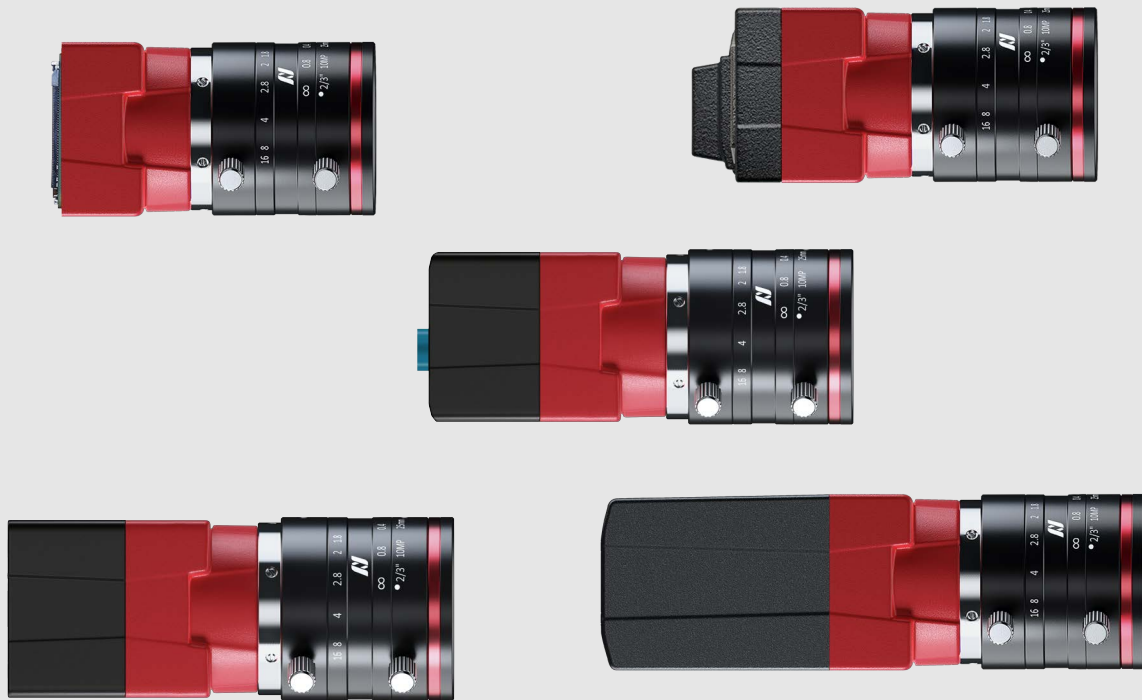




MIPI CSI-2, GIGE VISION, AND USB3 VISION CAMERAS

Alvium

Features Reference

V3.6.0

Latest FW: V00.15.00.c67f770e

This document at a glance



Read this document carefully

Learn to avoid damage to your camera and use it in the most safe and efficient way.

Features with Vimba X

Categories and features in this reference are organized as in the **Vimba X Viewer**. Order and visibility can be different on third party viewers.

Previous Vimba Viewer only displayed some transport layer features. **With Vimba X Viewer**, all transport layer features are displayed. In the viewer's feature tree, the features are categorized by the corresponding GenTL module. The node **Camera** contains all camera features, while the nodes **Transport Layer**, **Interface**, **Local Device**, and **Stream 0** contain the transport layer features.

Finding features

Camera firmware features can be found in the **Camera** GenTL Module of **Vimba X Viewer**. Transport layer features can be found in the other GenTL Modules. (These groups can differ when third party transport layers are used.) In this document, the included categories and features are listed in alphabetical order.

We recommend you to check **Show Descriptions** in **Vimba X Viewer** as shown in [Figure 1](#). The **All** tab is selected to show the feature tree. You can search for features using the search bar in **Vimba X Viewer**. You can easily search for features in this document using the [Index](#) on page 358.

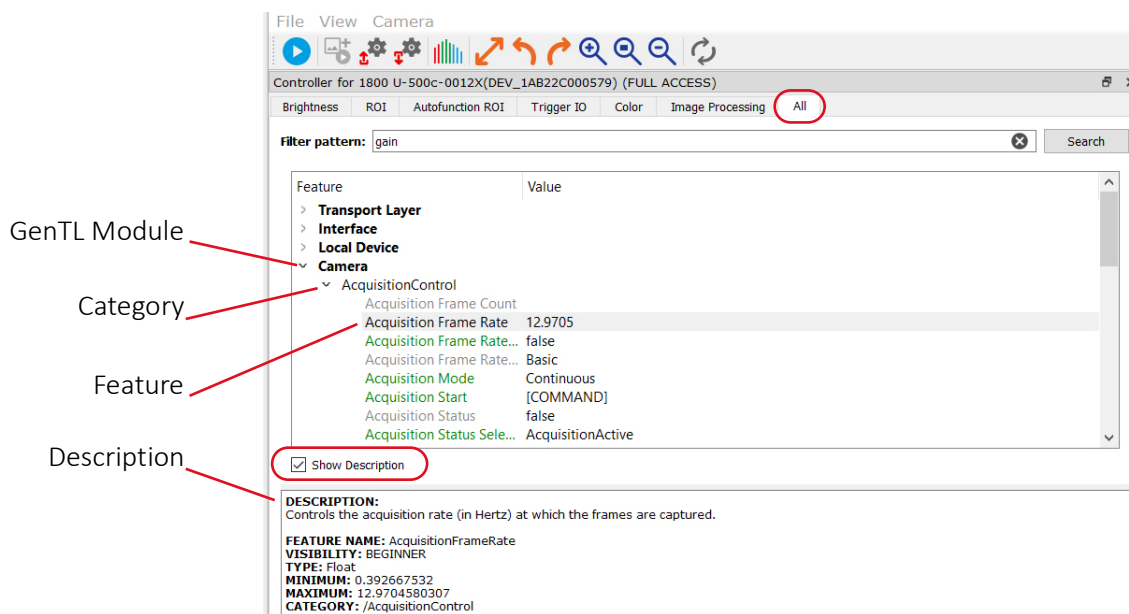


Figure 1: Features listed in the All tab of Vimba X Viewer

Differences in features and values



Document update for FW V00.15.00

The firmware update to V00.15.00 is applied for **Alvium G1** models first.
The support for the other interfaces is going to follow.

Features described in this document may not be supported by every Alvium model. Value ranges may differ between models as well.

GenICam for CSI-2 Access is supported for Alvium 1800 C models, please see the Alvium CSI-2 Cameras User Guide for details.

ActionControl features are supported only by Alvium GigE cameras.

ChunkDataControl features are supported only by Alvium GigE and USB cameras.

EventControl features are supported only by Alvium GigE and USB cameras.
Therefore, **TestEventGenerate** in the **TestControl** category is available only for GigE and USB.

MultipleRegionControl features are supported only by Alvium cameras with Sony IMX global shutter sensors.

SequencerControl features are supported only by Alvium GigE and USB cameras with Sony IMX global shutter sensors.

PtpControl features are supported only by Alvium GigE cameras.

TransferControl features for image acquisition in burst mode are supported only by Alvium GigE cameras. Support for the other Alvium series is technically impossible.

What else do you need?

This is a selection of helpful links:

Download or topic	Link
Alvium camera documentation and application notes	www.alliedvision.com/en/support/technical-documentation
Vimba X SDK for Windows, Linux, and Linux/ARM, including Vimba X Viewer , Firmware Updater , and Driver Installer for Windows	www.alliedvision.com/en/products/software/vimba-x-sdk
Firmware downloads	www.alliedvision.com/en/support/firmware-downloads
Technical support	www.alliedvision.com/en/support

Table 1: Helpful links

Contact us

Website, email

General

www.alliedvision.com/en/contact

info@alliedvision.com

Distribution partners

www.alliedvision.com/en/avt-locations/avt-distributors

Support

www.alliedvision.com/en/support

www.alliedvision.com/en/about-us/contact-us/technical-support-repair/-/rma

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Document history and conventions



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Document history



Alvium X- in document history entries

The letter X in Alvium X- represents any Alvium series, such as Alvium G1 or Alvium FP3.

Version	Date	Document updates
V3.6.0	2026-May-20	Main firmware version Alvium 1800 C/U, FP3, G1, G5, GM2: 00.15.00.c67f770e Previous FW versions Alvium X-321: 00.14.02.0b3047cf Alvium X-131,-192: 00.13.01.794391f9 Alvium X-050: 00.11.00.9cf0c21e Applied changes - Added FW 00.14.02.0b3047cf for Alvium 1800 C-, G1-, 1800 U-321 (IMX900) model support. - Extend general descriptions for ColorTransformationControl on page 148.Updated the descriptions for DeviceFirmwareIDSelector and DeviceFirmwareVersionSelector in DeviceControl on page 171. - Applied editorial changes.

Table 2: Document history (Sheet 1 of 15)

Version	Date	Document updates
V3.5.0	2026-Apr-01	Main firmware version: Release: Alvium 1800 C/U, FP3, G1, G5, GM2: 00.15.00.c67f770e Release: Alvium X-321: 00.14.02.0b3047cf Previous FW versions Alvium X-131,-192: 00.13.01.794391f9 Alvium X-050: 00.11.00.9cf0c21e Applied changes • Updated the latest firmware version. • Added features to the Image data flow on page 41. • Added <i>IntegrationMode</i> in AcquisitionControl on page 102. • Added <i>ChunkCounter0</i> and ...<i>1</i> options to ChunkDataControl on page 138. • Removed support for <i>ChunkDataControl1</i> features with CSI-2 models in various places. (Alvium CSI-2 models never supported these features.) • Added <i>FrameActive</i> option to various features in CounterAndTimerControl on page 157 and to <i>LineSource</i> in DigitalIOControl on page 189. • Updated the description for <i>BinningHorizontalMode</i> in ImageFormatControl on page 215. • Added decimation features to ImageFormatControl on page 215. • Added support for CSI-2 models for MultipleRegionControl (subcategory) on page 229. • Added TrapezoidProjectionControl (subcategory) on page 244. • Updated contents for <i>ContrastBrightLimit</i> and <i>ContrastDarkLimit</i> in ContrastControl (subcategory) on page 251 for better understanding. • Added OpticControl on page 268. • Add <i>DefaultSCPSPacketSize</i> in TransportLayerControl on page 305. • Applied editorial changes

Table 2: Document history (Sheet 2 of 15)

Version	Date	Document updates
V3.4.0	2025-Sep-09	Main firmware versions Release: Alvium 1800 U: 00.13.02.46198eb2 Alvium G1/G5: 00.14.01.d83c7207 Alvium 1500 C/1800 C/FP3/GM2: 00.14.00.baba1e3c Previous FW versions Alvium X-131,-192: 00.13.01.794391f9 Alvium X-050: 00.11.00.9cf0c21e Applied changes - Updated the reference firmware version for Alvium 1800 U: Bugs were fixed, but no features or specifications were changed. - Added <i>Sensor</i> option to DeviceTemperatureSelector in DeviceControl on page 171. This option has been supported since firmware V00.12.00. - Applied editorial changes.

Table 2: Document history (Sheet 3 of 15)

Version	Date	Document updates
V3.3.0	2025-Apr-04	Main firmware versions Release: Alvium G1, G5, USB: 00.14.01.d83c7207 Alvium CSI-2, FP3, GM2: 00.14.00.baba1e3c Previous FW versions Alvium X-131, -192: 00.13.01.794391f9 Alvium X-050: 00.11.00.9cf0c21e Applied changes - Updated the reference firmware version: Several bugs were fixed, but no features or specifications were changed. - Added unit Nanoseconds (ns) for ClockTriggerTimestamp and TimestampLatchValue in Feature descriptions: Camera on page 101. - In DeviceControl on page 171, added a note that DeviceLinkThroughputLimitMode must be activated to enable settings for DeviceLinkThroughputLimit. - Updated graphic elements in Image data flow on page 41. - Added pixel formats for TestPattern in Image data flow on page 41. - Removed availability with Alvium CSI-2 cameras for SerialHubEnable and for features in the SerialHub subcategory in DigitalIOControl on page 189. - Applied editorial changes.

Table 2: Document history (Sheet 4 of 15)

Version	Date	Document updates
V3.2.0	2024-Nov-05	Firmware versions Release: Alvium main firmware: 00.14.00.baba1e3c Release: Alvium X-131,-192: 00.13.01.794391f9 Previous FW versions Alvium X-050: 00.11.00.9cf0c21e Applied changes • Added Alvium FP3/GM2 to the title page. • Added links to Feature interdependencies on page 42 for the order of flipping and ROI. • Added notes in Feature descriptions: Camera on page 101 that DPC is disabled when multiple region features are used. • Added <code>FrameBufferOverflow</code> for <code>EventsData</code> in EventControl on page 202. • Added contents for <i>Region0</i> in Multiple region arrangement on page 230. • Added <code>GevPAUSEFrameReception</code> and <code>GevPAUSEFrameReceptionActive</code> in GigEVision on page 305 for flow control. • Added <i>TCP</i> mode to <code>GVSPProtocol</code> in Settings (subcategory) on page 333. • Applied editorial changes.

Table 2: Document history (Sheet 5 of 15)

Version	Date	Document updates
V3.1.1	2024-Jul-17	Main firmware versions Alvium G1, G5, USB: 00.13.01.794391f9 Alvium CSI-2, FP3, GM2: FW 00.13.00.849ffda0 Release: Alvium 1800 U-/G5-530 VSWIR: 00.13.02.46198eb2 Previous FW versions Alvium 1800 C-240: FW 00.13.00.cd808735 V3.0.0 on page 28 Alvium G5X: FW 00.12.00.00611a22: V2.9.0 on page 29 Applied changes - Updated the addresses of Sales offices in Contact us on page 4. - Changes to SystemInformation on page 50 in the Transport Layer Module: - Renamed <code>GevVersionMajor</code> and <code>GevVersionMinor</code>. - Added <code>GevInterfaceDefaultIPAddress</code> and <code>GevInterfaceDefaultSubnetMask</code>. - In DeviceEnumeration on page 70 in the Interface Module, added <code>DeviceUpdateTimeout</code>. - In Settings on page 83 in the Interface Module, renamed <code>DevicesDiscoveryBroadcastMode</code> and <code>DevicesDiscoveryMode</code>. - In BufferHandlingControl on page 325 in the Stream0 Module, added <code>StreamInputBufferCount</code> and <code>StreamOutputBufferCount</code>. - Changes to Settings (subcategory) on page 333 in the Stream0 Module: - Renamed <code>GevDriver</code>. - Added <code>GVSPProtocol</code>. - In Statistics (subcategory) on page 340 in the Stream0 Module, added <code>FramePacketStatisticsCounter</code>, <code>FramePacketStatisticsCounterSelector</code>, <code>FrameRate</code>, <code>FrameRateSelector</code>, <code>FrameStatisticsCounter</code>, <code>FrameStatisticsCounterSelector</code>, and <code>StreamTimeElapsed</code>. - Corrected minor errors.

Table 2: Document history (Sheet 6 of 15)

Version	Date	Document updates
V3.1.0	2024-Mar-25	Main firmware versions Release: Alvium G1, G5, USB: 00.13.01.794391f9 Alvium CSI-2, FP3, GM2: 00.13.00.849ffda0 Previous FW versions Alvium 1800 C-240 requires FW 00.13.00.cd808735 V3.0.0 on page 28 Alvium G5X models require FW 00.12.00.00611a22: V2.9.0 on page 29 Applied changes, additions only for G1, G5, USB - Updated camera images on the title page. - Updated options for TriggerSource in AcquisitionControl on page 102, for TimerTriggerSource in CounterAndTimerControl on page 157, for LineSource in DigitalIOControl on page 189, and for SequencerTriggerSource in SequencerControl on page 289. Added StandbyMode option for DevicePowerSavingMode, including GigE support, in DeviceControl on page 171. Added FrameActive and ReadOutActive options for LineSource in DigitalIOControl on page 189. - In EventControl on page 202: Added support for USB. Added EventFrameTriggerMissed, EventPtpSyncLocked, EventPtpSyncLost options for EventsData. - Added support for EventFrameTriggerWait by RS (rolling shutter) models. Added TestPattern in ImageFormatControl on page 215. - Completed feature name to SensorShutterMode in ImageFormatControl (category continued) on page 242. - Adjusted enumeration values for CustomConvolutionValueSelector in ImageProcessingControl on page 249. Continued on the next page.

Table 2: Document history (Sheet 7 of 15)

Version	Date	Document updates
V3.1.0	2024-Mar-25	Continued from the previous page. - Added note for StatFrameDropped on page 345. - Corrected standard compliance for some features. - Fixed broken links in this table. - Applied editorial changes.
V3.0.0	2023-Dec-05	Firmware versions Release: Alvium CSI-2: 00.13.00.849ffda0 Release: Alvium G1, G5 USB: 00.13.00.71d891fe Previous FW version Alvium G5X models require FW 00.12.00.00611a22: V2.9.0 on page 29 Applied changes, excluding G5X - Added ClockTriggerFrequency and ClockTriggerTimestamp to AcquisitionControl on page 102. - Removed IntensityControllerOutliersBright and IntensityControllerOutliersDark from AutoModeControl on page 129. - Added ChunkDataControl on page 138. - Added DeviceTemperatureStatus to DeviceControl on page 171. - Added EventControl on page 202. - Added Observe with binning features on page 216 to improve usability. - Added LensShadingCorrection on page 259. - Added LUTLoadAll and LUTSaveAll to LUTControl on page 264. - Changes in SequencerControl on page 289: - Removed initial description and added a link to an application note for using sequencer features. - Added SequencerConfigurationReset - Updated values for SequencerFeatureSelector, SequencerSetLoad, and SequencerSetSave. - Added TestEventGenerate to TestControl on page 300. - Applied editorial changes.

Table 2: Document history (Sheet 8 of 15)

Version	Date	Document updates
V2.9.2	2023-Jul-12	Firmware version: 00.12.00.00611a22 Updated contents to include Alvium G5X cameras.
V2.9.1	2023-Jun-16	Firmware version: 00.12.00.00611a22 - Updated graphic in Image data flow on page 41. - Added GigE support for TestPendingAck in TestControl on page 300.
V2.9.0	2023-Jun-07	Firmware version: Release: 00.12.00.00611a22 - Updated version for supported GigE Vision Standard from 1.2 to 2.2. - Removed entry for document V2.7.1 in this list that stated the support of TestPattern. This information was wrong and still is. Therefore, this document never included descriptions for this feature. - Adjusted document structure to match Vimba X Viewer. This includes: - Added information related to What else do you need? on page 3. - Added Feature descriptions: Transport Layer on page 45. - Added Feature descriptions: Interface on page 65. - Added Feature descriptions: Local Device on page 88. - Renamed previous “Feature descriptions” to Feature descriptions: Camera on page 101. - Added Feature descriptions: Stream 0 on page 324. - Moved categories from previous “Feature descriptions” to new “Feature descriptions...” chapters. Note: You can find categories and features in Contents on page 5 and PDF bookmarks, or in Index on page 358. - Removed contents about Config mode for IP settings. - Updated diagrams in Notes on feature descriptions on page 40 for multiple regions. - Updated information in Differences in features and values on page 3. Continued on next page.

Table 2: Document history (Sheet 9 of 15)

Version	Date	Document updates
V2.9.0	2023-May-24	Continued from previous page. - Updated origin of feature for selected features in Feature descriptions: Camera on page 101. - Removed unit from CounterDuration in CounterAndTimerControl on page 157. - Changed interface support for LineDebounceDuration and LineDebounceMode in DigitalIOControl on page 189. - Added SerialTxLock to SerialHub (subcategory) on page 196. - Added Sensor option to BinningSelector in ImageFormatControl on page 215. - Added MultipleRegionControl (subcategory) on page 229. - Added LUTValueAll in LUTControl on page 264. - Removed LUTEnable from affected features and aligned the corresponding lists between SequencerSelector and SequencerSetLoad in SequencerControl on page 289. - Removed plural S for StatFrame... and StatPacket... features in Stream on page 329 and StreamInformation on page 353. - Applied editorial changes.
V2.8.1	2022-Nov-14	Firmware version: 00.11.00.9cf0c21e Updated the title image.

Table 2: Document history (Sheet 10 of 15)

Version	Date	Document updates
V2.8.0	2022-Oct-27	Firmware version: Release: 00.11.00.9cf0c21e - Updated standard references in Standards referred to in this document on page 37. - Added features support for ActionControl on page 43 by Alvium G1 cameras. - Updated options for TriggerSource in AcquisitionControl on page 102, for TimerTriggerSource in CounterAndTimerControl on page 157, for LineSource in DigitalIOControl on page 189, and for SequencerTriggerSource in SequencerControl on page 289 - Removed ChunkDataControl category. - Added Counter features to CounterAndTimerControl on page 157. - Updated Pseudo code example for SequencerControl. - Added options for DeviceTemperatureSelector in DeviceControl on page 171. - Added Line Debounce features in DigitalIOControl on page 189. - Updated options for SoftwareSignalControl on page 298. - Added TransferControl on page 302 for burst image acquisition. - Applied editorial changes.
V2.7.2	2022-Jul-20	Firmware versions - Alvium CSI-2, G5, USB: 00.10.6c9062b1 - Alvium G1: 00.10.00.2cf3b22e Applied change Added notes that ActionControl features are not working properly on Alvium G1 cameras yet.

Table 2: Document history (Sheet 11 of 15)

Version	Date	Document updates
V2.7.1	2022-Jul-15	Firmware versions Release: Alvium CSI-2, G5, USB: 00.10.6c9062b1 Release: Alvium G1: 00.10.00.2cf3b22e Applied changes - Added options for TriggerSource in AcquisitionControl on page 102. - Added feature support for Alvium G5 in: ActionControl on page 120 GVCP (subcategory) on page 96 PtpControl on page 282. - Added feature support for Alvium USB cameras in ChunkDataControl. - Added options for TimerTriggerSource in CounterAndTimerControl on page 157. - Added support for all Alvium cameras and reorganized features in SerialHub (subcategory) on page 196. - Added options to FileSelector in FileAccessControl on page 208. - Added TestPattern in ImageFormatControl on page 215. - Added features in SequencerControl on page 289. - Added features in SoftwareSignalControl on page 298. - Removed ColorTransformationSelector from ColorTransformationControl on page 148. Applied editorial changes.

Table 2: Document history (Sheet 12 of 15)

Version	Date	Document updates
V2.7.0	2022-Jun-09	Firmware versions Release: Alvium CSI-2, G5,USB: 00.08.00.6727174b Release: Alvium 1500 C-050, C-120, C-210, C-500, and 1800 C-500: 00.08.01.13f227a4 Release: Alvium G1: 00.09.00.45ce470f Applied changes - Added support for Alvium G1 and G5 models. - Added features in ActionControl on page 120. (Available for Alvium G1 only) - Added features in SerialHub (subcategory) on page 196. (Available for Alvium G1 only) - Added features in GVCP (subcategory) on page 96 on page 128. (Available for Alvium G1 only) - Added features in PtpControl on page 282. (Available for Alvium G1 only) - Updated diagrams in AcquisitionControl on page 102 for GigE cameras. - Applied editorial changes.
V2.6.1	2022-Mar-28	Firmware version: 00.08.00.6727174b Added Timer0Active and Timer1Active options for LineSource .
V2.6.0	2022-Mar-21	Firmware version: Release: 00.08.00.6727174b - Added support for selected Alvium 1800 C models. - Updated diagrams in AcquisitionControl on page 102 for convolution filters. - Added the CounterAndTimerControl category. - Added AcquisitionFrameRateMode, ExposureActiveMode and SensorBitDepth. - Added features to control convolution filters in the ImageProcessingControl category. - Added individual options UserSet1 to UserSet4 and descriptions to the UserSetControl category. - Added features that are specific to MPI CSI-2, including the subcategories StreamInformation/Statistics and TransportLayerControl/Info. - Applied editorial changes.

Table 2: Document history (Sheet 13 of 15)

Version	Date	Document updates
V2.5.0	2021-Dec-07	Firmware version: Release: 00.07.00.81db3896 - Updated diagrams in AcquisitionControl on page 102 for new LUT and Sharpness features. - Added descriptions for Sharpness, TriggerDelay, and LUT features. - Removed descriptions for ContrastConfigurationMode. - Added information on using ExposureMode.
V2.4.1	2021-Sep-22	Firmware version: 00.06.00.35992 Removed FitRange option from IntensityControllerAlgorithm .
V2.4.0	2021-Aug-04	Firmware version: Release: 00.06.00.35992 - Updated Figure 2: Image data flow for Alvium cameras on page 41. - Added feature descriptions for BinningHorizontal, BinningHorizontalMode, BinningSelector, BinningVertical, BinningVerticalMode, and DevicePowerSavingMode. - Applied editorial changes.
V2.3.0.	2021-Apr-07	Firmware version: Release: 00.04.00.34658 - Added feature descriptions for DeviceLinkCommandTimeout, DeviceTLVersionMajor, DeviceTLVersionMinor, TimestampLatch, TimestampLatchValue, TimestampReset. - Applied editorial changes.
V2.2.0	2020-Nov-13	Firmware version: Release: 00.03.00.31919 - Added descriptions in AcquisitionControl on page 102. - Added User option to CorrectionSet and CorrectionSetDefault for defect pixel correction. - Applied editorial changes.
V2.1.2	2020-Jun-05	Firmware version: 00.01.02.28100 Corrected naming for the IntensityAutoPrecedence feature.
V2.1.1	2020-Mar-12	Firmware version: 00.01.02.28100 Removed notes for features previously enabled.

Table 2: Document history (Sheet 14 of 15)

Version	Date	Document updates
V2.1.0	2020-Feb-13	Firmware version: 00.01.02.28100 - Added contents for maximum values for contrast features. - Added ShutterMode to the feature descriptions.
V2.0.0	2020-Jan-07	Firmware version: Release: 00.01.02.28100 - Added descriptions for Contrast, Gamma, Hue, Saturation features, and ExposureActive option for TriggerSelector. - Reorganized feature categories. - Added information on related selectors. - Reorganized introduction chapters. - Corrected typographical errors.
V1.0.3	2019-Sep-05	Firmware version: 00.01.00.26405 Applied editorial changes.
V1.0.2	2019-Jul-08	Firmware version: 00.01.00.26405 Applied editorial changes.
V1.0.1	2019-Jul-05	Firmware version: 00.01.00.26405 Applied editorial changes.
V1.0.0	2019-Jul-01	Firmware version: Release: 00.01.00.26405 Release version

Table 2: Document history (Sheet 15 of 15)

Conventions used in this document

To give this document an easily understandable layout and to emphasize important information, the following typographical styles and symbols are used:

Styles

Style (example)	Function
Emphasis	Some important parts or items of the text are emphasized to make them more visible.
Feature names	Features names are displayed as monospaced text.
Feature options	Features options and values that are selectable by the user are displayed as monospaced italicized text.
<i>InputCommand</i>	Text or command to type in by the user, selected menu options, or other selectable options.
SourceCode	Code words, such as for programs, used in running text. Mainly designated for use in software documentation.

Table 3: Styles used in this reference (Sheet 1 of 2)

Style (example)	Function
UIElement	Text that is displayed, or output, by the system for the user, like parts of the GUI, dialog boxes, buttons, menus, important information, or windows titles.
WebReference	References to other documents or webpages, like weblinks, hypertext links, or emails.

Table 3: Styles used in this reference (Sheet 2 of 2)

Symbols and notes



NOTICE

Material damage or violation of data security

Precautions are described.



Avoiding malfunctions

Precautions are described.



Additional information

Web address or reference to an external source with more information is shown.



Practical tip

Additional information helps to understand or ease handling the camera.

Access

Acronym	Meaning
R/W	Feature is read/write.
R/(W)	Feature is readable, and it may be read/write, depending upon the user privilege level.
R/C	Feature is read-only and constant.
R	Feature is read-only and may change.
ROI	Region of interest
W	Feature is write-only.

Table 4: Abbreviations used in this reference

Standards referred to in this document

The document describes in alphabetical order the basic and advanced camera controls for Alvium cameras as seen from **Vimba X Viewer**.

These features comply with the following standards:

- GigE Vision Standard Version 2.2
- USB3 Vision Standard Version 1.1
- GenICam Standard Document Version 2.1.1
- GenICam Standard Features Naming Convention (SFNC) Version 2.7
- GenICam Pixel Format Naming Convention (PFNC) Version 2.2
- GenICam Transport Layer Standard Features Naming Convention (GenTL SFNC) Version 1.1.1
- GenICam Generic Control Protocol (GenCP) Version 1.3



Downloads of applied common standards

For SFNC, GenTL SFNC, and GenCP, see www.genicam.org

For USB3 Vision and PFNC, see www.visiononline.org



Allied Vision custom features

Some features in this document are adapted SFNC features. Some features are custom features adding new functions to the features range defined by the SFNC. See [Acronyms and terms](#) on page 37.

Acronyms and terms

Abbreviation/term	Meaning
Custom	Non-standard features that are adding to new functions to the existing standard feature definitions
Custom (deprecated)	Features that derive from an outdated non-standard version
GenTL SFNC	GenICam Transport Layer Standard Features Naming Convention
GenTL SFNC adapted	Features that deviate from the GenTL SFNC definition
GEV	GigE Vision Standard
SFNC	GenICam Standard Features Naming Convention
SFNC adapted	Features that deviate from the SFNC definition
Timestamp	For Alvium cameras, the timestamp interval is 1 Tick = 1 Nanosecond. This information is used for features in EventControl on page 202.
U3V	USB3 Vision Standard

Table 5: Standards used in this reference

Description scheme

This document is organized from GenTL Modules down to categories and features, in alphabetical order. For the structure in **Vimba X Viewer**, see [Finding features](#) on page 2.

The features in this reference are described according to the following formatting scheme.

Category name

First-level item, always starting a new page. Short description of category, including individual characteristics, and showing the Feature type as (*Category*).

Subcategory

Second-level item. Short description of subcategory, including individual characteristics, and showing the Feature type as (*Category*).

Feature

[Selector]

Second-level or third-level item. Short description of feature, including individual characteristics and possible values, and showing the full Category path.

Features availability

Interface support shows which interfaces are supported by features.

AcquisitionFrameCount supported all interfaces.

AcquisitionFrameCount

Controls the number of frames to acquire in *MultiFrame* acquisition mode.

Interface support	All
Display name	Acquisition Frame Count
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	(number)
Affected features	Not applicable
Category	/AcquisitionControl

Selectors

Some features have multiple instances. For these features, Selector features define which instance of the feature is accessed.

Example: the **LineInverter** feature, used to invert internal signal polarity, can be applied to all input and output lines of the camera. The line is selected by the **LineSelector** feature.

The headline for the feature description is **LineInverter[LineSelector]**, according to the C programming language convention for arrays: a pair of brackets follows the feature name, like in **SelectedFeature[Selector]**.

Invalidators

Some features have opposing functions. For example, **Sharpness** enhances edge contrast while **Blur** reduces edge contrast. Therefore, when **Sharpness** is enabled, **Blur** is automatically disabled. Feature descriptions provide an additional row for opposing features, called **Affected features**.

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Notes on feature descriptions

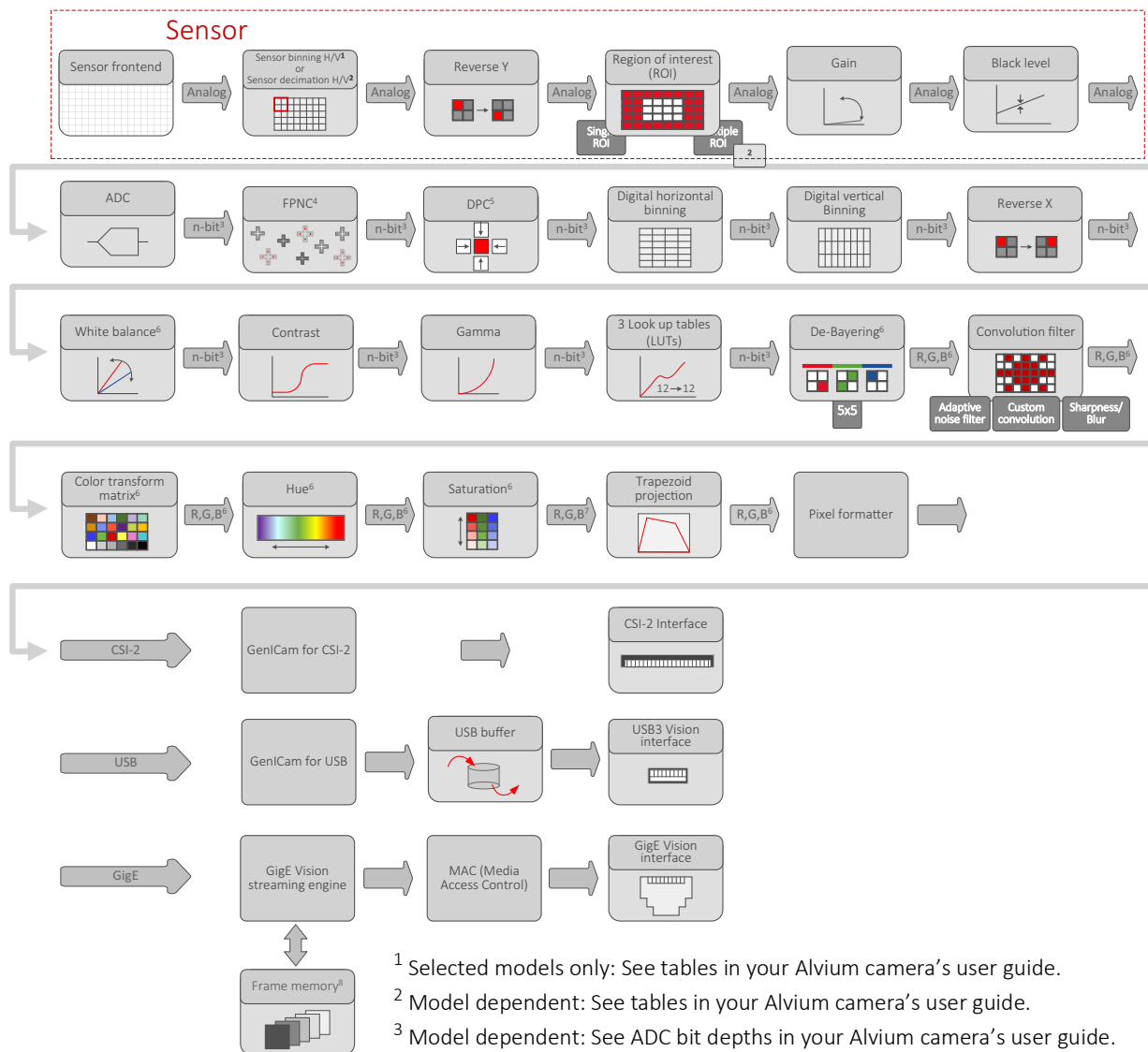


This chapter includes:

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Regions of interest and auto mode regions	43

Image data flow

To develop your application effectively, note the order in which the features are **processed** in Alvium cameras. See [Feature interdependencies](#) on page 42 for the recommended order to **configure** the camera. In the Alvium user guides, the image data flow describes the sequence of image processing steps inside the camera. The shown functionalities represent features or feature groups.



¹ Selected models only: See tables in your Alvium camera's user guide.

² Model dependent: See tables in your Alvium camera's user guide.

³ Model dependent: See ADC bit depths in your Alvium camera's user guide.

⁴ Factory preset for FPNC = Fixed Pattern Noise Correction. See your Alvium camera's user guide.

