Imperx Camera SDK

1.4.0.52

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Contents

Chapter 1

Imperx Camera SDK

The Imperx Camera SDK is designed to provide software developers with API methods for ease of integrating Imperx cameras into their software application. The API consists of two namespaces IpxCam and IpxGenParam which contains enum, classes and functions which can be used to control the camera parameters and acquire images or video from the Imperx cameras. The IpxCam namespace provides the scope to the GenICam GenTL transport layer interface to acquire images with an Imperx Camera. The IpxGenParam namespace provides the scope to the GenICam features.

1.1 Main Page

The IpxCam namespace consist of several main classes that represent the GenTL modules. The main classes are

System - The System class is the entry point to the GenTL Producer software driver.
Interface - The Interface class provides method to represents an individual physical interface, like GigE or USB3
Device - The Device class provides methods to enable the communication with the camera device and enumerate/instantiate the video data streams.
Stream -The Stream class purpose is to access the image buffer data acquirement from the Acquisition engine.
Buffer - The Buffer class contains the methods to access the image data and parameters of the acquired image buffer.

Example of GenTL System Hierarchy

Chapter 2

Namespace Index

2.1 Namespace List

Here is a list of all documented namespaces with brief descriptions:

Chapter 3

Hierarchical Index

3.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

Chapter 4

Class Index

4.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

Chapter 5

Namespace Documentation

5.1 IpxCam Namespace Reference

A namespace providing scope to the GenICam GenTL transport layer interface to acquire images with an Imperx Camera using enum, classes, etc.

Classes

- class Buffer

  The Buffer class represents the buffer module in the GenTL module hierarchy.
- class Device

  The Device class represents the device module in the GenTL module hierarchy.
- class DeviceInfo

  DeviceInfo class provides the information about the device.
- class Interface

  The Interface class represents a interface module in the GenTL module hierarchy.
- class List

  The List class is used to list the specified template type objects.
- class Stream

  The Stream class represents the data stream module in the GenTL module hierarchy.
- class System

  The System class represents an abstraction of the system module of the GenTL module hierarchy. The System class is the entry point to the GenTL Producer software driver.

Typedefs

- typedef List< Interface > InterfaceList
- typedef List< DeviceInfo > DeviceInfoList
- typedef List< Device > DeviceList
- typedef void IPXCAM_CALL EventCallback2(uint32_t eventType, const void *eventData, size_t eventSize, void *pPrivate)

Enumerations

- enum InterfaceType : uint32_t {
  USB3Vision = 1, GigEVision = 2, CameraLink = 3, CoaxPress = 4,
  HdSdi = 5, AllInterfaces = 0xff }

  An enum of Interface Types. Interface Node Types representing physical interface in the system.
- enum FlushOperation : uint32_t { Flush_OutputDiscard = 1, Flush_AllToInput = 2, Flush_UnqueuedToInput = 3, Flush_AllDiscard = 4 }

  An enum of Flush Operations. Flush Operations Types.
- enum ServiceFileType : uint32_t { FileLUT = 1, FileDPC = 2, FileHPC = 3, FileFFC = 4 }

  An enum of Service File Types. Service File Types.
- enum DeviceAccess : uint32_t { ReadOnly = 0, Control = 1, Exclusive = 2 }

  An enum of Device Access.

Functions

- IPXCAM_EXTERN_C IPX_CAMERA_API System * IpxCam_GetSystem ()

  This method returns the System module. It is the entry point to the GenTL Module hierarchy.

5.1.1 Detailed Description

A namespace providing scope to the GenICam GenTL transport layer interface to acquire images with an Imperx Camera using enum, classes, etc.

A more detailed class description.

5.1.2 Typedef Documentation

5.1.2.1 InterfaceList

```
typedef List<Interface> IpxCam::InterfaceList
```

Interface List

5.1.2.2 DeviceInfoList

```
typedef List<DeviceInfo> IpxCam::DeviceInfoList
```

Device Info List

5.1.2.3 DeviceList

```
typedef List<Device> IpxCam::DeviceList
```

Device List

5.1.2.4 EventCallback2

```
typedef void IPXCAM_CALL IpxCam::EventCallback2(uint32_t eventType, const void *eventData, size_t
eventSize, void *pPrivate)
```

EventCallback param[in] eventData pointer to event Data param[in] eventSize event Size param[in] pPrivate pointer to the context Data

5.1.3 Enumeration Type Documentation

5.1.3.1 InterfaceType

```
enum IpxCam::InterfaceType :  uint32_t
```

An enum of Interface Types. Interface Node Types representing physical interface in the system.

Enumerator

USB3Vision	Enum value USB3Vision.
GigEVision	Enum value GigEVision.
CameraLink	Enum value CameraLink.
CoaxPress	Enum value CoaxPress.
HdSdi	Enum value HdSdi.
AllInterfaces	Enum value AllInterfaces.

5.1.3.2 FlushOperation

```
enum IpxCam::FlushOperation :  uint32_t
```

An enum of Flush Operations. Flush Operations Types.

Enumerator

Flush_OutputDiscard	Enum value Flush_OutputDiscard. Discards all buffers in the output queue and if necessary remove the entries from the event data queue.
Flush_AllToInput	Enum value Flush_AllToInput. Puts all buffers in the input pool. Even those in the output queue and discard entries in the event data queue.
Flush_UnqueuedToInput	Enum value Flush_UnqueuedToInput. Puts all buffers that are not in the input pool or the output queue in the input pool.
Flush_AllDiscard	Enum value Flush_AllDiscard. Discards all buffers in the input pool and output queue.

5.1.3.3 ServiceFileType

```
enum IpxCam::ServiceFileType :  uint32_t
```

An enum of Service File Types. Service File Types.

Enumerator

FileLUT	Enum value FileLUT.
FileDPC	Enum value FileDPC.
FileHPC	Enum value FileHPC.
FileFFC	Enum value FileFFC.

5.1.3.4 DeviceAccess

```
enum IpxCam::DeviceAccess :  uint32_t
```

An enum of Device Access.

Enumerator

ReadOnly	Enum value ReadOnly.
Control	Enum value Control.
Exclusive	Enum value Exclusive.

5.1.4 Function Documentation

5.1.4.1 IpxCam_GetSystem()

```
IPX_CAMERA_API System * IpxCam::IpxCam_GetSystem ( )
```

This method returns the System module. It is the entry point to the GenTL Module hierarchy.

Returns

returns the pointer to system... system is being created as soon as DLL is loaded

Here is the caller graph for this function:

5.2 IpxGenParam Namespace Reference

A namespace providing scope to the GenICam features using enum, classes, etc.

Classes

- class Array

  This class contains functions that can access each node from the camera descriptor XML file by type and name.
- class Boolean

  A class containing methods that map the integer element value of a GenICam IBoolean interface feature to true or false.
- class Category

  *A class containing methods that the user can access the categories GenICam features. It will access the node object's of an ICategory interface. Each feature of a device will be placed in a **Category**. The Category feature is used to present the user with a group of features for the named category.*
- class Command

  A Class for GenICam Command properties contains methods that lets the user submit a command for execution as well as poll the status.
- class Enum

  Interface Class for Enumeration properties.
- class EnumEntry

  A Class for GenICam Enum Entries has methods to access the Enumeration node Enum Entry of the GenICam.
- class Float

  Interface Class for GenICam Float properties.
- class Int

  Interface Class for GenICam Int properties.
- class Param

  A Class for accessing the GenICam feature node parameters of the Camera Descriptor File.
- class ParamEventSink

  An Event Sink class designed to receive incoming events from Parameter Node Updates.
- class String

  Interface Class for GenICam String properties.

Enumerations

- enum ParamType : uint32_t {
  ParamUnknown, ParamInt, ParamFloat, ParamString,
  ParamEnum, ParamEnumEntry, ParamBoolean, ParamCommand,
  ParamCategory }

  An enum of Parameter Types. Parameter Node Types that can access the node object's programming interface.
- enum NameSpace : uint32_t { NameSpaceStandard = 0, NameSpaceCustom, NameSpaceUndefined =999 }

  An enum of GenICam NameSpace. Parameter Node Namespace.
- enum Visibility : uint32_t {
  VisBeginner = 0, VisExpert, VisGuru, VisInvisible,
  VisUndefined = 99 }

  An enum of Visibility. This element defines the type of user that has access to the feature.

5.2.1 Detailed Description

A namespace providing scope to the GenICam features using enum, classes, etc.

A more detailed class description.

5.2.2 Enumeration Type Documentation

5.2.2.1 ParamType

```
enum IpxGenParam::ParamType :  uint32_t
```

An enum of Parameter Types. Parameter Node Types that can access the node object's programming interface.

Enumerator

ParamUnknown	Enum value ParamUnknown. Unknown Parameter.
ParamInt	Enum value ParamInt will access node object's of IInteger interface.
ParamFloat	Enum value ParamFloat will access node object's of IFloat interface.
ParamString	Enum value ParamString will access node object's of IString interface.
ParamEnum	Enum value ParamEnum will access node object's of IEnumeration interface.
ParamEnumEntry	Enum value ParamEnumEntry will access the entry of Enum parameter∗/.
ParamBoolean	Enum value ParamBoolean will access node object's of IBoolean interface.
ParamCommand	Enum value ParamCommand will access node object's of ICommand interface.
ParamCategory	Enum value ParamCategory will access node object's of ICategory interface.

5.2.2.2 NameSpace

```
enum IpxGenParam::NameSpace :  uint32_t
```

An enum of GenICam NameSpace. Parameter Node Namespace.

Enumerator

NameSpaceStandard	Enum value NameSpaceStandard. Identifies the standard namespace used in the file.
NameSpaceCustom	Enum value NameSpaceCustom. Identifies the custom namespace used in the file.
NameSpaceUndefined	Enum value NameSpaceUndefined. Unknown namespace.

5.2.2.3 Visibility

```
enum IpxGenParam::Visibility :  uint32_t
```

An enum of Visibility. This element defines the type of user that has access to the feature.

Enumerator

VisBeginner	Enum value VisBeginner. User has visibility to all the basic features of the device.
VisExpert	Enum value VisExpert. User has visibility to more advance features of the device.
VisGuru	Enum value VisGuru. User has visibility to even more advance features that if set improperly can cause device to be in an improper state.
VisInvisible	Enum value VisInvisible. Not visible.
VisUndefined	Enum value VisUndefined. Unknown visibility.

5.3 IpxGui Namespace Reference

The IpxGUI namespace is a declarative region that provides a scope to the Imperx Camera GUI API classes and functions.

Classes

- class IIpxGenParamTreeView

  The IIpxGenParamTreeView class is composed of functions to set and clear parameters of the node tree of the camera. The node tree can be set with the current parameters stored in the IpxGenParam::Array and GenApi::INodeMap class.

Enumerations

- enum Visibility : uint32_t { Beginner = 0, Expert, Guru }

  An enum of Visibility. Defines the visibility type of features that user will see in the Tree View.

Functions

- IPXCAM_GUI_EXTERN_C IPX_CAMERA_GUI_API IIpxGenParamTreeView * CreateGenParamTreeViewForArrayA (IpxGenParam::Array *genParam, const char *title, uintptr_t parentWindow=0)

  This method returns the pointer to the IIpxGenParamTreeView class that was created using information extracted from the IpxGenParam::Array class.
- IPXCAM_GUI_EXTERN_C IPX_CAMERA_GUI_API IIpxGenParamTreeView * CreateGenParamTreeViewForArrayW (IpxGenParam::Array *genParam, const wchar_t *title, uintptr_t parentWindow=0)

  This method returns the pointer to the IIpxGenParamTreeView class that was created using information extracted from the IpxGenParam::Array.
- IPXCAM_GUI_EXTERN_C IPX_CAMERA_GUI_API IIpxGenParamTreeView * CreateGenParamTreeViewForNodemapA (IPX_GENAPI_NS::INodeMap *nodemap, const char *title, uintptr_t parentWindow=0)

  This method returns the pointer to the IIpxGenParamTreeView class that was created using information extracted from the GenApi::INodeMap class.
- IPXCAM_GUI_EXTERN_C IPX_CAMERA_GUI_API IIpxGenParamTreeView * CreateGenParamTreeViewForNodemapW (IPX_GENAPI_NS::INodeMap *nodemap, const wchar_t *title, uintptr_t parentWindow=0)

  This method returns the pointer to the IIpxGenParamTreeView that was created using information extracted from the GenApi::INodeMap class.
- IPXCAM_GUI_EXTERN_C IPX_CAMERA_GUI_API void DestroyGenParamTreeView (IIpxGenParamTreeView *view)

  This method destroys the IIpxGenParamTreeView object previously created.
- IPXCAM_GUI_EXTERN_C IPX_CAMERA_GUI_API IpxCam::DeviceInfo * SelectCameraA (IpxCam::System *pSystem, const char *title, uintptr_t parentWindow=0, bool poll=true)

  This method pops-up the "Select camera" modal dialog, where user can select the Camera and obtain the pointer to IpxCam::DeviceInfo object for the selected camera.
- IPXCAM_GUI_EXTERN_C IPX_CAMERA_GUI_API IpxCam::DeviceInfo * SelectCameraW (IpxCam::System *pSystem, const wchar_t *title, uintptr_t parentWindow=0, bool poll=true)

  This method pops-up the "Select camera" modal dialog, where user can select the Camera and obtain the pointer to IpxCam::DeviceInfo object for the selected camera.
- IPXCAM_GUI_EXTERN_C IPX_CAMERA_GUI_API void ShowCamConfigDialog (IpxCam::Device *device, uintptr_t parentWindow=0)

  Show Camera Configuration Dialog.
- IPXCAM_GUI_EXTERN_C IPX_CAMERA_GUI_API void ShowFrameABDialog (IpxCam::Device *device, uintptr_t parentWindow=0)
- IPXCAM_GUI_EXTERN_C IPX_CAMERA_GUI_API void ShowTriggerDialog (IpxCam::Device *device, uintptr_t parentWindow=0)

  Show Trigger Dialog.
- IPXCAM_GUI_EXTERN_C IPX_CAMERA_GUI_API void ShowPulseDialog (IpxCam::Device *device, uintptr_t parentWindow=0)

  Show Pulse Dialog.
- IPXCAM_GUI_EXTERN_C IPX_CAMERA_GUI_API void ShowStrobeDialog (IpxCam::Device *device, uintptr_t parentWindow=0)

  Show Strobe Dialog.
- IPXCAM_GUI_EXTERN_C IPX_CAMERA_GUI_API void ShowOutputDialog (IpxCam::Device *device, uintptr_t parentWindow=0)

  Show Output Data Dialog.
- IPXCAM_GUI_EXTERN_C IPX_CAMERA_GUI_API void ShowColorDialog (IpxCam::Device *device, uintptr_t parentWindow=0)

  Show Color Dialog.

5.3.1 Detailed Description

The IpxGUI namespace is a declarative region that provides a scope to the Imperx Camera GUI API classes and functions.

The IpxGUI namespace includes Imperx Camera GUI API classes and functions, such as: IIpxGenParamTreeView, SelectCameraA SelectCameraW IpxGenParamTreeView, IpxCameraSelectorDialog

5.3.2 Enumeration Type Documentation

5.3.2.1 Visibility

```
enum IpxGui::Visibility :  uint32_t
```

An enum of Visibility. Defines the visibility type of features that user will see in the Tree View.

Enumerator

Beginner	Enum value Beginner. User has visibility to all the basic features of the device.
Expert	Enum value Expert. User has visibility to more advance features of the device.
Guru	Enum value Guru. User has visibility to even more advance features that if set improperly can cause device to be in an improper state.

5.3.3 Function Documentation

5.3.3.1 CreateGenParamTreeViewForArrayA()

```
IPXCAM_GUI_EXTERN_C IPX_CAMERA_GUI_API IIpxGenParamTreeView* IpxGui::CreateGenParamTreeViewFor↩
ArrayA (
            IpxGenParam::Array * genParam,
            const char * title,
            uintptr_t parentWindow = 0 )
```

This method returns the pointer to the IIpxGenParamTreeView class that was created using information extracted from the IpxGenParam::Array class.

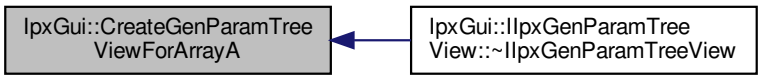
Parameters

in	*genParam*	The pointer to the IpxGenParam::Array class.
in	*title*	The title of the IIpxGenParamTreeView class as a const char.
in	*parentWindow*	A pointer to the parent Window. If the parent is set to 0, this widget is setup to become a window. If not this widget becomes a child widget

Returns

If the method succeeds, the return value is the pointer to the IIpxGenParamTreeView class created. Otherwise, the return value is nullptr.

Here is the caller graph for this function:



5.3.3.2 CreateGenParamTreeViewForArrayW()

```
IPXCAM_GUI_EXTERN_C IPX_CAMERA_GUI_API IIpxGenParamTreeView* IpxGui::CreateGenParamTreeViewFor↩
ArrayW (
            IpxGenParam::Array * genParam,
            const wchar_t * title,
            uintptr_t parentWindow = 0 )
```

This method returns the pointer to the IIpxGenParamTreeView class that was created using information extracted from the IpxGenParam::Array.

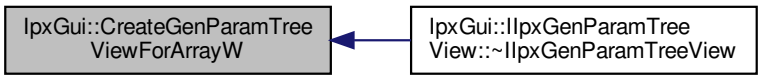
Parameters

in	*genParam*	The pointer to the IpxGenParam::Array class.
in	*title*	The title of the IIpxGenParamTreeView class as a wchar_t variable.
in	*parentWindow*	A pointer to the parent Window. If the parent is set to 0, this widget is setup to become a window. If not this widget becomes a child widget

Returns

If the method succeeds, the return value is the pointer to the IIpxGenParamTreeView class created. Otherwise, the return value is nullptr.

Here is the caller graph for this function:



5.3.3.3 CreateGenParamTreeViewForNodemapA()

```
IPXCAM_GUI_EXTERN_C IPX_CAMERA_GUI_API IIpxGenParamTreeView* IpxGui::CreateGenParamTreeViewFor↩
NodemapA (
            IPX_GENAPI_NS::INodeMap * nodemap,
            const char * title,
            uintptr_t parentWindow = 0 )
```

This method returns the pointer to the IIpxGenParamTreeView class that was created using information extracted from the GenApi::INodeMap class.

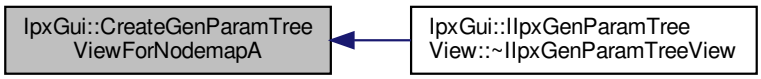
Parameters

in	*nodemap*	The pointer to the GenApi::INodeMap class.
in	*title*	The title of the IIpxGenParamTreeView class as a wchar_t variable.
in	*parentWindow*	A pointer to the parent Window. If the parent is set to 0, this widget is setup to become a window. If not this widget becomes a child widget

Returns

If the method succeeds, the return value is the pointer to the IIpxGenParamTreeView class created. Otherwise, the return value is nullptr.

