

## MchBilt Tango Cpp Class

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### MchBilt Class Identification :

Contact : at esrf.fr - meyer  
Class Family : PowerSupply  
Platform : Unix Like  
  
Bus : Not Applicable  
Manufacturer : none  
Manufacturer ref. :

### MchBilt Class Inheritance :

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

## MchBilt Class Description :

The multi channel Bilt device regroups all Bilt powersupply device used for the ESRF storage ring steerers

Reading and setting of currents and voltages is done by spectrum attributes, which contain the values of the individual Bilt devices.

## MchBilt Properties :

There is no class properties

Device Properties			
Name	Description	Type	Default Value
BiltNames	The list of available bilt device names in the order the values have to be arranged in the Current and Voltage spectra.	String[]	none
UpdatePeriod	The update period of all aquired values from the bilt devices in milli seconds.	int	500

MchBilt Class Commands				
Name	Input type	Output type	Level	Description
<a href="#">State</a>	DEV_VOID	DEV_STATE	OPERATOR	This command gets the device state (stored in its <i>device_state</i> data member) and returns it to the caller.
<a href="#">Status</a>	DEV_VOID	CONST_DEV_STRING	OPERATOR	This command gets the device status (stored in its <i>device_status</i> data member) and returns it to the caller.
<a href="#">On</a>	DEV_VOID	DEV_VOID	OPERATOR	Switch all Bilt power supplies on.
<a href="#">Off</a>	DEV_VOID	DEV_VOID	OPERATOR	Switch all Bilt power supplies off.
<a href="#">Reset</a>	DEV_VOID	DEV_VOID	OPERATOR	Reset all Bilt power supplies.
<a href="#">EnableAcCurrent</a>	DEV_VOID	DEV_VOID	OPERATOR	Enables the dynamic 10kHz AC current settings from the Liberas.
<a href="#">DisableAcCurrent</a>	DEV_VOID	DEV_VOID	OPERATOR	Disables the dynamic 10kHz AC current settings from the Liberas

and sets the AC current to 0.

### **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	State Code
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	Status description
DisplayLevel	OPERATOR	..
Inherited	true	..
Abstract	false	..
Polling Period	Not polled	..
Command allowed for	All states	..

### **Command On :**

Switch all Bilt power supplies on.

<b>On Definition</b>		
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	..

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### **Command Off :**

Switch all Bilt power supplies off.

<b>Off Definition</b>		
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	..

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### **Command Reset :**

Reset all Bilt power supplies.

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	..

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### **Command EnableAcCurrent :**

Enables the dynamic 10kHz AC current settings from the Liberas.

EnableAcCurrent 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	..

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### **Command DisableAcCurrent :**

Disables the dynamic 10kHz AC current settings from the Liberas and sets the AC current to 0.

DisableAcCurrent Definition		
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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	..

MchBilt Class Attributes							
Name	Inherited	Abstract	Attr. type	R/W type	Data type	Level	Description
<a href="#">Current</a>	false	false	Spectrum	READ	Tango::DEV_DOUBLE	OPERATOR	Array of current values. Not yet available channels are filled with NaN values.
<a href="#">Voltage</a>	false	false	Spectrum	READ	Tango::DEV_DOUBLE	OPERATOR	Array of voltage values. Not yet available channels are filled with NaN values.
<a href="#">SetCurrentAverage</a>	false	false	Spectrum	READ	Tango::DEV_DOUBLE	OPERATOR	Array of calculated average AC current setpoint values per second.. When not yet available, the channels are filled with NaN

							values.
<a href="#">SetCurrentRMS</a>	false	false	Spectrum	READ	Tango::DEV_DOUBLE	OPERATOR	Array of calculated RMS AC current setpoint values per second.. When not yet available, the channels are filled with NaN values.
<a href="#">FramesPerSecond</a>	false	false	Spectrum	READ	Tango::DEV_DOUBLE	OPERATOR	Array of error frames per second values. Not yet available channels are filled with NaN values.
<a href="#">ErrorsPerSecond</a>	false	false	Spectrum	READ	Tango::DEV_DOUBLE	OPERATOR	Array of error errors per second values. Not yet available channels are filled with NaN values.
<a href="#">ErrorCounter</a>	false	false	Spectrum	READ	Tango::DEV_DOUBLE	OPERATOR	Array of error counter values. Not yet available channels are filled with NaN values.
<a href="#">Impedance</a>	false	false	Spectrum	READ	Tango::DEV_DOUBLE	OPERATOR	Array of impedance values. Not yet available channels are filled

							with NaN values. Array of temperature values. Not yet available channels are filled with NaN values.
<a href="#">Temperature</a>	false	false	Spectrum	READ	Tango::DEV_DOUBLE	OPERATOR	
<a href="#">BiltStates</a>	false	false	Spectrum	READ	Tango::DEV_STATE	OPERATOR	The states of the individual bilt devices.
<a href="#">BiltNames</a>	false	false	Spectrum	READ	Tango::DEV_STRING	OPERATOR	The names of the individual bilt devices.
<a href="#">BiltLocations</a>	false	false	Spectrum	READ	Tango::DEV_STRING	OPERATOR	The locations of the individual Bilt power supply devices used \nfor every bilt.
<a href="#">DisableACCurrent</a>	false	false	Spectrum	READ	Tango::DEV_DOUBLE	OPERATOR	Array of boolean values which indicate whether the dynamic 10kHz AC current settings from the Liberas are disabled.

