

ImgCalibration Tango Cpp Class

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ImgCalibration Class Identification :

Contact : at null - null
Class Family :
Platform :
Bus :
Manufacturer :
Manufacturer ref. :

ImgCalibration Class Inheritance :

- [Tango::DeviceImpl](#)
 - [ImgCalibration](#)

ImgCalibration Class Description :

ImgCalibration Properties :

There is no class properties

Device Properties			
Name	Description	Type	Default Value
RemoteDevice	the name of the device on which the source image is taken	String	none
RemoteAttribute	the name of the attribute corresponding to the source image	String	none
PullPeriod	the period in ms at which a new image is retrieved from the remote device and undistorted	int	500
XSpacing	the spacing of calibration points in the horizontal direction, in mm	double	none
YSpacing	the spacing of calibration points in the vertical direction, in mm	double	none
Mode	<p>can be ONESHOT or CONTINUOUS.</p> <p>If ONESHOT, learning a calibration pattern is done by calling the `Learn` method (if RemoteDevice and RemoteAttribute are properly set) or by writing to the `CalibPattern` attribute (in that case there is no need to specify a remote device); undistorting an image is done by calling the `Undistort` method (if a remote device is specified) or by writing the `SourceImage` attribute (works either a remote device is specified or not).</p> <p>If CONTINUOUS, a remote device must be specified. Then a new image is undistorted at a frequency defined by the `PullPeriod` property. Learning a calibration pattern is done by calling the `Learn` method. The `Undistort` command is disabled and the `SourceImage` and `CalibPattern` attributes are not writable.</p>	String	ONESHOT
AutoStart	[CONTINUOUS mode only] Automatically starts the grabbing of images from the remote device	boolean	true

ImgCalibration Class Commands				
Name	Input type	Output type	Level	Description
State	DEV_VOID	DEV_STATE	OPERATOR	This command gets the device state (stored in its <i>device_state</i> data member) and returns it to the caller.
Status	DEV_VOID	CONST_DEV_STRING	OPERATOR	This command gets the device status (stored in its <i>device_status</i> data member) and returns it to the caller.
Calibrate	DEV_VOID	DEV_VOID	OPERATOR	Gets the image from the remote device, copies it to `sourcePattern`, calibrates with this grid, undistorts the grid, copies the result to `correctedPattern`, and updates the `errorMap` and `deLaunaySubdiv` attributes. This command generates an exception if a remote device is not specified.
Undistort	DEV_VOID	DEV_VOID	OPERATOR	This command gets a new image from the remote device, copies it to `SourceImage`, undistorts it with respect to the grid which was previously learned, and copies the result to `CalibratedImage`. This command is disabled in CONTINUOUS mode, and

				also in ONESHOT mode if a remote device has not been specified.
Start	DEV_VOID	DEV_VOID	OPERATOR	[CONTINUOUS mode only] starts the periodic grabbing of image from the remote device
Stop	DEV_VOID	DEV_VOID	OPERATOR	[CONTINUOUS mode only] stops the periodic grabbing of image from the remote device

Command State :

This command gets the device state (stored in its *device_state* data member) and returns it to the caller.

State Definition		
Input Argument	Tango::DEV_VOID	none.
Output Argument	Tango::DEV_STATE	State Code
DisplayLevel	OPERATOR	..
Inherited	true	..
Abstract	true	..
Polling Period	Not polled	..
Command allowed for	All states	..

Command Status :

This command gets the device status (stored in its *device_status* data member) and returns it to the caller.

Status Definition		
Input Argument	Tango::DEV_VOID	none.
Output Argument	Tango::CONST_DEV_STRING	Status description
DisplayLevel	OPERATOR	..
Inherited	true	..
Abstract	true	..
Polling Period	Not polled	..
Command allowed for	All states	..

Command Calibrate :

Gets the image from the remote device, copies it to `sourcePattern`, calibrates with this grid, undistorts the grid, copies the result to `correctedPattern`, and updates the `errorMap` and `deLaunaySubdiv` attributes.

This command generates an exception if a remote device is not specified.

