



TANGO
Device
Server

RRontec User's Guide

Rontec Class

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Implemented in C++ - CVS repository: tango-ds

Introduction:

handles Rontec MCA channel analyser through a serial RS232 line

Class Inheritance:

- Tango::Device_4Impl
 - Rontec

Properties:

Device Properties		
Property name	Property type	Description
ConnectedROIMask	Tango::DEV_STRING	list of the TTL outputs connected to a counter just for control and throw exception if try to configure a ROI that is not in the list 8 TTL outputs are available with the current RONTEC MCA hardware example : 1 4 represents : ouput1, output 4 connected default : 1
MaxFluoEnergy	Tango::DEV_DOUBLE	maximum fluo energy of the last MCA channel. with the current RONTEC MCA Hardware can be 10, 20, 40, or 80 KeV default : 80.0
NumberOfChannels	Tango::DEV_LONG	number of channels of the MCA. The current RONTEC MCA hardware has 4096 channels. this is for extentions purpose only, let the default value of 4096
SerialLineUrl	Tango::DEV_STRING	Tango name of the serial line device the other serial line properties are fixed for the RONTEC RCL : N(no parity),8(data bits),1(stop bit), hardware handshake (RTS/CTS
SpectrumPacketSize	Tango::DEV_LONG	Spectrum read packet size used in reading thread
EnergyMode	Tango::DEV_BOOLEAN	Energy mode or channel mode selection
EnergyCoeff0	Array of double	Energy conversion polynomial coefficient order 0
EnergyCoeff1	Array of double	Energy conversion polynomial coefficient order 0
EnergyCoeff2	Array of double	Energy conversion polynomial coefficient order 2

Device Properties Default Values:

Property Name	Default Values
ConnectedROIMask	1 2 3 4
MaxFluoEnergy	80
NumberOfChannels	4096
SerialLineUrl	test/rontec/serial
SpectrumPacketSize	256
EnergyMode	false
EnergyCoeff0	0
EnergyCoeff1	0
EnergyCoeff2	0

There is no Class properties.

States:

States	
Names	Descriptions
FAULT	command error
INIT	*
RUNNING	acquisition in progress
STANDBY	RONTEC OK, ready to accept command
UNKNOWN	communication loosed with RONTEC

Attributes:

Scalar Attributes			
Attribute name	Data Type	R/W Type	Expert
countRate: This is the input count rate. Rem : output count rate = countRate * (1-deadTime / 100)	DEV_DOUBLE	READ	No
cycleTime	DEV_DOUBLE	READ_WRITE	No
dataSource: Display the current data source or NONE if not open	DEV_STRING	READ	No
deadTime: Dead time = [(Real - Live) / Real] * 100	DEV_DOUBLE	READ	No
detectorTemperature	DEV_DOUBLE	READ	No
spectrumEndValue	DEV_DOUBLE	WRITE	No
energyRange	DEV_LONG	READ_WRITE	No
integrationTime: Time of integration (ie counting time)	DEV_DOUBLE	READ_WRITE	No
liveTime: Live Time: time which does not take into account the dead time. Should be shorter than real time	DEV_DOUBLE	READ	No
nbChannels: Number of Channels to get from the DataSource	DEV_SHORT	READ_WRITE	No
readDataSpectrum	DEV_BOOLEAN	WRITE	No
realTime: Real Time : time taking into account the dead time	DEV_DOUBLE	READ	No
roi1	DEV_LONG	READ	No
roi2	DEV_LONG	READ	No
roi3	DEV_LONG	READ	No
roi4	DEV_LONG	READ	No
roi5	DEV_LONG	READ	No
roi6	DEV_LONG	READ	No
roi7	DEV_LONG	READ	No
roi8	DEV_LONG	READ	No
spectrumStartValue	DEV_DOUBLE	WRITE	No
timingType: Type of timing: 0 -> Live (like an OS time) 1 -> Real (the real time according to deadTime).	DEV_SHORT	READ_WRITE	Yes

