pco.labview

pco.labview

LabVIEW driver for pco.camera

This document describes the LabVIEW interface to the pco.camera series.

Table of Contents:

A. Command Structure

This document describes the commands for controlling the pco.camera from within the National Instruments LabVIEW environment. Further explanations appear as needed for the commands, settings and mode configurations.

1 General

- Conventions in this manual
- Hardware elements and interface connectors

1.1 Conventions

The following typographic conventions are used in this manual:

bold: Functions, procedures or modes used	**get camera type**
[words in brackets]: Possible values or “states” of the described functions	[run]
ALL CAPITAL WORDS: Logical or boolean values such as TRUE, FALSE, ON, OFF, 0, 1, RISING, FALLING, HIGH, LOW	TRUE
<words in arrows>: Names of hardware input / output signals	<acq enbl>

1.2 Hardware elements, interface connectors

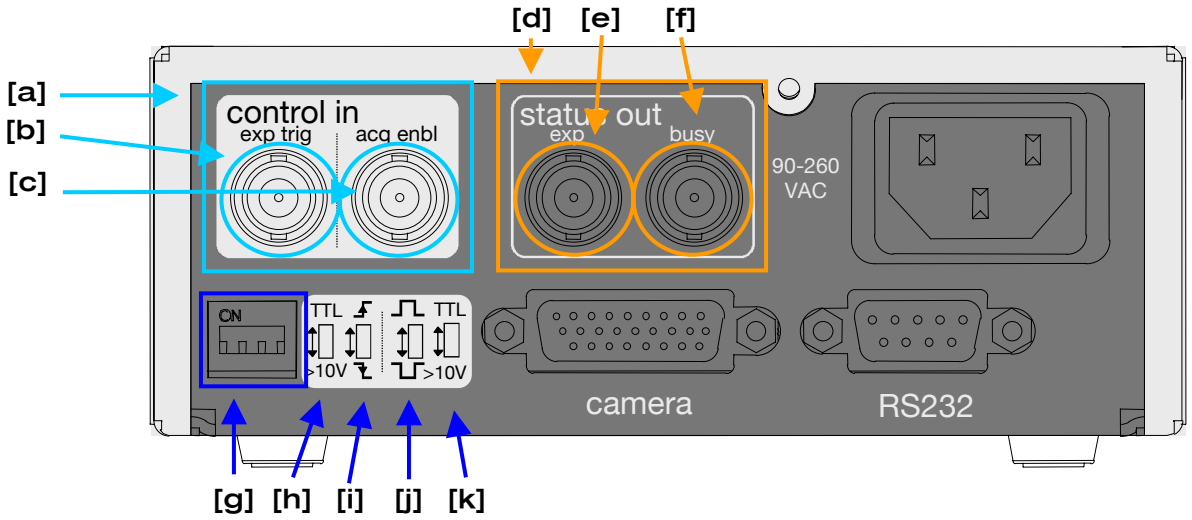


figure 1: View of back panel of pco.power

legend:

[a] <control in> - general input for external control signals, BNC plugs
[b] <exp trig> - external exposure trigger input
[c] <acq enbl> - external acquire enable input
[d] <status out> - general status output signals, BNC plugs
[e] <exp> - exposure output signal
[f] <busy> - busy output signal
[g] DIP switch, which sets polarity, HIGH and LOW levels and level of voltages
[h] [TTL] or [>10V] selects voltage level either TTL = 5V or larger than 10V
[i] ⌐ or ¬ trigger edge selection for <exp trig> input, either rising or falling edge
[j] ⎍ or ⎏ trigger level selection for <acq enbl> input, HIGH or LOW active
[k] [TTL] or [>10V] selects voltage level either TTL = 5V or larger than 10V

2 Overview and function description

The LabVIEW interface consists of the following files:

- VI Libraries: APIManagement.llb, BufferData.llb, GeneralControlStatus.llb, RecordingControl.llb, Sensor.llb, Storage.llb, TimingControl.llb

- Dynamic Link Libraries: pcolabview2.dll, SC2_Cam.lib, SC2_1394.dll

There are libraries of virtual instruments (VI's) used for camera control and image acquisition, and lower-level dynamic link library files. Most of the VI's call functions in the dynamic link library SC2_Cam.dll, which should reside in your application directory. The SC2_Cam.dll in turn accesses the SC2_1394.dll, which should be installed during the driver installation. A third DLL, pcolabview2.dll, handles memory management between the LabVIEW environment and the DLL's.

The VI's are grouped in libraries by function.

- Camera (General)
- Image Sensor
- Timing
- Storage
- Recording
- Image Read
- API-Management

2.1 GeneralControlStatus.llb – Camera control

This library contains general functions to control the camera and to request information about the camera:

- Request camera type, hardware/firmware version, serial number, interface type
- Request camera status (warnings, errors etc.)
- Reset all settings to default values
- Initiate self test procedure
- Get camera / power supply temperature

2.2 Sensor.llb - Image sensor specifics

This group contains complete image sensor control instructions and instructions to request information about the sensor. These are:

- Get Camera description: sensor type, standard resolution, extended resolution, dynamic resolution (bit), delay and exposure times…
- Set/request sensor format: [standard] / [extended].
- Set/request ROI settings.
- Set/request binning settings.
- Set/request pixel rate (frequency for shifting the pixels out of the sensor shift registers).
- Set/request conversion factor (gain) settings.
- Set/request double image mode (expose two images one after another immediately).
- Set/request ADC mode (use one or two ADCs for digitizing the pixel data of the sensor).
- Set/request IR sensitivity setting (ON/OFF).
- Set/request cooling set point temperature.
- Set/request Offset Mode.

2.3 TimingControl.llb – Image timing

This group contains all available commands for control of imaging process timing:

- Set / request delay and exposure time (timebase, timetable) for taking images.
- Set / request trigger mode for exposures: [auto trigger], [force trigger], [extern edge triggered], [extern exposure pulse trigger][(1)]. Controls the usage of the <exp trig> control input. See below for a detailed description of the trigger modes.
- Force trigger: this software command starts an exposure if the trigger mode is in the state [auto trigger], [force trigger] or [extern edge triggered]. If in [extern exposure pulse trigger] mode nothing happens.
- Request busy status: A trigger is ignored if the camera is still busy (exposure or readout). In case of [force trigger] command, the user may request the camera's busy status in order to generate a valid [force trigger] command.
- Set / request power down time (threshold value, which becomes available in case of exposure times longer than 1s)
- Read control input (<exp trig>): read TRUE or FALSE level of external control input[(2)] (<control in>).

Notes:

(1) Edge type (FALLING edge / RISING edge) as well as the electrical sensitivity (trigger level) are selected by DIP switches at the power supply unit near the trigger input(<control in>). In double image mode, the first exposure time is affected by the trigger commands. The duration of the second exposure is always given by the readout time of the first image.

(2) If the DIP switch shows a RISING edge, then the HIGH level signal is TRUE and the LOW level signal is FALSE. If the DIP switch shows a FALLING edge, then the HIGH level signal is FALSE and the LOW level signal is TRUE.

The following table shows how the different trigger modes work:

Trigger mode	Operation Description
auto trigger	A new image exposure is automatically started best possible compared to the readout of an image. If a CCD is used and images are taken in sequence, then exposures and sensor readout are started simultaneously.
software trigger	An exposure can only be started by a **force trigger** command.
extern exposure & software trigger	A delay / exposure sequence is started at the RISING or FALLING edge (1) of the trigger input (<control in>) or by a [force trigger] command.
extern exposure control	The exposure time is defined by pulse length at the trigger input (<control in>). The delay and exposure time values defined by the **set / request delay and exposure** command are ineffective.

2.4 Storage.llb – Camera memory management

This set contains all commands needed for controlling the memory and storage process.

The total camera memory is divided into four segments (similar to partitions on hard discs).

- Request RAM size (pages) and page size (pixels)
- Request / set RAM segment size in pages
- Clear RAM segment
- Get / set active RAM segment

Note:
Consistency check (in order to avoid buffers that overlap)must be performed by the application software!

Each segment also contains information about the image settings (ROI / binning etc.) for the images stored within this segment (all images must have the same format).

2.5 RecordingControl.llb – Image recording controls

- Set / request storage mode: [recorder mode] / [FIFO buffer mode] (see insert box 2.5.1 for further explanations)
- Set / request recorder submode: [sequence] / [ring buffer] (see insert box 2.5.2 for further explanations)
- Set / request recording state: [run] / [stop] (see insert box 2.5.3 for further explanations)
- Arm: prepare camera for recording command
  This function is necessary before a new recording (**set recording** = [run]) command is released. This function takes the delay, exposure, triggering, recorder mode (etc.) settings, compiles them and prepares the camera to start immediately when a start of recording (**set recording** = [run]) is performed.
- Set / request acquire mode: [auto] / [external], controls the usage of the <acq enbl> control input
  - [auto]: the external control input <acq enbl> is ignored
  - [external]: the external control input <acq enbl> is a static enable signal of images. If this input is TRUE, then exposure triggers are accepted and images are taken. If this signal is set FALSE, then all exposure triggers are ignored and the sensor readout is stopped.
- Read control input (<acq enbl>): read TRUE or FALSE level of external control input(1) (<control in>)
- Set date / time
- Set / request timestamp mode

Notes:

Active (TRUE) level (LOW/HIGH) as well as the electrical sensitivity is selected by DIP switches at the power supply unit near the acquire enable input(<acq enbl>).

(1) If the DIP switch shows ⎍⎏ then the HIGH level signal is TRUE and the LOW level signal is FALSE.
If the DIP switch shows ⎏⎍ then the HIGH level signal is FALSE and the LOW level signal is TRUE.

Box 2.5.1

recorder mode	**FIFO buffer mode**
• images are recorded and stored within the internal camera memory (camRAM) • “live view” transfers the most recent image to the PC (for viewing / monitoring) • indexed or total image readout after the recording has been stopped	• all images taken are transferred to the PC in chronological order • camera memory (camRAM) is used as a huge FIFO buffer to bypass short bottlenecks in data transmission. If buffer overflows, the oldest images are overwritten. In **FIFO buffer mode,** images are send directly to the PC interface (FireWire, USB ...) like a continuous data stream

	Synchronization is done with the interface.

Box 2.5.2

recorder submode: sequence	**recorder submode: ring buffer**
• Recording is stopped when the allocated buffer is full.	• Camera records continuously into ring buffer. If the allocated buffer is full, the older images are overwritten. Recording is stopped by software command.

BOX 2.5.3

Recording: [run] / [stop]
The recording command controls the camera status. If the recording state is [run], images can be released by **exposure trigger** and **acquire enable**. If the recording state is [stop] all image readout or exposure sequences are stopped and the sensors (CCDs or CMOS) are running in a special idle mode to prevent dark charge accumulation. The recording state has the highest priority compared to functions like **acquire enable** or **exposure trigger**. The recording state is started by: • software command: **Set recording** = [run] The recording state is stopped by: • powering on the camera • software command: **Set recording** = [stop] • software command: Reset all settings to default values. • in recorder submode = [sequence], if the buffer overflows.

2.6 Image Read

- Request image settings for this segment (ROI, binning, horizontal x vertical resolution)
- Request number of images in segment

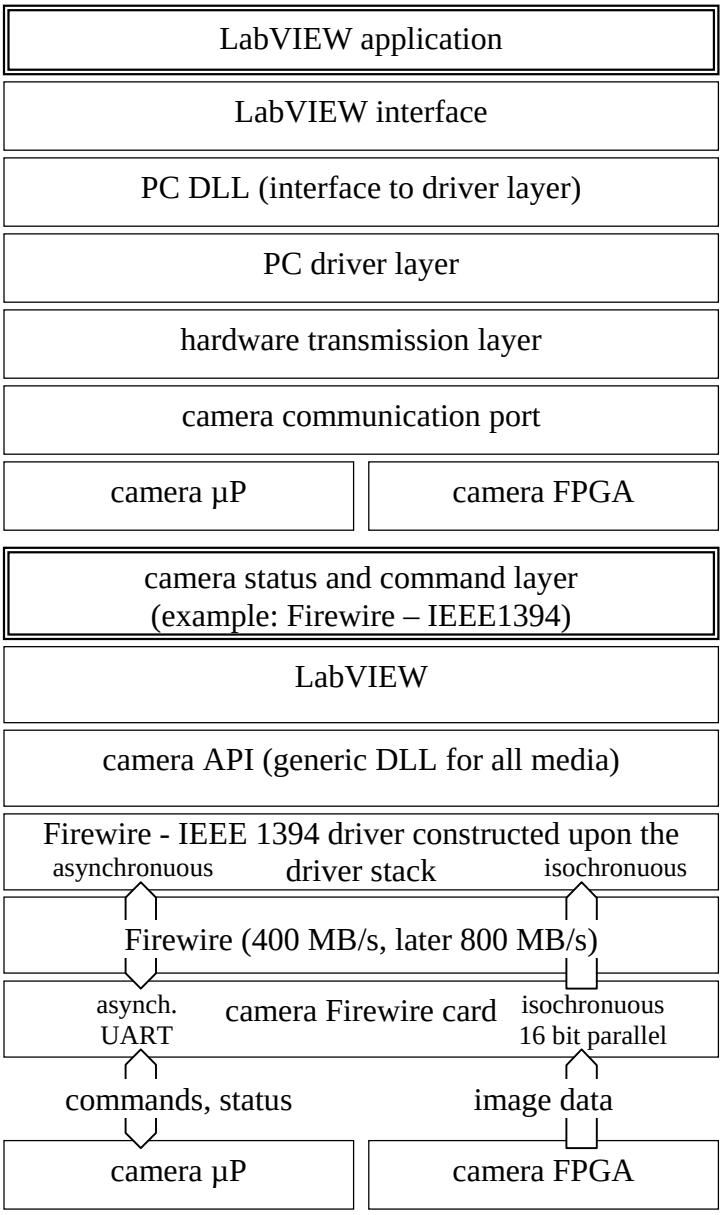
The image readout is part of the API-management commands. If the camera is in recording state the PCO_AddBuffer command must be used. If the camera is not in recording state, the PCO_GetImage command must be used.

2.7 APIManagement.llb – Programming interface controls

- Open and close the camera device
- Buffer management (allocate, free, add buffer, get status) and image access
- Device availability during runtime

B. Implementation Details

3 Communication Layers



The application software running on the PC is able to send commands to the camera as well as request status information from the camera. There is also a channel for transmitting image data.

The interface links the LabView application software to the camera device driver layer. Commands sent to the driver should be common for all camera versions as well as for all types of interfaces (FireWire, USB etc.). Thus, the driver converts the commands to the used hardware port.

Example of Layer structure applied to the FireWire interface between PC and camera.

Commands and status information are sent between the PC and the camera µP, the image data are transferred by the camera FPGA to the FireWire interface.

Interfaces, which will be implemented, are FireWire – IEEE1394, Camera Link, USB 2.0 and Ethernet (TCP/IP). The latter is somewhat different since within the PC, the layers up to the application layer are already implemented within the operating system.

The communication port, that is the path from the PC driver layer down, separates the data path into channels for commands, status messages and image data.

4 Sample application

A basic sample application is provided with the driver libraries, to illustrate the camera modes of operation. Developers can use this as a basis for further development, by inserting library functions into the sample application at the appropriate points.

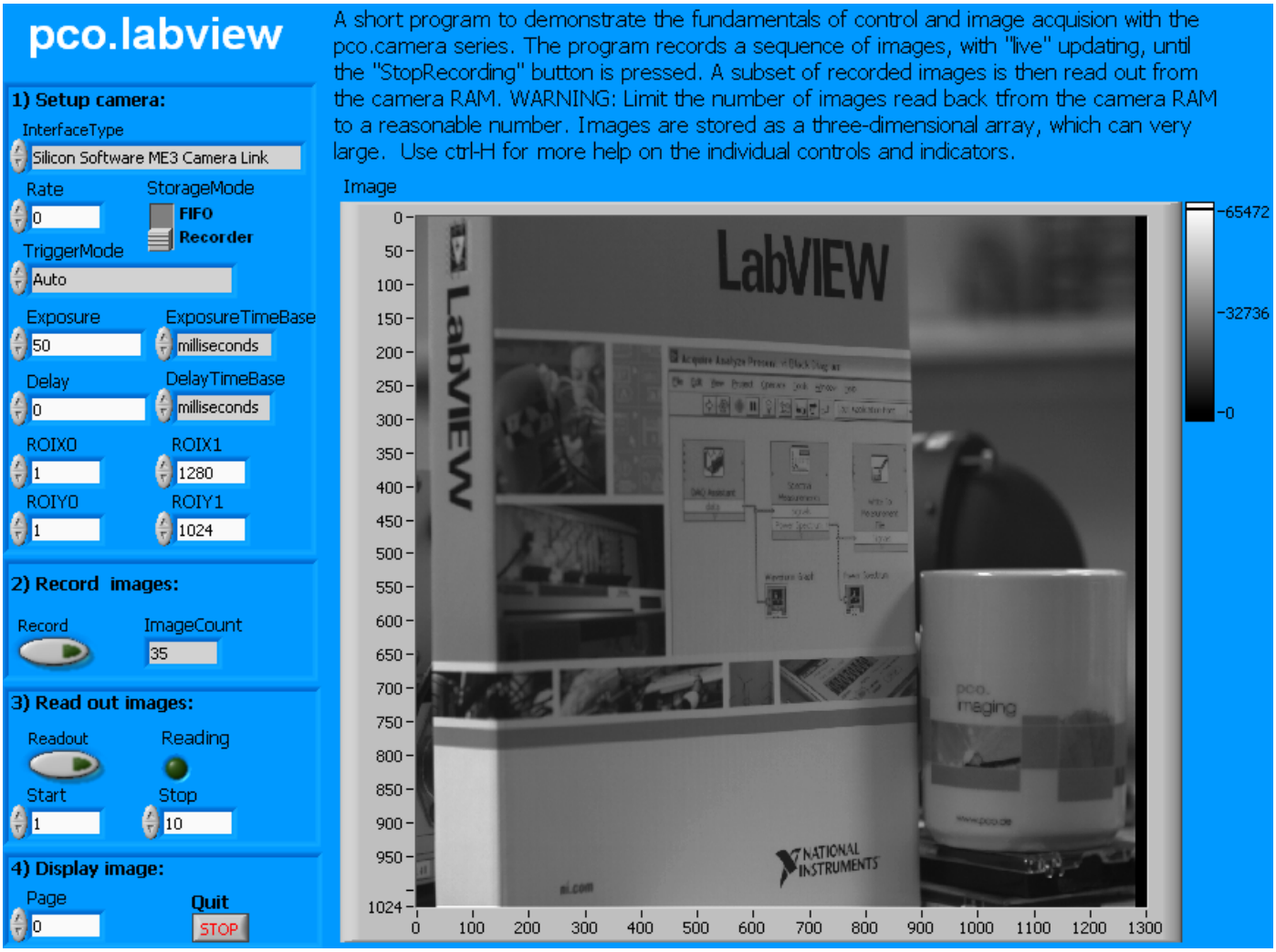
The sample program illustrates hown to obtain images from the pco.camera while the camera is recording, through the use of the buffer queue and the buffer events. It also illustrates how to retrieve previously recorded images from CamRAM.

SampleProgramExample.vi

A short program to demonstrate the fundamentals of control and image acquision with the pco.camera series. The program records a sequence of images, with "live" updating, until the "StopRecording" button is pressed. A subset of recorded images is then read out from the camera RAM.

Warning: Limit the number of images read back tfrom the camera RAM to a reasonable number. Images are stored as a three-dimensional array, which can very large.

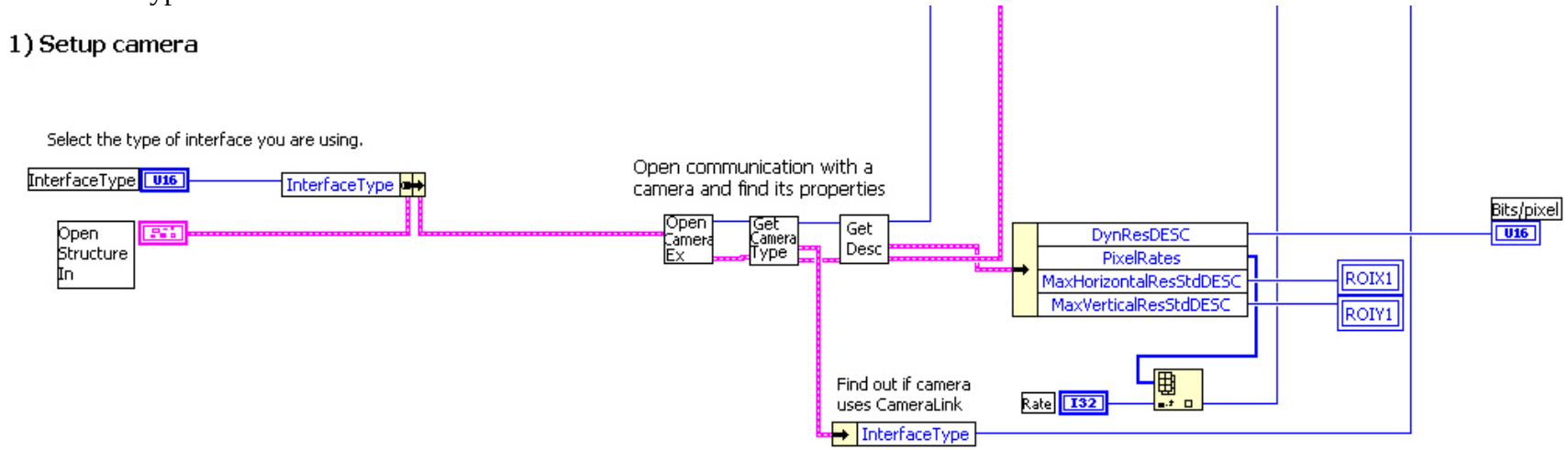
Front Panel



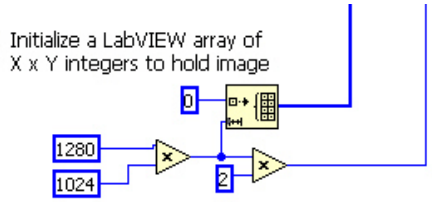
Block Diagram

Refer to the SampleProgramExample.vi for the full block diagram. Sections of the block diagram are presented here for more detailed explaination.

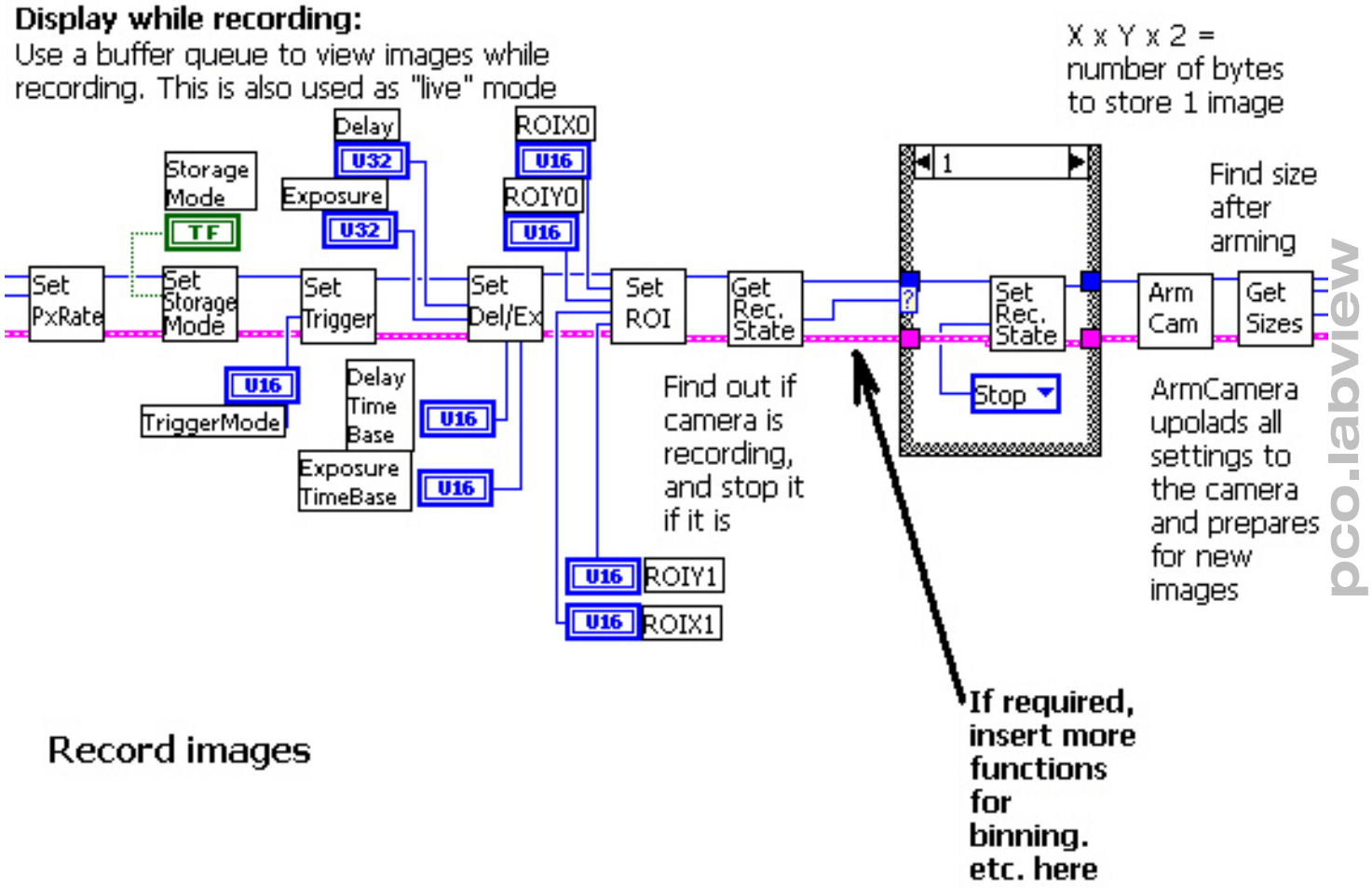
The first step is to initialize the camera, using the OpenCameraEx.vi. Information about the camera connected is obtained using GetCameraType.vi and GetDesc.vi.



