



GigE VISION CAMERAS

GigE Features Reference

V5.5.0

Legal notice

**Read this reference carefully**

Read this reference to fully understand your camera's 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 © 2019 Allied Vision GmbH. All rights reserved.

Contents

Legal notice	2
Copyright and trademarks	2
Contact us	7
Introduction	8
About this document	9
Document history	10
Reference conventions	13
Styles	13
Access	13
Visibility	14
Symbols	14
Acronyms and abbreviations	14
Additional information	16
Allied Vision software	16
Third-party software	16
GigE camera and driver features	17
Acquisition	18
AcquisitionAbort	18
AcquisitionFrameCount	18
AcquisitionFrameRateAbs	19
AcquisitionFrameRateLimit	19
AcquisitionMode	20
AcquisitionStart	21
AcquisitionStop	21
RecorderPreEventCount	21
SensorShutterMode	22
Trigger	24
ActionControl	29
ActionDeviceKey	30
ActionGroupKey	30
ActionGroupMask	31
ActionSelector	32
BufferHandlingControl	33
StreamAnnounceBufferMinimum	33
StreamAnnouncedBufferCount	33
StreamBufferHandlingMode	34

Controls	35
BlackLevelControl	35
CCDTemperatureOK	36
ColorTransformationControl	36
DSPSubregion	39
DefectMaskEnable	41
EdgeFilter	42
EFLensControl	43
Exposure	51
FpncControls	60
GainControl	61
Gamma	65
Hue	66
IODMode	67
Iris	68
LensDrive	73
LUTControl	75
NirMode	79
Saturation	80
SubstrateVoltage	81
Whitebalance	81
DeviceStatus	85
DeviceTemperature	85
DeviceTemperatureSelector	85
EventControl	86
EventData	86
EventID	87
EventNotification	94
EventSelector	94
EventsEnable1	95
GigE	96
BandwidthControlMode	96
ChunkModeActive	97
Configuration	99
Current	99
GVCP	100
GevSCPSPacketSize	103
NonImagePayloadSize	104
PTP	104
PayloadSize	107
Persistent	107
StreamBytesPerSecond	108
StreamFrameRateConstrain	109
StreamHold	110
Timestamp	111

IO	113
StatusLED	113
Strobe	115
Syncln	117
SyncOut	119
ImageFormat	122
Height	122
HeightMax	122
ImageSize	123
OffsetX	123
OffsetY	123
PixelFormat	124
SensorReadoutMode	127
Width	128
WidthMax	128
ImageMode	129
BinningHorizontal	129
BinningHorizontalMode	129
BinningVertical	130
BinningVerticalMode	130
DecimationHorizontal	131
DecimationVertical	132
ReverseX	133
ReverseY	133
SensorDigitizationTaps	134
SensorHeight	134
SensorTaps	135
SensorWidth	135
Info	136
GevDeviceMACAddress	136
DeviceFirmwareVersion	136
DeviceID	136
DeviceModelName	137
DevicePartNumber	137
DeviceScanType	137
DeviceUserID	138
DeviceVendorName	138
FirmwareVerBuild	139
FirmwareVerMajor	139
FirmwareVerMinor	139
SensorBits	140
SensorType	140
SavedUserSets	141

UserSetDefaultSelector	141
UserSetLoad	141
UserSetSave.....	142
UserSetSelector.....	142
Stream	143
Info.....	143
Multicast	143
Settings	145
Statistics.....	150
StreamInformation.....	155
StreamID	155
StreamType	155
Index	156

Contact us

Connect with Allied Vision by function

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

Find an Allied Vision office or distributor

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

General inquiries

info@alliedvision.com

Technical support

support@alliedvision.com

Sales offices

Europe, Middle East, and Africa: +49 36428 677-0

North, Central, and South America: +1 (877) USA-1394

Asia-Pacific: +65 6634-9027

China: +86 (21) 64861133

Headquarters

Allied Vision Technologies GmbH

Taschenweg 2a

07646 Stadtroda, Germany

Tel: +49 36428 677-0

Fax: +49 36428 677-28

Geschäftsführer (Managing Directors): Andreas Gerke, Peter Tix

Registration Office: AG Jena HRB 208962

Tax ID: DE 184383113

Introduction



This chapter includes:

- About this document
- Document history
- Layout styles and symbols used in this reference
- Abbreviations and acronyms used in this reference

About this document

This document describes the standard and advanced camera features for Allied Vision GigE cameras as seen from Vimba Viewer.

This document applies to the GigE Vision camera families listed below and describes their features:

Bigeye G	Prosilica GB	Prosilica GS
Mako G	Prosilica GC	Prosilica GT
Manta	Prosilica GE	Prosilica GX

Some features are not available for all camera models.

Example: White balance is not available for monochrome cameras.

Some features are implemented in the cameras, but are not always available.

Examples:

- Color correction features are implemented in Manta, Mako G, and Prosilica GT color cameras, but not the Prosilica GB, Prosilica GC, Prosilica GE, Prosilica GS, or Prosilica GX cameras.
- Color correction is supported in Manta, Mako G, and Prosilica GT. It is not available in color cameras if they are operated with Bayer pixel formats, but works if debayering is done within the camera.



Further information available online

For more information about Allied Vision Cameras, visit our website:

www.alliedvision.com/en/products/cameras



GigE IR and scientific camera and driver features chapter has been moved to the Goldeye G/CL Features Reference.

Document history

Version	Date	Remarks
V5.5.0	2019-Jul-08	<ul style="list-style-type: none"> Updated defect pixel feature descriptions Editorial updates
V5.4.0	2018-Mar-03	<ul style="list-style-type: none"> Added MaxNonOverlappedExposure Moved FpncEnable under FpncControls Updated cover image Added note table to AcquisitionRecord
V5.3.2	2017-Mar-17	<ul style="list-style-type: none"> Updated Action Command descriptions and supported Vimba version
V5.3.1	2017-Jan-27	<ul style="list-style-type: none"> Corrected Action Command access level to Write only.
V5.3.0	2016-Nov-10	<ul style="list-style-type: none"> Removed breadcrumbs but added Category field to tables Corrected formula to convert DN to F-Stop value in Chunk Data. Added little-endian and big-endian comments to table under ChunkModeActive.
V5.2.0	2016-Oct-12	<ul style="list-style-type: none"> Added SensorReadoutMode feature Added breadcrumbs to map feature location in Vimba user interface Added GenICam Standard Feature Naming Convention identifiers Added visibility row. Visibility identifiers including beginner, expert, and guru are in-line with GenICam classification Updated Trigger over Ethernet Action Command description
V5.1.0	2016-Jul-08	<ul style="list-style-type: none"> Added new ActionControl category of features.
V5.0.0	2016-May-10	<ul style="list-style-type: none"> Moved the GigE IR and scientific camera and driver features chapter to the new Goldeye G and CL Features Reference. Added EventExposureStart event. When enabled, will send an event from the camera when the exposure start event occurs. Event ID: 40019 Added affected features to tables Defined EventIDs Added SensorDigitizationTaps and SensorTaps features Added Fpnc feature Various minor updates and edits
V4.0.0	2015-Aug-25	<ul style="list-style-type: none"> Updated the document according to Allied Vision's new layout and brand guidelines Added GevIPConfigurationApply feature in GigE camera and driver features chapter
V3.2.0	2015-Mar-20	<ul style="list-style-type: none"> Replaced old links with new Allied Vision website links Changed this documents name from 'GigE Camera and Driver Features' to 'GigE Features Reference'

Table 1: Document history (sheet 1 of 3)

Version	Date	Remarks
V3.1.0	2015-Mar-10	<ul style="list-style-type: none"> Added <code>EFLensControl</code> Updated <code>DefectMaskEnable</code>, <code>PtpMode</code>, and <code>PtpStatus</code> Updated <code>ChunkModeActive</code> and <code>SensorShutterMode</code>
V3.0.0	2015-Jan-15	<ul style="list-style-type: none"> Updated Allied Vision logo Updated <code>Statistics</code> category in GigE camera and driver features chapter Renamed: <ul style="list-style-type: none"> Chapter 'AVT GigE camera and driver features' to GigE camera and driver features Following changes are made in the GigE camera and driver features chapter: <ul style="list-style-type: none"> Added <code>SensorShutterMode</code>, <code>BinningVerticalMode</code>, <code>BinningHorizontalMode</code>, and <code>DefectMaskEnable</code> Updated <code>BinningHorizontal</code> and <code>BinningVertical</code> Added <code>PiecewiseLinearHDR</code> option in <code>ExposureMode</code> Added <code>ExposureTimePWL1</code>, <code>ExposureTimePWL1</code>, <code>ThresholdPWL1</code>, and <code>ThresholdPWL1</code> Updated <code>ExposureTimeAbs</code>, <code>ExposureAuto</code>, <code>AcquisitionFrameRateAbs</code>, <code>GainAuto</code>, <code>IrisMode</code>, and <code>BalanceWhiteAuto</code>
V2.0.2	2014-Oct-08	<ul style="list-style-type: none"> Following changes are made in the GigE camera and driver features chapter: <ul style="list-style-type: none"> Updated <code>ChunkModeActive</code>, <code>BinningHorizontal</code>, <code>BinningVertical</code>, <code>DecimationHorizontal</code>, <code>DecimationVertical</code>, <code>PTP</code>, and <code>LUTControl</code> Moved <code>ReverseX</code> under <code>ImageMode</code> category Added <code>ReverseY</code> Removed <code>GainRaw</code> Updated <code>ExposureTimeAbs</code>, <code>GainAuto</code>, and <code>Gain</code> Added <code>ExposureTimeIncrement</code> Removed the <i>other</i> option from <code>ExposureAuto</code> Added <code>TriggerWidth</code> option for <code>ExposureMode</code>
V2.0.1	2014-Aug-15	<ul style="list-style-type: none"> Removed EF lens information from the <code>ChunkModeActive</code> control

Table 1: Document history (sheet 2 of 3)

Version	Date	Remarks
V2.0.0	2014-Jul-22	<ul style="list-style-type: none"> • Created GigE camera and driver features chapter by merging camera controls and driver controls chapters of V1.0.1 of this document • Added BufferHandlingControl and StreamInformation categories, applicable for Vimba version 1.3 or higher • Replaced GVCPHBInterval with GevHeartbeatTimeout and GevHeartbeatInterval, applicable for Vimba version 1.3 or higher • Updated the following in GigE camera and driver features chapter <ul style="list-style-type: none"> - Updated PixelFormat, Hue, Saturation, and ColorTransformationControl - For Vimba Viewer V1.1.1 or higher, GevDeviceMACAddress is moved under Info - Updated ChunkModeActive, and AcquisitionFrameRateAbs - Added note on binning in BinningHorizontal and BinningVertical - Removed the EF lens controls from the document until the camera samples are available - Removed FrameTrigger from SyncOutSource
V1.0.1	2013-Sep-06	<ul style="list-style-type: none"> • Added EF lens features • Added ReverseX feature • Updated DefectMaskPixelEnable feature • Updated controls in the Statistics feature • Updated controls in the DeviceStatus feature
V1.0.0	2013-Jul-04	<ul style="list-style-type: none"> • New Features Reference: Release status

Table 1: Document history (sheet 3 of 3)

Reference conventions

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

Styles

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

Table 2: Markup conventions used in this manual

Access

Access level	Description
Read/Write	Feature is read/write.
Read/(Write)	Feature is read only. It may be read/write depending upon the user privilege level
Read/Constant	Feature is read only and the value is constant.
Read	Feature is read and the value may change.
Write	Feature is write only.

Table 3: Feature access

Visibility

Level	Meaning
Beginner	Basic features.
Expert	Features that require a more in-depth knowledge of the camera functionality. This is the preferred visibility level for all advanced features in the cameras.
Guru	Advanced features that might bring the cameras into a state where it will not work properly anymore if it is set incorrectly for the cameras current mode of operation.

Table 4: Feature visibility

Symbols



Practical hint

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



Safety-related instructions to avoid malfunctions

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



Further information available online

This symbol highlights URLs for further information.

Acronyms and terms

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

Acronym or term	Description
Bps	Bytes per second
CCD	Charge-coupled device
CMOS	Complementary metal-oxide semiconductor
dB	Decibel

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

Acronym or term	Description
EF	Electro-Focus
FIFO	First-in first-out
GigE	Gigabit Ethernet
GVCP	GigE Vision Control Protocol
GVSP	GigE Vision Streaming Protocol
HDR	High-dynamic range
Hz	Hertz
I/O	Input/Output
IOD	Image on Demand
LSB	Least significant bit
NIR	Near-Infrared
PTP	Precision Time Protocol
SDK	Software Development Kit
SFNC	Standard Features Naming Convention, GenICam
ToE	Trigger over Ethernet
UDP	User Datagram Protocol

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

Additional information

Allied Vision software

Allied Vision provides a number of software packages, all of which are free of charge and contain the following components:

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



All software packages (including documentation and release notes) provided by Allied Vision can be downloaded at:

www.alliedvision.com/en/support/software-downloads

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 SFNC standard. GenICam-based third-party software automatically connect with Vimba's transport layers. Additionally, Vimba includes the Cognex Adapter for VisionPro.



Allied Vision cameras can be easily used with third party image-processing libraries. Allied Vision partners with all major software providers to ensure full compatibility of our SDK and easy integration of our cameras into your system. For more information see:

www.alliedvision.com/en/products/software/third-party-libraries.html

Please note: Allied Vision does not endorse one product or vendor rather than the other nor provide technical support for third-party solutions. Please contact the respective software vendor for assistance.



Prosilica GT, Prosilica GC, Manta, and Mako G camera families are GenICam SFNC version 1.2.1 compliant. Bigeye G cameras are GenICam SFNC version 1.0 compliant.

GigE camera and driver features



This chapter lists standard and advanced camera and driver features, as seen from Vimba Viewer.

Acquisition

This category includes all features related to image acquisition, including trigger and exposure control. It describes the basic model for acquisition and the typical behavior of the camera.

AcquisitionAbort

Software command used to stop the camera from receiving frame triggers and abort the current acquisition. A partially transferred image is completed. If no acquisition is in progress, the command is ignored.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Command
Access	Write
Visibility	Beginner
Affected features	AcquisitionStart, AcquisitionStop
Category	/Acquisition

AcquisitionFrameCount

Defines the number of frames to capture in a limited sequence of images. Used when `AcquisitionMode = MultiFrame` or `Recorder`. In `Recorder` mode, `AcquisitionFrameCount` cannot exceed `StreamHoldCapacity`.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	1 to 65535
Default value	1
Unit	Frames
Affected features	(not applicable)
Category	/Acquisition

AcquisitionFrameRateAbs

If `TriggerSelector = FrameStart` and either `TriggerMode = Off` or `TriggerSource = FixedRate`, this feature specifies the frame rate. Depending on the exposure duration, the camera may not achieve the frame rate set here.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Float
Access	Read/Write
Visibility	Beginner
Range	Camera dependent
Unit	Frames per second
Affected features	ExposureTimeAbs, AcquisitionFrameRateLimit
Category	/Acquisition

If ExposureMode = <i>Timed</i>	Ensure $[1/ExposureTimeAbs^*] > AcquisitionFrameRateAbs$ to achieve target frame rate.
If ExposureMode = <i>TriggerWidth</i>	Ensure $[1/(external\ trigger\ pulse\ width)] > AcquisitionFrameRateAbs$ to achieve target frame rate.
If ExposureMode = <i>PieceWiseLinearHDR</i>	Ensure the $[1/ExposureTimeAbs^*] > AcquisitionFrameRateAbs$ to achieve target frame rate.
* ExposureTimeAbs in seconds	

AcquisitionFrameRateLimit

The maximum frame rate possible for the current exposure duration and pixel format.

Origin of feature	Camera
Feature type	Float
Access	Read only
Visibility	Beginner
Range	Camera dependent
Unit	Frames per second
Affected features	(not applicable)
Category	/Acquisition

AcquisitionMode

This feature determines the behavior of the camera if acquisition start is triggered.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Possible values	<i>Continuous, SingleFrame, MultiFrame, Recorder</i>
Default value	<i>Continuous</i>
Affected features	(not applicable)
Category	/Acquisition

Value	Description
<i>Continuous</i>	<p>After an acquisition start event, the camera continuously receives frame trigger events.</p> <p>See TriggerSelector and TriggerSource for more information.</p>
<i>SingleFrame</i>	<p>The camera only delivers a single frame trigger event. Further trigger events are ignored until acquisition is stopped and restarted.</p>
<i>MultiFrame</i>	<p>The camera acquires the number of images specified by AcquisitionFrameCount. Further trigger events are ignored until acquisition is stopped and restarted.</p>
<i>Recorder</i>	<p>The camera continuously records images into the camera on-board FIFO image buffer, but does not send them to the host until an AcquisitionRecord trigger signal is received. Further AcquisitionRecord trigger events are ignored until acquisition is stopped and restarted.</p> <p>Combined with RecorderPreEventCount, this feature is useful for returning any number of frames before a trigger event.</p> <p>If an AcquisitionRecord trigger is received, the currently imaging image or acquiring image completes as normal, and then at least one more image is taken. The FIFO volatile image memory is a circular buffer, that starts rewriting images once it is full. Its size is determined by AcquisitionFrameCount.</p>

AcquisitionStart

Software command used to start the camera receiving frame triggers. Valid if `TriggerMode = Off`. See `TriggerSelector = FrameStart` trigger.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Command
Access	Write
Visibility	Beginner
Affected features	AcquisitionStop, AcquisitionAbort
Category	/Acquisition

AcquisitionStop

Software command used to stop the camera from receiving frame triggers. Valid if `TriggerMode = Off`. See `TriggerSelector = FrameStart` trigger.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Command
Access	Write
Visibility	Beginner
Affected features	AcquisitionStart, AcquisitionAbort
Category	/Acquisition

RecorderPreEventCount

Valid if `AcquisitionMode = Recorder`. The number of frames returned before the `AcquisitionRecord` trigger event, with `AcquisitionFrameCount` minus `RecorderPreEventCount` frames being returned after the `AcquisitionRecord` trigger event.



At least one image must be captured after the `AcquisitionRecord` trigger event, for instance, you cannot set `RecorderPreEventCount = 1`, and `AcquisitionFrameCount = 1`.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	1 to 65535
Default value	0
Unit	Frames
Affected features	(not applicable)
Category	/Acquisition

SensorShutterMode

Shutter type of the camera. The following figure illustrates the different sensor shutter modes.

Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Possible values	<i>Global, Rolling, GlobalReset</i>
Default value	<i>Global</i>
Affected features	ExposureTimeAbs, AcquisitionFrameRateLimit, AcquisitionFrameRateAbs, ExposureAutoMin, ExposureAutoMax
Category	/Acquisition

Value	Description
<i>Global</i>	All pixels reset and start exposure at same time. All pixels are shifted to readout at same time. All pixels have the same ExposureTimeAbs.
<i>Rolling</i>	Each row is reset, exposed, and read out in succession from top to bottom of image. All pixels have the same ExposureTimeAbs. This mode is susceptible to motion blur; however, this mode offers enhanced SNR and dynamic range.

