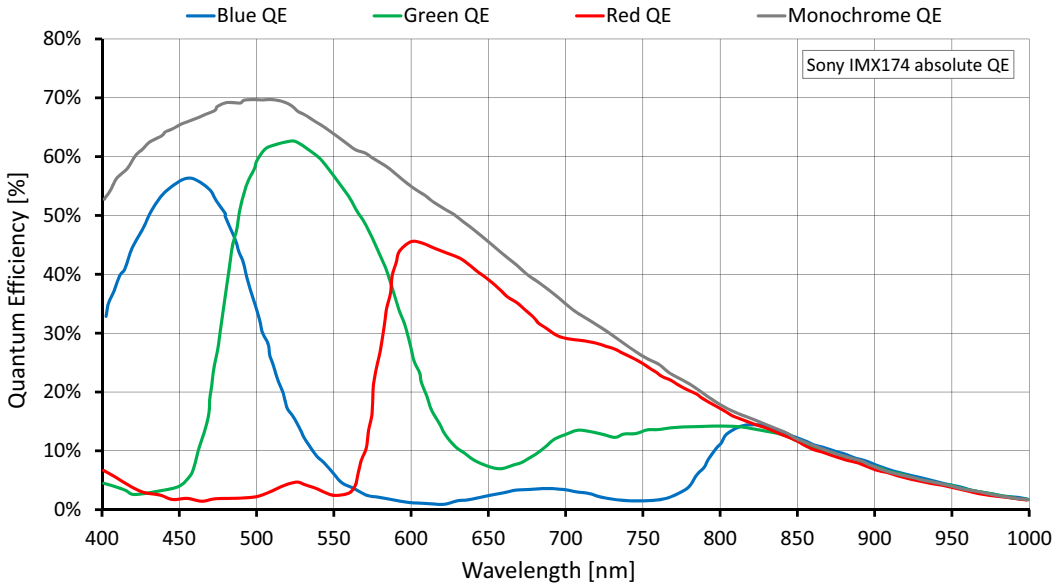


Figure 24: Prosilica GT1930L (Sony IMX174) absolute QE

Spectral response

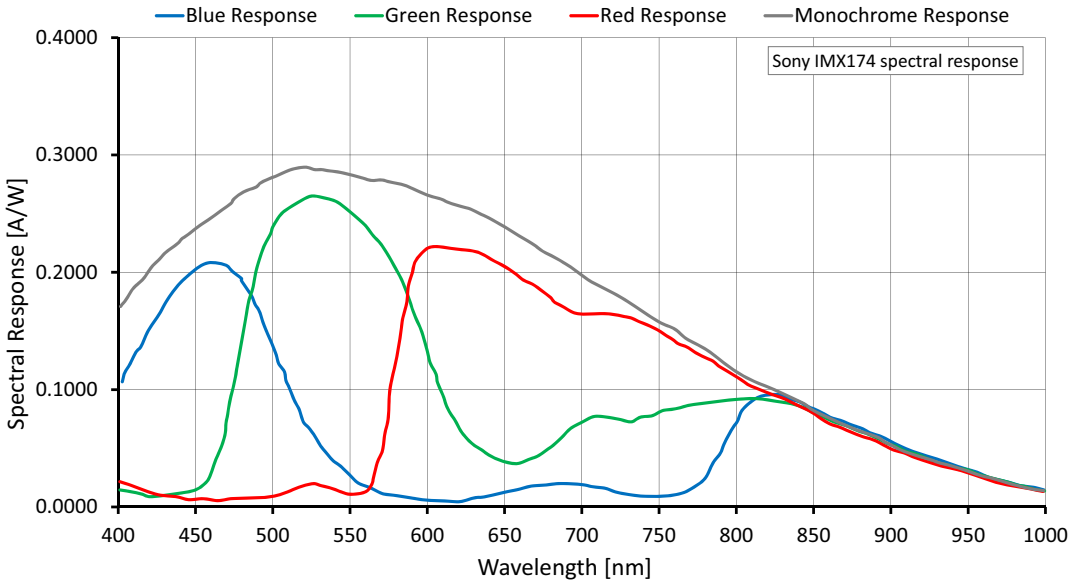


Figure 25: Prosilica GT1930L (Sony IMX174) spectral response

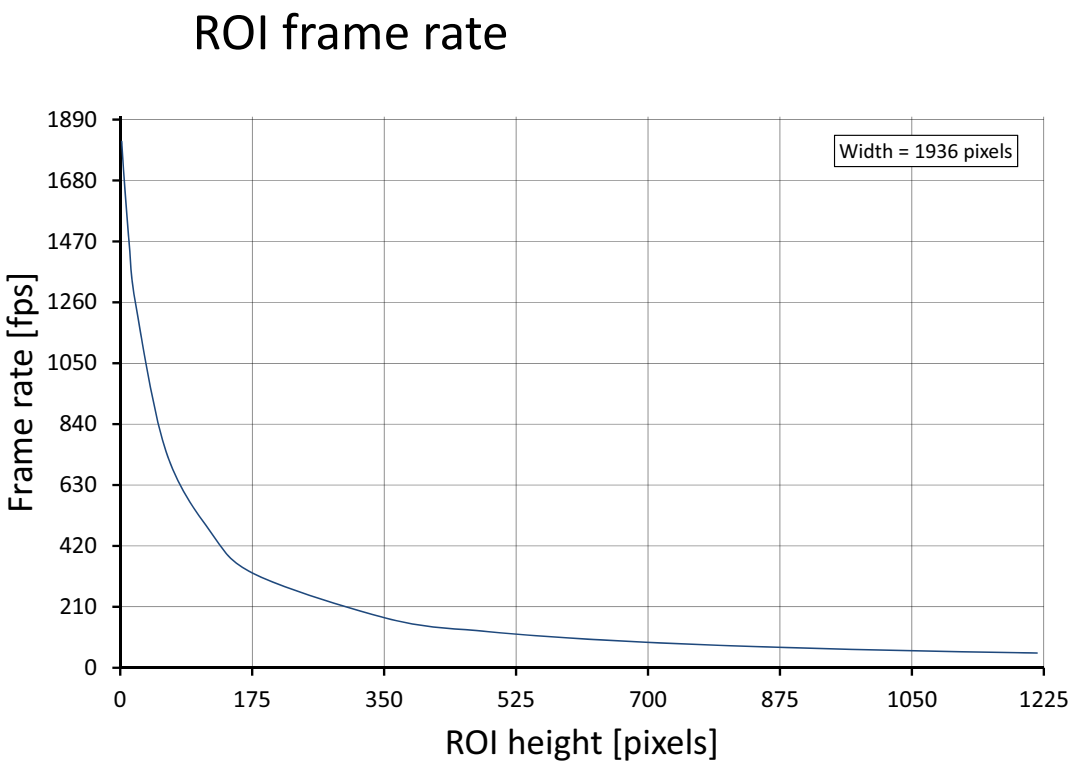


Figure 26: Prosilica GT1930L frame rate as a function of ROI height

Height	Frame rate	Height	Frame rate	Height	Frame rate
1216	50.8	600	102.0	60	751.5
1080	57.0	480	126.5	20	1261.0
1024	60.1	360	166.4	12	1458.8
960	64.2	180	320.7	4	1730.1
768	79.8	120	467.9	2	1814.5

Table 31: Frame rate as a function of ROI height (Width=1936 pixels)

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

Prosilica GT2000 series

The following table provides model series specifications. The values are valid for Prosilica GT2000, GT2000NIR, and GT2000C models. For specifications common to all models, see Specifications common to all Prosilica GT models.

Feature	Specification	
	Prosilica GT2000, GT2000NIR	**Prosilica GT2000C**
Sensor model	CMOSIS/ams CMV2000	
Resolution	2048 (H) × 1088 (V); 2.2 MP	
Shutter type	Global shutter	
Sensor type	CMOS	
Sensor format	Type 2/3	
Sensor size	12.7 mm diagonal	
Pixel size	5.5 µm × 5.5 µm	
Housing[1]	Standard format housing	
Default lens mount	C-Mount	
Maximum frame rate at full resolution	53.7 fps (60.1 fps burst mode)	
Maximum image bit depth	12-bit	
StreamHoldCapacity	Up to 29 frames at full resolution	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed	Mono8
YUV color pixel formats	Not applicable	YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats	Not applicable	RGB8Packed, BGR8Packed, RGBA8Packed, BGRA8Packed
RAW pixel formats	Not applicable	BayerGB8, BayerGB12, BayerGB12Packed
Exposure time control[2]	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	External power: 3.4 W at 12 VDC Power over Ethernet: 4.2 W	
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)	

Table 32: Prosilica GT2000 model series specifications (sheet 1 of 2)

Feature	Specification	
	Prosilica GT2000, GT2000NIR	**Prosilica GT2000C**
Storage temperature	-20 °C to +70 °C ambient temperature (without condensation)	
Camera 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] 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 GT2000 model series specifications (sheet 2 of 2)

Absolute QE

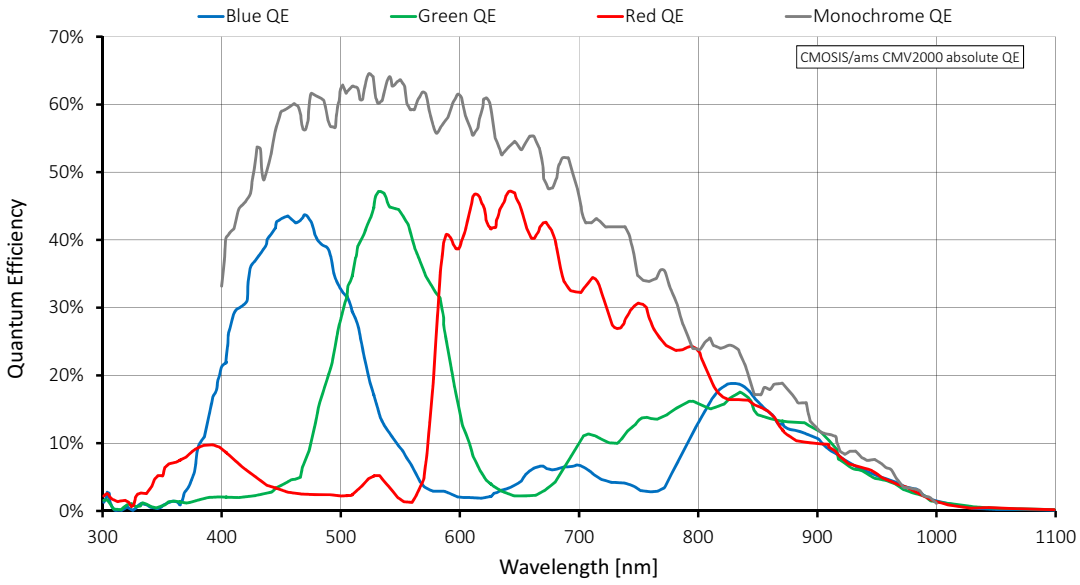


Figure 27: Prosilica GT2000 and GT2000C (CMOSIS/ams CMV2000) absolute QE

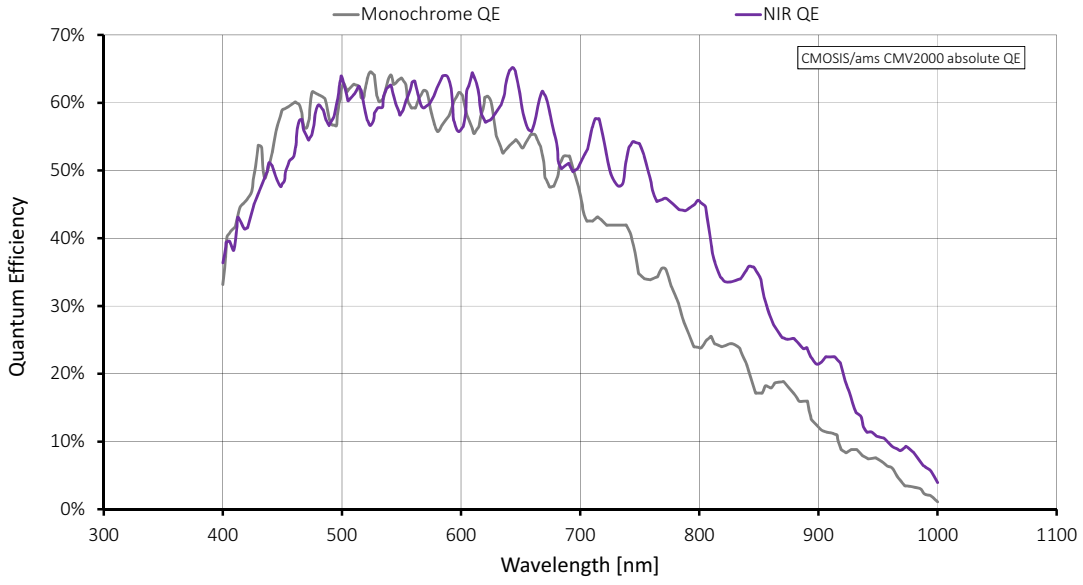


Figure 28: Prosilica GT2000NIR (CMOSIS/ams CMV2000 NIR) absolute QE

Spectral response

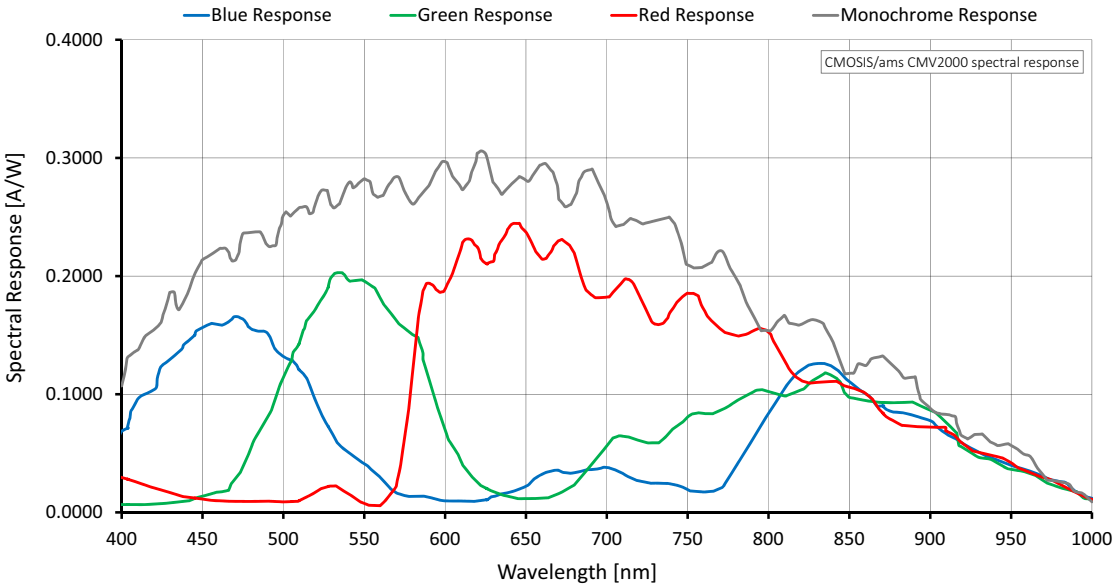


Figure 29: Prosilica GT2000 and GT2000C (CMOSIS/ams CMV2000) spectral response

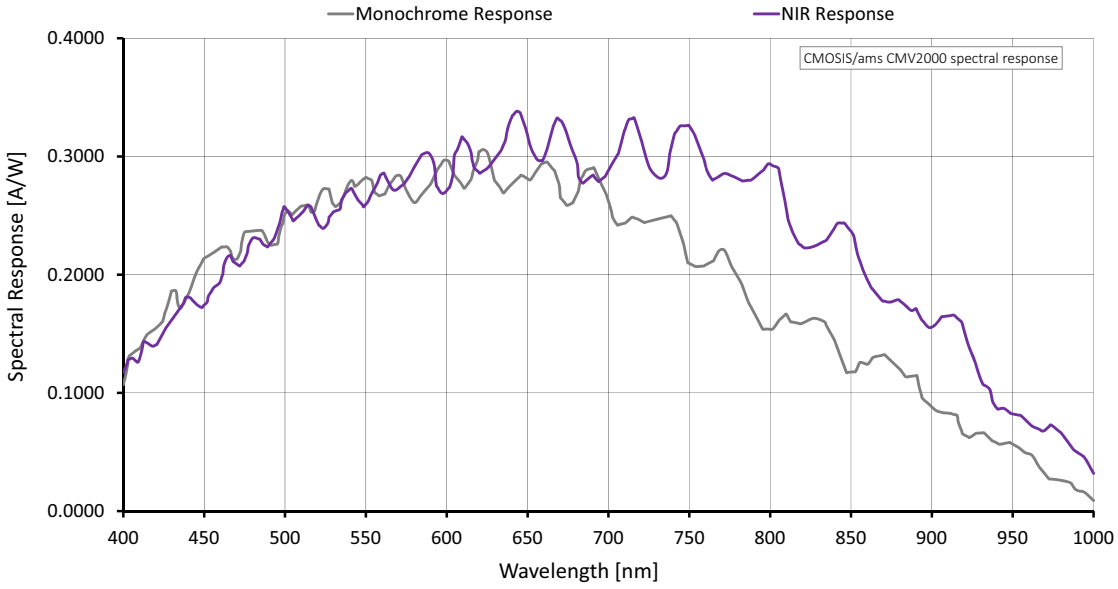


Figure 30: Prosilica GT2000NIR (CMOSIS/ams CMV2000 NIR) spectral response

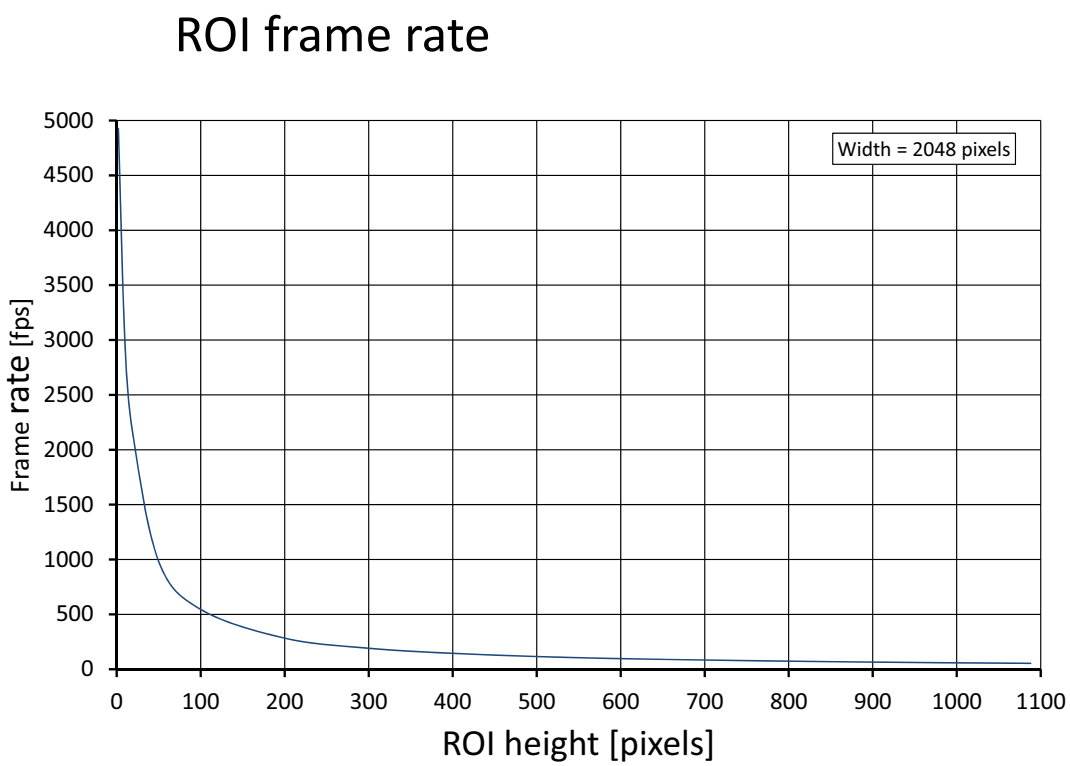


Figure 31: Prosilica GT2000 frame rate as a function of ROI height

Height	Frame rate
1088	53.7
1000	58.4
900	64.8
800	72.9
700	83.2

Height	Frame rate
600	96.8
500	115.9
400	144.3
300	191.2
200	283.1

Height	Frame rate
100	545.3
50	981.4
20	2105.3
10	2949.9
2	4926.1

Table 33: Frame rate as a function of ROI height

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

Prosilica GT2050 series

The following table provides model series specifications. The values are valid for Prosilica GT2050, GT2050NIR, and GT2050C models. For specifications common to all models, see Specifications common to all Prosilica GT models.

Feature	Specification	
	Prosilica GT2050, GT2050NIR	**Prosilica GT2050C**
Sensor model	CMOSIS/ams CMV4000	
Resolution	2048 (H) × 2048 (V); 4.2 MP	
Shutter type	Global shutter	
Sensor type	CMOS	
Sensor format	Type 1	
Sensor size	16.0 mm diagonal	
Pixel size	5.5 µm × 5.5 µm	
Housing	Standard format housing	
Default lens mount	C-Mount	
Maximum frame rate at full resolution	28.6 fps (32.0 burst mode)	
Maximum image bit depth	12-bit	
StreamHoldCapacity	Up to 15 frames at full resolution	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed	Mono8
YUV color pixel formats	Not applicable	YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats	Not applicable	RGB8Packed, BGR8Packed, RGBA8Packed, BGRA8Packed
RAW pixel formats	Not applicable	BayerGB8, BayerGB12, BayerGB12Packed
Exposure time control[1]	50 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	External power: 3.5 W at 12 VDC Power over Ethernet: 4.3 W	
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)	

Table 34: Prosilica GT2050 model series specifications (sheet 1 of 2)

Feature	Specification	
	Prosilica GT2050, GT2050NIR	**Prosilica GT2050C**
Storage temperature	-20 °C to +70 °C ambient temperature (without condensation)	
Camera 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] 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 34: Prosilica GT2050 model series specifications (sheet 2 of 2)

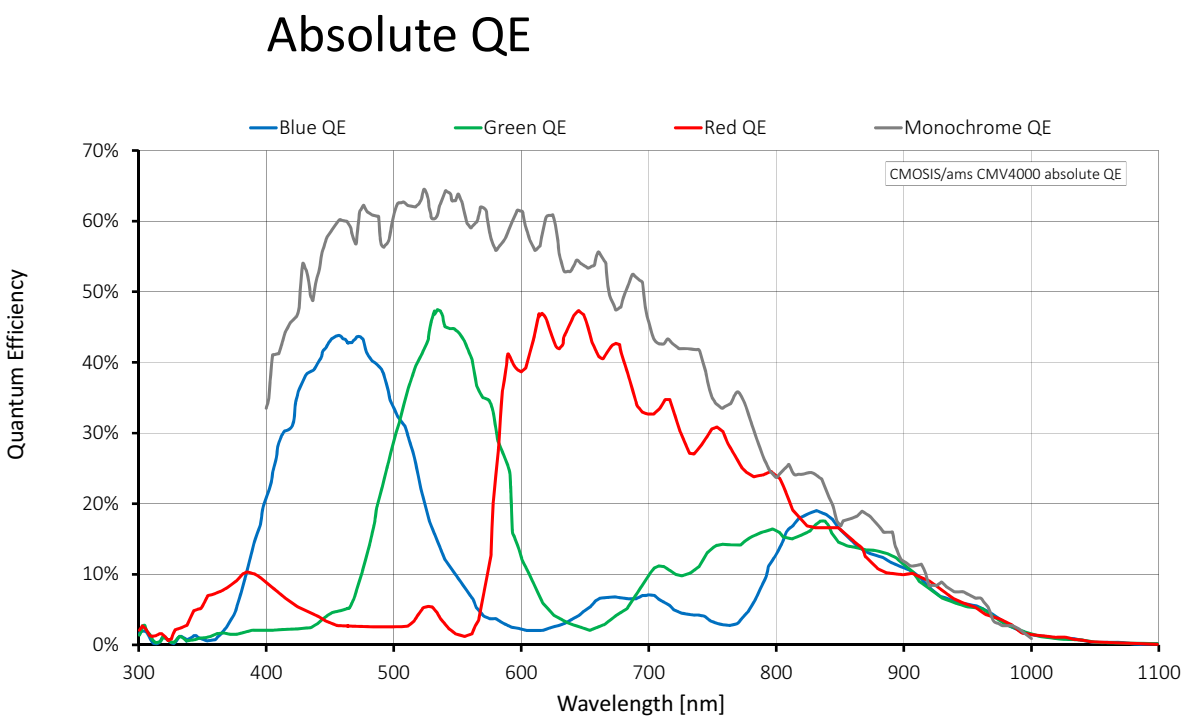


Figure 32: Prosilica GT2050 (CMOSIS/ams CMV4000) absolute QE

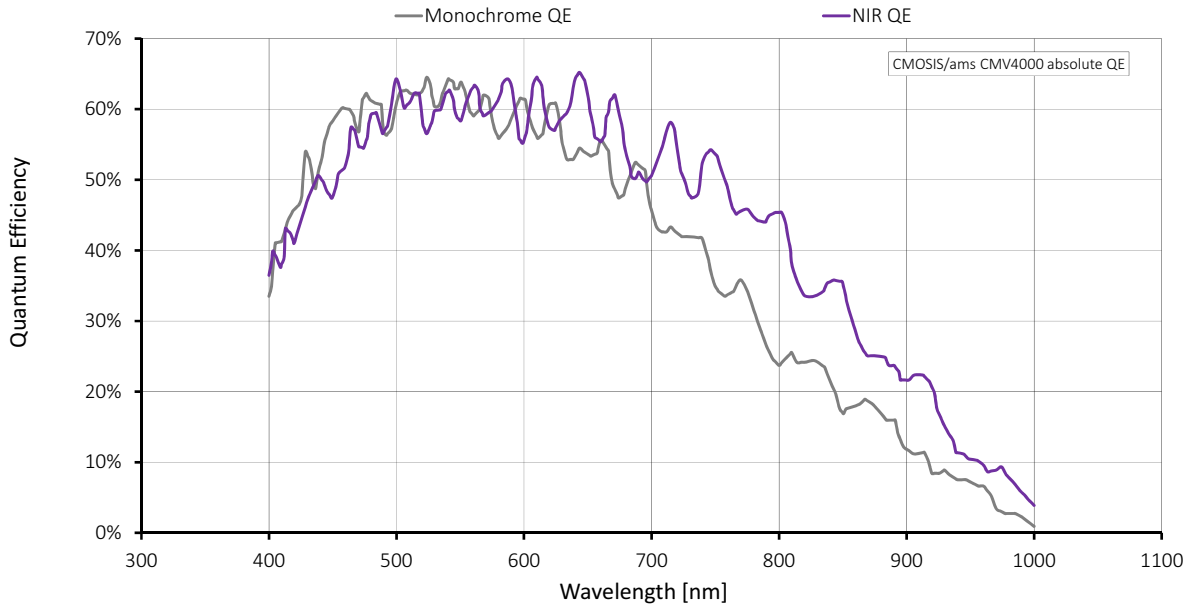


Figure 33: Prosilica GT2050NIR (CMOSIS/ams CMV4000 NIR) absolute QE

Spectral response

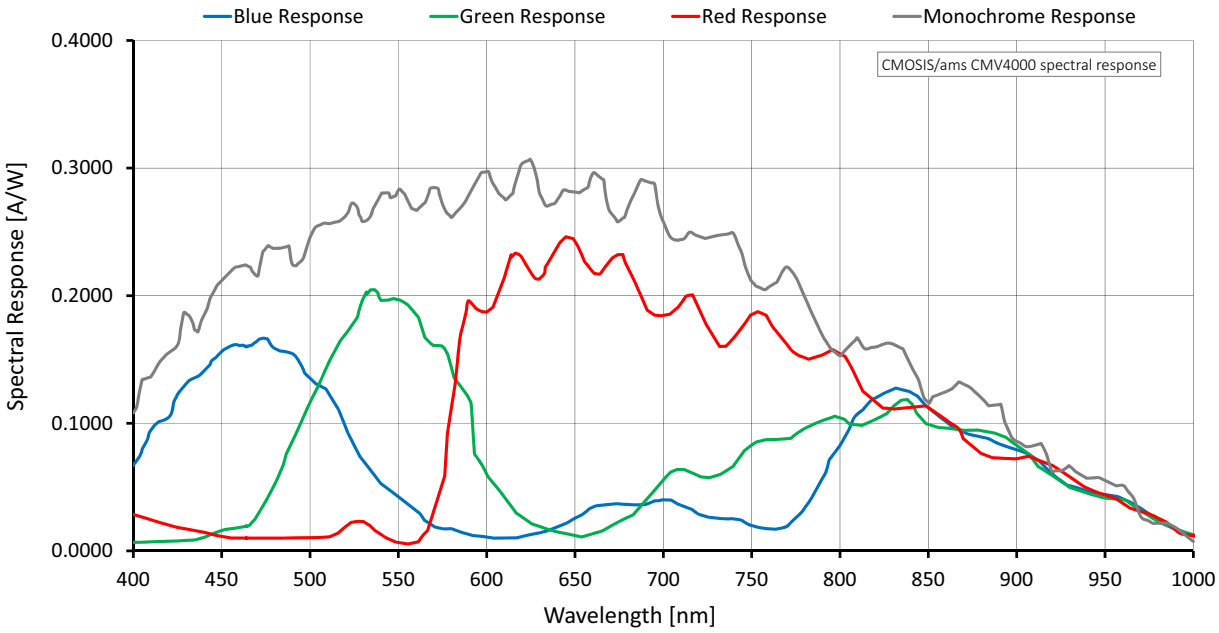


Figure 34: Prosilica GT2050 (CMOSIS/ams CMV4000) spectral response

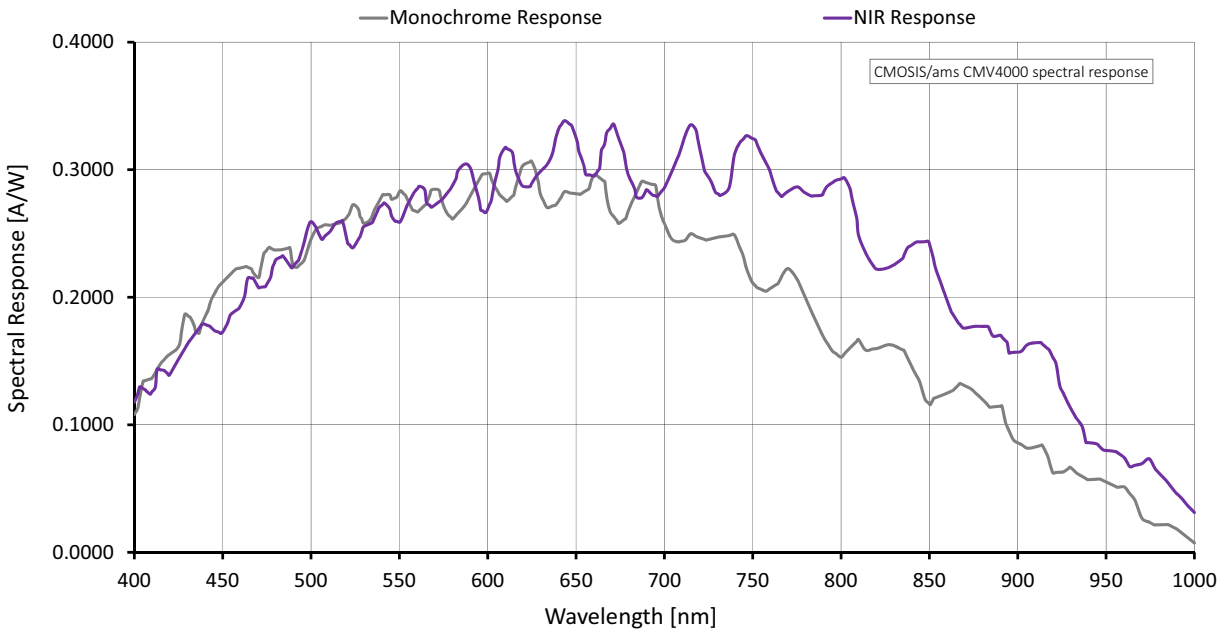


Figure 35: Prosilica GT2050NIR (CMOSIS/ams CMV4000 NIR) spectral response

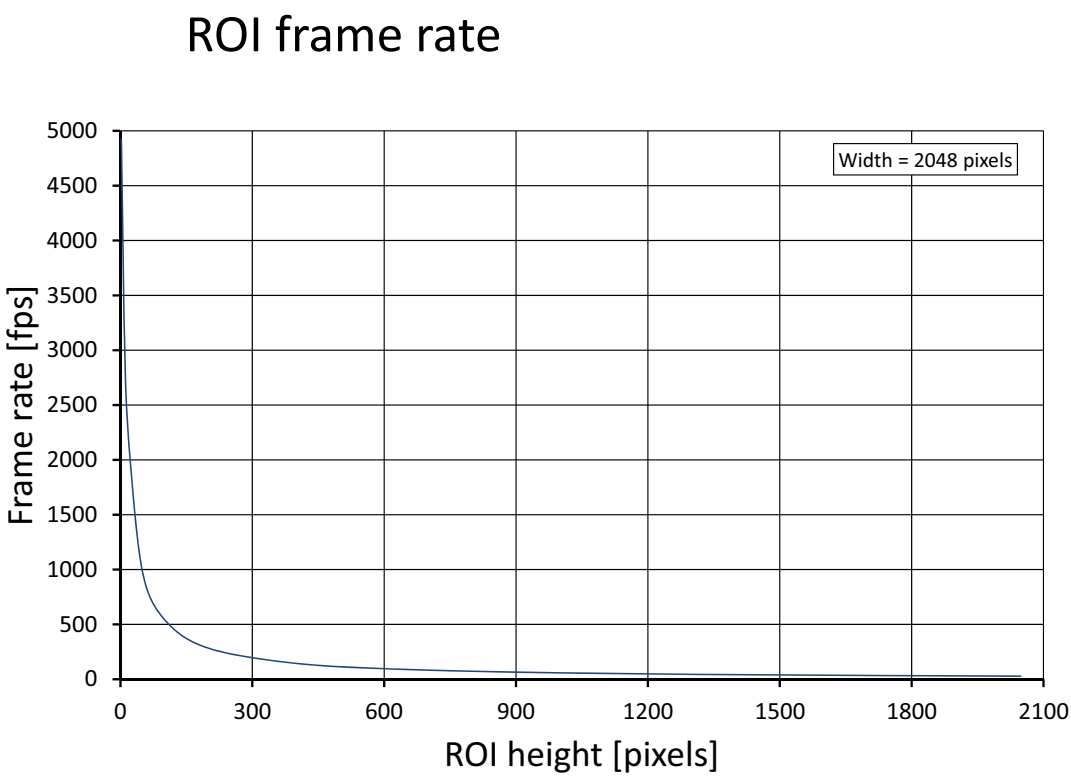


Figure 36: Prosilica GT2050 frame rate as a function of ROI height

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

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

Height	Frame rate
50	981.4
20	2105.3
10	2949.9
2	4926.1

Table 35: Frame rate as a function of ROI height (Width=2048 pixels)

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

Prosilica GT2300 series

The following table provides model series specifications. The values are valid for Prosilica GT2300 and GT2300C models. For specifications common to all models, see Specifications common to all Prosilica GT models.

Discontinuation

Due to ON Semi's discontinuation of this sensor the Prosilica GT2300 series has been discontinued with the last time buy period ending on March 1, 2020. For more information, see the Product change notice webpage at www.alliedvision.com/en/support/product-change-notifications.

