

QUICK REFERENCE

NI-SWITCH Instrument Driver

ICON	VI NAME ↑	TYPE	PARAMETER
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Initialize with Topology and Close



niSwitch Initialize With Topology (niSwitch_InitWithTopology)

Returns a session handle used to identify the switch module in all subsequent instrument driver calls and sets the topology of the switch.

Refer to *Resource Name Syntax* at the end of this guide.

ViConstString	resource name
ViConstString	topology name
ViBoolean	simulate
ViBoolean	reset
ViSession (out)	vi



niSwitch Close (niSwitch_close)

Terminates the NI-SWITCH session and all of its attributes and deallocates any memory resources the driver uses.

ViSession	vi
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Immediate Operations



niSwitch Connect Channels (niSwitch_Connect)

Creates the shortest available path between **channel 1** and **channel 2**. If a path is unavailable, an error is returned.

ViSession	vi
ViConstString	channel 1
ViConstString	channel 2



niSwitch Disconnect Channels (niSwitch_Disconnect)

Disconnects an existing path between **channel 1** and **channel 2**. Paths are created using [niSwitch Connect Channels](#) or [niSwitch Set Path](#).

ViSession	vi
ViConstString	channel 1
ViConstString	channel 2



niSwitch Disconnect All Channels (niSwitch_DisconnectAll)

Disconnects all existing paths.

ViSession	vi
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niSwitch Get Path (niSwitch_GetPath)

Returns a string that uniquely identifies the path you created with [niSwitch Connect Channels](#). Pass this string to [niSwitch Set Path](#) to establish the exact same path in the future.

ViSession	vi
ViConstString	channel 1
ViConstString	channel 2
ViInt32	buffer size
ViChar (out)	path list []

† Function names for C, C++, LabWindows™/CVI™, and Visual Basic are in parentheses.

Immediate Operations (continued)

	niSwitch Set Path (niSwitch_SetPath)	ViSession ViConstString	vi path list
<p>Connects two channels by establishing an explicit path with the path list parameter. Use for applications where repeatability of the path is important, such as in calibrated signal paths.</p> <p>If repeatability is not necessary, use niSwitch Connect Channels. To obtain the exact path for a given connection, use niSwitch Get Path.</p>			
	niSwitch Wait For Debounce (niSwitch_WaitForDebounce)	ViSession ViInt32	vi maximum time
<p>Returns after all the paths that you created have settled.</p>			
	niSwitch Switch Is Debounced? (niSwitch_IsDebounced)	ViSession ViBoolean (out)	vi is debounced
<p>Returns the state of the switch module and indicates if all the created paths have settled.</p>			
	niSwitch Can Connect Channels? (niSwitch_CanConnect)	ViSession ViConstString ViConstString ViInt32 (out)	vi channel 1 channel 2 path capability reference
<p>Verifies that the switch module can create a path between the two channels specified in the channel 1 and channel 2 parameters. If the switch module can create a path, this function indicates whether the path is currently available given the existing connections.</p>			

Scanning

	niSwitch Initiate Scan (niSwitch_InitiateScan)	ViSession	vi
<p>Downloads the configured scan list and trigger settings to hardware, initiates the scan, and returns. Once the scan initiates, you cannot perform any other operation other than niSwitch Abort Scan or niSwitch Send Software Trigger, nor can you perform the retrieval of attributes.</p>			
	niSwitch Commit (niSwitch_Commit)	ViSession	vi
<p>Downloads the configured scan list and trigger settings to hardware. niSwitch Commit is useful for arming triggers in a given order or control when expensive hardware operations are performed.</p>			
	niSwitch Abort Scan (niSwitch_AbortScan)	ViSession	vi
<p>Aborts a scan in progress. Initiate a scan with niSwitch Initiate Scan.</p>			

Scanning (continued)



niSwitch Configure Scan List (niSwitch_ConfigureScanList)

Configures the scan list and scan mode used for scanning. The scan list is comprised of a list of channel connections separated by semicolons. For example, the following scan list scans the first three channels of a multiplexer:

```
com0->ch0; com0->ch1; com0->ch2;
```

To see the status of a scan, call `niSwitch Is Scanning` or `niSwitch Wait For Scan Complete`. Use `niSwitch Configure Scan Trigger` and `niSwitch Initiate` to configure the scan trigger and start the scan respectively.

ViSession	vi
ViConstString	scan list
ViInt32	scan mode



niSwitch Set Continuous Scan (niSwitch_SetContinuousScan)

Tells the driver whether to continuously loop the scan list (True) or to stop scanning after one pass through the scan list (False). Call `niSwitch Abort Scan` to halt a continuous scan.

