

Keithley2701 Tango Cpp Class

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Keithley2701 Class Identification :

Contact : at esrf.fr - peru
Class Family : Instrumentation
Platform : Unix Like
Bus : Ethernet
Manufacturer : none
Manufacturer ref. :

Keithley2701 Class Inheritance :

- [Tango::DeviceImpl](#)
 - Keithley2701

Keithley2701 Class Description :

This device server is intended to drive a Keithley 2701 digital multimeter (DMM).

It has been developed in the framework of the parametric current transformer in use at ESRF. It does not cover all the features of this equipment but only those required for this project.

A 7706 multiplexer card can be installed inside the DMM. It

is used for the calibration of the current transformer.

This device server is intended to drive a Keithley 2701 digital multimeter (DMM).

Keithley2701 Properties :

There is no class properties

Device Properties			
Name	Description	Type	Default Value
IpAddress	The IP address of the device.	String	none
AnalogInputResistor	The Keithley name for the analog input in charge of the resistor voltage measure.	short	none
AnalogInputCT	The Keithley name for the analog input in charge of the CT voltage measure.	short	none
AnalogOutputCalibration	The Keithley name for the analog output in charge of adjusting the calibration current.	short	none
DigitalOutput	The Keithley name for the digital output in charge of the CT range setting.	short	none
DigitalInput	The Keithley name for the digital input in charge of the CT range readout.	short	none
HasCalibrationHardware	Set to true if the extension card required for the calibration of the PCT is installed in the DMM.	boolean	none

Keithley2701 Class Commands				
Name	Input type	Output type	Level	Description
State	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.
Status	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.
StartContinuousAcquisition	DEV_VOID	DEV_VOID	OPERATOR	Enter the continuous acquisition mode. The DMM must be externally triggered.
StopContinuousAcquisition	DEV_VOID	DEV_VOID	OPERATOR	Stop a continuous acquisition in progress.

DisplayString	DEV_STRING	DEV_VOID	OPERATOR	Makes the DMM displaying the string on the front panel.
Undisplay	DEV_VOID	DEV_VOID	OPERATOR	The front panel display is set back to normal mode.
SetOutputPort	DEV_SHORT	DEV_VOID	OPERATOR	Apply the pattern to the output port. By default the output port is set to 121.
GetOutputPort	DEV_VOID	DEV_SHORT	OPERATOR	Get the output port pattern value. By default the output port is set to 121.
ConnectCT	DEV_VOID	DEV_VOID	OPERATOR	Connect the CT output to the DMM input.
ConnectResistor	DEV_VOID	DEV_VOID	OPERATOR	Connect the resistor to the DMM input.
SetDCOutput	DEV_DOUBLE	DEV_VOID	OPERATOR	Set the analog output to "argin" volts.
ResetTimestamp	DEV_VOID	DEV_VOID	OPERATOR	Implemented for test purposes.
ConnectChannel	DEV_USHORT	DEV_VOID	OPERATOR	Connect one of the analog inputs of the 7706 extension card to the input of the DMM.
Reset	DEV_VOID	DEV_VOID	OPERATOR	Reset the device and re-start its acquisition thread

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	true	..
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 StartContinuousAcquisition :

Enter the continuous acquisition mode.
The DMM must be externally triggered.

StartContinuousAcquisition 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	• FAULT	..

Command StopContinuousAcquisition :

Stop a continuous acquisition in progress.

StopContinuousAcquisition 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	• FAULT	..

Command DisplayString :

Makes the DMM displaying the string on the front panel.

DisplayString Definition		
Input Argument	Tango::DEV_STRING	The string to be displayed
Output Argument	Tango::DEV_VOID	
DisplayLevel	OPERATOR	..
Inherited	false	..
Abstract	false	..
Polling Period	Not polled	..
		..
Command NOT allowed for	• FAULT	..

Command Undisplay :

The front panel display is set back to normal mode.

Undisplay 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	• FAULT	..