⁵ Factory preset for DPC = Defect pixel correction

⁶ Color models only

⁷ For monochrome models, values for R,G,B are equal.

⁸ Referred to as image buffer in feature descriptions.

Figure 2: Image data flow for Alvium cameras

Feature interdependencies

The conversion between time and clock cycles affects control values. Features for pixel format, bandwidth, ROI, exposure time, and triggering are related to each other. Changing values for one feature can change values for another feature. For example, frame rates can be reduced when **PixelFormat** is changed subsequently. [Figure 3](#) shows the interdependencies.

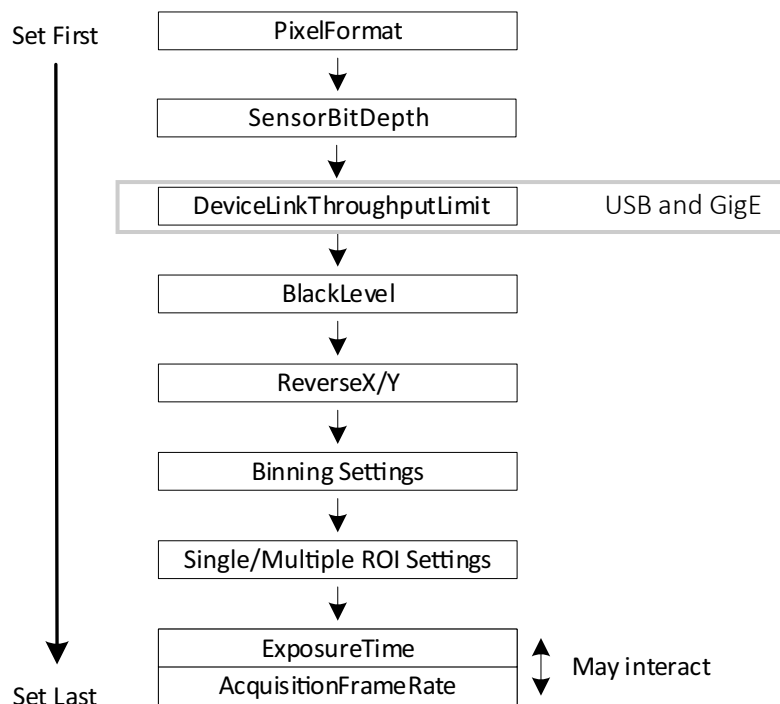


Figure 3: Interdependencies between features

Regions of interest and auto mode regions



Multiple regions

See descriptions in [MultipleRegionControl \(subcategory\)](#) on page 229.

Auto mode regions are areas of the image, where measurements are done for various auto features, such as for intensity with auto exposure. Several auto mode regions are supported. [Figure 4](#) shows features to define regions of interest (ROIs) and auto mode regions.

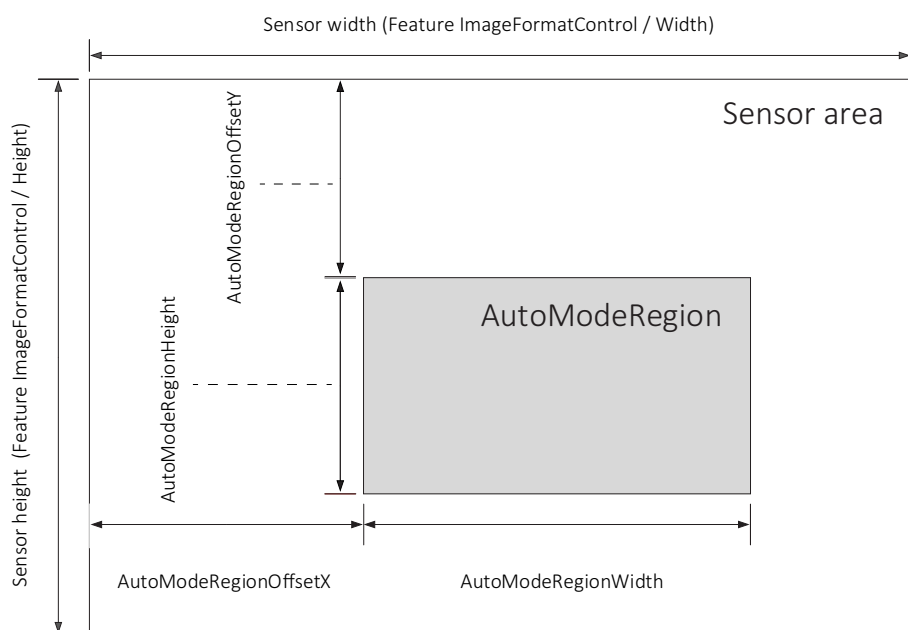


Figure 4: auto mode region and ROI measurement features

Basic rules

Set ROIs before auto mode regions:

- Auto mode region and ROI coordinates relate to the origin of the sensor pixel area. If the ROI position is changed, the absolute position of the auto mode region is maintained.
- The auto mode region must be a subset of the respective ROI.
- When auto mode regions are enabled initially, the position and size are the same as for the current ROI. Therefore: If adjust settings for an auto mode regions first, then disable and re enable it again, your previous settings will be lost. The position and size will be the same as for the current ROI again. Otherwise, if the ROI is changed so that the auto mode region the ROI do not overlap, the auto mode region is disabled.

ROI and auto mode region effects

Auto mode regions are always treated as a subset of ROIs. Figure 5 shows the interaction between ROIs and auto mode regions.

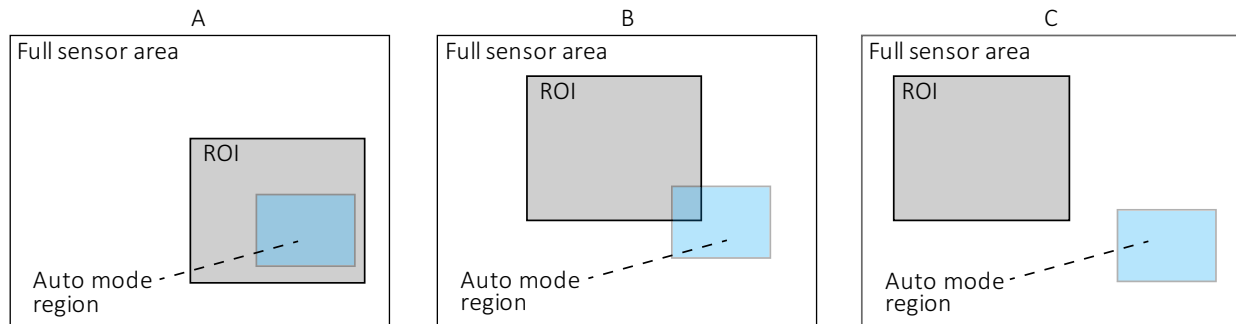


Figure 5: ROI and auto mode region > Effects

A.

Scenario: User input creates an auto mode region included by a larger ROI.

Result: Camera logic applies no changes to the selected auto mode region. The complete auto mode region is effective.

B.

Scenario: User input creates a common area between the ROI that partly overlaps with the auto mode region.

Result: Camera logic reduces the effective auto mode region to the common area between auto mode region and ROI.

Recommendation: Relocate and resize the auto mode region to become a subset of or to equal the ROI.

C.

Scenario: User input creates a ROI and auto mode region that do not overlap.

Result: Camera logic disables the auto mode region.

Recommendation: Create an auto mode region that overlaps or that is equal to the ROI.

Feature descriptions: Transport Layer



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ActionControl

The features in this category can be used to send (scheduled) action commands to **GigE cameras**.

Note: The GenTL SFNC defines this category as part of the Interface Module, see [ActionControl](#) on page 66. They are duplicated in the Transport Layer Module for easier usage (sending on all interfaces).

Interface support	GigE
Display name	Action Control
Standard	GenTL SFNC adapted
Origin of feature	Transport layer
Feature type	(Category)

ActionCommand

Sends an action command.

Interface support	GigE
Display name	Action Command
Standard	Gen TL SFNC adapted
Origin of feature	Transport layer
Feature type	Command
Access	W
Affected features	Not applicable
Category	/ActionControl

ActionDeviceKey

Controls the device key for an action command to be sent.

Note: This parameter must have the same value for all devices in a group.

Interface support	GigE
Display name	Action Device Key
Standard	Gen TL SFNC adapted
Origin of feature	Transport layer
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/ActionControl

Values	Description
0	Minimum
4294967295	Maximum

ActionGroupKey

Controls the group key for an action command to be sent.

Note: This parameter must have the same value for all devices in a group.

Interface support	GigE
Display name	Action Group Key
Standard	Gen TL SFNC adapted
Origin of feature	Transport layer
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/ActionControl

Values	Description
0	Minimum
4294967295	Maximum

ActionGroupMask

Controls the group mask for an action command to be sent.

Note: This parameter must have the same value for all devices in a group.

Interface support	GigE
Display name	Action Group Mask
Standard	Gen TL SFNC adapted
Origin of feature	Transport layer
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/ActionControl

Values	Description
0	Minimum
4294967295	Maximum

ActionScheduledTime

Controls the time in a time-enabled action command.

Interface support	GigE
Display name	Action Scheduled Time
Standard	Gen TL SFNC adapted
Origin of feature	Transport layer
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/ActionControl

Values	Description
0	Minimum
9223372036854775807	Maximum

ActionScheduledTimeEnable

Enables or disables time-enabled action commands.

Interface support	GigE
Display name	Action Scheduled Time Enable
Standard	Gen TL SFNC adapted
Origin of feature	Transport layer
Feature type	Boolean
Access	R/W
Affected features	Not applicable
Category	/ActionControl

Values	Description
<i>True</i>	Scheduled action command are enabled.
<i>False</i>	Scheduled action commands are disabled (default).

GevActionDestinationIPAddress

Controls the IP address for an action command to be sent.

Interface support	GigE
Display name	Gev Action Destination IP Address
Standard	Gen TL SFNC adapted
Origin of feature	Transport layer
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/ActionControl

Values	Description
0	Minimum
4294967295	Maximum

SystemInformation

The features in this category can be used to display versions of the used GenTL and GenTL SFNC, and to identify the GenTL Producer.

Interface support	All
Display name	System Information
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	(Category)

GenTL SFNC Version Major

Displays the major version number of the GenTL Standard Features Naming Convention that was used to create the GenTL Producer's XML.

Interface support	USB
Display name	Gen TL SFNC Version Major
Standard	Gen TL SFNC
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/SystemInformation

Values	Description
-9223372036854775808	Minimum
9223372036854775807	Maximum

GenTL_SFNC_Version_Minor

Displays the minor version number of the GenTL Standard Features Naming Convention that was used to create the GenTL Producer's XML.

Interface support	USB
Display name	Gen TL SFNC Version Minor
Standard	Gen TL SFNC
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/SystemInformation

Values	Description
-9223372036854775808	Minimum
9223372036854775807	Maximum

GenTL_SFNC_Version_Sub_Minor

Displays the sub minor version number of the GenTL Standard Features Naming Convention that was used to create the GenTL Producer's XML.

Interface support	USB
Display name	Gen TL SFNC Version Sub Minor
Standard	Custom
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/SystemInformation

Values	Description
-9223372036854775808	Minimum
9223372036854775807	Maximum

GenTLVersionMajor

Displays the major version number of the GenTL specification the GenTL Producer implementation complies with.

Interface support	All
Display name	Gen TL Version Major
Standard	Gen TL SFNC
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/SystemInformation

Values	Description
0	Minimum
4294967295	Maximum

GenTLVersionMinor

Displays the minor version number of the GenTL specification the GenTL Producer implementation complies with.

Interface support	All
Display name	Gen TL Version Minor
Standard	Gen TL SFNC
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/SystemInformation

Values	Description
0	Minimum
4294967295	Maximum

GevVersionMajor

Displays the major version number of the GigE Vision specification that the GenTL Producer implementation complies with.

Interface support	GigE
Display name	Gev Version Major
Standard	GenTL (deprecated)
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/SystemInformation
Values	Description
1	Minimum

GevVersionMinor

Displays the minor version number of the GigE Vision specification that the GenTL Producer implementation complies with.

Interface support	GigE
Display name	Gev Version Minor
Standard	GenTL (deprecated)
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/SystemInformation
Values	Description
1	Minimum

TLDisplayName

Displays the user readable name of the GenTL Producer.

This features corresponds to the TL_INFO_DISPLAYNAME command of the TLGetInfo function.

Interface support	All
Display name	TL Display Name
Standard	Gen TL SFNC
Origin of feature	Transport layer
Feature type	String
Access	R
Affected features	Not applicable
Category	/SystemInformation

TLID

Displays the Unique identifier of the GenTL Producer like a GUID.

This feature corresponds to the TL_INFO_ID command of the TLGetInfo function.

Interface support	All
Display name	TL ID
Standard	Gen TL SFNC
Origin of feature	Transport layer
Feature type	String
Access	R
Affected features	Not applicable
Category	/SystemInformation

TLModelName

Displays the name of the GenTL Producer to distinguish different kinds of GenTL Producer implementations from one vendor.

This feature corresponds to the TL_INFO_MODEL command of the TLGetInfo function.

Interface support	All
Display name	TL Model Name
Standard	Gen TL SFNC
Origin of feature	Transport layer
Feature type	String
Access	R
Affected features	Not applicable
Category	/SystemInformation

TLPath

Displays the full path to the GenTL Producer driver including name and extension.

This feature corresponds to the TL_INFO_PATHNAME command of the TLGetInfo function.

Interface support	All
Display name	TL Path
Standard	Gen TL SFNC
Origin of feature	Transport layer
Feature type	String
Access	R
Affected features	Not applicable
Category	/SystemInformation

TLType

Displays the transport layer type of the GenTL Producer implementation.

Corresponds to the TL_INFO_TLTYPE command of the TLGetInfo function.

Interface support	All
Display name	TL Type
Standard	Gen TL SFNC adapted
Origin of feature	Transport layer
Feature type	String
Access	R
Affected features	Not applicable
Category	/SystemInformation

Values	Description
<i>Custom</i>	MIPI CSI-2
<i>GigEVision</i>	GigE Vision
<i>USB3Vision</i>	USB3 Vision

TLVendorName

Displays the name of the GenTL Producer vendor.

This feature corresponds to the TL_INFO_VENDOR command of the TLGetInfo function.

Interface support	All
Display name	TL Vendor Name
Standard	Gen TL SFNC
Origin of feature	Transport layer
Feature type	String
Access	R
Affected features	Not applicable
Category	/SystemInformation

TLVersion

Displays the vendor specific version string.

This feature corresponds to the TL_INFO_VERSION command of the TLGetInfo function.

Interface support	All
Display name	TL Version
Standard	Gen TL SFNC
Origin of feature	Transport layer
Feature type	String
Access	R
Affected features	Not applicable
Category	/SystemInformation

CameraAddressForcing

This category contains system features to force access for cameras that are otherwise not detected.

Interface support	GigE
Display name	Camera Address Forcing
Standard	Custom
Origin of feature	Transport layer
Feature type	(Category)

GevDeviceForceGateway

Controls the gateway of the GEV camera to be forced.

Interface support	GigE
Display name	Gev Device Force Gateway
Standard	Custom
Origin of feature	Transport layer
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/CameraAddressForcing

Values	Description
0	Minimum
4294967295	Maximum

GevDeviceForceIP

Sends the force address command on all interfaces.

Interface support	GigE
Display name	Gev Device Force IP
Standard	Custom
Origin of feature	Transport layer
Feature type	Command
Access	W
Affected features	Not applicable
Category	/CameraAddressForcing

GevDeviceForceIPAddress

Controls the IP address of the GEV camera to be forced.

Interface support	GigE
Display name	Gev Device Force IP Address
Standard	Custom
Origin of feature	Transport layer
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/CameraAddressForcing

Values	Description
0	Minimum
4294967295	Maximum

GevDeviceForceMACAddress

Controls the 48-Bit MAC address of the GEV camera to force the IP setup.

Interface support	GigE
Display name	Gev Device Force MAC Address
Standard	Custom
Origin of feature	Transport layer
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/CameraAddressForcing

Values	Description
0	Minimum
9223372036854775807	Maximum

GevDeviceForceSubnetMask

Controls the subnet mask of the GEV camera to be forced.

Interface support	GigE
Display name	Gev Device Force Subnet Mask
Standard	Custom
Origin of feature	Transport layer
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/CameraAddressForcing

Values	Description
0	Minimum
4294967295	Maximum

InterfaceEnumeration

The features in this category can be used for interface enumeration of the system module.

Interface support	All
Display name	Interface Enumeration
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	(Category)

InterfaceCount

Displays the number of interfaces on the corresponding GenTL Producer.

Interface support	All
Display name	Interface Count
Standard	Custom
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/InterfaceEnumeration

InterfaceDisplayName

[InterfaceSelector]

Displays the user readable name of the selected interface.

Interface support	All
Display name	Interface Display Name
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	String
Access	R
Affected features	Not applicable
Category	/InterfaceEnumeration

InterfaceID

[InterfaceSelector]

Displays the GenTL Producer wide unique identifier of the selected interface.

Interface support	All
Display name	Interface ID
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	String
Access	R
Affected features	Not applicable
Category	/InterfaceEnumeration

GevInterfaceDefaultIPAddress

[InterfaceSelector]

Displays the IP address of the first subnet for the selected interface.

Interface support	GigE
Display name	Interface IP Address
Standard	Gen TL SFNC
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/InterfaceEnumeration

Values	Description
0	Minimum
4294967295	Maximum

GevInterfaceDefaultSubnetMask

[InterfaceSelector]

Displays the subnet mask of the first subnet for the selected interface.

Interface support	GigE
Display name	Interface Subnet Mask
Standard	Gen TL SFNC
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/InterfaceEnumeration

Values	Description
0	Minimum
4294967295	Maximum

GevInterfaceMACAddress

[InterfaceSelector]

Displays the 48-Bit MAC of the interface.

Interface support	GigE
Display name	Interface MAC Address
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/InterfaceEnumeration

Values	Description
0	Minimum
9223372036854775807	Maximum

InterfaceSelector

Selects the GenTL Producer interface.

Interface support	All
Display name	Interface Selector
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/InterfaceEnumeration

Values	Description
≥ 0	Value range

InterfaceUpdateList

Updates the interface list on this GenTL Producer.

Interface support	All
Display name	Interface Update List
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	Command
Access	W
Affected features	Not applicable
Category	/InterfaceEnumeration

Feature descriptions: Interface



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ActionControl

This category contains all Action Control features of the **Interface module**.

Interface support	GigE
Display name	Action Control
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	(Category)

ActionCommand

Creates an action command.

Interface support	GigE
Display name	Action Command
Standard	Gen TL SFNC
Origin of feature	Transport layer
Feature type	Command
Access	W
Affected features	Not applicable
Category	/ActionControl

ActionDeviceKey

Creates the Action Command Device Key to use in the action command.

Note: This parameter must have the same value for all devices in a group.

Interface support	GigE
Display name	Action Device Key
Standard	Gen TL SFNC
Origin of feature	Transport layer
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	ActionControl

Values	Description
0	Minimum
4294967295	Maximum

ActionGroupKey

Creates the Action Command Group Key to use in the action command.

Note: This parameter must have the same value for all devices in a group.

Interface support	GigE
Display name	Action Group Key
Standard	Gen TL SFNC
Origin of feature	Transport layer
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/ActionControl

Values	Description
0	Minimum
4294967295	Maximum

ActionGroupMask

Creates the Action Command Group Mask to use in the action command.

Note: This parameter must have the same value for all devices in a group.

Interface support	GigE
Display name	Action Group Mask
Standard	Gen TL SFNC
Origin of feature	Transport layer
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/ActionControl

Values	Description
0	Minimum
4294967295	Maximum

ActionScheduledTime

Controls the time for a time-enabled action command.

Interface support	GigE
Display name	Action Scheduled Time
Standard	Gen TL SFNC
Origin of feature	Transport layer
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/ActionControl

Values	Description
0	Minimum
9223372036854775807	Maximum

ActionScheduledTimeEnable

Enables or disables time-enabled action commands.

Interface support	GigE
Display name	Action Scheduled Time Enable
Standard	Gen TL SFNC adapted
Origin of feature	Transport layer
Feature type	Boolean
Access	R/W
Affected features	Not applicable
Category	/ActionControl

Values	Description
<i>True</i>	Scheduled action command are enabled.
<i>False</i>	Scheduled action commands are disabled (default).

GevActionDestinationIPAddress

Controls the destination IP address for the action command.

Note: This can be any valid destination address (including broadcast addresses for this interface).

Interface support	GigE
Display name	Gev Action Destination IP Address
Standard	Gen TL SFNC
Origin of feature	Transport layer
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/ActionControl

Values	Description
0	Minimum
4294967295	Maximum

DeviceEnumeration

This category contains all Device Enumeration features of the **Interface module**.

Interface support	All
Display name	Device Enumeration
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	(Category)

DeviceAccessStatus

Displays the device's access status at the moment of the last execution of `DeviceUpdateList`.

Interface support	All
Display name	Device Access Status
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	Enumeration
Access	R
Affected features	Not applicable
Category	/DeviceEnumeration

Values	Description
<i>Unknown</i>	Producer is unknown.
<i>ReadWrite</i>	Full access
<i>ReadOnly</i>	Read-only access
<i>NoAccess</i>	No connection available
<i>Busy</i>	The device has been opened by another entity already.
<i>OpenReadWrite</i>	The device has been opened in Read/Write mode by this GenTL host.
<i>OpenReadOnly</i>	The device has been opened in Read only mode by this GenTL host.

DeviceCount

Displays the number of found devices

Interface support	All
Display name	Device Count
Standard	Custom
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/DeviceEnumeration

Values	Description
0	Minimum
4294967295	Maximum

DeviceDisplayName

[DeviceSelector]

Displays the user readable name of the selected device.

Interface support	All
Display name	Device Display Name
Standard	Gen TL SFNC
Origin of feature	Transport layer
Feature type	String
Access	R
Affected features	Not applicable
Category	/DeviceEnumeration

DeviceDriverPath

[DeviceSelector]

Displays the system driver path that can be used for opening the selected device.

Interface support	USB
Display name	Device Driver Path
Standard	Custom
Origin of feature	Transport layer
Feature type	String
Access	R
Affected features	Not applicable
Category	/DeviceEnumeration

DeviceID

[DeviceSelector]

Displays the interface wide unique identifier of the selected device.

Interface support	All
Display name	Device ID
Standard	Gen TL SFNC
Origin of feature	Transport layer
Feature type	String
Access	R
Affected features	Not applicable
Category	/DeviceEnumeration

DeviceLocation

[DeviceSelector]

Displays the location path of the device in the tree of the corresponding interface that can be used for opening the selected device.

Interface support	USB
Display name	Device Location
Standard	Custom
Origin of feature	Transport layer
Feature type	String
Access	R
Affected features	Not applicable
Category	/DeviceEnumeration

DeviceModelName

[DeviceSelector]

Displays the name of the selected device model.

This feature corresponds to **DeviceModelName** of the remote device.

Interface support	All
Display name	Device Model Name
Standard	Gen TL SFNC
Origin of feature	Transport layer
Feature type	String
Access	R
Affected features	Not applicable
Category	/DeviceEnumeration

DeviceSelector

Selects the device to be displayed.

Interface support	All
Display name	Device Selector
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	Enumeration
Access	R
Affected features	Not applicable
Category	/DeviceEnumeration

Values	Description
≥ 0	Value range

DeviceType

[DeviceSelector]

Displays the transport layer technology of the selected device.

Interface support	All
Display name	Device Type
Standard	Gen TL SFNC adapted
Origin of feature	Transport layer
Feature type	Enumeration
Access	R
Affected features	Not applicable
Category	/DeviceEnumeration

Values	Description
<i>Custom</i>	MIPI CSI-2
<i>GigEVision</i>	GigE Vision
<i>USB3</i>	USB3 Vision

DeviceUpdateList

Updates the transport layer's device list.

Interface support	All
Display name	Device Update List
Standard	Gen TL SFNC
Origin of feature	Transport layer
Feature type	Command
Access	R
Affected features	Not applicable
Category	/DeviceEnumeration

DeviceUpdateTimeout

Controls the timeout for the **DeviceUpdateList** command.

Note: As long as no value has been specified by the user, the value is updated based on the selected value for **DiscoveryMode**.

Interface support	GigE
Display name	Device Update Timeout
Standard	GenTL SFNC
Origin of feature	Transport Layer
Feature type	Integer
Access	R/W
Unit	Milliseconds [ms]
Affected features	Not applicable
Category	/DeviceEnumeration

Values	Description
1	Minimum
5000	Maximum

DeviceVendorName

[DeviceSelector]

Displays the vendor's name for the selected device.

This feature corresponds to the **DeviceVendorName** of the remote device.

Interface support	All
Display name	Device Vendor Name
Standard	Gen TL SFNC
Origin of feature	Transport layer
Feature type	String
Access	R
Affected features	Not applicable
Category	/DeviceEnumeration

Gev (subcategory)

Note: Features in this subcategory are available for Alvium **GigE cameras only**.

This category contains GigE related features for Device Enumeration.

Interface support	GigE
Display name	GVCP
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	(Subcategory)
Category	/DeviceEnumeration

GevDeviceForceGateway

Controls the gateway of the GEV camera to be forced.

Interface support	GigE
Display name	Gev Device Force Gateway
Standard	GenTL SFNC
Origin of feature	Transport Layer
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/DeviceEnumeration/Gev

Values	Description
0	Minimum
4294967295	Maximum

GevDeviceForceIP

Sends the force address command on all interfaces.

Interface support	GigE
Display name	Gev Device Force IP
Standard	GenTL SFNC
Origin of feature	Transport Layer
Feature type	Command
Access	W
Affected features	Not applicable
Category	/DeviceEnumeration/Gev

GevDeviceForceIPAddress

Controls the IP address of the GEV camera to be forced.

Interface support	GigE
Display name	Gev Device Force IP Address
Standard	GenTL SFNC
Origin of feature	Transport Layer
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/DeviceEnumeration/Gev

Values	Description
0	Minimum
4294967295	Maximum

GevDeviceForceSubnetMask

Controls the subnet mask of the GEV camera to be forced.

Interface support	GigE
Display name	Gev Device Force Subnet Mask
Standard	GenTL SFNC
Origin of feature	Transport Layer
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/DeviceEnumeration/Gev

Values	Description
0	Minimum
4294967295	Maximum

GevDeviceIPAddress

[DeviceSelector]

Displays the current IP address of the selected remote device.

Interface support	GigE
Display name	Device IP Address
Standard	GenTL SFNC
Origin of feature	Transport Layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/DeviceEnumeration/Gev

Values	Description
0	Minimum
4294967295	Maximum

GevDeviceMACAddress

[DeviceSelector]

Displays the current 48-Bit MAC address of the selected remote device.

Interface support	GigE
Display name	Device MAC Address
Standard	GenTL SFNC
Origin of feature	Transport Layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/DeviceEnumeration/Gev

Values	Description
0	Minimum
9223372036854775807	Maximum

GevDeviceSubnetMask

[DeviceSelector]

Displays the current IP address of the selected remote device.

Interface support	GigE
Display name	Device Subnet Mask
Standard	GenTL SFNC
Origin of feature	Transport Layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/DeviceEnumeration/Gev

Values	Description
0	Minimum
4294967295	Maximum

GevInterfaceMACAddress

Displays the current 48-Bit MAC address of the interface.

Interface support	GigE
Display name	Interface MAC Address
Standard	GenTL SFNC
Origin of feature	Transport Layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/DeviceEnumeration/Gev

Values	Description
0	Minimum
9223372036854775807	Maximum

GevInterfaceSubnetIPAddress

Displays the IP address of the selected subnet for the interface.

Interface support	GigE
Display name	Interface Subnet IP Address
Standard	GenTL SFNC adapted
Origin of feature	Transport Layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/DeviceEnumeration/Gev

Values	Description
0	Minimum
4294967295	Maximum

GevInterfaceSubnetMask

Displays the current IP address of the selected subnet for the interface.

Interface support	GigE
Display name	Interface Subnet Mask
Standard	GenTL SFNC adapted
Origin of feature	Transport Layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/DeviceEnumeration/Gev

Values	Description
0	Minimum
4294967295	Maximum

Settings

The features in this category can be used to specify settings for GigE Device Discovery.

Interface support	GigE
Display name	Settings
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	(Category)

DiscoveryBroadcastMode

Selects the area where the interface (= the host) sends DHCP discover messages.

Interface support	GigE
Display name	Discovery Broadcast Mode
Standard	Custom
Origin of feature	Transport layer
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/Settings

Values	Description
<i>Local</i>	The interface sends the discovery broadcast to the local broadcast IP address 255.255.255.255 (default).
<i>Subnet</i>	The interface sends the discovery broadcast to a subnet broadcast IP address, such as 192.168.1.255.

DiscoveryMode

Controls how the interface discovers connected devices, using GigE Vision discover messages.

Interface support	GigE
Display name	Discovery Mode
Standard	Custom
Origin of feature	Transport layer
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/Settings

Values	Description
<i>Auto</i>	The interface sends the GigE Vision discover message in a frequency [ms]: $\text{InterfaceBeatRate} \times \text{InterfaceHailPace}$ (Default)
<i>Once</i>	The interface sends the GigE Vision discover message once during the startup of the transport layer.
<i>Off</i>	The interface does not send GigE Vision discover messages.

InterfaceBeatRate

Controls the frequency for the interface to send DHCP discover messages.

Interface support	GigE
Display name	Interface Beat Rate
Standard	Custom
Origin of feature	Transport layer
Feature type	Integer
Access	R/W
Unit	ms (milliseconds)
Affected features	Not applicable
Category	/Settings

Values	Description
<i>10</i>	Minimum
<i>500</i>	Default value
<i>10000</i>	Maximum

InterfaceHailPace

Controls the frequency for the interface to “hail” (page) devices.

Interface support	GigE
Display name	Interface Hail Pace
Standard	Custom
Origin of feature	Transport layer
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/Settings

Values	Description
1	Value of <code>InterfaceBeatRate</code>
4	Default value
10	10 × value of <code>InterfaceBeatRate</code>

InterfacePingPace

Controls the frequency for the interface to ping devices.

Interface support	GigE
Display name	Interface Ping Pace
Standard	Custom
Origin of feature	Transport layer
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/Settings

Values	Description
1	Value of <code>InterfaceBeatRate</code>
2	Default value
10	10 × value of <code>InterfaceBeatRate</code>

InterfaceInformation

This category contains all Interface Information features of the **Interface module**.

Interface support	All
Display name	Interface Information
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	(Category)

InterfaceDisplayName

[InterfaceSelector]

Displays the user readable name of the selected interface.

This feature corresponds to the INTERFACE_INFO_DISPLAYNAME command of the IFGetInfo function.

Interface support	All
Display name	Interface Display Name
Standard	Gen TL SFNC
Origin of feature	Transport layer
Feature type	String
Access	R
Affected features	Not applicable
Category	/InterfaceInformation

InterfaceID

[InterfaceSelector]

Displays the GenTL Producer wide unique identifier of the selected interface.

This feature corresponds to the INTERFACE_INFO_ID command of the IFGetInfo function.

Interface support	All
Display name	Interface ID
Standard	Gen TL SFNC
Origin of feature	Transport layer
Feature type	String
Access	R
Affected features	Not applicable
Category	/InterfaceInformation

InterfaceType

Displays the transport layer type of the interface.

This feature corresponds to the `INTERFACE_INFO_TLTYPE` command of the `IFGetInfo` function.

Interface support	All
Display name	Interface Type
Standard	Gen TL SFNC adapted
Origin of feature	Transport layer
Feature type	Enumeration
Access	R
Affected features	Not applicable
Category	/InterfaceInformation

Values	Description
<i>Custom</i>	MIPI CSI-2
<i>GigEVision</i>	GigE Vision
<i>USB3</i>	USB3 Vision

Feature descriptions: Local Device



This chapter includes:

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DeviceInformation

Features in this category provide basic information about the **Device module** and its identity.

Interface support	All
Display name	Device Information
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	(Category)

DeviceDisplayName

Displays the user readable name of the camera.

This feature corresponds to the `DEVICE_INFO_DISPLAYNAME` command of the `DevGetInfo` function.

Interface support	All
Display name	Device Display Name
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	String
Access	R
Affected features	Not applicable
Category	/DeviceInformation

Gev

Note: Features in this subcategory are available for Alvium **GigE cameras only**.

The features in this subcategory can be used to control IP settings, the communication between the host and the camera, and the transfer of data packets.

Interface support	GigE
Display name	GigE
Standard	GenTL SFNC
Origin of feature	Transport Layer
Feature type	(Category)
Category	/DeviceInformation

DeviceEndiannessMechanism

Displays the Endianness mode.

Interface support	GigE
Display name	Device Endianness Mechanism
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	Enumeration
Access	R
Affected features	Not applicable
Category	/DeviceInformation/Gev

Values	Description
<i>Legacy</i>	Device endianness is handled according to GenICam Schema 1.0 (default).
<i>Standard</i>	Device endianness is handled according to GenICam Schema 1.1 and later.

GevDeviceGateway

Displays the current gateway of the GVCP interface of the selected remote device (camera).

Interface support	GigE
Display name	Device Gateway
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/DeviceInformation/Gev

Values	Description
0	Minimum
4294967295	Maximum

GevDeviceIPAddress

Displays the current IP address of the GVCP interface of the remote device (camera).

Interface support	GigE
Display name	Device IP Address
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/DeviceInformation/Gev

Values	Description
0	Minimum
4294967295	Maximum

GevDeviceMACAddress

Displays the current 48-Bit MAC address of the GVCP interface of the remote device (camera).

Interface support	GigE
Display name	Device MAC Address
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/DeviceInformation/Gev

Values	Description
0	Minimum
9223372036854775807	Maximum

GevDeviceSubnetMask

Displays the current subnet of the GVCP interface of the remote device (camera).

Interface support	GigE
Display name	Device Subnet Mask
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/DeviceInformation/Gev

Values	Description
0	Minimum
4294967295	Maximum

DeviceInformation (category continued)

The feature descriptions for the `/DeviceInformation/Gev` category have ended on the previous page. The following features continue the `/DeviceInformation` category, without a subcategory.

DeviceID

Displays the interface-wide unique identifier of this device.

This feature corresponds to the `DEVICE_INFO_ID` command of the `DevGetInfo` function.

Interface support	All
Display name	Device ID
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	String
Access	R
Affected features	Not applicable
Category	/DeviceInformation

DeviceLocation

Displays the location path of the device in the tree of the corresponding interface that can also be used for opening the device (camera).

Interface support	CSI-2, USB
Display name	Device Location
Standard	Custom
Origin of feature	Transport layer
Feature type	String
Access	R
Affected features	Not applicable
Category	/DeviceInformation

DeviceModelName

Displays the name of the camera model.

Corresponds to the DEVICE_INFO_MODEL command of the DevGetInfo function.

Interface support	All
Display name	Device Model Name
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	String
Access	R
Affected features	Not applicable
Category	/DeviceInformation

DeviceType

Displays the transport layer type of the camera.

Interface support	All
Display name	Device Type
Standard	GenTL SFNC adapted
Origin of feature	Transport layer
Feature type	Enumeration
Access	R
Affected features	Not applicable
Category	/DeviceInformation

Values	Description
<i>Custom</i>	MIPI CSI-2
<i>GigEVision</i>	GigE Vision
<i>USB3</i>	USB3 Vision

DeviceVendorName

Displays the name of the camera vendor.

This feature corresponds to the DEVICE_INFO_VENDOR command of the DevGetInfo function.