Value	Description
<i>GlobalReset</i>	<p>All pixels are reset and start exposure at the same time. Pixels are shifted to readout one line at a time from the top to bottom of the image.</p> <p>This mode does not allow overlapped exposure and readout. In this mode, ExposureTimeAbs is the time from global reset to start of readout of top row. Subsequent rows have a longer exposure time ExposureTimeAbs + (row readout time × row number). This mode offers enhanced SNR and dynamic range with no motion blur, which is useful for strobe applications.</p>

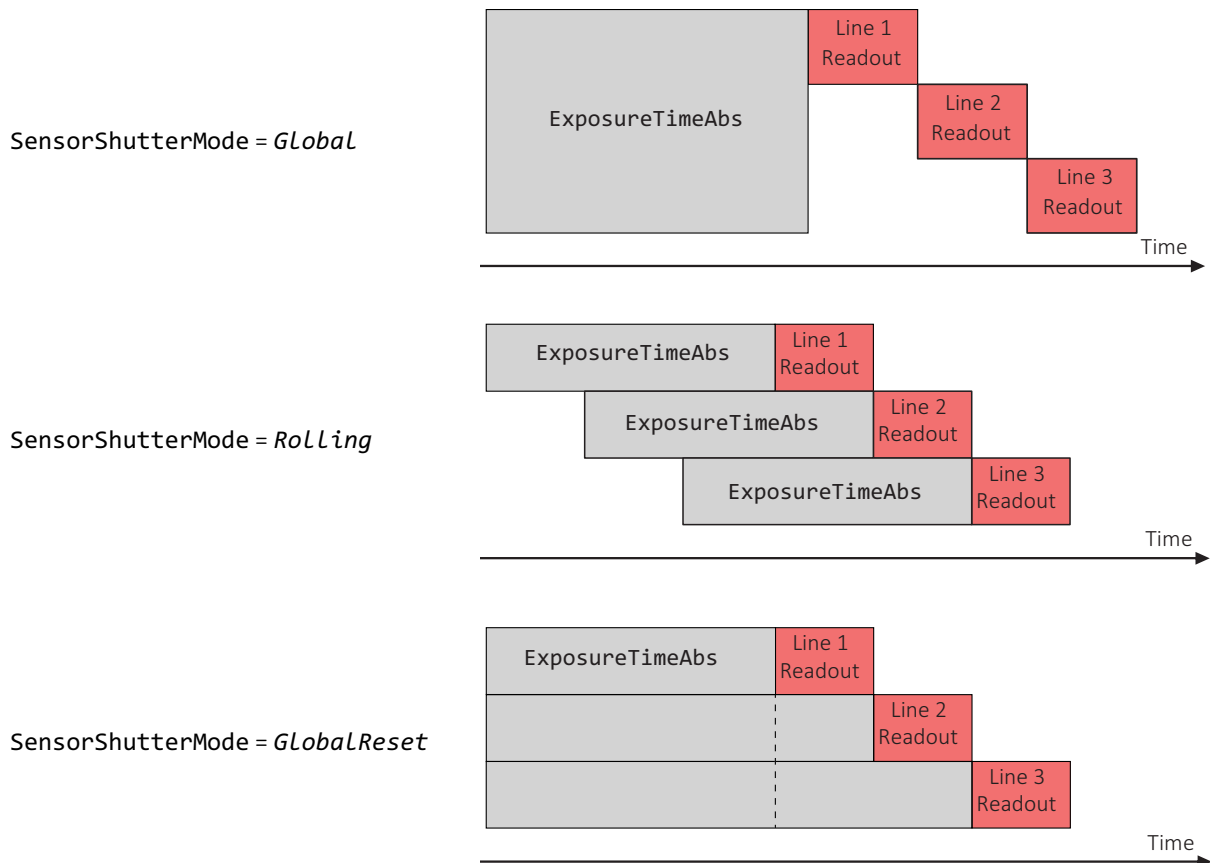


Figure 1: Illustration showing different sensor shutter modes

Trigger

This category relates to how an image frame is initiated or triggered.

TriggerActivation

Feature type of activation, for hardware triggers. This feature controls edge, level, and polarity sensitivities.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Possible values	<i>RisingEdge, FallingEdge, AnyEdge, LevelHigh, LevelLow</i>
Default value	<i>RisingEdge</i>
Affected features	(not applicable)
Category	/Acquisition/Trigger

Value	Description
<i>RisingEdge</i>	Resets the encoder on the rising edge of the signal.
<i>FallingEdge</i>	Resets the encoder on the falling edge of the signal.
<i>AnyEdge</i>	Resets the encoder on the falling or rising edge of the selected signal.
<i>LevelHigh</i>	Resets the encoder as long as the selected signal level is high.
<i>LevelLow</i>	Resets the encoder as long as the selected signal level is low.

TriggerDelayAbs

Start-of-image can be delayed to begin some time after a trigger event is received by the camera. This feature is valid only if **TriggerSource** is set to external trigger (for example *Line1, Line2*).

This feature is a commonly used trigger to synchronize with a strobe lighting source, which inherently has some fixed setup time.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Float

Access	Read/Write
Visibility	Beginner
Range	Camera dependent
Default value	0
Unit	Microseconds
Affected features	(not applicable)
Category	/Acquisition/Trigger

TriggerMode

Controls the trigger set in `TriggerSelector`.



If `TriggerMode = Off` and `TriggerSelector = FrameStart`, images triggered in `FixedRate` at `AcquisitionFrameRateAbs`.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Possible values	<i>Off, On</i>
Default value	<i>On</i>
Affected features	(not applicable)
Category	/Acquisition/Trigger

TriggerOverlap

Permitted window of trigger activation, relative to the previous frame. Does not work with software triggering, only external triggering.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Possible values	<i>Off, PreviousFrame</i>

Default value	<i>Off</i>
Affected features	(not applicable)
Category	/Acquisition/Trigger

Value	Description
<i>Off</i>	Any external trigger received before a high <i>FrameTriggerReady</i> signal is ignored.
<i>PreviousFrame</i>	Any external trigger received before <i>FrameTriggerReady</i> is latched and used to trigger the next frame.

TriggerSelector

Select a trigger, then use the features {TriggerMode, TriggerSoftware, TriggerSource, TriggerActivation, TriggerOverlap, TriggerDelayAbs} to setup and read the trigger features.



TriggerSource must equal *Line1*, *Line2*, *Line3*, *Line4* or *Action0*, *Action1* when TriggerSelector = *AcquisitionRecord*.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Possible values	<i>FrameStart</i> , <i>AcquisitionStart</i> , <i>AcquisitionEnd</i> , <i>AcquisitionRecord</i>
Default value	<i>FrameStart</i>
Affected features	TriggerMode, TriggerSoftware, TriggerSource, TriggerActivation, TriggerOverlap, TriggerDelayAbs
Category	/Acquisition/Trigger

Value	Description
<i>FrameStart</i>	The trigger which starts each image (if acquisition is running).
<i>AcquisitionStart</i>	The trigger which starts the acquisition process.
<i>AcquisitionEnd</i>	The trigger which ends the acquisition process.
<i>AcquisitionRecord</i>	The trigger which initiates the sending of AcquisitionFrameCount number of recorded images from the camera on-board memory to the host.

TriggerSoftware

Triggers an image. Valid if **TriggerSource** = *Software*.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Command
Access	Write
Visibility	Beginner
Affected features	(not applicable)
Category	/Acquisition/Trigger

TriggerSource

Determines how an image frame is initiated within an acquisition stream. This might be a hardware trigger, a fixed rate generator, or software trigger only.



An acquisition stream must be started in order to trigger or receive individual frames. For *Freerun* and *FixedRate* the first frame is synchronized to *AcquisitionStart* trigger.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Possible values	<i>Freerun, Line1, Line2, Line3, Line4, FixedRate, Software, Action0, Action1</i> The number of external trigger lines is camera dependent.
Default value	<i>Freerun</i>
Affected features	(not applicable)
Category	/Acquisition/Trigger

Value	Description
<i>Freerun</i>	The camera runs at the maximum supported frame rate depending on the exposure time and Region of Interest size.
<i>Line1</i>	External trigger <i>Line1</i> .
<i>Line2</i>	External trigger <i>Line2</i> .
<i>Line3</i>	External trigger <i>Line3</i> .
<i>Line4</i>	External trigger <i>Line4</i> .

Value	Description
<i>FixedRate</i>	The camera self-triggers at a fixed frame rate defined by <i>AcquisitionFrameRateAbs</i> .
<i>Software</i>	Software initiated image capture.
<i>Action0</i>	Select <i>Action0</i> or <i>Action1</i> . For use with Trigger over Ethernet Action Commands.
<i>Action1</i>	Select <i>Action0</i> or <i>Action1</i> . For use with Trigger over Ethernet Action Commands.



To use a Trigger over Ethernet Action Command, the trigger source must be set to *Action0* or *Action1*.

ActionControl

Triggering an action in multiple devices at roughly the same time can be accomplished through the action command (**ACTION_CMD**) message. Each action command message contains information for the device to validate the requested operation:

- **ActionDeviceKey**: Provides the device key that allows the device to check the validity of action commands. **ActionDeviceKey** must be equal on the camera and on the host PC. Before a camera accepts an Action Command, it verifies if the received key is identical with its configured key.
- **ActionSelector**: Selects to which Action Signal further Action settings apply.
- **ActionGroupKey**: Provides the key that the device uses to validate the action on reception of the action protocol message. Each camera can be assigned to exactly one group and all grouped cameras perform an action at the same time.
- **ActionGroupMask**: Provides the mask that the device uses to validate the action on reception of the action protocol message. **ActionGroupMask** serves as filter that specifies which cameras within a group react on an Action Command.



To use an Action Command, **TriggerMode** must be set to *On* and **TriggerSource** must be set to *Action0* or *Action1*.



If you use an Ethernet router, make sure all cameras are in the same subnet. Using a switch does not affect Action Commands.

Trigger over Ethernet is a synchronous image acquisition which is created by sending an Action Command through the Ethernet host. The Action Command is an Ethernet packet that can be unicast or broadcast to a device or devices in order to synchronously trigger an action on the cameras. This command can be sent by Vimba, a trigger device connected to the network or just a program sent by a host PC connected to the network. The Ethernet packet uses the IPv4 UDP, Port: 3956 and conforms to GVCP.

The following features must be configured for each camera that you want to control with an Action Command.

ActionDeviceKey

Provides the device key that allows the device to check the validity of action commands. The device internal assertion of an action signal is only authorized if the **ActionDeviceKey** and the action device key value in the protocol message are equal. When an Action Command is received, the **ActionDeviceKey** is the first control checked. The device key is a 32-bit value. Only a valid device key can trigger the Action Command event on the camera.



ActionDeviceKey must be configured on the cameras and on the host PC.
ActionDeviceKey must be set each time the camera is opened.

Standard	GenICam Standard Feature Naming Convention
Display name	Action Device Key
Origin of feature	Camera
Feature type	Integer
Access	Write
Visibility	Guru
Range	0 to 4294967295 (camera and host PC)
Default value	0
Vimba version	Vimba version 2.1 or later
Affected features	(not applicable)
Category	/ActionControl

ActionGroupKey

Provides the key that the device uses to validate the action on reception of the action protocol message. This enables an Action Command to be applied to specific subsets devices. The group key is a 32-bit value.



ActionGroupKey must be configured on the cameras and on the host PC.

Standard	GenICam Standard Feature Naming Convention
Display name	Action Group Key
Origin of feature	Camera
Feature type	Integer

Access	Write
Visibility	Guru
Range	0 to 4294967295 (camera and host PC)
Default value	0
Vimba version	Vimba version 2.1 or later
Affected features	(not applicable)
Category	/ActionControl

ActionGroupMask

Provides the mask that the device uses to validate the action on reception of the action protocol message. Once the **ActionGroupKey** is validated, the group mask is checked against the **ActionGroupMask**. Once the group key and group mask are validated, the related function is activated. The group mask is a 32-bit value.

Executing the API feature **ActionCommand** sends the **ActionControl** parameters to the cameras and triggers the assigned action, for example, image acquisition.



ActionGroupMask must be configured on the cameras and on the host PC.



On the host PC, the range of **ActionGroupMask** is **1** to **4294967295**. Sending an Action Command with **ActionGroupMask** **0** to the camera results in an error.

Standard	GenICam Standard Feature Naming Convention
Display name	Action Group Mask
Origin of feature	Camera
Feature type	Integer
Access	Write
Visibility	Guru
Range	0 to 4294967295 (camera) 1 to 4294967295 (host PC)
Default value	0
Vimba version	Vimba version 2.1 or later
Affected features	(not applicable)
Category	/ActionControl

ActionSelector

Selects to which action signal further action settings are applied. Allied Vision cameras support two Action Commands: *Action0* and *Action1*.



ActionDeviceKey must be configured on the cameras and on the host PC. **ActionDeviceKey** must be set each time the camera is opened.

Standard	GenICam Standard Feature Naming Convention
Display name	Action Selector
Origin of feature	Camera
Feature type	Integer
Access	Write
Visibility	Guru
Range	0 to 1
Default value	0
Vimba version	Vimba version 2.1 or later
Affected features	ActionGroupMask, ActionGroupKey
Category	/ActionControl

BufferHandlingControl

StreamAnnounceBufferMinimum

The minimal number of buffers to announce to enable the selected acquisition mode.

Display name	Stream Announce Buffer Minimum
Origin of feature	Driver
Feature type	Integer
Access	Read only (Constant)
Visibility	Beginner
Vimba version	Vimba version 1.3 or later
Affected features	(not applicable)
Category	/BufferHandlingControl

StreamAnnouncedBufferCount

The number of announced (known) buffers on this stream.

Display name	Stream Announced Buffer Count
Origin of feature	Driver
Feature type	Integer
Access	Read only
Visibility	Beginner
Vimba version	Vimba version 1.3 or later
Affected features	(not applicable)
Category	/BufferHandlingControl

StreamBufferHandlingMode

Available buffer handling modes of this stream.

Display name	Stream Buffer Handling Mode
Origin of feature	Driver
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Default value	Default
Vimba version	Vimba version 1.3 or later
Affected features	StreamAcquisitionModeSelector
Category	/BufferHandlingControl

Controls

BlackLevelControl

BlackLevel

The black level (offset) value. Setting **Gain** does not change the **BlackLevel**.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Float
Access	Read/Write
Visibility	Beginner
Range	0 to camera dependent
Default value	0
Affected features	(not applicable)
Category	/Controls/BlackLevelControl

BlackLevelSelector

Selects which black level is controlled by the various black level features. If set to *ALL*, **BlackLevel** is applied to all channels or taps.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Default value	<i>ALL</i>
Affected features	(not applicable)
Category	/Controls/BlackLevelControl

CCDTemperatureOK

The current temperature status of the CCD sensor. Indicates if CCD sensor has the desired cooling temperature.

Origin of feature	Camera
Feature type	Integer
Access	Read only
Possible values	0, 1
Default value	0
Affected features	(not applicable)
Category	/Controls

Value	Description
0	The CCD sensor may be too hot. Acquired image data may have higher noise than expected or contain erroneous pixels at long exposure times.
1	The CCD sensor temperature is in the desired temperature range. Acquired image data are OK.

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.

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

ColorTransformationMode

Selects the mode for color transformation.

Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Possible values	<i>Off, Manual, Temp6500K</i>
Default value	<i>Off</i>
Affected features	ColorTransformationValue
Category	/Controls/ColorTransformationControl

Value	Description
<i>Off</i>	No color transformation.
<i>Manual</i>	Manually set ColorTransformationValue matrix coefficients.
<i>Temp6500K</i>	Colors optimized for a surrounding color temperature of 6500 Kelvin.

ColorTransformationSelector

Selects which color transformation module is controlled by the various color transformation features.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Possible value	<i>RGBtoRGB</i>
Affected features	ColorTransformationValue
Category	/Controls/ColorTransformationControl

ColorTransformationValue

Represents the value of the selected gain factor or offset inside the transformation matrix.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Float
Access	Read/Write
Visibility	Beginner
Range	-2 to 2
Default value	1
Affected features	(not applicable)
Category	/Controls/ColorTransformationControl

ColorTransformationValueSelector

Selects the gain factor or offset of the transformation matrix if `ColorTransformationMode = Manual`.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Possible values	<i>Gain00, Gain01, Gain02, Gain10, Gain11, Gain12, Gain20, Gain21, Gain22</i>
Default value	<i>Gain00</i>
Affected features	ColorTransformationValue
Category	/Controls/ColorTransformationControl

Value	Description
<i>Gain00</i>	Red contribution to the red pixel (multiplicative factor).
<i>Gain01</i>	Green contribution to the red pixel (multiplicative factor).
<i>Gain02</i>	Blue contribution to the red pixel (multiplicative factor).
<i>Gain10</i>	Red contribution to the green pixel (multiplicative factor).
<i>Gain11</i>	Green contribution to the green pixel (multiplicative factor).
<i>Gain12</i>	Blue contribution to the green pixel (multiplicative factor).
<i>Gain20</i>	Red contribution to the blue pixel (multiplicative factor).

Value	Description
<i>Gain21</i>	Green contribution to the blue pixel (multiplicative factor).
<i>Gain22</i>	Blue contribution to the blue pixel (multiplicative factor).

DSPSubregion

The automatic exposure, gain, white balance, and iris features can be configured to respond only to a subregion within the image scene. This feature can be used to choose a subregion that 'meters' the rest of the image. This feature works like the region metering on a photographic camera.

DSPSubregionBottom

Defines the bottom edge of the DSP subregion. The DSP subregion is the area of the image used for measurements in "auto" functions such as auto-exposure and auto-gain. **DSPSubregionLeft** is the bottom row, relative to the current image region. For convenience, this value may be higher than the maximum height.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	0 to sensor height
Default value	Sensor height
Affected features	(not applicable)
Category	/Controls/DSPSubregion

DSPSubregionLeft

Defines the left edge of the DSP subregion.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	0 to sensor width
Default value	0

Affected features	(not applicable)
Category	/Controls/DSPSubregion

DSPSubregionRight

Defines the right edge of the DSP subregion.



For convenience, this value may be higher than the maximum width.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	0 to sensor width
Default value	Sensor width
Affected features	(not applicable)
Category	/Controls/DSPSubregion

DSPSubregionTop

Defines the top edge of the DSP subregion.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	0 to sensor height
Default value	0
Affected features	(not applicable)
Category	/Controls/DSPSubregion

DefectMaskEnable

Control defective pixel masking. Defective pixels (or clusters) are replaced with averaged values from neighboring pixels. Defective pixels are detected and recorded at the factory. This feature either enables or disables defect masking.



If `BinningHorizontal`, `BinningVertical`, `DecimationHorizontal`, or `DecimationVertical` is set greater than `1`, `DefectMaskEnable` is set to `False`.



The following model series support masking of defective pixels or clusters:

- Prosilica GT2000, GT2050, GT4090, GT4096, GT5120, GT4905, GT4907, GT6600
- Manta G-223, G-419,
- Mako G-030, G-223, G-419, G-503, G-131, G-192

For more information on user defined defect masking, see the Defect Mask Loader Tool application note at:

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

Some larger format sensors may contain defective columns. Defect masking replaces defective columns with interpolated values based on neighboring columns. Defective columns are detected and recorded at the factory. This feature either enables or disables masking of defective columns.



The following model series support masking of defective columns:

- Prosilica GT1660, GT1910, GT1920, GT2300, GT2750, GT3300, GT3400

For more information on user defined defect column masking, see the Load Defect Tables Tool application note at:

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

Origin of feature	Camera
Feature type	Boolean
Access	Read/Write
Visibility	Beginner
Possible values	<i>true, false</i>
Default value	<i>true</i>
Affected features	(not applicable)
Category	/Controls

DefectMaskPixelEnable

Controls defective pixel masking.

Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Possible values	<i>Enabled, Disabled</i>
Default value	<i>Enabled</i>
Affected features	(not applicable)
Category	/Controls/DefectMask

EdgeFilter

Image sharpness or blur. Applied post Bayer interpolation. Only available on color pixel formats with on-camera interpolation.

Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Possible values	<i>Smooth2, Smooth1, Off, Sharpen1, Sharpen2</i>
Default value	<i>Off</i>
Affected features	(not applicable)
Category	/Controls

Value	Description
<i>Smooth2</i>	Most blur applied
<i>Smooth1</i>	Slight blur applied
<i>Off</i>	No blur or sharpness applied
<i>Sharpen1</i>	Slight sharp applied
<i>Sharpen2</i>	Most sharp applied



EdgeFilter feature is applicable only to color models and Manta cameras except dual-tap camera models.

EFLensControl

The section describes features related to EF lens control in cameras with integrated EF-Mount.



The features listed under `EFLensControl1` are not available for cameras with Birger EF-Mount option.

EFLensFStop

EFLensFStopCurrent

The current F-stop number or aperture of the EF lens.

Origin of feature	Camera
Feature type	Float
Access	Read/Write
Visibility	Beginner
Range	EFLensFStopMin to EFLensFStopMax
Unit	Microseconds
Affected features	(not applicable)
Category	/Controls/EFLensControl1/EFLensFStop

EFLensFStopDecrease

Decrease the F-stop number, that is, increase lens aperture by the `EFLensFStopStepSize`.