Calibrate Definition		
Input Argument	Tango::DEV_VOID	
Output Argument	Tango::DEV_VOID	
DisplayLevel	OPERATOR	..
Inherited	false	..
Abstract	false	..
Polling Period	Not polled	..
Command allowed for	All states	..

Command Undistort :

This command gets a new image from the remote device, copies it to `SourceImage`, undistorts it with respect to the grid which was previously learned, and copies the result to `CalibratedImage`.

This command is disabled in CONTINUOUS mode, and also in ONESHOT mode if a remote device has not been specified.

Undistort Definition		
Input Argument	Tango::DEV_VOID	
Output Argument	Tango::DEV_VOID	
DisplayLevel	OPERATOR	..
Inherited	false	..
Abstract	false	..
Polling Period	Not polled	..
Command allowed for	All states	..

Command Start :

[CONTINUOUS mode only] starts the periodic grabbing of image from the remote device

Start Definition		
Input Argument	Tango::DEV_VOID	
Output Argument	Tango::DEV_VOID	
DisplayLevel	OPERATOR	..
Inherited	false	..
Abstract	false	..
Polling Period	Not polled	..
Command allowed for	All states	..

Command Stop :

[CONTINUOUS mode only] stops the periodic grabbing of image from the remote device

Stop Definition		
Input Argument	Tango::DEV_VOID	
Output Argument	Tango::DEV_VOID	
DisplayLevel	OPERATOR	..
Inherited	false	..
Abstract	false	..
Polling Period	Not polled	..
Command allowed for	All states	..

ImgCalibration Class Attributes							
Name	Inherited	Abstract	Attr. type	R/W type	Data type	Level	Description
sourceImage	false	false	Image	READ_WRITE	Tango::DEV_USHORT	OPERATOR	The last distorted image
correctedImage	false	false	Image	READ	Tango::DEV_USHORT	OPERATOR	The undistorted version of sourceImage
sourcePattern	false	false	Image	READ_WRITE	Tango::DEV_USHORT	OPERATOR	The currently learned

correctedPattern	false	false	Image	READ	Tango::DEV_USHORT	OPERATOR	calibration pattern The undistorted version of `sourcePattern`
errorMap	false	false	Image	READ	Tango::DEV_USHORT	EXPERT	the undistorted calibration pattern on which is drawn the model error for each calibration point of the pattern, scaled by a factor of 30 (in pixel units)
del aunaySubdiv	false	false	Image	READ	Tango::DEV_USHORT	EXPERT	the obtained Delaunay triangulation of the calibration points (an internal state of the calibration algorithm)
isCalibrated	false	false	Scalar	READ	Tango::DEV_BOOLEAN	OPERATOR	boolean indicating if a calibration pattern has been learned. if false, corrected images are simple raw copy.
xMagFactor	false	false	Scalar	READ	Tango::DEV_DOUBLE	OPERATOR	if U are the units of XSpacing, xMagFactor gives the correspondence between pixels and spacial units in U/pixel
yMagFactor	false	false	Scalar	READ	Tango::DEV_DOUBLE	OPERATOR	if U are the units of YSpacing, yMagFactor gives the correspondence between pixels and spacial units in U/pixel
modelError	false	false	Scalar	READ	Tango::DEV_DOUBLE	OPERATOR	The mean error per calibration point between the observed data and the calibration model, in the undistorted coordinate system, in mm
roi	false	false	Spectrum	READ_WRITE	Tango::DEV_LONG	OPERATOR	

There is no dynamic attribute defined.

Attribute sourcelmage :

The last distorted image

Attribute Definition	
Attribute Type	Image (131072 x 131072)
R/W Type	READ_WRITE
Data Type	Tango::DEV_USHORT
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read allowed for	All states
Write allowed for	All states

Attribute Properties	
label	Source Image
unit	
standard unit	
display unit	
format	
max_value	
min_value	
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	Not set

Attribute correctedImage :

The undistorted version of sourcelmage

Attribute Definition	

Attribute Properties	

Attribute Event Criteria	
	Not

Attribute Type	Image (131072 x 131072)
R/W Type	READ
Data Type	Tango::DEV_USHORT
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read allowed for	All states

label	CorrectedImage
unit	
standard unit	
display unit	
format	
max_value	
min_value	
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Periodic	set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	Not set