Feature	Specification	
	Prosilica GT2300	**Prosilica GT2300C**
Sensor model	ON Semi KAI-04050 TRUESENSE Gen 2	
Resolution	2336 (H) × 1752 (V); 4.1 MP	
Shutter type	Global shutter	
Sensor type	Interline CCD, Progressive Scan	
Sensor format	Type 1	
Sensor size	16.06 mm diagonal	
Pixel size	5.5 µm × 5.5 µm	
Housing	Extended format housing	
Default lens mount	C-Mount	
Maximum frame rate at full resolution	Quad-tap mode: 29.3 fps Single-tap mode: 8.7 fps	
Maximum image bit depth	12/14 bit	
StreamHoldCapacity	Up to 31 frames at full resolution	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed, Mono14	Mono8
YUV color pixel formats	Not applicable	YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats	Not applicable	RGB8Packed, BGR8Packed, RGBA8Packed, BGRA8Packed
RAW pixel formats	Not applicable	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	

Table 36: Prosilica GT2300 model series specifications (sheet 1 of 2)

Feature	Specification	
	Prosilica GT2300	**Prosilica GT2300C**
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	External power: 4.9 W at 12 VDC Power over Ethernet: 6.0 W	
Trigger latency	2.2 µs	
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)	
Camera 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 36: Prosilica GT2300 model series specifications (sheet 2 of 2)

Absolute QE

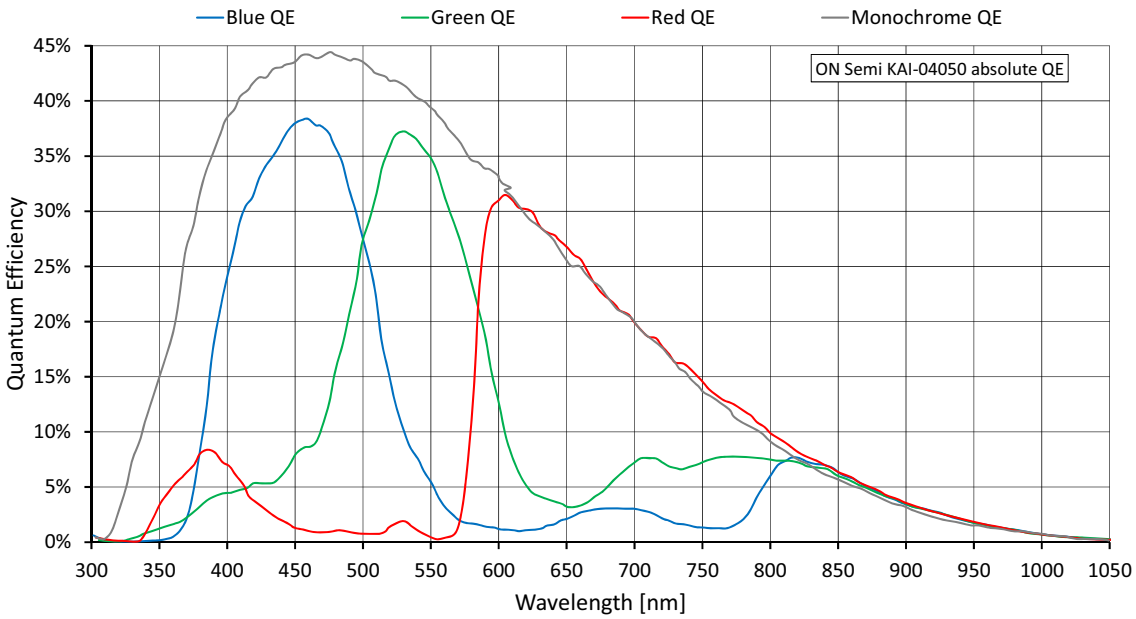


Figure 37: Prosilica GT2300 (ON Semi KAI-04050 Gen 2) absolute QE

Spectral response

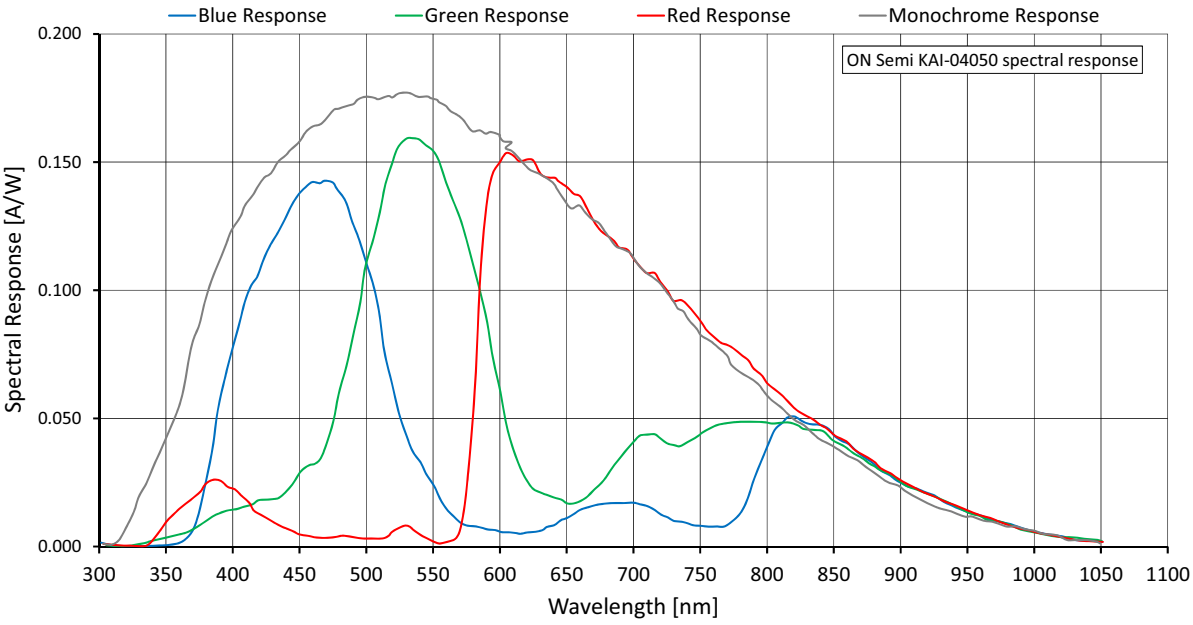


Figure 38: Prosilica GT2300 (ON Semi KAI-04050 Gen 2) spectral response

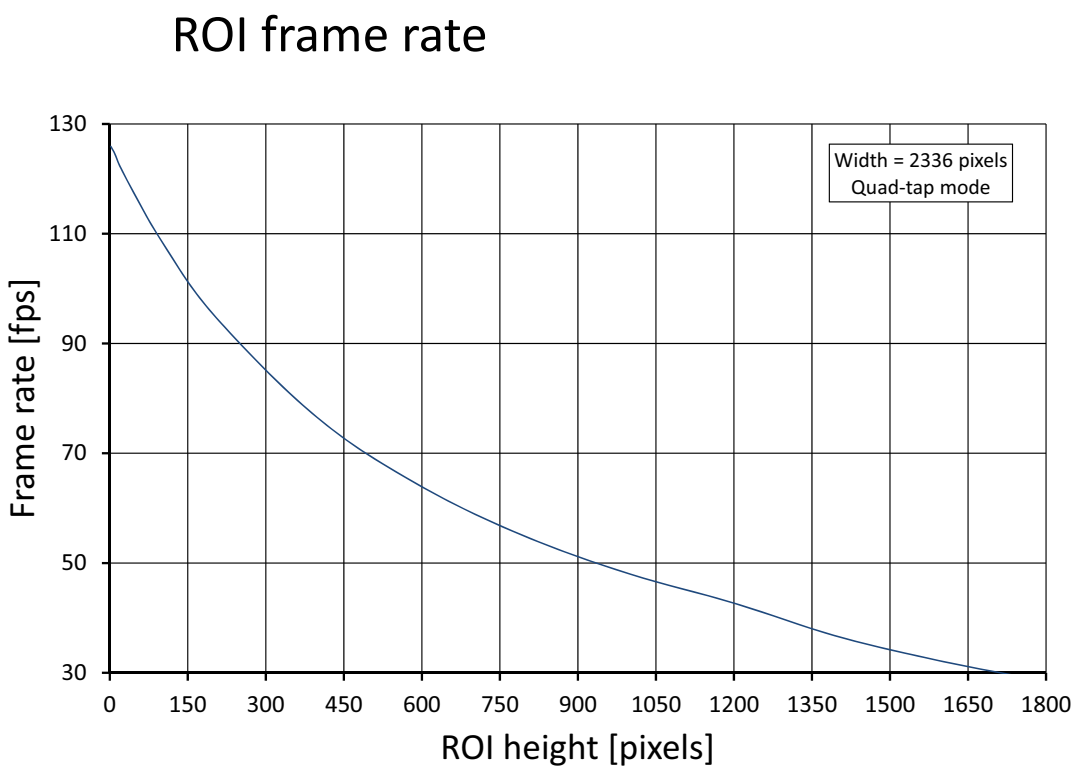


Figure 39: Prosilica GT2300 frame rate as a function of ROI height

Height	Frame rate
1752	29.3
1600	32.1
1400	36.6
1200	42.7
1000	48.0

Height	Frame rate
800	54.8
600	63.9
400	76.4
200	95.2
100	108.6

Height	Frame rate
50	116.8
20	122.2
10	124.5
2	125.9

Table 37: Frame rate as a function of ROI height (Width=2336 pixels)

The following table shows how binning affects ROI frame rate.

BinningVertical	Height	Frame rate
2	876	58.3
3	584	81.4
4	438	99.7
5	350	115.3

BinningVertical	Height	Frame rate
6	292	128.5
7	250	140.0
8	218	148.9

Table 38: Frame rate as a function of ROI height with vertical binning enabled (Width=2336 pixels)

Prosilica GT2450 series

The following table provides model series specifications. The values are valid for Prosilica GT2450 and GT2450C models. For specifications common to all models, see Specifications common to all Prosilica GT models.

Feature	Specification	
	Prosilica GT2450	**Prosilica GT2450C**
Sensor model	Sony ICX625ALA	Sony ICX625AQA
Resolution	2448 (H) × 2050 (V); 5 MP	
Shutter type	Global shutter	
Sensor type	Interline CCD, Progressive Scan	
Sensor format	Type 2/3	
Sensor size	11.016 mm diagonal	
Pixel size	3.45 µm × 3.45 µm	
Housing	Standard format housing	
Default lens mount	C-Mount	
Maximum frame rate at full resolution	15 fps	
Maximum image bit depth	12/14 bit	
StreamHoldCapacity	Up to 13 frames at full resolution	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed, Mono14	Mono8
YUV color pixel formats	Not applicable	YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats	Not applicable	RGB8Packed, BGR8Packed
RAW pixel formats	Not applicable	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	External power: 3.8 W at 12 VDC Power over Ethernet: 4.7 W	
Trigger latency	1.1 µs	

Table 39: Prosilica GT2450 specifications (sheet 1 of 2)

Feature	Specification	
	Prosilica GT2450	**Prosilica GT2450C**
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)	
Camera 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 39: Prosilica GT2450 specifications (sheet 2 of 2)

Absolute QE

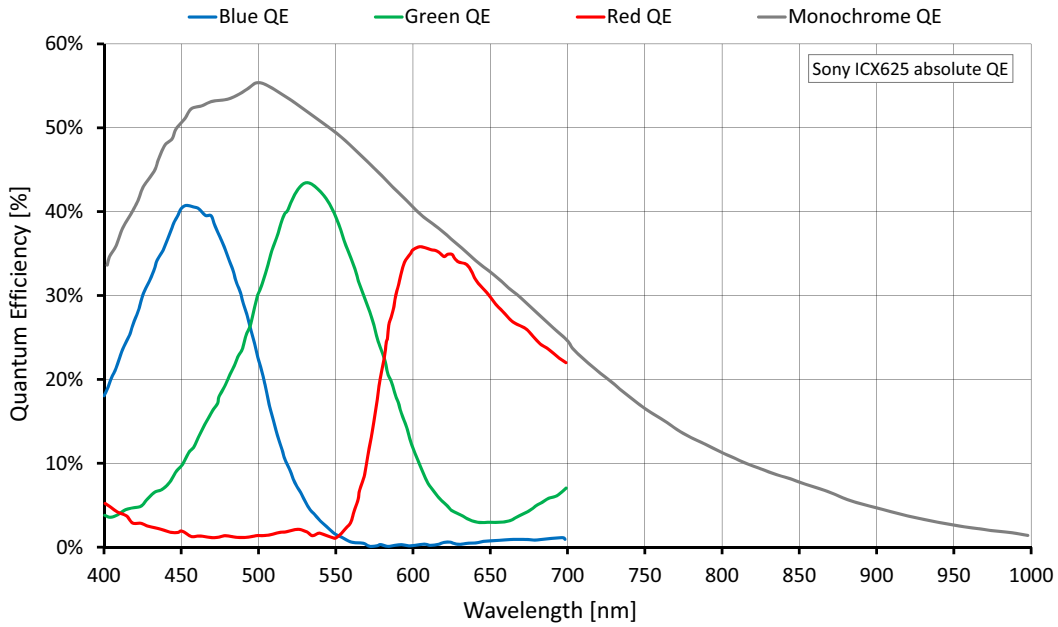


Figure 40: Prosilica GT2450 (Sony ICX625) absolute QE

Spectral response

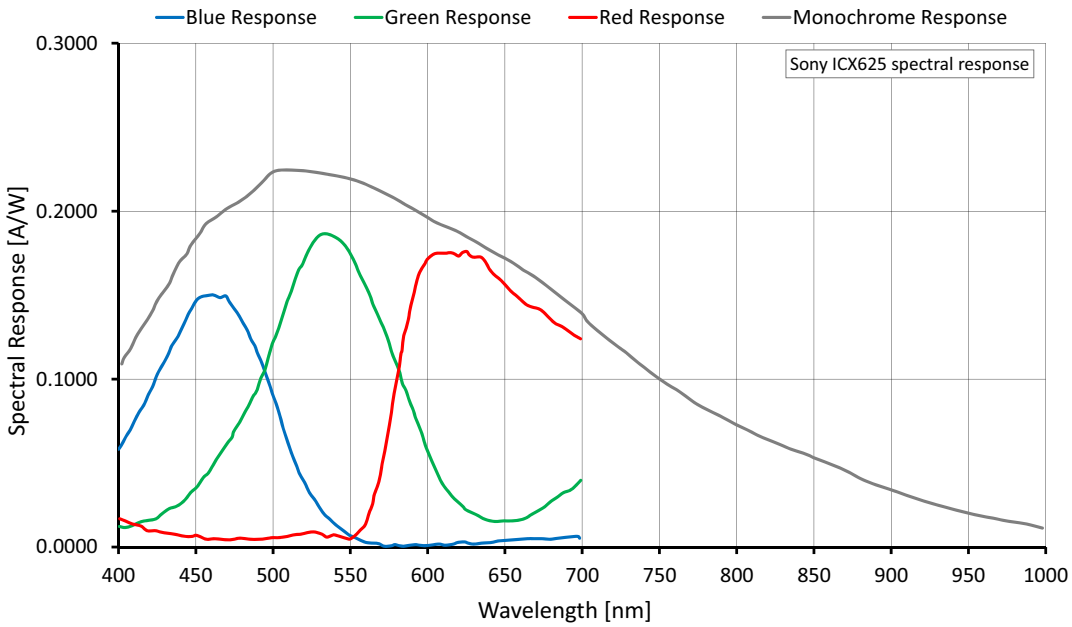


Figure 41: Prosilica GT2450 (Sony ICX625) spectral response

ROI frame rate

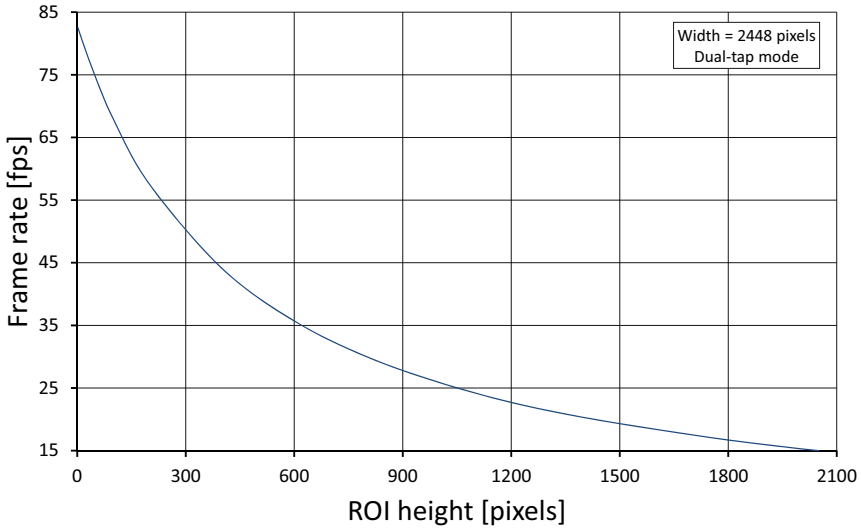


Figure 42: Prosilica GT2450 frame rate as a function of ROI height

Height	Frame rate
2050	15.0
2000	15.3
1800	16.7
1600	18.4
1400	20.3
1200	22.7

Height	Frame rate
1000	25.9
800	30.0
600	35.7
400	44.1
200	57.5
100	67.9

Height	Frame rate
50	74.7
20	79.4
10	81.1
2	82.5

Table 40: Frame rate as a function of ROI height (Width=2448 pixels)

The following table shows how binning affects ROI frame rate.

BinningVertical	Height	Frame rate
2	1025	25.4
3	683	33.1
4	512	38.9
5	410	43.4
6	341	47.1
7	292	50.2
8	256	52.7

BinningVertical	Height	Frame rate
9	227	54.8
10	205	56.6
11	186	58.2
12	170	59.6
13	157	60.8
14	146	61.8

Table 41: Frame rate as a function of ROI height with vertical binning enabled (Width=2448 pixels)

Prosilica GT2460 series

The following table provides model series specifications. The values are valid for Prosilica GT2460 and GT2460C models. For specifications common to all models, see Specifications common to all Prosilica GT models.

Feature	Specification	
	Prosilica GT2460	**Prosilica GT2460C**
Sensor model	Sony IMX264LLR	Sony IMX264LQR
Resolution	2464 (H) × 2056 (V); 5.1 MP	
Shutter type	Pregius® global shutter	
Sensor type	CMOS	
Sensor format	Type 2/3	
Sensor size	11.1 mm diagonal	
Pixel size	3.45 µm × 3.45 µm	
CRA[1]	0.0 degrees	
Housing	Standard format housing	
Default lens mount	C-Mount	
Maximum frame rate at full resolution	23.7 fps (28.7 fps burst mode)	
Maximum image bit depth	12-bit	
StreamHoldCapacity	Up to 26 frames at full resolution	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed	Mono8
YUV color pixel formats	Not applicable	YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats	Not applicable	RGB8Packed, BGR8Packed
RAW pixel formats	Not applicable	BayerRG8, BayerRG12, BayerRG12Packed
Exposure time control	**Pixel format**	**Value**
	Mono8, Mono12Packed, BayerRG8, BayerRG12Packed, YUV411Packed	30 µs to 85.9 s, 16.64 µs increments
	Mono12, BayerRG12, YUV422Packed	35 µs to 85.9 s, 22.16 µs increments
	RGB8Packed, BGR8Packed, YUV444Packed	47 µs to 85.9 s, 33.28 µs increments
Gain control	0.0 to 40.0 dB, 0.1 dB increments	

Table 42: Prosilica GT2460 model series specifications (sheet 1 of 2)

Feature	Specification	
	Prosilica GT2460	**Prosilica GT2460C**
Binning	Horizontal: 1 to 4 pixels Vertical: 1 to 4 rows	
Decimation X/Y	Horizontal and vertical: 1, 2, 4, 8 factor	
Power consumption	External power: 3.4 W at 12 VDC Power over Ethernet: 4.2 W	
Trigger latency	**Pixel format**	**Value**
	Mono8, Mono12Packed, BayerRG8, BayerRG12Packed, YUV411Packed	49.92 µs
	Mono12, BayerRG12, YUV422Packed	66.48 µs
	RGB8Packed, BGR8Packed, YUV444Packed	99.84 µs
Trigger jitter	**Pixel format**	**Value**
	Mono8, Mono12Packed, BayerRG8, BayerRG12Packed, YUV411Packed	±8.32 µs
	Mono12, BayerRG12, YUV422Packed	±11.08 µs
	RGB8Packed, BGR8Packed, YUV444Packed	±16.64 µs
Time between exposures	**Pixel format**	**Value**
	Mono8, Mono12Packed, BayerRG8, BayerRG12Packed, YUV411Packed	237 µs
	Mono12, BayerRG12, YUV422Packed	319 µs
	RGB8Packed, BGR8Packed, YUV444Packed	486 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)	
Camera 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] For more information on CRA, contact Allied Vision support.

Table 42: Prosilica GT2460 model series specifications (sheet 2 of 2)

Absolute QE

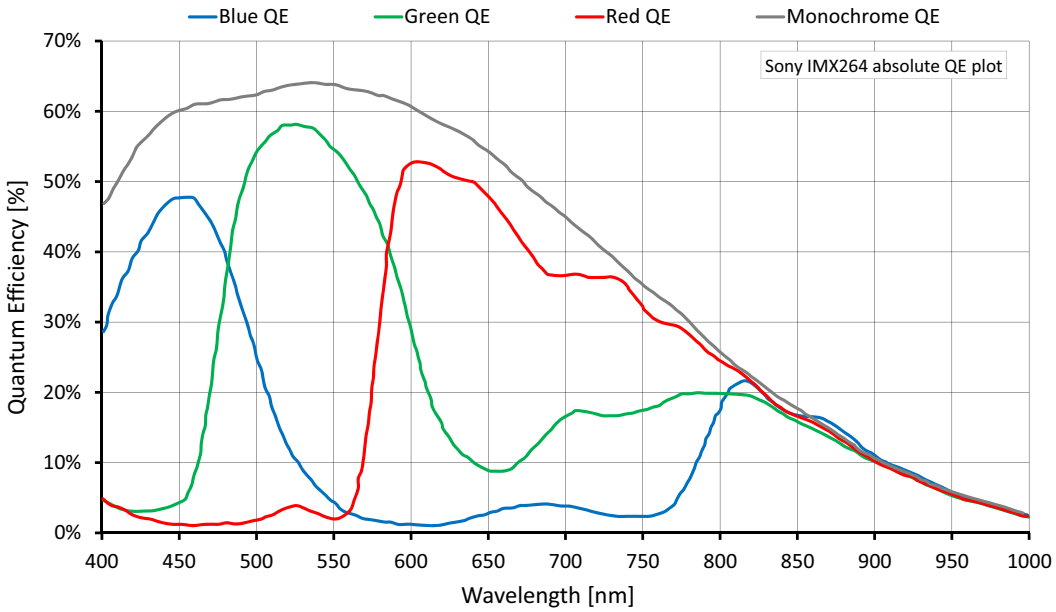


Figure 43: Prosilica GT2460 (Sony IMX264) absolute QE

Spectral response

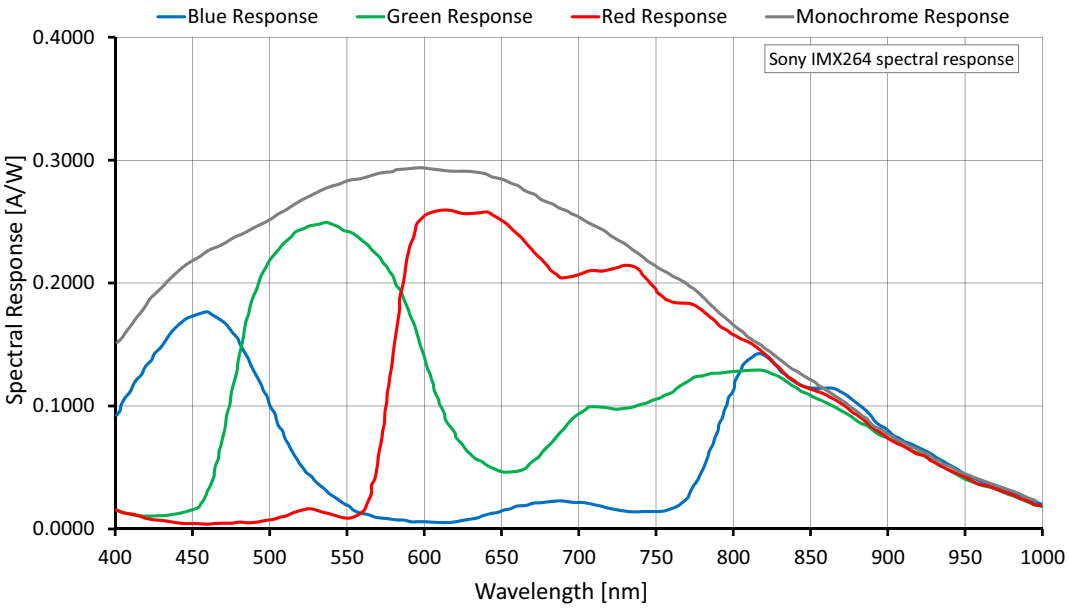


Figure 44: Prosilica GT2460 (Sony IMX264) spectral response

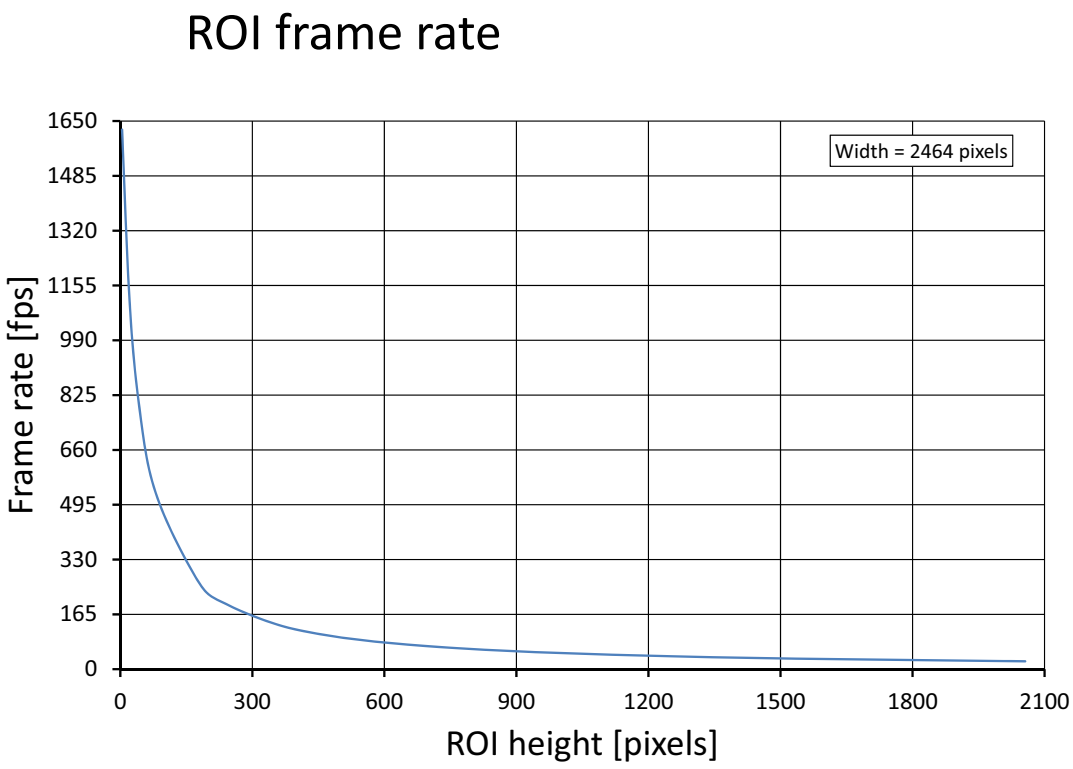


Figure 45: Prosilica GT2460 frame rate as a function of ROI height

Height	Frame rate
2056	23.7
1544	31.5
1324	36.7
1280	37.9
1024	47.3
960	50.4

Height	Frame rate
768	63.0
600	80.3
480	99.8
360	132.9
240	196.4
180	257.9

Height	Frame rate
80	531.8
40	823.2
20	1133.8
4	1624.2

Table 43: Frame rate as a function of ROI height (Width=2464 pixels)

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

Prosilica GT2750 series

The following table provides model series specifications. The values are valid for Prosilica GT2750 and GT2750C models. For specifications common to all models, see Specifications common to all Prosilica GT models.

Feature	Specification	
	Prosilica GT2750	**Prosilica GT2750C**
Sensor model	Sony ICX694ALG	Sony ICX694AQG
Resolution	2750 (H) × 2200 (V); 6.1 MP	
Shutter type	Global shutter	
Sensor type	Interline CCD, Progressive Scan	
Sensor format	Type 1	
Sensor size	15.989 mm diagonal	
Pixel size	4.54 µm × 4.54 µm	
Housing	Extended format housing	
Default lens mount	C-Mount	
Maximum frame rate at full resolution	Quad-tap mode: 19.8 fps Single-tap mode: 5.7 fps	
Maximum image bit depth	12/14 bit	
StreamHoldCapacity	Up to 21 frames at full resolution	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed, Mono14	Mono8
YUV color pixel formats	Not applicable	YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats	Not applicable	RGB8Packed, BGR8Packed, RGBA8Packed, BGRA8Packed
RAW pixel formats	Not applicable	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	Quad-tap Single-tap switchable in Vimba Viewer 2.0 or later	
Power consumption	External power: 5.4 W at 12 VDC Power over Ethernet: 6.6 W	

Table 44: Prosilica GT2750 model series specifications (sheet 1 of 2)

Feature	Specification	
	Prosilica GT2750	**Prosilica GT2750C**
Trigger latency	2.2 µs	
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)	
Camera 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 44: Prosilica GT2750 model series specifications (sheet 2 of 2)

Absolute QE

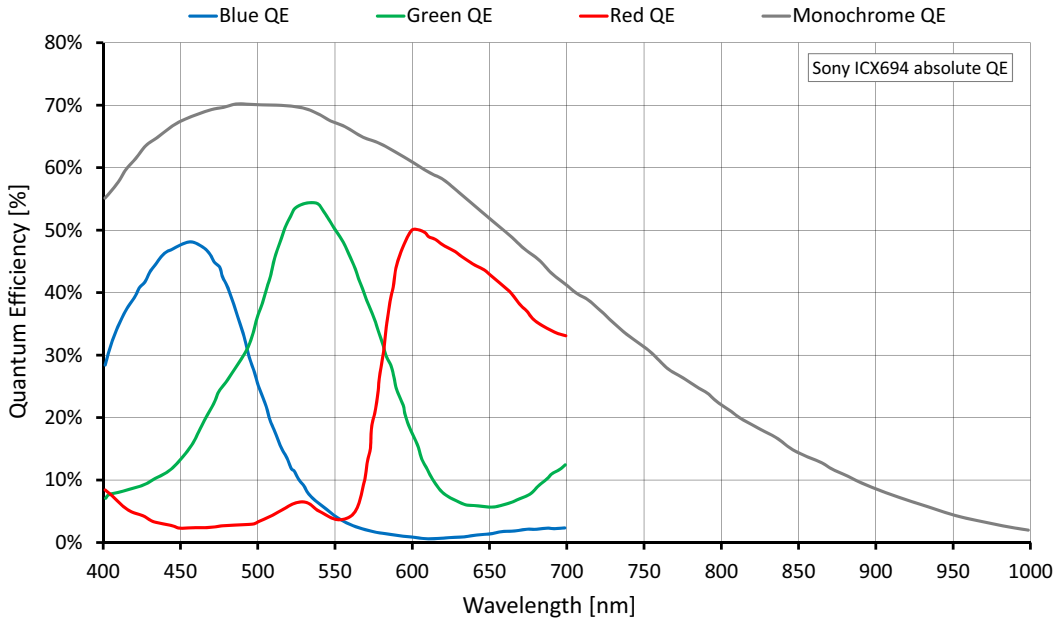


Figure 46: Prosilica GT2750 (Sony ICX694) absolute QE

Spectral response

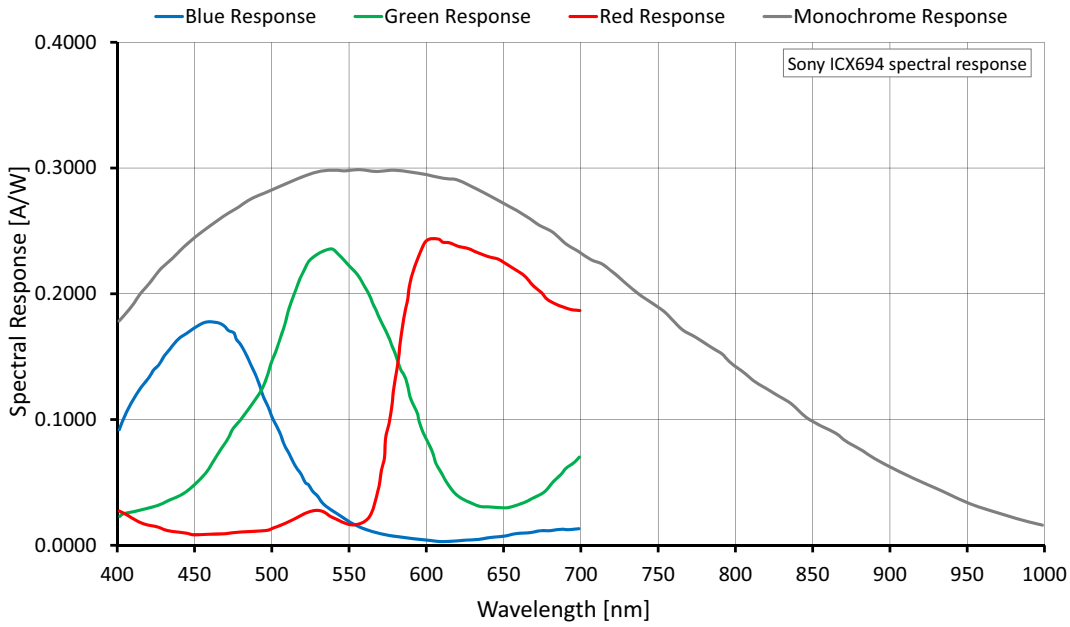


Figure 47: Prosilica GT2750 (Sony ICX694) spectral response

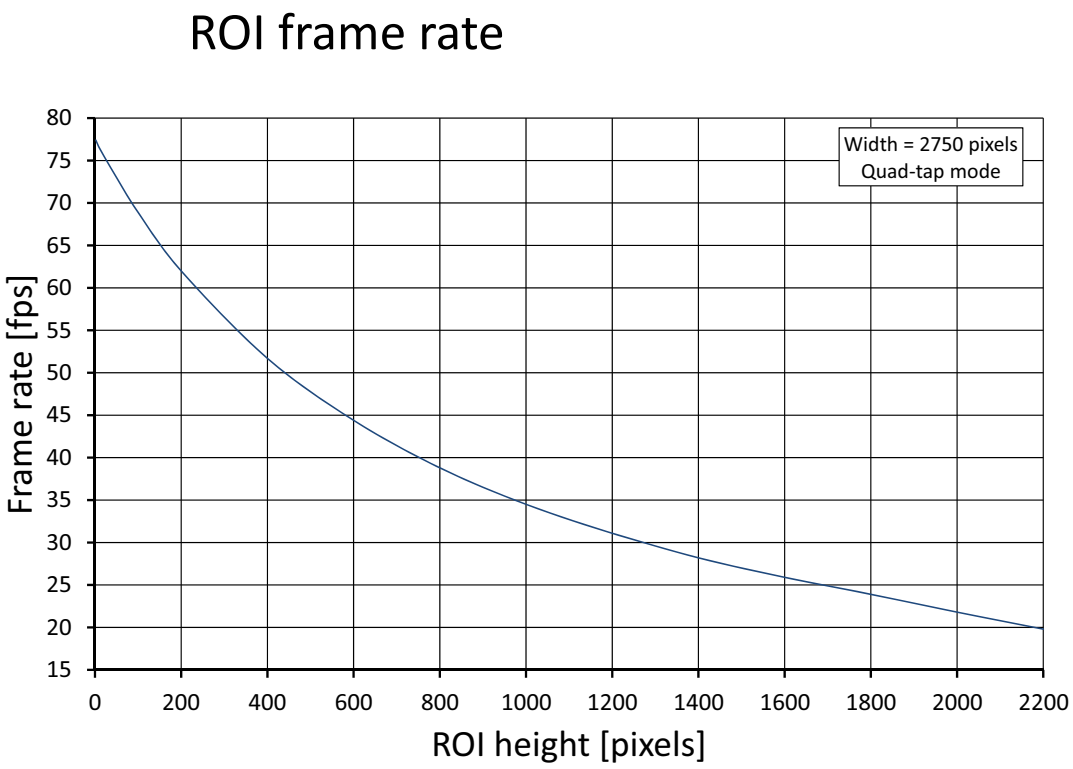


Figure 48: Prosilica GT2750 frame rate as a function of ROI height

Height	Frame rate
2200	19.8
2000	21.8
1800	23.9
1600	25.9
1400	28.2
1200	31.1

Height	Frame rate
1000	34.5
800	38.8
600	44.4
400	51.7
200	62.0
100	68.9

Height	Frame rate
50	73.0
20	75.6
10	76.5
2	77.4

Table 45: Frame rate as a function of ROI height (Width=2750 pixels)

The following table shows how binning affects ROI frame rate.

BinningVertical	Height	Frame rate
2	1100	37.0
3	732	50.2
4	550	60.9
5	440	70.0

BinningVertical	Height	Frame rate
6	366	77.4
7	314	83.8
8	274	88.9

Table 46: Frame rate as a function of ROI height with vertical binning enabled (Width=2750 pixels)

Prosilica GT3300

The following table provides model series specifications. The values are valid for Prosilica GT3300 cameras. For specifications common to all models, see Specifications common to all Prosilica GT models.

Discontinuation

Prosilica GT3300C was discontinued and the last time buy period ended on September 15, 2019. Due to ON Semi's discontinuation of this sensor the Prosilica GT3300 is also discontinued with the last time buy period ending on March 1, 2020. For more information, see the Product change notice webpage at www.alliedvision.com/en/support/product-change-notifications.

Feature	Specification Prosilica GT3300
Sensor model	ON Semi KAI-08050 TRUESENSE Gen 2
Resolution	3296 (H) × 2472 (V); 8.1 MP
Shutter type	Global shutter
Sensor type	Interline CCD, Progressive Scan
Sensor format	Type 4/3
Sensor size	22.66 mm diagonal
Pixel size	5.5 µm × 5.5 µm
Housing	Extended format housing
Default lens mount	F-Mount
Maximum frame rate at full resolution	Quad-tap mode: 14.7 fps Single-tap mode: 4.5 fps
Maximum image bit depth	12/14 bit
StreamHoldCapacity	Up to 16 frames at full resolution
Monochrome pixel formats	Mono8, Mono12, Mono12Packed, Mono14
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	Quad-tap Single-tap switchable in Vimba Viewer 2.0 or later

Table 47: Prosilica GT3300 model series specifications (sheet 1 of 2)

Feature	Specification Prosilica GT3300
Power consumption	External power: 5.6 W at 12 VDC Power over Ethernet: 6.9 W
Trigger latency	2.2 µs
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)
Camera 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 47: Prosilica GT3300 model series specifications (sheet 2 of 2)

Absolute QE

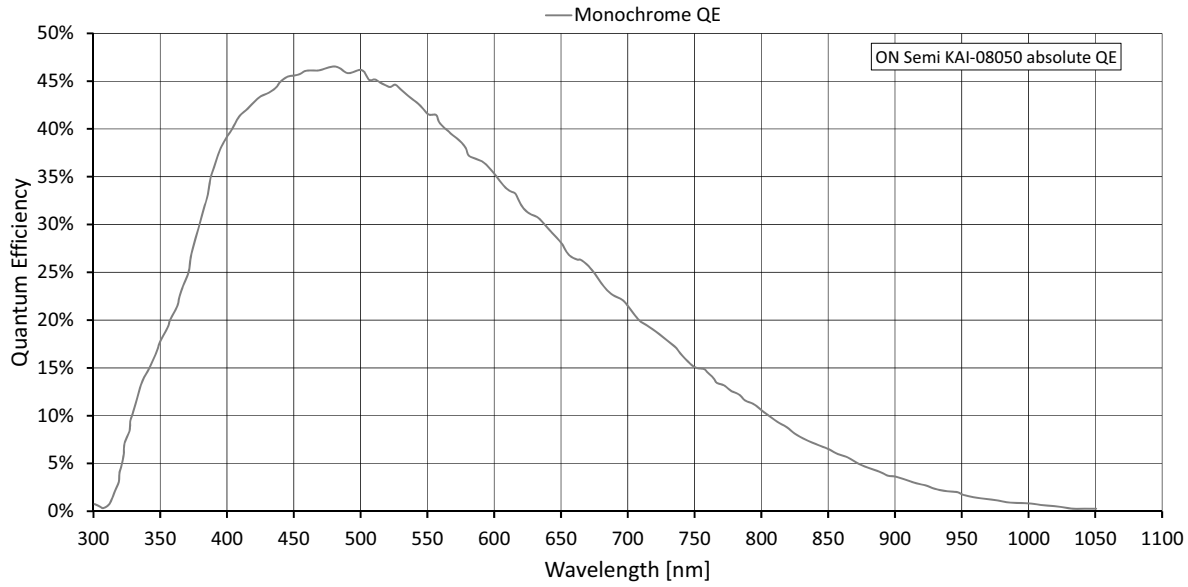


Figure 49: Prosilica GT3300 (ON Semi KAI-08050 Gen 2) absolute QE

Spectral response

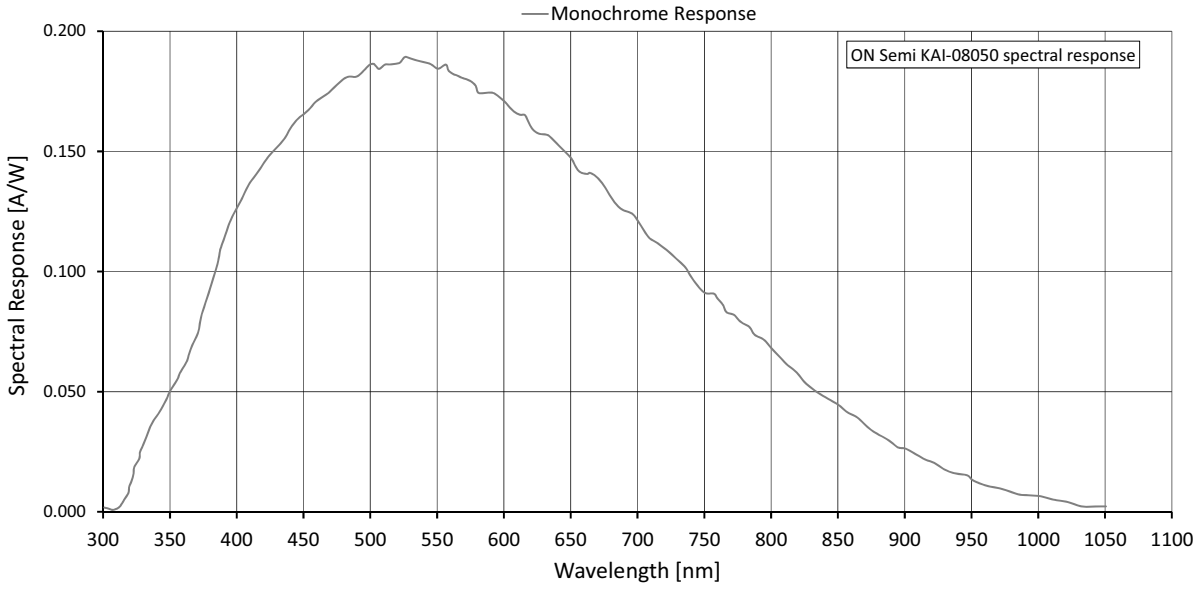


Figure 50: Prosilica GT3300 (ON Semi KAI-08050 Gen 2) spectral response

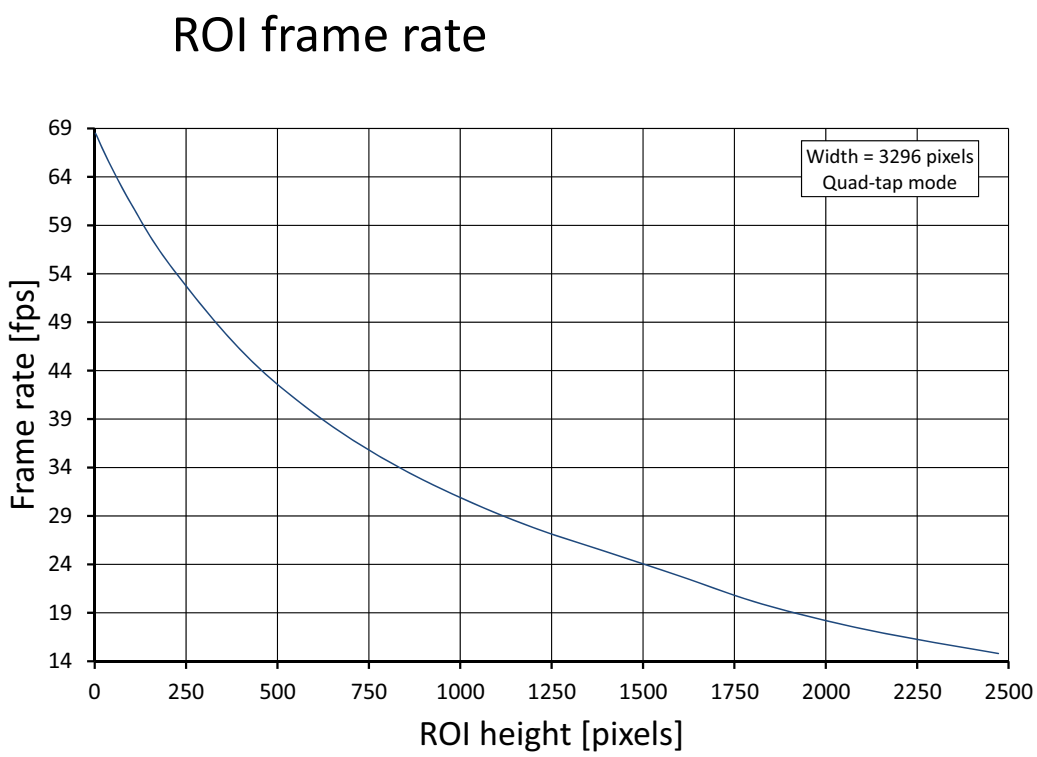


Figure 51: Prosilica GT3300 frame rate as a function of ROI height

Height	Frame rate
2472	14.8
2200	16.6
2000	18.2
1800	20.2
1600	22.8
1400	25.3

Height	Frame rate
1200	27.8
1000	30.9
800	34.7
600	39.6
400	46.1
200	55.2

Height	Frame rate
100	61.2
50	64.7
20	67.0
10	67.9
2	68.5

Table 48: Frame rate as a function of ROI height (Width=3296 pixels)

The following table shows how binning affects ROI frame rate.

