

## Mar345 Tango Cpp Class

### **Contents :**

- [Description](#)
- [Properties](#)
- [Commands](#)
  - [State](#)
  - [Status](#)
  - [Scan](#)
  - [Erase](#)
  - [OpenCurrentImage](#)
  - [OpenImageFile](#)
- [Attributes](#)
  - [mode](#)
  - [modeString](#)
  - [pixelSize](#)
  - [saveFileName](#)
  - [directory](#)
  - [root](#)
  - [imageNumber](#)
  - [getImage](#)
  - [exposureTime](#)
  - [marSerialNumber](#)
  - [marLogs](#)
  - [marProgressLogs](#)
  - [image](#)
  - [resizedImage](#)
- [States](#)

### **Mar345 Class Identification :**

Contact : at synchrotron-soleil.fr - langlois  
Class Family : Acquisition  
Platform : Unix Like  
  
Bus : Ethernet  
Manufacturer : Marresearch  
Manufacturer ref : Mar345

### **Mar345 Class Inheritance :**

- [Tango::DeviceImpl](#)
  - Mar345

### **Mar345 Class Description :**

The Mar345 device is used to control the MAR345 Image Plate Scanner Detector.  
it uses the scan345 daemon to run.  
it write commands into a dedicated file, which is processed by the scan345 daemon  
and read logs/status on another dedicated file, which is written by the scan345 daemon

## Mar345 Properties :

There is no class properties

Device Properties			
Name	Description	Type	Default Value
MarLogDir	Directory for the command/spy files (ie: mar.com and mar.spy)	String	path_not_defined
MarTablesDir	Directory for the tables files (ie: center2300.XXX, ...)	String	path_not_defined

Mar345 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="#">Scan</a>	DEV_VOID	DEV_VOID	OPERATOR	Start a scan (read) on the Mar345
<a href="#">Erase</a>	DEV_VOID	DEV_VOID	OPERATOR	Start an erase on the Mar345
<a href="#">OpenCurrentImage</a>	DEV_VOID	DEV_VOID	OPERATOR	Open the image corresponding to the Current Scan
<a href="#">OpenImageFile</a>	DEV_STRING	DEV_VOID	OPERATOR	Open an image file, and display it in the image attribute

## 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	true	..
Polling Period	Not polled	..
Command allowed for	All states	..

---

### **Command Scan :**

Start a scan (read) on the Mar345

Scan 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>• RUNNING</li><li>• MOVING</li><li>• FAULT</li></ul>	..

---

### **Command Erase :**

Start an erase on the Mar345

Erase 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>• RUNNING</li> <li>• MOVING</li> <li>• FAULT</li> </ul>	..

---

**Command OpenCurrentImage :**

Open the image corresponding to the Current Scan

<b>OpenCurrentImage Definition</b>		
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>• RUNNING</li> <li>• MOVING</li> <li>• FAULT</li> </ul>	..

---

**Command OpenImageFile :**

Open an image file, and display it in the image attribute

<b>OpenImageFile Definition</b>		
Input Argument	Tango::DEV_STRING	image file to open
Output Argument	Tango::DEV_VOID	
DisplayLevel	OPERATOR	..
Inherited	false	..
Abstract	false	..
Polling Period	Not polled	..
	<ul style="list-style-type: none"> <li>• RUNNING</li> </ul>	

Mar345 Class Attributes							
Name	Inherited	Abstract	Attr. type	R/W type	Data type	Level	Description
<a href="#">mode</a>	false	false	Scalar	WRITE	Tango::DEV_SHORT	OPERATOR	Specifies the scan mode. The number range from 0 to 7. The scanmodes are as follows: \n0 = 2300 pixels, 345 mm diameters, 0.15 mm pixelsize \n1 = 2000 pixels, 300 mm diameters, 0.15 mm pixelsize \n2 = 1600 pixels, 240 mm diameters, 0.15 mm pixelsize \n3 = 1200 pixels, 180 mm diameters, 0.15 mm pixelsize \n4 = 3450 pixels, 345 mm diameters, 0.10 mm pixelsize \n5 = 3000 pixels, 300 mm diameters, 0.10 mm pixelsize \n6 = 2400 pixels, 240 mm diameters, 0.10 mm pixelsize \n7 = 1800 pixels, 180 mm diameters, 0.10 mm pixelsize
<a href="#">modeString</a>	false	false	Scalar	READ	Tango::DEV_STRING	OPERATOR	Specifies the scan mode. The number range from 0 to 7. The scanmodes are as follows: \n0 = 2300 pixels, 345 mm diameters, 0.15 mm pixelsize \n1 = 2000 pixels, 300 mm diameters, 0.15 mm pixelsize \n2 = 1600 pixels, 240 mm diameters, 0.15 mm pixelsize \n3 = 1200 pixels, 180 mm diameters, 0.15 mm pixelsize \n4 = 3450 pixels, 345 mm diameters, 0.10 mm pixelsize \n5 = 3000 pixels, 300 mm diameters, 0.10 mm