Origin of feature	Camera
Feature type	Command
Access	Write
Visibility	Beginner
Affected features	EFLensFStopCurrent
Category	/Controls/EFLensControl1/EFLensFStop

EFLensFStopIncrease

Increase the F-stop number, that is, reduce lens aperture by the EFLensFStopStepSize.

Origin of feature	Camera
Feature type	Command
Access	Write
Visibility	Beginner
Affected features	EFLensFStopCurrent
Category	/Controls/EFLensControl/EFLensFStop

EFLensFStopMax

The maximum possible F-stop setting or the smallest possible aperture for the EF lens based on current zoom setting.

Origin of feature	Camera
Feature type	Float
Access	Read only
Visibility	Beginner
Default value	Lens dependent
Unit	F-Stop
Affected features	EFLensFStopCurrent
Category	/Controls/EFLensControl/EFLensFStop

EFLensFStopMin

The minimum possible F-stop setting or the largest possible aperture for the EF lens based on current zoom setting.

Origin of feature	Camera
Feature type	Float
Access	Read only
Visibility	Beginner
Default value	Lens dependent
Unit	F-Stop
Affected features	EFLensFStopCurrent
Category	/Controls/EFLensControl/EFLensFStop

EFLensFStopStepSize

Size of increments or decrements in EFLensFStopCurrent if using EFLensFStopIncrease and EFLensFStopDecrease commands, respectively.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	1 to 8
Unit	F-Stop/8
Affected features	(not applicable)
Category	/Controls/EFLensControl/EFLensFStop

EFLensFocus

EFLensFocusCurrent

The current focus setting.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	EFLensFocusMin to EFLensFocusMax
Affected features	(not applicable)
Category	/Controls/EFLensControl/EFLensFocus

EFLensFocusDecrease

Decrease or shorten the focus distance by EFLensFocusStepSize.

Origin of feature	Camera
Feature type	Command
Access	Write
Visibility	Beginner
Affected features	EFLensFocusCurrent
Category	/Controls/EFLensControl/EFLensFocus

EFLensFocusIncrease

Increase or lengthen the focus distance by EFLensFocusStepSize.

Origin of feature	Camera
Feature type	Command
Access	Write
Visibility	Beginner
Affected features	EFLensFocusCurrent
Category	/Controls/EFLensControl/EFLensFocus

EFLensFocusMax

The maximum or farthest possible focus setting.

Origin of feature	Camera
Feature type	Integer
Access	Read only
Visibility	Beginner
Default value	Lens dependent
Affected features	EFLensFocusCurrent
Category	/Controls/EFLensControl/EFLensFocus

EFLensFocusMin

The minimum or nearest possible focus setting.

Origin of feature	Camera
Feature type	Integer
Access	Read only
Visibility	Beginner
Default value	Lens dependent
Affected features	EFLensFocusCurrent
Category	/Controls/EFLensControl/EFLensFocus

EFLensFocusStepSize

Size of increments or decrements in `EFLensFocusCurrent` if using `EFLensFocusIncrease` and `EFLensFocusDecrease` commands, respectively.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	Lens dependent
Default value	10
Affected features	(not applicable)
Category	/Controls/EFLensControl/EFLensFocus

EFLensFocusSwitch

The current position of lens auto focus or manual focus switch.

Origin of feature	Camera
Feature type	Enumeration
Access	Read only
Visibility	Beginner
Possible values	<i>AutoFocus</i> , <i>ManualFocus</i>
Affected features	(not applicable)
Category	/Controls/EFLensControl/EFLensFocus

Value	Description
<i>AutoFocus</i>	Switch is in auto focus position.
<i>ManualFocus</i>	Switch is in manual focus position.



All features under `EFLensFocus` become read-only if the lens auto focus or manual focus switch is set to manual focus.

EFLensInitialize

Initializes the EF lens. This command is automatically executed on power up and/or if lens is attached to camera.

Origin of feature	Camera
Feature type	Command
Access	Write
Visibility	Beginner
Affected features	EFLensFStopCurrent, EFLensFStopMax, EFLensFStopMin, EFLensFocusSwitch, EFLensFocusCurrent, EFLensID, EFLensLastError, EFLensState, EFLensZoomCurrent, EFLensZoomMax, EFLensZoomMin
Category	/Controls/EFLensControl

EFLensStatus

EFLensID

The identification value of the attached EF lens.

Origin of feature	Camera
Feature type	Integer
Access	Read only
Visibility	Beginner
Affected features	(not applicable)
Category	/Controls/EFLensControl/EFLensStatus

EFLensLastError

The most recently detected error.

Origin of feature	Camera
Feature type	Enumeration
Access	Read only
Visibility	Beginner
Possible values	<i>EFLensErrNone, EFLensErrQuery, EFLensErrInternal1, EFLensErrInternal2, EFLensErrBusy, EFLensErrZeroStop, EFLensErrInfinityStop</i>
Affected features	(not applicable)
Category	/Controls/EFLensControl/EFLensStatus

Value	Description
<i>EFLensErrNone</i>	No error detected.
<i>EFLensErrQuery</i>	Lens failed query by camera.
<i>EFLensErrInternal1</i>	Lens communication error (can occur when removing lens).
<i>EFLensErrInternal2</i>	Lens communication error (can occur when removing lens).
<i>EFLensErrBusy</i>	Lens remained busy for longer than 10 seconds.
<i>EFLensErrZeroStop</i>	Lens focus “Zero Stop” not detected.
<i>EFLensErrInfinityStop</i>	Lens focus “Infinity Stop” not detected.

EFLensState

The current EF lens state.

Origin of feature	Camera
Feature type	Enumeration
Access	Read only
Visibility	Beginner
Possible values	<i>EFLensIdle</i> , <i>EFLensBusy</i> , <i>EFLensWaiting</i> , <i>EFLensInitializing</i> , <i>EFLensError</i>
Affected features	(not applicable)
Category	/Controls/EFLensControl/EFLensStatus

State	Description
<i>EFLensIdle</i>	No lens action in progress.
<i>EFLensBusy</i>	Lens is busy (changing focus or aperture).
<i>EFLensWaiting</i>	Camera is waiting for lens attachment.
<i>EFLensInitializing</i>	Camera is initializing lens.
<i>EFLensError</i>	Lens error detected. Error type is indicated by <i>EFLensLastError</i> . Remains in this state until <i>EFLensInitialize</i> is executed.

EFLensZoom

EFLensZoomCurrent

The current focal length of the EF lens.

Origin of feature	Camera
Feature type	Integer
Access	Read only
Visibility	Beginner
Range	EFLensZoomMin to EFLensZoomMax
Units	Millimeters
Affected features	(not applicable)
Category	/Controls/EFLensControl/EFLensZoom

EFLensZoomMax

The maximum focal length of the EF lens.

Origin of feature	Camera
Feature type	Integer
Access	Read only
Visibility	Beginner
Default value	Lens dependent
Units	Millimeters
Affected features	(not applicable)
Category	/Controls/EFLensControl/EFLensZoom

EFLensZoomMin

The minimum focal length of the EF lens.

Origin of feature	Camera
Feature type	Integer
Access	Read only
Visibility	Beginner
Default value	Lens dependent
Units	Millimeters
Affected features	(not applicable)
Category	/Controls/EFLensControl/EFLensZoom

Exposure

ExposureAuto

Auto algorithms use information from the camera's current image and apply the following settings to the next image. Large changes in scene lighting may require several frames for the algorithm to stabilize.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Possible values	<i>Off, Once, Continuous</i>
Default value	<i>Off</i>
Affected features	(not applicable)
Category	/Controls/Exposure

If using `ExposureAuto = Continuous`, and `GainAuto = Continuous` simultaneously, priority is given to changes in exposure until `ExposureAutoMax` is reached, at which point priority is given to changes in gain. Adding simultaneous `IrisMode = Video, DCIris, or PIrisAuto` results in undefined, "race to target" behavior.

You can configure the auto exposure feature to respond only to a subregion within the image scene. This subregion can be configured with the `DSPSubregion` feature.

Value	Description
<i>Off</i>	The automatic mode is <i>Off</i> .
<i>Once</i>	Valid if <code>ExposureMode = Timed or PiecewiseLinearHDR</code> . Auto-exposure occurs until target is achieved, then <code>ExposureAuto</code> returns to <i>Off</i> .
<i>Continuous</i>	Valid if <code>ExposureMode = Timed or PiecewiseLinearHDR</code> . The exposure time varies continuously according to the scene illumination. The auto exposure function operates according to the <code>ExposureAuto</code> and <code>DSPSubregion</code> features.



The camera must be acquiring images in order for the auto algorithm to update.

ExposureAutoControl

ExposureAutoAdjustTol

Tolerance in variation from `ExposureAutoTarget` in which the auto exposure algorithm does not respond. It can be used to limit exposure setting changes to only larger variations in scene lighting.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	0 to 50
Default value	5
Unit	Percent
Affected features	(not applicable)
Category	/Controls/Exposure/ExposureAutoControl

ExposureAutoAlg

Algorithms used to calculate auto exposure.

Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Possible values	<i>Mean, FitRange</i>
Default value	<i>Mean</i>
Affected features	(not applicable)
Category	/Controls/Exposure/ExposureAutoControl

Value	Description
<i>Mean</i>	The arithmetic mean of the histogram of the current image is compared to <code>ExposureAutoTarget</code> , and the next image adjusted in exposure time to meet this target. Bright areas are allowed to saturate.
<i>FitRange</i>	The histogram of the current image is measured, and the exposure time of the next image is adjusted so that bright areas are not saturated.

ExposureAutoMax

The upper bound to the exposure setting in auto exposure mode. This is useful in situations where frame rate is important. This value would normally be set to something less than (as a rough estimate) $1 \times 10^6 / (\text{desired frame rate})$.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	Camera dependent
Default value	<i>500000</i>
Unit	Microseconds
Affected features	(not applicable)
Category	/Controls/Exposure/ExposureAutoControl

ExposureAutoMin

The lower bound to the exposure setting in auto exposure mode.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	Camera dependent
Default value	Camera dependent
Unit	Microseconds
Affected features	(not applicable)
Category	/Controls/Exposure/ExposureAutoControl

ExposureAutoOutliers

The total pixels from top of the distribution that are ignored by the auto exposure algorithm.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	<i>0 to 1000</i>
Default value	<i>0</i>
Unit	0.01 percent (1000 = 10 percent)

Affected features	(not applicable)
Category	/Controls/Exposure/ExposureAutoControl



Number of upper outliers to discard before calculating exposure adjustments. This is in ten-thousandths of the number pixels in the image.

ExposureAutoRate

The rate at which the auto exposure function changes the exposure setting. 100 percent is auto exposure adjustments running at full speed, and 50 percent is half speed.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	1 to 100 1 = slowest to 100 = fastest
Default value	100
Unit	Percent
Affected features	(not applicable)
Category	/Controls/Exposure/ExposureAutoControl

ExposureAutoTarget

The general lightness or darkness of the auto exposure feature; specifically the target mean histogram level of the image.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	0 to 100 0 = black to 100 = white
Default value	50
Unit	Percent
Affected features	(not applicable)
Category	/Controls/Exposure/ExposureAutoControl



Higher values result in brighter images.

ExposureMode

The control for exposure duration.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Possible values	<i>Timed, TriggerWidth, PiecewiseLinearHDR</i>
Default value	<i>Timed</i>
Affected features	(not applicable)
Category	/Controls/Exposure

Value	Description
<i>Timed</i>	Camera exposure time is set by <code>ExposureTimeAbs</code> .
<i>TriggerWidth</i>	Camera exposure time is controlled by external trigger pulse on <i>Line1</i> or <i>Line2</i> . In order for this feature to work, <code>TriggerSelector = FrameStart</code> and <code>TriggerSource</code> must be set to <i>Line1</i> or <i>Line2</i> .
<i>PiecewiseLinearHDR</i>	Image dynamic range is increased in difficult lighting situations by clamping down bright pixels with light levels beyond <code>ThresholdPWL</code> limits. Overall camera exposure time is set by <code>ExposureTimeAbs</code> . HDR sub-exposures are set using <code>ExposureTimePWL1</code> and <code>ExposureTimePWL2</code> .

ExposureTimeAbs

The sensor integration time. Values written to this feature are rounded to nearest multiple of `ExposureTimeIncrement`. Reading this feature returns the used, rounded value.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Float

Access	Read/Write
Visibility	Beginner
Range	Camera dependent
Unit	Microseconds
Affected features	AcquisitionFrameRateLimit, AcquisitionFrameRateAbs
Category	/Controls/Exposure

ExposureTimeAbs depends on ExposureMode as follows:

If ExposureMode = <i>Timed</i>	Then ExposureTimeAbs is sensor integration time.
If ExposureMode = <i>TriggerWidth</i>	Then ExposureTimeAbs is ignored.
If ExposureMode = <i>PiecewiseLinearHDR</i>	Then ExposureTimeAbs is the full sensor integration time. See ExposureTimePWL1 and ExposureTimePWL2 for setting ThresholdPWL exposure durations.

ExposureTimeIncrement

Increment or resolution of the exposure time in microseconds.

Origin of feature	Camera
Feature type	Float
Access	Read only (Constant)
Visibility	Beginner
Range	Camera dependent
Unit	Microseconds
Affected features	(not applicable)
Category	/Controls/Exposure

ExposureTimePWL1

Valid only if ExposureMode = *PiecewiseLinearHDR*. Exposure time after ThresholdPWL1 is reached.

Origin of feature	Camera
Feature type	Float
Access	Read/Write
Visibility	Beginner

Range	Camera dependent
Unit	Microseconds
Affected features	(not applicable)
Category	/Controls/Exposure

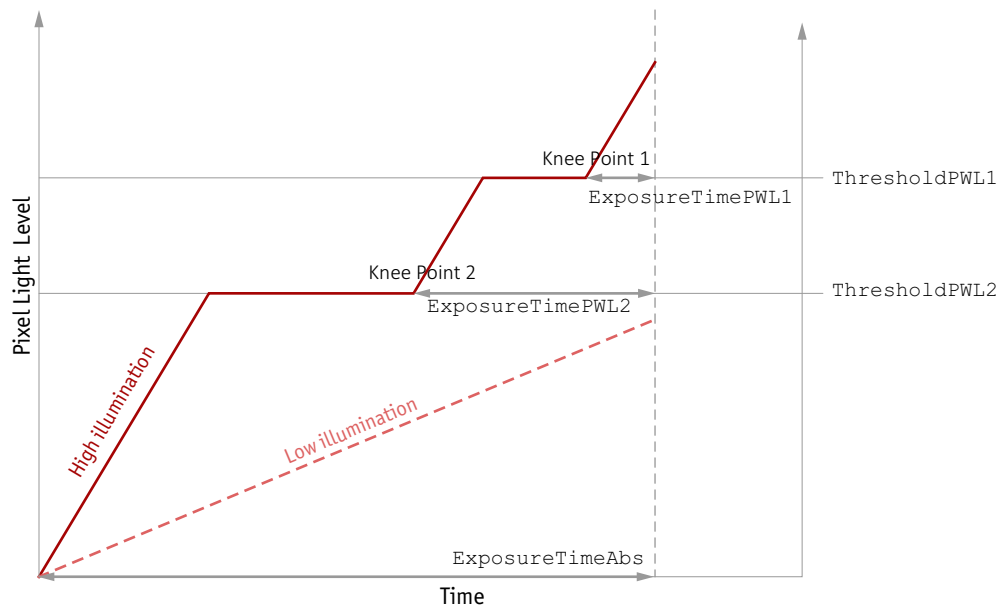


Figure 2: HDR sub exposures and thresholds if `ExposureMode = PiecewiseLinearHDR`

ExposureTimePWL2

Valid only if `ExposureMode = PiecewiseLinearHDR`. Exposure time after `ThresholdPWL2` is reached.

Origin of feature	Camera
Feature type	Float
Access	Read/Write
Visibility	Beginner
Range	Camera dependent
Unit	Microseconds
Affected features	(not applicable)
Category	/Controls/Exposure



If `ThresholdPWL2` is less than `ThresholdPWL1` (that is, enabled), `ExposureValuePWL2` must be greater than `ExposureValuePWL1`.

ThresholdPWL1

Valid only if `ExposureMode = PiecewiseLinearHDR`. The first and highest threshold level in `PiecewiseLinearHDR`.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	0 to 63 0 = no light in pixel, 63 = full pixel light capacity
Default value	63
Affected features	(not applicable)
Category	/Controls/Exposure



Leaving `ThresholdPWL1` at 63 disables the first threshold of `PiecewiseLinearHDR` mode, effectively disabling HDR mode.

ThresholdPWL2

Valid only if `ExposureMode = PiecewiseLinearHDR`. The second and lowest threshold level in `PiecewiseLinearHDR`.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	0 to 63 0 = no light capacity, 63 = full pixel light capacity
Default value	63
Affected features	(not applicable)
Category	/Controls/Exposure



Setting `ThresholdPWL2` above `ThresholdPWL1` disables the second threshold of `PiecewiseLinearHDR` mode.

Shutter

Control the mechanical shutter of Bigeye G-629B Cool cameras.

Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Possible values	<i>Off, On, SyncIn1, SyncIn2, SyncIn3, SyncIn4, SyncIn5</i>
Default value	<i>On</i>
Affected features	(not applicable)
Category	/Controls

Value	Description
<i>Off</i>	Deactivate the mechanical shutter. Use this mode, if you operate the camera with pulsed light sources.
<i>On</i>	Activate the mechanical shutter. If activated, the mechanical shutter opens upon each exposure cycle and closes again, if the exposure is over. Use this mode, if you operate the camera with constant light sources, due to the full frame sensor.
<i>SyncIn1</i>	Controls the mechanical shutter dependent on the level of <i>LineIn1</i> .
<i>SyncIn2</i>	Controls the mechanical shutter dependent on the level of <i>LineIn2</i> .
<i>SyncIn3</i>	Controls the mechanical shutter dependent on the level of <i>LineIn3</i> .
<i>SyncIn4</i>	Controls the mechanical shutter dependent on the level of <i>LineIn4</i> .
<i>SyncIn5</i>	Controls the mechanical shutter dependent on the level of <i>LineIn5</i> .



The shutter feature is intended to control the exposure by means of a mechanical shutter. It must not be confused with any other exposure control feature. The mechanical shutter is available only on the Bigeye G-629B Cool camera.

MaxNonOverlappedExposure

The maximum non-overlapped exposure value.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Unit	Microseconds
Range	0 to 4294967295
Affected features	(not applicable)
Category	/Controls/Exposure

FpncControls

FpncEnable

Enable or disable fixed pattern noise correction.

Origin of feature	Camera
Feature type	Boolean
Access	Read/Write
Visibility	Beginner
Possible values	<i>true, false</i>
Default value	<i>true</i>
Affected features	(not applicable)
Category	/Controls

GainControl

This feature controls the gain settings applied to the sensor.

Gain

The gain setting applied to the sensor. For best image quality, the gain setting must be set to zero. However, in low-light situations, it may be necessary to increase the gain setting.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Float
Access	Read/Write
Visibility	Beginner
Range	Camera dependent
Default value	0
Unit	Decibels
Affected features	(not applicable)
Category	/Controls/GainControl

$$G_{dB} = 20 \log \left(\frac{V_{out}}{V_{in}} \right)$$

GainAuto

Auto algorithms use information from the camera's current image and apply the following settings to the next image. Large changes in scene lighting may require two to three frames for the algorithm to stabilize.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Possible values	<i>Off, Once, Continuous</i>
Default value	<i>Off</i>
Affected features	(not applicable)
Category	/Controls/GainControl



Auto algorithm adjusts using 1 decibel gain steps. The camera must be acquiring images in order for the auto algorithm to update.

Value	Description
<i>Off</i>	The automatic mode is <i>Off</i> .
<i>Once</i>	Valid if <i>ExposureMode = Timed</i> or <i>PiecewiseLinearHDR</i> . Auto-gain occurs until target is achieved, then <i>GainAuto</i> returns to <i>Off</i> .
<i>Continuous</i>	Valid if <i>ExposureMode = Timed</i> or <i>PiecewiseLinearHDR</i> . Gain varies continuously according to the scene illumination. The auto exposure function operates according to the <i>ExposureAutoControl</i> and <i>DSPSubregion</i> features.