BinningVertical	Height	Frame rate
2	1236	29.4
3	824	43.1
4	618	53.2
5	494	62.0

BinningVertical	Height	Frame rate
6	412	69.5
7	352	75.8
8	308	81.4

Table 49: Frame rate as a function of ROI height with vertical binning enabled(Width=3296 pixels)

Prosilica GT3400 series

The following table provides model series specifications. The values are valid for Prosilica GT3400 and GT3400C models. For specifications common to all models, see Specifications common to all Prosilica GT models.

Feature	Specification	
	Prosilica GT3400	**Prosilica GT3400C**
Sensor model	Sony ICX814ALG	Sony ICX814AQG
Resolution	3384 (H) × 2704 (V); 9.2 MP	
Shutter type	Global shutter	
Sensor type	Interline CCD, Progressive Scan	
Sensor format	Type 1	
Sensor size	15.972 mm diagonal	
Pixel size	3.69 µm × 3.69 µm	
Housing	Extended format housing	
Default lens mount	C-Mount	
Maximum frame rate at full resolution	Quad-tap mode: 13.2 fps (14 fps burst mode) Single-tap mode: 3.8 fps	
Maximum image bit depth	12/14 bit	
StreamHoldCapacity	Up to 14 frames at full resolution	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed, Mono14	Mono8
YUV color pixel formats	Not applicable	YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats	Not applicable	RGB8Packed, BGR8Packed, RGBA8Packed, BGRA8Packed
RAW pixel formats	Not applicable	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	Quad-tap Single-tap switchable in Vimba Viewer 2.0 or later	
Power consumption	External power: 5.4 W at 12 VDC Power over Ethernet: 6.6 W	
Trigger latency	2.5 µs	

Table 50: Prosilica GT3400 model series specifications (sheet 1 of 2)

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)	
Camera 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 50: Prosilica GT3400 model series specifications (sheet 2 of 2)

Absolute QE

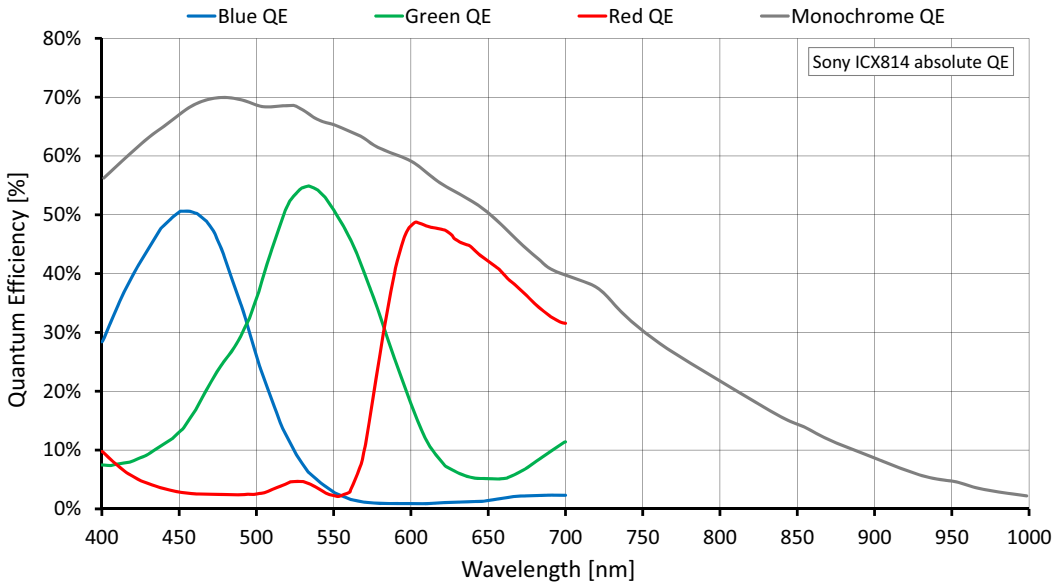


Figure 52: Prosilica GT3400 (Sony ICX814) absolute QE

Spectral response

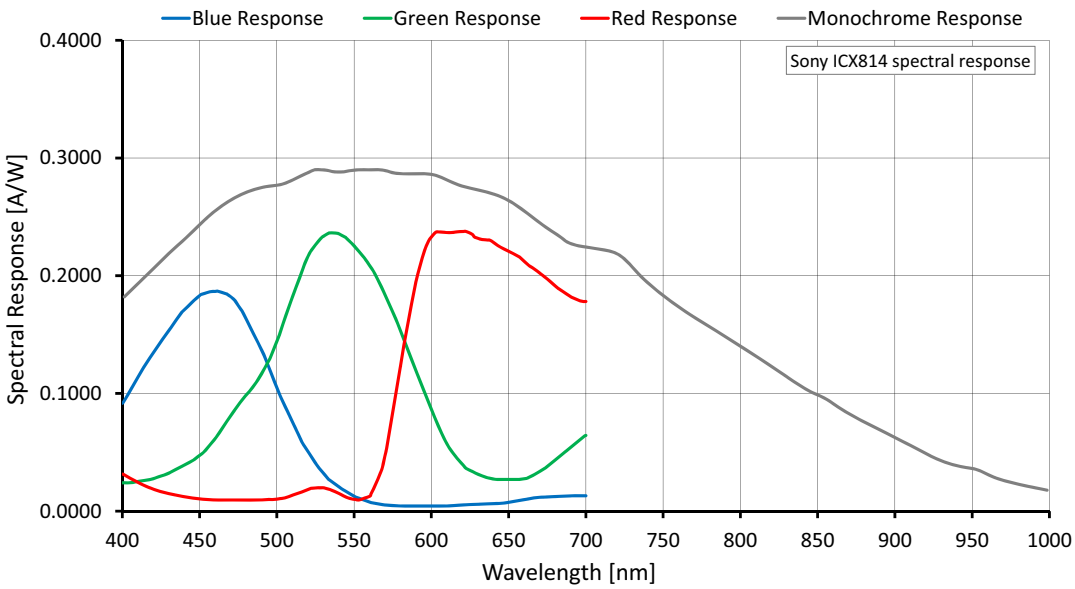


Figure 53: Prosilica GT3400 (Sony ICX814) spectral response

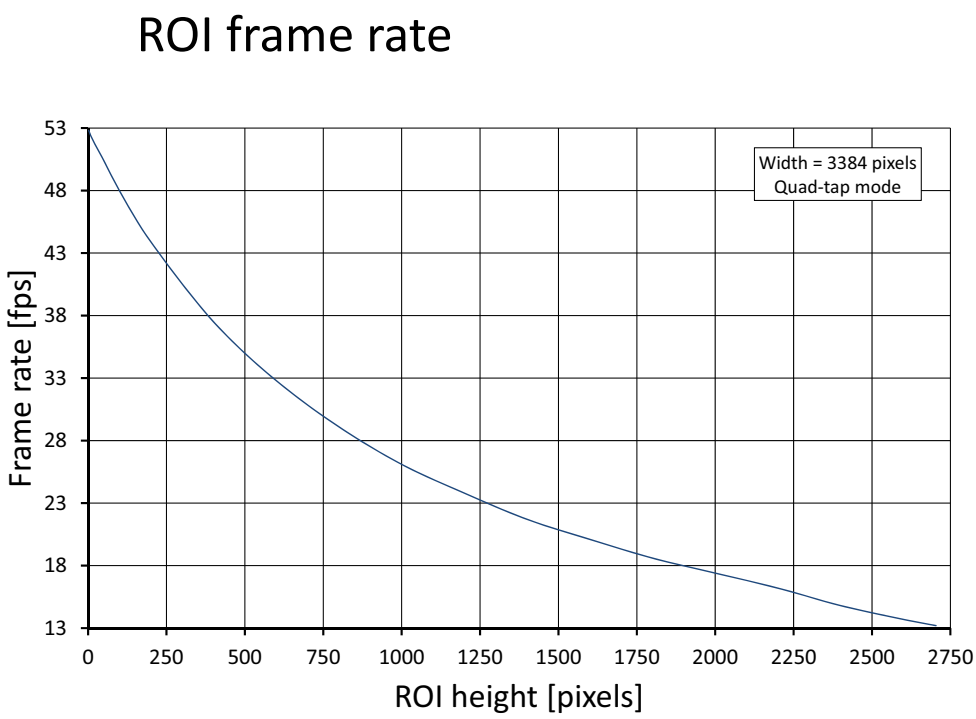


Figure 54: Prosilica GT3400 frame rate as a function of ROI height

Height	Frame rate
2704	13.2
2600	13.7
2400	14.8
2200	16.2
2000	17.4
1800	18.6
1600	20.1

Height	Frame rate
1400	21.7
1200	23.8
1000	26.1
800	29.1
600	32.8
400	37.5
200	43.9

Height	Frame rate
100	48.0
50	50.4
20	51.8
10	52.3
2	52.8

Table 51: Frame rate as a function of ROI height (Width=3384 pixels)

The following table shows how binning affects ROI frame rate.

BinningVertical	Height	Frame rate
2	1352	25.1
3	900	34.1
4	676	41.4
5	540	47.6

BinningVertical	Height	Frame rate
6	450	52.8
7	386	57.2
8	338	61.0

Table 52: Frame rate as a function of ROI height with vertical binning enabled (Width=3384 pixels)

Prosilica GT4090 series

The following table provides model series specifications. The values are valid for Prosilica GT4090 and GT4090NIR models. For specifications common to all models, see Specifications common to all Prosilica GT models.

Feature	Specification	
	Prosilica GT4090	**Prosilica GT4090NIR**
Sensor model	ON Semi PYTHON 12K (NOIP1SN012KA)	ON Semi PYTHON 12K (NOIP1FN012KA)
Resolution	4096 (H) × 3072 (V); 12.5 MP	
Shutter type	Global shutter	
Sensor type	CMOS	
Sensor format	Type 4/3	
Sensor size	23.04 mm diagonal	
Pixel size	4.5 µm × 4.5 µm	
CRA[1]	10.6 degrees	
Housing	Large Format housing	
Default lens mount	F-Mount	
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	
StreamHoldCapacity	Up to 10 frames at full resolution	
Monochrome pixel formats	Mono8, Mono10	
Exposure control	1 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	External power: 4.96 W at 12 VDC Power over Ethernet: 6.7 W	
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)	

Table 53: Prosilica GT4090 model series specifications (sheet 1 of 2)

Feature	Specification	
	Prosilica GT4090	**Prosilica GT4090NIR**
Storage temperature	-20 °C to +70 °C ambient temperature (without condensation)	
Camera dimensions (L × W × H)	96 × 66 × 53.3 mm	
Mass	372 g	
Temperature monitoring	Available for main board and sensor board. Resolution: 0.031; Accuracy: ±1 °C	
[1] For more information on CRA, contact Allied Vision support.		

Table 53: Prosilica GT4090 model series specifications (sheet 2 of 2)

Absolute QE

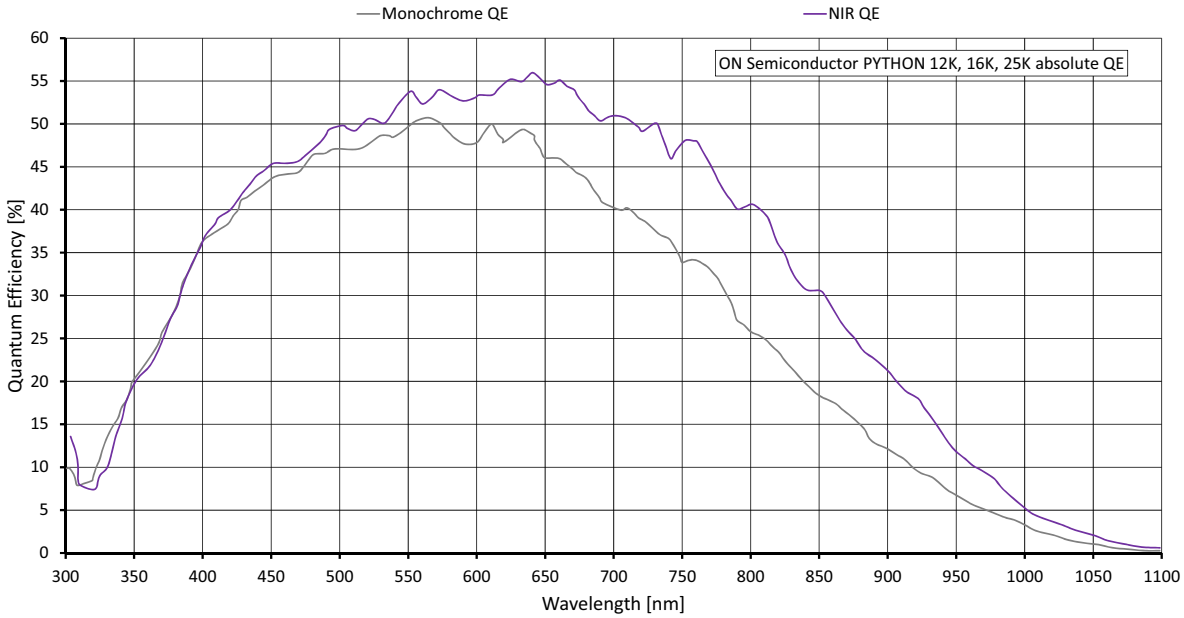


Figure 55: Prosilica GT4090 (ON Semi PYTHON 12K) absolute QE

ROI frame rate

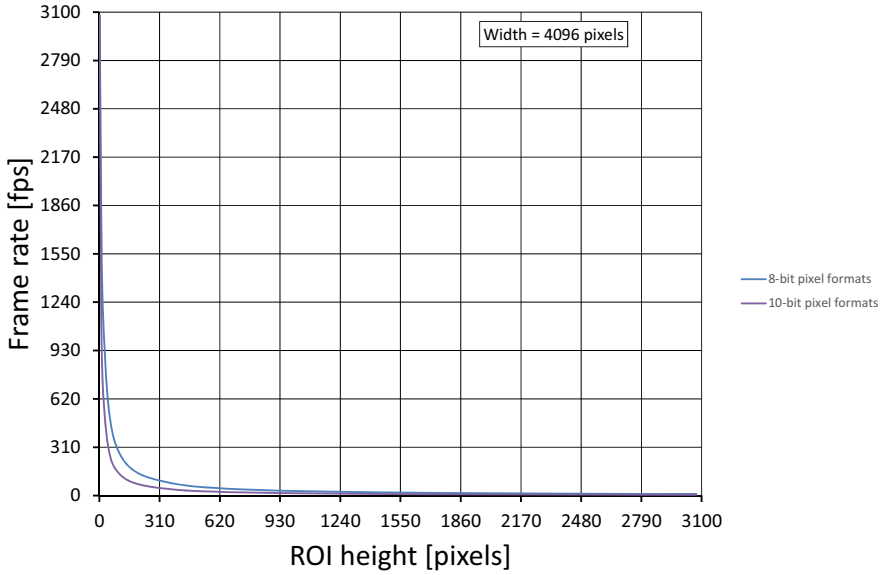


Figure 56: Prosilica GT4090 frame rate as a function of ROI height

Height	Frame rate	Height	Frame rate	Height	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 54: Frame rate as a function of ROI height (Mono8) (Width=4096 pixels)

Height	Frame rate	Height	Frame rate	Height	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 55: Frame rate as a function of ROI height (Mono10) (Width=4096 pixels)

Prosilica GT4096 series

The following table provides model series specifications. The values are valid for Prosilica GT4096 and GT4096NIR models. For specifications common to all models, see Specifications common to all Prosilica GT models.

Feature	Specification	
	Prosilica GT4096	**Prosilica GT4096NIR**
Sensor model	ON Semi PYTHON 16K (NOIP1SN016KA)	ON Semi PYTHON 16K (NOIP1FN016KA)
Resolution	4096 (H) × 4096 (V); 16.7 MP	
Shutter type	Global shutter	
Sensor type	CMOS	
Sensor format and size	Type APS-H	
Sensor size	26.067 mm diagonal	
Pixel size	4.5 µm × 4.5 µm	
CRA[1]	10.6 degrees	
Housing	Large Format housing	
Default lens mount	F-Mount	
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	
StreamHoldCapacity	Up to 7 frames at full resolution	
Monochrome pixel formats	Mono8, Mono10	
Exposure control	1 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	External power: 5.0 W at 12 VDC Power over Ethernet: 6.4 W	
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)	

Table 56: Prosilica GT4096 model series specifications (sheet 1 of 2)

Feature	Specification	
	Prosilica GT4096	**Prosilica GT4096NIR**
Storage temperature	-20 °C to +70 °C ambient temperature (without condensation)	
Camera dimensions (L × W × H)	96 × 66 × 53.3 mm	
Mass	372 g	
Temperature monitoring	Available for main board and sensor board. Resolution: 0.031; Accuracy: ±1 °C	
[1] For more information on CRA, contact the sensor manufacturer.		

Table 56: Prosilica GT4096 model series specifications (sheet 2 of 2)

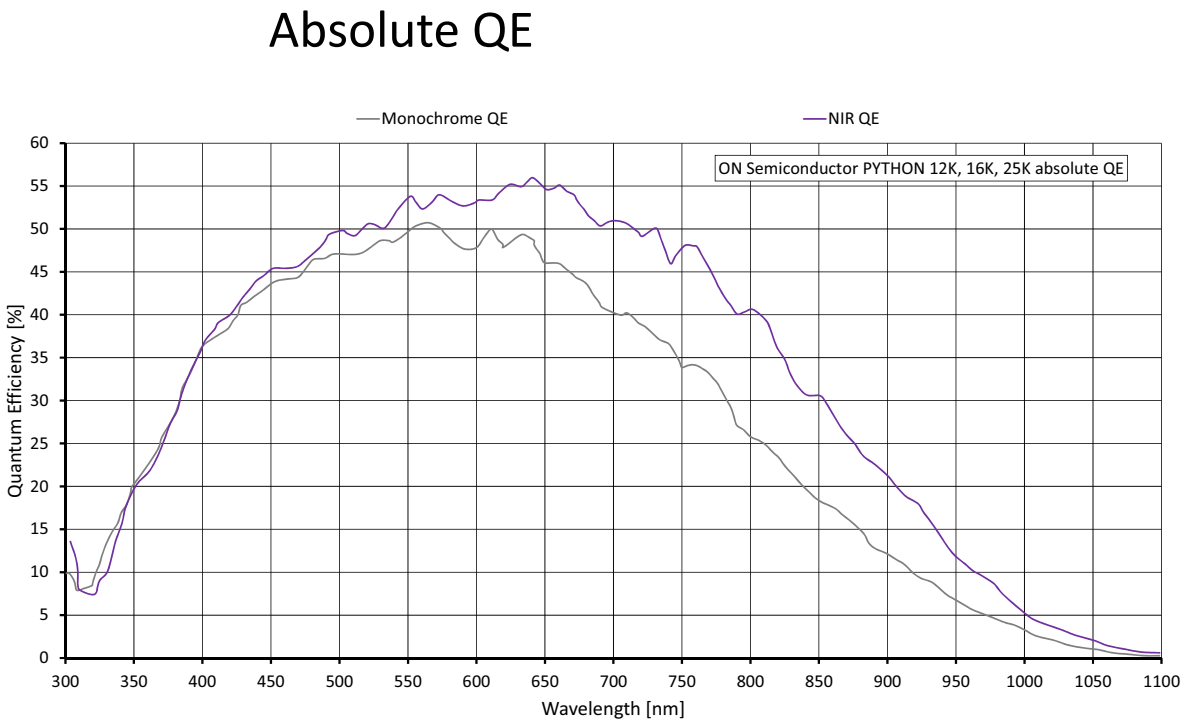


Figure 57: Prosilica GT4096 (ON Semi PYTHON 16K) absolute QE

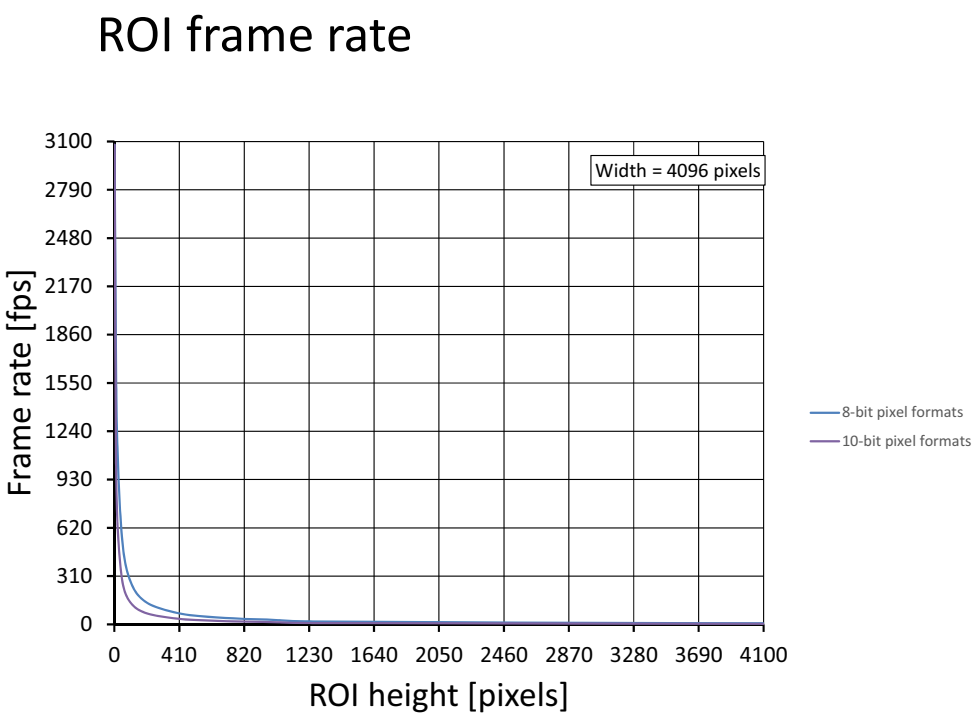


Figure 58: Prosilica GT4096 frame rate as a function of ROI height

Height	Frame rate
4096	7.2
4000	7.4
3500	8.4
3000	9.8
2500	11.8
2000	14.7

Height	Frame rate
1200	19.6
1000	29.3
800	36.6
600	48.6
400	72.8
200	143.2

Height	Frame rate
100	280.5
50	538.8
20	1122.5
10	1759.0
2	3078.8

Table 57: Frame rate as a function of ROI height (Mono8) (Width=4096 pixels)

Height	Frame rate
4096	3.6
4000	3.7
3500	4.2
3000	4.9
2500	5.9
2000	7.4

Height	Frame rate
1200	9.8
1000	14.7
800	18.3
600	24.4
400	36.6
200	72.8

Height	Frame rate
100	143.2
50	280.5
20	641.5
10	1122.5
2	3078.8

Table 58: Frame rate as a function of ROI height (Mono10) (Width=4096 pixels)

Prosilica GT4400 series

The following table provides model series specifications. The values are valid for Prosilica GT4400 and GT4400C models. For specifications common to all models, see Specifications common to all Prosilica GT models.

Feature	Specification	
	Prosilica GT4400	**Prosilica GT4400C**
Sensor model	Sony IMX367LLA	Sony IMX367LQA
Resolution	4432 (H) × 4436 (V); 19.6 MP	
Shutter type	Pregius® global shutter	
Sensor type	CMOS	
Sensor format	Type 4/3	
Aspect ratio	1:1	
Sensor size	21.6 mm diagonal	
Pixel size	3.45 µm × 3.45 µm	
CRA[1]	0.0 degrees	
Housing	Large Format housing	
Default lens mount	F-Mount	
Maximum frame rate at full resolution	6.12 fps (7.05 fps burst mode)	
Maximum image bit depth	12-bit	
StreamHoldCapacity	Up to 6 frames at full resolution	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed	Mono8
YUV color pixel formats	Not applicable	YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats	Not applicable	RGB8Packed, BGR8Packed
RAW pixel formats	Not applicable	BayerRG8, BayerRG12, BayerRG12Packed
Exposure time control	**Pixel format**	**Value**
	Mono8, BayerRG8, Mono12Packed, BayerRG12Packed, YUV411Packed	61 µs to 171.8 s; 31.68 µs increments
	Mono12, BayerRG12, YUV422Packed	72 µs to 171.8 s; 42.24 µs increments
	YUV444Packed, RGB8Packed, BGR8Packed	93 µs to 171.8 s; 63.36 µs increments
Gain control	0.0 to 40.0 dB, 0.1 dB increments	

Table 59: Prosilica GT4400 model series specifications (sheet 1 of 2)

Feature	Specification	
	Prosilica GT4400	**Prosilica GT4400C**
Binning	Horizontal: 1 to 4 pixels Vertical: 1 to 4 rows	
Decimation X/Y	Horizontal and vertical: 1, 2, 4, 8 factor	
Power consumption	External power: 5.0 W at 12 VDC Power over Ethernet: 6.2 W	
Trigger latency	**Pixel format**	**Value**
	Mono8, BayerRG8, Mono12Packed, BayerRG12Packed, YUV411Packed	95.04 µs
	Mono12, BayerRG12, YUV422Packed	126.72 µs
	YUV444Packed, RGB8Packed, BGR8Packed	190.08 µs
Trigger jitter	**Pixel format**	**Value**
	Mono8, BayerRG8, Mono12Packed, BayerRG12Packed, YUV411Packed	±15.84 µs
	Mono12, BayerRG12, YUV422Packed	±21.12 µs
	YUV444Packed, RGB8Packed, BGR8Packed	±31.68 µs
Time between exposures	**Pixel format**	**Value**
	Mono8, BayerRG8, Mono12Packed, BayerRG12Packed, YUV411Packed	604 µs
	Mono12, BayerRG12, YUV422Packed	815µs
	YUV444Packed, RGB8Packed, BGR8Packed	1238 µs
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)	
Camera dimensions (L × W × H)	67.1 × 66 × 53.3 mm	
Mass (typical)	372 g	
Temperature monitoring	Available for main board and sensor board. Resolution: 0.031; Accuracy: ±1 °C	

[1] For more information on CRA, contact Allied Vision support.

Table 59: Prosilica GT4400 model series specifications (sheet 2 of 2)

Absolute QE

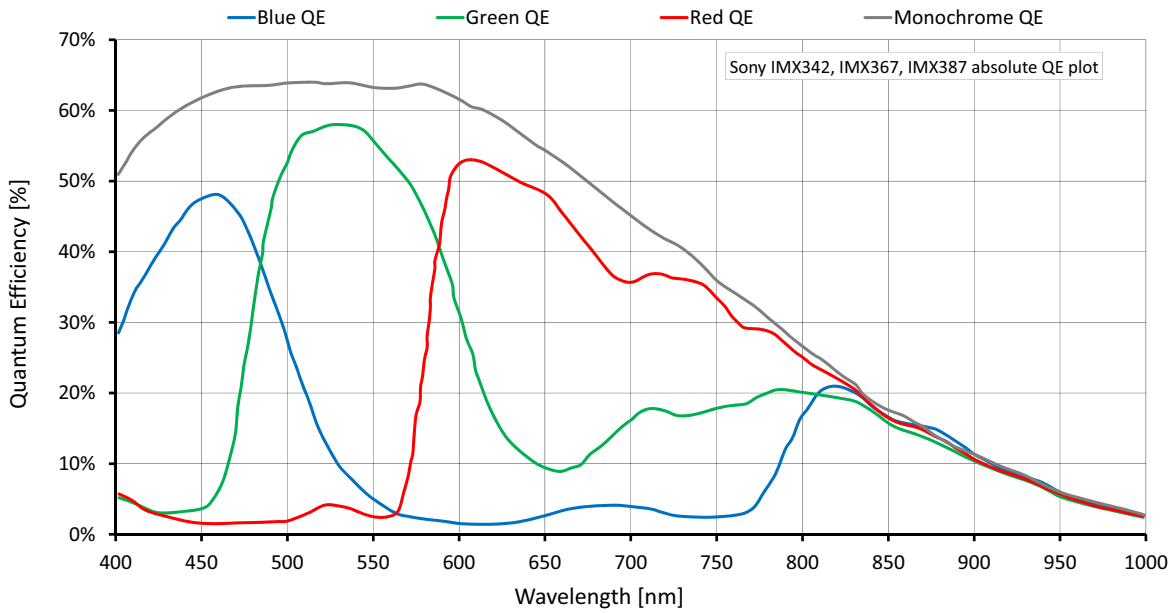


Figure 59: Prosilica GT4400 (Sony IMX367) absolute QE

Spectral response

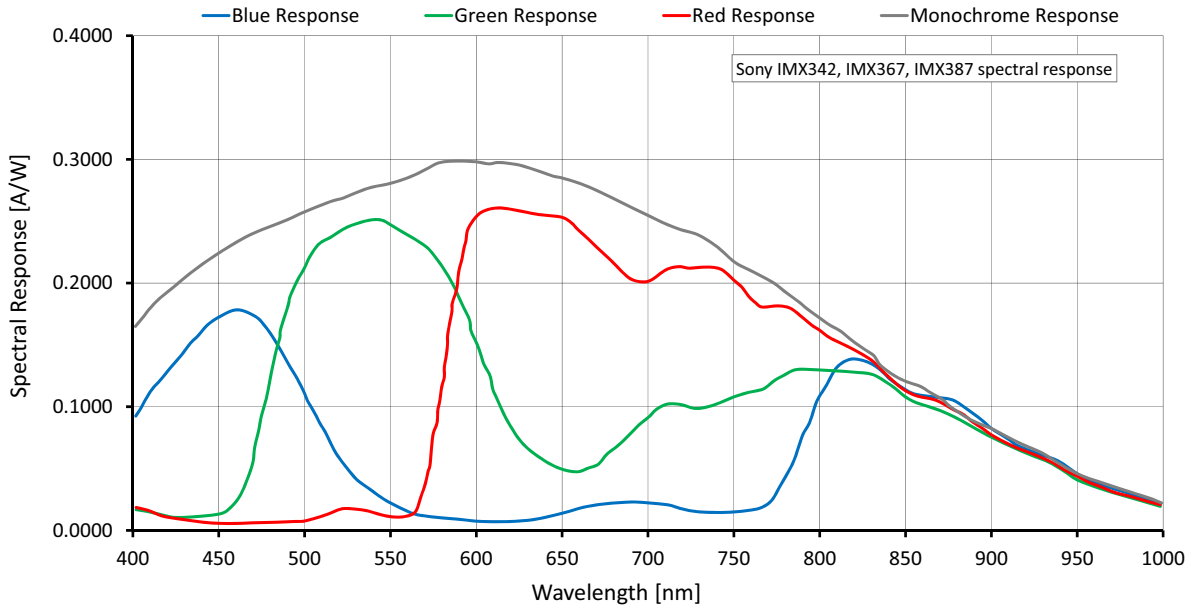


Figure 60: Prosilica GT4400 (Sony IMX367) spectral response

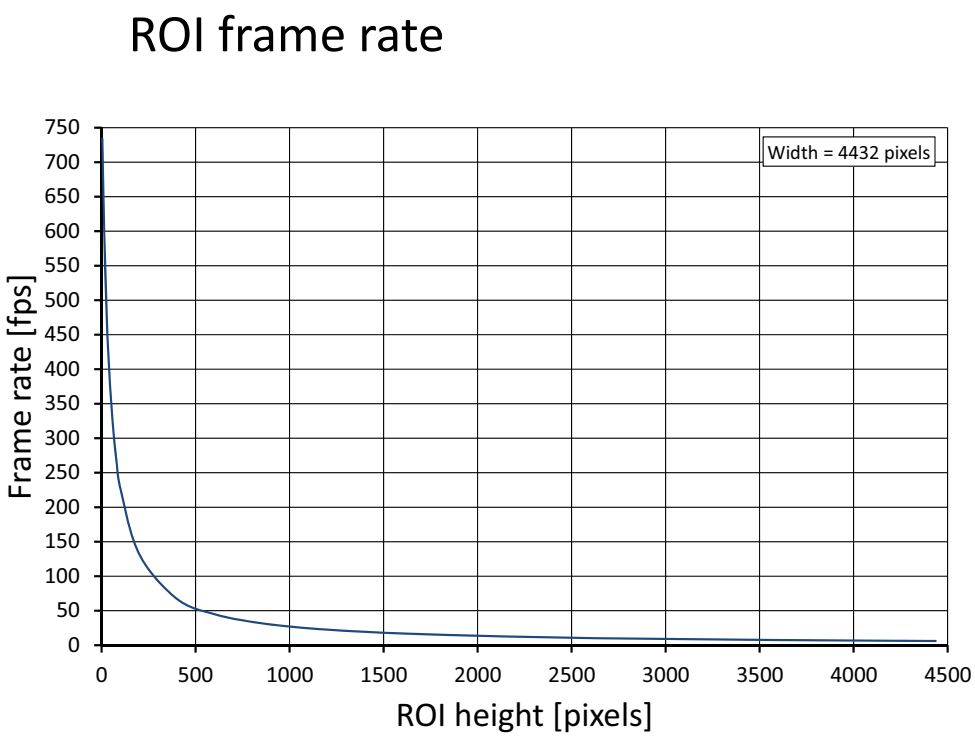


Figure 61: Prosilica GT4400 frame rate as a function of ROI height

Height	Frame rate
4436	6.12
4000	6.79
3500	7.77
3000	9.05
2500	10.87
2000	13.58
1500	18.09

Height	Frame rate
1200	22.58
1000	27.07
800	33.83
600	45.03
400	67.3
200	132.07
100	227.09

Height	Frame rate
80	265.26
64	306.46
48	362.82
32	444.58
16	573.92
4	734.05

Table 60: Frame rate as a function of ROI height (Width=4432 pixels)

2K video frame rate = **25.09** frames per second

Height = 1080 pixels, Width = Maximum

4K video frame rate = **12.58** frames per second

Height = 2160 pixels, Width = Maximum

Prosilica GT4905 series

The following table provides model series specifications. The values are valid for Prosilica GT4905 and GT4905C models. For specifications common to all models, see Specifications common to all Prosilica GT models.

Discontinuation

Due to ON Semi's discontinuation of this sensor the Prosilica GT4905 series has been discontinued with the last time buy period ending on March 1, 2020. For more information, see the Product change notice webpage at www.alliedvision.com/en/support/product-change-notifications.

