Digital Multimeters

IVI-C Programming Guide

August, 2025

SIGLENT TECHNOLOGIES CO.,LTD

Revision History

This chapter declares the modifications of IVI driver in the most recent release of the programming guide version.

Models Supported

The series of SIGLENT Digital Multimeter supply this IVI-C driver is shown below.

Series	Release Version Supporting IVI-C Driver
SDM4055A/SDM4065A/ SDM4075A	0.0.0.12 and higher
SDM3055 / SDM3055X	1.01.01.25 and higher
SDM3055X-E	2.01.01.12 and higher
SDM3065X	3.01.01.10 and higher
SDM3045X	5.01.01.07R1 and higher

Software Requirement

This chapter describes how to configure the IVI driver to control the instrument. If you want to use the IVI Driver, you must install NI-VISA, the IVI Compliance Package, and a C language development system that supports the IVI driver library.

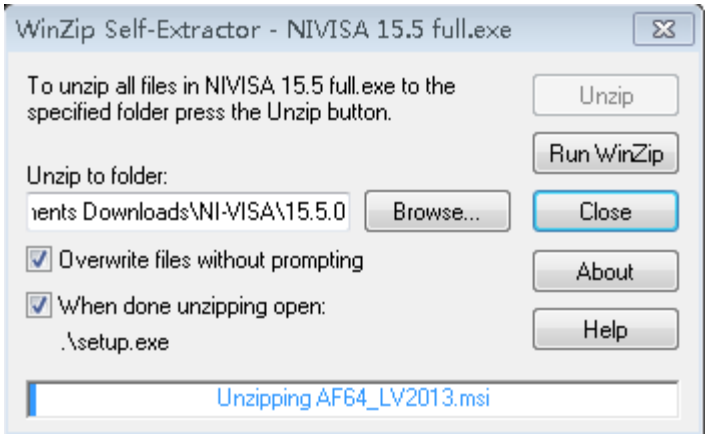
Install NI-MAX

Currently, NI-VISA is packaged in two versions: Full version and Run-Time Engine version. The full version includes the NI device drivers and a tool named NI-MAX which is a user interface to control and test remotely connected devices. You need to install the full version of NI-VISA.

You can get the NI-VISA 15.5full version or higher version from

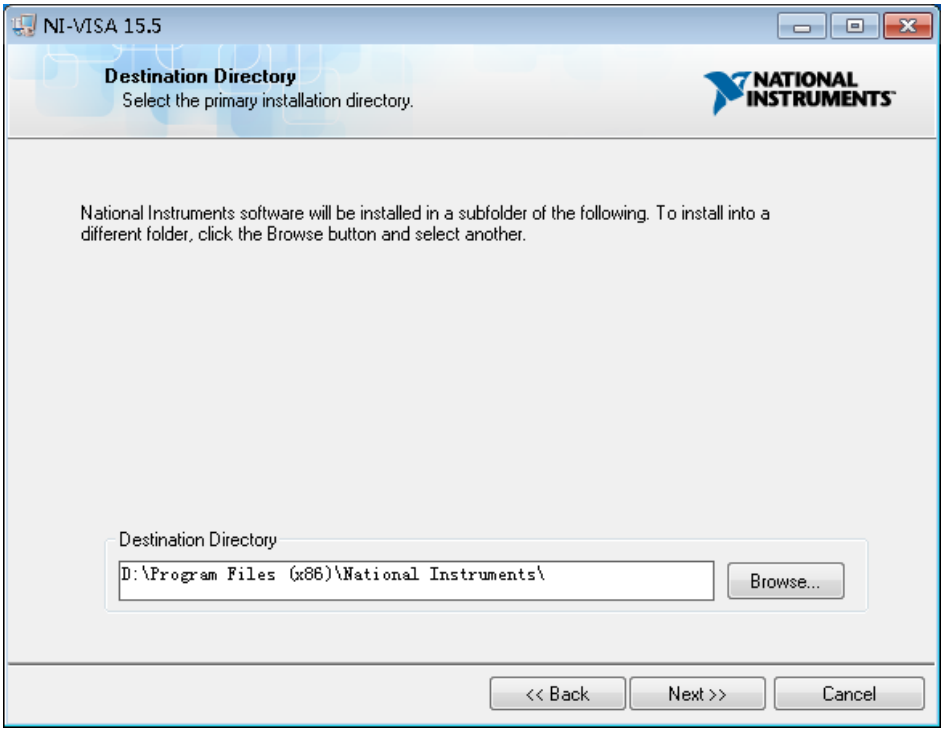
https://www.ni.com/en-us/support/downloads/drivers/download.ni-visa.html#306031.

