



USB3 VISION CAMERAS

# Alvium

## Features Reference

V2.4.1

# Alvium Features Reference at a glance



## Read this document carefully

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

The Alvium Features Reference describes Alvium features, using **Vimba Access** based on GenICam features as seen from the **Vimba Viewer**.



## Further information and feedback

- For more information on Alvium cameras, see [www.alliedvision.com/en/support/technical-documentation.html](http://www.alliedvision.com/en/support/technical-documentation.html).
- For feedback or technical question, please visit [www.alliedvision.com/en/support](http://www.alliedvision.com/en/support).



## Features and values availability

Features described in this document may not be supported by every Alvium model. Value ranges may differ between models as well. Some features have been disabled for firmware V1.x and previous versions.

## Vimba and third party software

Vimba is the Allied Vision Software Development Kit (SDK) for camera control and image acquisition, including drivers and other useful data.

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



Download **Vimba** from:

[www.alliedvision.com/en/support/software-downloads](http://www.alliedvision.com/en/support/software-downloads)

# Contact us

## Website, email

### General

[www.alliedvision.com/en/contact](http://www.alliedvision.com/en/contact)  
[info@alliedvision.com](mailto:info@alliedvision.com)

### Distribution partners

[www.alliedvision.com/en/avt-locations/avt-distributors](http://www.alliedvision.com/en/avt-locations/avt-distributors)

### Support

[www.alliedvision.com/en/support](http://www.alliedvision.com/en/support)  
[www.alliedvision.com/en/about-us/contact-us/technical-support-repair/-/rma](http://www.alliedvision.com/en/about-us/contact-us/technical-support-repair/-/rma)

## Offices

### Europe, Middle East, and Africa (Headquarters)

Allied Vision Technologies GmbH  
Taschenweg 2a  
07646 Stadtroda, Germany  
T// +49 36428 677-0 (Reception)  
T// +49 36428 677-230 (Sales)  
F// +49 36428 677-28

### Asia-Pacific

#### China

Allied Vision Technologies  
(Shanghai) Co., Ltd.  
2-2109 Hongwell Int. Plaza  
1602# ZhongShanXi Road  
Shanghai 200235, China  
T// +86 21 64861133

#### Singapore

Allied Vision Technologies Asia Pte. Ltd  
82 Playfair Rd, #07-02 D'Lithium  
Singapore 368001  
T// +65 6634 9027

### North, Central, and South America

#### Canada

Allied Vision Technologies Canada Inc.  
300 – 4621 Canada Way  
Burnaby, BC V5G 4X8, Canada  
T// +1 604 875 8855

#### USA

Allied Vision Technologies, Inc.  
102 Pickering Way- Suite 502  
Exton, PA 19341, USA  
Toll-free// +1-877-USA-1394  
T// +1 978 225 2030

# Contents

Alvium Features Reference at a glance .....	2
Vimba and third party software .....	2
Contact us .....	3
Contents .....	4
Document history and conventions .....	9
Document history .....	10
Conventions used in this document .....	11
Styles .....	11
Symbols and notes .....	11
Access .....	12
Standards referred to in this document .....	12
Features description scheme .....	13
<i>Category name</i> .....	13
<i>Subcategory</i> .....	13
<i>Feature[Selector]</i> .....	13
Features order .....	14
Copyright and trademarks .....	14
Feature description .....	15
Features processing order .....	16
Image data flow .....	16
Feature interdependencies .....	17
Regions of interest and auto mode regions .....	18
Basic rules .....	18
ROI and auto mode region effects .....	19
Feature descriptions .....	20
<i>AcquisitionControl</i> .....	20
<i>AcquisitionFrameCount</i> .....	20
<i>AcquisitionFrameRate</i> .....	20
<i>AcquisitionFrameRateEnable</i> .....	21
<i>AcquisitionFrameRateMode</i> .....	21
<i>AcquisitionMode</i> .....	22
<i>AcquisitionStart</i> .....	22
<i>AcquisitionStatus</i> .....	23
<i>AcquisitionStatusSelector</i> .....	23
<i>AcquisitionStop</i> .....	24
<i>ExposureAuto</i> .....	24
<i>ExposureMode</i> .....	25
<i>ExposureTime</i> .....	25
<i>TriggerActivation</i> .....	26

<i>TriggerMode</i> .....	26
<i>TriggerSelector</i> .....	27
<i>TriggerSoftware</i> .....	28
<i>TriggerSource</i> .....	28
<i>AnalogControl</i> .....	29
<i>BalanceRatio</i> .....	29
<i>BalanceRatioSelector</i> .....	30
<i>BalanceWhiteAuto</i> .....	30
<i>BlackLevel</i> .....	31
<i>BlackLevelSelector</i> .....	31
<i>Gain</i> .....	32
<i>GainAuto</i> .....	32
<i>GainSelector</i> .....	33
<i>Gamma</i> .....	33
<i>AutoModeControl</i> .....	34
<i>AutoModeRegionHeight</i> .....	34
<i>AutoModeRegionOffsetX</i> .....	34
<i>AutoModeRegionOffsetY</i> .....	35
<i>AutoModeRegionSelector</i> .....	35
<i>AutoModeRegionWidth</i> .....	36
<i>BalanceWhiteAutoRate</i> .....	36
<i>BalanceWhiteAutoTolerance</i> .....	37
<i>ExposureAutoMax</i> .....	37
<i>ExposureAutoMin</i> .....	38
<i>GainAutoMax</i> .....	38
<i>GainAutoMin</i> .....	38
<i>IntensityAutoPrecedence</i> .....	39
<i>IntensityControllerAlgorithm</i> .....	39
<i>IntensityControllerOutliersBright</i> .....	40
<i>IntensityControllerOutliersDark</i> .....	40
<i>IntensityControllerRate</i> .....	41
<i>IntensityControllerRegion</i> .....	41
<i>IntensityControllerSelector</i> .....	42
<i>IntensityControllerTarget</i> .....	42
<i>IntensityControllerTolerance</i> .....	43
<i>BufferHandlingControl</i> .....	44
<i>MaxDriverBuffersCount</i> .....	44
<i>StreamAnnounceBufferMinimum</i> .....	45
<i>StreamAnnouncedBufferCount</i> .....	45
<i>StreamBufferHandlingMode</i> .....	46
<i>ColorTransformationControl</i> .....	47
<i>ColorTransformationEnable</i> .....	47
<i>ColorTransformationSelector</i> .....	48
<i>ColorTransformationValue</i> .....	48
<i>ColorTransformationValueSelector</i> .....	49
<i>Hue</i> .....	50

<i>Saturation</i> .....	51
<i>CorrectionControl</i> .....	52
<i>CorrectionMode</i> .....	52
<i>CorrectionSelector</i> .....	53
<i>CorrectionSet</i> .....	53
<i>CorrectionSetDefault</i> .....	54
<i>CorrectionInfo</i> (subcategory) .....	55
<i>CorrectionDataSize</i> .....	55
<i>CorrectionEntryType</i> .....	55
<i>DeviceControl</i> .....	56
<i>DeviceFamilyName</i> .....	56
<i>DeviceFirmwareID</i> .....	56
<i>DeviceFirmwareIDSelector</i> .....	57
<i>DeviceFirmwareVersion</i> .....	57
<i>DeviceFirmwareVersionSelector</i> .....	58
<i>DeviceGenCPVersionMajor</i> .....	58
<i>DeviceGenCPVersionMinor</i> .....	59
<i>DeviceIndicatorLuminance</i> .....	59
<i>DeviceIndicatorMode</i> .....	60
<i>DeviceLinkCommandTimeout</i> .....	60
<i>DeviceLinkSpeed</i> .....	61
<i>DeviceLinkThroughputLimit</i> .....	61
<i>DeviceLinkThroughputLimitMode</i> .....	62
<i>DeviceManufacturerInfo</i> .....	62
<i>DeviceModelName</i> .....	63
<i>DevicePowerSavingMode</i> .....	63
<i>DeviceReset</i> .....	64
<i>DeviceSFNCVersionMajor</i> .....	64
<i>DeviceSFNCVersionMinor</i> .....	64
<i>DeviceSFNCVersionSubMinor</i> .....	65
<i>DeviceScanType</i> .....	65
<i>DeviceSerialNumber</i> .....	65
<i>DeviceTemperature</i> .....	66
<i>DeviceTemperatureSelector</i> .....	66
<i>DeviceTLVersionMajor</i> .....	67
<i>DeviceTLVersionMinor</i> .....	67
<i>DeviceUserID</i> .....	68
<i>DeviceVendorName</i> .....	68
<i>DeviceVersion</i> .....	68
<i>TimestampLatch</i> .....	69
<i>TimestampLatchValue</i> .....	69
<i>TimestampReset</i> .....	69
<i>DigitalIOControl</i> .....	70
<i>LineInverter</i> .....	70
<i>LineMode</i> .....	70
<i>LineSelector</i> .....	71

<i>LineSource</i> .....	72
<i>LineStatus</i> .....	73
<i>LineStatusAll</i> .....	73
<i>FileAccessControl</i> .....	74
<i>FileAccessBuffer</i> .....	74
<i>FileAccessLength</i> .....	74
<i>FileAccessOffset</i> .....	75
<i>FileOpenMode</i> .....	75
<i>FileOperationExecute</i> .....	76
<i>FileOperationResult</i> .....	76
<i>FileOperationSelector</i> .....	77
<i>FileOperationStatus</i> .....	78
<i>FileProcessStatus</i> .....	78
<i>FileSelector</i> .....	79
<i>FileSize</i> .....	80
<i>FileStatus</i> .....	80
<i>ImageFormatControl</i> .....	81
<i>BinningHorizontal</i> .....	81
<i>BinningHorizontalMode</i> .....	82
<i>BinningSelector</i> .....	82
<i>BinningVertical</i> .....	83
<i>BinningVerticalMode</i> .....	83
<i>Height</i> .....	84
<i>HeightMax</i> .....	84
<i>OffsetX</i> .....	85
<i>OffsetY</i> .....	85
<i>PixelFormat</i> .....	86
<i>PixelSize</i> .....	86
<i>ReverseX</i> .....	87
<i>ReverseY</i> .....	87
<i>SensorHeight</i> .....	88
<i>SensorWidth</i> .....	88
<i>ShutterMode</i> .....	89
<i>Width</i> .....	89
<i>WidthMax</i> .....	90
<i>ImageProcessingControl</i> .....	91
<i>ColorInterpolation</i> .....	91
<i>ContrastControl (subcategory)</i> .....	92
<i>ContrastBrightLimit</i> .....	92
<i>ContrastConfigurationMode</i> .....	93
<i>ContrastDarkLimit</i> .....	93
<i>ContrastEnable</i> .....	94
<i>ContrastShape</i> .....	94
<i>StreamInformation</i> .....	96
<i>StreamID</i> .....	96
<i>StreamIsGrabbing</i> .....	96