Feature	Specification	
	Prosilica GT4905	**Prosilica GT4905C**
Sensor model	ON Semi KAI-16050 TRUESENSE Gen 2	
Resolution	4896 (H) × 3264 (V); 16 MP	
Shutter type	Global shutter	
Sensor type	Interline CCD, Progressive Scan	
Sensor format	Type APS-H	
Sensor size	32.36 mm diagonal	
Pixel size	5.5 µm × 5.5 µm	
Housing	Large Format housing	
Default lens mount	F-Mount	
Maximum frame rate at full resolution	Quad-tap mode: 7.5 fps (8.5 fps burst mode) Single-tap mode: 2.2 fps	
Maximum image bit depth	12/14 bit	
StreamHoldCapacity	Up to 8 frames at full resolution	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed, Mono14	Mono8
YUV color pixel formats	Not applicable	YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats	Not applicable	RGB8Packed, BGR8Packed, RGBA8Packed, BGRA8Packed
RAW pixel formats	Not applicable	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	

Table 61: Prosilica GT4905 model series specifications (sheet 1 of 2)

Feature	Specification	
	Prosilica GT4905	**Prosilica GT4905C**
Decimation	Horizontal and vertical: 1, 2, 4, 8 factor	
Sensor taps	Quad-tap Single-tap switchable in Vimba Viewer 2.0 or later	
Power consumption	External power: 7.3 W at 12 VDC Power over Ethernet: 9.0 W	
Trigger latency	2.5 µs	
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)	
Camera 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	

Table 61: Prosilica GT4905 model series specifications (sheet 2 of 2)

Absolute QE

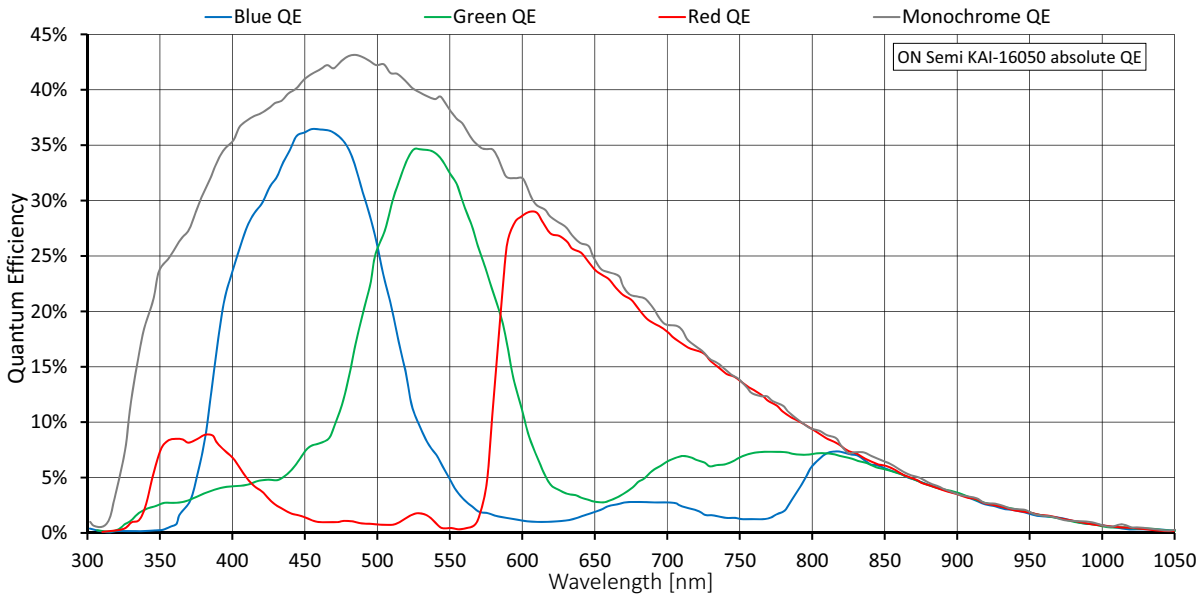


Figure 62: Prosilica GT4905 (ON Semi KAI-16050 Gen 2) absolute QE

Spectral response

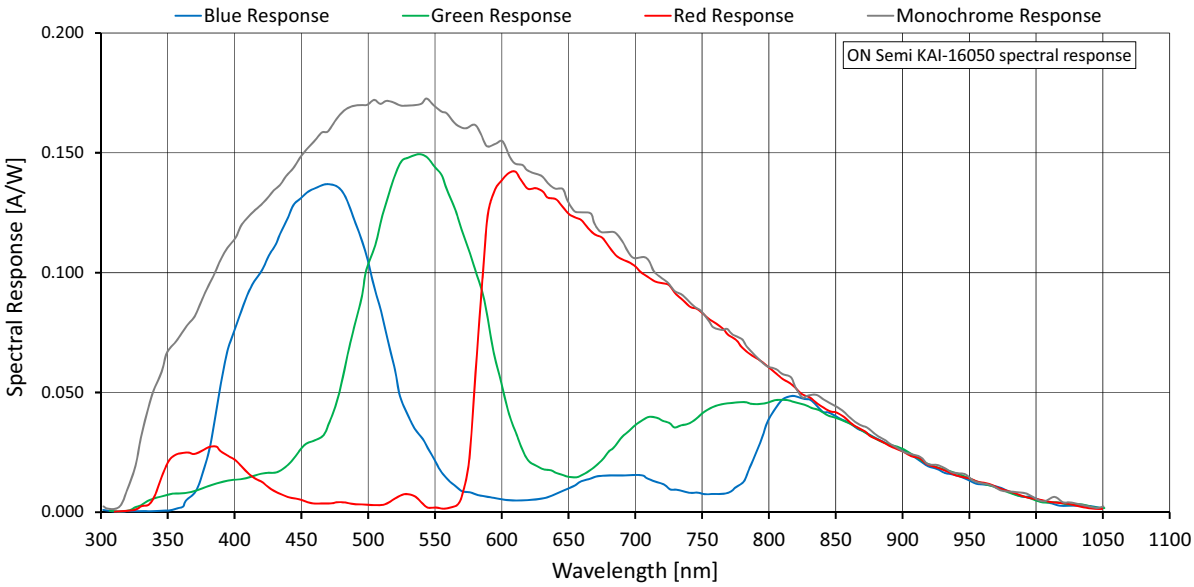


Figure 63: Prosilica GT4905 (ON Semi KAI-16050 Gen 2) spectral response

ROI frame rate

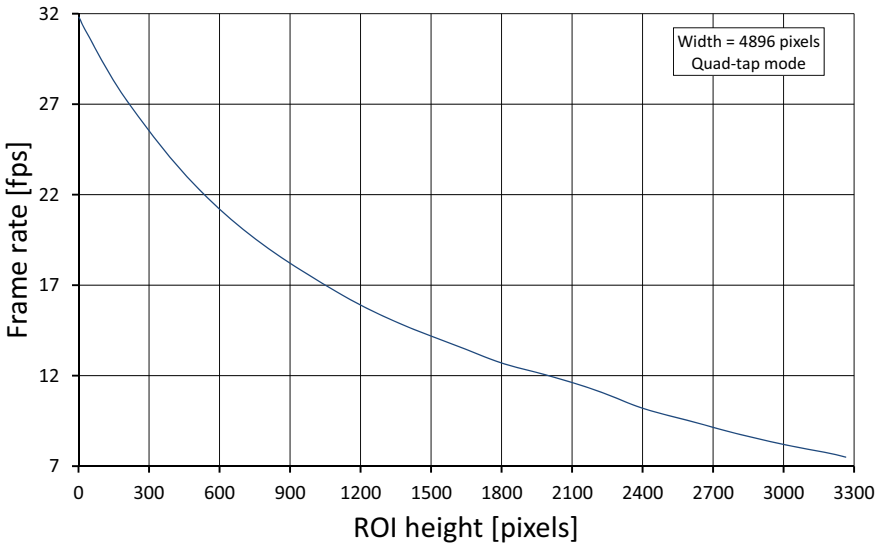


Figure 64: Prosilica GT4905 frame rate as a function of ROI height

Height	Frame rate
3264	7.5
3200	7.7
3000	8.2
2800	8.8
2600	9.5
2400	10.2
2200	11.2
2000	12.0

Height	Frame rate
1800	12.7
1600	13.7
1400	14.7
1200	15.9
1000	17.4
800	19.1
600	21.2
400	23.9

Height	Frame rate
200	27.3
100	29.4
50	30.6
20	31.3
10	31.6
2	31.8

Table 62: Frame rate as a function of ROI height (Width=4896 pixels)

The following table shows how binning affects ROI frame rate.

BinningVertical	Height	Frame rate
2	1632	15.1
3	1088	20.7
4	816	25.1
5	652	28.8

BinningVertical	Height	Frame rate
6	544	31.8
7	466	34.4
8	408	36.6

Table 63: Frame rate as a function of ROI height with vertical binning enabled (Width=4896 pixels)

Prosilica GT4907 series

The following table provides model series specifications. The values are valid for Prosilica GT4907 and GT4907C models. For specifications common to all models, see Specifications common to all Prosilica GT models.

Discontinuation

Due to ON Semi's discontinuation of this sensor the Prosilica GT4907 series has been discontinued with the last time buy period ending on March 1, 2020. For more information, see the Product change notice webpage at www.alliedvision.com/en/support/product-change-notifications.

Feature	Specification	
	Prosilica GT4907	**Prosilica GT4907C**
Sensor model	ON Semi KAI-16070 TRUESENSE Gen 2	
Resolution	4864 (H) × 3232 (V); 15.7 MP	
Shutter type	Global shutter	
Sensor type	Interline CCD, Progressive Scan	
Sensor format	Type 35mm	
Sensor size	43.2 mm diagonal	
Pixel size	7.4 µm × 7.4 µm	
Housing	Large Format housing	
Default lens mount	F-Mount	
Maximum frame rate at full resolution	Quad-tap mode: 7.6 fps Single-tap mode: 2.2 fps	
Maximum image bit depth	12/14 bit	
StreamHoldCapacity	Up to 8 frames at full resolution	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed, Mono14	Mono8
YUV color pixel formats	Not applicable	YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats	Not applicable	RGB8Packed, BGR8Packed, RGBA8Packed, BGRA8Packed
RAW pixel formats	Not applicable	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	

Table 64: Prosilica GT4907 model series specifications (sheet 1 of 2)

Feature	Specification	
	Prosilica GT4907	**Prosilica GT4907C**
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	External power: 7.7 W at 12 VDC Power over Ethernet: 9.5 W	
Trigger latency	2.5 µs	
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)	
Camera 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 64: Prosilica GT4907 model series specifications (sheet 2 of 2)

Absolute QE

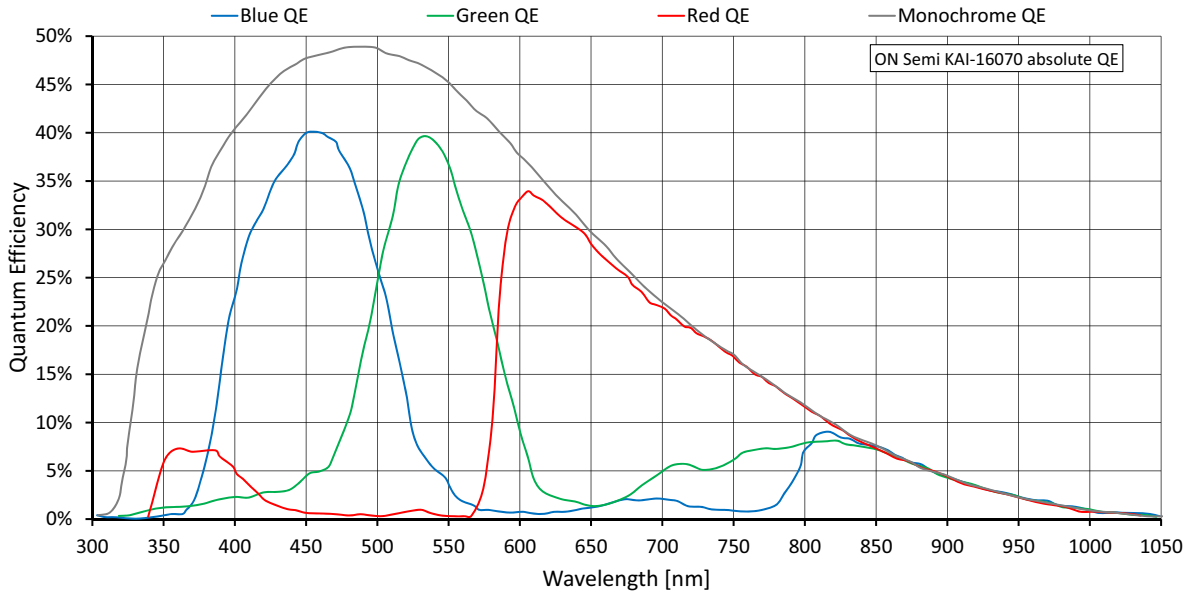


Figure 65: Prosilica GT4907 (ON Semi KAI-16070 Gen 2) absolute QE

Spectral response

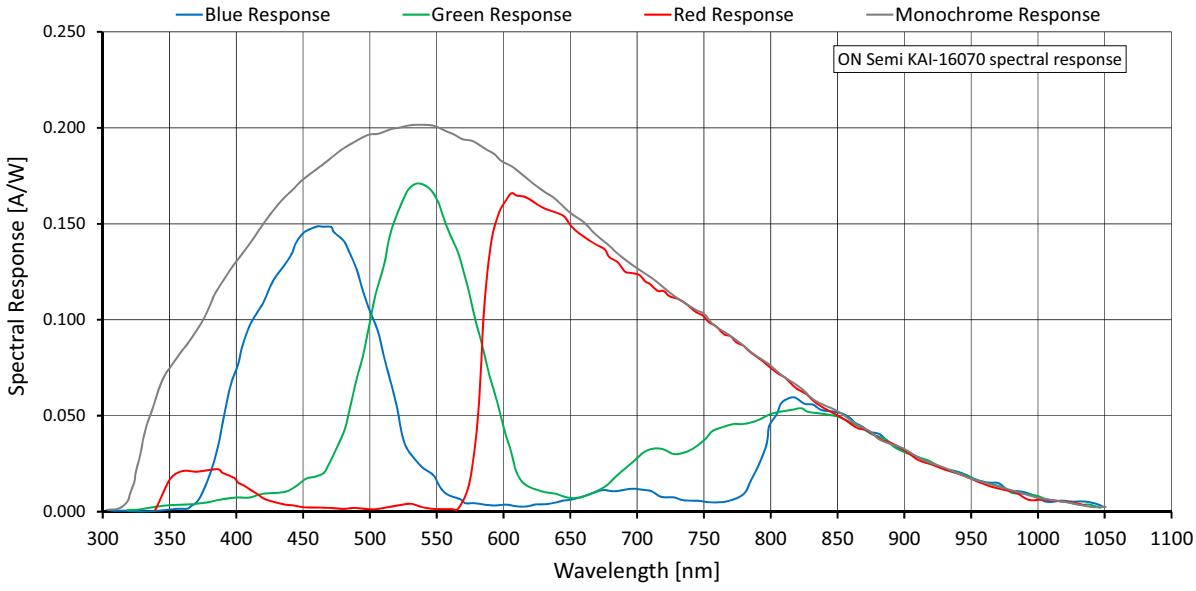


Figure 66: Prosilica GT4907 (ON Semi KAI-16070 Gen 2) spectral response

ROI frame rate

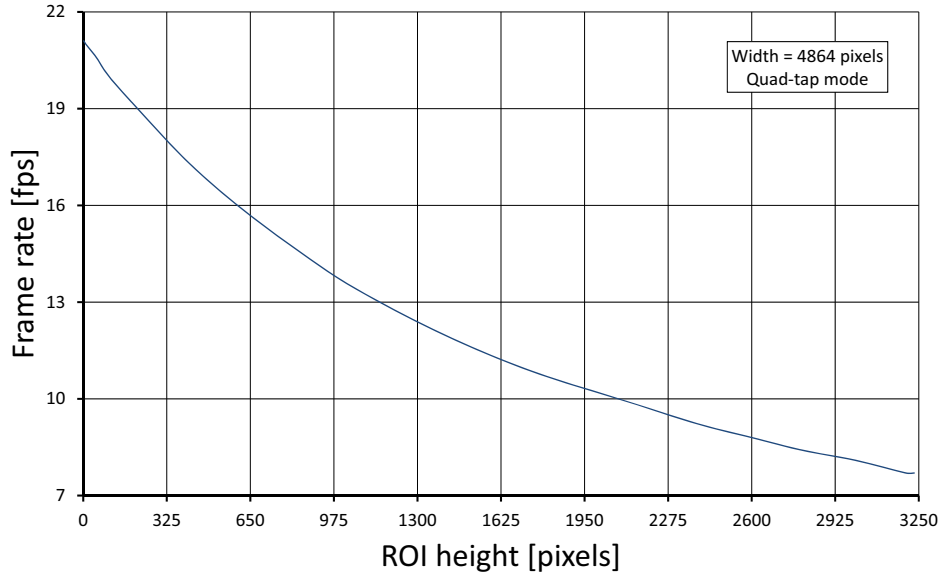


Figure 67: Prosilica GT4907 frame rate as a function of ROI height

Height	Frame rate
3232	7.7
3200	7.7
3000	8.1
2800	8.4
2600	8.8
2400	9.2
2200	9.7
2000	10.2

Height	Frame rate
1800	10.7
1600	11.3
1400	12.0
1200	12.8
1000	13.7
800	14.8
600	16.0
400	17.4

Height	Frame rate
200	19.1
100	20.0
50	20.6
20	20.9
10	21.0
2	21.1

Table 65: Frame rate as a function of ROI height (Width=4864 pixels)

The following table shows how binning affects ROI frame rate.

BinningVertical	Height	Frame rate
2	1616	12.5
3	1076	15.7
4	808	17.9
5	646	19.6

BinningVertical	Height	Frame rate
6	538	21.0
7	460	21.9
8	404	22.7

Table 66: Frame rate as a function of ROI height with vertical binning enabled

Prosilica GT5120 series

The following table provides model series specifications. The values are valid for Prosilica GT5120 and GT5120NIR models. For specifications common to all models, see Specifications common to all Prosilica GT models.

Feature	Specification	
	Prosilica GT5120	**Prosilica GT5120NIR**
Sensor model	ON Semi PYTHON 25K (NOIP1SN025KA)	ON Semi PYTHON 25K (NOIP1FN025KA)
Resolution	5120 (H) × 5120 (V); 26.2 MP	
Shutter type	Global shutter	
Sensor type	CMOS	
Sensor format	Type APS-H	
Sensor size	32.6 mm diagonal	
Pixel size	4.5 µm × 4.5 µm	
CRA[1]	10.6 degrees	
Housing	Large Format housing	
Default lens mount	F-Mount	
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	
StreamHoldCapacity	Up to 4 frames at full resolution	
Monochrome pixel formats	Mono8, Mono10	
Exposure time control	1 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	External power: 5.02 W at 12 VDC Power over Ethernet: 6.3 W	
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)	

Table 67: Prosilica GT5120 model series specifications (sheet 1 of 2)

Feature	Specification	
	Prosilica GT5120	**Prosilica GT5120NIR**
Camera 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] For more information on CRA, contact Allied Vision support.		

Table 67: Prosilica GT5120 model series specifications (sheet 2 of 2)

Absolute QE

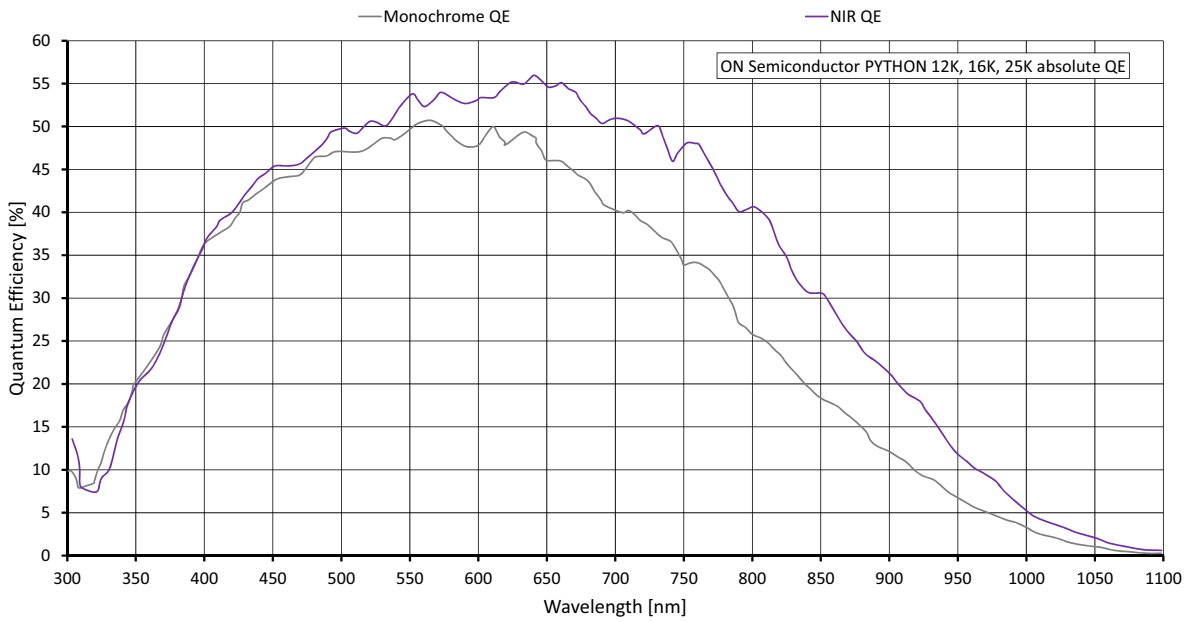


Figure 68: Prosilica GT5120 (ON Semi PYTHON 25K) absolute QE

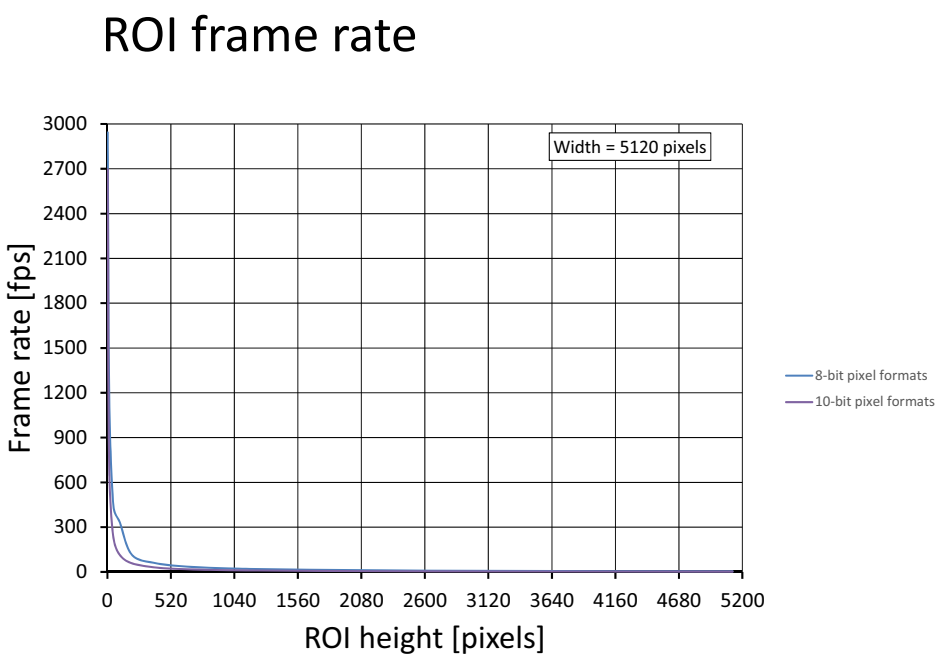


Figure 69: Prosilica GT5120 frame rate as a function of ROI height

Height	Frame rate
5120	4.6
5000	4.7
4500	5.2
4000	5.9
3500	6.7
3000	7.9
2500	9.4

Height	Frame rate
2000	11.8
1500	15.7
1000	23.5
800	29.3
600	39.0
400	58.3
200	115.1

Height	Frame rate
100	224.4
50	434.4
20	948.4
10	1521.4
2	2943.8

Table 68: Frame rate as a function of ROI height (Mono8) (Width=5120 pixels)

Height	Frame rate
5120	2.3
5000	2.4
4500	2.6
4000	2.9
3500	3.4
3000	3.9
2500	4.7

Height	Frame rate
2000	5.9
1500	7.9
1000	11.8
800	14.7
600	19.6
400	29.3
200	58.3

Height	Frame rate
100	115.1
50	224.4
20	538.8
10	962.6
2	2696.1

Table 69: Frame rate as a function of ROI height (Mono10) (Width=5120 pixels)

Prosilica GT5400 series

The following table provides model series specifications. The values are valid for Prosilica GT5400 and GT5400C models. For specifications common to all models, see Specifications common to all Prosilica GT models.

Feature	Specification	
	Prosilica GT5400	**Prosilica GT5400C**
Sensor model	Sony IMX387LLA	Sony IMX387LQA
Resolution	5472 (H) × 3084 (V); 16.8 MP	
Shutter type	Pregius® global shutter	
Sensor type	CMOS	
Sensor format	Type 4/3	
Aspect ratio	16:9	
Sensor size	21.7 mm diagonal	
Pixel size	3.45 µm × 3.45 µm	
CRA[1]	0.0 degrees	
Housing	Large Format housing	
Default lens mount	F-Mount	
Maximum frame rate at full resolution	7.14 fps (8.27 fps burst mode)	
Maximum image bit depth	12-bit	
StreamHoldCapacity	Up to 7 frames at full resolution	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed	Mono8
YUV color pixel formats	Not applicable	YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats	Not applicable	RGB8Packed, BGR8Packed
RAW pixel formats	Not applicable	BayerRG8, BayerRG12, BayerRG12Packed
Exposure time control	**Pixel format**	**Value**
	Mono8, BayerRG8, Mono12Packed, BayerRG12Packed, YUV411Packed	68 µs to 171.8 s; 38.72 µs increments
	Mono12, BayerRG12, YUV422Packed	81 µs to 171.8 s; 51.52 µs increments
	YUV444Packed, RGB8Packed, BGR8Packed	107 µs to 171.8 s; 77.44 µs increments
Gain control	0.0 to 40.0 dB, 0.1 dB increments	

Table 70: Prosilica GT5400 model series specifications (sheet 1 of 2)

Feature	Specification	
	Prosilica GT5400	**Prosilica GT5400C**
Binning	Horizontal: 1 to 4 pixels Vertical: 1 to 4 rows	
Decimation X/Y	Horizontal and vertical: 1, 2, 4, 8 factor	
Power consumption	External power: 5.2 W at 12 VDC Power over Ethernet: 6.4 W	
Trigger latency	**Pixel format**	**Value**
	Mono8, BayerRG8, Mono12Packed, BayerRG12Packed, YUV411Packed	116.16 µs
	Mono12, BayerRG12, YUV422Packed	154.56 µs
	YUV444Packed, RGB8Packed, BGR8Packed	232.32 µs
Trigger jitter	**Pixel format**	**Value**
	Mono8, BayerRG8, Mono12Packed, BayerRG12Packed, YUV411Packed	±19.36 µs
	Mono12, BayerRG12, YUV422Packed	±25.76 µs
	YUV444Packed, RGB8Packed, BGR8Packed	±38.72 µs
Time between exposures	**Pixel format**	**Value**
	Mono8, BayerRG8, Mono12Packed, BayerRG12Packed, YUV411Packed	745 µs
	Mono12, BayerRG12, YUV422Packed	1001 µs
	YUV444Packed, RGB8Packed, BGR8Packed	1520 µs
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)	
Camera dimensions (L × W × H)	67.1 × 66 × 53.3 mm	
Mass (typical)	372 g	
Temperature monitoring	Available for main board and sensor board. Resolution: 0.031; Accuracy: ±1 °C	

[1] For more information on CRA, contact Allied Vision support.

Table 70: Prosilica GT5400 model series specifications (sheet 2 of 2)

Absolute QE

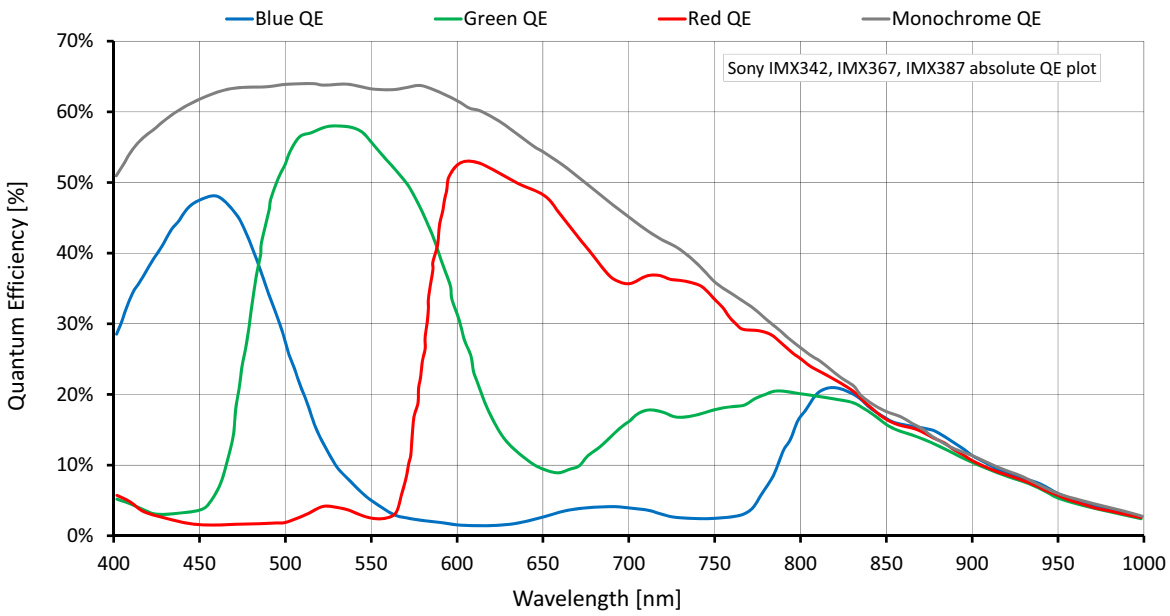


Figure 70: Prosilica GT5400 (Sony IMX387) absolute QE

Spectral response

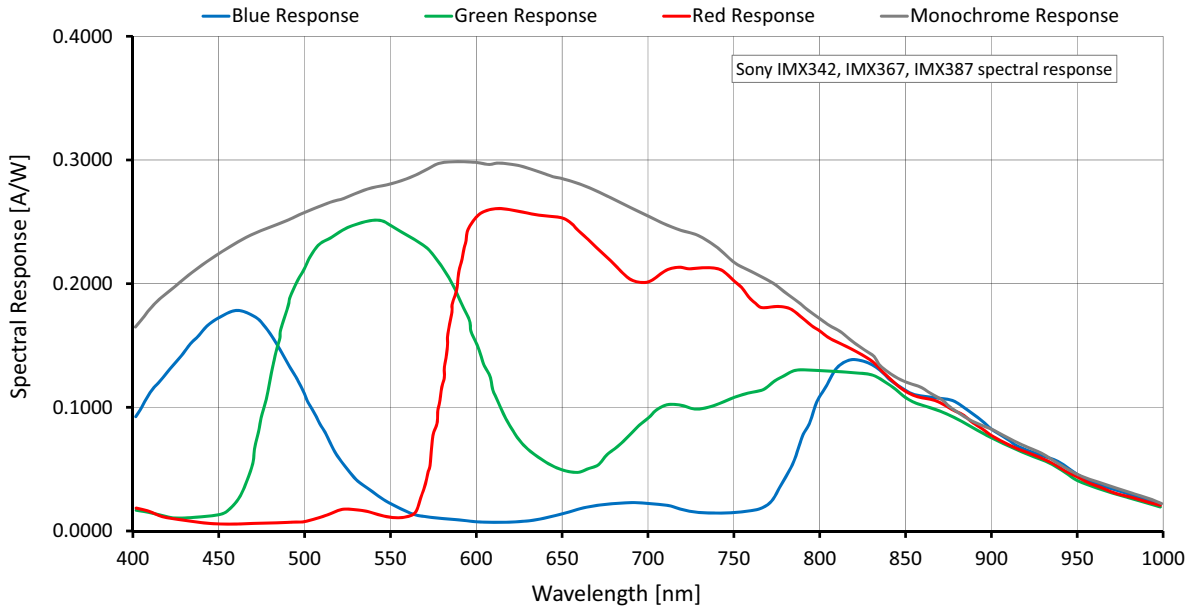


Figure 71: Prosilica GT5400 (Sony IMX387) spectral response

ROI frame rate

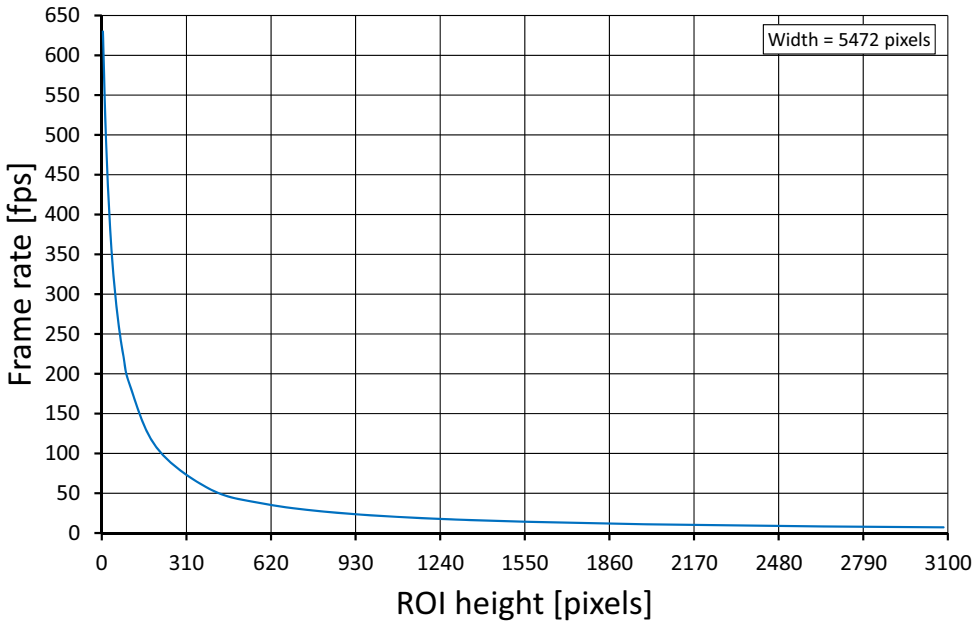


Figure 72: Prosilica GT5400 frame rate as a function of ROI height

Height	Frame rate
3048	7.14
3000	7.33
2500	8.8
2000	10.99
1500	14.67
1200	18.32

Height	Frame rate
1000	21.96
800	27.42
600	36.48
400	54.49
200	107.61
100	188.51

Height	Frame rate
80	220.74
64	255.7
48	303.84
32	374.29
16	487.28
4	629.88

Table 71: Frame rate as a function of ROI height (Width=5472 pixels)

2K video frame rate = **20.32** frames per second

Height = 1080 pixels, Width = Maximum

4K video frame rate = **10.18** frames per second

Height = 2160 pixels, Width = Maximum

Prosilica GT6400 series

The following table provides model series specifications. The values are valid for Prosilica GT6400 and GT6400C models. For specifications common to all models, see Specifications common to all Prosilica GT models.

Feature	Specification	
	Prosilica GT6400	**Prosilica GT6400C**
Sensor model	Sony IMX342LLA	Sony IMX342LQA
Resolution	6480 (H) × 4860 (V); 31.4 MP	
Shutter type	Pregius® global shutter	
Sensor type	CMOS	
Sensor format	Type APS-C	
Aspect ratio	4:3	
Sensor size	27.9 mm diagonal	
Pixel size	3.45 µm × 3.45 µm	
CRA[1]	0.0 degrees	
Housing	Large Format housing	
Default lens mount	F-Mount	
Maximum frame rate at full resolution	3.82 fps (4.49 fps burst mode)	
Maximum image bit depth	12-bit	
StreamHoldCapacity	Up to 4 frames at full resolution	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed	Mono8
YUV color pixel formats	Not applicable	YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats	Not applicable	RGB8Packed, BGR8Packed
RAW pixel formats	Not applicable	BayerRG8, BayerRG12, BayerRG12Packed
Exposure time control	**Pixel format**	**Value**
	Mono8, BayerRG8, Mono12Packed, BayerRG12Packed, YUV411Packed	75 µs to 171.8 s; 45.44 µs increments
	Mono12, BayerRG12, YUV422Packed	90 µs to 171.8 s; 60.48 µs increments
	YUV444Packed, RGB8Packed, BGR8Packed	120 µs to 171.8 s; 90.88 µs increments
Gain control	0.0 to 40.0 dB, 0.1 dB increments	

Table 72: Prosilica GT6400 model series specifications (sheet 1 of 2)

Feature	Specification	
	Prosilica GT6400	**Prosilica GT6400C**
Binning	Horizontal: 1 to 4 pixels Vertical: 1 to 4 rows	
Decimation X/Y	Horizontal and vertical: 1, 2, 4, 8 factor	
Power consumption	External power: 5.4 W at 12 VDC Power over Ethernet: 6.7 W	
Trigger latency	**Pixel format**	**Value**
	Mono8, BayerRG8, Mono12Packed, BayerRG12Packed, YUV411Packed	136.32 µs
	Mono12, BayerRG12, YUV422Packed	181.44 µs
	YUV444Packed, RGB8Packed, BGR8Packed	272.64 µs
Trigger jitter	**Pixel format**	**Value**
	Mono8, BayerRG8, Mono12Packed, BayerRG12Packed, YUV411Packed	±22.72 µs
	Mono12, BayerRG12, YUV422Packed	±30.24 µs
	YUV444Packed, RGB8Packed, BGR8Packed	±45.44 µs
Time between exposures	**Pixel format**	**Value**
	Mono8, BayerRG8, Mono12Packed, BayerRG12Packed, YUV411Packed	880 µs
	Mono12, BayerRG12, YUV422Packed	1180 µs
	YUV444Packed, RGB8Packed, BGR8Packed	1788 µs
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)	
Camera 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] For more information on CRA, contact Allied Vision support.

Table 72: Prosilica GT6400 model series specifications (sheet 2 of 2)

Absolute QE

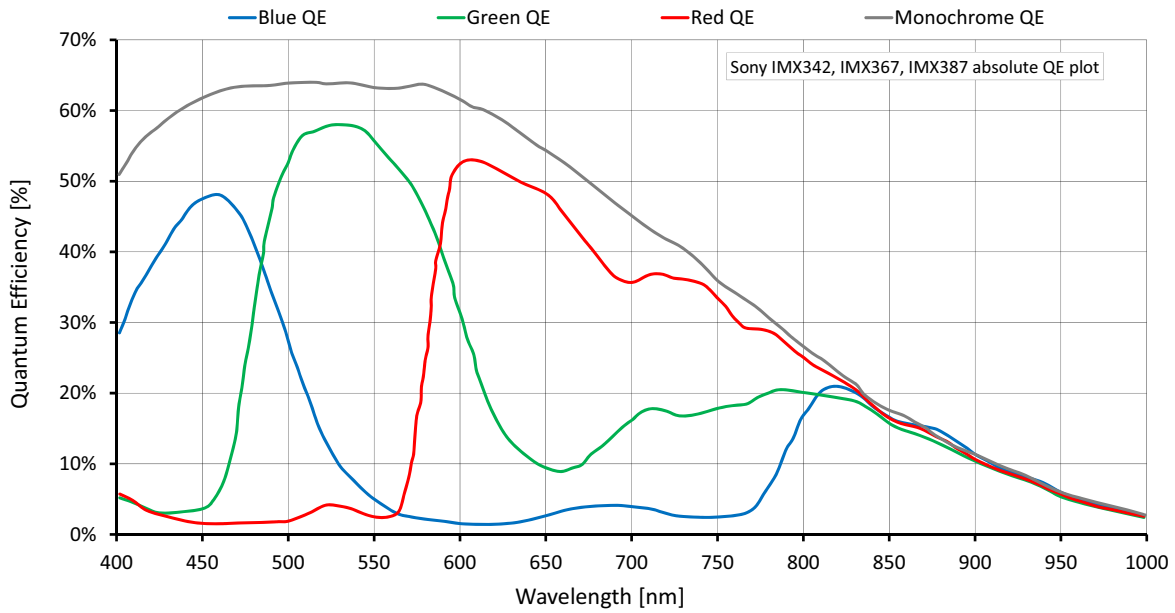


Figure 73: Prosilica GT6400 (Sony IMX342) absolute QE

Spectral response

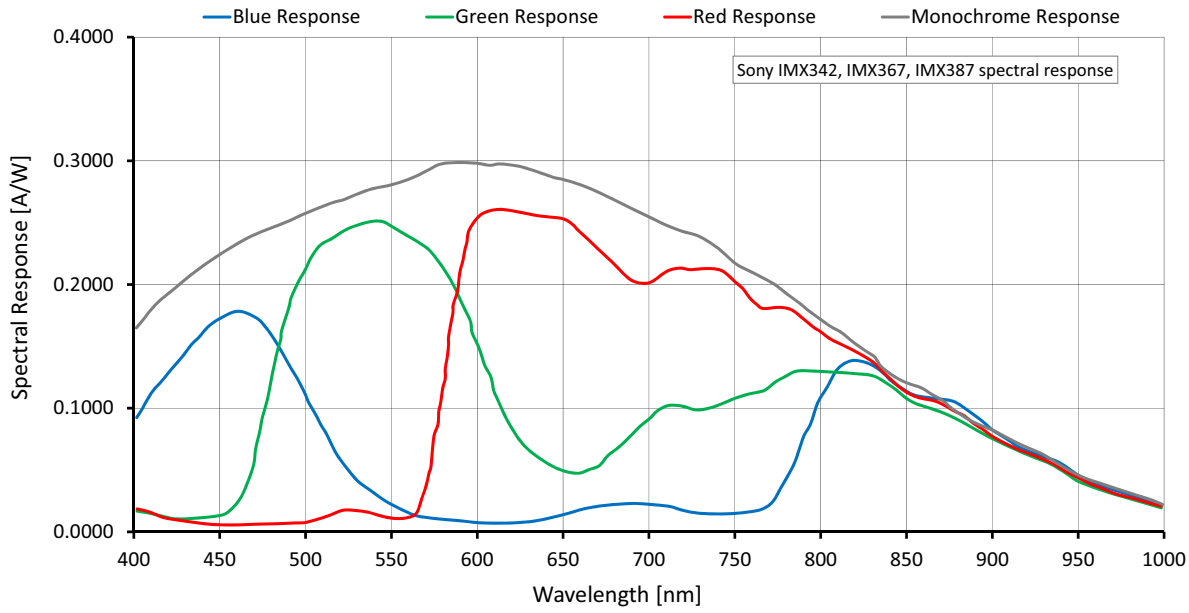


Figure 74: Prosilica GT6400 (Sony IMX342) spectral response

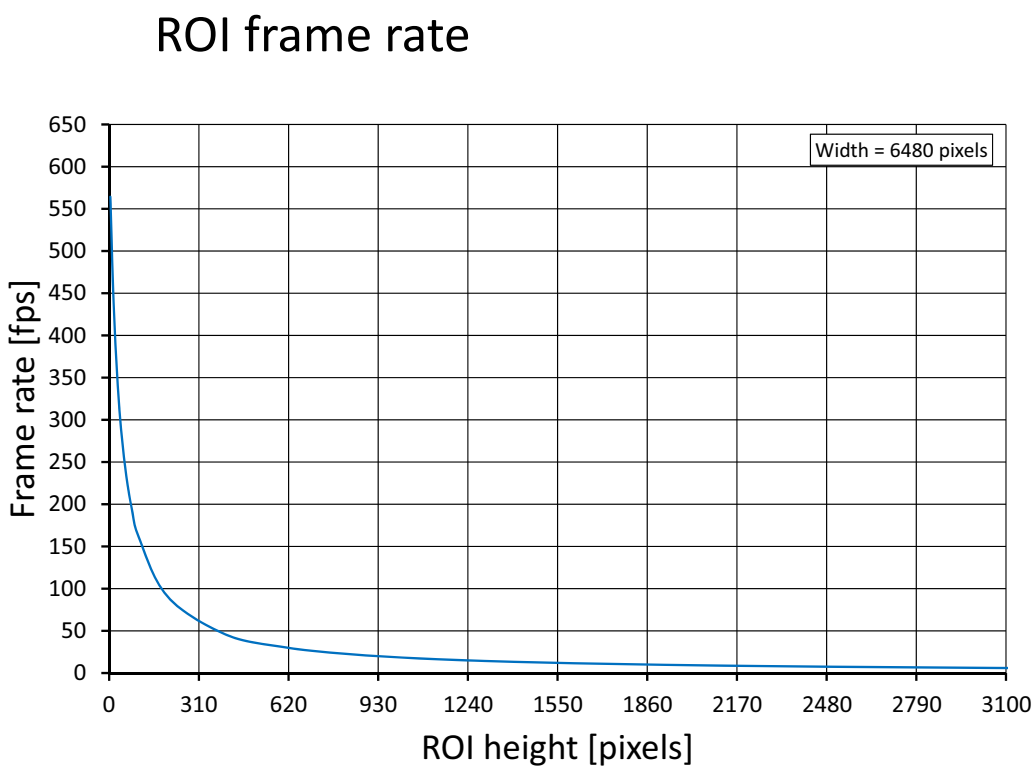


Figure 75: Prosilica GT6400 frame rate as a function of ROI height

Height	Frame rate
4860	3.82
4500	4.13
4000	4.65
3500	5.31
3000	6.2
2500	7.43
2000	9.29

Height	Frame rate
1500	12.38
1200	15.46
1000	18.57
800	23.16
600	30.86
400	46.03
200	91.31

Height	Frame rate
100	163.01
80	191.36
64	222.29
48	265.14
32	328.46
16	431.51
4	564.27

Table 73: Frame rate as a function of ROI height (Width=6480 pixels)

2K video frame rate = **17.2** frames per second

Height = 1080 pixels, Width = Maximum

4K video frame rate = **8.61** frames per second

Height = 2160 pixels, Width = Maximum

Prosilica GT6600 series

The following table provides model series specifications. The values are valid for Prosilica GT6600 and GT6600C models. For specifications common to all models, see Specifications common to all Prosilica GT models.