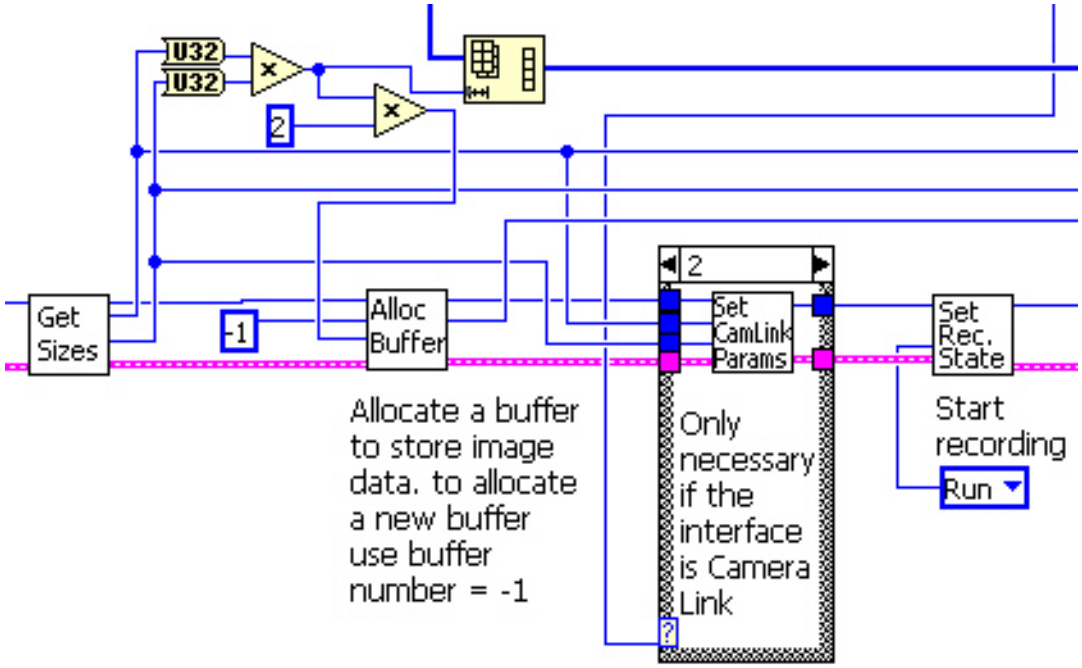
An array of integers is also created to hold the image data returned from the camera.



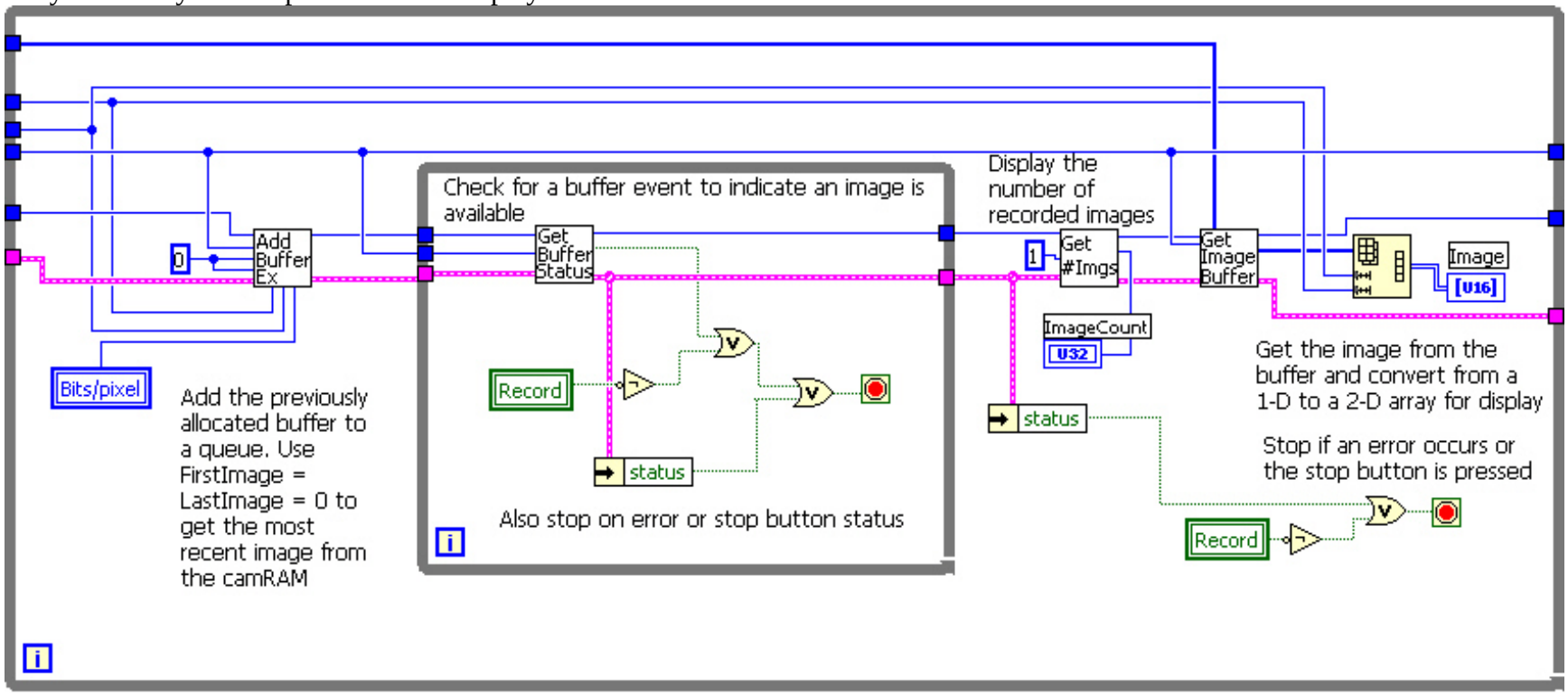
Camera parameters are set using the VI's in the driver library. Parameters are uploaded to the camera using the ArmCamera.vi.



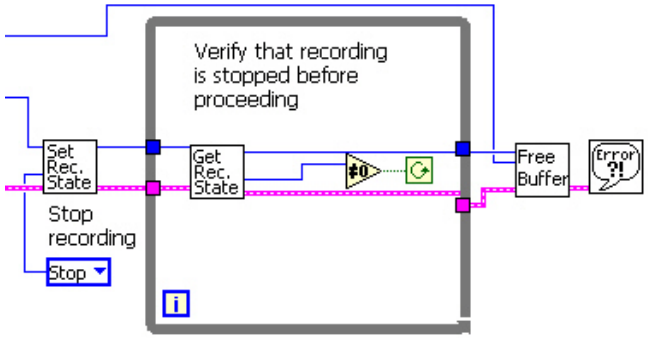
Once the camera is armed, the image size can be queried using GetSizes.vi. The size of the array is then modified to fit the image. A buffer is allocated for viewing images while recording. Setting the recording state to „Run“ with the SetRecordingState.vi starts the recording process.



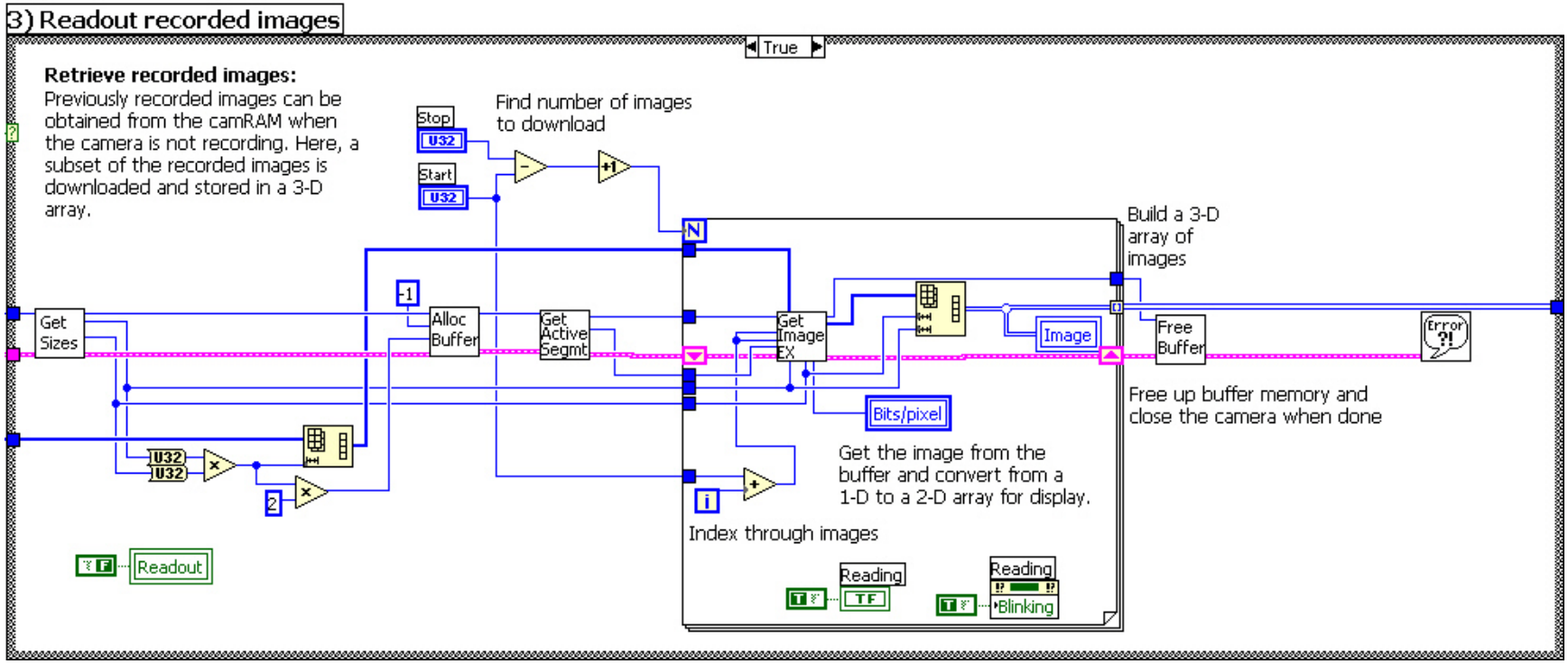
While recording, images can be obtained from the camera by adding a buffer to a queue to receive them, using the AddBufferEx.vi. GetBufferStatus.vi determines if there is an image available, and GetImageBuffer.vi retreives it from the buffer and places in a 1-D array. The array is reshaped to 2-D for display



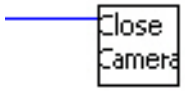
The recording process is halted by setting the recording state to “Stop”. Any buffers used are de-allocated using the FreeBuffer.vi.



Recorded images are read out by allocating a buffer and retrieving the images from Camera RAM using GetImageEx.vi The buffer is released after the readout process is complete



After all camera operations are complete, the camera is closed using the CloseCamera.vi



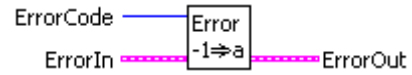
5 Interface library sections

5.1 GeneralControlStatus.llb

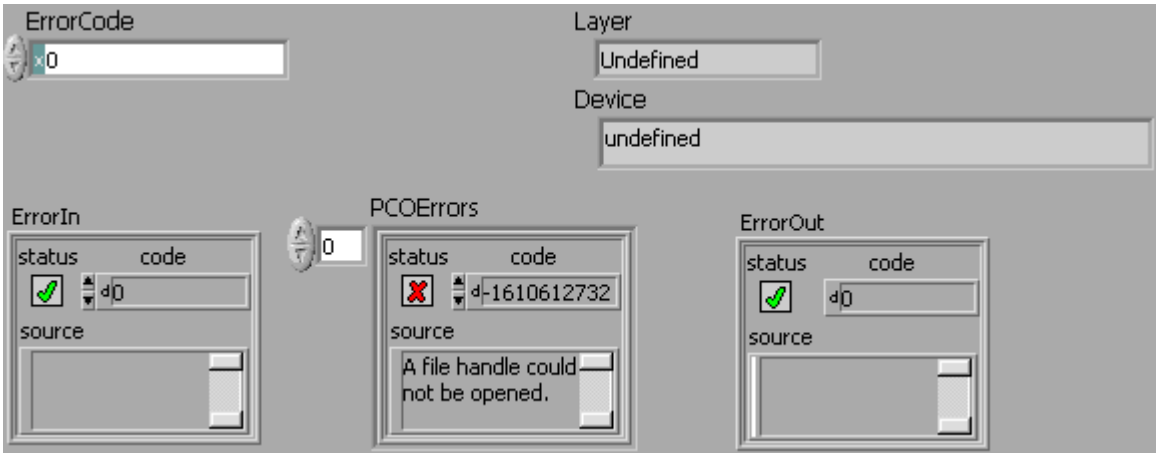
5.1.1 ErrorManager.vi

ErrorManager tranlsates error numbers generated by the pco.camera interface into language. Information on the source of the error, the device and software layer where the error originated is coded into the error string. This function is called by all the camera interface functions, so that error numbers can be converted into LabVIEW error clusters for further handling.

Connector Pane



Front Panel



Controls and Indicators

PCOErrors List of possible error numbers and descriptions of the errors. Last element is reserved for unknown errors.

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode Error code returned from any driver function

ErrorIn The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

Layer Layer is the software layer where the error originated

Device Device which caused the error. This can be a board level or software level error

ErrorOut The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

5.1.2 FormatHWDESC.vi

Connector Pane

Front Panel

Controls and Indicators

SC2_Hardware_DESC

5.1.3 FormatSoftwareDesc.vi

Connector Pane

Front Panel

Controls and Indicators

SC2_Software_DESC

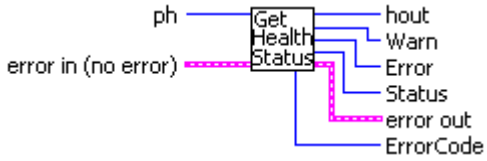
Cluster

- **string**
- **MinorRevision**
- **MajorRevision**
- **Variant**

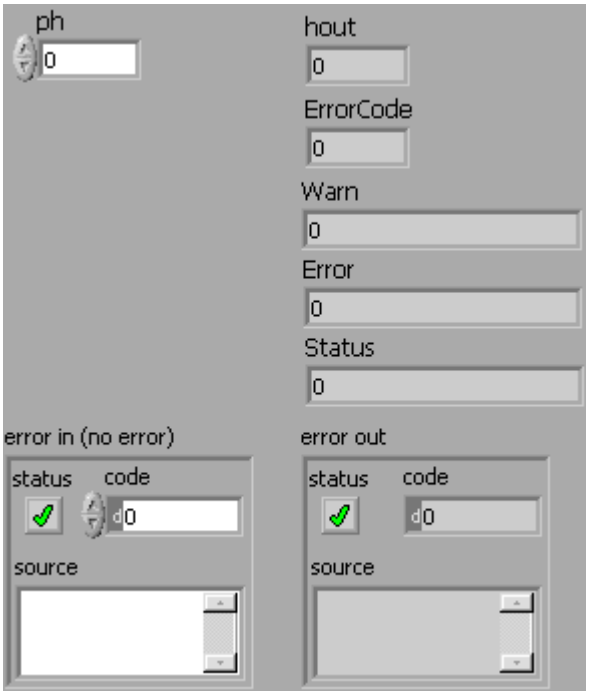
5.1.4 GetCameraHealthStatus.vi

Returns information on the operational status of the camera, including any error conditions that may exist.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

Warn Indicates a potential problem, but one which is not serious enough to be considered an error. The warnings can be interpreted bit-wise as follows:

0x00000001 Power Supply Voltage Range
0x00000002 Power Supply Temperature
0x00000004 Camera temperature (board temperature / FPGA temperature)
0x00000008 Image Sensor temperature (for cooled camera versions only)

Multiple error conditions can exist at the same time. For example, if there is a warning about the power supply temperature and the image sensor temperature, the code would be 0x0000000A.

Error Indicates an error condition in the camera. The code can be interpreted bit-wise as follows:

0x00000001 Power Supply Voltage Range
0x00000002 Power Supply Temperature
0x00000004 Camera temperature (board temperature / FPGA temperature)
0x00000008 Image Sensor temperature (for cooled camera versions only)
0x00010000 Camera Interface failure

0x00020000 Camera RAM module failure
0x00040000 Camera Main Board failure
0x00080000 Camera Head Boards failure

Multiple error conditions can exist at the same time. For example, if the camera interface and the main board both have errors, the code would be 0x00050000

U32 **Status** Indicates the general status of the camera. The code can be interpreted bit-wise as follows:

0x00000001 Default State:
• Bit set: Settings were changed since power up or reset.
• Bit cleared: No settings changed, camera is in default state.

0x00000002 Settings Valid:
• Bit set: Settings are valid (i.e. last “Arm Camera’ was successful and no settings were changed since ‘Arm camera’, except exposure time).
• Bit cleared: Settings were changed but not yet not checked and accepted by ‘Arm Camera’ command.

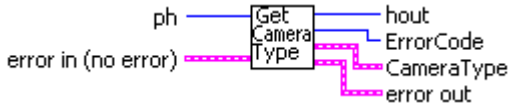
0x00000004 Recording State:
• Bit set: Recording state is on.
• Bit cleared: Recording state is off.

Multiple status indicators may be present. For example, if the settings have been changed, and the last setting was valid, the code would be 0x00000003

5.1.5 GetCameraType.vi

Returns information anout the type of camera referenced by the handle input. This information includes the camera type, subtype, serial number, along with version information for the hardware and firmware.

Connector Pane



Controls and Indicators

ph Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

CameraTypeIn

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **ErrorCode**

CameraTypeOut

CameraType

U16 **Size** Size in bytes of all the information returned by the driver.

U16 **CamType** Type of camera referenced by the handle. Valid types:

0x100 - pco.1200hs
0x200 - pco.1300
0x220 - pco.1600
0x240 - pco.2000
0x260 - pco.4000

Higher numbers are reserved for future use

U16 **CamSubType** Sub-type of the camera referenced by the handle

U32 **SerialNumber** Serial number of the camera head

U32 **HWVersion** Hardware version, coded as two hexadecimal words. The MS word is the major revision number. LS word is the minor revision number
e.g.:

0x00020001 - Version 2.01

More details are available in the HardwareVersion cluster

U32 **FWVersion** Firmware version, coded as two hexadecimal words. The MS word is the major revision number. LS word is the minor revision number
e.g.:

0x00020001 - Version 2.01

More details are available in the FirmwareVersion cluster

U16 **InterfaceType** Physical layer interface for this camera connection.

HardwareVersion Detailed description of hardware found in the camera system

U16 **BoardNum** Number of boards found in the system

HWVersions Detailed hardware information for each board

BoardName Text description of board

BatchNumber Code describing batch that this board is from.

MinorRevision Minor hardware revision code for this board, e.g. if version is 2.01, minor revision is 1

MajorRevision Major hardware revision code for this board, e.g. if version is 2.01, major revision is 2

Variant If there is a special variant for this board, a code for this variant will appear here

FirmwareVersion

DeviceNum Number of devices (processors or gate arrays) found in the system

FWVersions Detailed firmware information for each device

DeviceName Text description of device

MinorRevision Minor firmware revision code for this device, e.g. if version is 2.01, minor revision is 1

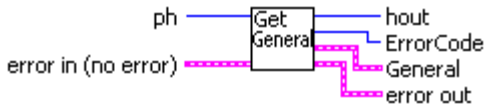
MajorRevision Major firmware revision code for this device, e.g. if version is 2.01, major revision is 2

Variant If there is a special variant for this device, a code for this variant will appear here

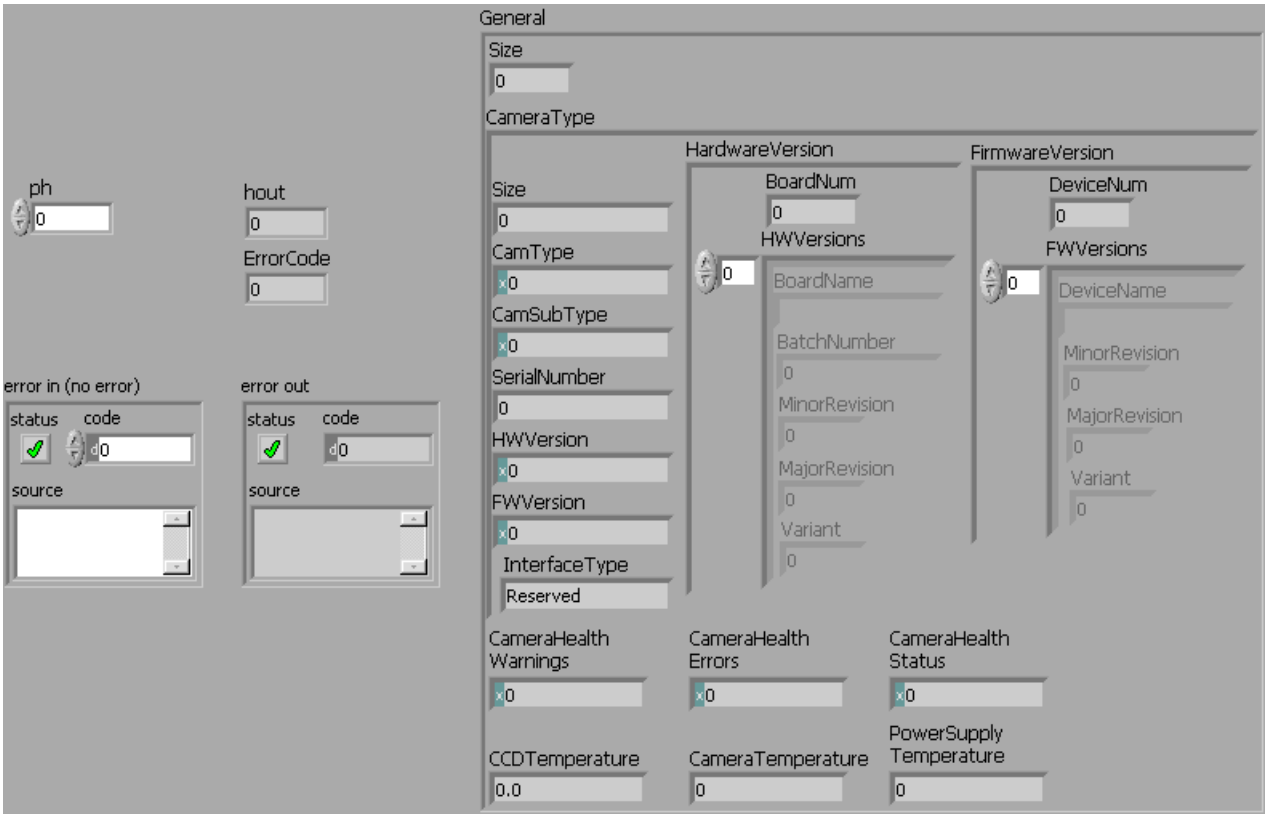
5.1.6 GetGeneral.vi

Returns information on the type, error status and physical state of the camera.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

GeneralIn

U32 **hout** Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **ErrorCode**

General

U16 **Size** Size in bytes of all the information returned by the driver.

CameraType

U16 **Size** Size in bytes of all the information returned by the driver.

U16 **CamType** Type of camera referenced by the handle. Valid types:

0x100 - pco.1200hs
0x200 - pco.1300
0x220 - pco.1600
0x240 - pco.2000
0x260 - pco.4000

Higher numbers are reserved for future use

U16 **CamSubType** Sub-type of the camera referenced by the handle

U32 **SerialNumber** Serial number of the camera head

U32 **HWVersion** Hardware version, coded as two hexadecimal words. The MS word is the major revision number. LS word is the minor revision number
e.g.:

0x00020001 - Version 2.01

More details are available in the HardwareVersion cluster

U32 **FWVersion** Firmware version, coded as two hexadecimal words. The MS word is the major revision number. LS word is the minor revision number
e.g.:

0x00020001 - Version 2.01

More details are available in the FirmwareVersion cluster

U16 **InterfaceType** Physical layer interface for this camera connection.

HardwareVersion Detailed description of hardware found in the camera system

U16 **BoardNum** Number of boards found in the system

HWVersions Detailed hardware information for each board

BoardName Text description of board

U16 **BatchNumber** Code describing batch that this board is from.

U8 **MinorRevision** Minor hardware revision code for this board, e.g. if version is 2.01, minor revision is 1

U8 **MajorRevision** Major hardware revision code for this board, e.g. if version is 2.01, major revision is 2

U16 **Variant** If there is a special variant for this board, a code for this variant will appear here

FirmwareVersion

U16 **DeviceNum** Number of devices (processors or gate arrays)

found in the system

FWVersions Detailed firmware information for each device

DeviceName Text description of device

MinorRevision Minor firmware revision code for this device, e.g. if version is 2.01, minor revision is 1

MajorRevision Major firmware revision code for this device, e.g. if version is 2.01, major revision is 2

Variant If there is a special variant for this device, a code for this variant will appear here

CameraHealthWarnings Indicates a potential problem, but one which is not serious enough to be considered an error. The warnings can be interpreted bit-wise as follows:

0x00000001 Power Supply Voltage Range
0x00000002 Power Supply Temperature
0x00000004 Camera temperature (board temperature / FPGA temperature)
0x00000008 Image Sensor temperature (for cooled camera versions only)

Multiple error conditions can exist at the same time. For example, if there is a warning about the power supply temperature and the image sensor temperature, the code would be 0x0000000A.

CameraHealthErrors Indicates an error condition in the camera. The code can be interpreted bit-wise as follows:

0x00000001 Power Supply Voltage Range
0x00000002 Power Supply Temperature
0x00000004 Camera temperature (board temperature / FPGA temperature)
0x00000008 Image Sensor temperature (for cooled camera versions only)
0x00010000 Camera Interface failure
0x00020000 Camera RAM module failure
0x00040000 Camera Main Board failure
0x00080000 Camera Head Boards failure

Multiple error conditions can exist at the same time. For example, if the camera interface and the main board both have errors, the code would be 0x00050000

CameraHealthStatus Indicates the general status of the camera. The code can be interpreted bit-wise as follows:

0x00000001 Default State:
• Bit set: Settings were changed since power up or reset.
• Bit cleared: No settings changed, camera is in default state.

0x00000002 Settings Valid:
• Bit set: Settings are valid (i.e. last “Arm Camera’ was successful and no settings were changed since ‘Arm camera’, except exposure time).
• Bit cleared: Settings were changed but not yet not checked and accepted by ‘Arm Camera’ command.

0x00000004 Recording State:
• Bit set: Recording state is on.
• Bit cleared: Recording state is off.

