

USB3 VISION CAMERAS

Alvium

Features Reference

V1.0.2

# Introduction



This chapter includes:

- Allied Vision contact details
- Short description of the document contents
- The document history
- Conventions used in this Features Reference (styles and symbols)
- Standards referred to in this Features Reference



## **Read this document carefully**

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

# Contacting Allied Vision

## Website

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

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

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

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

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# Introduction

The Features Reference describes the features for Allied Vision Alvium cameras using the GenICam USB standard feature naming convention as seen from the Vimba Viewer.

This document applies to the following camera family:

- Alvium 1800 U

Not all features described in this reference are available in all camera models.



### Further information available online

For more information on Allied Vision cameras visit our website:

<https://www.alliedvision.com/en/products/cameras>



This is the master document for all above mentioned camera models. It describes every feature that is available within the abovementioned camera families.

## Document history

Version and date	Document updates
V1.0.2; 2019-Jul-08	Editorial changes
V1.0.1; 2019-Jul-05	Editorial changes
V1.0.0; 2019-Jul-01	New document- release status

*Table 1: Document history*

# Conventions used in this document

To give this reference 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 and registers names	Features names are displayed as monospaced text.
<i>Features and registers options</i>	Features options and values that are selectable by the user are displayed as monospaced italicized text.
<i>Non-standard Features and registers 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 of programs etc., 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

These symbols in the document point to special or additional information



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


**Safety-related instructions to avoid malfunctions**

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



This symbol highlights URLs for further information. The URL itself is shown in blue. Example:

<https://www.alliedvision.com/en/products/cameras>

## Access

Abbreviation/term	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.
W	Feature is write-only.

Table 3: Abbreviations used in this reference

## Standards referred to in this reference

The document describes in alphabetical order the basic and advanced camera controls for Allied Vision Alvium USB 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 <http://genicam.org>

For USB3 Vision and PFNC, see <https://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
SFNC	GenICam Standard Features Naming Convention (SFNC) V2.2
Modified SFNC feature	These features complement the features defined in the SFNC. To assure consistency with the SFNC features, they have been defined uniformly by Allied Vision.
Custom	This feature is disabled if no correction data is found in the non-volatile memory of the camera.

Table 4: Standards used in this reference

## Features order and 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 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 invalidators.

(note the features `Blur` and `Sharpness` are not implemented in every model.)



# Additional information

## Allied Vision software

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

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



Download all Allied Vision software from Allied Vision's Software Download page:

<https://www.alliedvision.com/en/support/software-downloads.html>

## Third-party software

In general, third-party software provides increased functionality such as image processing and video recording. 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.

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# USB3.1 Gen1 features



This chapter includes a description of categories as seen from Vimba Viewer and features in alphabetical order.

## General concept

### Interaction between AutoModeRegions and DisplayRegions

Generally, AutoModeRegions are areas or regions on the image, where measurements are performed that are used for various auto-features, for example measurement of the intensity for auto-exposure control.

The features used to define area of display regions and AutoModeRegions are displayed in Figure 1.

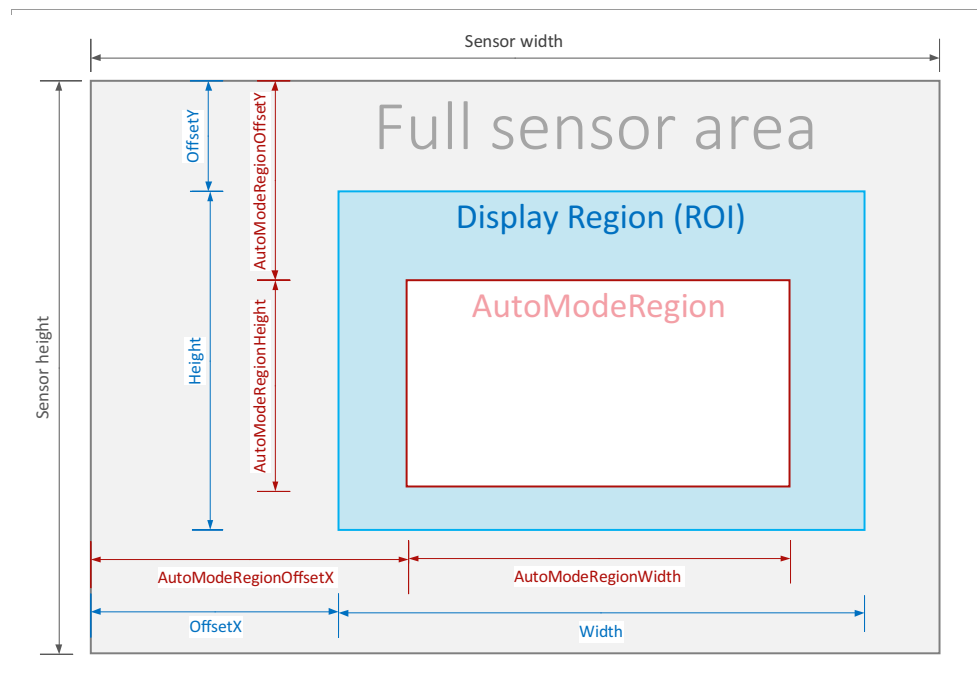


Figure 1: AutoModeRegion and display region measurement features

It is possible to have multiple AutoModeRegions. 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 AutoModeRegions and DisplayRegions 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

- AutoModeRegions need to be explicitly enabled by a feature.
- One AutoModeRegion inside a DisplayRegion is permitted. This provides a fixed correlation between DisplayRegion and AutoModeRegion.
- The coordinates of both the AutoModeRegion and the DisplayRegion are absolute to the whole sensor area.

