SoftXDipoleOptic Tango Cpp Class

Contents :

SoftXDipoleOptic Class Identification :

Contact	: at esrf.fr - taurel
Class Family	: Calculation
Platform	: All Platforms
Bus	: Not Applicable
Manufacturer	: none
Manufacturer ref.	:

SoftXDipoleOptic Class Inheritance :

- Tango::DeviceImpl
  - SoftXDipoleOptic

SoftXDipoleOptic Class Description :

The aim of this class is to simplify beam emittance computation done in the beam emittance measurement system. This class compute some bean optics parameters inside ESRF dipole. This class is named SoftXDipoleOptic due to the two differents kind of ESRF dipole. This class is for dipole with the low magnetic field part at the dipole entrance (on the electron path)

SoftXDipoleOptic Properties :

Class Properties			
Name	**Description**	**Type**	**Default Value**
CstParDeviceName		String	none
R	Radius of curvature of the trajectory induced by dipole	double	none
SoftR	Radius of curvature of the trajectory induced by dipole in its low magnetic field section	double	none
SoftLength	Length of the low magnetic field part of the ESRF dipole	double	none

There is no device properties

SoftXDipoleOptic Class Commands				
Name	**Input type**	**Output type**	**Level**	**Description**
State	DEV_VOID	DEV_STATE	OPERATOR	This command gets the device state (stored in its device_state data member) and returns it to the caller.
Status	DEV_VOID	CONST_DEV_STRING	OPERATOR	This command gets the device status (stored in its device_status data member) and returns it to the caller.

Command State :

This command gets the device state (stored in its device_state data member) and returns it to the caller.

State Definition		
Input Argument	Tango::DEV_VOID	none
Output Argument	Tango::DEV_STATE	Device state
DisplayLevel	OPERATOR	..
Inherited	true	..
Abstract	true	..
Polling Period	Not polled	..
Command allowed for	All states	..

Command Status :

This command gets the device status (stored in its device_status data member) and returns it to the caller.

Status Definition		
Input Argument	Tango::DEV_VOID	none
Output Argument	Tango::CONST_DEV_STRING	Device status
DisplayLevel	OPERATOR	..
Inherited	true	..
Abstract	true	..
Polling Period	Not polled	..
Command allowed for	All states	..

SoftXDipoleOptic Class Attributes							
Name	**Inherited**	**Abstract**	**Attr. type**	**R/W type**	**Data type**	**Level**	**Description**
X_Alpha_0	false	false	Scalar	WRITE	Tango::DEV_DOUBLE	OPERATOR	Beta matrix alpha value at dipole entrance (X

							plane)
X_Beta_0	false	false	Scalar	WRITE	Tango::DEV_DOUBLE	OPERATOR	Beta matrix beta value at dipole entrance (X plane)
X_Eta_0	false	false	Scalar	WRITE	Tango::DEV_DOUBLE	OPERATOR	Dispersion function value at dipole entrance (X plane)
X_Etap_0	false	false	Scalar	WRITE	Tango::DEV_DOUBLE	OPERATOR	Dispersion function derivate value at dipole entrance (X plane)
X_Alpha	false	false	Scalar	READ	Tango::DEV_DOUBLE	OPERATOR	Beta matrix inside alpha value at dipole at position Position (X plane)
X_Beta	false	false	Scalar	READ	Tango::DEV_DOUBLE	OPERATOR	Beta matrix beta value inside dipole at position Position (X plane)
X_Eta	false	false	Scalar	READ	Tango::DEV_DOUBLE	OPERATOR	Dispersion function value inside dipole at position Position (X plane)
X_Etap	false	false	Scalar	READ	Tango::DEV_DOUBLE	OPERATOR	Dispersion function derivative value inside dipole at position Position (X plane)
Z_Alpha_0	false	false	Scalar	WRITE	Tango::DEV_DOUBLE	OPERATOR	Beta matrix alpha value at dipole entrance (Z