ViSession	vi
ViConstString	scan list
ViInt32	scan mode



niSwitch Configure Scan Trigger (niSwitch_ConfigureScanTrigger)

Configures the scan triggers for the scan last established with `niSwitch Configure Scan List`.

ViSession	vi
ViReal64	scan delay
ViInt32	trigger input
ViInt32	scan advanced output



niSwitch Route Trigger Input (niSwitch_RouteTriggerInput)

Routes the input trigger from the front or rear connector to a trigger bus line (TTLx).

ViSession	vi
ViInt32	input connector
ViInt32	trigger bus line
ViBoolean	invert



niSwitch Route Scan Advanced Output (niSwitch_RouteScanAdvancedOutput)

Routes the scan advanced output trigger from the front or rear connector to a trigger bus line (TTLx).

ViSession	vi
ViInt32	input connector
ViInt32	trigger bus line
ViBoolean	invert



niSwitch Send Software Trigger (niSwitch_SendSoftwareTrigger)

Sends a software trigger to the switch module specified by the NI-SWITCH session.

ViSession	vi
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niSwitch Wait For Scan To Complete (niSwitch_WaitForScanComplete)


Pauses until the switch module stops scanning or **maximum time** has elapsed.


ViSession	vi
ViInt32	maximum time

Scanning (continued)


	niSwitch Switch Is Scanning? (niSwitch_IsScanning)	ViSession	vi
	Indicates the status of the scan.	ViBoolean (out)	is scanning


Relay Control


	niSwitch Relay Control (niSwitch_RelayControl)	ViSession	vi
	Controls individual relays of the switch module. When controlling individual relays, the protection offered by setting the usage of source channels and configuration channels is void.	ViConstString	switch name
		ViInt16	switch action


	niSwitch Get Relay Position (niSwitch_GetRelayPosition)	ViSession	vi
	Returns the relay position for the relay specified in the relay name parameter.	ViConstString	relay name
		ViInt16 (out)	position

Utility

	niSwitch Initialize (niSwitch_init)	ViRsrc	resource name
	Returns a session handle used to identify the switch module in all subsequent driver calls. Refer to <i>Resource Name Syntax</i> at the end of this guide.	ViBoolean	id query
		ViBoolean	reset device
		ViSession (out)	vi

	niSwitch Initialize With Options (niSwitch_InitWithOptions)	ViRsrc	resource name
	Returns a session handle used to identify the switch module in all subsequent driver calls. Also can optionally set attributes of the switch module. Refer to <i>Resource Name Syntax</i> at the end of this guide.	ViBoolean	id query
		ViBoolean	reset device
		ViString	option string
		ViSession (out)	vi

	niSwitch Reset (niSwitch_reset)	ViSession	vi
	Resets the switch module to a known state.		

	niSwitch Reset with Defaults (niSwitch_ResetWithDefaults)	ViSession	vi
	Resets the switch module and applies the initial user-specified setting from the logical name used to initialize the session.		

Utility (continued)



niSwitch Get Channel Name (niSwitch_GetChannelName)

Returns the channel string that is in the channel table at the specified index. Use this function/VI in a For Loop to get a complete list of valid channel names for the switch module. Use the Channel Count attribute to determine the number of channels.

ViSession	vi
ViInt32	index
ViString (out)	channel string



niSwitch Get Relay Name (niSwitch_GetRelayName)

Returns the relay name string that is in the relay list at the specified index. Use this function/VI in a For Loop to get a complete list of valid relay names for the switch module. Use the Number of Relays attribute to determine the number of relays.

ViSession	vi
ViInt32	index
ViString (out)	relay string



niSwitch Self Test (niSwitch_self_test)

Verifies the driver can communicate with the switch module.

ViSession	vi
ViInt16 (out)	self test result
ViChar (out)	self test message []



niSwitch Revision Query (niSwitch_revision_query)

Returns the revision numbers of the driver.

ViSession	vi
ViChar (out)	instrument driver revision []
ViChar (out)	firmware revision []



niSwitch Disable (niSwitch_Disable)

Places the switch in a quiescent state where it has minimal or no impact on the system to which it is connected.

ViSession	vi
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niSwitch Error Message (niSwitch_error_message)

Converts a status code returned by the driver into a user-readable string.