This means if the position of a DisplayRegion changes, then the position of the AutoModeRegion is usually not changed. The AutoModeRegion then represents the content changed by shifting the DisplayRegion.

- The AutoModeRegion needs to be inside the respective DisplayRegion.
- If AutoModeRegions are enabled, the position and size is set to the same position and size of the respective DisplayRegion. This means that disabling and re-enabling the AutoModeRegions resets their positions and sizes.
- If DisplayRegion is changed, then AutoModeRegion may need to be adjusted. To do so, the rule Position before Size is used.

This means that as long as the origin of the AutoModeRegion remains inside the DisplayRegion, the position and size of the AutoModeRegion can be maintained.

To ensure no part of the AutoModeRegion is outside the DisplayRegion, the size of the AutoModeRegion will be adjusted until the minimum allowed size is reached.

Only then the position may be altered.

## Examples

### Changing the size of the DisplayRegion

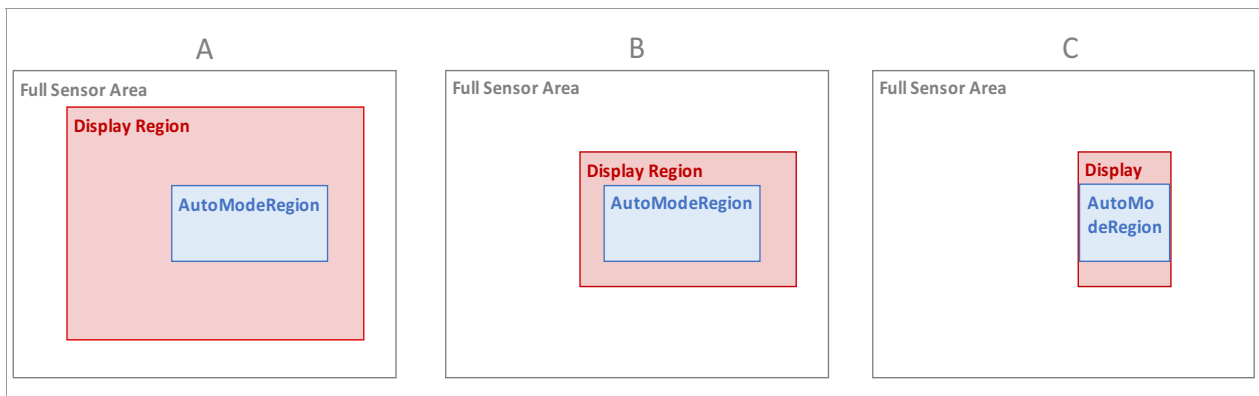


Figure 2: Changing the DisplayRegion

- A DisplayRegion and an AutoModeRegion are defined. In the first place, the AutoModeRegion is set to its default position and size, which is equal to the DisplayRegion. The AutoModeRegion is then resized so that it is much smaller than the DisplayRegion and fits completely into the DisplayRegion.
- The DisplayRegion is being resized, however the AutoModeRegion still fits completely into the AutoModeRegion.



- C. The size of the DisplayRegion is further reduced so that a part of the AutoModeRegion would lie outside the DisplayRegion. Therefore, the area of the AutoModeRegion is reduced as well to stay inside the DisplayRegion.

### Relocation of a DisplayRegion

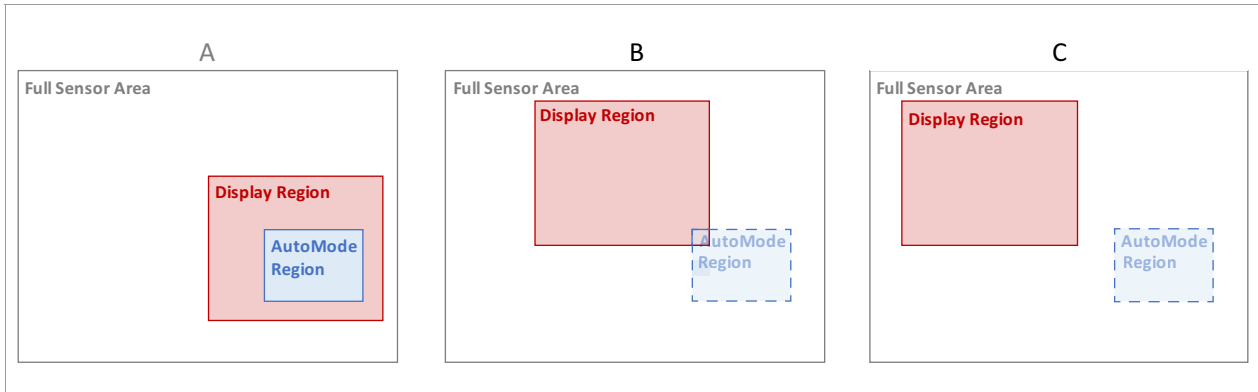


Figure 3: Relocation of the DisplayRegion

- A. A DisplayRegion and an AutoModeRegion are defined. The AutoModeRegion is resized so that it fits completely into the DisplayRegion.
- B. The DisplayRegion is moved to a new location that is largely outside the position and size of the AutoModeRegion. This results in an AutoModeRegion located at the bottom-right of the DisplayRegion. The size is set to the size of the AutoModeRegion part that still remains inside the DisplayRegion.
- C. After a further relocation of the DisplayRegion, the complete AutoModeRegion would be located outside the Display region. Therefore, the size of the AutoModeRegion is set to zero. In this case the camera switches the Auto features off.  
If the user enables the Auto features again, the AutoModeRegion is reset to its default position and size, which is equal to the DisplayRegion.