a. Double click the NIVISA 15.5 full.exe, a dialog will be shown as below:



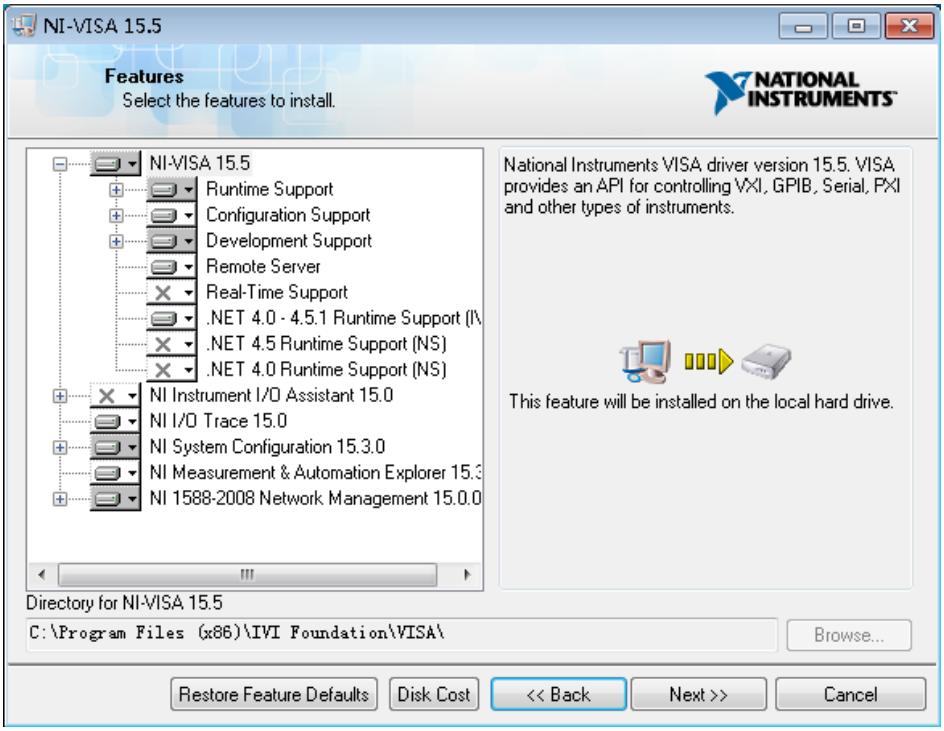
b. Click Unzip, the installation process will automatically launch after unzipping files. If your computer needs to install .NET Framework 4, it may auto start.

c. The NI-VISA installing dialog is shown above. Click Next to start the installation process.