Spectrum Attributes			
Attribute name	Data Type	X Data Length	Expert
dataSpectrum: fluo spectrum returned by the RONTEC MCA max channels number set in NumberOfChannels property starting channel fixed by SetStartingChannel, ending channel set by SetEndingChannel	DEV_DOUBLE	8192	No
offsetGain	DEV_DOUBLE	2	No
roisEnds: End Positions of the ROIs	DEV_DOUBLE	40	No
roisStarts	DEV_DOUBLE	40	No
roisStartsEnds: All the ROIs starts ends: they are in pair : start-end.	DEV_DOUBLE	80	Yes
energySpectrum	DEV_DOUBLE	8192	No

Commands:

More Details on commands....

Device Commands for Operator Level		
Command name	Argument In	Argument Out
Init	DEV_VOID	DEV_VOID
State	DEV_VOID	DEV_STATE
Status	DEV_VOID	CONST_DEV_STRING
Abort	DEV_VOID	DEV_VOID
Arm	DEV_VOID	DEV_VOID
ClearData	DEV_VOID	DEV_VOID
GetPartOfSpectrum	DEVVAR_DOUBLEARRAY	DEVVAR_LONGARRAY
GetPauseStatus	DEV_VOID	DEV_STRING
GetSpeedAndResolutionConfiguration	DEV_VOID	DEV_LONG
Reset	DEV_VOID	DEV_STRING
SendRontecMessage	DEV_STRING	DEV_STRING
SetROIs	DEVVAR_DOUBLEARRAY	DEV_VOID
SetSingleROI	DEVVAR_DOUBLEARRAY	DEV_VOID
SetSpeedAndResolutionConfiguration	DEV_LONG	DEV_VOID
Start	DEV_VOID	DEV_VOID

1 - Init

- **Description:** This commands re-initialise a device keeping the same network connection.
After an Init command executed on a device, it is not necessary for client to re-connect to the device.
This command first calls the device *delete_device()* method and then execute its *init_device()* method.
For C++ device server, all the memory allocated in the *nit_device()* method must be freed in the *delete_device()* method.
The language device desctructor automatically calls the *delete_device()* method.
- **Argin:**
DEV_VOID : none.
- **Argout:**
DEV_VOID : none.
- **Command allowed for:**
 - Tango::FAULT
 - Tango::INIT
 - Tango::RUNNING
 - Tango::STANDBY
 - Tango::UNKNOWN

2 - State

- **Description:** This command gets the device state (stored in its *device_state* data member) and returns it to the caller.
- **Argin:**
DEV_VOID : none.
- **Argout:**
DEV_STATE : State Code
- **Command allowed for:**
 - Tango::FAULT
 - Tango::INIT
 - Tango::RUNNING
 - Tango::STANDBY
 - Tango::UNKNOWN

3 - Status

- **Description:** This command gets the device status (stored in its *device_status* data member) and returns it to the caller.
- **Argin:**
DEV_VOID : none.
- **Argout:**
CONST_DEV_STRING : Status description
- **Command allowed for:**
 - Tango::FAULT
 - Tango::INIT
 - Tango::RUNNING
 - Tango::STANDBY
 - Tango::UNKNOWN

4 - Abort

- **Description:** stops acquisition already running
- **Argin:**
DEV_VOID :
- **Argout:**
DEV_VOID :
- **Command allowed for:**
 - Tango::FAULT
 - Tango::RUNNING
 - Tango::STANDBY

5 - Arm

- **Description:** will Arm the MCA (ie prepare the MCA).
- **Argin:**
DEV_VOID :
- **Argout:**
DEV_VOID :
- **Command allowed for:**
 - Tango::FAULT
 - Tango::RUNNING

