

MagnetType Tango Cpp Class

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MagnetType Class Identification :

Contact : at esrf.fr - taurel
Class Family : SoftwareSystem(specific ESRF)
Platform : Unix Like
Bus : Not Applicable
Manufacturer : none
Manufacturer ref. :

MagnetType Class Inheritance :

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

MagnetType Class Description :

This class is for the ESRF EBS storage ring simulator.
It is the interface for a whole set of magnets from the same type
(all quadrupoles, all sextupoles,...). This class is supposed to

be used by control loop software

MagnetType Properties :

There is no class properties

Device Properties			
Name	Description	Type	Default Value
Families	List of magnet families for the magnet type	String[]	none
MagnetType	Name of the magnet type	String	none
InjectFamilies	List of magnet families for the magnet type specific to injection cells	String[]	none

MagnetType 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.
Reset	DEV_VOID	DEV_VOID	OPERATOR	Reset device
ResetResonanceStrengths	DEV_VOID	DEV_VOID	OPERATOR	None.
SetpointCheck	DEVVAR_DOUBLEARRAY	DEVVAR_STRINGARRAY	EXPERT	Check for each family member, if the magnet is able to applied the new strengths. Returned the list of device(s) which are not able to applied the required strength. This list is empty if all magnets are able to generate the required strength

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	false	..
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	..

Command Reset :

Reset device

Reset Definition		
Input Argument	Tango::DEV_VOID	
Output Argument	Tango::DEV_VOID	
DisplayLevel	OPERATOR	..
Inherited	false	..
Abstract	false	..
Polling Period	Not polled	..
Command allowed for	All states	..

Command ResetResonanceStrengths :

ResetResonanceStrengths Definition		
Input Argument	Tango::DEV_VOID	
Output Argument	Tango::DEV_VOID	
DisplayLevel	OPERATOR	..
Inherited	false	..
Abstract	false	..
Polling Period	Not polled	..
Command allowed for	All states	..

Command SetpointCheck :

Check for each family member, if the magnet is able to applied the new strengths. Returned the list of device(s) which are not able to applied the required strength. This list is empty if all magnets are able to generate the required strength

SetpointCheck Definition		
Input Argument	Tango::DEVVAR_DOUBLEARRAY	List of new strength for each magnet family member
Output Argument	Tango::DEVVAR_STRINGARRAY	List of magnet device name(s) which refuses their new strength
DisplayLevel	EXPERT	..
Inherited	false	..
Abstract	false	..
Polling Period	Not polled	..
Command allowed for	All states	..

MagnetType Class Attributes							
Name	Inherited	Abstract	Attr. type	R/W type	Data type	Level	Description
DesignStrengthFile	false	false	Scalar	READ_WRITE	Tango::DEV_STRING	EXPERT	Design strength file name
CorrectionStrengthsSteps	false	false	Scalar	READ_WRITE	Tango::DEV_LONG	EXPERT	Number of steps in which a new Correction Strenths must be applied
Strengths	false	false	Spectrum	READ	Tango::DEV_DOUBLE	OPERATOR	
StrengthsMSMM	false	false	Spectrum	READ	Tango::DEV_DOUBLE	OPERATOR	Strengths spectrum attribute Mean, Std, Min

							and Max
StrengthsReadPoint	false	false	Spectrum	READ	Tango::DEV_DOUBLE	OPERATOR	
TotalCorrectionStrengths	false	false	Spectrum	READ	Tango::DEV_DOUBLE	OPERATOR	
TotalCorrectionStrengthsMSMM	false	false	Spectrum	READ	Tango::DEV_DOUBLE	OPERATOR	TotalCorrectionStrengths spectrum attribute Mean, Std, Min and Max
CorrectionStrengths	false	false	Spectrum	READ_WRITE	Tango::DEV_DOUBLE	OPERATOR	
CorrectionStrengthsMSMM	false	false	Spectrum	READ	Tango::DEV_DOUBLE	OPERATOR	CorrectionStrengths spectrum attribute Mean, Std, Min and Max
ResonanceStrengths	false	false	Spectrum	READ_WRITE	Tango::DEV_DOUBLE	OPERATOR	
ResonanceStrengthsMSMM	false	false	Spectrum	READ	Tango::DEV_DOUBLE	OPERATOR	ResonanceStrengths spectrum attribute Mean, Std, Min and Max
MagnetNames	false	false	Spectrum	READ	Tango::DEV_STRING	OPERATOR	Level 1 magnet device names
MagnetStates	false	false	Spectrum	READ	Tango::DEV_STATE	OPERATOR	
FamilyMagnetNames	false	false	Spectrum	READ	Tango::DEV_STRING	OPERATOR	Level 2 (family) power supply device name
FamilyMagnetStates	false	false	Spectrum	READ	Tango::DEV_STATE	OPERATOR	
RequireCycling	false	false	Spectrum	READ	Tango::DEV_BOOLEAN	OPERATOR	Boolean set for each magnets which requires cycling (in beam propagation order)
StrengthCorrectionCoeff	false	false	Spectrum	READ_WRITE	Tango::DEV_DOUBLE	EXPERT	Strength correction coefficient
StrengthCorrectionOffset	false	false	Spectrum	READ_WRITE	Tango::DEV_DOUBLE	EXPERT	Strength correction offset
FrozenMagnets	false	false	Spectrum	READ	Tango::DEV_STRING	EXPERT	List of disabled magnets
IsFrozen	false	false	Spectrum	READ_WRITE	Tango::DEV_BOOLEAN	EXPERT	Boolean set for each disabled magnets (in beam propagation order)