							pixelsize\n6 = 2400 pixels, 240 mm diameters, 0.10 mm pixelsize\n7 = 1800 pixels, 180 mm diameters, 0.10 mm pixelsize
<a href="#">pixelSize</a>	false	false	Scalar	READ	Tango::DEV_FLOAT	OPERATOR	Pixel Size (depending on mode choosen)
<a href="#">saveFileName</a>	false	false	Scalar	READ	Tango::DEV_STRING	EXPERT	Name of the file being saved
<a href="#">directory</a>	false	false	Scalar	WRITE	Tango::DEV_STRING	EXPERT	Specifies the output directory for image files.
<a href="#">root</a>	false	false	Scalar	WRITE	Tango::DEV_STRING	EXPERT	Specifies the root name of the output image when doing scans. The syntax is: _, where is any string and is a three digit number, e.g. 001.
<a href="#">imageNumber</a>	false	false	Scalar	READ_WRITE	Tango::DEV_SHORT	EXPERT	Image number: number which will be added to the file name,\nas: myfilename_005, where 5 is the imageNumber
<a href="#">getImage</a>	false	false	Scalar	READ_WRITE	Tango::DEV_BOOLEAN	EXPERT	If true, the device will try to open the file created by the MAR345,\nand display it in its image attribute
<a href="#">exposureTime</a>	false	false	Scalar	WRITE	Tango::DEV_DOUBLE	EXPERT	Specifies the used exposure time in seconds.\nDefault: TIME 60.0
<a href="#">marSerialNumber</a>	false	false	Scalar	READ	Tango::DEV_STRING	EXPERT	Read from the MAR_SCANNER_NO file from the tables path
<a href="#">marLogs</a>	false	false	Spectrum	READ	Tango::DEV_STRING	OPERATOR	Logs written by the Mar (thru scan345 prog)
<a href="#">marProgressLogs</a>	false	false	Spectrum	READ	Tango::DEV_STRING	EXPERT	Progress logs written by the Mar (thru scan345 prog)
<a href="#">image</a>	false	false	Image	READ	Tango::DEV_ULONG	EXPERT	Image read from the file created by scan345
<a href="#">resizedImage</a>	false	false	Image	READ	Tango::DEV_ULONG	OPERATOR	Resized Image used for smooth display

**There is no dynamic attribute defined.**

**Attribute mode :**

Specifies the scan mode. The number range from 0 to 7. The scanmodes are as follows:\n0 = 2300 pixels, 345 mm diameters, 0.15 mm pixelsize\n1 = 2000 pixels, 300 mm diameters, 0.15 mm pixelsize\n2 = 1600 pixels, 240 mm diameters, 0.15 mm pixelsize\n3 = 1200 pixels, 180 mm diameters, 0.15 mm pixelsize\n4 = 3450 pixels, 345 mm diameters, 0.10 mm pixelsize\n5 = 3000 pixels, 300 mm diameters, 0.10 mm pixelsize\n6 = 2400 pixels, 240 mm diameters, 0.10 mm pixelsize\n7 = 1800 pixels, 180 mm diameters, 0.10 mm pixelsize

Attribute Definition	
Attribute Type	Scalar
R/W Type	WRITE
Data Type	Tango::DEV_SHORT
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	Mode
unit	
standard unit	
display unit	
format	%1d
max_value	7
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	Not set

**Attribute modeString :**

Specifies the scan mode. The number range from 0 to 7. The scanmodes are as follows:\n0 = 2300 pixels, 345 mm diameters, 0.15 mm pixelsize\n1 = 2000 pixels, 300 mm diameters, 0.15 mm pixelsize\n2 = 1600 pixels, 240 mm diameters, 0.15 mm pixelsize\n3 = 1200 pixels, 180 mm diameters, 0.15 mm pixelsize\n4 = 3450 pixels, 345 mm diameters, 0.10 mm pixelsize\n5 = 3000 pixels, 300 mm diameters, 0.10 mm pixelsize\n6 = 2400 pixels, 240 mm diameters, 0.10 mm pixelsize\n7 = 1800 pixels, 180 mm diameters, 0.10 mm pixelsize

Attribute Definition	
Attribute Type	Scalar
R/W Type	READ

Attribute Properties	
label	Mode Str

Attribute Event Criteria	
Periodic	Not set
	Not

Data Type	Tango::DEV_STRING
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read NOT allowed for	• FAULT

unit	
standard unit	
display unit	
format	
max_value	
min_value	
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Relative Change	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	Not set