							plane)
Z_Beta_0	false	false	Scalar	WRITE	Tango::DEV_DOUBLE	OPERATOR	Beta matrix beta value at dipole entrance (Z plane)
Z_Eta_0	false	false	Scalar	WRITE	Tango::DEV_DOUBLE	OPERATOR	Dispersion function value at dipole entrance (Z plane)
Z_Etap_0	false	false	Scalar	WRITE	Tango::DEV_DOUBLE	OPERATOR	Dispersion function derivative value at dipole entrance (Z plane)
Z_Alpha	false	false	Scalar	READ	Tango::DEV_DOUBLE	OPERATOR	Beta matrix alpha value inside dipole at position Position (Z plane)
Z_Beta	false	false	Scalar	READ	Tango::DEV_DOUBLE	OPERATOR	Beta matrix beta value inside dipole at position Position (Z plane)
Z_Eta	false	false	Scalar	READ	Tango::DEV_DOUBLE	OPERATOR	Dispersion function value inside dipole at position Position (Z plane)
Z_Etap	false	false	Scalar	READ	Tango::DEV_DOUBLE	OPERATOR	Dispersion function derivative value inside dipole at position Position (Z plane)
Position	false	false	Scalar	READ_WRITE	Tango::DEV_DOUBLE	OPERATOR	Position inside dipole. 0 is the optic

							element entrance
EnergySpread	false	false	Scalar	READ	Tango::DEV_DOUBLE	OPERATOR	Particules beam energy spread.

There is no dynamic attribute defined.

Attribute X_Alpha_0 :

Beta matrix alpha value at dipole entrance (X plane)

Attribute Definition	
Attribute Type	Scalar
R/W Type	WRITE
Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	true
Write hardware at init.	true
Write allowed for	All states

Attribute Properties	
label	
unit	
standard unit	1
display unit	1
format	%8.3f
max_value	5
min_value	-5
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	false

Attribute X_Beta_0 :

Beta matrix beta value at dipole entrance (X plane)

Attribute Definition	
Attribute Type	Scalar
R/W Type	WRITE
Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	true
Write hardware at init.	true
Write allowed for	All states

Attribute Properties	
label	
unit	m
standard unit	1
display unit	1
format	%8.3f
max_value	100
min_value	0
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	false

Attribute X_Eta_0 :

Dispersion function value at dipole entrance (X plane)

Attribute Definition	
Attribute	

Attribute Properties	
label	

Attribute Event Criteria	
Periodic	Not set

Type	Scalar
R/W Type	WRITE
Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	true
Write hardware at init.	true
Write allowed for	All states

unit	m
standard unit	1
display unit	1
format	%8.3f
max_value	1
min_value	-1
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	false

Attribute X_Etap_0 :

Dispersion function derivate value at dipole entrance (X plane)

Attribute Definition	
Attribute Type	Scalar
R/W Type	WRITE
Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	true
Write hardware	true

Attribute Properties	
label	X_Eta`_0
unit	
standard unit	1
display unit	1
format	%8.3f
max_value	1
min_value	-1
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set

at init.	
Write allowed for	All states

delta_val	

Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	false

Attribute X_Alpha :

Beta matrix inside alpha value at dipole at position Position (X plane)

Attribute Definition	
Attribute Type	Scalar
R/W Type	READ
Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read allowed for	All states

Attribute Properties	
label	
unit	
standard unit	1
display unit	1
format	%8.3f
max_value	5
min_value	-5
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	false

Attribute X_Beta :

Beta matrix beta value inside dipole at position Position (X plane)

Attribute Definition	
Attribute Type	Scalar
R/W Type	READ
Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read allowed for	All states

Attribute Properties	
label	
unit	m
standard unit	1
display unit	1
format	%8.3f
max_value	100
min_value	0
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	false

Attribute X_Eta :

Dispersion function value inside dipole at position Position (X plane)

Attribute Definition	
Attribute Type	Scalar
R/W Type	READ

Attribute Properties	
label	
unit	m

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set

Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read allowed for	All states

standard unit	1
display unit	1
format	%8.3f
max_value	1
min_value	-1
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	false

Attribute X_Etap :

Dispersion function derivative value inside dipole at position Position (X plane)

Attribute Definition	
Attribute Type	Scalar
R/W Type	READ
Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read allowed for	All states