If using *ExposureAuto = Continuous* and *GainAuto = Continuous* simultaneously, priority is given to changes in exposure until *ExposureAutoMax* is reached, at which point priority is given to changes in gain. Adding simultaneous *IrisMode = Video/DCIris/PIrisAuto* results in undefined, “race to target” behavior.

You can configure the auto gain feature to respond only to a subregion within the image scene. This subregion can be configured with the *DSPSubregion* feature.

GainAutoControl

GainAutoAdjustTol

Tolerance in variation from *GainAutoTarget* in which the auto exposure algorithm does not respond. This feature is used to limit auto gain changes to only larger variations in scene lighting.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	0 to 50
Default value	5
Unit	Percent
Affected features	(not applicable)
Category	/Controls/GainControl/GainAutoControl



This prevents needless small adjustments from occurring each image.

GainAutoMax

The upper bound to the gain setting in auto gain mode.

Origin of feature	Camera
Feature type	Float
Access	Read/Write
Visibility	Beginner
Range	Camera dependent
Unit	Decibels
Affected features	(not applicable)
Category	/Controls/GainControl/GainAutoControl

GainAutoMin

The lower bound to the gain setting in auto gain mode.

Origin of feature	Camera
Feature type	Float
Access	Read/Write
Visibility	Beginner
Range	Camera dependent
Default value	0
Unit	Decibels
Affected features	(not applicable)
Category	/Controls/GainControl/GainAutoControl

GainAutoOutliers

The total pixels from top of the distribution that are ignored by the auto gain algorithm.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	0 to 1000
Default value	0

Unit	0.01 percent, that is, 1000 = 10 percent
Affected features	(not applicable)
Category	/Controls/GainControl/GainAutoControl



Number of upper outliers to discard before calculating gain adjustments. This is in ten-thousandths of the number pixels in the image.

GainAutoRate

The rate at which the auto gain function changes. A percentage of the maximum rate.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	1 to 100 1 = slowest; to 100 = fastest
Default value	100
Unit	Percent
Affected features	(not applicable)
Category	/Controls/GainControl/GainAutoControl



Use this feature to slow down the auto-gain adjustments.

GainAutoTarget

The general lightness or darkness of the auto gain feature. A percentage of maximum brightness.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	0 to 100
Default value	50
Unit	Percent

Affected features	(not applicable)
Category	/Controls/GainControl/GainAutoControl

GainSelector

Gain is applied to all sensor channels or taps.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Possible value	<i>ALL</i>
Default value	<i>ALL</i>
Affected features	GainRaw, GainAuto
Category	/Controls/GainControl

Gamma

Gamma controls the mode for automatic white balancing between the color channels. The white balancing ratios are automatically adjusted. Controls the gamma correction of pixel intensity. This is typically used to compensate for non-linearity of the display system (non-linear brightness control). Applies gamma value to the raw sensor signal (via a look-up table).

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Float
Access	Read/Write
Visibility	Beginner
Range	Camera dependent
Default value	<i>1.00</i>
Unit	Output = (Input) ^{Gamma}
Affected features	(not applicable)
Category	/Controls

Value	Description
1.00	Gamma OFF (no Gamma correction)
Values other than 1.00	Gamma ON



Manta type A

If Gamma is *ON*, LUT1 is used to do the gamma transform. The original look-up table values are stored temporarily. If Gamma is *ON*, and you read out LUT1: you only get stored look-up table values but not Gamma values. In general, Gamma values cannot be read out.

If Gamma is *OFF*, look-up table position 1 contains optional user defined look-up table values.



Manta type B, Mako G, and Prosilica GT cameras have a standalone gamma function which does not share resources with look-up tables.

Hue

Alters the color of an image without altering white balance. Takes float input, although rounds to integer. Only valid if using on-camera interpolated pixel formats.

Origin of feature	Camera
Feature type	Float
Access	Read/Write
Visibility	Beginner
Range	Camera dependent
Default value	0.00
Unit	Degrees
Affected features	(not applicable)
Category	/Controls



Hue turns the color vectors in the ultraviolet plane. It is one degree per step.

IODMode

Set camera to continuous or IOD mode.

Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Possible values	<i>Continuous, IOD, LineIn1, LineIn2, LineIn3, LineIn4, LineIn5</i>
Default value	<i>IOD</i>
Affected features	(not applicable)
Category	/Controls

Value	Description
<i>Continuous</i>	The camera requires no external exposure signal. The camera generates a constant exposure time independently. The exposure time is equal to frame readout time and cannot be adjusted. Bigeye G-132B Cool, Bigeye G-283B Cool, and Bigeye G-1100B Cool achieve maximum frame rate in continuous mode only.
<i>IOD</i>	Controls IOD mode. In this mode the camera needs an external trigger signal or a timer driven internal exposure signal.
<i>LineIn1</i>	The camera is switched between <i>IOD</i> and <i>Continuous</i> mode, dependent on the level of <i>LineIn1</i> .
<i>LineIn2</i>	The camera is switched between <i>IOD</i> and <i>Continuous</i> mode, dependent on the level of <i>LineIn2</i> .
<i>LineIn3</i>	The camera is switched between <i>IOD</i> and <i>Continuous</i> mode, dependent on the level of <i>LineIn3</i> .
<i>LineIn4</i>	The camera is switched between <i>IOD</i> and <i>Continuous</i> mode, dependent on the level of <i>LineIn4</i> .
<i>LineIn5</i>	The camera is switched between <i>IOD</i> and <i>Continuous</i> mode, dependent on the level of <i>LineIn5</i> .



If *Continuous* mode is activated, no external exposure signal is allowed. Set **TriggerSelector** to *FrameStart* and **TriggerSource** to an unused external trigger Line.

Iris

Auto iris lens support. Supported auto iris lens types (camera dependent): video-Iris, DC-Iris, and P-Iris. Prosilica GT series detects the lens type on power up. DC-Iris settings do not apply if a P-Iris lens connected. P-Iris settings do not apply if a DC-Iris lens connected.

The auto iris algorithm calculates **IrisAutoTarget** based on information of the current image, and applies this to the next image. Large changes in scene lighting may require two to three frames for the algorithm to stabilize. Adding simultaneous **GainAuto = Continuous**, or **ExposureAuto = Continuous**, to **IrisMode = Video/DCIris/PIrisAuto** results in undefined, “race to target” behavior.



The camera must be acquiring images in order for the auto algorithm to update.

IrisAutoTarget

Controls the general lightness or darkness of the auto iris feature; specifically the target mean histogram level of the image.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	0 to 100 0 = black, 100 = white
Default value	50
Unit	Percent
Affected features	(not applicable)
Category	/Controls/Iris

IrisMode

Sets the auto iris mode. Valid if **ExposureMode = Timed** or **PiecewiseLinearHDR**.

Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner

Possible values	<i>Disabled, Video, VideoOpen, VideoClose, PIrisAuto, PIrisManual, DCIris</i>
Default value	<i>Disabled</i>
Affected features	(not applicable)
Category	/Controls/Iris

Value	Description
<i>Disabled</i>	Disable auto iris.
<i>Video</i>	Enable video iris. Video-type lenses only.
<i>VideoOpen</i>	Fully open a video iris. Video-type lenses only.
<i>VideoClose</i>	Full close a video iris. Video-type lenses only.
<i>PIrisAuto</i>	Enable precise auto iris. P-Iris lenses only.
<i>PIrisManual</i>	Manually control iris via <code>LensPIrisPosition</code> feature. P-Iris lenses only.
<i>DCIris</i>	Enable DC auto iris. DC-Iris lenses only.

IrisVideoLevel

The current video iris level, which is the strength of the video signal coming from the camera. Dependent on the lens type. If calibrating a video-type lens, this value must fall between `IrisVideoLevelMin` and `IrisVideoLevelMax`.

Origin of feature	Camera
Feature type	Integer
Access	Read only
Visibility	Beginner
Range	0 to 150
Default value	0
Unit	Millivolts
Affected features	(not applicable)
Category	/Controls/Iris

Lens type	Range	Description
Video-type lenses	0 to 150	Reference voltage. This value must fall between <code>IrisVideoLevelMin</code> and <code>IrisVideoLevelMax</code> .
P-Iris lenses	0 to 100	Attempts to match <code>IrisAutoTarget</code> .
DC-Iris lenses	0 to 100	Attempts to match <code>IrisAutoTarget</code> .

IrisVideoLevelMax

Video-type lenses only. Limits the maximum driving voltage for closing the lens iris. Typically, this is **150** millivolts; however, it may vary depending on the lens reference voltage. A lower minimum value slows the adjustment time but prevents excessive overshoot.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	0 to 150
Default value	Camera dependent
Unit	10 millivolts Manta: 13.2 millivolts
Affected features	(not applicable)
Category	/Controls/Iris

IrisVideoLevelMin

Video-type lenses only. Limits the minimum driving voltage for opening the lens iris. A higher minimum value slows the adjustment time but prevents excessive overshoot.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	0 to 150
Default value	Camera dependent
Unit	10 millivolts Manta: 13.2 millivolts
Affected features	(not applicable)
Category	/Controls/Iris

LensDCIris

DC-Iris lenses only.

LensDCDriveStrength

Lens drive voltage. Altering this value changes the speed at which a DC-Iris lens operates. The lower the value, the slower the lens operates. A higher value may result in iris oscillation. The optimal value is lens dependent. Larger lenses typically require a larger drive voltage.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	0 to 50
Default value	10
Affected features	(not applicable)
Category	/Controls/Iris/LensDCIris

LensPIris

P-Iris lenses only. P-Iris allows discrete iris positions using an internal lens stepping motor.



For a list of P-Iris supported lenses, see the P-Iris Lenses Supported by Prosilica GT Cameras application note:

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

LensPIrisFrequency

The stepping motor drive rate. Lens dependent. Use the value defined in Prosilica GT Technical Manual, or contact the lens manufacturer.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	0 to 1000
Default value	100
Unit	Hertz
Affected features	(not applicable)
Category	/Controls/Iris/LensPIris

LensPirisNumSteps

Maximum number of discrete iris or aperture positions. Use the value defined in Prosilica GT Technical Manual, or contact the lens manufacturer.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	1 to 1023
Default value	50
Affected features	(not applicable)
Category	/Controls/Iris/LensPiris

LensPirisPosition

Iris or aperture position. Manually control iris in *PIrisManual* mode, or read back iris position in *PIrisAuto* mode. 0 represents fully open and 1022 represents fully closed position. Values greater than LensPirisNumSteps are ignored or not written.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	0 to 1022 0 = fully open position, 1022 = fully closed position
Default value	50
Affected features	(not applicable)
Category	/Controls/Iris/LensPiris

LensDrive

Open loop DC three-axis lens control.

LensDriveCommand

Setting this feature to any non-Stop value executes the function for LensDriveDuration and then returns to *Stop*.

Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Possible values	<i>Stop, IrisTimedOpen, IrisTimedClose, FocusTimedNear, FocusTimedFar, ZoomTimedIn, ZoomTimedOut</i>
Affected features	(not applicable)
Category	/Controls/LensDrive

Value	Description
<i>Stop</i>	No action.
<i>IrisTimedOpen</i>	Open the lens iris.
<i>IrisTimedClose</i>	Close the lens iris.
<i>FocusTimedNear</i>	Shorten the working distance.
<i>FocusTimedFar</i>	Lengthen the working distance.
<i>ZoomTimedIn</i>	Zoom in.
<i>ZoomTimedOut</i>	Zoom out.

LensDriveDuration

The duration of timed lens commands.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	0 to 5000
Default value	0
Unit	Milliseconds

Affected features	(not applicable)
Category	/Controls/LensDrive

LensVoltage

Reports the lens power supply voltage.

Origin of feature	Camera
Feature type	Integer
Access	Read only
Visibility	Beginner
Range	0 to 12000
Default value	0
Unit	Millivolts
Affected features	(not applicable)
Category	/Controls/LensDrive

LensVoltageControl

Lens power supply voltage feature. See lens documentation for appropriate voltage level. Set desired lens voltage in millivolts $\times 100001$. This is done to prevent users inadvertently setting an inappropriate voltage, possibly damaging the lens. If a bad value is written this feature resets to 0.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	0 to 12000
Default value	0
Unit	Millivolts $\times 100001$
Affected features	LensVoltage
Category	/Controls/LensDrive

LUTControl

Use of a look-up table allows any function (in the form **Output = F(Input)**) to be stored in the camera's memory and to be applied on the individual pixels of an image at runtime.



Color cameras only

LUTControl with single color panes does not work if binning is enabled, due to the loss of color information.

LUTEnable

Controls the selected look-up table.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Boolean
Access	Read/Write
Visibility	Expert
Possible values	<i>true, false</i>
Default value	<i>false</i>
Affected features	(not applicable)
Category	/Controls/LUTControl

LUTIndex

Controls the index (offset) of coefficient to access in the selected look-up table.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Guru
Range	0 to $(2^{\text{LUTBitDepthIn} - 1})$
Default value	0
Affected features	LUTValue
Category	/Controls/LUTControl

LUTInfo

This feature provides active look-up table information.

LUTAddress

Indicates location of memory, if a look-up table is loaded.

Origin of feature	Camera
Feature type	Integer
Access	Read only (Constant)
Visibility	Guru
Affected features	(not applicable)
Category	/Controls/LUTControl/LUTInfo

LUTBitDepthIn

The bit depth of the input value of the look-up table block.

Display name	LUTBitLengthIn
Origin of feature	Camera
Feature type	Integer
Access	Read only (Constant)
Visibility	Guru
Affected features	(not applicable)
Category	/Controls/LUTControl/LUTInfo

LUTBitDepthOut

The bit depth of the output value of the look-up table block.

Display name	LUTBitLengthOut
Origin of feature	Camera
Feature type	Integer
Access	Read only (Constant)
Visibility	Guru
Affected features	(not applicable)
Category	/Controls/LUTControl/LUTInfo

LUTSizeBytes

The memory size of the active look-up table.

Display name	LUTSize
Origin of feature	Camera
Feature type	Integer
Access	Read only (Constant)
Visibility	Guru
Affected features	(not applicable)
Category	/Controls/LUTControl/LUTInfo

LUTLoadAll / LUTLoad

Loads the look-up table from flash memory into volatile memory of the camera.

Origin of feature	Camera
Feature type	Command
Access	Write
Visibility	Beginner
Affected features	LUTSaveAll
Category	/Controls/LUTControl

LUTMode

Selects on which pixels the selected look-up table (depending on LUTSelector) is applied.

Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Expert
Possible values	<i>Luminance, Red, Green, Blue</i>
Default value	<i>Luminance</i>
Affected features	(not applicable)
Category	/Controls/LUTControl

Value	Description
<i>Luminance</i>	Look-up table is applied on all pixels.
<i>Red</i>	Look-up table is applied on red pixels only.

Value	Description
<i>Green</i>	Look-up table is applied on green pixels only.
<i>Blue</i>	Look-up table is applied on blue pixels only.



To avoid confusion, especially with color cameras, we recommend the following steps:

1. Configure the look-up table modes.
2. Enable the look-up table.

LUTSaveAll / LUTSave

Saves the look-up table from volatile memory into flash memory of the camera.

Origin of feature	Camera
Feature type	Command
Access	Write
Visibility	Beginner
Affected features	LUTLoadAll
Category	/Controls/LUTControl



With the `UserSets` feature (`UserSetSave` command) you cannot save the contents of the look-up table.

LUTSelector

Selects which look-up table is used. These look-up tables are camera specific.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Expert
Possible values	<i>LUT1, LUT2, LUT3</i>
Default value	<i>LUT1</i>
Affected features	LUTMode, LUTEnable, LUTIndex, LUTValue, LUTBitDepthIn, LUTBitDepthOut, LUTAddress, LUTSizeBytes
Category	/Controls/LUTControl

LUTValue

Returns or sets the value at entry **LUTIndex**.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Guru
Range	0 to $(2^{\text{LUTBitDepthOut}_-1})$
Default value	4095
Affected features	(not applicable)
Category	/Controls/LUTControl

NirMode

Select three different near-infrared modes. The modes differ in quantum efficiency, frame rates, and anti-blooming characteristics

Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Possible values	<i>Off, On_HighQuality, On_Fast</i>
Default value	<i>Off</i>
Affected features	(not applicable)
Category	/Controls

Value	Description
<i>Off</i>	<p>NirMode set to off. Acquire and readout image at the same time.</p> <p>NIR sensitivity: No increased sensitivity in the near-infrared range.</p> <p>Anti-blooming characteristics: As specified by the sensor manufacturer.</p> <p>Usage: Best suited if you need a very long exposure time.</p>

Value	Description
<i>On_HighQuality</i>	<p>Cannot acquire and readout image at same time. The exposure time always influences frame rate directly.</p> <p>NIR sensitivity: Increased near-infrared sensitivity, except for a very small portion of the exposure time, which is: $t_{\text{NormalQE}} = \text{MIN}(4300 \mu\text{s}, \text{ExposureTimeAbs}/4)$</p> <p>Anti-blooming characteristics: Very good if, <code>ExposureAuto = Off</code> Adaptively reduced if, <code>ExposureTimeAbs < 13200</code> microseconds or <code>ExposureAuto = other</code>.</p> <p>Usage: Best suited for medium length exposure times and HDR light conditions.</p>
<i>On_Fast</i>	<p>Acquire and readout image at same time.</p> <p>NIR sensitivity: Increased near-infrared sensitivity during the total exposure time.</p> <p>Anti-blooming characteristics: Reduced anti-blooming characteristics.</p> <p>Usage: Best suited for low-light applications and small exposure times, if a high frame rate is desired.</p>

Saturation

Alters color intensity. Only valid if using on-camera interpolated pixel formats.

Origin of feature	Camera
Feature type	Float
Access	Read/Write
Visibility	Beginner
Range	0.00 to 2
Default value	1
Affected features	(not applicable)
Category	/Controls

Value	Description
0	Monochrome
1	Default saturation
2	Maximum possible saturation that can be applied.



Saturation puts gain to the color vectors in the UV plane.

SubstrateVoltage

VsubValue

CCD substrate voltage. Optimized by Allied Vision for each sensor.

Origin of feature	Camera
Feature type	Integer
Access	Read only
Visibility	Beginner
Range	Camera dependent
Unit	Millivolts
Affected features	(not applicable)
Category	/Controls/SubstrateVoltage

Whitebalance

BalanceRatioAbs

Adjusts the gain of the channel selected in the **BalanceRatioSelector**.
BalanceRatioAbs = 1 means no gain is applied.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Float
Access	Read/Write
Visibility	Beginner
Range	0.8 to 3
Affected features	(not applicable)
Category	/Controls/Whitebalance/



The green channel gain is always **1**, as this is the luminance or reference channel. To increase or decrease green, decrease or increase red and blue accordingly.

BalanceRatioSelector

Select the red or blue channel to adjust with **BalanceRatioAbs**.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Possible values	<i>Red, Blue</i>
Default value	<i>Red</i>
Affected features	BalanceRatioAbs
Category	/Controls/Whitebalance/

BalanceWhiteAuto

Auto algorithms use information from the camera's current image and apply the following settings to the next image; for instance, the camera must be acquiring images in order for the auto algorithm to update. Large changes in scene lighting may require two to three frames for the algorithm to stabilize.

You can configure the auto white balance feature to respond only to a subregion within the image scene. This subregion can be configured with the **DSPSubregion** feature.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Possible values	<i>Off, Once, Continuous</i>
Default value	<i>Off</i>
Affected features	(not applicable)
Category	/Controls/Whitebalance/

Value	Description
<i>Off</i>	Auto white balance is off. White balance can be adjusted directly by changing the BalanceRatioSelector and BalanceRatioAbs .
<i>Once</i>	Valid if ExposureMode = <i>Timed</i> or <i>PiecewiseLinearHDR</i> . A single iteration of the auto white balance algorithm is run, and then BalanceWhiteAuto returns to <i>Off</i> . The <i>Once</i> value operates according to the ExposureAuto and DSPSubregion features.
<i>Continuous</i>	Valid if ExposureMode = <i>Timed</i> or <i>PiecewiseLinearHDR</i> . White balance continuously adjusts according to the current scene. The continuous function operates according to the ExposureAuto and DSPSubregion features.