<i>StreamType</i> .....	97
<i>TestControl</i> .....	98
<i>TestPendingAck</i> .....	98
<i>TransportLayerControl</i> .....	99
<i>PayloadSize</i> .....	99
<i>UserSetControl</i> .....	100
<i>UserSetDefault</i> .....	100
<i>UserSetLoad</i> .....	101
<i>UserSetSave</i> .....	102
<i>UserSetSelector</i> .....	103
Index .....	104

# Document history and conventions



This chapter includes:

Document history .....	10
Conventions used in this document .....	11
Copyright and trademarks .....	14

## Document history

Version	Date	Document updates
V2.4.1	2021-Sep-22	<ul style="list-style-type: none"> <li>Removed <i>FitRange</i> option from <i>IntensityControllerAlgorithm</i>.</li> </ul>
V2.4.0	2021-Aug-04	<ul style="list-style-type: none"> <li>Updated <a href="#">Figure 1: Image data flow for Alvium cameras</a> on page 16.</li> <li>Added feature descriptions for <i>BinningHorizontal</i>, <i>BinningHorizontalMode</i>, <i>BinningSelector</i>, <i>BinningVertical</i>, <i>BinningVerticalMode</i>, and <i>DevicePowerSavingMode</i>.</li> <li>Applied editorial changes.</li> </ul>
V2.3.0.	2021-Apr-07	<ul style="list-style-type: none"> <li>Added feature descriptions for <i>DeviceLinkCommandTimeout</i>, <i>DeviceTLVersionMajor</i>, <i>DeviceTLVersionMinor</i>, <i>TimestampLatch</i>, <i>TimestampLatchValue</i>, <i>TimestampReset</i>.</li> <li>Applied editorial changes.</li> </ul>
V2.2.0	2020-Nov-13	<ul style="list-style-type: none"> <li>Added descriptions in <a href="#">Features processing order</a> on page 16.</li> <li>Added <i>User</i> option to <i>CorrectionSet</i> and <i>CorrectionSetDefault</i> for defect pixel correction.</li> <li>Applied editorial changes.</li> </ul>
V2.1.2	2020-Jun-05	Corrected naming for the <i>IntensityAutoPrecedence</i> feature.
V2.1.1	2020-Mar-12	Removed notes for features previously enabled.
V2.1.0	2020-Feb-13	<ul style="list-style-type: none"> <li>Added contents for maximum values for contrast features.</li> <li>Added <i>ShutterMode</i> to the feature descriptions.</li> </ul>
V2.0.0	2020-Jan-07	<ul style="list-style-type: none"> <li>Reorganized and added categories and features.</li> <li>Added information on related selectors.</li> <li>Reorganized introduction chapters.</li> <li>Corrected typographical errors.</li> </ul>
V1.0.3	2019-Sep-05	Applied editorial changes.
V1.0.2	2019-Jul-08	Applied editorial changes.
V1.0.1	2019-Jul-05	Applied editorial changes.
V1.0.0	2019-Jul-01	Release version

Table 1: Document history

# 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
<b>Emphasis</b>	Some important parts or items of the text are emphasized to make them more visible.
Features names	Features names are displayed as monospaced text.
<i>Features options</i>	Features options and values that are selectable by the user are displayed as monospaced italicized text.
<i>Non-standard features options</i>	Marked with superscript ( <sup>1</sup> ) are features that complement the features defined in the SFNC.
<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.
<b>UIElement</b>	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.
<a href="#">WebReference</a>	References to other documents or webpages, like weblinks, hypertext links, or emails.

Table 2: Markup conventions used in this reference

## Symbols and notes



### Practical tip

Additional information helps to understand or ease handling the camera.



### Additional information

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



### Avoiding malfunctions

Precautions are described.

## 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 3: Abbreviations used in this reference

## Standards referred to in this document

The document describes in alphabetical order the basic and advanced camera controls for Allied Vision Alvim cameras as seen from Vimba Viewer.

These features comply with the following standards:

- USB3 Vision Standard V1.0.1
- GenICam Standard Features Naming Convention (SFNC) V2.2
- GenICam Transport Layer Standard Features Naming Convention (GenTL SFNC) V1.0
- AIA Pixel Format Naming Convention (PFNC) V2.0
- GenICam Generic Control Protocol (GenCP) V1.0.



### Downloads of applied common standards

For SFNC, GenTL SFNC, and GenCP, see [www.genicam.org](http://www.genicam.org)

For USB3 Vision and PFNC, see [www.visiononline.org](http://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.

Abbreviation/term	Meaning
GenTL SFNC	GenICam Transport Layer Standard Features Naming Convention V1.0
GenTL SFNC adapted	Features that deviate from the GenTL SFNC definition
SFNC	GenICam Standard Features Naming Convention V2.2
SFNC adapted	Features that deviate from the SFNC definition
Custom	Non-SFNC features that are adding to new functions to the existing SFNC feature definitions

Table 4: Standards used in this reference

## Features description scheme

This document describes categories and features as seen from Vimba Viewer and features in alphabetical order for Allied Vision Alvium cameras.

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

### 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 order

### 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.

## Copyright and trademarks

All text, pictures, and graphics are protected by copyright and other laws protecting intellectual property. All content is subject to change without notice.

All trademarks, logos, and brands cited in this document are property and/or copyright material of their respective owners. Use of these trademarks, logos, and brands does not imply endorsement.

Copyright © 2021 Allied Vision Technologies GmbH. All rights reserved.

# Feature description



This chapter includes:

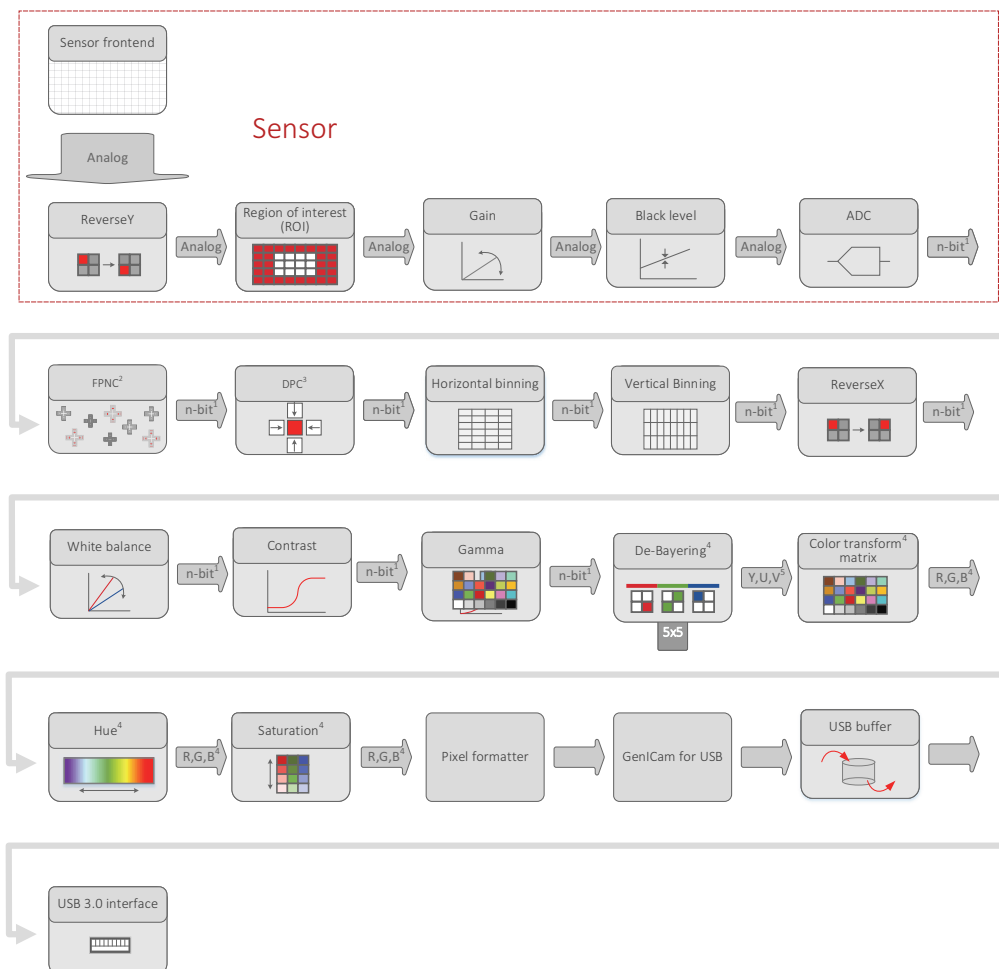
Features processing order .....	16
Regions of interest and auto mode regions .....	18
Feature descriptions .....	20

# Features processing order

To develop your application effectively, note the order in which the features are processed in Alvim cameras.

## Image data flow

In the Alvim user guides, the image data flow describes the sequence of image processing steps inside the camera. The shown functionalities represent features or feature groups.



<sup>1</sup> Model dependent: See ADC bit depths the Specifications chapter of the corresponding user guide.

<sup>2</sup> Factory preset for FPNC = Fixed Pattern Noise Correction  
The current firmware version does not support FPNC for Alvim 1800C/U-2050.

<sup>3</sup> Factory preset for DPC = Defect pixel correction

<sup>4</sup> Color models only

<sup>5</sup> For monochrome models: Y only

<sup>5</sup> USB only

Figure 1: Image data flow for Alvim 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 2 shows the interdependencies.