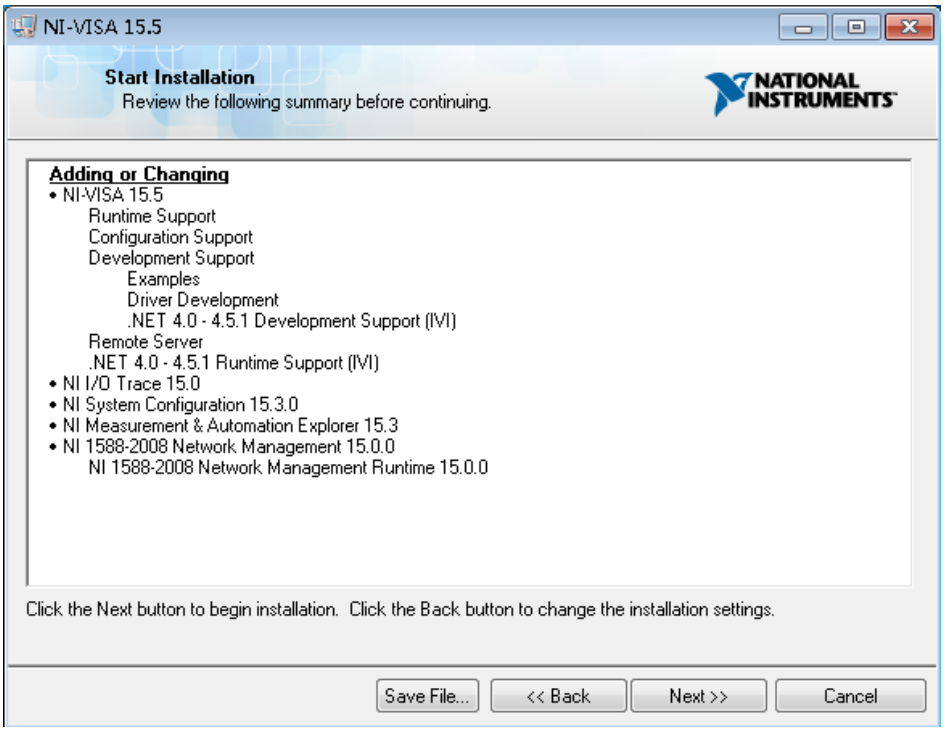


d. Set the install path. The default path is “C:\Program Files\National Instruments\”.

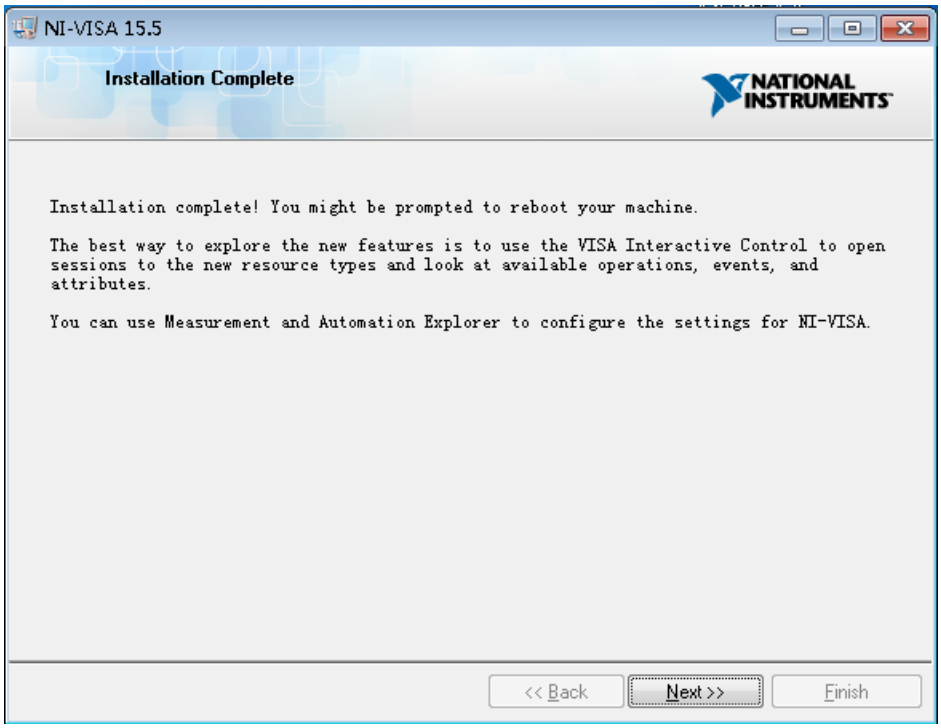
You can change it. Click Next.



e. Click Next twice, in the License Agreement dialog, select “I accept the above 2 License Agreement(s).”, and click Next.



f. Click Next to begin the installation.



g. Wait until the installation is completed, and then reboot your PC.