Here is the caller graph for this function:



5.3.3.4 CreateGenParamTreeViewForNodemapW()

```
IPXCAM_GUI_EXTERN_C IPX_CAMERA_GUI_API IIpxGenParamTreeView* IpxGui::CreateGenParamTreeViewFor↩
NodemapW (
            IPX_GENAPI_NS::INodeMap * nodemap,
            const wchar_t * title,
            uintptr_t parentWindow = 0 )
```

This method returns the pointer to the IIpxGenParamTreeView that was created using information extracted from the GenApi::INodeMap class.

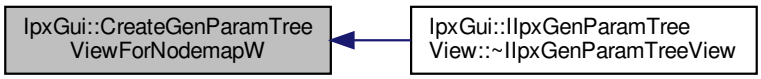
Parameters

in	*nodemap*	The pointer to the GenApi::INodeMap class.
in	*title*	The title of the IIpxGenParamTreeView as a wchar_t variable.
in	*parentWindow*	A pointer to the parent Window. If the parent is set to 0, this widget is setup to become a window. If not this widget becomes a child widget

Returns

If the method succeeds, the return value is the pointer to the IIpxGenParamTreeView class created. Otherwise, the return value is nullptr.

Here is the caller graph for this function:



5.3.3.5 DestroyGenParamTreeView()

```
IPXCAM_GUI_EXTERN_C IPX_CAMERA_GUI_API void IpxGui::DestroyGenParamTreeView (
            IIpxGenParamTreeView * view )
```

This method destroys the IIpxGenParamTreeView object previously created.

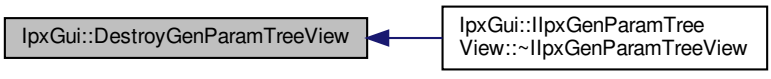
Parameters

in	*view*	A pointer to the IIpxGenParamTreeView class.

Returns

Void.

Here is the caller graph for this function:



5.3.3.6 SelectCameraA()

```
IPXCAM_GUI_EXTERN_C IPX_CAMERA_GUI_API IpxCam::DeviceInfo* IpxGui::SelectCameraA (
            IpxCam::System * pSystem,
            const char * title,
            uintptr_t parentWindow = 0,
            bool poll = true )
```

This method pops-up the "Select camera" modal dialog, where user can select the Camera and obtain the pointer to IpxCam::DeviceInfo object for the selected camera.

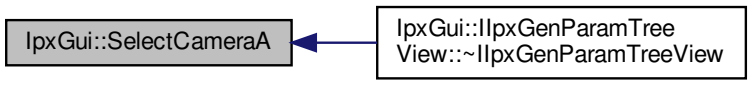
Parameters

in	*pSystem*	The pointer to the IpxCam::System class.
in	*title*	The title of the selected Camera as a const char variable.
in	*parentWindow*	A pointer to the parent Window. If the parent is set to 0, this widget is setup to become a window. If not this widget becomes a child widget
in	*poll*	Specifies if poll check box should be checked by default, so the System will be polled for new devices to appear

Returns

If the method succeeds, the return value is the pointer to the IpxCam::DeviceInfo class. Otherwise, the return value is nullptr.

Here is the caller graph for this function:



5.3.3.7 SelectCameraW()

```
IPXCAM_GUI_EXTERN_C IPX_CAMERA_GUI_API IpxCam::DeviceInfo* IpxGui::SelectCameraW (
            IpxCam::System * pSystem,
            const wchar_t * title,
            uintptr_t parentWindow = 0,
            bool poll = true )
```

This method pops-up the "Select camera" modal dialog, where user can select the Camera and obtain the pointer to IpxCam::DeviceInfo object for the selected camera.

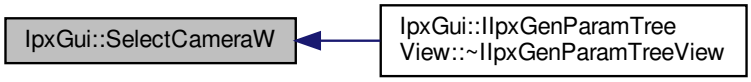
Parameters

in	*pSystem*	The pointer to the IpxCam::System class.
in	*title*	The title of the IIpxGenParamTreeView as a wchar_t variable.
in	*parentWindow*	A pointer to the parent Window. If the parent is set to 0, this widget is setup to become a window. If not this widget becomes a child widget
in	*poll*	Specifies if poll check box should be checked by default, so the System will be polled for new devices to appear

Returns

If the method succeeds, the return value is the pointer to the IpxCam::DeviceInfo class. Otherwise, the return value is nullptr.

Here is the caller graph for this function:



5.3.3.8 ShowCamConfigDialog()

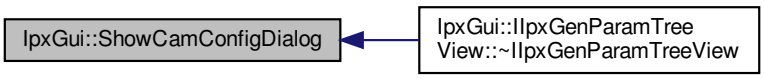
```
IPXCAM_GUI_EXTERN_C IPX_CAMERA_GUI_API void IpxGui::ShowCamConfigDialog (
            IpxCam::Device * device,
            uintptr_t parentWindow = 0 )
```

Show Camera Configuration Dialog.

Parameters

in	*device*	The pointer to the IpxCam::Device class.
in	*parentWindow*	A pointer to the parent Window. If the parent is set to 0, this widget is setup to become a window. If not this widget becomes a child widget

Here is the caller graph for this function:



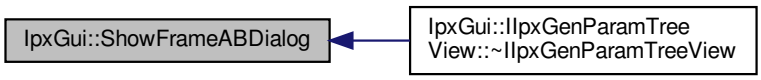
5.3.3.9 ShowFrameABDialog()

```
IPXCAM_GUI_EXTERN_C IPX_CAMERA_GUI_API void IpxGui::ShowFrameABDialog (
            IpxCam::Device * device,
            uintptr_t parentWindow = 0 )
```

Parameters

in	*device*	The pointer to the IpxCam::Device class.
in	*parentWindow*	A pointer to the parent Window. If the parent is set to 0, this widget is setup to become a window. If not this widget becomes a child widget

Here is the caller graph for this function:



5.3.3.10 ShowTriggerDialog()

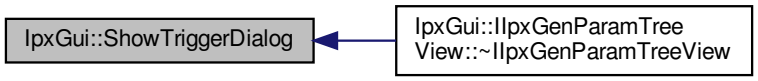
```
IPXCAM_GUI_EXTERN_C IPX_CAMERA_GUI_API void IpxGui::ShowTriggerDialog (
            IpxCam::Device * device,
            uintptr_t parentWindow = 0 )
```

Show Trigger Dialog.

Parameters

in	*device*	The pointer to the IpxCam::Device class.
in	*parentWindow*	A pointer to the parent Window. If the parent is set to 0, this widget is setup to become a window. If not this widget becomes a child widget

Here is the caller graph for this function:



5.3.3.11 ShowPulseDialog()

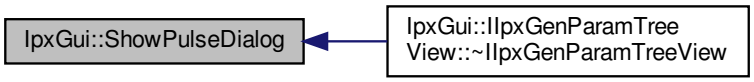
```
IPXCAM_GUI_EXTERN_C IPX_CAMERA_GUI_API void IpxGui::ShowPulseDialog (
            IpxCam::Device * device,
            uintptr_t parentWindow = 0 )
```

Show Pulse Dialog.

Parameters

in	*device*	The pointer to the IpxCam::Device class.
in	*parentWindow*	A pointer to the parent Window. If the parent is set to 0, this widget is setup to become a window. If not this widget becomes a child widget

Here is the caller graph for this function:



5.3.3.12 ShowStrobeDialog()

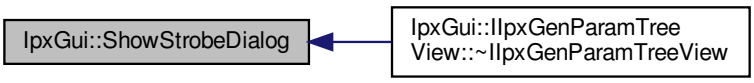
```
IPXCAM_GUI_EXTERN_C IPX_CAMERA_GUI_API void IpxGui::ShowStrobeDialog (
            IpxCam::Device * device,
            uintptr_t parentWindow = 0 )
```

Show Strobe Dialog.

Parameters

in	*device*	The pointer to the IpxCam::Device class.
in	*parentWindow*	A pointer to the parent Window. If the parent is set to 0, this widget is setup to become a window. If not this widget becomes a child widget

Here is the caller graph for this function:



5.3.3.13 ShowOutputDialog()

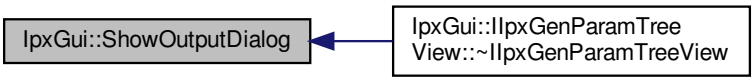
```
IPXCAM_GUI_EXTERN_C IPX_CAMERA_GUI_API void IpxGui::ShowOutputDialog (
            IpxCam::Device * device,
            uintptr_t parentWindow = 0 )
```

Show Output Data Dialog.

Parameters

in	*device*	The pointer to the IpxCam::Device class.
in	*parentWindow*	A pointer to the parent Window. If the parent is set to 0, this widget is setup to become a window. If not this widget becomes a child widget

Here is the caller graph for this function:



5.3.3.14 ShowColorDialog()

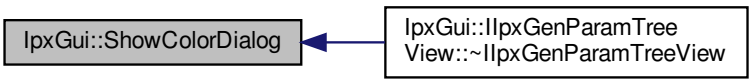
```
IPXCAM_GUI_EXTERN_C IPX_CAMERA_GUI_API void IpxGui::ShowColorDialog (
            IpxCam::Device * device,
            uintptr_t parentWindow = 0 )
```

Show Color Dialog.

Parameters

in	*device*	The pointer to the IpxCam::Device class.
in	*parentWindow*	A pointer to the parent Window. If the parent is set to 0, this widget is setup to become a window. If not this widget becomes a child widget

Here is the caller graph for this function:



Chapter 6

Class Documentation

6.1 IpxGenParam::Array Class Reference

This class contains functions that can access each node from the camera descriptor XML file by type and name.

`#include <IpxCameraApi.h>`

Public Member Functions

- virtual ~Array ()

  A destructor of the Array class.
- virtual Param * GetParam (const char *name, IpxCamErr *err)=0

  This method gets the pointer to the Param class for the specified node name from the node map declared in the camera descriptor XML file.
- virtual Boolean * GetBoolean (const char *name, IpxCamErr *err)=0

  This method gets the pointer to the Boolean class for the specified node name of the camera descriptor XML file.
- virtual Command * GetCommand (const char *name, IpxCamErr *err)=0

  This method gets the pointer to the Command class for the specified node name of the camera descriptor XML file.
- virtual Enum * GetEnum (const char *name, IpxCamErr *err)=0

  This method gets the pointer to the Enum class for the specified node name of the camera descriptor XML file.
- virtual Float * GetFloat (const char *name, IpxCamErr *err)=0

  This method gets the pointer to the Float class for the specified node name of the camera descriptor XML file.
- virtual Int * GetInt (const char *name, IpxCamErr *err)=0

  This method gets the pointer to the Int class for the specified node name of the camera descriptor XML file.
- virtual String * GetString (const char *name, IpxCamErr *err)=0

  This method gets the pointer to the String class for the specified node name of the camera descriptor XML file.
- virtual Category * GetRootCategory (IpxCamErr *err)=0

  This method gets the pointer to the root node class. The Root node is considered a special node. It has no parent node. In the topology graph, it is the top node which connects to at least one child node. The child node may connect to the device node that provides the connection to the transport layer.
- virtual IPX_GENAPI_NS::INodeMap * GetNodeMap (IpxCamErr *err)=0

This method gets the pointer to the NodeMap interface. The NodeMap interface will provide methods to retrieves all nodes in the node map.

- virtual uint32_t GetCount ()=0

  This method gets the number of nodes.

- virtual Param * GetParamByIndex (uint32_t idx, IpxCamErr *err)=0

  This method gets the parameter by index.

- virtual IpxCamErr SetBooleanValue (const char *name, bool aValue)=0

  This method sets the Boolean value of the Boolean node.

- virtual bool GetBooleanValue (const char *name, IpxCamErr *err=nullptr)=0

  This method gets the Boolean value of the Boolean node.

- virtual IpxCamErr SetEnumValueStr (const char *name, const char *val)=0

  This method sets the Enum node maps and the Enum interface to a name and index value. Each of the enum entries are represented by a name and index pair. This method sets the Enum value String of the corresponding node. The enum nodes map to a drop down box.

- virtual IpxCamErr SetEnumValue (const char *name, int64_t val)=0

  This method sets the Enum value of the enum node.

- virtual const char * GetEnumValueStr (const char *name, IpxCamErr *err=nullptr)=0

  This method gets the Enum value string of the current set Enum value entry.

- virtual int64_t GetEnumValue (const char *name, IpxCamErr *err=nullptr)=0

  This method gets the Enum value of the Enum node.

- virtual IpxCamErr SetFloatValue (const char *name, double val)=0

  This method sets the Float value of the Float node.

- virtual double GetFloatValue (const char *name, IpxCamErr *err=nullptr)=0

  This method gets the Float value of the Float node.

- virtual IpxCamErr SetIntegerValue (const char *name, int64_t val)=0

  This method sets the Integer value of the Integer node.

- virtual int64_t GetIntegerValue (const char *name, IpxCamErr *err=nullptr)=0

  This method gets the Integer value of the Integer node.

- virtual IpxCamErr SetStringValue (const char *name, const char *val)=0

  This method sets the String value of the String node.

- virtual const char * GetStringValue (const char *name, IpxCamErr *err=nullptr)=0

  This method gets the String value of the String node.

- virtual IpxCamErr ExecuteCommand (const char *name)=0

  This method executes/submits the command.

- virtual bool IsCommandDone (const char *name, IpxCamErr *err=nullptr)=0

  This method polls the corresponding executed command to see if the executed command is done or not.

- virtual IpxCamErr Poll (int64_t elapsedTime)=0

  This method fires nodes which have a polling time.

6.1.1 Detailed Description

This class contains functions that can access each node from the camera descriptor XML file by type and name.

An Array class.

6.1.2 Constructor & Destructor Documentation

6.1.2.1 ~Array()

```
virtual IpxGenParam::Array::~Array ( )  [inline], [virtual]
```

A destructor of the Array class.

Destructor. Destroys the Array and all its descendants.

6.1.3 Member Function Documentation

6.1.3.1 GetParam()

```
virtual Param* IpxGenParam::Array::GetParam (
            const char * name,
            IpxCamErr * err )  [pure virtual]
```

This method gets the pointer to the Param class for the specified node name from the node map declared in the camera descriptor XML file.

Parameters

in	*name*	Unique name of a node in node map.
out	*err*	Returns an error code: • IpxCamErr::IPX_CAM_ERR_OK - Successfully returns pointer to Param class of the specified node name • IpxCamErr::IPX_CAM_GENICAM_UNKNOWN_PARAM - specified node name not found in camera descriptor XML file

Returns

If the method succeeds, it returns the pointer to the Param class for the specific node name. Otherwise, it returns a nullptr.

6.1.3.2 GetBoolean()

```
virtual Boolean* IpxGenParam::Array::GetBoolean (
            const char * name,
            IpxCamErr * err )  [pure virtual]
```

This method gets the pointer to the Boolean class for the specified node name of the camera descriptor XML file.

Parameters

in	*name*	A unique name of Boolean type node in the camera descriptor XML file.
out	*err*	Returns an error code: • IpxCamErr::IPX_CAM_ERR_OK - Successfully returns pointer to Boolean class of the specified node name • IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR - specified node name not found in camera descriptor XML file

Returns

If the method succeeds, it returns the pointer to the Boolean class for the specific node name. Otherwise, it returns a nullptr.

6.1.3.3 GetCommand()

```
virtual Command* IpxGenParam::Array::GetCommand (
            const char * name,
            IpxCamErr * err )  [pure virtual]
```

This method gets the pointer to the Command class for the specified node name of the camera descriptor XML file.

Parameters

in	*name*	Unique name of Command type node in the camera descriptor XML file.
out	*err*	returns an error code: • IpxCamErr::IPX_CAM_ERR_OK - Successfully returns pointer to Command class of the specified node name • IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR - specified node name not found in camera descriptor XML file

Returns

If method succeeds, it returns the pointer to the Command class for the specific node name. Otherwise, it returns a nullptr.

6.1.3.4 GetEnum()

```
virtual Enum* IpxGenParam::Array::GetEnum (
            const char * name,
            IpxCamErr * err )  [pure virtual]
```

This method gets the pointer to the Enum class for the specified node name of the camera descriptor XML file.

Parameters

in	*name*	Unique name of Enumeration type node in the camera descriptor XML file.
out	*err*	returns an error code: • IpxCamErr::IPX_CAM_ERR_OK - Successfully returns pointer to Enum class of the specified node name • IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR - specified node name not found in camera descriptor XML file

Returns

If the method succeeds, it returns the pointer to the Enum parameter class for the specific node name. Otherwise, it returns a nullptr.

6.1.3.5 GetFloat()

```
virtual Float* IpxGenParam::Array::GetFloat (
            const char * name,
            IpxCamErr * err )  [pure virtual]
```

This method gets the pointer to the Float class for the specified node name of the camera descriptor XML file.

Parameters

in	*name*	Unique name of Float type node in the camera descriptor XML file.
out	*err*	returns an error code: • IpxCamErr::IPX_CAM_ERR_OK - Successfully returns pointer to Float class of the specified node name • IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR - specified node name not found in camera descriptor XML file

Returns

If the method succeeds, it returns the pointer to the Float parameter class for the specific node name

6.1.3.6 GetInt()

```
virtual Int* IpxGenParam::Array::GetInt (
            const char * name,
            IpxCamErr * err )  [pure virtual]
```

This method gets the pointer to the Int class for the specified node name of the camera descriptor XML file.

Parameters

in	*name*	Unique name of Integer type node in the camera descriptor XML file.
out	*err*	returns an error code: • IpxCamErr::IPX_CAM_ERR_OK - Successfully returns pointer to Int class of the specified node name • IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR - specified node name not found in camera descriptor XML file

Returns

If the method succeeds, it returns the pointer to the Int class for the specific node name

6.1.3.7 GetString()

```
virtual String* IpxGenParam::Array::GetString (
            const char * name,
            IpxCamErr * err )  [pure virtual]
```

This method gets the pointer to the String class for the specified node name of the camera descriptor XML file.

Parameters

in	*name*	Unique name of String type node in the camera descriptor XML file.
out	*err*	returns an error code: • IpxCamErr::IPX_CAM_ERR_OK - Successfully returns pointer to String class of the specified node name • IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR - specified node name not found in camera descriptor XML file

Returns

If the method succeeds, it returns the pointer to the String class for the specific node name

6.1.3.8 GetRootCategory()

```
virtual Category* IpxGenParam::Array::GetRootCategory (
            IpxCamErr * err )  [pure virtual]
```

This method gets the pointer to the root node class. The Root node is considered a special node. It has no parent node. In the topology graph, it is the top node which connects to at least one child node. The child node may connect to the device node that provides the connection to the transport layer.

Parameters

out	*err*	returns an error code: • IpxCamErr::IPX_CAM_ERR_OK - Successfully returns pointer to Category class • IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR - specified Root node name not found in camera descriptor XML file

Returns

returns the pointer to the Category (root node) class

6.1.3.9 GetNodeMap()

```
virtual IPX_GENAPI_NS::INodeMap* IpxGenParam::Array::GetNodeMap (
            IpxCamErr * err )  [pure virtual]
```

This method gets the pointer to the NodeMap interface. The NodeMap interface will provide methods to retrieves all nodes in the node map.

