



TANGO Device Server

Abstract Stepper Motor User's Guide

Motor Class

Revision: V1-1 - Author: jmchaize
Implemented in C++ - CVS repository: tango-ds

Introduction:

An abstract class for stepper motot

Class Inheritance:

- Tango::Device_4Impl
  - Motor

Properties:

Device Properties		
Property name	**Property type**	**Description**
Calibrated	Tango::DEV_BOOLEAN	When this property is different from 0, the motor is considered as calibrated and a certain number of attributes cannot be changed anymore.(e.g. step_per_unit) The goal is to avoid undesired change when the calibratiuon process has been performed.

Device Properties Default Values:

Property Name	**Default Values**
Calibrated	No default value

There is no Class properties.

States:

States	
Names	**Descriptions**
ON	The motor powered on and is ready to move.
MOVING	The motor is moving
FAULT	The motor indicates a fault.
ALARM	The motor indicates an alarm state for example has reached a limit switch.
OFF	The power on the moror drive is switched off.
DISABLE	The motor is in slave mode and disabled for normal use

Attributes:

Scalar Attributes			
Attribute name	**Data Type**	**R/W Type**	**Expert**
Steps_per_unit	DEV_DOUBLE	READ_WRITE	Yes
Steps: number of steps in the step counter	DEV_LONG	READ_WRITE	No
Position: The actual motor position.	DEV_DOUBLE	READ_WRITE	No
Acceleration: The acceleration of the motor.	DEV_LONG	READ_WRITE	Yes
Velocity: The constant velocity of the motor.	DEV_LONG	READ_WRITE	Yes
Backlash: Backlash to be applied to each motor movement	DEV_DOUBLE	READ_WRITE	Yes
Home_position: Position of the home switch	DEV_DOUBLE	READ_WRITE	Yes
HardLimitLow	DEV_BOOLEAN	READ	No
HardLimitHigh	DEV_BOOLEAN	READ	No
PresetPosition: preset the position in the step counter	DEV_DOUBLE	WRITE	Yes
FirstVelocity: number of step/s for the first step and for the move reference	DEV_LONG	READ_WRITE	Yes
Home_side: indicates if the axis is below or above the position of the home switch	DEV_BOOLEAN	READ	No
StepSize: Size of the relative step performed by the StepUp and StepDown commands. The StepSize is expressed in physical unit.	DEV_DOUBLE	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
On	DEV_VOID	DEV_VOID
Off	DEV_VOID	DEV_VOID
GoHome	DEV_VOID	DEV_VOID
Abort	DEV_VOID	DEV_VOID
StepUp	DEV_VOID	DEV_VOID
StepDown	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::ALARM
  - Tango::OFF
  - Tango::DISABLE

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::ALARM
  - Tango::OFF
  - Tango::DISABLE

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::ALARM
  - Tango::OFF
  - Tango::DISABLE

4 - On

- **Description:** Enable power on motor

- **Argin:**
  DEV_VOID :

- **Argout:**
  DEV_VOID :

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

5 - Off

- **Description:** Desable power on motor

- **Argin:**
  DEV_VOID :

- **Argout:**
  DEV_VOID :

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

6 - GoHome

- **Description:** Move the motor to the home position given by a home switch.

- **Argin:**
  DEV_VOID :

- **Argout:**
  DEV_VOID :

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

7 - Abort

- **Description:** Stop immediately the motor

- **Argin:**
  DEV_VOID :

- **Argout:**
  DEV_VOID :

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

8 - StepUp

- **Description:** perform a relative motion of "stepSize" in the forward direction. StepSize is defined as an attribute of the device.

- **Argin:**
  DEV_VOID :

- **Argout:**
  DEV_VOID :

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

9 - StepDown

- **Description:** perform a relative motion of "stepSize" in the backward direction. StepSize is defined as an attribute of the device.

- **Argin:**
  DEV_VOID :

- **Argout:**
  DEV_VOID :

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