# Features descriptions

## AcquisitionControl

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

## AcquisitionFrameCount

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>	N/A
<b>Category</b>	/AcquisitionControl

## AcquisitionFrameRate

Controls the acquisition rate at which the frames are captured.

<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

Possible values	Description
(Camera specific)	Minimum
(Camera specific)	Maximum

## AcquisitionFrameRateEnable

Controls if the AcquisitionFrameRate feature is writable and used to control the acquisition rate.

Otherwise, the acquisition rate is implicitly controlled by the combination of other features like ExposureTime, etc.

<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>	AcquisitionFrameRate
<b>Category</b>	/AcquisitionControl

Possible values	Description
<i>True</i>	AcquisitionFrameRate feature is writable and used to control the acquisition rate.
<i>False</i>	AcquisitionFrameRate is implicitly controlled by the combination of other features like ExposureTime, etc.

## AcquisitionFrameRateMode

Defines 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>	AcquisitionFrameRate
<b>Category</b>	/AcquisitionControl

Possible values	Description
<i>Basic</i>	AcquisitionFrameRate works without a forced framerate.

## AcquisitionMode

Sets the acquisition mode of the device.

It 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>	N/A
<b>Category</b>	/AcquisitionControl

Possible values	Description
<i>SingleFrame</i>	The camera will only acquire one single image. Further trigger events will be ignored until acquisition is stopped and restarted.
<i>MultiFrame</i>	The camera will acquire the number of images 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, the camera will continuously acquire images until acquisition stop is triggered.

## AcquisitionStart

Starts the Acquisition of the device.

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>	N/A
<b>Category</b>	/AcquisitionControl

## AcquisitionStatus

Reads 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>	N/A
<b>Category</b>	/AcquisitionControl
Possible values	Description
<i>true</i>	Device is doing the selected activity.
<i>false</i>	Device is not doing the selected activity.

## 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
Possible values	Description
<i>Acquisition Active</i>	Device is currently doing an acquisition of one or many frames.
<i>Acquisition Transfer</i>	Device is currently transferring an acquisition of one or many frames.

## AcquisitionStop

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

It is mainly used when **AcquisitionMode** is *Continuous* but 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>	N/A
<b>Category</b>	/AcquisitionControl

## ExposureAuto

Sets the auto exposure mode.

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>	N/A
<b>Category</b>	/AcquisitionControl

Possible values	Description
<i>Off</i>	Automatic mode is off.
<i>Once</i>	Automatic exposure occurs until the target value of the selected auto control algorithm is achieved, then <b>ExposureAuto</b> returns to <i>Off</i> .
<i>Continuous</i>	Automatic exposure always runs.

## ExposureMode

Sets 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>	N/A
<b>Category</b>	/AcquisitionControl
<b>Possible values</b>	<b>Description</b>
<i>Timed</i>	Sets the Exposure time when ExposureMode is <i>Timed</i> and ExposureAuto is <i>Off</i> .

## ExposureTime

Sets 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>	ExposureAutoMin, ExposureAutoMax, AcquisitionFrameRate
<b>Category</b>	/AcquisitionControl
<b>Possible values</b>	<b>Description</b>
(Camera specific)	Minimum
(Camera specific)	Maximum
(Camera specific)	Interval

## TriggerActivation

Specifies 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>	N/A
<b>Category</b>	/AcquisitionControl

Possible values	Description
<i>RisingEdge</i>	Rising edge trigger
<i>FaLLingEdge</i>	Falling edge trigger
<i>AnyEdge</i>	Rising or falling edge
<i>LevelHigh</i>	Active high signal
<i>LevelLow</i>	Active low signal

## TriggerMode

Controls if the selected trigger is active.

<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>	N/A
<b>Category</b>	/AcquisitionControl

Possible values	Description
<i>Off</i>	Trigger disabled.
<i>On</i>	Trigger enabled

## 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, TriggerSoftware, TriggerSource, TriggerActivation
<b>Category</b>	/AcquisitionControl



Possible values	Description
<i>Acquisition Start</i>	The trigger that starts the acquisition process.
<i>Acquisition Active</i>	Selects a trigger that controls the duration of the Acquisition of one or many frames. The Acquisition is activated when the trigger signal becomes active and terminated when it goes back to the inactive state.
<i>FrameStart</i>	The trigger that starts each image (when acquisition is running).

## TriggerSoftware

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>	N/A
<b>Category</b>	/AcquisitionControl

## TriggerSource

Specifies the internal signal or physical input Line to use as the trigger source.

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>	N/A
<b>Category</b>	/AcquisitionControl
Possible values	Description <i>(sheet 1 of 2)</i>
<i>Software</i>	Software initiates image capture
<i>Line0</i>	External trigger Line0.

