Transfer Efficiency
User's Guide

XfrEff Class

Revision: - Author: epaud
Implemented in C++ - CVS repository: ESRF

Introduction:

This device server handles the Machine Transfer Efficiency hardware based a CUB C-PCI card equipped with an add-on mezzanine card. This card hold a virtex programmable component were computing algorithms are loaded.

Class Description:

Properties:

Device Properties

Property name	Property type	Description
DeviceName	Tango::DEV_STRING	This is the CUB device name in the form "/dev/cub01". This resource is absolutely mandatory, otherwise the server exits on ERROR
InterlockLevel	Tango::DEV_LONG	Level of the interlock handled by the CUB mezanine
TL2_delay	Tango::DEV_LONG	Convolution window delay for TL2
SRN_delay	Tango::DEV_LONG	Convolution window delay for SRN
SR0_delay	Tango::DEV_LONG	Convolution window delay for SR0
SR_Gain	Tango::DEV_LONG	Analog Input 1 gain
A2_Gain	Tango::DEV_LONG	Analog Input 2 Gain
TL2_Gain	Tango::DEV_LONG	Analog Input 3 gain
B2_Gain	Tango::DEV_LONG	Analog Input 4 Gain
TL2_CalibFactor_Low_Gain	Tango::DEV_DOUBLE	TL2 , SR Calibration Factors
VirtexFilepath	Tango::DEV_STRING	This is the name of the virtex file to be downloaded to the CUB hardware
FillingMode	Tango::DEV_STRING	This property can take many predefined values and is used to select which parameter set will be used to initialised the hardware. A parameters set is composed of the TL2, SRN, SR0 delays and the Analog Inputs 1 to 4 (AI1 to AI4) gains. The values of the property must be: "default": use a defalut parameters sets "user-defined-1", "user-defined-2", "user-defined-3": These are 3 sets of parameters which can be used when a new filling mode requires dedicated parameters. "fromMachStat": In that case the filling mode is extracted from the "SYS/MACHSTAT/TANGO" device. If it is not accessible the "default" parameters set is taken instead. The many possible filling modes are grouped in common parameters set: "uniform", "1-bunch" , "16-32bunch" , "third" , "hybrid".
InjectionMode	Tango::DEV_STRING	Machine Injection Mode. Should be "1Hz" or "10Hz"
SRN_Width	Tango::DEV_LONG	SRN window width

Device Properties Default Values:

Property Name	Default Values
DeviceName	No default value
InterlockLevel	No default value
TL2_delay	No default value
SRN_delay	No default value
SR0_delay	No default value
SR_Gain	No default value
A2_Gain	No default value
TL2_Gain	No default value
B2_Gain	No default value
TL2_CalibFactor_Low_Gain	No default value
VirtexFilepath	No default value
FillingMode	No default value
InjectionMode	No default value
SRN_Width	No default value

There is no Class properties.

Attributes:

Scalar Attributes			
Attribute name	**Data Type**	**R/W Type**	**Expert**
TL2_delay	DEV_LONG	READ_WRITE	No
SRN_delay	DEV_LONG	READ_WRITE	No
SR0_delay	DEV_LONG	READ_WRITE	No
SR_Gain	DEV_LONG	READ_WRITE	No
A2_Gain	DEV_LONG	READ_WRITE	No
TL2_Gain	DEV_LONG	READ_WRITE	No
B2_Gain	DEV_LONG	READ_WRITE	No
SRN_Width	DEV_LONG	READ_WRITE	No
USM_Mode	DEV_LONG	READ	No
TL2_CalibFactor_Low_Gain	DEV_DOUBLE	READ_WRITE	No
TL2_CalibFactor_Medium_Gain	DEV_DOUBLE	READ_WRITE	No

TL2_CalibFactor_High_Gain	DEV_DOUBLE	READ_WRITE	No
SR_CalibFactor_Low_Gain	DEV_DOUBLE	READ_WRITE	No
SR_CalibFactor_Medium_Gain	DEV_DOUBLE	READ_WRITE	No
SR_CalibFactor_High_Gain	DEV_DOUBLE	READ_WRITE	No
Pulse_Mode_CalibFactor	DEV_DOUBLE	READ_WRITE	No
Parameters_set	DEV_STRING	READ	No
bunchClockFrequency	DEV_STRING	READ_WRITE	No
noise_offset	DEV_DOUBLE	READ_WRITE	No
linac_sr_eff	DEV_DOUBLE	READ	No
sy_tl2_eff	DEV_DOUBLE	READ	No
sy_acc_eff	DEV_DOUBLE	READ	No
linac_tl1_eff	DEV_DOUBLE	READ	No
tl1_sy_eff	DEV_DOUBLE	READ	No
tl2_sr_eff	DEV_DOUBLE	READ	No
tl2_sr_final_eff	DEV_DOUBLE	READ	No
tl2_sr_nturns_eff	DEV_DOUBLE	READ	No
tl1_current_begin	DEV_DOUBLE	READ	No
tl1_current_end	DEV_DOUBLE	READ	No
tl2_current	DEV_DOUBLE	READ	No
sy_current_begin	DEV_DOUBLE	READ	No
sy_current_end	DEV_DOUBLE	READ	No
sr_current	DEV_DOUBLE	READ	No
DebugFlags	DEV_LONG	READ_WRITE	No

Image Attributes

Attribute name	**Data Type**	**X Data Length**	**Y Data Length**	**Expert**
Data: These are the contents of the internal buffer. See the device description to see the organisation of the returned data. The data are discarded when read. Be carefull if the DevReadRawValues(0 command is used at the same time	DEV_LONG	1024	16	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
DevReadLastValue	DEV_VOID	DEVVAR_LONGARRAY
DevReadRawValues	DEV_VOID	DEVVAR_LONGARRAY
DevReadValues	DEV_VOID	DEVVAR_LONGARRAY

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:**

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:**

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:**

4 - DevReadLastValue

- **Description:** Read the last set of values acquired. The values are not discarded as for the DevReadRawValues() command.

- **Argin:**
  DEV_VOID :

- **Argout:**
  DEVVAR_LONGARRAY : See the device description

- **Command allowed for:**

5 - DevReadRawValues

- **Description:** Read the last data sets acquired by the CUB card. The data are discarded.

- **Argin:**
  DEV_VOID :

- **Argout:**
  DEVVAR_LONGARRAY : See the device description

- **Command allowed for:**

6 - DevReadValues

- **Description:** Returns only the usefull sub-set of data, and also a set out of 10. This is to minimize the data transfer rate.

- **Argin:**
  DEV_VOID :

- **Argout:**
  DEVVAR_LONGARRAY :

- **Command allowed for:**