



**TANGO
Device
Server**

OFFFManager User's Guide

OFFFManager Class

**Revision: release_3_3_3 - Author: leclercq
Implemented in C++**

Introduction:

This device takes in charge the process related to the so called "On the Fly Feed Forward" mechanism for the SOLEIL mechanical (or motorized) insertions.

Class Inheritance:

- Tango::Device_3Impl
 - OFFFManager

Properties:

Device Properties		
Property name	Property type	Description
CorrectorsPowerSupplies	Array of string	The device name of the correctors power supplies Please respect the following correction tables declaration order: first corrector in the correction table file must be the first corrector in list. This property has no default value and must be specified.
HistoryLength	Tango::DEV_LONG	The depth of the various history buffers produced by the device (in number of gap, phase or correction samples). Defaults to 4096.
DeltaGapThreshold	Tango::DEV_FLOAT	Absolute gap variation - in mm - above which a correction is applied. Defaults to 0.05 (i.e. 50 um).
DeltaPhaseThreshold	Tango::DEV_FLOAT	Absolute phase variation - in mm - above which a correction is applied. Defaults to 0.05 (i.e. 50 um).
NiCanInterface	Tango::DEV_STRING	Name of the NI-CAN interface as declared under Ni Measurement & Automation. Defaults to 'CAN0'
NiCanBaudrate	Tango::DEV_DOUBLE	NI CAN baudrate. Defaults to 500000. Do not edit unless you know what you are doing!
CorrectionTablesPaths	Array of string	Full path to the correction table(s). For U20: full path to the single correction table file (1 path required) For HU80: full path to the four correction table files of each modes // and anti-// (8 paths required) For HU80: be sure to respect the following order... mode_//:corrector_1_table mode_//:corrector_2_table mode_//:corrector_3_table mode_//:corrector_4_table mode_anti-//:corrector_1_table mode_anti-//:corrector_2_table mode_anti-//:corrector_3_table mode_anti-//:corrector_4_table This property has no default value and must be specified.
InsertionType	Tango::DEV_STRING	The insertion type (as string). Supported models: {U20, HU80}. This property has no default value and must be specified.
NiCanDelay	Tango::DEV_USHORT	Delay (in millisecs) between NI-CAN driver calls to ncWaitForState and ncReadMult. Please don't change this property unless you know what you're doing. Defaults to 10 ms.

Device Properties Default Values:

Property Name	Default Values
CorrectorsPowerSupplies	No default value
HistoryLength	4096
DeltaGapThreshold	0.05
DeltaPhaseThreshold	0.05
NiCanInterface	CAN0
NiCanBaudrate	500000
CorrectionTablesPaths	No default value
InsertionType	No default value
NiCanDelay	10

There is no Class properties.

States:

States	
Names	Descriptions
FAULT	On the fly feed forward off - aborted on error - emergy actions applied.
RUNNING	Device up and running - Can Interface: OK - Correction: ON
STANDBY	On the fly feed forward suspended - waiting for command.
DISABLE	Device up and running - Can Interface: OK - Correction: OFF (no values sent to power supplies)

Attributes:

Scalar Attributes

Attribute name	Data Type	R/W Type	Expert
CANInputRate: Rate at which the CAN frames are received from the CAN interface	DEV_FLOAT	READ	No
PSOutputRate: The rate at which the corrections are sent to the power supplies	DEV_FLOAT	READ	No
DeltaGapThreshold: Absolute gap variation - in mm - above which a correction is applied on the associated power supplies. Before changing this value please be sure you really know what you are doing.	DEV_DOUBLE	READ_WRITE	Yes
DeltaPhaseThreshold: Absolute gap variation - in mm - above which a correction is applied on the associated power supplies. Before changing this value please be sure you really know what you are doing.	DEV_DOUBLE	READ_WRITE	Yes