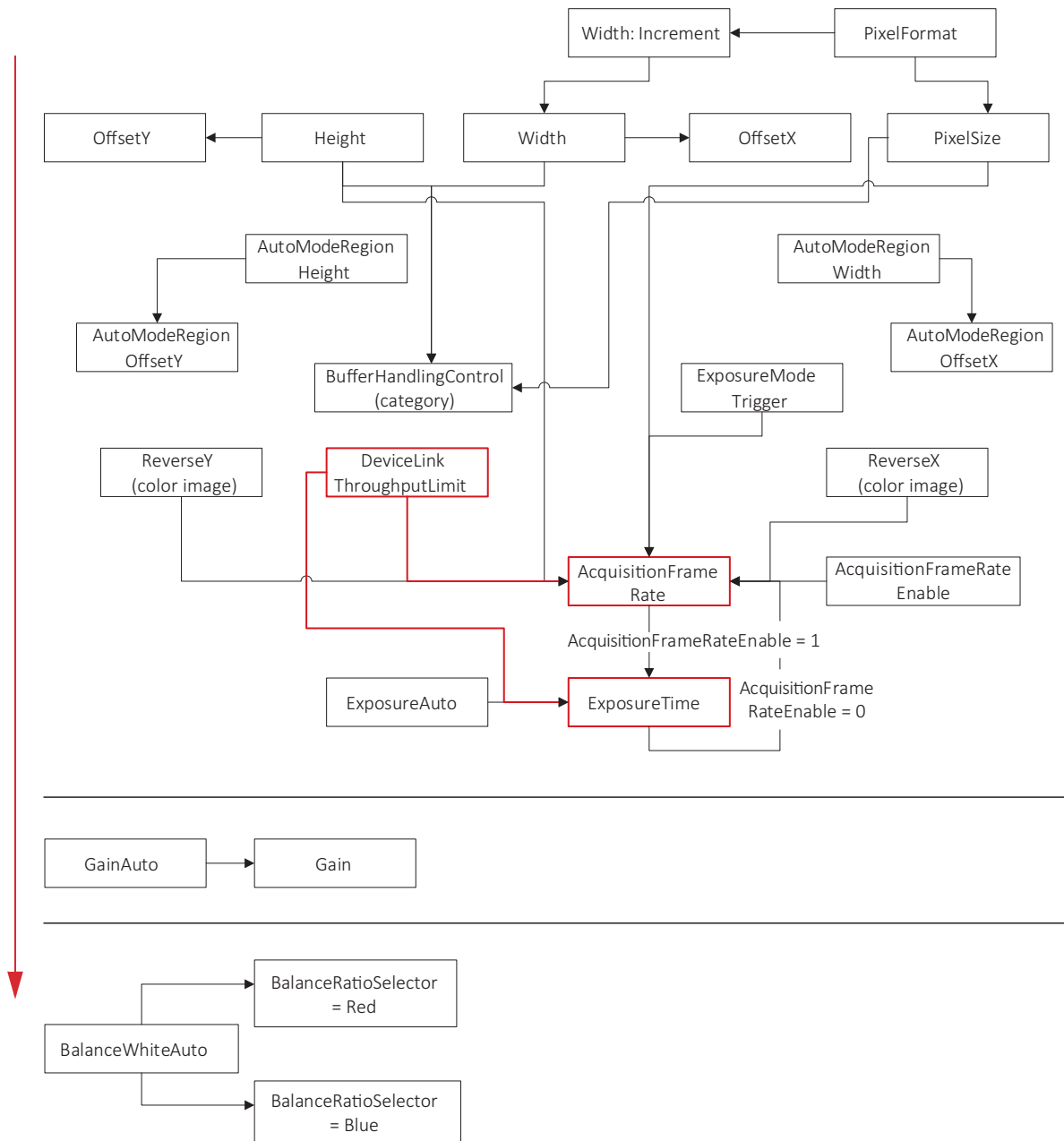


Figure 2: Interdependencies between features

## Regions of interest and auto mode regions

Generally, auto mode regions are areas or regions on the image, where measurements are done to be used by various auto-features, for example measurement of the intensity for auto-exposure control.

The features used to define area of regions of interest (ROIs) and auto mode regions are displayed in Figure 3.

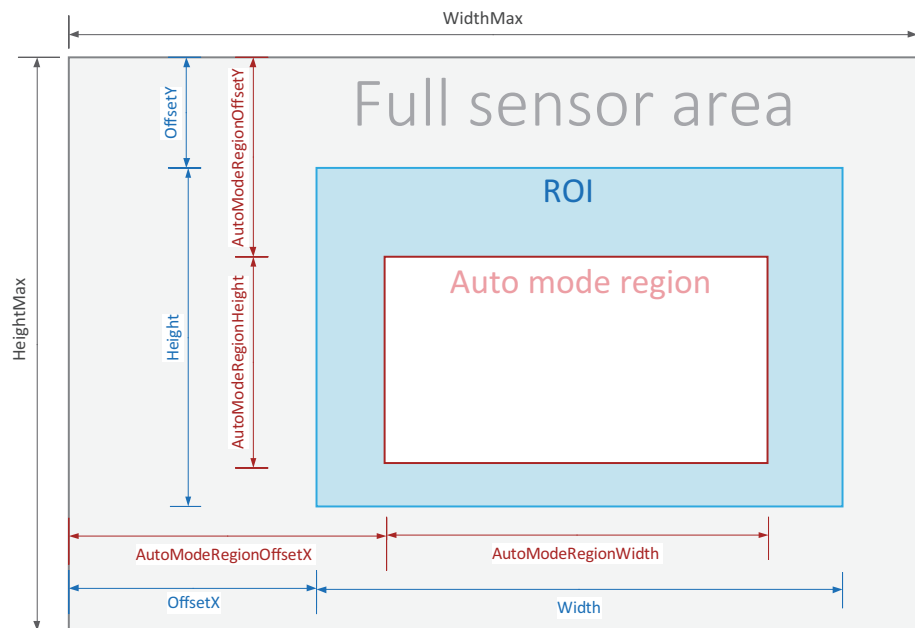


Figure 3: auto mode region and ROI measurement features

It is possible to have multiple auto mode regions. Also, multiple sensor-ROIs are supported that are called DisplayROI in this document. A DisplayROI covers the area that is being transmitted by the camera subsystem.

The interaction of auto mode regions and ROIs would allow for a huge variety of possibilities. However, the actual interaction is limited to a few useful possibilities that practically make sense.

### Basic rules

- Auto mode regions must be explicitly enabled by a feature.
- One auto mode region inside a ROI is permitted. This provides a fixed correlation between ROI and auto mode region.
- Auto mode region and ROI coordinates are absolute to the sensor area. If the ROI position is changed, the position of the auto mode region is maintained. The auto mode region represents the content changed by shifting the ROI.

- The auto mode region must be inside the respective ROI.
- If auto mode regions are enabled, the position and size are set to the same position and size of the respective ROI. This means that disabling and re-enabling the auto mode regions resets their positions and sizes.
- If ROI is changed, auto mode region may need to be adjusted. To do so, **set the position before you set the size.**

Therefore, as long as the origin of the auto mode region remains inside the ROI, the position and size of the auto mode region can be maintained.

To ensure no part of the auto mode region is outside the ROI, the size of the auto mode region is adjusted until the minimum allowed size is reached.

Only then the position may be altered.

## ROI and auto mode region effects

Auto mode region is always treated as a subset of ROI. The following scenarios show the interaction between ROI and auto mode region and gives recommendations where auto mode region settings can be improved. Vice versa, you can adjust settings for ROI to match an existing auto mode region.

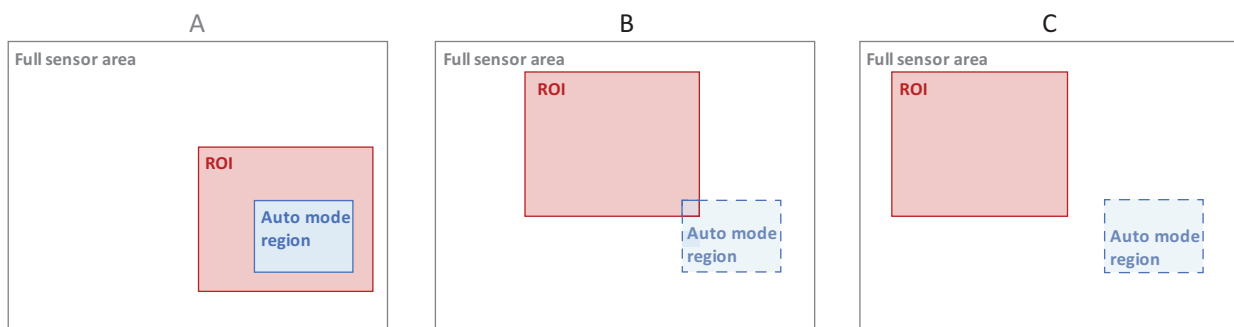


Figure 4: ROI and auto mode region effects

- 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.
- Scenario:** User input creates a common area between ROI and auto mode region is only small.  
**Result:** Camera logic reduces the effective auto mode region to the common area between auto mode region and ROI.  
**Recommendation:** Relocate and resize auto mode region to become a subset of or to match ROI.
- Scenario:** User input creates ROI and auto mode region that have no common area.  
**Result:** Camera logic reduces the effective auto mode region to  $\emptyset$ .  
**Recommendation:** Relocate and resize auto mode region to become a subset or to match ROI.

# Feature descriptions

## AcquisitionControl

<b>Display name</b>	Acquisition Control
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	(Category)

## AcquisitionFrameCount

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

<b>Display name</b>	Acquisition Frame Count
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Integer
<b>Access</b>	R/W
<b>Unit</b>	(number)
<b>Affected features</b>	Not applicable
<b>Category</b>	/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 17. In this case the value for `AcquisitionFrameRate` must be re-adjusted by the user.

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

## AcquisitionFrameRateEnable

Enables or disables `AcquisitionFrameRate`.

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

<b>Display name</b>	Acquisition Frame Rate Enable
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Boolean
<b>Access</b>	R/W
<b>Affected features</b>	<code>AcquisitionFrameRate</code>
<b>Category</b>	/AcquisitionControl

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

## AcquisitionFrameRateMode

Selects the interconnection between the `AcquisitionFrameRate` affecting features.

<b>Display name</b>	Acquisition Frame Rate Mode
<b>Standard</b>	Custom
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R/W
<b>Affected features</b>	<code>AcquisitionFrameRate</code>
<b>Category</b>	/AcquisitionControl

Values	Description
<i>Basic</i>	<code>AcquisitionFrameRate</code> is used without a forced frame rate.

