



TANGO
Device
Server

Motorization of a quadripole User's Guide

QpoleMotorization Class

Revision: Release_1_0 - Author: peru
Implemented in C++ - CVS repository: ESRF

Introduction:

This device server is intended to control the motorization of a quadripole.

Class Inheritance:

- Tango::Device_4Impl
 - QpoleMotorization

Properties:

Device Properties		
Property name	Property type	Description
ReductorRatio	Tango::DEV_LONG	Ratio of the reductor installed for each motor.
StepByTurn	Tango::DEV_LONG	Number of steps by turn of the motor.
MotorUpInDevName	Tango::DEV_STRING	Device name of the upstream in motor.
MotorUpOutDevName	Tango::DEV_STRING	Device name of the upstream out motor.
MotorDownInDevName	Tango::DEV_STRING	Device name of the downstream in motor.
MotorDownOutDevName	Tango::DEV_STRING	Device name of the downstream out motor.
MotorMiddleDevName	Tango::DEV_STRING	Device name of the middle motor.
CommonEccentricity	Tango::DEV_DOUBLE	Eccentricity common to the up and down motor groups.
MiddleEccentricity	Tango::DEV_DOUBLE	Eccentricity of the middle motor.
MotorUpInHomeCor	Tango::DEV_DOUBLE	Correction of the home motor angle (expressed in steps).
MotorUpOutHomeCor	Tango::DEV_DOUBLE	Correction of the home motor angle (expressed in steps).
MotorDownInHomeCor	Tango::DEV_DOUBLE	Correction of the home motor angle (expressed in steps).
MotorDownOutHomeCor	Tango::DEV_DOUBLE	Correction of the home motor angle (expressed in steps).
MotorMiddleHomeCor	Tango::DEV_DOUBLE	Correction of the home motor angle (expressed in steps).

Device Properties Default Values:

Property Name	Default Values
ReductorRatio	100
StepByTurn	200
MotorUpInDevName	No default value
MotorUpOutDevName	No default value
MotorDownInDevName	No default value
MotorDownOutDevName	No default value
MotorMiddleDevName	No default value
CommonEccentricity	2.1
MiddleEccentricity	1.2
MotorUpInHomeCor	No default value
MotorUpOutHomeCor	No default value
MotorDownInHomeCor	No default value
MotorDownOutHomeCor	No default value
MotorMiddleHomeCor	No default value

There is no Class properties.

States:

States	
Names	Descriptions
ON	State when everything is OK.
MOVING	When a motor is moving.
FAULT	When there is a fault.
UNKNOWN	At startup, before any home setting.

Attributes:

Scalar Attributes			
Attribute name	Data Type	R/W Type	Expert
DownHorizontalPos	DEV_DOUBLE	READ_WRITE	No
DownVerticalPos	DEV_DOUBLE	READ_WRITE	No
UpHorizontalPos	DEV_DOUBLE	READ_WRITE	No
UpVerticalPos	DEV_DOUBLE	READ_WRITE	No
MiddleVerticalPos	DEV_DOUBLE	READ_WRITE	No
DownInStepPos	DEV_DOUBLE	READ	No
DownOutStepPos	DEV_DOUBLE	READ	No
MiddleStepPos	DEV_DOUBLE	READ	No
UpInStepPos	DEV_DOUBLE	READ	No
UpOutStepPos	DEV_DOUBLE	READ	No
GlobalVerticalPos	DEV_DOUBLE	READ_WRITE	No
GlobalHorizontalPos	DEV_DOUBLE	READ_WRITE	No
LateralTilt: Lateral tilt expressed in milliradians.	DEV_DOUBLE	READ_WRITE	No
QpoleX	DEV_DOUBLE	READ_WRITE	No
QpoleZ	DEV_DOUBLE	READ_WRITE	No
QpoleTilt	DEV_DOUBLE	READ_WRITE	No

Spectrum Attributes			
Attribute name	Data Type	X Data Length	Expert
QpolePos	DEV_DOUBLE	3	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
UpHRelMove	DEV_DOUBLE	DEV_VOID
UpVRelMove	DEV_DOUBLE	DEV_VOID
DownHRelMove	DEV_DOUBLE	DEV_VOID
DownVRelMove	DEV_DOUBLE	DEV_VOID
MiddleRelMove	DEV_DOUBLE	DEV_VOID
UpHome	DEV_VOID	DEV_VOID
DownHome	DEV_VOID	DEV_VOID
MiddleHome	DEV_VOID	DEV_VOID
Abort	DEV_VOID	DEV_VOID
AllHRelMove	DEV_DOUBLE	DEV_VOID
AllVRelMove	DEV_DOUBLE	DEV_VOID
GlobalHome	DEV_VOID	DEV_VOID
SetPosition	DEVVAR_DOUBLEARRAY	DEV_VOID
UpToRef	DEV_VOID	DEV_VOID
DownToRef	DEV_VOID	DEV_VOID
MiddleToRef	DEV_VOID	DEV_VOID
GlobalToRef	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::FAULT
 - 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::ON
 - Tango::MOVING
 - Tango::FAULT
 - 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::ON
- Tango::MOVING
- Tango::FAULT
- Tango::UNKNOWN

4 - UpHRelMove

- **Description:** Makes a relative horizontal move of the upstream motor group.