Discontinuation

Due to ON Semi's discontinuation of this sensor the Prosilica GT6600 series has been discontinued with the last time buy period ending on March 1, 2020. For more information, see the Product change notice webpage at www.alliedvision.com/en/support/product-change-notifications.

Feature	Specification	
	Prosilica GT6600	**Prosilica GT6600C**
Sensor model	ON Semi KAI-29050 TRUESENSE Gen 2	
Resolution	6576 (H) × 4384 (V); 28.8 MP	
Shutter type	Global shutter	
Sensor type	Interline CCD, Progressive Scan	
Sensor format	Type 35mm	
Sensor size	43.47 mm diagonal	
Pixel size	5.5 µm × 5.5 µm	
Housing	Large Format housing	
Default lens mount	F-Mount	
Maximum frame rate at full resolution	Quad-tap mode: 4 fps Single-tap mode: 1 fps	
Maximum image bit depth	12/14 bit	
StreamHoldCapacity	Up to 4 frames at full resolution	
Monochrome pixel formats	Mono8, Mono12, Mono12Packed, Mono14	Mono8
YUV color pixel formats	Not applicable	YUV411Packed, YUV422Packed, YUV444Packed
RGB color pixel formats	Not applicable	RGB8Packed, BGR8Packed, RGBA8Packed, BGRA8Packed
RAW pixel formats	Not applicable	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	

Table 74: Prosilica GT6600 model series specifications (sheet 1 of 2)

Feature	Specification	
	Prosilica GT6600	**Prosilica GT6600C**
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	External power: 6.6 W at 12 VDC Power over Ethernet: 8.1 W	
Trigger latency	2.5 µs	
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)	
Camera 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	

Table 74: Prosilica GT6600 model series specifications (sheet 2 of 2)

Absolute QE

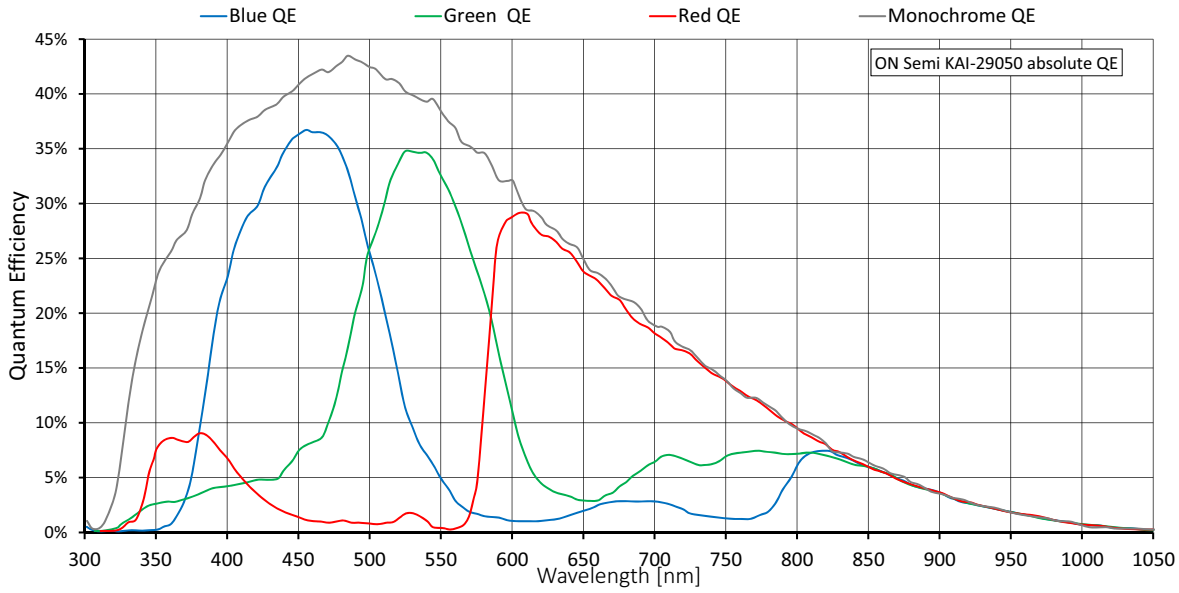


Figure 76: Prosilica GT6600 (ON Semi KAI-29050 Gen 2) absolute QE

Spectral response

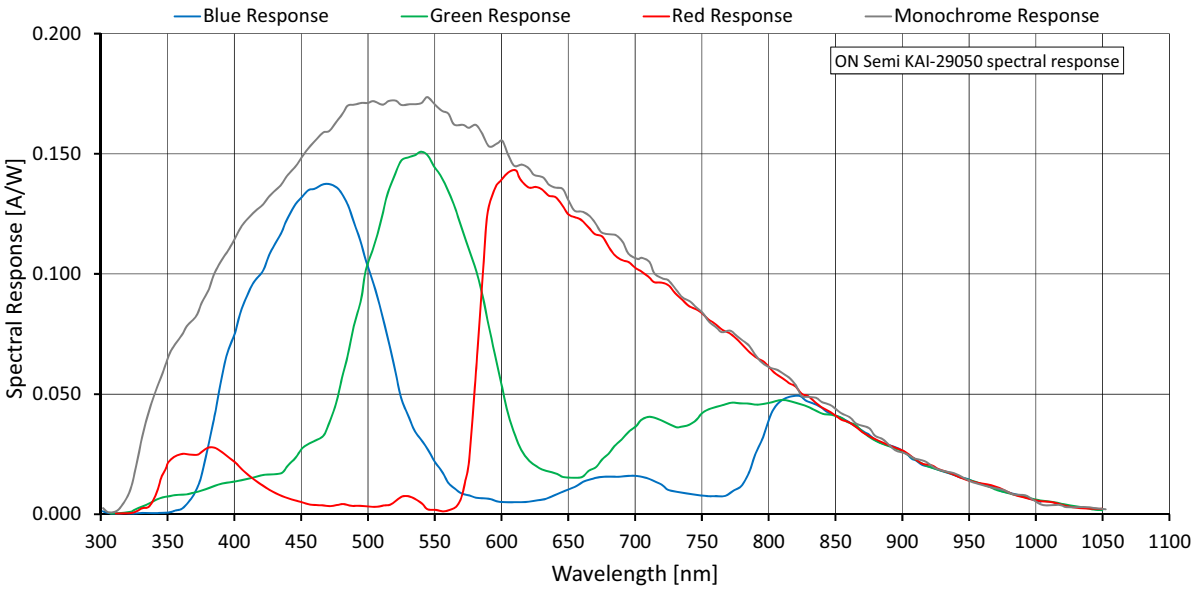


Figure 77: Prosilica GT6600 (ON Semi KAI-29050 Gen 2) spectral response

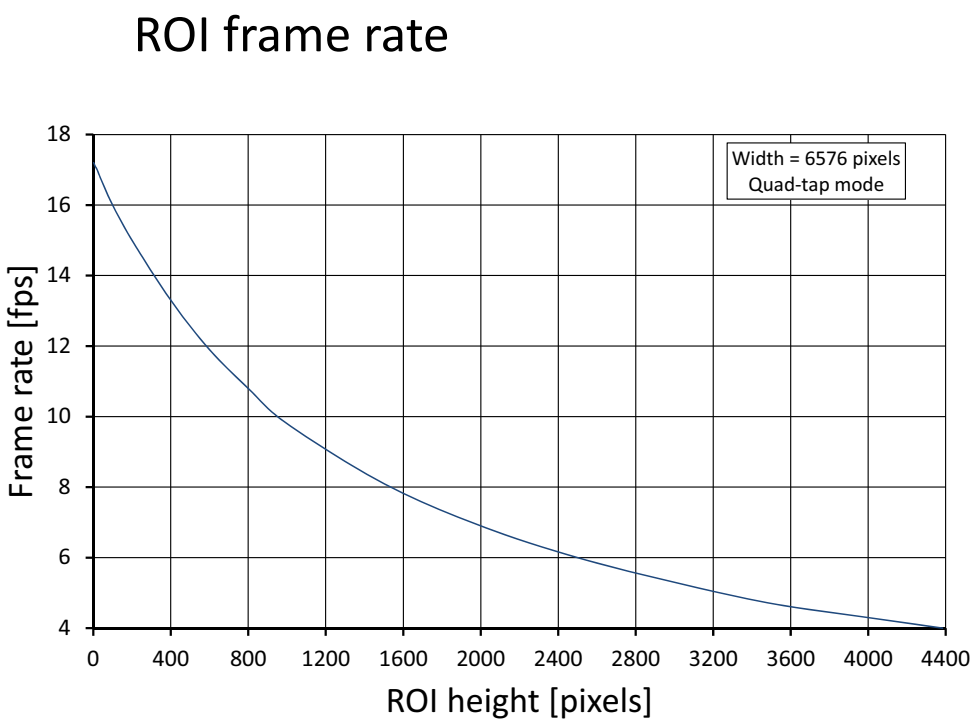


Figure 78: Prosilica GT6600 frame rate as a function of ROI height

Height	Frame rate
4384	4.0
4000	4.3
3500	4.7
3000	5.3
2500	6.0
2000	6.9

Height	Frame rate
1500	8.1
1000	9.8
800	10.8
600	11.9
400	13.3
200	15.0

Height	Frame rate
100	16.0
50	16.6
20	17.0
10	17.1
2	17.2

Table 75: Frame rate as a function of ROI height (Width=6576 pixels)

The following table shows how binning affects frame rate.

BinningVertical	Height	Frame rate
2	2192	7.5
3	1460	10.4
4	1096	13.0
5	876	15.3

BinningVertical	Height	Frame rate
6	730	17.3
7	626	19.1
8	548	20.7

Table 76: Frame rate as a function of ROI height with vertical binning enabled (Width=6576 pixels)

Prosilica GT model series comparison

Model series	Sensor model	Sensor type	Sensor format	Resolution	Frame rate
GT1290	Sony ICX445	CCD	Type 1/3	1280 × 960	33.3 fps
GT1380	Sony ICX285	CCD	Type 2/3	1360 × 1024	30.5 fps
GT1600	Sony ICX274	CCD	Type 1/1.8	1620 × 1220	25.8 fps
GT1660	ON Semi KAI-02050	CCD	Type 2/3	1600 × 1200	62 fps[1]
GT1910	ON Semi KAI-02150	CCD	Type 2/3	1920 × 1080	57.5 fps[1]
GT1920	Sony ICX674	CCD	Type 2/3	1936 × 1456	40.7 fps [1]
GT1930	Sony IMX174	CMOS	Type 1/1.2	1936 × 1216	50.8 fps
GT1930L	Sony IMX174	CMOS	Type 1/1.2	1936 × 1216	50.8 fps
GT2000	CMOSIS/ams CMV2000	CMOS	Type 2/3	2048 × 1088	53.7 fps
GT2050	CMOSIS/ams CMV4000	CMOS	Type 1	2048 × 2048	28.6 fps
GT2300	ON Semi KAI-04050	CCD	Type 1	2336 × 1752	29.3 fps[1]
GT2450	Sony ICX625	CCD	Type 2/3	2448 × 2050	15 fps
GT2460	Sony IMX264	CMOS	Type 2/3	2464 × 2056	23.7 fps
GT2750	Sony ICX694	CCD	Type 1	2750 × 2200	19.8 fps[1]
GT3300	ON Semi KAI-08050	CCD	Type 4/3	3296 × 2472	14.7 fps[1]
GT3400	Sony ICX814	CCD	Type 1	3384 × 2704	13.2 fps[1]
GT4090	ON Semi PYTHON 12K	CMOS	Type 4/3	4096 × 3072	9.58 fps
GT4096	ON Semi PYTHON 16K	CMOS	Type APS-H	4096 × 4096	7.18 fps
GT4400	Sony IMX367	CMOS	Type 4/3	4432 × 4436	6.12 fps
GT4905	ON Semi KAI-16050	CCD	Type APS-H	4896 × 3264	7.5 fps[1]
GT4907	ON Semi KAI-16070	CCD	Type 35mm	4864 × 3232	7.6 fps[1]
GT5120	ON Semi PYTHON 25K	CMOS	Type APS-H	5120 × 5120	4.60 fps
GT5400	Sony IMX387	CMOS	Type 4/3	5472 × 3084	7.14 fps
GT6400	Sony IMX342	CMOS	Type APS-C	6480 × 4860	3.82 fps
GT6600	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 77: Prosilica GT model series overview

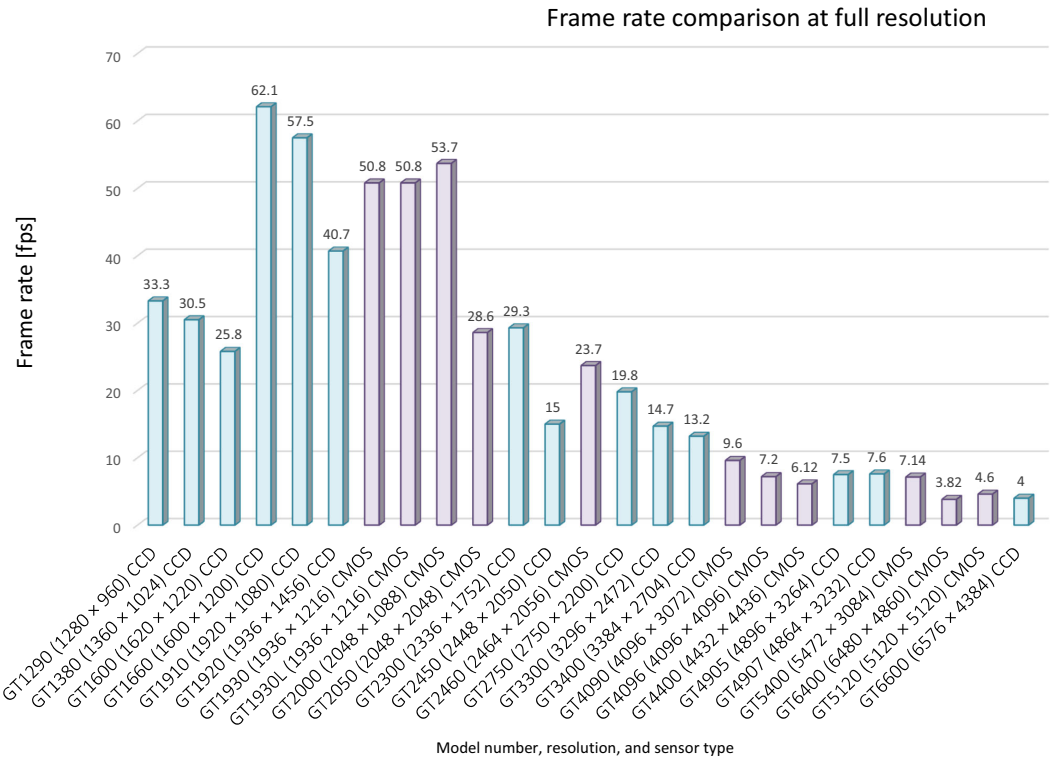


Figure 79: Frame rate comparison

Camera feature comparison

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

Standard and extended format models

Image optimization features	GT1290	GT1380	GT1600	GT1660	GT1910	GT1920	GT1930	GT2000	GT2050	GT2300	GT2450	GT2460	GT2750	GT3300	GT3400
Auto gain	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Auto exposure	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Auto white balance (color models only)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Binning	✓	✓	✓	✓	✓	✓	✓	×	×	✓	✓	✓	✓	✓	✓
Black level (offset)	×	×	×	×	×	×	✓	✓	✓	×	×	✓	×	×	×
Hue, saturation, color correction (color models only)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Column Defect Masking[1,2]	×	×	×	✓	✓	✓	×	×	×	✓	×	×	✓	✓	✓
Defect Pixel Correction	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Pixel Defect Masking[3]	×	×	×	×	×	×	×	✓	✓	×	×	×	×	×	×
Decimation X/Y	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Fixed Pattern Noise Correction	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Gamma correction	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Three look-up tables[4]	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Piecewise Linear HDR mode	×	×	×	×	×	×	×	✓	✓	×	×	×	×	×	×
Reverse X	×	×	×	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Reverse Y	×	×	×	✓	✓	✓	✓	✓	✓	✓	×	✓	✓	✓	✓
Region of Interest	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

[1] CCD models only: Column defect masking supported for quad-tap cameras running in single-tap mode.

[2] For more information, see the Load Defect Tables Tool application note.

[3] For more information, see the Defect Mask Loader Tool application note.

[4] Prosilica GT4400, GT5400, and GT6400 series have one look-up table.

Table 78: Image optimization feature comparison by model

Camera control features	GT1290	GT1380	GT1600	GT1660	GT1910	GT1920	GT1930	GT2000	GT2050	GT2300	GT2450	GT2460	GT2750	GT3300	GT3400
P-Iris and DC-Iris lens control	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EF lens control	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
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)	✓	✓	✓	✓	✓	✓	✓	✓[1]	✓[1]	✓	✓	✓	✓	✓	✓
Trigger over Ethernet (ToE)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

[1] Temperature readout only available on the main board and not on the sensor board.

Table 79: Camera control feature comparison by model

Large Format models

Image optimization features	GT1930L	GT4090	GT4096	GT4400	GT4905	GT4907	GT5120	GT5400	GT6400	GT6600
Auto gain	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Auto exposure	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Auto white balance (color models only)	✓	×	×	✓	✓	✓	×	✓	✓	✓
Binning	✓	×	×	✓	✓	✓	×	✓	✓	✓
Black level (offset)	✓	✓	✓	✓	×	×	✓	✓	✓	×
Hue, saturation, color correction (color models only)	✓	×	×	✓	✓	✓	×	✓	✓	✓
Column Defect Masking[1,2]	×	×	×	×	✓	✓	×	×	×	✓
Defect Pixel Correction[3]	×	✓	✓	×	×	×	✓	×	×	×
Pixel Defect Masking	×	×	×	✓	×	×	×	✓	✓	×

Table 80: Image optimization feature comparison by model (sheet 1 of 2)

Image optimization features	GT1930L	GT4090	GT4096	GT4400	GT4905	GT4907	GT5120	GT5400	GT6400	GT6600
Decimation X/Y	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Fixed Pattern Noise Correction	×	✓	✓	×	×	×	✓	×	×	×
Gamma correction	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Three look-up tables	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Piecewise Linear HDR mode	×	×	×	×	×	×	×	×	×	×
Reverse X	✓	×	×	✓	✓	✓	×	✓	✓	✓
Reverse Y	✓	×	×	✓	✓	✓	×	✓	✓	✓
Region of Interest	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

[1] CCD models only: Column defect masking supported for quad-tap cameras running in single-tap mode.

[2] For more information, see the Load Defect Tables Tool application note.

[3] For more information, see the Defective Pixel List Management Tool for Prosilica GT models with PYTHON sensor application note.

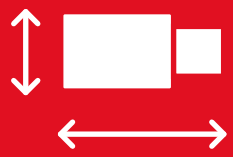
Table 80: Image optimization feature comparison by model (sheet 2 of 2)

Camera control features	GT1930L	GT4090	GT4096	GT4400	GT4905	GT4907	GT5120	GT5400	GT6400	GT6600
P-Iris and DC-Iris lens control	×	×	×	×	×	×	×	×	×	×
EF lens control[1]	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
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)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Trigger over Ethernet (ToE)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

[1] EF lens control is only supported for models with EF lens mount (order option-18).

Table 81: Camera control feature comparison by model

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

Standard format housing

C-Mount (default)

Model series: Prosilica GT1290, GT1380, GT1600, GT2000, GT2050, GT2450, GT2460

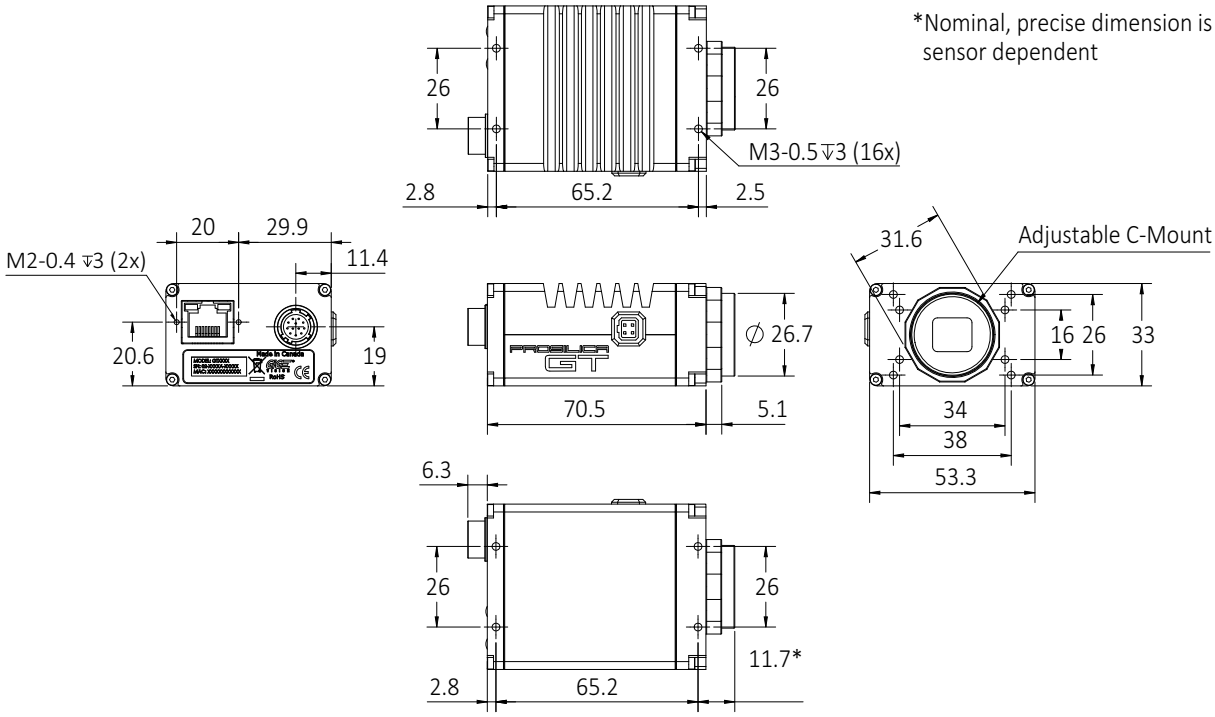


Figure 80: C-Mount standard format housing dimensions

Model series: Prosilica GT1930

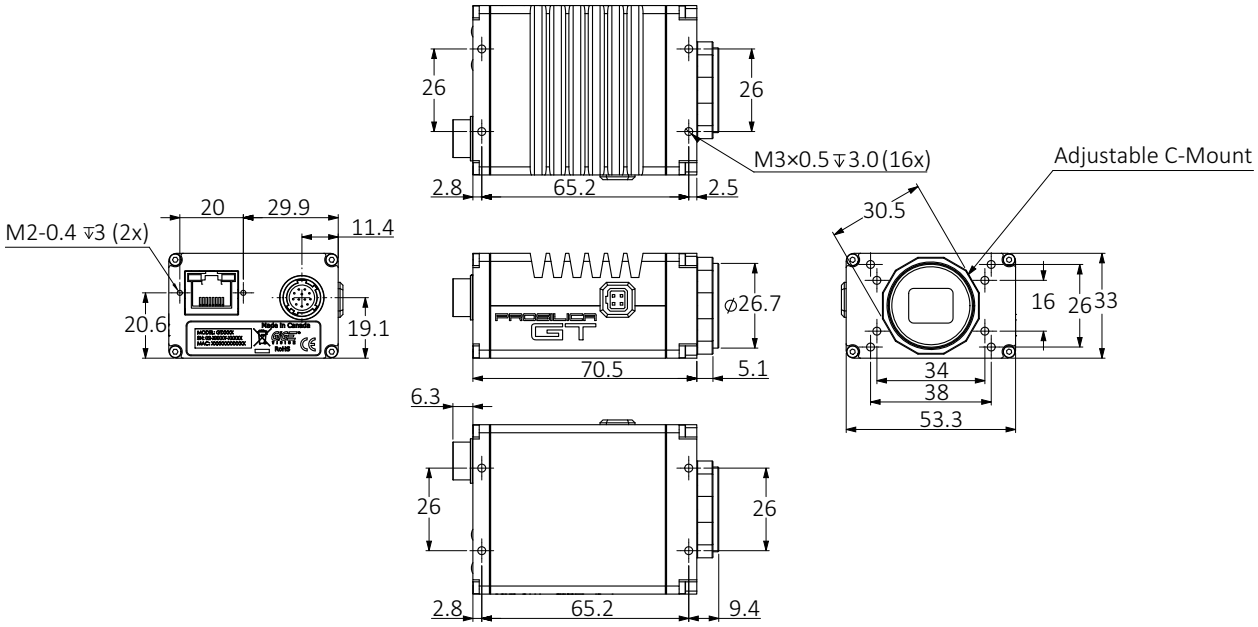


Figure 81: Prosilica GT1930 C-Mount standard format housing dimensions

CS-Mount

Model series: Prosilica GT1290, GT1380, GT1600, GT2000, GT2050, GT2450, GT2460

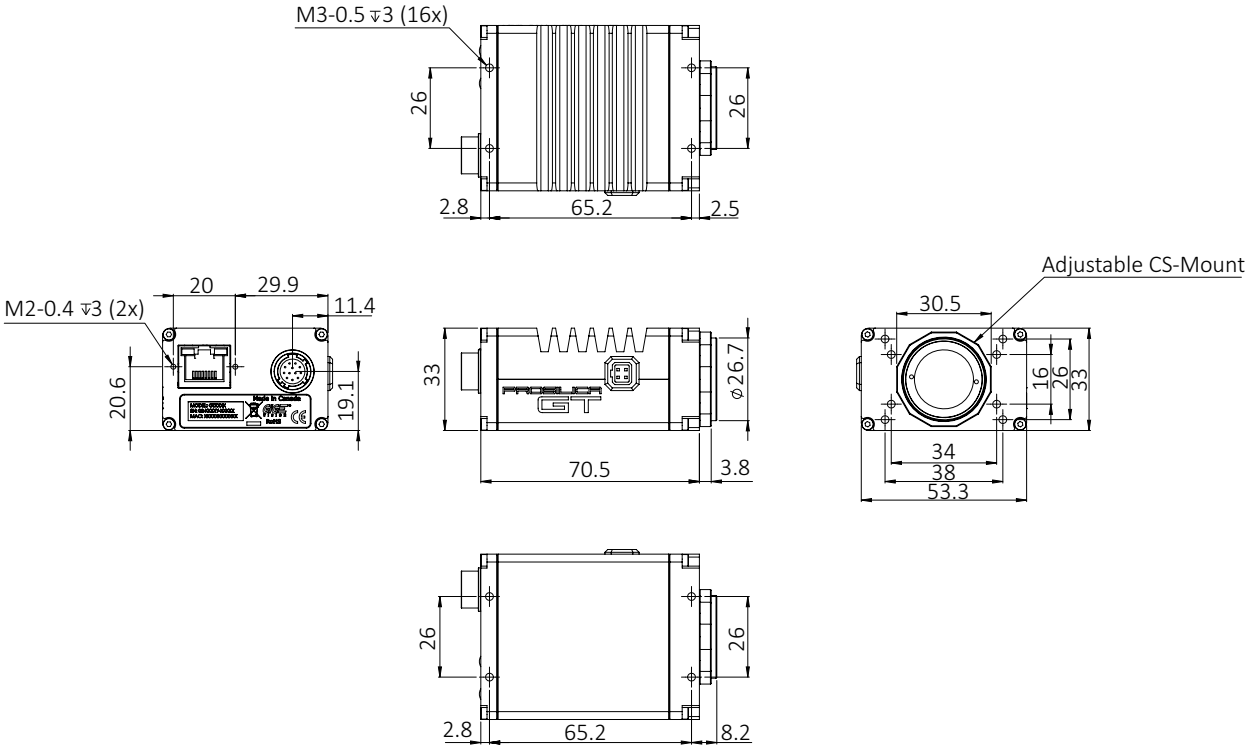


Figure 82: CS-Mount standard format housing dimensions

Contact the Allied Vision Sales team to purchase the Prosilica GT standard housing camera with CS-Mount option (order code Prosilica GT...-01).

Model series: Prosilica GT1930

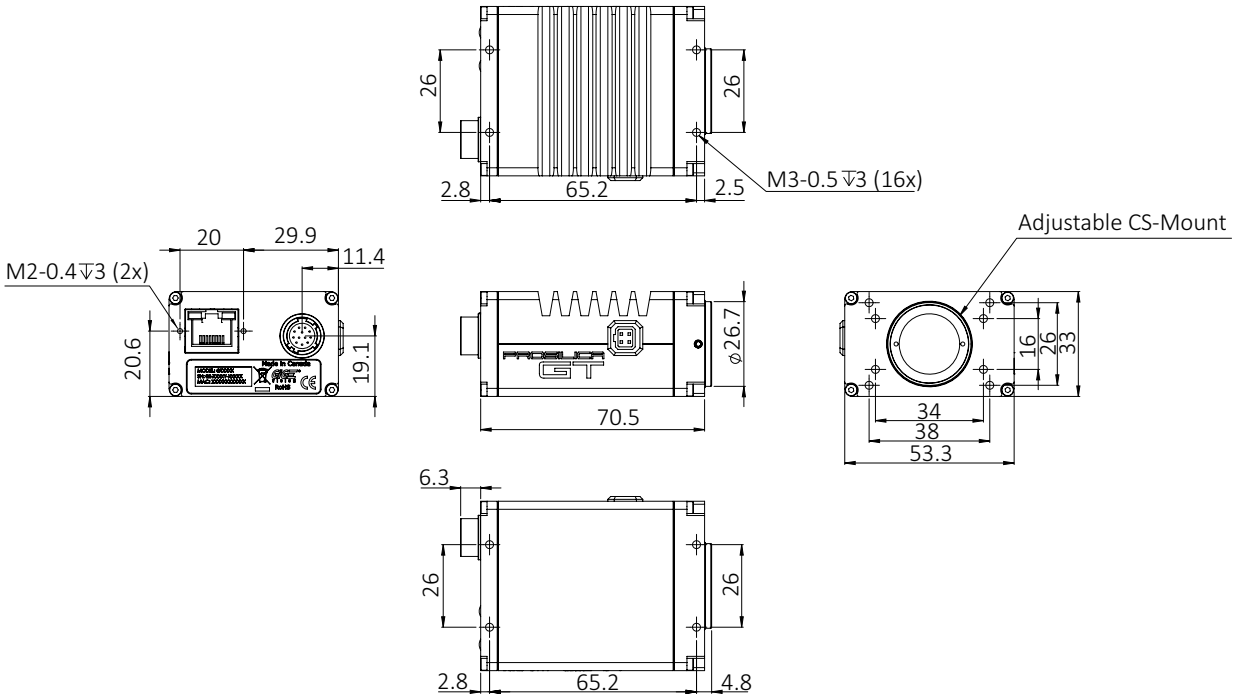


Figure 83: Prosilica GT1930 CS-Mount standard format housing dimensions

Contact the Allied Vision Sales team to purchase the Prosilica GT1930 standard housing camera with CS-Mount option (order code Prosilica GT...-01).

Extended format housing

C-Mount

Model series: Prosilica GT1660, GT1910, GT1920, GT2300, GT2750, GT3400 (default)
Model series: Prosilica GT3300 (optional)

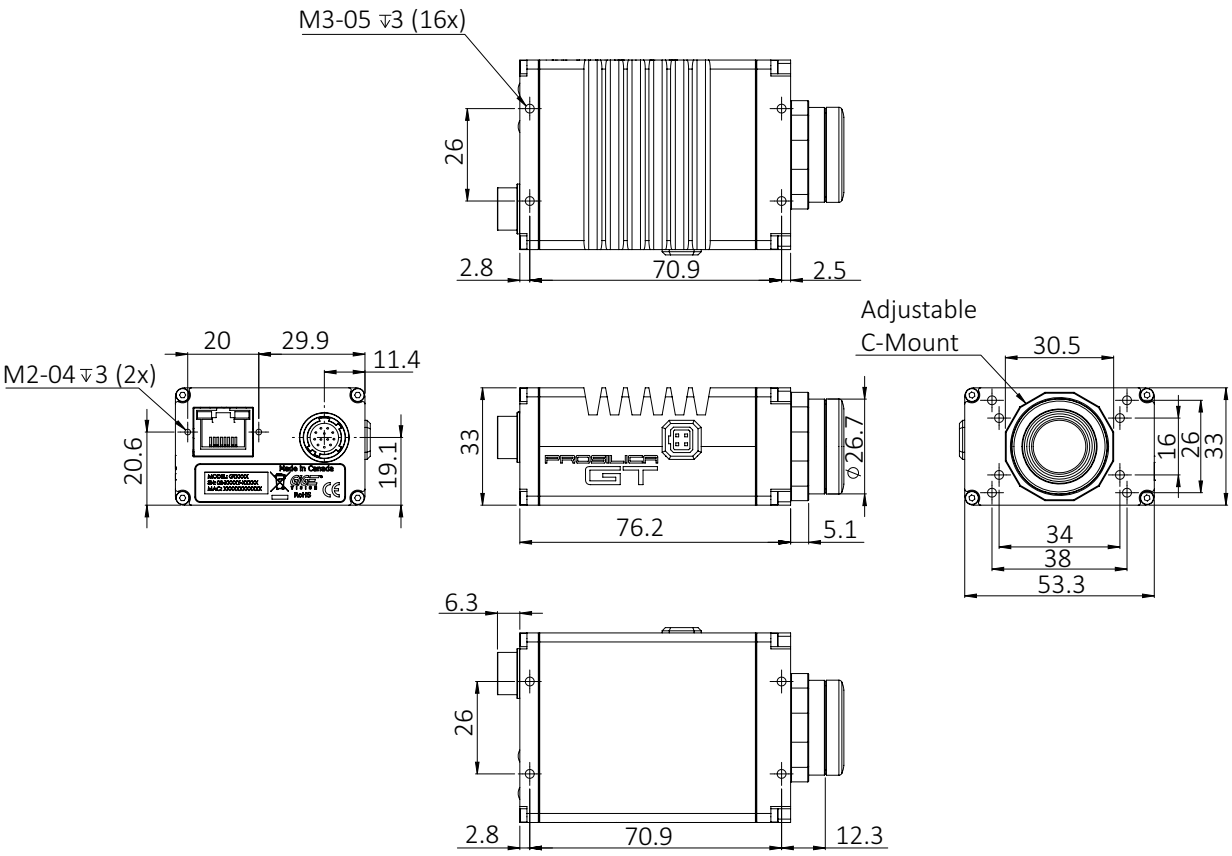


Figure 84: C-Mount extended format housing dimensions

Contact the Allied Vision Sales team to purchase the Prosilica GT3300 camera with C-Mount option (order code Prosilica GT...-07).