Interface support	All
Display name	Device Vendor Name
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	String
Access	R
Affected features	Not applicable
Category	/DeviceInformation

DriverPath

Displays the system driver path that can also be used for opening the camera.

Interface support	USB
Display name	Driver Path
Standard	Custom
Origin of feature	Transport layer
Feature type	String
Access	R
Affected features	Not applicable
Category	/DeviceInformation

GigE

Note: Features in this category are available for Alvium **GigE cameras only**.

The features in this category can be used to control IP settings, the communication between the host and the camera, and the transfer of data packets.

Interface support	GigE
Display name	GigE
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	(Category)

GVCP (subcategory)

Note: Features in this subcategory are available for Alvium **GigE cameras only**.

The features in this subcategory can be used to control command traffic and timings between the host and the camera.

Interface support	GigE
Display name	GVCP
Standard	Custom
Origin of feature	Transport layer
Feature type	(Subcategory)
Category	/GigE

GVCPCmdRetries

Controls the number of times a particular command to the camera is resent when no answer is being received.

Interface support	GigE
Display name	Command Retries
Standard	Custom
Origin of feature	Transport Layer
Feature type	Integer
Access	R/W
Affected features	GevHeartbeatTimeout, GevHeartbeatInterval, GVCPHBInterval
Category	/GigE/GVCP

Values	Description
1	Minimum
9	Maximum

GVCPCmdTimeout

Controls the period of time for the host to wait for an answer from the camera.

Interface support	GigE
Display name	Command Timeout
Standard	Custom
Origin of feature	Transport Layer
Feature type	Integer
Access	R/W
Unit	ms (milliseconds)
Affected features	GevHeartbeatTimeout, GevHeartbeatInterval, GVCPHBInterval
Category	/GigE/GVCP

Values	Description
100	Minimum
10000	Maximum

GevHeartbeatInterval

Controls the period of time after which a heartbeat is sent by the host.

Interface support	GigE
Display name	Heartbeat Interval
Standard	Custom
Origin of feature	Transport Layer
Feature type	Integer
Access	R/W
Unit	ms (milliseconds)
Affected features	GVCPHBInterval
Category	/GigE/GVCP

Values	Description
200	Minimum
100000	Maximum (depending on the configuration)

GevHeartbeatTimeout

Controls the period of time after which the camera rejects control by the host if no heartbeat activity is registered.

Interface support	GigE
Display name	Heartbeat Timeout
Standard	Custom
Origin of feature	Transport Layer
Feature type	Integer
Access	R/W
Unit	ms (milliseconds)
Affected features	GevHeartbeatInterval, GVCPHBInterval
Category	/GigE/GVCP

Values	Description
25100	Minimum
100000	Maximum

StreamEnumeration

This category contains all Stream Enumeration features of the **Device module**.

Interface support	All
Display name	Stream Enumeration
Standard	GenTL SFNC
Origin of feature	Camera
Feature type	(Category)

StreamCount

Displays the number of available streams.

Interface support	All
Display name	Stream Count
Standard	Custom
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/StreamEnumeration

Values	Description
0	Minimum
4294967295	Maximum

StreamID

[StreamSelector]

Displays the unique identifier for the stream of the selected device (camera), for instance a GUID.

Interface support	All
Display name	Stream ID
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	String
Access	R
Affected features	Not applicable
Category	/StreamEnumeration

StreamSelector

Selects the stream channel.

Interface support	All
Display name	Stream Selector
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/StreamEnumeration

Values	Description
≥ 0	Value range

Feature descriptions: Camera



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AcquisitionControl

The features in this category can be used to control acquisition, frame rate, and exposure time, and to enable triggering the camera and connected devices, such as strobe lights.

Interface support	All
Display name	Acquisition Control
Standard	SFNC
Origin of feature	Camera
Feature type	(Category)

AcquisitionFrameCount

Controls the number of frames to acquire in *MultiFrame* acquisition mode.

Interface support	All
Display name	Acquisition Frame Count
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	(number)
Affected features	Not applicable
Category	/AcquisitionControl

AcquisitionFrameRate

Controls the acquisition rate at which the frames are captured.

Notes

- If **AcquisitionFrameRateEnable** is false, **AcquisitionFrameRate** is read-only.
- If values for exposure time or ROI are changed **after** **AcquisitionFrameRate** has been set, the value may be adjusted. See [Feature interdependencies](#) on page 42. In this case the value for **AcquisitionFrameRate** must be re-adjusted by the user.

Interface support	All
Display name	Acquisition Frame Rate
Standard	SFNC
Origin of feature	Camera
Feature type	Float
Access	R/W
Unit	Hertz
Affected features	ExposureTime
Category	/AcquisitionControl

AcquisitionFrameRateEnable

Enables or disables **AcquisitionFrameRate**.

Note: Otherwise, the frame rate is implicitly controlled by the combination of other features like **ExposureTime**.

Interface support	All
Display name	Acquisition Frame Rate Enable
Standard	SFNC
Origin of feature	Camera
Feature type	Boolean
Access	R/W
Affected features	AcquisitionFrameRate
Category	/AcquisitionControl

Values	Description
<i>True</i>	AcquisitionFrameRate feature is writable and used to control the acquisition rate.
<i>False</i>	AcquisitionFrameRate is implicitly controlled by the combination of other features like ExposureTime . Automatically, the maximum available frame rate is used.

AcquisitionFrameRateMode

Selects the priority between `AcquisitionFrameRate` and `ExposureTime`.

Interface support	All
Display name	Acquisition Frame Rate Mode
Standard	Custom
Origin of feature	Camera
Feature type	Enumeration
Access	R
Affected features	Not affected
Category	/AcquisitionControl

Values	Description
<i>Basic</i>	<code>ExposureTime</code> has the priority over <code>AcquisitionFrameRate</code> . If <code>ExposureTime</code> gets longer than the inverse of <code>AcquisitionFrameRate</code> , the resulting acquisition frame rate is reduced accordingly.

AcquisitionMode

Selects the acquisition mode of the camera. The feature defines mainly the number of frames to capture during an acquisition and the way the acquisition stops.

Interface support	All
Display name	Acquisition Mode
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	LineMode, TriggerSource, LineInverter, LineSource
Category	/AcquisitionControl

Values	Description
<i>Continuous</i>	After an AcquisitionStart event: Selects continuous image acquisition until acquisition stop is triggered.
<i>MultiFrame</i>	A number of images is acquired that is specified by AcquisitionFrameCount . Further trigger events will be ignored until acquisition is stopped and restarted. In case of <i>MultiFrame</i> , acquisition can be stopped using AcquisitionStop command before it reaches the number of frames specified in AcquisitionFrameCount . So, the AcquisitionStop trigger event will not be ignored.
<i>SingleFrame</i>	Single images are acquired. Further trigger events will be ignored until acquisition is stopped and restarted.

AcquisitionStart

Starts the acquisition of the camera.

Note: The number of frames captured is specified by **AcquisitionMode**.

Interface support	All
Display name	Acquisition Start
Standard	SFNC
Origin of feature	Camera
Feature type	Command
Access	W
Affected features	Not applicable
Category	/AcquisitionControl

AcquisitionStatus

[AcquisitionStatusSelector]

Displays the state of the internal acquisition signal selected using **AcquisitionStatusSelector**.

Interface support	All
Display name	Acquisition Status
Standard	SFNC
Origin of feature	Camera
Feature type	Boolean
Access	R
Affected features	Not applicable
Category	/AcquisitionControl

Values	Description
<i>False</i>	The camera is performing the selected action.
<i>True</i>	The camera is performing the selected action.

AcquisitionStatusSelector

Selects the internal acquisition signal to read using **AcquisitionStatus**.

Interface support	All
Display name	Acquisition Status Selector
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	AcquisitionStatus
Category	/AcquisitionControl

Values	Description
<i>Acquisition Active</i>	The camera acquires one or many frames.
<i>Acquisition Transfer</i>	The camera transfers one or many frames to the host.

AcquisitionStop

Stops the acquisition of the camera at the end of the current frame.

Note: This feature is mainly used when **AcquisitionMode** is *Continuous*, but it can be used in any acquisition mode.

Interface support	All
Display name	Acquisition Stop
Standard	SFNC
Origin of feature	Camera
Feature type	Command
Access	W
Affected features	Not applicable
Category	/AcquisitionControl

ClockTriggerFrequency

Controls the frequency for synchronous image acquisition when using PTP (IEEE 1588 Precision Time Protocol).

Interface support	GigE
Display name	Clock Trigger Frequency
Standard	Custom
Origin of feature	Camera
Feature type	Float
Access	R/W
Affected features	Not applicable
Category	/AcquisitionControl

Values	Description
Camera model dependent	Minimum
Camera model dependent	Maximum

ClockTriggerTimestamp

Controls the timestamp for the first trigger in synchronous image acquisition using PTP.

Note: For Mako and Manta cameras, **AquisitionTimeGate** is the equivalent feature.

Interface support	GigE
Display name	Clock Trigger Timetamp
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	Ticks = Nanoseconds (ns)
Affected features	Not applicable
Category	/AcquisitionControl

Values	Description
0	Minimum
9223372036854775807	Maximum

ExposureActiveMode

Selects the mode for the **ExposureActive** signal. You can use this feature for synchronizing strobe lights to compensate for the rolling shutter effect.

Note: Global shutter cameras support only *FlashWindow*, other cameras support *FirstLine* and *FlashWindow*.

Interface support	All
Display name	Exposure Active Mode
Standard	Custom
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	LineInverter, LineMode, LineSelector, LineSource, LineStatus, LineStatusAll, TimerDelay, TimerDuration, TimerReset, TimerSelector, TimerStatus, TimerTriggerActivation, TimerTriggerSource, TriggerSelector
Category	/AcquisitionControl

Values	Description
<i>FirstLine</i>	Sets the ExposureActive signal to high when the first line is exposing.
<i>FlashWindow</i>	Sets the ExposureActive signal to high when all lines are exposing simultaneously.

ExposureAuto

Selects the auto exposure mode.

Note: The output of the auto exposure function affects the whole image.

Interface support	All
Display name	Exposure Auto
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/AcquisitionControl

Values	Description
<i>Continuous</i>	The exposure time is adjusted continuously according to the scene illumination.
<i>Off</i>	Automatic mode is disabled.
<i>Once</i>	Automatic exposure is applied once until the target value of the selected auto control algorithm is achieved, then the value returns to <i>Off</i> .

ExposureMode

Selects the operation mode of the exposure (or shutter).

Notes:

- A delay may occur between the trigger signal and the start of the exposure. For the delay with rolling shutter sensor cameras, see your Alvium camera's user guide.
- For *TriggerWidth* and *TriggerControlled*, the resulting exposure time is extended, because of an exposure offset after the trigger pulse.

Interface support	All
Display name	Exposure Mode
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/AcquisitionControl

Value	Description
<i>Timed</i>	The exposure time is set by ExposureTime or ExposureAuto .
<i>TriggerControlled</i> ²	One or more trigger signals control the exposure time independently from the current frame triggers.
<i>TriggerWidth</i> ^{1,2}	The width of the current frame trigger signal(s) pulse controls the exposure time.

¹ Controlling the exposure time using *TriggerWidth*: We recommend you to follow the workflow shown in [ExposureMode- Using TriggerWidth](#) on page 112.

² Global shutter sensor cameras only.

ExposureMode - Using TriggerWidth

Follow the workflow shown in [Figure 6](#) to use *TriggerWidth*.

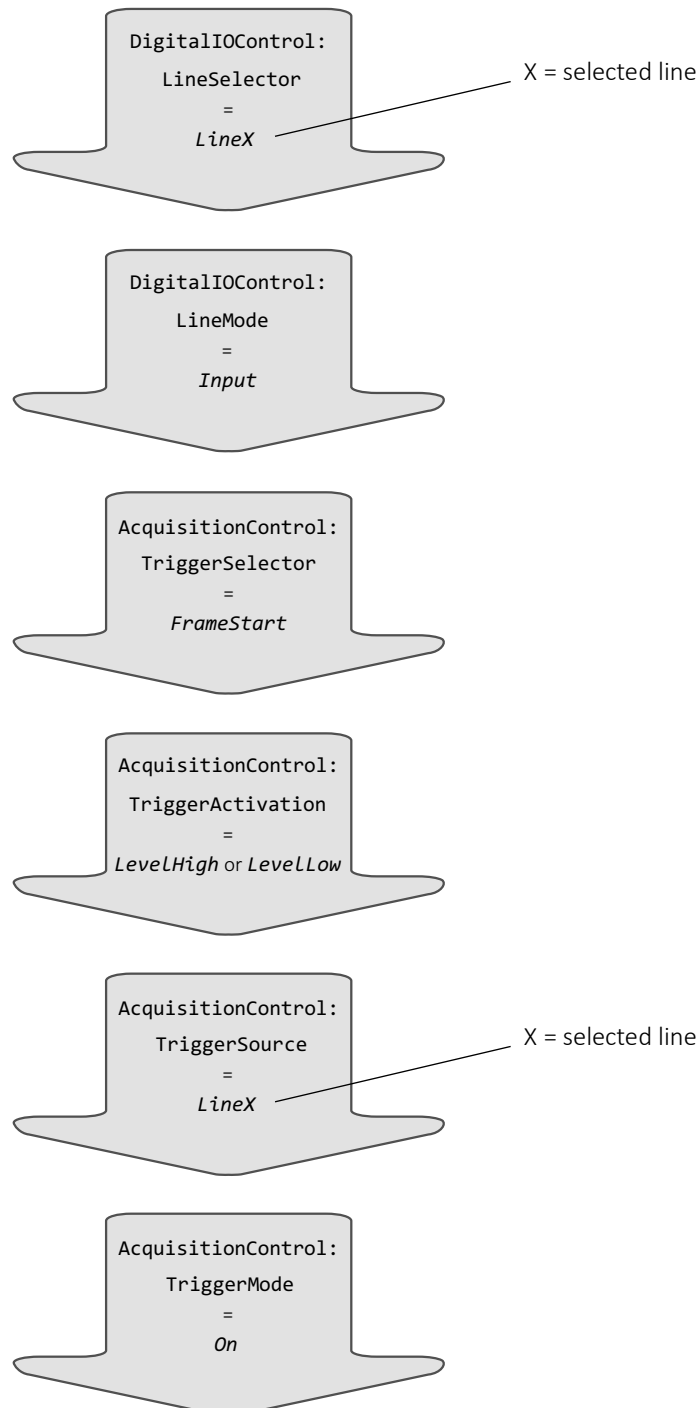


Figure 6: Workflow for using *TriggerWidth*

ExposureTime

Selects the exposure time when **ExposureMode** is *Timed* and **ExposureAuto** is *Off*. This controls the duration where the photosensitive cells are exposed to light.

Interface support	All
Display name	Exposure Time
Standard	SFNC
Origin of feature	Camera
Feature type	Float
Access	R/W
Unit	Microseconds
Affected features	ExposureAutoMin, ExposureAutoMax, AcquisitionFrameRate
Category	/AcquisitionControl

IntegrationMode

Selects the priority between image quality and speed for **Sony IMX GS (global shutter) models only**.

VSWIR sensor models: With overlapping mode, where a new exposure starts during the readout of the previous frame, the so-called **shutter line effect** occurs: The image brightness varies between the sensor top and bottom lines. This feature avoids the shutter line effect and enables a homogeneous image brightness.

Interface support	All
Display name	Integration Mode
Standard	Custom
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	AcquisitionFrameRate, ExposureTime
Category	/AcquisitionControl

Values	Description
<i>IntegrateThenRead</i>	"ITR": Image capture first, then readout. Use this option for high image quality with low noise and without shutter line.
<i>IntegrateWhileRead</i>	"IWR": The capture and the readout are allowed to overlap. Use this option to allow trigger overlap and higher frame rates (default).

TriggerActivation

[TriggerSelector]

Selects the electrical signal level of the trigger.

Interface support	All
Display name	Trigger Activation
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/AcquisitionControl

Values	Description
<i>AnyEdge</i>	The falling or rising edge of the signal is used for triggering.
<i>FaLLingEdge</i>	The falling edge of the signal is used for triggering.
<i>LevelHigh</i>	Any high signal level is used for triggering.
<i>LevelLow</i>	Any low signal level is used for triggering.
<i>RisingEdge</i>	The rising edge of the signal is used for triggering.

TriggerDelay

[TriggerSelector]

Controls the period of time before the camera corresponds after receiving a trigger signal.

Notes:

- Available only when **TriggeSelector** is set to *FrameStart* or *AcquisitionStart*.
- The value for **TriggerDelay** adds to the sensor related delay between trigger and exposure start. The sensor related delay depends on such as data rate and sensor characteristics.

Interface support	All
Display name	Trigger Delay
Standard	SFNC
Origin of feature	Camera
Feature type	Float
Access	R/W
Unit	Microseconds
Affected features	Not applicable
Category	/AcquisitionControl

Values	Description
0	Minimum
20748634.2705	Maximum

TriggerMode

[TriggerSelector]

Enables or disables the selected trigger.

Interface support	All
Display name	Trigger Mode
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	LineMode, TriggerSource, LineInverter, LineSource
Category	/AcquisitionControl

Values	Description
<i>Off</i>	Triggering is disabled.
<i>On</i>	Triggering is enabled

TriggerSelector

Selects the type of trigger to configure.

Interface support	All
Display name	Trigger Selector
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	TriggerMode, LineMode, TriggerSoftware, LineInverter, LineSource, TriggerSource, TriggerActivation
Category	/AcquisitionControl

Values	Description
<i>Acquisition Active</i>	The selected trigger controls the duration of the acquisition of a single frame or many frames. The acquisition is activated when the trigger signal becomes active and terminated when it goes back to the inactive state.
<i>AcquisitionEnd</i>	The selected trigger terminates the acquisition process.
<i>Acquisition Start</i>	The selected trigger starts the acquisition process.
<i>ExposureActive*</i>	The selected trigger controls the duration of exposure of a single frame (when acquisition is running).
<i>ExposureStart*</i>	The selected trigger starts the exposure of a single frame (when acquisition is running).
<i>ExposureEnd*</i>	The selected trigger ends the exposure of a single frame (when acquisition is running).
<i>FrameStart</i>	The selected trigger starts the capture of a single frame (when acquisition is running).

* Not supported by cameras using rolling shutter sensors.

TriggerSoftware

[TriggerSelector]

Generates an internal trigger. **TriggerSource** must be set to *Software*.

Interface support	All
Display name	Trigger Software
Standard	SFNC
Origin of feature	Camera
Feature type	Command
Access	W
Affected features	Not applicable
Category	/AcquisitionControl

TriggerSource

[TriggerSelector]

Selects the internal signal or physical input line to use as the trigger source.

Note: The selected trigger must have its **TriggerMode** set to **On**.

Interface support	All
Display name	Trigger Source
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/AcquisitionControl

Values	Description
<i>Action0</i> ¹	Action0 command is used to signal triggers.
<i>Action1</i> ¹	Action1 command is used to signal triggers.
<i>Counter0Active</i>	Counter0Active is used to signal triggers.
...	...
<i>Counter3Active</i>	Counter3Active is used to signal triggers.
<i>Line0</i>	Physical Line0 is used to signal triggers.
<i>Line1</i>	Physical Line1 is used to signal triggers.
<i>Line2</i> ²	Physical Line2 is used to signal triggers.
<i>Line3</i> ²	Physical Line3 is used to signal triggers.
<i>Off</i>	Triggering is disabled.
<i>Software</i>	Software is used to signal triggers.
<i>SoftwareSignal0</i>	SoftwareSignal0 is used to signal triggers.
<i>SoftwareSignal1</i>	SoftwareSignal1 is used to signal triggers.
<i>SynchronousClock</i> ¹	SynchronousClock is used to signal triggers.
<i>Timer0Active</i>	Timer0Active is used to signal triggers.
<i>Timer1Active</i>	Timer1Active is used to signal triggers.

¹ Available with Alvium GigE cameras only.

² Available with Alvium GigE and Alvium USB cameras. Alvium CSI-2 cameras support Line0 and Line1 only.

ActionControl

Note: Features in this category are available for Alvium **GigE cameras only**.

The features in this category can be used by external devices to trigger actions within the camera by software commands. This includes ToE (Trigger over Ethernet) where the GigE interface is used for triggering instead of the I/Os.

See [SoftwareSignalControl](#) on page 298 for the interaction with features in this category.

Interface support	GigE
Display name	Action Control
Standard	SFNC
Origin of feature	Camera
Feature type	(Category)

ActionDeviceKey

Controls the device key that allows the device to check the validity of action commands.

Notes:

- **ActionDeviceKey** has the unconventional access mode "write only" to make sure that the primary application alone has control over it.
- The device internal assertion of an action signal is only authorized if the **ActionDeviceKey** and the action device key value in the protocol message are equal.

Interface support	GigE
Display name	Action Device Key
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	W
Affected features	Not applicable
Category	/ActionControl

Values	Description
0	Minimum
4294967295	Maximum (32 Bits)

ActionGroupKey

[ActionSelector]

Controls the key that the device will use to validate the action on reception of the action protocol message.

The device asserts the selected Action signal only if:

- The camera's **ActionDeviceKey** is equal to the action device key in the action protocol message.
- The bitwise AND operation of the action group mask in the action protocol message against the selected **ActionGroupMask** is non-zero.
- The camera's **ActionGroupKey** is equal to the action group key in the action protocol message.

Interface support	GigE
Display name	Action Group Key
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/ActionControl

Values	Description
0	Minimum
4294967295	Maximum

ActionGroupMask

[ActionSelector]

Controls the mask that the device will use to validate the action on reception of the action protocol message.

The device asserts the selected Action signal only if:

- The camera's **ActionDeviceKey** is equal to the action device key in the action protocol message.
- The bitwise AND operation of the action group mask in the action protocol message against the selected **ActionGroupMask** is non-zero.
- The camera's **ActionGroupKey** is equal to the action group key in the action protocol message.

Interface support	GigE
Display name	Action Group Mask
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/ActionControl

Values	Description
0	Minimum
4294967295	Maximum

ActionQueueSize

[ActionSelector]

Displays the size of the scheduled action commands queue. This number represents the maximum number of scheduled action commands that can be pending at a given point in time.

Interface support	GigE
Display name	Action Queue Size
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/ActionControl

Values	Description
0	Minimum
4294967295	Maximum

ActionSelector

Selects to which Action Signal further Action settings apply.

Interface support	GigE
Display name	Action Selector
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R/W
Affected features	ActionGroupKey, ActionGroupMask, ActionQueueSize
Category	/ActionControl

Values	Description
0	Minimum
1	Maximum

AnalogControl

The features in this category can be used to control the intensity levels for monochrome and color imaging.

Interface support	All
Display name	Analog Control
Standard	SFNC
Origin of feature	Camera
Feature type	(Category)

BalanceRatio

[BalanceRatioSelector]

Controls the ratio of the selected color component to the green color component. This feature is used for white balance.

Interface support	All
Display name	Balance Ratio
Standard	SFNC
Origin of feature	Camera
Feature type	Float
Access	R/W
Affected features	Not applicable
Category	/AnalogControl

Values	Description
0	Minimum
8	Maximum
0.001	Increment

BalanceRatioSelector

Selects the balance ratio to control.

Interface support	All
Display name	Balance Ratio Selector
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	BalanceRatio
Category	/AnalogControl

Values	Description
<i>Red</i>	The red channel is adjusted.
<i>Blue</i>	The blue channel is adjusted.

BalanceWhiteAuto

Selects the auto white balance mode.

Interface support	All
Display name	Balance White Auto
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	BalanceWhiteAutoRate, BalanceWhiteAutoTolerance
Category	/AnalogControl

Values	Description
<i>Continuous</i>	Auto white balance is applied continuously.
<i>Once</i>	Auto white balance is applied once. After adjustments have been done, auto white balance is disabled.
<i>Off</i>	Auto white balance is disabled.

BlackLevel

[BlackLevelSelector]

Controls the analog black level as an absolute physical value. The feature represents a DC offset applied to the video signal.

Interface support	All
Display name	Black Level
Standard	SFNC
Origin of feature	Camera
Feature type	Float
Access	R/W
Affected features	Not applicable
Category	/AnalogControl

Values	Description
1	Increment

BlackLevelSelector

Selects the black level to be controlled by the various black level features.

Interface support	All
Display name	Black Level Selector
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	BlackLevel
Category	/AnalogControl

Value	Description
ALL	All black levels are controlled.

Gain

[GainSelector]

Controls the selected gain as an absolute physical value. This is an amplification factor applied to the video signal.

Interface support	All
Display name	Gain
Standard	SFNC
Origin of feature	Camera
Feature type	Float
Access	R/W
Unit	Decibels [dB]
Affected features	GainAutoMin, GainAutoMax
Category	/AnalogControl

Values	Description
<i>0.1</i>	Increment

GainAuto

[GainSelector]

Selects the auto gain mode.

Note: The output of the auto gain function affects the whole image.

Interface support	All
Display name	Gain Auto
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/AnalogControl

Values	Description
<i>Continuous</i>	Gain is continuously adjusted to keep the value set for IntensityControllerTarget . This is triggered by such as changes in illumination or in object brightness.
<i>Once</i>	Auto gain is being applied once. After adjustments have been done, gain is disabled.
<i>Off</i>	Auto gain is disabled.

GainSelector

Selects the gain to be controlled by the various gain features.

Interface support	All
Display name	Gain Selector
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Gain, GainAuto, GainAutoMax
Category	/AnalogControl

Value	Description
<i>ALL</i>	All gains are controlled.

Gamma

Controls the gamma correction of pixel intensity.

Interface support	All
Display name	Gamma
Standard	SFNC
Origin of feature	Camera
Feature type	Float
Access	R/W
Affected features	Not applicable
Category	/AnalogControl

Values	Description
<i>0.4</i>	Minimum
<i>2.4</i>	Maximum
<i>0.5</i>	Increment

AutoModeControl

The features in this category enable auto functions for white balance, gain, and exposure time.

Interface support	All
Display name	Auto Mode Control
Standard	Custom
Origin of feature	Camera
Feature type	(Category)

AutoModeRegionHeight

[AutoModeRegionSelector]

Controls the height of the region used to measure values for all auto functions.

Interface support	All
Display name	Auto Mode Region Height
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	Pixel
Affected features	AutoModeRegionOffsetY
Category	/AutoModeControl

AutoModeRegionOffsetX

[AutoModeRegionSelector]

Controls the horizontal position of the window used to measure the actual value for the auto function.

Interface support	All
Display name	Auto Mode Region OffsetX
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	Pixel
Affected features	AutoModeRegionWidth
Category	/AutoModeControl

AutoModeRegionOffsetY

[AutoModeRegionSelector]

Controls the vertical position of the window used to measure the actual value for the auto function.

Interface support	All
Display name	Auto Mode Region OffsetY
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	Pixel
Affected features	AutoModeRegionHeight
Category	/AutoModeControl

AutoModeRegionSelector

Selects the auto mode region to configure.

Interface support	All
Display name	Auto Mode Region Selector
Standard	Custom
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	AutoModeRegionWidth, AutoModeRegionOffsetX, AutoModeRegionHeight, AutoModeRegionOffsetY
Category	/AutoModeControl

Value	Description
<i>AutoModeRegion1</i>	Auto Mode Region 1 is configured.

AutoModeRegionWidth

[AutoModeRegionSelector]

Controls the width of the window used to measure the actual value for the auto function.

Interface support	All
Display name	Auto Mode Region Width
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	Pixel
Affected features	AutoModeRegionOffsetX
Category	/AutoModeControl

BalanceWhiteAutoRate

Controls the frequency of white balance adjustments.

Interface support	All
Display name	Balance White Auto Rate
Standard	Custom
Origin of feature	Camera
Feature type	Float
Access	R/W
Affected features	BalanceWhiteAutoTolerance
Category	/AutoModeControl

Values	Description
1	Minimum
100	Maximum
1	Increment

BalanceWhiteAutoTolerance

Controls the deviation of the current white balance value from the ideal value at which the white balance is adjusted.

Interface support	All
Display name	Balance White Auto Tolerance
Standard	Custom
Origin of feature	Camera
Feature type	Float
Access	R/W
Affected features	BalanceWhiteAutoRate
Category	/AutoModeControl

Values	Description
0	Minimum
50	Maximum
1	Increment

ExposureAutoMax

Controls the maximum value for auto exposure.

Note: The output of the auto exposure function affects the whole image.

Interface support	All
Display name	Exposure Auto Max
Standard	Custom
Origin of feature	Camera
Feature type	Float
Access	R/W
Affected features	ExposureAutoMin
Category	/AutoModeControl

ExposureAutoMin

Controls the minimum value for auto exposure.

Note: The output of the auto exposure function affects the whole image.

Interface support	All
Display name	Exposure Auto Min
Standard	Custom
Origin of feature	Camera
Feature type	Float
Access	R/W
Affected features	ExposureAutoMax
Category	/AutoModeControl

GainAutoMax

Controls the maximum value for auto gain.

Note: The output of the auto gain function affects the whole image.

Interface support	All
Display name	Gain Auto Max
Standard	Custom
Origin of feature	Camera
Feature type	Float
Access	R/W
Affected features	GainAutoMin
Category	/AutoModeControl

GainAutoMin

Controls the minimum value for auto gain.

Note: The output of the auto gain function affects the whole image.

Interface support	All
Display name	Gain Auto Min
Standard	Custom
Origin of feature	Camera
Feature type	Float
Access	R/W
Affected features	GainAutoMax
Category	/AutoModeControl

IntensityAutoPrecedence

Selects the precedence of intensity controller.

Interface support	All
Display name	Intensity Auto Precedence
Standard	Custom
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/AutoModeControl

Values	Description
<i>MinimizeBlur</i>	Orders the control loops so that image blur is minimized: gain first, exposure time second. Long exposure times are avoided if possible.
<i>MinimizeNoise</i>	Orders the control loops so that noise is minimized: exposure time first, gain second. Gain increases are avoided if possible.

IntensityControllerAlgorithm

[IntensityControllerSelector]

Selects the algorithm determining how the histogram is used to determine the current intensity value.

Note: The outliers are disregarded.

Interface support	All
Display name	Intensity Controller Algorithm
Standard	Custom
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/AutoModeControl

Values	Description
<i>Mean</i>	After comparing the arithmetic mean of the current image's histogram to ExposureAutoTarget , the exposure time for the next image is adjusted to meet this target. Bright areas are allowed to saturate.

IntensityControllerRate

Controls the rate at which the controller should compute an intensity value.

Note: This value also defines the period at which the associated auto functions change their control value.

Interface support	All
Display name	Intensity Controller Rate
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/AutoModeControl

Values	Description
<i>1</i>	Minimum
<i>100</i>	Maximum

IntensityControllerRegion

Selects the subregion of the image that the intensity controller operates on.

Interface support	All
Display name	Intensity Controller Region
Standard	Custom
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/AutoModeControl

Values	Description
<i>AutoModeRegion1</i>	The intensity controller controls Auto Mode Region 1.
<i>FuLLImage</i>	The intensity controller controls the full sensor area.

IntensityControllerSelector

Selects the intensity controller to configure.

Interface support	All
Display name	Intensity Controller Selector
Standard	Custom
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	IntensityControllerTolerance, IntensityControllerAlgorithm
Category	/AutoModeControl

Value	Description
<i>IntensityController1</i>	Intensity Controller 1 is selected to be configured.

IntensityControllerTarget

Controls the target intensity value for auto intensity control as deviation from the mean value in [percent]. The default value for all auto features is 50.

Interface support	All
Display name	Intensity Controller Target
Standard	Custom
Origin of feature	Camera
Feature type	Float
Access	R/W
Unit	Percent [%]
Affected features	Not applicable
Category	/AutoModeControl

Values	Description
<i>10</i>	Minimum
<i>89.9</i>	Maximum
<i>0.0001</i>	Increment
<i>50</i>	Default

IntensityControllerTolerance

Controls the deviation of the current value from the target value at which the feature is inactive.

Interface support	All
Display name	Intensity Controller Tolerance
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/AutoModeControl

Values	Description
0	Minimum
50	Maximum
1	Increment

ChunkDataControl

Note: Features in this category are available for Alvium **GigE and USB cameras only**.

The features in this category enable including image parameters at the end of the image payload.



Payload size is affected

Observe that chunk data increases the total payload size of an image.

Interface support	GigE, USB
Display name	Chunk Data Control
Standard	SFNC
Origin of feature	Camera
Feature type	(Category)

Functional overview

Select image parameter to be included in chunk data separately:

1. Set **ChunkSelector** to the image parameter you want to include at the end of the image payload.
2. Set **ChunkEnable** = *True* to confirm this selection.

Activate including image parameters at the end of the image payload:

3. Set **ChunkModeActive** = *True* to include the selected image parameters at the end of the image payload.

ChunkBalanceRatioBlue

[ChunkSelector]

Returns the blue color gain of the image.

Interface support	GigE, USB
Display name	Chunk Balance Ratio Blue
Standard	Custom
Origin of feature	Camera
Feature type	Float
Access	R
Affected features	Not applicable
Category	/ChunkDataControl

Values	Description
0	Minimum
8	Maximum

ChunkBalanceRatioRed

[ChunkSelector]

Returns the red color gain of the image.

Interface support	GigE, USB
Display name	Chunk Balance Ratio Red
Standard	Custom
Origin of feature	Camera
Feature type	Float
Access	R
Affected features	Not applicable
Category	/ChunkDataControl

Values	Description
0	Minimum
8	Maximum

ChunkCounter0

[ChunkSelector]

Returns the value of *Counter0* at the time of the *ExposureStart* internal event.

Note: This applies to *Counter0* and *LineStatusAll* chunk features.

Interface support	GigE, USB
Display name	Chunk Counter 0
Standard	SFNC adapted
Origin of feature	Camera
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/ChunkDataControl

ChunkCounter1

[ChunkSelector]

Returns the value of *Counter1* at the time of the *ExposureStart* internal event.

Note: This applies to *Counter1* and *LineStatusAll* chunk features.

Interface support	GigE, USB
Display name	Chunk Counter 1
Standard	SFNC adapted
Origin of feature	Camera
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/ChunkDataControl

ChunkEnable

[ChunkSelector]

Confirms to include the selected image parameters at the end of the image payload.

Interface support	GigE, USB
Display name	Chunk Enable
Standard	SFNC
Origin of feature	Camera
Feature type	Boolean
Access	R/W
Affected features	All other features in this category
Category	/ChunkDataControl

Values	Description
<i>False</i>	Settings for chunk data are disabled (default).
<i>True</i>	Settings for chunk data is enabled.

ChunkExposureTime

[ChunkSelector]

Returns the exposure time used to capture the image.

Interface support	GigE, USB
Display name	Chunk Exposure Time
Standard	SFNC
Origin of feature	Camera
Feature type	Float
Access	R
Unit	Microseconds
Affected features	Not applicable
Category	/ChunkDataControl

ChunkGain

[ChunkSelector]

Returns the gain used to capture the image.

Interface support	GigE, USB
Display name	Chunk Gain
Standard	SFNC
Origin of feature	Camera
Feature type	Float
Access	R
Unit	Decibels [dB]
Affected features	Not applicable
Category	/ChunkDataControl

Values	Description
Camera model dependent	Minimum
0.1	Increment
Camera model dependent	Maximum

ChunkHeight

[ChunkSelector]

Returns the height used to capture the image.

Interface support	GigE, USB
Display name	Chunk Height
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Unit	Pixels
Affected features	Not applicable
Category	/ChunkDataControl

ChunkLineStatusAll

[ChunkSelector]

Returns the current status of every input or output line in a sequence from Line0 to LineN in a single bitfield.

