



**TANGO
Device
Server**

TANGO Device Server User's Guide

BPMOrbitDD Class

**Revision: - Author: jairomoldes
Implemented in Python**

Introduction:

This device server will be used to get data from or run basic commands (without parameters) in a list of BPMLibera devices and select the interesting information for the user.

Class Inheritance:

- PyTango.Device_4Impl
 - BPMOrbitDD

Properties:

Device Properties		
Property name	Property type	Description
BPMs	Tango::DEVVAR_STRINGARRAY	List of BPMLibera devices from which to get the data from
BPMsDescription	Tango::DEVVAR_STRINGARRAY	List of user's descriptive names for the BPMLibera devices from which to get the data from
Location	Tango::DEV_STRING	System to treat (LT,BO,BT,SR)
XRef	Tango::DEVVAR_DOUBLEARRAY	Horizontal reference orbit
ZRef	Tango::DEVVAR_DOUBLEARRAY	Vertical reference orbit
SumRef	Tango::DEVVAR_DOUBLEARRAY	Sum orbit reference

Device Properties Default Values:

Property Name	Default Values
BPMs	No default value
BPMsDescription	No default value
Location	No default value
XRef	No default value
ZRef	No default value
SumRef	No default value

There is no Class properties.

States:

States	
Names	Descriptions
MOVING	Getting data from or running command in the BPMs
FAULT	Problem detected in at least one of the BPMs
ON	All BPMs up and running

Attributes:

Scalar Attributes			
Attribute name	Data Type	R/W Type	Expert
BPMsMinBufferSize	DEV_LONG	READ_WRITE	No
FirstTurn	DEV_LONG	READ_WRITE	No
LastTurn	DEV_LONG	READ_WRITE	No
XMean	DEV_DOUBLE	READ	No
ZMean	DEV_DOUBLE	READ	No
SumMean	DEV_DOUBLE	READ	No
EfficiencyLI	DEV_DOUBLE	READ	No
EfficiencyLT	DEV_DOUBLE	READ	No

Spectrum Attributes			
Attribute name	Data Type	X Data Length	Expert
BPMs	DEV_STRING	256	No
BPMsDescription	DEV_STRING	256	No
X	DEV_DOUBLE	65535	No
Z	DEV_DOUBLE	65535	No
Sum	DEV_DOUBLE	65535	No
XDiff	DEV_DOUBLE	65535	No
ZDiff	DEV_DOUBLE	65535	No
SumDiff	DEV_DOUBLE	65535	No
XRef	DEV_DOUBLE	65535	No
ZRef	DEV_DOUBLE	65535	No
SumRef	DEV_DOUBLE	65535	No
XDiffTurns	DEV_DOUBLE	65535	No
ZDiffTurns	DEV_DOUBLE	65535	No
SumDiffTurns	DEV_DOUBLE	65535	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
CheckTriggerReceived	DEV_VOID	DEV_BOOLEAN
SetupDDBufferFreezing	DEV_VOID	DEV_VOID
UnfreezeDDBuffer	DEV_VOID	DEV_VOID
ReadDDBuffers	DEV_VOID	DEV_VOID
Start	DEV_VOID	DEV_VOID
Stop	DEV_VOID	DEV_VOID
RunCommand	DEV_STRING	DEVVAR_STRINGARRAY
SaveXasRef	DEV_VOID	DEV_VOID
SaveZasRef	DEV_VOID	DEV_VOID
SaveSumAsRef	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::MOVING
 - Tango::FAULT
 - Tango::ON

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

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

4 - CheckTriggerReceived

- **Description:** This command will check that one and only one trigger has been received in all the BPMs since they were configured to freeze the DD Buffer using SetupDDBufferFreezing() command
- **Argin:**
DEV_VOID :
- **Argout:**
DEV_BOOLEAN : Returns True if trigger detected on all the BPMs, False otherwise
- **Command allowed for:**
 - Tango::MOVING
 - Tango::FAULT

- Tango::ON

5 - SetupDDBufferFreezing

- **Description:** This command will setup all BPMs for DD acquisition with buffer freezing enabled.
- **Argin:**
DEV_VOID :
- **Argout:**
DEV_VOID :
- **Command allowed for:**
 - Tango::MOVING
 - Tango::FAULT
 - Tango::ON

6 - UnfreezeDDBuffer

- **Description:** This command will unfreeze all the BPMs DD buffer and save the current trigger counter of all them for later checking if a trigger has been received
- **Argin:**
DEV_VOID :
- **Argout:**
DEV_VOID :
- **Command allowed for:**
 - Tango::MOVING
 - Tango::FAULT
 - Tango::ON

7 - ReadDDBuffers

- **Description:** Gets DD data from all the BPMs and computes the necessary statistics
- **Argin:**
DEV_VOID :
- **Argout:**
DEV_VOID :
- **Command allowed for:**
 - Tango::MOVING

- Tango::FAULT
- Tango::ON

8 - Start

- **Description:** Starts an endless loop to acquire as fast as possible the position attributes from the BPMs
- **Argin:**
DEV_VOID :
- **Argout:**
DEV_VOID :
- **Command allowed for:**
 - Tango::MOVING
 - Tango::FAULT
 - Tango::ON

9 - Stop

- **Description:** Stop the continuous acquisition started with the Acquire command (if it is running)
- **Argin:**
DEV_VOID :
- **Argout:**
DEV_VOID :
- **Command allowed for:**
 - Tango::MOVING
 - Tango::FAULT
 - Tango::ON

10 - RunCommand

- **Description:** Runs a command (needs to be a parameterless command) in all the BPMs
- **Argin:**
DEV_STRING : Command to be run in all the bpmms
- **Argout:**
DEVVAR_STRINGARRAY : Result of the command for each bpm
- **Command allowed for:**
 - Tango::MOVING

- Tango::FAULT
- Tango::ON

11 - SaveXasRef

- **Description:** Saves current X value as reference value
- **Argin:**
DEV_VOID :
- **Argout:**
DEV_VOID :
- **Command allowed for:**
 - Tango::MOVING
 - Tango::FAULT
 - Tango::ON

12 - SaveZasRef

- **Description:** Saves current Z value as reference value
- **Argin:**
DEV_VOID :
- **Argout:**
DEV_VOID :
- **Command allowed for:**
 - Tango::MOVING
 - Tango::FAULT
 - Tango::ON

13 - SaveSumAsRef

- **Description:** Saves current Sum value as reference value
- **Argin:**
DEV_VOID :
- **Argout:**
DEV_VOID :
- **Command allowed for:**
 - Tango::MOVING

- Tango::FAULT
- Tango::ON

TANGO is an open source project hosted by :
SOURCEFORGE.NET®

Core and Tools : CVS repository on tango-cs project
Device Servers : CVS repository on tango-ds project