allPIXA evo
Features Reference

Version 2.2.1

Firmware version 4.0.x
Camera description xml 3.24.x

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1 Introduction

The **Features Reference Guide** describes the features for Chromasens allPIXA evo cameras using the GenICam SFNC (Standard Feature Naming Convention).

Further the error codes of the camera are documented here.

1.1 Connection Timeouts

Reading and writing different features leads to different execution times on the camera and therefore to shorter or longer response times. To establish communication without getting timeouts the timeout parameters must be configured in a way to be within the execution time of all feature read/write requests.

Parameter	Value
Control Channel timeout *(CC_timeout)*	3000ms
Control Channel retry count	3
Device Link Heartbeat Timeout	9000ms

Special note for sphinx lib users. *In SphinxLib HeartbeatRate* corresponds to Device Link Heartbeat Timeout. The *cc_heartbeat_timeout* of sphinx lib should be set to a third of Device Link Heartbeat Timeout.

2 Features

2.1 Device Control

2.1.1 Device Vendor Name

Name	DeviceVendorName	**Standard**
Description	Name of the manufacturer of the device.	
Interface	String	
String length	32	
Access mode	Read only	
Adjustable while grabbing	-	
Value range	Chromasens GmbH	
Default value	-	
Notes	-	
Error behavior	-	

2.1.2 Device Model Name

Name	DeviceModelName	**Standard**
Description	Model of the device.	
Interface	String	
String length	32	
Access mode	Read only	
Adjustable while grabbing	-	
Value range	-	
Default value	-	
Notes	-	
Error behavior	-	

2.1.3 Device Manufacturer Info

Name	DeviceManufacturerInfo	**Standard**
Description	Manufacturer information about the device.	
Interface	String	
String length	48	
Access mode	Read only	
Adjustable while grabbing	-	
Value range	-	
Default value	-	
Notes	Currently not visible.	
Error behavior	-	

2.1.4 Device Version

Name	DeviceVersion	**Standard**
Description	Version of the device.	
Interface	String	
String length	32	
Access mode	Read only	
Adjustable while grabbing	-	
Value range	-	
Default value	-	
Notes	Currently not visible.	
Error behavior	-	

2.1.5 Device User ID

Name	DeviceUserID	**Standard**
Description	User-programmable device identifier.	
Interface	String	
String length	16	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	-	
Default value	Empty String	
Notes	-	
Error behavior	-	

2.1.6 Device Scan Type

Name	DeviceScanType	**Standard**
Description	Scan type of the sensor.	
Interface	Enumeration	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	See enum entries table below.	
Default value	-	
Notes	-	
Error behavior	-	

Device Scan Type Enum Entries:

Name	Description
Areascan	The camera is operating in area scan mode
Linescan	The camera is operating in line scan mode

2.1.7 Device Package Version

Name	DevicePackageVersion	**Custom**
Description	Version of the software package of the camera. The version is defined in the package description file. It can be checked if a package is consistent by querying the DevicePackageConsistency feature.	
Interface	String	
String length	16	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	-	
Default value	-	
Notes	-	
Error behavior	-	

2.1.8 Device Package Description

Name	DevicePackageDescription	**Custom**
Description	Description of the devices software package.	
Interface	String	
String length	64	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	-	
Default value	-	
Notes	-	
Error behavior	-	

2.1.9 Device Package Consistency

Name	DevicePackageConsistency	**Custom**
Description	Executes a package consistency check. Is set to True if the package is consistent otherwise False. A package is considered to be consistent if the files on the camera correspond with the files in the package description file.	
Interface	Boolean	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	False: Package is not consistent True: Package is consistent	
Default value	-	
Notes	-	
Error behavior	-	

2.1.10 Device Sensor File Version

Name	DeviceSensorFileVersion	**Custom**
Description	Version of the sensor file in the device.	
Interface	String	
String length	40	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	-	
Default value	-	
Notes	-	
Error behavior	-	

2.1.11 Device Firmware Version

Name	DeviceFirmwareVersion	**Standard**
Description	Version of the firmware in the device.	
Interface	String	
String length	64	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	-	
Default value	-	
Notes	-	
Error behavior	-	

2.1.12 Device FPGA Version

Name	DeviceFPGAVersion	**Custom**
Description	Version of the FPGA in the device.	
Interface	String	
String length	16	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	-	
Default value	-	
Notes	-	
Error behavior	-	

2.1.13 Device Product Number

Name	DeviceProductNumber	**Custom**
Description	Product number of the device.	
Interface	String	
String length	32	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	-	
Default value	-	
Notes	-	
Error behavior	-	

2.1.14 Device Serial Number

Name	DeviceSerialNumber	**Standard**
Description	Serial number of the device.	
Interface	String	
String length	32	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	-	
Default value	-	
Notes	-	
Error behavior	-	

2.1.15 Device SFNC Version Major

Name	DeviceSFNCVersionMajor	**Standard**
Description	Major version of the Standard Features Naming Convention that was used to create the device's GenICam XML.	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	>0	
Default value	-	
Notes	-	
Error behavior	-	

2.1.16 Device SFNC Version Minor

Name	DeviceSFNCVersionMinor	**Standard**
Description	Minor version of the Standard Features Naming Convention that was used to create the device's GenICam XML.	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	≥0	
Default value	-	
Notes	-	

2.1.17 Device SFNC Version SubMinor

Name	DeviceSFNCVersionSubMinor	**Standard**
Description	SubMinor version of the Standard Features Naming Convention that was used to create the device's GenICam XML.	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	≥0	
Default value	-	
Notes	-	

2.1.18 Device Manifest XML Major Version

Name	DeviceManifestXMLMajorVersion	**Standard**
Description	Indicates the major version number of the GenICam XML file of the selected manifest entry.	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	-	
Default value	≥0	
Notes	-	
Error behavior	-	

2.1.19 Device Manifest XML Minor Version

Name	DeviceManifestXMLMinorVersion	**Standard**
Description	Indicates the minor version number of the GenICam XML file of the selected manifest entry.	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	≥0	
Default value	-	
Notes	-	

2.1.20 Device Manifest XML Sub Minor Version

Name	DeviceManifestXMLSubMinorVersion	**Standard**
Description	Indicates the subminor version number of the GenICam XML file of the selected manifest entry.	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	≥0	
Default value	-	
Notes	-	

2.1.21 Device Temperature Selector

Name	DeviceTemperatureSelector	**Standard**
Description	Selects the location within the device, where the temperature will be measured.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	-	
Value range	See enum entries table below.	
Default value	Mainboard	
Notes	-	
Error behavior	-	

Device Temperature Selector Enum Entries:

Name	Description
Mainboard	Temperature of the mainboard
Power1	Temperature of the power module 1
Power2	Temperature of the power module 2
Sensor	Temperature of the sensor

2.1.22 Device Temperature

Name	DeviceTemperature	**Standard**
Description	Device temperature in degrees Celsius.	
Interface	Float	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range		
Default value	-	
Notes	-	
Error behavior	-	

2.1.23 Device Voltage Selector

Name	DeviceVoltageSelector	**Custom**
Description	Selects the voltage source which shall be displayed.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	-	
Value range	See enum entries table below.	
Default value	Channel1	
Notes	-	
Error behavior	-	

Device Voltage Selector Enum Entries:

Name	Description
Channel1	Selects Channel 1
Channel2	Selects Channel 2
Channel3	Selects Channel 3
Channel4	Selects Channel 4
Channel5	Selects Channel 5
Channel6	Selects Channel 6
Channel7	Selects Channel 7
Channel8	Selects Channel 8

2.1.24 Device Voltage

Name	DeviceVoltage	**Custom**
Description	Displays the voltage for the selected element.	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	-	
Default value	-	
Notes	The unit of this feature is mV.	
Error behavior	-	

2.1.25 Device Identify

Name	DeviceIdentify	**Custom**
Description	Increases heartbeat speed for a short time to identify the camera.	
Interface	Command	
Access mode	Write Only	
Adjustable while grabbing	Yes	
Value range	1	
Default value	1	
Notes	While grabbing images you will not see the heartbeat. Therefore this only takes effect if the acquisition is not active.	
Error behavior	-	

2.1.26 Device Reset

Name	DeviceReset	**Standard**
Description	Resets the device to its power up state.	
Interface	Command	
Access mode	Write Only	
Adjustable while grabbing	Yes	
Value range	1	
Default value	1	
Notes	This command will return always success. When executing this command the camera performs a power cycle. You have to reconnect to the camera.	
Error behavior	-	

2.1.27 Device Error Code

Name	DeviceErrorCode	**Custom**
Description	Most recent error status of the camera.	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	See Device Error Code section for possible values.	
Default value	0x00000000	
Notes	Reads the most recent error occurred. Zero is indicating no error. Any other value indicates an error. When executing a write access to any register (except bootstrap registers) the device error code is cleared.	
Error behavior	-	

2.1.28 Device TL Type

Name	DeviceTLType	**Standard**
Description	Transport Layer type of the device.	
Interface	Enumeratioin	
Access mode	Read only	
Adjustable while grabbing	-	
Value range	See enum entries table below.	
Default value	GigEVision	
Notes	-	
Error behavior	-	

Device TL Type Enum Entries:

Name	Description
GigEVision	GigE Vision

2.1.29 Device Link Selector

Name	DeviceLinkSelector	**Standard**
Description	Selects which link of the device to control.	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	-	
Value range	0	
Default value	0	
Notes	-	
Error behavior	-	

2.1.30 Device Link Connection Count

Name	DeviceLinkConnectionCount	**Standard**
Description	Returns the number of physical connections of the device used by a particular Link.	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	≥0	
Default value	-	
Notes	-	
Error behavior	-	

2.1.31 Device Average Resolution – Not Available for AllPIXA-EVO

Name	DeviceAverageResolution	**Custom**
Description	Returns the average resolution in DPI (Dots Per Inch).	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	≥0	
Default value	-	
Notes	Average resolution of the system in sensor direction. It is measured in factory and programmed to the device.	
Error behavior	-	

2.1.32 Device TL Version Major

Name	DeviceTLVersionMajor	**Standard**
Description	Major version of the Transport Layer of the device.	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	≥0	
Default value	-	
Notes	-	
Error behavior	-	

2.1.33 Device TL Version Minor

Name	DeviceTLVersionMinor	**Standard**
Description	Minor version of the Transport Layer of the device.	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	≥0	
Default value	-	
Notes	-	
Error behavior	-	

2.1.34 Device TL Version Sub Minor

Name	DeviceTLVersionSubMinor	**Standard**
Description	Sub Minor version of the Transport Layer of the device.	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	≥0	
Default value	-	
Notes	-	
Error behavior	-	

2.1.35 Device Registers Endianness

Name	DeviceRegistersEndianness	**Standard**
Description	Endianness of the registers of the device.	
Interface	Enumeration	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	See enum entries table below.	
Default value	Big	
Notes	-	
Error behavior	-	

Device Registers Endianness Enum Entries:

Name	Description
Little	Device's registers are little Endian
Big	Device's registers are big Endian

2.1.36 Device Character Set

Name	DeviceCharacterSet	**Standard**
Description	Character set used by the strings of the device's bootstrap registers.	
Interface	Enumeration	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	See enum entries table below.	
Default value	UTF8	
Notes	-	
Error behavior	-	

Device Character Set Enum Entries:

Name	Description
UTF8	UTF 8

2.1.37 Device Event Channel Count

Name	DeviceEventChannelCount	**Standard**
Description	Indicates the number of event channels supported by the device.	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	≥0	
Default value	-	
Notes	-	
Error behavior	-	

2.1.38 Device Stream Channel Count

Name	DeviceStreamChannelCount	**Standard**
Description	Indicates the number of streaming channels supported by the device.	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	≥0	
Default value	-	
Notes	-	
Error behavior	-	

2.1.39 Device Link Heartbeat Timeout

Name	DeviceLinkHeartbeatTimeout	**Standard**
Description	Controls the current heartbeat timeout of the specific Link.	
Interface	Float	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	≥500000.0	
Default value	-	
Notes	-The unit is micro seconds(us)	
Error behavior	-	

2.1.40 Device Stream Channel Endianness

Name	DeviceStreamChannelEndianness	**Standard**
Description	Endianness of multi-pixel data for this stream.	
Interface	Enumeration	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	See enum entries table below.	
Default value	Little	
Notes	-	
Error behavior	-	

Device Stream Channel Endianness Enum Entries:

Name	Description
Little	Stream channel data is little Endian.
Big	Stream channel data is big Endian.

2.1.41 Timestamp Reset

Name	TimestampReset	**Standard**
Description	Resets the current value of the device timestamp counter.	
Interface	Command	
Access mode	Write Only	
Adjustable while grabbing	Yes	
Value range	1	
Default value	1	
Notes	-	
Error behavior	-	

2.1.42 Timestamp Latch

Name	TimestampLatch	**Standard**
Description	Latches current timestamp counter into TimestampLatchValue.	
Interface	Command	
Access mode	Write Only	
Adjustable while grabbing	Yes	
Value range	1	
Default value	1	
Notes	-	
Error behavior	-	

2.1.43 Timestamp Latch Value

Name	TimestampLatchValue	**Standard**
Description	Returns the latched value of the timestamp counter.	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	≥0	
Default value	-	
Notes	-	
Error behavior	-	

2.2 Image Format Control

The parameters of this group describe how to influence and determine the image size and format. It also provides the necessary information to acquire and to display the image data. It assumes that the device has a source of data that generates a single rectangular image. This image can be entirely or partially streamed out of the device using one or many Region of interest (ROI).

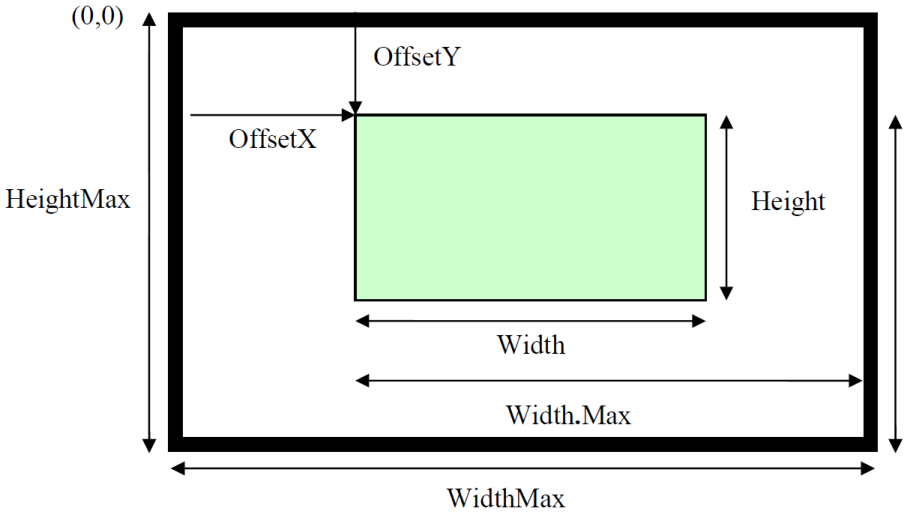

Image is taken from SFNC 2.4 p. 109

The sensor provides **Sensor Width** pixels.

The parameters **ReverseX** can be used to flip the image along the X-axis. The flipping is done before the Region of interest is applied.

Within the shrunk image the user can set a Region of interest using the parameters **OffsetX**, **Width**, and **Height**. The resulting image has **Width** time **Height** pixels. **OffsetX** refers to the upper left corner of the image which has the coordinate (0, 0).

The parameters **Region Selector** and **Region Mode** can be used to select and control each Region individually. All measures are given in pixel. As a result the values should not change if the **Pixel Format** changes. For monochrome cameras each pixel corresponds to a single gray value.

For color cameras in RGB mode each pixel corresponds to one RGB triplet.

The parameter **Height** describes the height of the image in lines.

