

## SmarActMotor Tango Cpp Class

### **Contents :**

- [Description](#)
- [Properties](#)
- [Commands](#)
  - [State](#)
  - [Status](#)
  - [Calibrate](#)
  - [StopMove](#)
  - [Home](#)
- [Attributes](#)
  - [Position](#)
  - [Conversion](#)
  - [UnitLimitMin](#)
  - [UnitLimitMax](#)
  - [HoldTime](#)
  - [HomeDirection](#)
  - [AutoZero](#)
  - [Speed](#)
  - [AxisType](#)
  - [PositionKnown](#)
  - [MaxFrequency](#)
- [States](#)

### **SmarActMotor Class Identification :**

Contact : at desy.de - johannes.blume  
Class Family : Motion  
Platform : Unix Like  
Bus : Not Applicable  
Manufacturer : SmarAct  
Manufacturer ref. : MCS-3C-IDSH

### **SmarActMotor Class Inheritance :**

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

### **SmarActMotor Class Description :**

Axis server for SmarAct MCS-3C-IDSH controller

## SmarActMotor Properties :

There is no class properties

Device Properties			
Name	Description	Type	Default Value
SmarActCtrlDevice		String	none
AxisNumber	axis index number (0-2)	int	none

SmarActMotor 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="#">Calibrate</a>	DEV_DOUBLE	DEV_VOID	OPERATOR	Calibrate axis to value argin
<a href="#">StopMove</a>	DEV_VOID	DEV_VOID	OPERATOR	Stop movement of this axis
<a href="#">Home</a>	DEV_VOID	DEV_VOID	OPERATOR	Run reference mark search: direction, holdtime and autozero are taken from the corresponding attributes

## 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.

<b>Status Definition</b>		
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 Calibrate :**

Calibrate axis to value argin

<b>Calibrate Definition</b>		
Input Argument	Tango::DEV_DOUBLE	calibration value
Output Argument	Tango::DEV_VOID	
DisplayLevel	OPERATOR	..
Inherited	false	..
Abstract	false	..
Polling Period	Not polled	..
Command NOT allowed for	• FAULT	..

---

## **Command StopMove :**

Stop movement of this axis

<b>StopMove 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	..

---

## **Command Home :**

Run reference mark search: direction, holdtime and autozero are taken from the corresponding attributes

<b>Home 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	..

---

<b>SmarActMotor 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>
							Read: the current absolute position

<a href="#">Position</a>	false	false	Scalar	READ_WRITE	Tango::DEV_DOUBLE	OPERATOR	Write: move to absolute position Positions are in mm for linear movements, in deg for rotations.
<a href="#">Conversion</a>	false	false	Scalar	READ_WRITE	Tango::DEV_DOUBLE	EXPERT	
<a href="#">UnitLimitMin</a>	false	false	Scalar	READ_WRITE	Tango::DEV_DOUBLE	OPERATOR	The lower limit the axis is allowed to move to. A value of 0 disables limit checking.
<a href="#">UnitLimitMax</a>	false	false	Scalar	READ_WRITE	Tango::DEV_DOUBLE	OPERATOR	The upper limit the axis is allowed to move to. A value of 0 disables limit checking.
<a href="#">HoldTime</a>	false	false	Scalar	READ_WRITE	Tango::DEV_LONG	EXPERT	Hold time (ms): Specifies how long the position is actively held after reaching the target. Setting the maximum value (60000) will make the positioner hold the position forever (until stopped with StopMove or moved to a new position).
<a href="#">HomeDirection</a>	false	false	Scalar	READ_WRITE	Tango::DEV_BOOLEAN	OPERATOR	Direction to use when running reference mark search false = forward true = backward
<a href="#">AutoZero</a>	false	false	Scalar	READ_WRITE	Tango::DEV_BOOLEAN	OPERATOR	Decides whether the axis position will be set to zero after a reference mark search (= Home) true = position will be set to zero false = position will not be set to

