

## HexaSmarUnit Tango Cpp Class

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### HexaSmarUnit Class Identification :

Contact : at desy.de - johannes.blume  
 Class Family : Motion  
 Platform : Unix Like  
 Bus : Not Applicable  
 Manufacturer : Smaract  
 Manufacturer :  
 ref. <http://www.smaract.de/index.php/products/smarpod>

### HexaSmarUnit Class Inheritance :

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

### HexaSmarUnit Class Description :

Class controlling one Smaract Hexapod rack module  
 (for units using ascii interface and controlled via  
 SmarAct Embedded Controller Module (ECM))

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## HexaSmarUnit Properties :

There is no class properties

Device Properties			
Name	Description	Type	Default Value
ControllerDevice	Name of SmarActMCSASCIICtrl controller device this unit is connected to	String	none
UnitNumber	Number of this unit (first = 0)	short	none

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HexaSmarUnit 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 device_state 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 device_status data member) and returns it to the caller.
<a href="#">Home</a>	DEV_VOID	DEV_VOID	OPERATOR	run reference mark search
<a href="#">Stop</a>	DEV_VOID	DEV_VOID	OPERATOR	stop all movements
<a href="#">Move</a>	DEVVAR_DOUBLEARRAY	DEV_VOID	OPERATOR	move a single axis (do not use directly, for use from HexaSmarMotor device)
<a href="#">SetPivot</a>	DEVVAR_DOUBLEARRAY	DEV_VOID	OPERATOR	set pivot point (do not use directly, for use from HexaSmarMotor device)
<a href="#">Position</a>	DEV_SHORT	DEV_DOUBLE	OPERATOR	get position for single axis (do not use directly, for use from HexaSmarMotor device)
<a href="#">GetPivot</a>	DEV_SHORT	DEV_DOUBLE	OPERATOR	get pivot point (do not use directly, for use from HexaSmarMotor device)

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### **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	..

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### **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	..

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### **Command Home :**

run reference mark search

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Home Definition		
Input Argument	Tango::DEV_VOID	
Output Argument	Tango::DEV_VOID	
DisplayLevel	OPERATOR	..
Inherited	false	..
Abstract	false	..
Polling Period	Not polled	..
Command NOT allowed for	<ul style="list-style-type: none"> <li>MOVING</li> <li>INIT</li> </ul>	..

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### **Command Stop :**

stop all movements

Stop Definition		
Input Argument	Tango::DEV_VOID	
Output Argument	Tango::DEV_VOID	
DisplayLevel	OPERATOR	..
Inherited	false	..
Abstract	false	..
Polling Period	Not polled	..
Command NOT allowed for	<ul style="list-style-type: none"> <li>INIT</li> </ul>	..

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### **Command Move :**

move a single axis (do not use directly, for use from HexaSmarMotor device)

Move Definition		
Input Argument	Tango::DEVVAR_DOUBLEARRAY	0: axis number 1: target position
Output Argument	Tango::DEV_VOID	
DisplayLevel	OPERATOR	..

Inherited	false	..
Abstract	false	..
Polling Period	Not polled	..
Command NOT allowed for	<ul style="list-style-type: none"> <li>• MOVING</li> <li>• INIT</li> </ul>	..

### **Command SetPivot :**

set pivot point (do not use directly, for use from HexaSmarMotor device)

<b>SetPivot Definition</b>		
Input Argument	Tango::DEVVAR_DOUBLEARRAY	0: axis number 1: target pivot point
Output Argument	Tango::DEV_VOID	
DisplayLevel	OPERATOR	..
Inherited	false	..
Abstract	false	..
Polling Period	Not polled	..
Command NOT allowed for	<ul style="list-style-type: none"> <li>• MOVING</li> <li>• INIT</li> </ul>	..

### **Command Position :**

get position for single axis (do not use directly, for use from HexaSmarMotor device)

<b>Position Definition</b>		
Input Argument	Tango::DEV_SHORT	axis number
Output Argument	Tango::DEV_DOUBLE	current position
DisplayLevel	OPERATOR	..
Inherited	false	..
Abstract	false	..
Polling Period	Not polled	..

Command NOT allowed for	• INIT	..

### **Command GetPivot :**

get pivot point (do not use directly, for use from HexaSmarMotor device)

<b>GetPivot Definition</b>		
Input Argument	Tango::DEV_SHORT	axis number
Output Argument	Tango::DEV_DOUBLE	pivot point
DisplayLevel	OPERATOR	..
Inherited	false	..
Abstract	false	..
Polling Period	Not polled	..
Command NOT allowed for	• INIT	..