Possible values	Description <i>(sheet 2 of 2)</i>
<i>Line1</i>	External trigger Line1.
<i>Line2</i>	External trigger Line2.
<i>Line3</i>	External trigger Line3.

## AnalogControl

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

## BalanceRatio

Controls ratio of the selected color component to a reference color component. It is used for white balancing.

<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>	N/A
<b>Category</b>	/AnalogControl

Possible values	Description
<i>0.0000</i>	Minimum
<i>8.0000</i>	Maximum
<i>0.0010</i>	Interval

## BalanceRatioSelector

Selects which 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

Possible values	Description
<i>Red</i>	Adjusts the red part of the white balance.
<i>Blue</i>	Adjusts the blue part of the white balance.

## BalanceWhiteAuto

Sets 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

Possible values	Description
<i>Off</i>	Automatic white balance is off.
<i>Once</i>	Automatic white balance is on for once only. Once it is adjusted it will be set or <i>Off</i> .
<i>Continuous</i>	Automatic white balance is continuously adjusted.

## BlackLevel

Controls the analog black level as an absolute physical value.

This 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>	N/A
<b>Category</b>	/AnalogControl

Possible values	Description
(Camera specific)	Minimum
(Camera specific)	Maximum
<i>1.0000</i>	Interval

## BlackLevelSelector

Selects which Black Level is 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
<b>Possible values</b>	<b>Description</b>
<i>ALL</i>	All Black Levels are controlled.

## Gain

Controls the selected gain [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
<b>Possible values</b>	<b>Description</b>
(Camera specific)	Minimum
(Camera specific)	Maximum
<i>0.1000</i>	Interval

## GainAuto

Sets the auto gain mode.

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>	N/A
<b>Category</b>	/AnalogControl
<b>Possible values</b>	<b>Description</b>
<i>Off</i>	Auto gain mode is off.
<i>Once</i>	Auto gain mode is on for once only. Once it is adjusted, it will be set to <i>Off</i> .
<i>Continuous</i>	Auto gain mode is continuously adjusted.

## GainSelector

Selects which Gain is 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, GainAutoMin, GainAutoMax
<b>Category</b>	/AnalogControl
<b>Possible values</b>	<b>Description</b>
<i>ALL</i>	All Gains are controlled.

## Gamma

Controls the gamma correction of pixel intensity.

This is typically used to compensate for non-linearity of the display system (such as CRT).

<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>	N/A
<b>Category</b>	/AnalogControl

Possible values	Description
<i>0.4000</i>	Minimum
<i>2.4000</i>	Maximum
<i>0.0500</i>	Interval

## AutoModeControl

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

## AutoModeRegionHeight

Defines the height of the window 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

Possible values	Description
(Camera specific)	Minimum
(Camera specific)	Maximum
(Camera specific)	Interval

## AutoModeRegionOffsetX

Defines 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



Possible values	Description
(Camera specific)	Minimum
(Camera specific)	Maximum (=sensor width minus the current value of <b>AutoModeRegionOffsetX</b> )
(Camera specific)	Interval

## AutoModeRegionOffsetY

Defines 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

Possible values	Description
(Camera specific)	Minimum
(Camera specific)	Maximum (=sensor height minus the current value of <b>AutoModeRegionOffsetY</b> )
(Camera specific)	Interval

## 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

Possible values	Description
AutoModeRegion0	Name of the region selected.

## AutoModeRegionWidth

Defines 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

Possible values	Description
(Camera specific)	Minimum
(Camera specific)	Maximum
(Camera specific)	Interval

## BalanceWhiteAutoRate

The rate at which the auto function changes 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>	Integer
<b>Access</b>	R/W
<b>Affected features</b>	BalanceWhiteAutoTolerance
<b>Category</b>	/AutoModeControl

Possible values	Description
1	Minimum
100	Maximum
1	Interval

## BalanceWhiteAutoTolerance

Tolerance in variation from the ideal white balance value in which the algorithm will not react.

<b>Display name</b>	Balance White Auto 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>	BalanceWhiteAutoRate
<b>Category</b>	/AutoModeControl
Possible values	Description
0	Minimum
50	Maximum
1	Interval

## ExposureAutoMax

Maximum for auto exposure control value.

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
Possible values	Description
(Camera specific)	Minimum
(Camera specific)	Maximum
(Camera specific)	Interval

## ExposureAutoMin

Minimum for auto exposure control value.

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
Possible values	Description
(Camera specific)	Minimum
(Camera specific)	Maximum
(Camera specific)	Interval

## GainAutoMax

Maximum for auto gain control value.

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
Possible values	Description
(Camera specific)	Minimum
(Camera specific)	Maximum
(Camera specific)	Interval

## GainAutoMin

Minimum for auto gain control value.

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
Possible values	Description
(Camera specific)	Minimum
(Camera specific)	Maximum
(Camera specific)	Interval

## 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>	N/A
<b>Category</b>	/AutoModeControl
Possible values	Description
<i>MinimizeNoise</i>	The intensity controller gives precedence to image noise.
<i>MinimizeBlur</i>	The intensity controller gives precedence to image blur.

## IntensityControllerAlgorithm

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

<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>	N/A
<b>Category</b>	/AutoModeControl
<b>Possible values</b>	<b>Description</b>
<i>Mean</i>	Target a particular mean value of all measured pixels within the <code>AutoModeRegion</code> area.
<i>FitRange</i>	Adjust the maximum pixel value within the <code>AutoModeRegion</code> area to fit the sensor dynamic range.

