



**TANGO  
Device  
Server**

# **Retrig AI User's Guide**

## **RetrigAI Class**

**Revision: release\_1\_0\_1 - Author: abeilleg  
Implemented in C++**

### **Introduction:**

Perform infinite retriggered analog input acquisition simultaneously on four channels. The device is available for boards SAI\_2005 and SAI\_2010.

### **Class Inheritance:**

- Tango::Device\_3Impl
  - RetrigAI

## Properties:

<b>Device Properties</b>		
<b>Property name</b>	<b>Property type</b>	<b>Description</b>
<b>BoardType</b>	Tango::DEV_USHORT	The board type ( the possible values are SAI_2005, SAI_2010).
<b>BoardNum</b>	Tango::DEV_USHORT	The number of the board in the cPCI chassis (between 0 and 7).
<b>InputRange0</b>	Tango::DEV_USHORT	The input range for channel 0 ( possible values are B_10, B_5, B_2_5, B_1_25, U_10, U_5, U_2_5, U_1_25 ).
<b>InputRange1</b>	Tango::DEV_USHORT	The input range for channel 1 ( possible values are B_10, B_5, B_2_5, B_1_25, U_10, U_5, U_2_5, U_1_25 ).
<b>InputRange2</b>	Tango::DEV_USHORT	The input range for channel 2 ( possible values are B_10, B_5, B_2_5, B_1_25, U_10, U_5, U_2_5, U_1_25 ).
<b>InputRange3</b>	Tango::DEV_USHORT	The input range for channel 3 ( possible values are B_10, B_5, B_2_5, B_1_25, U_10, U_5, U_2_5, U_1_25 ).
<b>Timeout</b>	Tango::DEV_DOUBLE	The time to wait for incoming data before generating a timeout. In seconds.
<b>TriggerMode</b>	Tango::DEV_USHORT	The trigger mode. Can be a POST trigger and data is acquired just after the received trigger. Can be a DELAY trigger and data is acquired after a certain delay.
<b>TriggerSource</b>	Tango::DEV_USHORT	To choose analog (ATRIG) or digital trigger(DTRIG).
<b>ATRIGSelection</b>	Tango::DEV_USHORT	To select the type of analog trigger. The trigger can be generated when the analog trigger passes below a level or above a level. The possible values are BELOW and ABOVE.
<b>ATRIGLevel</b>	Tango::DEV_DOUBLE	The level of the analog trigger in volts.
<b>DTRIGPolarity</b>	Tango::DEV_USHORT	The digital level polarity. It can be detected on rising edge or falling edge. The possible values are RISING or FALLING.
<b>Delay</b>	Tango::DEV_DOUBLE	The delay after a Delay trigger in seconds.
<b>ConversionSource</b>	Tango::DEV_USHORT	Set the AI conversion signal source (i.e. DAC sampling source). Use one of the following: INTERNAL, EXTSAMPLING.

Device Properties Default Values:

<b>Property Name</b>	<b>Default Values</b>
BoardType	No default value
BoardNum	No default value
InputRange0	No default value
InputRange1	No default value
InputRange2	No default value
InputRange3	No default value
Timeout	No default value
TriggerMode	No default value
TriggerSource	No default value
ATRIGSelection	No default value
ATRIGLevel	No default value
DTRIGPolarity	No default value
Delay	No default value
ConversionSource	No default value

**There is no Class properties.**

### **States:**

<b>States</b>	
<b>Names</b>	<b>Descriptions</b>
<b>UNKNOWN</b>	
<b>STANDBY</b>	
<b>RUNNING</b>	
<b>FAULT</b>	

### **Attributes:**

## Scalar Attributes

Attribute name	Data Type	R/W Type	Expert
<b>timeoutCounter</b>	DEV_LONG	READ	No
<b>errorCounter</b>	DEV_LONG	READ	No
<b>frequency</b> : The acquisition frequency in Hertz.	DEV_DOUBLE	READ_WRITE	No
<b>bufferDepth</b> : The buffer depth in seconds for one channel.	DEV_DOUBLE	READ_WRITE	No

## Spectrum Attributes

Attribute name	Data Type	X Data Length	Expert
<b>channel0</b>	DEV_DOUBLE	10000000	No
<b>channel1</b>	DEV_DOUBLE	10000000	No
<b>channel2</b>	DEV_DOUBLE	10000000	No
<b>channel3</b>	DEV_DOUBLE	10000000	No

## Commands:

More Details on commands....