## 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.

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

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

## AcquisitionStart

Starts the acquisition of the camera.

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

<b>Display name</b>	Acquisition Start
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Command
<b>Access</b>	W
<b>Affected features</b>	Not applicable
<b>Category</b>	/AcquisitionControl

## AcquisitionStatus

[AcquisitionStatusSelector]

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

<b>Display name</b>	Acquisition Status
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Boolean
<b>Access</b>	R
<b>Affected features</b>	Not applicable
<b>Category</b>	/AcquisitionControl
Values	Description
<i>True</i>	The camera is performing the selected action.
<i>False</i>	The camera is performing the selected action.

## AcquisitionStatusSelector

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

<b>Display name</b>	Acquisition Status Selector
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R/W
<b>Affected features</b>	AcquisitionStatus
<b>Category</b>	/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.

<b>Display name</b>	Acquisition Stop
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Command
<b>Access</b>	W
<b>Affected features</b>	Not applicable
<b>Category</b>	/AcquisitionControl

## ExposureAuto

Selects the auto exposure mode.

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

<b>Display name</b>	Exposure Auto
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R/W
<b>Affected features</b>	Not applicable
<b>Category</b>	/AcquisitionControl

Values	Description
<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> .
<i>Continuous</i>	The exposure time varies continuously according to the scene illumination.

## ExposureMode

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

<b>Display name</b>	Exposure Mode
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R/W
<b>Affected features</b>	Not applicable
<b>Category</b>	/AcquisitionControl

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

## 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.

<b>Display name</b>	Exposure Time
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Float
<b>Access</b>	R/W
<b>Unit</b>	Microseconds [ $\mu$ s]
<b>Affected features</b>	<code>ExposureAutoMin</code> , <code>ExposureAutoMax</code> , <code>AcquisitionFrameRate</code>
<b>Category</b>	/AcquisitionControl

## TriggerActivation

[TriggerSelector]

Selects the activation mode of the trigger.

<b>Display name</b>	Trigger Activation
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R/W
<b>Affected features</b>	Not applicable
<b>Category</b>	/AcquisitionControl
Values	Description
<i>RisingEdge</i>	The encoder on the rising edge of the signal is reset.
<i>FallingEdge</i>	The encoder on the falling edge of the signal is reset.
<i>AnyEdge</i>	The encoder on the falling or rising edge of the signal is reset.
<i>LevelHigh</i>	The encoder at a high signal level is reset.
<i>LevelLow</i>	The encoder at a low signal level is reset.

## TriggerMode

[TriggerSelector]

Enables or disables the selected trigger.

<b>Display name</b>	Trigger Mode
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R/W
<b>Affected features</b>	LineMode, TriggerSource, LineInverter, LineSource
<b>Category</b>	/AcquisitionControl
Values	Description
<i>On</i>	Triggering is enabled
<i>Off</i>	Triggering is disabled.

## TriggerSelector

Selects the type of trigger to configure.

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

<b>Values</b>	<b>Description</b>
<i>AcquisitionStart</i>	The selected trigger starts the acquisition process.
<i>AcquisitionActive</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 trigger terminates the acquisition process.
<i>FrameStart</i>	The selected trigger starts the capture 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>ExposureActive*</i>	The selected trigger controls the duration of exposure 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*.

<b>Display name</b>	Trigger Software
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Command
<b>Access</b>	W
<b>Affected features</b>	Not applicable
<b>Category</b>	/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*.

<b>Display name</b>	Trigger Source
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R/W
<b>Affected features</b>	Not applicable
<b>Category</b>	/AcquisitionControl

Values for U3V	Description
<i>Software</i>	Software 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>	Physical Line2 is used to signal triggers.
<i>Line3</i>	Physical Line3 is used to signal triggers.

## AnalogControl

<b>Display name</b>	Analog Control
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	(Category)

## BalanceRatio

[BalanceRatioSelector]

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

<b>Display name</b>	Balance Ratio
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Float
<b>Access</b>	R/W
<b>Affected features</b>	Not applicable
<b>Category</b>	/AnalogControl

Values	Description
0	Minimum
8	Maximum
0.001	Increment

## BalanceRatioSelector

Selects the balance ratio to control.

<b>Display name</b>	Balance Ratio Selector
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R/W
<b>Affected features</b>	BalanceRatio
<b>Category</b>	/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.

<b>Display name</b>	Balance White Auto
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R/W
<b>Affected features</b>	BalanceWhiteAutoRate, BalanceWhiteAutoTolerance
<b>Category</b>	/AnalogControl
Values	Description
<i>Off</i>	Auto white balance is disabled.
<i>Once</i>	Auto white balance is applied once. After adjustments have been done, auto white balance is disabled.
<i>Continuous</i>	Auto white balance is applied continuously.

## BlackLevel

[BlackLevelSelector]

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

<b>Display name</b>	Black Level
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Float
<b>Access</b>	R/W
<b>Affected features</b>	Not applicable
<b>Category</b>	/AnalogControl

Values	Description
1	Increment

## BlackLevelSelector

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

<b>Display name</b>	Black Level Selector
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R/W
<b>Affected features</b>	BlackLevel
<b>Category</b>	/AnalogControl

Value	Description
ALL	All black levels are controlled.

## Gain

[GainSelector]

Controls the selected gain in decibels [dB] as an absolute physical value. This is an amplification factor applied to the video signal.

<b>Display name</b>	Gain
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Float
<b>Access</b>	R/W
<b>Affected features</b>	GainAutoMin, GainAutoMax
<b>Category</b>	/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.

<b>Display name</b>	Gain Auto
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R/W
<b>Affected features</b>	Not applicable
<b>Category</b>	/AnalogControl

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

## GainSelector

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

<b>Display name</b>	Gain Selector
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R/W
<b>Affected features</b>	Gain, GainAuto, GainAutoMax
<b>Category</b>	/AnalogControl
<b>Value</b>	<b>Description</b>
<i>ALL</i>	All gains are controlled.

## Gamma

Controls the gamma correction of pixel intensity.

<b>Display name</b>	Gamma
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Float
<b>Access</b>	R/W
<b>Affected features</b>	Not applicable
<b>Category</b>	/AnalogControl
<b>Values</b>	<b>Description</b>
<i>0.4</i>	Minimum
<i>2.4</i>	Maximum
<i>0.5</i>	Increment

## AutoModeControl

<b>Display name</b>	Auto Mode Control
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	(Category)

## AutoModeRegionHeight

[AutoModeRegionSelector]

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

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

## AutoModeRegionOffsetX

[AutoModeRegionSelector]

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

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

## AutoModeRegionOffsetY

[AutoModeRegionSelector]

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

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

## AutoModeRegionSelector

Selects the auto mode region to configure.

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

<b>Value</b>	<b>Description</b>
<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.

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

## BalanceWhiteAutoRate

Controls the rate at which the frequency for adjustments of the white balance.

<b>Display name</b>	Balance White Auto Rate
<b>Standard</b>	Custom
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Float
<b>Access</b>	R/W
<b>Affected features</b>	BalanceWhiteAutoTolerance
<b>Category</b>	/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.

<b>Display name</b>	Balance White Auto Tolerance
<b>Standard</b>	Custom
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Float
<b>Access</b>	R/W
<b>Affected features</b>	BalanceWhiteAutoRate
<b>Category</b>	/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.

<b>Display name</b>	Exposure Auto Max
<b>Standard</b>	Custom
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Float
<b>Access</b>	R/W
<b>Affected features</b>	ExposureAutoMin
<b>Category</b>	/AutoModeControl

## ExposureAutoMin

Controls the minimum value for auto exposure.

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

<b>Display name</b>	Exposure Auto Min
<b>Standard</b>	Custom
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Float
<b>Access</b>	R/W
<b>Affected features</b>	ExposureAutoMax
<b>Category</b>	/AutoModeControl

## GainAutoMax

Controls the maximum value for auto gain.

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

<b>Display name</b>	Gain Auto Max
<b>Standard</b>	Custom
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Float
<b>Access</b>	R/W
<b>Affected features</b>	GainAutoMin
<b>Category</b>	/AutoModeControl

## GainAutoMin

Controls the minimum value for auto gain.

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

<b>Display name</b>	Gain Auto Min
<b>Standard</b>	Custom
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Float
<b>Access</b>	R/W
<b>Affected features</b>	GainAutoMax
<b>Category</b>	/AutoModeControl

## IntensityAutoPrecedence

Selects the precedence of intensity controller.

<b>Display name</b>	Intensity Auto Precedence
<b>Standard</b>	Custom
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R/W
<b>Affected features</b>	Not applicable
<b>Category</b>	/AutoModeControl
Values	Description
<i>MinimizeNoise</i>	Orders the control loops so that noise is minimized: exposure time first, gain second. Gain increases are avoided if possible.
<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.

## IntensityControllerAlgorithm

[IntensityControllerSelector]

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

**Note:** The outliers are disregarded.

<b>Display name</b>	Intensity Controller Algorithm
<b>Standard</b>	Custom
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R/W
<b>Affected features</b>	Not applicable
<b>Category</b>	/AutoModeControl
Values	Description
<i>Mean</i>	After comparing the arithmetic mean of the current image's histogram to <b>ExposureAutoTarget</b> , the exposure time for the next image is adjusted to meet this target. Bright areas are allowed to saturate.

## IntensityControllerOutliersBright

[IntensityControllerSelector]

Controls the number of pixels from the top of the distribution to be ignored.

<b>Display name#</b>	Intensity Controller Outliers Bright
<b>Standard</b>	Custom
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Float
<b>Access</b>	R/W
<b>Affected features</b>	Not applicable
<b>Category</b>	/AutoModeControl

Values	Description
0	Minimum
10	Maximum
0.01	Increment

## IntensityControllerOutliersDark

[IntensityControllerSelector]

Controls the number of pixels from the bottom of the distribution to be ignored.

<b>Display name</b>	Intensity Controller Outliers Dark
<b>Standard</b>	Custom
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Float
<b>Access</b>	R/W
<b>Affected features</b>	Not applicable
<b>Category</b>	/AutoModeControl

Values	Description
0	Minimum
10	Maximum
0.01	Increment

## 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.

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

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

## IntensityControllerRegion

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

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

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

## IntensityControllerSelector

Selects the intensity controller to configure.