2.2.1 Sensor Width

Name	SensorWidth	**Standard**
Description	Effective width of the sensor in pixels.	
Interface	Integer	
Access mode	Read only	
Adjustable while grabbing	-	
Value range	Depends on the built in sensor.	
Default value	1	
Notes	-	
Error behavior	-	

2.2.2 Sensor Height

Name	SensorHeight	**Standard**
Description	Effective height of the sensor in pixels.	
Interface	Integer	
Access mode	Read only	
Adjustable while grabbing	-	
Value range	1	
Default value	1	
Notes	-	
Error behavior	-	

2.2.3 Sensor Color Type

Name	SensorColorType	**Custom**
Description	Specifies the sensor color type.	
Interface	Enumeration	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	See enum entries table below.	
Default value	-	
Notes	-	
Error behavior	-	

Sensor Color Type Enum Entries:

Name	Description
RGB	RGB Sensor
Monochrome	Monochrome Sensor

2.2.4 Width Max

Name	WidthMax	**Standard**
Description	Maximum width of the image (in pixels). The dimension is calculated after horizontal binning, decimation or any other function changing the horizontal dimensions of the image.	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	>0	
Default value	SensorWidth	
Notes	-	
Error behavior	-	

2.2.5 Height Max

Name	HeightMax	**Standard**
Description	Maximum height of the image (in pixels). This dimension is calculated after vertical binning, decimation or any other function changing the vertical dimensions of the image.	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	>0	
Default value	-	
Notes	The maximum height is 1015811 lines.	
Error behavior	-	

2.2.6 Region Selector

Name	RegionSelector	**Standard**
Description	Selects the Region of interest to control.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	-	
Value range	See enum entries table below.	
Default value	-	
Notes	-	
Error behavior	-	

Region Selector Enum Entries:

Name	Description
Region1	Selected feature will control the region 1
Region2	Selected feature will control the region 2 – *NOT AVAILABLE IN EVO 1.0*
Region3	Selected feature will control the region 3 – *NOT AVAILABLE IN EVO 1.0*
Region4	Selected feature will control the region 4 – *NOT AVAILABLE IN EVO 1.0*

2.2.7 Region Mode

Name	RegionMode	**Standard**
Description	Controls if the selected Region of interest is active and streaming.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	See enum entries table below.	
Default value	-	
Notes	-	
Error behavior	See the device error code documentation.	

Region Mode Enum Entries:

Name	Description
Off	Disable the usage of the Region. – *NOT AVAILABLE IN EVO 1.0*
On	Enable the usage of the Region.

2.2.8 Width

Name	Width	**Standard**
Description	Width of the Image provided by the device (in pixels).	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	[8 , Width Max]	
Default value	WidthMax	
Notes	The width value must be a multiple of eight for RGB.	
Error behavior	See the device error code documentation.	

2.2.9 Height

Name	Height	**Standard**
Description	Height of the Image provided by the device (in pixels).	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	[16 , Height Max]	
Default value	1024	
Notes	This parameter influences the value range of AcquisitionFrameRate. Please read the AcquisitionFrameRate feature documentation for further details.	
Error behavior	See the device error code documentation.	

2.2.10 Offset X

Name	OffsetX	**Standard**
Description	Horizontal offset from the origin to the region of interest (in pixels).	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	≥0	
Default value	0	
Notes	-	
Error behavior	See the device error code documentation.	

2.2.11 Sensor Region Offset X

Name	SensorRegionOffsetX	**Custom**
Description	Horizontal offset from the origin to the region of interest in sensor coordinates (pixels).	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	No	
Value range	≥0	
Default value	0	
Notes	The display name is just Sensor Offset X.	
Error behavior	See the device error code documentation.	

2.2.12 Sensor Region Width

Name	SensorRegionWidth	**Custom**
Description	Width of the selected region of interest in sensor coordinates (in pixels).	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	No	
Value range	≥0	
Default value	0	
Notes	The display name is just Sensor Width. It resides below the Region Selector There is a SensorWidth feature defining the sensors full width which resides in the top level of the image format control category.	
Error behavior	See the device error code documentation.	

2.2.13 Binning Horizontal

Name	BinningHorizontal	**Standard**
Description	Number of horizontal photo-sensitive cells to combine. This increases the intensity (or signal to noise ratio) of the pixels and reduces the horizontal resolution (width) of the image.	
Interface	Integer	

Access mode	Read/Write
Adjustable while grabbing	No
Value range	1,2,4,8,16 1: Indicates that no horizontal binning is performed by the camera. Please note that the values 4 – 16 are not available for all allPIXAevo variants.
Default value	1
Notes	When changing this parameter, the Region OffsetX and Width will be scaled according to the binning value. Please check these parameters after adapting Binning Horizontal.
Error behavior	See the device error code documentation.

2.2.14 Decimation Horizontal Float

Name	DecimationHorizontalFloat	**Custom**
Description	This is the same feature as DecimationHorizontal as defined in the SFNC. However, it supports float values for decimation. Horizontal sub-sampling of the image. This reduces the horizontal resolution (width) of the image by the specified horizontal decimation factor.	
Interface	Float	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	[0.5 , 3.999]	
Default value	1.0	
Notes	A value of 1 indicates that the camera performs no horizontal decimation. When changing this parameter, the Region OffsetX and Width will be scaled according to the decimation value. Please check these parameters after adapting Decimation Horizontal. This feature is not available for all cameras of the allPIXAevo family.	
Error behavior	See the device error code documentation.	

2.2.15 Reverse X

Name	ReverseX	**Standard**
Description	Flip horizontally the image sent by the device.	
Interface	Boolean	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	True – Horizontally flipped image False – Normal Image	
Default value	False	
Notes	This feature is effective only if Test Pattern is set to Off	
Error behavior	-	

2.2.16 Pixel Format

Name	PixelFormat	**Standard**
Description	Format of the pixels provided by the device. It represents all the informations provided by PixelSize, PixelColorFilter combined in a single feature.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	See enum entries table below.	
Default value	RGB8 – For color camera Mono8 – For mono camera	
Notes	-	
Error behavior	See the device error code documentation.	

Pixel Format Enum Entries:

Name	Description
Mono8	8 bits per pixel Mono
RGB8	24 bit per pixel RGB linear memory
RGB10p32	32-bit per pixel RGB format. The bit depth is 10-bit. Please check the PFNC (Pixel Format Naming Convention) for more details – Not available for **g8_dxge** packages!
BGR8	24 bit per pixel BGR linear memory

2.2.17 Test Pattern Generator Selector

Name	TestPatternGeneratorSelector	**Standard**
Description	Selects which test pattern generator is controlled by the TestPattern feature.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	See enum entries table below.	
Default value	ImageProcessing	
Notes	-	
Error behavior	-	

Test Pattern Generator Selector Enum Entries:

Name	Description
ImageProcessing	TestPattern feature will control the Image Processing test pattern generator.

2.2.18 Test Pattern

Name	TestPattern	**Standard**
Description	Selects the type of test pattern that is generated by the device as image source.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	See enum entries table below.	
Default value	Off	
Notes	-	
Error behavior	See the device error code documentation.	

Test Pattern Generator Selector Enum Entries:

Name	Description
Off	Image is coming from the sensor.
GreyHorizontalRamp	Image is filled horizontally with an image that goes from the darkest possible value to the brightest.
GreyVerticalRamp	Image is filled vertically with an image that goes from the darkest possible value to the brightest.
GreyHorizontalRampMoving	Image is filled horizontally with an image that goes from the darkest possible value to the brightest and that moves horizontally from left to right at each frame.
GreyVerticalRampMoving	Image is filled vertically with an image that goes from the darkest possible value to the brightest and that moves vertically from top to bottom at each frame.
ColorRamps	Horizontal ramp in red color channel. Vertical and horizontal ramp in green color channel. Vertical ramp in blue color channel.
TogglingPixels	Vertical and horizontal neighbored pixels have the inverse intensity value each other.
PinStripes	Fixed pin stripe pattern with configurable background. The background is configurable with the test pattern value feature.

2.2.19 Test Pattern Value

Name	TestPatternValue	**Custom**
Description	Test Pattern specific value that influences the appearance of the generated image.	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	[0 – 4095]	
Default value	64	
Notes	-	
Error behavior	See the device error code documentation.	

2.3 Acquisition Control

2.3.1 Acquisition Mode

Name	AcquisitionMode	**Standard**
Description	Sets the acquisition mode of the device. It defines mainly the number of frames to capture during an acquisition and the way the acquisition stops.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	See enum entries table below.	
Default value	Continuous	
Notes	-	
Error behavior	-	

Acquisition Mode Enum Entries:

Name	Description
Continuous	Frames are captured continuously until stopped with the AcquisitionStop command.

2.3.2 Acquisition Start

Name	AcquisitionStart	**Standard**
Description	Starts the Acquisition of the device. The number of frames captured is specified by AcquisitionMode.	
Interface	Command	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	1	
Default value	1	
Notes	Please note that this command is the same as the Acquisition Stop but differs with the value.	
Error behavior	GEV_STATUS_SUCCESS is returned on successful start. See the device error code documentation.	

2.3.3 Acquisition Stop

Name	AcquisitionStop	**Standard**
Description	Stops the Acquisition of the device at the end of the current Frame.	
Interface	Command	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	0	
Default value	0	
Notes	Please note that this command is the same as the Acquisition Start but differs with the value. The trailer indicating the image end states that there are zero image lines contained in the frame which has been canceled.	
Error behavior	GEV_STATUS_SUCCESS is returned on successful stop. See the device error code documentation.	

2.3.4 Exposure Time

Name	ExposureTime	**Standard**
Description	This controls the duration where the photosensitive cells are exposed to light.	
Interface	Float	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	[15.0, Acquisition Line Time – 1]	
Default value	30	
Notes	The unit is micro seconds.	
Error behavior	See the device error code documentation.	

2.3.5 Acquisition Integration Time - Deprecated

Name	AcquisitionIntegrationTime	**Custom**
Description	Controls the integration time. (unit: micro seconds)	
Interface	Float	
Access mode	Read/Write	
Adjustable while grabbing	-	
Value range	See the value range of Exposure Time	
Default value	-	
Notes	This feature is deprecated please use Exposure Time instead.	
Error behavior	See the device error code documentation.	

2.3.6 Acquisition Integration Time Min - Deprecated

Name	AcquisitionIntegrationTimeMin	**Custom**
Description	Displays the minimum integration time. (unit: micro seconds)	
Interface	Float	
Access mode	Read only	
Adjustable while grabbing	-	
Value range		
Default value	-	
Notes	This feature is deprecated please query the min and max values from Exposure Time instead.	
Error behavior	-	

2.3.7 Acquisition Line Rate

Name	AcquisitionLineRate	**Standard**
Description	Controls the rate (in Hertz) at which the Lines in a Frame are captured.	
Interface	Float	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	[(1 / Acquisition Line Time.Max), (1 / Acquisition Line Time.Min)]	
Default value	-	
Notes	This is the inverse of the Acquisition Line Time	
Error behavior	See the device error code documentation.	

2.3.8 Acquisition Line Time Min - Deprecated

Name	AcquisitionLineTimeMin	**Custom**
Description	Displays the minimum processing time per scan line in us.	
Interface	Float	
Access mode	Read only	
Adjustable while grabbing	-	
Value range	[Exposure Time + 1.5us]	
Default value	-	
Notes	Please query the min and max values of the Acquisition Line Time feature instead of using this feature.	
Error behavior	-	

2.3.9 Acquisition Line Time

Name	AcquisitionLineTime	**Custom**
Description	Controls the processing time per scan line.	
Interface	Float	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	The value range depends on: - The transport layer configuration (connected links, packet size (GEV)) - The region width - The Exposure Time **Query the min and max values of the acquisition line time feature to get the valid range.** The exposure time always has to be smaller than the the line time: Range defined by exposure time: [Exposure Time + 1.0us, 27900us] Example range with one and two physical links connected. 1. [37.43[1]us, 27900us] – For single link (10Gbps) 2. [30.88[1]us, 27900us] – For dual link (20Gbps) [1] *For Region Width: 15360, GevSCPSPacketSize: 8240 and AcquisitionFrameRate disabled.*	
Default value	50	
Notes	This is the inverse of the Acquisition Line Rate . When AcquisitionLineTime is set for higher values then make sure to adopt image timeout in order to avoid timeout issues while grabbing. This parameter influences the value range of AcquisitionFrameRate. Please read the AcquisitionFrameRate feature documentation for further details.	
Error behavior	See the device error code documentation.	

2.3.10 Acquisition Line Rate Max - Deprecated

Name	AcquisitionLineRateMax	**Custom**
Description	This value is calculated by the camera. It limits the AcquisitionLineRate. The unit is Hertz.	
Interface	Float	
Access mode	Read only	
Adjustable while grabbing	-	
Value range	-	
Default value	-	
Notes	Please use the min and max node entries of the Acquisition Line Rate feature.	
Error behavior	-	

2.3.11 Acquisition Frame Rate Enable

Name	AcquisitionFrameRateEnable	**Standard**
Description	Controls if the AcquisitionFrameRate feature is writable and used to control the acquisition rate. Otherwise, the acquisition rate is implicitly controlled by the combination of other features like AcquisitionLineTime.	
Interface	Boolean	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	True, False	
Default value	-	
Notes	The FrameActive and FrameStart triggers must be set to Off to enable this feature.	
Error behavior	See the device error code documentation.	

2.3.12 Acquisition Frame Rate

Name	AcquisitionFrameRate	**Standard**
Description	Controls the acquisition rate (in Hertz) at which the frames are captured.	
Interface	Float	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	The value range depends on the line time as well as on the image height: *Min Acquisition Frame Rate:* $$Min = \frac{1}{AcquisitionLineTime * (ImageHeight + 32764)}$$ *Max Acquisition Frame Rate:* $$Max = \frac{1}{AcquisitionLineTime * ImageHeight}$$	
Default value	-	
Notes	The Acquisition Frame Rate is based on the given AcquisitionLineTime even if a line trigger is used. Therefore the real frame rate depends on the line trigger if used. The accuracy of this feature is limited. This feature is writeable only if AcquisitionFrameRateEnable is set true. Changing the image height or the acquisition line time influences the value range of the AcquisitionFrameRate. It might be that while changing these parameters the current value for the AcquisitionFrameRate gets out of range. In this case the real acquisition frame rate is clamped internally to the maximum possible frame rate.	
Error behavior	See the device error code documentation.	

2.3.13 Time Delay Integration

Name	TimeDelayIntegration	**Custom**
Description	Selects the number of photo-sensitive cells combined together (average).	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	[1, 3]	
Default value	1	
Notes	This feature is valid and available for **Mono Camera** only.	
Error behavior	See the device error code documentation.	

2.3.14 Master Slave Mode

Name	MasterSlaveMode	**Custom**
Description	Specifies the master slave mode of the camera.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	See enum entries table below.	
Default value	Off	
Notes	-	
Error behavior	See the device error code documentation.	

Master Slave Mode Enum Entries:

Name	Description
Off	No master slave is selected.
Master	Selects the camera to be Master.
Slave	Selects the camera to be Slave.
AutoSelect	Automatically selects the camera to be either Master or Slave.
AutoSelect (Master)	This is available when AutoSelect is selected.
AutoSelect (Slave)	This is available when AutoSelect is selected.

2.3.15 Master Slave Interface

Name	MasterSlaveInterface	**Custom**
Description	Specifies the interface type to be used for master slave.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	See enum entries table below.	
Default value	External	
Notes	Valid Interface configurations: **Master (Also for AutoSelect)::** - External - Internal - External + Internal *Cascade is not supported for Master. If set it is neglected.* **Slave (Also for AutoSelect):** - External - External + Cascade - External + Cascade + Internal - Internal	
Error behavior	See the device error code documentation.	

Master Slave Interface Enum Entries:

Name	Description
External	Interface between master and slave camera is of external(physical)
Internal	Interface between master and slave camera is of internal
Cascade	Cascade interface for slave camera

2.3.16 Master Slave Interface Enable

Name	Enable	**Custom**
Description	Enables the selected master slave interface.	
Interface	Boolean	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	True – Enables selected master slave interface. False – Disables selected master slave interface.	
Default value	False	
Notes	-	
Error behavior	See the device error code documentation.	

