

StraightSectionOptic Tango Cpp Class

Contents :

- [Description](#)
- [Properties](#)
- [Commands](#)
 - [State](#)
 - [Status](#)
- [Attributes](#)
 - [X_Alpha_0](#)
 - [X_Beta_0](#)
 - [X_Eta_0](#)
 - [X_Etap_0](#)
 - [X_Alpha](#)
 - [X_Beta](#)
 - [X_Eta](#)
 - [X_Etap](#)
 - [Z_Alpha_0](#)
 - [Z_Beta_0](#)
 - [Z_Eta_0](#)
 - [Z_Etap_0](#)
 - [Z_Alpha](#)
 - [Z_Beta](#)
 - [Z_Eta](#)
 - [Z_Etap](#)
 - [Position](#)
 - [EnergySpread](#)
- [States](#)

StraightSectionOptic Class Identification :

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

StraightSectionOptic Class Inheritance :

- [Tango::DeviceImpl](#)
 - StraightSectionOptic

StraightSectionOptic 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 straight section.

StraightSectionOptic Properties :

Class Properties			
Name	Description	Type	Default Value
CstParDeviceName	Device name for the storage ring constant parameter device	String	none

There is no device properties

StraightSectionOptic 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	..

StraightSectionOptic 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 straight section middle (X plane)
X_Beta_0	false	false	Scalar	WRITE	Tango::DEV_DOUBLE	OPERATOR	Beta matrix btea value at straight section middle (X

							plane)
X_Eta_0	false	false	Scalar	WRITE	Tango::DEV_DOUBLE	OPERATOR	Dispersion function value at straight section middle (X plane)
X_Etap_0	false	false	Scalar	WRITE	Tango::DEV_DOUBLE	OPERATOR	Dispersion function derivative value at straight section middle (X plane)
X_Alpha	false	false	Scalar	READ	Tango::DEV_DOUBLE	OPERATOR	Beta matrix alpha value inside straight section at position Position (X plane)
X_Beta	false	false	Scalar	READ	Tango::DEV_DOUBLE	OPERATOR	Beta matrix beta value inside straight section at position Position (X plane)
X_Eta	false	false	Scalar	READ	Tango::DEV_DOUBLE	OPERATOR	Dispersion function value inside straight section at position Position (X plane)
X_Etap	false	false	Scalar	READ	Tango::DEV_DOUBLE	OPERATOR	Dispersion function derivative value inside straight section at position Position (X plane)
Z_Alpha_0	false	false	Scalar	WRITE	Tango::DEV_DOUBLE	OPERATOR	Beta matrix alpha value at straight section

							middle (Z plane)
Z_Beta_0	false	false	Scalar	WRITE	Tango::DEV_DOUBLE	OPERATOR	Beta matrix beta value at straight section middle (Z plane)
Z_Eta_0	false	false	Scalar	WRITE	Tango::DEV_DOUBLE	OPERATOR	Dispersion function value at straight section middle (Z plane)
Z_Etap_0	false	false	Scalar	WRITE	Tango::DEV_DOUBLE	OPERATOR	Dispersion function derivative value at straight section middle (Z plane)
Z_Alpha	false	false	Scalar	READ	Tango::DEV_DOUBLE	OPERATOR	Beta matrix alpha value inside straight section at position Position (Z plane)
Z_Beta	false	false	Scalar	READ	Tango::DEV_DOUBLE	OPERATOR	Beta matrix beta value inside straight section at position Position (Z plane)
Z_Eta	false	false	Scalar	READ	Tango::DEV_DOUBLE	OPERATOR	Dispersion function value inside straight section at position Position (Z plane)
Z_Etap	false	false	Scalar	READ	Tango::DEV_DOUBLE	OPERATOR	Dispersion function derivative value inside straight section at

							position Position (Z plane)
Position	false	false	Scalar	READ_WRITE	Tango::DEV_DOUBLE	OPERATOR	Position inside straight section. Value 0 is element middle
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 straight section middle (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

Attribute Properties	
label	
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

Write allowed for	All states
-------------------	------------

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

Attribute X_Beta_0 :

Beta matrix btea value at straight section middle (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 straight section middle (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	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 X_Etap_0 :

Dispersion function derivative value at straight section middle (X plane)

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

Attribute Properties	
label	X_Eta`_0
unit	
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

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

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 X Alpha :

Beta matrix alpha value inside straight section 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	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 X_Beta :

Beta matrix beta value inside straight section 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 straight section 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	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 X_Etap :

Dispersion function derivative value inside straight section 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

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	

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

Memorized	Not set
Read allowed for	All states

max_warning	
min_warning	
delta_time	
delta_val	

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 straight section middle (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	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_Beta_0 :

Beta matrix beta value at straight section middle (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 straight section middle (Z 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 Z_Etap_0 :

Dispersion function derivative value at straight section middle (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	

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	

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

hardware at init.	true
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 Z_Alpha :

Beta matrix alpha value inside straight section 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	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_Beta :

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

Attribute Definition	
Attribute Type	Scalar
R/W Type	READ

Attribute Properties	
label	
unit	m
standard unit	1

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
	Not

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

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	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_Etap :

Dispersion function derivative value inside straight section 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

code	
Push DataReady event by user code	false

Attribute Position :

Position inside straight section. Value 0 is element middle

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	-3
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

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