Multiple status indicators may be present. For example, if the settings have been changed, and the last setting was valid, the code would be 0x00000003

CCDTemperature Temperature in Celcius of the image sensor

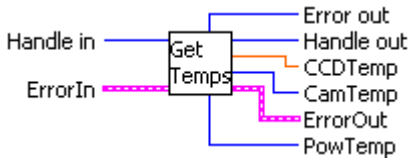
CameraTemperature Temperature in Celcius of the camera head electronics

PowerSupplyTemperature Temperature in Celcius of the power supply electronics.

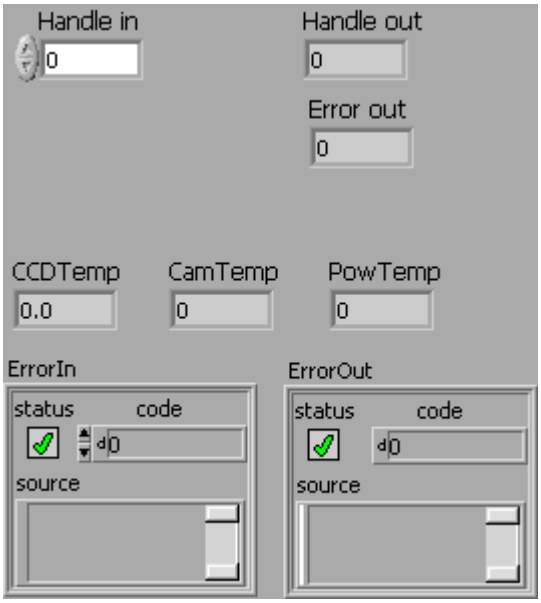
5.1.7 GetTemperatures.vi

Get current sensor, electronics and power supply temperatures.

Connector Pane



Front Panel



Controls and Indicators

U32 **Handle in**

ErrorIn The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

Error out

Handle out

CCDTemp Sensor temperature in Celsius

CamTemp Electronics temperature in Celsius

PowTemp Power supply temperature in Celsius

ErrorOut The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

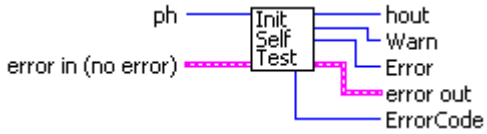
source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

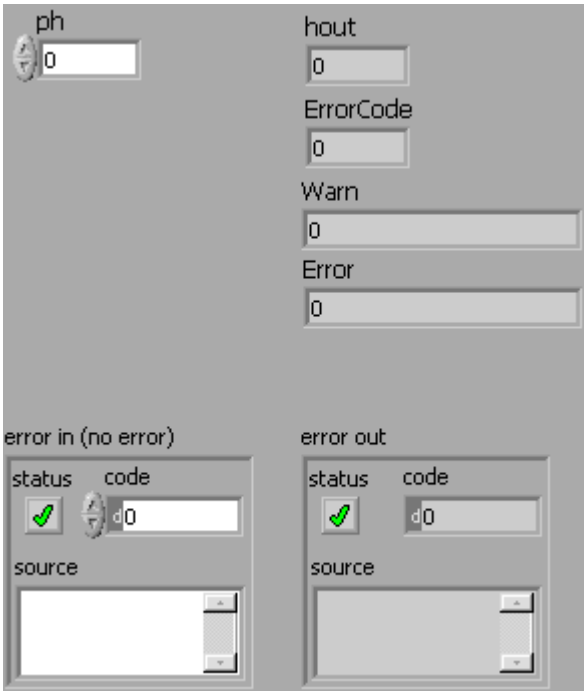
5.1.8 InitiateSelfTestProcedure.vi

Initiates a camera self-test and returns any errors or warnings encountered.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information

about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

Warn Indicates a potential problem, but one which is not serious enough to be considered an error. The warnings can be interpreted bit-wise as follows:

0x00000001 Power Supply Voltage Range
0x00000002 Power Supply Temperature
0x00000004 Camera temperature (board temperature / FPGA temperature)
0x00000008 Image Sensor temperature (for cooled camera versions only)

Multiple error conditions can exist at the same time. For example, if there is a warning about the power supply temperature and the image sensor temperature, the code would be 0x0000000A.

Error Indicates an error condition in the camera. The code can be interpreted bit-wise as follows:

0x00000001 Power Supply Voltage Range
0x00000002 Power Supply Temperature
0x00000004 Camera temperature (board temperature / FPGA temperature)
0x00000008 Image Sensor temperature (for cooled camera versions only)
0x00010000 Camera Interface failure
0x00020000 Camera RAM module failure

0x00040000 Camera Main Board failure
0x00080000 Camera Head Boards failure

Multiple error conditions can exist at the same time. For example, if the camera interface and the main board both have errors, the code would be 0x00050000

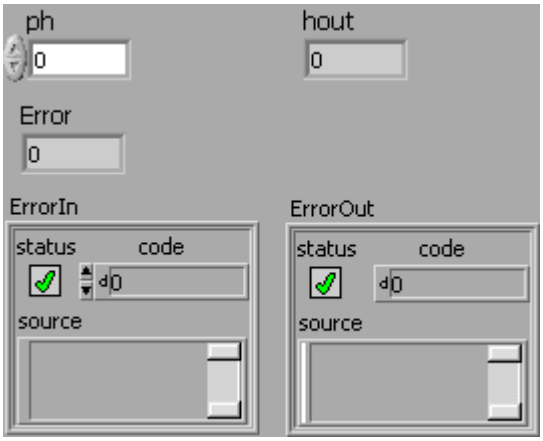
5.1.9 ResetSettingsToDefault.vi

Rests all camera settings to default values. These values are:

Sensor Format:	standard
ROI:	full resolution
Binning:	no binning (1 X 1)
Pixel Rate:	Lowest rate (sensor dependent)
Gain:	Normal gain (if setting available due to sensor)
Double Image Mode:	Off
IR sensitivity:	Off (if setting available due to sensor)
Cooler Setpoint:	-12 C°
ADC mode:	Using one ADC
Exposure Time:	20 ms
Delay Time:	0 µs
Trigger Mode:	Auto Trigger
Recording state:	stopped
Memory Segmentation:	Total memory allocated to first segment
Storage Mode Recorder:	Ring Buffer + Live View on
Acquire Mode:	Auto

Connector Pane

Front Panel



Controls and Indicators

U32 **ph**

ErrorIn The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

hout

Error

ErrorOut The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

5.1.10 StripCamType.vi

Connector Pane

Front Panel

Controls and Indicators

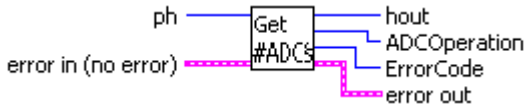
CameraTypeIn

5.2 Sensor.llb

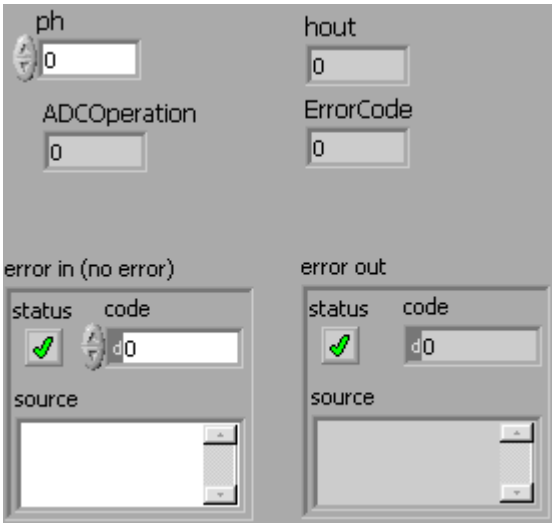
5.2.1 GetADCOperation.vi

Finds the number of A/D converters currently in use. Some models have multiple ADC's for faster readout.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

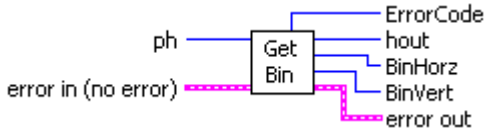
ErrorCode

ADCOperation Number of A/D converters currently in use.

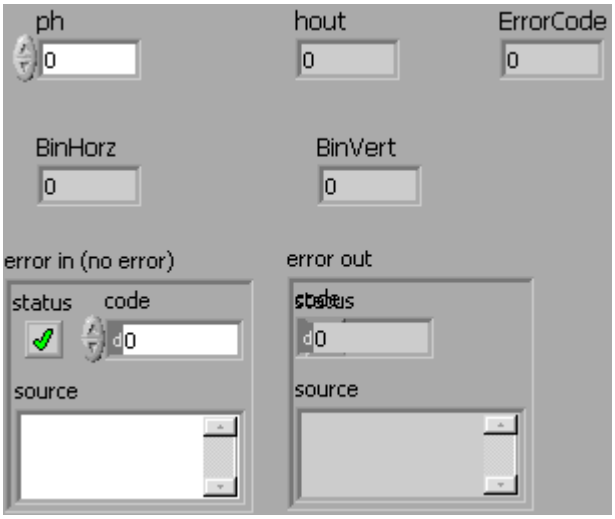
5.2.2 GetBinning.vi

Finds the camera's current binning setting. as set by the Set Binning and ArmCamera commands. Use GetDescription.vi to determine what the allowed binning settings are for the camera.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information

about the error displayed.

U32 **hout** Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **ErrorCode**

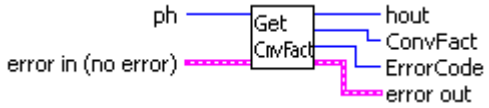
U16 **BinHorz** Current horizontal binning setting

U16 **BinVert** Current vertical binning setting

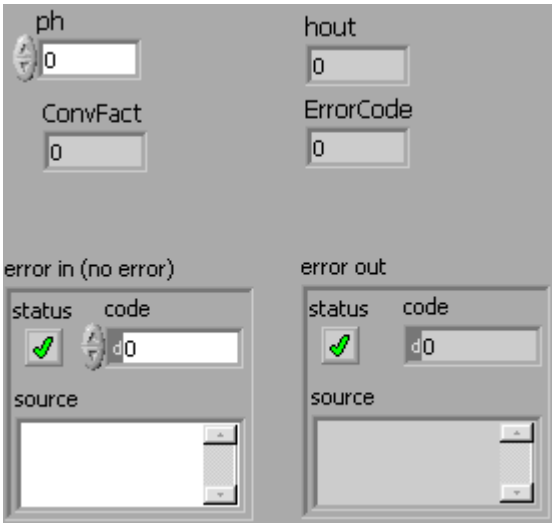
5.2.3 GetConversionFactor.vi

Finds the current A/D converter gain setting, in electrons/pixel. The number returned is an integer and represents 100 times the actual value, e.g. 435 = 4.35 electrons/count.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information

about the error displayed.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

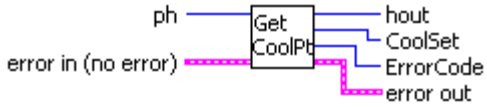
ErrorCode

ConvFact Finds the current A/D converter gain setting, in electrons/pixel. The number returned is an integer and represents 100 times the actual value, e.g. 435 = 4.35 electrons/count.

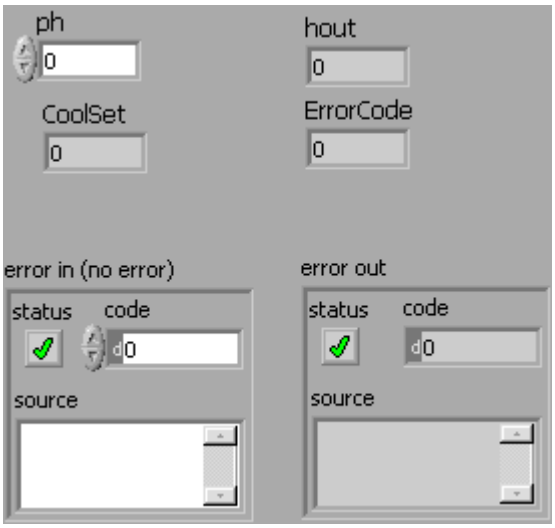
5.2.4 GetCoolingSetpointTemperature.vi

Finds the current cooling temperature setpoint, in °C. Value will be 0 for cameras which are not cooled.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

U32 **hout** Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

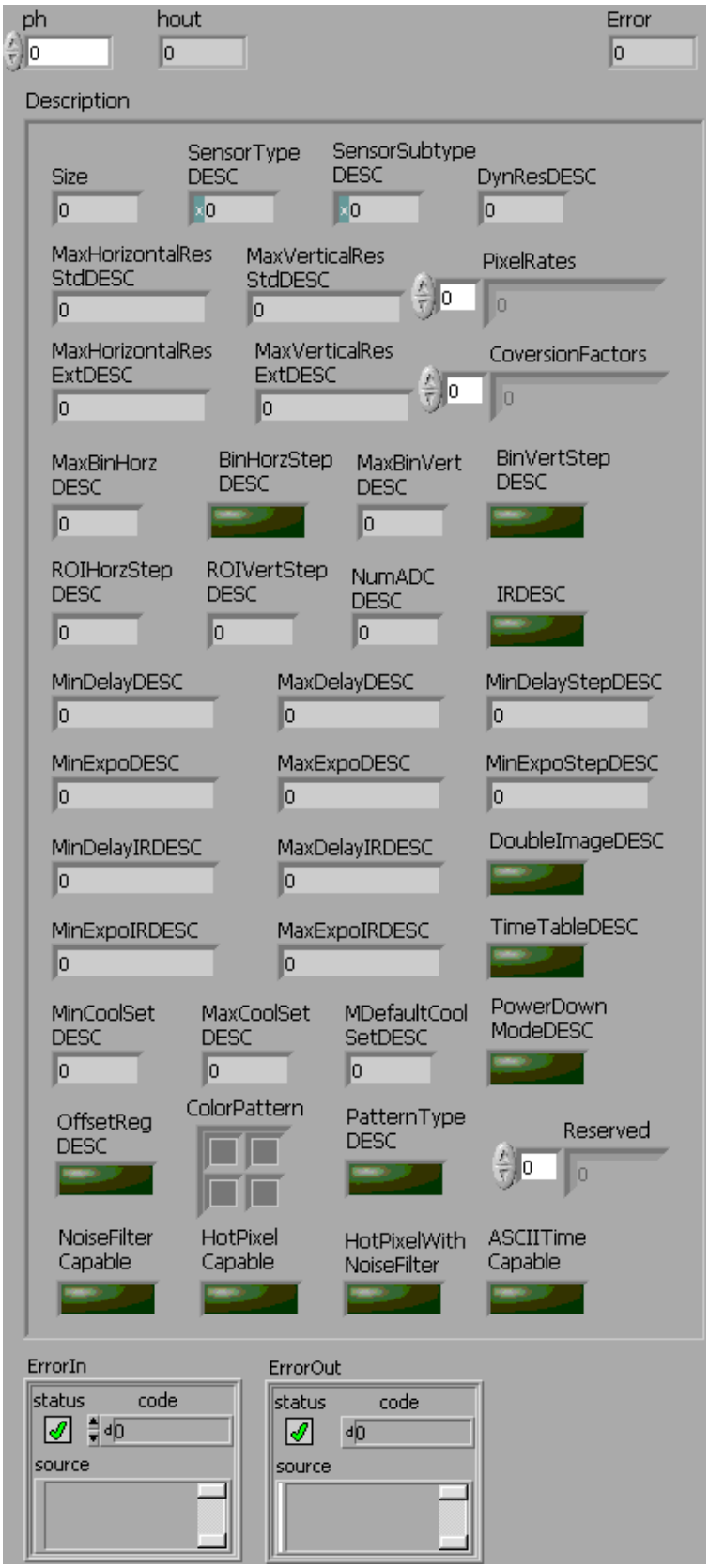
The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **ErrorCode**

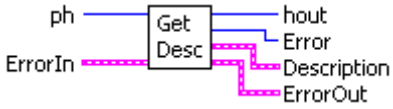
I16 **CoolSet** Current cooling temperature setpoint, in °C. Value will be 0 for cameras which are not cooled.



5.2.5 GetDescription.vi

Returns detailed information on the camera refernced by the input handle. The "Description" cluster contains information on sensor type, supported modes of operation, and various other operating parameters.

Connector Pane



Front Panel

Controls and Indicators

U32 **ph** Handle to camera

STR **Description** Detailed description of the properties of the camera including sensor type, digitization rate, etc.

U16 **Size** Size of this cluster in bytes

U16 **SensorTypeDESC** Identification code for image sensor in camera head

Here are the sensor codes defined for this release:

Monochrome sensors:

0x0010 Sony ICX285AL
0x0020 Sony ICX263AL
0x0030 Sony ICX274AL
0x0040 Sony ICX407AL
0x0050 Sony ICX414AL
0x0110 Kodak KAI-2000M
0x0120 Kodak KAI-2001M
0x0130 Kodak KAI-4010M
0x0140 Kodak KAI-4020M
0x0150 Kodak KAI-11000M
0x1010 Micron MV13 bw

Color sensors:

0x0011 Sony ICX285AK
0x0021 Sony ICX263AK
0x0031 Sony ICX274AK
0x0041 Sony ICX407AK
0x0051 Sony ICX414AK
0x0111 Kodak KAI-2000CM
0x0121 Kodak KAI-2001CM
0x0131 Kodak KAI-4010CM
0x0141 Kodak KAI-4020CM
0x0151 Kodak KAI-11000CM
0x1011 Micron MV13 col

U16 **SensorSubtypeDESC** Code for sensor subtypes, variants etc.

U16 **MaxHorizontalResStdDESC** Maximum horizontal effective pixels in standard mode

U16 **MaxVerticalResStdDESC** Maximum vertical effective pixels in standard mode

U16 **MaxHorizontalResExtDESC** Maximum horizontal pixels in extended mode. This includes all dark pixels, reference pixels and effective pixels

U16 **MaxVerticalResExtDESC** Maximum vertical pixels in extended mode. This includes all dark pixels, reference pixels and effective pixels

U16 **DynResDESC** Analog to digital converter resolution, in bits.

U16 **MaxBinHorzDESC** Maximum bin size in the horizontal direction

TF **BinHorzStepDESC** Describes the binning increments allowed in the horizontal direction.

FALSE = Only binary increments are allowed, i.e. 1, 2, 4, 8.....
TRUE = Linear increments are allowed, i.e. 1, 2, 3,4, 5, 6,.....

U16 **MaxBinVertDESC** Maximum bin size in the vertical direction

TF **BinVertStepDESC** Describes the binning increments allowed in the vertical direction.

FALSE = Only binary increments are allowed, i.e. 1, 2, 4, 8.....
TRUE = Linear increments are allowed, i.e. 1, 2, 3,4, 5, 6,.....

U16 **ROIHorzStepDESC** Describes the minimum increment allowed in the region of interest setting in the horizontal direction. For example:

A value of 10 means the right ROI border can be 1, 11, 21, etc.
A value of 32 means the right ROI border can be 1, 33, 65, etc.

U16 **ROIVertStepDESC** Describes the minimum increment allowed in the region of interest setting in the vertical direction. For example:

A value of 10 means the top ROI border can be 1, 11, 21, etc.
A value of 32 means the top ROI border can be 1, 33, 65, etc.

U16 **NumADCDESC** Number of A/D converters available

TF **IRDESC** Indicates whether camera has enhanced infrared mode

FALSE - IR enhancement not suppoted
TRUE - Camera supports enhanced infrared mode

U32 **MinDelayDESC** Minimum delay setting in nanoseconds for standard mode

U32 **MaxDelayDESC** Maximum delay setting in milliseconds for standard mode

U32 **MinDelayStepDESC** Minimum delay step size in nanoseconds (all modes)

U32 **MinExpoDESC** Minimum exposure setting in nanoseconds for standard mode

U32 **MaxExpoDESC** Maximum exposure setting in milliseconds for standard mode

U32 **MinExpoStepDESC** Minimum exposure step size in nanoseconds (all modes)

U32 **MinDelayIRDESC** Minimum delay setting in nanoseconds for IR enhanced mode

U32 **MaxDelayIRDESC** Maximum delay setting in milliseconds for IR enhanced mode

U32 **MinExpoIRDESC** Minimum exposure setting in nanoseconds for IR enhanced mode

MaxExpoIRDESC Maximum exposure setting in milliseconds for IR enhanced mode

TimeTableDESC Indicates camera's ability to use delay / exposure time tables

FALSE - Exposure time tables not supported
TRUE - Exposure time tables supported

DoubleImageDESC Indicates double image capability

FALSE - Double image mode not supported.
TRUE - Camera has double image capability.

MinCoolSetDESC Minimum cooling setpoint, in °C. Value is 0 for uncooled cameras

MaxCoolSetDESC Maximum cooling setpoint, in °C. Value is 0 for uncooled cameras

MDefaultCoolSetDESC Default cooling setpoint, in °C. Value is 0 for uncooled cameras

PowerDownModeDESC Indicates whether the sensor can be powered down to reduce dark current

FALSE - Power down mode is not supported
TRUE - Power down mode is supported

OffsetRegDESC Indicates whether camera is capable of automatic offset regulation. Offset regulation is perform by sampling dark reference pixels to gauge the thermal drift in the sensor, then adjusting the offset voltage to compensate.

FALSE - Camera does not support automatic offset regulation
TRUE - Offset regulation is supported.

ColorPattern Describes the pattern of color filters used on the pixels of a color sensor. This number packs 4, 4 bit numbers describing each quadrant of a 2 X 2 pixel color pattern cell.

UpperLeftColor Color of the upper left pixel in the 2 X 2 color pattern

Possible values are:

0 - Monochrome, no color filter
1 - Red
2 - Green A
3 - Green B
4 - Blue
5 - Cyan
6 - Magenta
7 - Yellow

U8 **UpperRightColor** Color of the upper right pixel in the 2 X 2 color pattern

Possible values are:

0 - Monochrome, no color filter
1 - Red
2 - Green A
3 - Green B
4 - Blue
5 - Cyan
6 - Magenta
7 - Yellow

U8 **LowerLeftColor** Color of the lower left pixel in the 2 X 2 color pattern

Possible values are:

0 - Monochrome, no color filter
1 - Red
2 - Green A
3 - Green B
4 - Blue
5 - Cyan
6 - Magenta
7 - Yellow

U8 **LowerRightColor** Color of the lower right pixel in the 2 X 2 color pattern

Possible values are:

0 - Monochrome, no color filter
1 - Red
2 - Green A
3 - Green B
4 - Blue
5 - Cyan
6 - Magenta
7 - Yellow

TF **PatternTypeDESC** Iindicates, for color sensors, whether sensor has an RGB or a CMY Bayer pattern. For monochrome sensors, the output is always FALSE.

FALSE - RGB pattern
TRUE - CMY pattern

[U32] **PixelRates** Analog to digital converter rates, in samples per second. For cameras that support multiple A/D rates, each element of the array will contain the sampling rate for each supported mode.

U32 **PixelRateDesc1**

[U16] **CoversionFactors** Digitizer conversion factors, in electrons / count. For cameras that support multiple ranges, each element of the array will be

filled with the corresponding conversion factor for that mode.

U16 **ConvFactDesc1**

[U32] **Reserved** Reserved for future use

U32 **Reserved1**

TF **NoiseFilterCapable** Indicates whether camera is capable of noise filtering

FALSE - Camera does not support noise filter
TRUE - Noise filter is supported.

TF **HotPixelCapable** Indicates whether camera is capable of automatic hot pixel correction. NOTE: Also check the "HotPixelWithNoiseFilter" indicator to determine if the noise filter is required for this mode of operation.

FALSE - Camera does not support hot pixel correction
TRUE - hot PixelCorrection is supported.

TF **HotPixelWithNoiseFilter** Indicates whether noise filter is required for hot pixel correction

FALSE - Noise filter is not required
TRUE - Noise filter is required

TF **ASCIITimeCapable** Indicates whether camera is capable of automatic offset regulation. Offset regulation is perform by sampling dark reference pixels to gauge the thermal drift in the sensor, then adjusting the offset voltage to compensate.

FALSE - Camera does not support automatic offset regulation
TRUE - Offset regulation is supported.

U32 **hout** Handle returned by GetDescription

ErrorOut The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

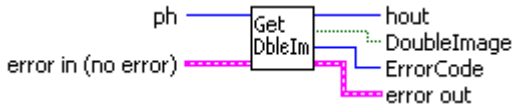
ErrorIn The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

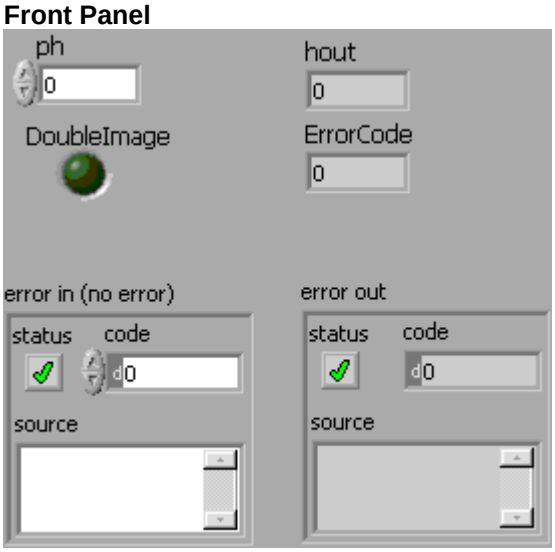
5.2.6 GetDoubleImageMode.vi

Determines if the camera is currently in double image mode.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

5-H **error in (no error)** The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

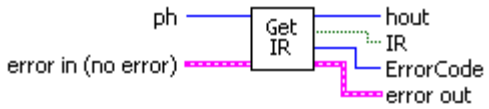
DoubleImage Indicates the state of the double image mode.

FALSE - Double image mode disabled
TRUE - Camera is currently in double image mode.

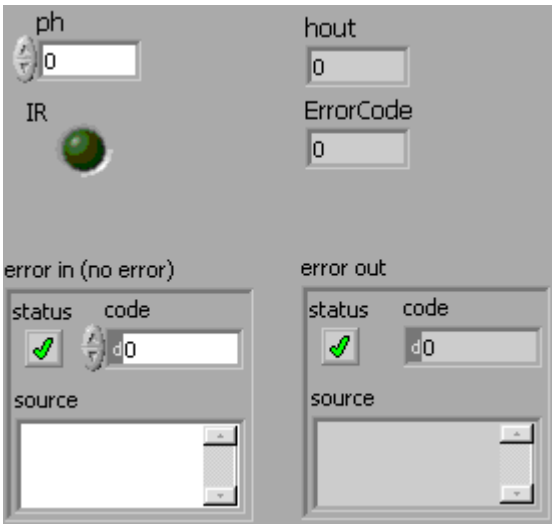
5.2.7 GetIRSensitivity.vi

Indicates the status of the enhanced infrared sensitivity mode.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

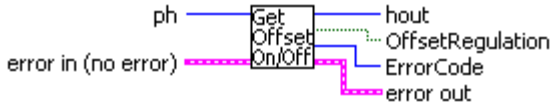
IR Indicates the status of the enhanced infrared sensitivity mode.