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**There is no dynamic attribute defined.**

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**Attribute Current :**

Array of current values. Not yet available channels are filled with NaN values.

Attribute Definition	
Attribute Type	Spectrum ( 500 )
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	Current
unit	A
standard unit	
display unit	
format	%5.4f
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 Voltage :**

Array of voltage values. Not yet available channels are filled with NaN values.

Attribute Definition	
Attribute Type	Spectrum ( 500 )
R/W Type	READ

Attribute Properties	
label	Voltage
unit	A
standard unit	

Attribute Event Criteria	
Periodic	Not set
Relative Change	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	
format	%6.4f
max_value	
min_value	
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

	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 SetCurrentAverage :**

Array of calculated average AC current setpoint values per second.. When not yet available, the channels are filled with NaN values.

Attribute Definition	
Attribute Type	Spectrum ( 500 )
R/W Type	READ
Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set

Attribute Properties	
label	Average AC current set./s
unit	mA
standard unit	
display unit	
format	%6.3f
max_value	
min_value	
max_alarm	
min_alarm	
max_warning	

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

Read allowed for	All states
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min_warning	
delta_time	
delta_val	

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

### **Attribute SetCurrentRMS :**

Array of calculated RMS AC current setpoint values per second.. When not yet available, the channels are filled with NaN values.

Attribute Definition	
Attribute Type	Spectrum ( 500 )
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	RMS AC current set./s
unit	mA
standard unit	
display unit	
format	%.6.3f
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

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### **Attribute FramesPerSecond :**

Array of error frames per second values. Not yet available channels are filled with NaN values.

Attribute Definition	
Attribute Type	Spectrum ( 500 )
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	Frames per second
unit	
standard unit	
display unit	
format	%6d
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

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### **Attribute ErrorsPerSecond :**

Array of error errors per second values. Not yet available channels are filled with NaN values.

Attribute Definition	
Attribute Type	Spectrum ( 500 )
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	Errors per second
unit	
standard unit	
display unit	
format	%6d
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 ErrorCounter :**

Array of error counter values. Not yet available channels are filled with NaN values.

Attribute Definition	
Attribute Type	Spectrum ( 500 )
R/W Type	READ
Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR
Inherited	false

Attribute Properties	
label	Error Counter
unit	
standard unit	
display unit	
format	%6d
max_value	

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

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

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 Impedance :**

Array of impedance values. Not yet available channels are filled with NaN values.

Attribute Definition	
Attribute Type	Spectrum ( 500 )
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	Impedance
unit	Ohm
standard unit	
display unit	
format	%4.2f
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
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### **Attribute Temperature :**

Array of temperature values. Not yet available channels are filled with NaN values.

Attribute Definition	
Attribute Type	Spectrum ( 1000 )
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	Temperature
unit	C
standard unit	
display unit	
format	%6d
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 BiltStates :**

The states of the individual bilt devices.

Attribute Definition	
Attribute Type	Spectrum ( 256 )
R/W Type	READ
Data Type	Tango::DEV_STATE
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 BiltNames :

The names of the individual bilt devices.

Attribute Definition	
Attribute Type	Spectrum ( 256 )
R/W Type	READ
Data Type	Tango::DEV_STRING
Display Level	OPERATOR
Inherited	false
Abstract	false

Attribute Properties	
label	
unit	
standard unit	
display unit	
format	
max_value	

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

Polling Period	Not polled
Memorized	Not set
Read allowed for	All states

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 BiltLocations :**

The locations of the individual Bilt power supply devices used for every bilt.

Attribute Definition	
Attribute Type	Spectrum ( 256 )
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	Not

**Attribute DisableACCurrent :**

Array of boolean values which indicate whether the dynamic 10kHz AC current settings from the Liberas are disabled.

Attribute Definition	
Attribute Type	Spectrum ( 500 )
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	Disabled AC current settings
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

<b>MchBilt Class States</b>	
<b>Name</b>	<b>Description</b>
ON	All bilts switched on.
OFF	One or more bilts are off.
ALARM	Alarm detected on one or more bilts.
FAULT	Fault detected on one or more bilts.
UNKNOWN	Connection problems with one or more bilts.