CS-Mount

Model series: Prosilica GT1660, GT1910, GT1920, GT2300, GT2750, GT3300, GT3400

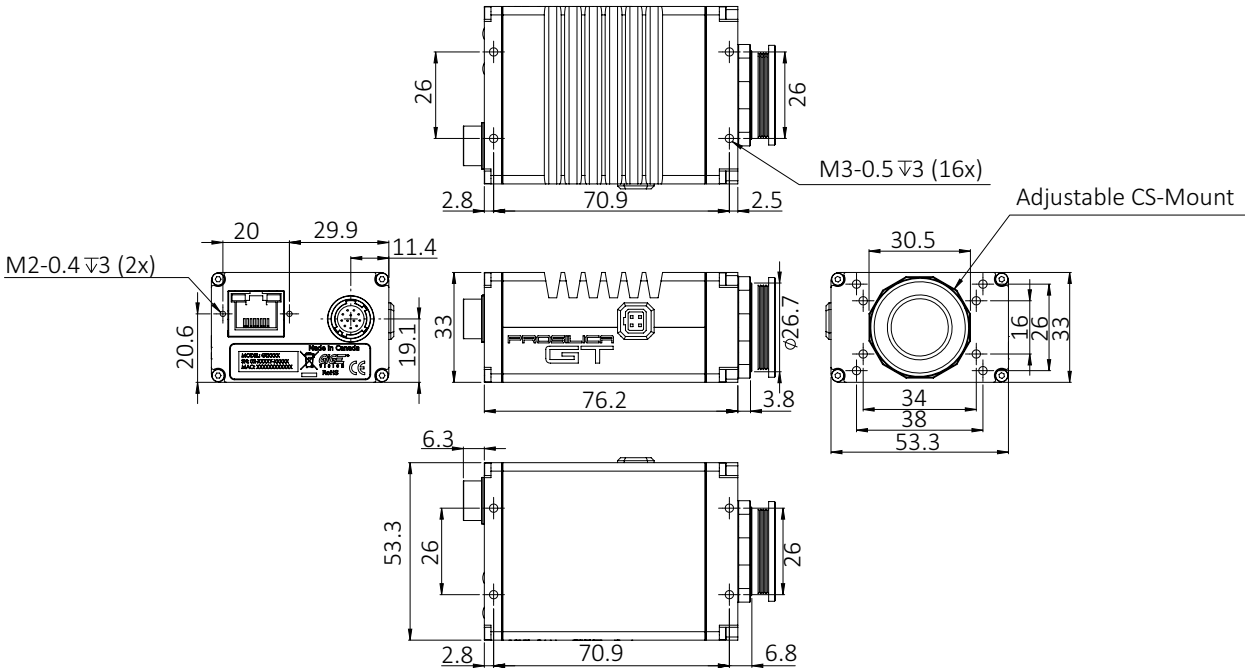


Figure 85: CS-Mount extended format housing dimensions

Contact the Allied Vision Sales team to purchase the Prosilica GT extended housing camera with CS-Mount option (order code Prosilica GT...-07).

Birger EF-Mount

Model series: Prosilica GT1660, GT1910, GT1920, GT2300, GT2750, GT3300, GT3400

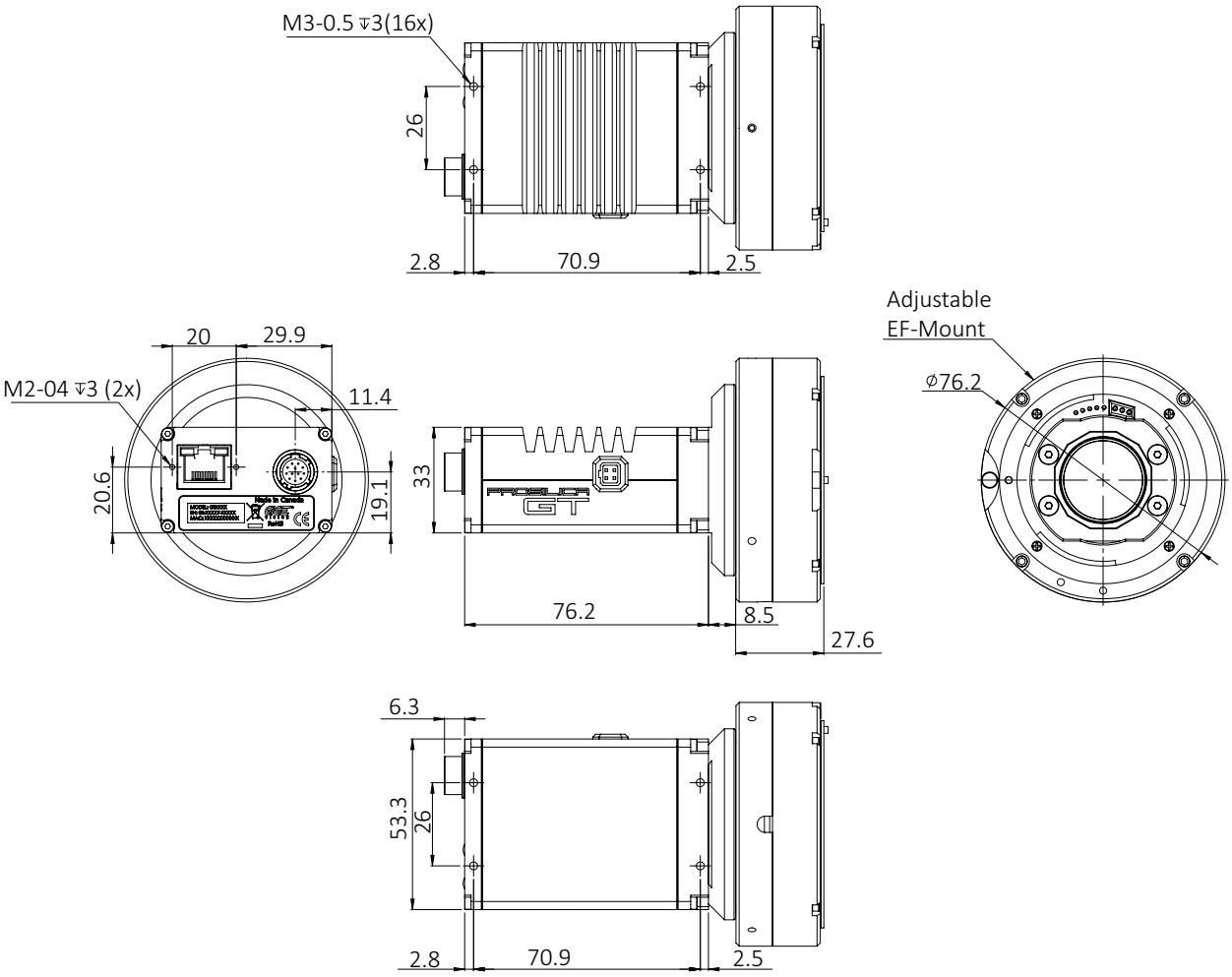


Figure 86: Birger EF-Mount extended format housing dimensions

Contact the Allied Vision Sales team to purchase the Prosilica GT extended format housing camera with Birger EF-Mount option (order code Prosilica GT...-09).

F-Mount

Model series: Prosilica GT3300 (default)
Model series: Prosilica GT1660, GT1910, GT1920, GT2300, GT2750, GT3400 (optional)

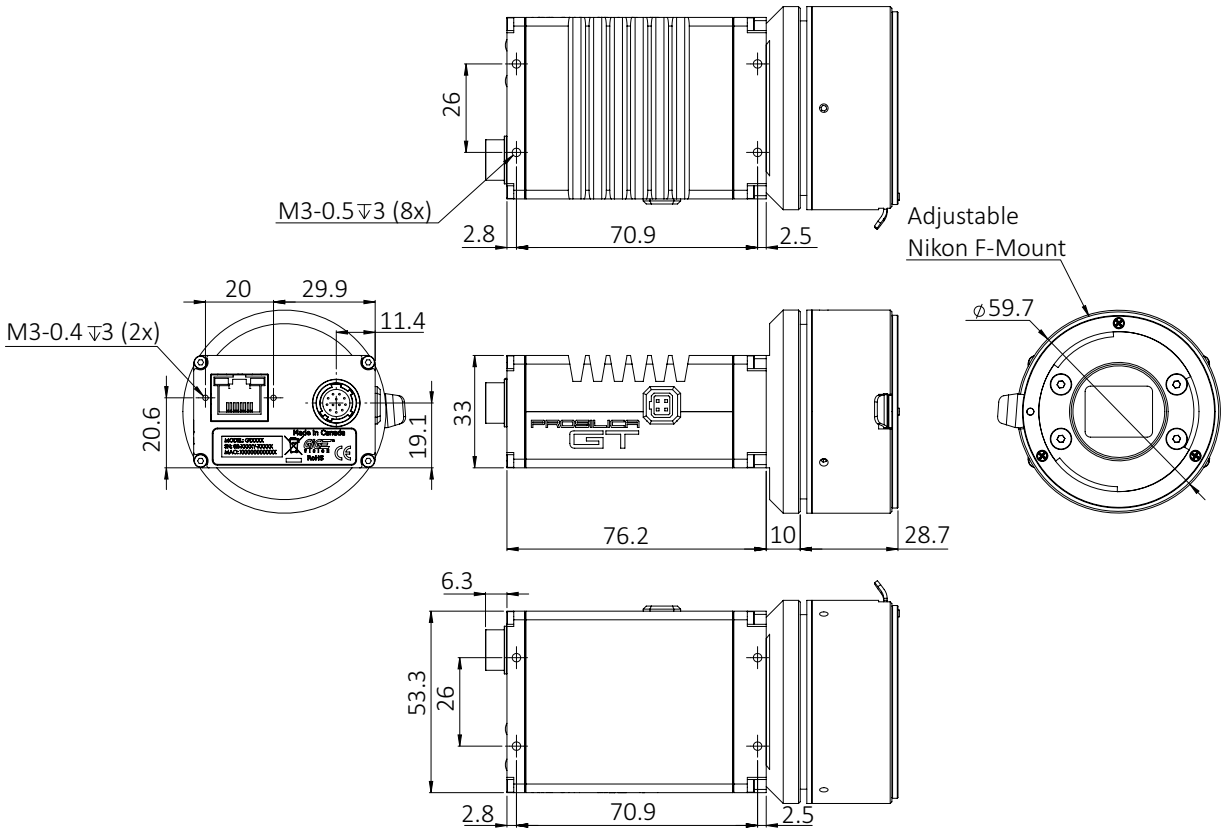


Figure 87: F-Mount extended format housing dimensions

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

M42-Mount

Model series: Prosilica GT1660, GT1910, GT1920, GT2300, GT2750, GT3300, GT3400

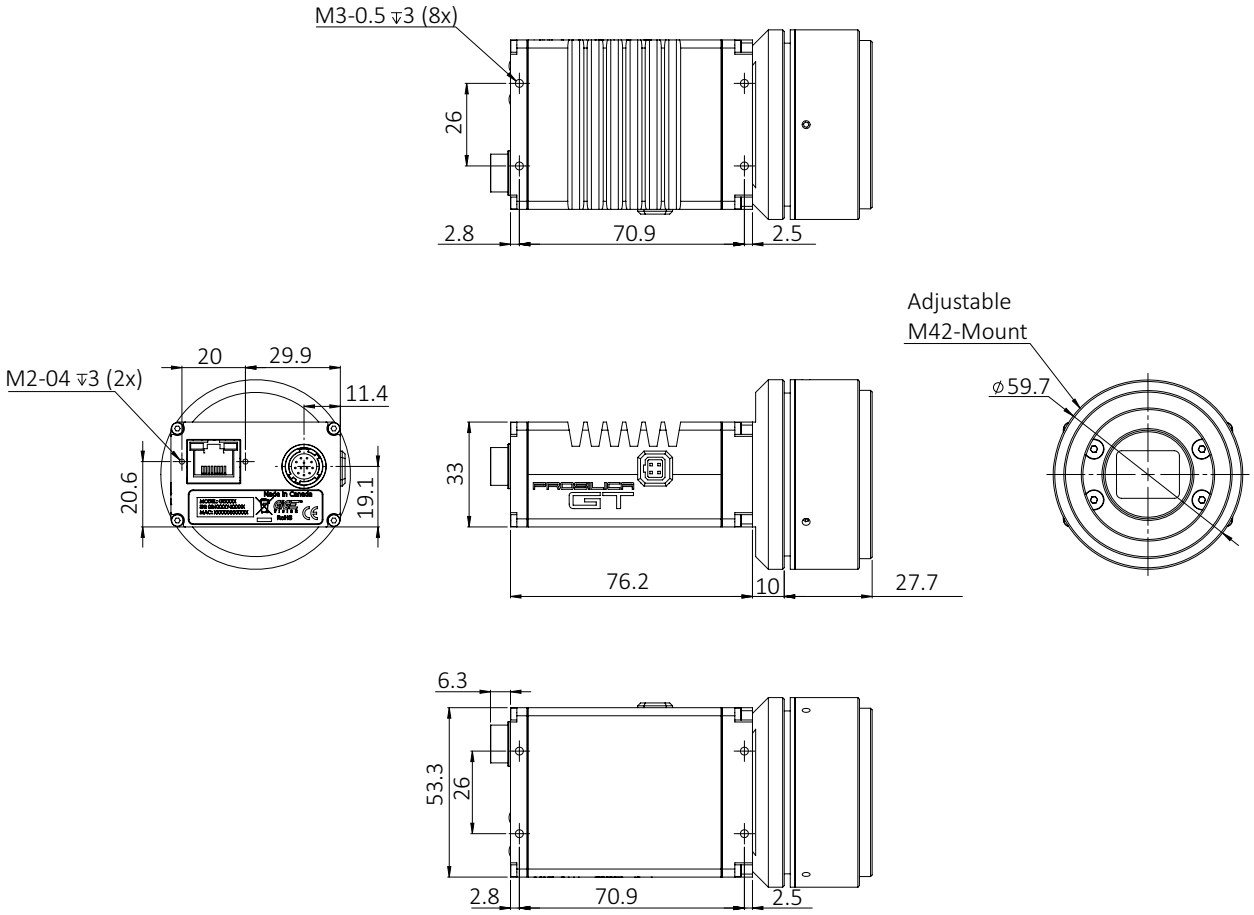


Figure 88: M42-Mount extended format housing dimensions

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

Large Format housing

C-Mount

Model series: Prosilica GT4400 and GT5400

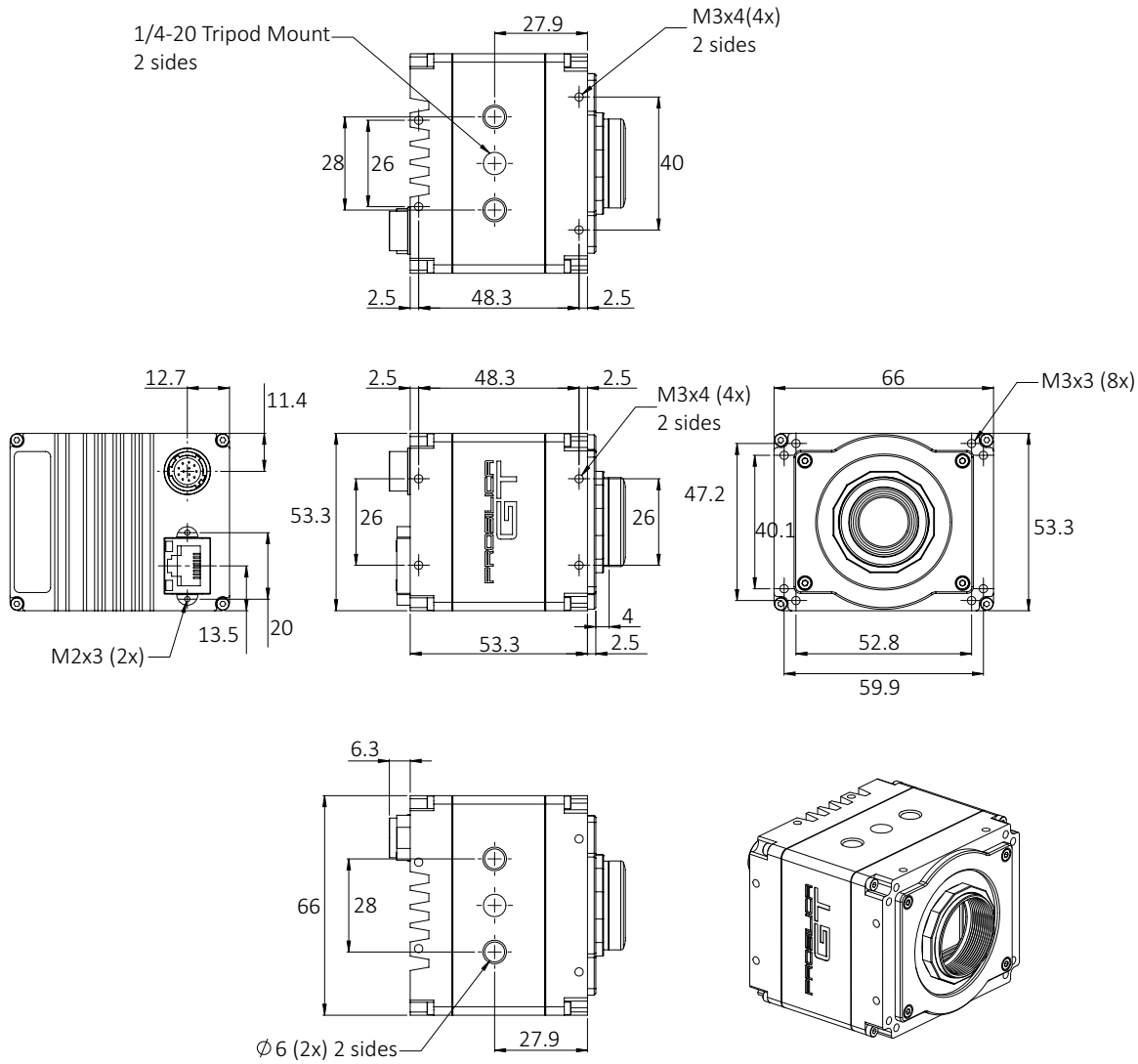


Figure 89: C-Mount Large Format housing dimensions

Contact the Allied Vision Sales team to purchase the Prosilica GT series camera with C-Mount option (order code Prosilica GT...-07).

EF-Mount PA

Model series: Prosilica GT1930L, GT4090, GT4096, GT4400, GT4905, GT4907, GT5120, GT5400, GT6400, GT6600

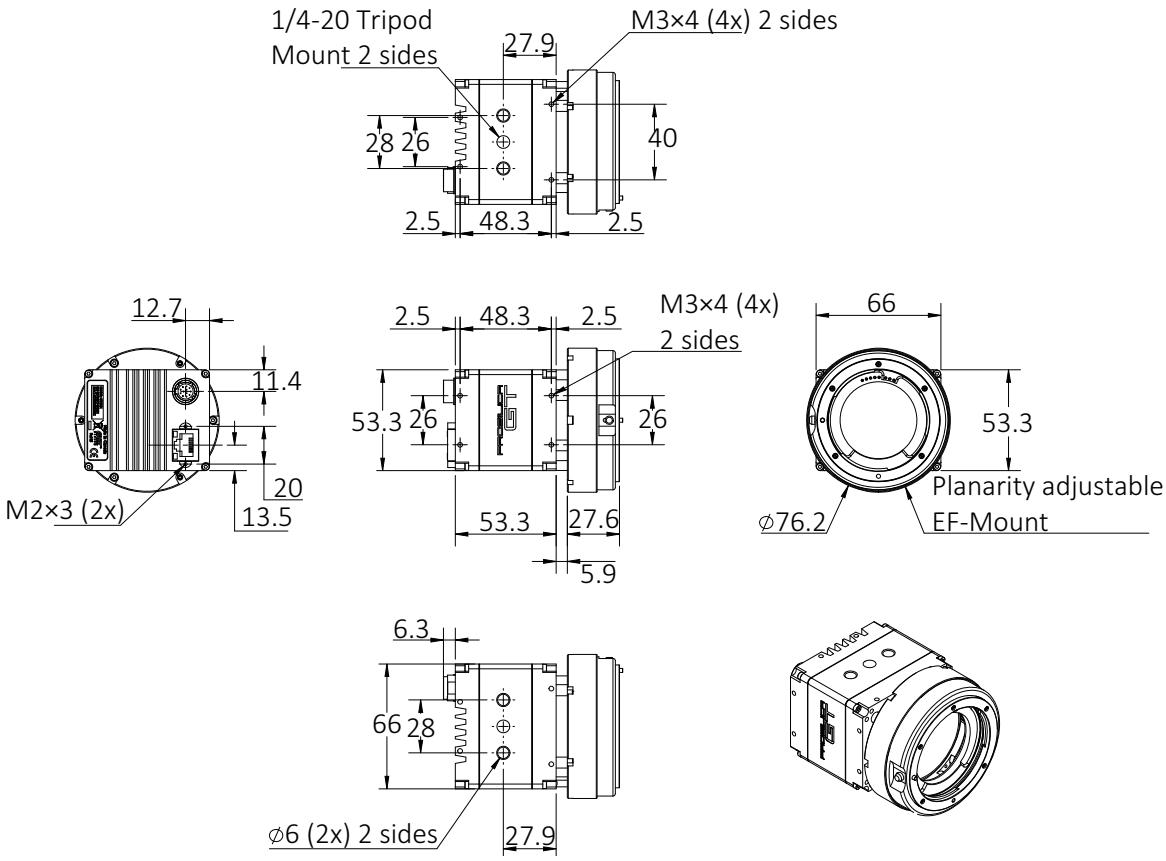


Figure 90: EF-Mount PA Large Format housing dimensions

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)

Model series: Prosilica GT1930L, GT4090, GT4096, GT4400, GT4905, GT4907, GT5120, GT5400, GT6400, GT6600

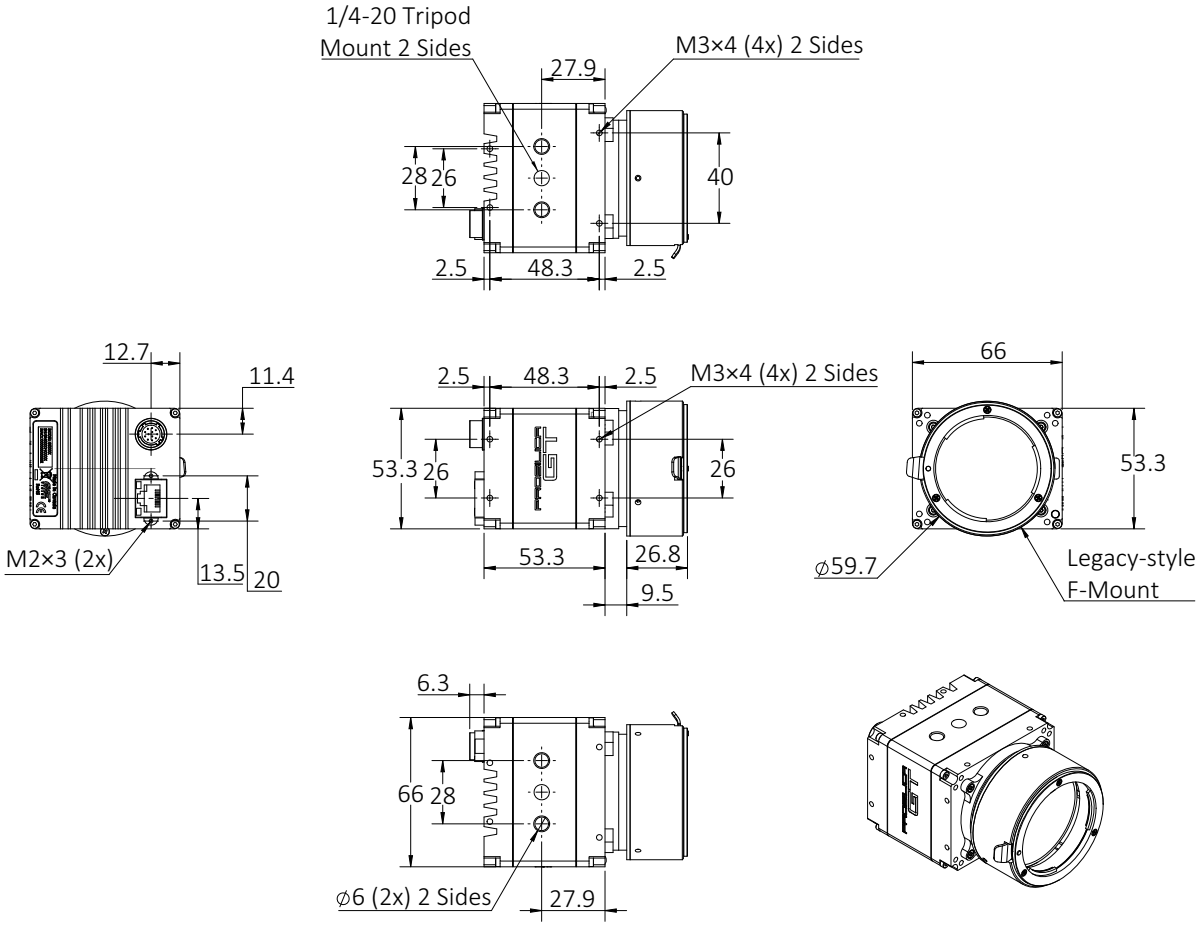


Figure 91: F-Mount Large Format housing dimensions

F-Mount PA

Model series: Prosilica GT1930L, GT4090, GT4096, GT4400, GT4905, GT4907, GT5120, GT5400, GT6400, GT6600

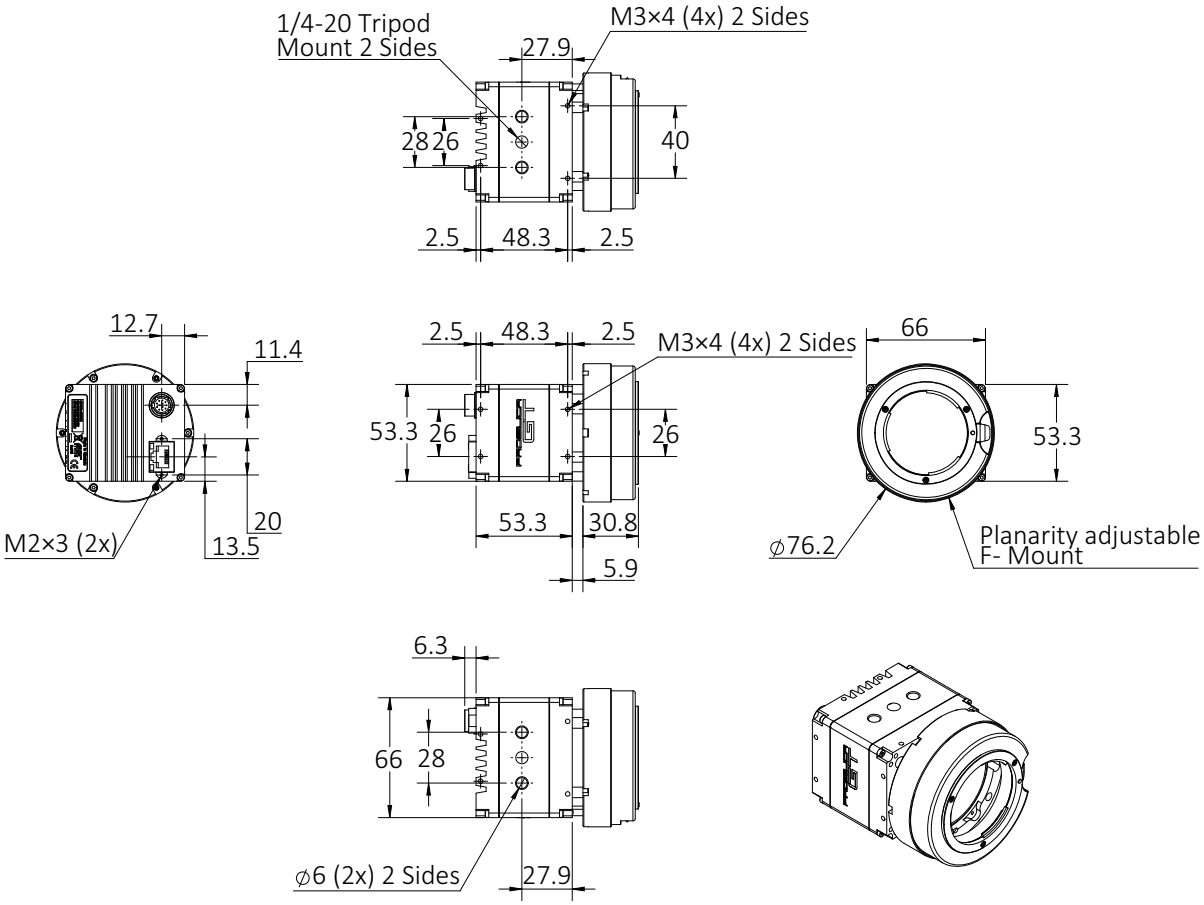


Figure 92: F-Mount PA Large Format housing dimensions

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

Model series: Prosilica GT1930L, GT4090, GT4096, GT4400, GT4905, GT4907, GT5120, GT5400, GT6400, GT6600

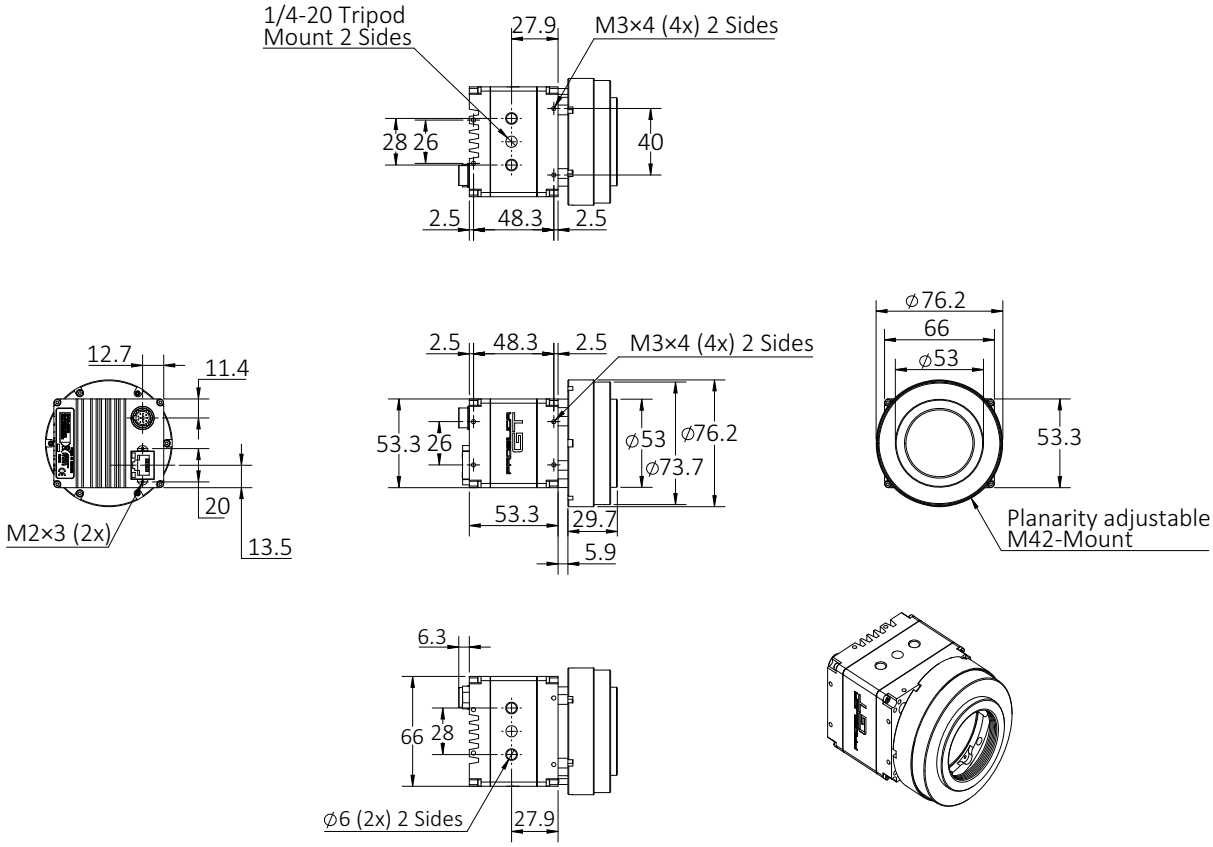


Figure 93: M42-Mount PA Large Format housing dimensions

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

Model series: Prosilica GT1930L, GT4090, GT4096, GT4400, GT4905, GT4907, GT5120, GT5400, GT6400, GT6600

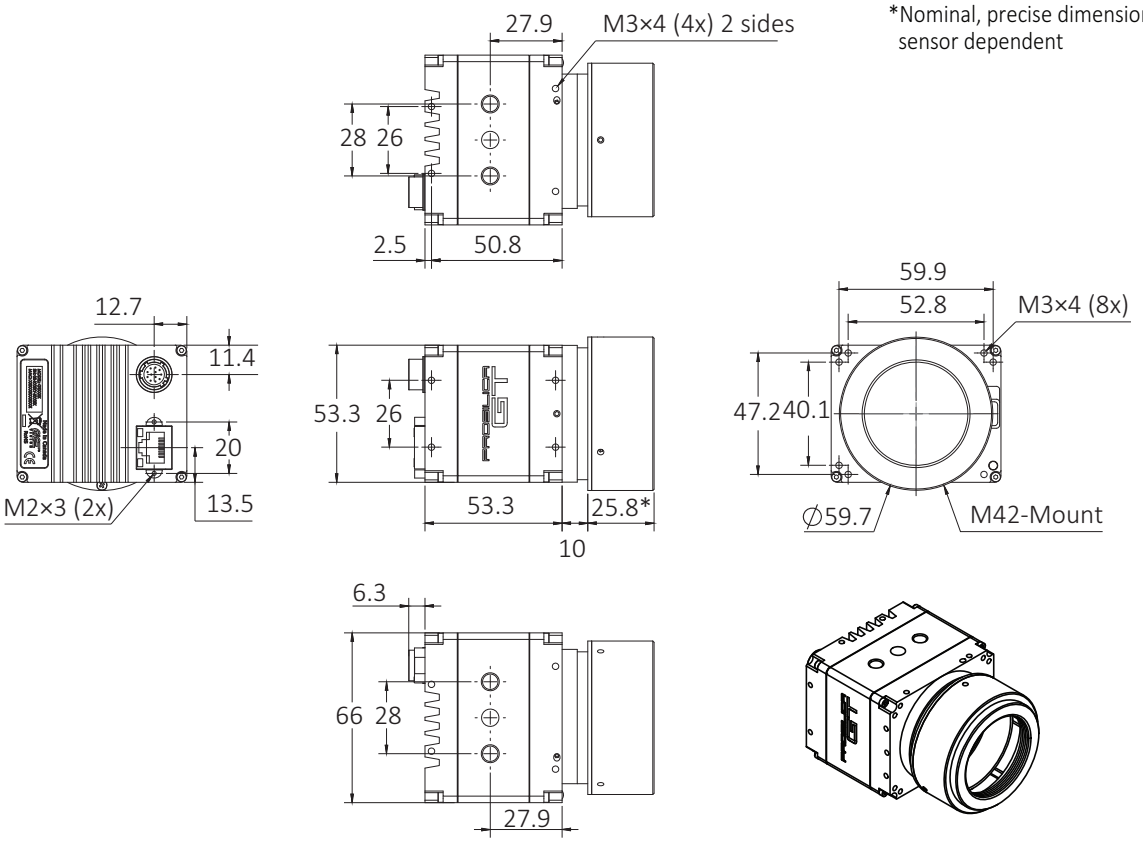


Figure 94: M42-Mount Large Format housing dimensions

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

Model series: Prosilica GT1930L, GT4090, GT4096, GT4400, GT4905, GT4907, GT5120, GT5400, GT6400, GT6600

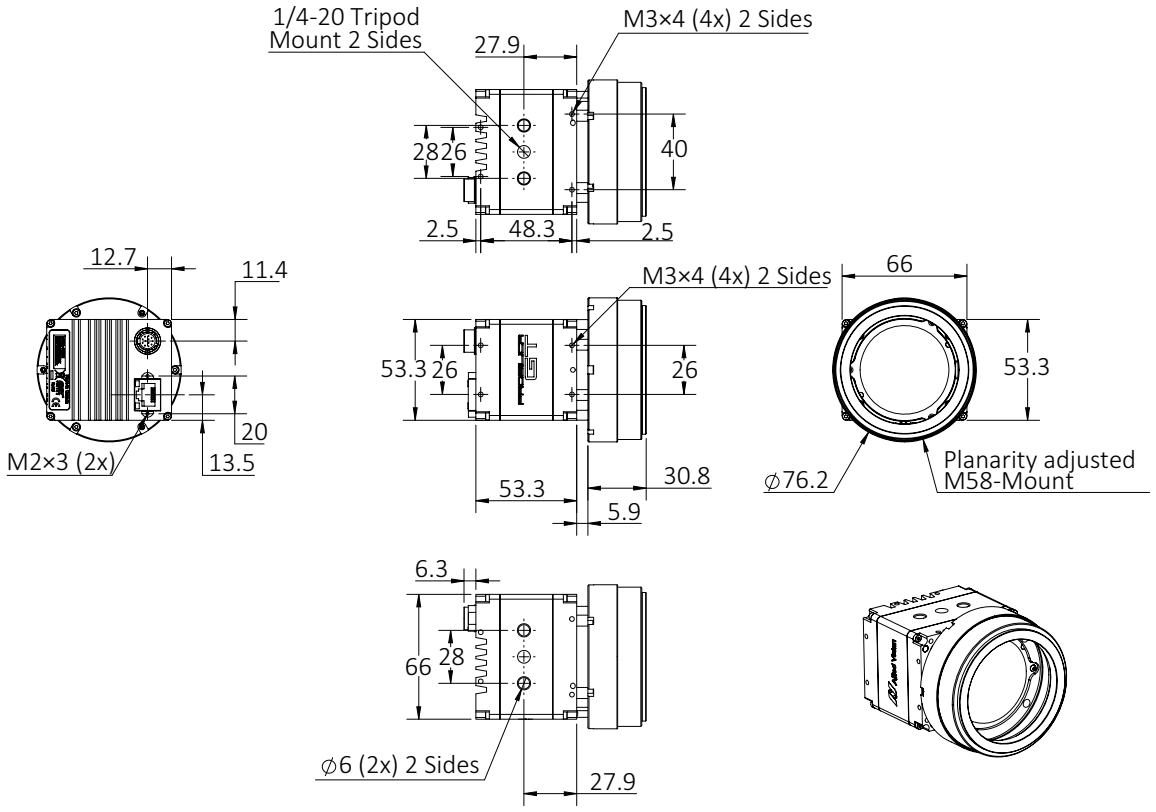


Figure 95: M58-Mount PA Large Format housing dimensions

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

Model series: Prosilica GT1930L, GT4090, GT4096, GT4400, GT4905, GT4907, GT5120, GT5400, GT6400, GT6600

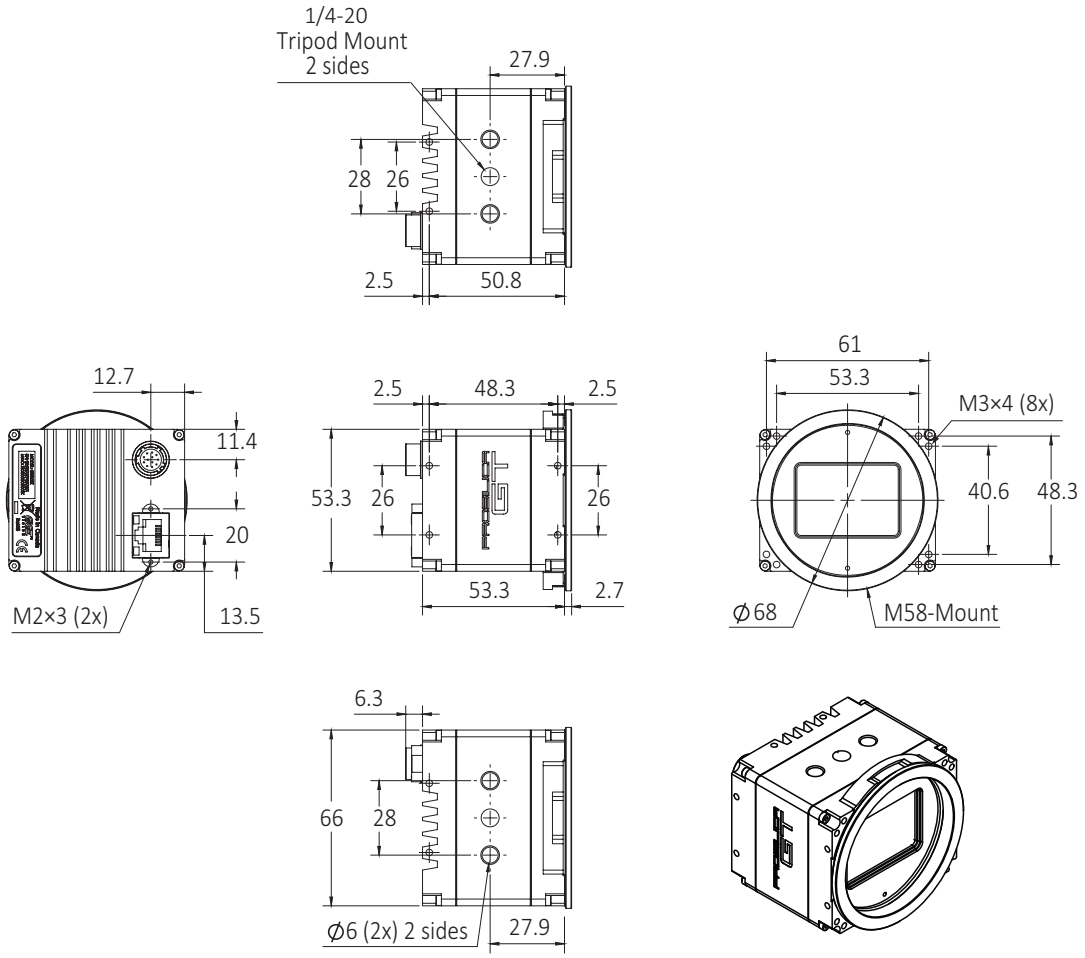


Figure 96: M58-Mount Large Format housing dimensions

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

TFL-Mount (35mm × 0.75)

Model series: Prosilica GT6400

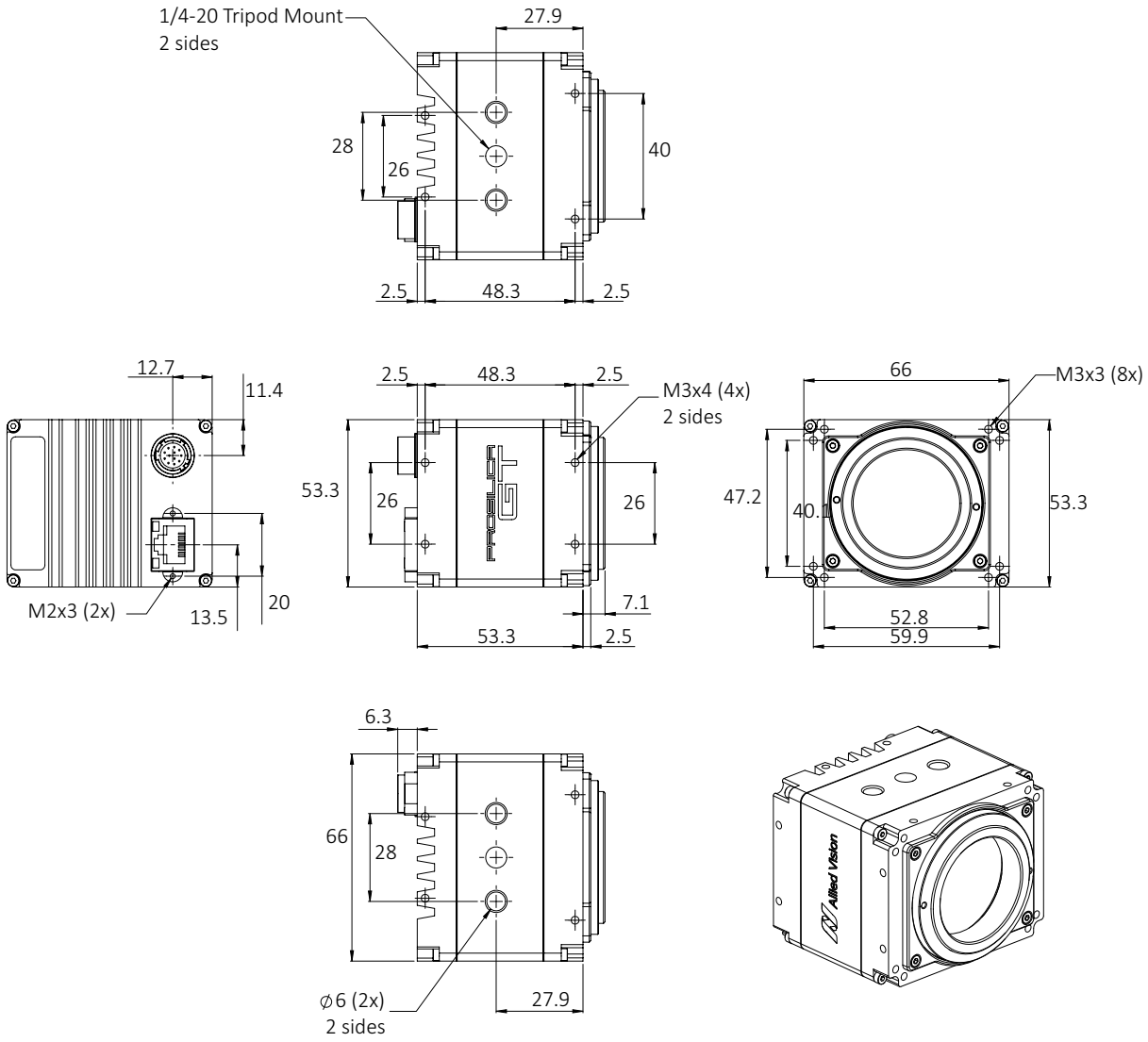


Figure 97: TFL-Mount Large Format housing dimensions

Contact the Allied Vision Sales team to purchase the Prosilica GT series camera with TFL Mount option (order code Prosilica GT...-40).