There is no dynamic attribute defined.

Attribute DesignStrengthFile :

Design strength file name

Attribute Definition	
Attribute Type	Scalar
R/W Type	READ_WRITE
Data Type	Tango::DEV_STRING
Display Level	EXPERT
Inherited	false

Attribute Properties	
label	Design strength file
unit	
standard unit	
display unit	

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

Abstract	false
Polling Period	Not polled
Memorized	true
Write hardware at init.	Not set
Read allowed for	All states
Write NOT allowed for	<ul style="list-style-type: none"> FAULT UNKNOWN

format	
max_value	
min_value	
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 CorrectionStrengthsSteps :

Number of steps in which a new Correction Strenths must be applied

Attribute Definition	
Attribute Type	Scalar
R/W Type	READ_WRITE
Data Type	Tango::DEV_LONG
Display Level	EXPERT
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	
standard unit	
display unit	
format	
max_value	10
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 Strengths :

Attribute Definition	
Attribute Type	Spectrum (610)
R/W Type	READ

Attribute Properties	
label	
unit	m-1

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 NOT allowed for	<ul style="list-style-type: none"> FAULT UNKNOWN

standard unit	
display unit	
format	%4.3e
max_value	
min_value	
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 StrengthsMSMM :

Strengths spectrum attribute Mean, Std, Min and Max

Attribute Definition	
Attribute Type	Spectrum (4)
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	
display unit	
format	%4.3e
max_value	
min_value	
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 StrengthsReadPoint :

Attribute Definition	
Attribute Type	Spectrum (610)
R/W Type	READ

Attribute Properties	
label	
unit	m-1

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 NOT allowed for	<ul style="list-style-type: none"> FAULT UNKNOWN

standard unit	
display unit	
format	%4.3e
max_value	
min_value	
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 TotalCorrectionStrengths :

Attribute Definition	
Attribute Type	Spectrum (610)
R/W Type	READ
Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read NOT allowed for	<ul style="list-style-type: none"> FAULT UNKNOWN

Attribute Properties	
label	
unit	m-1
standard unit	
display unit	
format	%4.3e
max_value	
min_value	
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 TotalCorrectionStrengthsMSMM :

TotalCorrectionStrengths spectrum attribute Mean, Std, Min and Max

Attribute Definition	
Attribute Type	Spectrum (4)
R/W Type	READ

Attribute Properties	
label	
unit	

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	
display unit	
format	%4.3e
max_value	
min_value	
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 CorrectionStrengths :

Attribute Definition	
Attribute Type	Spectrum (610)
R/W Type	READ_WRITE
Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read NOT allowed for	<ul style="list-style-type: none"> • FAULT • UNKNOWN
Write NOT allowed for	<ul style="list-style-type: none"> • FAULT • UNKNOWN

Attribute Properties	
label	
unit	m-1
standard unit	
display unit	
format	%4.3e
max_value	
min_value	
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 CorrectionStrengthsMSMM :

CorrectionStrengths spectrum attribute Mean, Std, Min and Max

Attribute Definition	
Attribute Type	Spectrum (4)
R/W Type	READ

Attribute Properties	
label	
unit	

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	
display unit	
format	%4.3e
max_value	
min_value	
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 ResonanceStrengths :

Attribute Definition	
Attribute Type	Spectrum (610)
R/W Type	READ_WRITE
Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read NOT allowed for	<ul style="list-style-type: none"> • FAULT • UNKNOWN
Write NOT allowed for	<ul style="list-style-type: none"> • FAULT • UNKNOWN

Attribute Properties	
label	
unit	m-1
standard unit	
display unit	
format	%4.3e
max_value	
min_value	
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 ResonanceStrengthsMSMM :

ResonanceStrengths spectrum attribute Mean, Std, Min and Max

Attribute Definition	
Attribute Type	Spectrum (4)
R/W Type	READ

Attribute Properties	
label	
unit	

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	
display unit	
format	%4.3e
max_value	
min_value	
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 MagnetNames :

Level 1 magnet device names

Attribute Definition	
Attribute Type	Spectrum (610)
R/W Type	READ
Data Type	Tango::DEV_STRING
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	
display unit	
format	
max_value	
min_value	
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 MagnetStates :