## IntensityControllerOutliersBright

Defines 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>	N/A
<b>Category</b>	/AutoModeControl
<b>Possible values</b>	<b>Description</b>
<i>0.00</i>	Minimum
<i>10.00</i>	Maximum
<i>0.01</i>	Interval

## IntensityControllerOutliersDark

Defines 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>	N/A
<b>Category</b>	/AutoModeControl

Possible values	Description
<i>0.00</i>	Minimum
<i>10.00</i>	Maximum
<i>0.01</i>	Interval

## IntensityControllerRate

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

This rate also defines the period where 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>	N/A
<b>Category</b>	/AutoModeControl

Possible values	Description
<i>1</i>	Minimum
<i>100</i>	Maximum

## IntensityControllerRegion

The subregion of the image where 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>	Integer
<b>Access</b>	R/W
<b>Affected features</b>	N/A
<b>Category</b>	/AutoModeControl

Possible values	Description
<i>FullImage</i>	The intensity controller works on the full sensor area.
<i>AutoModeRegion1</i>	The intensity controller works on the defined AutoModeRegion.

## 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
Possible values	Description
<i>IntensityController1</i>	Intensity controller selected.

## IntensityControllerTarget

Target intensity value for auto intensity control.

<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>	N/A
<b>Category</b>	/AutoModeControl
Possible values	Description
<i>10.0000</i>	Minimum
<i>90.0000</i>	Maximum
<i>0.0001</i>	Interval

## IntensityControllerTolerance

Tolerance in variation from the target value in which the algorithm will not react.

<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>	N/A
<b>Category</b>	/AutoModeControl
<b>Possible values</b>	<b>Description</b>
<i>0</i>	Minimum
<i>50</i>	Maximum
<i>1</i>	Interval

## BufferHandlingControl

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

## MaxDriverBuffersCount

Maximum number of driver buffers used by the acquisition engine.

<b>Display name</b>	Max Driver Buffers Count
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Integer
<b>Access</b>	R/W
<b>Affected features</b>	N/A
<b>Category</b>	/BufferHandlingControl

Possible values	Description
1	Minimum
4096	Maximum
1	Interval

## StreamAnnounceBufferMinimum

Minimal number of buffers to announce to enable selected buffer handling mode. Corresponds to the `STREAM_INFO_BUF_ANNOUNCE_MIN` command of `DSGetInfo` function.

<b>Display name</b>	Stream Announce Buffer Minimum
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Access</b>	R
<b>Affected features</b>	N/A
<b>Category</b>	/BufferHandlingControl

## StreamAnnouncedBufferCount

Number of announced (known) buffers on this stream. Corresponds to the `STREAM_INFO_NUM_ANNOUNCED` command of `DSGetInfo` function.

<b>Display name</b>	Stream Announced Buffer Count
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Integer
<b>Access</b>	R
<b>Affected features</b>	N/A
<b>Category</b>	/BufferHandlingControl
<b>Possible values</b>	<b>Description</b>
	0 Minimum
9223372036854775807	Maximum

## StreamBufferHandlingMode

Available acquisition modes of this stream.

<b>Display name</b>	Stream Buffer Handling Mode
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R
<b>Affected features</b>	StreamAcquisitionModeSelector
<b>Category</b>	/BufferHandlingControl
<b>Possible values</b>	<b>Description</b>
<i>Default</i>	Default stream buffer handling.

## CorrectionControl

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

## 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>	CorrectionDataSize, CorrectionEntryType
<b>Category</b>	/CorrectionControl

Possible values	Description
<i>FixedPattern NoiseCorrection</i>	Fixed pattern noise correction selected.

## CorrectionInfo

Information section of 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>	(Category)

## CorrectionDataSize

Defines 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>Access</b>	R

<b>Affected features</b>	N/A
<b>Category</b>	/CorrectionControl/CorrectionInfo

## CorrectionEntryType

Defines 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>Access</b>	R
<b>Affected features</b>	N/A
<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

Identifier of the product family of the device.

<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>	N/A
<b>Category</b>	/DeviceControl

## DeviceFirmwareID

This feature holds one or a list of Firmware IDs of the camera. It is depending on the `DeviceFirmwareIDSelector` feature.

<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>	N/A
<b>Category</b>	/DeviceControl

## DeviceFirmwareIDSelector

Selects the `DeviceFirmwareID` to read.

<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>	N/A
<b>Category</b>	/DeviceControl
<b>Possible values</b>	<b>Description</b>
<i>Current</i>	Selects the current firmware version
<i>Supported</i>	Selects a firmware version other than the current.

## DeviceFirmwareVersion

Version of the firmware in the device.

<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>	N/A
<b>Category</b>	/DeviceControl/DeviceControl

## DeviceFirmwareVersionSelector

Selects the DeviceFirmwareVersion to read.

<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>	N/A
<b>Category</b>	/DeviceControl
<b>Possible values</b>	<b>Description</b>
<i>Current</i>	Selects the current firmware version.
<i>Programmed</i>	Selects a firmware version other than the current.

## DeviceGenCPVersionMajor

Major version of the GenCP supported by the device.

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

## DeviceGenCPVersionMinor

Minor version of the GenCP supported by the device.