<b>Display name</b>	Intensity Controller Selector
<b>Standard</b>	Custom
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R/W
<b>Affected features</b>	IntensityControllerOutliersDark, IntensityControllerOutliersBright, IntensityControllerTolerance, IntensityControllerAlgorithm
<b>Category</b>	/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.

<b>Display name</b>	Intensity Controller Target
<b>Standard</b>	Custom
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Float
<b>Access</b>	R/W
<b>Affected features</b>	Not applicable
<b>Category</b>	/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.

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

Values	Description
0	Minimum
50	Maximum
1	Increment

## BufferHandlingControl



You need experience to use these features

We recommend you to use features in this category only if you are an advanced user.

<b>Display name</b>	Buffer Handling Control
<b>Standard</b>	GenTL SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	(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.

<b>Display name</b>	Max Driver Buffers Count
<b>Standard</b>	GenTL SFNC
<b>Origin of feature</b>	Transport layer
<b>Feature type</b>	Integer
<b>Access</b>	R/W
<b>Affected features</b>	Not applicable
<b>Category</b>	/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.

<b>Display name</b>	Stream Announce Buffer Minimum
<b>Standard</b>	GenTL SFNC
<b>Origin of feature</b>	Transport layer
<b>Feature type</b>	Integer
<b>Access</b>	R
<b>Affected features</b>	Not applicable
<b>Category</b>	/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.

<b>Display name</b>	Stream Announced Buffer Count
<b>Standard</b>	GenTL SFNC
<b>Origin of feature</b>	Transport layer
<b>Feature type</b>	Integer
<b>Access</b>	R
<b>Affected features</b>	Not applicable
<b>Category</b>	/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.

<b>Display name</b>	Stream Buffer Handling Mode
<b>Standard</b>	GenTL SFNC
<b>Origin of feature</b>	Transport layer
<b>Feature type</b>	Enumeration
<b>Access</b>	R
<b>Affected features</b>	StreamAcquisitionModeSelector
<b>Category</b>	/BufferHandlingControl
<b>Value</b>	<b>Description</b>
<i>Default</i>	Default stream buffer handling is available.

## ColorTransformationControl

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.

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

<b>Display name</b>	Color Transformation Control
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	(Category)

## ColorTransformationEnable

[ColorTransformationSelector]

Enables or disables the selected color transformation module.

<b>Display name</b>	Color Transformation Enable
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Boolean
<b>Access</b>	R/W
<b>Affected features</b>	ColorTransformationValue
<b>Category</b>	/ColorTransformationControl

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

## ColorTransformationSelector

Selects the type of color transformation.

<b>Display name</b>	Color Transformation Selector
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R/W
<b>Affected features</b>	ColorTransformationEnable, ColorTransformationValue, ColorTransformationValueSelector
<b>Category</b>	/ColorTransformationControl

Value	Description
<i>RGBtoRGB</i>	RGB is transformed to RGB.

## ColorTransformationValue

ColorTransformationSelector][ColorTransformationValue-Selector]

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

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

Values	Description
-4	Minimum
+4	Maximum
0.000001	Increment
1	Default

## ColorTransformationValueSelector

[ColorTransformationSelector]

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

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

For values described in the following table, see [ColorTransformationControl](#) on page 47 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 [°].

<b>Display name</b>	Hue
<b>Standard</b>	Custom
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Float
<b>Access</b>	R/W
<b>Affected features</b>	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
<b>Category</b>	/ColorTransformationControl

Values	Description
-4	Minimum (40 degrees)
+4	Maximum (40 degrees)
0.00001	Increment
0	Default

## Saturation

Controls the amplification of the chrominance signal in the color space in degrees [°].

<b>Display name</b>	Saturation
<b>Standard</b>	Custom
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Float
<b>Access</b>	R/W
<b>Affected features</b>	Not applicable
<b>Category</b>	/ColorTransformationControl

Values	Description
0	Minimum (40 degrees)
+2	Maximum (40 degrees)
0	Default

## CorrectionControl

<b>Display name</b>	Correction Control
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	(Category)

## CorrectionMode

Enables or disables correction features.

<b>Display name</b>	Correction Mode
<b>Standard</b>	Custom
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R/W
<b>Affected features</b>	Not applicable
<b>Category</b>	/CorrectionControl

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

## CorrectionSelector

Selects the type of correction to configure

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

Values	Description
<i>DefectPixelCorrection*</i>	Defect pixel correction (DPC) is selected.
<i>FixedPatternNoiseCorrection*</i>	Fixed pattern noise correction (FPNC) is selected.

\*Availability is camera dependent.

## CorrectionSet

[CorrectionSelector]

Selects the currently enabled correction settings.

<b>Display name</b>	Correction Set
<b>Standard</b>	Custom
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R/(W)
<b>Affected features</b>	Not applicable
<b>Category</b>	/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.

<b>Display name</b>	Correction Set Default
<b>Standard</b>	Custom
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R
<b>Affected features</b>	Not applicable
<b>Category</b>	/CorrectionControl
<b>Values</b>	<b>Description</b>
<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)

This subcategory provides information on the correction type currently used.

<b>Display name</b>	Correction Info
<b>Standard</b>	Custom
<b>Origin of feature</b>	Camera
<b>Feature type</b>	(Subcategory)

## CorrectionDataSize

[CorrectionSelector]

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

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

## CorrectionEntryType

**Note:** Disabled for firmware V1.x and previous versions.

Displays the entry type (correction type specific variant).

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

## DeviceControl

<b>Display name</b>	Device Control
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	(Category)

## DeviceFamilyName

Displays the identifier of the product family of the camera.

<b>Display name</b>	Device Family Name
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	String
<b>Access</b>	R
<b>Affected features</b>	Not applicable
<b>Category</b>	/DeviceControl

## DeviceFirmwareID

[DeviceFirmwareIDSelector]

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

<b>Display name</b>	Device Firmware ID
<b>Standard</b>	Custom
<b>Origin of feature</b>	Camera
<b>Feature type</b>	String
<b>Access</b>	R
<b>Affected features</b>	Not applicable
<b>Category</b>	/DeviceControl

## DeviceFirmwareIDSelector

Selects the DeviceFirmwareID to be read after restarting the camera.

<b>Display name</b>	Device Firmware ID Selector
<b>Standard</b>	Custom
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R/W
<b>Affected features</b>	DeviceFirmwareID
<b>Category</b>	/DeviceControl
Values	Description
<i>Current</i>	The current firmware ID is selected to be read after the next camera restart.
<i>Supported</i>	Another than the current firmware ID is selected to be read after the next camera restart.

## DeviceFirmwareVersion

[DeviceFirmwareVersionSelector]

Displays the version of the firmware in the camera.

<b>Display name</b>	Device Firmware Version
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	String
<b>Access</b>	R
<b>Affected features</b>	Not applicable
<b>Category</b>	/DeviceControl/DeviceControl

## DeviceFirmwareVersionSelector

Selects the DeviceFirmwareVersion to be read after restarting the camera.

<b>Display name</b>	Device Firmware Version Selector
<b>Standard</b>	Custom
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R/W
<b>Affected features</b>	DeviceFirmwareVersion
<b>Category</b>	/DeviceControl
Values	Description
<i>Current</i>	The current firmware version is selected to be read after the next camera restart.
<i>Programmed</i>	Another than the current firmware version is selected to be read after the next camera restart.

## DeviceGenCPVersionMajor

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

<b>Display name</b>	Device GenCP Version Major
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Integer
<b>Access</b>	R
<b>Affected features</b>	DeviceGenCPVersionMinor
<b>Category</b>	/DeviceControl

### DeviceGenCPVersionMinor

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

<b>Display name</b>	Device GenCP Version Minor
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Integer
<b>Access</b>	R
<b>Affected features</b>	DeviceGenCPVersionMajor
<b>Category</b>	/DeviceControl

### DeviceIndicatorLuminance

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

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

Values	Description
0	Minimum
10	Maximum

## DeviceIndicatorMode

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

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

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

## DeviceLinkCommandTimeout

Displays the command timeout of the specified link.

<b>Display name</b>	Device Link Command Timeout
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Float
<b>Access</b>	R
<b>Unit</b>	μs
<b>Affected features</b>	Not applicable
<b>Category</b>	/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.

<b>Display name</b>	Device Link Speed
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Integer
<b>Access</b>	R
<b>Unit</b>	Bytes per second
<b>Affected features</b>	Not applicable
<b>Category</b>	/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.

**Note:** 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.

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

Values	Description
450000000	Maximum with USB 3.x
200000000	Default

## 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.

<b>Display name</b>	Device Link Throughput Limit Mode
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R/W
<b>Affected features</b>	ExposureAutoMin, ExposureAutoMax, ExposureTime, AcquisitionFrameRate
<b>Category</b>	/DeviceControl

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

## DeviceManufacturerInfo

Displays the manufacturer information about the camera.

<b>Display name</b>	Device Manufacturer Info
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	String
<b>Access</b>	R
<b>Affected features</b>	Not applicable
<b>Category</b>	/DeviceControl

## DeviceModelName

Displays the model name of the camera.

<b>Display name</b>	Device Model Name
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	String
<b>Access</b>	R
<b>Affected features</b>	Not applicable
<b>Category</b>	/DeviceControl

## DevicePowerSavingMode

Selects between standard power use and various power saving modes.

<b>Display name</b>	Device Power Saving Mode
<b>Standard</b>	Custom
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R/W
<b>Affected features</b>	Not applicable
<b>Category</b>	/DeviceControl

Values	Description
<i>Disabled</i>	The camera uses standard power (default).
<i>SuspendMode</i>	The camera is enabled to go into USB U3 power saving mode. <sup>1</sup>

<sup>1</sup>To apply the selected power saving mode, 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.

<b>Display name</b>	Device Reset
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Command
<b>Access</b>	W
<b>Affected features</b>	Not applicable
<b>Category</b>	/DeviceControl

## DeviceSFNCVersionMajor

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

<b>Display name</b>	Device SFNC Version Major
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Integer
<b>Access</b>	R
<b>Affected features</b>	Not applicable
<b>Category</b>	/DeviceControl

## DeviceSFNCVersionMinor

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

<b>Display name</b>	Device SFNC Version Minor
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Integer
<b>Access</b>	R
<b>Affected features</b>	Not applicable
<b>Category</b>	/DeviceControl

### DeviceSFNCVersionSubMinor

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

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

### DeviceScanType

Displays the scan type of the image sensor.