Install the IVI Compliance Package

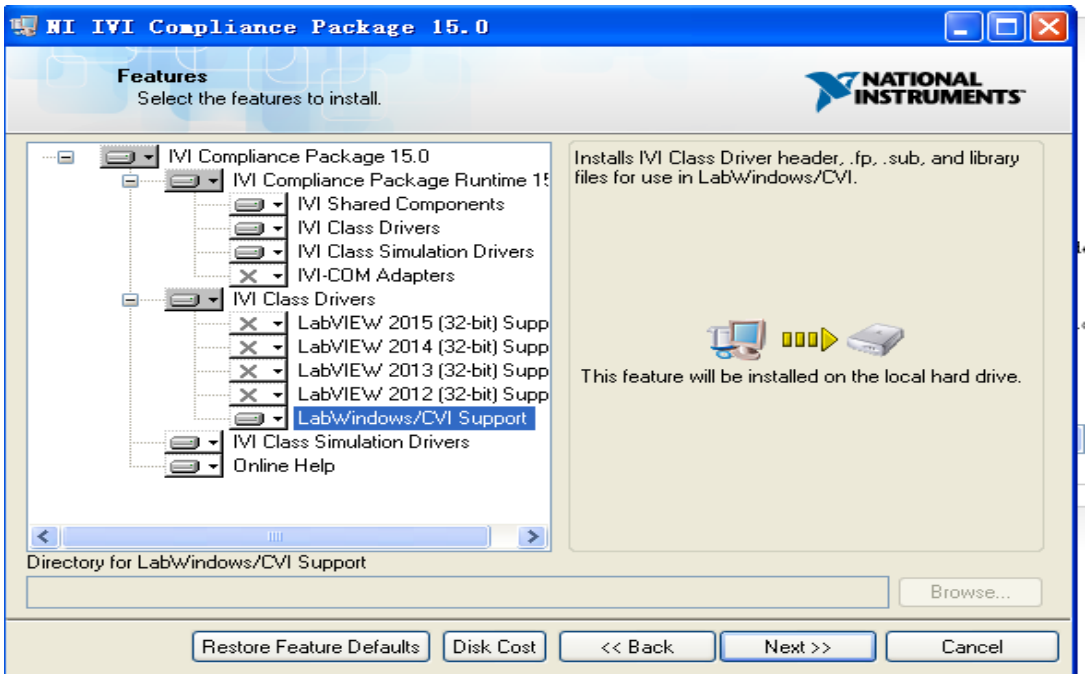
The IVI Compliance Package contains the IVI class drivers and supported libraries for developing and leveraging IVI-based applications.

You can get the IVI Compliance Package from

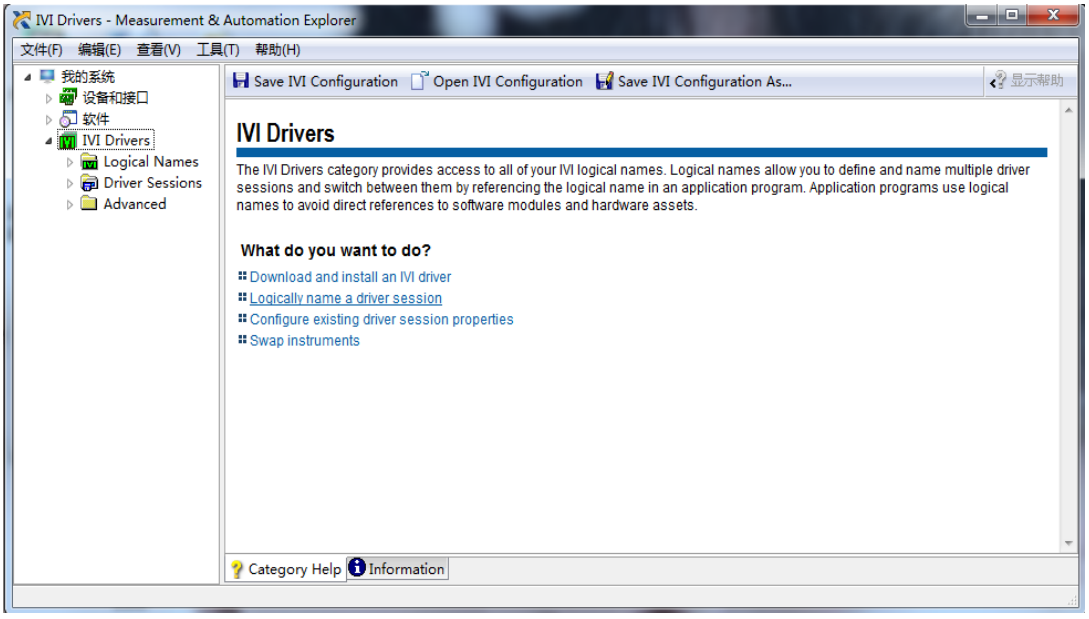
https://www.ni.com/zh-cn/support/downloads/drivers/download.ivi-compliance-package.html#329444