<b>Display name</b>	Device GenCP Version Minor
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<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 Device.

<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>	N/A
<b>Category</b>	/DeviceControl

Possible values	Description
0	Minimum
10	Maximum



## DeviceIndicatorMode

Controls the behavior of the indicators (such as LEDs) showing the status of the Device.

<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>	N/A
<b>Category</b>	/DeviceControl
<b>Possible values</b>	<b>Description</b>
<i>Inactive</i>	Indicator is not active.
<i>Active</i>	Indicator is active.
<i>ErrorStatus</i>	Indicator is in error status.

## DeviceLinkSpeed

Indicates 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>	N/A
<b>Category</b>	/DeviceControl

## DeviceLinkThroughputLimit

Limits the maximum bandwidth of the data that will be streamed out by the device on the selected Link.

If necessary, delays will be uniformly inserted between transport layer packets in order to control the peak bandwidth. Depending on the performance of the host

system, it may be necessary to activate and/or deactivate the limit to avoid missing frames.

<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>	ExposureAutoMin, ExposureAutoMax, ExposureTime, AcquisitionFrameRate
<b>Category</b>	/DeviceControl
<b>Possible values</b>	<b>Description</b>
<i>3275000</i>	Minimum
<i>450000000</i>	Maximum

## DeviceLinkThroughputLimitMode

Controls if the `DeviceLinkThroughputLimit` is active.

When disabled, lower level TL specific features are expected to control the throughput.

When 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
<b>Possible values</b>	<b>Description</b>
<i>On</i>	<code>DeviceLinkThroughputLimit</code> is enabled.
<i>Off</i>	<code>DeviceLinkThroughputLimit</code> is disabled.

## DeviceManufacturerInfo

Manufacturer information about the device.

<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>	N/A
<b>Category</b>	/DeviceControl

## DeviceModelName

Model name of the device.

<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>	N/A
<b>Category</b>	/DeviceControl

## DeviceReset

Resets the device to its power up state.

After reset, the device 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>	N/A
<b>Category</b>	/DeviceControl

## DeviceSFNCVersionMajor

Major version of the SFNC that was used to create the device's GenICam XML.

<b>Display name</b>	Device SFNC Version Major
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Access</b>	R
<b>Affected features</b>	N/A
<b>Category</b>	/DeviceControl

## DeviceSFNCVersionMinor

Minor version of the SFNC that was used to create the device's GenICam XML.

<b>Display name</b>	Device SFNC Version Minor
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Access</b>	R
<b>Affected features</b>	N/A
<b>Category</b>	/DeviceControl

## DeviceSFNCVersionSubMinor

Sub minor version of the SFNC that was used to create the device's GenICam XML.

<b>Display name</b>	Device SFNC Version Sub Minor
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Access</b>	R
<b>Affected features</b>	N/A
<b>Category</b>	/DeviceControl

## DeviceScanType

Scan type of the sensor of the device.

<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>	N/A
<b>Category</b>	/DeviceControl

## DeviceSerialNumber

Device's serial number.

This string is a unique identifier of the device.

<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>	N/A
<b>Category</b>	/DeviceControl

## DeviceTemperature

Device temperature, 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>	N/A
<b>Category</b>	/DeviceControl

Possible values	Description
-214748365	Minimum
214748364.7	Maximum

## DeviceTemperatureSelector

Selects the location within the device, where the temperature will 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>Possible values</b>	<b>Description</b>
<i>Mainboard</i>	Mainboard temperature will be measured.

## DeviceUserID

User-programmable device identifier. This string must not have more than 63 characters.

<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>	N/A
<b>Category</b>	/DeviceControl

## DeviceVendorName

Name of the manufacturer of the device.

<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>	N/A
<b>Category</b>	/DeviceControl

## DeviceVersion

Version of the device.

<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>	N/A
<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

Controls 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>	N/A
<b>Category</b>	/DigitalIOControl

Possible 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

Controls if the physical Line is 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>	LineSource
<b>Category</b>	/DigitalIOControl

Possible values	Description
<i>Input</i>	Physical line is used for signal input.
<i>Output</i>	Physical line is used for signal output.



## LineSelector

Selects the physical line (or pin) of the external device 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

Possible values	Description
<i>Line0</i>	Line 0 is selected for configuration.
<i>Line1</i>	Line 1 is selected for configuration.
<i>Line2</i>	Line 2 is selected for configuration.
<i>Line3</i>	Line 3 is selected for configuration.

## LineSource

Selects which internal acquisition or I/O source signal to output on the selected Line.

LineMode must be 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>	N/A
<b>Category</b>	/DigitalIOControl

Possible values	Description <i>(sheet 1 of 2)</i>
<i>Off</i>	Outputs no I/O source signal.
<i>Acquisition Active</i>	Outputs the <i>AcquisitionActive</i> I/O source signal.
<i>FrameTrigger Wait</i>	Outputs the <i>FrameTriggerWait</i> I/O source signal.

Possible values	Description <i>(sheet 2 of 2)</i>
<i>Stream0TransferActive</i>	Outputs the <i>Stream0TransferActive</i> I/O source signal.
<i>Line0Signal</i>	Outputs the <i>Line0Signal</i> I/O source signal.
<i>Line1Signal</i>	Outputs the <i>Line1Signal</i> I/O source signal.
<i>Line2Signal</i>	Outputs the <i>Line2Signal</i> I/O source signal.
<i>Line3Signal</i>	Outputs the <i>Line3Signal</i> I/O source signal.