Spectrum Attributes

Attribute name	Data Type	X Data Length	Expert
GapHistory: The insertion history (circular buffer). Its size can be controlled using the property.	DEV_FLOAT	16384	No
PhaseHistory: The insertion history (circular buffer). Its size can be controlled using the property.	DEV_FLOAT	16384	No
DeltaGapHistory: The history of the difference between two successive measurements in mm (circular buffer). Its size can be controlled using the property.	DEV_FLOAT	16384	No
DeltaPhaseHistory: The history of the difference between two successive measurements in mm (circular buffer). Its size can be controlled using the property.	DEV_FLOAT	16384	No

Image Attributes

Attribute name	Data Type	X Data Length	Y Data Length	Expert
CorrectionHistory: An image containing values at which a correction has been applied. The data is stored the following way: Image[0][j] = gaps values Image[i>0][j] = set points sent to corrector i	DEV_FLOAT	32	16384	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
ModeChanged	DEV_USHORT	DEV_VOID

Device Commands for Expert Level Only

Command name	Argument In	Argument Out
Start	DEV_VOID	DEV_VOID
Stop	DEV_VOID	DEV_VOID
EnableCorrection	DEV_VOID	DEV_VOID
DisableCorrection	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::FAULT
 - Tango::RUNNING
 - Tango::STANDBY
 - 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::FAULT
- Tango::RUNNING
- Tango::STANDBY
- 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::FAULT
- Tango::RUNNING
- Tango::STANDBY
- Tango::DISABLE

4 - Start (for expert only)

- **Description:** Starts the on the fly feed forward process.

- **Argin:**

DEV_VOID : n/a

- **Argout:**

DEV_VOID : n/a

- **Command allowed for:**

- Tango::FAULT
- Tango::RUNNING
- Tango::STANDBY
- Tango::DISABLE

5 - Stop (for expert only)

- **Description:** Stops the on the fly feed forward process.

- **Argin:**

DEV_VOID : n/a

- **Argout:**

DEV_VOID : n/a

- **Command allowed for:**

- Tango::FAULT
- Tango::RUNNING
- Tango::STANDBY
- Tango::DISABLE

6 - EnableCorrection (for expert only)

- **Description:** Enable correction: interpolated correction values are actually sent to the power supplies. Device state is switched from DISABLED to RUNNING. Before executing this command please be sure you really know what you are doing.
- **Argin:**
DEV_VOID : n/a
- **Argout:**
DEV_VOID : n/a
- **Command allowed for:**
 - Tango::FAULT
 - Tango::RUNNING
 - Tango::STANDBY
 - Tango::DISABLE

7 - DisableCorrection (for expert only)

- **Description:** Disable correction: interpolated correction values are NOT sent to the power supplies. Device state is switched from RUNNING to DISABLED. Before executing this command please be sure you really know what you are doing.
- **Argin:**
DEV_VOID : n/a
- **Argout:**
DEV_VOID : n/a
- **Command allowed for:**
 - Tango::FAULT
 - Tango::RUNNING
 - Tango::STANDBY
 - Tango::DISABLE

8 - ModeChanged

- **Description:** For HU80 : valid modes are: 0:parallele or 1:anti-parallele This command has no effect on any other insertion device type.
- **Argin:**
DEV_USHORT : The new insertion mode
- **Argout:**
DEV_VOID : n/a
- **Command allowed for:**
 - Tango::FAULT
 - Tango::RUNNING
 - Tango::STANDBY
 - Tango::DISABLE