BalanceWhiteAutoControl

BalanceWhiteAutoAdjustTol

Tolerance allowed from the ideal white balance values, within which the auto white balance does not run. It is used to limit white balance setting changes to only larger variations in color.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	0 to 50
Default value	5
Unit	Percent
Affected features	(not applicable)
Category	/Controls/Whitebalance/BalanceWhiteAutoControl



This prevents needless small adjustments from occurring each image.

BalanceWhiteAutoRate

The rate of white balance adjustments. It is used to slow the rate of color balance change so that only longer period fluctuations affect color.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	<i>1</i> to <i>100</i> <i>1</i> = slowest, <i>100</i> = fastest
Default value	<i>100</i>
Unit	Percent
Affected features	(not applicable)
Category	/Controls/Whitebalance/BalanceWhiteAutoControl

DeviceStatus

DeviceTemperature

Reports the temperature that is defined by `DeviceTemperatureSelector`.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Float
Access	Read only
Visibility	Beginner
Unit	Degrees Celsius
Resolution	0.031
Accuracy	±1 °C
Affected features	(not applicable)
Category	/DeviceStatus

DeviceTemperatureSelector

Selects one of the built-in temperature sensors within the camera. Not all cameras support main board and sensor support. See the camera technical manuals to find out more information on main board and sensor temperature support.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Possible values	<i>Main, Sensor</i>
Affected features	DeviceTemperature
Category	/DeviceStatus

EventControl

This chapter describes how to control the generation of events to the host application. An event is a message that is sent to the host application to notify it of the occurrence of an internal event.

EventData

Origin of feature	Camera
Visibility	Beginner
Feature type	Integer
Access	Read only (Constant)
Category	/EventControl/EventData

The following table lists all the events supported by cameras.

Event	Event
EventAcquisitionEndFrameID	EventLine1RisingEdgeFrameID
EventAcquisitionEndTimestamp	EventLine1RisingEdgeTimestamp
EventAcquisitionRecordTriggerFrameID	EventLine2FallingEdgeFrameID
EventAcquisitionRecordTriggerTimestamp	EventLine2FallingEdgeTimestamp
EventAcquisitionStartFrameID	EventLine2RisingEdgeFrameID
EventAcquisitionStartTimestamp	EventLine2RisingEdgeTimestamp
EventAction0FrameID	EventLine3FallingEdgeFrameID
EventAction0Timestamp	EventLine3FallingEdgeTimestamp
EventAction1FrameID	EventLine3RisingEdgeFrameID
EventAction1Timestamp	EventLine3RisingEdgeTimestamp
EventErrorFrameID	EventLine4FallingEdgeFrameID
EventErrorTimestamp	EventLine4FallingEdgeTimestamp
EventExposureEndFrameID	EventLine4RisingEdgeFrameID
EventExposureEndTimestamp	EventLine4RisingEdgeTimestamp
EventExposureStartFrameID	EventOverflowFrameID
EventExposureStartTimestamp	EventOverflowTimestamp
EventFrameTriggerFrameID	EventPtpSyncLockedFrameID
EventFrameTriggerTimestamp	EventPtpSyncLockedTimestamp
EventLine1FallingEdgeFrameID	EventPtpSyncLostFrameID
EventLine1FallingEdgeTimestamp	EventPtpSyncLostTimestamp

EventID

EventAcquisitionEnd

ID value of event.

Origin of feature	Camera
Feature type	Integer
Access	Read only (Constant)
Visibility	Beginner
Value	<i>40001</i>
Affected features	EventAcquisitionEndTimestamp, EventAcquisitionEndFrameID
Category	/EventControl/EventID

EventAcquisitionRecordTrigger

ID value of event.

Origin of feature	Camera
Feature type	Integer
Access	Read only (Constant)
Visibility	Beginner
Value	<i>40004</i>
Affected features	EventAcquisitionRecordTriggerTimestamp, EventAcquisitionRecordTriggerFrameID
Category	/EventControl/EventID

EventAcquisitionStart

ID value of event.

Origin of feature	Camera
Feature type	Integer
Access	Read only (Constant)
Visibility	Beginner
Value	<i>40000</i>

Affected features	EventAcquisitionStartTimestamp, EventAcquisitionStartFrameID
Category	/EventControl/EventID

EventAction0

ID value of event.

Origin of feature	Camera
Feature type	Integer
Access	Read only (Constant)
Visibility	Beginner
Value	40020
Affected features	EventAction0Timestamp, EventAction0FrameID
Category	/EventControl/EventID

EventAction1

ID value of event.

Origin of feature	Camera
Feature type	Integer
Access	Read only (Constant)
Visibility	Beginner
Value	40021
Affected features	EventAction1Timestamp, EventAction1FrameID
Category	/EventControl/EventID

EventError

The error event occurs if there is a problem on the camera; this event should be reported to technical support. If you use the message channel for event notification, you are always subscribed to this event.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Integer
Access	Read only (Constant)
Visibility	Beginner

Value	65535
Affected features	EventErrorTimestamp, EventErrorFrameID
Category	/EventControl/EventID

EventExposureEnd

ID value of event.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Integer
Access	Read only (Constant)
Visibility	Beginner
Value	40003
Affected features	EventExposureEndTimestamp, EventExposureEndFrameID
Category	/EventControl/EventID

EventExposureStart

The Exposure Start event occurs if the exposure start event occurs.

Origin of feature	Camera
Feature type	Integer
Access	Read only (Constant)
Visibility	Beginner
Value	40019
Vimba version	Vimba version 1.4 or later
Affected features	EventExposureStartTimestamp, EventExposureStartFrameID
Category	/EventControl/EventID

EventFrameTrigger

ID value of event.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Integer

Access	Read only (Constant)
Visibility	Beginner
Value	<i>40002</i>
Affected features	EventFrameTriggerTimestamp, EventFrameTriggerFrameID
Category	/EventControl/EventID

EventFrameTriggerReady

The Frame Trigger event occurs if the camera is ready for another frame acquisition.

Origin of feature	Camera
Feature type	Integer
Access	R/C
Visibility	Beginner
Value	<i>40018</i>
Affected features	EventFrameTriggerReadyTimestamp, EventFrameTriggerReadyFrameID
Category	/EventControl/EventID

EventLine1FallingEdge

ID value of event.

Origin of feature	Camera
Feature type	Integer
Access	Read only (Constant)
Visibility	Beginner
Value	<i>40011</i>
Affected features	EventLine1FallingEdgeTimestamp, EventLine1FallingEdgeFrameID
Category	/EventControl/EventID

EventLine1RisingEdge

ID value of event.

Origin of feature	Camera
Feature type	Integer

Access	Read only (Constant)
Visibility	Beginner
Value	<i>40010</i>
Affected features	EventLine1RisingEdgeTimestamp, EventLine1RisingEdgeFrameID
Category	/EventControl/EventID

EventLine2FallingEdge

ID value of event.

Origin of feature	Camera
Feature type	Integer
Access	Read only (Constant)
Visibility	Beginner
Value	<i>40013</i>
Affected features	EventLine2FallingEdgeTimestamp, EventLine2FallingEdgeFrameID
Category	/EventControl/EventID

EventLine2RisingEdge

ID value of event.

Origin of feature	Camera
Feature type	Integer
Access	Read only (Constant)
Visibility	Beginner
Value	<i>40012</i>
Affected features	EventLine2RisingEdgeTimestamp, EventLine2RisingEdgeFrameID
Category	/EventControl/EventID

EventLine3FallingEdge

ID value of event.

Origin of feature	Camera
Feature type	Integer

Access	Read only (Constant)
Visibility	Beginner
Value	<i>40015</i>
Affected features	EventLine3FallingEdgeTimestamp, EventLine3FallingEdgeFrameID
Category	/EventControl/EventID

EventLine3RisingEdge

ID value of event.

Origin of feature	Camera
Feature type	Integer
Access	Read only (Constant)
Visibility	Beginner
Value	<i>40014</i>
Affected features	EventLine3RisingEdgeTimestamp, EventLine3RisingEdgeFrameID
Category	/EventControl/EventID

EventLine4FallingEdge

ID value of event.

Origin of feature	Camera
Feature type	Integer
Access	Read only (Constant)
Visibility	Beginner
Value	<i>40017</i>
Affected features	EventLine4FallingEdgeTimestamp, EventLine4FallingEdgeFrameID
Category	/EventControl/EventID

EventLine4RisingEdge

ID value of event.

Origin of feature	Camera
Feature type	Integer

Access	Read only (Constant)
Visibility	Beginner
Value	<i>40016</i>
Affected features	EventLine4RisingEdgeTimestamp, EventLine4RisingEdgeFrameID
Category	/EventControl/EventID

EventOverflow

The overflow event occurs if one or more notification events are lost on the camera. If you use the message channel for event notification, you are always subscribed to this event.

Origin of feature	Camera
Feature type	Integer
Access	Read only (Constant)
Visibility	Beginner
Value	<i>65534</i>
Affected features	EventOverflowTimestamp, EventOverflowFrameID
Category	/EventControl/EventID

EventPtpSyncLocked

The camera has acquired synchronization to the master clock.

Origin of feature	Camera
Feature type	Integer
Access	Read only (Constant)
Visibility	Beginner
Value	<i>40006</i>
Affected features	EventPtpSyncLockedTimestamp, EventPtpSyncLockedFrameID
Category	/EventControl/EventID

EventPtpSyncLost

The camera has lost synchronization to the master clock.

Origin of feature	Camera
Feature type	Integer

Access	Read only (Constant)
Visibility	Beginner
Value	40005
Affected features	EventPtpSyncLostTimestamp, EventPtpSyncLostFrameID
Category	/EventControl/EventID



If you use the message channel for event notification, you are always subscribed to EventOverflow and EventError events.



There is no mechanism to detect the loss of events during transportation. If mis-configured, cameras may produce lots of events; more than a PC can handle.

EventNotification

Activates event notification on the GigE Vision message channel.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Possible values	<i>On, Off</i>
Default value	<i>Off</i>
Affected features	EventsEnable1
Category	/EventControl

EventSelector

Selects a specific event to be enabled or disabled using **EventNotification**.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write

Visibility	Beginner
Possible values	<i>AcquisitionStart, AcquisitionEnd, AcquisitionRecordTrigger, ExposureStart, ExposureEnd, FrameTrigger, FrameTriggerReady, PtpSyncLocked, PtpSyncLost, Line1FallingEdge, Line2FallingEdge, Line3FallingEdge, Line4FallingEdge, Line1RisingEdge, Line2RisingEdge, Line3RisingEdge, Line4RisingEdge, Action0, Action1,</i>
Default value	<i>AcquisitionStart</i>
Affected features	EventNotification, EventsEnable1
Category	/EventControl

EventsEnable1

Bit field of all events.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	0 to 4294967295
Default value	0
Affected features	EventNotification
Category	/EventControl

For example:

Bit 1	EventAcquisitionStart
Bit 2	EventAcquisitionEnd
Bit 3	EventFrameTrigger
Bit 19	EventFrameTriggerReady

This is an alternative to setting each event individually using the `EventNotification` and `EventSelector` method.



Activate event-notification on the GigE Vision message channel. For programmers, see register documentation.

GigE

BandwidthControlMode

Selects the desired mode of bandwidth control.

Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Possible values	<i>StreamBytesPerSecond, SCPD, Both</i>
Default value	<i>StreamBytesPerSecond</i>
Affected features	(not applicable)
Category	/GigE

Value	Description
<i>StreamBytesPerSecond</i>	See the StreamBytesPerSecond feature for more information.
<i>SCPD</i>	Stream channel packet delay expressed in timestamp counter units. This mode may be used to limit the rate of data from the camera to the host. It works by inserting a delay between successive stream channel packets, for example, the longer the delay, the slower the data rate. This mode is not recommended.
<i>Both</i>	Implements a combination of control modes. This mode is not recommended.



Bandwidth allocation can be controlled by **StreamBytesPerSecond**, or by register **SCPD0**. If you do not understand **SCPD0** and how this driver uses this register, leave this set to **StreamBytesPerSecond**.

ChunkModeActive

Enables camera to send GVSP chunk data with an image. **ChunkModeActive** is read-only during acquisition.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Boolean
Access	Read/Write
Visibility	Expert
Possible values	<i>true, false</i>
Default value	<i>false</i>
Affected features	PayloadSize, NonImagePayloadSize
Category	/GigE

The currently implemented chunk data.

Byte	Description
Bytes 1 to 4	<ul style="list-style-type: none"> Acquisition count Big-endian
Byte 5	<p>These eight bits indicate the following EF lens settings:</p> <ul style="list-style-type: none"> Bit 7 (Error): If this bit is set to 1, the EF lens is in an error state, bits 2 to 5 indicate enumerated value of last error, and all other bits and bytes is 0. Bit 6 (Lens attached): If this bit is set to 1, an EF lens is attached to camera. Bit 5 (Auto focus): If this bit is set to 1, the EF lens manual/auto focus switch is set to the auto focus position. Bits 2 to 4 (Last error): Enumerated error value: <ul style="list-style-type: none"> 0: No error detected 1: Lens failed query by camera 2: Lens communication error (can occur when removing lens) 3: Lens communication error (can occur when removing lens) 4: Lens remained busy for longer than 10 seconds 5: Lens focus "Zero Stop" not detected 6: Lens focus "Infinity Stop" not detected Bits 0 to 1: Upper 2 bits of focus percentage value (see Byte 6). Big-endian
Byte 6	<ul style="list-style-type: none"> These eight bits in conjunction with bits 0 to 1 of byte 5, indicate the current focus position of the EF lens in (percentage of maximum focus range) × 10 (that is, 1000 = 100 percent = Infinity Stop). If the lens manual/auto focus switch is in the manual position these bits is 0. Big-endian

Byte	Description
Byte7	<ul style="list-style-type: none"> These eight bits indicate the current aperture position of the EF lens in Dn. To convert Dn to F-Stop value, use formula: $F\text{-Stop} = 2^{[(Dn-8)/16]}$. Big-endian
Byte 8	<ul style="list-style-type: none"> These eight bits indicate the current focal length of the EF lens in millimeters. Big-endian
Bytes 9 to 12	<ul style="list-style-type: none"> Exposure value in microseconds. Big-endian
Bytes 13 to 16	<ul style="list-style-type: none"> Gain value in decibels. For Prosilica GT1930, GT1930C, GT1930L and GT1930LC models: Gain value in tenths of decibels (that is, 201 represents 20.1 decibels) Big-endian
Bytes 17 to 18	<ul style="list-style-type: none"> Sync-in levels. A bit field. Bit 0 is sync-in 0, bit 1 is sync-in 1. A bit value of 1 = level high, and a bit value of 0 = level low. Big-endian
Bytes 19 to 20	<ul style="list-style-type: none"> Sync-out levels A bit field. Bit 0 is sync-out 0, bit 1 is sync-out 1. A bit value of 1 = level high, and a bit value of 0 = level low. Big-endian
Bytes 21 to 24	<ul style="list-style-type: none"> Reserved 0 Big-endian
Bytes 25 to 28	<ul style="list-style-type: none"> Reserved 0 Big-endian
Bytes 29 to 32	<ul style="list-style-type: none"> Reserved 0 Big-endian
Bytes 33 to 36	<ul style="list-style-type: none"> Reserved 0 Big-endian
Bytes 37 to 40	<ul style="list-style-type: none"> Reserved 0 Big-endian
Bytes 41 to 44	<ul style="list-style-type: none"> Chunk ID 1000 Little-endian
Bytes 45 to 48	<ul style="list-style-type: none"> Chunk length Little-endian

Configuration

GevIPConfigurationApply

Apply the IP configuration mode selected by `GevIPConfigurationMode`.

Display name	IP Configuration Apply
Origin of feature	Driver
Feature type	Command
Access	Write
Affected features	(not applicable)
Category	/GigE/Configuration

GevIPConfigurationMode

The current IP configuration mode.

Display name	IP Configuration Mode
Origin of feature	Driver
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Possible values	<i>LLA, DHCP, Persistent</i>
Affected features	(not applicable)
Category	/GigE/Configuration

Current

GevCurrentDefaultGateway

The IP address of the default gateway of the camera.

Standard	GenICam Standard Feature Naming Convention
Display name	Current Default Gateway
Origin of feature	Driver
Feature type	Integer
Access	Read only

Visibility	Beginner
Affected features	(not applicable)
Category	/GigE/Current

GevCurrentIPAddress

The current IP address of the camera.

Standard	GenICam Standard Feature Naming Convention
Display name	Current IP Address
Origin of feature	Driver
Feature type	Integer
Access	Read only
Visibility	Beginner
Affected features	(not applicable)
Category	/GigE/Current

GevCurrentSubnetMask

The current subnet mask of the camera.

Standard	GenICam Standard Feature Naming Convention
Display name	Current Subnet Mask
Origin of feature	Driver
Feature type	Integer
Access	Read only
Visibility	Beginner
Affected features	(not applicable)
Category	/GigE/Current

GVCP



GVCP is an interface standard for machine vision cameras which runs on the UDP protocol.

Allied Vision GigE cameras have a sophisticated real time resend mechanism that ensures a high degree of data integrity.

GVCPCmdRetries

Controls the maximum number of resend requests that the host attempts when trying to recover a lost packet.

Display name	Command Retries
Origin of feature	Driver
Feature type	Integer
Access	Read/Write
Visibility	Expert
Range	1 to 9
Default value	5
Affected features	GevHeartbeatTimeout, GevHeartbeatInterval, GVCPHBInterval
Category	/GigE/GVCP

GVCPCmdTimeout

The timeout waiting for an answer from the camera.

Display name	Command Timeout
Origin of feature	Driver
Feature type	Integer
Access	Read/Write
Visibility	Expert
Range	100 to 1000
Default value	250
Unit	Milliseconds
Affected features	GevHeartbeatTimeout, GevHeartbeatInterval, GVCPHBInterval
Category	/GigE/GVCP

GevHeartbeatInterval

The driver sends heartbeat packets to the camera every **GevHeartbeatInterval** milliseconds.

Display name	Heartbeat Interval
Origin of feature	Driver
Feature type	Integer

Access	Read/Write
Visibility	Expert
Range	200 to 1450
Default value	1450
Unit	Milliseconds
Vimba version	Vimba version 1.3 or later
Affected features	GVCPHBInterval
Category	/GigE/GVCP

GevHeartbeatTimeout

The driver sends heartbeat packets to the camera. If a heartbeat packet is not received within **GevHeartbeatTimeout**, the camera assumes the host has closed its controlling application or is dead, and closes its stream and control channel.

This parameter may need to be increased if stepping through code in a debugging tool, as this prevents the driver from sending heartbeat packets.

Standard	GenICam Standard Feature Naming Convention
Display name	Heartbeat Timeout
Origin of feature	Driver
Feature type	Integer
Access	Read/Write
Visibility	Expert
Range	500 to 10000
Default value	3000
Unit	Milliseconds
Vimba version	Vimba version 1.3 or later
Affected features	GevHeartbeatInterval, GVCPHBInterval
Category	/GigE/GVCP

GVCPHBInterval

The driver sends a heartbeat request packet to the camera every **GVCPHBInterval** milliseconds. If the camera fails to respond to the heartbeat request, a retry is sent **GVCPCmdTimeout** ms later. After **GVCPCmdRetries** retries with no response, a camera unplugged event is returned by the driver.

Display name	Heartbeat Interval
Origin of feature	Driver

Feature type	Integer
Access	Read/Write
Range	500 to 5000
Default value	3000
Unit	Milliseconds
Vimba version	Up to Vimba V1.2.1
Affected features	(not applicable)
Category	/GigE/GVCP



This parameter can be increased significantly to bypass problems if debugging applications.

GevSCPSPacketSize

This parameter determines the Ethernet packet size. Generally, this number must be set to as large as the network card (or other involved active networking components) allows. If this number is reduced, then CPU loading increases.