ViSession	vi
ViStatus	error code
ViChar (out)	error message [256]

Interchangeability



niSwitch Clear Interchange Warnings (niSwitch_ClearInterchangeWarnings)

ViSession

vi

Clears the list of current interchange warnings.



niSwitch Reset Interchange Check (niSwitch_ResetInterchangeCheck)

ViSession

vi

Resets the interchangeability checking algorithms in the specific driver, thus ignoring all previous configuration operations.



niSwitch Get Next Interchange Check (niSwitch_GetNextInterchangeCheck)

ViSession

vi

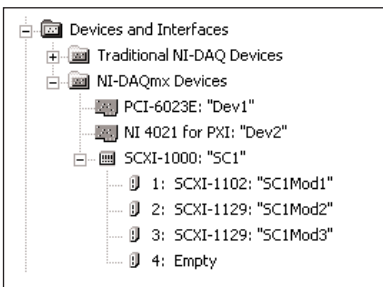
ViConstString (out)

interchange warning

Returns the interchangeability warning associated with the IVI session.

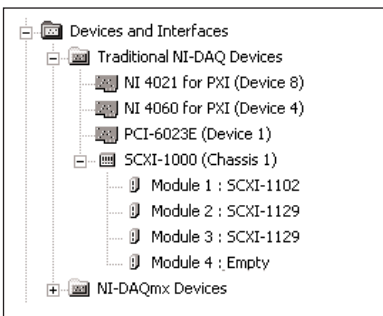
Resource Name Syntax

To establish a session with the correct switch module, you must pass a resource name to `niSwitch Initialize With Topology`. The syntax of the resource name depends on where in Measurement & Automation Explorer (MAX) you configured your switch module—under NI-DAQmx Devices, Traditional NI-DAQ (Legacy) Devices, or PXI System.



NI-DAQmx Devices

If you configured the PXI or SCXI switch module under NI-DAQmx Devices in MAX, the resource name is the string in quotes. For example, the resource name of the first SCXI-1129 in the following figure would be `SC1Mod2`. Pass this string to `niSwitch Initialize With Topology`. You can rename the resource name for switch modules configured as DAQmx devices simply by clicking on the device in MAX and entering a new name.

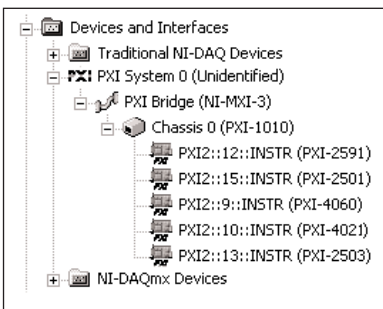


Traditional NI-DAQ (Legacy) Devices

If you configured the switch module in MAX under Traditional NI-DAQ (Legacy) Devices, the resource name syntax is:

```
SCXI[chassis ID]::slot number
```

For example, the resource name of the first SCXI-1129 for the following configuration would be `SCXI1::2`. Pass this string to `niSwitch Initialize With Topology`.



PXI System

If you configured the switch module in MAX under PXI System, the resource name syntax is:

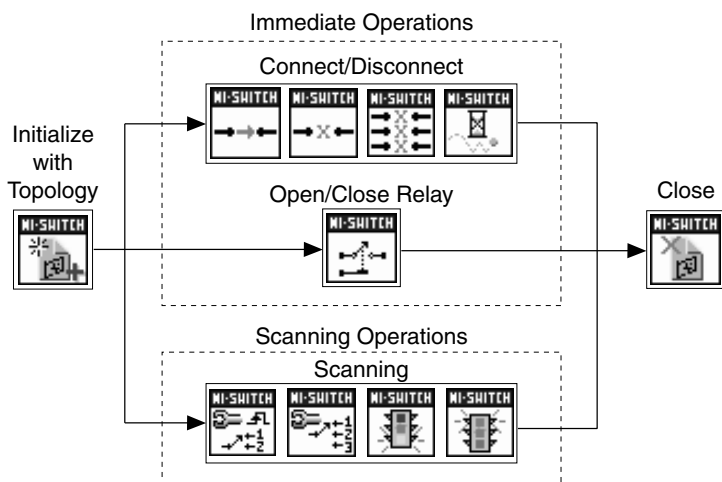
```
PXI[bus number]::device number
```

For example, the resource name of the left PXI-2591 for the configuration to the left would be `PXI2::12`. Pass this string to `niSwitch Initialize With Topology`.



Note If the module also appears under NI-DAQmx Devices, configure your PXI module under NI-DAQmx Devices instead of PXI System.

Programming Flow



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