If the IVI Compliance Package is not installed, there is no IVI Drivers option in "My System".

a. Install the IVI Compliance Package (ICP).



b. Restart your computer after the installation. After the reboot, the IVI Drivers option appears.



SDM IVI-C Driver Package List

The SDM IVI-C driver package provides three kinds of files: sdm.dll file, sdm.lib file and sdm.h file.

File	Description
sdm.dll / sdm64.dll	A dynamic link library file, including variables, functions, and data interfaces for various attributes.
sdm.lib / sdm64.lib	An import library file, including the symbolic name and optional identification number of each exported function in the sdm.dll file.
sdm.h	A header file, including declarations of variables, functions, and data interfaces.

You include the sdm.h when programming the Siglent Digital Multimeters with the IVI driver, and load the sdm.dll dynamic file or sdm.lib import library file into your own project.

You will find an example that show you how to use these files at the end of this document.

Introduction to IVI

IVI (Interchangeable Virtual Instruments) is a new generation of instrument driver technology specifications introduced by the IVI Foundation. IVI can realize the interchangeability with the instrument, the instrument simulation, and the instrument state tracking and buffer function. All references to IVI drivers in this document refer to IVI-C drivers that are created using NI tools and that rely on the IVI Engine.

IVI Data Type

There are five data types for the attributes of the IVI Engine: ViInt32, ViReal64, ViString, ViBoolean, and ViSession.

Table 1 Data Type

Data Type	Description
ViInt32	32-bit signed integer
ViReal64	64-bit floating-point number
ViString	String type
ViBoolean	Boolean value
ViSession	A VISA session handle

IVI Attribute Access Functions

SetAttribute

- ViStatus sdm_SetAttributeViInt32 (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 value);

Name	Type	Description
vi	ViSession	Returns a ViSession handle that you use to identify the session in subsequent function calls.
channelName	ViConstString	If the attribute you specify is based on a repeated capability, pass a repeated capability identifier.
attribute	ViAttr	Pass the ID of an attribute.
value	ViInt32	Pass the value to which you want to set the attribute.

- ViStatus sdm_SetAttributeViInt64 (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt64 value);

Name	Type	Description
vi	ViSession	Returns a ViSession handle that you use to identify the session in subsequent function calls.
channelName	ViConstString	If the attribute you specify is based on a repeated capability, pass a repeated capability identifier.
attribute	ViAttr	Pass the ID of an attribute.
value	ViInt64	Pass the value to which you want to set the attribute.

- ViStatus sdm_SetAttributeViReal64 (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);

Name	Type	Description
vi	ViSession	Returns a ViSession handle that you use to identify the session in subsequent function calls.
channelName	ViConstString	If the attribute you specify is based on a repeated capability, pass a repeated capability identifier.
attribute	ViAttr	Pass the ID of an attribute.
value	ViReal64	Pass the value to which you want to set the attribute.

- ViStatus sdm_SetAttributeViString (ViSession vi, ViConstString channelName, ViAttr attribute, ViConstString value);

Name	Type	Description
vi	ViSession	Returns a ViSession handle that you use to identify the session in subsequent function calls.
channelName	ViConstString	If the attribute you specify is based on a repeated capability, pass a repeated capability identifier.
attribute	ViAttr	Pass the ID of an attribute.
value	ViConstString	Pass the value to which you want to set the attribute.

- ViStatus sdm_SetAttributeViSession (ViSession vi, ViConstString channelName, ViAttr attribute, ViSession value);

Name	Type	Description
vi	ViSession	Returns a ViSession handle that you use to identify the session in subsequent function calls.
channelName	ViConstString	If the attribute you specify is based on a repeated capability, pass a repeated capability identifier.
attribute	ViAttr	Pass the ID of an attribute.
value	ViSession	Pass the value to which you want to set the attribute.