## LineStatus

Returns 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>	N/A
<b>Category</b>	/DigitalIOControl

## LineStatusAll

Returns the current status of the all input or output Line.

<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>	
<b>Category</b>	DigitalIOControl

Possible 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

Defines the intermediate access buffer that allows the exchange of data between the device 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>	Raw
<b>Access</b>	R
<b>Affected features</b>	N/A
<b>Category</b>	/FileAccessControl

## FileAccessLength

Controls the Length of the mapping between the device file storage and the FileAccessBuffer.

<b>Display name</b>	File Access Length
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Access</b>	R
<b>Affected features</b>	N/A
<b>Category</b>	/FileAccessControl

## FileAccessOffset

Controls the Offset of the mapping between the device file storage and the FileAccessBuffer.

<b>Display name</b>	File Access Offset
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Access</b>	R

<b>Affected features</b>	N/A
<b>Category</b>	/FileAccessControl

## FileOpenMode

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

<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>	N/A
<b>Category</b>	/FileAccessControl

## 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

Represents the file operation result.

For Read or Write operations, the number of successfully read/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>	N/A
<b>Category</b>	/FileAccessControl

## FileOperationSelector

Selects the target operation for the selected file in the device.

This Operation is executed when the FileOperationExecute feature is called.

<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

Possible values	Description
<i>Open</i>	Opens the file selected by FileSelector.
<i>Close</i>	Closes the file selected by FileSelector.
<i>Read</i>	Reads from the file selected by FileSelector.
<i>Write</i>	Writes to the file selected by FileSelector.
<i>Delete</i>	Deletes the file selected by FileSelector.

## FileOperationStatus

Represents 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>	N/A
<b>Category</b>	/FileAccessControl

Possible values	Description
<i>Success</i>	(Default) File operation was successful.
<i>Failure</i>	File operation failed.

## FileProcessStatus

Represents 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>	N/A
<b>Category</b>	/FileAccessControl

Possible values	Description
<i>None</i>	(Default) No extended status.
<i>UpdateNot Required</i>	File operation need not be continued.

## FileSelector

Selects the target file in the device.

<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

Possible values	Description
<i>Firmware</i>	Firmware is target for file operations.
<i>UserData</i>	User data is target for file operations.
<i>DefectPixel Correction</i>	Defect pixel correction is target for file operations.
<i>FixedPattern NoiseCorrection</i>	Fixed Pattern noise correction is target for file operations.

## FileSize

Represents 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>Access</b>	R
<b>Affected features</b>	N/A
<b>Category</b>	/FileAccessControl

## FileStatus

Represents the status of the selected file.

Allied Vision feature.

<b>Display name</b>	File Status
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R
<b>Affected features</b>	N/A
<b>Category</b>	/FileAccessControl

Possible values	Description
<i>Open</i>	(Default) The selected File is currently open.
<i>Closed</i>	The selected File is currently closed.

## ImageFormatControl

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

### Height

Height of the image provided by the device.

<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

Possible values	Description
(Camera specific)	Minimum
(Camera specific)	Maximum
(Camera specific)	Interval

### HeightMax

Maximum height of the image.

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>	N/A
<b>Category</b>	/ImageFormatControl
<b>Possible values</b>	<b>Description</b>
(Camera specific)	Minimum
(Camera specific)	Maximum

## OffsetX

Horizontal offset from the origin to the region of interest.

<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
<b>Possible values</b>	<b>Description</b>
$\emptyset$	Minimum
(Camera specific)	Maximum (equals MaxWidth minus Width)

## OffsetY

Vertical offset from the origin to the region of interest.

<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

Possible values	Description
(Camera specific)	Minimum
(Camera specific)	Maximum (equals <b>MaxHeight</b> minus <b>Height</b> )

## PixelFormat

Format of the pixels provided by the device.

It represents all the information provided by PixelCoding, PixelSize, 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, ExposureAutoMin, ExposureAutoMax, ExposureTime, AcquisitionFrameRate, Width, OffsetX, AutoModeRegionOffsetX, AutoModeRegionWidth, PayloadSize, WidthMax, Height, OffsetY, AutoModeRegionOffsetY, AutoModeRegionHeight, HeightMax, PixelSize, BlackLevel
<b>Category</b>	/ImageFormatControl

Possible values	Description
(Camera specific)	Pixel format data

## PixelSize

Total size of a pixel of the image.

<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>	N/A
<b>Category</b>	/ImageFormatControl

## ReverseX

Flip horizontally the image sent by the device.

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>	ExposureAutoMin, ExposureAutoMax, ExposureTime, AcquisitionFrameRate
<b>Category</b>	/ImageFormatControl
<b>Possible values</b>	<b>Description</b>
<i>True</i>	Image is flipped horizontally.
<i>False</i>	Image is not flipped horizontally.

## ReverseY

Flip vertically the image sent by the device.

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>	N/A
<b>Category</b>	/ImageFormatControl
<b>Possible values</b>	<b>Description</b>
<i>True</i>	Image is flipped vertically.
<i>False</i>	Image is not flipped vertically.

## SensorHeight

Effective height of the sensor.

<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

Effective width of the sensor.

<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

## TestPattern

Selects the type of test pattern that is generated by the device as image source.