2.3.17 Slave DelayLines

Name	MasterSlaveDelayLines	**Custom**
Description	Specifies the delay in number of lines for the slave camera.	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	[0 , 32764]	
Default value	0	
Notes	This feature is valid and available for **Slave Camera** only.	
Error behavior	See the device error code documentation.	

2.3.18 Trigger Selector

Name	TriggerSelector	**Standard**
Description	Selects the type of trigger to configure.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	See enum entries table below.	
Default value	FrameStart	
Notes	-	
Error behavior	See the device error code documentation.	

Trigger Selector Enum Entries:

Name	Description
FrameStart	Selects a trigger starting the capture of one frame.
FrameActive	Selects a trigger controlling the duration of one frame.
LineStart	Selects a trigger starting the capture of one Line of a Frame.

2.3.19 Trigger Mode

Name	TriggerMode	**Standard**
Description	Controls if the selected trigger is active.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	See enum entries table below.	
Default value	Off	
Notes	-	
Error behavior	See the device error code documentation.	

Trigger Mode Enum Entries:

Name	Description
Off	Disables the selected trigger.
On	Enables the selected trigger.

2.3.20 Trigger Source

Name	TriggerSource	**Standard**
Description	Specifies the internal signal or physical input Line to use as the trigger source.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	See the enum entries for more information.	
Default value	-	
Notes	-	
Error behavior	See the device error code documentation.	

Trigger Source Enum Entries:

Name	Description	Notes
Encoder0	Specifies Encoder0 signal to use as internal source for the trigger.	This enum entry is valid and available only for **LineStart**
Line1	Specifies physical line (or pin) **Line1** and associated I/O control block to use as external source for the trigger signal.	This enum entry is valid and available only for **LineStart**
Line2	Specifies physical line (or pin) **Line2** and associated I/O control block to use as external source for the trigger signal.	This enum entry is valid and available only for **Frame Trigger**
Line3	Specifies physical line (or pin) **Line3** and associated I/O control block to use as external source for the trigger signal.	This enum entry is valid and available for **Frame** or **Line** trigger
Line4	Specifies physical line (or pin) **Line4** and associated I/O control block to use as external source for the trigger signal.	This enum entry is valid and available for **Frame** or **Line** trigger

2.3.21 Trigger Activation

Name	TriggerActivation	**Standard**
Description	Specifies the activation mode of the trigger.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	See enum entries table below.	
Default value	-	
Notes	-	
Error behavior	See the device error code documentation.	

Trigger Activation Enum Entries:

Name	Description	Notes
RisingEdge	Specifies that the trigger is considered valid on the rising edge of the source signal.	This enum entry is valid and available only for **LineStart** or **FrameStart**
FallingEdge	Specifies that the trigger is considered valid on the falling edge of the source signal.	This enum entry is valid and available only for **FrameStart**
LevelHigh	Specifies that the trigger is considered valid as long as the level of the source signal is high.	This enum entry is valid and available only for **FrameActive**
LevelLow	Specifies that the trigger is considered valid as long as the level of the source signal is low.	This enum entry is valid and available only for **FrameActive**

2.3.22 Trigger DelayLines

Name	TriggerDelayLines	**Custom**
Description	Specifies the delay in number of lines to apply after the trigger reception before activating it	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	[0 , 32764]	
Default value	0	
Notes	This feature is valid and available for **FrameStart** and **FrameActive** only. The accuracy of trigger delay lines is limited and depends on the value.: [0 , 8191] step 1 [8192 , 16383] step 2 [16384 , 32764] step 4	
Error behavior	See the device error code documentation.	

2.3.23 Trigger Divider

Name	TriggerDivider	**Standard**
Description	Specifies a division factor for the incoming line trigger pulses	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	[1 , 256]	
Default value	1	
Notes	This feature is valid and available for **LineStart** only.	
Error behavior	See the device error code documentation.	

2.3.24 Trigger Signal Detection Mode

Name	TriggerSignalDetectionMode	**Custom**
Description	Specifies the debounce type to be evaluated.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	See enum entries table below.	
Default value	FrameStart - PeakholderDetection FrameActive – Debouncing4Lines	
Notes	This feature is valid and available for **FrameStart** and **FrameActive** only.	
Error behavior	See the device error code documentation.	

Trigger Signal Detection Mode Enum Entries:

Name	Description
PeakholderDetection	Peakholder 15 lines
Debouncing4Clocks	Debouncing 4 clocks
Debouncing4Lines	Debouncing 4 lines
Debouncing60Lines	Debouncing 60 lines

2.3.25 Extend Lines

Name	FrameActiveExtendLines	**Custom**
Description	Specifies the number of additional output lines for FrameActive.	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	[0, 65535]	
Default value	0	
Notes	This feature is valid and available for **FrameActive** only.	
Error behavior	See the device error code documentation.	

2.3.26 Line Time (Measured)

Name	MeasuredLineTime	**Custom**
Description	Measure the processing time per scan line during line/encoder trigger.	
Interface	Float	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	-	
Default value	-	
Notes	This feature is valid and available for **LineStart** only.	
Error behavior		

2.3.27 Line Trigger Status

Name	LineTriggerStatus	**Custom**
Description	Display the line trigger status.	
Interface	Enumeration	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	See enum entries table below.	
Default value	-	
Notes	This feature is valid and available for **LineStart** only.	
Error behavior	-	

Line Trigger Status Enum Entries:

Name	Description
OK	OK
SpeedToHigh	Speed To High

2.4 Analog Control

2.4.1 Gain Selector

Name	GainSelector	**Standard**
Description	Selects which Gain is controlled by the Gain features.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	See enum entries table below.	
Default value	All – For color camera White – For mono camera	
Notes	The linear gain reflects the product of the analog and digital gain. Setting the linear gain will adapt the analog (if available) as well as the digital gain. The analog gain is not supported for all products. If the analog gain is not available, the digital gain is not displayed separately. In this case the linear gain reflects the digital gain value. When reading the gain while All/AnalogAll/DigitalAll is selected an average is returned. In case of writing the value will be written to all color channels.	
Error behavior	See the device error code documentation.	

Gain Selector Enum Entries:

Name	Description
All	Selects linear gain of all color channels.
Red	Selects linear gain red
Green	Selects linear gain green
Blue	Selects linear gain blue
White	Selects linear gain white
AnalogAll	Selects analog gain of all color channels.
AnalogRed	Selects analog gain red
AnalogGreen	Selects analog gain green
AnalogBlue	Selects analog gain blue
AnalogWhite	Selects analog gain white
DigitalAll	Selects digital gain of all color channels.
DigitalRed	Selects digital gain red
DigitalGreen	Selects digital gain green
DigitalBlue	Selects digital gain blue
DigitalWhite	Selects digital gain white

2.4.2 Gain

Name	Gain	**Standard**
Description	This is an amplification factor applied to the video signal.	
Interface	Float	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	The value range varies for different camera variants. Therefore, query the value range from the feature parameters (min/max entries) However, for the digital gain the value range is same for all camera variants. LinearGain = [DigitalMin * AnalogMin, DigitalMax * AnalogMax] AnalogGain = *camera dependent* DigitalGain = [1.0 , 3.999]	
Default value	1.0	
Notes	This feature is available for Gain Selector	
Error behavior	See the device error code documentation.	

2.4.3 Brightness Contrast Enable

Name	BrightnessContrastEnable	**Custom**
Description	Enable brightness and contrast image processing unit.	
Interface	Boolean	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	True – Enables brightness and contrast image processing unit. False – Disables brightness and contrast image processing unit.	
Default value	False	
Notes	-	
Error behavior	See the device error code documentation.	

2.4.4 Brightness Contrast Channel Selector

Name	BrightnessContrastChannelSelector	**Custom**
Description	Selects the color channel to control the brightness and contrast.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	See enum entries table below.	
Default value	Red	
Notes	-	
Error behavior	See the device error code documentation.	

Brightness Contrast Channel Selector Enum Entries:

Name	Description
Red	Brightness or Contrast will be applicable to the red channel.
Green	Brightness or Contrast will be applicable to the green channel.
Blue	Brightness or Contrast will be applicable to the blue channel.
White	Brightness or Contrast will be applicable to the white channel.

2.4.5 Contrast

Name	BrightnessContrastGain	**Custom**
Description	Controls the contrast (gain) value for the selected color channel.	
Interface	Float	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	[0.0 , 1.999]	
Default value	1.0	
Notes	-	
Error behavior	See the device error code documentation.	

2.4.6 Brightness

Name	BrightnessContrastOffset	**Custom**
Description	Controls the brightness (offset) value for the selected color channel.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	[-0.25 , 0.25]	
Default value	0.0	
Notes	The resulting brightness (offset) is defined by the features value multiplied with the maximum value of a pixel defined by the pixel formats bit-depth. Example: The maximum value of a pixel using the pixel format RGB8 (bit-depth 8-bit) is 255. Brightness value of 0.1 would increase the output pixel value by: Offset= 0.1x 255 = 25dn's	
Error behavior	See the device error code documentation.	

2.4.7 Gain Auto

Name	GainAuto	**Standard**
Description	Sets the automatic gain control (AGC) mode. The exact algorithm used to implement AGC is device-specific.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	See enum entries table below.	
Default value	Off	
Notes	This feature is available only if Gain Selector is **All or White** (White for Mono cameras) The status of automatic gain control is reflected in GainAutoStatus feature. When the GainAuto feature has changed its value to Off after performing the Once calibration, please query GainAutoStatus to check if the automatic gain control was successful.	
Error behavior	See the device error code documentation.	

Gain Auto Enum Entries:

Name	Description
Off	Gain is User controlled using **Gain**.
Once	Gain is automatically adjusted once by the device. Once it has converged, it automatically returns to the **Off** state.
Continuous	Gain is constantly adjusted by the device.

2.4.8 Gain Auto Status

Name	GainAutoStatus	**Standard**
Description	Returns the state of the automatic gain control	
Interface	Enumeration	
Access mode	Read only	
Adjustable while grabbing	-	
Value range	See enum entries table below.	
Default value	Control off	
Notes	-	
Error behavior	-	

Gain Auto Enum Entries:

Name	Description
ControlOff	No automatic gain control in progress.
ControlSuccessful	The automatic gain control was successfully performed.
ControlInProgress	The automatic gain control is in progress.
ControlStopped	Continuous gain control temporarily stopped. Gain stop control enabled; gain stop condition reached!
LowerGainLimit	Warning! The automatic gain control has reached lower gain limit!
UpperGainLimit	Warning! The automatic gain control has reached upper gain limit!
ReferenceTimeout	No reference data from the gain control region available! Camera might be in triggered mode. Probably there are no trigger pulses.

2.4.9 Synchronization Mode Enable

Name	GainAutoSyncModeEnable	**Custom**
Description	Controls if the gain control reference values are taken in freerun or synchronous mode	
Interface	Boolean	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	True – Enables synchronization mode False – Disables synchronization mode	
Default value	False	
Notes	-	
Error behavior	See the device error code documentation.	

2.4.10 Stop Control Enable

Name	GainAutoStopControlEnable	**Custom**
Description	Controls if the gain auto continuous mode is limited according to the gain stop factor.	
Interface	Boolean	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	True – Enables Gain Auto Stop Control False – Disables Gain Auto Stop Control	
Default value	False	
Notes	-	
Error behavior	-	

2.4.11 Stop Factor

Name	GainAutoStopFactor	**Custom**
Description	The stop factor is used to limit the continuous gain control. The factor is multiplied with the target reference values. The result defines a threshold for the current reference values. Whenever the current reference values are equal or fall below the threshold the continuous gain control is not performed till the current reference values are larger than the threshold again.	
Interface	Float	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	[0.0 , 1.0]	
Default value	0.8	
Notes	-	
Error behavior	See the device error code documentation.	

2.4.12 Gain Control Region Offset X

Name	GainControlRegionOffsetX	**Custom**
Description	Sets the offset x of the gain control region. (in pixel)	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	[2 , (SensorWidth- GainControlRegionWidth)]	
Default value	2 – For color camera 24 – For mono camera	
Notes	The minimal step of the value is two.	
Error behavior	See the device error code documentation.	

2.4.13 Gain Control Region Width

Name	GainControlRegionWidth	**Custom**
Description	Sets the width of the gain control region. (in pixel)	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	[8 , 240]	
Default value	32 – For color camera 48 – For mono camera	
Notes	The step of the width is two.	
Error behavior	See the device error code documentation.	

2.4.14 Gain Control Region Offset Y

Name	GainControlRegionOffsetY	**Custom**
Description	Sets the offset y of the gain control region. (in pixel)	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	Frame trigger off: [3, Height - GainControlRegionHeight] Frame trigger on: [3 -TriggerDelayLines, 32767]	
Default value	3	
Notes		
Error behavior	See the device error code documentation.	

2.4.15 Gain Control Region Height

Name	GainControlRegionHeight	**Custom**
Description	Sets the height of the gain control region. (in pixel)	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	[2 , 240]	
Default value	32	
Notes	-	
Error behavior	See the device error code documentation.	

2.4.16 Gain Control Region visible

Name	GainControlRegionVisible	**Custom**
Description	The borders of the gain control region are drawn into the image if enabled.	
Interface	Boolean	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	True – Displays the borders of the gain control region False – Does not display the borders of the gain control region	
Default value	False	
Notes	-	
Error behavior	-	

2.4.17 Average Samples

Name	GainAutoAverageSamples	**Custom**
Description	The number of reference samples which are averaged before doing a gain control step.	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	[1 , 32]	
Default value	4	
Notes	-	
Error behavior	See the device error code documentation.	

2.4.18 Gain Control Region Channel Selector

Name	GainControlRegionChannelSelector	**Custom**
Description	Selects the color channel to define the target intensity value or to read the current intensity value of the gain control region.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	See enum entries table below.	
Default value	Red	
Notes	-	
Error behavior	See the device error code documentation.	

Gain Control Region Channel Selector Enum Entries:

Name	Description
Red	Selects red channel to define the target intensity value or to read the current intensity value of the gain control region.
Green	Selects green channel to define the target intensity value or to read the current intensity value of the gain control region.
Blue	Selects blue channel to define the target intensity value or to read the current intensity value of the gain control region.
White	Selects white channel to define the target intensity value or to read the current intensity value of the gain control region.

2.4.19 Target value

Name	GainControlRegionTargetValue	**Custom**
Description	The target luminance intensity value of the selected channel in the gain control region. The bit depth of the value is 10-bit.	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	[0 , 1023]	
Default value	700	
Notes	-	
Error behavior	See the device error code documentation.	

2.4.20 Current value

Name	GainControlRegionCurrentValue	**Custom**
Description	The current luminance intensity value of the selected channel in the gain control region. The bit depth of the value is 10-bit.	
Interface	Integer	
Access mode	Read only	
Adjustable while grabbing	-	
Value range	-	
Default value	-	
Notes	-	
Error behavior	-	

2.4.21 Sensor Sensitivity Channel Selector

Name	SensorSensitivityChannelSelector	**Custom**
Description	Selects the color to be controlled for the sensor sensitivity.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	See enum entries table below.	
Default value	Red	
Notes	-	
Error behavior	See the device error code documentation.	

Sensor Sensitivity Channel Selector Enum Entries:

Name	Description
All	Selects all color channels to control sensor sensitivity. When setting the sensor sensitivity, the corresponding value will be applied to all color channels. When reading the sensor sensitivity in case of all selector the lastly set value is returned. After booting up this will be 0.
White	Selects white channel to control sensor sensitivity.
Red	Selects red channel to control sensor sensitivity.
Green	Selects green channel to control sensor sensitivity.
Blue	Selects blue channel to control sensor sensitivity.

2.4.22 Sensor Sensitivity

Name	SensorSensitivity	**Custom**
Description	Controls the sensor sensitivity of the specified selector.	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	[0, 2]	
Default value	2	
Notes	-	
Error behavior	See the device error code documentation.	

