



**TANGO**  
Device  
Server

# **AcqPrinceton User's Guide**

## **AcqPrinceton Class**

Revision: keyword substitution - Author: stephle  
Implemented in C++ - CVS repository: tango-ds

### **Introduction:**

Princeton CCD acquisition device

### **Class Inheritance:**

- Tango::Device\_4Impl
  - AcqPrinceton

### **Properties:**

| Device Properties |                   |                           |
|-------------------|-------------------|---------------------------|
| Property name     | Property type     | Description               |
| <b>CamId</b>      | Tango::DEV_STRING | Camera identifier         |
| <b>CamType</b>    | Tango::DEV_LONG   | Camera type 0 = Princeton |

Device Properties Default Values:

| Property Name | Default Values |
|---------------|----------------|
| CamId         | 0              |
| CamType       | 0              |

**There is no Class properties.**

**States:**

| States         |                                              |
|----------------|----------------------------------------------|
| Names          | Descriptions                                 |
| <b>ALARM</b>   | *                                            |
| <b>CLOSE</b>   | The camera is closed                         |
| <b>FAULT</b>   | *                                            |
| <b>INIT</b>    | The device is initializing                   |
| <b>OPEN</b>    | The camera is open, ready to accept commands |
| <b>RUNNING</b> | The camera is running, taking pictures       |
| <b>UNKNOWN</b> | The device is in unknown state               |

**Attributes:**

| Scalar Attributes                                                                                                                             |             |            |        |
|-----------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------|--------|
| Attribute name                                                                                                                                | Data Type   | R/W Type   | Expert |
| <b>acqMode:</b> Write : Acquisition mode 0 = Focus 1 = Sequence                                                                               | DEV_LONG    | WRITE      | No     |
| <b>checkTemperature</b>                                                                                                                       | DEV_BOOLEAN | WRITE      | No     |
| <b>depth:</b> Read : detected depth of the CCD in bits (8/16/24/32)                                                                           | DEV_LONG    | READ       | No     |
| <b>exposure:</b> Write : desired exposure time in ms                                                                                          | DEV_DOUBLE  | WRITE      | No     |
| <b>fileFormat:</b> NOT USED : for compatibility with CCD abstract device                                                                      | DEV_STRING  | WRITE      | Yes    |
| <b>fileName:</b> NOT USED : for compatibility with CCD abstract device                                                                        | DEV_STRING  | WRITE      | Yes    |
| <b>frames:</b> Write : number of frames to take in each sequence Read : current number of frames taken                                        | DEV_LONG    | READ_WRITE | No     |
| <b>height:</b> Read : detected height of the CCD in pixels                                                                                    | DEV_LONG    | READ       | No     |
| <b>nbROI:</b> Write : number of roi to take in consideration                                                                                  | DEV_LONG    | WRITE      | No     |
| <b>numFrame:</b> Write : select frame number                                                                                                  | DEV_LONG    | WRITE      | No     |
| <b>rotateImage</b>                                                                                                                            | DEV_LONG    | WRITE      | No     |
| <b>saturation</b>                                                                                                                             | DEV_DOUBLE  | READ       | No     |
| <b>saturationAlarm</b>                                                                                                                        | DEV_DOUBLE  | WRITE      | No     |
| <b>saturationMax</b>                                                                                                                          | DEV_DOUBLE  | WRITE      | No     |
| <b>shutterMode:</b> 0=OPEN_NEVER, 1=OPEN_PRE_EXPOSURE, 2=OPEN_PRE_SEQUENCE, 3=OPEN_PRE_TRIGGER, 4=OPEN_NO_CHANGE                              | DEV_LONG    | WRITE      | No     |
| <b>temperature:</b> Write : temperature set point Read : measured temperature                                                                 | DEV_DOUBLE  | READ_WRITE | No     |
| <b>timing:</b> Write : software trigger timing (ms) Read : measured time between frames (ms)                                                  | DEV_DOUBLE  | READ_WRITE | No     |
| <b>trigger:</b> Write : trigger mode 0 = freerun 1 = software trigger 2 = external trigger, positive edge 3 = external trigger, negative edge | DEV_LONG    | WRITE      | No     |
| <b>useROI:</b> Write : using roi setup true = use defined roi false = do not use roi                                                          | DEV_BOOLEAN | WRITE      | No     |
| <b>width:</b> Read : detected width of the CCD in pixels                                                                                      | DEV_LONG    | READ       | No     |
| <b>shutterCloseDelay</b>                                                                                                                      | DEV_DOUBLE  | WRITE      | No     |

| Spectrum Attributes                                                     |            |               |        |
|-------------------------------------------------------------------------|------------|---------------|--------|
| Attribute name                                                          | Data Type  | X Data Length | Expert |
| <b>binning:</b> Write : binning parameter [xbin,ybin]                   | DEV_LONG   | 2             | No     |
| <b>fileParms:</b> NOT USED : for compatibility with CCD abstract device | DEV_STRING | 4             | Yes    |
| <b>roi:</b> Write : Region Of Interest [xmin,xmax,ymin,ymax]            | DEV_LONG   | 4             | No     |
| <b>roi2</b>                                                             | DEV_LONG   | 4             | No     |

| Image Attributes                                                               |            |               |               |        |
|--------------------------------------------------------------------------------|------------|---------------|---------------|--------|
| Attribute name                                                                 | Data Type  | X Data Length | Y Data Length | Expert |
| <b>image:</b> Read : last image (state RUNNING) or selected image (state OPEN) | DEV_USHORT | 8192          | 8192          | No     |