These large packet sizes (>1500 bytes) are called jumbo packets or frames in Ethernet terminology. If your GigE network card does not support jumbo packets or frames of at least 8228 bytes (the camera default on power up), then you need to reduce the `GevSCPSPacketSize` parameter of the camera to match the maximum jumbo packet size supported by your GigE interface. A `GevSCPSPacketSize` of 1500 bytes is a safe setting which all GigE network cards support.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Expert
Range	Camera dependent
Default value	Camera dependent
Unit	Bytes
Affected features	StreamBytesPerSecond, AcquisitionFrameRateAbs, ExposureTimeAbs, AcquisitionFrameRateLimit, StreamHoldCapacity, GVSPPacketSize
Category	/GigE



If you see all black images, or all frames reported as **StatFrameDropped** and zero images reported as **StatFrameDelivered**, you need to decrease this parameter.

NonImagePayloadSize

The maximum size of chunk data, not including the image chunk, in the image block payload. If **ChunkModeActive** = *false* then **NonImagePayloadSize** = 0.

Origin of feature	Camera
Feature type	Integer
Access	Read only
Visibility	Beginner
Range	0 to 4294967295
Unit	Bytes
Affected features	(not applicable)
Category	/GigE

PTP

PTP manages clock synchronization of multiple devices across an Ethernet network, with ± 1 microsecond tolerance. Once the clocks of the devices are synchronized, a synchronous software trigger can be sent to Allied Vision cameras via the **PtpAcquisitionGateTime** feature. On Allied Vision GigE cameras, the device clock is represented by the camera **GevTimestampValue** feature.



For more information on PTP, see the IEEE 1588-2008 standard:
standards.ieee.org/findstds/standard/1588-2008.html

PtpAcquisitionGateTime

PtpAcquisition trigger time. Used to schedule a synchronized software trigger on multiple PTP synchronized device. **PtpAcquisitionGateTime** must be set beyond current camera **GevTimestampValue**, for instance $\text{GevTimestampValue} \geq \text{PtpAcquisitionGateTime}$. If set below **GevTimestampValue**, image acquisition stalls. **PtpAcquisitionGateTime** resets to zero if **PtpMode** set to *Off*.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	0 to $(2^{63}-1)$
Default value	0
Unit	Nanoseconds
Affected features	(not applicable)
Category	/GigE/PTP

PtpMode

Controls the PTP device behavior.

Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Possible values	<i>Off, Slave, Master, Auto</i>
Default value	<i>Off</i>
Affected features	PtpAcquisitionGateTime
Category	/GigE/PTP

Value	Description
<i>Off</i>	This camera's GevTimestampValue is not synchronized with any other device. PtpAcquisitionGateTime resets to zero.
<i>Slave</i>	This camera's GevTimestampValue is altered to align with a master device's clock.

Value	Description
<i>Master</i>	This camera's GevTimestampValue is the master clock. All other PTP enabled slave devices synchronize their clock to this camera.
<i>Auto</i>	This camera uses the IEEE 1588 best master clock algorithm to determine which camera is master, and which are subordinates. It may be assigned as either. There may be several state transitions prior to synchronization.



If using the camera event channel, a **EventPtpSyncLost** is sent if **PtpMode** is changed. **EventPtpSyncLocked** is sent once PTP synchronization is re-established.

PtpStatus

The state of the PTP operation.

Origin of feature	Camera
Feature type	Enumeration
Access	Read only
Visibility	Beginner
Possible values	<i>Disabled, Initializing, Listening, Master, Passive, Uncalibrated, Slave</i>
Default value	<i>Disabled</i>
Affected features	(not applicable)
Category	/GigE/PTP

Value	Description
<i>Disabled</i>	Camera PtpMode is set to <i>Off</i> .
<i>Initializing</i>	PTP is being initialized. If camera or PTP device is being initialized, all devices statuses are set to initializing. This state appears very briefly.
<i>Listening</i>	Device is listening for other PTP enabled devices. The purpose of this state is to determine which device acts as the master.
<i>Master</i>	Device acting as master clock. If a better master clock is determined, the device proceeds to <i>Listening</i> , <i>Uncalibrated</i> , and finally <i>Slave</i> states.
<i>Passive</i>	If there are two or more devices with PtpMode = <i>Master</i> , this device has an inferior clock and is not synchronized to the master.

Value	Description
<i>Uncalibrated</i>	PTP synchronization not yet achieved. Subordinate devices are synchronizing with master.
<i>Slave</i>	PTP synchronization between this device and master is achieved. Device is acting as a subordinate to another device's master clock.



PTP capable cameras with firmware < 01.54.11026 have `PtpStatus = [Off, Master, Syncing, Slave, Error]`.

PayloadSize

The total size of image block payload.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Integer
Access	Read only
Visibility	Beginner
Unit	Bytes
Affected features	(not applicable)
Category	/GigE

If <code>ChunkModeActive = true</code>	Then <code>PayloadSize = ImageSize + NonImagePayloadSize + 8</code>
If <code>ChunkModeActive = false</code>	Then <code>PayloadSize = ImageSize</code>

Persistent

GevPersistentDefaultGateway

The persistent default gateway of the camera.

Standard	GenICam Standard Feature Naming Convention
Display name	Persistent Default Gateway
Origin of feature	Camera

Feature type	Integer
Access	Read/Write
Visibility	Beginner
Affected features	(not applicable)
Category	/GigE/Persistent

GevPersistentIPAddress

The persistent IPv4 address of the camera.

Standard	GenICam Standard Feature Naming Convention
Display name	Persistent IP Address
Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Affected features	(not applicable)
Category	/GigE/Persistent

GevPersistentSubnetMask

The persistent subnet mask of the camera.

Standard	GenICam Standard Feature Naming Convention
Display name	Persistent Subnet Mask
Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Affected features	(not applicable)
Category	/GigE/Persistent

StreamBytesPerSecond

Moderates the data rate of the camera. This is particularly useful for slowing the camera down so that it can operate over slower links such as Fast Ethernet (100 Mbps), or wireless networks. It is also an important control for multiple camera situations. If multiple cameras are connected to a single GigE port (usually through

a switch), `StreamBytesPerSecond` for each camera needs to be set to a value so that the sum of each camera's `StreamBytesPerSecond` parameter does not exceed the data rate of the GigE port. Setting the parameter in this way ensures that multiple-camera situations work without packet collisions, for instance data loss.

To calculate the required minimum `StreamBytesPerSecond` setting for a camera in any image mode, use the following formula:

$$\text{StreamBytesPerSecond} = \text{Height} \times \text{Width} \times \text{FrameRate} \times \text{Bytes per Pixel}$$

115,000,000 bps is the typical maximum data rate for a GigE port. Beyond this setting, some network cards may drop packets.



If you are seeing occasional frames or packets reported as `StatFrameDropped` or `StatPacketMissed` you may need to decrease this parameter.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	1,000,000 to 124,000,000 1,000,000 to 248,000,000 for Prosilica GX in LAG mode
Unit	Bits per second
Affected features	AcquisitionFrameRateAbs, ExposureTimeAbs, AcquisitionFrameRateLimit
Category	/GigE

StreamFrameRateConstrain

If *true*, the camera automatically limits frame rate to bandwidth, determined by `StreamBytesPerSecond`, to prevent camera buffer overflows and dropped frames. If *false*, the frame rate is not limited to bandwidth (only sensor readout time). Latter case is useful for `AcquisitionMode = Recorder` or `StreamHoldEnable = On` modes, as these modes are not bandwidth limited.

Origin of feature	Camera
Feature type	Boolean
Access	Read/Write
Visibility	Beginner
Possible values	<i>true</i> , <i>false</i>
Default value	<i>true</i>

Affected features	AcquisitionFrameRateAbs, ExposureTimeAbs, AcquisitionFrameRateLimit
Category	/GigE

StreamHold

Normally, the camera sends data to the host PC immediately after completion of exposure. Enabling **StreamHold** delays the transmission of data, storing it in on-camera memory, until **StreamHold** is disabled.

This feature can be useful to prevent GigE network flooding in situations where a large number of cameras connected to a single host PC are capturing a single event. Using the **StreamHold** function, each camera holds the event image data until the host PC disables **StreamHold** for each camera in turn.

StreamHoldCapacity

The maximum number of images (for the current size and format), which can be stored on the camera if **StreamHold** is enabled. Used if **AcquisitionMode = Recorder**, or **StreamHoldEnable = On**. This value is different for each camera depending on the camera internal memory size and the **ImageSize**.

Origin of feature	Camera
Feature type	Integer
Access	Read only
Visibility	Beginner
Unit	Frames
Affected features	(not applicable)
Category	/GigE/StreamHold

StreamHoldEnable

Control on-camera image storage; this feature is like a “pause” button for the image stream.

Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Possible values	<i>On, Off</i>
Default value	<i>Off</i>

Affected features	(not applicable)
Category	/GigE/StreamHold
Value	Description
<i>On</i>	Images remain stored on the camera, and are not transmitted to the host.
<i>Off</i>	The image stream resumes, and any stored images are sent to the host.

Timestamp

Allied Vision GigE cameras have a very accurate `timestamp` function for timestamping images.



Use PTP for synchronizing cameras.

GevTimestampControlLatch

Captures timestamp and stores it in `GevTimestampValue`.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Command
Access	Write
Visibility	Beginner
Affected features	<code>GevTimestampControlReset</code>
Category	/GigE/Timestamp

GevTimestampControlReset

Resets the camera's timestamp to `0`. This is not possible while PTP is enabled; if `PtpMode` is set to *Master* or *Auto*.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Command
Access	Write

Visibility	Beginner
Affected features	GevTimestampControlLatch
Category	/GigE/Timestamp

GevTimestampTickFrequency

The frequency of the image timestamp. The image timestamp can be useful for determining whether images are missing from a sequence due to missing trigger events. Cameras offering clock synchronization via PTP has a `GevTimestampTickFrequency` of 1,000,000,000.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Integer
Access	Read only
Visibility	Beginner
Range	0 to 4294967295
Default value	Camera dependent
Unit	Hertz
Affected features	(not applicable)
Category	/GigE/Timestamp

GevTimestampValue

The value of timestamp, if latched by `GevTimestampControlLatch`.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Integer
Access	Read only
Visibility	Beginner
Unit	Camera clock ticks
Affected features	(not applicable)
Category	/GigE/Timestamp

IO

The feature and readout of all camera I/Os. The number of I/Os is camera model dependent.

StatusLED

StatusLedLevels

Status LED levels in GPO mode.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Range	0 to 4294967296
Default value	0
Affected features	(not applicable)
Category	/IO/StatusLED



StatusLedPolarity can invert these values.

StatusLedPolarity

The polarity applied to the status LED specified by StatusLedSelector.

Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Possible values	<i>Normal, Invert</i>
Affected features	(not applicable)
Category	/IO/StatusLED

StatusLedSelector

Select the status LED to be controlled with `StatusLedSource` and `StatusLedPolarity`.

Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Possible values	<i>StatusLed1</i>
Affected features	(not applicable)
Category	/IO/StatusLED

StatusLedSource

The signal source of the status LED specified by `StatusLedSelector`.

Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Possible values	<i>GPO, AcquisitionTriggerReady, FrameTriggerReady, FrameTrigger, Exposing, FrameReadout, Imaging, Acquiring, Line1, Line2, Line3, Line4, CCDTemperatureOK, Strobe1</i>
Default value	<i>Exposing</i>
Affected features	(not applicable)
Category	/IO/StatusLED

Value	Description
<i>GPO</i>	General purpose output.
<i>AcquisitionTriggerReady</i>	Active once the camera has been recognized by the host PC and is ready to start acquisition.
<i>FrameTriggerReady</i>	Becomes active if the camera is in a state that accepts the next frame trigger.
<i>FrameTrigger</i>	This is the logic trigger signal inside of the camera. It is initiated by an external trigger or software trigger.
<i>Exposing</i>	Exposure in progress.
<i>FrameReadout</i>	Becomes active at the start of frame readout.
<i>Imaging</i>	Exposing or frame readout. Active if the camera is exposing or reading out frame data.
<i>Acquiring</i>	Becomes active at the start of acquisition.

Value	Description
<i>LineIn1, LineIn2, LineIn3, LineIn4</i>	External input <i>Line1, Line2, Line3, Line4</i> .
<i>CCDTemperatureOK</i>	Only for CCD models that support this feature: indicates if camera has reached the desired temperature value.
<i>Strobe1</i>	Source is strobe timing unit.

Strobe



Strobe is an internal signal generator for on-camera clocking functions. Valid if any of the **SyncOutSource** is set to *Strobe1*. Strobe allows the added functionality of duration and delay, useful if trying to synchronize a camera exposure to an external strobe.

StrobeDelay

The delay from strobe trigger to strobe output.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	Camera dependent
Default value	0
Unit	Microseconds
Affected features	(not applicable)
Category	/IO/Strobe

StrobeDuration

The duration of strobe signal.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	Camera dependent

Default value	0
Unit	Microseconds
Affected features	(not applicable)
Category	/IO/Strobe

StrobeDurationMode

The mode of the strobe timing unit.

Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Possible values	<i>Source, Controlled</i>
Default value	Source
Affected features	(not applicable)
Category	/IO/Strobe

Value	Description
<i>Source</i>	Strobe duration is the same as source duration.
<i>Controlled</i>	Strobe duration is set by StrobeDuration .

StrobeSource

Associates the start of strobe signal with one of the following image capture events.

Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Possible values	<i>AcquisitionTriggerReady, FrameTriggerReady, FrameTrigger, Exposing, FrameReadout, Acquiring, LineIn1, LineIn2, LineIn3, LineIn4</i>
Default value	<i>FrameTrigger</i>
Affected features	(not applicable)
Category	/IO/Strobe

Value	Description
<i>AcquisitionTriggerReady</i>	Active once the camera has been recognized by the host PC and is ready to start acquisition.
<i>FrameTriggerReady</i>	Active if the camera is in a state that accepts the next frame trigger.
<i>FrameTrigger</i>	Active if an image has been initiated to start. This is the logic trigger signal inside of the camera. It is initiated by an external trigger or software trigger.
<i>Exposing</i>	Active for the duration of sensor exposure.
<i>FrameReadout</i>	Active for the duration of frame readout, that is, the transferring of image data from the sensor to camera memory.
<i>Acquiring</i>	Active during the acquisition stream.
<i>LineIn1</i>	Active if there is an external trigger at <i>Line1</i> .
<i>LineIn2</i>	Active if there is an external trigger at <i>Line2</i> .
<i>LineIn3</i>	Active if there is an external trigger at <i>Line3</i> .
<i>LineIn4</i>	Active if there is an external trigger at <i>Line4</i> .



For detailed information, see the camera quantum efficiency plots provided in the camera technical manuals.

www.alliedvision.com/en/support/technical-documentation.html

SyncIn

The signal source of the strobe timing unit. See *SyncOutSource* for descriptions.

SyncInGlitchFilter

Ignores glitches on the *SyncIn* input line with pulse duration less than set value.

Setting *SyncInGlitchFilter* value increases latency of *FrameTrigger* by same amount.



Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner

Range	0 to 50000
Default value	0
Unit	Nanoseconds
Affected features	(not applicable)
Category	/IO/SyncIn

SyncInLevels

A 4-bit register where each bit corresponds to a specific **SyncIn** input. For example, if this value returns 2 (0010), **SyncIn2** is high and all other sync input signals (**SyncIn1**, **SyncIn3**, **SyncIn4**) are low. The value in the register is binary.

Origin of feature	Camera
Feature type	Integer
Access	Read only
Visibility	Beginner
Affected features	(not applicable)
Category	/IO/SyncIn

SyncInSelector

Select the sync-in line to control with **SyncInGlitchFilter**.

Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Possible values	<i>SyncIn1</i> , <i>SyncIn2</i> , <i>SyncIn3</i> , <i>SyncIn4</i>
Default value	<i>SyncIn1</i>
Affected features	SyncInGlitchFilter
Category	/IO/SyncIn

SyncOut

Used for synchronization with other cameras, devices, or general purpose outputs.

SyncOutLevels

The output levels of hardware synchronization outputs, for outputs in GPO mode.

Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	0 to 4294967295
Affected features	(not applicable)
Category	/IO/SyncOut



SyncOutPolarity can invert the SyncOutLevels.

SyncOutPolarity

The polarity applied to the sync-out line specified by SyncOutSelector.

Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Possible values	<i>Normal, Invert</i>
Default value	<i>Normal</i>
Affected features	(not applicable)
Category	/IO/SyncOut

SyncOutSelector

Selects the sync-out line to control with SyncOutSource and SyncOutPolarity.

Origin of feature	Camera
Feature type	Enumeration

Access	Read/Write
Visibility	Beginner
Possible values	<i>SyncOut1, SyncOut2, SyncOut3, SyncOut4</i>
Default value	<i>SyncOut1</i>
Affected features	SyncOutSource, SyncOutPolarity
Category	/IO/SyncOut

SyncOutSource

The signal source of the sync-out line specified by `SyncOutSelector`.

Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Possible values	<i>GPO, AcquisitionTriggerReady, FrameTriggerReady, Exposing, FrameReadout, Imaging, Acquiring, LineIn1, LineIn2, LineIn3, LineIn4, Strobe1, CCDTemperatureOK</i>
Affected features	(not applicable)
Category	/IO/SyncOut

Value	Description
<i>GPO</i>	General purpose output.
<i>AcquisitionTriggerReady</i>	Active once the camera has been recognized by the host PC and is ready to start acquisition.
<i>FrameTriggerReady</i>	Active if the camera is in a state that accepts the next frame trigger.
<i>Exposing</i>	Active for the duration of sensor exposure.
<i>FrameReadout</i>	Active during frame readout. The transferring of image data from the sensor to camera memory.
<i>Imaging</i>	Active if the camera is exposing or reading out frame data.
<i>Acquiring</i>	Active if acquisition start has been initiated.
<i>LineIn1</i>	Active if there is an external trigger at <i>Line1</i> .
<i>LineIn2</i>	Active if there is an external trigger at <i>Line2</i> .
<i>LineIn3</i>	Active if there is an external trigger at <i>Line3</i> .
<i>LineIn4</i>	Active if there is an external trigger at <i>Line4</i> .

Value	Description
<i>Strobe1</i>	The output signal is controlled according to <i>Strobe1</i> settings.
<i>CCDTemperatureOK</i>	Only for CCD models that support this feature: indicates if camera has reached the desired temperature value.

ImageFormat

This chapter describes how to influence and determine the image size and resolution. It assumes that the camera generates a single rectangular image and allows for only one Region of Interest.

Height

The height of the image.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	Camera dependent
Unit	Pixels
Affected features	StreamHoldCapacity, PayloadSize, NonImagePayloadSize, ImageSize, AcquisitionFrameRateAbs, ExposureTimeAbs, AcquisitionFrameRateLimit
Category	/ImageFormat

HeightMax

The maximum image height for the current image mode.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Integer
Access	Read only
Visibility	Beginner
Unit	Pixels
Affected features	StreamHoldCapacity, PayloadSize, NonImagePayloadSize, ImageSize, AcquisitionFrameRateAbs, ExposureTimeAbs, AcquisitionFrameRateLimit, Height, OffsetY
Category	/ImageFormat

ImageSize

The size of images for the current format. The image size is impacted by the pixel format and image height.

Origin of feature	Camera
Feature type	Integer
Access	Read only
Visibility	Beginner
Unit	Bytes
Affected features	(not applicable)
Category	/ImageFormat

OffsetX

The starting column of the readout region (relative to the first column of the sensor).

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	Camera dependent
Default value	0
Unit	Pixels
Affected features	StreamHoldCapacity, PayloadSize, NonImagePayloadSize, ImageSize, AcquisitionFrameRateAbs, ExposureTimeAbs, AcquisitionFrameRateLimit
Category	/ImageFormat

OffsetY

The starting row of the readout region (relative to the first row of the sensor).

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Integer

Access	Read/Write
Visibility	Beginner
Range	Camera dependent
Default value	0
Unit	Pixels
Affected features	StreamHoldCapacity, PayloadSize, NonImagePayloadSize, ImageSize, AcquisitionFrameRateAbs, ExposureTimeAbs, AcquisitionFrameRateLimit
Category	/ImageFormat

PixelFormat

There are various pixel formats that GigE cameras can output. Not all cameras have every pixel format (see the technical manuals for details).

