



TANGO Device Server

Undulator for Petra3 beamlines User's Guide

Petra3Undulator Class

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Implemented in C++

Introduction:

The undulator class for the Petra3 beamlines implements the basic parameters (gap, taper, velocity) to drive an undulator from a beamline. It also handles the state and disables the access in case of a local usage or an exclusive usage by the acceleraor control room.

The undulator control is handled by a Tine device in the accelerator control system. The Tine device has to be mapped into a Tango device by the Tine To Tango Gateway (TTTGW class). You have to specify the name of a TTTGW device for every device of this class.

The Tine undulator device has many more attributes and shows the hardware state via a control byte and a status byte.
Control byte information:

bit 1 (0x2) = set when vacuum interlock OK
bit 2 (ox4) = set when beamline access enabled

Status byte information:

1 - local control for comissioning
5 - Undulator moves
6 - Undulator ready to move
7 - Error detected by local control, try to reset

10 - local control is switched off
27 - Undulator is ready to move, but an incoherent read and set value was detected

Class Inheritance:

- Tango::Device_4Impl
  - Petra3Undulator

Properties:

Device Properties		
Property name	**Property type**	**Description**
TTTGW_Name	Tango::DEV_STRING	The name of the Tine device for the undulator. The Tine devices should be mapped automatically into Tango devices by the TTTGW (Tine To Tango GateWay) class with the same name. The Undulator class will acess the device of the Tine To Tango Gateway.

Device Properties Default Values:

Property Name	Default Values
TTTGW_Name	none

There is no Class properties.

States:

States	
Names	**Descriptions**
ON	The undulator has reached the requested position and is waiting for a new request.
MOVING	The undulator is moving to a new position.
DISABLE	The undulator is disabled for the experiment. Only reading is possible. The control room has taken the control over the undulator or the local control is activated.
FAULT	The hardware indicates a fault. A reset might help.
UNKNOWN	No connection to the Tine undulator device, state cannot be evaluated.
ALARM	The local control indicates incoherent set and read values.

Attributes:

Scalar Attributes			
Attribute name	**Data Type**	**R/W Type**	**Expert**
Gap: The gap of the undulator.	DEV_FLOAT	READ_WRITE	No
Taper: The applied taper on the undulator.	DEV_FLOAT	READ_WRITE	No
Velocity: The moving velocity of the undulator gap in % of the maximum velocity.	DEV_FLOAT	READ_WRITE	No

Commands:

More Details on commands....

Device Commands for Operator Level		
Command name	**Argument In**	**Argument Out**
Init	DEV_VOID	DEV_VOID
State	DEV_VOID	DEV_STATE
Status	DEV_VOID	CONST_DEV_STRING
Reset	DEV_VOID	DEV_VOID
Stop	DEV_VOID	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::ON
  - Tango::MOVING
  - Tango::DISABLE
  - Tango::FAULT
  - Tango::UNKNOWN
  - Tango::ALARM

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::ON
  - Tango::MOVING
  - Tango::DISABLE
  - Tango::FAULT
  - Tango::UNKNOWN
  - Tango::ALARM

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::ON
  - Tango::MOVING
  - Tango::DISABLE
  - Tango::FAULT
  - Tango::UNKNOWN
  - Tango::ALARM

4 - Reset

- **Description:** Reset a hardware fault.

- **Argin:**
  DEV_VOID :

- **Argout:**
  DEV_VOID :

- **Command allowed for:**
  - Tango::ON
  - Tango::MOVING
  - Tango::DISABLE
  - Tango::FAULT
  - Tango::UNKNOWN
  - Tango::ALARM

5 - Stop

- **Description:** Stop a gap or taper movement.

- **Argin:**
  DEV_VOID :

- **Argout:**
  DEV_VOID :

- **Command allowed for:**
  - Tango::MOVING