Interface support	GigE, USB
Display name	Chunk Line Status All
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/ChunkDataControl

Values	Description
0	Minimum (no I/O lines are active)
15	Maximum (all I/O lines are active)

ChunkModeActive

Enables or disables image parameters to be included at the end of the image payload.

Interface support	GigE, USB
Display name	Chunk Mode Active
Standard	SFNC
Origin of feature	Camera
Feature type	Boolean
Access	R/W
Affected features	All other features in this category
Category	/ChunkDataControl

Values	Description
<i>False</i>	Chunk data is excluded from the payload (default).
<i>True</i>	Chunk data is included in the payload.

ChunkOffsetX

[ChunkSelector]

Returns the **OffsetX** value used to capture the image.

Interface support	GigE, USB
Display name	Chunk Offset X
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Unit	Pixels
Affected features	Not applicable
Category	/ChunkDataControl

ChunkOffsetY

[ChunkSelector]

Returns the **OffsetY** value used to capture the image.

Interface support	GigE, USB
Display name	Chunk Offset Y
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Unit	Pixels
Affected features	Not applicable
Category	/ChunkDataControl

ChunkSelector

Selects which chunk to enable or disable.

Interface support	GigE, USB
Display name	Chunk Selector
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	All chunk features, except for ChunkModeActive and ChunkSelector
Category	/ChunkDataControl

Values	Description
<i>BalanceRatioBlue</i>	The corresponding feature is selected to be included in the payload of the corresponding image.
<i>BalanceRatioRed</i>	
<i>Counter0</i>	
<i>Counter1</i>	
<i>ExposureTime</i>	
<i>Gain</i>	
<i>Height</i>	
<i>LineStatusALL</i>	
<i>OffsetX</i>	
<i>OffsetY</i>	
<i>SequencerActive</i>	
<i>Timestamp</i>	
<i>Width</i>	

ChunkSequencerSetActive

[ChunkSelector]

Returns the value for the active sequencer set used to capture the image.

Interface support	GigE, USB
Display name	Chunk Sequencer Set Active
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/ChunkDataControl

Values	Description
0	Sequencer set 0 is active.
N	Sequencer set N is active.
255	The sequencer is disabled.

ChunkTimestamp

[ChunkSelector]

Returns the timestamp of the image at the time of the *FrameStart* internal event.

Interface support	GigE, USB
Display name	Chunk Timestamp
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Unit	Ticks = Nanoseconds (ns)
Affected features	Not applicable
Category	/ChunkDataControl

ChunkWidth

[ChunkSelector]

Returns the width used to capture the image.

Interface support	GigE, USB
Display name	Chunk Width
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Unit	Pixels
Affected features	Not applicable
Category	/ChunkDataControl

ColorTransformationControl

The features in this category can be used to control the interpolation of the RGB channels for the color image output, and simple access to hue and saturation.

Interface support	All
Display name	Color Transformation Control
Standard	SFNC
Origin of feature	Camera
Feature type	(Category)

This section describes features related to color transformations in color cameras. The following features are only valid if using on-camera interpolated pixel formats.

The color transformation is a linear operation taking as input the triplet R_{in} , G_{in} , B_{in} for an RGB color pixel. This triplet is multiplied by a 3×3 matrix. This color transformation allows to change the coefficients of the 3×3 matrix.

$$\begin{bmatrix} R_{out} \\ G_{out} \\ B_{out} \end{bmatrix} = \begin{bmatrix} Gain00 & Gain01 & Gain02 \\ Gain10 & Gain11 & Gain12 \\ Gain20 & Gain21 & Gain22 \end{bmatrix} \times \begin{bmatrix} R_{in} \\ G_{in} \\ B_{in} \end{bmatrix}$$

The parameters above are filled as follows:

Variable	Color contribution (multiplicative factor)	Affected color pixel
Gain00	Red	Red
Gain01	Green	Red
Gain02	Blue	Red
Gain10	Red	Green
Gain11	Green	Green
Gain12	Blue	Green
Gain20	Red	Blue
Gain21	Green	Blue
Gain22	Blue	Blue

ColorTransformationEnable

[ColorTransformationSelector]

Enables or disables the selected color transformation module.

Interface support	All
Display name	Color Transformation Enable
Standard	SFNC
Origin of feature	Camera
Feature type	Boolean
Access	R/W
Affected features	ColorTransformationValue
Category	/ColorTransformationControl

Values	Description
<i>True</i>	The selected color transformation module is enabled.
<i>False</i>	The selected color transformation module is disabled.

ColorTransformationValue

[ColorTransformationSelector][ColorTransformationValue-Selector]

Selects the gain factor or offset for the selected color transformation.

Interface support	All
Display name	Color Transformation Value
Standard	SFNC
Origin of feature	Camera
Feature type	Float
Access	R/W
Affected features	Not applicable
Category	/ColorTransformationControl

Values	Description
<i>-4</i>	Minimum
<i>+4</i>	Maximum
<i>1</i>	Default

ColorTransformationValueSelector

[ColorTransformationSelector]

Selects the gain factor or offset of the Transformation matrix for the selected Color Transformation module.

Interface support	All
Display name	Color Transformation Value Selector
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	ColorTransformationValue
Category	/ColorTransformationControl

For values described in the following table, see [ColorTransformationControl](#) on page 148 for the color transformation matrix.

Values	Description
<i>Gain00</i>	Gain 00 for the red contribution to the red pixel (multiplicative factor) is selected.
<i>Gain01</i>	Gain 01 for the green contribution to the red pixel (multiplicative factor) is selected.
<i>Gain02</i>	Gain 02 for the blue contribution to the red pixel (multiplicative factor) is selected.
<i>Gain10</i>	Gain 10 for the red contribution to the green pixel (multiplicative factor) is selected.
<i>Gain11</i>	Gain 11 for the green contribution to the green pixel (multiplicative factor) is selected.
<i>Gain12</i>	Gain 12 for the blue contribution to the green pixel (multiplicative factor) is selected.
<i>Gain20</i>	Gain 20 for the red contribution to the blue pixel (multiplicative factor) is selected.
<i>Gain21</i>	Gain 21 for the green contribution to the blue pixel (multiplicative factor) is selected.
<i>Gain22</i>	Gain 22 for the blue contribution to the blue pixel (multiplicative factor) is selected.

Hue

Controls the color tone correction by rotating the chrominance field clockwise with values > 0 and counter clockwise with values < 0 in degrees [°].

Interface support	All
Display name	Hue
Standard	Custom
Origin of feature	Camera
Feature type	Float
Access	R/W
Unit	Degrees [°]
Affected features	PixelFormat, DeviceLinkThroughputLimit, ExposureAutoMin, ExposureAutoMax, ExposureTime, AcquisitionFrameRate, Width, OffsetX, AutoModeRegionWidth, AutoModeRegionOffsetX, AutoModeRegionHeight, AutoModeRegionOffsetY, PayloadSize, WidthMax, Height, OffsetY, HeightMax, PixelSize, ContrastEnable, ContrastDarkLimit, ContrastBrightLimit, BlackLevel, Saturation, ColorTransformationEnable, ColorTransformationValue
Category	/ColorTransformationControl

Values	Description
-40	Minimum (40 degrees)
+40	Maximum (40 degrees)
0	Default

Saturation

Controls the amplification of the chrominance signal in the color space.

Interface support	All
Display name	Saturation
Standard	Custom
Origin of feature	Camera
Feature type	Float
Access	R/W
Affected features	Not applicable
Category	/ColorTransformationControl

Values	Description
0	Minimum
+2	Maximum
1	Default

CorrectionControl

The features in this category can be used to control DPC (Defect pixel correction) and FPNC (Fixed pattern noise correction) for image correction.

Interface support	All
Display name	Correction Control
Standard	Custom
Origin of feature	Camera
Feature type	(Category)

CorrectionMode

Enables or disables correction features.

Interface support	All
Display name	Correction Mode
Standard	Custom
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/CorrectionControl

Values	Description
<i>Off</i>	Correction features are disabled.
<i>On</i>	Correction features are enabled.

CorrectionSelector

Selects the type of correction to configure.

Interface support	All
Display name	Correction Selector
Standard	Custom
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	CorrectionMode, CorrectionSet, CorrectionSetDefault, CorrectionDataSize, CorrectionEntryType
Category	/CorrectionControl

Values	Description
<i>DefectPixel Correction^{1,2}</i>	Defect pixel correction (DPC) is selected.
<i>FixedPatternNoise Correction¹</i>	Fixed pattern noise correction (FPNC) is selected.

¹ Availability is camera model dependent. | ² Disabled when using multiple ROI.

CorrectionSet

[CorrectionSelector]

Selects the currently enabled correction settings.

Interface support	All
Display name	Correction Set
Standard	Custom
Origin of feature	Camera
Feature type	Enumeration
Access	R/(W)
Affected features	Not applicable
Category	/CorrectionControl

Values	Description
<i>Preset</i>	Factory settings are enabled (default).
<i>User*</i>	User settings are enabled.

* Available only if a user correction set has been written to the camera memory.

CorrectionSetDefault

[CorrectionSelector]

Selects the correction set used when the camera is reset.

Interface support	All
Display name	Correction Set Default
Standard	Custom
Origin of feature	Camera
Feature type	Enumeration
Access	R
Affected features	Not applicable
Category	/CorrectionControl

Values	Description
<i>Preset</i>	Factory settings are used after camera reset.
<i>User*</i>	User settings are used after camera reset.

* Available only if a user correction set has been written to the camera memory.

CorrectionInfo (subcategory)

The features in this subcategory can be used to display the correction type currently used.

Interface support	All
Display name	Correction Info
Standard	Custom
Origin of feature	Camera
Feature type	Subcategory
Category	/CorrectionControl

CorrectionDataSize

[CorrectionSelector]

Displays the current size of the correction data that is stored inside the camera.

Interface support	All
Display name	Correction Data Size
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/CorrectionControl/CorrectionInfo

CorrectionEntryType

Displays the entry type (correction type specific variant).

Interface support	All
Display name	Correction Entry Type
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/CorrectionControl/CorrectionInfo

CounterAndTimerControl

The features in this category can be used to control counters and timers to enable advanced triggering. For example, you can synchronize the timing for image acquisition with strobe lights, using these features.

Interface support	All
Display name	Counter And Timer Control
Standard	SFNC
Origin of feature	Camera
Feature type	(Category)

CounterDuration

[CounterSelector]

Controls the duration (or the number of events) before a **CounterEnd** event is generated.

Note: When the counter reaches the **CounterDuration** value, a **CounterEnd** event is generated. The **CounterActive** signal becomes inactive and the counter stops until a new trigger occurs or the counter is explicitly reset by **CounterReset**.

Interface support	All
Display name	Counter Duration
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/CounterAndTimerControl

Values	Description
0	Minimum
4294967295	Maximum

CounterEventActivation

[CounterSelector]

Selects the edge type of the electrical signal related to the event defined by **CounterEventSource** to increment the counter.

Note: The electrical signal level of the trigger to activate the counter is selected by **CounterTriggerActivation**.

Interface support	All
Display name	Counter Event Activation
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/AcquisitionControl

Values	Description
<i>AnyEdge</i>	The counter is incremented on the falling or rising edge of the signal.
<i>FaLLingEdge</i>	The counter is incremented on the falling edge of the signal.
<i>RisingEdge</i>	The counter is incremented on the rising edge of the signal.

CounterEventSource

[CounterSelector]

Selects the event to increment the counter.

Note: Use **CounterEventActivation** to define which electrical state of the signal you want to be used.

Interface support	All
Display name	Counter Event Source
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/CounterAndTimerControl

Value	Description
<i>AcquisitionActive</i>	The <i>AcquisitionActive</i> signal increments the counter.
<i>Action0</i>	The <i>Action0</i> signal increments the counter.
<i>Action1</i>	The <i>Action1</i> signal increments the counter.
<i>Counter0Active</i>	The <i>Counter0Active</i> signal increments the counter.
<i>Counter1Active</i>	The <i>Counter1Active</i> signal increments the counter.
<i>Counter2Active</i>	The <i>Counter2Active</i> signal increments the counter.
<i>Counter3Active</i>	The <i>Counter3Active</i> signal increments the counter.
<i>ExposureActive</i>	The <i>ExposureActive</i> signal increments the counter.
<i>FrameActive</i>	The <i>FrameActive</i> signal increments the counter.
<i>Line0</i>	A trigger signal on Line0 increments the counter.
<i>Line1</i>	A trigger signal on Line1 increments the counter.
<i>Line2</i>	A trigger signal on Line2 increments the counter.
<i>Line3</i>	A trigger signal on Line3 increments the counter.
<i>Off</i>	The feature is disabled.
<i>SoftwareSignal0</i>	The <i>SoftwareSignal0</i> signal increments the counter.
<i>SoftwareSignal1</i>	The <i>SoftwareSignal1</i> signal increments the counter.
<i>Timer0Active</i>	The <i>Timer0Active</i> signal increments the counter.
<i>Timer1Active</i>	The <i>Timer1Active</i> signal increments the counter.

CounterReset

[CounterSelector]

Resets and restarts the selected counter.

Note: The counter is incremented immediately after the reset unless a counter trigger is active.

Interface support	All
Display name	Counter Reset
Standard	SFNC
Origin of feature	Camera
Feature type	Command
Access	W
Affected features	CounterDuration, CounterStatus, CounterTriggerActivation, CounterTriggerSource, CounterValue
Category	/CounterAndTimerControl

CounterResetActivation

[CounterSelector]

Selects the electrical signal level of the trigger to reset the counter.

Interface support	All
Display name	Counter Reset Activation
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/AcquisitionControl

Values	Description
<i>AnyEdge</i>	The counter is reset on the falling or rising edge of the signal.
<i>FaLLingEdge</i>	The counter is reset on the falling edge of the signal.
<i>LevelHigh</i>	The counter is reset at a high signal level.
<i>LevelLow</i>	The counter is reset at a low signal level.
<i>RisingEdge</i>	The counter is reset on the rising edge of the signal.

CounterResetSource

[CounterSelector]

Selects the event to reset the counter.

Interface support	All
Display name	Counter Reset Source
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/CounterAndTimerControl

Value	Description
<i>AcquisitionActive</i>	The <i>AcquisitionActive</i> signal resets the counter.
<i>Counter0Active</i>	The <i>Counter0Active</i> signal resets the counter.
<i>Counter1Active</i>	The <i>Counter1Active</i> signal resets the counter.
<i>Counter2Active</i>	The <i>Counter2Active</i> signal resets the counter.
<i>Counter3Active</i>	The <i>Counter3Active</i> signal resets the counter.
<i>ExposureActive</i>	The <i>ExposureActive</i> signal resets the counter.
<i>Line0</i>	A trigger signal on Line0 resets the counter.
<i>Line1</i>	A trigger signal on Line1 resets the counter.
<i>Line2</i>	A trigger signal on Line2 resets the counter.
<i>Line3</i>	A trigger signal on Line3 resets the counter.
<i>Off</i>	The feature is disabled.
<i>SoftwareSignal0</i>	The <i>SoftwareSignal0</i> signal resets the counter.
<i>SoftwareSignal1</i>	The <i>SoftwareSignal1</i> signal resets the counter.
<i>Timer0Active</i>	The <i>Timer0Active</i> signal resets the counter.
<i>Timer1Active</i>	The <i>Timer1Active</i> signal resets the counter.

CounterSelector

Selects the counter to configure.

Interface support	All
Display name	Counter Selector
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/CounterAndTimerControl

Value	Description
<i>Counter0</i>	<i>Counter0Active</i> is selected.
<i>Counter1</i>	<i>Counter1Active</i> is selected.
<i>Counter2</i>	<i>Counter2Active</i> is selected.
<i>Counter3</i>	<i>Counter3Active</i> is selected.

CounterStatus

[CounterSelector]

Displays the current status of the counter.

Interface support	All
Display name	Counter Status
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R
Affected features	Not applicable
Category	/CounterAndTimerControl

Value	Description
<i>CounterActive</i>	The counter is counting for the period of time specified by <i>CounterDuration</i> .
<i>CounterCompleted</i>	The counter has reached the <i>CounterDuration</i> value.
<i>CounterOverflow</i>	The counter has reached its maximum possible count.
<i>CounterTriggerWait</i>	The counter is waiting for a start trigger.
<i>Idle</i>	The counter is inactive.

CounterTriggerActivation

[CounterSelector]

Selects the electrical signal level of the trigger to activate the counter.

Interface support	All
Display name	Counter Trigger Activation
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/CounterAndTimerControl

Value	Description
<i>AnyEdge</i>	The falling or rising edge of the signal activates the counter.
<i>FaLLingEdge</i>	The falling edge of the signal activates the counter.
<i>LevelHigh</i>	Any high signal level activates the counter.
<i>LevelLow</i>	Any low signal level activates the counter.
<i>RisingEdge</i>	The rising edge of the signal activates the counter.

CounterTriggerSource

[CounterSelector]

Selects the event to trigger the counter.

Interface support	All
Display name	Counter Trigger Source
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/CounterAndTimerControl

Value	Description
<i>AcquisitionActive</i>	The <i>AcquisitionActive</i> signal starts the counter.
<i>Counter0Active</i>	The <i>Counter0Active</i> signal starts the counter.
<i>Counter1Active</i>	The <i>Counter1Active</i> signal starts the counter.
<i>Counter2Active</i>	The <i>Counter2Active</i> signal starts the counter.
<i>Counter3Active</i>	The <i>Counter3Active</i> signal starts the counter.
<i>ExposureActive</i>	The <i>ExposureActive</i> signal starts the counter.
<i>FrameActive</i>	The <i>FrameActive</i> signal starts the counter.
<i>Line0</i>	A trigger signal on Line0 starts the counter.
<i>Line1</i>	A trigger signal on Line1 starts the counter.
<i>Line2</i>	A trigger signal on Line2 starts the counter.
<i>Line3</i>	A trigger signal on Line3 starts the counter.
<i>Off</i>	The feature is disabled.
<i>SoftwareSignal0</i>	The <i>SoftwareSignal0</i> signal starts the counter.
<i>SoftwareSignal1</i>	The <i>SoftwareSignal1</i> signal starts the counter.
<i>Timer0Active</i>	The <i>Timer0Active</i> signal starts the counter.
<i>Timer1Active</i>	The <i>Timer1Active</i> signal starts the counter.

CounterValue

[CounterSelector]

Controls the current value of the selected counter.

Note: Writing to **CounterValue** is typically used to set the start value.

Interface support	All
Display name	Counter Value
Standard	SFNC (adapted)
Origin of feature	Camera
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/CounterAndTimerControl

Value	Description
0	Minimum
4294967295	Maximum

CounterValueAtReset

[CounterSelector]

Displays the latest value of the selected counter before it was reset by a trigger or by an explicit **CounterReset** command.

Interface support	All
Display name	Counter Value At Reset
Standard	SFNC (adapted)
Origin of feature	Camera
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/CounterAndTimerControl

Value	Description
0	Minimum
4294967295	Maximum

TimerDelay

[TimerSelector]

Controls the duration of the delay at the reception of a trigger before starting the timer.

Interface support	All
Display name	Timer Delay
Standard	SFNC
Origin of feature	Camera
Feature type	Float
Access	R/W
Unit	Microseconds
Affected features	Not applicable
Category	/CounterAndTimerControl

Values	Description
0	Minimum
429496729.5	Maximum

TimerDuration

[TimerSelector]

Controls the duration of the timer pulse.

When the timer reaches the TimerDuration value:

- For **TimerStatus**, the value is changed from *TimerActive* to *TimerCompleted*.
- The timer stops counting until the camera receives a new trigger, or until the timer is explicitly reset with **TimerReset**.

Interface support	All
Display name	Timer Duration
Standard	SFNC
Origin of feature	Camera
Feature type	Float
Access	R/W
Unit	Microseconds
Affected features	Not applicable
Category	/CounterAndTimerControl

Values	Description
0	Minimum
429496729.5	Maximum

TimerReset

[TimerSelector]

The selected timer is reset by software and restarted.

Note: The timer starts immediately after the reset unless a timer trigger is active.

Interface support	All
Display name	Timer Reset
Standard	SFNC
Origin of feature	Camera
Feature type	Command
Access	W
Affected features	TimerDelay, TimerDuration, TimerStatus, TimerSelector, TimerTriggerActivation, TimerTriggerSource
Category	/CounterAndTimerControl

TimerSelector

Selects the timer to be configured.

Interface support	All
Display name	Timer Selector
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	TimerDelay, TimerDuration, TimerReset, TimerStatus, TimerTriggerActivation, TimerTriggerSource
Category	/CounterAndTimerControl

Value	Description
<i>Timer0</i>	Timer0 is selected.
<i>Timer1</i>	Timer1 is selected.

TimerStatus

[TimerSelector]

Displays the current status of the selected timer.

Interface support	All
Display name	Timer Status
Standard	SFNC (adapted)
Origin of feature	Camera
Feature type	Enumeration
Access	R
Affected features	Not applicable
Category	/CounterAndTimerControl

Value	Description
<i>TimerActive</i>	The timer is active.
<i>TimerCompleted</i>	The timer has completed.
<i>TimerDelay</i>	The timer is delayed by the period of time set for TimerDelay .
<i>TimerTriggerWait</i>	The timer is waiting for a trigger.

TimerTriggerActivation

[TimerSelector]

Selects the electrical signal level of the trigger to activate the timer.

Interface support	All
Display name	Timer Trigger Activation
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/CounterAndTimerControl

Value	Description
<i>AnyEdge</i>	The timer is triggered by a signal on any edge.
<i>FaLLingEdge</i>	The timer is triggered by a signal on the falling edge.
<i>LevelHigh</i>	The timer is triggered when signal level turns to high.
<i>LevelLow</i>	The timer is triggered when signal level turns to low.
<i>RisingEdge</i>	The timer is triggered by a signal on the rising edge.

TimerTriggerSource

[TimerSelector]

Selects the electrical signal level of the trigger to start the selected timer.

Interface support	All
Display name	Timer Trigger Source
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/CounterAndTimerControl

Value	Description
<i>AcquisitionActive</i>	The timer is triggered when the acquisition starts.
<i>Action0</i> ¹	The timer is triggered by the Action0 command.
<i>Action1</i> ¹	The timer is triggered by the Action1 command.
<i>Counter0Active</i>	The timer is triggered when Counter0 is active
...	...
<i>Counter3Active</i>	The timer is triggered when Counter3 is active
<i>ExposureActive</i> ²	The timer is triggered when the exposure starts.
<i>FrameActive</i>	The timer is triggered when the a frame is exposed.
<i>Line0</i>	The timer is triggered by a signal on input line 0.
<i>Line1</i>	The timer is triggered by a signal on input line 1.
<i>Line2</i> ³	The timer is triggered by a signal on input line 2.
<i>Line3</i> ³	The timer is triggered by a signal on input line 3.
<i>Off</i>	The timer is disabled or stopped (default).
<i>SoftwareSignal0</i>	The timer is triggered by SoftwareSignal0.
<i>SoftwareSignal1</i>	The timer is triggered by SoftwareSignal1.
<i>SynchronousClock</i>	The timer is triggered by SynchronousClock.
<i>Timer0Active</i>	The timer is triggered when Timer0 is active
<i>Timer1Active</i>	The timer is triggered when Timer1 is active

¹ Available with Alvium GigE cameras only.

² Available for cameras with global shutter sensors and with rolling shutter sensors if **TriggerMode** is enabled or if **AcquisitionMode** is set to **Continuous**.

³ Available with Alvium GigE and Alvium USB cameras. Alvium CSI-2 cameras support Line0 and Line1 only.

DeviceControl

The features in this category can be used to display, such as the camera temperature and name, firmware version, transport layer, or applied standard versions for GenCP and SFNC.

Other features enable monitoring the link speed, controlling the bandwidth, and resetting the camera. Timestamp features are essential for counters and timers.

Interface support	All (most features)
Display name	Device Control
Standard	SFNC
Origin of feature	Camera
Feature type	(Category)

DeviceFamilyName

Displays the identifier of the product family of the camera.

Interface support	All
Display name	Device Family Name
Standard	SFNC
Origin of feature	Camera
Feature type	String
Access	R
Affected features	Not applicable
Category	/DeviceControl

DeviceFirmwareID

[DeviceFirmwareIDSelector]

Displays one or a list of firmware IDs of the camera.

Interface support	All
Display name	Device Firmware ID
Standard	Custom
Origin of feature	Camera
Feature type	String
Access	R
Affected features	Not applicable
Category	/DeviceControl

DeviceFirmwareIDSelector

Selects the value to be output for `DeviceFirmwareID`.

Interface support	All
Display name	Device Firmware ID Selector
Standard	Custom
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	DeviceFirmwareID
Category	/DeviceControl

Values	Description
<i>Current</i>	ID of the currently running firmware
<i>Supported</i>	Firmware ID in the non-volatile memory

DeviceFirmwareVersion

[DeviceFirmwareVersionSelector]

Displays the version of the firmware in the camera.

Interface support	All
Display name	Device Firmware Version
Standard	SFNC
Origin of feature	Camera
Feature type	String
Access	R
Affected features	Not applicable
Category	/DeviceControl/DeviceControl

DeviceFirmwareVersionSelector

Selects the value to be output for **DeviceFirmwareVersion**.

Note: You can use this feature for debugging.

Interface support	All
Display name	Device Firmware Version Selector
Standard	Custom
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	DeviceFirmwareVersion
Category	/DeviceControl

Values	Description
<i>Current</i>	Currently running firmware version
<i>Programmed</i>	Firmware version of the main application in the non-volatile memory

DeviceGenCPVersionMajor

Displays the major version of the GenCP supported by the camera.

Interface support	CSI-2, USB
Display name	Device GenCP Version Major
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Affected features	DeviceGenCPVersionMinor
Category	/DeviceControl

DeviceGenCPVersionMinor

Displays the minor version of the GenCP supported by the camera.

Interface support	CSI-2, USB
Display name	Device GenCP Version Minor
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Affected features	DeviceGenCPVersionMajor
Category	/DeviceControl

DeviceIndicatorLuminance

Controls the luminance of the indicators (such as LEDs) showing the status of the camera.

Interface support	All
Display name	Device Indicator Luminance
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/DeviceControl

Values	Description
0	Minimum
10	Maximum

DeviceIndicatorMode

Selects the behavior of the indicators (such as LEDs) showing the status of the camera.

Interface support	All
Display name	Device Indicator Mode
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/DeviceControl

Values	Description
<i>Active</i>	The indicator is enabled.
<i>ErrorStatus</i>	The indicator signals an error status.
<i>Inactive</i>	The indicator is disabled.

DeviceLinkCommandTimeout

Displays the command timeout of the specified link.

Interface support	All
Display name	Device Link Command Timeout
Standard	SFNC
Origin of feature	Camera
Feature type	Float
Access	R
Unit	Microseconds
Affected features	Not applicable
Category	/DeviceControl

Values	Description
0	Minimum
1,000,000,000	Maximum

DeviceLinkSpeed

Displays the speed of transmission negotiated and represents the total speed of all the connections of the specified link.

Interface support	All
Display name	Device Link Speed
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Unit	Bytes per second
Affected features	Not applicable
Category	/DeviceControl

DeviceLinkThroughputLimit

Controls the maximum bandwidth of the data streamed out by the camera on the selected link. Delays are uniformly inserted between transport layer packets reducing the peak bandwidth.

Notes:

- You must set **DeviceLinkThroughputLimitMode** to *On* for activating settings in **DeviceLinkThroughputLimit**.
- Use this feature to adjust camera data output to the performance of your host system to avoid lost frames. Additionally, you may reduce the frame rate to reduce bandwidth.
- Maximum values can be reduced by the bandwidth of the host system.

Interface support	GigE, USB
Display name	Device Link Throughput Limit
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	Bytes per second
Affected features	ExposureTimeMax, ExposureTimeMin, ExposureAutoMin, ExposureAutoMax, ExposureTime, AcquisitionFrameRate
Category	/DeviceControl

Values Alvium G1	Description
Camera model dependent	Minimum
125000000	Maximum

Values Alvium G5	Description
Camera model dependent	Minimum
625000000	Maximum

Values Alvium USB	Description
Camera model dependent	Minimum
200000000	Default
450000000	Maximum

DeviceLinkThroughputLimitMode

Enable or disables **DeviceLinkThroughputLimit**.

When this feature is disabled, low-level transport layer (TL) specific features are expected to control the throughput.

When this feature is enabled, **DeviceLinkThroughputLimit** controls the overall throughput.

Interface support	GigE, USB
Display name	Device Link Throughput Limit Mode
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	ExposureTimeMax, ExposureTimeMin, ExposureAutoMin, ExposureAutoMax, ExposureTime, AcquisitionFrameRate
Category	/DeviceControl

Values	Description
<i>Off</i>	DeviceLinkThroughputLimit is disabled (GigE default).
<i>On</i>	DeviceLinkThroughputLimit is enabled (USB default).

DeviceManufacturerInfo

Displays the manufacturer information about the camera.

Interface support	All
Display name	Device Manufacturer Info
Standard	SFNC
Origin of feature	Camera
Feature type	String
Access	R
Affected features	Not applicable
Category	/DeviceControl

DeviceModelName

Displays the model name of the camera.

Interface support	All
Display name	Device Model Name
Standard	SFNC
Origin of feature	Camera
Feature type	String
Access	R
Affected features	Not applicable
Category	/DeviceControl

DevicePowerSavingMode

Selects between standard power use and various power saving modes.

Interface support	GigE, USB
Display name	Device Power Saving Mode
Standard	Custom
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/DeviceControl

Values	GigE	USB	Description
<i>Disabled</i>	✓	✓	The camera uses standard power (default).
<i>StandbyMode</i>	✓	✓	Camera functions are disabled to reduce power consumption. However, the control channel is maintained active: the camera can still be controlled by GenICam features. Note: You must execute DeviceReset before you can restart the streaming of the camera.
<i>SuspendMode</i> ¹	—	✓	The camera is enabled to go into USB U3 power saving mode. The Phy shuts the camera down. This mode is recommended with Linux.

¹ To apply *SuspendMode*, the host must send a **DevicePowerSave** command or a respective backend command to the camera.

DeviceReset

Resets the camera to its power up state.

Note: After reset, the camera must be rediscovered.

Interface support	All
Display name	Device Reset
Standard	SFNC
Origin of feature	Camera
Feature type	Command
Access	W
Affected features	Not applicable
Category	/DeviceControl

DeviceScanType

Displays the scan type of the image sensor.

Interface support	All
Display name	Device Scan Type
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R
Affected features	Not applicable
Category	/DeviceControl

Values	Description
<i>Areascan</i>	2D area readout is selected.

DeviceSerialNumber

Displays the camera's serial number.

Displays the unique identifier of the camera.

Interface support	All
Display name	Device Serial Number
Standard	SFNC
Origin of feature	Camera
Feature type	String
Access	R
Affected features	Not applicable
Category	/DeviceControl

DeviceSFNCVersionMajor

Displays the major version of the SFNC that was used to create the camera's GenICam XML.

Interface support	All
Display name	Device SFNC Version Major
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/DeviceControl

DeviceSFNCVersionMinor

Displays the minor version of the SFNC that was used to create the camera's GenICam XML.

Interface support	All
Display name	Device SFNC Version Minor
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/DeviceControl

DeviceSFNCVersionSubMinor

Displays the sub minor version of the SFNC that was used to create the camera's GenICam XML.

Interface support	All
Display name	Device SFNC Version Sub Minor
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/DeviceControl

DeviceStreamChannelPacketSize

Displays the stream packet size achieved on the selected channel for the transmitter or the maximum packet size supported by the receiver.

Interface support	GigE
Display name	Device Stream Channel Packet Size
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Unit	Bytes
Affected features	Not applicable
Category	/DeviceControl

Value	Description
0	Minimum
4294967295	Maximum

DeviceTemperature

[DeviceTemperatureSelector]

Displays the camera temperature in degrees Celsius [°C], measured at the location selected by DeviceTemperatureSelector.

Interface support	All
Display name	Device Temperature
Standard	SFNC
Origin of feature	Camera
Feature type	Float
Access	R
Unit	Degrees Celsius
Affected features	Not applicable
Category	/DeviceControl

DeviceTemperatureSelector

Selects the location in the camera, where the temperature is to be measured.

Interface support	All
Display name	Device Temperature Selector
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	DeviceTemperature
Category	/DeviceControl

Value	Description
<i>Mainboard</i>	The mainboard temperature is measured.
<i>FpgaCore¹</i>	The FPGA (companion board) temperature is measured.
<i>PhyCore¹</i>	The physical interface temperature is measured.
<i>Sensor²</i>	The sensor temperature is measured.

¹ Alvium G5 only.

² Selected Alvium models. This value can be output only when the camera is not streaming.

DeviceTemperatureStatus

Displays if the camera is operated at a safe temperature.

For Alvium G1 and G5, this is output as event messages as well.

Notes: If the camera is often overheated, the accuracy of the sensor readout can be compromised on the long run. You can use this feature to enable a long life for your camera.

If the mainboard temperature reaches 90 °C:

1. With Alvium G1 and G5, the camera outputs the event message **EventTemperatureShutoff**.
2. The camera is shut off.

Interface support	All
Display name	Device Temperature Status
Standard	Custom
Origin of feature	Camera
Feature type	Enumeration
Access	R
Affected features	DeviceTemperature
Category	/DeviceControl

Value	Description
<i>OK</i>	Mainboard temperature: ≤75 °C Event message with Alvium G1 and G5: EventTemperatureOK. User actions: No actions are required.
<i>Warning</i>	Mainboard temperature: >75 °C. Event message with Alvium G1 and G5: EventTemperatureWarning. User actions: We recommend you to take actions to cool down the camera. If the temperature increases even more, the camera will be shut down completely.
<i>Overtemperature</i>	The mainboard temperature exceeds the maximum value allowed in the model specifications. Event message with Alvium G1 and G5: EventTemperatureOvertemperature. The sensor is shut down and the camera does not output images, but you can read out and write settings that do not require the sensor. User actions: We recommend you to ensure adequate cooling for the camera before you restart it.

DeviceTLVersionMajor

Displays the major version of the camera's transport layer.

Interface support	All
Display name	Device Transport Layer Version Major
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/DeviceControl

Value	Description
0	Minimum
4294967295	Maximum

DeviceTLVersionMinor

Displays the minor version of the camera transport layer.

Interface support	All
Display name	Device Transport Layer Version Minor
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/DeviceControl

Value	Description
0	Minimum
4294967295	Maximum

DeviceUserID

Controls the user-programmable camera identifier.

Note: Maximum 63 characters are allowed.

Interface support	All
Display name	Device User ID
Standard	SFNC
Origin of feature	Camera
Feature type	String
Access	R/W
Affected features	Not applicable
Category	/DeviceControl

DeviceVendorName

Displays the name of the camera manufacturer.

Interface support	All
Display name	Device Vendor Name
Standard	SFNC
Origin of feature	Camera
Feature type	String
Access	R
Affected features	Not applicable
Category	/DeviceControl

DeviceVersion

Displays the camera's product code.

Interface support	All
Display name	Device Version
Standard	SFNC
Origin of feature	Camera
Feature type	String
Access	R
Affected features	Not applicable
Category	/DeviceControl

TimestampLatch

Latches the current timestamp counter into `TimestampLatchValue`.

Interface support	All
Display name	Time Stamp Latch
Standard	SFNC
Origin of feature	Camera
Feature type	Command
Access	W
Affected features	TimestampLatchValue
Category	/DeviceControl

TimestampLatchValue

Displays the latched value of the timestamp counter.