Parameters

out	*err*	returns an error code: • IpxCamErr::IPX_CAM_ERR_OK - Successfully returns pointer to GenApi::INodeMap class • IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR - the node map does not exist

Returns

nodemap returns the pointer to the NodeMap interface

6.1.3.10 GetCount()

```
virtual uint32_t IpxGenParam::Array::GetCount ( )  [pure virtual]
```

This method gets the number of nodes.

Returns

The number of nodes. This number should be greater than 0.

6.1.3.11 GetParamByIndex()

```
virtual Param* IpxGenParam::Array::GetParamByIndex (
            uint32_t idx,
            IpxCamErr * err )  [pure virtual]
```

This method gets the parameter by index.

Parameters

in	*idx*	Index
out	*err*	returns the error code: • IpxCamErr::IPX_CAM_ERR_OK - Successfully returns pointer to Param class • IpxCamErr::IPX_CAM_ERR_INVALID_INDEX - entered invalid index

Returns

Returns param pointer to Parameter class of the specified node referenced by the index value

6.1.3.12 SetBooleanValue()

```
virtual IpxCamErr IpxGenParam::Array::SetBooleanValue (
            const char * name,
            bool aValue )  [pure virtual]
```

This method sets the Boolean value of the Boolean node.

Parameters

in	*name*	Unique name of Boolean node to set
in	*aValue*	Boolean value to set

Returns

returns the error code:

- `IpxCamErr::IPX_CAM_ERR_OK` - Successfully set the Boolean value
- `IpxCamErr::IPX_CAM_GENICAM_ACCESS_ERROR` - Unable to access genicam specified node

6.1.3.13 GetBooleanValue()

```
virtual bool IpxGenParam::Array::GetBooleanValue (
            const char * name,
            IpxCamErr * err = nullptr )  [pure virtual]
```

This method gets the Boolean value of the Boolean node.

Parameters

in	*name*	Unique name of Boolean node to get
out	*err*	returns the error code: • `IpxCamErr::IPX_CAM_ERR_OK` - Successfully gets the Boolean value • `IpxCamErr::IPX_CAM_GENICAM_UNKNOWN_PARAM` - unknown parameter • `IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR` - Unable to access genicam specified node

Returns

Returns the Boolean Value

6.1.3.14 SetEnumValueStr()

```
virtual IpxCamErr IpxGenParam::Array::SetEnumValueStr (
            const char * name,
            const char * val )  [pure virtual]
```

This method sets the Enum node maps and the Enum interface to a name and index value. Each of the enum entries are represented by a name and index pair. This method sets the Enum value String of the corresponding node. The enum nodes map to a drop down box.

Parameters

in	*name*	Name of Enum entry node to set
in	*val*	Enum node value set

Returns

returns the error code:

- IpxCamErr::IPX_CAM_ERR_OK - Successfully sets the Enum Value string
- IpxCamErr::IPX_CAM_GENICAM_ACCESS_ERROR - Unable to access genicam specified node
- IpxCamErr::IPX_CAM_GENICAM_OUT_OF_RANGE - the const value entered is out of range

6.1.3.15 SetEnumValue()

```
virtual IpxCamErr IpxGenParam::Array::SetEnumValue (
            const char * name,
            int64_t val )  [pure virtual]
```

This method sets the Enum value of the enum node.

Parameters

in	*name*	Unique ame of Enum entry to set
in	*val*	Enum entry value to set

Returns

returns the error code:

- IpxCamErr::IPX_CAM_ERR_OK - Successfully gets the Enum value
- IpxCamErr::IPX_CAM_GENICAM_ACCESS_ERROR - Unable to access genicam specified node
- IpxCamErr::IPX_CAM_GENICAM_UNKNOWN_PARAM - unknown parameter
- IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR - Unable to access genicam specified node type
- IpxCamErr::IPX_CAM_GENICAM_OUT_OF_RANGE - the value entered is out of range

6.1.3.16 GetEnumValueStr()

```
virtual const char* IpxGenParam::Array::GetEnumValueStr (
            const char * name,
            IpxCamErr * err = nullptr )  [pure virtual]
```

This method gets the Enum value string of the current set Enum value entry.

Parameters

in	*name*	Unique name of Enum entry
out	*err*	returns error code: • IpxCamErr::IPX_CAM_ERR_OK - Successfully gets the Enum string value • IpxCamErr::IPX_CAM_GENICAM_UNKNOWN_PARAM - unknown parameter • IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR - Unable to access genicam specified node type

Returns

Get the Enum value String of the current set Enum Value Entry

6.1.3.17 GetEnumValue()

```
virtual int64_t IpxGenParam::Array::GetEnumValue (
            const char * name,
            IpxCamErr * err = nullptr )  [pure virtual]
```

This method gets the Enum value of the Enum node.

Parameters

in	*name*	Unique name of Enum type node in the camera descriptor XML file.
out	*err*	returns error code: • IpxCamErr::IPX_CAM_ERR_OK - Successfully gets the Enum value • IpxCamErr::IPX_CAM_GENICAM_UNKNOWN_PARAM - unknown parameter • IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR - Unable to access genicam specified node type

Returns

Returns the Enum Value

6.1.3.18 SetFloatValue()

```
virtual IpxCamErr IpxGenParam::Array::SetFloatValue (
            const char * name,
            double val )  [pure virtual]
```

This method sets the Float value of the Float node.

Parameters

in	*name*	Unique name of Float type node in the camera descriptor XML file.
in	*val*	Float value to set

Returns

returns the error code:

- `IpxCamErr::IPX_CAM_ERR_OK` - Successfully sets the Float value
- `IpxCamErr::IPX_CAM_GENICAM_ACCESS_ERROR` - Unable to access genicam specified node
- `IpxCamErr::IPX_CAM_GENICAM_UNKNOWN_PARAM` - unknown parameter
- `IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR` - Unable to access genicam specified node type
- `IpxCamErr::IPX_CAM_GENICAM_OUT_OF_RANGE` - the value entered is out of range

6.1.3.19 GetFloatValue()

```
virtual double IpxGenParam::Array::GetFloatValue (
            const char * name,
            IpxCamErr * err = nullptr )  [pure virtual]
```

This method gets the Float value of the Float node.

Parameters

in	*name*	Unique name of Float type node in the camera descriptor XML file.
out	*err*	returns the error code: • `IpxCamErr::IPX_CAM_ERR_OK` - Successfully gets the Float value • `IpxCamErr::IPX_CAM_GENICAM_UNKNOWN_PARAM` - unknown parameter • `IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR` - Unable to access genicam specified node type

Returns

Returns the Float value

6.1.3.20 SetIntegerValue()

```
virtual IpxCamErr IpxGenParam::Array::SetIntegerValue (
            const char * name,
            int64_t val )  [pure virtual]
```

This method sets the Integer value of the Integer node.

Parameters

in	*name*	Unique name of Integer type node in the camera descriptor XML file.
in	*val*	Integer value to set

Returns

returns the error code:

- `IpxCamErr::IPX_CAM_ERR_OK` - Successfully sets the Integer value
- `IpxCamErr::IPX_CAM_GENICAM_ACCESS_ERROR` - Unable to access genicam specified node
- `IpxCamErr::IPX_CAM_GENICAM_UNKNOWN_PARAM` - unknown parameter
- `IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR` - Unable to access genicam specified node type
- `IpxCamErr::IPX_CAM_GENICAM_OUT_OF_RANGE` - the value entered is out of range

6.1.3.21 GetIntegerValue()

```
virtual int64_t IpxGenParam::Array::GetIntegerValue (
            const char * name,
            IpxCamErr * err = nullptr )  [pure virtual]
```

This method gets the Integer value of the Integer node.

Parameters

in	*name*	Unique name of Integer type node in the camera descriptor XML file.
out	*err*	returns the error code: • `IpxCamErr::IPX_CAM_ERR_OK` - Successfully gets the Integer value • `IpxCamErr::IPX_CAM_GENICAM_UNKNOWN_PARAM` - unknown parameter • `IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR` - Unable to access genicam specified node type

Returns

Returns the Integer value

6.1.3.22 SetStringValue()

```
virtual IpxCamErr IpxGenParam::Array::SetStringValue (
            const char * name,
            const char * val )  [pure virtual]
```

This method sets the String value of the String node.

Parameters

in	*name*	Unique name of String type node in the camera descriptor XML file.
in	*val*	String value to set

Returns

Returns the error code:

- `IpxCamErr::IPX_CAM_ERR_OK` - Successfully sets the String value
- `IpxCamErr::IPX_CAM_GENICAM_ACCESS_ERROR` - Unable to access genicam specified node
- `IpxCamErr::IPX_CAM_GENICAM_UNKNOWN_PARAM` - unknown parameter
- `IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR` - Unable to access genicam specified node type
- `IpxCamErr::IPX_CAM_GENICAM_OUT_OF_RANGE` - the value entered is out of range

6.1.3.23 GetStringValue()

```
virtual const char* IpxGenParam::Array::GetStringValue (
            const char * name,
            IpxCamErr * err = nullptr )  [pure virtual]
```

This method gets the String value of the String node.

Parameters

in	*name*	Unique name of String type node in the camera descriptor XML file.
out	*err*	returns the error code: • `IpxCamErr::IPX_CAM_ERR_OK` - Successfully gets the String value • `IpxCamErr::IPX_CAM_GENICAM_UNKNOWN_PARAM` - unknown parameter • `IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR` - Unable to access genicam specified node type

Returns

Returns the String value

6.1.3.24 ExecuteCommand()

```
virtual IpxCamErr IpxGenParam::Array::ExecuteCommand (
            const char * name )  [pure virtual]
```

This method executes/submits the command.

Parameters

in	*name*	Unique name of Command type node in the camera descriptor XML file.

Returns

Returns the error code:

- `IpxCamErr::IPX_CAM_ERR_OK` - Successfully determines state of executed command.
- `IpxCamErr::IPX_CAM_GENICAM_ACCESS_ERROR` - Unable to access genicam specified node

6.1.3.25 IsCommandDone()

```
virtual bool IpxGenParam::Array::IsCommandDone (
            const char * name,
            IpxCamErr * err = nullptr )  [pure virtual]
```

This method polls the corresponding executed command to see if the executed command is done or not.

Parameters

in	*name*	Unique name of Command type node in the camera descriptor XML file.
out	*err*	returns the error code: • `IpxCamErr::IPX_CAM_ERR_OK` - Successfully determines state of executed command. • `IpxCamErr::IPX_CAM_GENICAM_ACCESS_ERROR` - Unable to access genicam specified node

Returns

Returns true if the Execute command has finished. Otherwise, returns false.

6.1.3.26 Poll()

```
virtual IpxCamErr IpxGenParam::Array::Poll (
            int64_t elapsedTime )  [pure virtual]
```

This method fires nodes which have a polling time.

Parameters

in	*elapsedTime*	Time elapsed since last poll in msec

Returns

Returns the error code:

- `IpxCamErr::IPX_CAM_ERR_OK` - Successfully determines state of executed command.
- `IpxCamErr::IPX_CAM_GENICAM_ACCESS_ERROR` - Unable to access genicam specified node

The documentation for this class was generated from the following file:

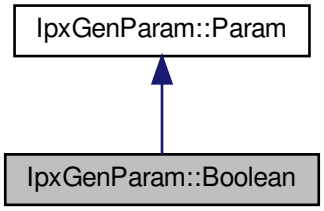
- IpxCameraApi.h

6.2 IpxGenParam::Boolean Class Reference

A class containing methods that map the integer element value of a GenICam IBoolean interface feature to true or false.

`#include <IpxCameraApi.h>`

Inheritance diagram for IpxGenParam::Boolean:



Public Member Functions

- virtual ParamType GetType ()

  This method returns the node object Boolean type.
- virtual IpxCamErr SetValue (bool val)=0

  This method can be used to set the node value to true or false.
- virtual bool GetValue (IpxCamErr *err=nullptr)=0

  This method returns the node value. It can return a true or false value.

6.2.1 Detailed Description

A class containing methods that map the integer element value of a GenICam IBoolean interface feature to true or false.

A class containing methods for GenICam Boolean Properties. For example, the mapping below will illustrate the IBoolean interfaces of a **LUTEnable** feature.

6.2.2 Member Function Documentation

6.2.2.1 GetType()

```
virtual ParamType IpxGenParam::Boolean::GetType ( )  [inline], [virtual]
```

This method returns the node object Boolean type.

Returns

Returns the node object Boolean type

Implements IpxGenParam::Param.

6.2.2.2 SetValue()

```
virtual IpxCamErr IpxGenParam::Boolean::SetValue (
            bool val )  [pure virtual]
```

This method can be used to set the node value to true or false.

Parameters

in	*val*	The node value to set such as true or false

Returns

Returns the error code:

- `IpxCamErr::IPX_CAM_ERR_OK` - Successfully sets the Boolean value
- `IpxCamErr::IPX_CAM_GENICAM_ACCESS_ERROR` - Unable to access genicam specified node
- `IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR` - Unable to access genicam specified node type
- `IpxCamErr::IPX_CAM_GENICAM_OUT_OF_RANGE` - the value entered is out of range

6.2.2.3 GetValue()

```
virtual bool IpxGenParam::Boolean::GetValue (
             IpxCamErr * err = nullptr )  [pure virtual]
```

This method returns the node value. It can return a true or false value.

Parameters

`out`	*err*	returns error code: • `IpxCamErr::IPX_CAM_ERR_OK` - Successfully gets the value of the Boolean node • `IpxCamErr::IPX_CAM_GENICAM_ACCESS_ERROR` - Unable to access genicam specified node • `IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR` - Unable to access genicam specified node type

Returns

The node value read.

The documentation for this class was generated from the following file:

- IpxCameraApi.h

6.3 IpxCam::Buffer Class Reference

The Buffer class represents the buffer module in the GenTL module hierarchy.

```
#include <IpxCameraApi.h>
```

Public Member Functions

- virtual ~Buffer ()

  A destructor of the Buffer object.
- virtual IpxImage * GetImage ()=0

  This method returns the pointer to the memory of the image object.
- virtual void * GetBufferPtr ()=0

  This method returns the pointer to the memory of the buffer object.
- virtual size_t GetImageOffset ()=0

  This method returns the image offset of the image.
- virtual size_t GetBufferSize ()=0

  This method returns the buffer size of the allocated memory.
- virtual uint64_t GetPixelFormat ()=0

  This method returns the pixel format of the buffer object.
- virtual void * GetUserPtr ()=0

  This method returns the user data buffer pointer to memory of the buffer object.
- virtual uint64_t GetTimestamp ()=0

  This method returns the timestamp of the buffer that was acquired.
- virtual uint64_t GetFrameID ()=0

  This method returns the frame id of the image stream block id of the buffer object.
- virtual bool IsIncomplete ()=0

  This method returns a flag indicating if the buffer data has been transferred or an incomplete transfer.
- virtual size_t GetWidth ()=0

  This method gets the width of the buffer data in number of pixels.
- virtual size_t GetHeight ()=0

  This method gets the height of the data buffer.
- virtual size_t GetXOffset ()=0

  This method returns the XOffset of the data in the buffer.
- virtual size_t GetYOffset ()=0

  This method returns the YOffset of the data in the buffer.
- virtual size_t GetXPadding ()=0

  This method returns the number of extra bytes padded in the X direction.
- virtual size_t GetYPadding ()=0

  This method returns the number of extra bytes padded in the Y direction.
- virtual size_t GetDeliveredHeight ()=0

  This method returns the actual height of delivered data.
- virtual bool IsKacFrameB ()=0

  This method indicates if this buffer is Frame A or Frame B, acquired from Cheetah camera with KAC-12040 or KAC-06040 CMOS sensor.

6.3.1 Detailed Description

The Buffer class represents the buffer module in the GenTL module hierarchy.

This Buffer class contains a method that can be used to temporarily hold a chuck of memory from the acquisition engine. It also contains methods that can retrieve information of the received data (held data) such as pointer to an image, image size, and pixel format.

6.3.2 Constructor & Destructor Documentation

6.3.2.1 ~Buffer()

```
virtual IpxCam::Buffer::~Buffer ( )  [inline], [virtual]
```

A destructor of the Buffer object.

Destructor. Destroys the Buffer object and all its descendants.

6.3.3 Member Function Documentation

6.3.3.1 GetImage()

```
virtual IpxImage* IpxCam::Buffer::GetImage ( )  [pure virtual]
```

This method returns the pointer to the memory of the image object.

Returns

returns the pointer to the memory of the image object

6.3.3.2 GetBufferPtr()

```
virtual void* IpxCam::Buffer::GetBufferPtr ( )  [pure virtual]
```

This method returns the pointer to the memory of the buffer object.

Returns

returns the pointer to the memory of Buffer Object

6.3.3.3 GetImageOffset()

```
virtual size_t IpxCam::Buffer::GetImageOffset ( )  [pure virtual]
```

This method returns the image offset of the image.

Returns

returns the Image Offset of the Image

6.3.3.4 GetBufferSize()

```
virtual size_t IpxCam::Buffer::GetBufferSize ( )  [pure virtual]
```

This method returns the buffer size of the allocated memory.

Returns

returns the number of bytes written into the buffers

6.3.3.5 GetPixelFormat()

```
virtual uint64_t IpxCam::Buffer::GetPixelFormat ( )  [pure virtual]
```

This method returns the pixel format of the buffer object.

Returns

returns the Pixel Format of the Buffer Object

6.3.3.6 GetUserPtr()

```
virtual void* IpxCam::Buffer::GetUserPtr ( )  [pure virtual]
```

This method returns the user data buffer pointer to memory of the buffer object.

Returns

returns the user data buffer pointer to memory of the Buffer Object

6.3.3.7 GetTimestamp()

```
virtual uint64_t IpxCam::Buffer::GetTimestamp ( )  [pure virtual]
```

This method returns the timestamp of the buffer that was acquired.

Returns

returns the timestamp of the buffer that was acquired

6.3.3.8 GetFrameID()

```
virtual uint64_t IpxCam::Buffer::GetFrameID ( )  [pure virtual]
```

This method returns the frame id of the image stream block id of the buffer object.

Returns

returns the image stream block id of the buffer object

6.3.3.9 IsIncomplete()

```
virtual bool IpxCam::Buffer::IsIncomplete ( )  [pure virtual]
```

This method returns a flag indicating if the buffer data has been transferred or an incomplete transfer.

Returns

Is true, if an error occurred during the transferring of the buffer data

6.3.3.10 GetWidth()

```
virtual size_t IpxCam::Buffer::GetWidth ( )  [pure virtual]
```

This method gets the width of the buffer data in number of pixels.

Returns

returns the width of the data in the buffer in number of pixels

6.3.3.11 GetHeight()

```
virtual size_t IpxCam::Buffer::GetHeight ( )  [pure virtual]
```

This method gets the height of the data buffer.

Returns

returns the height of the data in the buffer

6.3.3.12 GetXOffset()

```
virtual size_t IpxCam::Buffer::GetXOffset ( )  [pure virtual]
```

This method returns the XOffset of the data in the buffer.

Returns

returns the XOffset of the data in the buffer in number of pixels from the image origin

6.3.3.13 GetYOffset()

```
virtual size_t IpxCam::Buffer::GetYOffset ( )  [pure virtual]
```

This method returns the YOffset of the data in the buffer.

