
ska-tmc-common Documentation

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INTRODUCTION

This is a shared repository for common classes required for Telescope Monitoring and Control(TMC) work package of SKA Telescope software.

The ska-tmc-common repository contains implementation of Tango abstraction layer. It provides the abstraction in form of following classes:

TangoClient: Class that provides abstraction for Tango client APIs

TangoGroupClient: Class that provides abstraction for Tango group APIs

TangoServerHelper: Class that provides abstraction for Tango device server APIs

TMC COMMON TANGOCLIENT

Tango Client Code

class `tmc.common.tango_client.TangoClient` (*fqdn, logger=None*)

Class for TangoClient API

get_device_fqdn ()

Returns the Fully Qualified Device Name (FQDN) of the Tango device server.

send_command (*command_name, command_data=None*)

This method invokes command on the device server in synchronous mode.

Params `command_name`: string. Name of the command

`command_data`: (optional) void. Parameter with the command.

Returns The result of the command. The type depends on the command. It may be None.

Throws `DevFailed` in case of error.

send_command_async (*command_name, command_data=None, callback_method=None*)

This method invokes command on the device server in asynchronous mode.

Params `command_name`: string. Name of the command

`command_data`: (optional) void. Parameter with the command.

`callback_method`: (optional) Callback function that should be executed after completion of the command execution.

Returns `int`. Command identifier returned by the Tango device server.

Throws `DevFailed` in case of error.

get_attribute (*attribute_name*)

This method reads the value of the given attribute.

Param `attribute_name`: string. Name of the attribute

Returns Returns the `DeviceAttribute` object with several fields. The attribute value is present in the `value` field of the object. `value`: Normal scalar value or NumPy array of values.

Throws `AttributeError` in case of error.

set_attribute (*attribute_name, value*)

This method writes the value to the given attribute.

Params `attribute_name`: string. Name of the attribute

`value`: The value to be set. For non SCALAR attributes, it may be any sequence of sequences.

Returns `None`

Throws AttributeError in case of error.

subscribe_attribute (*attr_name*, *callback_method*)

Subscribes to the change event on the given attribute.

Params *attr_name*: string. Name of the attribute to subscribe change event.

callback_method: Name of callback method.

Returns int. *event_id* returned by the Tango device server.

unsubscribe_attribute (*event_id*)

Unsubscribes a client from receiving the event specified by *event_id*.

Param *event_id*: int. Event id of the subscription

Returns None.

TMC COMMON TANGO GROUP CLIENT

Tango Group Client Code

```
class tmc.common.tango_group_client.TangoGroupClient (group_name, logger)
```

Class for TangoGroupClient API

```
get_tango_group (group_name)
```

Creates a Tango Group with given name

```
add_device (device_to_add)
```

Add device element in the Group.

Param *device_to_add*: string. Device FQDN to add in the group

Returns None

```
remove_device (device_to_remove)
```

Removes specified elements in the *device_to_remove* from the Group.

Param *device_to_remove*: string. FQDN of the device to be removed from group.

Returns None

Throws DevFailed on failure in removing the device from the group.

```
delete_group (group_to_delete)
```

Deletes the Tango Group.

```
get_group_device_list (forward=True)
```

Returns the list of devices in the group

Params None

Returns list. The list of devices

Throws DevFailed on failure in getting group device list.

```
remove_all_device ()
```

Removes all the devices from the group.

```
send_command (command_name, command_data=None)
```

Invokes command on the Tango group synchronously.

Param *command_name*: string. Name of the command to be invoked

command_data: (optional) Void. The arguments with the command.

Returns Sequence of tango.GroupCmdReply objects.

Throws DevFailed on failure in executing the command.

send_command_async (*command_name*, *command_data=None*, *callback_method=None*)

Invokes command on the Tango group asynchronously.

Param *command_name*: string. Name of the command to be invoked

command_data: (optional) Void. The arguments with the command.

callback_method: The callback method that should be executed upon execution

Returns int. Request id returned by tango group. Pass this id to *get_command_reply* to retrieve the reply of the command.

Throws DevFailed on failure in executing the command.

get_command_reply (*command_id*, *timeout=0*)

Retrieves the response of the command

Params *command_id*: int. It is a request identifier previously returned by one of the *command_inout_async* methods.

timeout: (optional) int. Timeout in milliseconds. If no timeout is mentioned, the API waits indefinitely.

Returns The results of an asynchronous command as *tango.GroupCmdReply* object.

Throws DevFailed on failure in executing the command.

TMC COMMON TANGO SERVER

This is the Tango Server Helper module of Tango Interface Layer. This module implements a class `TangoServerHelper` which helps in operations like getting and setting attributes and properties of the Tango device.

class `tmc.common.tango_server_helper.TangoServerHelper`

This class provides APIs to help performing role of Tango device server.

static `get_instance()`

Returns instance object of `TangoServerHelper` class. Creates one if the object does not exist.

Param None.

Returns object of `TangoServerHelper` class

set_tango_class (*device*)

Set the Tango class object as a device

Param *device* : Tango class object

Returns None

read_property (*property_name*)

Returns the value of given Tango device property

Param *property_name*: String. Name of the Tango device property

Returns List of strings containing value(s) of the device property

Throws `DevFailed` exception in case of error

write_property (*property_name, value*)

Sets the value to a given device property

Param *property_name*: String. Name of the Tango device property

value: Value of the property to be set

Returns None

Throws `DevFailed` exception in case command failed error. `ValueError` exception in case value error. `KeyError` exception in case key error

get_status ()

Returns value of the Status attribute of the Tango device.

Param None

Returns String. The Status value of the Tango device.

Throws `DevFailed` on failure in getting device status.

set_status (*new_status*)

Sets the Status attribute of the Tango device with given value.

Param *new_status*: String. New value for Status attribute.

Returns None.

Throws DevFailed on failure in setting device status.

get_state ()

Returns value of the State attribute of the Tango device.

Param None

Returns (DevState). The State value of the Tango device.

Throws DevFailed on failure in getting device state.

set_state (*new_state*)

Sets the State attribute of the Tango device with given value.

Param *new_state*: (DevState). New value for State attribute.

Returns None.

Throws DevFailed on failure in setting device state.

write_attr (*attr_name*, *value*, *push_change_event=True*)

Updates the value of device server's attribute

Param *attr_name*: String. Name of the attribute which should be updated.

value: New value of the attribute

Returns None.

Throws ValueError exception in case of error.

read_attr (*attr_name*)

Returns the value of device server's attribute

Param *attr_name*: String. Name of the attribute which should be updated.

Returns *value*: Value of the attribute

Throws ValueError exception in case of error.

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