## Commands:

More Details on commands....

| Device Commands for Operator Level |             |                  |
|------------------------------------|-------------|------------------|
| Command name                       | Argument In | Argument Out     |
| <b>Init</b>                        | DEV_VOID    | DEV_VOID         |
| <b>State</b>                       | DEV_VOID    | DEV_STATE        |
| <b>Status</b>                      | DEV_VOID    | CONST_DEV_STRING |
| <b>Close</b>                       | DEV_VOID    | DEV_VOID         |
| <b>Open</b>                        | DEV_VOID    | DEV_VOID         |
| <b>Start</b>                       | DEV_VOID    | DEV_VOID         |
| <b>Stop</b>                        | DEV_VOID    | DEV_VOID         |

| Device Commands for Expert Level Only |                    |              |
|---------------------------------------|--------------------|--------------|
| Command name                          | Argument In        | Argument Out |
| <b>GetParam</b>                       | DEV_STRING         | DEV_STRING   |
| <b>SetParam</b>                       | DEVVAR_STRINGARRAY | DEV_VOID     |

## 1 - Init

- **Description:** This commands re-initialise a device keeping the same network connection.  
After an Init command executed on a device, it is not necessary for client to re-connect to the device.  
This command first calls the device *delete\_device()* method and then execute its *init\_device()* method.  
For C++ device server, all the memory allocated in the *nit\_device()* method must be freed in the *delete\_device()* method.  
The language device desctructor automatically calls the *delete\_device()* method.
- **Argin:**  
**DEV\_VOID** : none.
- **Argout:**  
**DEV\_VOID** : none.
- **Command allowed for:**
  - Tango::ALARM
  - Tango::CLOSE
  - Tango::FAULT
  - Tango::INIT
  - Tango::OPEN
  - Tango::RUNNING
  - Tango::UNKNOWN

## 2 - State

- **Description:** This command gets the device state (stored in its *device\_state* data member) and returns it to the caller.
- **Argin:**  
**DEV\_VOID** : none.
- **Argout:**  
**DEV\_STATE** : State Code
- **Command allowed for:**
  - Tango::ALARM
  - Tango::CLOSE
  - Tango::FAULT
  - Tango::INIT
  - Tango::OPEN
  - Tango::RUNNING
  - Tango::UNKNOWN

## 3 - Status

- **Description:** This command gets the device status (stored in its *device\_status* data member) and returns it to the caller.
- **Argin:**  
**DEV\_VOID** : none.
- **Argout:**  
**CONST\_DEV\_STRING** : Status description
- **Command allowed for:**
  - Tango::ALARM
  - Tango::CLOSE
  - Tango::FAULT
  - Tango::INIT
  - Tango::OPEN
  - Tango::RUNNING
  - Tango::UNKNOWN

## 4 - Close

- **Description:** Frees the current camera, prepares it for power-down
- **Argin:**  
**DEV\_VOID** :
- **Argout:**  
**DEV\_VOID** :
- **Command allowed for:**
  - Tango::ALARM
  - Tango::FAULT
  - Tango::OPEN
  - Tango::RUNNING

## 5 - GetParam (for expert only)

- **Description:**
- **Argin:**  
**DEV\_STRING** : name
- **Argout:**  
**DEV\_STRING** : value

- **Command allowed for:**

- Tango::ALARM
- Tango::OPEN
- Tango::RUNNING

## 6 - Open

- **Description:** Reserves and initializes the camera hardware - Detects the characteristics of the CCD : width, height, depth wich can be read using the device's attributes - Sets the desired temperature

- **Argin:**  
**DEV\_VOID :**

- **Argout:**  
**DEV\_VOID :**

- **Command allowed for:**

- Tango::ALARM
- Tango::CLOSE
- Tango::FAULT
- Tango::OPEN
- Tango::RUNNING

## 7 - SetParam (for expert only)

- **Description:**

- **Argin:**  
**DEVVAR\_STRINGARRAY :** name,value

- **Argout:**  
**DEV\_VOID :**

- **Command allowed for:**

- Tango::ALARM
- Tango::OPEN
- Tango::RUNNING

## 8 - Start

- **Description:** Starts exposing - the desired exposing mode (continuous or sequence) must be previously defined with SetMode() command

- **Argin:**  
**DEV\_VOID :**

- **Argout:**  
**DEV\_VOID :**

- **Command allowed for:**

- Tango::ALARM
- Tango::OPEN
- Tango::RUNNING

## 9 - Stop

- **Description:** Stops the current sequence of exposing

- **Argin:**  
**DEV\_VOID :**

- **Argout:**  
**DEV\_VOID :**

- **Command allowed for:**

- Tango::ALARM
- Tango::FAULT
- Tango::OPEN
- Tango::RUNNING

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