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Possible values	<i>Mono8, Mono10, Mono12, Mono12Packed, Mono14, BayerBG8, BayerRG8, BayerGR8, BayerBG8, BayerBG10, BayerGB12Packed, BayerGR12Packed, BayerGB12, BayerRG12, BayerGR12, RGB8Packed, BGR8Packed, RGBA8Packed, BGRA8Packed, RGB12Packed, YUV411Packed, YUV422Packed, YUV444Packed</i>
Affected features	BinningHorizontal, StreamHoldCapacity, PayloadSize, NonImagePayloadSize, WidthMax, ImageSize, AcquisitionFrameRateAbs, ExposureTimeAbs, AcquisitionFrameRateLimit, Width, OffsetX, BinningVertical, HeightMax, Height, OffsetY
Category	/ImageFormat

<i>Mono8</i>	<ul style="list-style-type: none"> • One pixel of data for every byte. For color cameras with on-camera interpolation, luminance (Y) channel returned. • Format: Monochrome • Bit depth: 8
<i>Mono10</i>	<ul style="list-style-type: none"> • One pixel of data for every two bytes, LSB aligned. For color cameras with on-camera interpolation, luminance (Y) channel returned. • Format: Monochrome • Bit depth: 10
<i>Mono12</i>	<ul style="list-style-type: none"> • One pixel of data for every two bytes, LSB aligned. For color cameras with on-camera interpolation, luminance (Y) channel returned. • Format: Monochrome • Bit depth: 12
<i>Mono12Packed</i>	<ul style="list-style-type: none"> • Two pixels of data for every three bytes. Does not support odd width × height. • Format: Monochrome • Bit depth: 12
<i>Mono14</i>	<ul style="list-style-type: none"> • One pixel of data for every two bytes, LSB aligned. For color cameras with on-camera interpolation, luminance (Y) channel returned. • Format: Monochrome • Bit depth: 14
<i>BayerGB8</i>	<ul style="list-style-type: none"> • Un-interpolated color. Interpolation performed by host software. • Format: Raw • Bit depth: 8
<i>BayerRG8</i>	<ul style="list-style-type: none"> • Un-interpolated color. Interpolation performed by host software. • Format: Raw • Bit depth: 8
<i>BayerGR8</i>	<ul style="list-style-type: none"> • Un-interpolated color. Interpolation performed by host software. • Format: Raw • Bit depth: 8
<i>BayerBG8</i>	<ul style="list-style-type: none"> • Un-interpolated color. Interpolation performed by host software. • Format: Raw • Bit depth: 8

<i>BayerBG10</i>	<ul style="list-style-type: none"> • One pixel of data every for two bytes, LSB aligned. Un-interpolated color. Interpolation performed by host software. • Format: Raw • Bit depth: 10
<i>BayerGB12Packed</i>	<ul style="list-style-type: none"> • Two pixels of data for every three bytes. Un-interpolated color. Interpolation performed by host software. Does not support odd width or height. • Format: Raw • Bit depth: 12
<i>BayerGR12Packed</i>	<ul style="list-style-type: none"> • Two pixels of data for every three bytes. Un-interpolated color. Interpolation performed by host software. Does not support odd width or height. • Format: Raw • Bit depth: 12
<i>BayerGB12</i>	<ul style="list-style-type: none"> • One pixel of data for every two bytes, LSB aligned. Un-interpolated color. Interpolation performed by host software. • Format: Raw • Bit depth: 12
<i>BayerRG12</i>	<ul style="list-style-type: none"> • One pixel of data every for two bytes, LSB aligned. Un-interpolated color. Interpolation performed by host software. • Format: Raw • Bit depth: 12
<i>BayerGR12</i>	<ul style="list-style-type: none"> • One pixel of data for every two bytes, LSB aligned. Un-interpolated color. Interpolation performed by host software. • Format: Raw • Bit depth: 12
<i>RGB8Packed</i>	<ul style="list-style-type: none"> • One pixel of data for every three bytes. On-camera interpolated color. • Format: Color (RGB) • Bit depth: 8
<i>BGR8Packed</i>	<ul style="list-style-type: none"> • One pixel of data for every three bytes. On-camera interpolated color. • Bit depth: 8
<i>RGBA8Packed</i>	<ul style="list-style-type: none"> • One pixel of data for every four bytes. On-camera interpolated color. Alpha channel (A) is fully opaque, 0xFF. • Format: Color (RGB) • Bit depth: 8

<i>BGRA8Packed</i>	<ul style="list-style-type: none"> • One pixel of data for every four bytes. On-camera interpolated color. Alpha channel (A) is fully opaque, 0xFF. • Bit depth: 8
<i>RGB12Packed</i>	<ul style="list-style-type: none"> • One pixel of data for every six bytes, R, G, B channels LSB-aligned. On-camera interpolated color. • Format: Color (RGB) • Bit depth: 12
<i>YUV411Packed</i>	<ul style="list-style-type: none"> • Four pixels of data for every six bytes. On-camera interpolated color. Data in YUV411 format. • Format: Color (YUV) • Bit depth: 8
<i>YUV422Packed</i>	<ul style="list-style-type: none"> • Three pixels of data for every six bytes. On-camera interpolated color. Data in YUV422 format. • Format: Color (YUV) • Bit depth: 8
<i>YUV444Packed</i>	<ul style="list-style-type: none"> • Two pixels of data for every six bytes. On-camera interpolated color. Data in YUV444 format. • Format: Color (YUV) • Bit depth: 8

SensorReadoutMode

Readout mode of the sensor. Use this feature to switch between 10-bit and 12-bit readout mode.



With 10-bit sensor readout mode you can achieve a higher frame rate. The sensor is capable of higher frame rates but readout is limited by GigE bandwidth and exposure value. You can improve frame rates with a reduced Region of Interest and shorter exposure values.

Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Default value	<i>Readout12Bits</i>
Possible values	<i>Readout12Bits</i> : 12-bit sensor readout mode <i>Readout10Bits</i> : 10-bit sensor readout mode
Affected features	(not applicable)
Category	/ImageFormat

Width

The width of image.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	Camera dependent
Unit	Pixels
Affected features	StreamHoldCapacity, PayloadSize, NonImagePayloadSize, ImageSize, AcquisitionFrameRateAbs, ExposureTimeAbs, AcquisitionFrameRateLimit
Category	/ImageFormat

WidthMax

The maximum image width for the current image mode. Horizontal binning, for example, changes this value.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Integer
Access	Read only
Visibility	Beginner
Unit	Pixels
Affected features	StreamHoldCapacity, PayloadSize, NonImagePayloadSize, ImageSize, AcquisitionFrameRateAbs, ExposureTimeAbs, AcquisitionFrameRateLimit, Width, OffsetX
Category	/ImageFormat

ImageMode

BinningHorizontal

The horizontal binning factor. Binning is the summing of charge (for CCD sensors) or gray value (for CMOS sensors) of adjacent pixels on a sensor, giving a lower resolution image, but at full resolution. Image sensitivity is also improved due to summed pixel charge or gray value.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	Camera dependent
Default value	1
Affected features	StreamHoldCapacity, PayloadSize, NonImagePayloadSize, WidthMax, ImageSize, AcquisitionFrameRateAbs, ExposureTimeAbs, AcquisitionFrameRateLimit, Width, OffsetX
Category	/ImageMode



BinningHorizontal and **DecimationHorizontal** are mutually exclusive. Setting **BinningHorizontal** > 1 forces **DecimationHorizontal** to 1.

Color cameras only: Color information is lost while binning is active due to summing of adjacent different filtered pixels on the Bayer filter array.

BinningHorizontalMode

Determines whether the result of binned pixels is averaged or summed up. Changing **BinningHorizontalMode** also changes **BinningVerticalMode**.

Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Possible values	<i>Sum, Average</i>
Default value	<i>Sum</i>
Affected features	BinningVerticalMode
Category	/ImageMode

Value	Description
<i>Sum</i>	Binning is accomplished by summing the charge or gray value of adjacent pixels on sensor.
<i>Average</i>	Binning is accomplished by averaging the charge or gray value of adjacent pixels on sensor. This increases SNR by SQRT (number of binned pixels).

BinningVertical

The vertical binning factor. Binning is the summing of charge (for CCD sensors) or gray value (for CMOS sensors) of adjacent pixels on a sensor, giving a lower resolution image, but at full resolution. Image sensitivity is also improved due to summed pixel charge or gray value.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	Camera dependent
Default value	<i>1</i>
Affected features	StreamHoldCapacity, PayloadSize, NonImagePayloadSize, HeightMax, ImageSize, AcquisitionFrameRateAbs, ExposureTimeAbs, AcquisitionFrameRateLimit, Height, OffsetY
Category	/ImageMode



BinningVertical and **DecimationVertical** are mutually exclusive. Setting **BinningVertical** > *1* forces **DecimationVertical** to *1*.

Color cameras only: Color information is lost while binning is active due to summing of adjacent different filtered pixels on the Bayer filter array.

BinningVerticalMode

Determines whether the result of binned pixels is averaged or summed up. Changing **BinningVerticalMode** also changes **BinningHorizontalMode**.

Origin of feature	Camera
Feature type	Enumeration

Access	Read/Write
Possible values	<i>Sum, Average</i>
Default value	<i>Sum</i>
Affected features	BinningHorizontalMode
Category	/ImageMode

Value	Description
<i>Sum</i>	Binning is accomplished by summing the charge or gray value of adjacent pixels on sensor.
<i>Average</i>	Binning is accomplished by averaging the charge or gray value of adjacent pixels on sensor. This increases SNR by SQRT (number of binned pixels).

DecimationHorizontal

Decimation (also known as sub-sampling) is the process of skipping neighboring pixels (with the same color) while being read out from the sensor. Decimation is used primarily to reduce the number of pixels and thus the amount of data while retaining the original image area angle and image brightness. **DecimationHorizontal** controls the horizontal sub-sampling of the image. There is no decrease in payload size with horizontal sub-sampling.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	1 to 8
Default value	1
Affected features	BinningHorizontal, StreamHoldCapacity, PayloadSize, NonImagePayloadSize, WidthMax, ImageSize, AcquisitionFrameRateAbs, ExposureTimeAbs, AcquisitionFrameRateLimit, Width, ExposureAutoMin, ExposureAutoMax, OffsetX, DefectMaskEnable
Category	/ImageMode

Value	Description
1	Off
2	2 times reduction factor; 2 of 4 columns displayed.

Value	Description
4	4 times reduction factor; 2 of 8 columns displayed.
8	8 times reduction factor; 2 of 16 columns displayed.



Writing an invalid number for **DecimationHorizontal** rounds up to next valid mode. For example, 5 rounds up to 8. **DecimationHorizontal** and **BinningHorizontal** are mutually exclusive. Setting **DecimationHorizontal** > 1 forces **BinningHorizontal** to 1.

DecimationVertical

Decimation (also known as sub-sampling) is the process of skipping neighboring pixels (with the same color) while being read out from the sensor. Decimation is used primarily to reduce the number of pixels and thus the amount of data while retaining the original image area angle and image brightness.

DecimationVertical controls the vertical sub-sampling of the image. There is a decrease in payload size with vertical sub-sampling.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Integer
Access	Read/Write
Visibility	Beginner
Range	1 to 8
Default value	1
Affected features	BinningVertical, StreamHoldCapacity, PayloadSize, NonImagePayloadSize, HeightMax, ImageSize, AcquisitionFrameRateAbs, ExposureTimeAbs, AcquisitionFrameRateLimit, Height, ExposureAutoMin, ExposureAutoMax, OffsetY, DefectMaskEnable
Category	/ImageMode

Value	Description
1	Off
2	2 times reduction factor. 2 of 4 columns displayed.
4	4 times reduction factor. 2 of 8 columns displayed.
8	8 times reduction factor. 2 of 16 columns displayed.



Writing an invalid number for **DecimationVertical** rounds up to next valid mode. For example, 5 rounds up to 8. **DecimationVertical** and **BinningVertical** are mutually exclusive. Setting **DecimationVertical** > 1 forces **BinningVertical** to 1.



For more information on the decimation process, see the Decimation application note at:

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

ReverseX

Flips the image sent by camera horizontally. The Region of Interest is applied after flipping.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Boolean
Access	Read/Write
Visibility	Beginner
Possible values	<i>true, false</i>
Default value	<i>false</i>
Affected features	StreamHoldCapacity, PayloadSize, NonImagePayloadSize, WidthMax, ImageSize, AcquisitionFrameRateAbs, ExposureTimeAbs, AcquisitionFrameRateLimit, Width, OffsetX
Category	/ImageMode

ReverseY

Flips the image sent by camera vertically. The Region of Interest is applied after flipping.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Boolean
Access	Read/Write
Visibility	Beginner
Possible values	<i>true, false</i>
Default value	<i>false</i>

Affected features	StreamHoldCapacity, PayloadSize, NonImagePayloadSize, HeightMax, ImageSize, AcquisitionFrameRateAbs, ExposureTimeAbs, AcquisitionFrameRateLimit, Height, OffsetX
Category	/ImageMode

SensorDigitizationTaps

The number of digitized samples outputted simultaneously by the camera analog to digital conversion stage.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Expert
Possible values	<i>Four, Two, One</i>
Default value	Camera dependent
Affected features	AcquisitionFrameRateAbs, AcquisitionFrameRateLimit, DecimationHorizon, DecimationVertical, ReverseX, ReverseY
Category	/ImageMode

SensorHeight

The total number of pixel rows on the sensor.

Example: *1216*

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Integer
Access	Read only (Constant)
Visibility	Beginner
Affected features	DSPSubregionBottom
Category	/ImageMode

SensorTaps

The number of taps on the camera sensor.

Standard	GenICam Standard Feature Naming Convention
Display Name	SensorTaps
Origin of feature	Camera
Feature type	Enumeration
Access	Read only (Constant)
Visibility	Expert
Vimba Version	Vimba version 1.3 or later
Affected features	(not applicable)
Category	/ImageMode

SensorWidth

The total number of pixel columns on the sensor.

Example: *1936*

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Integer
Access	Read only (Constant)
Visibility	Beginner
Affected features	DSPSubregionRight
Category	/ImageMode

Info

GevDeviceMACAddress

The 48-bit MAC address of the GVCP interface of the selected remote device.

Display name	Device MAC address
Origin of feature	Driver
Feature type	Integer
Access	Read only (Constant)
Visibility	Beginner
Affected features	(not applicable)
Category	/Info

DeviceFirmwareVersion

The firmware version of this Allied Vision GigE camera.

Example: *00.01.54.1594*

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	String
Access	Read only (Constant)
Visibility	Beginner
Affected features	(not applicable)
Category	/Info

DeviceID

The serial number of the camera.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	String
Access	Read only (Constant)
Visibility	Beginner

Affected features	(not applicable)
Category	/Info

DeviceModelName

The camera model name. Software must use the **DevicePartNumber** to distinguish between models.

Example: *GT2450C*

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	String
Access	Read only (Constant)
Visibility	Beginner
Affected features	(not applicable)
Category	/Info

DevicePartNumber

The Allied Vision camera part number.

Origin of feature	Camera
Feature type	String
Access	Read only (Constant)
Visibility	Beginner
Affected features	(not applicable)
Category	/Info

DeviceScanType

The scan type of the camera.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Enumeration
Access	Read only (Constant)
Visibility	Beginner

Possible values	<i>Areascan</i>
Default value	<i>Areascan</i>
Affected features	(not applicable)
Category	/Info

DeviceUserID

Used for multiple-camera situations for providing meaningful labels to individual cameras.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	String
Access	Read/Write
Visibility	Beginner
Affected features	(not applicable)
Category	/Info

DeviceVendorName

The manufacturer's name.

Example: *ALLied Vision Technologies*

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	String
Access	Read only
Visibility	Beginner
Affected features	(not applicable)
Category	/Info

FirmwareVerBuild

The firmware version build information.

Example: 00.01.54.**15954**

Origin of feature	Camera
Feature type	Integer
Access	Read only
Visibility	Beginner
Affected features	(not applicable)
Category	/Info

FirmwareVerMajor

The major part of the firmware version number (part before the decimal).

Example: 00.**01**.54.15954

Origin of feature	Camera
Feature type	Integer
Access	Read only
Visibility	Beginner
Affected features	(not applicable)
Category	/Info

FirmwareVerMinor

The minor part of firmware version number (part after the decimal).

Example: 00.01.**54**.15954

Origin of feature	Camera
Feature type	Integer
Access	Read only
Visibility	Beginner
Affected features	(not applicable)
Category	/Info

SensorBits

The maximum bit depth of sensor.

Origin of feature	Camera
Feature type	Integer
Access	Read only (Constant)
Visibility	Beginner
Affected features	(not applicable)
Category	/Info

SensorType

The type of image sensor. Monochrome or Bayer pattern color sensor type.

Example: *Mono*

Origin of feature	Camera
Feature type	Enumeration
Access	Read only (Constant)
Visibility	Beginner
Possible values	<i>Mono, CoLoR</i>
Affected features	(not applicable)
Category	/Info

SavedUserSets

Allied Vision GigE cameras are capable of storing a number of user-specified configurations within the camera's non-volatile memory. These saved configurations can be used to define the power up settings of the camera or to quickly switch between a number of predefined settings.



Look-up table features cannot be saved. To save the content of a look-up table, use `Controls > LUTControl1 > LUTSave` or `LUTSaveAll`.

UserSetDefaultSelector

On power up or reset, this user set is loaded.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Possible values	<i>Default, UserSet1, UserSet2, UserSet3, UserSet4, UserSet5</i> The number of user sets is camera dependent.
Affected features	See Vimba user interface
Category	/SavedUserSets

UserSetLoad

Loads camera parameters from the user set specified by `UserSetSelector`.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Command
Access	Write
Visibility	Beginner
Affected features	See Vimba user interface
Category	/SavedUserSets

UserSetSave

Saves camera parameters to the user set specified by `UserSetSelector`. The *Default* setting cannot be overwritten.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Command
Access	Write
Visibility	Beginner
Affected features	See Vimba user interface
Category	/SavedUserSets

UserSetSelector

Selects a feature user set to load, save, or configure.

Standard	GenICam Standard Feature Naming Convention
Origin of feature	Camera
Feature type	Enumeration
Access	Read/Write
Visibility	Beginner
Possible values	<i>Default, UserSet1, UserSet2, UserSet3, UserSet4, UserSet5</i> The number of user sets is camera dependent.
Affected features	See Vimba user interface
Category	/SavedUserSets

Stream

Info

GVSPFilterVersion

Version of the GVSP filter driver.

Example: *01.24.17*

Display name	GVSP Filter Version
Origin of feature	Driver
Feature type	String
Access	Read only (Constant)
Visibility	Expert
Affected features	(not applicable)
Category	/Stream/Info

Multicast

Multicast mode allows the camera to send image data to all hosts on the same subnet as the camera. The host PC (or Vimba Viewer application instance) that first enables multicast mode is the master, and controls all camera parameters. All other hosts/instances are the monitors, and can view image data only.



Most GigE switches support a maximum **PacketSize** of 1500 bytes in multicast mode.



If using clients with Linux, you have to configure the IP subsystem to process multicast IP traffic.

MulticastEnable

Enables multicast mode. In multicast mode, all PCs on the same subnet as the camera can receive image data from the camera **MulticastIPAddress**.

Display name	Multicast Enable
Origin of feature	Driver
Feature type	Boolean
Access	Read/Write
Visibility	Expert
Possible values	<i>true, false</i>
Default value	<i>false</i>
Affected features	(not applicable)
Category	/Stream/Multicast

MulticastIPAddress

Sets the multicast IPv4 address.

Display name	Multicast IP Address
Origin of feature	Driver
Feature type	Integer
Access	Read/Write
Visibility	Expert
Affected features	(not applicable)
Category	/Stream/Multicast

Settings



GVSP provides a protocol for streaming data streams which runs on the UDP protocol.

GVSPAdjustPacketSize

Requests the packet size used to be adjusted automatically.