Attribute sourcePattern :

The currently learned calibration pattern

Attribute Definition	
Attribute Type	Image (131072 x 131072)
R/W Type	READ_WRITE
Data Type	Tango::DEV_USHORT
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read allowed for	All states
Write allowed for	All states

Attribute Properties	
label	CalibPattern
unit	
standard unit	
display unit	
format	
max_value	
min_value	
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false

Push DataReady event by user code	Not set
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Attribute correctedPattern :

The undistorted version of `sourcePattern`

Attribute Definition	
Attribute Type	Image (131072 x 131072)
R/W Type	READ
Data Type	Tango::DEV_USHORT
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read allowed for	All states

Attribute Properties	
label	Corrected Pattern
unit	
standard unit	
display unit	
format	
max_value	
min_value	
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	Not set

Attribute errorMap :

the undistorted calibration pattern on which is drawn the model\error for each calibration point of the pattern, scaled by a factor of 30 (in pixel units)

Attribute Definition	

Attribute Properties	

Attribute Event Criteria	
Periodic	Not

Attribute Type	Image (131072 x 131072)
R/W Type	READ
Data Type	Tango::DEV_USHORT
Display Level	EXPERT
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read allowed for	All states

label	ErrorMap
unit	
standard unit	
display unit	
format	
max_value	
min_value	
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

	set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	Not set

Attribute delaunaySubdiv :

the obtained Delaunay triangulation of the calibration points \n(an internal state of the calibration algorithm)

Attribute Definition	
Attribute Type	Image (131072 x 131072)
R/W Type	READ
Data Type	Tango::DEV_USHORT
Display Level	EXPERT
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read allowed for	All states

Attribute Properties	
label	DelaunaySubdiv
unit	
standard unit	
display unit	
format	
max_value	
min_value	
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false

Push DataReady event by user code	Not set
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Attribute isCalibrated :

boolean indicating if a calibration pattern has been learned.\nif false, corrected images are simple raw copy.

Attribute Definition	
Attribute Type	Scalar
R/W Type	READ
Data Type	Tango::DEV_BOOLEAN
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read allowed for	All states

Attribute Properties	
label	Is Calibrated
unit	
standard unit	
display unit	
format	
max_value	
min_value	
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	Not set

Attribute xMagFactor :

if U are the units of XSpacing, xMagFactor gives the correspondence\n between pixels and spacial units in U/pixel

Attribute Definition	
	Scalar

Attribute Properties	
label	X Mag

Attribute Event Criteria	
Periodic	Not set

Attribute Type	
R/W Type	READ
Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read allowed for	All states

	Factor
unit	mm/pix
standard unit	mm/pix
display unit	mm/pix
format	%6.5f
max_value	
min_value	
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	Not set

Attribute yMagFactor :

if U are the units of YSpacing, yMagFactor gives the correspondence between pixels and spacial units in U/pixel

Attribute Definition	
Attribute Type	Scalar
R/W Type	READ
Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read allowed for	All states

Attribute Properties	
label	Y Mag Factor
unit	mm/pix
standard unit	mm/pix
display unit	mm/pix
format	%6.5f
max_value	
min_value	
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by	Not

Attribute modelError :

The mean error per calibration point between the observed data and the calibration model, in the undistorted coordinate system, in mm

Attribute Definition	
Attribute Type	Scalar
R/W Type	READ
Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read allowed for	All states

Attribute Properties	
label	ModelError
unit	mm
standard unit	mm
display unit	mm
format	%6.5f
max_value	
min_value	
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	Not set

Attribute roi :

Attribute Definition	
Attribute Type	Spectrum (8)
R/W Type	READ_WRITE
Data Type	Tango::DEV_LONG

Attribute Properties	
label	ROI
unit	
standard unit	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set

Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read allowed for	All states
Write allowed for	All states

display unit	
format	%4d
max_value	
min_value	
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	Not set

ImgCalibration Class States	
Name	Description
RUNNING	the device is running properly
FAULT	an error occurred, either at initialization (missing or wrongly defined property, allocation error, or internal error), either during processing in CONTINUOUS mode