Interface support	All
Display name	Timestamp Latch Value
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Unit	Ticks = Nanoseconds (ns)
Affected features	Not applicable
Category	/DeviceControl

Value	Description
0	Minimum
9223372036854775807	Maximum

TimestampReset

Resets the current value of the timestamp counter.

Note: After executing this command, the timestamp counter restarts automatically.

Interface support	All
Display name	Timestamp Reset
Standard	SFNC
Origin of feature	Camera
Feature type	Command
Access	W
Affected features	TimestampLatchValue
Category	/DeviceControl

DigitalIOControl

The features in this category can be used to control the physical input and output lines of the camera.

Interface support	All
Display name	Digital IO Control Info
Standard	SFNC adapted
Origin of feature	Camera
Feature type	(Category)

LineDebounceDuration

Controls the time constant for **LineDebounceMode**.

Interface support	GigE, USB
Display name	Line Debounce Duration
Standard	Custom
Origin of feature	Camera
Feature type	Float
Access	R/W
Unit	Microseconds
Affected features	Not applicable
Category	/DigitalIOControl

Values	Description
<i>0.0193236715</i>	Minimum
<i>39.5748792271</i>	Maximum

LineDebounceMode

Controls the Line Debouncing feature for a particular input line.

Interface support	GigE, USB
Display name	Line Debounce Mode
Standard	Custom
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	LineDebounceDuration
Category	/DigitalIOControl

Values	Description
<i>Delay</i>	LineDebounceDuration controls how long the signal level must be sustained for before it is accepted.
<i>Off</i>	The feature is disabled (default).
<i>Stall</i>	LineDebounceDuration controls the intensity duration after the falling edge of the signal.

LineInverter

[LineSelector]

Enables or disables the inversion of the signal of the selected input or output line.

Interface support	All
Display name	Line Inverter
Standard	SFNC
Origin of feature	Camera
Feature type	Boolean
Access	R/W
Affected features	Not applicable
Category	/DigitalIOControl

Values	Description
<i>False</i>	Signal of the input or output line is not inverted.
<i>True</i>	Signal of the input or output line is inverted.

LineMode

[LineSelector]

Selects the physical line to be used to input or output a signal.

Interface support	All
Display name	Line Mode
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	TriggerSource, LineInverter, LineSource
Category	/DigitalIOControl

Values	Description
<i>Input</i>	The physical line is used for signal input.
<i>Output</i>	The physical line is used for signal output.

LineSelector

Selects the physical line (or pin) of the external camera connector or the virtual line of the transport layer to configure.

Interface support	All
Display name	Line Selector
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	LineMode, LineSource, LineInverter, LineStatus, LineStatusAll
Category	/DigitalIOControl

Values	Description
<i>Line0</i>	Line 0 is selected for configuration.
<i>Line1</i>	Line 1 is selected for configuration.
<i>Line2*</i>	Line 2 is selected for configuration.
<i>Line3*</i>	Line 3 is selected for configuration.
* Not supported by Alvium CSI-2 cameras, including Alvium FP3/GM2.	

LineSource

[LineSelector]

Sets the output signal for the selected line.

Note: LineMode must be set to *Output*.

Interface support	All
Display name	Line Source
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/DigitalIOControl

Values	Description (sheet 1 of 2)
<i>AcquisitionActive</i>	The <i>AcquisitionActive</i> signal is output.
<i>Action0</i> ¹	The Action0 command is output.
<i>Action1</i> ¹	The Action1 command is output.
<i>Counter0Active</i>	The <i>Counter0Active</i> signal is output.
...	...
<i>Counter3Active</i>	The <i>Counter3Active</i> signal is output.
<i>ExposureActive</i> ²	The <i>ExposureActive</i> signal is output.
<i>FrameActive</i>	The <i>FrameActive</i> signal is output.
<i>FrameTriggerWait</i>	The <i>FrameTriggerWait</i> signal is output. In triggered mode, the signal for <i>FrameTriggerWait</i> is high when the camera is waiting for a trigger. Vica versa, in fixed frame rate or freerun mode, the signal for <i>FrameTriggerWait</i> is low.
<i>Line0Signal</i>	The <i>Line0Signal</i> signal is output.
...	...
<i>Line3Signal</i> ³	The <i>Line3Signal</i> signal is output.
<i>Off</i>	No signal is output.
<i>ReadoutActive</i>	The <i>ReadoutActive</i> signal is output.

¹ Available with Alvium GigE cameras only. | ² Available for cameras with global shutter sensors and with rolling shutter sensors if **TriggerMode** is enabled or if **AcquisitionMode** is set to *Continuous*. | ³ Available with Alvium GigE and Alvium USB cameras. Alvium CSI-2 cameras support Line0 and Line1 only.

Table 6: LineSource > Possible values (sheet 1 of 2)

Values	Description (sheet 2 of 2)
<i>Stream0TransferActive</i>	The <i>Stream0TransferActive</i> signal is output.
<i>SynchronousClock</i> ¹	The PpsSignal of the pulse is output. You can use this signal to verify that the devices' clocks are synchronized sufficiently for PTP.
<i>Timer0Active</i>	The <i>Timer0Active</i> signal is output.
<i>Timer1Active</i>	The <i>Timer1Active</i> signal is output.
¹ Available with Alvium GigE cameras only.	

Table 6: LineSource > Possible values (sheet 2 of 2)

LineStatus

[LineSelector]

Displays the current status of the selected input or output line.

Interface support	All
Display name	Line Status
Standard	SFNC
Origin of feature	Camera
Feature type	Boolean
Access	R
Affected features	Not applicable
Category	/DigitalIOControl

Values	Description
<i>False</i>	Line status is disabled.
<i>True</i>	Line status is enabled.

LineStatusAll

Displays the current status of every input or output line in a sequence from Line0 to LineN in a single bitfield.

Interface support	All
Display name	Line Status All
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/DigitalIOControl

Values	Description
0	Minimum
15	Maximum

SerialHubEnable

Enables or disables the serial port (UART).

Note: When this feature is enabled, the corresponding lines become Rx and Tx. Therefore, the user application can't control these lines then.

Interface support	GigE, USB
Display name	Serial Hub Enable
Standard	Custom
Origin of feature	Camera
Feature type	Boolean
Access	R/W
Affected features	LineInverter, LineMode, LineSource
Category	/DigitalIOControl

Values	Description
<i>True</i>	The serial port is enabled.
<i>False</i>	The serial port is disabled (default).

Available lines

For Alvium GigE cameras and for Alvium USB cameras, 2 lines can be used as serial ports while 2 lines can be accessed by the user application at the same time:

UART signal	GigE lines	USB lines
UART Tx	Line0	Line2
UART Rx	Line1	Line3

Table 7: I/O lines available for serial ports by Alvium series

Changing between enabled and disabled serial ports

Previous line settings are not stored. You must reconfigure the corresponding lines if you want to change between use as serial ports and access by the user application.

SerialHub (subcategory)

The features in this subcategory enable using the I/Os by UART for serial port.

Interface support	GigE, USB
Display name	Serial Hub
Standard	Custom
Origin of feature	Camera
Feature type	Subcategory
Category	/DigitalIOControl

SerialBaudRate

Selects the baud rate of the UART port.

Interface support	GigE, USB
Display name	Uart Baud Rate
Standard	Custom
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Unit	Baud = Bps (Bits per second)
Affected features	LineMode, LineInverter, LineSource
Category	/DigitalIOControl/SerialHub

Values	Description
<i>Baud_9600</i>	9600 Baud is selected.
<i>Baud_115200</i>	115200 Baud is selected.
<i>Baud_230400</i>	230400 Baud is selected.

SerialParityBit

Selects the Parity Bit at the end of UART frames.

Interface support	GigE, USB
Display name	Serial Parity Bit
Standard	Custom
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Unit	Baud = Bps (Bits per second)
Affected features	Not applicable
Category	/DigitalIOControl/SerialHub

Values	Description
<i>Even</i>	The number of 1 bits in frame is even.
<i>Mark</i>	The parity bit is always set to 1.
<i>None</i>	No parity bit is in the frame.
<i>Odd</i>	The number of 1 bits in frame is odd.
<i>Space</i>	The parity bit is always set to 0.

SerialRxData

Displays the data to be fetched from the Rx queue.

Interface support	GigE, USB
Display name	Serial Rx Data
Standard	Custom
Origin of feature	Camera
Feature type	Raw
Access	R
Affected features	Not applicable
Category	/DigitalIOControl/SerialHub

SerialRxSize

Controls the number of bytes inserted from the Rx queue.

Interface support	GigE, USB
Display name	Serial Rx Size
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	Bytes
Affected features	Not applicable
Category	/DigitalIOControl/SerialHub

Values	Description
1	Minimum
4	Default
128	Maximum

SerialRxWaiting

Displays the number of bytes from the Rx queue waiting to be received.

Interface support	GigE, USB
Display name	Serial Rx Waiting
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R
Unit	Bytes
Affected features	Not applicable
Category	/DigitalIOControl/SerialHub

Values	Description
0	Minimum
128	Maximum

SerialStopBits

Controls the number of stop bits at the end of UART frames.

Interface support	GigE, USB
Display name	Serial Stop Bits
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/DigitalIOControl/SerialHub

Values	Description
1	Minimum (default)
2	Maximum

SerialTxData

Controls the data that will be transmitted to the TX queue of the serial interface.

Interface support	GigE, USB
Display name	Serial Tx Data
Standard	Custom
Origin of feature	Camera
Feature type	Raw
Access	R/W
Affected features	Not applicable
Category	/DigitalIOControl/SerialHub

SerialTxLock

Locks or unlocks the transmission from the Tx queue.

When unlocked, the Tx queue is immediately sent over the serial port.

Interface support	GigE, USB
Display name	Serial Tx Lock
Standard	Custom
Origin of feature	Camera
Feature type	Boolean
Access	R/W
Affected features	Not applicable
Category	/DigitalIOControl/SerialHub
Values	Description
<i>True</i>	The transmission from the Tx queue is locked.
<i>False</i>	The transmission from the Tx queue is unlocked (default).

SerialTxRemaining

Displays the number bytes from the Tx queue that remain free.

Interface support	GigE, USB
Display name	Serial Tx Remaining
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R
Unit	Bytes
Affected features	Not applicable
Category	/DigitalIOControl/SerialHub
Values	Description
<i>0</i>	Minimum
<i>128</i>	Maximum

SerialTxSize

Controls the number of bytes from the Tx data to be inserted into the Tx queue.

Interface support	GigE, USB
Display name	Serial Tx Size
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	Bytes
Affected features	Not applicable
Category	/DigitalIOControl/SerialHub

Values	Description
1	Minimum
4	Default
128	Maximum

EventControl

The features in this category can be used to generate messages that are sent to the host application for notifying internal camera events.

Interface support	GigE, USB
Display name	Event Control
Standard	SFNC adapted
Origin of feature	Camera
Feature type	(Category)

Functional overview

1. *EventSelector* selects the event message to be configured by *EventNotification*.
See [EventSelector](#) on page 206.
2. *EventNotification* enables the event message to be sent to the host.
See [EventNotification](#) on page 206.

Output for event message

- As **data packets** sent from the camera to the host.
- Vimba Viewer's **Event Viewer** continually displays all current events and related timestamps.
- Features in *EventsData* display the event identifier of the related feature and the start timestamp in Vimba Viewer's **Controller Window**:

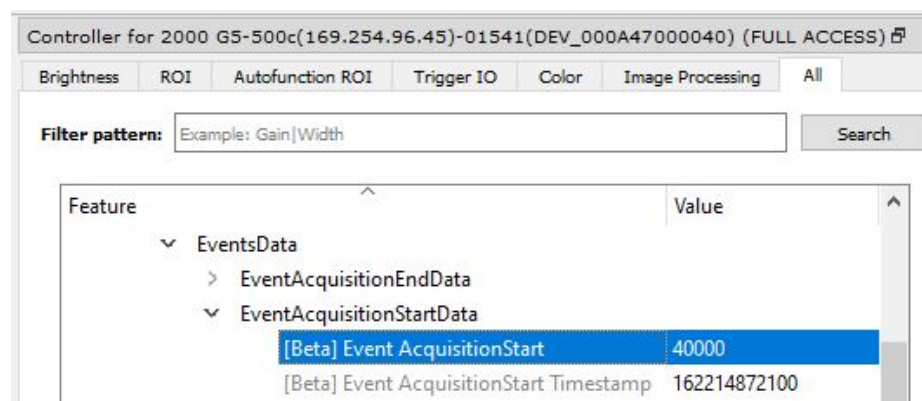


Figure 7: Value display for EventsData features in the Controller Window

See [EventsData \(subcategory\)](#) on page 203.

EventsData (subcategory)

The features in this subcategory can be used to display event messages.

Interface support	GigE, USB
Display name	Events Data
Standard	SFNC adapted
Origin of feature	Camera
Feature type	(Subcategory)
Category	/EventControl



EventsData feature descriptions

EventsData features are structured like this: Each subcategory contains a feature for the event itself and another feature for the event's timestamp, for example, **EventExposureStart** and **EventExposureStartTimestamp**. To ease reading, only the features for the event itself are listed in [Table 8](#) below.

Events are described in the value table for [EventSelector](#) on page 206.

[Feature structure: \[Event-Name\]Data \(2nd subcategory\)](#) on page 204 describes the feature structure.

[Example: EventAcquisitionEndData \(2nd subcategory\)](#) on page 205 is an example.

EventAcquisitionEnd	EventOverflow
EventAcquisitionStart	EventPtpSyncLocked ¹
EventAction<0...1> ¹	EventPtpSyncLost ¹
EventActionLate ¹	EventSequencerSetChange
EventFrameBufferOverflow	EventSoftwareSignal<0...1>
EventCounter<0...3>End	EventTemperatureOK ²
EventCounter<0...3>Start	EventTemperatureOvertemperature ²
EventExposureEnd	EventTemperatureShutOff ²
EventExposureStart	EventTemperatureWarning ²
EventFrameTriggerMissed	EventTest
EventFrameTriggerWait	EventTimer<0...1>End
EventLine<0...3>FallingEdge	EventTimer<0...1>Start
EventLine<0...3>RisingEdge	

¹ GigE cameras only | ² See [DeviceTemperatureStatus](#) on page 184.

Table 8: Available events by Event-Name

Feature structure: [Event-Name]Data (2nd subcategory)

The features in this subcategory can be used to display event messages for [Event-Name].

Interface support	GigE, USB
Display name	[Event-Name] Data
Standard	SFNC adapted
Origin of feature	Camera
Feature type	(Subcategory)
Category	/EventControl/EventsData

[Event-Name]

Displays the unique Identifier of the [Event-Name] event.

Interface support	GigE, USB
Display name	[Event-Name]
Standard	SFNC adapted
Origin of feature	Camera
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/EventControl/EventsData/[Event-Name]Data

[Event-Name]Timestamp

Displays the timestamp of the latest [Event-Name] event.

Interface support	GigE, USB
Display name	[Event-Name] Timestamp
Standard	SFNC adapted
Origin of feature	Camera
Feature type	Integer
Unit	Ticks = Nanoseconds (ns)
Access	R
Affected features	Not applicable
Category	/EventControl/EventsData/[Event-Name]Data

Example: EventAcquisitionEndData (2nd subcategory)

The features in this subcategory can be used to display event messages for *AcquisitionEnd*.

Interface support	GigE, USB
Display name	Event Acquisition End Data
Standard	SFNC adapted
Origin of feature	Camera
Feature type	(Subcategory)
Category	/EventControl/EventsData

EventAcquisitionEnd

Displays the unique Identifier of the *AcquisitionEnd* event.

Interface support	GigE, USB
Display name	Event Acquisition End
Standard	SFNC adapted
Origin of feature	Camera
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/EventControl/EventsData/EventAcquisitionEndData

EventAcquisitionEndTimestamp

Displays the timestamp of the latest *AcquisitionEnd* event.

Interface support	GigE, USB
Display name	Event Acquisition End Timestamp
Standard	SFNC adapted
Origin of feature	Camera
Feature type	Integer
Unit	Ticks = Nanoseconds (ns)
Affected features	Not applicable
Category	/EventControl/EventsData/EventAcquisitionEndData

EventControl (category continued)

The feature descriptions for the `/EventControl/EventsData` subcategory have ended on the previous page. The following features continue the `/EventControl` category, without a subcategory.

EventNotification

[EventSelector]

Enables or disables the selected event message to be sent to the host.

Interface support	GigE, USB
Display name	Event Notification
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/EventControl

Values	Description
<i>Off</i>	The selected event message is not sent to the host.
<i>On</i>	The selected event is sent to the host.

EventSelector

Selects which event message to configure with `EventNotification`.

Interface support	GigE, USB
Display name	Event Selector
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	EventNotification
Category	/EventControl

Values	Description for selected values (sheet 1 of 2)
<i>AcquisitionEnd</i>	The camera just completed the acquisition.
<i>AcquisitionStart</i>	The camera just started the acquisition.
<i>Action<0...1>¹</i>	The camera just executed Action<0...1>.

Table 9: EventSelector value descriptions (sheet 1 of 2)

Values	Description for selected values (sheet 2 of 2)
<i>ActionLate</i> ¹	The camera just missed to execute an action command in time.
<i>Counter<0...3>End</i>	Counter<0...3> has just ended.
<i>Counter<0...3>Start</i>	Counter<0...3> was just started.
<i>ExposureEnd</i>	The exposure has just ended.
<i>ExposureStart</i>	The exposure just has been started.
<i>FrameBufferOverflow</i>	Image data is currently overflowing the frame buffer. This results in lost frames.
<i>FrameTriggerMissed</i>	The camera has missed a trigger because it was not ready. This can occur, when the camera receives a trigger while processing a frame, for example.
<i>FrameTriggerWait</i>	The camera is currently waiting for a frame trigger. In triggered mode, the signal for <i>FrameTriggerWait</i> is high when the camera is waiting for a trigger. Vica versa, in fixed frame rate or freerun mode, the signal for <i>FrameTriggerWait</i> is low.
<i>Line<0...3>FallingEdge</i>	The camera has just received the falling edge of a signal on I/O Line<0...3>.
<i>Line<0...3>RisingEdge</i>	The camera has just received the rising edge of a signal on I/O Line<0...3>.
<i>Overflow</i>	Event data is currently overflowing the camera internal memory.
<i>PtpSyncLocked</i> ²	PTP Synchronization of the camera to the PTP Master has been established.
<i>PtpSyncLost</i> ²	PTP Synchronization of the camera to the PTP Master has been lost.
<i>SequencerSetChange</i>	The change of the sequencer set has just become active on the camera.
<i>SoftwareSignal<0...1></i>	The camera has just received a signal on SoftwareSignal<0...1>.
<i>TemperatureOK</i> ³	The camera temperature is currently low enough to allow full operation.
<i>TemperatureOvertemperature</i> ³	The camera's mainboard temperature has just reached a critical value. The camera is going to be shut down next.
<i>TemperatureShutOff</i> ³	The camera has just been shut off because the maximum temperature has been reached that is allowed by the specifications.
<i>TemperatureWarning</i> ³	The camera's mainboard temperature is currently increasing towards the maximum value allowed by the specifications. You should cool the camera.
<i>Test</i>	The camera has just received a the TestEventGenerate command.
<i>Timer<0...1>End</i>	Timer<0...1> has just ended.
<i>Timer<0...1>Start</i>	Timer<0...1> has just been started.

¹ GigE models only | ² See [PtpControl](#) on page 282, including **PtpServoStatus**.

³ See [DeviceTemperatureStatus](#) on page 184.

Table 9: EventSelector value descriptions (sheet 2 of 2)

FileAccessControl

The features in this category enable to read from and write files to the camera, including such as firmware, user data, or datasets for DPC (Defect pixel correction) and FPNC (Fixed pattern noise correction).

Interface support	All
Display name	File Access Control
Standard	SFNC
Origin of feature	Camera
Feature type	(Category)

FileAccessBuffer

Displays the intermediate access buffer that allows the exchange of data between the camera file storage and the application.

Interface support	All
Display name	File Access Buffer
Standard	SFNC
Origin of feature	Camera
Feature type	Register
Access	R
Affected features	Not applicable
Category	/FileAccessControl

FileAccessLength

Displays the length of the mapping between the camera file storage and FileAccessBuffer.

Interface support	All
Display name	File Access Length
Standard	SFNC
Origin of feature	Camera
Feature type	Register
Access	R
Affected features	Not applicable
Category	/FileAccessControl

FileAccessOffset

Displays the offset of the mapping between the camera file storage and the FileAccessBuffer.

Interface support	All
Display name	File Access Offset
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/FileAccessControl

FileOpenMode

Selects the access mode in which a file is opened in the camera.

Interface support	All
Display name	File Open Mode
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/FileAccessControl

Values	Description
<i>Read</i>	Read access is enabled.
<i>Write</i>	Write access is enabled.

FileOperationExecute

Executes the operation selected by **FileOperationSelector** on the selected file.

Interface support	All
Display name	File Operation Execute
Standard	SFNC
Origin of feature	Camera
Feature type	Command
Access	W
Affected features	FileAccessBuffer, FileAccessOffset, FileAccessLength, FileOperationStatus, FileOperationResult, FileSize
Category	/FileAccessControl

FileOperationResult

[FileSelector][FileOperationSelector]

Displays the file operation result. For read or write operations, the number of successfully read or written bytes is returned.

Interface support	All
Display name	File Operation Result
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/FileAccessControl

FileOperationSelector

[FileSelector]

Selects the target operation for the selected file in the camera. This operation is executed when the **FileOperationExecute** feature is called.



Damage to the defect pixel correction data set

If you select *DefectPixelCorrectionPreset* for **FileSelector**, you also have write access. This way, the DPC correction data from manufacturing can be overwritten.

Before you write to this data set, read and save the data to an external source for recovery!

Interface support	All
Display name	File Operation Selector
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	FileOperationExecute, FileAccessBuffer, FileAccessOffset, FileAccessLength, FileOperationStatus, FileOperationResult, FileSize
Category	/FileAccessControl

Values	Description
<i>Close</i>	The selected file s closed.
<i>Delete</i>	The selected file is deleted.
<i>Open</i>	The selected file is opened.
<i>Read</i>	The selected file is read from.
<i>Write</i>	The selected file is written to.

FileOperationStatus

[FileSelector][FileOperationSelector]

Displays the file operation execution status.

Interface support	All
Display name	File Operation Status
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R
Affected features	Not applicable
Category	/FileAccessControl

Values	Description
<i>Failure</i>	File operation failed.
<i>Success</i>	File operation was successful (default).

FileProcessStatus

[FileSelector]

Displays an additional process status.

Interface support	All
Display name	File Process Status
Standard	Custom
Origin of feature	Camera
Feature type	Enumeration
Access	R
Affected features	Not applicable
Category	/FileAccessControl

Values	Description
<i>None</i>	No extended status (default).
<i>UpdateNotRequired</i>	No file operation is required, because flash and file content are identical.

FileSelector

Selects the target file in the camera.



Damage to the defect pixel correction data set

If you select *DefectPixelCorrectionPreset* for *FileSelector*, you also have write access. This way, the DPC correction data from manufacturing can be overwritten.

Before you write to this data set, read and save the data to an external source for recovery!

Interface support	All
Display name	File Selector
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	FileStatus, FileSize, FileOpenMode, FileOperationSelector, FileOperationExecute, FileAccessBuffer, FileAccessOffset, FileAccessLength, FileOperationStatus, FileOperationResult
Category	/FileAccessControl

Values	Description
<i>DefectPixelCorrectionPreset</i>	The preset for defect pixel correction (DPC) is target for file operations.
<i>DefectPixelCorrectionUser</i>	User defined defect pixel correction (DPC) is target for file operations.
<i>Firmware</i>	Firmware is target for file operations.
<i>FixedPatternNoiseCorrectionPreset</i>	The preset for fixed pattern noise correction (FPNC) is target for file operations.
<i>FixedPatternNoiseCorrectionUser</i>	User defined fixed pattern noise correction (FPNC) user set is target for file operations.
<i>UserData</i>	User data is target for file operations.
<i>UserSet1</i>	UserSet1 target for file operations.
<i>UserSet2</i>	UserSet2 target for file operations.
<i>UserSet3</i>	UserSet3 target for file operations.
<i>UserSet4</i>	UserSet4 target for file operations.

FileSize

[FileSelector]

Displays the size of the selected file in bytes.

Interface support	All
Display name	File Size
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/FileAccessControl

FileStatus

[FileSelector]

Displays the status of the selected file.

Interface support	All
Display name	File Status
Standard	Custom
Origin of feature	Camera
Feature type	Enumeration
Access	R
Affected features	Not applicable
Category	/FileAccessControl

Values	Description
<i>Closed</i>	The selected file is currently closed (default).
<i>Open</i>	The selected file is currently open.

ImageFormatControl

The features in this category can be used to control pixel related data, including binning and ROI (region of interest), and reverse image. **PixelFormat** and **PixelSize** enable selecting between different modes for monochrome and color pixel readout.

SensorBitDepth can be used to control the bandwidth by different sensor readout modes (ADC).

When set to *GlobalResetReleaseShutter*, sensor lines are integrated simultaneously for selected rolling shutter sensors with **ShutterMode**.

Interface support	All (most features)
Display name	Image Format Control
Standard	SFNC
Origin of feature	Camera
Feature type	(Category)

Observe with binning features

Only binning or decimation can be used at a time.

Only digital binning or sensor binning can be used at a time.

You must revert binning values to 1 before you can switch between these binning modes.

BinningHorizontal

Controls the number of horizontal pixels combined into one. This reduces the horizontal resolution (width) of the image.

Notes:

- For Alvium models ≥ 12 MP resolution, if **BinningVertical** is used, **BinningHorizontal** is set to 2.
- With sensor binning, maximum values depend on the camera model.

Interface support	All
Display name	Binning Horizontal
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	Pixel
Affected features	WidthMax
Category	/ImageFormatControl

Values	Description
1	Minimum
8	Maximum (with digital binning)

BinningHorizontalMode

Determines whether the result of binned pixels is averaged or summed up.

Notes:

- **Digital binning:** All Alvium models support *Sum* and *Average*.
- **Sensor binning:** Alvium models with sensor binning support *Sum* or *Average*, or both.

Interface support	All
Display name	Binning Horizontal Mode
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	AcquisitionFrameRate, BinningHorizontal, BinningVertical, BinningVerticalMode, DeviceLinkThroughputLimit, ExposureAutoMax, ExposureAutoMin, ExposureTime, HeightMax, WidthMax
Category	/ImageFormatControl

Values	Description
<i>Average</i>	The charge or gray value of adjacent pixels is averaged.
<i>Sum</i>	The charge or gray value of adjacent pixels is summed up.

BinningSelector

Selects which binning engine is controlled by **BinningHorizontal** and **BinningVertical**.

Note: Only digital binning or sensor binning can be used at a time.

Interface support	All
Display name	Binning Selector
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	AcquisitionFrameRate, BinningHorizontal, BinningHorizontalMode, BinningVertical, BinningVerticalMode, DeviceLinkThroughputLimit, ExposureAutoMax, ExposureAutoMin, ExposureTime, HeightMax, WidthMax
Category	/ImageFormatControl

Values	Description
<i>Digital</i>	Digital binning is used (default).
<i>Sensor*</i>	Sensor binning is used.
* Availability only for selected models.	

BinningVertical

Controls the number of vertical pixels combined into one. This reduces the vertical resolution (height) of the image.

Note: With sensor binning, maximum values depend on the camera model.

Interface support	All
Display name	Binning Vertical
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	Pixel
Affected features	AcquisitionFrameRate, BinningHorizontal, DeviceLinkThroughputLimit, ExposureAutoMax, ExposureAutoMin, ExposureTime, HeightMax, WidthMax
Category	/ImageFormatControl

Values	Description
1	Minimum
8	Maximum (with digital binning)

BinningVerticalMode

Determines whether the result of binned pixels is averaged or summed up.

Note:

- Changing **BinningVerticalMode** sets **BinningHorizontalMode** to the same value.
- **Digital binning:** All Alvium models support *Sum*, and *Average*.
- **Sensor binning:** All Alvium models with sensor binning support *Sum*, some models support *Average* in addition.

Interface support	All
Display name	Binning Vertical Mode
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	AcquisitionFrameRate, BinningHorizontal, BinningVertical, BinningHorizontalMode, DeviceLinkThroughputLimit, ExposureAutoMax, ExposureAutoMin, ExposureTime, HeightMax, WidthMax
Category	/ImageFormatControl

Values	Description
<i>Average</i>	The charge or gray value of adjacent pixels is averaged.
<i>Sum</i>	The charge or gray value of adjacent pixels is summed up.

Observe with decimation features

Only binning or decimation can be used at a time.

DecimationHorizontal

Controls the horizontal sub-sampling of the image. This reduces the horizontal resolution (width) of the image by the specified horizontal decimation factor.

Note: For availability, see the corresponding Alvium user guide.

Interface support	All
Display name	Decimation Horizontal
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	Pixel
Affected features	AutoModeRegionOffsetX, AutoModeRegionWidth, Width
Category	/ImageFormatControl

Values	Description
1	Minimum
2	Maximum

DecimationVertical

Controls the vertical sub-sampling of the image. This reduces the vertical resolution (width) of the image by the specified horizontal decimation factor.

Note: For availability, see the corresponding Alvium user guide.

Interface support	All
Display name	Decimation Vertical
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	Pixel
Affected features	AutoModeRegionOffsetY, AutoModeRegionHeight, Height
Category	/ImageFormatControl

Values	Description
1	Minimum
2	Maximum

Height

Controls the image height output by the camera.

Interface support	All
Display name	Height
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	Pixel
Affected features	OffsetY, AutoModeRegionOffsetY, AutoModeRegionHeight, AcquisitionFrameRate, PayloadSize
Category	/ImageFormatControl

HeightMax

Displays the available maximum image height.

Note: This dimension is calculated after vertical binning or any other function changing the vertical dimension of the image.

Interface support	All
Display name	Height Max
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Unit	Pixel
Affected features	Height, OffsetY
Category	/ImageFormatControl

OffsetX

Controls the horizontal offset from the origin to the ROI.

Interface support	All
Display name	Offset X
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	Pixel
Affected features	AutoModeRegionOffsetX, AutoModeRegionWidth
Category	/ImageFormatControl

Values	Description
0	Minimum
16	Increment with Alvium Sony GS (global shutter) models that support SequencerControl1
8	Increment with other Alvium models

OffsetY

Controls the vertical offset from the origin to the ROI.

Interface support	All
Display name	Offset Y
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	Pixel
Affected features	AutoModeRegionOffsetY, AutoModeRegionHeight
Category	/ImageFormatControl

Values	Description
0	Minimum
16	Increment with Alvium Sony GS (global shutter) models that support SequencerControl
8	Increment with other Alvium models

PixelFormat

Selects the pixel format output by the camera.

Note: The feature represents all the information provided by **PixelCoding**, **PixelSize**, and **PixelColorFilter** combined in a single feature.

Interface support	All
Display name	Pixel Format
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	DeviceLinkThroughputLimit, PayloadSize, PixelSize, BlackLevel, ContrastEnable, ContrastDarkLimit, ContrastBrightLimit, BlackLevel, Hue, Saturation, ColorTransformationEnable, ColorTransformationValue, HeightMax, WidthMax
Category	/ImageFormatControl

PixelSize

Displays the total size of a pixel of the image as Bits per pixel (Bpp).

Interface support	All
Display name	Pixel Size
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R
Unit	Bits
Affected features	Not applicable
Category	/ImageFormatControl

ReverseX

Enables or disables to flip the image horizontally.

Note: The ROI is applied after the flipping.

See [Feature interdependencies](#) on page 42.

Interface support	All
Display name	Reverse X
Standard	SFNC
Origin of feature	Camera
Feature type	Boolean
Access	R/W
Affected features	Width, WidthMax (color cameras)
Category	/ImageFormatControl

Values	Description
<i>False</i>	Image is not flipped horizontally.
<i>True</i>	Image is flipped horizontally.

ReverseY

Enables or disables to flip the image vertically.

Note: The ROI is applied after the flipping.

See [Feature interdependencies](#) on page 42.

Interface support	All
Display name	Reverse Y
Standard	SFNC
Origin of feature	Camera
Feature type	Boolean
Access	R/W
Affected features	Height, HeightMax (color cameras)
Category	/ImageFormatControl

Values	Description
<i>False</i>	Image is not flipped vertically.
<i>True</i>	Image is flipped vertically.

SensorBitDepth

Selects the readout mode of the camera sensor.

If you are using pixel formats that do not require 12-bit readout and you want to achieve higher frame rates, you can select between readout modes for 12-bit, 10-bit, and 8-bit.

Notes

- The sensor ADC bit depth is the default value.
- In the *Adaptive* mode, the bit depth is switched between 10-bit and 12-bit automatically, depending on the selected pixel format and limitations of sensor and camera.

Interface support	All
Display name	Sensor Bit Depth
Standard	Custom
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Unit	Bits
Affected features	AcquisitionFrameRate, DeviceLinkThroughputLimit, ExposureActiveMode, ExposureAuto, ExposureAutoMax, ExposureAutoMin, ExposureMode, ExposureTime
Category	/ImageFormatControl

Values ¹	Description
<i>Adaptive</i>	The sensor bit depth is switched automatically between 12-bit and 10-bit readout, depending on the pixel format. (Default value for all camera models.)
<i>Bpp8</i>	The sensor bit depth is set to 8-bit, if supported by the sensor.
<i>Bpp10</i>	The sensor bit depth is set to 10-bit, if supported by the sensor.
<i>Bpp12</i>	The sensor bit depth is set to 12-bit if the camera sensor supports 12-bit readout mode.

¹Camera model dependent

SensorHeight

Displays the effective sensor height.

Interface support	All
Display name	Sensor Height
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Unit	Pixel
Affected features	HeightMax
Category	/ImageFormatControl

SensorWidth

Displays the effective sensor width.

Interface support	All
Display name	Sensor Width
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Unit	Pixel
Affected features	WidthMax
Category	/ImageFormatControl

MultipleRegionControl (subcategory)

This subcategory holds the features to configure and control the multiple regions of the camera.

Interface support	GigE, USB
Display name	Multiple Region Control
Standard	Custom
Origin of feature	Camera
Feature type	(Subcategory)
Category	/ImageFormatControl

Functional overview

Multiple region features can be used to assign different image settings to sections of an image, or to exclude irrelevant contents from the image output. In some cases, frame rates can be increased as well.



Availability by model

Available only with Sony IMX GS (global shutter) models. You can find the feature availability for your Alvium model in the feature specifications of your camera's user guide at www.alliedvision.com/en/support/technical-documentation.

Features available with multiple regions

The following features for image control can be adjusted separately:

- BalanceRatioBlue
- BalanceRatioRed
- ColorTransformationEnable
- ColorTransformationValue
- ContrastBrightLimit
- ContrastDarkLimit
- ContrastEnable
- ContrastShape
- Gamma
- Hue
- Saturation

Features disabled by multiple regions

The following features are disabled when multiple regions are used:

- Binning features
- Defect pixel correction (DPC)
- ReverseX
- ReverseY

Multiple regions cannot be configured when these features are enabled.

Multiple region arrangement

SubRegionSelector is set to *Region0* by default for all camera models. *Region0* cannot be disabled. For cameras that support only single ROI, no other regions or multiple region features are available. Selected Alvium models support 4 regions.