- **Argin:**

DEV_DOUBLE :

- **Argout:**

DEV_VOID :

- **Command allowed for:**

- Tango::ON
- Tango::MOVING
- Tango::FAULT
- Tango::UNKNOWN

5 - UpVRelMove

- **Description:** Makes a relative vertical move of the upstream motor group.

- **Argin:**

DEV_DOUBLE :

- **Argout:**

DEV_VOID :

- **Command allowed for:**

- Tango::ON
- Tango::MOVING
- Tango::FAULT
- Tango::UNKNOWN

6 - DownHRelMove

- **Description:** Makes a relative horizontal move of the downstream motor group.

- **Argin:**

DEV_DOUBLE :

- **Argout:**
DEV_VOID :

- **Command allowed for:**

- Tango::ON
- Tango::MOVING
- Tango::FAULT
- Tango::UNKNOWN

7 - DownVRelMove

- **Description:** Makes a relative vertical move of the downstream motor group.

- **Argin:**
DEV_DOUBLE :

- **Argout:**
DEV_VOID :

- **Command allowed for:**

- Tango::ON
- Tango::MOVING
- Tango::FAULT
- Tango::UNKNOWN

8 - MiddleRelMove

- **Description:** Makes a relative vertical move of the middle motor.

- **Argin:**
DEV_DOUBLE :

- **Argout:**
DEV_VOID :

- **Command allowed for:**

- Tango::ON
- Tango::MOVING
- Tango::FAULT
- Tango::UNKNOWN

9 - UpHome

- **Description:** Sends upstream motor group to home position.
- **Argin:**
DEV_VOID :
- **Argout:**
DEV_VOID :
- **Command allowed for:**
 - Tango::ON
 - Tango::MOVING
 - Tango::FAULT
 - Tango::UNKNOWN

10 - DownHome

- **Description:** Sends downstream motor group to home position.
- **Argin:**
DEV_VOID :
- **Argout:**
DEV_VOID :
- **Command allowed for:**
 - Tango::ON
 - Tango::MOVING
 - Tango::FAULT
 - Tango::UNKNOWN

11 - MiddleHome

- **Description:** Sends middle motor to home position.
- **Argin:**
DEV_VOID :
- **Argout:**
DEV_VOID :
- **Command allowed for:**
 - Tango::ON
 - Tango::MOVING
 - Tango::FAULT

- Tango::UNKNOWN

12 - Abort

- **Description:** Abort all motions in progress.
- **Argin:**
DEV_VOID :
- **Argout:**
DEV_VOID :
- **Command allowed for:**
 - Tango::MOVING

13 - AllHRelMove

- **Description:** Horizontal relative move of the whole assembly.
- **Argin:**
DEV_DOUBLE :
- **Argout:**
DEV_VOID :
- **Command allowed for:**
 - Tango::ON
 - Tango::MOVING
 - Tango::FAULT
 - Tango::UNKNOWN

14 - AllVRelMove

- **Description:** Vertical relative move of the whole assembly.
- **Argin:**
DEV_DOUBLE :
- **Argout:**
DEV_VOID :
- **Command allowed for:**
 - Tango::ON
 - Tango::MOVING
 - Tango::FAULT

- Tango::UNKNOWN

15 - GlobalHome

- **Description:** Send all of the motorizations to home position.
- **Argin:**
DEV_VOID :
- **Argout:**
DEV_VOID :
- **Command allowed for:**
 - Tango::ON
 - Tango::MOVING
 - Tango::FAULT
 - Tango::UNKNOWN

16 - SetPosition

- **Description:** Set the position of the quadripole: argin[0] is the x position. argin[1] is the z position. argin[2] is the tilt value.
- **Argin:**
DEVVAR_DOUBLEARRAY :
- **Argout:**
DEV_VOID :
- **Command allowed for:**
 - Tango::ON
 - Tango::MOVING
 - Tango::FAULT

17 - UpToRef

- **Description:** Send up motorization to reference position (home + correction).
- **Argin:**
DEV_VOID :
- **Argout:**
DEV_VOID :
- **Command allowed for:**

- Tango::ON
- Tango::MOVING
- Tango::FAULT
- Tango::UNKNOWN

18 - DownToRef

- **Description:** Send down motorization to reference position (home + correction).
- **Argin:**
DEV_VOID :
- **Argout:**
DEV_VOID :
- **Command allowed for:**
 - Tango::ON
 - Tango::MOVING
 - Tango::FAULT
 - Tango::UNKNOWN

19 - MiddleToRef

- **Description:** Send middle motorization to reference position (home + correction).
- **Argin:**
DEV_VOID :
- **Argout:**
DEV_VOID :
- **Command allowed for:**
 - Tango::ON
 - Tango::MOVING
 - Tango::FAULT
 - Tango::UNKNOWN

20 - GlobalToRef

- **Description:** Send all motorizations to reference position (home + correction).
- **Argin:**
DEV_VOID :
- **Argout:**

DEV_VOID :

● **Command allowed for:**

- Tango::ON
- Tango::MOVING
- Tango::FAULT
- Tango::UNKNOWN

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