<b>Display name</b>	Test Pattern
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R/W
<b>Affected features</b>	N/A
<b>Category</b>	/ImageFormatControl

<b>Possible values</b>	<b>Description</b> ( <i>sheet 1 of 2</i> )
<i>Off</i>	No test pattern is displayed.
<i>GreyDiagonal Ramp</i>	Grey diagonal ramp test pattern.
<i>GreyDiagonal RampMoving</i>	Moving grey diagonal ramp test pattern.

Possible values	Description <i>(sheet 2 of 2)</i>
<i>RGBDiagonalRamp</i>	RGB diagonal ramp test pattern.
<i>RGBDiagonalRamp Moving</i>	Moving RGB diagonal test pattern.

## Width

Width of the image provided by the device.

<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

Possible values	Description
(Camera specific)	Minimum
(Camera specific)	Maximum
(Camera specific)	Interval

## WidthMax

Maximum width of the image.

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>	N/A
<b>Category</b>	/ImageFormatControl

Possible values	Description
(Camera specific)	Minimum
(Camera specific)	Maximum

## ImageProcessingControl

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

## ColorInterpolation

Defines the `ColorInterpolation` filter.

<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>	N/A
<b>Category</b>	/ImageProcessingControl

Possible values	Description
<i>Mono</i>	Selects no algorithm for debayering.
<i>Basic2x2</i>	Selects a basic 2×2 algorithm for debayering.
<i>Bilinear3x3</i>	Selects a standard 3×3 algorithm for debayering.
<i>HighQuality Linear5x5</i>	Selects a high quality linear interpolation for debayering.

## StreamInformation

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

## StreamID

Device unique ID for the stream, for instance a GUID.

<b>Display name</b>	Stream ID
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	String
<b>Access</b>	R
<b>Affected features</b>	N/A
<b>Category</b>	/StreamInformation

## StreamIsGrabbing

Flag indicating whether the acquisition engine is started or not.

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

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



## StreamType

Transport layer type of the Data Stream.

<b>Display name</b>	Stream Type
<b>Standard</b>	SFNC
<b>Origin of feature</b>	Camera
<b>Feature type</b>	Enumeration
<b>Access</b>	R
<b>Affected features</b>	N/A
<b>Category</b>	/StreamInformation
<b>Possible values</b>	<b>Description</b>
<i>True</i>	Acquisition engine is started.
<i>False</i>	Acquisition engine is not started.

## 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 device's pending acknowledge feature.

When this feature is written, the device waits a time period corresponding to the value of TestPendingAck before acknowledging the write.

<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>Affected features</b>	N/A
<b>Category</b>	/TestControl

Possible values	Description
0	Minimum
60000	Maximum

## Transport Layer Control

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

### PayloadSize

Provides 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.

This is 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>	N/A
<b>Category</b>	/TransportLayerControl

Possible values	Description
$\emptyset$	Minimum
(Camera specific)	Maximum

## UserSetControl

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

## UserSetDefault

Selects the feature User Set to load and make active by default when the device 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>	N/A
<b>Category</b>	/UserSetControl

Possible values	Description
<i>Default</i>	Set to the default user set.

## UserSetLoad

Loads the User Set specified by UserSetSelector to the device and makes it active.

<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, TestPattern, PixelFormat, PixelSize, BlackLevel, IntensityControllerOutliersDark, IntensityControllerOutliersBright, IntensityControllerTolerance, IntensityControllerTarget, IntensityControllerAlgorithm, IntensityControllerRate, ExposureAuto, GainAuto, GainAutoMin, GainAutoMax, BalanceWhiteAuto, BalanceWhiteAutoRate, BalanceWhiteAutoTolerance, IntensityAutoPrecedenceMode, BlackLevelCompensation, AcquisitionMode, AcquisitionFrameCount, AcquisitionFrameRateMode, AcquisitionFrameRateEnable, TriggerMode, TriggerSource, TriggerActivation, ExposureMode, Gain, BalanceRatio, Gamma, LineMode, LineSource, LineInverter, UserOutputValue, ColorInterpolation
<b>Category</b>	/UserSetControl

## UserSetSelector

Selects the feature User Set to load, save or configure.

<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, TestPattern, PixelFormat, PixelSize, BlackLevel, IntensityControllerOutliersDark, IntensityControllerOutliersBright, IntensityControllerTolerance, IntensityControllerTarget, IntensityControllerAlgorithm, IntensityControllerRate, ExposureAuto, GainAuto, GainAutoMin, GainAutoMax, BalanceWhiteAuto, BalanceWhiteAutoRate, BalanceWhiteAutoTolerance, IntensityAutoPrecedenceMode, BlackLevelCompensation, AcquisitionMode, AcquisitionFrameCount, AcquisitionFrameRateMode, AcquisitionFrameRateEnable, TriggerMode, TriggerSource, TriggerActivation, ExposureMode, Gain, BalanceRatio, Gamma, LineMode, LineSource, LineInverter, UserOutputValue, ColorInterpolation, UserSetSave
<b>Category</b>	/UserSetControl
<b>Possible values</b>	<b>Description</b>
<i>Default</i>	Set to the default user set.
<i>UserSet1</i>	Set to user set 1.
<i>UserSet2</i>	Set to user set 2.
<i>UserSet3</i>	Set to user set 3.
<i>UserSet4</i>	Set to user set 4.

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