2.4.23 Gamma

Name	Gamma	**Standard**
Description	Controls the gamma correction of pixel intensity. This is typically used to compensate for non-linearity of the display system (such as CRT).	
Interface	Float	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	[0.1 – 2.5]	
Default value	1.0	
Notes	The gamma values 0.2 – 2.5 behave corresponding to the standard gamma definition. **The gamma value 0.1 enables a special sRGB gamma table.** The gamma feature is effective only if the Gamma is enabled.	
Error behavior	See the device error code documentation.	

2.5 Image Calibration Control

2.5.1 Image Calibration Mode

Name	ImageCalibrationMode	**Custom**
Description	Prepare camera for DSNU or PRNU calibration.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	See enum entries table below.	
Default value	Off	
Notes	Features are set internal that raw, un-scaled and not transformed image data is generated. Changes in features are returned when the appropriate features are read. Feature which are changed cannot be changed by user while ImageCalibrationMode is active. Returning “ImageCalibrationMode” to Off features are restored to that values which were active when entering “ImageCalibrationMode”	
Error behavior	See the device error code documentation.	

Image Calibration Mode Enum Entries:

Name	Description
Off	
CalibrateDarkSignalNonUniformity	Camera is preparing for DSNU calibration
CalibratePhotoResponseNonUniformity	Camera is preparing for PSNU calibration

2.5.2 Dark Signal Non-Uniformity (DSNU) Selector

Name	DarkSignalNonUniformitySelector	**Custom**
Description	Selects a DSNU LUT.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	See enum entries table below.	
Default value	LUT1	
Notes	-	
Error behavior	See the device error code documentation.	

Dark Signal Non-Uniformity (DSNU) Selector Enum Entries:

Name	Description
LUT1	Look-Up-Table 1
LUT2	Look-Up-Table 2

2.5.3 DSNU Dataset Information

Name	DarkSignalNonUniformityDataSetInformation	**Custom**
Description	Gives information of the selected DSNU LUT state.	
Interface	Enumeration	
Access mode	Read only	
Adjustable while grabbing	-	
Value range	See enum entries table below.	
Default value	-	
Notes	-	
Error behavior	-	

Dark Signal Non-Uniformity (DSNU) Selector Enum Entries:

Name	Description
InactiveUnconfigured	The selected DSNU correction dataset is not used in the image processing pipeline of the camera and does not contain valid DSNU correction values.
InactiveConfigured	The selected DSNU correction dataset is not used in the image processing pipeline of the camera but contains valid DSNU correction values.
ActiveConfigured	The selected DSNU correction dataset is used in the image processing pipeline of the camera and contains valid DSNU correction values.

2.5.4 DSNU Available Planes

Name	DarkSignalNonUniformityAvailablePlains	**Custom**
Description	Indicates which color planes are available.	
Interface	Enumeration	
Access mode	Read Write	
Adjustable while grabbing	Yes	
Value range	See enum entries table below.	
Default value	Red	
Notes	-	
Error behavior	See the device error code documentation.	

DSNU Available Planes Enum Entries:

Name	Description
Red	Selects red channel to read the first and last valid pixel values.
Green	Selects green channel to read the first and last valid pixel values.
Blue	Selects blue channel to read the first and last valid pixel values.
White	Selects red channel to read the first and last valid pixel values.

2.5.5 First Valid Pixel

Name	DarkSignalNonUniformityFirstPixelReg	**Custom**
Description	Indicates first valid pixel.	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	≥0	
Default value	0	
Notes	-	
Error behavior	-	

2.5.6 Last Valid Pixel

Name	DarkSignalNonUniformityLastPixelReg	**Custom**
Description	Indicates last valid pixel.	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	≥0	
Default value	-	
Notes	-	
Error behavior	-	

2.5.7 DSNU Display Reference Values

Name	DarkSignalNonUniformityReferenceOutput	**Custom**
Description	Displays the DSNU reference as a static output video.	
Interface	Boolean	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	True – Displays the DSNU reference values False – Does not display the DSNU reference values	
Default value	False	
Notes	This feature is available only if DSNU LUT is active and configured.	
Error behavior	See the device error code documentation.	

2.5.8 Photo Response Non-Uniformity (PRNU) Selector

Name	PhotoResponseNonUniformitySelector	**Custom**
Description	Selects a PRNU LUT.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	See enum entries table below.	
Default value	LUT1	
Notes	-	
Error behavior	See the device error code documentation.	

Photo Response Non-Uniformity (PRNU) Selector Enum Entries:

Name	Description
LUT1	Look-Up-Table 1
LUT2	Look-Up-Table 2

2.5.9 PRNU Dataset Information

Name	PhotoResponseNonUniformityDataSetInformation	**Custom**
Description	Gives information of the selected PRNU LUT state.	
Interface	Enumeration	
Access mode	Read only	
Adjustable while grabbing	-	
Value range	See enum entries table below.	
Default value	-	
Notes	-	
Error behavior	-	

Photo Response Non-Uniformity (DSNU) Selector Enum Entries:

Name	Description
InactiveUnconfigured	The selected PRNU correction dataset is not used in the image processing pipeline of the camera and does not contain valid PRNU correction values.
InactiveConfigured	The selected PRNU correction dataset is not used in the image processing pipeline of the camera but contains valid PRNU correction values.
ActiveConfigured	The selected PRNU correction dataset is used in the image processing pipeline of the camera and contains valid PRNU correction values.

2.5.10 PRNU Available Planes

Name	PhotoResponseNonUniformityAvailablePlains	**Custom**
Description	Indicates first valid pixel.	
Interface	Enumeration	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range		
Default value	Red	
Notes	-	
Error behavior	See the device error code documentation.	

PRNU Available Planes Enum Entries:

Name	Description
Red	Selects red channel to read the first and last valid pixel values.
Green	Selects green channel to read the first and last valid pixel values.
Blue	Selects blue channel to read the first and last valid pixel values.
White	Selects red channel to read the first and last valid pixel values.

2.5.11 First Valid Pixel

Name	PhotoResponseNonUniformityFirstPixelReg	**Custom**
Description	Indicates first valid pixel.	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	≥0	
Default value	0	
Notes	-	
Error behavior	-	

2.5.12 Last Valid Pixel

Name	PhotoResponseNonUniformityLastPixelReg	**Custom**
Description	Indicates last valid pixel.	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	≥0	
Default value	-	
Notes	-	
Error behavior	-	

2.5.13 PRNU Display Reference Values

Name	PhotoResponseNonUniformityReferenceOutput	**Custom**
Description	Displays the PRNU reference as a static output video.	
Interface	Boolean	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	True – Display the PRNU reference values False – Don't display the PRNU reference values	
Default value	False	
Notes	This feature is valid and available only if PRNU LUT is active and configured.	
Error behavior	See the device error code documentation.	

2.5.14 Line Distance

Name	ImageCalibrationLineDistance	**Custom**
Description	This feature is used to compensate the line distance of the sensors color channels.	
Interface	Float	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	[0.0 , 2.0]	
Default value	0	
Notes	-	
Error behavior	See the device error code documentation.	

2.5.15 Scan Direction

Name	ImageCalibrationScanDirection	**Custom**
Description	Controls scan direction processing.	
Interface	Enumeration	
Access mode	Read Write	
Adjustable while grabbing	Yes	
Value range	See enum entries table below.	
Default value	Forward	
Notes	-	
Error behavior	See the device error code documentation.	

Scan Direction Enum Entries:

Name	Description
Forward	Specifies forward scanning direction of the camera (RGB).
Backward	Specifies backward scanning direction of the camera (BGR).

2.5.16 Image Center Offset – Not Available for AllPIXA-EVO

Name	ImageCenterOffset	**Custom**
Description	Displays the pixel offset between sensor center and scan target center.	
Interface	Integer	
Access mode	Read only	
Adjustable while grabbing	-	
Value range	≥-15000	
Default value	-	
Notes	-	
Error behavior	-	

2.6 Color Transformation Control

2.6.1 Color Transformation Selector

Name	ColorTransformationSelector	**Standard**
Description	Selects which Color Transformation module is controlled by the various color transformation features.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	See enum entries table below.	
Default value	ColortoColor	
Notes	-	
Error behavior	See the device error code documentation.	

Color Transformation Selector Enum Entries:

Name	Description
ColortoColor	Color to Color
ColortoGrey	Color to Grey

2.6.2 Color Transformation Enable

Name	ColorTransformationEnable	**Standard**
Description	Activates the selected Color Transformation module.	
Interface	Boolean	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	True – Enables the selected color transformation module False – Disables the selected color transformation module	
Default value	False	
Notes	When enabling ColortoGrey module the pixel format internally changed to Mono8 and Region Width and Gain Control Region Width are adopted according to Mono8 pixel format. When disabling ColortoGrey module the pixel format internally changed to RGB8.	
Error behavior	See the device error code documentation.	

2.6.3 Color Transformation Value Selector

Name	ColorTransformationValueSelector	**Standard**
Description	Selects the Gain factor or Offset of the transformation matrix to access in the selected color transformation module.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	See enum entries table below.	
Default value	Gain00 – For colortocolor module Gain0 – For colortogrey module	
Notes	-	
Error behavior	See the device error code documentation.	

Color Transformation Value Selector Enum Entries:

Name	Description
Gain00	Gain 0, 0 of the transformation matrix.
Gain01	Gain 0, 1 of the transformation matrix.
Gain02	Gain 0, 2 of the transformation matrix.
Gain10	Gain 1, 0 of the transformation matrix.
Gain11	Gain 1, 1 of the transformation matrix.
Gain12	Gain 1, 2 of the transformation matrix.
Gain20	Gain 2, 0 of the transformation matrix.
Gain21	Gain 2, 1 of the transformation matrix.
Gain22	Gain 2, 2 of the transformation matrix.
Offset0	Offset 0 of the transformation matrix.
Offset1	Offset 1 of the transformation matrix.
Offset2	Offset 2 of the transformation matrix.
Gain0	Gain 1, 0 of the transformation matrix.
Gain1	Gain 1, 1 of the transformation matrix.
Gain2	Gain 1, 2 of the transformation matrix.

2.6.4 Color Transformation Value

Name	ColorTransformationValue	**Standard**
Description	Represents the value of the selected Gain factor or Offset inside the transformation matrix.	
Interface	Float	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	[-2.0 , 2.0] – For Gain selector [-0.5, 0.5] – For Offset selector	
Default value	-	
Notes	-	
Error behavior	See the device error code documentation.	

2.7 LUT Control

2.7.1 LUT Selector

Name	LUTSelector	**Standard**
Description	Selects which LUT to control.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	See the enum entries table below.	
Default value	Gamma	
Notes	-	
Error behavior	See the device error code documentation.	

LUT Selector Enum Entries:

Name	Description
Gamma	Selects the Gamma LUT
DarkSignalNonUniformityLUT1	Selects the DSNU LUT 1
DarkSignalNonUniformityLUT2	Selects the DSNU LUT2
PhotoResponseNonUniformityLUT1	Selects the PRNU LUT1
PhotoResponseNonUniformityLUT2	Selects the PRNU LUT2

2.7.2 LUT Enable

Name	LUTEnable	**Standard**
Description	Activates/Deactivates the selected LUT.	
Interface	Boolean	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	True – Activates the selected LUT False – Deactivates the selected LUT	
Default value	False	
Notes	-	
Error behavior	See the device error code documentation.	

2.7.3 LUT Dataset Name

Name	LUTDatasetNameReg	**Custom**
Description	Leave a comment here to describe the chosen LUT.	
Interface	String	
String length	32	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	-	
Default value	-	
Notes	This feature is not available for Gamma.	
Error behavior	-	

2.8 User Set Control

2.8.1 Loaded User Set

Name	LoadedUserSet	**Custom**
Description	Specifies the last loaded user set.	
Interface	String	
String length	32	
Access mode	Read Only	
Adjustable while grabbing	Yes	
Value range	-	
Default value	Default	
Notes	-	
Error behavior	See the device error code documentation.	

2.8.2 User Set Selector

Name	UserSetSelector	**Standard**
Description	Selects the feature User Set to load, save or configure.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	See enum entries table below.	
Default value	UserSet1	
Notes	-	
Error behavior	See the device error code documentation.	

User Set Selector Enum Entries:

Name	Description
UserSet1	Selects the UserSet 1
UserSet2	Selects the UserSet 2
UserSet3	Selects the UserSet 3
UserSet4	Selects the UserSet 4
UserSet5	Selects the UserSet 5
UserSet6	Selects the UserSet 6
UserSet7	Selects the UserSet 7
UserSet8	Selects the UserSet 8
Default	Selects the Default

2.8.3 User Set Load

Name	UserSetLoad	**Standard**
Description	Loads the User Set specified by UserSetSelector to the device and makes it active.	
Interface	Command	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	1	

Default value	1
Notes	**Default** is Read only.
Error behavior	See the device error code documentation.

2.8.4 User Set Save

Name	UserSetSave	**Standard**
Description	Save the current user settings to the selected user set in the non - volatile memory of the device.	
Interface	Command	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	1	
Default value	1	
Notes	**Default** is Read only.	
Error behavior	See the device error code documentation.	

2.8.5 User Set Comment

Name	UserSetComment	**Custom**
Description	Leave a comment here to describe the chosen setting.	
Interface	String	
String length	32	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	-	
Default value	Default	
Notes	**Default** is Read only.	
Error behavior	See the device error code documentation.	

2.9 Transport Layer Control

2.9.1 Payload Size

Name	PayloadSize	**Standard**
Description	Provides the number of bytes transferred for each image or chunk on the stream channel.	
Interface	Integer	
Access mode	Read only	
Adjustable while grabbing	-	
Value range	≥0	
Default value	-	
Notes	-	
Error behavior	-	

2.9.2 Gev Version Major

Name	GevVersionMajor	**Standard**
Description	Major version of the specification.	
Interface	Integer	
Access mode	Read only	
Adjustable while grabbing	-	
Value range	>0	
Default value	-	
Notes	This feature is deprecated (See DeviceTLVersionMajor).	
Error behavior	-	

2.9.3 Gev Version Minor

Name	GevVersionMinor	**Standard**
Description	Minor version of the specification.	
Interface	Integer	
Access mode	Read only	
Adjustable while grabbing	-	
Value range	≥0	
Default value	-	
Notes	This feature is deprecated (See DeviceTLVersionMinor).	
Error behavior	-	

2.9.4 Gev Device Mode Is Big Endian

Name	GevDeviceModeIsBigEndian	**Standard**
Description	Endianess of the device registers.	
Interface	Boolean	
Access mode	Read only	
Adjustable while grabbing	-	
Value range	True – Represents the Endianness of the device registers False – Does not represents the Endianness of the device registers	
Default value	-	
Notes	This feature is deprecated (See DeviceRegistersEndianness).	
Error behavior	-	

2.9.5 Gev Device Mode Character Set

Name	GevDeviceModeCharacterSet	**Standard**
Description	Character set used by all the strings of the bootstrap registers.	
Interface	Enumeration	
Access mode	Read only	
Adjustable while grabbing	-	
Value range	See enum entries table below.	
Default value	UTF8	
Notes	This feature is deprecated (See DeviceCharacterSet).	
Error behavior	-	

Gev Device Mode Character Set Enum Entries:

Name	Description
UTF8	UTF 8

2.9.6 Gev Interface Selector

Name	GevInterfaceSelector	**Standard**
Description	Selects which physical network interface to control.	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	0	
Default value	0	
Notes	-	
Error behavior	-	

2.9.7 Gev MACAddress

Name	GevMACAddress	**Standard**
Description	MAC address of the network interface.	
Interface	Integer	
Access mode	Read only	
Adjustable while grabbing	-	
Value range	≥0	
Default value	-	
Notes	-	
Error behavior	-	

2.9.8 Gev Supported Option Selector

Name	GevSupportedOptionSelector	**Standard**
Description	Selects the GEV option to interrogate for existing support.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	See enum entries table below.	
Default value	-	
Notes	-	
Error behavior	-	

Gev Supported Option Selector Enum Entries:

Name	Description
UserDefinedName	Indicates if the Userdefined name register is supported.
SerialNumber	Indicates if the Serial number register is supported.
HeartbeatDisable	Indicates if the Heartbeat can be disabled.
LinkSpeed	Indicates if the Link Speed registers are supported.
CCPApplicationSocket	Indicates if the CCP Application Port and IP address registers are supported.
ManifestTable	Indicates if the Manifest Table is supported.
TestData	Indicates if the test packet is filled with data from the LFSR generator.
DiscoveryAckDelay	When Discovery ACK Delay register is supported, this bit indicates that the application can write it. If this bit is 0, the register is read-only.
DiscoveryAckDelayWritable	Indicates if the Discovery ACK Delay register is supported.
ExtendedStatusCodes	It indicates if the generation of extended status codes is supported.
PrimaryApplicationSwitchover	It indicates if the authenticate primary application switchover requests are supported.
Action	It indicates if Actions are supported.
PendingAck	It indicates if the generation of PENDING_ACK is supported.