- ViStatus sdm_SetAttributeViBoolean (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Name	Type	Description
vi	ViSession	Returns a ViSession handle that you use to identify the session in subsequent function calls.
channelName	ViConstString	If the attribute you specify is based on a repeated capability, pass a repeated capability identifier.
attribute	ViAttr	Pass the ID of an attribute.
value	ViBoolean	Pass the value to which you want to set the attribute.

GetAttribute

- ViStatus sdm_GetAttributeViInt32 (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 *value);

Name	Type	Description
vi	ViSession	Returns a ViSession handle that you use to identify the session in subsequent function calls.
channelName	ViConstString	If the attribute you specify is based on a repeated capability, pass a repeated capability identifier.
attribute	ViAttr	Pass the ID of an attribute.
value	ViInt32 *	Returns the current value of the attribute.

- ViStatus sdm_GetAttributeViInt64 (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt64 *value);

Name	Type	Description
vi	ViSession	Returns a ViSession handle that you use to identify the session in subsequent function calls.
channelName	ViConstString	If the attribute you specify is based on a repeated capability, pass a repeated capability identifier.
attribute	ViAttr	Pass the ID of an attribute.
value	ViInt64 *	Returns the current value of the attribute.

- ViStatus sdm_GetAttributeViReal64 (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value);

Name	Type	Description
vi	ViSession	Returns a ViSession handle that you use to identify the session in subsequent function calls.
channelName	ViConstString	If the attribute you specify is based on a repeated capability, pass a repeated capability identifier.
attribute	ViAttr	Pass the ID of an attribute.
value	ViReal64 *	Returns the current value of the attribute.

- ViStatus sdm_GetAttributeViString (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 bufSize, ViChar value []);

Name	Type	Description
vi	ViSession	Returns a ViSession handle that you use to identify the session in subsequent function calls.
channelName	ViConstString	If the attribute you specify is based on a repeated capability, pass a repeated capability identifier.
attribute	ViAttr	Pass the ID of an attribute.
bufSize	ViInt32	Pass the number of bytes in the ViChar array you specify for the Attribute Value parameter.
value	ViChar	The buffer in which the function returns the current value of the attribute.

- ViStatus sdm_GetAttributeViSession (ViSession vi, ViConstString channelName, ViAttr attribute, ViSession *value);

Name	Type	Description
vi	ViSession	Returns a ViSession handle that you use to identify the session in subsequent function calls.
channelName	ViConstString	If the attribute you specify is based on a repeated capability, pass a repeated capability identifier.
attribute	ViAttr	Pass the ID of an attribute.
value	ViSession *	Returns the current value of the attribute.

- ViStatus sdm_GetAttributeViBoolean (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

Name	Type	Description
vi	ViSession	Returns a ViSession handle that you use to identify the session in subsequent function calls.
channelName	ViConstString	If the attribute you specify is based on a repeated capability, pass a repeated capability identifier.
attribute	ViAttr	Pass the ID of an attribute.
value	ViBoolean *	Returns the current value of the attribute.

CheckAttribute

- ViStatus sdm_CheckAttributeViInt32 (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 value);

Name	Type	Description
vi	ViSession	Returns a ViSession handle that you use to identify the session in subsequent function calls.
channelName	ViConstString	If the attribute you specify is based on a repeated capability, pass a repeated capability identifier.
attribute	ViAttr	Pass the ID of an attribute.
value	ViInt32	Pass the value which you want to verify as a valid value for the attribute given the current settings of the instrument session.

- ViStatus sdm_CheckAttributeViInt64 (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt64 value);

Name	Type	Description
vi	ViSession	Returns a ViSession handle that you use to identify the session in subsequent function calls.
channelName	ViConstString	If the attribute you specify is based on a repeated capability, pass a repeated capability identifier.
attribute	ViAttr	Pass the ID of an attribute.
value	ViInt64	Pass the value which you want to verify as a valid value for the attribute given the current settings of the instrument session.