Returns

returns the the YOffset of the data in the buffer in number of lines from the image orgin

6.3.3.14 GetXPadding()

```
virtual size_t IpxCam::Buffer::GetXPadding ( )  [pure virtual]
```

This method returns the number of extra bytes padded in the X direction.

Returns

returns the XPadding of the data in the buffer in number of bytes

6.3.3.15 GetYPadding()

```
virtual size_t IpxCam::Buffer::GetYPadding ( )  [pure virtual]
```

This method returns the number of extra bytes padded in the Y direction.

Returns

returns the YPadding of the data in the buffer in number of bytes

6.3.3.16 GetDeliveredHeight()

```
virtual size_t IpxCam::Buffer::GetDeliveredHeight ( )  [pure virtual]
```

This method returns the actual height of delivered data.

Returns

returns the actual height of delivered data

6.3.3.17 IsKacFrameB()

```
virtual bool IpxCam::Buffer::IsKacFrameB ( )  [pure virtual]
```

This method indicates if this buffer is Frame A or Frame B, acquired from Cheetah camera with KAC-12040 or KAC-06040 CMOS sensor.

Returns

returns true for Frame B, false - otherwise

The documentation for this class was generated from the following file:

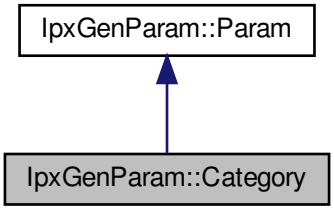
- IpxCameraApi.h

6.4 IpxGenParam::Category Class Reference

A class containing methods that the user can access the categories GenICam features. It will access the node object's of an ICategory interface. Each feature of a device will be placed in a **Category**. The Category feature is used to present the user with a group of features for the named category.

`#include <IpxCameraApi.h>`

Inheritance diagram for IpxGenParam::Category:



Public Member Functions

- virtual ParamType GetType ()

  This method returns the node object Category type.
- virtual uint32_t GetCount ()=0

  This method returns the number of categories in the array.
- virtual Param * GetParamByIndex (uint32_t idx, IpxCamErr *err)=0

  This method returns the Parameter by Index.

6.4.1 Detailed Description

A class containing methods that the user can access the categories GenICam features. It will access the node object's of an ICategory interface. Each feature of a device will be placed in a **Category**. The Category feature is used to present the user with a group of features for the named category.

A class containing methods for GenICam Category Properties. For example, the mapping below will illustrate the I↩ Category interfaces categories such as DeviceControl and EventControl.

6.4.2 Member Function Documentation

6.4.2.1 GetType()

```
virtual ParamType IpxGenParam::Category::GetType ( )  [inline], [virtual]
```

This method returns the node object Category type.

Returns

Returns the node object Category type

Implements IpxGenParam::Param.

6.4.2.2 GetCount()

```
virtual uint32_t IpxGenParam::Category::GetCount ( )  [pure virtual]
```

This method returns the number of categories in the array.

Returns

Returns the number of categories in the array

6.4.2.3 GetParamByIndex()

```
virtual Param* IpxGenParam::Category::GetParamByIndex (
            uint32_t idx,
            IpxCamErr * err )  [pure virtual]
```

This method returns the Parameter by Index.

Parameters

in	*idx*	index
out	*err*	returns the error code: • IpxCamErr::IPX_CAM_ERR_OK - Successfully returns pointer to the parameter specified by the node name • IpxCamErr::IPX_CAM_ERR_INVALID_INDEX - an invalid index for node

Returns

returns the pointer to the parameter object

The documentation for this class was generated from the following file:

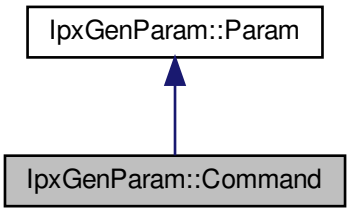
- IpxCameraApi.h

6.5 IpxGenParam::Command Class Reference

A Class for GenICam Command properties contains methods that lets the user submit a command for execution as well as poll the status.

```
#include <IpxCameraApi.h>
```

Inheritance diagram for IpxGenParam::Command:



Public Member Functions

- virtual ParamType GetType ()

  This method returns the node object Command type.
- virtual IpxCamErr Execute ()=0

  This method executes the command.
- virtual bool IsDone (IpxCamErr *err=nullptr)=0

  This method queries whether the command is executed.

6.5.1 Detailed Description

A Class for GenICam Command properties contains methods that lets the user submit a command for execution as well as poll the status.

A class containing methods for GenICam Command Properties. For example, the mapping below will illustrate the ICommand interface for AcquisitionStart. This feature starts the Acquisition of the device.

6.5.2 Member Function Documentation

6.5.2.1 GetType()

```
virtual ParamType IpxGenParam::Command::GetType ( )  [inline], [virtual]
```

This method returns the node object Command type.

Returns

returns the node object Command type

Implements IpxGenParam::Param.

6.5.2.2 Execute()

```
virtual IpxCamErr IpxGenParam::Command::Execute ( )  [pure virtual]
```

This method executes the command.

Returns

the error code

6.5.2.3 IsDone()

```
virtual bool IpxGenParam::Command::IsDone (
            IpxCamErr * err = nullptr )  [pure virtual]
```

This method queries whether the command is executed.

Parameters

`out`	*err*	returns error code: • `IpxCamErr::IPX_CAM_ERR_OK` - Successfully determined that state of execute command • `IpxCamErr::IPX_CAM_GENICAM_ACCESS_ERROR` - Unable to access genicam specified node • `IpxCamErr::IPX_CAM_GENICAM_TREE_ERROR` - Unable to access tree

Returns

If set to TRUE, the Execute command has finished. Otherwise, it returns FALSE.

The documentation for this class was generated from the following file:

- IpxCameraApi.h

6.6 IpxCam::Device Class Reference

The Device class represents the device module in the GenTL module hierarchy.

```
#include <IpxCameraApi.h>
```

Classes

- struct UploadEventData

  A structure representing data for uploading to a device.

Public Types

- enum UploadEventType : uint32_t { FlashSectorErase, FlashPageWrite, FlashPageRead }

  An enum of events used during uploading files to a device.
- enum Endianness : uint8_t { BigEndian, LittleEndian }

  An enum of endianness types of underlying protocol.
- typedef void IPXCAM_CALL UploadEventCallback(UploadEventType eventType, UploadEventData eventData)

Public Member Functions

- virtual ~Device ()

  A destructor of the Device class.
- virtual void Release ()=0

  This method releases the instance of the device object. This method releases the device object.
- virtual uint32_t GetNumStreams ()=0

  This method retrieves the number of the data streams, provided by the Device.
- virtual Stream * GetStreamByIndex (uint32_t idx=0)=0

  This retrieves the pointer to the Stream object by stream index.
- virtual Stream * GetStreamById (const char *id)=0

  This method retrieves the pointer to the Stream object by stream identifier.
- virtual DeviceInfo * GetInfo ()=0

  This method returns a pointer to the DeviceInfo object , associated with the Device.
- virtual IpxCamErr ReadMem (uint64_t addr, void *data, size_t len)=0

  This method reads a number of bytes from a given address of the Device.
- virtual IpxCamErr WriteMem (uint64_t addr, const void *data, size_t len, size_t *written)=0

  This method writes a number of bytes at a given address.
- virtual IpxCamErr UploadFile (ServiceFileType type, const char *fileName, uint64_t flags=0, UploadEvent↩ Callback *pCallback=nullptr)=0

  This method uploads the service type file.
- virtual IpxCamErr RegisterEvent (uint32_t eventType, IpxCam::EventCallback *eventCallback, void *pPrivate)=0

  This method registers the Device class method as a callback method to be called when a eventType occurs.
- virtual IpxCamErr UnRegisterEvent (uint32_t eventType, IpxCam::EventCallback *eventCallback, void *p↩ Private)=0

  This method un-registers the Interface class callback method for the eventType.
- virtual IpxGenParam::Array * GetTransportParameters (IpxCamErr *err=nullptr)=0

  This method returns the transport parameters of the device object.
- virtual IpxGenParam::Array * GetCameraParameters (IpxCamErr *err=nullptr)=0

  This method returns the camera parameters of the device object.
- virtual IpxCamErr SaveConfiguration (const char *fileName)=0

  This method saves the camera configuration file.
- virtual IpxCamErr LoadConfiguration (const char *fileName)=0

  This method loads the configuration from file.
- virtual Endianness GetEndianness () const =0

  This event occurs, when the camera was disconnected from the System.

Static Public Attributes

- static const uint32_t CameraConnected = 1003

  This event occurs, if GenICam event was triggered by the camera device.
- static const uint32_t CameraDisconnected = 1004

  This event occurs, when the camera was connected to the System.

6.6.1 Detailed Description

The Device class represents the device module in the GenTL module hierarchy.

This Device class provides methods to enable the communication and control of the Imperx device and enumerate/instantiate data stream objects. The methods can be used to enumerate and instantiate the Data Stream module objects. The device must must correspond to the interface transport layer technology. For example,the device could be an Imperx GEV Camera and the transport layer technology would be GEV. The Device class can be used to retrieve data information about the device by returning the pointer to the DeviceInfo class. It can be used to retrieve the pointer to the Stream object and save / load the camera configurations to / from file.

6.6.2 Member Typedef Documentation

6.6.2.1 UploadEventCallback

```
typedef void IPXCAM_CALL IpxCam::Device::UploadEventCallback(UploadEventType eventType, Upload↩
EventData eventData)
```

UploadEventCallback param[in] eventType type of the event param[in] eventData event Data

6.6.3 Member Enumeration Documentation

6.6.3.1 UploadEventType

```
enum IpxCam::Device::UploadEventType :  uint32_t
```

An enum of events used during uploading files to a device.

Enumerator

FlashSectorErase	Enum value FlashSectorErase.
FlashPageWrite	Enum value FlashPagewrite.
FlashPageRead	Enum value FlashPageRead.

6.6.3.2 Endianness

```
enum IpxCam::Device::Endianness :  uint8_t
```

An enum of endianness types of underlying protocol.

Enumerator

BigEndian	Enum value Big-endian.
LittleEndian	Enum value Little-endian

6.6.4 Constructor & Destructor Documentation

6.6.4.1 ~Device()

```
virtual IpxCam::Device::~Device ( )  [inline], [virtual]
```

A destructor of the Device class.

Destructor. Destroys the Device and all its descendants.

6.6.5 Member Function Documentation

6.6.5.1 GetNumStreams()

```
virtual uint32_t IpxCam::Device::GetNumStreams ( )  [pure virtual]
```

This method retrieves the number of the data streams, provided by the Device.

Returns

retrurns the number of the data streams

6.6.5.2 GetStreamByIndex()

```
virtual Stream* IpxCam::Device::GetStreamByIndex (
            uint32_t idx = 0 )  [pure virtual]
```

This retrieves the pointer to the Stream object by stream index.

Parameters

in	*idx*	stream index value

Returns

returns the pointer to the Stream object

6.6.5.3 GetStreamById()

```
virtual Stream* IpxCam::Device::GetStreamById (
            const char * id )  [pure virtual]
```

This method retrieves the pointer to the Stream object by stream identifier.

Parameters

in	*id*	pointer to the string reresenting the stream identifier

Returns

returns the pointer to the Stream object

6.6.5.4 GetInfo()

```
virtual DeviceInfo* IpxCam::Device::GetInfo ( )  [pure virtual]
```

This method returns a pointer to the DeviceInfo object , associated with the Device.

Returns

returns the pointer to the DeviceInfo object

6.6.5.5 ReadMem()

```
virtual IpxCamErr IpxCam::Device::ReadMem (
            uint64_t addr,
            void * data,
            size_t len )  [pure virtual]
```

This method reads a number of bytes from a given address of the Device.

Parameters

in	*addr*	Byte address to read from
in	*data*	pointer to a user allocated byte data buffer
in	*len*	size of the amount of bytes to read from the register map address

Returns

returns ErrorCode

6.6.5.6 WriteMem()

```
virtual IpxCamErr IpxCam::Device::WriteMem (
            uint64_t addr,
            const void * data,
            size_t len,
            size_t * written )  [pure virtual]
```

This method writes a number of bytes at a given address.

Parameters

in	*addr*	Byte address to read from
in	*data*	pointer to a user allocated byte data buffer
in	*len*	size of the amount of bytes to write to the register map address
out	*written*	size of bytes written

Returns

returns ErrorCode

6.6.5.7 UploadFile()

```
virtual IpxCamErr IpxCam::Device::UploadFile (
            ServiceFileType type,
            const char * fileName,
            uint64_t flags = 0,
            UploadEventCallback * pCallback = nullptr )  [pure virtual]
```

This method uploads the service type file.

Parameters

in	*type*	ServiceFile Type
in	*fileName*	Name of the ServiceFile name
in	*flags*	flag
in	*pCallback*	pointer to the event Callback

Returns

returns ErrorCode

6.6.5.8 RegisterEvent()

```
virtual IpxCamErr IpxCam::Device::RegisterEvent (
            uint32_t eventType,
            IpxCam::EventCallback * eventCallback,
            void * pPrivate )  [pure virtual]
```

This method registers the Device class method as a callback method to be called when a eventType occurs.

Parameters

in	*eventType*	Event Type, can receive one of the following values: • **GenICamEvent** [1002] - this event occurs, if GenICam event was triggered by the camera • **CameraConnected** [1003] - this event occurs, when camera was connected to the System • **CameraDisconnected** [1004] - this event occurs, when camera was disconnected from the System
in	*eventCallback*	event CallBack
in	*pPrivate*	pointer to user's data

Returns

returns Error code

6.6.5.9 UnRegisterEvent()

```
virtual IpxCamErr IpxCam::Device::UnRegisterEvent (
            uint32_t eventType,
```

```
            IpxCam::EventCallback * eventCallback,
            void * pPrivate )  [pure virtual]
```

This method un-registers the Interface class callback method for the eventType.

Parameters

in	*eventType*	Event Type, can receive one of the following values: • **GenICamEvent** [1002] - this event occurs, if GenICam event was triggered by the camera • **CameraConnected** [1003] - this event occurs, when camera was connected to the System • **CameraDisconnected** [1004] - this event occurs, when camera was disconnected from the System
in	*eventCallback*	event CallBack
in	*pPrivate*	pointer to user's data

Returns

returns Error code

6.6.5.10 GetTransportParameters()

```
virtual IpxGenParam::Array* IpxCam::Device::GetTransportParameters (
            IpxCamErr * err = nullptr )  [pure virtual]
```

This method returns the transport parameters of the device object.

Parameters

out	*err*	returns error code

Returns

returns the Transport parameter array

6.6.5.11 GetCameraParameters()

```
virtual IpxGenParam::Array* IpxCam::Device::GetCameraParameters (
            IpxCamErr * err = nullptr )  [pure virtual]
```

This method returns the camera parameters of the device object.

Parameters

out	*err*	returns error code

Returns

returns the Camera Parameters array

6.6.5.12 SaveConfiguration()

```
virtual IpxCamErr IpxCam::Device::SaveConfiguration (
            const char * fileName )  [pure virtual]
```

This method saves the camera configuration file.

Parameters

in	*fileName*	Configuration file name

Returns

returns Error code

6.6.5.13 LoadConfiguration()

```
virtual IpxCamErr IpxCam::Device::LoadConfiguration (
            const char * fileName )  [pure virtual]
```

This method loads the configuration from file.

Parameters

in	*fileName*	Configuration file name

Returns

returns Error code

6.6.5.14 GetEndianness()

```
virtual Endianness IpxCam::Device::GetEndianness ( ) const  [pure virtual]
```

This event occurs, when the camera was disconnected from the System.

This method returns endianness of underlying protocol

Returns

returns endianness

The documentation for this class was generated from the following file:

- IpxCameraApi.h

6.7 IpxCam::DeviceInfo Class Reference

DeviceInfo class provides the information about the device.

```
#include <IpxCameraApi.h>
```

Public Member Functions

- virtual ~DeviceInfo ()

  A destructor of the DeviceInfo class.
- virtual Interface * GetInterface ()=0

  This method returns the interface of the device object.
- virtual const char * GetID ()=0

  This method returns the unique device identifier string for the Imperx Camera device object.
- virtual const char * GetVendor ()=0

  This method returns the device vendor name of the device object.
- virtual const char * GetModel ()=0

  This method returns the Camera device model name of the device object.
- virtual const char * GetDisplayName ()=0

  This method returns the display name of the Camera device object.
- virtual const char * GetUserDefinedName ()=0

  This method returns the user defined name of the Camera device.
- virtual const char * GetSerialNumber ()=0

  This method returns the serial number of the Camera device .
- virtual const char * GetVersion ()=0

  This method returns the device version of the device object.
- virtual int32_t GetAccessStatus ()=0

  This method returns the information about the current device acecss status.
- virtual const char * GetUSB3HostInfo ()=0

  This method returns the information about USB3 host controller where the camera is connected to.
- virtual IpxCamErr ForceIP (const char *addr, const char *netmask, const char *gateway)=0

  This method sets IP address to GEV camera (using ForceIP command)
- virtual IpxCamErr ForceIP (uint32_t addr, uint32_t netmask, uint32_t gateway)=0

  This method sets IP address to GEV camera (using ForceIP command)

6.7.1 Detailed Description

DeviceInfo class provides the information about the device.

The DeviceInfo class can be used to retrieve the information about the device, and to create the Device object by IpxCam_CreateDevice() call

6.7.2 Constructor & Destructor Documentation

6.7.2.1 ~DeviceInfo()

```
virtual IpxCam::DeviceInfo::~DeviceInfo ( )  [inline], [virtual]
```

A destructor of the DeviceInfo class.

Destructor. Destroys the DeviceInfo and all its descendants.

6.7.3 Member Function Documentation

6.7.3.1 GetInterface()

```
virtual Interface* IpxCam::DeviceInfo::GetInterface ( )  [pure virtual]
```

This method returns the interface of the device object.

Returns the Interface pointer for the device, associated with the DeviceInfo object

Returns

returns the Interface

6.7.3.2 GetID()

```
virtual const char* IpxCam::DeviceInfo::GetID ( )  [pure virtual]
```

This method returns the unique device identifier string for the Imperx Camera device object.

Returns

returns the unique device identifier string for the Imperx Camera device

6.7.3.3 GetVendor()

```
virtual const char* IpxCam::DeviceInfo::GetVendor ( )  [pure virtual]
```

This method returns the device vendor name of the device object.

Returns

returns the Imperx Camera device vendor name

6.7.3.4 GetModel()

```
virtual const char* IpxCam::DeviceInfo::GetModel ( )  [pure virtual]
```

This method returns the Camera device model name of the device object.

Returns

returns the Camera device model name

6.7.3.5 GetDisplayName()

```
virtual const char* IpxCam::DeviceInfo::GetDisplayName ( )  [pure virtual]
```

This method returns the display name of the Camera device object.

Returns

returns the user readable name of the Camera device

6.7.3.6 GetUserDefinedName()

```
virtual const char* IpxCam::DeviceInfo::GetUserDefinedName ( )  [pure virtual]
```

This method returns the user defined name of the Camera device.

Returns

returns the user defined name of the Camera device

6.7.3.7 GetSerialNumber()

```
virtual const char* IpxCam::DeviceInfo::GetSerialNumber ( )  [pure virtual]
```

This method returns the serial number of the Camera device .