Display name	GVSP Adjust Packet Size
Origin of feature	Driver
Feature type	Command
Access	Write
Visibility	Expert
Affected features	(not applicable)
Category	/Stream/Settings

GVSPBurstSize

The maximum number of GVSP packets to be processed in a burst.

Display name	GVSP Burst Size
Origin of feature	Driver
Feature type	Integer
Access	Read/Write
Visibility	Expert
Enumeration	1 to 256
Default value	32
Unit	GVSP Packets
Affected features	(not applicable)
Category	/Stream/Settings

GVSPDriver

The streaming driver to be used.

Display name	GVSP Driver Selector
Origin of feature	Driver

Feature type	Enumeration
Access	Read/Write
Visibility	Expert
Possible values	<i>Filter, Socket</i>
Default value	<i>Filter</i>
Affected features	(not applicable)
Category	/Stream/Settings

GVSPHostReceiveBuffers

The number of buffers to be used by the network socket. Only applicable if not using the filter driver.

Display name	GVSP Host Receive Buffers
Origin of feature	Driver
Feature type	Integer
Access	Read/Write
Visibility	Expert
Range	256 to 2048
Default value	512
Affected features	(not applicable)
Category	/Stream/Settings

GVSPMaxLookBack

The size of the look back window, in packets, when determining if a stream packet is missing. If a stream packet arrives out of order, the driver skips back **GVSPMaxLookBack** packets to see if the packets previous to this point have all arrived. If not, a resend is issued. A lower value allows the driver less time to assemble out-of-order packets; a larger value allows the driver more time. If the value is set too low, the driver issues unnecessary resends. If the value is set too high and a packet truly is missing, the driver issues a resend but the camera may no longer have the required packet in its resend buffer and the packet is dropped. The ideal value is system dependent.

Display name	GVSP Max Look Back
Origin of feature	Driver
Feature type	Integer
Access	Read/Write
Visibility	Expert

Range	<i>1 to 1024</i>
Default value	<i>30</i>
Unit	GVSP Packets
Affected features	(not applicable)
Category	/Stream/Settings

GVSPMaxRequests

The maximum number of resend requests that the host attempts before marking a packet dropped.

Display name	GVSP Max Requests
Origin of feature	Driver
Feature type	Integer
Access	Read/Write
Visibility	Expert
Range	<i>1 to 512</i>
Default value	<i>3</i>
Affected features	(not applicable)
Category	/Stream/Settings

GVSPMaxWaitSize

The maximum number of received GVSP packets following a resend request to wait before requesting again.

Display name	GVSP Max Wait Size
Origin of feature	Driver
Feature type	Integer
Access	Read/Write
Visibility	Expert
Range	<i>8 to 1024</i>
Default value	<i>100</i>
Unit	GVSP Packets
Affected features	(not applicable)
Category	/Stream/Settings

GVSPMissingSize

The maximum number of simultaneous missing GVSP packets before dropping the frame.

Display name	GVSP Missing Size
Origin of feature	Driver
Feature type	Integer
Access	Read/Write
Visibility	Expert
Range	0 to 1024 When the value is set to 0 this feature is disabled.
Default value	512
Unit	GVSP Packets
Affected features	(not applicable)
Category	/Stream/Settings

GVSPPacketSize

The GVSP packet size in bytes.

Display name	GVSP Packet Size
Origin of feature	Driver
Feature type	Integer
Access	Read/Write
Visibility	Expert
Range	Camera dependent
Default value	Camera dependent
Unit	Bytes
Affected features	GevSCSPacketSize, StreamBytesPerSecond, AcquisitionFrameRateAbs, ExposureTimeAbs, AcquisitionFrameRateLimit, StreamHoldCapacity
Category	/Stream/Settings

GVSP Tilting Size

The maximum number of GVSP packets received from a following frame before dropping the frame.

Display name	GVSP Tilting Size
Origin of feature	Driver
Feature type	Integer
Access	Read/Write
Visibility	Expert
Range	0 to 1024 When the value set to 0 this feature is disabled.
Default value	100
Unit	GVSP Packets
Affected features	(not applicable)
Category	/Stream/Settings

GVSP Timeout

The end of stream timeout. If no stream packet is received before **GVSP Timeout**, the host requests resend, up to **GVSP Max Requests** times. If still no packet is received from the camera, the packet is marked as dropped.

Display name	GVSP Timeout
Origin of feature	Driver
Feature type	Integer
Access	Read/Write
Visibility	Expert
Range	10 to 5000
Default value	70
Unit	ms
Affected features	(not applicable)
Category	/Stream/Settings

Statistics



The packet counts in these statistics cover the image transport. Packets used for camera control or event data are not counted. All counters are reset at `AcquisitionStart`.

StatFrameRate

The rate at which the camera is acquiring frames, derived from the frame timestamps.

Display name	Stat Frame Rate
Origin of feature	Driver
Feature type	Float
Access	Read only
Visibility	Beginner
Affected features	(not applicable)
Category	/Stream/Statistics

StatFrameDelivered

The number of error-free frames captured since the start of imaging.

Display name	Stat Frames Delivered
Origin of feature	Driver
Feature type	Integer
Access	Read only
Visibility	Beginner
Affected features	(not applicable)
Category	/Stream/Statistics

StatFrameDropped

The number of incomplete frames received by the host due to missing packets (not including shoved frames).

Display name	Stat Frames Dropped
Origin of feature	Driver
Feature type	Integer

Access	Read only
Visibility	Beginner
Affected features	(not applicable)
Category	/Stream/Statistics

StatFrameRescued

The number of frames that initially had missing packets but were successfully completed after packet resend.

Display name	Stat Frames Rescued
Origin of feature	Driver
Feature type	Integer
Access	Read only
Visibility	Expert
Affected features	(not applicable)
Category	/Stream/Statistics

StatFrameShoved

The number of frames dropped because the transfer of a following frame was completed earlier.

Display name	Stat Frames Shoved
Origin of feature	Driver
Feature type	Integer
Access	Read only
Visibility	Expert
Affected features	(not applicable)
Category	/Stream/Statistics

StatFrameUnderrun

The number of frames missed due to the non-availability of a user supplied buffer.

Display name	Stat Frames Underrun
Origin of feature	Driver
Feature type	Integer
Access	Read only

Visibility	Expert
Affected features	(not applicable)
Category	/Stream/Statistics

StatLocalRate

Inverse of time interval between the last two frames (faulty or not) received by the host. No averaging is performed.

Display name	Stat Local Rate
Origin of feature	Driver
Feature type	Float
Access	Read only
Visibility	Expert
Affected features	(not applicable)
Category	/Stream/Statistics



In case of error-free frame reception, **StatLocalRate** is similar to **StatFrameRate**, except that the host clock is used instead of frame timestamps for measuring the time interval between frames. Otherwise, **StatLocalRate** and **StatFrameRate** may differ significantly.

StatPacketErrors

The number of improperly formed packets. If this number is not zero, it suggests a possible cable or camera hardware failure.

Display name	Stat Packets Errors
Origin of feature	Driver
Feature type	Integer
Access	Read only
Visibility	Expert
Affected features	(not applicable)
Category	/Stream/Statistics

StatPacketMissed

The number of packets missed since the start of imaging.

Display name	Stat Packets Missed
Origin of feature	Driver
Feature type	Integer
Access	Read only
Visibility	Beginner
Affected features	(not applicable)
Category	/Stream/Statistics



If everything is configured correctly, this number should remain zero, or at least very low compared to **StatPacketReceived** value.

StatPacketReceived

The number of error-free packets received by the driver since the start of imaging, this number should grow steadily during continuous acquisition.

Display name	Stat Packets Received
Origin of feature	Driver
Feature type	Integer
Access	Read only
Visibility	Beginner
Affected features	(not applicable)
Category	/Stream/Statistics

StatPacketRequested

The number of missing packets that were requested to be resent from the camera.

Display name	Stat Packets Requested
Origin of feature	Driver
Feature type	Integer
Access	Read only
Visibility	Beginner
Affected features	(not applicable)
Category	/Stream/Statistics



If everything is configured correctly, this number should remain zero, or at least very low compared to `StatPacketReceived` value.

StatPacketResent

The number of packets resent by the camera since the start of imaging.

Display name	Stat Packets Resent
Origin of feature	Driver
Feature type	Integer
Access	Read only
Visibility	Beginner
Affected features	(not applicable)
Category	/Stream/Statistics

StatTimeElapsed

The elapsed time since the stream was started.

Display name	Stat Time Elapsed
Origin of feature	Driver
Feature type	Float
Access	Read only
Visibility	Expert
Unit	Seconds
Affected features	(not applicable)
Category	/Stream/Statistics

StreamInformation

StreamID

The camera's unique ID for the stream.

Display name	Stream ID
Origin of feature	Driver
Feature type	String
Access	Read only (Constant)
Visibility	Beginner
Vimba version	Vimba version 1.3 or later
Affected features	(not applicable)
Category	/StreamInformation

StreamType

Identifies the transport layer technology of the stream.

Example: GEV

Display name	Stream Feature type
Origin of feature	Driver
Feature type	Enumeration
Access	Read only (Constant)
Visibility	Beginner
Vimba version	Vimba version 1.3 or later
Affected features	(not applicable)
Category	/StreamInformation

Index

A

Abbreviations	13
Acquisition	18
AcquisitionAbort	18
AcquisitionFrameCount	18
AcquisitionFrameRateAbs	19
AcquisitionFrameRateLimit	19
AcquisitionMode	20
AcquisitionStart	21
AcquisitionStop	21
RecorderPreEventCount	21
SensorShutterMode	22
Trigger	24
AcquisitionStart	150
Anti-blooming characteristics	79

B

BalanceWhiteAutoControl	
BalanceWhiteAutoAdjustTol	83
BalanceWhiteAutoRate	84
BlackLevelControl	
BlackLevel	35
BlackLevelSelector	35
BufferHandlingControl	33
StreamAnnounceBufferMinimum	33
StreamAnnouncedBufferCount	33
StreamBufferHandlingMode	34

C

ColorTransformationControl	36
ColorTransformationMode	37
ColorTransformationSelector	37
ColorTransformationValue	38
ColorTransformationValueSelector	38
Contact us	7
Control	
BlackLevelControl	35
LUTControl	75
Controls	35, 75
CCDTemperatureOK	36
ColorTransformationControl	36
DefectMask	42
DefectMaskEnable	41
DSPSubregion	39

EdgeFilter	42
EFLensControl	43
Exposure	51
FpncEnable	60
GainGontrol	61
Gamma	65
Hue	66
IODMode	67
Iris	68
LensDrive	73
NirMode	79
Saturation	80
SubstrateVoltage	81
Whitebalance	81

D

DefectMask	
DefectMaskColumnEnable	42
DefectMaskPixelEnable	42
DefectMaskPixelEnable	12
DeviceStatus	85
DeviceTemperature	85
DeviceTemperatureSelector	85
Document history	10
DSPSubregion	51, 82
DSPSubregionBottom	39
DSPSubregionLeft	39
DSPSubregionRight	40
DSPSubregionTop	40

E

EFLensControl	
EFLensFocus	45
EFLensFStop	43
EFLensInitialize	48
EFLensStatus	48
EFLensZoom	50
EFLensFocus	
EFLensFocusCurrent	45
EFLensFocusDecrease	45
EFLensFocusIncrease	46
EFLensFocusMax	46
EFLensFocusMin	46
EFLensFocusStepSize	47
EFLensFocusSwitch	47

EFLensFStop		ExposureTimePWL1	56
EFLensFStopCurrent	43	ExposureTimePWL2	57
EFLensFStopDecrease	43	Shutter	59
EFLensFStopIncrease	44	ThresholdPWL1	58
EFLensFStopMax	44	ExposureAuto	62, 83
EFLensFStopMin	44	ExposureAutoControl	62
EFLensFStopStepSize	45	ExposureAutoAdjustTol	52
EFLensStatus		ExposureAutoAlg	52
EFLensID	48	ExposureAutoMax	53
EFLensLastError	48	ExposureAutoMin	53
EFLensState	49	ExposureAutoOutliers	53
EFLensZoom		ExposureAutoRate	54
EFLensZoomCurrent	50	ExposureAutoTarget	54
EFLensZoomMax	50	ExposureAutoMax	51
EFLensZoomMin	50	ExposureAutoTarget	52
Ethernet packet size	103	ExposureMode	68
EventControl	86	ExposureTimeAbs	55
EventData	86	ExposureTimePWL1	56
EventID	87	ExposureTimePWL2	56
EventNotification	94, 95		
EventSelector	94	F	
EventsEnable1	95	FitRange	52
EventID		FocusTimedFar	73
EventAcquisitionEnd	87	FocusTimedNear	73
EventAcquisitionRecordTrigger	87	FrameRate	109
EventAcquisitionStart	87, 88	FrameReadout	114, 120
EventError	88	FrameStart	55
EventExposureEnd	89	FrameTrigger	114
EventExposureStart	89	FrameTriggerReady	114, 120
EventFrameTrigger	89		
EventFrameTriggerReady	90	G	
EventLine1FallingEdge	90	GainAuto	62, 68
EventLine1RisingEdge	90	GainAutoControl	
EventLine2FallingEdge	91	GainAutoAdjustTol	62
EventLine2RisingEdge	91	GainAutoMax	63
EventLine3FallingEdge	91	GainAutoMin	63
EventLine3RisingEdge	92	GainAutoOutliers	63
EventLine4FallingEdge	92	GainAutoRate	64
EventLine4RisingEdge	92	GainAutoTarget	64
EventOverflow	93	GainControl	61
EventPtpSyncLocked	93	Gain	61
EventPtpSyncLost	93	GainAuto	61
Exposure		GainAutoControl	62
ExposureAuto	51	GainSelector	65
ExposureAutoControl	52	General purpose output	120
ExposureMode	55, 60	GevCurrentDefaultGateway	99
ExposureTimeAbs	55	GevCurrentIPAddress	100
ExposureTimeIncrement	56	GevCurrentSubnetMask	100
		GevHeartbeatInterval	101

GevHeartbeatTimeout	102	SensorWidth	135
GevIPConfigurationApply	99	ImageSize	110
GevIPConfigurationMode	99	Imaging	114, 120
GevPersistentDefaultGateway	107	Info	136
GevPersistentIPAddress	108	DeviceFirmwareVersion	136
GevPersistentSubnetMask	108	DeviceID	136
GevSCSPacketSize	103	DeviceModelName	137
GigE	96	DevicePartNumber	137
BandwidthControlMode	96	DeviceScanType	137
ChunkModeActive	97, 104	DeviceUserID	138
Configuration	99	DeviceVendorName	138
Current	99	FirmwareVerBuild	139
GVCP	100	FirmwareVerMajor	139
Persistent	107	FirmwareVerMinor	139
StreamBytesPerSecond	108	GevDeviceMACAddress	136
StreamHold	110	GVSPFilterVersion	143
Timestamp	111	SensorBits	140
GigE switch	143	SensorType	140
GigE Vision Control Protocol (GVCP)	100	IO	113
GPO	120	StatusLED	113
GVCP interface MAC address	136	Strobe	115
GVCPCmdRetries	101, 102	Syncln	117
GVCPCmdTimeout	101, 102	SyncOut	119
GVCPHBInterval	102	IO Syncln	
GVSPMaxRequests	149	SynclnLevels	118
GVSPTimeout	149	Iris	
I		IrisAutoTarget	68
ImageFormat	122	IrisMode	68
Height	122	IrisVideoLevel	69
HeightMax	122	IrisVideoLevelMax	70
ImageSize	123	IrisVideoLevelMin	70
OffsetX	123	LensDCIris	71
OffsetY	123	LensPIris	71
PixelFormat	124, 127	IrisAutoTarget	69
Width	128	IrisTimedClose	73
WidthMax	128	IrisTimedOpen	73
ImageMode	129	J	
BinningHorizontal	129	Jumbo Packets	103
BinningHorizontalMode	129	L	
BinningVertical	130	Legal notice	2
BinningVerticalMode	130	LensDCIris	
DecimationHorizontal	131	LensDCDriveStrength	71
DecimationVertical	132	LensDrive	73
ReverseX	133	LensDriveCommand	73
ReverseY	133	LensDriveDuration	73
SensorDigitizationTaps	134	LensVoltage	74
SensorHeight	134	LensVoltageControl	74
SensorTaps	135		

LensDriveCommand		
ZoomTimedOut	73	
LensDriveDuration	73	
LensPiris		
LensPirisFrequency	71	
LensPirisNumSteps	72	
LensPirisPosition	72	
LensPirisNumSteps	72	
LineIn1	120	
LineIn2	120	
LineIn3	120	
LineIn4	120	
LUTControl	75	
LUTEnable	75	
LUTIndex	75, 79	
LUTInfo	76	
LUTLoad	77	
LUTMode	77	
LUTSave	78	
LUTSelector	77, 78	
LUTValue	79	
LUTInfo		
LUTAddress	76	
LUTBitDepthIn	76	
LUTBitDepthOut	76	
LUTSizeBytes	77	
M		
Mean	52	
Multicast		
MulticastEnable	144	
MulticastIPAddress	144	
N		
NonImagePayloadSize	104	
Non-volatile memory	141	
O		
On-camera memory	110	
P		
PayloadSize	107	
PieceWiseLinearHDR	55, 83	
PirisAuto	69	
PirisManual	69	
Ptp	104	
PtpAcquisitionGateTime	105	
PtpMode	105	
PtpStatus	106	
R		
Recorder	110	
S		
SavedUserSets	141	
UserSetDefaultSelector	141	
UserSetLoad	141	
UserSetSave	142	
UserSetSelector	142	
Scan type	137	
SCPD	96	
Sensor		
Bit depth	140	
Taps	135	
Type	140	
Settings		
GVSPAdjustPacketSize	145	
GVSPBurstSize	145	
GVSPDriver	145	
GVSPHostReceiveBuffers	146	
GVSPMaxLookBack	146	
GVSPMaxRequests	147	
GVSPMaxWaitSize	147	
GVSPMissingSize	148	
GVSPPacketSize	148	
GVSPTiltingSize	149	
GVSPTimeout	149	
StatFrameRate	152	
Statistics		
StatFrameDelivered	150	
StatFrameDropped	150	
StatFrameRate	150	
StatFrameRescued	151	
StatFrameShoved	151	
StatFrameUnderrun	151	
StatLocalRate	152	
StatPacketErrors	152	
StatPacketMissed	153	
StatPacketReceived	153	
StatPacketRequested	153	
StatPacketResent	154	
StatTimeElapsed	154	
StatLocalRate	152	
StatPacketReceived	153, 154	
StatusLED		
StatusLedLevels	113	
StatusLedPolarity	113	
StatusLedSelector	114	

StatusLedSource	114
Stream	143
Info	143
Multicast	143
Settings	145
Statistics	150
Stream channel packet delay (SCPD)	96
Stream ID	155
StreamBytesPerSecond	96
StreamFrameRateConstrain	109
StreamHold	
StreamHoldCapacity	110
StreamHoldEnable	109, 110
StreamInformation	155
StreamID	155
StreamType	155
Strobe	
StrobeDelay	115
StrobeDuration	115, 116
StrobeDurationMode	116
StrobeSource	116
Strobe1	115, 121
SubstrateVoltage	
VsubValue	81
Symbols	14
SyncIn	
SyncInGlitchFilter	117, 118
SyncInSelector	118
SyncOut	
SyncOutLevels	119
SyncOutPolarity	119
SyncOutSelector	119
SyncOutSource	120

T

Third-party software	16
Timestamp	96
GevTimestampControlLatch	111, 112
GevTimestampControlReset	111
GevTimestampTickFrequency	112
GevTimestampValue	104, 106, 112
Timestamp function	111
Transport layer technology	155
Trigger	
TriggerActivation	24
TriggerDelayAbs	24
TriggerMode	25
TriggerOverlap	25
TriggerSelector	26
TriggerSoftware	27
TriggerSource	27, 55
TriggerSelector	
AcquisitionEnd	26

V

VideoClosed	69
VideoOpen	69

W

Whitebalance	
BalanceRatioAbs	81
BalanceRatioSelector	82
BalanceWhiteAuto	82
BalanceWhiteAutoControl	83

Z

ZoomTimedIn	73
ZoomTimedOut	73