FALSE - Enhanced infrared sensitivity mode is disabled
FALSE - Enhanced infrared sensitivity mode is enabled

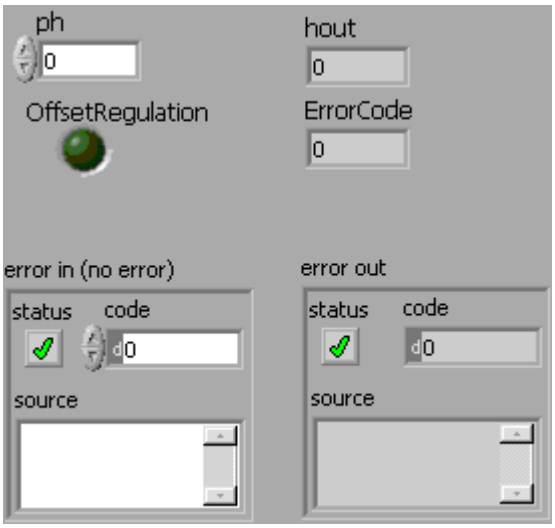
5.2.8 GetOffsetMode.vi

Returns the current state of the automatic offset regulation.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

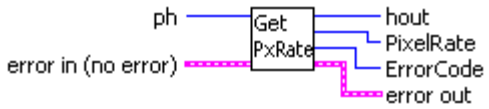
OffsetRegulation Current state of the automatic offset regulation.

FALSE - Automatic offset control enabled
TRUE - Automatic offset control disabled

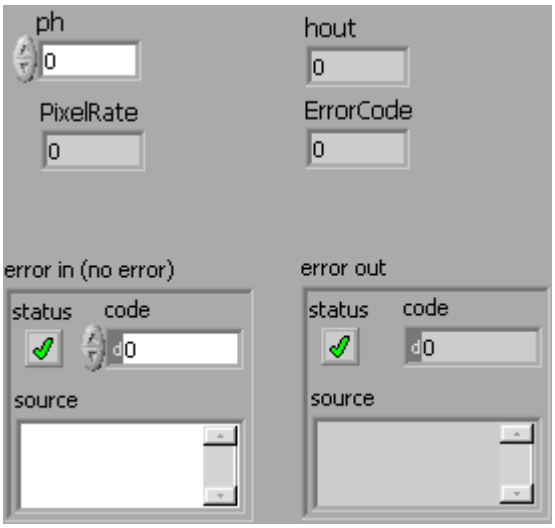
5.2.9 GetPixelRate.vi

Finds the current pixel rate, as of the last ArmCamera command. The pixelrate is gven in Hz, e.g. 10000000 = 10 Mhz

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

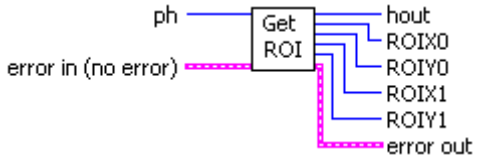
ErrorCode

PixelRate Current pixel rate, as of the last ArmCamera command. The pixelrate is gven in Hz, e.g. 10000000 = 10 Mhz

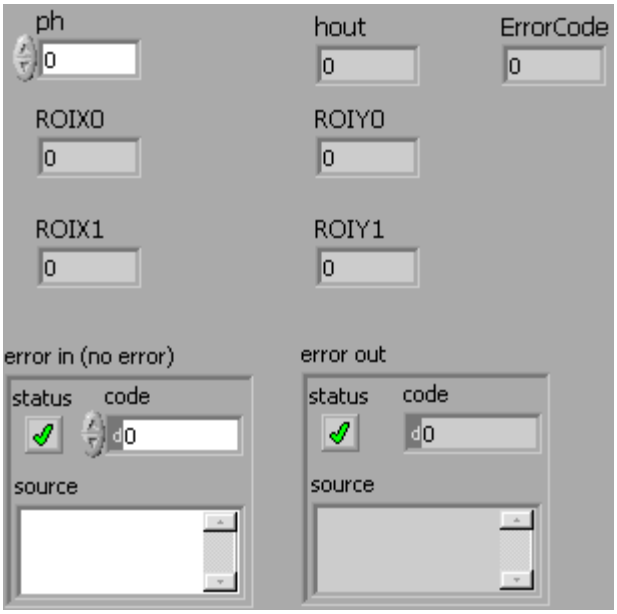
5.2.10 GetROI.vi

Get ROI (region or area of interest) window settings. The ROI is equal to or smaller than the absolute image area which is defined by the settings of format and binning.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

EH **error in (no error)** The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

ROIX0 Left border of the region of interest

ROIY0 Top border of the region of interest

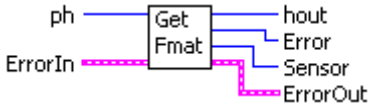
ROIX1 Right border of the region of interest

ROIY1 Bottom border of the region of interest

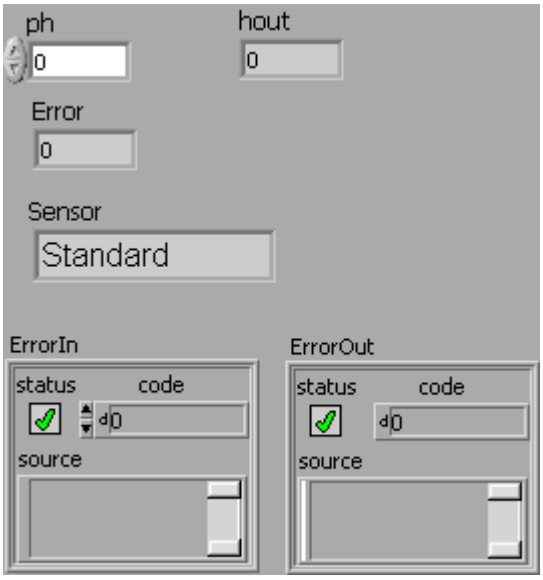
5.2.11 GetSensorFormat.vi

Returns the format of the sensor as either Standard or Extended. Extended format displays all pixels, including dark refernce and dummies.

Connector Pane



Front Panel



Controls and Indicators

ph

ErrorIn The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **Error**

U32 **hout**

U16 **Sensor** Current sensor format setting:

0 - Standard format displays only active pixels
1 - Extended format: displays active dark reference and dummy pixels.

ErrorOut The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

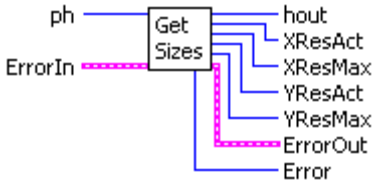
abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

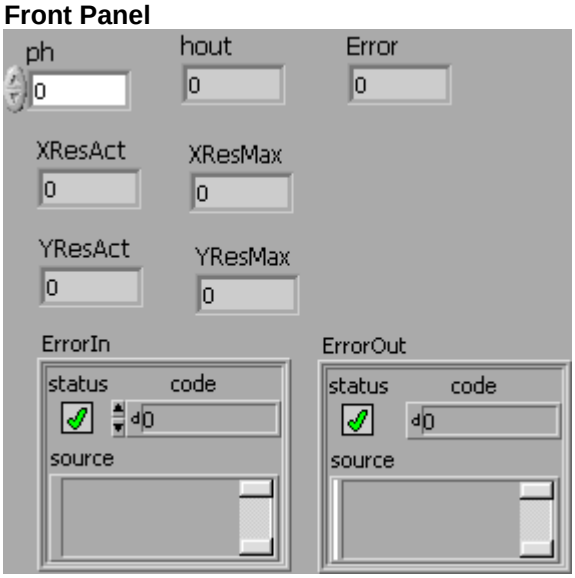
5.2.12 GetSizes.vi

Finds the actual size of the image as set by the last ArmCamera command.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph**

ErrorIn The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

Error

hout

XResAct Actual horizontal resolution of the image as determined by the settings at the last ArmCamera command.

YResAct Actual vertical resolution of the image as determined by the settings at the last ArmCamera command.

XResMax Maximum horizontal resolution for this sensor

YResMax Maximum vertical resolution for this sensor

ErrorOut The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

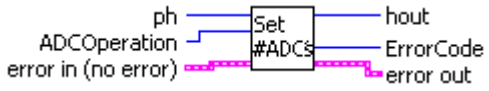
source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

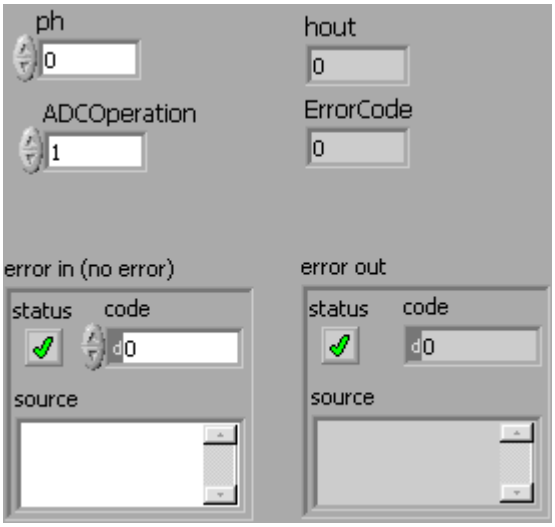
5.2.13 SetADCOperation.vi

Sets the number of A/D converters used to read out the image sensor. One ADC gives the higherst linearity, but multiple ADC's can be used in some models for faster readout. Use GetDescription.vi to find the maximum number of ADC's available.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information

about the error displayed.

ADCOperation Sets the number of A/D converters used to read out the image sensor. One ADC gives the higherst linearity, but multiple ADC's can be used in some models for faster readout. Use GetDescription.vi to find the maximum number of ADC's available.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

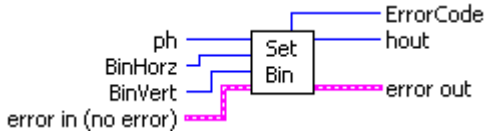
The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

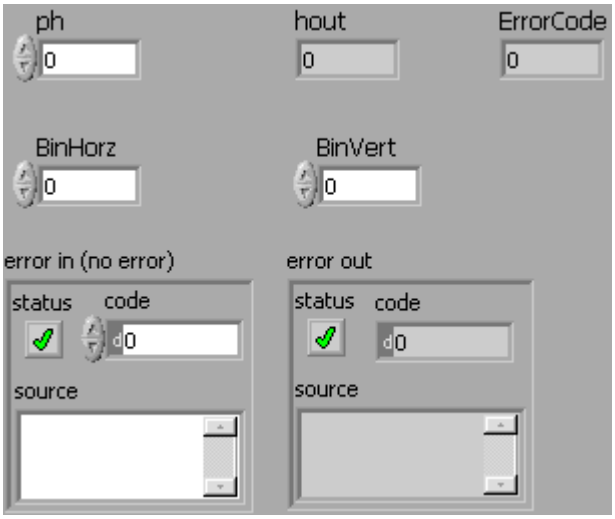
5.2.14 SetBinning.vi

Sets the binning to be used by the camera at the next ArmCamera command. Use GetDescription.vi to determine what the allowed binning settings are for the camera.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information

about the error displayed.

BinHorz Set horizontal binning.

BinVert Set vertical binning.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

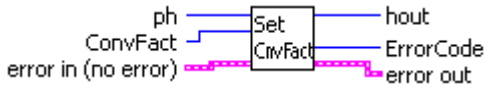
The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

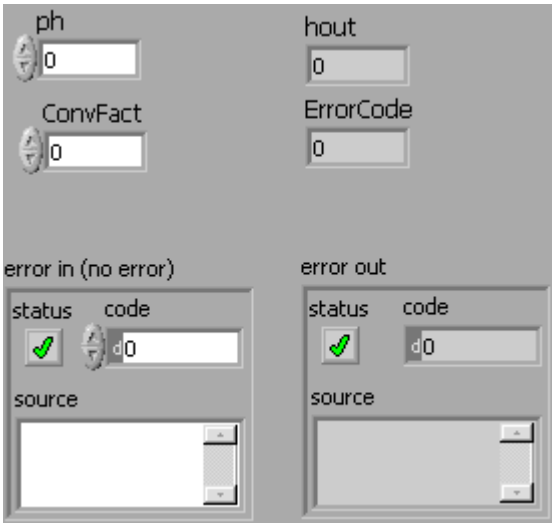
5.2.15 SetConversionFactor.vi

Sets the A/D converter gain setting, in electrons/pixel. This setting is an integer and represents 100 times the actual value, e.g. 435 = 4.35 electrons/count. Use GetDescription to determine the valid settings for the camera. Setting will take effect at next ArmCamera command.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information

about the error displayed.

U16 **ConvFact** Sets the A/D converter gain, in electrons/pixel. This setting is an integer and represents 100 times the actual value, e.g. 435 = 4.35 electrons/count. Use GetDescription to determine the valid settings for the camera. Setting will take effect at next ArmCamera command.

U32 **hout** Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

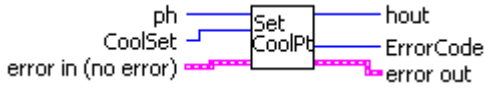
The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **ErrorCode**

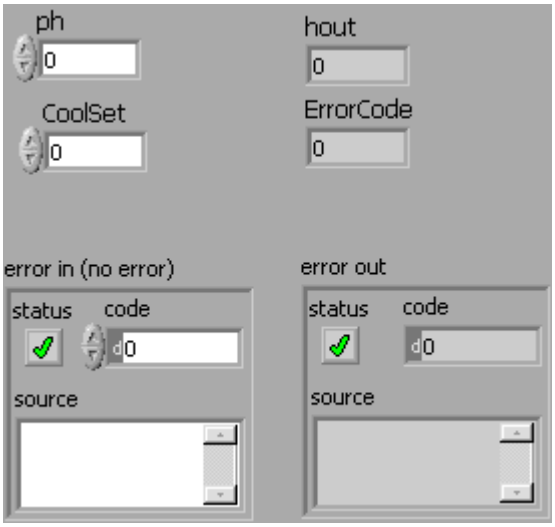
5.2.16 SetCoolingSetpointTemperature.vi

Sets the cooling temperature setpoint on cooled cameras. Use GetDescription.vi to determine if the camera supports this feature.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

CoolSet Desired cooling setpoint, in °C.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

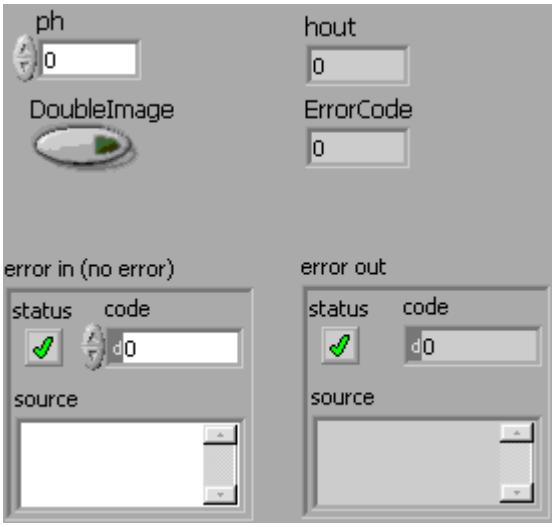
ErrorCode

5.2.17 SetDoubleImageMode.vi

Enables or disables double image mode in cameras that have this capability. Use GetDescription.vi to determine if the camera has double image capability. This setting will take effect at the next ArmCamera command.

Connector Pane

Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

DoubleImage Enables or disables double image mode in cameras that have this capability. Use GetDescription.vi to determine if the camera has double image capability. This setting will take effect at the next ArmCamera command.

FALSE - Disable double image mode
TRUE - Enable double image mode.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

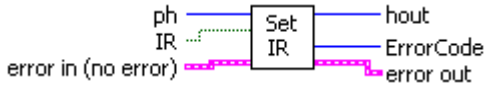
The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

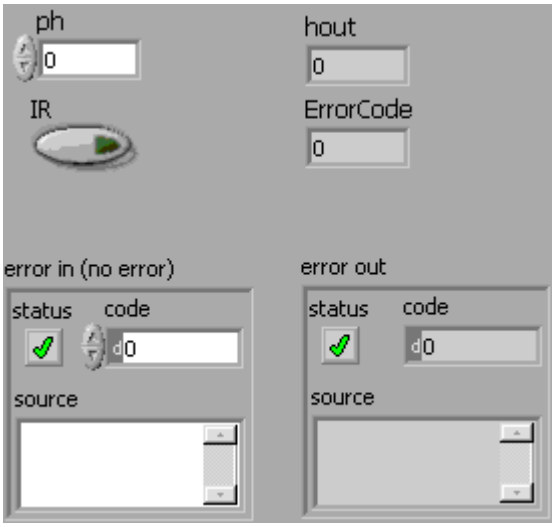
5.2.18 SetIRSensitivity.vi

Enables or disables the enhanced infrared sensitivity mode, in cameras where this feature is supported. Use GetDescription.vi to determine if the camera supports this mode.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

IR Enables or disables the enhanced infrared sensitivity mode, in cameras where this feature is supported. Use GetDescription.vi to determine if the camera supports this mode.

FALSE - Disable the enhanced IR mode
TRUE - Enable the enhanced IR mode

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

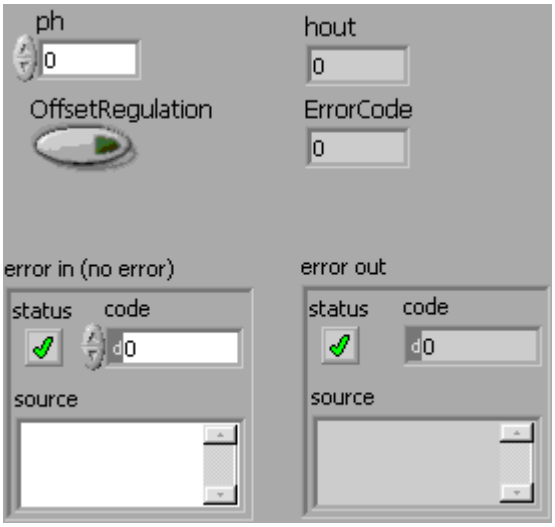
ErrorCode

5.2.19 SetOffsetMode.vi

Enables or disables automatic offset regulation. Automatic offset regulation adjusts the offset based on measurement of the reference pixels.

Connector Pane

Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

OffsetRegulation Enables or disables automatic offset regulation.

FALSE - Enable automatic offset regulation.
TRUE - Disable Automatic offset regulation.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

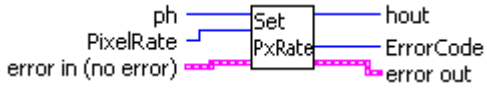
The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

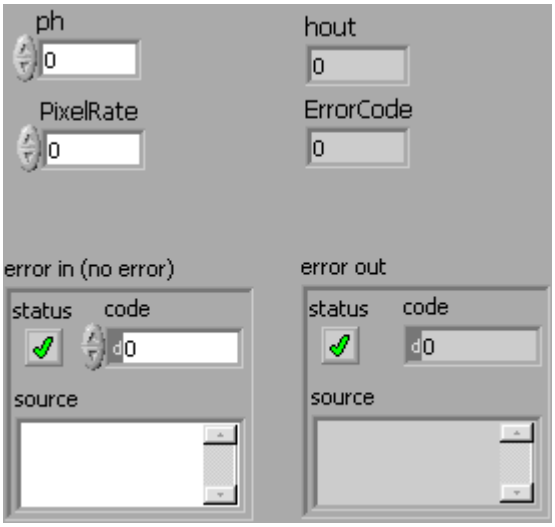
5.2.20 SetPixelRate.vi

Sets the pixel rate. Takes effect at next ArmCamera command. The pixelrate is specified in Hz, e.g. 10000000 = 10 Mhz. Use GetDescription.vi to find the allowed rates for the camera.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

PixelRate Sets the pixel rate. Takes effect at next ArmCamera command. The pixelrate is specified in Hz, e.g. 10000000 = 10 Mhz. Use GetDescription.vi to find the allowed rates for the camera.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

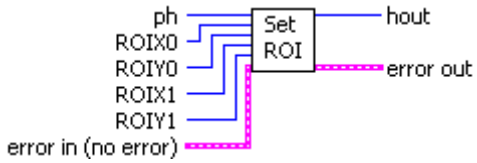
The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

5.2.21 SetROI.vi

Set ROI (region or area of interest) window. The ROI must be equal to or smaller than the absolute image area which is defined by the settings of format and binning. If you change the binning settings you have to adapt the ROI, before you call ArmCamera.vi. The binning setting sets the limits for the ROI. E.g. a sensor with 1600x1200 and binning 2x2 will result in a maximum ROI of 800x600.

Connector Pane



Front Panel

Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ROIX0 Sets left border of the region of interest

ROIY0 Sets top border of the region of interest

ROIX1 Sets right border of the region of interest

ROIY1 Sets bottom border of the region of interest

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

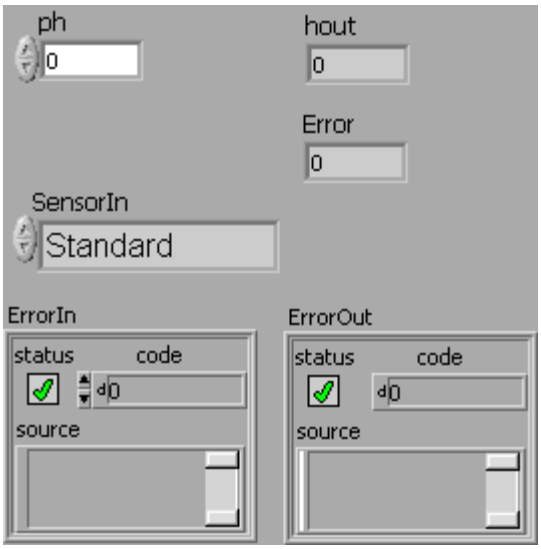
ErrorCode

5.2.22 SetSensorFormat.vi

Sets the format of the sensor to either Standard or Extended. Extended format displays all pixels, including dark refernce and dummies.

Connector Pane

Front Panel



Controls and Indicators

U32 **ph**

U16 **SensorIn** Sets sensor format:

0 - Standard format displays only active pixels
1 - Extended format: displays active dark reference and dummy pixels.

ErrorIn The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information

about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

Error

hout

ErrorOut The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

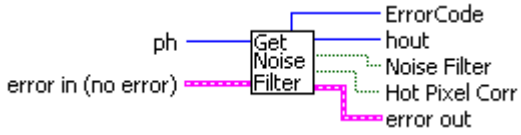
source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

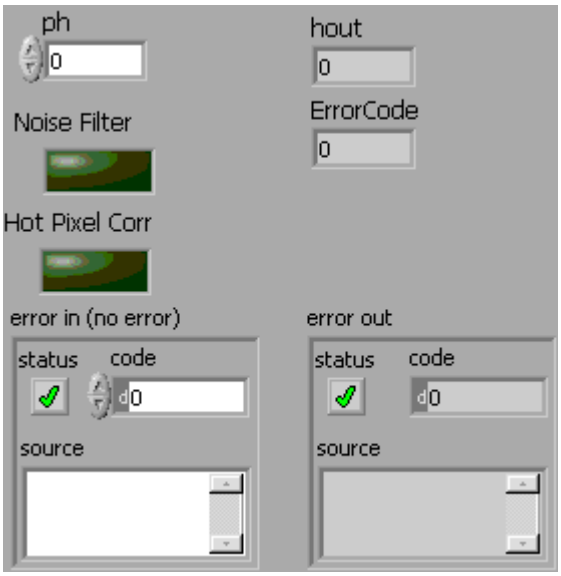
5.2.23 GetNoiseFilterMode.vi

Determines the current state of automatic noise filtering and hot pixel correction in camera models equipped with this feature.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

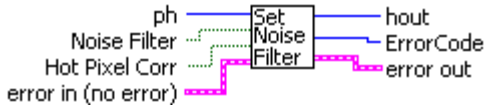
Noise Filter Indicates state of noise filter mode

Hot Pixel Corr Indicates state of hot pixel correction

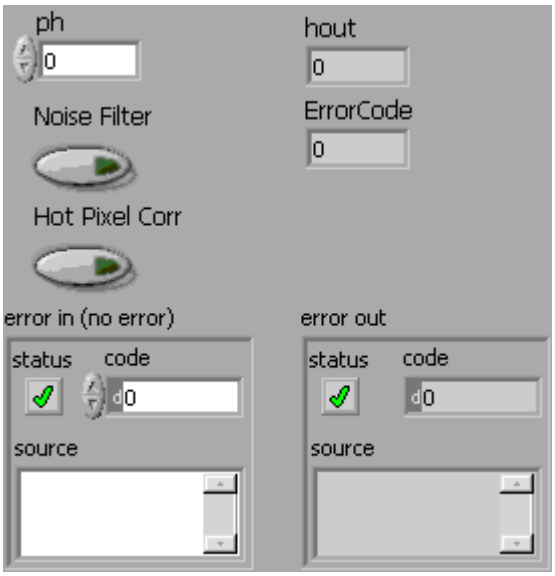
5.2.24 SetNoiseFilterMode.vi

Enables automatic noise filtering and hot pixel correction in camera models equipped with this feature.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information

about the error displayed.

Noise Filter Turn on noise filter mode

Hot Pixel Corr Enable hot pixel correction

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

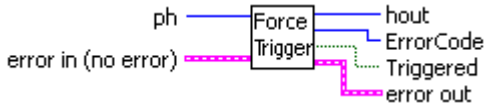
ErrorCode

5.3 TimingControl.llb

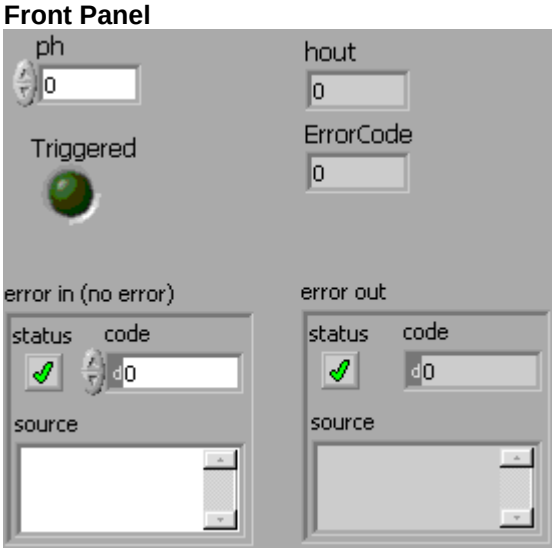
5.3.1 ForceTrigger.vi

This software command starts an exposure if the trigger mode is in the state [software trigger] (0x0001) or in the state [extern exposure & software trigger] (0x0002). If in state [extern exposure control] (0x0003), nothing happens. The camera has to be ready: (recording = [start]) and [not busy].