Attribute Definition	
Attribute Type	Spectrum (620)
R/W Type	READ

Attribute Properties	
label	
unit	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set

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

standard unit	
display unit	
format	
max_value	
min_value	
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 FamilyMagnetNames :

Level 2 (family) power supply device name

Attribute Definition	
Attribute Type	Spectrum (32)
R/W Type	READ
Data Type	Tango::DEV_STRING
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read NOT allowed for	<ul style="list-style-type: none"> • FAULT • UNKNOWN

Attribute Properties	
label	
unit	
standard unit	
display unit	
format	
max_value	
min_value	
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 FamilyMagnetStates :

Attribute Definition	
Attribute Type	Spectrum (32)
R/W Type	READ

Attribute Properties	
label	
unit	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set

Data Type	Tango::DEV_STATE
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read NOT allowed for	<ul style="list-style-type: none"> FAULT UNKNOWN

standard unit	
display unit	
format	
max_value	
min_value	
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 RequireCycling :

Boolean set for each magnets which requires cycling (in beam propagation order)

Attribute Definition	
Attribute Type	Spectrum (620)
R/W Type	READ
Data Type	Tango::DEV_BOOLEAN
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	
display unit	
format	
max_value	
min_value	
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 StrengthCorrectionCoeff :

Strength correction coefficient

Attribute Definition	
Attribute Type	Spectrum (650)

Attribute Properties	
label	

Attribute Event Criteria	
Periodic	Not set

R/W Type	READ_WRITE	unit	Relative Change	Not set
Data Type	Tango::DEV_DOUBLE	standard unit	Absolute Change	Not set
Display Level	EXPERT	display unit		
Inherited	false	format	Archive Periodic	Not set
Abstract	false	max_value	Archive Relative Change	Not set
Polling Period	Not polled	min_value	Archive Absolute Change	Not set
Memorized	Not set	max_alarm		
		min_alarm	Push Change event by user code	false
Read NOT allowed for	<ul style="list-style-type: none"> FAULT UNKNOWN 	max_warning	Push Archive event by user code	false
Write NOT allowed for	<ul style="list-style-type: none"> FAULT UNKNOWN 	min_warning		
		delta_time	Push DataReady event by user code	false
		delta_val		

Attribute StrengthCorrectionOffset :

Strength correction offset

Attribute Definition		Attribute Properties	Attribute Event Criteria	
Attribute Type	Spectrum (650)	label	Periodic	Not set
R/W Type	READ_WRITE	unit	Relative Change	Not set
Data Type	Tango::DEV_DOUBLE	standard unit	Absolute Change	Not set
Display Level	EXPERT	display unit		
Inherited	false	format	Archive Periodic	Not set
Abstract	false	max_value	Archive Relative Change	Not set
Polling Period	Not polled	min_value	Archive Absolute Change	Not set
Memorized	Not set	max_alarm		
		min_alarm	Push Change event by user code	false
Read allowed for	All states	max_warning	Push Archive event by user code	false
Write allowed for	All states	min_warning		
		delta_time	Push DataReady event by user code	false
		delta_val		

Attribute FrozenMagnets :

List of disabled magnets

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Attribute Definition		Attribute Properties		Attribute Event Criteria	
Attribute Type	Spectrum (620)	label		Periodic	Not set
R/W Type	READ	unit		Relative Change	Not set
Data Type	Tango::DEV_STRING	standard unit		Absolute Change	Not set
Display Level	EXPERT	display unit			
Inherited	false	format		Archive Periodic	Not set
Abstract	false	max_value		Archive Relative Change	Not set
Polling Period	3000	min_value		Archive Absolute Change	Not set
Memorized	Not set	max_alarm			
		min_alarm		Push Change event by user code	false
Read allowed for	All states	max_warning			
		min_warning		Push Archive event by user code	false
		delta_time			
		delta_val		Push DataReady event by user code	false

Attribute IsFrozen :

Boolean set for each disabled magnets (in beam propagation order)

Attribute Definition		Attribute Properties		Attribute Event Criteria	
Attribute Type	Spectrum (620)	label		Periodic	Not set
R/W Type	READ_WRITE	unit		Relative Change	Not set
Data Type	Tango::DEV_BOOLEAN	standard unit		Absolute Change	Not set
Display Level	EXPERT	display unit			
Inherited	false	format		Archive Periodic	Not set
Abstract	false	max_value		Archive Relative Change	Not set
Polling Period	Not polled	min_value		Archive Absolute Change	Not set
Memorized	Not set	max_alarm			
		min_alarm		Push Change event by user code	false
Read allowed for	All states	max_warning			
Write allowed for	All states	min_warning		Push Archive event by user code	false
		delta_time			
		delta_val		Push DataReady event by user code	false

MagnetType Class States	

Name	Description
ON	
OFF	
ALARM	
FAULT	
UNKNOWN	