### Device Commands for Operator Level

Command name	Argument In	Argument Out
<b>Init</b>	DEV_VOID	DEV_VOID
<b>State</b>	DEV_VOID	DEV_STATE
<b>Status</b>	DEV_VOID	CONST_DEV_STRING
<b>Start</b>	DEV_VOID	DEV_VOID
<b>Stop</b>	DEV_VOID	DEV_VOID

### Device Commands for Expert Level Only

Command name	Argument In	Argument Out
<b>Calibrate</b>	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::UNKNOWN
  - Tango::STANDBY
  - Tango::RUNNING
  - Tango::FAULT

# 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::UNKNOWN
  - Tango::STANDBY
  - Tango::RUNNING
  - Tango::FAULT

# 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::UNKNOWN
  - Tango::STANDBY
  - Tango::RUNNING
  - Tango::FAULT

## 4 - Start

- **Description:** Start acquisition.
- **Argin:**  
DEV\_VOID :
- **Argout:**  
DEV\_VOID :
- **Command allowed for:**
  - Tango::UNKNOWN
  - Tango::STANDBY
  - Tango::RUNNING
  - Tango::FAULT

## 5 - Stop

- **Description:** Stop acquisition.
- **Argin:**  
DEV\_VOID :
- **Argout:**  
DEV\_VOID :
- **Command allowed for:**
  - Tango::UNKNOWN
  - Tango::STANDBY
  - Tango::RUNNING
  - Tango::FAULT

## 6 - Calibrate (for expert only)

- **Description:** Calibrate hardware.
- **Argin:**  
DEV\_VOID :
- **Argout:**  
DEV\_VOID :
- **Command allowed for:**
  - Tango::UNKNOWN
  - Tango::STANDBY
  - Tango::RUNNING
  - Tango::FAULT

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# **Retrig AI User's Guide**

## **RetrigAI Class**

**Revision: release\_1\_0\_1 - Author: abeilleg  
Implemented in C++**

### **Introduction:**

Perform infinite retriggered analog input acquisition simultaneously on four channels. The device is available for boards SAI\_2005 and SAI\_2010.

### **Class Inheritance:**

- Tango::Device\_3Impl
  - RetrigAI



## Properties:

<b>Device Properties</b>		
<b>Property name</b>	<b>Property type</b>	<b>Description</b>
<b>BoardType</b>	Tango::DEV_USHORT	The board type ( the possible values are SAI_2005, SAI_2010).
<b>BoardNum</b>	Tango::DEV_USHORT	The number of the board in the cPCI chassis (between 0 and 7).
<b>InputRange0</b>	Tango::DEV_USHORT	The input range for channel 0 ( possible values are B_10, B_5, B_2_5, B_1_25, U_10, U_5, U_2_5, U_1_25 ).
<b>InputRange1</b>	Tango::DEV_USHORT	The input range for channel 1 ( possible values are B_10, B_5, B_2_5, B_1_25, U_10, U_5, U_2_5, U_1_25 ).
<b>InputRange2</b>	Tango::DEV_USHORT	The input range for channel 2 ( possible values are B_10, B_5, B_2_5, B_1_25, U_10, U_5, U_2_5, U_1_25 ).
<b>InputRange3</b>	Tango::DEV_USHORT	The input range for channel 3 ( possible values are B_10, B_5, B_2_5, B_1_25, U_10, U_5, U_2_5, U_1_25 ).
<b>Timeout</b>	Tango::DEV_DOUBLE	The time to wait for incoming data before generating a timeout. In seconds.
<b>TriggerMode</b>	Tango::DEV_USHORT	The trigger mode. Can be a POST trigger and data is acquired just after the received trigger. Can be a DELAY trigger and data is acquired after a certain delay.
<b>TriggerSource</b>	Tango::DEV_USHORT	To choose analog (ATRIG) or digital trigger(DTRIG).
<b>ATRIGSelection</b>	Tango::DEV_USHORT	To select the type of analog trigger. The trigger can be generated when the analog trigger passes below a level or above a level. The possible values are BELOW and ABOVE.
<b>ATRIGLevel</b>	Tango::DEV_DOUBLE	The level of the analog trigger in volts.
<b>DTRIGPolarity</b>	Tango::DEV_USHORT	The digital level polarity. It can be detected on rising edge or falling edge. The possible values are RISING or FALLING.
<b>Delay</b>	Tango::DEV_DOUBLE	The delay after a Delay trigger in seconds.
<b>ConversionSource</b>	Tango::DEV_USHORT	Set the AI conversion signal source (i.e. DAC sampling source). Use one of the following: INTERNAL, EXTSAMPLING.