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information

about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

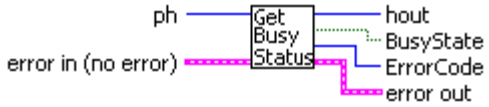
Triggered Indicates if the trigger was successful.

FALSE = trigger command was not successful: camera is busy
TRUE = a new image exposure has been triggered by the command

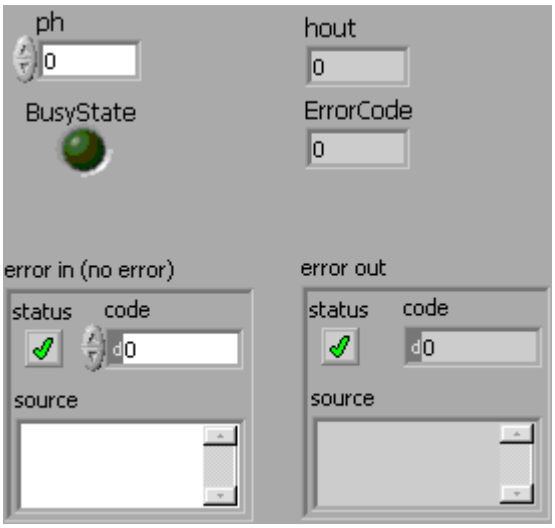
5.3.2 GetBusyStatus.vi

Finds the busy status of the camera. A camera is busy if it is exposing or if the sensor is being read out

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

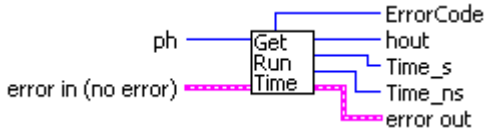
BusyState Busy status of the camera.

FALSE - Camera is not busy and can accept triggers
TRUE - Camera is busy and cannot accept triggers

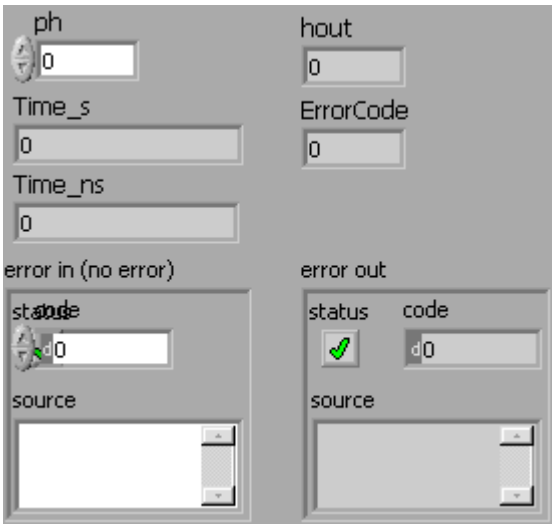
5.3.3 GetCOCRunTime.vi

Returns the time to execute the camera operation code, including all delay and exposure. This can be used to calculate the frames per second.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

5-H **error in (no error)** The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

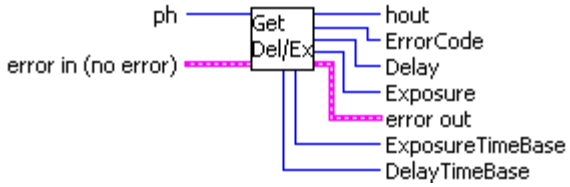
Time_s Number of seconds to execute the COC. Total time also includes the "Time_ns".

Time_ns Number of nanoseconds to execute the COC. Total time also includes the "Time_s".

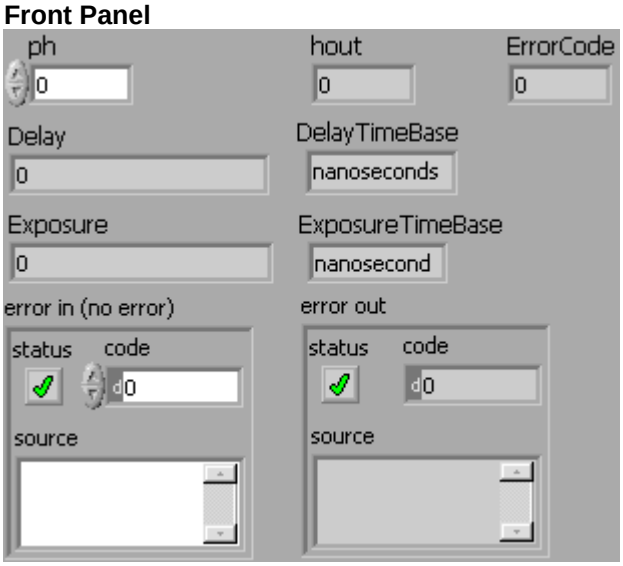
5.3.4 GetDelayExposureTime.vi

Returns the current delay and exposure time values.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

Delay Current delay settings, in timebase units.

Exposure Current exposure settings, in timebase units.

DelayTimeBase Time base (units of time) for the current delay setting.

0 - Nanoseconds
1 - Microseconds
2 - Milliseconds

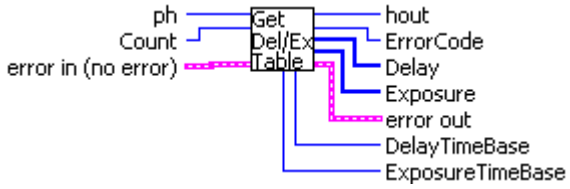
ExposureTimeBase Time base (units of time) for the current exposure setting.

0 - Nanoseconds
1 - Microseconds
2 - Milliseconds

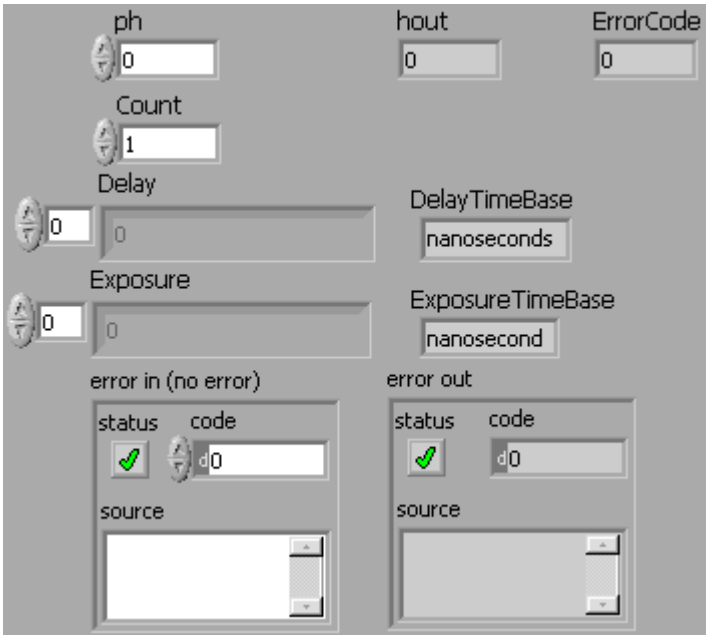
5.3.5 GetDelayExposureTimeTable.vi

Get delay / exposure time table. For some camera types it is possible to define a table with delay / exposure times (defined in the camera description). After start of exposure the camera will take a series of consecutive images with delay and exposure times as defined in the table. Therefore a flexible message format has been defined. The table consists of maximum 16 delay / exposure time pairs. If an exposure time entry is set to the value zero, then at execution time this delay/ exposure pair is disregarded and the sequence is started automatically with the first entry in the table. This results in a sequence of 1 to 16 images with different delay and exposure time settings. External or automatic triggering of images is fully functional for every image in the sequence. If the user wants maximum speed (at CCDs overlapping exposure and read out is taken), [auto trigger] should be selected and the sequence should be controlled with the <acq enbl> input.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE

(checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

Count Number of delay/exposure pairs defined in the table. Maximum nuber is 16 pairs.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

Delay Array of delay values, in time base units

Delay

Exposure Array of exposure values, in time base units

Exposure

ExposureTimeBase Time base (units of time) for the exposure setting. One time base is used for all exposure settings in the array

0 - Nanoseconds
1 - Microseconds
2 - Milliseconds

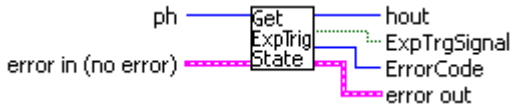
U16 **DelayTimeBase** Time base (units of time) for the delay setting. One time base is used for all delay settings in the array

0 - Nanoseconds
1 - Microseconds
2 - Milliseconds

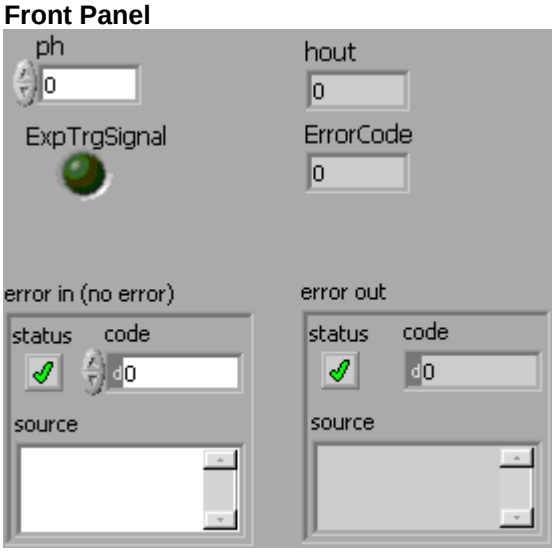
5.3.6 GetExpTrigSignalStatus.vi

Get the current status of the <exp trig> user input (one of the <control in> inputs at the rear of the pco.power supply). If the signal level at the <exp trig> input is HIGH and the DIP switch is set to HIGH, then the Status is TRUE. If the signal level at the <exp trig> input is HIGH and the DIP switch is set to LOW then the Status is FALSE.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

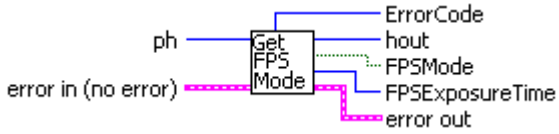
ExpTrgSignal Current status of the <exposure in> signal

5.3.7 GetFPSExposureMode.vi

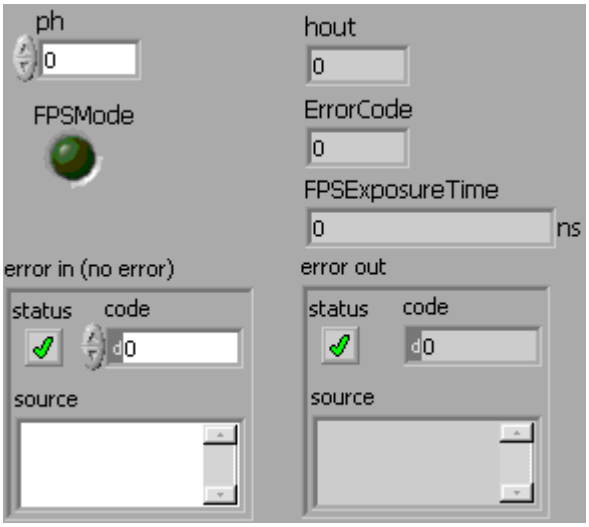
Determines if the camera is in frames per second (FPS) mode (available for the pco.1200hs camera model only!)

The FPS exposure mode is useful if you want to get the maximum exposure time for maximumframe rate. The maximum image framerate depends on pixelrate, vertical ROI
and exposure time.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

FPSMode Status of the FPS mode

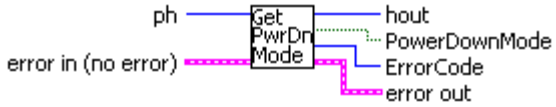
FALSE - FPS mode is not enabled
TRUE - FPS mode is enabled

FPSExposureTime The exposure time that will be set if “FPS Exposure Mode” is on. The exposure time depends on the current settings of vertical ROI and Pixelrate. The returned time is always in ns!

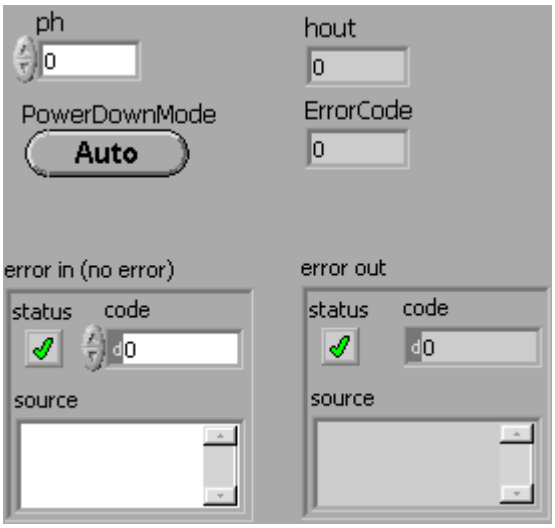
5.3.8 GetPowerDownMode.vi

Determines the current power down mode.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

PowerDownMode Current power down mode

FALSE - Power down is performed automatically
TRUE - Power down is under user control

5.3.9 GetTrigger.vi

Find the current trigger mode of the camera.

Trigger mode:

- 0x0000 = [auto trigger]An exposure of a new image is started automatically best possible compared to thereadout of an image. If using a CCD and images are taken in a sequence, then exposures and readout of the sensor are started simultaneously. Signals at the trigger input (<exptrig>) are irrelevant.

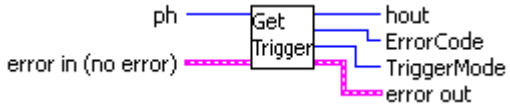
- 0x0001 = [software trigger]:An exposure can only be started by a force trigger command.

- 0x0002 = [extern exposure & software trigger]:A delay / exposure sequence is started at the RISING or FALLING edge (depending on the DIP switch setting) of the trigger input (<exp trig>).

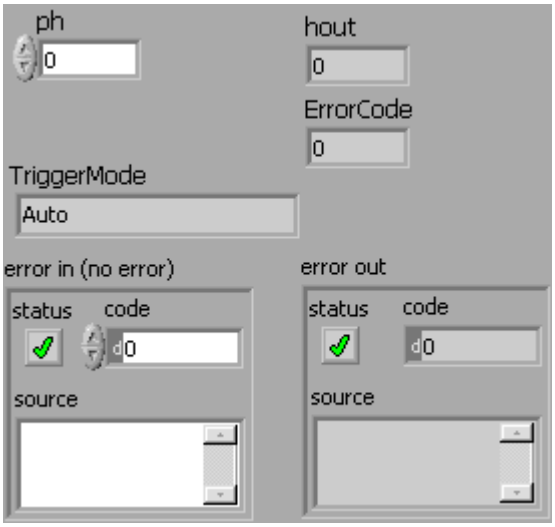
- 0x0003 = [extern exposure control]: The exposure time is defined by the pulse length at the trigger input(<exp trig>). The delay and exposure time values defined by the set/request delay and exposure command are ineffective. (Exposure time length control is also possible for double image mode; exposure time of the second image is given by the readout time of the first image.)

Note: Modes [extern exposure & software trigger] and [extern exposure control], depend also on the selected acquire mode. A trigger edge at the trigger input (<exp trig>) will be effective or not (see also SetAcquireMode.vi). A software trigger however will always be effective independent of the state of the <acq enbl> input.

Connector Pane



Front Panel



Controls and Indicators

ph Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed

in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

TriggerMode Current trigger mode of the camera.

Trigger mode:

- 0x0000 = [auto trigger] An exposure of a new image is started automatically best possible compared to thereadout of an image. If using a CCD and images are taken in a sequence, then exposures and readout of the sensor are started simultaneously. Signals

at the trigger input (<exptrig>) are irrelevant.

- 0x0001 = [software trigger]:An exposure can only be started by a force trigger command.

- 0x0002 = [extern exposure & software trigger]:A delay / exposure sequence is started at the RISING or FALLING edge (depending on the DIP switch setting) of the trigger input (<exp trig>).

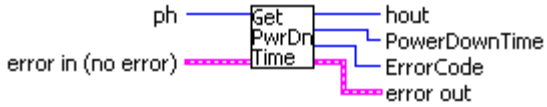
- 0x0003 = [extern exposure control]: The exposure time is defined by the pulse length at the trigger input(<exp trig>). The delay and exposure time values defined by the set/request delay and exposure command are ineffective. (Exposure time length control is also possible for double image mode; exposure time of the second image is given by the readout time of the first image.)

Note: Modes [extern exposure & software trigger] and [extern exposure control], depend also on the selected acquire mode. A trigger edge at the trigger input (<exp trig>) will be effective or not (see also SetAcquireMode.vi). A software trigger however will always be effective independent of the state of the <acq enbl> input.

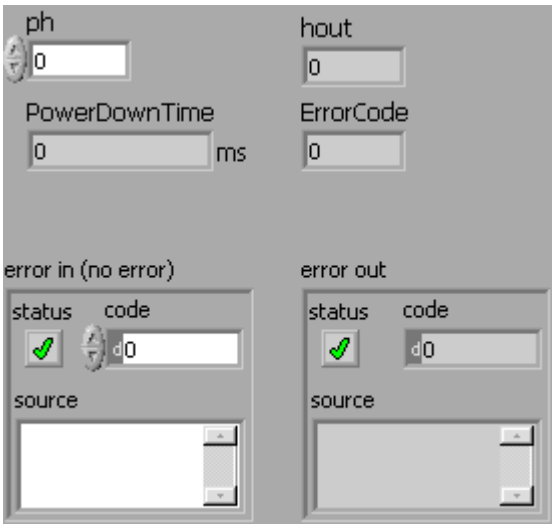
5.3.10 GetUserPowerDownTime.vi

Gets the current user power down time setting

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

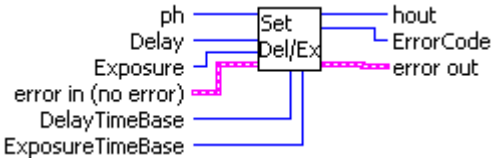
ErrorCode

PowerDownTime The time to power down, in milliseconds, for user power down mode

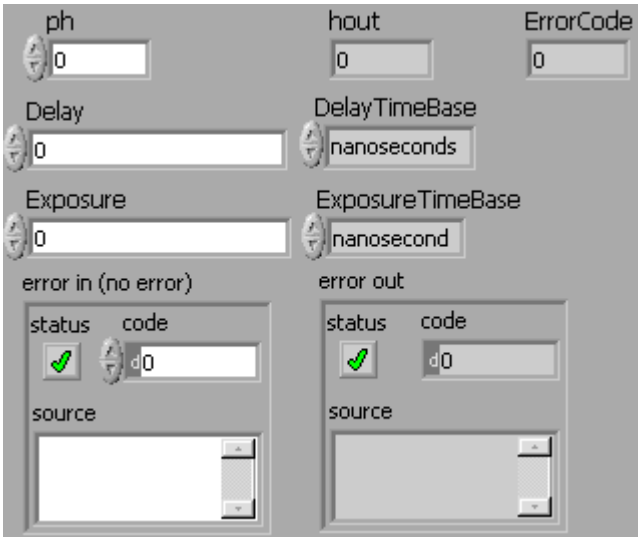
5.3.11 SetDelayExposureTime.vi

Sets delay and exposure time for the next exposure. Settings take effect after the next ArmCamera camera command. Use GetDescription.vi to determine the maximum and minimum settings for these parameters.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

Delay Delay, in timebase units. Use GetDescription.vi to determine the maximum and minimum values for the camera

Exposure Exposure, in timebase units. Use GetDescription.vi to determine the maximum and minimum values for the camera

DelayTimeBase Time base (units of time) for the delay setting.

0 - Nanoseconds
1 - Microseconds
2 - Milliseconds

ExposureTimeBase Time base (units of time) for the exposure setting.

0 - Nanoseconds
1 - Microseconds
2 - Milliseconds

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

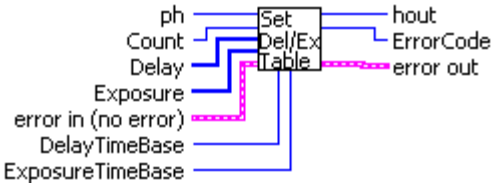
ErrorCode

5.3.12 SetDelayExposureTimeTable.vi

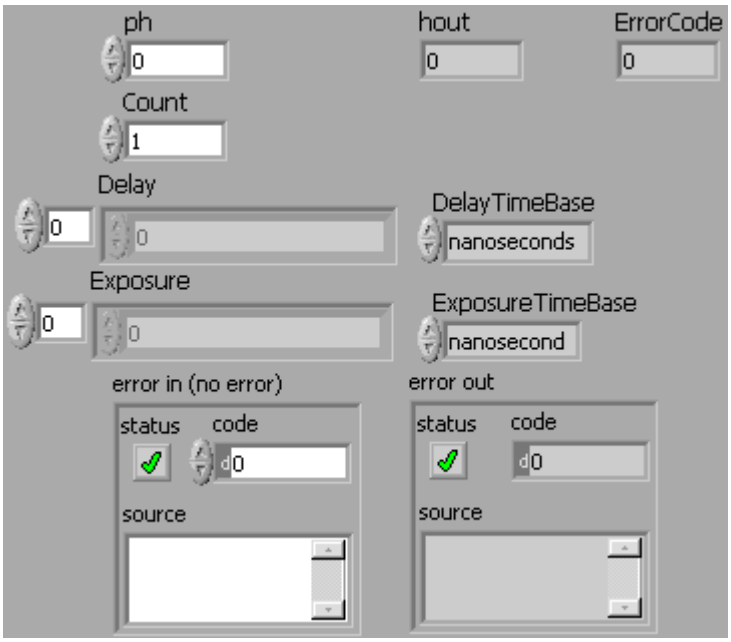
Set delay / exposure time table. For some camera types it is possible to define a table with delay / exposure times. Use GetDescription.vi to determine if the camera supports this feature. After start of exposure the camera will take a series of consecutive images with delay and exposure times as defined in the table. Therefore a flexible message format has been defined. The table consists of maximum 16 delay / exposure time pairs. If an exposure time entry is set to the value zero, then at execution time this delay/ exposure pair is disregarded and the sequence is started automatically with the first entry in the table. This results in a sequence of 1 to 16 images with different delay and exposure time settings. External or automatic triggering of images is fully functional for every image in the sequence. If the user wants maximum speed (at CCDs overlapping exposure and read out is taken), [auto trigger] should be selected and the sequence should be controlled with the <acq enbl> input.

SetDelayEexposureTime.vi and SetDelayExposureTimeTable.vi can only be used alternatively. Each of these functions will overwrite the settings of the other. Using SetDelayEexposureTime.vi has the same effect as SetDelayExposureTimeTable.vi with the second exposure entry set to zero.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

Count

Delay Number of delay/exposure pairs defined in the table. Maximum nuber is 16 pairs.

Delay

Exposure Array of exposure values, in time base units

Exposure

ExposureTimeBase Time base (units of time) for the exposure settings. One time base is used for all exposure settings in the array

0 - Nanoseconds
1 - Microseconds
2 - Milliseconds

DelayTimeBase Time base (units of time) for the delay settings. One time base is used for all delay settings in the array

0 - Nanoseconds
1 - Microseconds
2 - Milliseconds

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

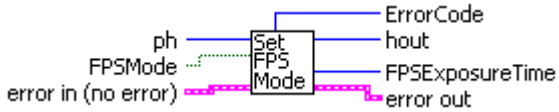
ErrorCode

5.3.13 SetFPSExposureMode.vi

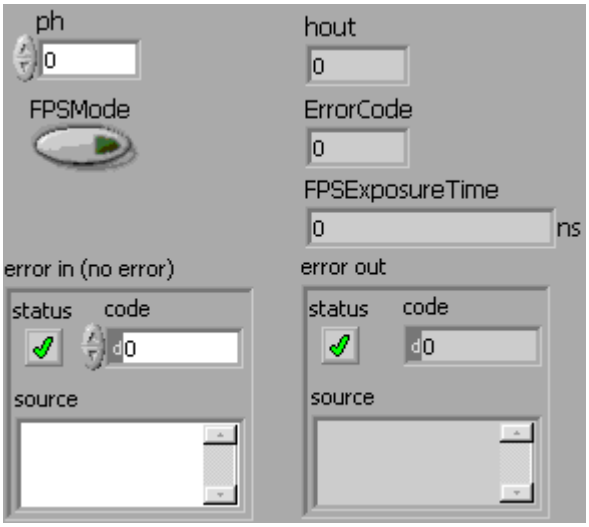
Enables or disables the frames per second (FPS) mode (available for the pco.1200hs camera model only!)

The FPS exposure mode is useful if you want to get the maximum exposure time for maximumframe rate. The maximum image framerate depends on pixelrate, vertical ROI
and exposure time.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

FPSMode Turns FPS mode on or off

FALSE - Disable FPS mode
TRUE - Enable FPS mode

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

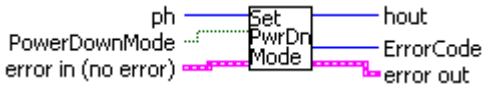
ErrorCode

FPSExposureTime The exposure time that will be set if “FPS Exposure Mode” is on. The exposure time depends on the current settings of vertical ROI and Pixelrate. The returned time is always in ns!

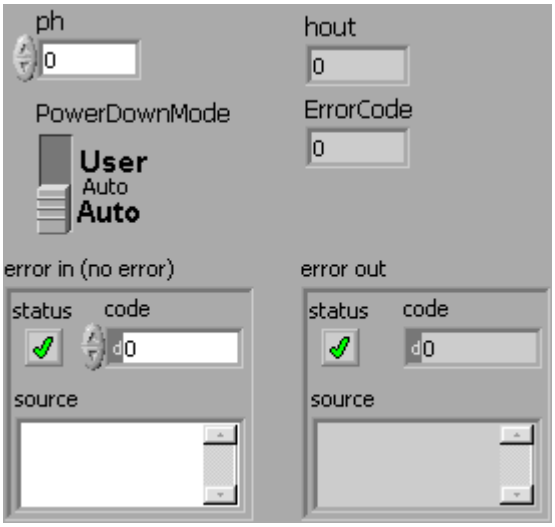
5.3.14 SetPowerDownMode.vi

Sets the power down mode of the camera. The camera powers down the output amplifier during long exposure times to reduce noise. In automatic mode, the power down is performed according to a preset firmware setting. In user mode, the power down is performed after a user-specified time. Use GetCameraDescription.vi to determine if the camera supports user power down mode.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

PowerDownMode Sets the power down mode

FALSE - Power down is performed automatically
TRUE - Power down is under user control

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

5.3.15 SetTrigger.vi

Set the current trigger mode of the camera.