Returns

returns the serial number of the Camera device

6.7.3.8 GetVersion()

```
virtual const char* IpxCam::DeviceInfo::GetVersion ( )  [pure virtual]
```

This method returns the device version of the device object.

Returns

returns the Device version

6.7.3.9 GetAccessStatus()

```
virtual int32_t IpxCam::DeviceInfo::GetAccessStatus ( )  [pure virtual]
```

This method returns the information about the current device acecss status.

Returns the information about the current device acecss status

Returns

Status Access Code, can receive one of the following values:

- **AccessStatusUnknown** [0] - The current availability of the device is unknown.
- **AccessStatusReadWrite** [1] - The device is available for Read/Write access
- **AccessStatusReadOnly** [2] - The device is available for Read only access
- **AccessStatusNoAccess** [3] - The device is not available either because it is already open or because it is not reachable.

6.7.3.10 GetUSB3HostInfo()

```
virtual const char* IpxCam::DeviceInfo::GetUSB3HostInfo ( )  [pure virtual]
```

This method returns the information about USB3 host controller where the camera is connected to.

Returns the information about USB3 host controller

Returns

returns the pointer to string structure or nullptr for non-USB camera

6.7.3.11 ForceIP() [1/2]

```
virtual IpxCamErr IpxCam::DeviceInfo::ForceIP (
            const char * addr,
            const char * netmask,
            const char * gateway )  [pure virtual]
```

This method sets IP address to GEV camera (using ForceIP command)

Set IP address to GEV camera.

Parameters

in	*addr*	IP Address to set
in	*netmask*	IP Address subnet mask
in	*gateway*	Gateway address

Returns

returns Error code

6.7.3.12 ForceIP() [2/2]

```
virtual IpxCamErr IpxCam::DeviceInfo::ForceIP (
            uint32_t addr,
            uint32_t netmask,
            uint32_t gateway )  [pure virtual]
```

This method sets IP address to GEV camera (using ForceIP command)

Set IP address to GEV camera.

Parameters

in	*addr*	IP Address to set (host byte order)
in	*netmask*	IP Address subnet mask (host byte order)
in	*gateway*	Gateway address (host byte order)

Returns

returns Error code

The documentation for this class was generated from the following file:

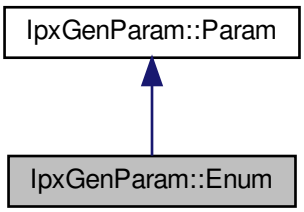
- IpxCameraApi.h

6.8 IpxGenParam::Enum Class Reference

Interface Class for Enumeration properties.

`#include <IpxCameraApi.h>`

Inheritance diagram for IpxGenParam::Enum:



Public Member Functions

- virtual ParamType GetType ()

  This method returns the node object Enum type.
- virtual size_t GetEnumEntriesCount (IpxCamErr *err=nullptr)=0

  This method gets the number of entry nodes.
- virtual EnumEntry * GetEnumEntryByIndex (size_t aIndex)=0

  This method gets the Enum Entry node by the Index number.
- virtual EnumEntry * GetEnumEntryByName (const char *name)=0

This method gets the Enum Entry node by Name.

- virtual EnumEntry * GetEnumEntryByValue (int64_t val)=0

  This method gets the Enum Entry node by Value.

- virtual int64_t GetValue (IpxCamErr *err=nullptr)=0

  This method gets the Enum Entry node value.

- virtual const char * GetValueStr (IpxCamErr *err=nullptr)=0

  This method gets the Enum Entry node String.

- virtual IpxCamErr SetValue (int64_t val)=0

  This method sets the Enum Entry node value.

- virtual IpxCamErr SetValueStr (const char *val)=0

  This method sets the Enum Entry node String.

6.8.1 Detailed Description

Interface Class for Enumeration properties.

A Enum class. This class is used to map the name of the Enumeration interface type for the drop down box.

For example, the mapping below illustrates the enumeration "WhiteBalanceMode".

6.8.2 Member Function Documentation

6.8.2.1 GetType()

```
virtual ParamType IpxGenParam::Enum::GetType ( )  [inline], [virtual]
```

This method returns the node object Enum type.

Returns

If the method succeeds, it will returns the Enum parameter type.

Implements IpxGenParam::Param.

6.8.2.2 GetEnumEntriesCount()

```
virtual size_t IpxGenParam::Enum::GetEnumEntriesCount (
            IpxCamErr * err = nullptr )  [pure virtual]
```

This method gets the number of entry nodes.

Parameters

out	*err*	returns error code: • `IpxCamErr::IPX_CAM_ERR_OK` - Successfully gets the number of EnumEntries • `IpxCamErr::IPX_CAM_GENICAM_ACCESS_ERROR` - Unable to access genicam specified node • `IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR` - Unable to access genicam specified node type

Returns

Returns the number of enum entry nodes.

6.8.2.3 GetEnumEntryByIndex()

```
virtual EnumEntry* IpxGenParam::Enum::GetEnumEntryByIndex (
            size_t aIndex )  [pure virtual]
```

This method gets the Enum Entry node by the Index number.

Parameters

in	*aIndex*	Index number

Returns

If the method succeeds, it returns the Enum Entry node.

6.8.2.4 GetEnumEntryByName()

```
virtual EnumEntry* IpxGenParam::Enum::GetEnumEntryByName (
            const char * name )  [pure virtual]
```

This method gets the Enum Entry node by Name.

Parameters

in	*name*	Entry Name

Returns

If the method succeeds, it returns the Enum Entry node.

6.8.2.5 GetEnumEntryByValue()

```
virtual EnumEntry* IpxGenParam::Enum::GetEnumEntryByValue (
            int64_t val )  [pure virtual]
```

This method gets the Enum Entry node by Value.

Parameters

in	*val*	Entry Value

Returns

If the method succeeds, it returns the Enum Entry node.

6.8.2.6 GetValue()

```
virtual int64_t IpxGenParam::Enum::GetValue (
            IpxCamErr * err = nullptr )  [pure virtual]
```

This method gets the Enum Entry node value.

Parameters

out	*err*	returns error code: • `IpxCamErr::IPX_CAM_ERR_OK` - Successfully gets the Enum Entry node value • `IpxCamErr::IPX_CAM_GENICAM_ACCESS_ERROR` - Unable to access genicam specified node • `IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR` - Unable to access genicam specified node type

Returns

If the method succeeds, it returns the Enum Entry node value.

6.8.2.7 GetValueStr()

```
virtual const char* IpxGenParam::Enum::GetValueStr (
            IpxCamErr * err = nullptr )  [pure virtual]
```

This method gets the Enum Entry node String.

Parameters

out	*err*	returns error code: • IpxCamErr::IPX_CAM_ERR_OK - Successfully get the Enum Entry node string • IpxCamErr::IPX_CAM_GENICAM_ACCESS_ERROR - Unable to access genicam specified node • IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR - Unable to access genicam specified node type

Returns

If the method succeeds, it returns the Enum Entry node string.

6.8.2.8 SetValue()

```
virtual IpxCamErr IpxGenParam::Enum::SetValue (
            int64_t val )  [pure virtual]
```

This method sets the Enum Entry node value.

Parameters

in	*val*	Enum Entry node value

Returns

returns the error code:

- IpxCamErr::IPX_CAM_ERR_OK - Successfully sets the Enum value
- IpxCamErr::IPX_CAM_GENICAM_ACCESS_ERROR - Unable to access genicam specified node
- IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR - Unable to access genicam specified node type

6.8.2.9 SetValueStr()

```
virtual IpxCamErr IpxGenParam::Enum::SetValueStr (
            const char * val )  [pure virtual]
```

This method sets the Enum Entry node String.

Parameters

in	*val*	Enum Entry node String

Returns

returns the error code

The documentation for this class was generated from the following file:

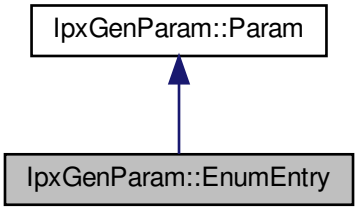
- IpxCameraApi.h

6.9 IpxGenParam::EnumEntry Class Reference

A Class for GenICam Enum Entries has methods to access the Enumeration node Enum Entry of the GenICam.

`#include <IpxCameraApi.h>`

Inheritance diagram for IpxGenParam::EnumEntry:



Public Member Functions

- virtual ParamType GetType ()

  This method returns the node object EnumEntry type.
- virtual int64_t GetValue (IpxCamErr *err=nullptr)=0

  This method gets the EnumEntry numerical value.
- virtual const char * GetValueStr (IpxCamErr *err=nullptr)=0

  This method gets the EnumEntry String value.

6.9.1 Detailed Description

A Class for GenICam Enum Entries has methods to access the Enumeration node Enum Entry of the GenICam.

A GenICam EnumEntry class. For example, the mapping below illustrates entries of the IEnumeration interface for the AOI2_Select feature. This feature can select the mode of operation for Slave AOI #2. The enumeration entries coudl be "Off", "Include", and "Exclude".

6.9.2 Member Function Documentation

6.9.2.1 GetType()

```
virtual ParamType IpxGenParam::EnumEntry::GetType ( )  [inline], [virtual]
```

This method returns the node object EnumEntry type.

Returns

If the method succeeds, it returns the ParamType object type of the EnumEntry.

Implements IpxGenParam::Param.

6.9.2.2 GetValue()

```
virtual int64_t IpxGenParam::EnumEntry::GetValue (
            IpxCamErr * err = nullptr )  [pure virtual]
```

This method gets the EnumEntry numerical value.

Parameters

out	*err*	returns error code: • IpxCamErr::IPX_CAM_ERR_OK - Successfully indicates EnumEntry value was retrieved • IpxCamErr::IPX_CAM_GENICAM_ACCESS_ERROR - Unable to access genicam specified node • IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR - Unable to access genicam specified node type

Returns

If the method succeeds, it returns the value read of the EnumEntry.

6.9.2.3 GetValueStr()

```
virtual const char* IpxGenParam::EnumEntry::GetValueStr (
            IpxCamErr * err = nullptr )  [pure virtual]
```

This method gets the EnumEntry String value.

Parameters

out	*err*	returns error code: • `IpxCamErr::IPX_CAM_ERR_OK` - Successfully indicates EnumEntry string value was retrieved • `IpxCamErr::IPX_CAM_GENICAM_ACCESS_ERROR` - Unable to access genicam specified node • `IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR` - Unable to access genicam specified node type

Returns

If the method succeeds, it returns the String value read of the EnumEntry.

The documentation for this class was generated from the following file:

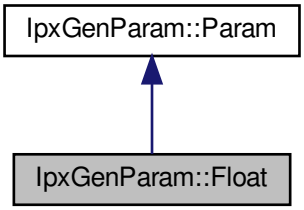
- IpxCameraApi.h

6.10 IpxGenParam::Float Class Reference

Interface Class for GenICam Float properties.

```
#include <IpxCameraApi.h>
```

Inheritance diagram for IpxGenParam::Float:



Public Member Functions

- virtual ParamType GetType ()

  This method returns the node object Float type.
- virtual IpxCamErr SetValue (double val)=0

  This method sets the node value.
- virtual double GetValue (IpxCamErr *err=nullptr)=0

  This method gets the Float node value.
- virtual double GetMin (IpxCamErr *err=nullptr)=0

  This method gets the minimum value.
- virtual double GetMax (IpxCamErr *err=nullptr)=0

  This method gets the maximum value.
- virtual const char * GetUnit (IpxCamErr *err=nullptr)=0

  This method gets the Unit.

6.10.1 Detailed Description

Interface Class for GenICam Float properties.

A GenICam Float class. For example, mapping a slider with value, min, and max plus a physical unit

6.10.2 Member Function Documentation

6.10.2.1 GetType()

```
virtual ParamType IpxGenParam::Float::GetType ( )  [inline], [virtual]
```

This method returns the node object Float type.

Returns

returns the parameter type

Implements IpxGenParam::Param.

6.10.2.2 SetValue()

```
virtual IpxCamErr IpxGenParam::Float::SetValue (
            double val )  [pure virtual]
```

This method sets the node value.

Parameters

in	*val*	The value to set

Returns

returns the error code:

- `IpxCamErr::IPX_CAM_ERR_OK` - Successfully sets the Float value
- `IpxCamErr::IPX_CAM_GENICAM_ACCESS_ERROR` - Unable to access genicam specified node
- `IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR` - Unable to access genicam specified node type
- `IpxCamErr::IPX_CAM_GENICAM_OUT_OF_RANGE` - the value entered is out of range

6.10.2.3 GetValue()

```
virtual double IpxGenParam::Float::GetValue (
            IpxCamErr * err = nullptr )  [pure virtual]
```

This method gets the Float node value.

Parameters

out	*err*	returns error code: • IpxCamErr::IPX_CAM_ERR_OK - Successfully get the Float value • IpxCamErr::IPX_CAM_GENICAM_ACCESS_ERROR - Unable to access genicam specified node • IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR - Unable to access genicam specified node type

Returns

Gets the Float node value

6.10.2.4 GetMin()

```
virtual double IpxGenParam::Float::GetMin (
            IpxCamErr * err = nullptr )  [pure virtual]
```

This method gets the minimum value.

Parameters

out	*err*	returns error code: • IpxCamErr::IPX_CAM_ERR_OK - Successfully gets the Minimum float value • IpxCamErr::IPX_CAM_GENICAM_ACCESS_ERROR - Unable to access genicam specified node • IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR - Unable to access genicam specified node type

Returns

Returns the minimum

6.10.2.5 GetMax()

```
virtual double IpxGenParam::Float::GetMax (
            IpxCamErr * err = nullptr )  [pure virtual]
```

This method gets the maximum value.

Parameters

out	*err*	returns error code: • `IpxCamErr::IPX_CAM_ERR_OK` - Successfully gets the Maximum float value • `IpxCamErr::IPX_CAM_GENICAM_ACCESS_ERROR` - Unable to access genicam specified node • `IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR` - Unable to access genicam specified node type

Returns

Returns the maximum

6.10.2.6 GetUnit()

```
virtual const char* IpxGenParam::Float::GetUnit (
            IpxCamErr * err = nullptr )  [pure virtual]
```

This method gets the Unit.

Parameters

out	*err*	returns error code: • `IpxCamErr::IPX_CAM_ERR_OK` - Successfully gets the units • `IpxCamErr::IPX_CAM_GENICAM_ACCESS_ERROR` - Unable to access genicam specified node • `IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR` - Unable to access genicam specified node type

Returns

Returns the unit

The documentation for this class was generated from the following file:

- IpxCameraApi.h

6.11 IpxGui::IIpxGenParamTreeView Class Reference

The IIpxGenParamTreeView class is composed of functions to set and clear parameters of the node tree of the camera. The node tree can be set with the current parameters stored in the IpxGenParam::Array and GenApi::INodeMap class.

```
#include <IpxCameraGuiApi.h>
```

Public Member Functions

- virtual ~IIpxGenParamTreeView ()

  A destructor of the IIpxGenParamTreeView class.
- virtual void setParams (IpxGenParam::Array *genParam)=0

  This method sets the parameters of the node tree by the information extracted from the IpxGenParam::Array class.
- virtual void setParams (IPX_GENAPI_NS::INodeMap *nodemap)=0

  This method sets the parameters of the node tree with parameters retrieved from the GenApi::INodeMap class.
- virtual void clearParams ()=0

  This method clears the parameters of the node tree that have been set by the instance of the IpxGui::IIpxGenParam↩ TreeView class.
- virtual Visibility visibility () const =0

  This method returns the current visibility mode.
- virtual void setVisibility (Visibility visibility)=0

  This method sets visibility mode.
- virtual const char * saveState () const =0

  This method saves the current state of the Tree View.
- virtual void loadState (const char *state)=0

  This method loads the state of the Tree View.
- virtual void setPollingTime (uint64_t pollingTime)=0

  This method sets polling time.
- virtual uint64_t getPollingTime ()=0

  This method retrives current polling time.
- virtual void enablePolling (bool enable)=0

  This method enables polling.
- virtual bool isPollingEnabled ()=0

  This method retrives current polling state.

6.11.1 Detailed Description

The IIpxGenParamTreeView class is composed of functions to set and clear parameters of the node tree of the camera. The node tree can be set with the current parameters stored in the IpxGenParam::Array and GenApi::INodeMap class.

A Class for IIpxGenParamTreeView. For example, we can declare the instance of IpxGui::IIpxGenParamTreeView class as m_parameterView as shown below:

```
IpxGui::IIpxGenParamTreeView* m_ParameterView;
```

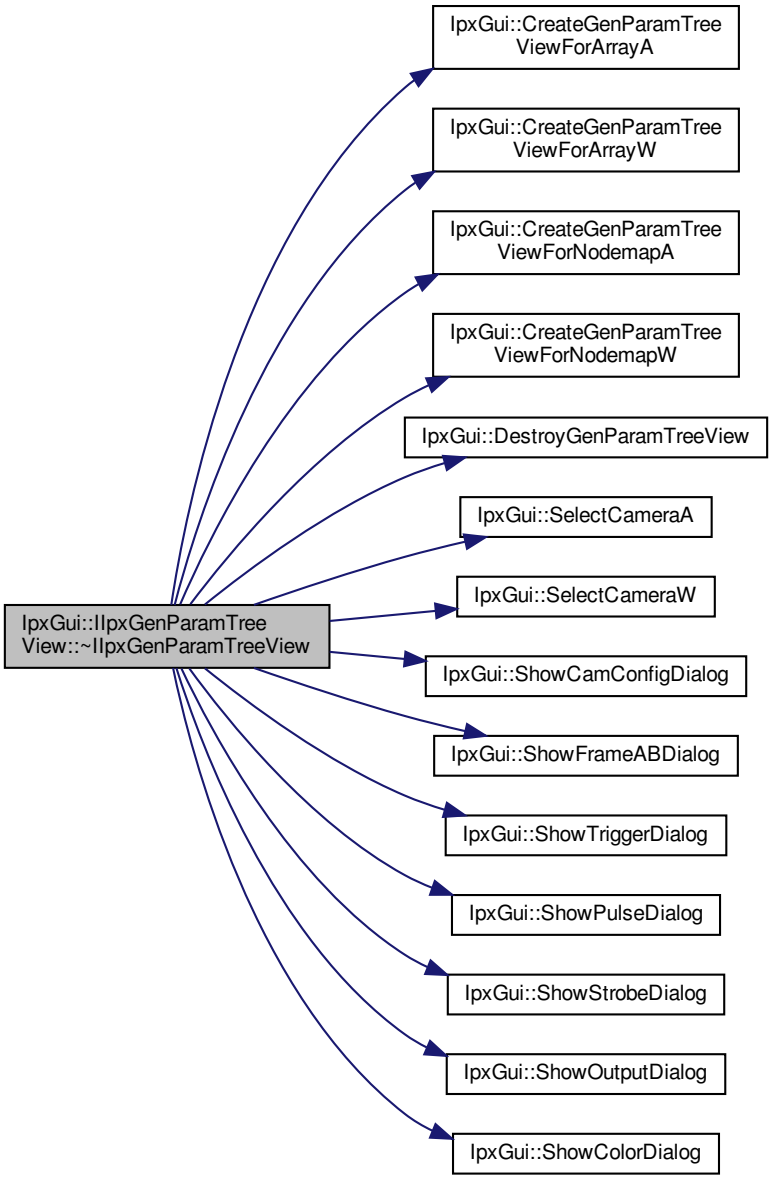
6.11.2 Constructor & Destructor Documentation

6.11.2.1 ~IIpxGenParamTreeView()

```
virtual IpxGui::IIpxGenParamTreeView::~IIpxGenParamTreeView ( )  [inline], [virtual]
```

A destructor of the IIpxGenParamTreeView class.