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DeltaGapThreshold	Tango::DEV_FLOAT	Absolute gap variation - in mm - above which a correction is applied. Defaults to 0.05 (i.e. 50 um).
DeltaPhaseThreshold	Tango::DEV_FLOAT	Absolute phase variation - in mm - above which a correction is applied. Defaults to 0.05 (i.e. 50 um).
NiCanInterface	Tango::DEV_STRING	Name of the NI-CAN interface as declared under Ni Measurement & Automation. Defaults to 'CAN0'
NiCanBaudrate	Tango::DEV_DOUBLE	NI CAN baudrate. Defaults to 500000. Do not edit unless you know what you are doing!
CorrectionTablesPaths	Array of string	Full path to the correction table(s). For U20: full path to the single correction table file (1 path required) For HU80: full path to the four correction table files of each modes // and anti-// (8 paths required) For HU80: be sure to respect the following order... mode_//:corrector_1_table mode_//:corrector_2_table mode_//:corrector_3_table mode_//:corrector_4_table mode_anti-//:corrector_1_table mode_anti-//:corrector_2_table mode_anti-//:corrector_3_table mode_anti-//:corrector_4_table This property has no default value and must be specified.
InsertionType	Tango::DEV_STRING	The insertion type (as string). Supported models: {U20, HU80}. This property has no default value and must be specified.
NiCanDelay	Tango::DEV_USHORT	Delay (in millisecs) between NI-CAN driver calls to ncWaitForState and ncReadMult. Please don't change this property unless you know what you're doing. Defaults to 10 ms.

Device Properties Default Values:

Property Name	Default Values
CorrectorsPowerSupplies	No default value
HistoryLength	4096
DeltaGapThreshold	0.05
DeltaPhaseThreshold	0.05
NiCanInterface	CAN0
NiCanBaudrate	500000
CorrectionTablesPaths	No default value
InsertionType	No default value
NiCanDelay	10

There is no Class properties.

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PSOutputRate: The rate at which the corrections are sent to the power supplies	DEV_FLOAT	READ	No
DeltaGapThreshold: Absolute gap variation - in mm - above which a correction is applied on the associated power supplies. Before changing this value please be sure you really know what you are doing.	DEV_DOUBLE	READ_WRITE	Yes
DeltaPhaseThreshold: Absolute gap variation - in mm - above which a correction is applied on the associated power supplies. Before changing this value please be sure you really know what you are doing.	DEV_DOUBLE	READ_WRITE	Yes

Spectrum Attributes

Attribute name	Data Type	X Data Length	Expert
GapHistory: The insertion history (circular buffer). Its size can be controlled using the property.	DEV_FLOAT	16384	No
PhaseHistory: The insertion history (circular buffer). Its size can be controlled using the property.	DEV_FLOAT	16384	No
DeltaGapHistory: The history of the difference between two successive measurements in mm (circular buffer). Its size can be controlled using the property.	DEV_FLOAT	16384	No
DeltaPhaseHistory: The history of the difference between two successive measurements in mm (circular buffer). Its size can be controlled using the property.	DEV_FLOAT	16384	No

Image Attributes

Attribute name	Data Type	X Data Length	Y Data Length	Expert
CorrectionHistory: An image containing values at which a correction has been applied. The data is stored the following way: Image[0][j] = gaps values Image[i>0][j] = set points sent to corrector i	DEV_FLOAT	32	16384	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
ModeChanged	DEV_USHORT	DEV_VOID

Device Commands for Expert Level Only

Command name	Argument In	Argument Out
Start	DEV_VOID	DEV_VOID
Stop	DEV_VOID	DEV_VOID
EnableCorrection	DEV_VOID	DEV_VOID
DisableCorrection	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::FAULT
 - Tango::RUNNING
 - Tango::STANDBY
 - 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::FAULT
- Tango::RUNNING
- Tango::STANDBY
- 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::FAULT
- Tango::RUNNING
- Tango::STANDBY
- Tango::DISABLE

4 - Start (for expert only)

- **Description:** Starts the on the fly feed forward process.

- **Argin:**

DEV_VOID : n/a

- **Argout:**

DEV_VOID : n/a

- **Command allowed for:**

- Tango::FAULT
- Tango::RUNNING
- Tango::STANDBY
- Tango::DISABLE

5 - Stop (for expert only)

- **Description:** Stops the on the fly feed forward process.