EventData	It indicates if the EVENTDATA_CMD and EVENTDATA_ACK are supported.
Event	It indicates if the EVENT_CMD and EVENT_ACK are supported.
PacketResend	It indicates if the PACKETRESEND_CMD is supported.
WriteMem	It indicates if the WRITEMEM_CMD and WRITEMEM_ACK are supported.
CommandsConcatenation	It indicates if the Multiple operations in a single message are supported.
IPConfigurationLLA	It indicates if Link Local Address IP configuration scheme is supported.
IPConfigurationDHCP	It indicates if DHCP IP configuration scheme is supported.
IPConfigurationPersistentIP	It indicates if PersistentIP configuration scheme is supported.
StreamChannelSourceSocket	Indicates the SCSP register (stream channel source port) is available.
MessageChannelSourceSocket	Indicates the MCSP register (message channel source port) is available.
StreamChannel0BigAndLittleEndian	Stream Channel0 Big And Little Endian.
StreamChannel0IPReassembly	Stream Channel0 IP Reassembly
StreamChannel0UnconditionalStreaming	Stream Channel0 Unconditional Streaming.
StreamChannel0ExtendedChunkData	Stream Channel0 Extended Chunk Data.

2.9.9 Gev Supported Option

Name	GevSupportedOption	**Standard**
Description	Returns if the selected GEV option is supported.	
Interface	Boolean	
Access mode	Read only	
Adjustable while grabbing	-	
Value range	True – Selected GEV option is supported False – Selected GEV option is not supported	
Default value	-	
Notes	-	
Error behavior	-	

2.9.10 Gev Current IP Configuration LLA

Name	GevCurrentIPConfigurationLLA	**Standard**
Description	Indicates if Link Local Address IP configuration scheme is activated on the given network interface.	
Interface	Boolean	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	True – Link Local Address IP configuration scheme is activated on the given logical link. False - Link Local Address IP configuration scheme is not activated on the given logical link.	
Default value	True	
Notes	-	
Error behavior	-	

2.9.11 Gev Current IP Configuration DHCP

Name	GevCurrentIPConfigurationDHCP	**Standard**
Description	Indicates if DHCP IP configuration scheme is activated on the given network interface.	
Interface	Boolean	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	True – DHCP IP configuration scheme is activated on the given logical link. False - DHCP IP configuration scheme is not activated on the given logical link.	
Default value	-	
Notes	-	
Error behavior	-	

2.9.12 Gev Current IP Configuration Persistent IP

Name	GevCurrentIPConfigurationPersistentIP	**Standard**
Description	Indicates if PersistentIP configuration scheme is activated on the given network interface.	
Interface	Boolean	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	True – PersistentIP configuration scheme is activated on the given logical link. False - PersistentIP configuration scheme is not activated on the given logical link.	
Default value	-	
Notes	-	
Error behavior	-	

2.9.13 Gev Current IP Address

Name	GevCurrentIPAddress	**Standard**
Description	Reports the IP address for the given network interface.	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	≥0	
Default value	-	
Notes	-	
Error behavior	-	

2.9.14 Gev Current Subnet Mask

Name	GevCurrentSubnetMask	**Standard**
Description	Provides the subnet mask of the given interface.	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	≥0	
Default value	-	
Notes	-	
Error behavior	-	

2.9.15 Gev Current Default Gateway

Name	GevCurrentDefaultGateway	**Standard**
Description	Indicates the default gateway IP address to be used on the given network interface.	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	≥0	
Default value	-	
Notes	-	
Error behavior	-	

2.9.16 Gev First URL

Name	GevFirstURL	**Standard**
Description	Indicates the first URL to the XML device description file. The First URL is used as the first choice by the application to retrieve the XML device description file.	
Interface	String	
String Length	512	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	-	
Default value	-	
Notes	This feature is deprecated.	
Error behavior	-	

2.9.17 Gev Second URL

Name	GevSecondURL	**Standard**
Description	Indicates the second URL to the XML device description file. This URL is an alternative if the application was unsuccessful to retrieve the device description file using the first URL.	
Interface	String	
String Length	512	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	-	
Default value	-	
Notes	This feature is deprecated.	
Error behavior	-	

2.9.18 Gev Number of Interfaces - Deprecated

Name	GevNumberOfInterfaces	**Standard**
Description	Indicates the number of physical network interfaces supported by this device.	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	>0	
Default value	-	
Notes	This feature is deprecated (See DeviceLinkSelector).	
Error behavior	-	

2.9.19 Gev Persistent IP Address

Name	GevPersistentIPAddress	**Standard**
Description	Indicates the Persistent IP address for this network interface. It is only used when the device boots with the Persistent IP configuration scheme.	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	≥0	
Default value	-	
Notes	-	
Error behavior	-	

2.9.20 Gev Persistent Subnet Mask

Name	GevPersistentSubnetMask	**Standard**
Description	Indicates the Persistent subnet mask associated with the Persistent IP address on this network interface. It is only used when the device boots with the Persistent IP configuration scheme.	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	≥0	
Default value	-	
Notes	-	
Error behavior	-	

2.9.21 Gev Persistent Default Gateway

Name	GevPersistentDefaultGateway	**Standard**
Description	Indicates the persistent default gateway for this network interface. It is only used when the device boots with the Persistent IP configuration scheme.	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	≥0	
Default value	-	
Notes	-	
Error behavior	-	

2.9.22 Gev Persistent IP Address

Name	GevPersistentIPAddress	**Standard**
Description	Indicates the Persistent IP address for this network interface. It is only used when the device boots with the Persistent IP configuration scheme.	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	≥0	
Default value	-	
Notes	-	
Error behavior	-	

2.9.23 GevLinkSpeed

Name	GevLinkSpeed	**Standard**
Description	Indicates the speed of transmission negotiated by the given network interface.	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	>0	
Default value	-	
Notes	The unit is Mbs.	
Error behavior	-	

2.9.24 Gev Message Channel Count

Name	GevMessageChannelCount	**Standard**
Description	Indicates the number of message channels supported by this device.	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	≥0	
Default value	-	
Notes	This feature is deprecated (See DeviceEventChannelCount).	
Error behavior	-	

2.9.25 Gev Stream Channel Count

Name	GevStreamChannelCount	**Standard**
Description	Indicates the number of stream channels supported by this device.	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	≥0	
Default value	-	
Notes	This feature is deprecated (See Device Stream Channel Count).	
Error behavior	-	

2.9.26 Gev Heartbeat Timeout

Name	GevHeartbeatTimeout	**Standard**
Description	Indicates the current heartbeat timeout in milliseconds.	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	≥500	
Default value	-	
Notes	This feature is deprecated (See Device Link Heartbeat Timeout).	
Error behavior	-	

2.9.27 Gev Timestamp Tick Frequency

Name	GevTimestampTickFrequency	**Standard**
Description	Indicates the number of timestamp ticks during 1 second (frequency in Hz).	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	≥0	
Default value	-	
Notes	This feature is deprecated (See increment of theTimestamp Latch Value feature).	
Error behavior	-	

2.9.28 Gev Timestamp Control Latch

Name	GevTimestampControlLatch	**Standard**
Description	Latches current timestamp counter into GevTimestampValue.	
Interface	Command	
Access mode	Write Only	
Adjustable while grabbing	Yes	
Value range	1	
Default value	1	
Notes	This feature is deprecated (See Timestamp Latch).	

Error behavior	-

2.9.29 Gev Timestamp Control Reset

Name	GevTimestampControlReset	**Standard**
Description	Resets the Timestamp counter to 0.	
Interface	Command	
Access mode	Write Only	
Adjustable while grabbing	Yes	
Value range	1	
Default value	1	
Notes	This feature is deprecated (See Timestamp Reset).	
Error behavior	-	

2.9.30 Gev Time stamp Value

Name	GevTimestampValue	**Standard**
Description	Returns the latched 64-bit value of the timestamp counter.	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	≥0	
Default value	-	
Notes	This feature is deprecated (See Timestamp Latch Value).	
Error behavior	-	

2.9.31 Gev CCP

Name	GevCCP	**Standard**
Description	Controls the device access privilege of an application.	
Interface	Enumeration	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	See enum entries table below.	
Default value	-	
Notes	-	
Error behavior	-	

Gev CCP Enum Entries:

Name	Description
OpenAccess	Open Access
ExclusiveAccess	Exclusive Access
ControlAccess	Control Access

2.9.32 Gev MCPHost Port

Name	GevMCPHostPort	**Standard**
Description	I Indicates the port to which the device must send messages. Setting this value to 0 closes the message channel.	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	≥0	
Default value	-	
Notes	-	
Error behavior	-	

2.9.33 Gev MCDA

Name	GevMCDA	**Standard**
Description	Indicates the destination IP address for the message channel.	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	≥0	
Default value	-	
Notes	-	
Error behavior	-	

2.9.34 Gev MCTT

Name	GevMCTT	**Standard**
Description	Provides the transmission timeout value in milliseconds.	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	≥0	
Default value	0	
Notes	-	
Error behavior	-	

2.9.35 Gev MCRC

Name	GevMCRC	**Standard**
Description	Indicates the number of retransmissions allowed when a message channel message times out.	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	≥0	
Default value	0	
Notes	-	
Error behavior	-	

2.9.36 Gev MCSP

Name	GevMCSP	**Standard**
Description	This feature indicates the source port for the message channel.	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	≥0	
Default value	-	
Notes	-	
Error behavior	-	

2.9.37 Gev Stream Channel Selector

Name	GevStreamChannelSelector	**Standard**
Description	Selects the stream channel to control.	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	≥0	
Default value	0	
Notes	-	
Error behavior	-	

2.9.38 Gev SCP Interface Index

Name	GevSCPInterfaceIndex	**Standard**
Description	Index of network interface to use.	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	0	
Default value	0	
Notes	-	
Error behavior	-	

2.9.39 Gev SCPHost Port

Name	GevSCPHostPort	**Standard**
Description	Indicates the port to which the device must send data stream. Setting this value to 0 closes the stream channel.	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	≥0	
Default value	-	
Notes	-	
Error behavior	-	

2.9.40 Gev SCPSFire Test Packet

Name	GevSCPSFireTestPacket	**Standard**
Description	Sends a test packet. When this feature is set, the device will fire one test packet.	
Interface	Boolean	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	True – The device will fire one test packet. False – The device will not send a test packet.	
Default value	-	
Notes	-	
Error behavior	-	

2.9.41 Gev SCPSDo Not Fragment

Name	GevSCPSDoNotFragment	**Standard**
Description	The state of this feature is copied into the "do not fragment" bit of IP header of each stream packet. It can be used by the application to prevent IP fragmentation of packets on the stream channel.	
Interface	Boolean	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	True False	
Default value	-	
Notes	-	
Error behavior	-	

2.9.42 Gev SCPSBig Endian

Name	GevSCPSBigEndian	**Standard**
Description	Endianess of multi-byte pixel data for this stream.	
Interface	Boolean	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	True False	
Default value	-	
Notes	This feature is deprecated (See Device Stream Channel Endianness).	
Error behavior	-	

2.9.43 Gev SCPSPacket Size

Name	GevSCPSPacketSize	**Standard**
Description	Specifies the stream packet size in bytes to send on this channel.	
Interface	Integer	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	>0	
Default value	-	
Notes	-	
Error behavior	-	

2.9.44 Gev SCPD

Name	GevSCPD	**Standard**
Description	Indicates the delay (in timestamp counter unit) to insert between each packet for this stream channel. This can be used as a crude flow-control mechanism if the application or the network infrastructure cannot keep up with the packets coming from the device.	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	≥0	
Default value	-	
Notes	-	
Error behavior	-	

2.9.45 Gev SCDA

Name	GevSCDA	**Standard**
Description	Indicates the destination IP address for this stream channel.	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	≥0	
Default value	-	
Notes	-	
Error behavior	-	

2.10 File Access Control

In general, make sure to always use consistent packages as delivered by Chromasens and do not mix files from different packages!

2.10.1 File Selector

Name	FileSelector	**Standard**
Description	Select a file to read/write.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	See enum entries table below.	
Default value	**NoFile**	
Notes	-	
Error behavior	See the device error code documentation.	

File Selector Enum Entries:

Name	Description
NoFile	No file selected
Bitstream	Enables bitstream access
Application	Enables application access
Xml	Enables GenICam XML access
DSNULUT1	Enables DSNU LUT 1 access[1]
DSNULUT2	Enables DSNU LUT 2 access[1]
PRNULUT1	Enables PRNU LUT 1 access[1]
PRNULUT2	Enables PRNU LUT 2 access[1]
SensorFile	Enables Sensor File access
GammaLUT	Enables Gamma LUT access
UserSet1	Enables User set 1 access
UserSet2	Enables User set 2 access
UserSet3	Enables User set 3 access
UserSet4	Enables User set 4 access
UserSet5	Enables User set 5 access
UserSet6	Enables User set 6 access
UserSet7	Enables User set 7 access
UserSet8	Enables User set 8 access
LightCtrlSet1	Enables Light controller set 1 access (Not for allPIXA Evo)
PackageDescriptionFile	Enables Package Description File access

[1] *If the LUT is enabled in the image processing unit, it will be updated with the newly downloaded file.*

2.10.2 File Operation Selector

Name	FileOperationSelector	**Standard**
Description	Select an operation which shall be performed on a file.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	See enum entries table below.	
Default value	NoOperation	
Notes	-	
Error behavior	See the device error code documentation.	

File Operation Selector Enum Entries:

Name	Description	Notes
NoOperation	Selects no operation	-
Open	Open a file	Fails if a file is already opened.
Close	Close a file	When this command is executed, the file is verified and internally copied. This is a time-consuming process. A file is always closed, even if an error occurs. The **File Operation Status** is set appropriately. Therefore **Success** indicates a successful file update and **Failure** an erroneous update. If a **Fatal Error** occurs, the File Operation Status is set to **Fatal Error**. In this case you must not switch off the camera if the file type is one of the following: - Bitstream - Application - XML - Bootfile (sensorfile) For these files, please try to download the file again to avoid damage! For other files you may switch off the camera. ***In general, make sure to always use consistent packages as delivered by chromasens and do not mix files from different packages!***
Read	Read a file	-
Write	Write a file	-

2.10.3 File Operation Execute

Name	FileOperationExecute	**Standard**
Description	Executes the selected file operation.	
Interface	Command	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	{0,1}	
Default value	1	
Notes	To check whether the operation is finished, read the value of the **FileOperationExecute** command periodically. If the value is not equal to the commands value of the node in the xml, the command has finished execution.	
Error behavior	See the device error code documentation.	

2.10.4 File Open Mode

Name	FileOpenMode	**Standard**
Description	Select an open mode.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	See enum entries table below.	
Default value	**NoOpenMode**	
Notes	-	
Error behavior	See the device error code documentation.	