Attribute Properties	
label	X_Eta`
unit	
standard unit	1
display unit	1
format	%8.3f
max_value	1
min_value	-1
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false

Push Archive event by user code	false
Push DataReady event by user code	false

Attribute Z_Alpha_0 :

Beta matrix alpha value at dipole entrance (Z plane)

Attribute Definition	
Attribute Type	Scalar
R/W Type	WRITE
Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	true
Write hardware at init.	true
Write allowed for	All states

Attribute Properties	
label	
unit	
standard unit	1
display unit	1
format	%8.3f
max_value	5
min_value	-5
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	false

Attribute Z_Beta_0 :

Beta matrix beta value at dipole entrance (Z plane)

Attribute Definition	
Attribute Type	Scalar
R/W Type	WRITE
Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	true
Write hardware at init.	true
Write allowed for	All states

Attribute Properties	
label	
unit	m
standard unit	1
display unit	1
format	%8.3f
max_value	100
min_value	0
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	false

Attribute Z_Eta_0 :

Dispersion function value at dipole entrance (Z plane)

Attribute Definition	
Attribute Type	Scalar
R/W Type	WRITE
Data Type	Tango::DEV_DOUBLE
Display	

Attribute Properties	
label	
unit	m
standard unit	1
display unit	1
format	%8.3f

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set

Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	true
Write hardware at init.	true
Write allowed for	All states

max_value	1
min_value	-1
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	false

Attribute Z_Etap_0 :

Dispersion function derivative value at dipole entrance (Z plane)

Attribute Definition	
Attribute Type	Scalar
R/W Type	WRITE
Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	true
Write hardware at init.	true
Write allowed for	All states

Attribute Properties	
label	Z_Eta`_0
unit	
standard unit	1
display unit	1
format	%8.3f
max_value	1
min_value	-1
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false

Push Archive event by user code	false
Push DataReady event by user code	false

Attribute Z_Alpha :

Beta matrix alpha value inside dipole at position Position (Z plane)

Attribute Definition	
Attribute Type	Scalar
R/W Type	READ
Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read allowed for	All states

Attribute Properties	
label	
unit	
standard unit	1
display unit	1
format	%8.3f
max_value	5
min_value	-5
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	false

Attribute Z_Beta :

Beta matrix beta value inside dipole at position Position (Z plane)

Attribute Definition	
Attribute Type	Scalar
R/W Type	READ
Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read allowed for	All states

Attribute Properties	
label	
unit	m
standard unit	1
display unit	1
format	%8.3f
max_value	100
min_value	0
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	false

Attribute Z_Eta :

Dispersion function value inside dipole at position Position (Z plane)

Attribute Definition	
Attribute Type	Scalar
R/W Type	READ
Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR

Attribute Properties	
label	
unit	m
standard unit	1
display unit	1
format	%8.3f
max_value	1

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
	Not

Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read allowed for	All states

min_value	-1
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Archive Periodic	set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	false

Attribute Z_Etap :

Dispersion function derivative value inside dipole at position Position (Z plane)

Attribute Definition	
Attribute Type	Scalar
R/W Type	READ
Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read allowed for	All states

Attribute Properties	
label	Z_Eta`
unit	
standard unit	1
display unit	1
format	%8.3f
max_value	1
min_value	-1
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by	false

user code	

Attribute Position :

Position inside dipole. 0 is the optic element entrance

Attribute Definition	
Attribute Type	Scalar
R/W Type	READ_WRITE
Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	true
Write hardware at init.	true
Read allowed for	All states
Write allowed for	All states

Attribute Properties	
label	
unit	m
standard unit	1
display unit	1
format	%8.3f
max_value	3
min_value	0
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	false

Attribute EnergySpread :

Particules beam energy spread.

Attribute Definition	
Attribute Type	Scalar
R/W Type	READ
Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read allowed for	All states

Attribute Properties	
label	
unit	%
standard unit	1
display unit	100
format	%8.3f
max_value	0.002
min_value	0
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	false

SoftXDipoleOptic Class States	
Name	**Description**
ON	The device is ready to do its computation