

Writing Applications with xiAPI

Default parameters

After camera is opened by xiOpenDevice the default camera parameters are set by API. The default parameters might be different in different API versions. In order to ensure that your application will have camera in expected state with any API version - please set all parameters expected by your application to required value.

API parameter modifiers

Description: The parameter modifiers allow you to acquire more information about the camera parameters (e.g. min. or max. value). Also with certain parameters they allow direct update of these parameters without interrupting the image acquisition loop (e.g. setting of exposure and gain).

XI_PRM_INFO_SETTABLE

Description: Check if parameter is settable. It finishes with success when settable.

Usage:

```
if (XI_OK == xiSetParamInt(handle, XI_PRM_TEMP_SELECTOR XI_PRM_INFO_SETTABLE,
XI_TEMP_SENSOR_BOARD))
{
    printf("Camera supports TEMP_SENSOR_BOARD\n");
}
```

XI_PRM_INFO_MIN

Description: Acquire parameter minimum value

Usage:

```
int exp_min = 0;
xiGetParamInt(handle, XI_PRM_EXPOSURE XI_PRM_INFO_MIN, &exp_min);
float framerate = 0;
xiGetParamFloat(handle, XI_PRM_FRAMERATE XI_PRM_INFO_MIN, &framerate);
```

XI_PRM_INFO_MAX

Description: Acquire parameter maximum value.

Usage:

```
int exp_max = 0;
xiGetParamInt(handle, XI_PRM_EXPOSURE XI_PRM_INFO_MAX, &exp_max);
float framerate = 0;
xiGetParamFloat(handle, XI_PRM_FRAMERATE XI_PRM_INFO_MAX, &framerate);
```

XI_PRM_INFO_INCREMENT

Description: Get parameter possible increment step. The setting of value is limited to values MinumumValue+(N*IncrementValue)

Usage:

```
int height_inc = 0;
xiGetParamInt(handle, XI_PRM_HEIGHT XI_PRM_INFO_INCREMENT, &height_inc);
```

XI_PRM_DIRECT_UPDATE

Description: Parameter modifier for direct update without stopping the streaming. Currently `XI_PRM_EXPOSURE` and `XI_PRM_GAIN` can be used with this modifier.

Usage:

```
int exp_val = 0;
xiSetParamInt(handle, XI_PRM_EXPOSURE XI_PRM_DIRECT_UPDATE, exp_val);
int gain_val = 0;
xiSetParamInt(handle, XI_PRM_GAIN XI_PRM_DIRECT_UPDATE, gain_val);
```

Image Buffers Queue

Functionality

The Image Buffers is first-in first-out (FIFO) type of queue.

Capturing

Each captured image is stored in the buffers queue. When application calls `xiGetImage` - the oldest image is removed from queue. Maximum number of images in queue can be set by parameter `XI_PRM_BUFFERS_QUEUE_SIZE`.

Flushing the queue

The images remain in the queue until they are overwritten or flushed. The queue is flushed on one of following conditions:

- acquisition is stopped (`xiStopAcquisition`)
- application set some of parameters using `xiSetParam`:
 - Exposure (`XI_PRM_EXPOSURE`) see Note
 - Gain (`XI_PRM_GAIN`) see Note
 - Downsampling (`XI_PRM_DOWNSAMPLING`)
 - Data Format (`XI_PRM_IMAGE_DATA_FORMAT`)
 - Width (`XI_PRM_WIDTH`)
 - Height (`XI_PRM_HEIGHT`)
 - Offset X (`XI_PRM_OFFSET_X`)
 - Offset Y (`XI_PRM_OFFSET_Y`)

Note: Some of parameters can be changed without flushing the queue. It is possible to change parameter using modifier: `XI_PRM_DIRECT_UPDATE`