File Open Mode Enum Entries:

Name	Description	Notes
NoOpenMode	No open mode selected	-
Read	Open a file in read-only mode	-
Write	Open a file in write-only mode	With this open mode no read command is permitted. In addition, if the **FileAccessOffset** is set after a write command occurred, the new value of the **FileAccessOffset** must be at least new_**FileAccessOffset** = (old_**FileAccessOffset**+ old_**FileAccessLength**).

2.10.5 File Access Offset

Name	FileAccessOffset	**Standard**
Description	Controls the starting position of the access in the file.	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	≥0	
Default value	0	
Notes	The unit is Byte. Please see Write for restrictions.	
Error behavior	See the device error code documentation.	

2.10.6 File Access Length

Name	FileAccessLength	**Standard**
Description	Controls the length of the mapping between the device file storage and the FileAccessBuffer.	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	≥0	
Default value	0	
Notes	The unit is Byte. Please see Write for restrictions.	
Error behavior	See the device error code documentation.	

2.10.7 File Operation Result

Name	FileOperationResult	**Standard**
Description	The number of the successfully read/written bytes of the last file operation.	
Interface	Integer	
Access mode	Read only	
Adjustable while grabbing	-	
Value range	≥0	
Default value	0	
Notes	-	
Error behavior	-	

2.10.8 File Operation Status

Name	FileOperationStatus	**Standard**
Description	Status of recent operation.	
Interface	Enumeration	
Access mode	Read only	
Adjustable while grabbing	-	
Value range	See enum entries table below.	
Default value	**Success**	
Notes	-	
Error behavior	-	

File Operation Status Enum Entries:

Name	Description	Notes
Success	The last operation succeeded	-
Failure	The last operation failed	-
FatalError	If this error occurs, do not switch off the device and repeat the update immediately! Otherwise, the system may refuse to boot next time!	A fatal error occurred during the last operation. Please see the Close command for more information.

2.10.9 File Size

Name	FileSize	**Standard**
Description	Represents the size of the selected file in bytes.	
Interface	Integer	
Access mode	Read only	
Adjustable while grabbing	-	
Value range	≥0	
Default value	0	
Notes	-	
Error behavior	See the device error code documentation.	

2.10.10 File Checksum

Name	FileChecksum	**Custom**
Description	The checksum of a file.	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	≥0	
Default value	0	
Notes	This feature must be set by the user after the file is opened and before the file is closed if a file is uploaded to the camera. Only if the checksum feature corresponds to the checksum calculated internally by the camera, the file download succeeds. For reading operations there is no need to set the checksum feature. **Calculation:** The checksum is an unsigned 32-bit value. It is the sum of all 4-Byte words (Little Endian) of the file. If a files size is not a multiple of four, the "missing" bytes are interpreted as zero. *Pseudo code for calculation:* *u32 file[N]* *u32 checksum = 0* *checksum += file[0]* *checksum += file[1]* *…* *checksum += file[N-1]*	
Error behavior	See the device error code documentation.	

2.10.11 File Access Buffer

Name	FileAccessBuffer	**Standard**
Description	This buffer is used for the GenICam file update mechanism.	
Interface	Register	
Size	65536	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	-	
Default value	-	
Notes	See the device error code documentation.	

2.11 Lighting Control – Not Available for AllPIXA-EVO

2.11.1 Light Controller Set Load

Name	LightControllerSetLoad	**Custom**
Description	Loads the Light Controller Set to the device and makes it active.	
Interface	Command	
Access mode	Read/Write	
Adjustable while grabbing	-	
Value range	1	
Default value	1	
Notes	-	
Error behavior	-	

2.11.2 Light Controller Set Save

Name	LightControllerSetSave	**Custom**
Description	Save the Light Controller Set to the non-volatile memory of the device.	
Interface	Command	
Access mode	Read/Write	
Adjustable while grabbing	-	
Value range	1	
Default value	1	
Notes	-	
Error behavior	-	

2.11.3 Light Controller Scan Devices

Name	LightControlScanDevices	**Custom**
Description	Performs a scan for XLCs.	
Interface	Command	
Access mode	Write only	
Adjustable while grabbing	-	
Value range	1	
Default value	1	
Notes	-	
Error behavior	-	

2.11.4 Light Controller Scan Status

Name	LightControllerScanStatus	**Custom**
Description	Displays Light Controller scan status information.	
Interface	Enumeration	
Access mode	Read only	
Adjustable while grabbing	-	
Value range	See enum entries table below.	
Default value	-	
Notes	-	
Error behavior	-	

Light Controller Scan Status Enum Entries:

Name	Description
NoScanExecuted	No Scan Executed
ScanInProgress	Scan In Progress
ScanFinished	Scan Finished

2.11.5 Light Controller Detected Devices

Name	LightControllerDetectedDevices	**Custom**
Description	The bit position represents the on/off state of the light controller.	
Interface	Integer	
Access mode	Read only	
Adjustable while grabbing	-	
Value range	≥0	
Default value	-	
Notes	-	
Error behavior	-	

2.11.6 Light Controller General Error

Name	LightControllerGeneralError	**Custom**
Description	Displays Light Controller General Error Information.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	-	
Value range	See enum entries table below.	
Default value	-	
Notes	-	
Error behavior	-	

Light Controller General Error Enum Entries:

Name	Description
No Error	NoError
Communication Not Enabled	CommunicationNotEnabled
No Device Available	NoDeviceAvailable
Device Not Available	DeviceNotAvailable
Invalid Controller Selector	InvalidControllerSelector
Invalid Channel Selector	InvalidChannelSelector
Link May Be Broken	LinkMayBeBroken
Invalid ID	InvalidID
ID Already Assigned	IDAlreadyAssigned

2.11.7 Light Controller Selector

Name	LightControllerSelector	**Standard**
Description	Selects the Light Controller to configure.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	-	
Value range	See enum entries table below.	
Default value	-	
Notes	-	
Error behavior	-	

Light Controller Selector Enum Entries:

Name	Description
LightControllerBroadcast	Light Controller Broadcast
LightController2	Light Controller 2
LightController3	Light Controller 3
LightController4	Light Controller 4
LightController5	Light Controller 5
LightController6	Light Controller 6
LightController7	Light Controller 7
LightController8	Light Controller 8
LightController9	Light Controller 9
LightController10	Light Controller 10
LightController11	Light Controller 11
LightController12	Light Controller 12
LightController13	Light Controller 13
LightController14	Light Controller 14
LightController15	Light Controller 15

2.11.8 Light Connection Status

Name	LightConnectionStatus	**Standard**
Description	Status of a light connected to the controller's output Line.	
Interface	Enumeration	
Access mode	Read only	
Adjustable while grabbing	-	
Value range	See enum entries table below.	
Default value	-	
Notes	-	
Error behavior	-	

Light Connection Status Enum Entries:

Name	Description
Sensing	Sensing
Ready	Ready
NoConnect	No Connect
ResponseError	Response Error
Error	Error

2.11.9 Light Controller Reset

Name	LightControllerReset	**Custom**
Description	Resets the selected XLC.	
Interface	Command	
Access mode	Write only	
Adjustable while grabbing	-	
Value range	1	
Default value	1	
Notes	-	
Error behavior	-	

2.11.10 Light Controller Assign ID

Name	LightControllerAssignID	**Custom**
Description	Represents the current Light Controller ID and changes it if another one has been entered.	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	-	
Value range	-	
Default value	-	
Notes	-	
Error behavior	-	

2.11.11 Light Controller Input Voltage

Name	LightControllerInputVoltage	**Custom**
Description	Displays the Light Controller input voltage.	
Interface	Integer	
Access mode	Read only	
Adjustable while grabbing	-	
Value range	-	
Default value	-	
Notes	The unit is mV.	
Error behavior	-	

2.11.12 Light Controller Detailed Error Information

Name	LightControllerDetailedErrorInformation	**Custom**
Description	Detailed error information about the selected light controller.	
Interface	Enumeration	
Access mode	Read only	
Adjustable while grabbing	-	
Value range	See enum entries table below.	
Default value	-	
Notes	-	
Error behavior	-	

Light Controller Detailed Error Enum Entries:

Name	Description
NoError	No Error
InvalidCommando	Invalid Commando
InvalidParameter	Invalid Parameter
Parameter	Parameter
CommandNotSupported	Command Not Supported
InputVoltage	Input Voltage
AnalogVoltage	Analog Voltage
LedOutput	Led Output
FailNoSignal	Fail No Signal
TemperatureWarning	Temperature Warning
TemperatureError	Temperature Error
ShutdownSignal	Shutdown Signal
EepromWriteDriverUnit	EEPROM Write Driver Unit
EepromReadDriverUnit	EEPROM Read Driver Unit
EepromWriteLed	EEPROM Write LED
EepromReadLed	EEPROM Read LED
Fan	Fan
AnalogOutputVoltage	Analog Output Voltage
SeeGeneralError	See General Error

2.11.13 Light Controller Serial Number

Name	LightControllerSerialNumberReg	**Custom**
Description	Serial Number of the Light Controller	
Interface	String	
String Length	32	
Access mode	Read only	
Adjustable while grabbing	-	
Value range	-	
Default value	-	
Notes	-	
Error behavior	-	

2.11.14 Light Controller Channel Selector

Name	LightControllerChannelSelector	**Custom**
Description	Selects the Light Controller Channel to configure.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	-	
Value range	See enum entries table below.	
Default value	-	
Notes	-	
Error behavior	-	

Light Controller Selector Enum Entries:

Name	Description
LightControllerChannelA	Light Controller Channel A
LightControllerChannelB	Light Controller Channel B
LightControllerChannelC	Light Controller Channel C
LightControllerChannelD	Light Controller Channel D
LightControllerChannelBroadcast	Light Controller Channel Broadcast

2.11.15 Light Current Rating

Name	LightCurrentRating	**Standard**
Description	Set the current rating of the lighting output.	
Interface	Float	
Access mode	Read/Write	
Adjustable while grabbing	-	
Value range	≥0	
Default value	-	
Notes	The unit is Amp.	
Error behavior	-	

2.11.16 Light Enable

Name	LightEnable	**Custom**
Description	Controls the light for the selected Lighting Controller.	
Interface	Boolean	
Access mode	Read/Write	
Adjustable while grabbing	-	
Value range	True – Enables the selected lighting controller False – Disables the selected lighting controller	
Default value	-	
Notes	-	
Error behavior	-	

2.11.17 Light Controller Driver Temperature

Name	LightControllerDriverTemperatureReg	**Custom**
Description	Light Controller Driver Temperature	
Interface	Integer	
Access mode	Read only	
Adjustable while grabbing	-	
Value range	-	
Default value	-	
Notes	The unit is degree celsius.	
Error behavior	-	

2.11.18 Light Controller Luminant Temperature

Name	LightControllerLuminantTemperatureReg	**Custom**
Description	Light Controller Luminant Temperature	
Interface	Integer	
Access mode	Read only	
Adjustable while grabbing	-	
Value range	-	
Default value	-	
Notes	The unit is degree celsius.	
Error behavior	-	

3 Digital IO Control

3.1 Line Selector

Name	LineSelector	**Standard**
Description	Selects the physical line (or pin) of the external device connector.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	See enum entries table below.	
Default value	Line1	
Notes	-	
Error behavior	See the device error code documentation.	

Line Selector Enum Entries:

Name	Description
Line1	Selects Line 1
Line2	Selects Line 2
Line3	Selects Line 3
Line4	Selects Line 4
Line5	Selects Line 5
Line6	Selects Line 6
Line7	Selects Line 7
Line8	Selects Line 8
Line9	Selects Line 9
IntLine1	Selects IntLine 1. Currently not implemented
InternalLB	Selects InternalLB. Currently not implemented

3.2 Line Mode

Name	LineMode	**Standard**
Description	Controls if the physical line is used to input or output a signal.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	See enum entries table below.	
Default value	Input	
Notes	-	
Error behavior	See the device error code documentation.	

Line Mode Enum Entries:

Name	Description
Input	The selected physical line is used to Input an electrical signal
Output	The selected physical line is used to Output an electrical signal – (Currently not available)

3.3 Line Inverter

Name	LineInverter	**Standard**
Description	Controls the inversion of the signal of the selected input or output Line.	
Interface	Boolean	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	True – The Line signal is inverted False – The Line signal is not inverted	
Default value	False	
Notes	-	
Error behavior	See the device error code documentation.	

3.4 Line Status

Name	LineStatus	**Standard**
Description	Returns the current status of the selected input or output Line.	
Interface	Boolean	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	-	
Default value	True – The level of the Line signal is High False – The level of the Line signal is low	
Notes	-	
Error behavior	-	

3.5 Line Source

Name	LineSource	**Standard**
Description	Selects which internal acquisition or I/O source signal to output on the selected Line. LineMode must be output.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	See enum entries table below.	
Default value	Off	
Notes	-	
Error behavior	See the device error code documentation.	

Line Source Enum Entries:

Name	Description
Off	Line output is disabled

4 Encoder Control

4.1 Encoder Selector

Name	EncoderSelector	**Standard**
Description	Selects which Encoder to configure.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	See enum entries table below.	
Default value	Encoder0	
Notes	-	
Error behavior	See the device error code documentation.	

Encoder Selector Enum Entries:

Name	Description
Encoder0	Selects Encoder0

4.2 Encoder Source A

Name	EncoderSourceA	**Standard**
Description	Selects the signal which will be the source of the input A of the encoder.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	See enum entries table below.	
Default value	Off	
Notes	-	
Error behavior	See the device error code documentation.	

Encoder Source A Enum Entries:

Name	Description
Off	Encoder does not forward any input
Line1	Encoder forward input is taken from the I/O Line1
Line3	Encoder forward input is taken from the I/O Line3
Line4	Encoder forward input is taken from the I/O Line4

4.3 Encoder Source B

Name	EncoderSourceB	**Standard**
Description	Selects the signal which will be the source of the input B of the encoder.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	See enum entries table below.	
Default value	Off	
Notes	-	
Error behavior	See the device error code documentation.	

Encoder Source B Enum Entries:

Name	Description
Off	Encoder does not forward any input
Line2	Encoder forward input is taken from the I/O Line2

4.4 Encoder Mode

Name	EncoderMode	**Standard**
Description	Selects if the count of encoder uses FourPhase mode with jitter filtering or the HighResolution mode without jitter filtering.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	See enum entries table below.	
Default value	Four Phase	
Notes	-	
Error behavior	See the device error code documentation.	

Encoder Mode Enum Entries:

Name	Description
FourPhase	The counter increments or decrements 1 for every full quadrature cycle with jitter filtering.
HighResolution	The counter increments or decrements every quadrature phase for high resolution counting, but without jitter filtering.

4.5 Encoder Output Mode

Name	EncoderOutputMode	**Standard**
Description	Selects the conditions for the encoder interface to generate a valid encoder output signal.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	See enum entries table below.	
Default value	Motion	
Notes	-	
Error behavior	See the device error code documentation.	

Encoder Output Mode Enum Entries:

Name	Description
Motion	Output pulses are generated at all motion increments in both directions.

4.6 Encoder Divider Float

Name	EncoderDividerFloat	**Custom**
Description	Specifies the number of encoder steps needed to generate an encoder output pulse	
Interface	Float	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	[0.001 , 255.999]	
Default value	1.0	
Notes	-	
Error behavior	See the device error code documentation.	

4.7 Encoder Average

Name	EncoderAverage	**Custom**
Description	Specifies the number of averaged encoder input pulses.	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	See enum entries table below.	
Default value	Average1	
Notes	-	
Error behavior	See the device error code documentation.	

Encoder Output Mode Enum Entries:

Name	Description
Average1	No averaged performed
Average2	Average 2
Average4	Average 4
Average8	Average 8
Average16	Average 16

5 Led Flash Control

5.1 Led Flash Enable

Name	LedFlashEnable	**Custom**
Description	Enables Led flashing feature to support LED drivers with strobe signals for flashing	
Interface	Boolean	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	True – Led flash is enabled False – Led flash is disabled	
Default value	False	
Notes	-	
Error behavior	See the device error code documentation.	