Command SetOutputPort :

Apply the pattern to the output port.
By default the output port is set to 121.

SetOutputPort Definition		
Input Argument	Tango::DEV_SHORT	Pattern to be applied
Output Argument	Tango::DEV_VOID	
DisplayLevel	OPERATOR	..
Inherited	false	..
Abstract	false	..
Polling Period	Not polled	..
Command NOT allowed for	• FAULT	..

Command GetOutputPort :

Get the output port pattern value.
By default the output port is set to 121.

GetOutputPort Definition		
Input Argument	Tango::DEV_VOID	
Output Argument	Tango::DEV_SHORT	
DisplayLevel	OPERATOR	..
Inherited	false	..
Abstract	false	..
Polling Period	Not polled	..
Command NOT allowed for	• FAULT	..

Command ConnectCT :

Connect the CT output to the DMM input.



ConnectCT 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	• FAULT	..

Command ConnectResistor :

Connect the resistor to the DMM input.

ConnectResistor 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	• FAULT	..

Command SetDCOutput :

Set the analog output to "argin" volts.

SetDCOutput Definition		
Input Argument	Tango::DEV_DOUBLE	
Output Argument	Tango::DEV_VOID	
DisplayLevel	OPERATOR	..
Inherited	false	..
Abstract	false	..
Polling Period	Not polled	..
		..
	• FAULT	

Command NOT allowed for ..

Command ResetTimestamp :

Implemented for test purposes.

ResetTimestamp 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	• FAULT	..

Command ConnectChannel :

Connect one of the analog inputs of the 7706 extension card to the input of the DMM.

ConnectChannel Definition		
Input Argument	Tango::DEV_USHORT	Channel number
Output Argument	Tango::DEV_VOID	
DisplayLevel	OPERATOR	..
Inherited	false	..
Abstract	false	..
Polling Period	Not polled	..
		..
Command NOT allowed for	• FAULT	..

Command Reset :

Reset the device and re-start its acquisition thread

Reset 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"> • ON • OFF • INIT 	..

Keithley2701 Class Attributes							
Name	Inherited	Abstract	Attr. type	R/W type	Data type	Level	Description
LastVoltageValue	false	false	Scalar	READ	Tango::DEV_DOUBLE	OPERATOR	The last voltage read from the Voltmeter
BufferSize	false	false	Scalar	READ	Tango::DEV_SHORT	OPERATOR	The sample number in the voltage and timestamp buffers
ThreadReady	false	false	Scalar	READ	Tango::DEV_BOOLEAN	OPERATOR	Set to true when the acquisition thread gets data from the hardware.
VoltageAndTimestampBuffer	false	false	Spectrum	READ	Tango::DEV_DOUBLE	OPERATOR	Voltage and timestamp got from the hardware. There are two data for each point. The first one is the voltage (in Volt) and the second one is the timestamp

There is no dynamic attribute defined.

Attribute LastVoltageValue :

The last voltage read from the Voltmeter

Attribute Definition	
Attribute Type	Scalar
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

Attribute Properties	
label	
unit	V
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 BufferSize :

The sample number in the voltage and timestamp buffers

Attribute

Attribute

Attribute Event Criteria

Definition	
Attribute Type	Scalar
R/W Type	READ
Data Type	Tango::DEV_SHORT
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read allowed for	All states

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

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 ThreadReady :

Set to true when the acquisition thread gets data from the hardware.

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 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
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Attribute VoltageAndTimestampBuffer :

Voltage and timestamp got from the hardware. There are two data for each point.
The first one is the voltage (in Volt) and the second one is the timestamp (in Sec)

Attribute Definition	
Attribute Type	Spectrum (3000)
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

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

Keithley2701 Class States	
Name	Description
ON	Normal state when the continuous acquisition mode is engaged.
FAULT	This state is set in case of a problem while dialoging with the DMM

OFF	This is the state when the continuous acquisition mode is not engaged.
INIT	The device is in its initialization phase