- ViStatus sdm_CheckAttributeViReal64 (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);

Name	Type	Description
vi	ViSession	Returns a ViSession handle that you use to identify the session in subsequent function calls.
channelName	ViConstString	If the attribute you specify is based on a repeated capability, pass a repeated capability identifier.
attribute	ViAttr	Pass the ID of an attribute.
value	ViReal64	Pass the value which you want to verify as a valid value for the attribute given the current settings of the instrument session.

- ViStatus sdm_CheckAttributeViString (ViSession vi, ViConstString channelName, ViAttr attribute, ViConstString value);

Name	Type	Description
vi	ViSession	Returns a ViSession handle that you use to identify the session in subsequent function calls.
channelName	ViConstString	If the attribute you specify is based on a repeated capability, pass a repeated capability identifier.
attribute	ViAttr	Pass the ID of an attribute.
value	ViConstString	Pass the value which you want to verify as a valid value for the attribute given the current settings of the instrument session.

- ViStatus sdm_CheckAttributeViSession (ViSession vi, ViConstString channelName, ViAttr attribute, ViSession value);

Name	Type	Description
vi	ViSession	Returns a ViSession handle that you use to identify the session in subsequent function calls.
channelName	ViConstString	If the attribute you specify is based on a repeated capability, pass a repeated capability identifier.
attribute	ViAttr	Pass the ID of an attribute.
value	ViSession	Pass the value which you want to verify as a valid value for the attribute given the current settings of the instrument session.

- ViStatus sdm_CheckAttributeViBoolean (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Name	Type	Description
vi	ViSession	Returns a ViSession handle that you use to identify the session in subsequent function calls.
channelName	ViConstString	If the attribute you specify is based on a repeated capability, pass a repeated capability identifier.
attribute	ViAttr	Pass the ID of an attribute.
value	ViBoolean	Pass the value which you want to verify as a valid value for the attribute given the current settings of the instrument session.

Attribute

This chapter describes the attributes of the SIGLENT IVI driver. The following table lists the supported IVI base class attributes and SIGLENT custom attributes.

Basic Operation		SDM_ATTR_FUNCTION SDM_ATTR_RANGE SDM_ATTR_RESOLUTION_ABSOLUTE SDM_ATTR_TRIGGER_DELAY SDM_ATTR_TRIGGER_SOURCE
Source	Current	SDM_ATTR_CURRENT_AC_RANGE SDM_ATTR_CURRENT_AC_RANGE_AUTO SDM_ATTR_CURRENT_AC_NULL_VALUE SDM_ATTR_CURRENT_AC_NULL_STATE SDM_ATTR_CURRENT_AC_NULL_AUTO SDM_ATTR_CURRENT_AC_BANDWIDTH SDM_ATTR_CURRENT_DC_RANGE SDM_ATTR_CURRENT_DC_RANGE_AUTO SDM_ATTR_CURRENT_DC_NULL_VALUE SDM_ATTR_CURRENT_DC_NULL_AUTO SDM_ATTR_CURRENT_DC_NULL_STATE SDM_ATTR_CURRENT_DC_NPLC SDM_ATTR_CURRENT_DC_AZ_STATE SDM_ATTR_CURRENT_DC_FILTER
	Voltage	SDM_ATTR_VOLTAGE_AC_RANGE SDM_ATTR_VOLTAGE_AC_RANGE_AUTO SDM_ATTR_VOLTAGE_AC_NULL_VALUE SDM_ATTR_VOLTAGE_AC_NULL_AUTO SDM_ATTR_VOLTAGE_AC_NULL_STATE SDM_ATTR_VOLTAGE_AC_BANDWIDTH SDM_ATTR_VOLTAGE_DC_RANGE SDM_ATTR_VOLTAGE_DC_RANGE_AUTO SDM_ATTR_VOLTAGE_DC_NULL_VALUE SDM_ATTR_VOLTAGE_DC_NULL_AUTO SDM_ATTR_VOLTAGE_DC_NULL_STATE SDM_ATTR_VOLTAGE_DC_AZ_STATE SDM_ATTR_VOLTAGE_DC_FILTER SDM_ATTR_VOLTAGE_DC_NPLC SDM_ATTR_VOLTAGE_DC_IMPEDANCE
	Resistance	SDM_ATTR_RES_RANGE