5.2 Led Flash Number of Pattern

Name	LedFlashNumberOfPattern	**Custom**
Description	Number of Led Flash pattern per flashing sequence	
Interface	Integer	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	[1 , 4]	
Default value	1	
Notes	-	
Error behavior	See the device error code documentation.	

5.3 Led Flash Pattern Selector

Name	LedFlashPatternSelector	**Custom**
Description	Selects which Led Flash Pattern to configure	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	Yes	
Value range	See enum entries table below.	
Default value	LedFlashPattern1	
Notes	-	
Error behavior	See the device error code documentation.	

Led Flash Pattern Selector Enum Entries:

Name	Description
LedFlashPattern1	Led Flash Pattern 1
LedFlashPattern2	Led Flash Pattern 2
LedFlashPattern3	Led Flash Pattern 3
LedFlashPattern4	Led Flash Pattern 4

5.4 Out1 OnTime

Name	LedFlashOut1OnTime	**Custom**
Description	This controls the On time for Flash Output 1	
Interface	Float	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	[0.0 , 3495.04]	
Default value	0.0	
Notes	-	
Error behavior	See the device error code documentation.	

5.5 Out2 OnTime

Name	LedFlashOut2OnTime	**Custom**
Description	This controls the On time for Flash Output 2	
Interface	Float	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	[0.0 , 3495.04]	
Default value	0.0	
Notes	-	
Error behavior	See the device error code documentation.	

5.6 Out3 OnTime

Name	LedFlashOut3OnTime	**Custom**
Description	This controls the On time for Flash Output 3	
Interface	Float	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	[0.0 , 3495.04]	
Default value	0.0	
Notes	-	
Error behavior	See the device error code documentation.	

5.7 Out4 OnTime

Name	LedFlashOut4OnTime	**Custom**
Description	This controls the On time for Flash Output 4	
Interface	Float	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	[0.0 , 3495.04]	
Default value	0.0	
Notes	-	
Error behavior	See the device error code documentation.	

5.8 Pattern Off Delay

Name	LedFlashPatternOffDelay	**Custom**
Description	This increase the duration of the specified pattern	
Interface	Float	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	[0.0 , (3495.04 – MaxOutXOnTime)] MaxOutXOnTime is the maximum of the flash out on time of the specified pattern.	
Default value	0.0	
Notes	-	
Error behavior	See the device error code documentation.	

5.9 Pattern duration

Name	LedFlashPatternDuration	**Custom**
Description	This is the resulting duration of the pattern	
Interface	Float	
Access mode	Read Only	
Adjustable while grabbing	-	
Value range	The value depends on the minimum line time and on the maximum flash out on time of the specified pattern.	
Default value	-	
Notes	-	
Error behavior	-	

5.10 Led Flash Frame Control

Name	LedFlashFrameControl	**Custom**
Description	Determine if Led flash signals are generated continuously or only while image scan	
Interface	Enumeration	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	See enum entries table below.	
Default value	Continuous	
Notes	-	
Error behavior	See the device error code documentation.	

Led Flash Frame Control Enum Entries:

Name	Description
Continuous	Flash pulses are generated continuously
ImageFrame	Flash pulses are generated only during image scan

5.11 Led Flash Sequence Time

Name	LedFlashSequenceTime	**Custom**
Description	This is the time to repeat all defined pattern in freerun	
Interface	Float	
Access mode	Read/Write	
Adjustable while grabbing	No	
Value range	[(MinLineTime * NoOfPattern), 13980.8] The minimum value depends on different factors like minimum line time of the system together with number of pattern	
Default value	-	
Notes	-	
Error behavior	See the device error code documentation.	

6 Device Error Code

The Device error code is organized in two parts. The upper two bytes define the category where the error occurred. The lower two bytes define the specific error occurred in this category.

Example:

When the region of interest exceeds the sensor boundaries the following error code is provided by the DeviceErrorCode:

0x00010003

The yellow part defines the category and the green part the specific error. Use the category error number to figure out in which section you need to search for the specific error code.

So 0x0001 is the category code of the image format control (IMF_ERROR_CATEGORY) group. In this category the code 0x0003 defines the specific error code for the case when the region of interest exceeds the sensor boundaries.

6.1 Error Category (Upper 2 bytes)

This section contains an overview of the categories error codes. This is the upper part of the DeviceErrorCode.

Definition	Value	Description
IMF_ERROR_CATEGORY	0x0001	Image format control error category
ALG_CTRL_ERROR_CATEGORY	0x0002	Analog control error category
ACQ_CTRL_ERROR_CATEGORY	0x0003	Acquisition control error category
DIG_IO_CTRL_ERROR_CATEGORY	0x0004	Digital I/O control error category
ENC_CTRL_ERROR_CATEGORY	0x0005	Encoder control error category
USER_SET_CTRL_ERROR_CATEGORY	0x0006	User set control error category
ICC_ERROR_CATEGORY	0x0007	Image calibration control error category
LUT_CTRL_ERROR_CATEGORY	0x0008	Look-up table control error category
CT_CTRL_ERROR_CATEGORY	0x0009	Color transformation control error category.
DEV_CTRL_ERROR_CATEGORY	0x000A	Device control error category
FAC_ERROR_CATEGORY	0x000B	File access control error category
LED_FLASH_CTRL_ERROR_CATEGORY	0x000C	Led flash control error category

6.2 Specific Error (Lower 2 bytes)

This section contains the specific error codes (lower part of the DeviceErrorCode) grouped by the category.

6.2.1 Image Format Control (IMF_ERROR_CATEGORY)

The below table contains the details of specific error belongs to the IMF_ERROR_CATEGORY (0x0001).

Definition	Value	Description
IMF_ERR_ROI_INVALID_ WIDTH_OFFSET_MODULO	0x0001	The width or the offset is not a multiple of 8(RGB) or 24(Mono)
IMF_ERR_ROI_WIDTH_ TOO_SMALL	0x0002	The region width is too small
IMF_ERR_ROI_EXCEEDS_ SENSOR_BOUDARIES	0x0003	The region of interest exceeds the sensor boundaries. You need to use a smaller offsetX or width.
IMF_ERR_WREF_IN_ MULTIPLE_ROIS	0x0004	The complete gain control region is located in multiple regions. You need to use the gain control region only in one region
IMF_ERR_BV_MAX_ LINE_WIDTH_EXCEEDED	0x0005	The sum of all active region widths and gain control region width (if not completely in one region) exceeds an internal limit of 15360
IMF_ERR_FAILED_TO_ SET_ROI_AT_SENSOR	0x0006	An internal error occurred while setting the region parameters
IMF_ERR_FAILED_TO_ SET_ROI_AT_TRANSPORT_LAYER	0x0007	An internal error occurred while setting the region parameters
IMF_ERR_INVALID_ BINNING_PARAMETER	0x0008	The binning parameter is not supported. You need to use either 1 or 2 for binning parameter
IMF_ERR_INVALID_ PIXEL_FORMAT	0x0009	Invalid value for pixel format. You need to use a supported pixel format
IMF_ERR_COULD_NOT_ ADJUST_ROI_WIDTH_TO_PXFMT	0x000A	Could not adjust region width corresponding to pixel format. Increase the region width before changing the pixel format
IMF_ERR_COULD_NOT_ADJUST_ WREF_OFFSET_WIDTH_TO_PXFMT	0x000B	Could not adjust gain control region width or offsetX corresponding to pixel format. Increase the gain control region width or offsetX before changing the pixel format
IMF_ERR_INVALID_ROI_WIDTH_ OFFSET_MODULO_PXFMT	0x000C	Invalid region width or offsetX
IMF_ERR_ INVALID_WREF_WIDTH_ OFFSET_MODULO_PXFMT	0x000D	Invalid gain control region width or offsetX
IMF_ERR_FAILED_TO_SET_ PIXFMT_AT_SENSOR	0x000E	An internal error occurred while setting the pixel format
IMF_ERR_ FAILED_TO_SET_ PIXFMT_AT_TRANSPORT_LAYER	0x000F	An internal error occurred while setting the pixel format
IMF_ERR_TRIGGER_SLAVE_DELAY_ LINES_OUT_OF_RANGE	0x0010	The trigger or slave delay lines value is out of range
IMF_ERR_IMAGE_HEIGHT_ OUT_OF_RANGE	0x0011	The image height is out of range
IMF_ERR_TRG_SLAVE_DEL_GCTRL_ OFFSET_Y_TOO_SMALL	0x0012	The trigger or slave delay lines value is too small with respect to gain control region offset. The sum of trigger delay lines and gain control region offsetY must be atleast 2

IMF_ERR_ TRG_SLAVE_DEL_GCTRL _ OFFSET_Y_TOO_LARGE	0x0013	The trigger or slave delay lines value is too large with respect to gain control region offset. The sum of trigger delay lines and gain control region offsetY must be less than 32767
IMF_ERR_TESTPATTERN_ VALUE_OUT_OF_RANGE	0x0014	The test pattern value is out of range
IMF_ERR_INVALID_PARAMETER	0x0015	Invalid Parameter
IMF_ERR_DECIMATION_HOR_OUT_OF_RANGE	0x0016	The Decimation Horizontal Float value is out of range!

6.2.2 Analog Control (ALG_CTRL_ERROR_CATEGORY)

The below table contains the details of specific error belongs to the ALG_CTRL_ERROR_CATEGORY (0x0002).

Definition	Value	Description
ALG_CTRL_ERR_GAINCTRL_ OFFSET_Y_RANGE	0x0001	The gain control region offsetY is out of range
ALG_CTRL_ERR_GAINCTRL_ WIDTH_RANGE	0x0002	The gain control region width is out of range
ALG_CTRL_ERR_GAINCTRL_ HEIGHT_RANGE	0x0003	The gain control region height is out of range
ALG_CTRL_ERR_GAINCTRL_ EXCEEDS_SENSOR_BOUNDARIES	0x0004	The gain control region exceeds the sensor boundaries. You need to use a smaller offsetX or width
ALG_CTRL_ERR_GAINCTRL_ OFFSET_X_RANGE	0x0005	The gain control region offsetX is out of range
ALG_CTRL_ERR_GAINCTRL_ INVALID_WIDTH_OFFSET_MODULO	0x0006	The width or the offset is not a multiple of 8(RGB) or 24(Mono)
ALG_CTRL_ERR_GAINCTRL_ EXCEEDS_BV_WIDTH_LIMIT	0x0007	The sum of all active region widths and gain control region width (if not completely in one region) exceeds an internal limit of 15360
ALG_CTRL_ERR_GAINCTRL_ IN_MULTIPLE_ROIS	0x0008	The complete gain control region is located in multiple regions. You need to use the gain control region only in one region
ALG_CTRL_ERR_FAILED_TO_ SET_GAINCTRL_AT_SENSOR	0x0009	An internal error occurred while setting the gain control region parameters
ALG_CTRL_ERR_STOP_GAIN_ FACTOR_OUT_OF_RANGE	0x000A	The stop gain factor is out of range
ALG_CTRL_ERR_GAINCTRL_ OFFSET_Y_TOO_SMALL	0x000B	The gain control region offsetY is too small! It must be larger than 2 when using no frame trigger. When using frame trigger the sum of trigger delay lines and gain control region offsetY must be atleast 2.
ALG_CTRL_ERR_GAINCTRL_ OFFSET_Y_TOO_LARGE	0x000C	The gain control region offsetY is too large! It must be less than or equals to: Height - GainControlRegionHeight when using no frame trigger. When using frame trigger the sum of trigger

		delay lines and gain control region offsetY must be less than 32767.
ALG_CTRL_ERR_GAINCTRL_ TARGET_VALUE_OUT_OF_RANGE	0x000D	The gain control target value is out of range
ALG_CTRL_ERR_BRIGHTNESS_ CONTRAST_GAIN_OUT_OF_RANGE	0x000E	The contrast (gain) value of the brightness contrast feature is out of range
ALG_CTRL_ERR_ BRIGHTNESS_ CONTRAST_OFFSET_OUT_OF_RANGE	0x000F	The brightness (offset) value of the brightness contrast feature is out of range
ALG_CTRL_ERR_GAIN_ VALUE_OUT_OF_RANGE	0x0010	The gain value is out of range
ALG_CTRL_ERR_GAIN_ AUTO_AVG_SAMPLES_OUT_OF_RANGE	0x0011	The average samples value is out of range
ALG_CTRL_ERR_GAMMA_ VALUE_OUT_OF_RANGE	0x0012	The gamma value is out of range
ALG_CTRL_ERR_INVALID_PARAMETER	0x0013	The parameter is invalid!
ALG_CTRL_ERR_SENSOR_SENSITIVITY_VALUE_OUT_OF_RANGE	0x0014	The sensor sensitivity is out of range

6.2.3 Acquisition Control (ACQ_CTRL_ERROR_CATEGORY)

The below table contains the details of specific error belongs to the ACQ_CTRL_ERROR_CATEGORY (0x0003).

Definition	Value	Description
ACQ_CTRL_ERR_FEATURE_ CHANGE_DURING_IMG_ACQ	0x0001	The feature change is not allowed while grabbing
ACQ_CTRL_ERR_TRG_ SELECTOR_INVALID	0x0002	The trigger selector is invalid
ACQ_CTRL_ERR_TRG_SIG_ DETEC_MODE_NOT_AVAILABLE	0x0003	The trigger signal detection mode is invalid for LineStart. You need to use TriggerSignalDetectionMode feature only for FrameStart or FrameActive
ACQ_CTRL_ERR_LINE_ TRG_SRC_INVALID	0x0004	The selected source for line trigger is invalid
ACQ_CTRL_ERR_TRG_ ACTIV_INVALID	0x0005	The trigger activation value is invalid
ACQ_CTRL_ERR_TRG_ SRC_USED_BY_LINE_START	0x0006	The trigger source is already assigned for LineStart. You need to use different source for LineStart and FrameStart/Active
ACQ_CTRL_ERR_TRG_ FRAME_START_ACTIV_INVALID	0x0007	The trigger activation is invalid for FrameStart. You can use RisingEdge/FallingEdge for FrameStart
ACQ_CTRL_ERR_TRG_ FRAME_ACTIVE_ACTIV_INVALID	0x0008	The trigger activation is invalid for FrameActive. You can use LevelHigh/LevelLow for FrameActive
ACQ_CTRL_ERR_FRAME_ TRG_SRC_INVALID	0x0009	The selected source for frame trigger is invalid
ACQ_CTRL_ERR_MASTER_ TRG_SRC_INVALID	0x000A	The source (encoder0, Line1, Line2 and InternalLB) for SelectMaster_Input trigger is invalid
ACQ_CTRL_ERR_EXPOSURE_ TIME_TOO_SMALL	0x000B	The exposure time is too small
ACQ_CTRL_ERR_EXPOSURE_ TIME_TOO_LARGE	0x000C	The exposure time is too large
ACQ_CTRL_ERR_LINE_TIME_ TOO_SMALL	0x000D	The line time is too small. It must be at least 1.5us larger than integration time
ACQ_CTRL_ERR_LINE_TIME_ TOO_LARGE	0x000E	The line time is too large