Tripod adapter

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

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

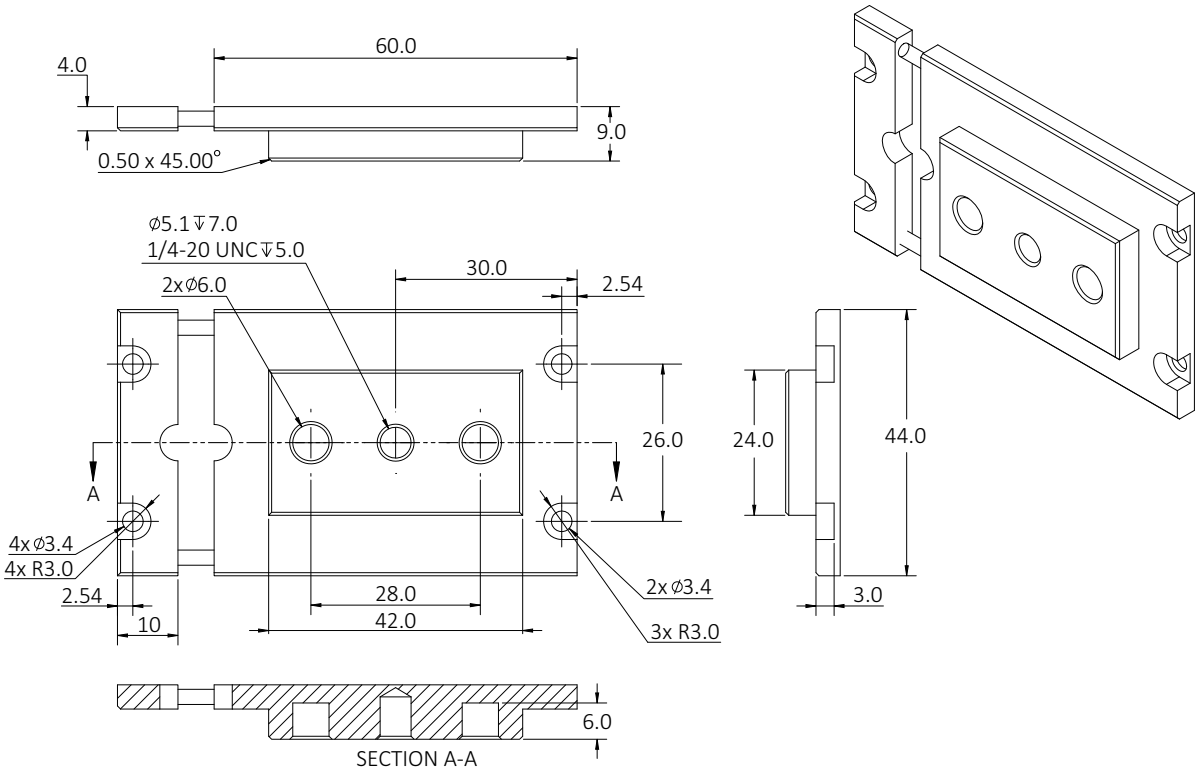


Figure 98: Tripod adapter for Prosilica GT standard and extended cameras

1/40-20 tripod mount for Large Format cameras

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

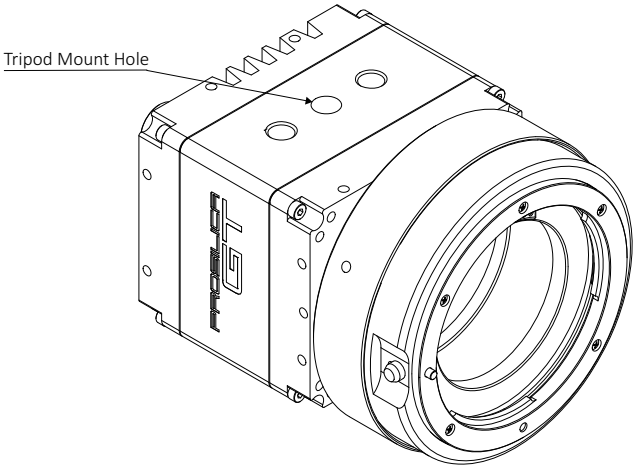


Figure 99: Integrated tripod mount threads for Prosilica GT Large Format cameras

Lens protrusion

Standard and extended format cameras

C-Mount

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. The following table presents lens protrusion values for Prosilica GT cameras with C-Mount.

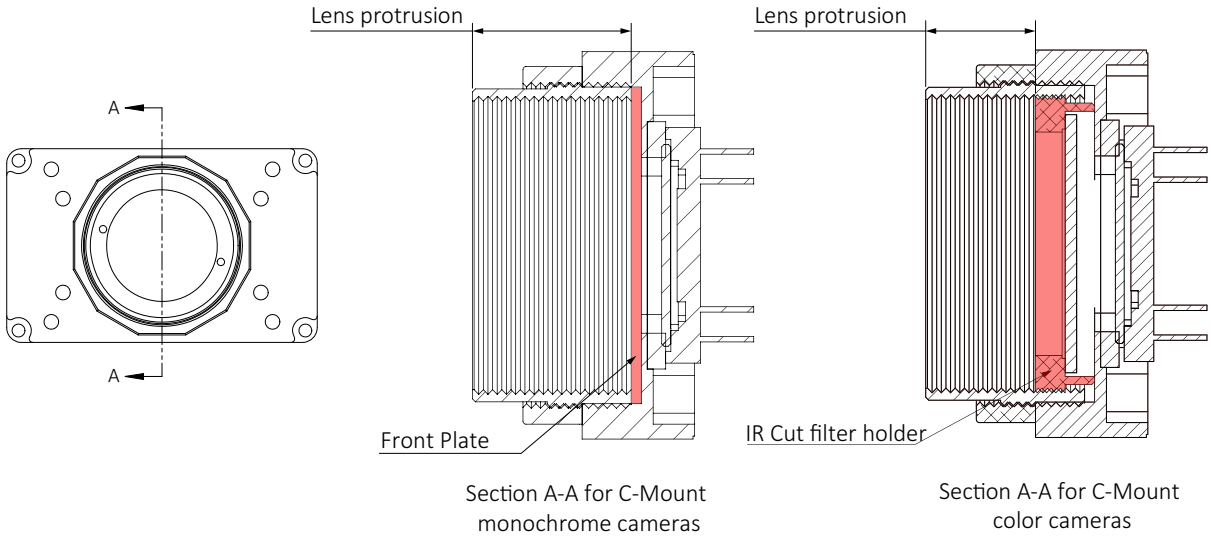


Figure 100: Cross section of typical Prosilica GT camera front assembly with C-Mount

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 table.

Model	Lens protrusion [mm]
Prosilica GT1290	13.64
Prosilica GT1290C	9.32
Prosilica GT1380	13.64

Model	Lens protrusion [mm]
Prosilica GT2000C	10.31
Prosilica GT2050	13.64
Prosilica GT2050C	10.31

Table 82: Lens protrusion for Prosilica GT models with C-Mount (sheet 1 of 2)

Model	Lens protrusion [mm]
Prosilica GT1380C	9.64
Prosilica GT1600	13.64
Prosilica GT1600C	9.32
Prosilica GT1660	13.64
Prosilica GT1910	13.64
Prosilica GT1910C	9.43
Prosilica GT1920	13.64
Prosilica GT1920C	9.27
Prosilica GT1930	14.52
Prosilica GT1930C	9.44
Prosilica GT2000	13.64

Model	Lens protrusion [mm]
Prosilica GT2300	13.64
Prosilica GT2300C	9.43
Prosilica GT2450	13.64
Prosilica GT2450C	9.27
Prosilica GT2460	14.404
Prosilica GT2460C	9.324
Prosilica GT2750	13.64
Prosilica GT2750C	9.27
Prosilica GT3400	13.64
Prosilica GT3400C	9.27

Table 82: Lens protrusion for Prosilica GT models with C-Mount (sheet 2 of 2)

Large Format cameras

Lens protrusion is the distance from outer edge of mount ring to contact point of first surface internal to 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.

C-Mount

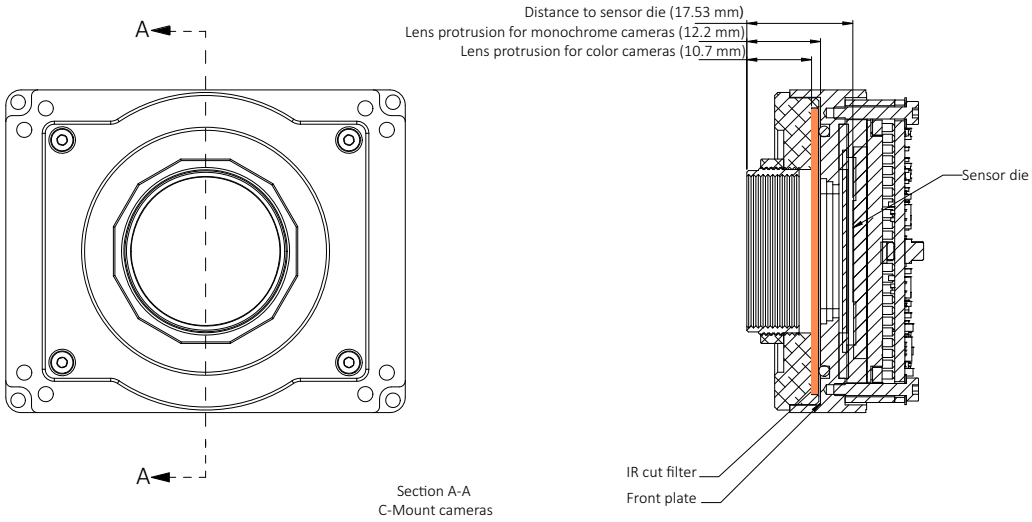


Figure 101: Cross section of Prosilica GT Large Format camera front assembly with C-Mount

TFL-Mount

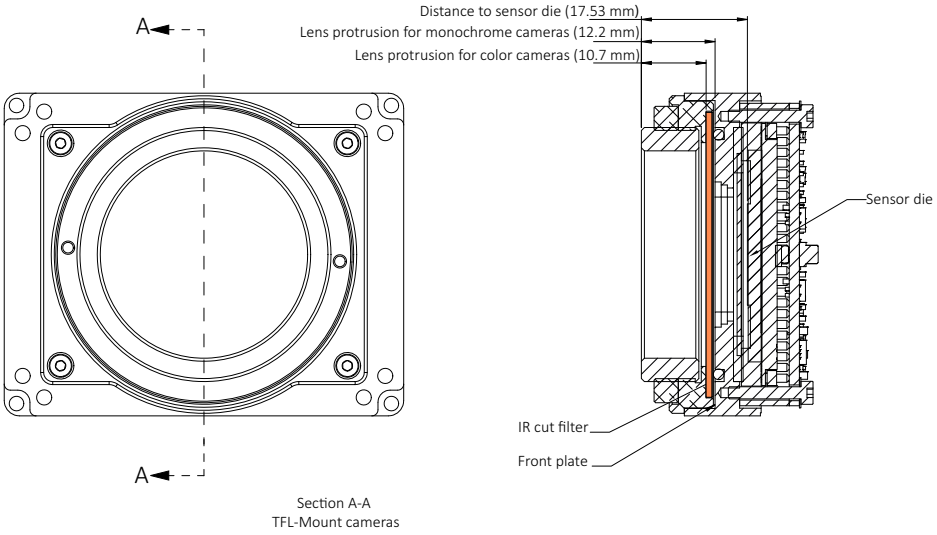


Figure 102: Cross section of Prosilica GT Large Format camera front assembly with TFL-Mount

M58-Mount

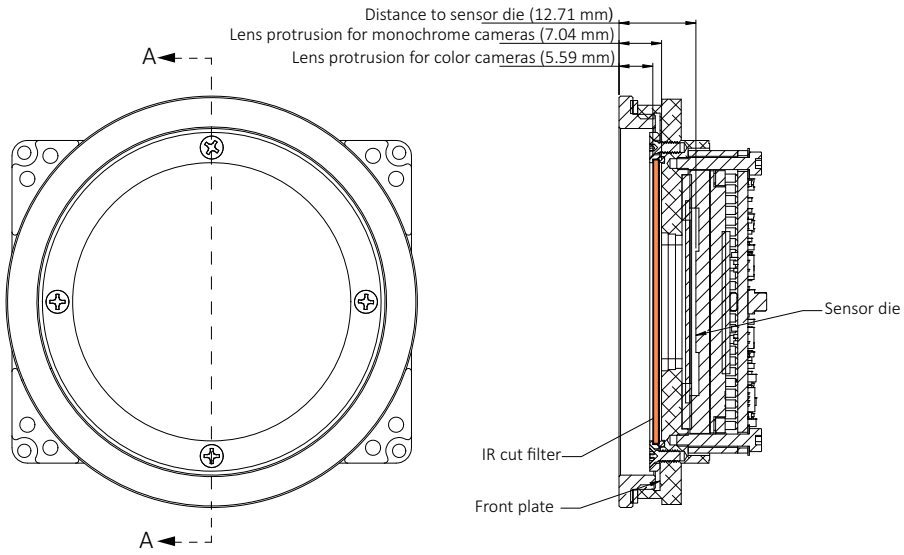


Figure 103: Cross section of Prosilica GT Large Format camera front assembly with M58-Mount

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 table.

Flange focal distance

Standard and extended cameras

C-Mount

Flange focal distance is the optical distance from the mounting flange to image sensor die. Prosilica GT standard and extended format cameras with C-Mount are calibrated to a standard 17.526 mm flange focal distance, with a ±10 µm tolerance.

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 ±10 µm tolerance. For more information, see the Modular Concept.

Adjustment of C-Mount

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

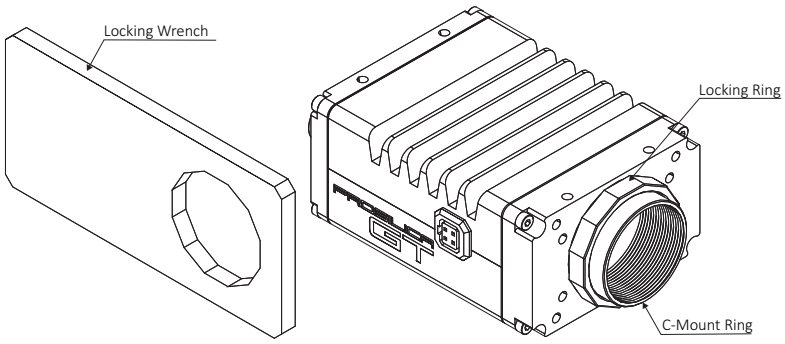


Figure 104: Prosilica GT camera and locking wrench

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.

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 meters). 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.

Large Format cameras

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 does not require adjusting. If for some reason the lens mount requires adjustment, use the following method.

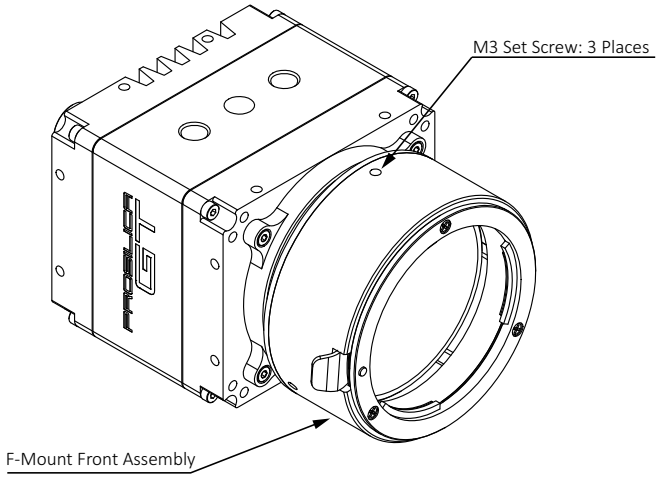
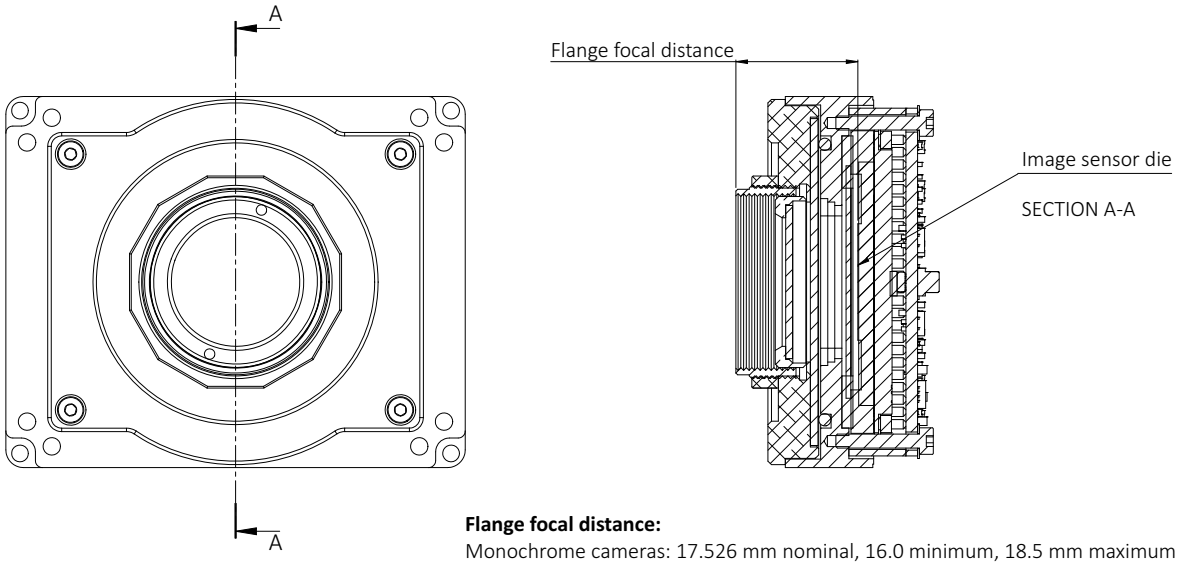


Figure 105: Prosilica GT Large Format with F-Mount isometric view

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

C-Mount



Flange focal distance:
Monochrome cameras: 17.526 mm nominal, 16.0 minimum, 18.5 mm maximum
Color cameras: 17.892 mm nominal, 16.0 mm minimum, 18.5 mm maximum

Figure 106: C-Mount (Large Format models) flange focal distance

M42-Mount PA

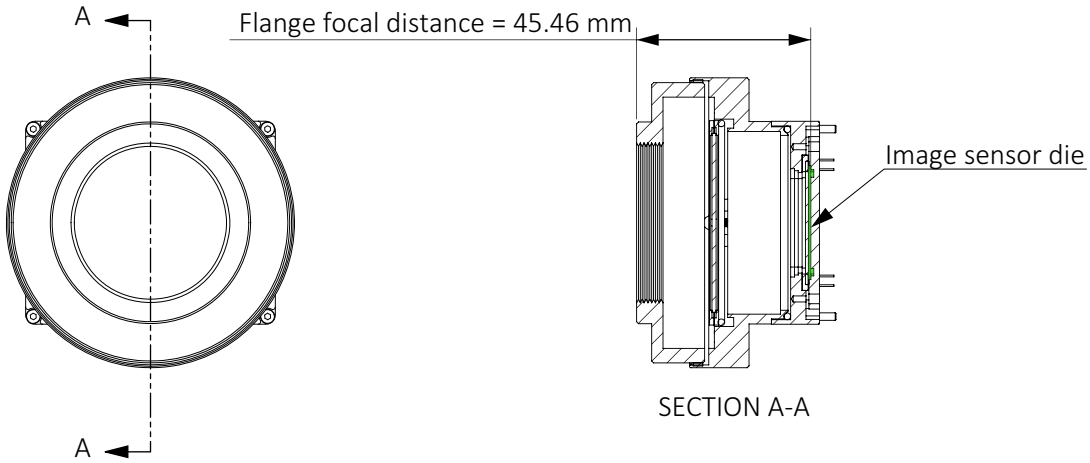


Figure 107: M42-Mount PA flange focal distance

M42-Mount

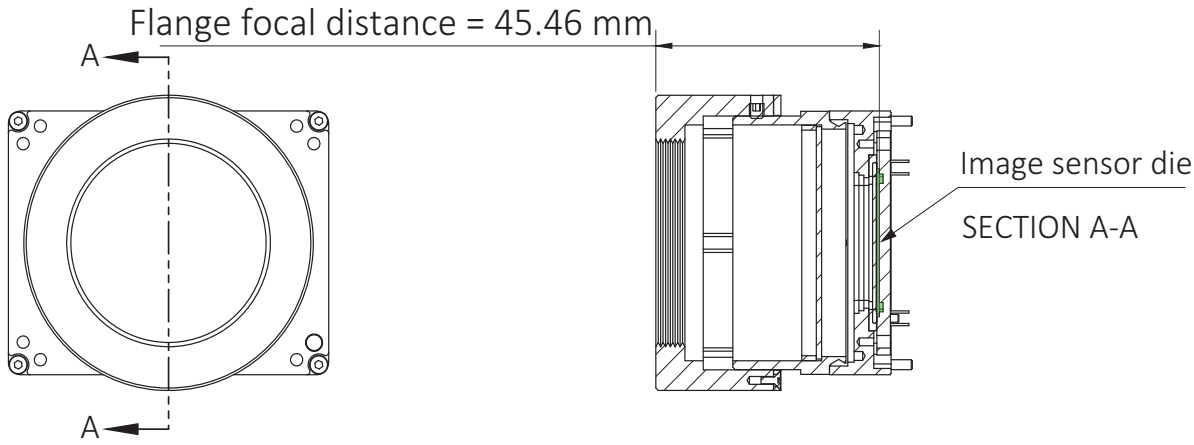
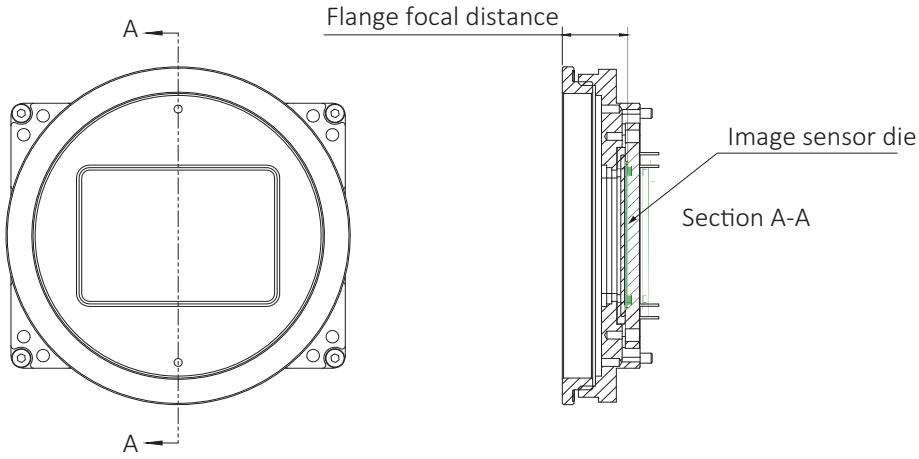


Figure 108: M42-Mount flange focal distance

M58-Mount

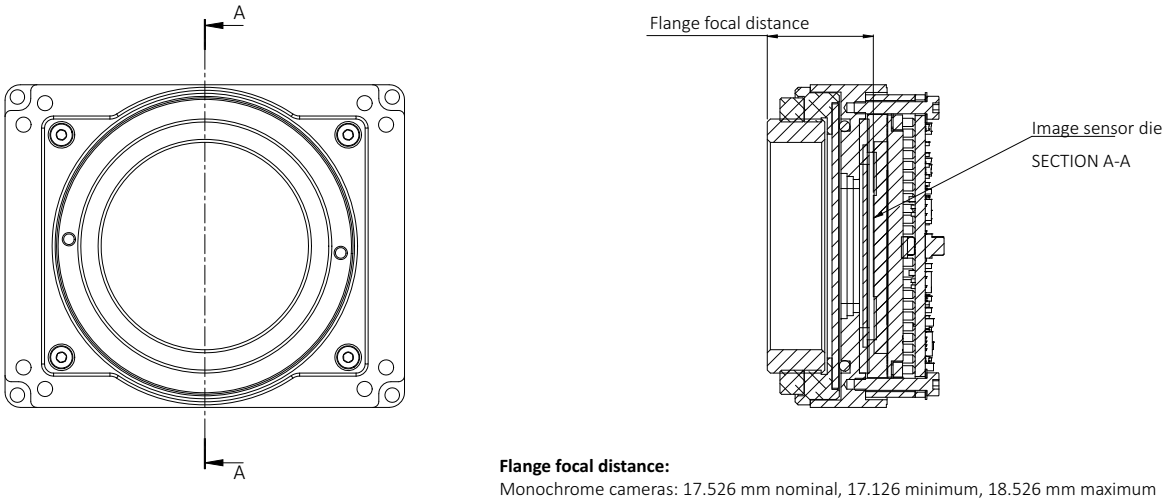


Flange focal distance:
Monochrome cameras: [12.33 to 15.81 mm] adjustable, 12.71 mm nominal.
Color cameras: [11.54 to 15.81 mm] adjustable, 12.71 mm nominal.

Figure 109: M58-Mount flange focal distance

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

TFL-Mount



Flange focal distance:
Monochrome cameras: 17.526 mm nominal, 17.126 minimum, 18.526 mm maximum
Color cameras: 17.892 mm nominal, 17.126 mm minimum, 18.526 mm maximum

Figure 110: TFL-Mount flange focal distance

Calibration variation

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

Mount	Calibration variation	Flange focal distance
C-Mount	Not available	See Figure 106
EF-Mount	< 70 µm (0.3 degrees) Z-tilt and ±10 µm	44.00 mm
F-Mount	Not available	46.50 mm
M42-Mount	Not available	45.46 mm
M58-Mount	Not available	See Figure 109
TFL Mount	Not available	See Figure 110

Table 83: 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 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 set screws.

1. Using a compatible lens, set the lens to infinity and image on a target (10 to 15 meters). Target should highlight focus levels at center image and at the corners of the image. A lens with a long focal length, or adjustable zoom lens, allows 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 the following figure, until all targets are in focus.

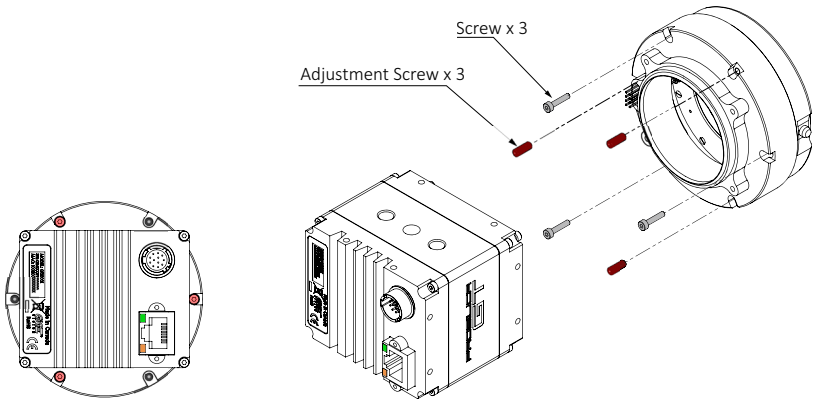


Figure 111: Back view (left) and exploded view (right) of Prosilica GT1930L camera assembly showing the adjustment screws and screws in the EF-Mount

3. Tighten the three screws and recheck the focus.

Sensor position accuracy

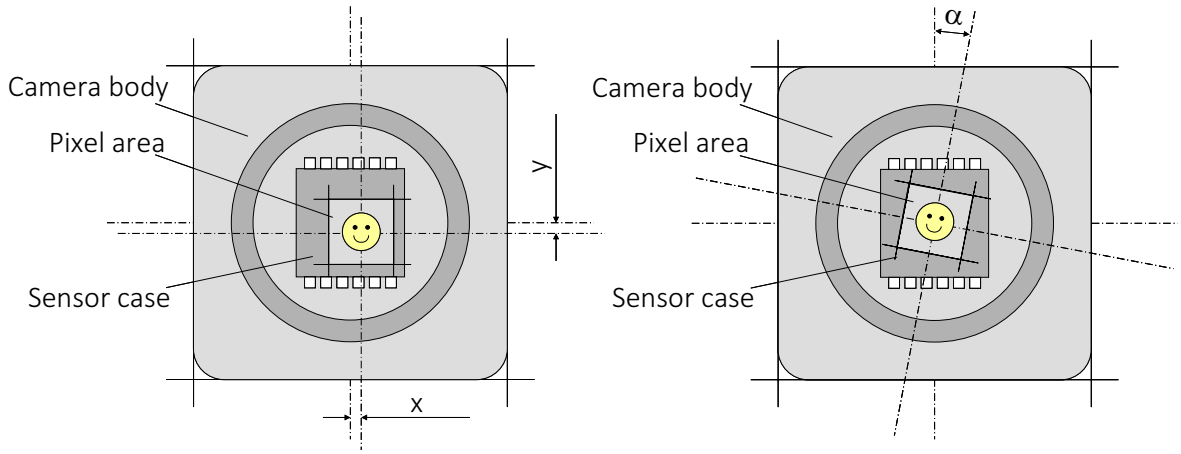


Figure 112: Sensor position accuracy

The following table defines the manufacturing accuracy of fitting sensors into Prosilica GT cameras. Unless stated otherwise, the following values are applicable.

Criteria	Subject	Properties
Alignment method		Optical alignment of photo sensitive sensor area into camera front module (lens mount front flange).
Reference points	Sensor	Center of pixel area (photo sensitive cells)
	Camera	Center of camera front flange (outer case edges)
Accuracy	x-axis y-axis	±250 µm (sensor shift)
	z-axis	±10 µm (optical back focal length)
	α	< 1 degrees (sensor rotation as the deviation from the parallel to the camera bottom)

Table 84: Sensor position accuracy criteria

Optical filters

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

The following figure shows the filter transmission response for the IRC30 filter, and the optional Schneider 486 IR cut filter, RG715 type IR pass filter, RG830 type IR pass filter, and B 270 ASG protection glass. The Schneider 486 IR cut filter is only available with Prosilica GT Large Format cameras. The RG830 and RG715 type IR pass filters are only available with Prosilica GT standard and extended format cameras.

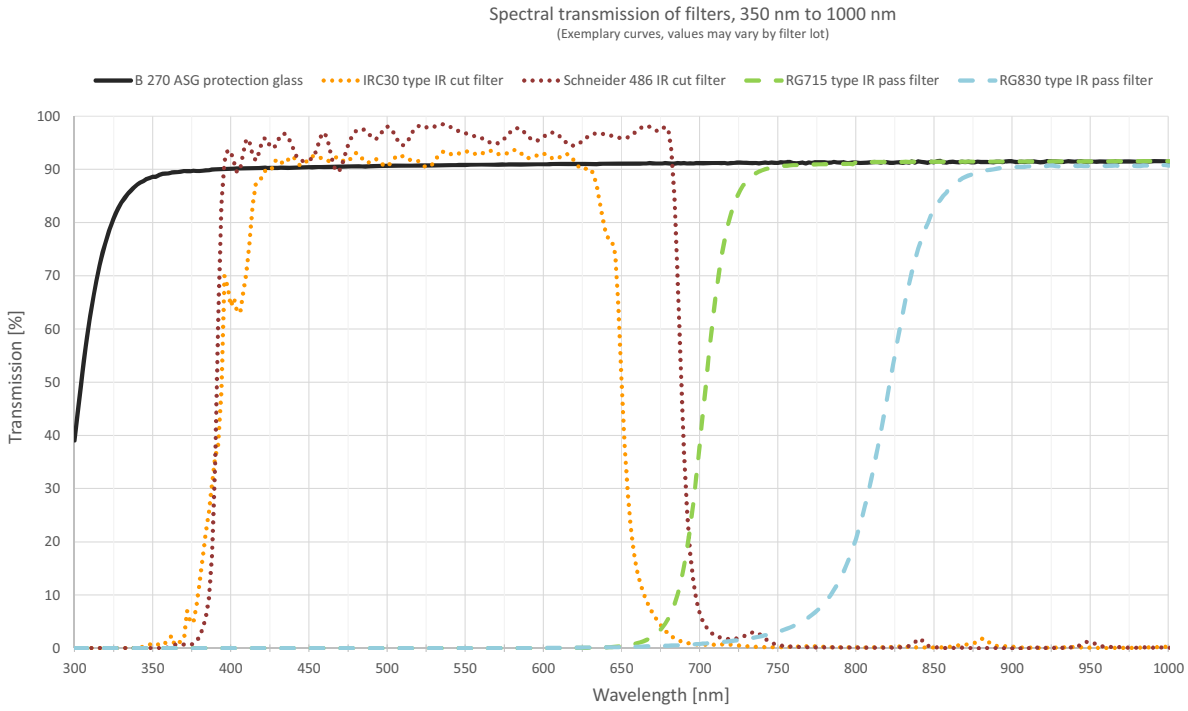
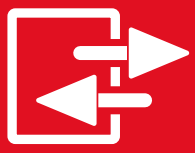


Figure 113: Spectral transmission of filters

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

Standard and extended format housing

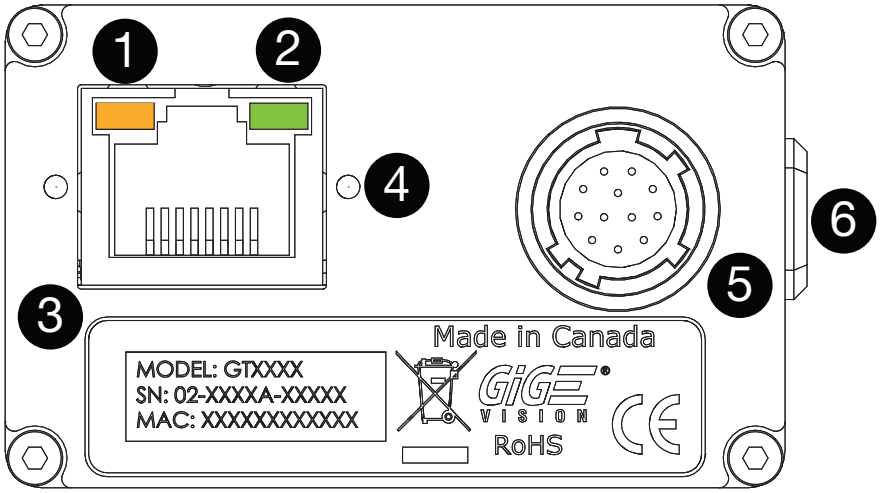


Figure 114: Ports and LEDs (standard and extended housing)

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

Table 85: Ports and LEDs

Large Format housing

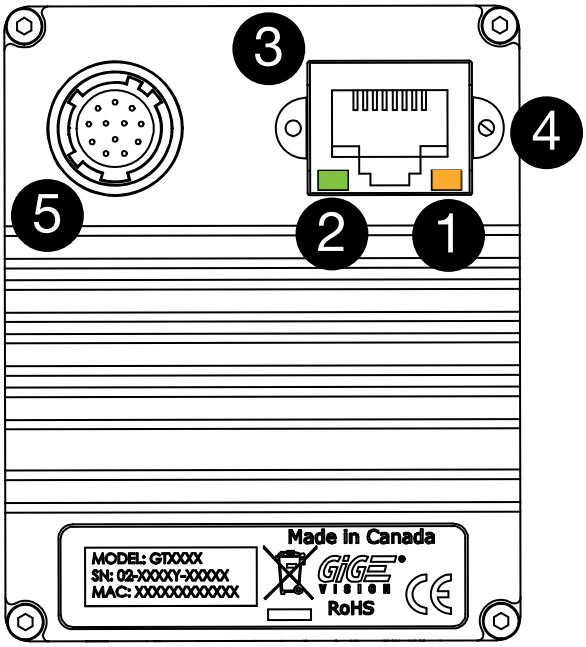


Figure 115: Port and LEDs (Large Format housing)

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

Table 86: Ports and LEDs

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 powered on and the link with the host is established

Table 87: Status of LEDs

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

Gigabit Ethernet port

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. We recommend using CAT6 or higher compatible cabling for best performance.