- Tango::STANDBY

6 - ClearData

- **Description:** clears the acquisition memory
- **Argin:**
DEV_VOID :
- **Argout:**
DEV_VOID :
- **Command allowed for:**
 - Tango::FAULT
 - Tango::RUNNING
 - Tango::STANDBY

7 - GetPartOfSpectrum

- **Description:** returns the data starting at argin[0] (exception if argin[0] < starting channel cofigured for argin[1] channel truncated if exceeds the end_channel configured
- **Argin:**
DEVVAR_DOUBLEARRAY : [0]starting channel, [1] size of channel
- **Argout:**
DEVVAR_LONGARRAY : the data
- **Command allowed for:**
 - Tango::FAULT
 - Tango::RUNNING
 - Tango::STANDBY

8 - GetPauseStatus

- **Description:** returns PAUSE or RUNNING according to acquisition stopped or running
- **Argin:**
DEV_VOID :
- **Argout:**
DEV_STRING : PAUSE/RUNNING
- **Command allowed for:**
 - Tango::FAULT

- Tango::RUNNING
- Tango::STANDBY

9 - GetSpeedAndResolutionConfiguration

- **Description:** returns the processor configured : 0 : max cps 1 : ... cps 2 : cps 3 : min cps
- **Argin:**
DEV_VOID :
- **Argout:**
DEV_LONG : processor number actually selected
- **Command allowed for:**
 - Tango::FAULT
 - Tango::RUNNING
 - Tango::STANDBY

10 - Reset

- **Description:**
- **Argin:**
DEV_VOID :
- **Argout:**
DEV_STRING : string returned by the rontec
- **Command allowed for:**
 - Tango::FAULT
 - Tango::RUNNING
 - Tango::STANDBY

11 - SendRontecMessage

- **Description:**
- **Argin:**
DEV_STRING : the command and arguments to be sent
- **Argout:**
DEV_STRING : the rontec answer as string
- **Command allowed for:**
 - Tango::FAULT

- Tango::RUNNING
- Tango::STANDBY

12 - SetROIs

- **Description:** Set the ROIs. the parameter is an array with values going by pair: tab[0]=126, tab[1]=238 -> first ROI starts from 126, ends to 238 tab[2]=1569,tab[3]=2368 -> second ROI starts from 1569, ends to 2368.
- **Argin:**
DEVVAR_DOUBLEARRAY : starts and ends of the ROI. eg: tab[0]=126, tab[1]=238, tab[2]=1569,tab[3]=2368
- **Argout:**
DEV_VOID :
- **Command allowed for:**
 - Tango::FAULT
 - Tango::RUNNING
 - Tango::STANDBY

13 - SetSingleROI

- **Description:** configures the TTL output number for pulse output photons processed with low_channel < energy < high_channel the RONTEC waits for energy so we retrieve energy in DServer from channel and MaxFluoEnergy channels are retrieved according amplifier and energy calibration. not allowed if acquisition is running Exception if ROI number not in the ConnectedROIMask property
- **Argin:**
DEVVAR_DOUBLEARRAY : [0] : TTL output number, [1] low energy (eV), [2] high energy (eV)
- **Argout:**
DEV_VOID :
- **Command allowed for:**
 - Tango::FAULT
 - Tango::RUNNING
 - Tango::STANDBY

14 - SetSpeedAndResolutionConfiguration

- **Description:** selects the processor 0 : max cps 3 : min cps depends on real hardware exception if error
- **Argin:**
DEV_LONG : the processor selected 0..3

- **Argout:**
DEV_VOID :

- **Command allowed for:**

- Tango::FAULT
- Tango::RUNNING
- Tango::STANDBY

15 - Start

- **Description:** starts a acquisition previously configured with attributes startingChannel, endingChannel, integrationTime for time given in integrationTime clears memory in the MCA if not done. for continuous acquisition : integrationTime=0

- **Argin:**
DEV_VOID :

- **Argout:**
DEV_VOID :

- **Command allowed for:**

- Tango::FAULT
- Tango::STANDBY

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