ACQ_CTRL_ERR_LINE_TIME_ TOO_SMALL_RUNTIME	0x000F	The line time is too small, when considering run time parameters
ACQ_CTRL_ERR_FRAME_ START_MODE_ON	0x0010	FrameActive mode cannot be made On because FrameStart mode is already On
ACQ_CTRL_ERR_FRAME_ ACTIVE_MODE_ON	0x0011	FrameStart mode cannot be made On because FrameActive mode is already On
ACQ_CTRL_ERR_DEBOUNCING_ MODE_INVALID	0x0012	Invalid debouncing mode
ACQ_CTRL_ERR_TRIGGER_ DIV_OUT_OF_RANGE	0x0013	The trigger divider value is out of range
ACQ_CTRL_ERR_TRIGGER_ DIV_NOT_AVAILABLE	0x0014	The trigger divider is not available for the selected trigger (FrameStart/Active)
ACQ_CTRL_ERR_TRG_SRC_ USED_BY_FRAME_START_ACTIVE	0x0015	The trigger source is already assigned for either FrameStart or FrameActive. You need to use different source for LineStart and FrameStart/Active
ACQ_CTRL_ERR_TRG_ LINE_ACTIV_INVALID	0x0016	The trigger activation value is invalid for LineStart. You can use only RisingEdge for LineStart
ACQ_CTRL_ERR_TRG_ DELAY_LINES_NOT_AVAILABLE	0x0017	The trigger delay lines is invalid for LineStart. You can use trigger delay lines only for FrameStart/Active
ACQ_CTRL_ERR_LINE_ START_DISABLE_INVALID	0x0018	Invalid LineStart Disable
ACQ_CTRL_ERR_INVALID_ SELECTOR_TRIGGER_DISABLE	0x0019	The trigger disable is invalid for FrameStart/Active. You can use trigger disable only for LineStart
ACQ_CTRL_ERR_SELECTED_ LINE_IS_OUTPUT	0x001A	The trigger source used is not configured correctly which is the line mode to output. You need to set the selected line mode to input
ACQ_CTRL_ERR_INVALID_ PARAMETER	0x001B	The parameter is invalid!
ACQ_CTRL_ERR_FRAME_RATE_ ENABLE	0x001C	The AcquisitionFrameRateEnable feature can be enabled only if the mode of all frame triggers is set to off!
ACQ_CTRL_ERR_FRAME_RATE_ RANGE	0x001D	The acquisition frame rate value is out of range!
ACQ_CTRL_ERR_FEATURE_ LOCKED	0x001E	The feature is currently locked and cannot be written.
ACQ_CTRL_ERR_TRG_FRAME_ RATE_ENABLE_INVALID	0x001F	Enabling a frame trigger is not permitted if the AcquisitionFrameRateEnable feature is set.
ACQ_CTRL_ERR_MASTER_SLAVE_ MODE_INVALID	0x0020	The master slave mode is invalid.
ACQ_CTRL_ERR_MASTER_SLAVE_ INTERFACE_INVALID	0x0021	The master slave interface is invalid Or invalid interface with respect to master or slave.
ACQ_CTRL_ERR_ENABLING_INTE RFACE_NOT_ALLOWED	0x0022	Enabling externalandinternal, internalandcascade or cascade interface is not permitted for slave camera.
ACQ_CTRL_ERR_MASTER_SLAVE_ NOT_CONFIGURED	0x0023	Master slave is not configured properly. Enable any master slave interface.
ACQ_CTRL_ERR_LINE3_USED_AS _TRIGGER_SOURCE	0x0024	Enabling AutoSelect mode is not permitted if Line3 is used as TriggerSource.
ACQ_CTRL_ERR_AUTOSELECT_M ODE_ON	0x0025	Enabling the selected trigger is not allowed if trigger source is Line3 in AutoSelect mode of master slave configuration.
ACQ_CTRL_ERR_TDI_INVALID	0x0026	Invalid time delay integration value.
ACQ_CTRL_TDI_NOT_AVIALABLE	0x0027	TDI feature is not available for color sensor.
ACQ_CTRL_ERR_FRAME_ACTIVE_ EXTEND_LINES_IS_OUT_RANGE	0x0028	Frame active extend lines is out of range.
ACQ_CTRL_ERR_EXTEND_LINES_ NOT_AVAILABLE	0x0029	Frame Active Extend Lines feature is not available for FrameStart and LineStart trigger.

6.2.4 Digital IO Control (DIG_IO_CTRL_ERROR_CATEGORY)

The below table contains the details of specific error belongs to the DIG_IO_CTRL_ERROR_CATEGORY (0x0004).

Definition	Value	Description
DIG_IO_CTRL_ERR_LINE_ SELECTOR_INVALID	0x0001	The line selector is invalid
DIG_IO_CTRL_ERR_ USEROUTPUT_SELECTOR_INVALID	0x0002	The user output selector is invalid
DIG_IO_CTRL_ERR_ LINE_INVALID_MODE	0x0003	The Line1 and Line2 selector are always input only
DIG_IO_CTRL_ERR_ LINE_IS_INPUT	0x0004	The selected line mode is not valid with respect to the line source. You need to use the selected line mode to output
DIG_IO_CTRL_ERR_ LINE_MODE_CHANGE_NOT_ALLOWED	0x0005	The selected line mode change is not allowed. The selected line is used either as a trigger source or as a encoder source
	0x0006	
	0x0007	
	0x0008	

6.2.5 Encoder Control (ENC_CTRL_ERROR_CATEGORY)

The below table contains the details of specific error belongs to the ENC_CTRL_ERROR_CATEGORY (0x0005).

Definition	Value	Description
ENC_CTRL_ERR_ENC_ SELECTOR_INVALID	0x0001	The encoder selector is invalid
ENC_CTRL_ERR_SRC_ A_INVALID	0x0002	The encoder source A is invalid
ENC_CTRL_ERR_SRC_ B_INVALID	0x0003	The encoder source B is invalid
ENC_CTRL_ERR_ENC_ MODE_INVALID	0x0004	The encoder mode is invalid
ENC_CTRL_ERR_ENC_ AVG_INC_OUT_OF_RANGE	0x0005	The encoder average is out of range
ENC_CTRL_ERR_OUT_ MODE_INVALID	0x0006	The encoder output mode is invalid
ENC_CTRL_ERR_SRC_ IN_USE_BY_INPUTB	0x0007	The source is already assigned to input B of the selected encoder. You need to use different source for input A and input B
ENC_CTRL_ERR_SRC_ IN_USE_BY_INPUTA	0x0008	The source is already assigned to input A of the selected encoder. You need to use different source for input A and input B
ENC_CTRL_ERR_ENC_ DIV_OUT_OF_RANGE	0x0009	The encoder divider value is out of range
ENC_CTRL_ERR_ SELECTED_LINE_IS_OUTPUT	0x000A	The encoder source A or B used is not configured correctly. You need to set the selected line mode to input.

6.2.6 User Set Control (USER_SET_CTRL_ERROR_CATEGORY)

The below table contains the details of specific error belongs to the USER_SET_CTRL_ERROR_CATEGORY (0x0006).

Definition	Value	Description
USER_SET_CTRL_ERR_	0x0001	Invalid user set selector

SELECTOR_INVALID		
USER_SET_CTRL_ERR_ DEFAULT_READ_ONLY	0x0002	The default user set modification is not allowed
USER_SET_CTRL_ERR_ LOAD_USER_SET_FAILED	0x0003	An error occurred while loading the user set

6.2.7 Image Calibration Control (ICC_ERROR_CATEGORY)

The below table contains the details of specific error belongs to the ICC_ERROR_CATEGORY (0x0007).

Definition	Value	Description
ICC_ERR_LINE_DISTANCE_ OUT_OF_RANGE	0x0001	The line distance is out of range
ICC_IMGCALMODE_ERR_ INVALID_PARAMETER	0x0002	ImageCalibrationMode is out of range
ICC_IMGCALAUTO_ERR_ INVALID_PARAMETER	0x0003	ImageCalibrationAuto is out of range
ICC_IMG_CAL_FEATURES_LOCKED	0x0004	The selected feature is locked due to an image calibration mode is active
ICC_IMGCALPRNU_NODSNULUT_ACTIVE	0x0005	For PRNU calibration a valid and loaded DSNU is needed

6.2.8 LUT Control (LUT_CTRL_ERROR_CATEGORY)

The below table contains the details of specific error belongs to the LUT_CTRL_ERROR_CATEGORY (0x0008).

Definition	Value	Description
LUT_CTRL_ERR_FFC_LUT_ COULD_NOT_LOAD_DATA	0x0001	An error occurred while loading the LUT's data from flash
LUT_CTRL_ERR_INVALID_ FFC_LUT	0x0002	The LUT does not contain valid data according to the pixel format
LUT_CTRL_ERR_INVALID_ PARAMETER	0x0003	The parameter is invalid!

6.2.9 Color Transformation Control (CT_CTRL_ERROR_CATEGORY)

The below table contains the details of specific error belongs to the CT_CTRL_ERROR_CATEGORY (0x0009).

Definition	Value	Description
CT_CTRL_ERR_SELECTOR_INVALID	0x0001	Invalid color transformation module selector.
CT_CTRL_VALUE_SELECTOR_INVALID	0x0002	Invalid color transformation value (gain or offset) selector.
CT_CTRL_ERR_ENABLING_NOT_ALLOWED	0x0003	Already other color transformation module is active.
CT_CTRL_ERR_GAIN_OUT_OF_RANGE	0x0004	Color transformation module gain value is out of range.
CT_CTRL_ERR_OFFSET_OUT_OF_RANGE	0x0005	Color transformation module offset value is out of range.

6.2.10 Device Control (DEV_CTRL_ERROR_CATEGORY)

The below table contains the details of specific error belongs to the DEV_CTRL_ERROR_CATEGORY (0x000A).

Definition	Value	Description
DEV_CTRL_WARNING_ TEMPERATURE_TOO_HIGH	0x0001	Warning! The device temperature is too high. You need to provide the cooling for the camera
DEV_CTRL_ERROR_ TEMPERATURE_TOO_HIGH	0x0002	Error! The device temperature is too high. The sensor will be switched off. You need to reboot the camera to recover from this error
DEV_CTRL_ERROR_COULD_ NOT_GET_SENSOR_TEMPERATURE	0x0003	An internal error occurred while getting the sensor temperature

6.2.11 File Access Control (FAC_ERROR_CATEGORY)

The below table contains the details of specific error belongs to the FAC_ERROR_CATEGORY (0x000B).

Definition	Value	Description
FAC_ERROR_FILE_ALREADY_OPEN	0x0001	A file is already open
FAC_ERROR_INVALID_FILE_SELECTOR	0x0002	Invalid file selector
FAC_ERROR_INVALID_FILE_OPERATION_SELECTOR	0x0003	Invalid file operation selector
FAC_ERROR_INVALID_FILE_OPERATION_EXEC_VAL	0x0004	Invalid file operation execute command value
FAC_ERROR_FILE_OPERATION_IN_PROGRESS	0x0005	File operation is in progress
FAC_ERROR_NO_FILE_OPEN	0x0006	No file is open
FAC_ERROR_FILE_NOT_OPEN_OR_INVALID_OPEN_MODE	0x0007	Either file is not open or file open mode is not write operation
FAC_ERROR_NO_FILE_SELECTED	0x0008	No file is selected. Select any one file
FAC_ERROR_INVALID_FILE_CONTENT	0x0009	Invalid file content
FAC_ERROR_CHECKSUM_CALCULATION_FAILED	0x000A	Calculation of file checksum failed
FAC_ERROR_CHECKSUM_ERROR	0x000B	Comparison of calculated checksum is not matching with the given checksum
FAC_ERROR_INVALID_OPEN_MODE	0x000C	File open mode is not according to the set operation (read, write)
FAC_ERROR_EXCESS_FILE_SIZE	0x000D	File access(read, write) exceeds the file size(max size for writing)
FAC_ERROR_EXCESS_FILE_ACCESS_BUFFER_SIZE	0x000E	File read access exceeds the file access buffer size
FAC_ERROR_COPY_DATA_TO_FILE_ACCESS_BUF_FAILED	0x000F	An error occurred while copying data to the file access buffer
FAC_ERROR_INVALID_FILE_ACCESS_OFFSET	0x0010	Invalid file access offset
FAC_ERROR_FLASH_ACCESS_ERROR	0x0011	An error occurred during flash access like erase, write
FAC_ERROR_INVALID_OPEN_MODE_SELECTOR	0x0012	Invalid file open mode selector
FAC_ERROR_FILE_ACCESS_BUFFER_OVERRUN	0x0013	File access buffer overrun
FAC_ERROR_CLOSE	0x0014	Error during file close operation. The file has not been updated. The file might be invalid.
FAC_ERROR_CLOSE_FATAL	0x0015	Fatal error during file close operation. Avoid switching off camera! Redo the update! Otherwise, the camera might refuse to boot or problems while connecting might occur.

6.2.12 Led Flash Control (LED_FLASH_CTRL_ERROR_CATEGORY)

The below table contains the details of specific error belongs to the LED_FLASH_CTRL_ERROR_CATEGORY (0x000C).

Definition	Value	Description
LED_FLASH_CTRL_ERR_NO_OF_PATTERN_INVALID	0x0001	Number of pattern value is invalid
LED_FLASH_CTRL_ERR_PATTERN_SELECTOR_INVALID	0x0002	Invalid pattern selector
LED_FLASH_CTRL_ERR_INVALID_FRAME_CONTROL	0x0003	Frame control is invalid
LED_FLASH_CTRL_ERR_SEQUENCE_TIME_INVALID	0x0004	Sequence time is less than the sum of all active pattern on time
LED_FLASH_CTRL_ERR_FLASH_OUT_ON_TIME_INVALID	0x0005	Flash out on time of the selected pattern is invalid
LED_FLASH_CTRL_ERR_FLASH_OUT_OFF_DELAY_INVALID	0x0006	Flash out off delay of the selected pattern is invalid

6.3 Debug Control

This features might be removed in future releases!

6.3.1 Full-Flag

Name	FullFlag	**Custom**
Description	Indicates an internal framebuffer FIFO overflow.	
Interface	Integer	
Access mode	Read only	
Adjustable while grabbing	-	
Value range	0: No overflow 1: An overflow occurred	
Default value	-	
Notes	-	
Error behavior	-	

7 Document History

Date	Version	Author	Changes
5th February 2020	1.0.0	-	Prepared document for initial release.
29th April 2020	1.2.0	FG	Introduced RGB10p32 pixel format. Adapted the maximum exposure time and min line time.
20th May 2020	1.3.0	FG	Set the maximum Image Height to 1015811.
8th June 2020	1.4.0	FG	Added Decimation Horizontal Float. It is not available in this version.
8th June 2020	1.4.0	HR	Chapter Sensor Resync Counter removed
10th June 2020	1.5.0	FG	Added the Stream Region Width feature.
8th July 2020	1.6.0	FG	Removed the Stream Region Width Feature. It's not required anymore from sphinx library version 2.4.1 and later.
16th July 2020	1.7.0	AB	Added CDS Gain, FullWellCapacity and LedFlashControl
24st August 2020	1.9.0	FG	Reduced the value range of GainControlRegionOffsetY. Minimum value is now set to 3 (If no frame trigger is used) Adapted description of DecimationHorizontalFloat and BinningHorizontal. Added note that the Region parameters will be scaled. Adapted range of BinningHorizontal feature and added a note regarding the value range. Added new error code IMF_ERR_DECIMATION_HOR_OUT_OF_RANGE Adapted value range of Gain Control Region Width. It is independent of binning now. The GainControlRegionOffsetX value range depends on the SensorWidth now and not on the WidthMax feature anymore.
12th October 2020	2.0.0	AB	Removed CDS Gain, FullWellCapacity and FileValidateCommand Added SensorSensitivityChannelSelector and SensorSensitivity Replaced cds gain error code with sensor sensitivity error code
13th October 2020	2.0.0	AB	Introduced Frame Active Extend Lines feature
14th October 2020	2.0.0	FG	Added features Sensor Offset X and Sensor Region Width

29th October 2020	2.1.0	FG	Extended description for All entry of sensor sensitivity channel selector.
17th November 2020	2.2.0	FG	Introduced GainAutoStatus feature. Adapted description of GainSelector as well as Gain feature for analog and digital gain. Added hint in GainAuto to check GainAutoStatus after performing Once gain calibration.
16th February 2021	2.2.1	FG	- Removed EEPROM file from File Selector. - Added some device error codes for File Access Control - Adapted the File Operation Status fatal error description. - Added some general note to File Access Control section. - Removed timeout description from File Operation Execute - Added section for timeout parameters Connection Timeouts
18th February 2021	2.2.1	FG	- Added Device error codes for Image Calibration Control