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

Prosilica GT cameras support cables with horizontal locking screw connector for a secured connection.

We recommend using locking-screw cables from Components Express, Inc. for a perfect fit. Go to CEI product configurator to customize the cable according to your needs.

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

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.

Camera I/O connections

The GPIO port uses a Hirose HR10-10R-12PA(73) connector on the camera side. The mating cable connector is Hirose HR10A-10P-12S.

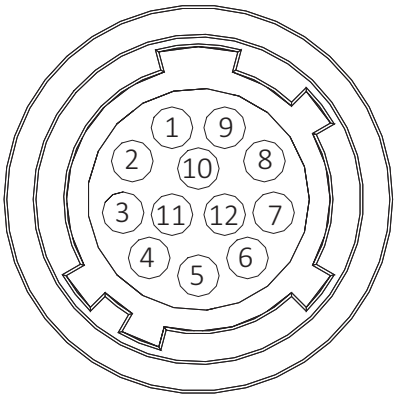
Safety-related instructions to avoid malfunctions

Read all Notes and Cautions in the Hardware and Installation chapter before using the Hirose I/O connector.

Hirose connector

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

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

Table 88: Camera I/O connector pin assignment and color coding (sheet 1 of 2)

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

Table 88: Camera I/O connector pin assignment and color coding (sheet 2 of 2)

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

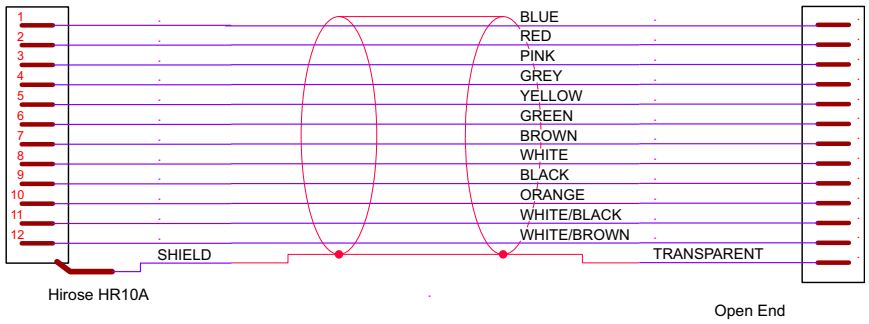


Figure 116: Cable color coding

I/O definition

Camera power

The 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 VDC will damage the camera.

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.

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

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 volts. Tie trigger ground to Camera GND to complete the trigger circuit.

NOTICE

Power caution

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

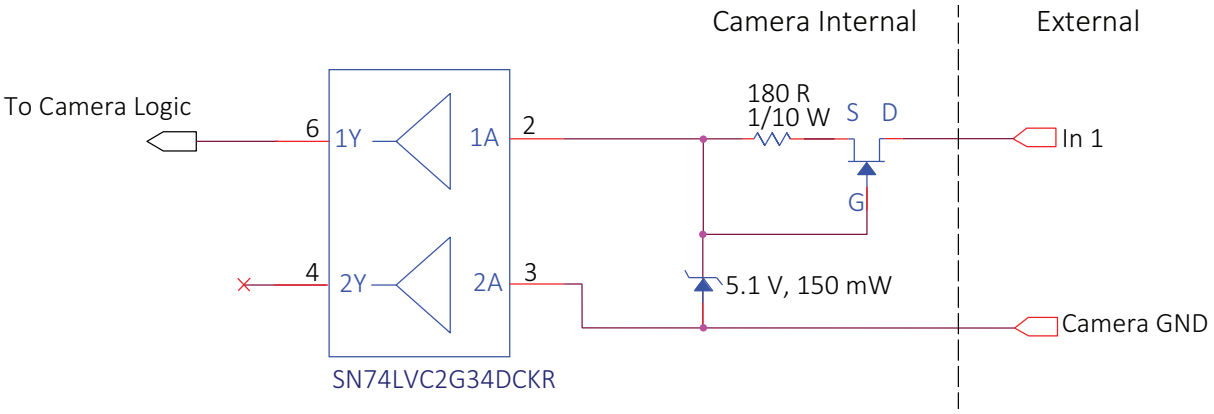


Figure 117: Internal circuit diagram for non-isolated input trigger

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 volts with a minimum current source of 5 mA.

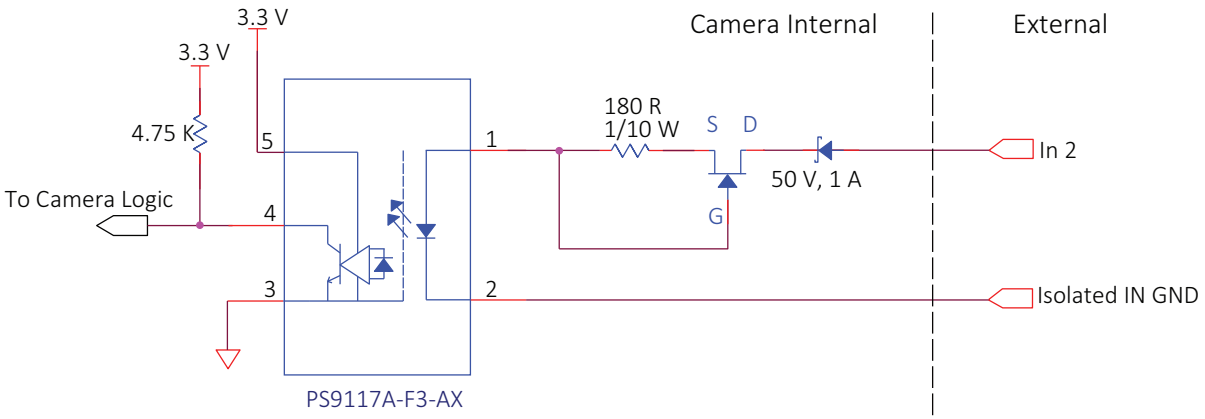


Figure 118: Internal circuit diagram for opto-isolated input trigger

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 **In2** 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.

Table 89: Output signals

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 volts. It is not suitable for driving loads in excess of 50 µA.

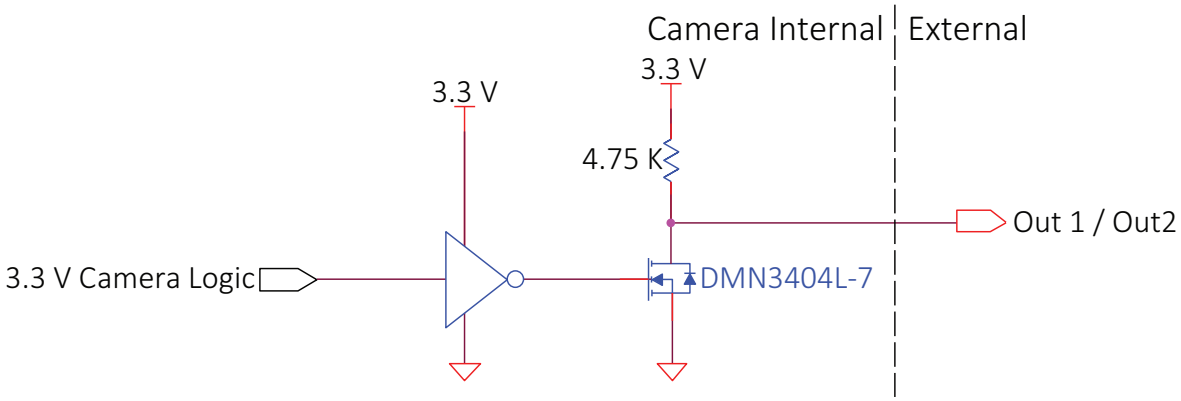


Figure 119: Out 1 and Out 2 trigger circuit

Out3 and Out4 (Opto-isolated)

Note on 4.75 KΩ resistors

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

Regardless of whether your Prosilica GT camera has the two 4.75 KΩ 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 the following figure and table. Isolated Out Power can be configured between 5 to 24 volts.

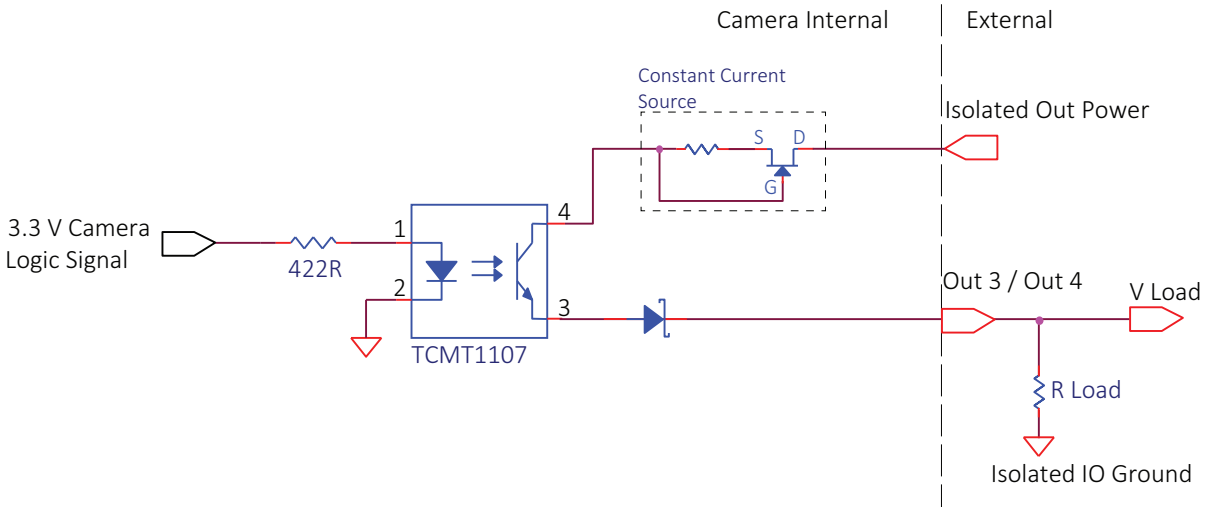


Figure 120: Out 3 and Out 4 trigger circuit

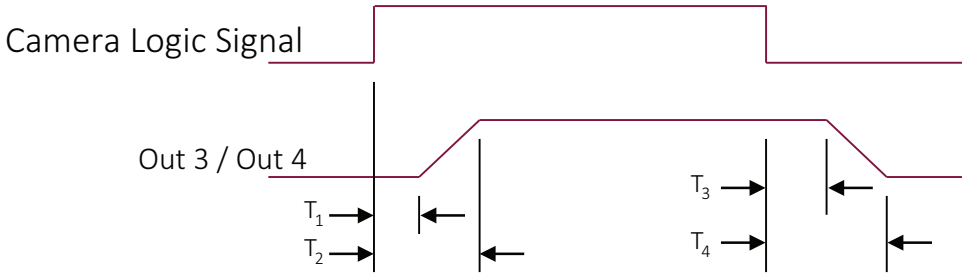


Figure 121: Out3 and Out4 timing diagram

The influence of various Isolated Out Power values and load values on the timing response of the trigger is indicated in the following table. 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 µs	5.4 µs	5.6 µs	64 µs
5 V	1.7 mA	2.4 KΩ	4.0 V	6.7 mW	1.2 µs	5.4 µs	4.4 µs	34 µs
12 V	2.1 mA	5 KΩ	10.4 V	21.6 mW	1.2 µs	10 µs	4.0 µs	47 µs
24 V	1.8 mA	10 KΩ	18.4 V	33.9 mW	1.2 µs	15 µs	3.4 µs	70 µs

Table 90: Trigger circuit values

Lens control

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.

- 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

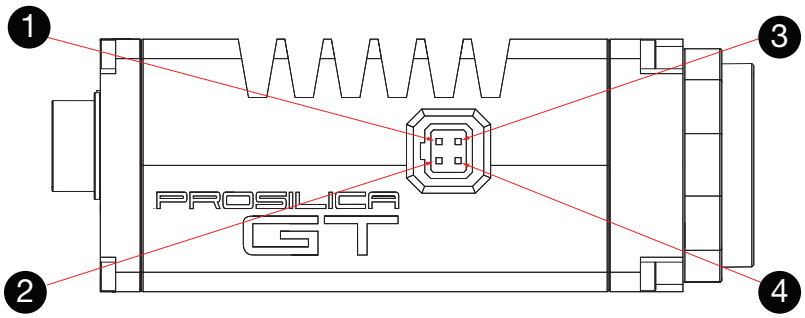


Figure 122: Lens control port

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 91: 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 92: 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. We 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 volts) 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

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

Operate 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`.

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

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

Operate 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, 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`.

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

Prosilica GT Large Format cameras

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

See the Modular Concept for information on lens mount options available with Prosilica GT Large Format cameras.

Operating EF lenses

EF-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

Operate EF lenses

NOTICE

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

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

1. Connect an EF lens to the camera before powering up the camera.
2. Power up the camera, and open the camera control software.
3. Use `EFLensInitialize` command to initialize the EF lens. This command is automatically executed on power up 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`*.

Camera trigger

Trigger timing diagram

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

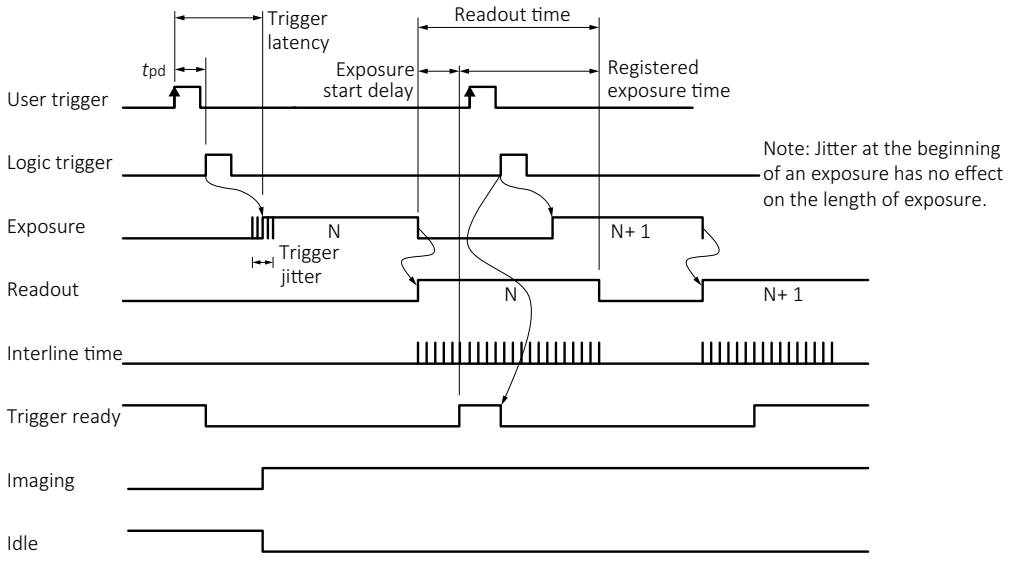


Figure 123: Internal signal timing waveforms (CCD-sensor models)

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

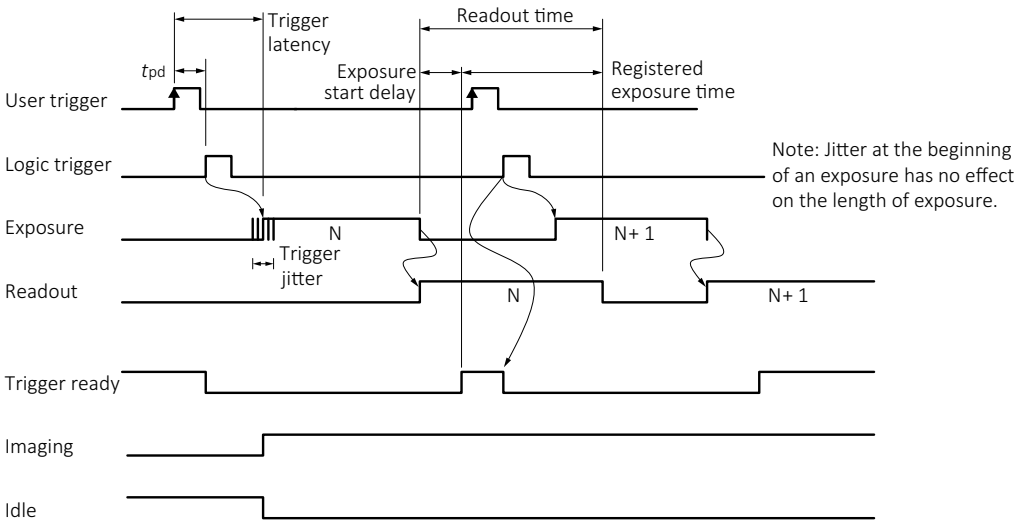


Figure 124: Internal signal timing waveforms (CMOS-sensor models)

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).
Propagation delay	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 or reading out data.
Idle	High if the camera image sensor is not exposing or reading out data.

Table 93: 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 the Specifications chapter.

- 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

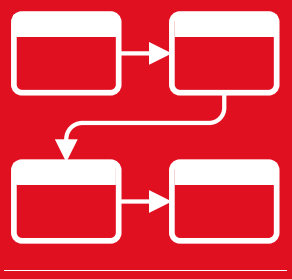
For applications requiring the shortest possible trigger latency and the smallest possible trigger jitter the user trigger signal should be applied when **Imaging** is false and **Idle** is true. In this case, trigger latency and trigger jitter are as indicated in the Specifications chapter.

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 www.alliedvision.com/en/support/technical-papers-knowledge-base

Image data flow



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

A complete listing of camera features, including definitions can be found on the Allied Vision Technical Documentation webpage.

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

Prosilica GT model series with CCD sensors

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

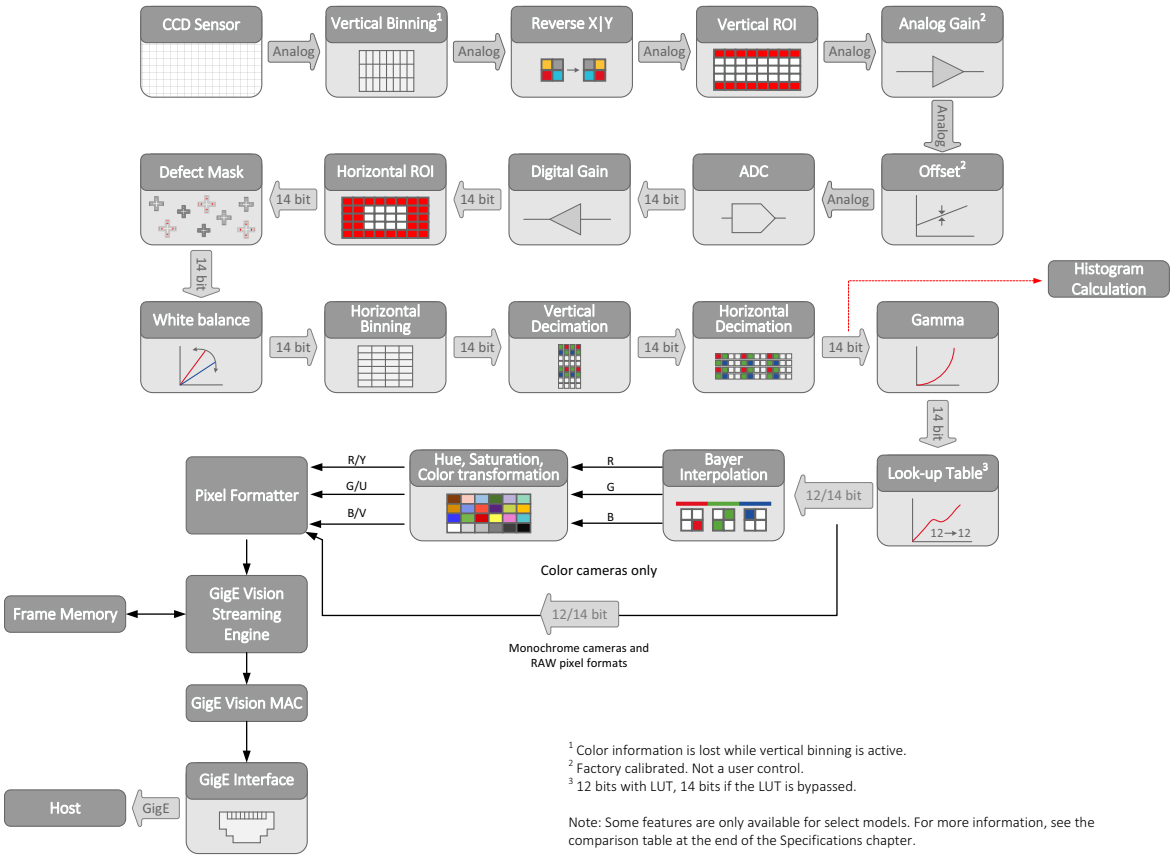
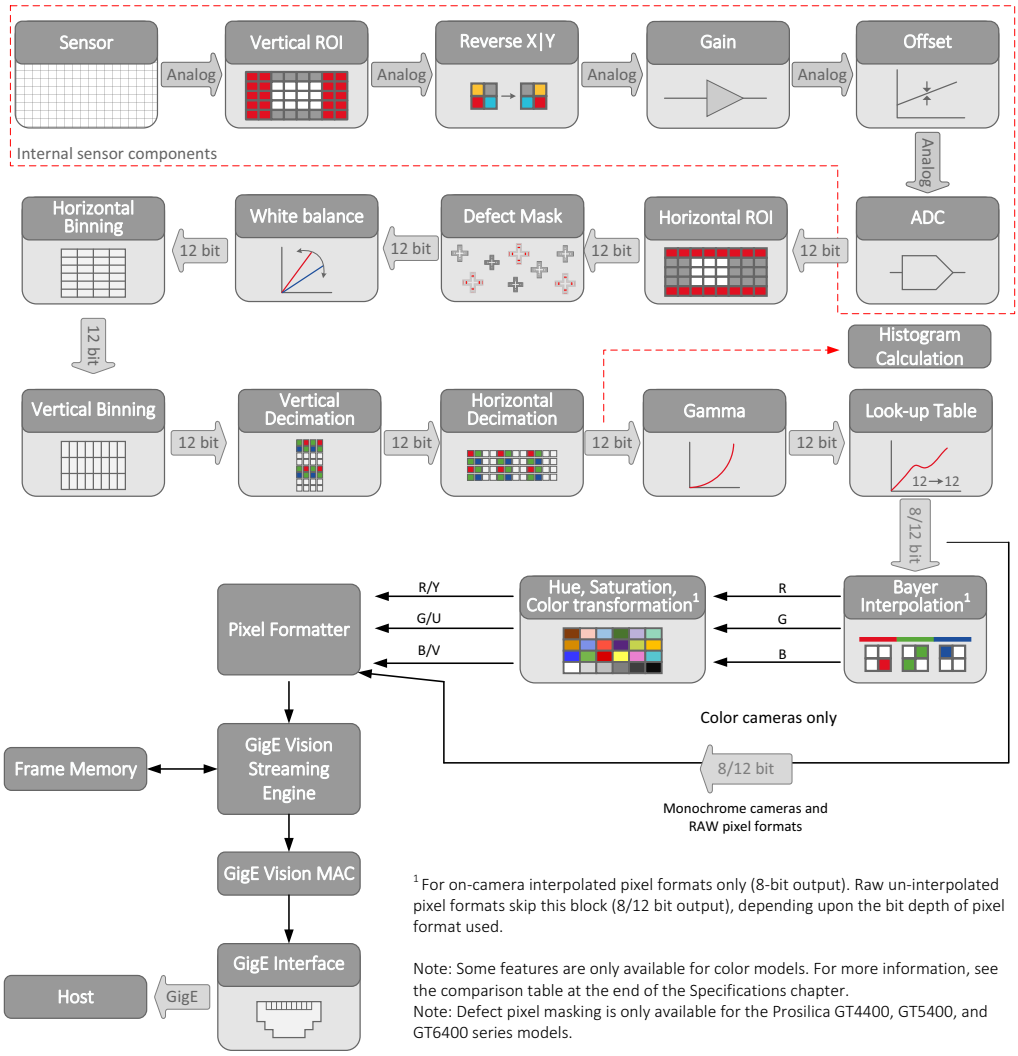


Figure 125: Image data flow for model series with CCD sensors

Prosilica GT model series with CMOS sensors

Model series: Prosilica GT1930, GT1930L, GT2460, GT4400, GT5400, GT6400

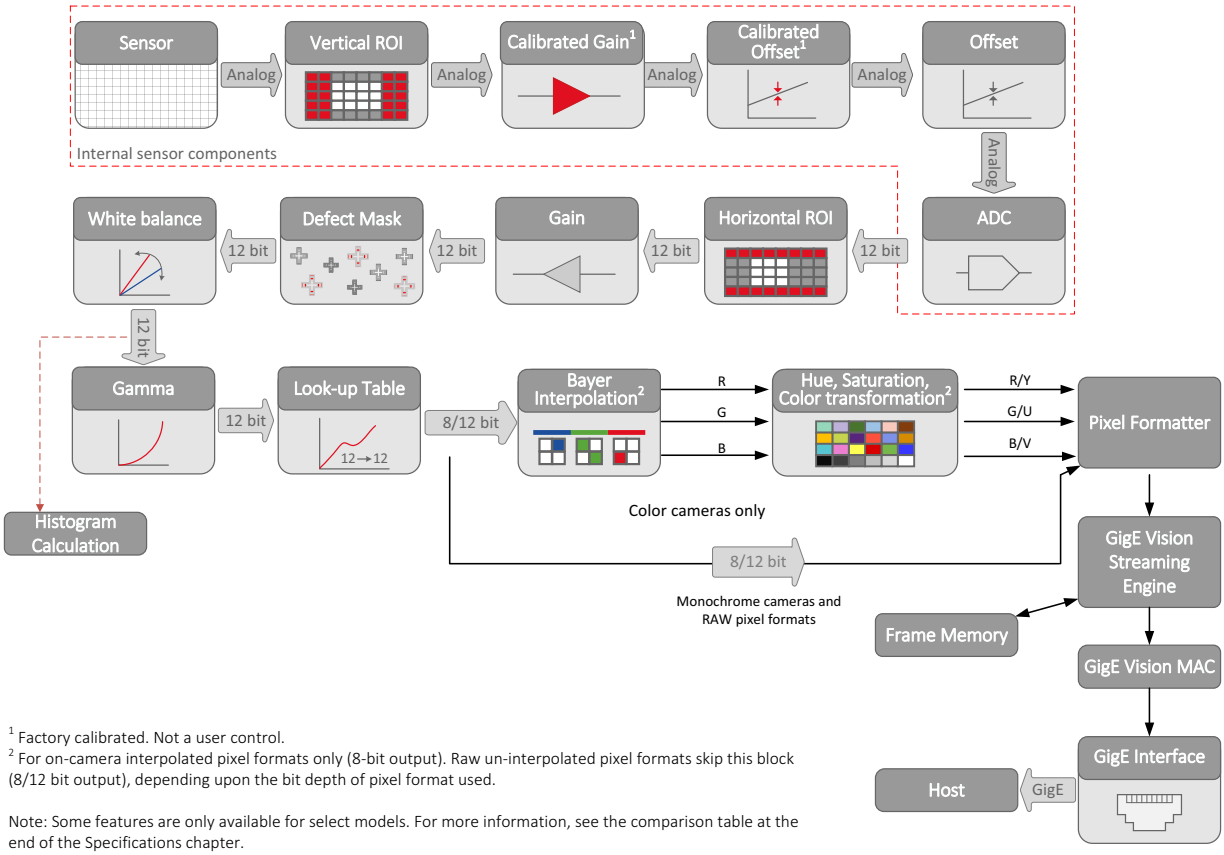


[1] For on-camera interpolated pixel formats only (8-bit output). Raw un-interpolated pixel formats skip this block (8/12 bit output), depending upon the bit depth of pixel format used.

Note: Some features are only available for color models. For more information, see the comparison table at the end of the Specifications chapter.
Note: Defect pixel masking is only available for the Prosilica GT4400, GT5400, and GT6400 series models.

Figure 126: Image data flow for Prosilica GT1930, GT1930L, GT2460, GT4400, GT5400, and GT6400 model series

Model series: Prosilica GT2000, GT2050



[1] Factory calibrated. Not a user control.
[2] For on-camera interpolated pixel formats only (8-bit output). Raw un-interpolated pixel formats skip this block (8/12 bit output), depending upon the bit depth of pixel format used.

Note: Some features are only available for select models. For more information, see the comparison table at the end of the Specifications chapter.

Figure 127: Image data flow for Prosilica GT2000 and GT2050 model series

Model series: Prosilica GT4090, GT4096, GT5120

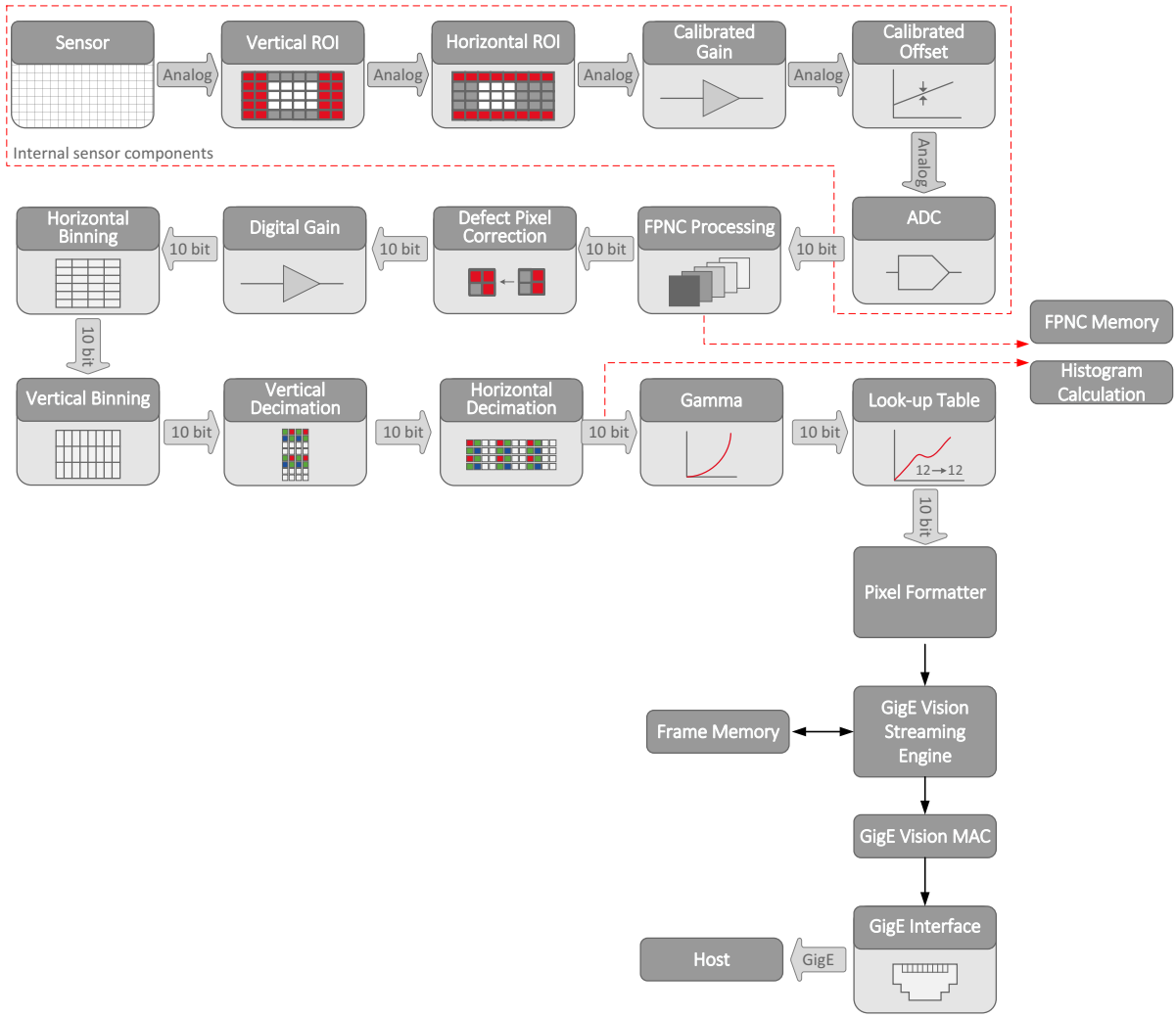


Figure 128: Image data flow for model series with ON Semi PYTHON sensors

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.

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 the following figure, 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.

Don’t 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.

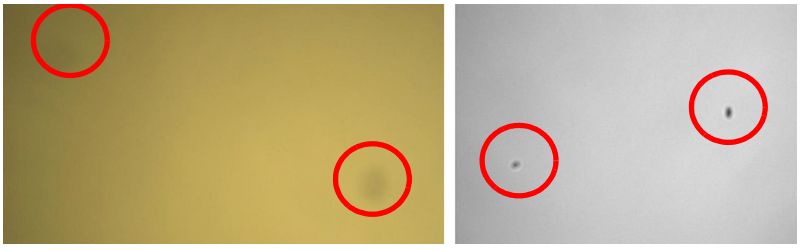


Figure 129: Image with tiny dust on the filter (left) and dust on the sensor (right)

Locating impurities

Before you dismount the lens you must 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

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.

Don’t 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 my 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 benzine, 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.

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

We do not recommend cleaning Prosilica GT cameras with compressed air.

NOTICE

- Compressed air at high pressure 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 100 kPA.
- Operating distance from the camera should be 5 to 30 cm.

Firmware update

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

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

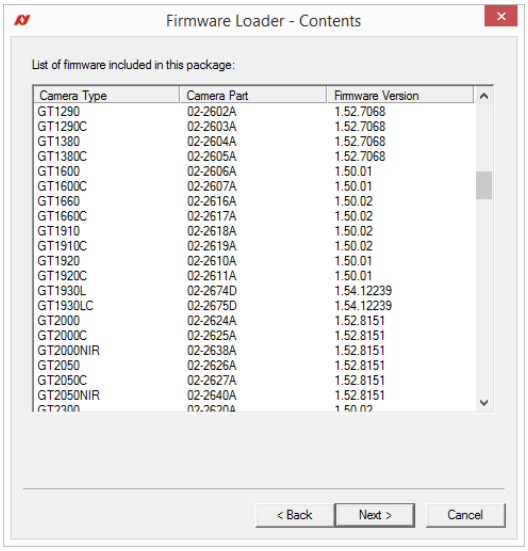
NOTICE

Don’t unplug the GigE cable or camera power supply during the update procedure.

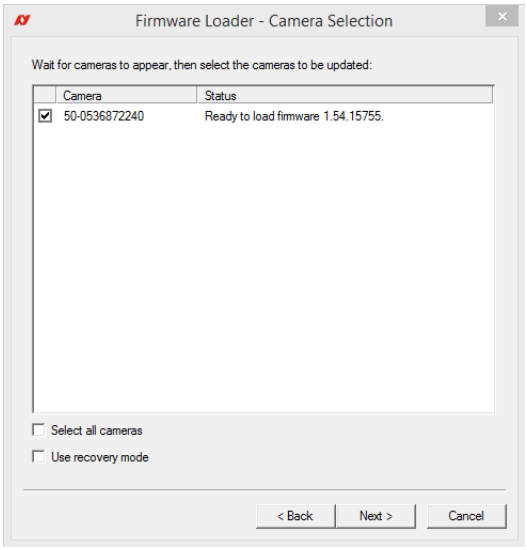
To update the firmware on your Prosilica GT camera

1. Launch the **Firmware Loader**.

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

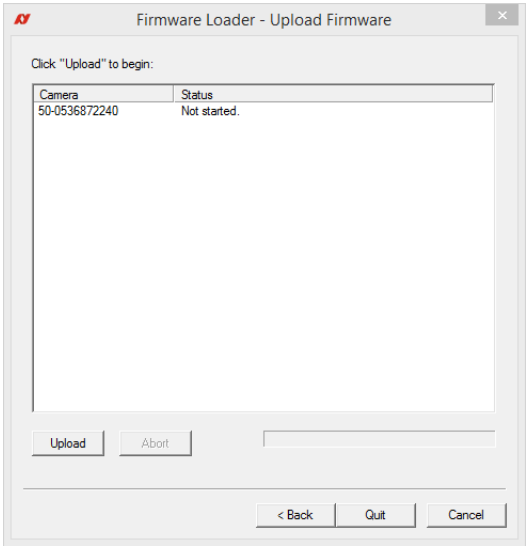


3. Click **Next**. Select your camera model on this page.

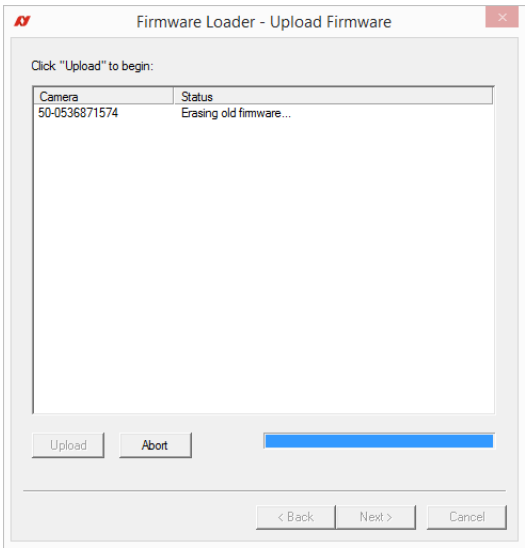


Select the **Use recovery mode** check box if the connected GigE camera is not found by the firmware loader, or if the GigE camera is listed as unavailable. When selected, power cycle the camera to enter the **Boot Loader** mode.

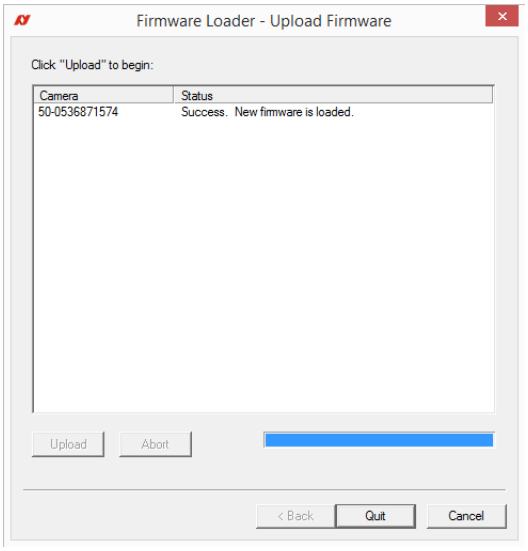
4. Click **Next**.



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



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



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

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