Destructor. Destroys the IIpxGenParamTreeView and all its descendants. Here is the call graph for this function:



6.11.3 Member Function Documentation

6.11.3.1 setParams() [1/2]

```
virtual void IpxGui::IIpxGenParamTreeView::setParams (
            IpxGenParam::Array * genParam )  [pure virtual]
```

This method sets the parameters of the node tree by the information extracted from the IpxGenParam::Array class.

Parameters

in	*genParam*	The pointer to the IpxGenParam::Array class.

Returns

Void. For example, set the Camera Parameters to the corresponding fields of the TreeView as shown below:

```
//Establish camera device
m_camera = IpxCam_CreateDevice(m_devInfo);

//If the camera exist, set the camera parameter to the corresponding fields of the GUI TreeView
if(m_camera){
  m_ParameterView->setParams(m_camera->GetCameraParameters());
}
```

6.11.3.2 setParams() [2/2]

```
virtual void IpxGui::IIpxGenParamTreeView::setParams (
            IPX_GENAPI_NS::INodeMap * nodemap )  [pure virtual]
```

This method sets the parameters of the node tree with parameters retrieved from the GenApi::INodeMap class.

The INodeMap consists of a list of nodes representing the GenICam compliant camera high-level features.

Parameters

in	*nodemap*	The pointer to the GenApi::INodeMap class.

Returns

Void. For example, setting the parameters of the node map.

```
//Instantiate the IpxGui::IIpxGenParamTreeView
IpxGui::IIpxGenParamTreeView* m_ParameterView;
...
auto params = GetCameraParameters(&retErr);
```

```
if(!params) {
   return retErr;
}
GenApi::INodeMap *nodemap = param->GetNodeMap(&retErr);
if(!nodemap){
    return retErr;
}
...
//Set the nodemap parameters of the GUI TreeView

m_ParameterView->setParams(nodemap);
...
```

6.11.3.3 clearParams()

```
virtual void IpxGui::IIpxGenParamTreeView::clearParams ( )  [pure virtual]
```

This method clears the parameters of the node tree that have been set by the instance of the IpxGui::IIpxGenParam↩ TreeView class.

Returns

Void. For example, clear all the parameters after we disconnect the camera as shown below:

```
//Instantiate the IpxGui::IIpxGenParamTreeView
IpxGui::IIpxGenParamTreeView* m_ParameterView;

//Connect the camera
...
//Set some camera parameters
...
//Perform some actions
...
//Clear parameters during disconnecting process of camera
m_ParameterView->clearParam();
```

6.11.3.4 visibility()

```
virtual Visibility IpxGui::IIpxGenParamTreeView::visibility ( ) const  [pure virtual]
```

This method returns the current visibility mode.

This method retrieves the current setting of the user level access feature.

Returns

Returns the current setting of the user level access feature.

6.11.3.5 setVisibility()

```
virtual void IpxGui::IIpxGenParamTreeView::setVisibility (
            Visibility visibility )  [pure virtual]
```

This method sets visibility mode.

It sets the current visibility mode.

Parameters

in	*visibility*	The visibility parameter used to set the visibility mode.

Returns

Void.

6.11.3.6 saveState()

```
virtual const char* IpxGui::IIpxGenParamTreeView::saveState ( ) const  [pure virtual]
```

This method saves the current state of the Tree View.

saves the current state of the Tree View.

Returns

If the method succeeds, the method returns pointer to the array of data to be saved. Otherwise, the return value is nullptr. The array consists of string values separated by token. Just save this data somethere if you want to restore state later.

6.11.3.7 loadState()

```
virtual void IpxGui::IIpxGenParamTreeView::loadState (
            const char * state )  [pure virtual]
```

This method loads the state of the Tree View.

loads the state of the Tree View. The individual node can be in a state of expanded or collapse state.

Parameters

in	*state*	to be loaded The array consists of string values separated by token. Load previously saved state of the Tree View.

6.11.3.8 setPollingTime()

```
virtual void IpxGui::IIpxGenParamTreeView::setPollingTime (
            uint64_t pollingTime )  [pure virtual]
```

This method sets polling time.

sets the polling time. Polling should be enabled by enablePolling() function

Parameters

in	*pollingTime*	time in msec to be set

6.11.3.9 getPollingTime()

```
virtual uint64_t IpxGui::IIpxGenParamTreeView::getPollingTime ( )  [pure virtual]
```

This method retrives current polling time.

retrives the polling time. Polling should be enabled by enablePolling() function

Returns

current polling time in msec

The documentation for this class was generated from the following file:

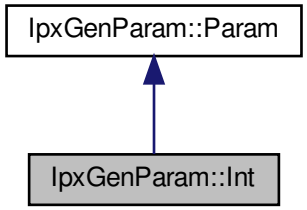
- IpxCameraGuiApi.h

6.12 IpxGenParam::Int Class Reference

Interface Class for GenICam Int properties.

```
#include <IpxCameraApi.h>
```

Inheritance diagram for IpxGenParam::Int:



Public Member Functions

- virtual ParamType GetType ()

  This method returns the node object Int type.
- virtual IpxCamErr SetValue (int64_t val)=0

  This method sets the Int node value.
- virtual int64_t GetValue (IpxCamErr *err=nullptr)=0

  This method gets the Int node value.
- virtual int64_t GetMin (IpxCamErr *err=nullptr)=0

  This method gets the minimum value.
- virtual int64_t GetMax (IpxCamErr *err=nullptr)=0

  This method gets the maximum value.
- virtual int64_t GetIncrement (IpxCamErr *err=nullptr)=0

  This method gets the Increment value.

6.12.1 Detailed Description

Interface Class for GenICam Int properties.

A GenICam Int class. For example, the mapping below illustrates the ability to set the "Width" value.

6.12.2 Member Function Documentation

6.12.2.1 GetType()

```
virtual ParamType IpxGenParam::Int::GetType ( )  [inline], [virtual]
```

This method returns the node object Int type.

Returns

returns the parameter type

Implements IpxGenParam::Param.

6.12.2.2 SetValue()

```
virtual IpxCamErr IpxGenParam::Int::SetValue (
            int64_t val )  [pure virtual]
```

This method sets the Int node value.

Parameters

in	*val*	Int node value

Returns

returns the error code:

- IpxCamErr::IPX_CAM_ERR_OK - Successfully sets the Int value
- IpxCamErr::IPX_CAM_GENICAM_ACCESS_ERROR - Unable to access genicam specified node
- IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR - Unable to access genicam specified node type
- IpxCamErr::IPX_CAM_GENICAM_OUT_OF_RANGE - the value entered is out of range

6.12.2.3 GetValue()

```
virtual int64_t IpxGenParam::Int::GetValue (
            IpxCamErr * err = nullptr )  [pure virtual]
```

This method gets the Int node value.

Parameters

out	*err*	returns error code: • IpxCamErr::IPX_CAM_ERR_OK - Successfully gets the Int value • IpxCamErr::IPX_CAM_GENICAM_ACCESS_ERROR - Unable to access genicam specified node • IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR - Unable to access genicam specified node type

Returns

returns the Int node value

6.12.2.4 GetMin()

```
virtual int64_t IpxGenParam::Int::GetMin (
            IpxCamErr * err = nullptr )  [pure virtual]
```

This method gets the minimum value.

Parameters

out	*err*	returns error code: • IpxCamErr::IPX_CAM_ERR_OK - Successfully gets the Minimum int value • IpxCamErr::IPX_CAM_GENICAM_ACCESS_ERROR - Unable to access genicam specified node • IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR - Unable to access genicam specified node type

Returns

Returns the minimum

6.12.2.5 GetMax()

```
virtual int64_t IpxGenParam::Int::GetMax (
            IpxCamErr * err = nullptr )  [pure virtual]
```

This method gets the maximum value.

Parameters

out	*err*	returns error code: • IpxCamErr::IPX_CAM_ERR_OK - Successfully gets the Maximum int value • IpxCamErr::IPX_CAM_GENICAM_ACCESS_ERROR - Unable to access genicam specified node • IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR - Unable to access genicam specified node type

Returns

Returns the maximum

6.12.2.6 GetIncrement()

```
virtual int64_t IpxGenParam::Int::GetIncrement (
            IpxCamErr * err = nullptr )  [pure virtual]
```

This method gets the Increment value.

Parameters

out	*err*	returns error code : • `IpxCamErr::IPX_CAM_ERR_OK` - Successfully gets the increment value • `IpxCamErr::IPX_CAM_GENICAM_ACCESS_ERROR` - Unable to access genicam specified node • `IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR` - Unable to access genicam specified node type

Returns

Returns the increment

The documentation for this class was generated from the following file:

- IpxCameraApi.h

6.13 IpxCam::Interface Class Reference

The Interface class represents a interface module in the GenTL module hierarchy.

`#include <IpxCameraApi.h>`

Public Member Functions

- virtual ~Interface ()

  A destructor of the Interface class.
- virtual DeviceInfoList * GetDeviceInfoList ()=0

  This method gets the device info list of DeviceInfo objects for the devices available on this Interface.
- virtual DeviceInfo * GetFirstDeviceInfo ()=0

  TThis method retrieves the DeviceInfo object for the first device available on this Interface.
- virtual DeviceInfo * GetDeviceInfoById (const char *deviceId)=0

  This method retrieves the device info for the specified device identifier.
- virtual IpxCamErr ReEnumerateDevices (bool *pChanged, uint64_t iTimeout)=0

  This method re-enumerates the devices.
- virtual const char * GetDescription ()=0

  This method gets the description of the interface object.
- virtual InterfaceType GetType ()=0

  This method gets the type of interface object.
- virtual const char * GetId ()=0

  This method gets the identifier of the interface object.
- virtual const char * GetVersion ()=0

This method gets the version of Interface driver.

- virtual IpxCamErr RegisterEvent (uint32_t eventType, IpxCam::EventCallback *eventCallback, void *pPrivate)=0

  This method registers the Interface class method as a callback method to be called when a eventType occurs.

- virtual IpxCamErr UnRegisterEvent (uint32_t eventType, IpxCam::EventCallback *eventCallback, void *pPrivate)=0

  This method unregisters the Interface class callback method for the eventType.

- virtual IpxGenParam::Array * GetParameters (IpxCamErr *err=nullptr)=0

  This method returns the parameter array used to control the Imperx Camera device.

- virtual Device * CreateDeviceFromConfig (const char *fileName, IpxCamErr *err=nullptr)=0

  This method creates the device based on the information specified in the configuration file.

6.13.1 Detailed Description

The Interface class represents a interface module in the GenTL module hierarchy.

It represents an individual physical interface. For example, a network interface card (NIC), a frame grabber board, U3V, and GEV in the GenTL system. This Interface class gets the enumeration and available devices on the physical interface in the system.

6.13.2 Constructor & Destructor Documentation

6.13.2.1 ~Interface()

```
virtual IpxCam::Interface::~Interface ( )  [inline], [virtual]
```

A destructor of the Interface class.

Destructor. Destroys the Interface and all its descendants.

6.13.3 Member Function Documentation

6.13.3.1 GetDeviceInfoList()

```
virtual DeviceInfoList* IpxCam::Interface::GetDeviceInfoList ( )  [pure virtual]
```

This method gets the device info list of DeviceInfo objects for the devices available on this Interface.

Returns

returns the pointer to DeviceInfoList object

For example,

```
// Get the Device Info List for the Interface
// List has to be released, let us use unique pointer
auto del = [](IpxCam::DeviceInfoList *l) { l->Release(); };
std::unique_ptr<IpxCam::DeviceInfoList, decltype(del)> list(iface->GetDeviceInfoList(), del);

if (list->GetCount() == 0)
{
   std::cout << "No Interface Available. " << endl;
   exit(1);
}

IpxCam::Device *device = nullptr;
for (auto devInfo = list->GetFirst(); devInfo; devInfo = list->GetNext())
{
   if (std::string("Test camera") == devInfo->GetModel())
   {
      device = IpxCam::IpxCam_CreateDevice(devInfo);
      break;
   }
}
```

6.13.3.2 GetFirstDeviceInfo()

```
virtual DeviceInfo* IpxCam::Interface::GetFirstDeviceInfo ( )  [pure virtual]
```

TThis method retrieves the DeviceInfo object for the first device available on this Interface.

Returns

returns the pointer to DeviceInfo object or nullptr if no device found

For example,

```
//Retrieve the first device available for the specified interface.
lDeviceInfo = iface->GetFirstDeviceInfo();

std::cout << "First Device Info ModelName" << lDeviceInfo->GetModel() << endl;
```

6.13.3.3 GetDeviceInfoById()

```
virtual DeviceInfo* IpxCam::Interface::GetDeviceInfoById (
            const char * deviceId )  [pure virtual]
```

This method retrieves the device info for the specified device identifier.

Parameters

in	*deviceId*	Device identifier

Returns

returns the pointer to DeviceInfo object or nullptr if no such device found

6.13.3.4 ReEnumerateDevices()

```
virtual IpxCamErr IpxCam::Interface::ReEnumerateDevices (
            bool * pChanged,
            uint64_t iTimeout )  [pure virtual]
```

This method re-enumerates the devices.

The ReEnumerateDevices method allows the user to re-enumerate the devices connected to the Interface and update the DeviceInfoList object returned by subsequent GetDeviceInfoList() method calls.

Parameters

in	*pChanged*	Change in Device
in	*iTimeout*	Timeout allowed to search for available devices

Returns

returns error code

6.13.3.5 GetDescription()

```
virtual const char* IpxCam::Interface::GetDescription ( )  [pure virtual]
```

This method gets the description of the interface object.

Returns the user readable description of the interface

Returns

returns the Description of the interface

6.13.3.6 GetType()

```
virtual InterfaceType IpxCam::Interface::GetType ( )  [pure virtual]
```

This method gets the type of interface object.

Returns the Interface Type (Transport Layer Technology) of this interface

Returns

returns Interface Type

The interface type return can be the following:

```
enum InterfaceType
{
    USB3Vision   = 1,
    GigEVision  = 2,
    CameraLink  = 3,
    CoaxPress   = 4,
    HdSdi       = 5,
    AllInterfaces      = 0xff,
};
```

6.13.3.7 GetId()

```
virtual const char* IpxCam::Interface::GetId ( )  [pure virtual]
```

This method gets the identifier of the interface object.

Returns the interface identifier that could be used to instantinate the interface

Returns

returns interface identifier

6.13.3.8 GetVersion()

```
virtual const char* IpxCam::Interface::GetVersion ( )  [pure virtual]
```

This method gets the version of Interface driver.

Returns the pointer to the string with the version of the interface driver

Returns

returns the version of the interface driver

6.13.3.9 RegisterEvent()

```
virtual IpxCamErr IpxCam::Interface::RegisterEvent (
            uint32_t eventType,
            IpxCam::EventCallback * eventCallback,
            void * pPrivate )  [pure virtual]
```

This method registers the Interface class method as a callback method to be called when a eventType occurs.

Parameters

in	*eventType*	Event Type TODO - define event ids here!!!!
in	*eventCallback*	pointer to event CallBack method
in	*pPrivate*	pointer to user's data

Returns

returns Error code

6.13.3.10 UnRegisterEvent()

```
virtual IpxCamErr IpxCam::Interface::UnRegisterEvent (
            uint32_t eventType,
            IpxCam::EventCallback * eventCallback,
            void * pPrivate )  [pure virtual]
```

This method unregisters the Interface class callback method for the eventType.

Parameters

in	*eventType*	Event Type
in	*eventCallback*	pointer to event CallBack method
in	*pPrivate*	pointer to user's data

Returns

returns Error code

6.13.3.11 GetParameters()

```
virtual IpxGenParam::Array* IpxCam::Interface::GetParameters (
            IpxCamErr * err = nullptr )  [pure virtual]
```

This method returns the parameter array used to control the Imperx Camera device.

Parameters

out	*err*	returns error code

Returns

returns the parameter array used to control the Imperx Camera device

6.13.3.12 CreateDeviceFromConfig()

```
virtual Device* IpxCam::Interface::CreateDeviceFromConfig (
            const char * fileName,
            IpxCamErr * err = nullptr )  [pure virtual]
```

This method creates the device based on the information specified in the configuration file.

TODO make a description

Parameters

in	*fileName*	Configuration file to open
out	*err*	returns error code

Returns

returns Device or nullptr if device cannot be instantiated

The documentation for this class was generated from the following file:

- IpxCameraApi.h

6.14 IpxCam::List< _T > Class Template Reference

The List class is used to list the specified template type objects.

```
#include <IpxCameraApi.h>
```

Public Types

- typedef _T elem_type

Public Member Functions

- virtual ~List ()

  A destructor of the List class.
- virtual void Release ()=0

  This method releases the instance of the list of the specified object.
- virtual size_t GetCount ()=0

  This functions gets the number of items in the specified list object.
- virtual elem_type * GetFirst ()=0

  This method retrieves the first element in the specified list object.
- virtual elem_type * GetNext ()=0

  This method retrieves the next element in the specified list object.

6.14.1 Detailed Description

template<class _T>
class IpxCam::List< _T >

The List class is used to list the specified template type objects.

The supported template type objects are **Interface**,**Device**,**DeviceInfo**,**Stream**, and **Buffer**.

They can be declared as follows:

IpxCam::List<Interface> *interfaceList	**This class represents the list of Interface objects.**
IpxCam::List<Device> *deviceList	**This class represents the list of Device objects.**
IpxCam::List<DeviceInfo> *deviceInfoList	**This class represents the list of DeviceInfo objects.**
IpxCam::List<Stream> *streamList	**This class represents the list of Data Stream objects**
IpxCam::List<Buffer> *bufferList	**This class represents the list of Buffer objects**

Alternatively, you can also use the declared typedef(aliases for specific objects) provided in the IpxCam namespace as shown below:

```
typedef List<Interface>    InterfaceList;
typedef List<DeviceInfo>   DeviceInfoList;
typedef List<Device>       DeviceList;
```

They can be declared as follows:

InterfaceList *interfaceList	**This class represents the list of Interface objects.**
DeviceInfoList *deviceInfoList	**This class represents the list of DeviceInfo objects.**

This class can be used to search through the list of objects discovered.