- **Argin:**

DEV_VOID : n/a

- **Argout:**

DEV_VOID : n/a

- **Command allowed for:**

- Tango::FAULT
- Tango::RUNNING
- Tango::STANDBY
- Tango::DISABLE

6 - EnableCorrection (for expert only)

- **Description:** Enable correction: interpolated correction values are actually sent to the power supplies. Device state is switched from DISABLED to RUNNING. Before executing this command please be sure you really know what you are doing.
- **Argin:**
DEV_VOID : n/a
- **Argout:**
DEV_VOID : n/a
- **Command allowed for:**
 - Tango::FAULT
 - Tango::RUNNING
 - Tango::STANDBY
 - Tango::DISABLE

7 - DisableCorrection (for expert only)

- **Description:** Disable correction: interpolated correction values are NOT sent to the power supplies. Device state is switched from RUNNING to DISABLED. Before executing this command please be sure you really know what you are doing.
- **Argin:**
DEV_VOID : n/a
- **Argout:**
DEV_VOID : n/a
- **Command allowed for:**
 - Tango::FAULT
 - Tango::RUNNING
 - Tango::STANDBY
 - Tango::DISABLE

8 - ModeChanged

- **Description:** For HU80 : valid modes are: 0:parallele or 1:anti-parallele This command has no effect on any other insertion device type.
- **Argin:**
DEV_USHORT : The new insertion mode
- **Argout:**
DEV_VOID : n/a
- **Command allowed for:**
 - Tango::FAULT
 - Tango::RUNNING
 - Tango::STANDBY
 - Tango::DISABLE

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TANGO
Device
Server

OFFFManager

Device Commands Description

OFFFManager Class

Revision: release_3_3_3 - Author: leclercq

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::FAULT
 - Tango::RUNNING
 - Tango::STANDBY
 - 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::FAULT
 - Tango::RUNNING
 - Tango::STANDBY
 - 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::FAULT
 - Tango::RUNNING
 - Tango::STANDBY
 - Tango::DISABLE

4 - Start (for expert only)

- **Description:** Starts the on the fly feed forward process.
- **Argin:**
DEV_VOID : n/a
- **Argout:**
DEV_VOID : n/a
- **Command allowed for:**
 - Tango::FAULT
 - Tango::RUNNING
 - Tango::STANDBY
 - Tango::DISABLE

5 - Stop (for expert only)

- **Description:** Stops the on the fly feed forward process.
- **Argin:**
DEV_VOID : n/a
- **Argout:**
DEV_VOID : n/a
- **Command allowed for:**
 - Tango::FAULT
 - Tango::RUNNING
 - Tango::STANDBY
 - Tango::DISABLE

6 - EnableCorrection (for expert only)

- **Description:** Enable correction: interpolated correction values are actually sent to the power supplies. Device state is switched from DISABLED to RUNNING. Before executing this command please be sure you really know what you are doing.
- **Argin:**
DEV_VOID : n/a
- **Argout:**
DEV_VOID : n/a
- **Command allowed for:**
 - Tango::FAULT
 - Tango::RUNNING
 - Tango::STANDBY
 - Tango::DISABLE

7 - DisableCorrection (for expert only)

- **Description:** Disable correction: interpolated correction values are NOT sent to the power supplies. Device state is switched from RUNNING to DISABLED. Before executing this command please be sure you really know what you are doing.
- **Argin:**
DEV_VOID : n/a
- **Argout:**
DEV_VOID : n/a

- **Command allowed for:**

- Tango::FAULT
- Tango::RUNNING
- Tango::STANDBY
- Tango::DISABLE

8 - ModeChanged

- **Description:** For HU80 : valid modes are: 0:parallele or 1:anti-parallele This command has no effect on any other insertion device type.

- **Argin:**

DEV_USHORT : The new insertion mode

- **Argout:**

DEV_VOID : n/a

- **Command allowed for:**

- Tango::FAULT
- Tango::RUNNING
- Tango::STANDBY
- Tango::DISABLE

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