							zero
<a href="#">Speed</a>	false	false	Scalar	READ_WRITE	Tango::DEV_DOUBLE	OPERATOR	The closed loop move speed, cannot exceed the maximum closed loop frequency (MaxFrequency). A value of 0 disables speed control.
<a href="#">AxisType</a>	false	false	Scalar	READ	Tango::DEV_LONG	OPERATOR	The axis type, 0: linear movement 1: angular movement 2: goniometer
<a href="#">PositionKnown</a>	false	false	Scalar	READ	Tango::DEV_BOOLEAN	OPERATOR	true: the controller knows the physical position of this axis false: the controller does not know the physical position of this axis  if false, run command `Home`
<a href="#">MaxFrequency</a>	false	false	Scalar	READ_WRITE	Tango::DEV_LONG	EXPERT	The maximum closed loop frequency in hz (50 - 18500). If you experience sudden stops on one axis when starting a movement on another try setting this to a lower value.  The value can not be read from the controller, so this is a memorized attribute and will always be set on server startup.

**There is no dynamic attribute defined.**

---

**Attribute Position :**

Read: the current absolute position

Write: move to absolute position

Positions are in mm for linear movements, in deg for rotations.

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	Not set
Read NOT allowed for	<ul style="list-style-type: none"> <li>• FAULT</li> </ul>
Write NOT allowed for	<ul style="list-style-type: none"> <li>• FAULT</li> </ul>

Attribute Properties	
label	
unit	
standard unit	
display unit	
format	%7.4f
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 Conversion :**

Attribute Definition	

Attribute Properties	

Attribute Event Criteria	
Periodic	Not

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

label	
unit	
standard unit	
display unit	
format	
max_value	
min_value	
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 UnitLimitMin :**

The lower limit the axis is allowed to move to.  
A value of 0 disables limit checking.

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	• FAULT

Attribute Properties	
label	
unit	
standard unit	
display unit	
format	%7.4f
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



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

--	--

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

### **Attribute UnitLimitMax :**

The upper limit the axis is allowed to move to.  
A value of 0 disables limit checking.

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

Attribute Properties	
label	
unit	
standard unit	
display unit	
format	%7.4f
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 HoldTime :**

Hold time (ms): Specifies how long the position is actively held after reaching the target.  
Setting the maximum value (60000) will make the positioner hold

the position forever (until stopped with StopMove or moved to a new position).

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

Attribute Properties	
label	
unit	ms
standard unit	ms
display unit	ms
format	%5d
max_value	60000
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 HomeDirection :**

Direction to use when running reference mark search

false = forward

true = backward

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

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

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 AutoZero :**

Decides whether the axis position will be set to zero after a reference mark search (= Home)  
true = position will be set to zero  
false = position will not be set to zero

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	• FAULT
Write NOT allowed for	• FAULT

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 Speed :**

The closed loop move speed, cannot exceed the maximum closed loop frequency (MaxFrequency).  
A value of 0 disables speed control.

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>• FAULT</li></ul>
Write NOT allowed for	<ul style="list-style-type: none"><li>• FAULT</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 AxisType :**

The axis type,

- 0: linear movement
- 1: angular movement
- 2: goniometer

Attribute Definition	
Attribute Type	Scalar
R/W Type	READ
Data Type	Tango::DEV_LONG
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>• FAULT</li> </ul>

Attribute Properties	
label	
unit	
standard unit	
display unit	
format	%1d
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 PositionKnown :

true: the controller knows the physical position of this axis

false: the controller does not know the physical position of this axis

if false, run command `Home`

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

Attribute Properties	
label	
unit	
standard unit	
display unit	
format	
max_value	
min_value	
max_alarm	

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

Read NOT allowed for	<ul style="list-style-type: none"> <li>• FAULT</li> </ul>
----------------------	---

min_alarm
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 MaxFrequency :**

The maximum closed loop frequency in hz (50 - 18500). If you experience sudden stops on one axis when starting a movement on another try setting this to a lower value.

The value can not be read from the controller, so this is a memorized attribute and will always be set on server startup.

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

Attribute Properties	
label	
unit	hz
standard unit	hz
display unit	hz
format	
max_value	18500
min_value	50
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>SmarActMotor Class States</b>	
<b>Name</b>	<b>Description</b>
ON	Ready to move
MOVING	Axis is moving
FAULT	Something went wrong, check status