Example using DeviceInfoList

In this example, you will see how to use the DeviceInfoList. An example is shown below that demonstrates on how to use the list class methods. The **deviceInfoList-**>**GetCount()** method is used retrieve the number of devices connected. We confirm that at least one device is available. Next, the for loop will loop from the first device information listed using the **deviceInfoList-**>**GetFirst()** funtion to the end of the list. During each iteration the **deviceInfoList-**>**GetNext()** will increment to the next deviceInfo available. In the example, you will notice that we search for a specified device model name. Once, the specified device is found, we will release the **deviceInfoList-**>**Release()** and the create the specified device using the **IpxCam::IpxCam_CreateDevice()** method.

```
// Get the Device Info List for the Interface
// List has to be released, let us use unique pointer
auto del = [](IpxCam::DeviceInfoList *l) { l->Release(); };
std::unique_ptr<IpxCam::DeviceInfoList, decltype(del)> list(iface->GetDeviceInfoList(), del);

if (list->GetCount() == 0)
{
   std::cout << "No Interface Available. " << endl;
   exit(1);
}

IpxCam::Device *device = nullptr;
for (auto devInfo = list->GetFirst(); devInfo; devInfo = list->GetNext())
{
   if (std::string("Test camera") == devInfo->GetModel())
   {
      device = IpxCam::IpxCam_CreateDevice(devInfo);
      break;
   }
}
```

Example using InterfaceList

In this example, you will see how to use the InteraceList. You will retrieve the interfaces available for this system. Next, the for loop will loop from the first interface available using the **list-**>**GetFirst()** method to the end of the list. During each ineration the **list-**>**GetNext()** will increment to the next interface available.

```
// Used later to get chosen interface
std::vector<IpxCam::Interface*> ifaceVector;

// Get the Interface List for the System
auto list = system->GetInterfaceList();

// Get the individual Interface elements
for (auto iface = list->GetFirst(); iface; iface = list->GetNext())
{
   ifaceVector.push_back(iface);

   // Display the Interface Available
   std::cout << "[" << (ifaceVector.size() - 1) << "]" << "\t" << iface->GetDescription() << "Id " << iface
      ->GetId() << endl;
}

// List has to be released
list->Release();
```

6.14.2 Member Typedef Documentation

6.14.2.1 elem_type

```
template<class _T >
typedef _T IpxCam::List< _T >::elem_type
```

Element Type

6.14.3 Constructor & Destructor Documentation

6.14.3.1 ~List()

```
template<class _T >
virtual IpxCam::List< _T >::~List ( )  [inline], [virtual]
```

A destructor of the List class.

Destructor. Destroys the List and all its descendants.

6.14.4 Member Function Documentation

6.14.4.1 Release()

```
template<class _T >
virtual void IpxCam::List< _T >::Release ( )  [pure virtual]
```

This method releases the instance of the list of the specified object.

Returns

Void.

6.14.4.2 GetCount()

```
template<class _T >
virtual size_t IpxCam::List< _T >::GetCount ( )  [pure virtual]
```

This functions gets the number of items in the specified list object.

Returns

Returns the number of items in the specified list object.

6.14.4.3 GetFirst()

```
template<class _T >
virtual elem_type* IpxCam::List< _T >::GetFirst ( )  [pure virtual]
```

This method retrieves the first element in the specified list object.

Returns

Returns the first element in the specified list object.

6.14.4.4 GetNext()

```
template<class _T >
virtual elem_type* IpxCam::List< _T >::GetNext ( )  [pure virtual]
```

This method retrieves the next element in the specified list object.

Returns

Returns the next element in the specified list object.

The documentation for this class was generated from the following file:

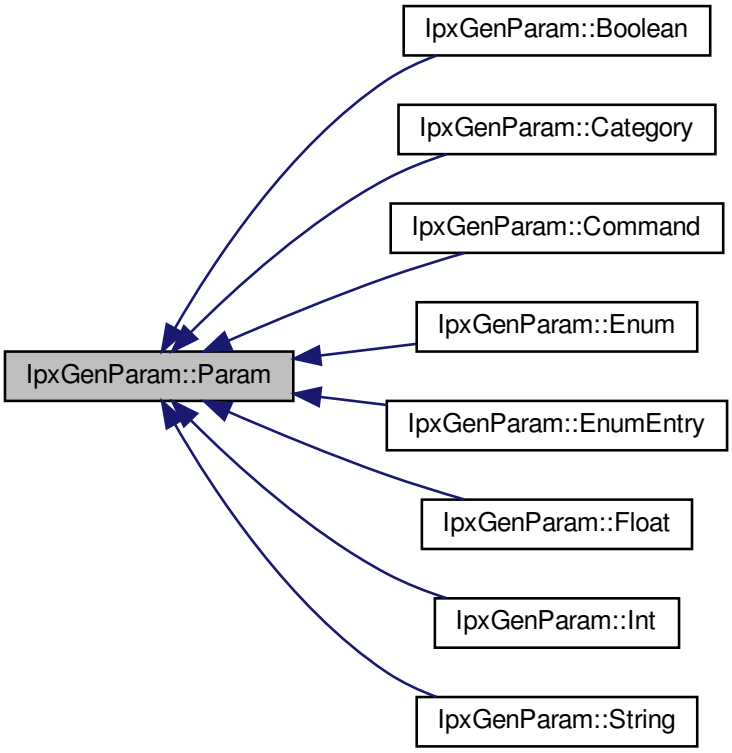
- IpxCameraApi.h

6.15 IpxGenParam::Param Class Reference

A Class for accessing the GenICam feature node parameters of the Camera Descriptor File.

```
#include <IpxCameraApi.h>
```

Inheritance diagram for IpxGenParam::Param:



Public Member Functions

- virtual ~Param ()

  A destructor of the Param class.
- virtual ParamType GetType ()=0

  This method returns the Parameter Node Type.
- virtual const char * GetName ()=0

  This method returns the parameter node name.
- virtual const char * GetToolTip ()=0

  This method returns a short description of the parameter node.
- virtual const char * GetDescription ()=0

  This method returns a long description of the parameter node.
- virtual const char * GetDisplayName ()=0

  This method returns the name of the display.
- virtual Visibility GetVisibility ()=0

  This method returns the visibility of the node.
- virtual bool IsValueCached ()=0

This method checks if the parameter node is cached.

- virtual bool IsAvailable ()=0

  This method checks if parameter node is available.

- virtual bool IsWritable ()=0

  This method checks if parameter node is writeable.

- virtual bool IsReadable ()=0

  This method checks if the parameter node is readable.

- virtual bool IsStreamable ()=0

  This method checks if the parameter node is streamable.

- virtual bool IsVisible (Visibility vis)=0

  This method checks if the node is visible.

- virtual IpxCamErr RegisterEventSink (ParamEventSink *aEventSink)=0

  This method registers the event.

- virtual IpxCamErr UnregisterEventSink (ParamEventSink *aEventSink)=0

  This method un-registers the event.

- virtual IPX_GENAPI_NS::INode * GetNode ()=0

  This method returns the callback of the node registered.

- virtual Category * ToCategory ()=0

  This method returns typed representation of param.

- virtual Boolean * ToBoolean ()=0

  This method returns typed representation of param.

- virtual Command * ToCommand ()=0

  This method returns typed representation of param.

- virtual EnumEntry * ToEnumEntry ()=0

  This method returns typed representation of param.

- virtual Enum * ToEnum ()=0

  This method returns typed representation of param.

- virtual Float * ToFloat ()=0

  This method returns typed representation of param.

- virtual Int * ToInt ()=0

  This method returns typed representation of param.

- virtual String * ToString ()=0

  This method returns typed representation of param.

6.15.1 Detailed Description

A Class for accessing the GenICam feature node parameters of the Camera Descriptor File.

A Class for Param Properties.

6.15.2 Constructor & Destructor Documentation

6.15.2.1 ~Param()

```
virtual IpxGenParam::Param::~Param ( )  [inline], [virtual]
```

A destructor of the Param class.

Destructor. Destroys the Param and all its descendants.

6.15.3 Member Function Documentation

6.15.3.1 GetType()

```
virtual ParamType IpxGenParam::Param::GetType ( )  [pure virtual]
```

This method returns the Parameter Node Type.

Returns

If the method succeeds, it will return the parameter type. Otherwise, it will return a nullptr.

Implemented in IpxGenParam::String, IpxGenParam::Int, IpxGenParam::Float, IpxGenParam::Enum, IpxGenParam::↩ EnumEntry, IpxGenParam::Command, IpxGenParam::Boolean, and IpxGenParam::Category.

6.15.3.2 GetName()

```
virtual const char* IpxGenParam::Param::GetName ( )  [pure virtual]
```

This method returns the parameter node name.

Returns

If the method succeeds, it will return the parameter node name. Otherwise, it will return a nullptr.

6.15.3.3 GetToolTip()

```
virtual const char* IpxGenParam::Param::GetToolTip ( )  [pure virtual]
```

This method returns a short description of the parameter node.

Returns

If the method succeeds, it will return a short description of the parameter node. Otherwise, it will return a nullptr.

6.15.3.4 GetDescription()

```
virtual const char* IpxGenParam::Param::GetDescription ( )  [pure virtual]
```

This method returns a long description of the parameter node.

Returns

If the method succeeds, it will return a long description of the parameter node. Otherwise, it will return a nullptr.

6.15.3.5 GetDisplayName()

```
virtual const char* IpxGenParam::Param::GetDisplayName ( )  [pure virtual]
```

This method returns the name of the display.

Returns

If the method succeeds, it will return the name of the display. Otherwise, it will return a nullptr.

6.15.3.6 GetVisibility()

```
virtual Visibility IpxGenParam::Param::GetVisibility ( )  [pure virtual]
```

This method returns the visibility of the node.

Returns

It will return the visibility setting of the parameter node. It will be either Basic, Expert, or Guru.

6.15.3.7 IsValueCached()

```
virtual bool IpxGenParam::Param::IsValueCached ( )  [pure virtual]
```

This method checks if the parameter node is cached.

Returns

True if the value is cached. Otherwise, the value is not cached.

6.15.3.8 IsAvailable()

```
virtual bool IpxGenParam::Param::IsAvailable ( )  [pure virtual]
```

This method checks if parameter node is available.

Returns

True if the parameter node is available. Otherwise, it is not available.

6.15.3.9 IsWritable()

```
virtual bool IpxGenParam::Param::IsWritable ( )  [pure virtual]
```

This method checks if parameter node is writeable.

Returns

True if the parameter node is writeable. Otherwise, it is not writeable.

6.15.3.10 IsReadable()

```
virtual bool IpxGenParam::Param::IsReadable ( )  [pure virtual]
```

This method checks if the parameter node is readable.

Returns

True if the parameter node is readable. Otherwise, it is not readable.

6.15.3.11 IsStreamable()

```
virtual bool IpxGenParam::Param::IsStreamable ( )  [pure virtual]
```

This method checks if the parameter node is streamable.

Returns

True if the parameter node is streamable. Otherwise, it is not streamable.

6.15.3.12 IsVisible()

```
virtual bool IpxGenParam::Param::IsVisible (
            Visibility vis )  [pure virtual]
```

This method checks if the node is visible.

Parameters

in	*vis*	Visibility of the parameter node

Returns

True if the parameter node is visible. Otherwise, it is not visible.

6.15.3.13 RegisterEventSink()

```
virtual IpxCamErr IpxGenParam::Param::RegisterEventSink (
            ParamEventSink * aEventSink )  [pure virtual]
```

This method registers the event.

Parameters

in	*aEventSink*	pointer to Parameter Event Sink

Returns

Returns the Error code:

- `IpxCamErr::IPX_CAM_ERR_OK` - Successfully registers event sink

6.15.3.14 UnregisterEventSink()

```
virtual IpxCamErr IpxGenParam::Param::UnregisterEventSink (
            ParamEventSink * aEventSink )  [pure virtual]
```

This method un-registers the event.

Parameters

in	*aEventSink*	pointer to Paramet Event Sink

Returns

returns the Error code:

- `IpxCamErr::IPX_CAM_ERR_OK` - Successfully unregisters event sink

6.15.3.15 GetNode()

```
virtual IPX_GENAPI_NS::INode* IpxGenParam::Param::GetNode ( )  [pure virtual]
```

This method returns the callback of the node registered.

Returns

If the method succeeds, it will return the pointer to the node of the callback that is registered. Otherwise, it will return a value of nullptr.

6.15.3.16 ToCategory()

```
virtual Category* IpxGenParam::Param::ToCategory ( )  [pure virtual]
```

This method returns typed representation of param.

Returns

If the method succeeds, it will return pointer to typed param. Otherwise, it will return a value of nullptr

6.15.3.17 ToBoolean()

```
virtual Boolean* IpxGenParam::Param::ToBoolean ( )  [pure virtual]
```

This method returns typed representation of param.

Returns

If the method succeeds, it will return pointer to typed param. Otherwise, it will return a value of nullptr

6.15.3.18 ToCommand()

```
virtual Command* IpxGenParam::Param::ToCommand ( )  [pure virtual]
```

This method returns typed representation of param.

Returns

If the method succeeds, it will return pointer to typed param. Otherwise, it will return a value of nullptr

6.15.3.19 ToEnumEntry()

```
virtual EnumEntry* IpxGenParam::Param::ToEnumEntry ( )  [pure virtual]
```

This method returns typed representation of param.

Returns

If the method succeeds, it will return pointer to typed param. Otherwise, it will return a value of nullptr

6.15.3.20 ToEnum()

```
virtual Enum* IpxGenParam::Param::ToEnum ( )  [pure virtual]
```

This method returns typed representation of param.

Returns

If the method succeeds, it will return pointer to typed param. Otherwise, it will return a value of nullptr

6.15.3.21 ToFloat()

```
virtual Float* IpxGenParam::Param::ToFloat ( )  [pure virtual]
```

This method returns typed representation of param.

Returns

If the method succeeds, it will return pointer to typed param. Otherwise, it will return a value of nullptr

6.15.3.22 ToInt()

```
virtual Int* IpxGenParam::Param::ToInt ( )  [pure virtual]
```

This method returns typed representation of param.

Returns

If the method succeeds, it will return pointer to typed param. Otherwise, it will return a value of nullptr

6.15.3.23 ToString()

```
virtual String* IpxGenParam::Param::ToString ( )  [pure virtual]
```

This method returns typed representation of param.

Returns

If the method succeeds, it will return pointer to typed param. Otherwise, it will return a value of nullptr

The documentation for this class was generated from the following file:

- IpxCameraApi.h

6.16 IpxGenParam::ParamEventSink Class Reference

An Event Sink class designed to receive incoming events from Parameter Node Updates.

```
#include <IpxCameraApi.h>
```

Public Member Functions

- virtual ~ParamEventSink ()
  A destructor of the ParamEventSink class.
- virtual void OnParameterUpdate (Param *param)=0
  Update Parameter Node.

6.16.1 Detailed Description

An Event Sink class designed to receive incoming events from Parameter Node Updates.

A Class for ParamEventSink.

6.16.2 Constructor & Destructor Documentation

6.16.2.1 ~ParamEventSink()

```
virtual IpxGenParam::ParamEventSink::~ParamEventSink ( )  [inline], [virtual]
```

A destructor of the ParamEventSink class.

Destructor. Destroys the ParamEventSink and all its descendants.

6.16.3 Member Function Documentation

6.16.3.1 OnParameterUpdate()

```
virtual void IpxGenParam::ParamEventSink::OnParameterUpdate (
            Param * param )  [pure virtual]
```

Update Parameter Node.

Parameters

in	*param*	The pointer to the Param class node return Void.

The documentation for this class was generated from the following file:

- IpxCameraApi.h

6.17 IpxCam::Stream Class Reference

The Stream class represents the data stream module in the GenTL module hierarchy.

`#include <IpxCameraApi.h>`

Public Member Functions

- virtual ~Stream ()

  A destructor of the Stream class.
- virtual void Release ()=0

  This method releases the instance of the stream object.
- virtual IpxCam::Buffer * CreateBuffer (size_t iSize, void *pPrivate, IpxCamErr *err)=0

  This method is used to create the buffer in the data stream object.
- virtual IpxCam::Buffer * SetBuffer (void *pBuffer, size_t iSize, void *pPrivate, IpxCamErr *err)=0

  This method is used to set the buffer to allocate and announce to the data stream.
- virtual IpxCamErr RevokeBuffer (IpxCam::Buffer *hBuffer)=0

  This method revokes any announced buffers.
- virtual IpxCamErr QueueBuffer (IpxCam::Buffer *hBuffer)=0

  This method queues specified buffers.
- virtual IpxCam::Buffer * GetBuffer (uint64_t iTimeout, IpxCamErr *err=nullptr)=0

  This method retrieves the buffer object.
- virtual IpxCamErr CancelBuffer ()=0

  This method cancels any previously registered buffer events that have been waiting to be performed.
- virtual IpxCamErr FlushBuffers (FlushOperation operation)=0

  This method flushes the buffers of the data stream object.
- virtual IpxCamErr StartAcquisition (uint64_t iNumFramesToAcquire=UINT64_MAX, uint32_t flags=0)=0

  This method sends the start command to start the acquistion of image data.
- virtual IpxCamErr StopAcquisition (uint32_t flags=0)=0

  This method sends the stop command to stop the acquistion of the any more image data.
- virtual IpxCamErr AllocBufferQueue (void *pPrivate, size_t iNum)=0

  This method allocates the buffer queue of the data stream object.
- virtual IpxCamErr ReleaseBufferQueue ()=0

  This method releases the buffer queue of the data stream object.
- virtual size_t GetBufferQueueSize ()=0

  This functions get the buffer queue size of the data stream object.

- virtual IpxCamErr RegisterEvent (uint32_t eventType, IpxCam::EventCallback *eventCallback, void *pPrivate)=0

  This method registers the data Stream class method as a callback method to be called when a eventType occurs.
- virtual IpxCamErr UnRegisterEvent (uint32_t eventType, IpxCam::EventCallback *eventCallback, void *p↩ Private)=0

  This method un-registers the data Stream class callback method for the eventType.
- virtual IpxGenParam::Array * GetParameters (IpxCamErr *err=nullptr)=0

  This method returns an array of parameters for the data stream object.
- virtual uint64_t GetNumDelivered ()=0

  This method returns the number of delivered buffers since the start of the last acquisition.
- virtual uint64_t GetNumUnderrun ()=0

  This method returns the number of lost frames due to the queue being underrun.
- virtual size_t GetNumAnnounced ()=0

  This method returns the number of announced buffers in the data stream object.
- virtual size_t GetNumQueued ()=0

  This method returns the number of queued buffers in the data stream object.
- virtual size_t GetNumAwaitDelivery ()=0

  This method returns the number of buffers awaiting delivery of the data stream object.
- virtual size_t GetBufferSize ()=0

  This method returns the buffer size of the data stream object.
- virtual bool IsGrabbing ()=0

  This method returns a flag indicating if the data stream is grabbing or not.
- virtual size_t GetMinNumBuffers ()=0

  This method returns the minimum number of buffers.
- virtual size_t GetBufferAlignment ()=0

  This method returns the alignment size of the stream object.

6.17.1 Detailed Description

The Stream class represents the data stream module in the GenTL module hierarchy.

This data stream class provides buffer methods. This data stream class purpose is to access the buffer data acquirement from the Acquisition engine.

6.17.2 Constructor & Destructor Documentation

6.17.2.1 ~Stream()

```
virtual IpxCam::Stream::~Stream ( )  [inline], [virtual]
```

A destructor of the Stream class.

Destructor. Destroys the Stream and all its descendants.

6.17.3 Member Function Documentation

6.17.3.1 Release()

```
virtual void IpxCam::Stream::Release ( )  [pure virtual]
```

This method releases the instance of the stream object.