Free mode

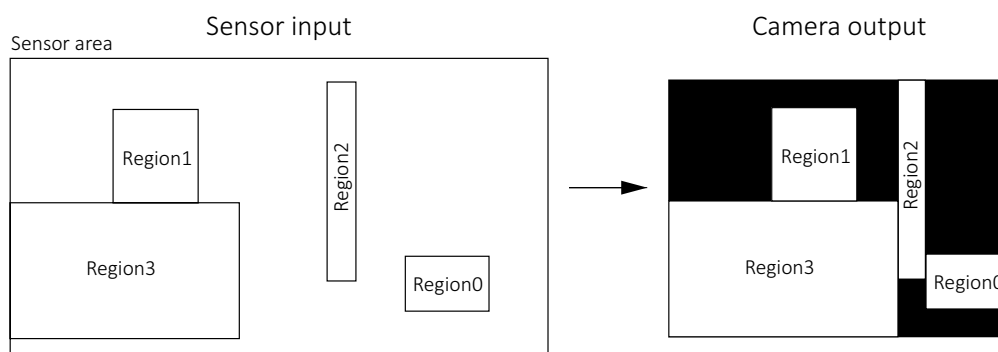


Figure 8: Free mode - sensor input vs. camera output

Tile mode

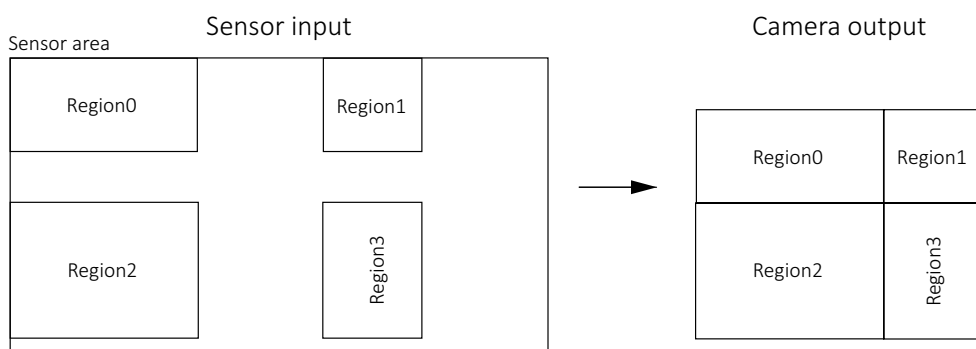


Figure 9: Tile mode - sensor input vs. camera output

Horizontal mode

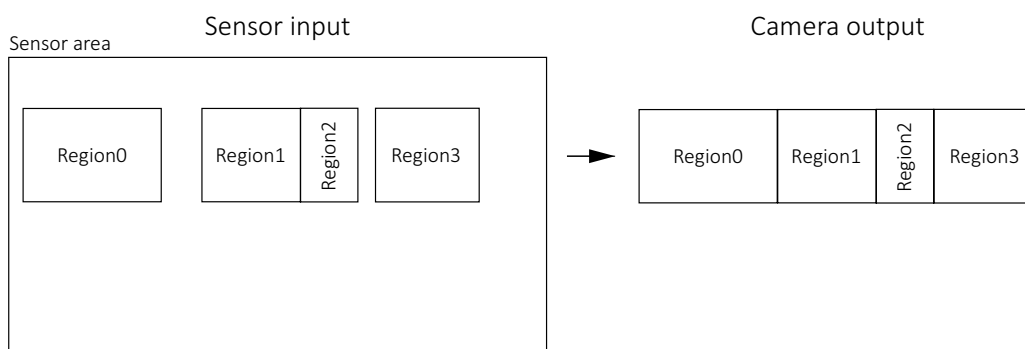


Figure 10: Horizontal mode - sensor input vs. camera output

Vertical mode

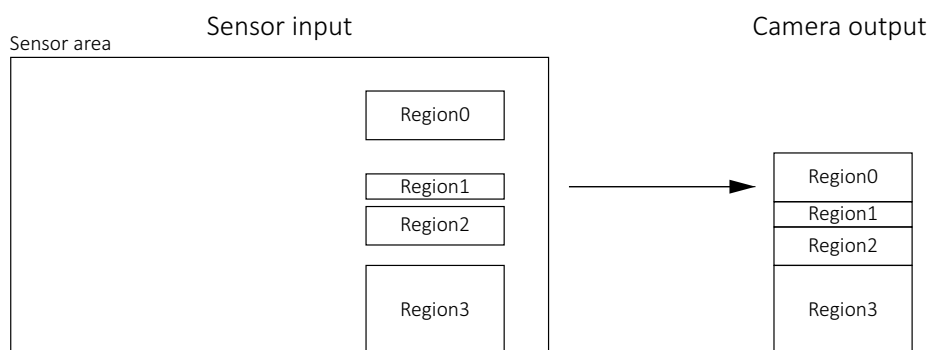


Figure 11: Vertical mode - sensor input vs. camera output

Rules for region ID numbers

Generally, the IDs for **SubRegionSelector** must be assigned continuously, ascending from **Region0**, to output the selected regions completely.

In **Tile** mode, if an ID is missing in a line or column space, the following regions are omitted, as shown in the top example of [Figure 12](#) where **Region1** and **Region2** have been disabled.

In the example below, **Region0** and **Region2** do not have continuous IDs, but they share a common line space. Therefore, the selected regions are output completely.

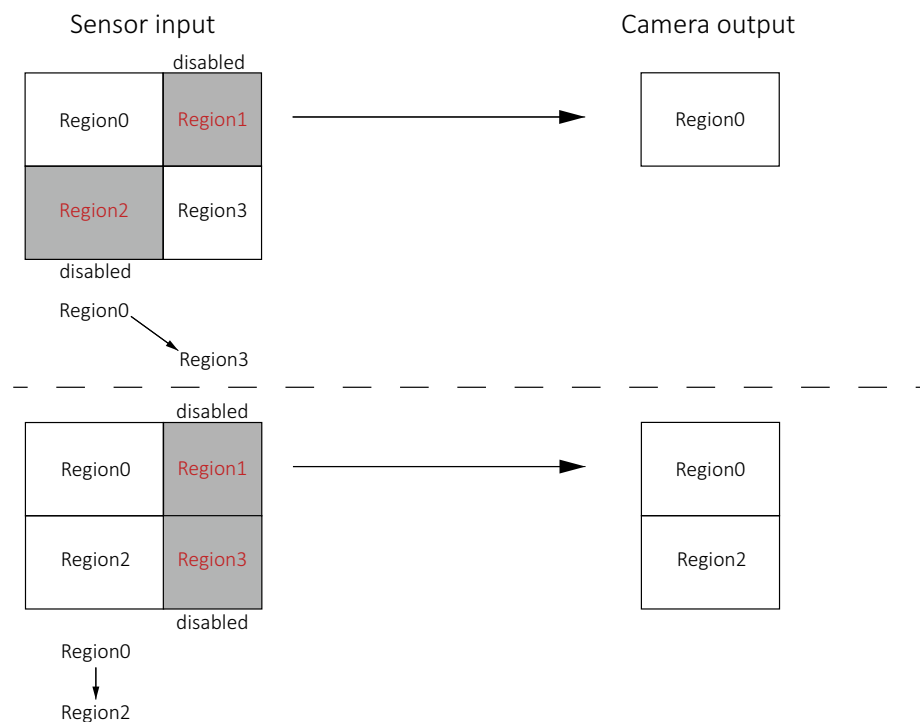


Figure 12: Tile mode - missing Region1

In *Horizontal* and *Vertical* mode, the values for **SubRegionSelector** must be assigned continuously. If an ID is missing, the following regions are omitted, as shown in the top example of [Figure 13](#) where **Region1** has been disabled. In the example below, the regions have been reassigned for **Region1** and **Region2**. The selected regions are output completely.

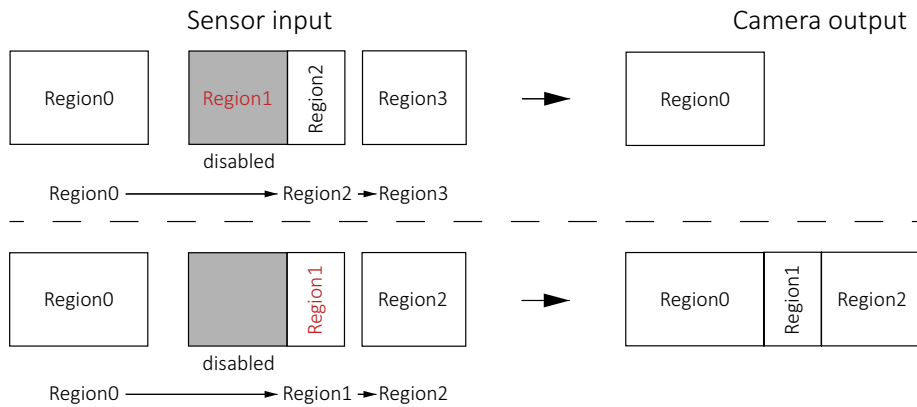


Figure 13: Horizontal mode - missing Region1

Region arrangement modes data at a glance

[Table 10](#) shows ranges for **MultipleRegionArrangement** modes.

Arrangement mode	Availability ¹	Number of regions ²	Position	Subregion ID order	Pixel gaps
Free mode ³	All	1 to 4	Free	Free	Yes
Tile	All		Common values for SubRegionOffsetX and SubRegionWidth with regions arranged one above another Common values for SubRegionOffsetY and SubRegionHeight with regions arranged next to one another	See Figure 9 , Figure 12	
Horizontal	Some cameras		Common values for SubRegionOffsetY and SubRegionHeight	Left to right	
Vertical	Some cameras		Common values for SubRegionOffsetX and SubRegionWidth	Top to bottom	

¹ For cameras that support multiple regions | ² Regions must not overlap | ³ Default

Table 10: Ranges for **MultipleRegionArrangement** modes

Values for width, height, and offsets

When multiple regions are enabled, feature values are:

- **Width** = Number of horizontal pixels of the **output image**
- **Height** = Number of vertical pixels of the **output image**
- **OffsetX** = Horizontal offset from the top left corner of the **sensor image**
- **OffsetY** = Vertical offset from the top left corner of the **sensor image**

Single ROI and AutoModeControl

Multiple regions are part of the functional family for regions cropped out of the full sensor image. The following section describes the relation between these functions.

Single ROI

Multiple regions can be set while the camera is operated in single ROI mode. Changes become effective when **MultipleRegionEnable** is set to **True**.

When **Region0** is activated in multiple regions for the first time, the feature values for the active single ROI (or the full sensor image) are taken over. When features for **Region0** have been adjusted separately and multiple regions are disabled, the last values for **Region0** are applied for the single ROI (or the full sensor image).



Switching between ROI modes

We recommend you not to switch between single ROI and multiple ROI.

Auto mode regions

Auto mode regions equal single ROI (or the full sensor image) by default. Size and position of auto mode regions can be adjusted to subsets. See [Regions of interest and auto mode regions](#) on page 43.

When multiple regions are enabled, auto mode regions are automatically adjusted to match **Region0**. Therefore, when **Region0** is adjusted, an active auto mode region is adjusted simultaneously. Afterwards, auto mode regions can be adjusted, but only as a subset of **Region0**.

When multiple regions are disabled, size and position for **Region0** is applied for the auto mode regions.

MultipleRegionArrangement

Selects the position of the separate ROIs in the merged image.

Notes:

- Available only with Sony IMX GS (global shutter) models.
- ROIs cannot overlap.

Interface support	GigE, USB
Display name	Multiple Region Arrangement
Standard	Custom
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Height, OffsetX, OffsetY, Width
Category	/ImageFormatControl/MultipleRegionControl

Values	Description
<i>Tile</i>	Selects 2 to 4 regions that add to a common rectangle without gaps.
<i>Horizontal</i>	Selects 2 to 4 regions next to each other that add to a common rectangle without gaps.
<i>Vertical</i>	Selects 2 to 4 regions above each other that add to a common rectangle without gaps.
<i>Free</i>	Selects 2 to 4 regions in free arrangement, allowing gaps (default).

MultipleRegionEnable

Selects between single region and multiple regions mode. The number of subregions to be configured depends on the camera model.

Note: Available only with Sony IMX GS (global shutter) models.

Interface support	GigE, USB
Display name	Multiple Region Enable
Standard	Custom
Origin of feature	Camera
Feature type	Boolean
Access	R/W
Affected features	Height, OffsetX, OffsetY, Width
Category	/ImageFormatControl/MultipleRegionControl

Values	Description
<i>False</i>	Single region mode is enabled, subregions mode is disabled (default). Height, OffsetX, OffsetY, and Width be used as usual.
<i>True</i>	Subregions mode is enabled. Height, OffsetX, OffsetY, and Width features are locked and are automatically aligned with the values set for subregions.

SubRegionHeight

[SubRegionSelector]

Height of the selected subregion.

Notes:

- Available only with Sony IMX GS (global shutter) models.
- If values are entered that are not dividable by 8, **SubRegionHeight** is increased automatically to the next higher available value. For example, if **9** is entered, the value is increased to **16**.

Interface support	GigE, USB
Display name	Sub Region Height
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	Pixels
Affected features	Height, Width
Category	/ImageFormatControl/MultipleRegionControl

Values	Description
Model dependent	Minimum
(Height max)	Maximum, depending on the height of other subregions
Model dependent	Increment

SubRegionMode

[SubRegionSelector]

Enables or disables the selected subregion.

Note: Available only with Sony IMX GS (global shutter) models.

Interface support	GigE, USB
Display name	Sub Region Mode
Standard	Custom
Origin of feature	Camera
Feature type	Boolean
Access	R/W
Affected features	Height, OffsetX, OffsetY, Width
Category	/ImageFormatControl/MultipleRegionControl

Values	Description
<i>On</i>	The selected subregion is enabled.
<i>Off</i>	The selected subregion is disabled (default).

SubRegionOffsetX

[SubRegionSelector]

X-offset of the selected subregion.

Notes:

- Available only with Sony IMX GS (global shutter) models.
- If values are entered that are not dividable by 8, **SubRegionOffsetX** is increased automatically to the next higher available value. For example, if **18** is entered, the value is increased to **32**.

Interface support	GigE, USB
Display name	Sub Region Offset X
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	Pixels
Affected features	OffsetX
Category	/ImageFormatControl/MultipleRegionControl

Values	Description
Model dependent	Minimum
(Height max)	Maximum, depending on the height of other subregions
Model dependent	Increment

SubRegionOffsetY

[SubRegionSelector]

Y-offset of the selected subregion.

Notes:

- Available only with Sony IMX GS (global shutter) models.
- If values are entered that are not dividable by 8, **SubRegionOffsetY** is increased automatically to the next higher available value. For example, if 9 is entered, the value is increased to **16**.

Interface support	GigE, USB
Display name	Sub Region Offset Y
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	Pixels
Affected features	OffsetY
Category	/ImageFormatControl/MultipleRegionControl

Values	Description
Model dependent	Minimum
(Height max)	Maximum, depending on the height of other subregions
Model dependent	Increment

SubRegionSelector

Selects the subregion in a range from θ to n , where θ is the index of the first subregion and n is the index of the last one.

Note: Available only with Sony IMX GS (global shutter) models.

Interface support	GigE, USB
Display name	Sub Region Selector
Standard	Custom
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	SubRegionHeight, SubRegionMode, SubRegionWidth, SubRegionOffsetX, SubRegionOffsetY
Category	/ImageFormatControl/MultipleRegionControl

Values ¹	Description
<i>Regionθ</i>	Minimum
<i>RegionN</i>	Maximum

SubRegionWidth

[SubRegionSelector]

Width of the selected subregion.

Notes:

- Available only with Sony IMX GS (global shutter) models.
- If values are entered that are not dividable by 8, **SubRegionWidth** is increased automatically to the next higher available value. For example, if **626** is entered, the value is increased to **640**.

Interface support	GigE, USB
Display name	Sub Region Width
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	Pixels
Affected features	Height
Category	/ImageFormatControl/MultipleRegionControl

Values	Description
Model dependent	Minimum
(Height max)	Maximum, depending on the height of other subregions
Model dependent	Increment

ImageFormatControl (category continued)

The feature descriptions for the `/ImageFormatControl/MultipleRegionControl` subcategory have ended on the previous page. The following features continue the `/ImageFormatControl` category, without a subcategory.

SensorShutterMode

Selects the shutter mode for cameras where different modes are available.

Interface support	All
Display name	Shutter Mode
Standard	SFNC adapted
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/ImageFormatControl

Values	Description
<i>GlobalResetReleaseShutter</i>	The camera is operated using global reset release shutter (GRS).
<i>GlobalShutter</i>	The camera is operated using global shutter (GS).
<i>RollingShutter</i>	The camera is operated using rolling shutter (RS).

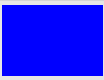
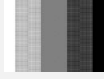
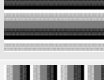
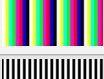
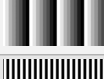
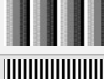
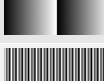
TestPattern

Selects the test pattern to be output by the camera.

Notes:

- Available test patterns vary between sensor models.
- Disable **BalanceWhiteAuto**, set values for **BalanceRatio** to 1 for neutral gray.
- Disable color interpolation, use BayerRG8 for gray test patterns.

Interface support	All
Display name	Test Pattern
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/ImageFormatControl

Values	Pixel format	Sensor models	Description		
			Color sensor		Mono sensor
			Color format	Mono format	Mono format
<i>Off</i>	N.a.	All	The sensor image is output (default).		
<i>Blue</i>	RGB8	AR0135, AR0521, AR0522		Not applicable	
<i>ColorVerticalBar</i>	RGB8/Mono8/ BayerRG8	AR0135, AR0521, AR0522			
<i>ColorVerticalBarFadeGrey</i>	RGB8/Mono8/ BayerRG8	AR0135, AR0521, AR0522			
<i>Green</i>	RGB8	AR0135, AR0521, AR0522		Not applicable	
<i>Grey</i>	RGB8/Mono8	AR0135, AR0521, AR0522			
<i>Red</i>	RGB8	AR0135, AR0521, AR0522		Not applicable	
<i>ColorHorizontalBar</i>	RGB8/Mono8/ BayerRG8	IMX GS/RS			
<i>ColorVerticalBar</i>	RGB8/Mono8/ BayerRG8	IMX GS/RS			
<i>GreyAlternatingStripe</i>	BayerRG8/ Mono8	IMX GS			
<i>GreyAlternatingPixel</i>	BayerRG8/ Mono8	IMX GS			
<i>GreyHorizontalRamp</i>	BayerRG8/ Mono8	IMX GS			
<i>GreyVerticalBar1</i>	BayerRG8/ Mono8	IMX GS			
<i>GreyVerticalBar2</i>	BayerRG8/ Mono8	IMX GS			
<i>Black</i>	RGB8/Mono8	IMX RS			
<i>White</i>	RGB8/Mono8	IMX RS			
<i>GreyDiagonalRamp</i>	RGB8	e2v			
<i>GreyDiagonalRampMoving</i>	RGB8	e2v			

TrapezoidProjectionControl (subcategory)

The features in this subcategory can be used to compensate for a trapezoid projection of the camera image.

Interface support	All
Display name	Trapezoid Projection Control
Standard	Custom
Origin of feature	Camera
Feature type	Subcategory
Category	/ImageFormatControl

Dependencies with other features

Trapezoid projection features are disabled when any of the following features is enabled:

- Bayer pixel formats for PixelFormat
- MultipleRegions

Using trapezoid projection features reduces the available width by one pixel.

When trapezoid projection features are active, values for the following features cannot be changed:

- ROI features
- Binning features
- Decimation features
- ReverseX
- ReverseY

TrapezoidBottomOffsetX

Controls the horizontal offset from the origin to the bottom left point of the trapezoid projection of the camera image.

Interface support	All
Display name	Trapezoid Bottom Offset X
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	Pixel
Affected features	Not applicable
Category	/ImageFormatControl/TrapezoidProjectionControl

Values	Description
<i>OffsetX</i> (Region of interest)	Minimum
Camera model dependent	Maximum

TrapezoidBottomWidth

Controls the bottom width of the trapezoid projection of the camera image.

Interface support	All
Display name	Trapezoid Bottom Width
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	Pixel
Affected features	Not applicable
Category	/ImageFormatControl/TrapezoidProjectionControl

Values	Description
1	Minimum
Camera model dependent	Maximum

TrapezoidMode

Enables or disables the compensation for a trapezoid projection of the camera image.

Interface support	All
Display name	Trapezoid Mode
Standard	Custom
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/ImageFormatControl/TrapezoidProjectionControl

Values	Description
<i>Off</i>	The functionality is disabled (default).
<i>On</i>	The functionality is enabled.

TrapezoidTopOffsetX

Controls the horizontal offset from the origin to the top left point of the trapezoid projection of the camera image.

Interface support	All
Display name	Trapezoid Top Offset X
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	Pixel
Affected features	Not applicable
Category	/ImageFormatControl/TrapezoidProjectionControl

Values	Description
<i>OffsetX</i> (Region of interest)	Minimum
Camera model dependent	Maximum

TrapezoidTopWidth

Controls the top width of the trapezoid projection of the camera image.

Interface support	All
Display name	Trapezoid Top Width
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	Pixel
Affected features	Not applicable
Category	/ImageFormatControl/TrapezoidProjectionControl

Values	Description
1	Minimum
Camera model dependent	Maximum

ImageFormatControl (category continued)

The feature descriptions for the `/ImageFormatControl/TrapezoidProjectionControl` subcategory have ended on the previous page. The following features continue the `/ImageFormatControl` category, without a subcategory.

Width

Controls the image width of the image output by the camera.

Interface support	All
Display name	Width
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	Pixel
Affected features	OffsetX, AutoModeRegionOffsetX, AutoModeRegionWidth, AcquisitionFrameRate, ExposureAutoMin, ExposureAutoMax, ExposureTime, PayloadSize
Category	/ImageFormatControl

WidthMax

Displays the available maximum image width.

Note: The dimension is calculated after horizontal binning or any other function changing the horizontal dimension of the image.

Interface support	All
Display name	Width Max
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Unit	Pixel
Affected features	Width, OffsetX
Category	/ImageFormatControl

ImageProcessingControl

The features in this category enable on-board image processing for contrast, noise suppression and convolution filters, sharpness and blur. You can use `ColorInterpolation` to select the number of merged pixels used for debayering.

Interface support	All
Display name	Image Processing Control
Standard	Custom
Origin of feature	Camera
Feature type	(Category)

AdaptiveNoiseSupressionFactor

Controls the amount of the noise suppression.

Interface support	All
Display name	Adaptive Noise Supression Factor
Standard	Custom
Origin of feature	Camera
Feature type	Float
Access	R/W
Affected features	Not applicable
Category	/ImageProcessingControl

Values	Description
0.5	Minimum
1	The feature is disabled.
2	Maximum

ColorInterpolation

Selects the `ColorInterpolation` filter.

Note: This feature is available only with color models.

Interface support	All
Display name	Color Interpolation
Standard	Custom
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/ImageProcessingControl

Values	Description
<i>Basic2x2</i>	Basic 2×2 algorithm for debayering is selected.
<i>Bilinear3x3</i>	A standard 3×3 algorithm for debayering is selected.
<i>HighQuality Linear5x5</i>	A high-quality linear interpolation for debayering is selected (default).

ContrastControl (subcategory)

The features in this subcategory enable on-board image processing for contrast.

Interface support	All
Display name	Contrast Control
Standard	Custom
Origin of feature	Camera
Feature type	Subcategory
Category	/ImageProcessingControl

ContrastBrightLimit

Selects the maximum gray value for the image.

Interface support	All
Display name	Contrast Bright Limit
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R/W
Affected features	ContrastDarkLimit
Category	/ImageProcessingControl/ContrastControl

Values	Description
<i>ContrastDarkLimit + 1</i>	The minimum value is selected.
4095	The maximum value is selected.

Note: The scaling of **ContrastBrightLimit** depends on the selected pixel format:

Pixel bit depth [bit]	Value range	Calculated value range	Pixel count per increment
8	0 to 4095	0 to 255	$\frac{1}{16}$
10	0 to 4095	0 to 1023	$\frac{1}{4}$
12		0 to 4095	1

ContrastDarkLimit

Selects the minimum gray value for the image.

Note: The scaling of **ContrastDarkLimit** depends on the selected pixel format. See [ContrastBrightLimit](#) on page 251.

Interface support	All
Display name	Contrast Dark Limit
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R/W
Affected features	ContrastBrightLimit
Category	/ImageProcessingControl/ContrastControl

Values	Description
<i>0</i>	The minimum value is selected.
<i>ContrastBrightLimit - 1</i>	The maximum value is selected.

ContrastEnable

Enables or disables the contrast enhancement features.

Interface support	All
Display name	Contrast Enable
Standard	Custom
Origin of feature	Camera
Feature type	Boolean
Access	R/W
Affected features	Not applicable
Category	/ImageProcessingControl/ContrastControl

Values	Description
<i>False</i>	The feature is disabled.
<i>True</i>	The feature is enabled.

ContrastShape

Controls the sigmoid shape of the transfer curve.

Interface support	All
Display name	Contrast Shape
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/ImageProcessingControl/ContrastControl

Values	Description
1	Minimum
4	Default value
10	Maximum
1	Increment

[Figure 14](#) and [Figure 15](#) on page 254 show the transfer curves for different values.

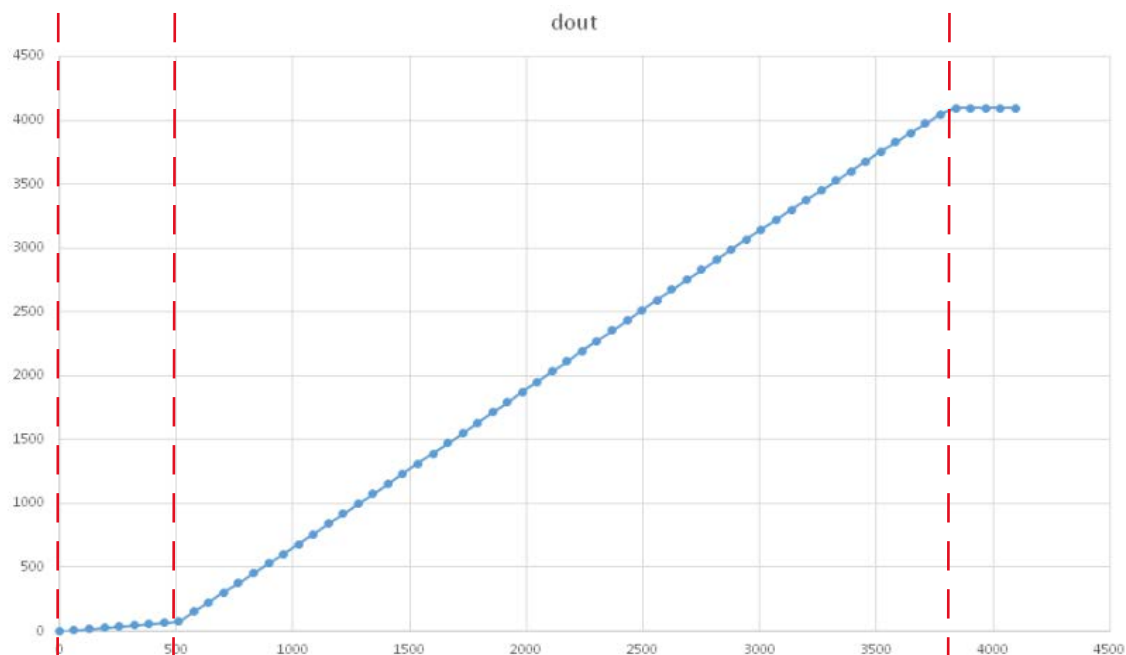


Figure 14: Image transfer for a value of 1

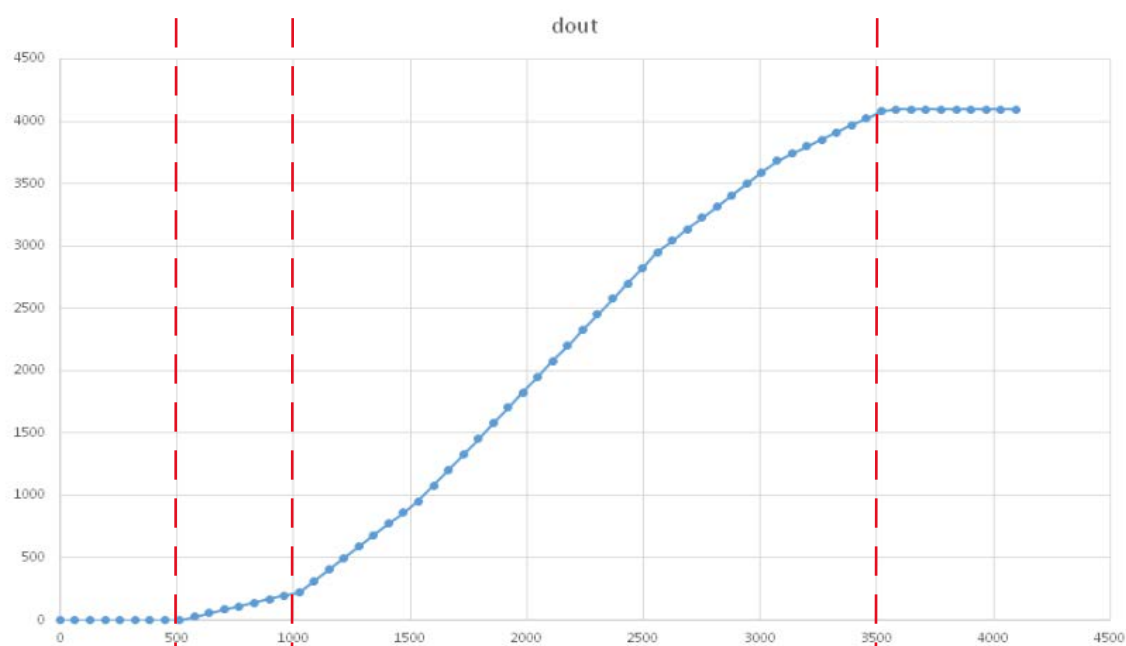


Figure 15: Image transfer for a value of 9

ImageProcessingControl (category continued)

The feature descriptions for the `/ImageProcessingControl/ContrastControl` subcategory have ended on the previous page. The following features continue the `/ImageProcessingControl` category, without a subcategory.

ConvolutionMode

Selects the convolution filter to process the image.

Various filters enable to reduce image noise, emphasize the edges of an image, or to perform individual image processing.

Interface support	All
Display name	Convolution Mode
Standard	Custom
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	AdaptiveNoiseSuppression, CustomConvolutionValue, Sharpness
Category	/ImageProcessingControl

Values	Description
<i>AdaptiveNoiseSuppression</i>	To reduce noise while keeping the edges, the adaptive noise suppression is selected, (controlled by AdaptiveNoiseSuppressionFactor).
<i>CustomConvolution</i>	Your individual settings defined in CustomConvolutionValue are selected.
<i>Off</i>	The feature is disabled (default).
<i>Sharpness</i>	To increase the contrast of edges, the sharpness mode is selected, (controlled by Sharpness).

CustomConvolutionValue

[CustomConvolutionValueSelector]

Sets the value for the convolution filter selected by CustomConvolutionValueSelector.

Interface support	All
Display name	Custom Convolution Value
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/ImageProcessingControl
Values	Description
0	Minimum
255	Maximum

CustomConvolutionValueSelector

Defines the position to read from or write to the selected *CustomConvolution* filter, using *CustomConvolutionValue*.

Interface support	All
Display name	Custom Convolution Value Selector
Standard	Custom
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	AdaptiveNoiseSuppressionFactor, CustomConvolutionValue, Sharpness
Category	/ImageProcessingControl

Values	Description
<i>Coefficient00...04</i>	Selects coefficients from 00 to 04.
<i>Coefficient10...14</i>	Selects coefficients from 10 to 14.
<i>Coefficient20...24</i>	Selects coefficients from 20 to 24.
<i>Coefficient30...34</i>	Selects coefficients from 30 to 34.
<i>Coefficient40...44</i>	Selects coefficients from 40 to 44.

	0	1	2	3	4
0	00	01	02	03	04
1	10	11	12	13	14
2	20	21	22	23	24
3	30	31	32	33	34
4	40	41	42	43	44

Figure 16: Matrix for coefficient values

Sharpness

Selects the degree of sharpness or blurring of the image.

Interface support	All
Display name	Sharpness
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/ImageProcessingControl

Values	Description
-12	Maximum blurring is applied.
0	The image is not affected (default).
12	Maximum sharpness is applied.

LensShadingCorrection

Some lenses do not illuminate the image uniformly across the image plane. Brightness decreases towards the corners in circles. This effect is called lens shading. The features in this category can be used to compensate for this effect.

Interface support	All
Display name	Lens Shading Compensation
Standard	Custom
Origin of feature	Camera
Feature type	(Category)

Functional overview

Figure 17 shows schematically how the lens shading correction works.

LensShadingCenterOffsetX and **LensShadingCenterOffsetY** define the center position of the lens shading effect.

LensShadingValue defines the factor to brighten up the image. This is done in concentric circles counted from the origin $C_{\text{Lens Shading}}$.

LensShadingIndex counts the circle where you want to apply the next step to brighten up the image, counted as offset from the origin $C_{\text{Lens Shading}}$ in pixels.

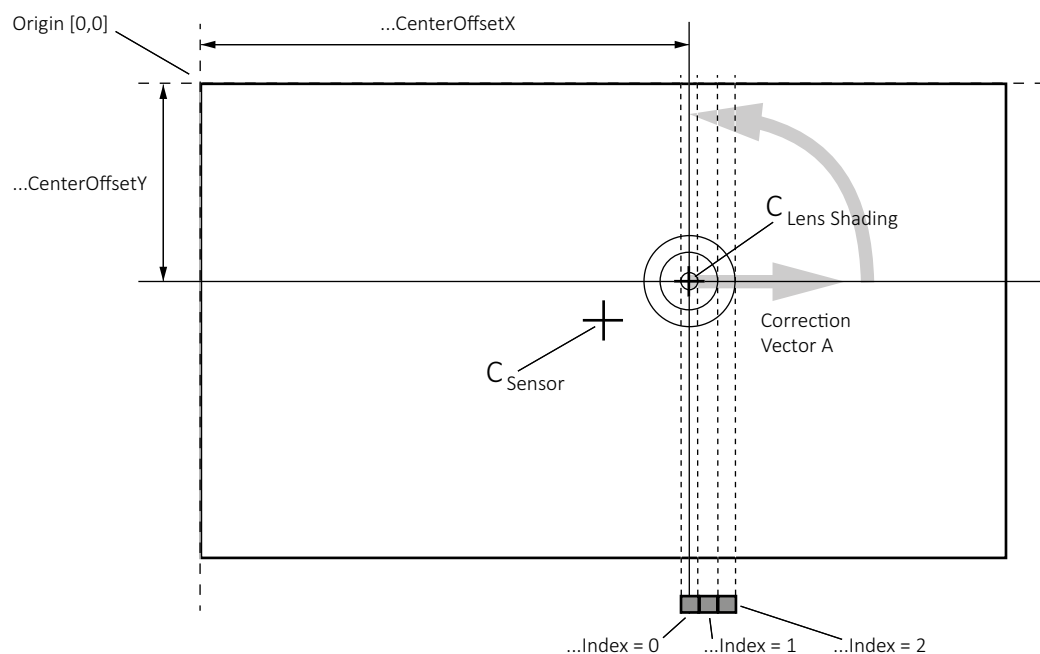


Figure 17: Lens shading correction overview

Lens shading features affect the brightness values for each pixel as shown in this equation:

$$out(x,y) = in(x,y) * A\left(\sqrt{(o_x - x)^2 + (o_y - y)^2}\right)$$

Equation 1: Calculating input and output values for image brightness by pixel

With the following variables:

Variable	Related feature or description
o_x	LensShadingCenterOffsetX
o_y	LensShadingCenterOffsetY
$A()$	LensShadingIndex, LensShadingValue
x	X coordinate of input pixel
y	Y coordinate of input pixel

Table 11: Variable in the equation above

LensShadingCenterOffsetX

Controls the horizontal distance of $C_{\text{Lens Shading}}$ to the origin. See [Figure 17](#) on page 259.