<b>Display name</b>	Device Scan Type
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R
<b>Affected features</b>	Not applicable
<b>Category</b>	/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.

<b>Display name</b>	Device Serial Number
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	String
<b>Access</b>	R
<b>Affected features</b>	Not applicable
<b>Category</b>	/DeviceControl

## DeviceTemperature

[DeviceTemperatureSelector]

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

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

## DeviceTemperatureSelector

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

<b>Display name</b>	Device Temperature Selector
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R/W
<b>Affected features</b>	DeviceTemperature
<b>Category</b>	/DeviceControl

<b>Value</b>	<b>Description</b>
<i>Mainboard</i>	The mainboard temperature is measured.

## DeviceTLVersionMajor

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

<b>Display name</b>	Device TL Version Major
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Integer
<b>Access</b>	R
<b>Affected features</b>	Not applicable
<b>Category</b>	/DeviceControl

<b>Value</b>	<b>Description</b>
0	Minimum
4294967295	Maximum

## DeviceTLVersionMinor

Displays the minor version of the camera transport layer.

<b>Display name</b>	Device TL Version Minor
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Integer
<b>Access</b>	R
<b>Affected features</b>	Not applicable
<b>Category</b>	/DeviceControl

<b>Value</b>	<b>Description</b>
0	Minimum
4294967295	Maximum

## DeviceUserID

Controls the user-programmable camera identifier.

**Note:** Maximum 63 characters are allowed.

<b>Display name</b>	Device user ID
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	String
<b>Access</b>	R/W
<b>Affected features</b>	Not applicable
<b>Category</b>	/DeviceControl

## DeviceVendorName

Displays the name of the camera manufacturer.

<b>Display name</b>	Device Vendor Name
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	String
<b>Access</b>	R
<b>Affected features</b>	Not applicable
<b>Category</b>	/DeviceControl

## DeviceVersion

Displays the camera's product code.

<b>Display name</b>	Device Version
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	String
<b>Access</b>	R
<b>Affected features</b>	Not applicable
<b>Category</b>	/DeviceControl

## TimestampLatch

Latches the current timestamp counter into `TimestampLatchValue`.

<b>Display name</b>	Time Stamp Latch
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Command
<b>Access</b>	W
<b>Affected features</b>	<code>TimestampLatchValue</code>
<b>Category</b>	/DeviceControl

## TimestampLatchValue

Displays the latched value of the timestamp counter.

<b>Display name</b>	Timestamp Latch Value
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Integer
<b>Access</b>	R
<b>Affected features</b>	Not applicable
<b>Category</b>	/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.

<b>Display name</b>	Timestamp Reset
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Command
<b>Access</b>	W
<b>Affected features</b>	<code>TimestampLatchValue</code>
<b>Category</b>	/DeviceControl

## DigitalIOControl

<b>Display name</b>	Digital IO Control Info
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	(Category)

## LineInverter

[LineSelector]

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

<b>Display name</b>	Line Inverter
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Boolean
<b>Access</b>	R/W
<b>Affected features</b>	Not applicable
<b>Category</b>	/DigitalIOControl

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

## LineMode

[LineSelector]

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

<b>Display name</b>	Line Mode
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R/W
<b>Affected features</b>	TriggerSource, LineInverter, LineSource
<b>Category</b>	/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.

<b>Display name</b>	Line Selector
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R/W
<b>Affected features</b>	LineMode, LineSource, LineInverter, LineStatus, LineStatusAll
<b>Category</b>	/DigitalIOControl
<b>Values</b>	<b>Description</b>
<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.

## LineSource

[LineSelector]

Set the output signal for the selected line.

**Note:** LineMode must be set to *Output*.

<b>Display name</b>	Line Source
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R/W
<b>Affected features</b>	Not applicable
<b>Category</b>	/DigitalIOControl

Values	Description
<i>Off</i>	No I/O source signal is output.
<i>AcquisitionActive</i>	The <i>AcquisitionActive</i> I/O source signal is output.
<i>FrameTriggerWait</i>	The <i>FrameTriggerWait</i> I/O source signal is output.
<i>ExposureActive*</i>	The <i>ExposureActive</i> I/O source signal is output.
<i>Stream0TransferActive</i>	The <i>Stream0TransferActive</i> I/O source signal is output.
<i>Line0Signal</i>	The <i>Line0Signal</i> I/O source signal is output.
<i>Line1Signal</i>	The <i>Line1Signal</i> I/O source signal is output.
<i>Line2Signal</i>	The <i>Line2Signal</i> I/O source signal is output.
<i>Line3Signal</i>	The <i>Line3Signal</i> I/O source signal is output.

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

## LineStatus

[LineSelector]

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

<b>Display name</b>	Line Status
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Boolean
<b>Access</b>	R
<b>Affected features</b>	Not applicable
<b>Category</b>	/DigitalIOControl

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

## LineStatusAll

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

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

Values	Description
$\emptyset$	Minimum
15	Maximum

## FileAccessControl

<b>Display name</b>	File Access Control
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	(Category)

## FileAccessBuffer

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

<b>Display name</b>	File Access Buffer
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Register
<b>Access</b>	R
<b>Affected features</b>	Not applicable
<b>Category</b>	/FileAccessControl

## FileAccessLength

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

<b>Display name</b>	File Access Length
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Register
<b>Access</b>	R
<b>Affected features</b>	Not applicable
<b>Category</b>	/FileAccessControl

## FileAccessOffset

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

<b>Display name</b>	File Access Offset
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Integer
<b>Access</b>	R
<b>Affected features</b>	Not applicable
<b>Category</b>	/FileAccessControl

## FileOpenMode

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

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

<b>Values</b>	<b>Description</b>
<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.

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

## FileOperationResult

[FileSelector][FileOperationSelector]

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

<b>Display name</b>	File Operation Result
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Integer
<b>Access</b>	R
<b>Affected features</b>	Not applicable
<b>Category</b>	/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!

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

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

## FileOperationStatus

[FileSelector][FileOperationSelector]

Displays the file operation execution status.

<b>Display name</b>	File Operation Status
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R
<b>Affected features</b>	Not applicable
<b>Category</b>	/FileAccessControl

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

## FileProcessStatus

[FileSelector]

Displays an additional process status.

<b>Display name</b>	File Process Status
<b>Standard</b>	Custom
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R
<b>Affected features</b>	Not applicable
<b>Category</b>	/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!

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

Values	Description
<i>Firmware</i>	Firmware is target for file operations.
<i>UserData</i>	User data is target for file operations.
<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>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.

## FileSize

[FileSelector]

Displays the size of the selected file in bytes.

<b>Display name</b>	File Size
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Integer
<b>Access</b>	R
<b>Affected features</b>	Not applicable
<b>Category</b>	/FileAccessControl

## FileStatus

[FileSelector]

Displays the status of the selected file.

<b>Display name</b>	File Status
<b>Standard</b>	Custom
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R
<b>Affected features</b>	Not applicable
<b>Category</b>	/FileAccessControl

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

## ImageFormatControl

<b>Display name</b>	Image Format Control
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	(Category)

### BinningHorizontal

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

**Note:** For Alvium models  $\geq 12$  MP resolution, if **BinningVertical** is used, **BinningHorizontal** is set to 2.

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

Values	Description
1	Minimum
8	Maximum

## BinningHorizontalMode

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

**Note:** Changing **BinningHorizontalMode** sets **BinningVerticalMode** to the same value.

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

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

## BinningSelector

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

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

Values	Description
<i>Digital</i>	Digital binning is used.

## BinningVertical

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

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

Values	Description
1	Minimum
8	Maximum

## BinningVerticalMode

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

**Note:** Changing **BinningVerticalMode** sets **BinningHorizontalMode** to the same value.

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

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

## Height

Controls the image height output by the camera.

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

## HeightMax

Displays the available maximum image height.

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

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

## OffsetX

Controls the horizontal offset from the origin to the ROI.

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

Values	Description
0	Minimum

## OffsetY

Controls the vertical offset from the origin to the ROI.

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

Values	Description
0	Minimum

## 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.

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

## PixelSize

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

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

## ReverseX

Enables or disables to flip the image horizontally.

**Note:** The ROI is applied after the flipping.

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

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

## ReverseY

Enables or disables to flip the image vertically.

**Note:** The ROI is applied after the flipping.

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

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

## SensorHeight

Displays the effective sensor height.

<b>Display name</b>	Sensor Height
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Integer
<b>Access</b>	R
<b>Unit</b>	Pixel
<b>Affected features</b>	HeightMax
<b>Category</b>	/ImageFormatControl

## SensorWidth

Displays the effective sensor width.

<b>Display name</b>	Sensor Width
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Integer
<b>Access</b>	R
<b>Unit</b>	Pixel
<b>Affected features</b>	WidthMax
<b>Category</b>	/ImageFormatControl

## ShutterMode

Selects the shutter type for cameras where the sensor can be operated in different shutter modes.

<b>Display name</b>	Shutter Mode
<b>Standard</b>	SFNC adapted
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R/W
<b>Affected features</b>	Not applicable
<b>Category</b>	/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).

\*Availability depends on the sensor model.

## Width

Controls the image width of the image output by the camera.

<b>Display name</b>	Width
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Integer
<b>Access</b>	R/W
<b>Unit</b>	Pixel
<b>Affected features</b>	OffsetX, AutoModeRegionOffsetX, AutoModeRegionWidth, AcquisitionFrameRate, ExposureAutoMin, ExposureAutoMax, ExposureTime, PayloadSize
<b>Category</b>	/ImageFormatControl

## WidthMax

Displays the available maximum image width.

**Note:** The dimension is calculated after horizontal binning, decimation, or any other function changing the horizontal dimension of the image.

<b>Display name</b>	Width Max
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Integer
<b>Access</b>	R
<b>Unit</b>	Pixel
<b>Affected features</b>	Width, OffsetX
<b>Category</b>	/ImageFormatControl

## ImageProcessingControl

<b>Display name</b>	Image Processing Control
<b>Standard</b>	Custom
<b>Origin of feature</b>	Camera
<b>Feature type</b>	(Category)

## ColorInterpolation

Selects the `ColorInterpolation` filter.