**Attribute pixelSize :**

Pixel Size (depending on mode choosen)

Attribute Definition	
Attribute Type	Scalar
R/W Type	READ
Data Type	Tango::DEV_FLOAT
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read NOT allowed for	• FAULT

Attribute Properties	
label	Pixel Size
unit	mm
standard unit	
display unit	
format	%.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	Not set



**Attribute saveFileName :**

Name of the file being saved

Attribute Definition	
Attribute Type	Scalar
R/W Type	READ
Data Type	Tango::DEV_STRING
Display Level	EXPERT
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	Saved File Name
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	Not set

**Attribute directory :**

Specifies the output directory for image files.

Attribute Definition	
Attribute Type	Scalar
R/W Type	WRITE
Data Type	Tango::DEV_STRING
Display Level	EXPERT
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	true

Attribute Properties	
label	Directory
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

Write hardware at init.	true
Write allowed for	All states

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	Not set

### **Attribute root :**

Specifies the root name of the output image when doing scans. The syntax is: `_,` where `_` is any string and `001` is a three digit number, e.g. `001`.

Attribute Definition	
Attribute Type	Scalar
R/W Type	WRITE
Data Type	Tango::DEV_STRING
Display Level	EXPERT
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	true
Write hardware at init.	true
Write allowed for	All states

Attribute Properties	
label	Root Name
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	Not set

### **Attribute imageNumber :**

Image number: number which will be added to the file name, \nas: myfilename\_005, where 5 is the imageNumber

Attribute Definition	
Attribute Type	Scalar
R/W Type	READ_WRITE
Data Type	Tango::DEV_SHORT
Display Level	EXPERT
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 allowed for	All states

Attribute Properties	
label	Image Number
unit	
standard unit	
display unit	
format	%3d
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	Not set

### **Attribute getImage :**

If true, the device will try to open the file created by the MAR345,\nand display it in its image attribute

Attribute Definition	
Attribute Type	Scalar
R/W Type	READ_WRITE
Data Type	Tango::DEV_BOOLEAN
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 allowed for	All states

Attribute Properties	
label	Get Image
unit	
standard unit	
display unit	
format	
max_value	
min_value	
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
Push Change event by user code	false

delta_val	
-----------	--

Push Archive event by user code	false
Push DataReady event by user code	Not set

**Attribute exposureTime :**

Specifies the used exposure time in seconds.\nDefault: TIME 60.0

Attribute Definition	
Attribute Type	Scalar
R/W Type	WRITE
Data Type	Tango::DEV_DOUBLE
Display Level	EXPERT
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Write allowed for	All states

Attribute Properties	
label	Exposure Time
unit	sec
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	Not set

**Attribute marSerialNumber :**

Read from the MAR\_SCANNER\_NO file from the tables path

Attribute Definition	
Attribute Type	Scalar

Attribute Properties	
label	Mar Serial

Attribute Event Criteria	
Periodic	Not set

R/W Type	READ
Data Type	Tango::DEV_STRING
Display Level	EXPERT
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read NOT allowed for	• FAULT

	Number
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	Not set

### Attribute marLogs :

Logs written by the Mar (thru scan345 prog)

Attribute Definition	
Attribute Type	Spectrum ( 10000 )
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	• FAULT

Attribute Properties	
label	Mar Logs
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	Not set

### **Attribute marProgressLogs :**

Progress logs written by the Mar (thru scan345 prog)

Attribute Definition	
Attribute Type	Spectrum ( 10000 )
R/W Type	READ
Data Type	Tango::DEV_STRING
Display Level	EXPERT
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	Mar Progress Logs
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	Not set

### **Attribute image :**

Image read from the file created by scan345

Attribute Definition	
Attribute Type	Image ( 3450 x 3450 )
R/W Type	READ
Data Type	Tango::DEV_ULONG
Display Level	EXPERT
Inherited	false
Abstract	false

Attribute Properties	
label	Image
unit	
standard unit	
display unit	
format	
max_value	

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

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

min_value	
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Archive Periodic	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	Not set

### **Attribute resizedImage :**

Resized Image used for smooth display

Attribute Definition	
Attribute Type	Image ( 3450 x 3450 )
R/W Type	READ
Data Type	Tango::DEV_ULONG
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	Resized Image
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	Not set

**Mar345 Class States**

<b>Name</b>	<b>Description</b>
RUNNING	Mar345 is Scanning
STANDBY	Mar345 is waiting for request
MOVING	Mar345 is Erasing
FAULT	Init Failed: Maybe a file error