Interface support	All
Display name	Lens Shading Center OffsetX
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	Pixels
Affected features	Not applicable
Category	/LensShadingCorrection

Values	Description
Camera model dependent	Minimum
Camera model dependent	Maximum

LensShadingCenterOffsetY

Controls the vertical distance of $C_{\text{Lens Shading}}$ to the origin. See [Figure 17](#) on page 259.

Interface support	All
Display name	Lens Shading Center OffsetY
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	Pixels
Affected features	Not applicable
Category	/LensShadingCorrection

Values	Description
Camera model dependent	Minimum
Camera model dependent	Maximum

LensShadingEnable

Enables or disables the lens shading correction.

Interface support	All
Display name	Lens Shading Enable
Standard	Custom
Origin of feature	Camera
Feature type	Boolean
Access	R/W
Affected features	Not applicable
Category	/LensShadingCorrection

Values	Description
<i>False</i>	The lens shading correction is disabled (default).
<i>True</i>	The lens shading correction is enabled.

LensShadingIndex

Selects the circle where the lens shading correction multiplies brightness values by **LensShadingValue**. This value is maintained until the next circle defined by **LensShadingIndex**.

Note: This features counts from the origin $C_{\text{Lens Shading}}$ in pixels as shown in [Figure 17](#) on page 259.

Interface support	All
Display name	Lens Shading Index
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/LensShadingCorrection

Values	Description
0	Minimum
Camera model dependent	Maximum

LensShadingLoadAll

Loads configuration datasets for the lens shading correction from the non-volatile memory of the camera.

Interface support	All
Display name	Lens Shading Load All
Standard	Custom
Origin of feature	Camera
Feature type	Command
Access	W
Affected features	Not applicable
Category	/LensShadingCorrection

LensShadingSaveAll

Saves configuration datasets for the lens shading correction to the non-volatile memory of the camera.

Interface support	All
Display name	Lens Shading Save All
Standard	Custom
Origin of feature	Camera
Feature type	Command
Access	W
Affected features	Not applicable
Category	/LensShadingCorrection

LensShadingValue

Controls the factor to multiply the image brightness starting from the selected circle defined by `LensShadingIndex`. See [Figure 17](#) on page 259.

Interface support	All
Display name	Lens Shading Value
Standard	Custom
Origin of feature	Camera
Feature type	Float
Access	R/W
Affected features	Not applicable
Category	/LensShadingCorrection

Values	Description
0	Minimum
1	The current brightness is maintained (default).
8	Maximum

LUTControl

The features in this category can be used to change intensity values, adjusted by luminance and RGB color channels.

Interface support	All
Display name	LUT Control
Standard	SFNC
Origin of feature	Camera
Feature type	(Category)

LUTEnable

[LUTSelector]

Enables or disables the selected LUT.

Interface support	All
Display name	LUT Enable
Standard	SFNC
Origin of feature	Camera
Feature type	Boolean
Access	R/W
Affected features	LUTIndex, LUTValue
Category	/LUTControl

Values	Description
<i>False</i>	The selected LUT is disabled.
<i>True</i>	The selected LUT is enabled.

LUTIndex

[LUTSelector]

Controls the index (offset) of the coefficient to access in the selected LUT.

Interface support	All
Display name	LUT Index
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R/W
Affected features	LUTValue
Category	/LUTControl

Values	Description
0	Minimum
4095	Maximum

LUTLoadAll

Loads the LUT configuration from the non-volatile memory of the camera to replace the current LUT configuration.

Interface support	All
Display name	LUT Load All
Standard	Custom
Origin of feature	Camera
Feature type	Command
Access	W
Affected features	LUTIndex, LUTValue, LUTValueAll
Category	/LUTControl

LUTSaveAll

Saves the current LUT configuration to the non-volatile memory of the camera.

Interface support	All
Display name	LUTSave All
Standard	Custom
Origin of feature	Camera
Feature type	Command
Access	W
Affected features	LUTIndex, LUTValue, LUTValueAll
Category	/LUTControl

LUTSelector

Selects the LUT to be controlled.

Interface support	All
Display name	LUT Selector
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	LUTEnable, LUTIndex, LUTValue
Category	/LUTControl

Values	Description
<i>Blue</i>	The LUT for blue is selected.
<i>Green</i>	The LUT for green is selected.
<i>Luminance</i>	The LUT for luminance is selected.
<i>Red</i>	The LUT for red is selected.

LUTValue

[LUTSelector][LUTIndex]

Controls the value for the selected LUT.

Interface support	All
Display name	LUT Value
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R/W
Affected features	Not affected
Category	/LUTControl

Values	Description
0	Minimum
4095	Maximum

LUTValueAll

[LUTSelector]

Controls all the LUT coefficients in a single access without using individual LUTIndex. This can be used to write values for red, green, or blue at once.

Notes

- Monochrome cameras support only *Luminance*, not RGB.
- One LUT entry is 12 bit, so 1 value occupies 2 Bytes (8192 elements) in the Raw data array.
- Values can be read and written at the same time.

Interface support	All
Display name	LUT Value All
Standard	SFNC
Origin of feature	Camera
Feature type	Raw
Access	R/W
Affected features	Not affected
Category	/LUTControl

OpticControl

The features in this category can be used to focus **Optotune ELM** lenses on Alvium cameras.

Previous lenses use focusing elements made of glass. To change focus, these elements are moved. Optotune ELM lenses use **Liquid Lenses** as focusing elements. When a voltage is applied, Liquid Lenses change their shape and focal length, which is used to adjust the focusing distance. Terms and feature names:

Focal Power in Diopters [dpt]: The inverse of focal length

Optic Controller: Liquid Lens

Settling time: The period of time for the liquid lens to move from one focus step to another.

Interface support	All
Display name	Optic Control
Standard	SFNC
Origin of feature	Camera
Feature type	(Category)

FocusAuto

[OpticControllerSelector]

Selects the operation mode for autofocus.

Interface support	All
Display name	Focus Auto
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not affected
Category	/OpticControl

Values	Description
<i>BETA_Continuous</i>	Focus is adjusted continually. The cycle time between two adjustments is controlled by FocusAutoSettlingTime . Explore our new feature , now in Beta. Your experience and feedback will help us improve.
<i>Off</i>	Autofocus is disabled (default).
<i>Once</i>	Focus is adjusted when FocusMeasureEnable is executed.

FocusAutoAccuracy

[OpticControllerSelector]

Controls the accuracy for the autofocus adjustment.

Note: We recommend you to find a buyout between accuracy and response time.

Interface support	All
Display name	Focus Auto Accuracy
Standard	Custom
Origin of feature	Camera
Feature type	Float
Access	R/W
Unit	dpt [Diopters]
Affected features	Not affected
Category	/OpticControl

Values	Description
0.1	Minimum value (default)
1	Focus is adjusted with maximum accuracy. This stage is most time-consuming.

FocusAutoAlgorithm

[OpticControllerSelector]

Selects the algorithm used to adjust autofocus.

Note: We recommend you to find a buyout between accuracy and response time.

Interface support	All
Display name	Focus Auto Algorithm
Standard	Custom
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not affected
Category	/OpticControl

Values	Description
<i>BETA_AdaptiveStepSize</i>	This algorithm uses strategies to minimize the number of steps, making it faster but less accurate than global search. Explore our new feature, now in Beta. Your experience and feedback will help us improve.
<i>GlobalSearch</i>	Starting with minimum object distance of the lens, the image is detected for edges to focus. (default). The step size is very small to enable optimum focus settings. This stage is most time-consuming.

FocalPower

[OpticControllerSelector]

Displays the current focus value.

Interface support	All
Display name	Focal Power
Standard	SFNC
Origin of feature	Camera
Feature type	Float
Access	R
Unit	dpt [Diopters]
Affected features	Not affected
Category	/OpticControl

Values	Description
0	Minimum
Depending on the lens	Maximum

FocusAutoFocalPowerMax

[OpticControllerSelector]

Controls the maximum focus value for autofocus.

Interface support	All
Display name	Focus Auto Focal Power Max
Standard	Custom
Origin of feature	Camera
Feature type	Float
Access	R/W
Unit	dpt [Diopters]
Affected features	Not affected
Category	/OpticControl

FocusAutoFocalPowerMin

[OpticControllerSelector]

Controls the minimum focus value for autofocus.

Interface support	All
Display name	Focus Auto Focal Power Min
Standard	Custom
Origin of feature	Camera
Feature type	Float
Access	R/W
Unit	dpt [Diopters]
Affected features	Not affected
Category	/OpticControl

FocusAutoSettlingTime

[OpticControllerSelector]

Controls the settling time between changes performed by the autofocus algorithm.

Interface support	All
Display name	Focus Auto Settling Time
Standard	Custom
Origin of feature	Camera
Feature type	Float
Access	R/W
Unit	µs [Microseconds]
Affected features	Not affected
Category	/OpticControl

Values	Description
0	Minimum
20000	Default
100000	Maximum

FocusMeasurement (subcategory)

The features in this subcategory can be used to control focus settings.

Interface support	All
Display name	Focus Measurement
Standard	Custom
Origin of feature	Camera
Feature type	(Subcategory)
Category	/OpticControl

FocusKernelMode

Selects which filter kernel is used for the calculation of **FocusMeasureValue**.

Interface support	All
Display name	Focus Kernel Mode
Standard	Custom
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not affected
Category	/OpticControl/FocusMeasurement

Values	Description
<i>Laplace</i>	The Laplace filter is used.
<i>Scharr</i>	The Scharr filter is used.
<i>Sobel</i>	The Sobel filter is used.

FocusMeasureEnable

Enables or disables focusing.

Interface support	All
Display name	Focus Measure Enable
Standard	Custom
Origin of feature	Camera
Feature type	Boolean
Access	R/W
Affected features	Not affected
Category	/OpticControl/FocusMeasurement

Values	Description
0	Focusing is disabled (default).
1	Focusing is enabled.

FocusMeasureValue

Displays the measured focus value.

Interface support	All
Display name	Focus Measure Value
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R
Unit	dpt [Diopters]
Affected features	Not affected
Category	/OpticControl/FocusMeasurement

FocusRegionHeight

Controls the height of the sensor area used for focusing.

Interface support	All
Display name	Focus Region Height
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	Pixels
Affected features	Not affected
Category	/OpticControl/FocusMeasurement

Values	Description
Camera model dependent	Minimum
Camera model dependent	Maximum

FocusOffsetX

Controls the horizontal offset from the origin to the sensor area used for focusing.

Interface support	All
Display name	Focus Offset X
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	Pixels
Affected features	Not affected
Category	/OpticControl/FocusMeasurement

Values	Description
0	Minimum
Camera model dependent	Maximum

FocusOffsetY

Controls the vertical offset from the origin to the sensor area used for focusing.

Interface support	All
Display name	Focus Offset Y
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	Pixels
Affected features	Not affected
Category	/OpticControl/FocusMeasurement

Values	Description
0	Minimum
Camera model dependent	Maximum

FocusRegionWidth

Controls the width of the sensor area used for focusing.

Interface support	All
Display name	Focus Region Width
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	Pixels
Affected features	Not affected
Category	/OpticControl/FocusMeasurement

Values	Description
Camera model dependent	Minimum
Camera model dependent	Maximum

OpticControl (category continued)

The feature descriptions for the `/OpticControl/FocusMeasurement` subcategory have ended on the previous page. The following features continue the `/OpticControl` category, without a subcategory.

OpticControllerFamilyName

[OpticControllerSelector]

Displays the family name of the selected optic controller.

Interface support	All
Display name	Optic Controller Family Name
Standard	SFNC
Origin of feature	Camera
Feature type	String
Access	R
Affected features	Not affected
Category	/OpticContro

OpticControllerFirmwareVersion

[OpticControllerSelector]

Displays the firmware version of the selected optic controller.

Interface support	All
Display name	Optic Controller Firmware Version
Standard	SFNC
Origin of feature	Camera
Feature type	String
Access	R
Affected features	Not affected
Category	/OpticContro

OpticControllerInitialize

[OpticControllerSelector]

Initializes the selected optic controller for use.

Interface support	All
Display name	Optic Controller Initialize
Standard	SFNC
Origin of feature	Camera
Feature type	Command
Access	W
Affected features	Not affected
Category	/OpticContro

OpticControllerModelName

[OpticControllerSelector]

Displays the model name of the selected optic controller.

Interface support	All
Display name	Optic Controller Model Name
Standard	SFNC
Origin of feature	Camera
Feature type	String
Access	R
Affected features	Not affected
Category	/OpticContro

OpticControllerSelector

Selects the optic controller to be configured.

Interface support	All
Display name	Optic Controller Model Name
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R
Affected features	Not affected
Category	/OpticContro

Values	Description
<i>Optotune</i>	The driver for Optic controllers by Optotune is selected.

OpticControllerStatus

[OpticControllerSelector]

Displays the status of the selected optic controller.

Interface support	All
Display name	Optic Controller Status
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R
Affected features	Not affected
Category	/OpticContro

Values	Description
<i>Busy</i>	The optic controller is busy.
<i>Error</i>	The optic controller reports an error.
<i>NotConnected</i>	No optic controller is connected to the camera.
<i>NotInitialized</i>	The optic controller has not been initialized yet. This status can occur when no lens is mounted.
<i>NotSupported</i>	The connected optic controller is not supported.
<i>Ready</i>	The optic controller is ready for use.

OpticControllerTemperature

[OpticControllerSelector]

Displays the current temperature of the selected optic controller.

Interface support	All
Display name	Optic Controller Temperature
Standard	SFNC
Origin of feature	Camera
Feature type	Float
Access	R
Unit	°C [Degrees Celsius]
Affected features	Not affected
Category	/OpticControl

Values	Description
Value range	Ensure to keep the values specified by the manufacturer of the optic controller.

OpticControllerVendorName

[OpticControllerSelector]

Displays the vendor name of the selected optic controller.

Interface support	All
Display name	Optic Controller Vendor Name
Standard	SFNC
Origin of feature	Camera
Feature type	String
Access	R
Affected features	Not affected
Category	/OpticControl

OpticControllerVersion

[OpticControllerSelector]

Displays the version of the selected optic controller.

Interface support	All
Display name	Optic Controller Version
Standard	SFNC
Origin of feature	Camera
Feature type	String
Access	R
Affected features	Not affected
Category	/OpticControl

PtpControl

Note: Features in this category are available for Alvium **GigE cameras only**.

The features in this category can be used to synchronize your camera, for example, with other cameras.

Interface support	GigE
Display name	Ptp Control
Standard	SFNC
Origin of feature	Camera
Feature type	(Category)

PtpClockAccuracy

Displays the expected accuracy of the camera's PTP clock when it is the grandmaster, or in the event it becomes the grandmaster.

Interface support	GigE
Display name	Ptp Clock Accuracy
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R
Affected features	Not applicable
Category	/PtpControl

Values	Description
<i>Unknown</i>	The accuracy cannot be stated (default).

PtpClockID

Displays the latched **parent** clock ID of the PTP device (=camera).

Interface support	GigE
Display name	Ptp Clock ID
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R
Affected features	Not applicable
Category	/PtpControl

Values	Description
0	Minimum
9223372036854775807	Maximum

PtpDataSetLatch

Latches the current values from the camera's PTP clock data set.

Interface support	GigE
Display name	Ptp Data Set Latch
Standard	SFNC
Origin of feature	Camera
Feature type	Command
Access	W
Affected features	Not applicable
Category	/PtpControl

PtpEnable

Enable or disables using the Precision Time Protocol (PTP).

Interface support	GigE
Display name	Ptp Enable
Standard	SFNC
Origin of feature	Camera
Feature type	Boolean
Access	R/W
Affected features	Not applicable
Category	/PtpControl

Values	Description
<i>False</i>	PTP is disabled (default).
<i>True</i>	PTP is enabled.

PtpGrandmasterClockID

Displays the latched **grandmaster** clock ID of the PTP device (=camera).

Interface support	GigE
Display name	Ptp Grandmaster Clock ID
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/PtpControl

Values	Description
<i>0</i>	Minimum
<i>9223372036854775807</i>	Maximum

PtpOffsetFromMaster

Displays the latched offset from the PTP master clock.

Interface support	GigE
Display name	Ptp Offset From Master
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Unit	Ticks = Nanoseconds (ns)
Affected features	Not applicable
Category	/PtpControl

Values	Description
<i>-2147483648</i>	Minimum
<i>2147483647</i>	Maximum

PtpOperationMode

Controls the IEEE 1588 operation mode.

Interface support	GigE
Display name	Ptp Operation Mode
Standard	Custom
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/PtpControl

Values	Description
<i>Auto</i>	The status for the camera is set automatically.
<i>Master</i>	Sets the camera to be master.
<i>Slave</i>	Sets the camera to be slave.

PtpParentClockID

Displays the latched **parent** (=current master) clock ID of the PTP device (=camera).

Interface support	GigE
Display name	Ptp Parent Clock ID
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/PtpControl

Values	Description
0	Minimum
9223372036854775807	Maximum

PtpServoStatus

Displays the latched state of the PTP Servo Clock.



PTP accuracy

The average accuracy for PTP is 12 μ s.

- **Typical PTP lock type** with Alvium cameras:
Floating lock state in cycles: *Idle* > *Locked* > *Stepchange*
Average offset from Master: < 12 μ s
- **Other PTP lock type** with Alvium cameras (temporary, cannot be forced):
Strong lock state: *Locked*.
Average offset from Master: < 1 μ s

Interface support	GigE
Display name	Ptp Servo Status
Standard	SFNC adapted
Origin of feature	Camera
Feature type	Enumeration
Access	R
Affected features	Not applicable
Category	/PtpControl

Values	Description
<i>ClockChange</i>	The status of the clock frequency configuration is changed. This occurs when there is a big difference between master and slave clock frequency.
<i>Idle</i>	The status of the clock controller is in idle state (waiting for all data collection).
<i>Locked</i>	The status of the clock controller is in adjusting state, the PI controller is used to follow the master clock drift.
<i>StepChange</i>	The status of the clock counter is changed step-by-step.
<i>Unknown</i>	The status of the clock controller is set to Unknown (for example, if the camera works as a Master).

PtpStatus

Displays the PTP status.

Interface support	GigE
Display name	Ptp Status
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R
Affected features	Not applicable
Category	/PtpControl

Values	Description ¹
1	Initializing
2	Faulty
3	Disabled
4	Listening
5	Pre Master
6	Master
7	Passive
8	Uncalibrated
9	Slave

¹ Refer to the IEEE 1588-2008 specification for additional information on PTP states.

SequencerControl

Note: Features in this category are available for **Alvium USB and GigE cameras with Sony IMX global shutter sensors** only. The features in this category can be used to trigger camera feature settings in sequencer sets ("**set**" on this page) during acquisition in a predefined order.



Using Alvium Sequencer features

The Alvium Sequencer is very powerful. We recommend you to read the Getting Started with the Alvium Sequencer application note at www.alliedvision.com/fileadmin/content/documents/products/cameras/Alvium_common/appnote/Getting-Started_Alvium_Sequencer.pdf to ease setting up your application.

Interface support	GigE, USB
Display name	Sequencer Control
Standard	SFNC
Origin of feature	Camera
Feature type	(Category)

SequencerConfigurationMode

Enables or disables configuration of the sequencer.

Interface support	GigE, USB
Display name	Sequencer Configuration Mode
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	ExposureAutoMin, ExposureAutoMax
Category	/SequencerControl

Values	Description
<i>Off</i>	Configuration of the sequencer is disabled (default).
<i>On</i>	Configuration of the sequencer is enabled.

SequencerConfigurationReset

Deletes all sequencer sets from the non-volatile memory of the camera.

Interface support	GigE, USB
Display name	Sequencer Configuration Reset
Standard	SFNC
Origin of feature	Camera
Feature type	Command
Access	W
Category	/SequencerControl

SequencerFeatureEnable

[SequencerFeatureSelector]

Displays which feature can be used in sequencer sets.

Interface support	GigE, USB
Display name	Sequencer Feature Enable
Standard	SFNC
Origin of feature	Camera
Feature type	Boolean
Access	R
Affected features	Not applicable
Category	/SequencerControl

Values	Description
<i>False</i>	The selected feature is disabled (default).
<i>True</i>	The selected feature is enabled.

SequencerFeatureSelector

Selects the features to be inquired by `SequencerFeatureEnable`.

Interface support	GigE, USB
Display name	Sequencer Feature Selector
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/SequencerControl

Values

AcquisitionFrameRate, AcquisitionFrameRateEnable, BalanceRatioBlue, BalanceRatioRed, ColorTransformationEnable, ColorTransformationValue, ExposureTime, Gain, Gamma, Hue, OffsetX, OffsetY, Saturation

SequencerMode

Enables or disables the sequencer.

Interface support	GigE, USB
Display name	Sequencer Mode
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	PayloadSize
Category	/SequencerControl

Values

Description

<i>Off</i>	The sequencer is disabled (default).
<i>On</i>	The sequencer is enabled.

SequencerSetActive

Displays the index of the currently active sequencer set.

Interface support	GigE, USB
Display name	Sequencer Set Active
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/SequencerControl

Values	Description
0	Minimum
4294967295	Maximum

SequencerSetLoad

[SequencerSetSelector]

Loads and activates the sequencer set selected by **SequencerSetSelector** from the non-volatile memory of the camera.

Note: Even if **SequencerMode** is *Off*, the configuration of the selected sequencer is activated on the camera.

Interface support	GigE, USB
Display name	Sequencer Set Load
Standard	SFNC
Origin of feature	Camera
Feature type	Command
Access	W
Affected features	AcquisitionFrameRate, AcquisitionFrameRateEnable, BalanceRatioBlue, BalanceRatioRed, ColorTransformationEnable, ColorTransformationValue, ExposureTime, Gain, Gamma, Hue, OffsetX, OffsetY, Saturation
Category	/SequencerControl

SequencerSetSave

[SequencerSetSelector]

Saves the sequencer set selected by **SequencerSetSelector** to the non-volatile memory of the camera.

Note: Even if **SequencerMode** is *off*, the selected set is saved.

Interface support	GigE, USB
Display name	Sequencer Set Save
Standard	SFNC
Origin of feature	Camera
Feature type	Command
Access	W
Affected features	See SequencerSetLoad .
Category	/SequencerControl

SequencerSetSelector

Selects the sequencer set to be configured or used.

Interface support	GigE, USB
Display name	Sequencer Set Selector
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	See SequencerSetLoad .
Category	/SequencerControl

Values	Description
<i>Set0</i>	Set0 is selected (default).
<i>Set1</i>	Set1 is selected.
...	...
<i>Set15</i>	Set15 is selected.

SequencerSetStart

Selects the sequencer set to start with.

Note: The sequencer set selected by **SequencerSetStart**sequencer is the initial sequencer set, including sets grouped in paths. See [SequencerPathControl \(subcategory\)](#) on page 295.

Interface support	GigE, USB
Display name	Sequencer Set Start
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/SequencerControl

Values	Description
0	Minimum
15	Maximum

SequencerPathControl (subcategory)

Note: Features in this subcategory are available for the following **Alvium USB and GigE cameras with Sony IMX global shutter sensors** only.

The features in this subcategory can be used to configure the Sequencer Paths of sequencer sets to be triggered.

Interface support	GigE, USB
Display name	Sequencer Path Control
Standard	Custom
Origin of feature	Camera
Feature type	(Subcategory)
Category	/SequencerControl

SequencerPathSelector

[SequencerSetSelector]

Selects the SequencerPath including the sequencer sets to be configured or used.

Interface support	GigE, USB
Display name	Sequencer Path Selector
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	SequencerSetNext, SequencerTriggerSource, SequencerTriggerActivation
Category	/SequencerControl/SequencerPathControl

Values	Description
<i>Path0</i>	Path0 is selected to be configured (default).
<i>Path1</i>	Path1 is selected to be configured.
...	...
<i>Path7</i>	Path7 is selected to be configured.

SequencerSetNext

[SequencerSetSelector][SequencerPathSelector]

Selects the next sequencer set to be configured or used.

Interface support	GigE, USB
Display name	Sequencer Set Next
Standard	SFNC (adapted)
Origin of feature	Camera
Feature type	Integer
Access	R/W
Affected features	SequencerSetNext, SequencerTriggerSource, SequencerTriggerActivation
Category	/SequencerControl/SequencerPathControl

Values	Description
0	Minimum
15	Maximum

SequencerTriggerActivation

[SequencerSetSelector][SequencerPathSelector]

Selects the electrical signal level to trigger the corresponding sequencer set.

Interface support	GigE, USB
Display name	Sequencer Trigger Activation
Standard	SFNC (adapted)
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/SequencerControl/SequencerPathControl

Values	Description
<i>AnyEdge</i>	The sequencer is triggered on the falling or rising edge of the signal.
<i>FaLLingEdge</i>	The sequencer is triggered on the falling edge of the signal.
<i>LevelHigh</i>	The sequencer is triggered at a high signal level.
<i>LevelLow</i>	The sequencer is triggered at a low signal level.
<i>RisingEdge</i>	The sequencer is triggered on the rising edge of the signal.

SequencerTriggerSource

[SequencerSetSelector][SequencerPathSelector]

Selects the internal signal or physical input line to use as source for triggering the sequencer.

Note: The selected trigger must have its **TriggerMode** set to **On**.

Interface support	GigE, USB
Display name	Sequencer Trigger Source
Standard	SFNC (adapted)
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/SequencerControl/SequencerPathControl

Values	Description
<i>Action0</i> ¹	The Action0 command is output as source signal.
<i>Action1</i> ¹	The Action1 command is output as source signal.
<i>Counter0Active</i>	The Counter0Active signal triggers the sequencer.
<i>Counter1Active</i>	The Counter1Active signal triggers the sequencer.
<i>Counter2Active</i>	The Counter2Active signal triggers the sequencer.
<i>Counter3Active</i>	The Counter3Active signal triggers the sequencer.
<i>ExposureActive</i> ²	The ExposureActive signal triggers the sequencer.
<i>FrameActive</i>	The FrameActive signal triggers the sequencer.
<i>Line0</i>	Physical Line0 triggers the sequencer.
<i>Line1</i>	Physical Line1 triggers the sequencer.
<i>Line2</i> ³	Physical Line2 triggers the sequencer.
<i>Line3</i> ³	Physical Line3 triggers the sequencer.
<i>Off</i>	Triggering is disabled.
<i>SoftwareSignal0</i>	SoftwareSignal0 triggers the sequencer.
<i>SoftwareSignal1</i>	SoftwareSignal1 triggers the sequencer.
<i>...N</i>	SoftwareSignalN triggers the sequencer.
<i>Timer0Active</i>	The Timer0Active signal triggers the sequencer.
<i>Timer1Active</i>	The Timer1Active signal triggers the sequencer.

¹ Available with Alvium GigE cameras only.

² Available for cameras with global shutter sensors and with rolling shutter sensors if TriggerMode is enabled or if AcquisitionMode is set to Continuous.

³ Available with Alvium GigE and Alvium USB cameras. Alvium CSI-2 cameras support Line0 and Line1 only.

Table 12: SequencerTriggerSource values

SoftwareSignalControl

The features in this category can be used by external devices to trigger actions within the camera by software commands.

See [ActionControl](#) on page 120 for the interaction with features in this category.

Interface support	All
Display name	Software Signal Control
Standard	SFNC
Origin of feature	Camera
Feature type	(Category)

SoftwareSignalPulse

[SoftwareSignalSelector]

Generates a pulse signal used by external devices to trigger actions within the camera by software commands.

Interface support	All
Display name	Software Signal Pulse
Standard	SFNC
Origin of feature	Camera
Feature type	Command
Access	W
Affected features	Not applicable
Category	/SoftwareSignalControl

SoftwareSignalSelector

Selects which Software Signal features to control.

Interface support	All
Display name	Software Signal Selector
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	SoftwareSignalPulse
Category	/SoftwareSignalControl
Values	Description
<i>SoftwareSignal0</i>	Selects software signal 0 (default).
<i>SoftwareSignal1</i>	Selects software signal 1.

TestControl

The feature in this category can be used to test if packets are transmitted successfully between the host and the camera.

Interface support	All
Display name	Test Control
Standard	SFNC
Origin of feature	Camera
Feature type	(Category)

TestEventGenerate

Generates events for `EventTest` and `EventTestTimestamp`. See [EventControl](#) on page 202.

Interface support	GigE
Display name	Test Event Generate
Standard	SFNC
Origin of feature	Camera
Feature type	Command
Access	W
Affected features	Not applicable
Category	/TestControl

TestPendingAck

Tests the camera's pending acknowledge feature. When this feature is written, the camera waits a time period corresponding to the value of **TestPendingAck** before acknowledging the write.

Note: If you select a high value, the camera does not respond for a long time.

Interface support	All
Display name	Test Pending Ack
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	ms
Affected features	Not applicable
Category	/TestControl

Values	Description
0	Minimum
60000	Maximum

TransferControl

Note: Features in this category are available for Alvium **GigE cameras only**.

The features in this category can be used to acquire a sequence of images as a burst.

Interface support	GigE
Display name	Transfer Control
Standard	SFNC adapted
Origin of feature	Camera
Feature type	(Category)

TransferControlMode

[TransferSelector]

Enables or disables image acquisition as burst.

Interface support	GigE
Display name	Transfer Control Mode
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	AcquisitionFrameRate
Category	/TransferControl

Values	Description
<i>Automatic</i>	The image burst is enabled
<i>Basic</i>	The image burst is disabled (default).

TransferQueueCurrentBlockCount

[TransferSelector]

Displays the current number of images in the frame buffer.

Interface support	GigE
Display name	Transfer Queue Current Block Count
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Unit	Bytes
Affected features	Not applicable
Category	/TransferControl

Values	Description
0	Minimum
4294967295	Maximum

TransferQueueMaxBlockCount

[TransferSelector]

Controls the maximum number of images that can be stored in the frame buffer.

Interface support	GigE
Display name	Transfer Queue Max Block Count
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	Bytes
Affected features	Not applicable
Category	/TransferControl

Values	Description
0	Minimum
4294967295	Maximum

TransferSelector

Selects the stream to be configured by Transfer Control features. Use as a reference for your host software.

Interface support	GigE
Display name	Transfer Selector
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	AcquisitionFrameRate, TransferControlMode, TransferQueueCurrentBlockCount, TransferQueueMaxBlockCount
Category	/TransferControl
Values	Description
<i>Stream0</i>	Stream 0 is selected.

TransportLayerControl

The features in this category can be used to display the current bandwidth use and the transfer status of packets between the host and the camera on the transport layer level.

Interface support	All
Display name	Transport Layer Control
Standard	SFNC
Origin of feature	Camera
Feature type	(Category)

GigEVision

Note: Features in this subcategory are available for Alvium **GigE cameras only**.

The features in this subcategory can be used to control IP settings, the communication between the host and the camera, and the transfer of data packets.

Interface support	GigE
Display name	GigE
Standard	SFNC
Origin of feature	Camera
Feature type	(Category)
Category	/TransportLayerControl

DefaultSCPSPacketSize

Controls the stream packet size that is used at boot time of the camera to calculate frame rates and other system performance features.

Note: This feature for default settings corresponds to the GigE Vision specific feature **GeVSCPSPacketSize** and also to **DeviceStreamChannelPacketSize**.

Interface support	GigE
Display name	Default SCPS Packet Size
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R/W
Unit	Bytes
Affected features	Not applicable
Category	/TransportLayerControl/GigEVision

Values	Description
500	Minimum
16358	Maximum

GevCurrentDefaultGateway

Displays the current default gateway address.

Interface support	GigE
Display name	Gev Current Default Gateway
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/TransportLayerControl/GigEVision

GevCurrentIPAddress

Displays the current IP address.

Interface support	GigE
Display name	Gev Current IP Address
Standard	SFNC adapted
Origin of feature	Camera
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/TransportLayerControl/GigEVision

Priorities for assigning IP addresses

Figure 18 shows the workflow to assign IP addresses to cameras according to the GigE Vision standard:

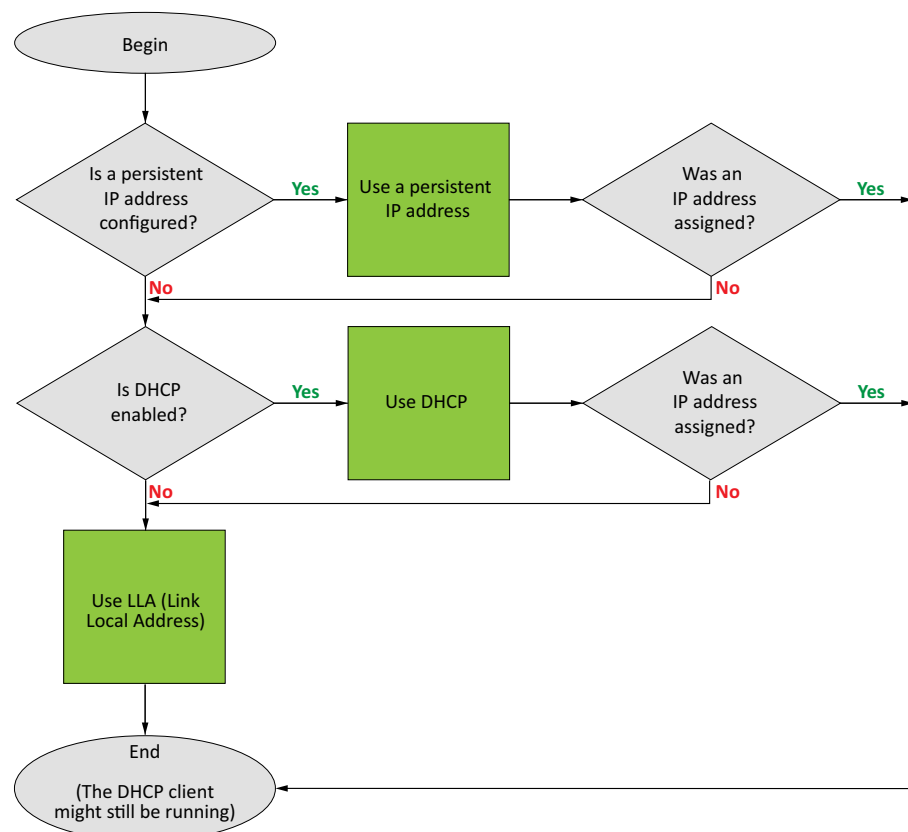


Figure 18: Priorities for assigning IP addresses

GevCurrentIPConfigurationDHCP

Enables or disables IP settings being configured by DHCP.

Interface support	GigE
Display name	Gev Current IP Configuration DHCP
Standard	SFNC
Origin of feature	Camera
Feature type	Boolean
Access	R/W
Affected features	Not applicable
Category	/TransportLayerControl/GigEVision

Values	Description
<i>True</i>	IP settings are configured by DHCP (dynamic host configuration protocol) (default).
<i>False</i>	IP settings are configured by LLA or by the user (persistent IP).



Priorities for assigning IP addresses

See the flowchart in [Figure 18: Priorities for assigning IP addresses](#) on page 307 for the priorities between `GevCurrentIPConfigurationPersistentIP`, `GevCurrentIPConfigurationDHCP`, and `GevCurrentIPConfigurationLLA`.