Device Properties Default Values:

<b>Property Name</b>	<b>Default Values</b>
BoardType	No default value
BoardNum	No default value
InputRange0	No default value
InputRange1	No default value
InputRange2	No default value
InputRange3	No default value
Timeout	No default value
TriggerMode	No default value
TriggerSource	No default value
ATRIGSelection	No default value
ATRIGLevel	No default value
DTRIGPolarity	No default value
Delay	No default value
ConversionSource	No default value

**There is no Class properties.**

### **States:**

<b>States</b>	
<b>Names</b>	<b>Descriptions</b>
<b>UNKNOWN</b>	
<b>STANDBY</b>	
<b>RUNNING</b>	
<b>FAULT</b>	

### **Attributes:**

## Scalar Attributes

Attribute name	Data Type	R/W Type	Expert
<b>timeoutCounter</b>	DEV_LONG	READ	No
<b>errorCounter</b>	DEV_LONG	READ	No
<b>frequency</b> : The acquisition frequency in Hertz.	DEV_DOUBLE	READ_WRITE	No
<b>bufferDepth</b> : The buffer depth in seconds for one channel.	DEV_DOUBLE	READ_WRITE	No

## Spectrum Attributes

Attribute name	Data Type	X Data Length	Expert
<b>channel0</b>	DEV_DOUBLE	10000000	No
<b>channel1</b>	DEV_DOUBLE	10000000	No
<b>channel2</b>	DEV_DOUBLE	10000000	No
<b>channel3</b>	DEV_DOUBLE	10000000	No

## Commands:

More Details on commands....

### Device Commands for Operator Level

Command name	Argument In	Argument Out
<b>Init</b>	DEV_VOID	DEV_VOID
<b>State</b>	DEV_VOID	DEV_STATE
<b>Status</b>	DEV_VOID	CONST_DEV_STRING
<b>Start</b>	DEV_VOID	DEV_VOID
<b>Stop</b>	DEV_VOID	DEV_VOID

### Device Commands for Expert Level Only

Command name	Argument In	Argument Out
<b>Calibrate</b>	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::UNKNOWN
  - Tango::STANDBY
  - Tango::RUNNING
  - Tango::FAULT

# 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::UNKNOWN
  - Tango::STANDBY
  - Tango::RUNNING
  - Tango::FAULT

# 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::UNKNOWN
  - Tango::STANDBY
  - Tango::RUNNING
  - Tango::FAULT

## 4 - Start

- **Description:** Start acquisition.
- **Argin:**  
DEV\_VOID :
- **Argout:**  
DEV\_VOID :
- **Command allowed for:**
  - Tango::UNKNOWN
  - Tango::STANDBY
  - Tango::RUNNING
  - Tango::FAULT

## 5 - Stop

- **Description:** Stop acquisition.
- **Argin:**  
DEV\_VOID :
- **Argout:**  
DEV\_VOID :
- **Command allowed for:**
  - Tango::UNKNOWN
  - Tango::STANDBY
  - Tango::RUNNING
  - Tango::FAULT

## 6 - Calibrate (for expert only)

- **Description:** Calibrate hardware.
- **Argin:**  
DEV\_VOID :
- **Argout:**  
DEV\_VOID :
- **Command allowed for:**
  - Tango::UNKNOWN
  - Tango::STANDBY
  - Tango::RUNNING
  - Tango::FAULT

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# Retrig AI

## Device Commands Description

### RetrigAI Class

Revision: release\_1\_0\_1 - Author: abeilleg

## 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 *init\_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::UNKNOWN
  - Tango::STANDBY
  - Tango::RUNNING
  - Tango::FAULT

## 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::UNKNOWN
  - Tango::STANDBY
  - Tango::RUNNING
  - Tango::FAULT

### 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::UNKNOWN
  - Tango::STANDBY
  - Tango::RUNNING
  - Tango::FAULT

### 4 - Start

- **Description:** Start acquisition.
- **Argin:**  
**DEV\_VOID** :
- **Argout:**  
**DEV\_VOID** :
- **Command allowed for:**
  - Tango::UNKNOWN
  - Tango::STANDBY
  - Tango::RUNNING
  - Tango::FAULT

## 5 - Stop

- **Description:** Stop acquisition.
- **Argin:**  
DEV\_VOID :
- **Argout:**  
DEV\_VOID :
- **Command allowed for:**
  - Tango::UNKNOWN
  - Tango::STANDBY
  - Tango::RUNNING
  - Tango::FAULT

## 6 - Calibrate (for expert only)

- **Description:** Calibrate hardware.
- **Argin:**  
DEV\_VOID :
- **Argout:**  
DEV\_VOID :
- **Command allowed for:**
  - Tango::UNKNOWN
  - Tango::STANDBY
  - Tango::RUNNING
  - Tango::FAULT

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