Trigger mode:

- 0x0000 = [auto trigger]An exposure of a new image is started automatically best possible compared to thereadout of an image. If using a CCD and images are taken in a sequence, then exposures and readout of the sensor are started simultaneously. Signals at the trigger input (<exptrig>) are irrelevant.

- 0x0001 = [software trigger]:An exposure can only be started by a force trigger command.

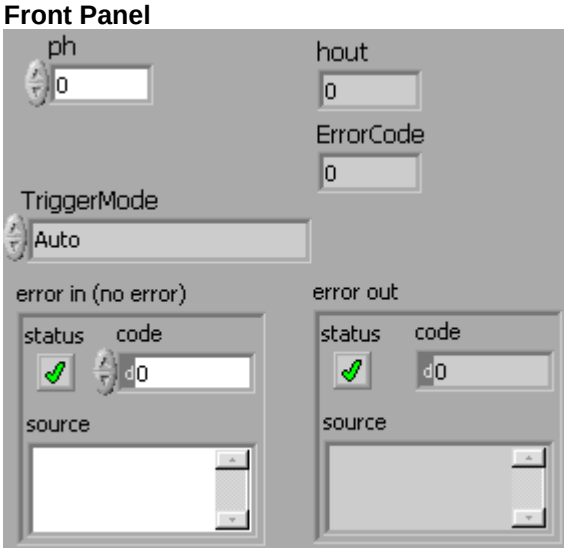
- 0x0002 = [extern exposure & software trigger]:A delay / exposure sequence is started at the RISING or FALLING edge (depending on the DIP switch setting) of the trigger input (<exp trig>).

- 0x0003 = [extern exposure control]: The exposure time is defined by the pulse length at the trigger input(<exp trig>). The delay and exposure time values defined by the set/request delay and exposure command are ineffective. (Exposure time length control is also possible for double image mode; exposure time of the second image is given by the readout time of the first image.)

Note: Modes [extern exposure & software trigger] and [extern exposure control], depend also on the selected acquire mode. A trigger edge at the trigger input (<exp trig>) will be effective or not (see also SetAcquireMode.vi). A software trigger however will always be effective independent of the state of the <acq enbl> input.

Connector Pane

Front Panel



Controls and Indicators

ph Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TriggerMode Sets the trigger mode of the camera.

Trigger mode:

- 0x0000 = [auto trigger] An exposure of a new image is started automatically best possible compared to thereadout of an image. If using a CCD and images are taken in a sequence, then exposures and readout of the sensor are started simultaneously. Signals at the trigger input (<exptrig>) are irrelevant.

- 0x0001 = [software trigger]:An exposure can only be started by a force trigger command.

- 0x0002 = [extern exposure & software trigger]:A delay / exposure sequence is started at the RISING or FALLING edge (depending on the DIP switch setting) of the trigger input (<exp trig>).

- 0x0003 = [extern exposure control]: The exposure time is defined by the pulse length at the trigger input(<exp trig>). The delay and exposure time values defined by the set/request delay and exposure command are ineffective. (Exposure time length control is also possible for double image mode; exposure time of the second image is given by the readout time of the first image.)

Note: Modes [extern exposure & software trigger] and [extern exposure control], depend also on the selected acquire mode. A trigger edge at the trigger input (<exp trig>) will be effective or not (see also SetAcquireMode.vi). A software trigger however will always be effective independent of the state of the <acq enbl> input.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

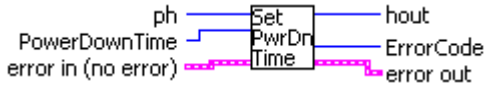
The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

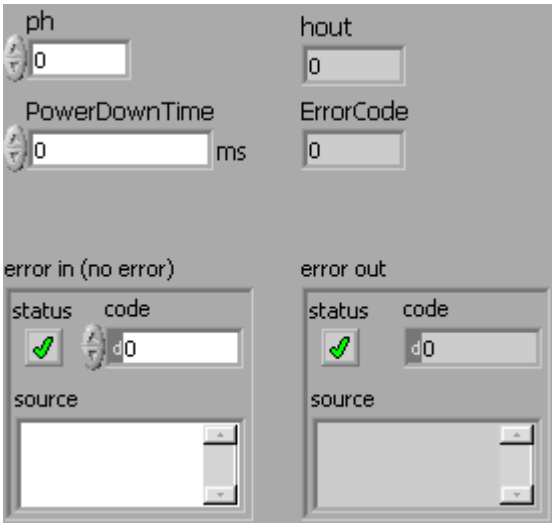
5.3.16 SetUserPowerDownTime.vi

Sets the power down time in milliseconds, for the user power down mode. Use SetPowerDownMode to enable the user power down mode.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

U16 **PowerDownTime** The time to power down, in milliseconds, for user power down mode

U32 **hout** Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

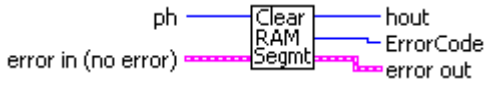
I32 **ErrorCode**

5.4 Storage.llb

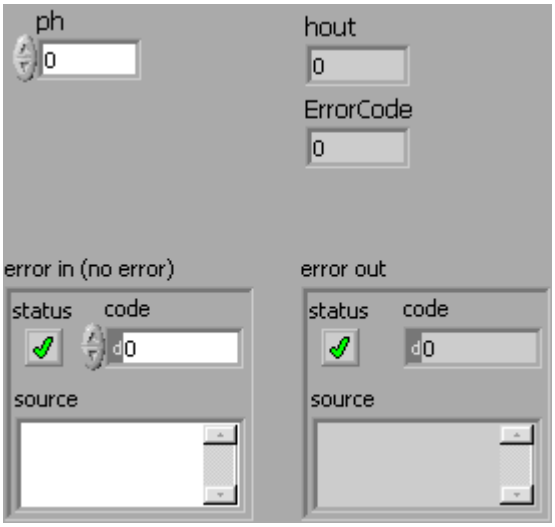
5.4.1 ClearRAMSegment.vi

Clears the active RAM segment. All previously recorded images are lost.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information

about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

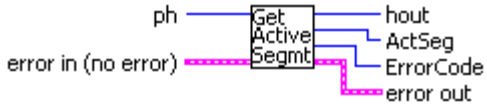
The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

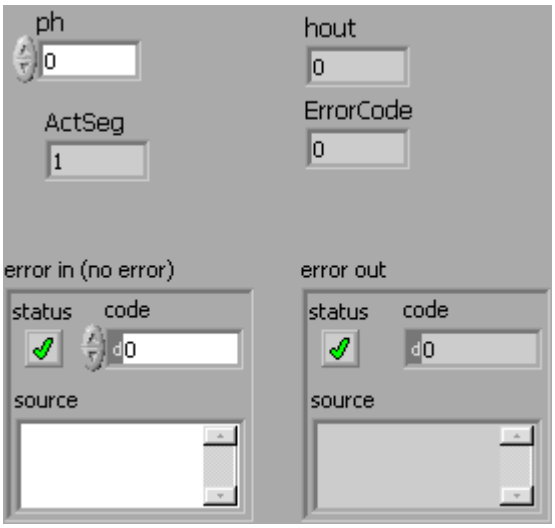
5.4.2 GetActiveRAMSegment.vi

Determines which camRAM segment is currently active.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

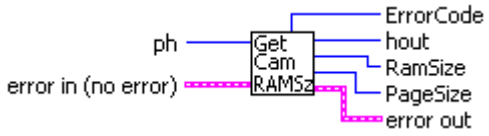
ErrorCode

ActSeg Number of the active segment

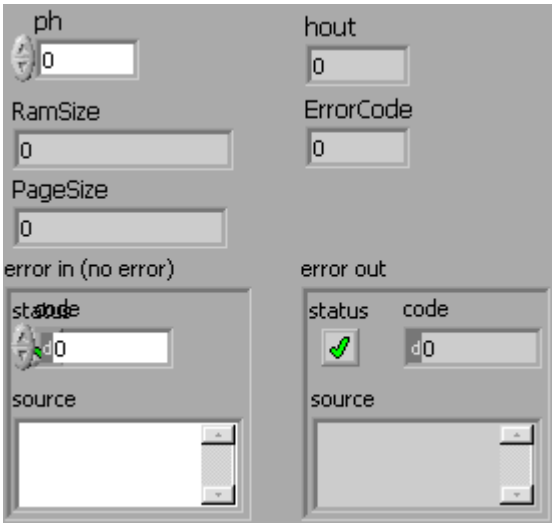
5.4.3 GetCameraRAMSize.vi

Finds the size of the camera RAM (camRAM) in pages. One page is the smallest unit for RAM segmentation as well as for storing images. Segment sizes can only configured as multiples of pages. The size reserved for one image is also calculated as multiples of whole pages, therefore there may be some unused RAM memory if the page size is not exactly a multiple of the image size. The number of pages needed for one image depends on the image size (Xres x Yres) divided by the pixels per page (page size). Every begun page size has to be considered, so if you have 50.6 pages for an image you will need 51 pages for this image. With this value of 'pages per image' you can calculate the number of images fitting into the segment.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

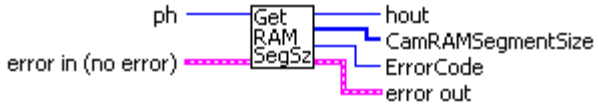
RamSize Total size of camera RAM, in pages.

PageSize Size of one page, in pixels. This number will determine how many pages will be needed to store one image of X x Y pixels.

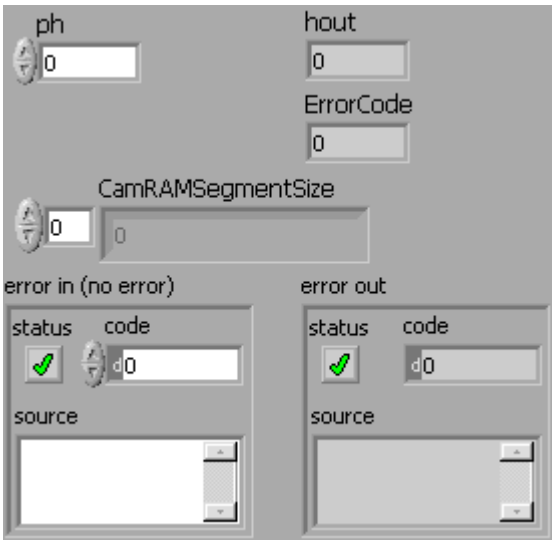
5.4.4 GetCamRAMSegmentSize.vi

Finds the RAM segment sizes in pages. A sizeof zero pages indicates that the segment will not be used.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

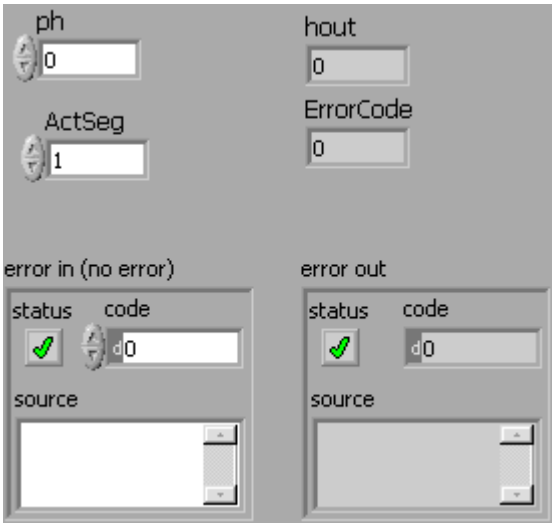
CamRAMSegmentSize Array of RAM segment sizes in pages, one element per segment. Element 0 is the size of segment 1, element 1 is the size of segment 2, etc.

5.4.5 SetActiveRAMSegment.vi

Selects one of 4 camRAM segments to be the active segment

Connector Pane

Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

U16 **ActSeg** Selects the number of the active segment. Valid numbers are integers from 1 to 4.

U32 **hout** Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **ErrorCode**

5.4.6 SetCamRAMSegmentSize.vi

Sets the sizes of RAM segments

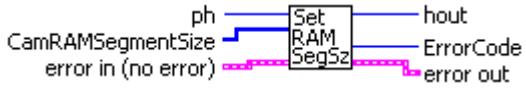
- The sum of all segment sizes must not be larger than the total size of the RAM (as multiples ofpages)

- A single segment size can have the value 0x0000, but the sum of all 4 segments must be greater than 0x0000.

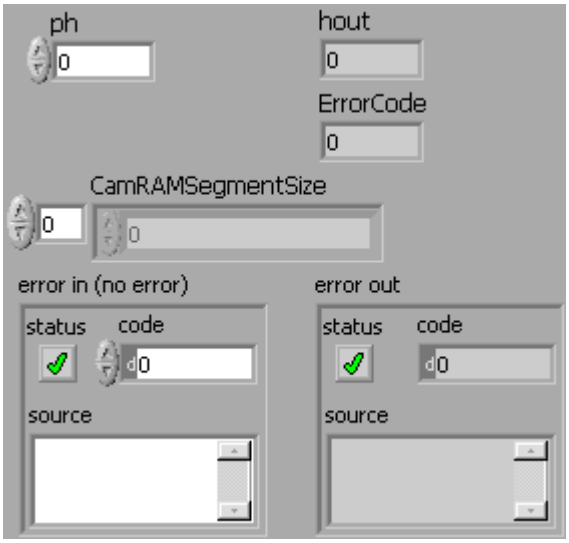
-The command will be rejected, if Recording State is [run]

- The function will result in all segments to be cleared. All images recorded before are lost!

Connector Pane



Front Panel



Controls and Indicators

ph Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

CamRAMSegmentSize Array of RAM segment sizes in pages, one element per segment. Element 0 is the size of segment 1, element 1 is the size of segment 2, etc.

- The sum of all segment sizes must not be larger than the total size of the RAM (as multiples ofpages)

- A single segment size can have the value 0x0000, but the sum of all 4 segments must be greater than 0x0000.

-The command will be rejected, if Recording State is [run]

- The function will result in all segments to be cleared. All images recorded before are lost!

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

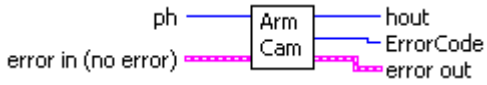
ErrorCode

5.5 RecordingControl.llb

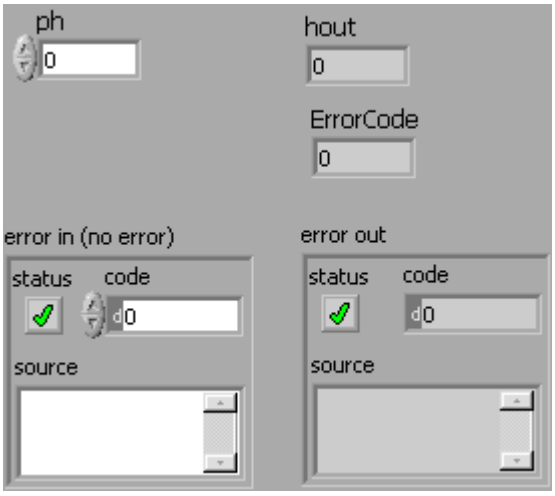
5.5.1 ArmCamera.vi

Arms the camera. Arming loads the desired settings in preparation for the start of a new recording. Settings do not take effect unitl after an "ArmCamera" command.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

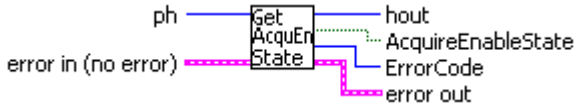
ErrorCode

5.5.2 GetAcquireEnableSignalStatus.vi

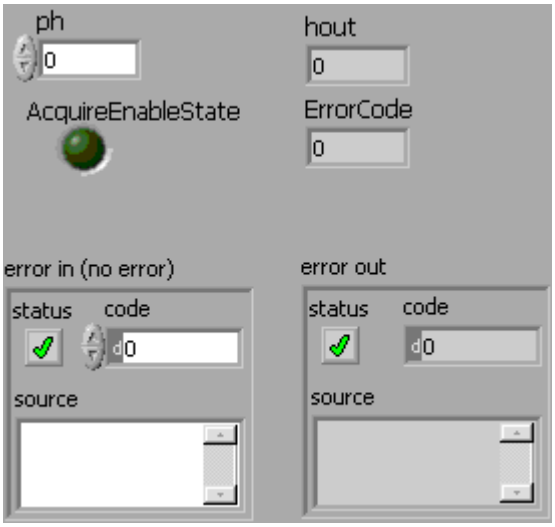
Finds the status of the "acquire enable" signal. If this signal is TRUE and the camera is in "external acquision control" mode, images acquisition is enabled. The state of the "acquire enable" signal depends on the input voltage level and the dip switch settings on the pco.power unit.

- input signal = HIGH, DIP switch = HIGH: Status = TRUE
- input signal = HIGH, DIP switch = LOW: StatuS = FALSE
- input signaL = LOW, DIP switch = HIGH: Status = FALSE
- input signal = LOW, DIP switch = LOW: Status = TRUE

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

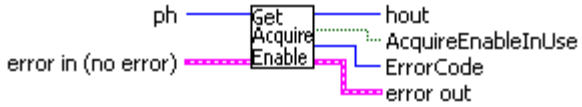
AcquireEnableState Finds the status of the "acquire enable" signal. If this signal is TRUE and the camera is in "external acquision control" mode, images acquisition is enabled. The state of the "acquire enable" signal depends on the input voltage level and the dip switch settings on the pco.power unit.

- input signal = HIGH, DIP switch = HIGH: Status = TRUE
- input signal = HIGH, DIP switch = LOW: StatuS = FALSE
- input signaL = LOW, DIP switch = HIGH: Status = FALSE
- input signal = LOW, DIP switch = LOW: Status = TRUE

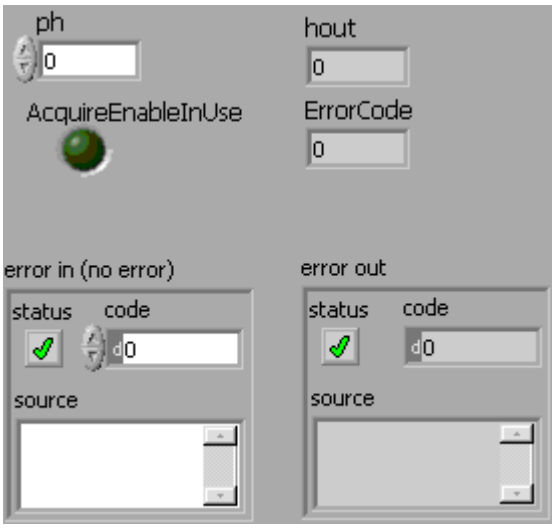
5.5.3 GetAcquireMode.vi

Determines if the "acquire enable" control is currently in use.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

AcquireEnableInUse Indicates if the camera is using the "acquire enable" signal.

FALSE - The acquire enable signal is not in use
TRUE - The camera is using the acquire enable signal to control acquisition.

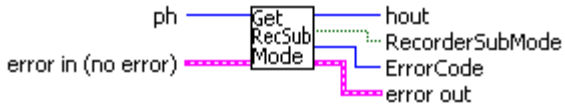
5.5.4 GetRecorderSubmode.vi

Finds the current recorder submode. Valid modes are "Sequence" and "Ring Buffer". These submodes only apply to the "Recorder" storage mode. They make no difference to the FIFO mode.

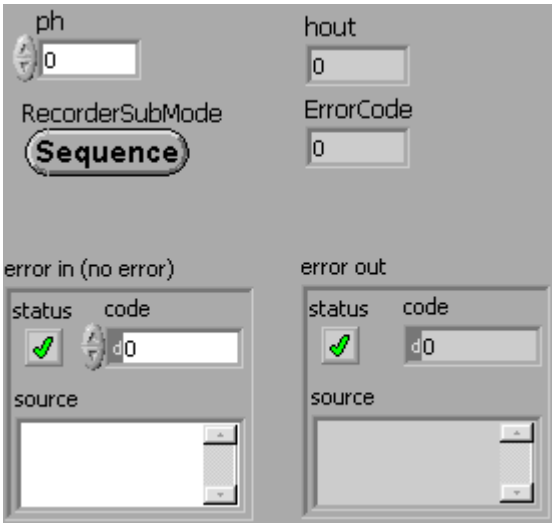
Sequence:
Recording is stopped when the allocated buffer is full

Ring Buffer:
Camera records continuously into ring buffer. If the allocated buffer overflows, the oldest images are overwrittenrecording is stopped by software or disabling acquire signal (<acq enbl>)

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

RecorderSubMode Current recorder submode.

FALSE - The submode is Sequence
TRUE - The submode is Ring Buffer

5.5.5 GetRecordingState.vi

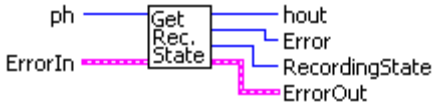
Finds the recording state of the camera.

The recording state controls the status of the camera. If the recording status is [run], images can be started by exposure trigger and <acq enbl>. If the recording status is cleared or stopped, all image readout or exposure sequences are stopped and the sensors (CCD or CMOS) are running in a special idle mode to prevent dark charge accumulation. The recording status has the highest priority compared to functions like <acq enbl> or exposure trigger.

The recording status is controlled by software command: set recording status = [run]

The recording status is cleared by:
Powering ON the camera
Software command: set recording status = [stop]
Software command: reset all settings to default values

Connector Pane



Front Panel

Controls and Indicators

U32 **ph**

ErrorIn The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

U16 **RecordingState** Current recording state

0 - Recording stopped
1 - Camera is recording

I32 **Error**

U32 **hout**

ErrorOut The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

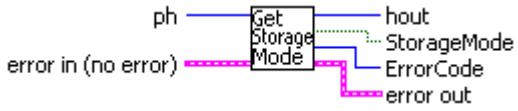
5.5.6 GetStorageMode.vi

Finds the current recording mode of the camera. Possible values are Recoder mode and FIFO mode

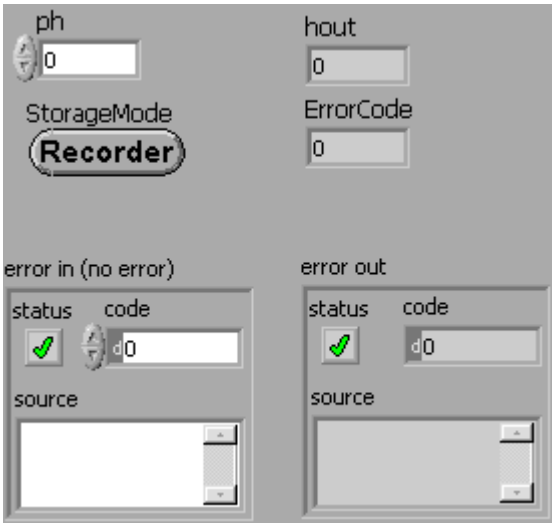
Recorder Mode:
Images are recorded and stored within the internal camera memory (camRAM)
Live View transfers the most recent image to the PC (for viewing / monitoring)
Indexed or total readout of images after the recording has been stopped

FIFO Buffer mode:
All images taken are transferred to the PC in chronological order
Camera memory (camRAM) is used as huge FIFO buffer to bypass short bottlenecks in data transmission
If buffer overflows the oldest images are overwritten

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

5-H **error in (no error)** The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information

about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

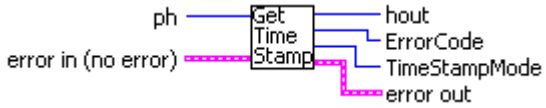
StorageMode Current storage mode.

FALSE - Camera is in Recorder mode
TRUE - Camera is in FIFO mode

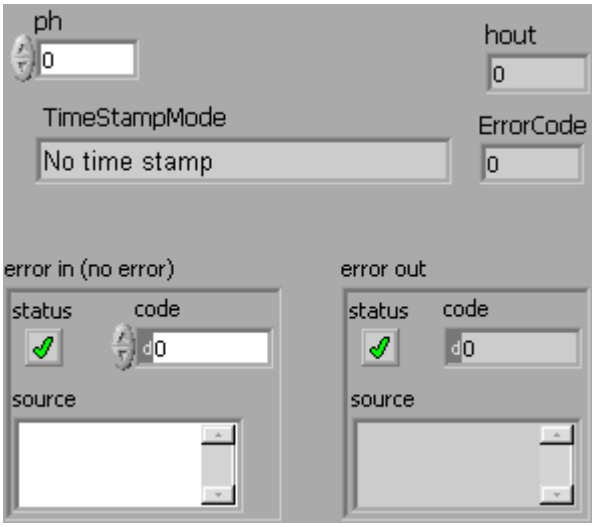
5.5.7 GetTimeStampMode.vi

Indicates the state of the time stamping mode. Time stamping may be disabled, or encoded as BCD or BCD and ASCII text.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information

about the error displayed.

U32 **hout** Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **ErrorCode**

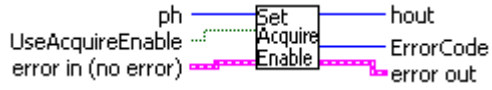
U16 **TimeStampMode** Current time stamp mode. Possible values are:

0 - Time stamp mode disabled.
1 - Binary Coded Decimal (BCD) time stamp in the first 14 pixels
2 - BCD time stamp in the first 14 pixels + ASCII text

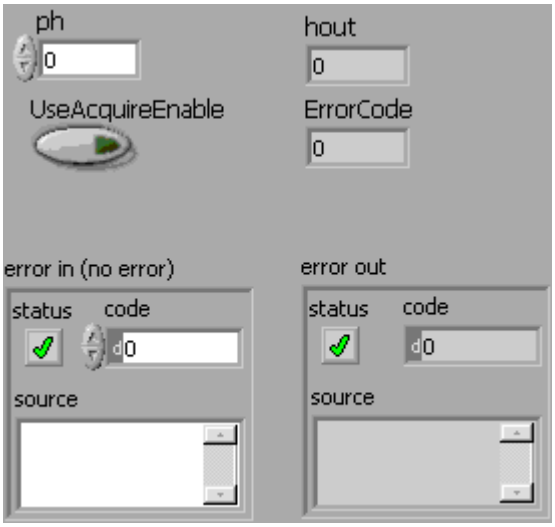
5.5.8 SetAcquireMode.vi

Enables or disables the use of the "acquire enable" signal to controal acquisition.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

UseAcquireEnable Enables or disables the use of the "acquire enable" signal to controal acquisition.