GevCurrentIPConfigurationLLA

Enables or disables IP settings being configured by LLA.

Interface support	GigE
Display name	Gev Current IP Configuration LLA
Standard	SFNC
Origin of feature	Camera
Feature type	Boolean
Access	R/W
Affected features	Not applicable
Category	/TransportLayerControl/GigEVision

Values	Description
<i>True</i>	IP settings are configured by LLA (link-local address) (default).



Priorities for assigning IP addresses

See the flowchart in [Figure 18: Priorities for assigning IP addresses](#) on page 307 for the priorities between `GevCurrentIPConfigurationPersistentIP`, `GevCurrentIPConfigurationDHCP`, and `GevCurrentIPConfigurationLLA`.

GevCurrentIPConfigurationPersistentIP

Enables or disables IP settings being configured by manually by the user.

Interface support	GigE
Display name	Gev Current IP Configuration Persistent IP
Standard	SFNC
Origin of feature	Camera
Feature type	Boolean
Access	R/W
Affected features	GevCurrentIPConfigurationDHCP, GevIPConfigurationStatus
Category	/TransportLayerControl/GigEVision

Values	Description
<i>True</i>	IP settings are configured manually by the user.
<i>False</i>	IP settings are configured by LLA or DHCP (default).



Priorities for assigning IP addresses

See the flowchart in [Figure 18: Priorities for assigning IP addresses](#) on page 307 for the priorities between `GevCurrentIPConfigurationPersistentIP`, `GevCurrentIPConfigurationDHCP`, and `GevCurrentIPConfigurationLLA`.

GevCurrentSubnetMask

Displays the current subnet mask address.

Interface support	GigE
Display name	Gev Current Subnet Mask
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/TransportLayerControl/GigEVision

GevIPConfigurationStatus

Displays if IP settings are configured by DHCP, LLA, or manually by the user.

Interface support	GigE
Display name	Gev IP Configuration Status
Standard	SFNC adapted
Origin of feature	Camera
Feature type	Enumeration
Access	R
Affected features	Not applicable
Category	/TransportLayerControl/GigEVision

Values	Description
<i>DHCP</i>	IP settings are configured by DHCP (dynamic host configuration protocol) (default). If no DHCP server is found, DHCP falls back to LLA automatically i.
<i>LLA</i>	IP settings are configured by LLA (link-local address).
<i>Persistent</i>	IP settings are configured manually by the user.



Priorities for assigning IP addresses

See the flowchart in [Figure 18: Priorities for assigning IP addresses](#) on page 307 for the priorities between `GevCurrentIPConfigurationPersistentIP`, `GevCurrentIPConfigurationDHCP`, and `GevCurrentIPConfigurationLLA`.

GevMACAddress

Displays the current MAC address.

Interface support	GigE
Display name	Gev MAC Address
Standard	SFNC adapted
Origin of feature	Camera
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/TransportLayerControl/GigEVision

GevPAUSEFrameReception

Controls whether incoming PAUSE frames are handled on the given logical link.

Interface support	GigE
Display name	Gev PAUSE Frame Reception
Standard	SFNC adapted
Origin of feature	Camera
Feature type	Boolean
Access	R/W
Affected features	Not applicable
Category	/TransportLayerControl/GigEVision

Values	Description
<i>True</i>	Ethernet flow control is enabled on the given local link.
<i>False</i>	Ethernet flow control is disabled on the given local link.

GevPAUSEFrameReceptionActive

Displays the status of the physical layer PAUSE resolution.

Interface support	GigE
Display name	Gev PAUSE Frame Reception Active
Standard	Custom
Origin of feature	Camera
Feature type	Boolean
Access	R
Affected features	Not applicable
Category	/TransportLayerControl/GigEVision

Values	Description
<i>True</i>	Ethernet flow control is active on the given local link.
<i>False</i>	Ethernet flow control is inactive on the given local link.

GevPersistentDefaultGateway

Selects the default gateway address.

Interface support	GigE
Display name	Gev Persistent Default Gateway
Standard	SFNC adapted
Origin of feature	Camera
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/TransportLayerControl/GigEVision

GevPersistentIPAddress

Selects the IP address.

Interface support	GigE
Display name	Gev Persistent IP Address
Standard	SFNC adapted
Origin of feature	Camera
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/TransportLayerControl/GigEVision

GevPersistentSubnetMask

Selects the subnet mask address.

Interface support	GigE
Display name	Gev Persistent Subnet Mask
Standard	SFNC adapted
Origin of feature	Camera
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/TransportLayerControl/GigEVision

GevSCPSPacketSize

Controls the stream packet size to be transmitted on the selected channel for a GVSP transmitter.

Displays the maximum packet size supported by a GVSP receiver.

Notes:

- The following data is excluded: Data leader, data trailer, the last data packet (which might be of smaller size because the packet size is not necessarily a multiple of block size for stream channel).
- If cameras cannot support the requested packet size, they must not fire test packets when requested to do so.
- `DeviceStreamChannelPacketSize` is updated after writing to `GevSCPSPacketSize`.

Interface support	GigE
Display name	Gev SCPS Packet Size
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R/W
Affected features	<code>DeviceStreamChannelPacketSize</code>
Category	/TransportLayerControl/GigEVision

GevSupportedOption

[GevSupportedOptionSelector]

Returns if the selected GEV option is supported.

Interface support	GigE
Display name	Gev Supported Option
Standard	SFNC
Origin of feature	Camera
Feature type	Boolean
Access	R
Affected features	Not applicable
Category	/TransportLayerControl/GigEVision

Values	Description
<i>True</i>	The selected GEV option is supported.
<i>False</i>	The selected GEV option is not supported.

GevSupportedOptionSelector

[GevSupportedOptionSelector]

Displays which GEV specific options the camera supports. This data is used to adapt applications to camera capabilities.

Note: Values for this feature have been added for FW V.12.

Interface support	GigE
Display name	Gev Supported Option Selector
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/TransportLayerControl/GigEVision

Values	Description
Action, CCPApplicationSocket, CommandsConcatenation, DiscoveryAckDelay, DiscoveryAckDelayWritable, DynamicLAG, Event, EventData, ExtendedStatusCodes, ExtendedStatusCodesVersion2_0, HeartbeatDisable, IPConfigurationDHCP, IPConfigurationLLA, IPConfigurationPersistentIP, LinkSpeed, ManifestTable, MessageChannelSourceSocket, MultiLink, PacketResend, PAUSEFrameReception, PAUSEFrameGeneration, PendingAck, PrimaryApplicationSwitchover, Ptp, ScheduledAction, SerialNumber, SingleLink (default), StandardIDMode, StaticLAG, StreamChannelOAllInTransmission, StreamChannelOBigAndLittleEndian, StreamChannelOExtendedChunkData, StreamChannelOIPReassembly, StreamChannelOMultiZone, StreamChannelOPacketResendDestination, StreamChannelOUnconditionalStreaming, StreamChannelSourceSocket, TestData, UnconditionalAction, UserDefinedName, WriteMem	See the GenICam Standard Features Naming Convention (SFNC) V2.7 or the GigE Vision Standard V2.2 at www.genicam.org

TransportLayerControlControl (category continued)

The feature descriptions for the `/TransportLayerControl/GigEVision` subcategory have ended on the previous page. The following features continue the `/TransportLayerControl` category, without a subcategory.

PayloadSize

Displays the number of bytes transferred for each image or chunk on the stream channel. This includes any end-of-line, end-of-frame statistics, or other stamp data. Therefore, the feature displays the total size of data payload for a data block.

Interface support	All
Display name	Payload Size
Standard	SFNC
Origin of feature	Camera
Feature type	Integer
Access	R
Unit	Bytes
Affected features	Not applicable
Category	/TransportLayerControl

Values	Description
0	Minimum

Info (subcategory)

Note: Features in this subcategory are available for Alvim **CSI-2 cameras only**.

The features in this subcategory can be used to display the transfer status of packets between the host and the camera on the transport layer level.

Interface support	CSI-2
Display name	Info
Standard	Custom
Origin of feature	Transport layer
Feature type	Subcategory
Category	/TransportLayerControl

CSI2ClockFrequency

Displays the MIPI CSI-2 clock frequency.

Interface support	CSI-2
Display name	CSI-2 Clock Frequency
Standard	Custom
Origin of feature	Transport layer
Feature type	Float
Access	R
Unit	Hz [Hertz]
Affected features	Not applicable
Category	/TransportLayerControl/Info

CSI2DriverInterfaceVersion

Displays the version of the MIPI CSI-2 driver interface.

Interface support	CSI-2
Display name	CSI-2 Driver Interface Version
Standard	Custom
Origin of feature	Transport layer
Feature type	String
Access	R
Affected features	Not applicable
Category	/TransportLayerControl/Info

CSI2DriverVersion

Displays the version of the MIPI CSI-2 driver.

Interface support	CSI-2
Display name	CSI-2 Driver Version
Standard	Custom
Origin of feature	Transport layer
Feature type	String
Access	R
Affected features	Not applicable
Category	/TransportLayerControl/Info

CSI2LaneCount

Displays the number of used MIPI CSI-2 lanes.

Interface support	CSI-2
Display name	CSI-2 Lane Count
Standard	Custom
Origin of feature	Transport layer, camera
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/TransportLayerControl/Info

LibcsiVersion

Displays the libcsi version.

Interface support	CSI-2
Display name	libcsi Version
Standard	Custom
Origin of feature	Transport layer
Feature type	String
Access	R
Affected features	Not applicable
Category	/TransportLayerControl/Info

PacketCount

Displays the number of MIPI CSI-2 packets per frame.

Interface support	CSI-2
Display name	Packet Count
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/TransportLayerControl/Info

Values	Description
0	Minimum
4294967295	Maximum

PacketSize

Displays the size of MIPI CSI-2 packets.

Interface support	CSI-2
Display name	Packet Size
Standard	Custom
Origin of feature	Camera
Feature type	Integer
Access	R
Unit	Bytes
Affected features	Not applicable
Category	/TransportLayerControl/Info

Values	Description
0	Minimum
4294967295	Maximum

UserSetControl

The features in this category enable to store and select user-specific camera settings, or to revert the camera to defined settings.

User sets can be loaded by default, without needing to set values by software after every restart of the camera. Or they can be used to switch between different settings, for example, to adjust from daylight to artificial light.

Supported features

User sets on Alvium cameras support all features except for:

- Selectors
- Command features
- Read-only features
- Features that do not apply to the corresponding interface, such as CSI-2 related features on a USB camera
- Features in the **LUTControl** category.

Interface support	All
Display name	User Set Control
Standard	SFNC
Origin of feature	Camera
Feature type	(Category)

UserSetDefault

Selects the user set to be loaded by default when the camera is reset.

Interface support	All
Display name	User Set Default
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/UserSetControl

Value	Description
<i>Default</i>	The default user set is loaded at camera reset.
<i>UserSet1</i>	Your individual UserSet1 is loaded at camera reset.
<i>UserSet2</i>	Your individual UserSet2 is loaded at camera reset.
<i>UserSet3</i>	Your individual UserSet3 is loaded at camera reset.
<i>UserSet4</i>	Your individual UserSet4 is loaded at camera reset.

UserSetLoad

[UserSetSelector]

Loads the user set specified by **UserSetSelector** to the camera.

Interface support	All
Display name	User Set Load
Standard	SFNC
Origin of feature	Camera
Feature type	Command
Access	W
Affected features	All features that are not excluded from user sets. See your Alvium camera's user guide for exceptions.
Category	/UserSetControl

UserSetSave

[UserSetSelector]

Writes and saves the current setup and state of the camera to the user set specified by **UserSetSelector**.

Interface support	All
Display name	User Set Save
Standard	SFNC
Origin of feature	Camera
Feature type	Command
Access	W
Affected features	All features that are not excluded from user sets. See your Alvium camera's user guide for exceptions.
Category	/UserSetControl

UserSetSelector

Selects the user set to be loaded or saved.

Interface support	All
Display name	User Set Selector
Standard	SFNC
Origin of feature	Camera
Feature type	Enumeration
Access	R/W
Affected features	UserSetLoad, UserSetSave All features that are not excluded from user sets. See your Alvium camera's user guide for exceptions.
Category	/UserSetControl

Value	Description
<i>Default</i>	The default user set is selected.
<i>UserSet1</i>	Your individual UserSet1 set is selected.
<i>UserSet2</i>	Your individual UserSet2 set is selected.
<i>UserSet3</i>	Your individual UserSet3 set is selected.
<i>UserSet4</i>	Your individual UserSet4 set is selected.

Feature descriptions: Stream 0



This chapter includes:

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You need experience to use these features

We recommend you to use features in this category only if you are an advanced user.

BufferHandlingControl



Stream 0 as GenTL Module

Current Alvium cameras use Stream0 only.

The features in this category can be used to control the buffers in the acquisition engine of the data stream.

Interface support	All (most features)
Display name	Buffer Handling Control
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	(Category)

MaxDriverBuffersCount

Controls the maximum number of driver buffers used by the acquisition engine.

Note: We recommend you to use this feature only if you are an advanced user.

Interface support	CSI-2, USB
Display name	Max Driver Buffers Count
Standard	Custom
Origin of feature	Transport layer
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/BufferHandlingControl

Values	Description
1	Minimum
4096	Maximum
1	Increment

StreamAnnounceBufferMinimum

Displays the minimum number of buffers to announce to enable selected buffer handling mode. Corresponds to the `STREAM_INFO_BUF_ANNOUNCE_MIN` command of `DSGetInfo` function.

Note: We recommend you to use this feature only if you are an advanced user.

Interface support	All
Display name	Stream Announce Buffer Minimum
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/BufferHandlingControl

StreamAnnouncedBufferCount

Displays the number of announced (known) buffers on this stream. Corresponds to the `STREAM_INFO_NUM_ANNOUNCED` command of `DSGetInfo` function.

Note: We recommend you to use this feature only if you are an advanced user.

Interface support	All
Display name	Stream Announced Buffer Count
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/BufferHandlingControl

Values	Description
0	Minimum
9223372036854775807	Maximum

StreamBufferHandlingMode

Selects the available acquisition modes of the stream.

Note: We recommend you to use this feature only if you are an advanced user.

Interface support	All
Display name	Stream Buffer Handling Mode
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	Enumeration
Access	R
Affected features	StreamAcquisitionModeSelector
Category	/BufferHandlingControl
Value	Description
<i>Default</i>	Default stream buffer handling is available.

StreamInputBufferCount

Displays the number of buffers in the input buffer pool plus the buffers(s) currently being filled. Corresponds to the **STREAM_INFO_NUM_QUEUED** command of **DSGetInfo** function.

Interface support	All
Display name	Stream Input Buffer Count
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/BufferHandlingControl
Value	Description
≥ 0	Value range

StreamIsGrabbing

Displays the status of the acquisition engine.

Interface support	All
Display name	Stream Is Grabbing
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	Boolean
Access	R
Affected features	MaxDriverBuffersCount, StreamPayloadSizeMode, StreamPayloadSizeAlignment, ManualStreamPayloadSize
Category	/BufferHandlingControl

Values	Description
<i>False</i>	Acquisition engine is not started.
<i>True</i>	Acquisition engine is started.

StreamOutputBufferCount

Displays the number of buffers in the output buffer pool plus the buffers(s) currently being filled. Corresponds to the `STREAM_INFO_NUM_AWAIT_DELIVERY` command of `DSGetInfo` function.

Interface support	All
Display name	Stream Output Buffer Count
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/BufferHandlingControl

Value	Description
≥ 0	Value range

Stream

Note: Features in this category are available for Alvium **GigE cameras only**.

The features in this category can be used to control data traffic between the host and the camera. This includes functions to avoid dropped frames. **MultiCast** can just be used to deliver the streaming data to multiple receivers.

Interface support	GigE
Display name	Stream
Standard	Custom
Origin of feature	Transport layer
Feature type	(Category)

Info (subcategory)

Note: Features in this subcategory are available for Alvium **GigE cameras only**.

The features in this subcategory can be used to display the Multicast configuration of the camera and the version of the filter version for the GigE Vision Streaming Protocol.

Interface support	GigE
Display name	Info
Standard	Custom
Origin of feature	Transport layer
Feature type	(Subcategory)
Category	/Stream

GVSPFilterCompatibility

Displays the compatibility of the transport layer and the found GVSP filter driver.

Interface support	GigE
Display name	GVSP Filter Compatibility
Standard	Custom
Origin of feature	Transport layer
Feature type	Enumeration
Access	R
Affected features	Not applicable
Category	/Stream/Info

Values	Description
<i>Matching</i>	The transport layer and the GVSP filter driver are compatible.
<i>TLOutdated</i>	The filter driver is newer than expected by the transport layer, but it is compatible.
<i>DriverOutdated</i>	The filter driver is older than expected by the transport layer, but it is compatible.
<i>Incompatible</i>	The transport layer and the filter driver are not compatible. The filter driver cannot be used for streaming.
<i>Disabled</i>	The filter driver is installed on the system but it is not enabled for the network adapter.

GVSPFilterVersion

Displays version of the GVSP filter driver.

Interface support	GigE
Display name	GVSP Filter Version
Standard	Custom
Origin of feature	Transport layer
Feature type	String
Access	R
Affected features	Not applicable
Category	/Stream/Info

Multicast (subcategory)

Note: Features in this subcategory are available for Alvium **GigE cameras only**.

The features in this subcategory enable multiple cameras to use IP connections most effectively by sending packets to many receivers at the same time.

Interface support	GigE
Display name	Multicast
Standard	Custom
Origin of feature	Transport layer
Feature type	(Subcategory)
Category	/Stream

MulticastEnable

Enables or disables multicast.

Interface support	GigE
Display name	Multicast Enable
Standard	Custom
Origin of feature	Transport layer
Feature type	Boolean
Access	R/W
Affected features	Not applicable
Category	/Stream/Multicast

Values	Description
<i>False</i>	Disables multicast.
<i>True</i>	Enables multicast.

MulticastIPAddress

Selects the IP address of the target multicasting group.

Interface support	GigE
Display name	Multicast IP Address
Standard	Custom
Origin of feature	Transport Layer
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/Stream/Multicast

Values	Description
224.0.0.0	Minimum (0xE0.00.00.00 in hexadecimal or 3.758.096.384 in decimal)
239.255.255.255	Maximum (0xEF.FF.FF.FF in hexadecimal or 4.026.531.839 in decimal)

Settings (subcategory)

Note: Features in this subcategory are available for Alvium **GigE cameras only**.

The features in this subcategory can be used to control settings for the packet transfer between the host and the camera. **GVSPDriver** enables to select between using the transport layer or the filter driver.

Interface support	GigE
Display name	Settings
Standard	Custom
Origin of feature	Transport layer
Feature type	(Subcategory)
Category	/Stream

GVSPAdjustPacketSize

Request the packet size used to be adjusted automatically.

Interface support	GigE
Display name	GVSP Adjust Packet Size
Standard	Custom
Origin of feature	Transport layer
Feature type	Command
Access	W
Affected features	GVSPPacketSize, GevSCPSPacketSize, DeviceStreamChannelPacketSize
Category	/Stream/Settings

GVSPBurstSize

Controls the maximum number of GVSP packets to be processed in a burst.

Interface support	GigE
Display name	GVSP Burst Size
Standard	Custom
Origin of feature	Transport Layer
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/Stream/Settings

Values	Description
1	Minimum
256	Maximum

GVSPDriver

Selects the streaming driver to be used.

Interface support	GigE
Display name	GVSP Driver Selector
Standard	Custom
Origin of feature	Transport layer
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/Stream/Settings

Values	Description
<i>Filter</i>	Selects the filter driver's stream engine (default).
<i>Socket</i>	Selects the transport layer's stream engine.

GVSPHostReceiveBufferSize

Controls the socket buffer space used to receive GVSP packets.

The operating system adjusts the socket buffer continuously. The value may be limited internally by the operating system. See the SO_RCVBUF documentation of the operating system.

Note: This feature cannot be used with the filter driver.

Interface support	GigE
Display name	GVSP Host Receive Buffer Size
Standard	Custom
Origin of feature	Transport Layer
Feature type	Integer
Access	R/W
Unit	Bytes
Affected features	Not applicable
Category	/Stream/Settings

GVSPMaxLookBack

Controls the size for the detection of the missing GVSP packets. This feature can be used to delay the first RESEND_CMD for a missing GVSP packet by X packets.

Interface support	GigE
Display name	GVSP Max Look Back
Standard	Custom
Origin of feature	Transport Layer
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/Stream/Settings

Values	Description
1	Minimum
1024	Maximum

GVSPMaxRequests

Controls the maximum amount of RESEND_CMDs requested for a missing GVSP packet.

Note: Setting the feature to 0 disables the GigE Vision resend mechanism. The transport layer or filter driver does not request the re-transmission of any missing GVSP packet.

Interface support	GigE
Display name	GVSP Max Requests
Standard	Custom
Origin of feature	Transport Layer
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/Stream/Settings

Values	Description
0	Minimum, disables GigE Vision resend mechanism.
512	Maximum

GVSPMaxWaitSize

Controls the maximum number of received GVSP packets following a resend request to wait before requesting again. Before requesting a resend for the same packet, the transport layer or the filter driver waits until the defined value for GVSPMaxWaitSize has been reached.

Interface support	GigE
Display name	GVSP Max Wait Size
Standard	Custom
Origin of feature	Transport Layer
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/Stream/Settings

Values	Description
8	Minimum
1024	Maximum

GVSPMissingSize

Controls the maximum number of simultaneously missing GVSP packets before dropping the frame.

You can use this feature to cancel the reception of a single frame if the resend limit `GVSPMaxRequests` is reached for too many packets. The frame is marked as incomplete and returned to the GenTL consumer.

Interface support	GigE
Display name	GVSP Missing Size
Standard	Custom
Origin of feature	Transport Layer
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/Stream/Settings

Values	Description
0	Minimum, disables the feature.
1024	Maximum

GVSPPacketSize

Controls the total size of a GVSP packet, including the IP, UDP, and GVSP headers.

Interface support	GigE
Display name	GVSP Packet Size
Standard	Custom
Origin of feature	Transport Layer
Feature type	Integer
Access	R/W
Unit	Bytes
Affected features	GevSCPSPacketSize, DeviceStreamChannelPacketSize
Category	/Stream/Settings

Values	Description
1000	Minimum for Alvium G1
9190	Maximum for Alvium G1
500	Minimum for Alvium G5
16358	Maximum for Alvium G5

GVSPProtocol

Selects the transport protocol to be used for transferring the streaming data.

Interface support	GigE
Display name	GVSP Protocol
Standard	Custom
Origin of feature	Transport layer
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/Stream/Settings

Values	Description
<i>UDP</i>	Streaming is done using UDP.
<i>TCP</i>	Streaming is done using TCP (Alvium G5X only).

GVSPtiltingSize

Controls the maximum number of GVSP packets received from a following frame before dropping the frame.

You can use this feature to cancel the reception of a single frame if a certain number of GVSP packets of the following frame have already been received. The frame is marked as incomplete and returned to the GenTL consumer.

Interface support	GigE
Display name	GVSP Tilting Size
Standard	Custom
Origin of feature	Transport Layer
Feature type	Integer
Access	R/W
Affected features	Not applicable
Category	/Stream/Settings

Values	Description
<i>0</i>	Minimum, disables the feature.
<i>1024</i>	Maximum

GVSPTimeout

Controls the timeout used for stream packets.

You can use this feature to react on possible streaming interruptions. If no GVSP packet is received during the last **GVSPTimeout** milliseconds, the stream engine forces a resend of currently missing GVSP packets.

Interface support	GigE
Display name	GVSP Timeout
Standard	Custom
Origin of feature	Transport Layer
Feature type	Integer
Access	R/W
Unit	Milliseconds [ms]
Affected features	Not applicable
Category	/Stream/Settings

Values	Description
0	Minimum, disables the feature.
5000	Maximum

Statistics (subcategory)

Note: Features in this subcategory are available for Alvium **GigE cameras only**.

The features in this subcategory can be used to display frame rates, streaming duration, and the transfer status of packets between the host and the camera.

Interface support	GigE
Display name	Statistics
Standard	Custom
Origin of feature	Transport layer
Feature type	(Subcategory)
Category	/Stream

FramePacketStatisticsCounter

[FramePacketStatisticsCounterSelector]

Displays the number of GVSP packets as selected by FramePacketStatisticsCounterSelector.

Interface support	GigE
Display name	Frame Packet Statistics Counter
Standard	Custom
Origin of feature	Transport Layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/Stream/Statistics

FramePacketStatisticsCounterSelector

Selects the frame packet statistic that is shown in `FramePacketStatisticsCounter`.

Interface support	GigE
Display name	Frame Packet Statistics Counter Selector
Standard	Custom
Origin of feature	Transport layer
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/Stream/Statistics

Values	Description
<i>Bad</i>	All frame packets have errors, such as: missed and defective packets. This excludes resent packets or packets requested to be resent. (See other values below.)
<i>Delivered</i>	Packets sent to the host successfully
<i>Defective</i>	Defective packets
<i>Missed</i>	Missed packets
<i>ResendRequested</i>	Packets that have been requested for resend
<i>Resent</i>	Packets resent to the host successfully
<i>StatusError</i>	Packets with an unclear status

FrameRate

[FrameRateSelector]

Displays the current frame rate as defined by `FrameRateSelector`.

Interface support	GigE
Display name	Frame Rate
Standard	Custom
Origin of feature	Transport Layer
Feature type	Integer
Access	R
Unit	Hz [Hertz]
Affected features	Not applicable
Category	/Stream/Statistics

FrameRateSelector

Selects the type of frame rate to be displayed.

Interface support	GigE
Display name	Frame Rate Selector
Standard	Custom
Origin of feature	Transport layer
Feature type	Enumeration
Access	R/W
Affected features	Not applicable
Category	/Stream/Statistics

Values	Description
<i>Received</i>	Frames received by the host
<i>Sent</i>	Frames output by the camera

FrameStatisticsCounter

[FrameStatisticsCounterSelector]

Displays the frame statistic that is selected by
FrameStatisticsCounterSelector.

Interface support	GigE
Display name	Frame Statistics Counter
Standard	Custom
Origin of feature	Transport Layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/Stream/Statistics

FrameStatisticsCounterSelector

Selects the type of frame statistics to be counted.

Interface support	GigE
Display name	Frame Statistics Counter Selector
Standard	Custom
Origin of feature	Transport layer
Feature type	Enumeration
Access	R/W
Affected features	FrameStatisticsConter
Category	/Stream/Statistics

Values	Description
<i>Bad</i>	This includes frames that are, such as: incomplete, discarded, dropped, or defective. This excludes reconstructed frames. (See the corresponding value below.)
<i>Defective</i>	Defective frames
<i>Delivered</i>	Frames sent to the host successfully
<i>Dropped</i>	Frames ignored by the host because no buffer was available to store the data
<i>Incomplete</i>	Incomplete frames
<i>Missed</i>	Missed frames
<i>Reconstructed</i>	Reconstructed frames

StatFrameDelivered

Displays the number of frames that have been delivered to the TL consumer without errors.

Interface support	GigE
Display name	Stat Frame Delivered
Standard	Custom (deprecated)
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/Stream/Statistics

Values	Description
0	Minimum
4294967295	Maximum

StatFrameDropped

Displays the number of frames received by the host that are incomplete due to missing packets.

Note: This does not include shoved frames.

Interface support	GigE
Display name	Stat Frame Dropped
Standard	Custom (deprecated)
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/Stream/Statistics

Values	Description
0	Minimum
4294967295	Maximum



Dropped frames with GEV versions

Until firmware version 11.0, Alvium GigE cameras support GigE Vision Standard (GEV) V1.2. From firmware version 12.0, they support V2.2.

GEV V2.x allows to set flags **PREVIOUS BLOCK DROPPED** to notify the host of frames dropped on the camera. From firmware V13.0, Alvium GigE cameras drop frames on the camera when data is about to overflow the image buffer. This way, no corrupted images are sent to the camera.

Therefore, Alvium GigE cameras behave differently from previous GigE cameras by Allied Vision.

Please observe that you increase the risk of dropped frames when you use Flow Control back pressure mechanism or when you operate cameras in burst mode.

Previous GigE cameras, such as Mako, Manta, or Prosilica GT

With GEV V1.x, **StatFrameDropped** lists frames dropped on the host.

Alvium G1 or G5

With GEV V1.x, **StatFrameDropped** lists frames dropped on the host.

With GEV V2.x, **StatFrameDropped** lists frames dropped on the host as well.

In addition, **FrameStatisticsCounter** lists frames dropped **on the camera** (when **FrameStatisticsCounterSelector** is set to *Missed* or *Bad*).

This applies when Alvium GigE cameras are operated using Vimba X GigE TL. Alvium GigE cameras switch back to GEV V1.x mode with Vimba GigE TL. This way, they can be used to easily replace previous GigE cameras in existing applications.

StatFrameRate

Displays the frequency at which the device is sending frames to the host (derived from the frame timestamps).

Interface support	GigE
Display name	Stat Frame Rate
Standard	Custom (deprecated)
Origin of feature	Transport layer
Feature type	Float
Access	R
Unit	Hertz [Hz] (frames per second)
Affected features	Not applicable
Category	/Stream/Statistics

Values	Description
0	Minimum
1.79769313486e+308	Maximum

StatFrameRescued

Displays the number of frames that initially had missing packets but were successfully completed after packet resend.

Interface support	GigE
Display name	Stat Frame Rescued
Standard	Custom (deprecated)
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/Stream/Statistics

Values	Description
0	Minimum
4294967295	Maximum

StatFrameShoved

Displays the number of frames dropped because the transfer of a following frame was completed earlier.

Interface support	GigE
Display name	Stat Frame Shoved
Standard	Custom (deprecated)
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/Stream/Statistics
Values	Description
0	Minimum
4294967295	Maximum

StatFrameUnderrun

Displays the number of frames missed due to the non-availability of a user supplied buffer (buffer underrun).

Interface support	GigE
Display name	Stat Frame Underrun
Standard	Custom (deprecated)
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/Stream/Statistics
Values	Description
0	Minimum
4294967295	Maximum

StatLocalRate

Displays the frequency at which the host has received complete and incomplete frames (derived from the host clock).

Interface support	GigE
Display name	Stat Local Rate
Standard	Custom (deprecated)
Origin of feature	Transport layer
Feature type	Float
Access	R
Unit	Hz (frames per second)
Affected features	Not applicable
Category	/Stream/Statistics

Values	Description
0	Minimum
1.79769313486e+308	Maximum

StatPacketErrors

Displays the number of received packets that are erroneous.

Interface support	GigE
Display name	Stat Packet Errors
Standard	Custom (deprecated)
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/Stream/Statistics

Values	Description
0	Minimum
4294967295	Maximum

StatPacketMissed

Displays the number of packets expected, but not received by the host.

Note: This does not include successfully resent packets.

Interface support	GigE
Display name	Stat Packet Missed
Standard	Custom (deprecated)
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/Stream/Statistics
Values	Description
0	Minimum
4294967295	Maximum

StatPacketReceived

Displays the number of error-free packets received and processed by the host.

Note: This includes successfully resent packets.

Interface support	GigE
Display name	Stat Packet Received
Standard	Custom (deprecated)
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/Stream/Statistics
Values	Description
0	Minimum
4294967295	Maximum

StatPacketRequested

Displays the number of missing packets that were requested for resend from the camera.

Interface support	GigE
Display name	Stat Packet Requested
Standard	Custom (deprecated)
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/Stream/Statistics
Values	Description
0	Minimum
4294967295	Maximum

StatPacketResent

Displays the number of missing packets that were resent by the camera after having been requested.

Interface support	GigE
Display name	Stat Packet Resent
Standard	Custom (deprecated)
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/Stream/Statistics
Values	Description
0	Minimum
4294967295	Maximum

StatPacketUnavailable

Displays the number of packets that could not be resent by the camera after having been requested.

Interface support	GigE
Display name	Stat Packet Unavailable
Standard	Custom (deprecated)
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/Stream/Statistics
Values	Description
0	Minimum
4294967295	Maximum

StatTimeElapsed

Displays the Elapsed time since the streaming was started.

Interface support	GigE
Display name	Stat Time Elapsed
Standard	Custom (deprecated)
Origin of feature	Transport layer
Feature type	Float
Access	R
Unit	Seconds [s]
Affected features	Not applicable
Category	/Stream/Statistics
Values	Description
0	Minimum
1.79769313486e+308	Maximum

StreamTimeElapsed

Displays the elapsed time since the streaming was started.

Interface support	GigE
Display name	Stream Time Elapsed
Standard	Custom
Origin of feature	Transport layer
Feature type	Float
Access	R
Unit	Seconds [s]
Affected features	Not applicable
Category	/Stream/Statistics

Values	Description
0	Minimum
1.79769313486e+308	Maximum

StreamInformation

The features in this category can be used to display, such as the streaming status, the frame rate, and the transfer status of frames sent by the camera.

Interface support	All (most features)
Display name	Stream Information
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	(Category)

StreamID

Displays the camera's unique identifier for the stream, for instance a GUID.

Interface support	All
Display name	Stream ID
Standard	GenTL SFNC
Origin of feature	Transport layer
Feature type	String
Access	R
Affected features	Not applicable
Category	/StreamInformation

StreamType

Displays the transport layer type of the data stream.

Interface support	All
Display name	Stream Type
Standard	GenTL SFNC adapted
Origin of feature	Transport layer
Feature type	Enumeration
Access	R
Affected features	Not applicable
Category	/StreamInformation

Values	Description
<i>Custom</i>	The transport layer is MIPI CSI-2 type.
<i>GEV</i>	The transport layer is GigE type.
<i>USB3</i>	The transport layer is USB 3.x type.

Statistics (subcategory)

Note: Features in this subcategory are available for Alvium **CSI-2 cameras only**.

The features in this subcategory can be used to display the frame rate and the transfer status of frames sent by the camera.

Interface support	CSI-2
Display name	Statistics
Standard	Custom
Origin of feature	Transport layer
Feature type	Subcategory
Category	/StreamInformation

StatFrameRate

Displays the rate at which the device is sending frames to the host, derived from the frame timestamps.

Interface support	CSI-2
Display name	Stat Frame Rate
Standard	Custom
Origin of feature	Transport layer
Feature type	Float
Access	R
Unit	fps [frames per second]
Affected features	Not applicable
Category	/StreamInformation/Statistics

Values	Description
0	Minimum
1.79769313486e+308	Maximum

StatFrameCRCError

Displays the number of frames received with CRC errors.

Interface support	CSI-2
Display name	Stat Frame CRC Error
Standard	Custom
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/StreamInformation/Statistics

Values	Description
0	Minimum
9223372036854775807	Maximum

StatFrameDelivered

Displays the number of frames received without errors.

Interface support	CSI-2
Display name	Stat Frame Delivered
Standard	Custom
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/StreamInformation/Statistics

Values	Description
0	Minimum
9223372036854775807	Maximum

StatFrameIncomplete

Displays the number of incomplete frames received.

Note: Shoved frames are not included.

Interface support	CSI-2
Display name	Stat Frame Incomplete
Standard	Custom
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/StreamInformation/Statistics

Values	Description
0	Minimum
9223372036854775807	Maximum

StatFrameUnderrun

Displays the number of frames missed due to the non-availability of a user supplied buffer (buffer underrun).

Interface support	CSI-2
Display name	Stat Frame Underrun
Standard	Custom (deprecated)
Origin of feature	Transport layer
Feature type	Integer
Access	R
Affected features	Not applicable
Category	/StreamInformation/Statistics

Values	Description
0	Minimum
9223372036854775807	Maximum

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