**Note:** This feature is available only with color models.

<b>Display name</b>	Color Interpolation
<b>Standard</b>	Custom
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R/W
<b>Affected features</b>	Not applicable
<b>Category</b>	/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)

<b>Display name</b>	Contrast Control
<b>Standard</b>	Custom
<b>Origin of feature</b>	Camera
<b>Feature type</b>	(Subcategory)

### ContrastBrightLimit

Selects the maximum gray value for the image.

**Note:** To use the feature, `ContrastConfigurationMode` must be set to *Expert*

The current **value ranges displayed for 8-bit and 10-bit pixel formats are higher than the calculated values.**

<b>Display name</b>	Contrast Bright Limit
<b>Standard</b>	Custom
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Integer
<b>Access</b>	R/W
<b>Affected features</b>	ContrastDarkLimit
<b>Category</b>	/ImageProcessing/ContrastControl

Values	Description
<code>ContrastDarkLimit + 1</code>	The minimum value is selected.
<code>4095</code>	The maximum value is selected.

Pixel bit depth [bit]	Value range	Calculated value range	Pixel count per increment
8	0 to 4095	0 to 255	1/16
10	0 to 4095	0 to 1023	1/4
12		0 to 4095	1

## ContrastConfigurationMode

Selects the availability of other contrast related features.

<b>Display name</b>	Contrast Control
<b>Standard</b>	Custom
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R/W
<b>Affected features</b>	ContrastBrightLimit, ContrastDarkLimit
<b>Category</b>	/ImageProcessing/ContrastControl

Values	Description
<i>Beginner*</i>	Basic functions are selected.
<i>Expert</i>	Advanced functions are selected.

\*Disabled for firmware V1.x and previous versions.

## ContrastDarkLimit

Selects the minimum gray value for the image.

**Note:** To use the feature, ContrastConfigurationMode must be set to *Expert*.

The current **value ranges displayed for 8-bit and 10-bit pixel formats are higher than the calculated values**. See [ContrastBrightLimit](#) on page 92.

<b>Display name</b>	Contrast Dark Limit
<b>Standard</b>	Custom
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Integer
<b>Access</b>	R/W
<b>Affected features</b>	ContrastBrightLimit
<b>Category</b>	/ImageProcessing/ContrastControl

Values	Description
0	The minimum value is selected.
<i>ContrastBrightLimit - 1</i>	The maximum value is selected.

## ContrastEnable

Enables or disables the contrast enhancement features.

**Note:** To use the feature, **ContrastConfigurationMode** must be set to *Expert*. In *Basic* mode, it reflects the value of (ContrastValue!=0).

<b>Display name</b>	Contrast Enable
<b>Standard</b>	Custom
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Boolean
<b>Access</b>	R/W
<b>Affected features</b>	Not applicable
<b>Category</b>	/ImageProcessing/ContrastControl

Values	Description
<i>True</i>	The feature is enabled.
<i>False</i>	The feature is disabled.

## ContrastShape

Controls the sigmoid shape of the transfer curve.

**Note:** To use the feature, **ContrastConfigurationMode** must be set to *Expert*. The default value is **4**.

<b>Display name</b>	Contrast Shape
<b>Standard</b>	Custom
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Integer
<b>Access</b>	R/W
<b>Affected features</b>	Not applicable
<b>Category</b>	/ImageProcessing/ContrastControl

Values	Description
<b>1</b>	Minimum value
<b>10</b>	Maximum value
<b>1</b>	Increment

Figure 5 and Figure 6 on page 95 show the transfer curves for different values.

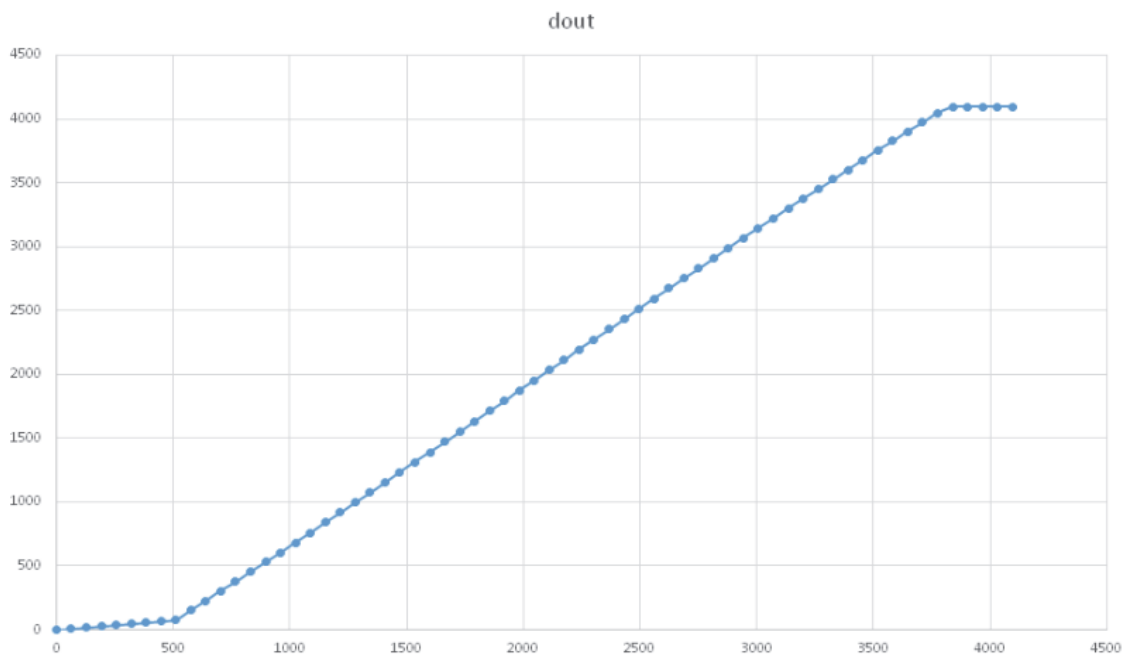


Figure 5: Image transfer for a value of 1.

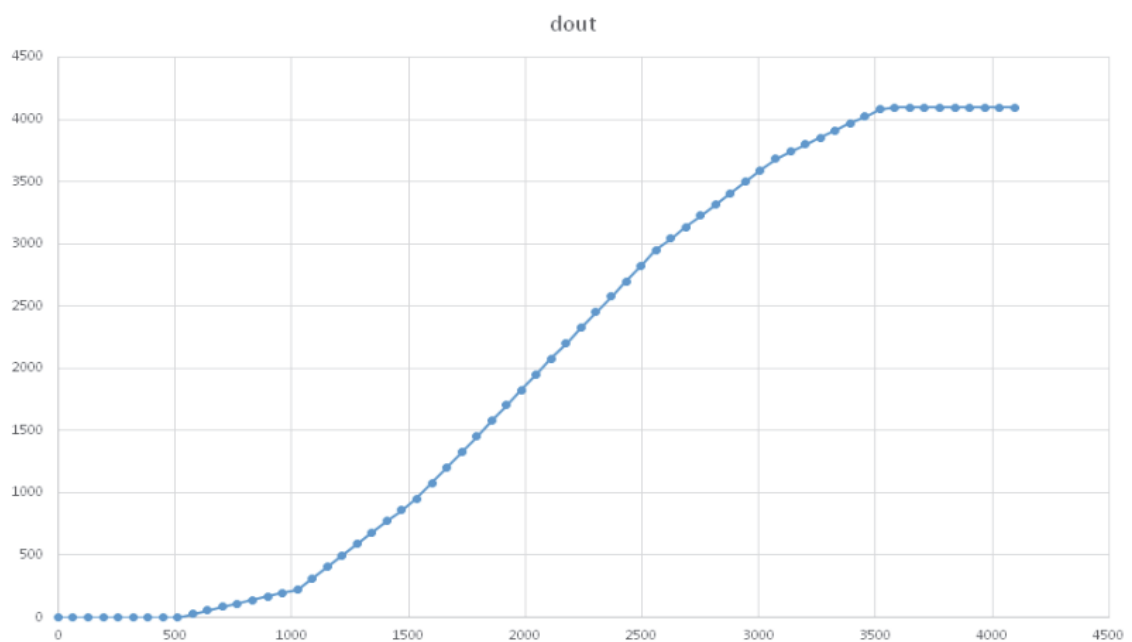


Figure 6: Image transfer for a value of 9.

## StreamInformation

<b>Display name</b>	Stream Information
<b>Standard</b>	GenTL SFNC
<b>Origin of feature</b>	Transport layer
<b>Feature type</b>	(Category)

## StreamID

Displays the camera's unique ID for the stream, for instance a GUID.

<b>Display name</b>	Stream ID
<b>Standard</b>	GenTL SFNC
<b>Origin of feature</b>	Transport layer
<b>Feature type</b>	String
<b>Access</b>	R
<b>Affected features</b>	Not applicable
<b>Category</b>	/StreamInformation

## StreamIsGrabbing

Displays the status of the acquisition engine.

<b>Display name</b>	Stream Is Grabbing
<b>Standard</b>	GenTL SFNC
<b>Origin of feature</b>	Transport layer
<b>Feature type</b>	Boolean
<b>Access</b>	R
<b>Affected features</b>	MaxDriverBuffersCount, StreamPayloadSizeMode, StreamPayloadSizeAlignment, ManualStreamPayloadSize
<b>Category</b>	/StreamInformation

Values	Description
<i>True</i>	Acquisition engine is started.
<i>False</i>	Acquisition engine is not started.

## StreamType

Displays the transport layer type of the data stream.

<b>Display name</b>	Stream Type
<b>Standard</b>	GenTL SFNC (adapted)
<b>Origin of feature</b>	Transport layer
<b>Feature type</b>	Enumeration
<b>Access</b>	R
<b>Affected features</b>	Not applicable
<b>Category</b>	/StreamInformation
<b>Values</b>	<b>Description</b>
<i>USB3</i>	The transport layer is USB 3.x type.