FALSE - Disables the use of the "acquire enable" signal
TRUE - Enables the use of the "acquire enable" signal

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

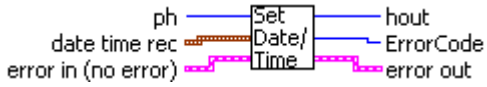
The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

5.5.9 SetDateTime.vi

Sets the camera's internal clock. Once set, the clock can be used for precision time stamping. The clock runs continuously while the camera is powered up, but the time is not maintained when the power is off.

Connector Pane



Front Panel

Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

date time rec LabVIEW date/time cluster, compatible with the LabVIEW "Seconds to Date/Time.vi"

second

minute

hour

day of month

month

year

day of week

day of year

is DST

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

5.5.10 SetRecorderSubmode.vi

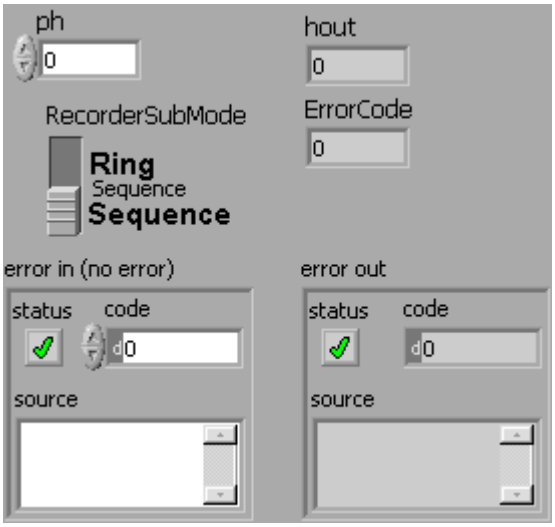
Sets the recorder submode. Valid modes are "Sequence" and "Ring Buffer". These submodes only apply to the "Recorder" storage mode. They make no difference to the FIFO mode.

Sequence:
Recording is stopped when the allocated buffer is full

Ring Buffer:
Camera records continuously into ring buffer. If the allocated buffer overflows, the oldest images are overwrittenrecording is stopped by software or disabling acquire signal (<acq enbl>)

Connector Pane

Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

RecorderSubMode Required recorder submode.

FALSE - Sets the sequence mode
TRUE - Sets the Ring Buffer

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

5.5.11 SetRecordingState.vi

Sets the recording state of the camera.

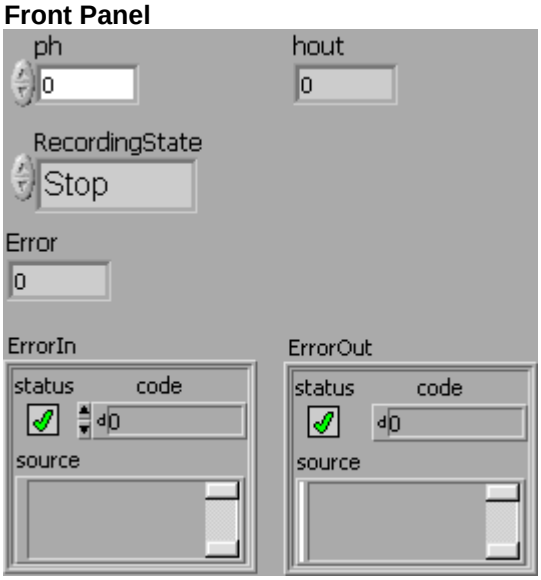
The recording state controls the status of the camera. If the recording status is [run], images can be started by exposure trigger and <acq enbl>. If the recording status is cleared or stopped, all image readout or exposure sequences are stopped and the sensors (CCD or CMOS) are running in a special idle mode to prevent dark charge accumulation. The recording status has the highest priority compared to functions like <acq enbl> or exposure trigger.

The recording status is controlled by software command: set recording status = [run]

The recording status is cleared by:
Powering ON the camera
Software command: set recording status = [stop]
Software command: reset all settings to default values

Connector Pane

Front Panel



Controls and Indicators

U16 **RecordingState** Set the required recording state

0 - Stop recording
1 - Start recording

U32 **ph** Handle to a previously opened camera

ErrorIn The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the

error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

Error

hout

ErrorOut The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

5.5.12 SetStorageMode.vi

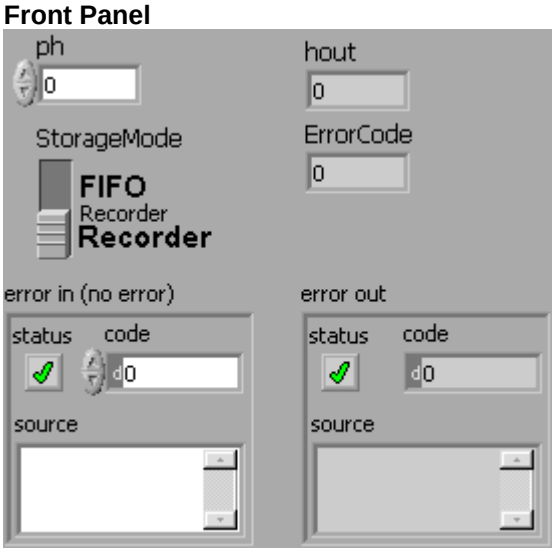
Sets the recording mode of the camera. Possible values are Recoder mode and FIFO mode

Recorder Mode:
Images are recorded and stored within the internal camera memory (camRAM)
Live View transfers the most recent image to the PC (for viewing / monitoring)
Indexed or total readout of images after the recording has been stopped

FIFO Buffer mode:
All images taken are transferred to the PC in chronological order
Camera memory (camRAM) is used as huge FIFO buffer to bypass short bottlenecks in data transmission
If buffer overflows the oldest images are overwritten

Connector Pane

Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **StorageMode** Sets the storage mode of the camera.

FALSE - Selects Recorder mode
TRUE - Selects FIFO mode

U32 **hout** Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

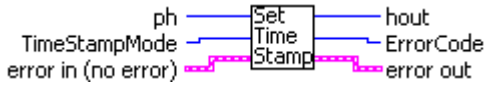
I32 **ErrorCode**

5.5.13 SetTimeStampMode.vi

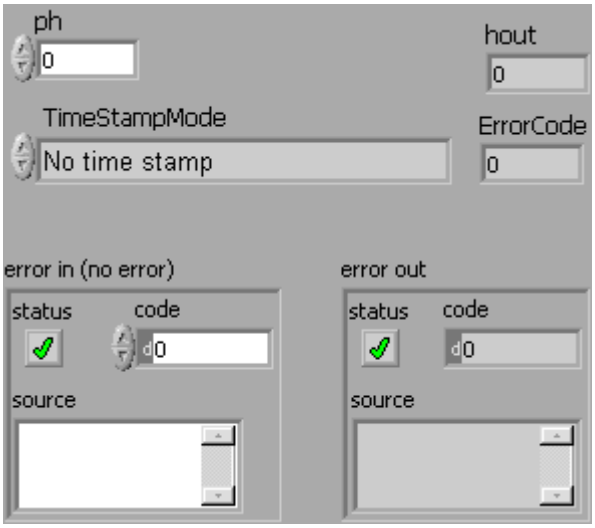
Set mode of the timestamp function. Time stamping writes the continuous image number and date / time information with a resolution of 10 µs direct into the raw image data. The first 14 pixels (top left corner) are used to hold this information. The numbers are coded in BCD with one byte per pixel, which means that every pixel can hold 2 digits. If the pixels have more resolution than 8 bits, then the BCD digits are left aligned (MS bit) and the lower bits padded with zeros. In addition to the 14 pixel binary stamp, the information can be written in ASCII text for direct inspection. A 8 by 8 pixel array is used toi hold the ASCII data. The digits are displayed below the BCD coded line.

Format of BCD coded pixels:

Connector Pane



Front Panel



Controls and Indicators

ph Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information

about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TimeStampMode Sets the time stamp mode. Possible values are:

0 - Time stamp mode disabled.
1 - Binary Coded Decimal (BCD) time stamp in the first 14 pixels
2 - BCD time stamp in the first 14 pixels + ASCII text

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

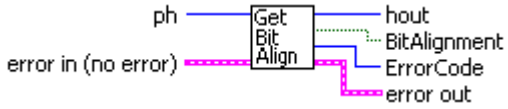
ErrorCode

5.6 BufferData.llb

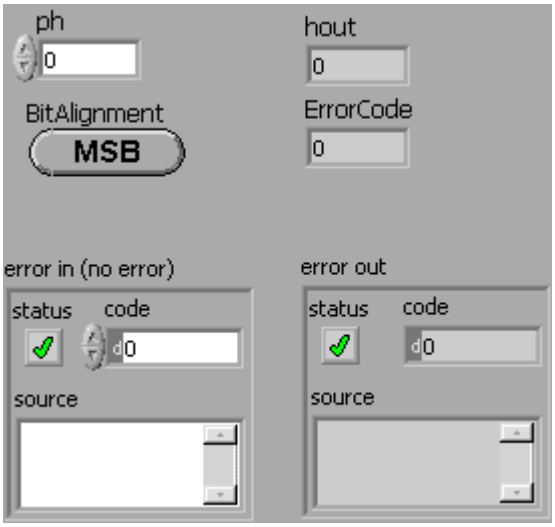
5.6.1 GetBitAlignment.vi

Determines the bit alignment that is currently in use for storing images. For image data less than 16 bits, the data will be aligned to either the MS bit or the LS bit, and the remaining bits padded with zeroes.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information

about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

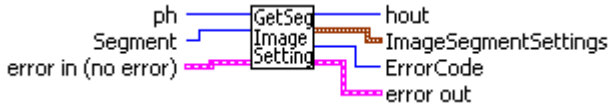
BitAlignment Describes the current setting for the bit alignment.

FALSE - Values are aligned to the MS bit and the LS bits are zero
TRUE - Values are aligned to the LS bit and the MS bits are zero

5.6.2 GetImageSegmentSettings.vi

Finds information about the images in the specified segment. The horizontal and vertical resolutiona and binning as well as the region of interest settings are returned.

Connector Pane



Front Panel

Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

Segment Number of the segment to get settings from. Values of 1 to 4 are allowed.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

ImageSegmentSettings Settings for the images in the selected segment

XRes Horizontal Resolution of the images in the segment

YRes Vertical Resolution of the images in the segment

BinHorz Horizontal binning of the images in the segment

BinVert Vertical binning of the images in the segment

ROIX0 Leftmost horizontal ROI setting

ROIY0 Upper vertical ROI setting

ROIX1 Rightmost horizontal ROI setting

U16 **ROIY1** Lower vertical ROI setting

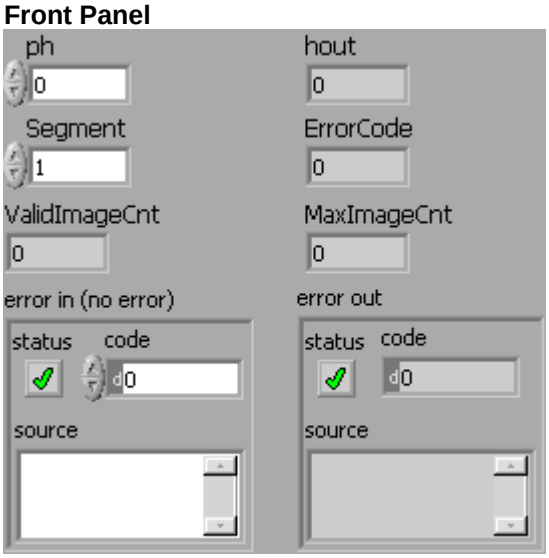
5.6.3 GetNumberOfImagesInSegment.vi

Get the number of valid images within the segment. The operation is slightly different due to the selected storage mode:
In [recorder mode], if recording is not stopped and in [FIFO buffer mode] the number of images is dynamic due to read and write accesses to the camera RAM.

In [recorder mode] and recording is stopped, the number is fixed.

Connector Pane

Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information

about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

Segment Segment to find the image count. Valid numbers are 1 to 4.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

ValidImageCnt Number of valid images in this segment

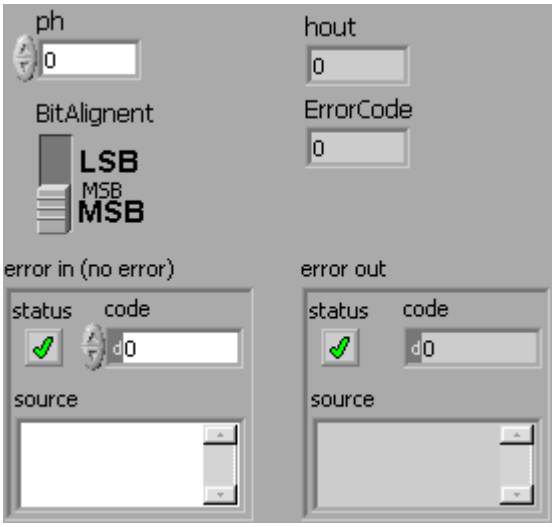
MaxImageCnt Maximu number of valid images that can be stored in this segment

5.6.4 SetBitAlignment.vi

Sets the bit alignment that is used for storing images. For image data less than 16 bits, the data will be aligned to either the MS bit or the LS bit, and the remaining bits padded with zeroes.

Connector Pane

Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

BitAlignent Sets the bit alignment.

FALSE - Values are aligned to the MS bit and the LS bits are zero
TRUE - Values are aligned to the LS bit and the MS bits are zero

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

BitAlignent Sets the bit alignment.

FALSE - Values are aligned to the MS bit and the LS bits are zero
TRUE - Values are aligned to the LS bit and the MS bits are zero

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

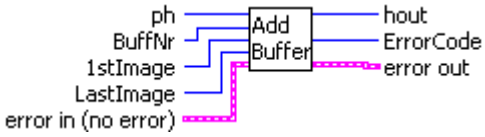
ErrorCode

5.7 APIManagement.llb

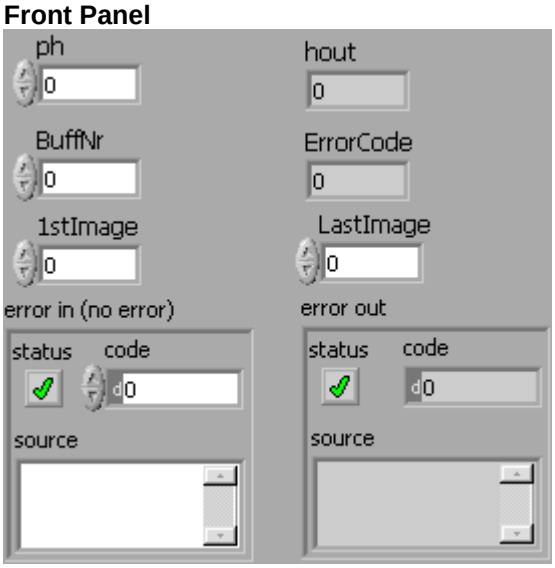
5.7.1 AddBuffer.vi (***Obsolete – Use AddBufferEx.vi for new development)

Adds a buffer to the driver queue. This function returns immediately. If the desired image is transferred to the buffer a buffer event will be created.Once an event is created, the data can be retreived using GetImageBuffer.vi. This function is used to view images while the recording is enabled. To read out previously recorded images, use GetImage.vi.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

1stImage Image to transfer to buffer.

0 - Transfers most recent image to the buffer

Any other number must be a valid image number. Value must also be the same as the LastImage

LastImage Image to transfer to buffer.

0 - Transfers most recent image to the buffer

Any other number must be a valid image number. Value must also be the same as the 1stImage

BuffNr Buffer to add to the queue.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

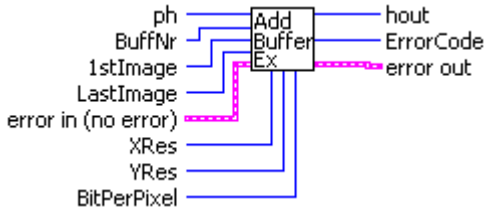
The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

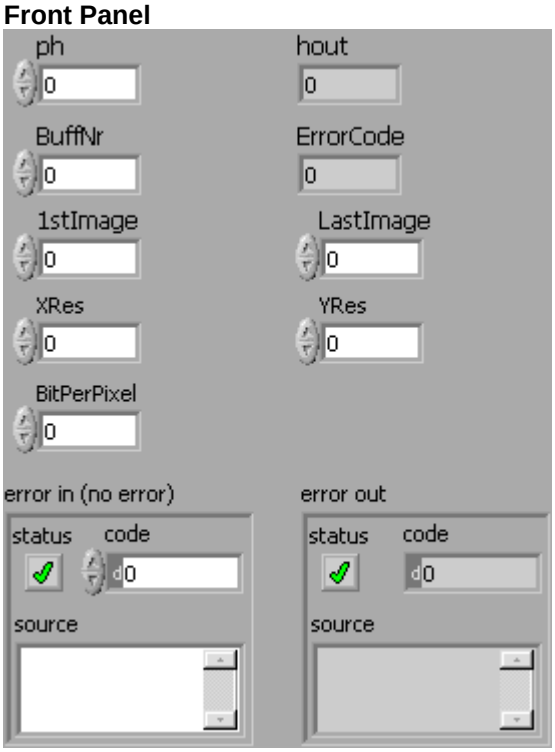
5.7.2 AddBufferEX.vi

Adds a buffer to the driver queue. This function returns immediately. If the desired image is transferred to the buffer a buffer event will be created.Once an event is created, the data can be retreived using GetImageBuffer.vi. This function is used to view images while the recording is enabled. To read out previously recorded images, use GetImageEx.vi.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

5-H **error in (no error)** The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

1stImage Image to transfer to buffer.

0 - Transfers most recent image to the buffer

Any other number must be a valid image number. Value must also be the same as the LastImage

LastImage Image to transfer to buffer.

0 - Transfers most recent image to the buffer

Any other number must be a valid image number. Value must also be the same as the 1stImage

BuffNr Buffer to add to the queue.

XRes Horizontal resolution, in pixels, of the image to be transferred

YRes Vertical resolution, in pixels, of the image to be transferred

BitPerPixel Number of bits used to store one pixel of data. This parameter must match the number specified in the CameraDesciption.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

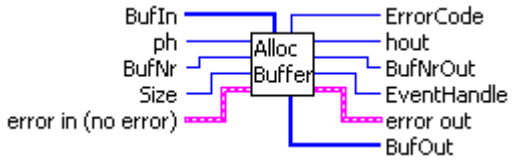
The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

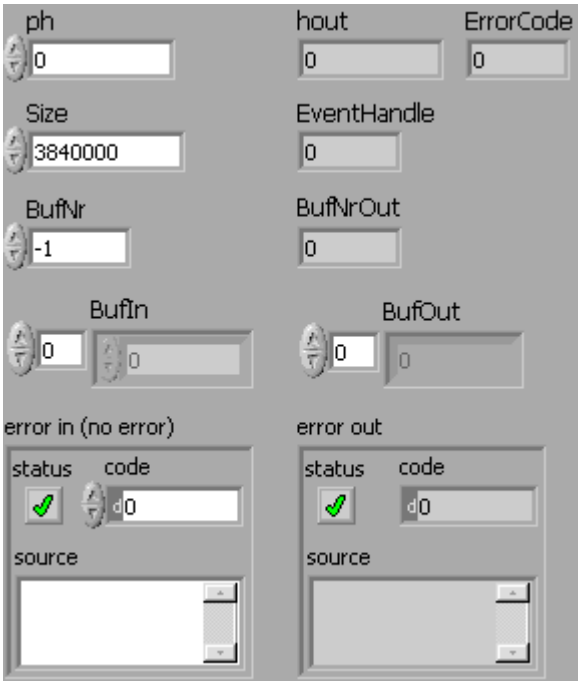
5.7.3 AllocateBuffer.vi

Allocates a buffer to receive the transferred images. There is a maximum of 8 buffers. This function is needed to create buffers for the image transfer. During recording you can get images with the AddBuffer function. While waiting for an image you can poll the buffer status with GetBufferStatus. Data can be retrieved using GetImageBuffer.vi once an event is detected.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I16 **BufNr** Number of the buffer to allocate. To allocate a new buffer, this parameter must be -1. To re-allocate an existing buffer, use that buffer use that buffer number.

U32 **Size** Number of bytes to allocate for the buffer.

[U16] **BufIn** A LabVIEW array of unsigned 16 bit integers (U16), initialized to the exact size of the buffer. For example , for a buffer of 1600 X 1200 pixels, the array should have 1920000 elements.

U16

U32 **hout** Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **ErrorCode**

U32 **EventHandle** Reserved for future versions

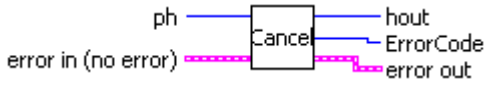
I16 **BufNrOut** Number of the buffer now allocated

[U16] **BufOut** A LabVIEW array of unsigned 16 bit integers (U16),to hold the buffer data. The array will have as many elements as the pixels in the buffer.

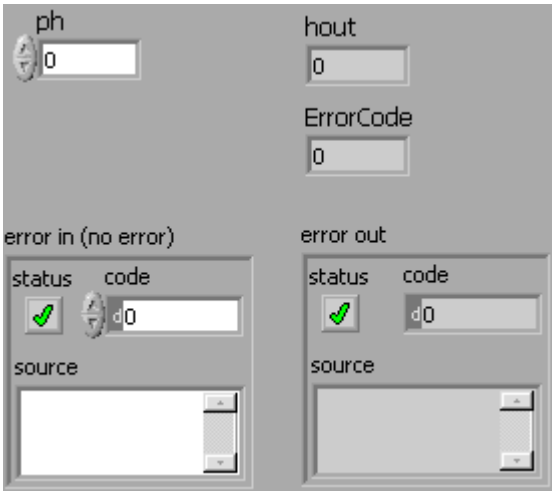
5.7.4 CancelImages.vi

Removes all buffesr from the driver queue. Stops pending buffers while the camera is recording. Recording can then be terminated by setting the recording mode to "Stop". It is recommended that if there are pending buffers you should call CancelImages before you stop recording with SetRecordingState setting to zero.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

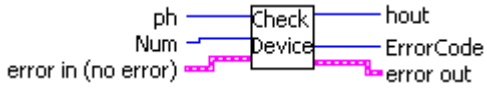
The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

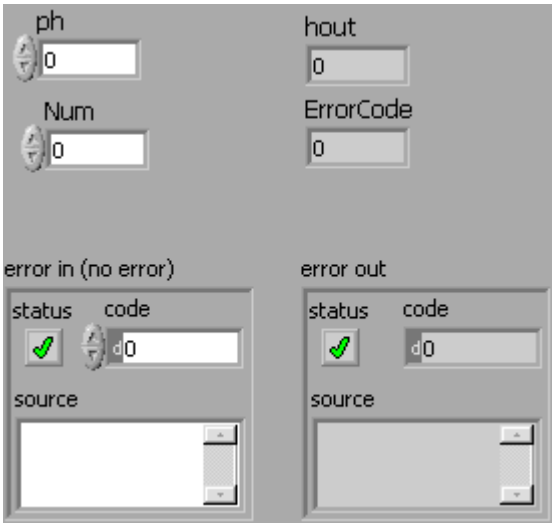
5.7.5 CheckDeviceAvailability.vi

This function can be used to determine if a device is still available after a bus reset. If the function returns without any errors, the device is still available.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

Num

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

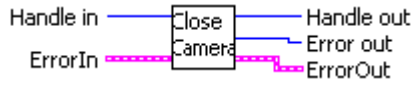
The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

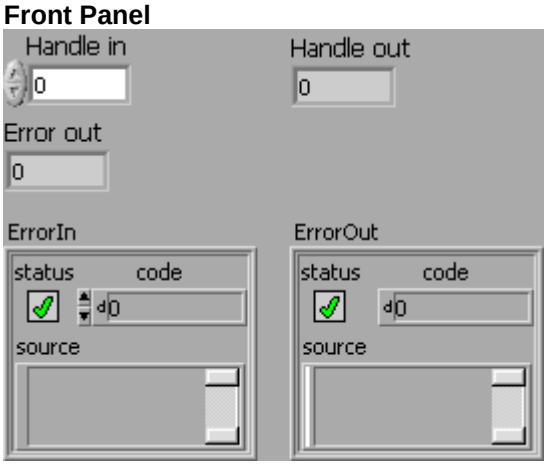
5.7.6 CloseCamera.vi

Closes a previously opened camera and returns resources to the operating system. It is strongly recommended to call this function before terminating the LabVIEW application.