Returns

Void. This method is used to release the stream object.

6.17.3.2 CreateBuffer()

```
virtual IpxCam::Buffer* IpxCam::Stream::CreateBuffer (
            size_t iSize,
            void * pPrivate,
            IpxCamErr * err )  [pure virtual]
```

This method is used to create the buffer in the data stream object.

Allocates the memory for a buffer and announces this buffer to the data stream

Parameters

in	*iSize*	Size of the buffer
in	*pPrivate*	pointer to private data (user's data) which will be passed to the GenTL Consumer
out	*err*	returns Error code

Returns

returns Buffer object pointer of the announced buffer

6.17.3.3 SetBuffer()

```
virtual IpxCam::Buffer* IpxCam::Stream::SetBuffer (
            void * pBuffer,
            size_t iSize,
```

```
            void * pPrivate,
            IpxCamErr * err )  [pure virtual]
```

This method is used to set the buffer to allocate and announce to the data stream.

Sets buffers to allocate and announce to the data stream

Parameters

in	*pBuffer*	buffer
in	*iSize*	size of Buffer
in	*pPrivate*	pointer to user's data
out	*err*	returns Error code

Returns

returns Buffer object pointer

6.17.3.4 RevokeBuffer()

```
virtual IpxCamErr IpxCam::Stream::RevokeBuffer (
            IpxCam::Buffer * hBuffer )  [pure virtual]
```

This method revokes any announced buffers.

This method removes the specified announced buffer from the acquisition engine's queue

Parameters

in	*hBuffer*	handle of buffer

Returns

returns Error code

6.17.3.5 QueueBuffer()

```
virtual IpxCamErr IpxCam::Stream::QueueBuffer (
            IpxCam::Buffer * hBuffer )  [pure virtual]
```

This method queues specified buffers.

During acquisition, this method queues the specified buffer.

Parameters

in	*hBuffer*	handle of buffer

Returns

returns Error code

6.17.3.6 GetBuffer()

```
virtual IpxCam::Buffer* IpxCam::Stream::GetBuffer (
            uint64_t iTimeout,
            IpxCamErr * err = nullptr )  [pure virtual]
```

This method retrieves the buffer object.

Retrieve the next event data entry from the event data queued

Parameters

in	*iTimeout*	timeout in ms
in	*err*	error code

Returns

returns the pointer of the buffer

6.17.3.7 CancelBuffer()

```
virtual IpxCamErr IpxCam::Stream::CancelBuffer ( )  [pure virtual]
```

This method cancels any previously registered buffer events that have been waiting to be performed.

Terminates the waiting operation on a previously registered Buffer Event

Returns

returns Error code

6.17.3.8 FlushBuffers()

```
virtual IpxCamErr IpxCam::Stream::FlushBuffers (
            FlushOperation operation )  [pure virtual]
```

This method flushes the buffers of the data stream object.

Flushes the Flush Operation specified internal buffer pool or queue. Operations defined in FlushOperations enum.

Parameters

in	*operation*	FlushOperation

Returns

returns Error code

6.17.3.9 StartAcquisition()

```
virtual IpxCamErr IpxCam::Stream::StartAcquisition (
            uint64_t iNumFramesToAcquire = UINT64_MAX,
            uint32_t flags = 0 )  [pure virtual]
```

This method sends the start command to start the acquistion of image data.

Starts the Acquisition Engine

Parameters

in	*iNumFramesToAcquire*	number of Frames to Acquire
in	*flags*	flags

Returns

returns Error code

6.17.3.10 StopAcquisition()

```
virtual IpxCamErr IpxCam::Stream::StopAcquisition (
            uint32_t flags = 0 )  [pure virtual]
```

This method sends the stop command to stop the acquistion of the any more image data.

The acquisition on the remote device is stopped after finishing acquiring image data

Parameters

in	*flags*	flags

Returns

returns Error code

6.17.3.11 AllocBufferQueue()

```
virtual IpxCamErr IpxCam::Stream::AllocBufferQueue (
            void * pPrivate,
            size_t iNum )  [pure virtual]
```

This method allocates the buffer queue of the data stream object.

Parameters

in	*pPrivate*	pointer to user's data
in	*iNum*	number of Buffers to allocate

Returns

returns Error code

6.17.3.12 ReleaseBufferQueue()

```
virtual IpxCamErr IpxCam::Stream::ReleaseBufferQueue ( )  [pure virtual]
```

This method releases the buffer queue of the data stream object.

Release the Buffer Queue

Returns

returns Error code

6.17.3.13 GetBufferQueueSize()

```
virtual size_t IpxCam::Stream::GetBufferQueueSize ( )  [pure virtual]
```

This functions get the buffer queue size of the data stream object.

Returns

returns the Buffer Queue size

6.17.3.14 RegisterEvent()

```
virtual IpxCamErr IpxCam::Stream::RegisterEvent (
            uint32_t eventType,
            IpxCam::EventCallback * eventCallback,
            void * pPrivate )  [pure virtual]
```

This method registers the data Stream class method as a callback method to be called when a eventType occurs.

Parameters

in	*eventType*	Event Type TODO - define event type ids here!!!!
in	*eventCallback*	event CallBack
in	*pPrivate*	pointer to user's data

Returns

returns Error code

6.17.3.15 UnRegisterEvent()

```
virtual IpxCamErr IpxCam::Stream::UnRegisterEvent (
            uint32_t eventType,
            IpxCam::EventCallback * eventCallback,
            void * pPrivate )  [pure virtual]
```

This method un-registers the data Stream class callback method for the eventType.

Parameters

in	*eventType*	Event Type
in	*eventCallback*	event CallBack
in	*pPrivate*	pointer to user's data

Returns

returns Error code

6.17.3.16 GetParameters()

```
virtual IpxGenParam::Array* IpxCam::Stream::GetParameters (
            IpxCamErr * err = nullptr )  [pure virtual]
```

This method returns an array of parameters for the data stream object.

Parameters

out	*err*	returns the error code

Returns

returns the data stream parameters array

6.17.3.17 GetNumDelivered()

```
virtual uint64_t IpxCam::Stream::GetNumDelivered ( )  [pure virtual]
```

This method returns the number of delivered buffers since the start of the last acquisition.

Returns

returns the number of delivered buffers since the start of the last acquisition

6.17.3.18 GetNumUnderrun()

```
virtual uint64_t IpxCam::Stream::GetNumUnderrun ( )  [pure virtual]
```

This method returns the number of lost frames due to the queue being underrun.

Returns

returns the number of lost frames due to queue underrun

6.17.3.19 GetNumAnnounced()

```
virtual size_t IpxCam::Stream::GetNumAnnounced ( )  [pure virtual]
```

This method returns the number of announced buffers in the data stream object.

Returns

returns number of announced buffers

6.17.3.20 GetNumQueued()

```
virtual size_t IpxCam::Stream::GetNumQueued ( )  [pure virtual]
```

This method returns the number of queued buffers in the data stream object.

Returns

returns the number of buffers in the input pool and the number of buffers currently being filled

6.17.3.21 GetNumAwaitDelivery()

```
virtual size_t IpxCam::Stream::GetNumAwaitDelivery ( )  [pure virtual]
```

This method returns the number of buffers awaiting delivery of the data stream object.

Returns

returns the number of buffers in the output buffer queue

6.17.3.22 GetBufferSize()

```
virtual size_t IpxCam::Stream::GetBufferSize ( )  [pure virtual]
```

This method returns the buffer size of the data stream object.

Returns

returns the buffer size

6.17.3.23 IsGrabbing()

```
virtual bool IpxCam::Stream::IsGrabbing ( )  [pure virtual]
```

This method returns a flag indicating if the data stream is grabbing or not.

Returns

Flag indicating the state of the acquisition engine. If true, acquisition engine has stared. Otherwise, the acquistion engine is off.

6.17.3.24 GetMinNumBuffers()

```
virtual size_t IpxCam::Stream::GetMinNumBuffers ( )  [pure virtual]
```

This method returns the minimum number of buffers.

Returns

returns the minimum number of buffers to announce

6.17.3.25 GetBufferAlignment()

```
virtual size_t IpxCam::Stream::GetBufferAlignment ( )  [pure virtual]
```

This method returns the alignment size of the stream object.

Returns

returns the alignment size in bytes of the buffer passed

The documentation for this class was generated from the following file:

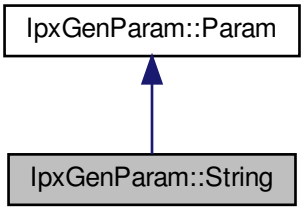
- IpxCameraApi.h

6.18 IpxGenParam::String Class Reference

Interface Class for GenICam String properties.

```
#include <IpxCameraApi.h>
```

Inheritance diagram for IpxGenParam::String:



Public Member Functions

- virtual ParamType GetType ()

  This method returns the node object Command type.
- virtual size_t GetMaxLength (IpxCamErr *err=nullptr)=0

  This method gets the Maximum Length of the string.
- virtual const char * GetValue (size_t *len=nullptr, IpxCamErr *err=nullptr)=0

  This method gets the value of the string node.
- virtual IpxCamErr SetValue (const char *val)=0

  This method sets the value of the string node.

6.18.1 Detailed Description

Interface Class for GenICam String properties.

A GenICam String class. For example, mapping to an edit box showing a string

6.18.2 Member Function Documentation

6.18.2.1 GetType()

```
virtual ParamType IpxGenParam::String::GetType ( )  [inline], [virtual]
```

This method returns the node object Command type.

Returns

The parameter type

Implements IpxGenParam::Param.

6.18.2.2 GetMaxLength()

```
virtual size_t IpxGenParam::String::GetMaxLength (
            IpxCamErr * err = nullptr )  [pure virtual]
```

This method gets the Maximum Length of the string.

Parameters

out	*err*	returns error code: • IpxCamErr::IPX_CAM_ERR_OK - Successfully gets the maximum length value • IpxCamErr::IPX_CAM_GENICAM_ACCESS_ERROR - Unable to access genicam specified node • IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR - Unable to access genicam specified node type

Returns

gets the maximum length of the string

6.18.2.3 GetValue()

```
virtual const char* IpxGenParam::String::GetValue (
            size_t * len = nullptr,
            IpxCamErr * err = nullptr )  [pure virtual]
```

This method gets the value of the string node.

Parameters

out	*len*	return the length of the string
out	*err*	returns the error code: • IpxCamErr::IPX_CAM_ERR_OK - Successfully gets the string • IpxCamErr::IPX_CAM_GENICAM_ACCESS_ERROR - Unable to access genicam specified node • IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR - Unable to access genicam specified node type

Returns

returns the value

6.18.2.4 SetValue()

```
virtual IpxCamErr IpxGenParam::String::SetValue (
            const char * val )  [pure virtual]
```

This method sets the value of the string node.

Parameters

in	*val*	Set the value of the string node

Returns

returns the error code:

- `IpxCamErr::IPX_CAM_ERR_OK` - Successfully sets the string
- `IpxCamErr::IPX_CAM_GENICAM_ACCESS_ERROR` - Unable to access genicam specified node
- `IpxCamErr::IPX_CAM_GENICAM_TYPE_ERROR` - Unable to access genicam specified node type

The documentation for this class was generated from the following file:

- IpxCameraApi.h

6.19 IpxCam::System Class Reference

The System class represents an abstraction of the system module of the GenTL module hierarchy. The System class is the entry point to the GenTL Producer software driver.

```
#include <IpxCameraApi.h>
```

Public Member Functions

- virtual ~System ()

  A destructor of the System class.
- virtual void Release ()=0

  This method releases the instance of the system object.
- virtual InterfaceList * GetInterfaceList (InterfaceType type=AllInterfaces)=0

  This method returns all the interface list of the system object.
- virtual Interface * GetInterfaceById (const char *ifaceId)=0

  This method returns the interface by unique string identifier of the system object.
- virtual const char * GetDisplayName ()=0

  This method displays the name of the GenTL Producer.
- virtual const char * GetVersion ()=0

  This method returns the version of the GenTL Producer of the system object.
- virtual Device * CreateDeviceFromConfig (const char *fileName, IpxCamErr *err=nullptr)=0

  This method configures and sets up the device using the information retrieved from the configuration file.
- virtual IpxCamErr RegisterGenTLProvider (const char *fileName)=0

  This method registers the 3rd party GenTL provider CTI library in the System.

6.19.1 Detailed Description

The System class represents an abstraction of the system module of the GenTL module hierarchy. The System class is the entry point to the GenTL Producer software driver.

This class provides member functions to enumerate and instantiate the available interfaces reachable. It also provides a method for the configuration of the device module. This system module is the root of the GenTL Module hierarchy. **IpxCam::System** class has member functions to to find all the interfaces,display the user readable name and producer version of the GenTL system. The **IpxCam::System** class can return **IpxCam::InterfaceList**, **IpxCam::Interface**, and **IpxCam::Device** objects.

The following is an example on how to use some of the public Member Functions.

```
//Get System
IpxCam::System *system = IpxCam::IpxCam_GetSystem();
IpxCam::DeviceInfo *lDeviceInfo = nullptr;

if (system)
{
    //Retrieve the System Name
    const char* displayname_str = system->GetDisplayName();
    std::cout << "DisplayName " << displayname_str;

    //Retrieve the Version of the System
    const char* verion_str = system->GetVersion();
    std::cout << "Version " << system->GetVersion();

    IpxCam::Interface *iface = nullptr;
    IpxCam::Interface *iface2 = nullptr;
    std::cout << "Interfaces Available:" << endl;

    std::vector<IpxCam::Interface*> ifaceVector;

    //Get the Interface List for the System
    IpxCam::InterfaceList* list = system->GetInterfaceList();
    for(IpxCam::List<IpxCam::Interface>::elem_type* iface = list
      ->GetFirst(); iface; iface = list->GetNext())
    {
        ifaceVector.push_back(iface);
        //Display the Interface Available
        std::cout << "[" << (ifaceVector.size() - 1) << "]" << "\t" << iface->
      GetDescription() << "Id " << iface->GetId() << endl;
    }

    //List the number of Interfaces in the System
    std::cout << "Number of Interfaces in the System: " << list->GetCount() << endl;

    //Example of sending Interface By Id
    iface2 = system->GetInterfaceById(ifaceVector[0]->GetId());

    std::cout << "Interface Description: " << iface2->GetDescription() << endl;
    lDeviceInfo = iface2->GetFirstDeviceInfo();
    std::cout << "ModelName" << lDeviceInfo->GetModel() << endl;

    std::cout << "Releasing system" << endl;
    list->Release();
    system->Release();
}
```

6.19.2 Constructor & Destructor Documentation

6.19.2.1 ~System()

```
virtual IpxCam::System::~System ( )  [inline], [virtual]
```

A destructor of the System class.

Destructor. Destroys the System and all its descendants. Here is the call graph for this function:

6.19.3 Member Function Documentation

6.19.3.1 Release()

```
virtual void IpxCam::System::Release ( )  [pure virtual]
```

This method releases the instance of the system object.

Returns

Void.

The following shows an example on how to use the **Release** method to release the system object instantiated.

```
//Get the GenTL System
IpxCam::System *system = IpxCam::IpxCam_GetSystem();

if (system)
{
  //Add Code Here

  //Release the GenTL System
  system->Release();
}
```

6.19.3.2 GetInterfaceList()

```
virtual InterfaceList* IpxCam::System::GetInterfaceList (
             InterfaceType type = AllInterfaces )  [pure virtual]
```

This method returns all the interface list of the system object.

It lists all the available hardware interfaces with the transport layers technologies that are supported.

Parameters

in	*type*	interface type

Returns

returns the interface list

The following is an example on how to use the **GetInterfaceList** method.

```
// Used later to get chosen interface
std::vector<IpxCam::Interface*> ifaceVector;

// Get the Interface List for the System
auto list = system->GetInterfaceList();

// Get the individual Interface elements
for (auto iface = list->GetFirst(); iface; iface = list->GetNext())
{
   ifaceVector.push_back(iface);

   // Display the Interface Available
   std::cout << "[" << (ifaceVector.size() - 1) << "]" << "\t" << iface->
      GetDescription() << "Id " << iface->GetId() << endl;
}

// List has to be released
list->Release();
```

6.19.3.3 GetInterfaceById()

```
virtual Interface* IpxCam::System::GetInterfaceById (
             const char * ifaceId )  [pure virtual]
```

This method returns the interface by unique string identifier of the system object.

Get interface specified by interface identifier.

Parameters

in	*ifaceId*	Interface identifier

Returns

returns the Interface or nullptr if no such interface is found

For example, the const char ∗ifaceId interface identification name could be as shown below:

```
//Get System
IpxCam::System *system = IpxCam::IpxCam_GetSystem();

const char *ifaceId = "\\?\u
      sb#vid_20f7&pid_30b3&mi_00#7&16f3afad&0&0000#{ff958afd-fce7-4264-994c-8fa230d5a524}";

auto iface = system->GetInterface(ifaceId);
```

This method will retrieve the available interface list of the system.

6.19.3.4 GetDisplayName()

```
virtual const char* IpxCam::System::GetDisplayName ( )  [pure virtual]
```

This method displays the name of the GenTL Producer.

This method returns the User readable name of the GenTL Producer of the system object.

Returns

returns the Display Name

The following is an example on how to use the GetDisplayName method

```
//Get System
IpxCam::System *system = IpxCam::IpxCam_GetSystem();

if (system)
{
  //Retrieve the System Name
  const char* displayname_str = system->GetDisplayName();
  std::cout << "DisplayName " << displayname_str;

  // some code here

  system->Release();
}
```

6.19.3.5 GetVersion()

```
virtual const char* IpxCam::System::GetVersion ( )  [pure virtual]
```

This method returns the version of the GenTL Producer of the system object.

This method returns the GenTL Producer version.

Returns

returns the Version

The following is an example on how to use the GetVersion method

```
//Get System
IpxCam::System *system = IpxCam::IpxCam_GetSystem();

if (system)
{
  //Retrieve the Version of the System
  const char* verion_str = system->GetVersion();
  std::cout << "Version " << system->GetVersion();

  // some code here

  system->Release();
}
```

6.19.3.6 CreateDeviceFromConfig()

```
virtual Device* IpxCam::System::CreateDeviceFromConfig (
            const char * fileName,
            IpxCamErr * err = nullptr )  [pure virtual]
```

This method configures and sets up the device using the information retrieved from the configuration file.

Creates the Device object from configuraion file

Parameters

in	*fileName*	Configuration file to open
out	*err*	returns the error code

Returns

returns Device or nullptr if device cannot be instantiated

6.19.3.7 RegisterGenTLProvider()

```
virtual IpxCamErr IpxCam::System::RegisterGenTLProvider (
            const char * fileName )  [pure virtual]
```

This method registers the 3rd party GenTL provider CTI library in the System.

Registers the GenTL CTI library

Parameters

in	*fileName*	path to GenTL CTI file to add

Returns

returns the error code

The documentation for this class was generated from the following file:

- IpxCameraApi.h

6.20 IpxCam::Device::UploadEventData Struct Reference

A structure representing data for uploading to a device.

`#include <IpxCameraApi.h>`

6.20.1 Detailed Description

A structure representing data for uploading to a device.

The documentation for this struct was generated from the following file:

- IpxCameraApi.h

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