## TestControl

<b>Display name</b>	Test Control
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	(Category)

### 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 correspond for a long time.

<b>Display name</b>	Test Pending Ack
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Integer
<b>Access</b>	R/W
<b>Unit</b>	ms
<b>Affected features</b>	Not applicable
<b>Category</b>	/TestControl

Values	Description
0	Minimum
60000	Maximum

## TransportLayerControl

<b>Display name</b>	Transport Layer Control
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	(Category)

### 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.

<b>Display name</b>	Payload Size
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Integer
<b>Access</b>	R
<b>Unit</b>	Bytes
<b>Affected features</b>	Not applicable
<b>Category</b>	/TransportLayerControl

Values	Description
0	Minimum

## UserSetControl



The features in this category are currently disabled

The features in this category have been mostly disabled for firmware V1.x and previous versions.

<b>Display name</b>	User Set Control
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	(Category)

## UserSetDefault

**Note:** Disabled for firmware V1.x and previous versions.

Selects the user set to be loaded by default when the camera is reset.

<b>Display name</b>	User Set Default
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R/W
<b>Affected features</b>	Not applicable
<b>Category</b>	/UserSetControl

<b>Value</b>	<b>Description</b>
<i>Default</i>	The default user set is loaded at camera reset.

## UserSetLoad

[UserSetSelector]

**Note:** Partly disabled for firmware V1.x and previous versions. You can use this command to reset the camera to factory settings quickly.

Loads and enables the user set specified by `UserSetSelector` to the camera.

<b>Display name</b>	User Set Load
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Command
<b>Access</b>	W
<b>Affected features</b>	DeviceLinkThroughputLimitMode, ExposureAutoMin, ExposureAutoMax, ExposureTime, AcquisitionFrameRate, DeviceLinkThroughputLimit, Width, OffsetX, AutoModeRegionOffsetX, AutoModeRegionWidth, PayloadSize, Height, OffsetY, AutoModeRegionOffsetY, AutoModeRegionHeight, WidthMax, HeightMax, ReverseX, ReverseY, PixelFormat, PixelSize, BlackLevel, IntensityControllerOutliersDark, IntensityControllerOutliersBright, IntensityControllerTolerance, IntensityControllerTarget, IntensityControllerAlgorithm, IntensityControllerRate, ExposureAuto, GainAuto, GainAutoMin, GainAutoMax, BalanceWhiteAuto, BalanceWhiteAutoRate, BalanceWhiteAutoTolerance, BlackLevelCompensation, AcquisitionMode, AcquisitionFrameCount, AcquisitionFrameRateMode, AcquisitionFrameRateEnable, TriggerMode, TriggerSource, TriggerActivation, ExposureMode, Gain, BalanceRatio, Gamma, LineMode, LineSource, LineInverter, ColorInterpolation
<b>Category</b>	/UserSetControl

## UserSetSave

[UserSetSelector]

**Note:** Disabled for firmware V1.x and previous versions.

Writes the user set specified by **UserSetSelector** to the camera's non-volatile memory.

<b>Display name</b>	User Set Save
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Command
<b>Access</b>	W
<b>Affected features</b>	Not applicable
<b>Category</b>	/UserSetControl

## UserSetSelector

**Note:** Disabled for firmware V1.x and previous versions.

Selects the user set to be loaded, saved, or configured.

<b>Display name</b>	User Set Selector
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R/W
<b>Affected features</b>	UserSetLoad, DeviceLinkThroughputLimitMode, ExposureAutoMin, ExposureAutoMax, ExposureTime, AcquisitionFrameRate, DeviceLinkThroughputLimit, Width, OffsetX, AutoModeRegionOffsetX, AutoModeRegionWidth, PayloadSize, Height, OffsetY, AutoModeRegionOffsetY, AutoModeRegionHeight, WidthMax, HeightMax, ReverseX, ReverseY, PixelFormat, PixelSize, BlackLevel, IntensityControllerOutliersDark, IntensityControllerOutliersBright, IntensityControllerTolerance, IntensityControllerTarget, IntensityControllerAlgorithm, IntensityControllerRate, ExposureAuto, GainAuto, GainAutoMin, GainAutoMax, BalanceWhiteAuto, BalanceWhiteAutoRate, BalanceWhiteAutoTolerance, BlackLevelCompensation, AcquisitionMode, AcquisitionFrameCount, AcquisitionFrameRateMode, AcquisitionFrameRateEnable, TriggerMode, TriggerSource, TriggerActivation, ExposureMode, Gain, BalanceRatio, Gamma, LineMode, LineSource, LineInverter, ColorInterpolation, UserSetSave
<b>Category</b>	/UserSetControl
<b>Value</b>	<b>Description</b>
<i>Default</i>	The default user set is selected to be loaded, saved, or configured.

# Index

## A

AcquisitionControl (category) .....	20
AcquisitionFrameCount .....	20
AcquisitionFrameRate .....	20
AcquisitionFrameRateEnable .....	21
AcquisitionFrameRateMode .....	21
AcquisitionMode .....	22
AcquisitionStart .....	22
AcquisitionStatus .....	23
AcquisitionStatusSelector .....	23
AcquisitionStop .....	24
AnalogControl (category) .....	29
AutoModeControl (category) .....	34
AutoModeRegionHeight .....	34
AutoModeRegionOffsetX .....	34
AutoModeRegionOffsetY .....	35
AutoModeRegionSelector .....	35
AutoModeRegionWidth .....	36

## B

BalanceRatio .....	29
BalanceRatioSelector .....	30
BalanceWhiteAuto .....	30
BalanceWhiteAutoRate .....	36
BalanceWhiteAutoTolerance .....	37
BinningHorizontal .....	81
BinningHorizontalMode .....	82
BinningSelector .....	82
BinningVertical .....	83
BinningVerticalMode .....	83
BlackLevel .....	31
BlackLevelSelector .....	31
BufferHandlingControl (category) .....	44

## C

ColorInterpolation .....	91
ColorTransformationControl (category) .....	47
ColorTransformationEnable .....	47
ColorTransformationSelector .....	48
ColorTransformationValue .....	48
ColorTransformationValueSelector .....	49
ContrastBrightLimit .....	92
ContrastConfigurationMode .....	93
ContrastControl (subcategory) .....	92

ContrastDarkLimit .....	93
ContrastEnable .....	94
ContrastShape .....	94
CorrectionControl (category) .....	52
CorrectionDataSize .....	55
CorrectionEntryType .....	55
CorrectionInfo (subcategory) .....	55
CorrectionMode .....	52
CorrectionSelector .....	53
CorrectionSet .....	53
CorrectionSetDefault .....	54

## D

DeviceControl (category) .....	56
DeviceFamilyName .....	56
DeviceFirmwareID .....	56
DeviceFirmwareIDSelector .....	57
DeviceFirmwareVersion .....	57
DeviceFirmwareVersionSelector .....	58
DeviceGenCPVersionMajor .....	58
DeviceGenCPVersionMinor .....	59
DeviceIndicatorLuminance .....	59
DeviceIndicatorMode .....	60
DeviceLinkCommandTimeout .....	60
DeviceLinkSpeed .....	61
DeviceLinkThroughputLimit .....	61
DeviceLinkThroughputLimitMode .....	62
DeviceManufacturerInfo .....	62
DeviceModelName .....	63
DevicePowerSavingMode .....	63
DeviceReset .....	64
DeviceScanType .....	65
DeviceSerialNumber .....	65
DeviceSFNCVersionMajor .....	64
DeviceSFNCVersionMinor .....	64
DeviceSFNCVersionSubMinor .....	65
DeviceTemperature .....	66
DeviceTemperatureSelector .....	66
DeviceTLVersionMajor .....	67
DeviceTLVersionMinor .....	67
DeviceUserID .....	68
DeviceVendorName .....	68
DeviceVersion .....	68
DigitalIOControl (category) .....	70

## E

ExposureAuto .....	24
ExposureAutoMax .....	37

ExposureAutoMin .....	38	LineSelector .....	71
ExposureMode .....	25	LineSource .....	72
ExposureTime .....	25	LineStatus .....	73
		LineStatusAll .....	73
<b>F</b>		<b>M</b>	
FileAccessBuffer .....	74	MaxDriverBuffersCount .....	44
FileAccessControl (category) .....	74	<b>O</b>	
FileAccessLength .....	74	OffsetX .....	85
FileAccessOffset .....	75	OffsetY .....	85
FileOpenMode .....	75	<b>P</b>	
FileOperationExecute .....	76	PayloadSize .....	99
FileOperationResult .....	76	PixelFormat .....	86
FileOperationSelector .....	77	PixelFormatSize .....	86
FileOperationStatus .....	78	<b>R</b>	
FileProcessStatus .....	78	ReverseX .....	87
FileSelector .....	79	ReverseY .....	87
FileSize .....	80	<b>S</b>	
FileStatus .....	80	Saturation .....	51
<b>G</b>		SensorHeight .....	88
Gain .....	32	SensorWidth .....	88
GainAuto .....	32	ShutterMode .....	89
GainAutoMax .....	38	StreamAnnounceBufferMinimum .....	45
GainAutoMin .....	38	StreamAnnouncedBufferCount .....	45
GainSelector .....	33	StreamBufferHandlingMode .....	46
Gamma .....	33	StreamID .....	96
<b>H</b>		StreamInformation (category) .....	96
Height .....	84	StreamsGrabbing .....	96
HeightMax .....	84	StreamType .....	97
Hue .....	50	<b>T</b>	
<b>I</b>		TestControl (category) .....	98
ImageFormatControl (category) .....	81	TestPendingAck .....	98
ImageProcessingControl (category) .....	91	TimestampLatch .....	69
IntensityAutoPrecedence .....	39	TimestampLatchValue .....	69
IntensityControllerAlgorithm .....	39	TimestampReset .....	69
IntensityControllerOutliersBright .....	40	TransportLayerControl (category) .....	99
IntensityControllerOutliersDark .....	40	TriggerActivation .....	26
IntensityControllerRate .....	41	TriggerMode .....	26
IntensityControllerRegion .....	41	TriggerSelector .....	27
IntensityControllerSelector .....	42	TriggerSoftware .....	28
IntensityControllerTarget .....	42	TriggerSource .....	28
IntensityControllerTolerance .....	43		
<b>L</b>			
LineInverter .....	70		
LineMode .....	70		

## U

UserSetControl (category) .....	100
UserSetDefault .....	100
UserSetLoad .....	101
UserSetSelector .....	103

## W

Width .....	89
WidthMax .....	90