Connector Pane



Front Panel



Controls and Indicators

U32 **Handle in** Handle to a previously opened camera

ErrorIn The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **Error out**

Handle out Handle output

ErrorOut The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

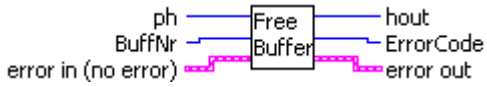
source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

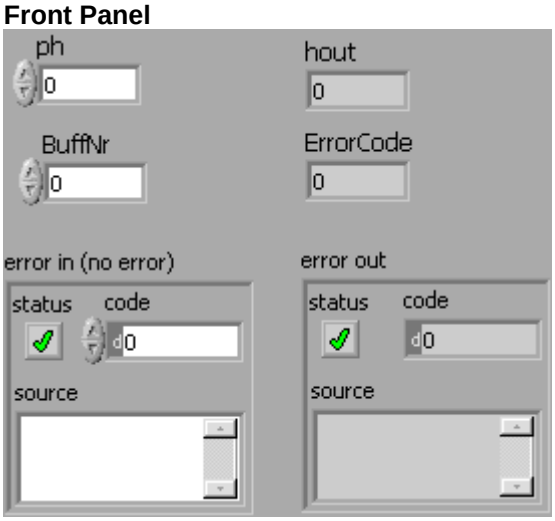
5.7.7 FreeBuffer.vi

Frees a previously allocated buffer. It is recommended to free all allocated buffers before the LabVIEW application terminates.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

BuffNr Buffer number to free.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

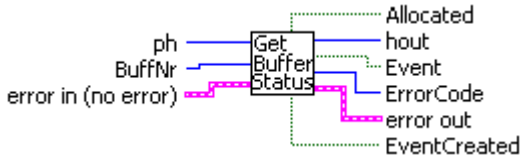
The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

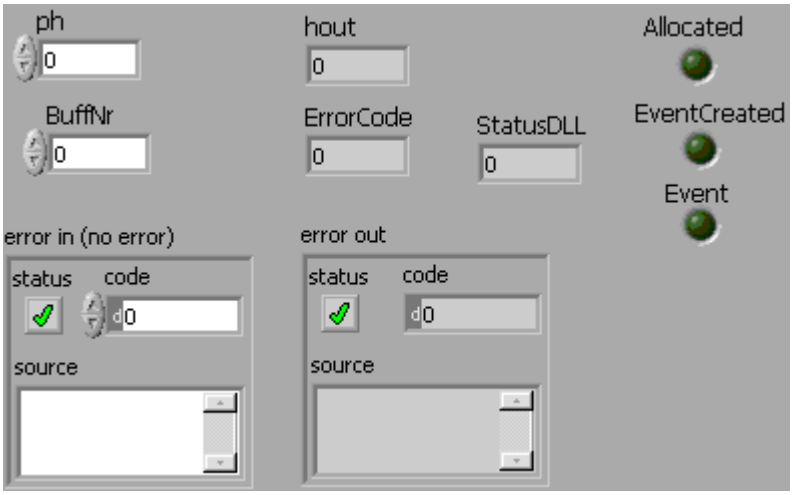
5.7.8 GetBufferStatus.vi

Get the buffer status of a previously 'allocated' and 'added' buffer. This can be used to poll the status, while waiting for an image during recording. The "event" flag will indicate when an image is ready for transfer.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information

about the error displayed.

I16 **BuffNr** Buffer to find the status of

U32 **hout** Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **ErrorCode**

TF **Event** Indicates that an event has been generated and an image is available for transfer.

TF **EventCreated** Indicates that the buffer has been allocated and an event will be generated when an image is available.

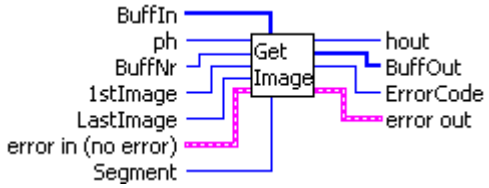
TF **Allocated** Indicates that the buffer has been allocated

U32 **StatusDLL** Status word. See also the individual flags.

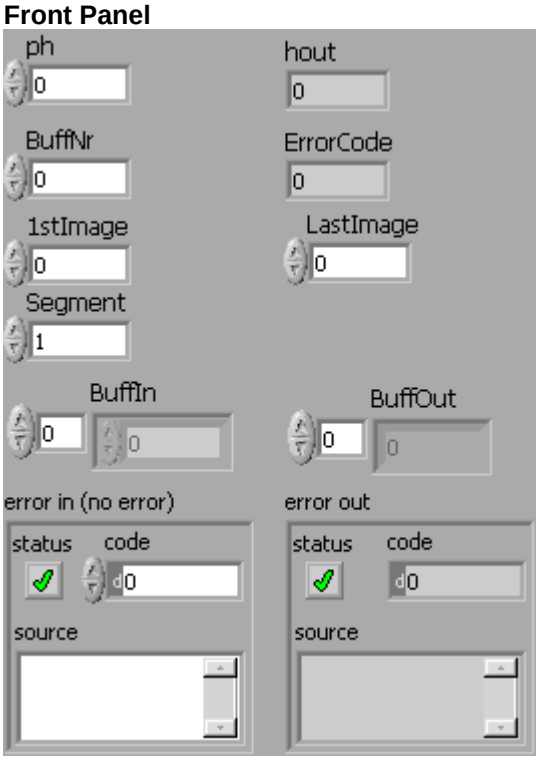
5.7.9 GetImage.vi (***Obsolete – Use GetImageEx.vi for new development***)

Gets previously recorded images from the camera. This function returns after the desired image is transferred to the buffer. You can get more than one image from the camera with this function call, but you have to take care about the size of the receiving buffer.To view images while the recording is enabled, use AddBuffer, and GetImageBuffer.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information

about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

U32 **1stImage** Number of the first image to retrieve from the CamRam. This must be a valid image number. If attempting to retreive more than one image, make sure that the buffer is of the correct size.

U32 **LastImage** Number of the last image to retrieve from the CamRam. This must be a valid image number. If attempting to retreive more than one image, make sure that the buffer is of the correct size.

I16 **BuffNr** Number of a previously allocated buffer to receive the image data.

U16 **Segment** Segment of camera memory to retrieve images from. Valid numbers are 1,2,3, and 4

[U16] **BuffIn** LabVIEW array to hold the image data. Array must be initialized to the correct size before use.

U16

U32 **hout** Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **ErrorCode**

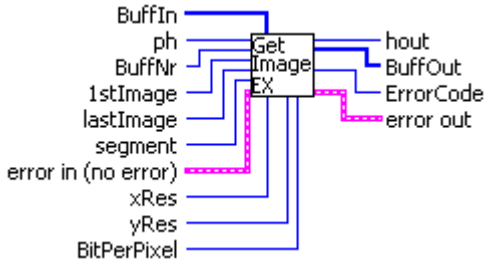
[U16] **BuffOut** LabVIEW array containing image data retreived from the CamRam.

U16

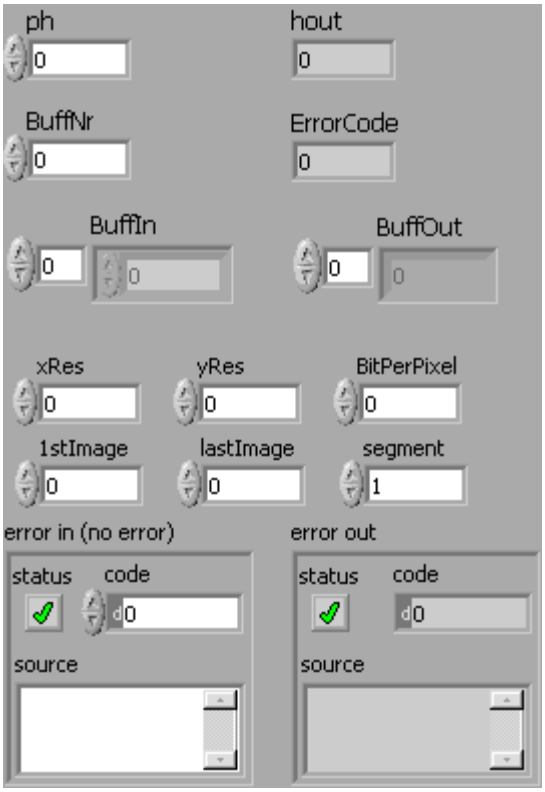
5.7.10 GetImageEX.vi

Gets an image from a previously allocated and added buffer, after an event is created.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

BuffNr Buffer number to get the image from

BuffIn LabVIEW array to hold the image data in the buffer. The array must be previously created with the exact number of elements required to hold the image.

xRes Horizontal Resolution of frame in buffer

yRes Vertical resolution of frame in buffer

BitPerPixel Pixel depth in bits (e.g. 14 bit, 12 bit)

lastImage Number of the last image to retrieve from the CamRam. This must be a valid image number. If attempting to retreive more than one image, make sure that the buffer is of the correct size.

1stImage Number of the first image to retrieve from the CamRam. This must be a valid image number. If attempting to retreive more than one image, make sure that the buffer is of the correct size.

segment Segment of camera memory to retrieve images from. Valid numbers are 1,2,3, and 4

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **ErrorCode**

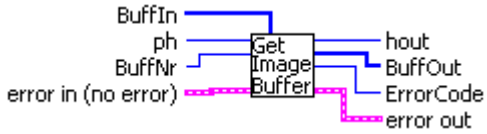
[U16] **BuffOut** LabVIEW array that contains the image data from the specified buffer.

U16

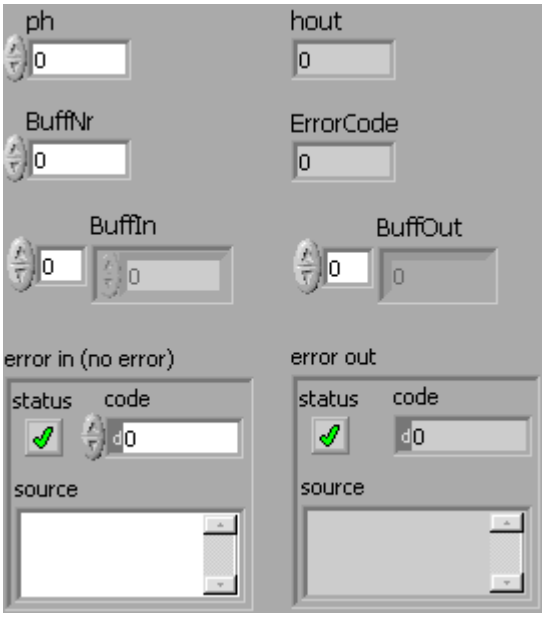
5.7.11 GetImageBuffer.vi

Gets an image from a previously allocated and added buffer, after an event is created.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

BuffNr Buffer number to get the image from

BuffIn LabVIEW array to hold the image data in the buffer. The array must be previously created with the exact number of elements required to hold the image.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

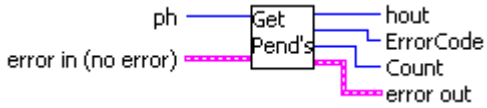
ErrorCode

BuffOut LabVIEW array that contains the image data from the specified buffer.

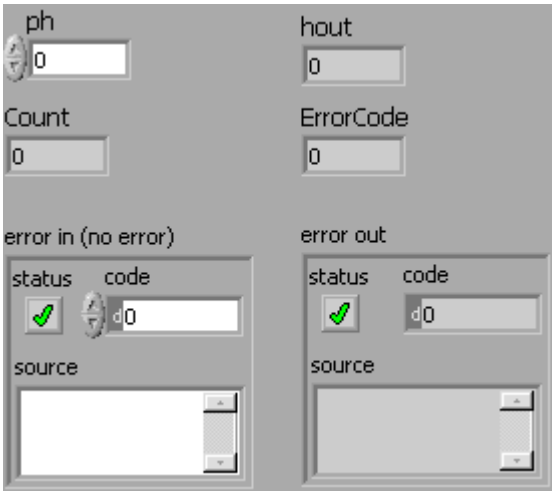
5.7.12 GetPendingBuffer.vi

Finds the number of buffers queued and ready to accept image data. This number should be found after stopping a recording. If there are buffers pending when the camera is stopped, they should be cleared using CancelImages.vi.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

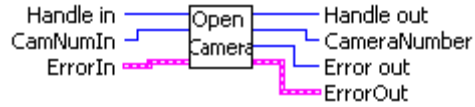
Count Number of pending buffers.

Block Diagram

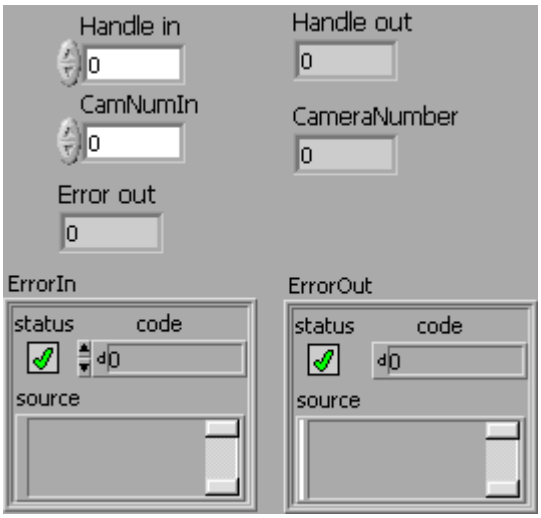
5.7.13 OpenCamera.vi (***Obsolete – Use GetImageEx.vi for new development***)

Opens a camera device. This VI must be called to initialize the camera before any other functions can be used.

Connector Pane



Front Panel



Controls and Indicators

U32 **Handle in** To start a new camera instance, the handle input must be 0.

I32 **CamNumIn** Number of the camera to be opened

ErrorIn The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information

about the error displayed.

Error out

Handle out A unique handle to communicate with the camera.

CameraNumber Camera number used in this "OpenCamera" command.

ErrorOut The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

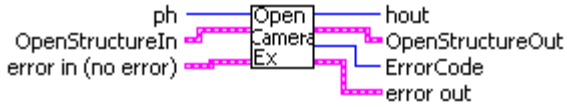
code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

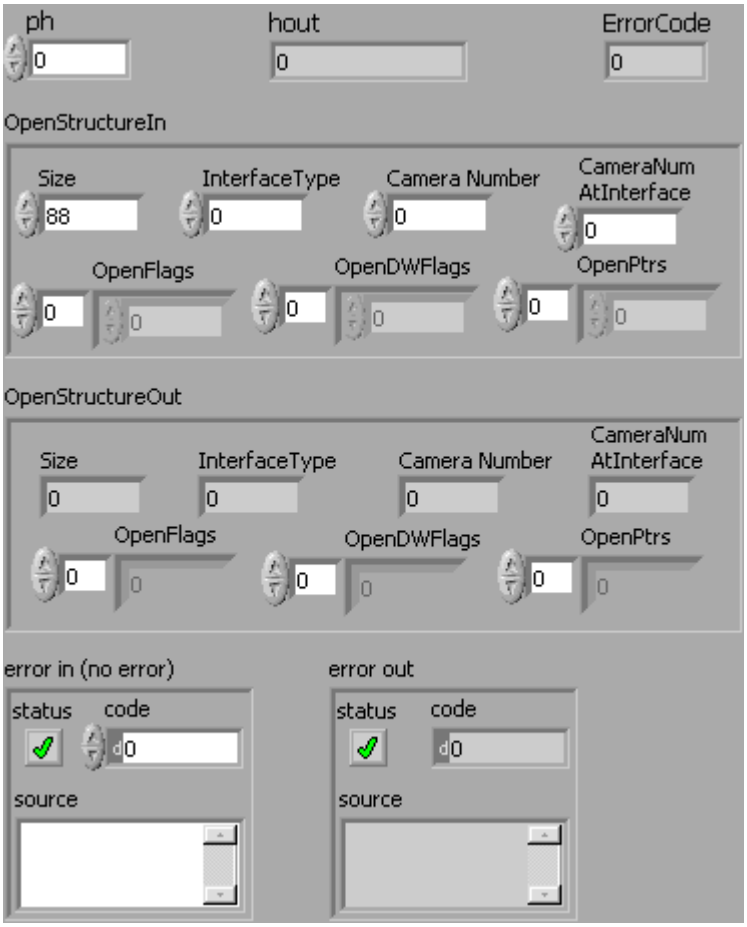
5.7.14 OpenCameraEx.vi

Opens a camera device with given parameters, and returns a handle specidfic to that camera.

Connector Pane



Front Panel



Controls and Indicators

ph Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

OpenStructureIn Configuration parameters for interfacing to pco.cameras

Size Size of the structure returned from the driver.

InterfaceType Describes the physical interface to the camera.

1 - FireWire/IEEE1394
2 - CameraLink using Matrox interface
3 - CameraLink using Silicon Software ME3 interface
4 - National Instruments 1400 series Camera Link boards
10 - CameraLink using generic serial interface
0xFFFF - Search for available interfaces

Other types may be added in future versions of the driver

Camera Number Requested number of the camera connected to this interface.

CameraNumAtInterface Assigned camera number for the selected interface. This may be different from the requested camera number, when scanning multiple connections for cameras.

OpenFlags Optional control flags for each interface. These are interface specific, and may be used to set certain parameters for that interface.

OpenFlags1

OpenDWFlags Additional optional control flags for each interface. These are interface specific, and may be used to set certain parameters for that interface.

OpenDWFlags1

OpenPtrs Additional interface data.

OpenPtr1

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

OpenStructureOut Describes the parameters of the physical interface

Size Size of the structure returned from the driver.

InterfaceType Describes the physical interface to the camera.

1 - FireWire/IEEE1394
2 - CameraLink using Matrox interface
3 - CameraLink using Silicon Software ME3 interface
4 - National Instruments 1400 series Camera Link boards
10 - CameraLink using generic serial interface
0xFFFF - Search for available interfaces

Other types may be added in future versions of the driver

Camera Number Requested number of the camera connected to this interface.

CameraNumAtInterface Assigned camera number for the selected interface. This may be different from the requested camera number, when scanning multiple connections for cameras.

OpenFlags Optional control flags for each interface. These are interface specific, and may be used to set certain parameters for that interface.

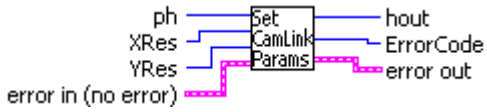
OpenDWFlags Additional optional control flags for each interface. These are interface specific, and may be used to set certain parameters for that interface.

OpenPtrs Additional interface data.

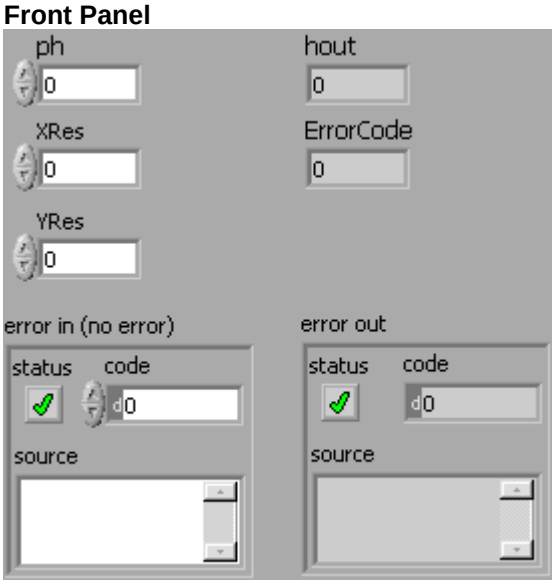
5.7.15 CamLinkSetImageParameters.vi

Set the image parameters for the image buffer transfer inside the CamLink interface. When the pco.camera is connected to a CameraLink interface,this function must be called each time thie size of the image is changed, before the user can retreive images from the camera

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

XRes Actual x resolution of the image to be transferred

YRes Actual y resolution of the image to be transferred

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

5.7.16 GetTransferParameters.vi

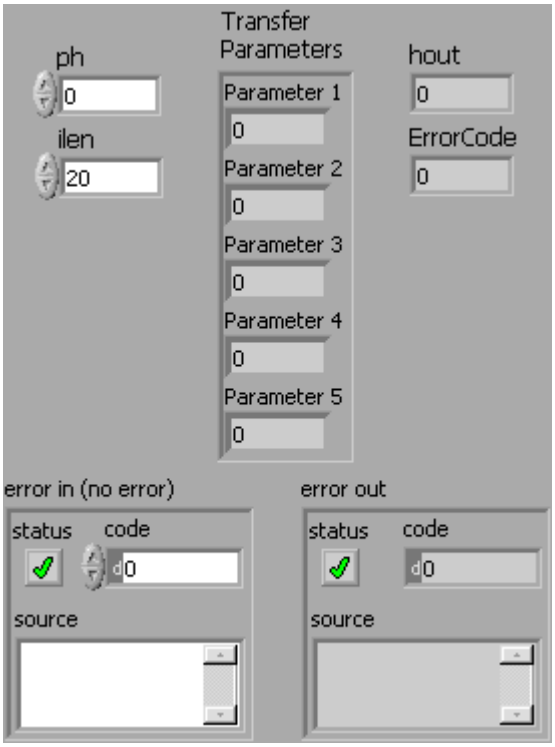
Finds the current transfer parameters of the communication interface. The parameters are interface-dependent, and must be interpreted accordingly.

For FireWire cameras, the parameters describe the number of isochronous channels and bandwith per channel for multiple cameras.

For CameraLink cameras, the parameters describe the baud rate for serial communications, as well as the function of the CC lines and the single/continuous transfer of images.

Connector Pane

Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE

(checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ilen Total number of bytes in "Transfer Parameters" cluster: default is 10.

hout Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

status The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ErrorCode

Transfer Parameters Interface-specific parameters to control the transfer of data from camera to PC

Parameter 1 FireWire Bandwith / CameraLink baudrate

Firewire cameras:
Bandwith bytes - split between cameras. 4096 is default, use 2048 for 2 cameras, etc.

CameraLink:
Baudrate: Default is 9600. Use baudrates supported by your interface, typically

9600, 19200, 38400 etc.

U32 **Parameter 2** FireWire: Speed of iso transfer/ CamLink: Clock frequency

FireWire:
Finds speed of iso channel. Speed setiings are 1 (slow), 2, 4(fastest). Default value is 4 (recommended)

CameraLink:
Finds PixelClock. Should match the camera clock frequency. Values are in Hz: e.g. 40000000, 66000000, 80000000

U32 **Parameter 3** FireWire: Number of iso channels / CameraLink: CC Line settings

FireWire:
Determines the number of iso channels if more than one camera is connected.

CameraLink:
Displays the function of the CC lines in the CameraLink interface.
Bit0 set: CC1 line to be used as trigger instead of <exp trig>
Bit1 set: CC2 line to be used as aquire enable instead of <acq enbl>
Bit3 set: CC4 line to gate image tranfer

U32 **Parameter 4** FireWire: Number of iso buffers / CameraLink: Data format

FireWire:
Sets number of iso buffers. Valid range is 16 to 256. Recommended value is 128

CameraLink:
Sets data format. Valid values are:

0x01: one pixel (16 bit) per clock
0x02: two pixels (12 bit) per clock (only for pco.hs1200 and not implemented yet)

U32 **Parameter 5** FireWire: Bytes per iso frame / CameraLink: Transmit enable.

FireWire:
Determines the number of bytes for each iso channel frame. Recommended value is 2000.

CameraLink:
Returns the current status of image transfer mode. Possible values:

0 - Single image transfer
1 - Continuous image transfers

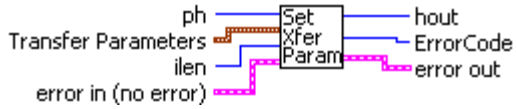
5.7.17 SetTransferParameters.vi

Controls the transfer parameters of the communication interface. The parameters are interface-dependent.

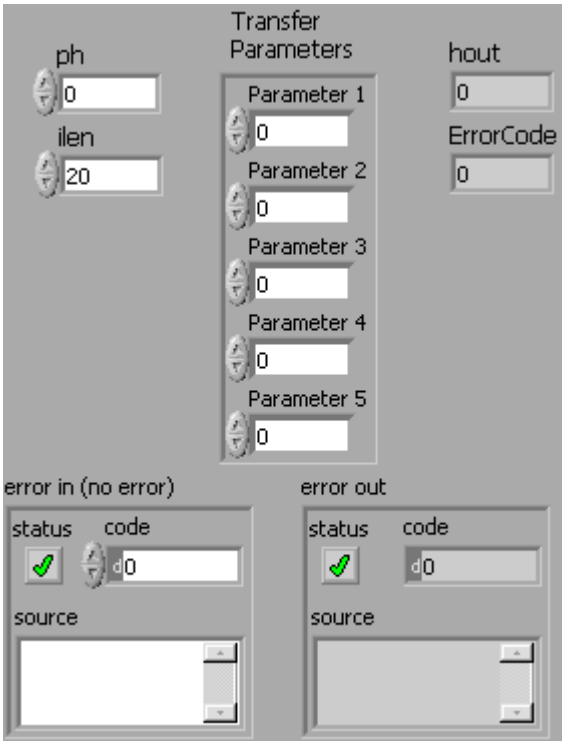
For FireWire cameras, the parameters control the number of isochronous channels and bandwith per channel for multiple cameras.

For CameraLink cameras, the parameters set the baud rate for serial communications, as well as the function of the CC lines and the single/continuous transfer of images.

Connector Pane



Front Panel



Controls and Indicators

U32 **ph** Handle for the camera

error in (no error) The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

code The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

source The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

ilen Total number of bytes in "Transfer Parameters" cluster: default is 20.

Transfer Parameters Interface-specific parameters to control the transfer of data from camera to PC

Parameter 1 FireWire Bandwith / CameraLink baudrate

Firewire cameras:
Bandwith bytes - split between cameras. 4096 is default, use 2048 for 2 cameras, etc.

CameraLink:
Baudrate: Default is 9600. Use baudrates supported by your interface, typically 9600, 19200, 38400 etc.

Parameter 2 FireWire: Speed of iso transfer/ CamLink: Clock frequency

FireWire:
Sets speed of iso channel. Speed setiings are 1 (slow), 2, 4(fastest). Default value is 4 (recommended)

CameraLink: Sets PixelClock. Should match the camera clock frequency. Values are in Hz: 40000000, 66000000, 80000000

Parameter 3 FireWire: Number of iso channels / CameraLink: CC Line settings

FireWire:
Use this parameter to set the number of iso channels if more than one camera is connected. Use -1 to detect the number of channels automatically.

CameraLink:
Set the function of the CC lines in the CameraLink interface.
Bit0 set: enable CC1 line to be used as trigger instead of <exp trig>
Bit1 set: enable CC2 line to be used as aquire enable instead of <acq enbl>
Bit3 set: enable CC4 line to gate image tranfer

Parameter 4 FireWire: Number of iso buffers / CameraLink: Data format

FireWire:
Sets number of iso buffers. Valid range is 16 to 256. Recommended value is 128

CameraLink:
Sets data format. Valid values are:

0x01: one pixel (16 bit) per clock
0x02: two pixels (12 bit) per clock (only for pco.hs1200 and not implemented yet)

U32 **Parameter 5** FireWire: Bytes per iso frame / CameraLink: Transmit enable.

FireWire:
Sets number of bytes for each iso channel frame. Recommended value is 2000

CameraLink:
Enables continuous transfer of images. Possible values:

0 - Single image transfer
1 - Continuous image transfers

U32 **hout** Handle output

error out The **error out** cluster passes error or warning information out of a VI to be used by other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

TF **status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

abc **source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

I32 **ErrorCode**

6 Error / Warning Codes

The error codes are standardized where possible. The error codes contain the error layer information, the source (micocontrollers, CPLDs, FPGAs) and an error code (error cause). All values are combined by a logical OR operation. Error codes and warnings are always negative values, if read as signed integers, or if read as unsigned word, the MSB is set. Errors have the general format 0x80######; warnings have the format 0xC0######.

The error numbers are not unique. Each layer and the common errors have their own error codes. The “Error.vi” formats the error code into LabView clusters, where the error text gives the layer and source information and descriptive text.

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