<b>HexaSmarUnit Class Attributes</b>							
<b>Name</b>	<b>Inherited</b>	<b>Abstract</b>	<b>Attr. type</b>	<b>R/W type</b>	<b>Data type</b>	<b>Level</b>	<b>Description</b>
<a href="#">Velocity</a>	false	false	Scalar	READ_WRITE	Tango::DEV_DOUBLE	OPERATOR	Set closed loop movement speed (value of 0 deactivates the speed control feature). In this case speed is limited by the value for MaxFrequency.
<a href="#">Acceleration</a>	false	false	Scalar	READ_WRITE	Tango::DEV_DOUBLE	OPERATOR	set closed loop acceleration (value of 0 deactivates the acceleration control feature.) If set to a

							value > 0 speed control will implicitly be enabled.
<a href="#">PivotMode</a>	false	false	Scalar	READ_WRITE	Tango::DEV_STRING	OPERATOR	Sets/gets the behavior of the pivot point when the stage is moved linearly. Valid values are `relative` or `fixed`.
<a href="#">MaxFrequency</a>	false	false	Scalar	READ_WRITE	Tango::DEV_DOUBLE	OPERATOR	The maximum closed-loop frequency in Hz. This value is used if Velocity is set to 0.
<a href="#">SensorMode</a>	false	false	Scalar	READ_WRITE	Tango::DEV_SHORT	OPERATOR	0: sensors are disabled 1: sensors are permanently enabled 2: sensors are enabled in power-save mode
<a href="#">Homed</a>	false	false	Scalar	READ	Tango::DEV_BOOLEAN	OPERATOR	true: the positioners are referenced false: the positioners are not referenced
<a href="#">StopMode</a>	false	false	Scalar	READ_WRITE	Tango::DEV_BOOLEAN	OPERATOR	true: movement will stop immediately false: movement will stop with waiting for deceleration

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**There is no dynamic attribute defined.**

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**Attribute Velocity :**

Set closed loop movement speed (value of 0 deactivates the speed control feature).  
 In this case speed is limited by the value for MaxFrequency.

Attribute Definition	
Attribute Type	Scalar
R/W Type	READ_WRITE
Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	3000
Memorized	true
Write hardware at init.	true
Read NOT allowed for	<ul style="list-style-type: none"> <li>INIT</li> </ul>
Write NOT allowed for	<ul style="list-style-type: none"> <li>INIT</li> </ul>

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 Acceleration :**

set closed loop acceleration (value of 0 deactivates the acceleration control feature.)  
 If set to a value > 0 speed control will implicitly be enabled.

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

Attribute Properties	
label	
unit	
standard unit	
display unit	

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



Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	true
Write hardware at init.	true
Read NOT allowed for	• INIT
Write NOT allowed for	• INIT

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 PivotMode :**

Sets/gets the behavior of the pivot point when the stage is moved linearly. Valid values are `relative` or `fixed`.

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

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	

**Attribute MaxFrequency :**

The maximum closed-loop frequency in Hz. This value is used if Velocity is set to 0.

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 NOT allowed for	<ul style="list-style-type: none"> <li>INIT</li> </ul>
Write NOT allowed for	<ul style="list-style-type: none"> <li>INIT</li> </ul>

Attribute Properties	
label	
unit	Hz
standard unit	Hz
display unit	Hz
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 SensorMode :**

- 0: sensors are disabled
- 1: sensors are permanently enabled
- 2: sensors are enabled in power-save mode

Attribute Definition	
Attribute Type	Scalar
R/W Type	READ_WRITE
Data Type	Tango::DEV_SHORT
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	true
Write hardware at init.	true
Read NOT allowed for	<ul style="list-style-type: none"> <li>INIT</li> </ul>
Write NOT allowed for	<ul style="list-style-type: none"> <li>INIT</li> </ul>

Attribute Properties	
label	
unit	
standard unit	
display unit	
format	
max_value	2
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 Homed :**

true: the positioners are referenced

false: the positioners are not referenced

Attribute Definition	
Attribute Type	Scalar
R/W Type	READ
Data Type	Tango::DEV_BOOLEAN
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read NOT allowed for	<ul style="list-style-type: none"> <li>INIT</li> </ul>

Attribute Properties	
label	
unit	
standard unit	
display unit	
format	
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

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 StopMode :**

true: movement will stop immediately

false: movement will stop with waiting for deceleration

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

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

<b>HexaSmarUnit Class States</b>	
<b>Name</b>	<b>Description</b>
ON	Device is ready to move
MOVING	The device is moving
INIT	Device is running a reference mark search.
OFF	Device connection is ok, but device is not referenced. Run command Home.