		SDM_ATTR_RES_NULL_VALUE SDM_ATTR_RES_RANGE_AUTO SDM_ATTR_RES_NULL_AUTO SDM_ATTR_RES_NULL_STATE SDM_ATTR_RES_NPLC SDM_ATTR_RES_AZ_STATE SDM_ATTR_FRES_RANGE SDM_ATTR_FRES_RANGE_AUTO SDM_ATTR_FRES_NULL_VALUE SDM_ATTR_FRES_NULL_AUTO SDM_ATTR_FRES_NULL_STATE SDM_ATTR_FRES_AZ_STATE SDM_ATTR_FRES_NPLC
	Frequency	SDM_ATTR_FREQ_VOLT_RANGE SDM_ATTR_FREQ_VOLT_RANGE_AUTO SDM_ATTR_FREQ_NULL_VALUE SDM_ATTR_FREQ_NULL_AUTO SDM_ATTR_FREQ_NULL_STATE SDM_ATTR_FREQ_APERTURE
	Period	SDM_ATTR_PER_VOLT_RANGE SDM_ATTR_PER_VOLT_RANGE_AUTO SDM_ATTR_PER_NULL_VALUE SDM_ATTR_PER_NULL_AUTO SDM_ATTR_PER_NULL_STATE SDM_ATTR_PER_APERTURE
	Temperature	SDM_ATTR_TEMP_NULL_VALUE SDM_ATTR_TEMP_NULL_AUTO SDM_ATTR_TEMP_NULL_STATE SDM_ATTR_TEMP_UNIT
	Capacitance	SDM_ATTR_CAP_RANGE SDM_ATTR_CAP_NULL_VALUE SDM_ATTR_CAP_RANGE_AUTO SDM_ATTR_CAP_NULL_AUTO SDM_ATTR_CAP_NULL_STATE
	Continuity	SDM_ATTR_CONT_THRESHOLD SDM_ATTR_CONT_VOLUME
	Diode	SDM_ATTR_DIODE_VOLUME
	Calculate	SDM_ATTR_CALCULATE_CLEAR SDM_ATTR_CALC_LIMIT_CLEAR SDM_ATTR_CALC_LIMIT_UPPER

		SDM_ATTR_CALC_LIMIT_LOWER SDM_ATTR_CALC_LIMIT_STATE SDM_ATTR_CALC_TRANSFORM_HIST_ALL SDM_ATTR_CALC_TRANSFORM_HIST_DATA SDM_ATTR_CALC_TRANSFORM_HIST_CLEAR SDM_ATTR_CALC_TRANSFORM_HIST_COUNT SDM_ATTR_CALC_TRANSFORM_HIST_POINT SDM_ATTR_CALC_TRANSFORM_HIST_RANGE_AUTO SDM_ATTR_CALC_TRANSFORM_HIST_RANGE_LOWER SDM_ATTR_CALC_TRANSFORM_HIST_RANGE_UPPER SDM_ATTR_CALC_TRANSFORM_HIST_STATE SDM_ATTR_CALC_SCALE_STATE SDM_ATTR_CALC_SCALE_FUNCTION SDM_ATTR_CALC_SCALE_DB_REFERENCE SDM_ATTR_CALC_SCALE_DBM_REFERENCE SDM_ATTR_CALC_SCALE_REFERENCE_AUTO SDM_ATTR_CALC_AVERAGE_ALL SDM_ATTR_CALC_AVERAGE_AVERAGE SDM_ATTR_CALC_AVERAGE_COUNT SDM_ATTR_CALC_AVERAGE_MAXIMUM SDM_ATTR_CALC_AVERAGE_MINIMUM SDM_ATTR_CALC_AVERAGE_PTPEAK SDM_ATTR_CALC_AVERAGE_SDEVIATION SDM_ATTR_CALC_AVERAGE_CLEAR SDM_ATTR_CALC_AVERAGE_STATE
	Trigger	SDM_ATTR_TRIG_DELAY_AUTO SDM_ATTR_TRIGGER_COUNT SDM_ATTR_TRIGGER_SLOPE SDM_ATTR_SAMPLE_COUNT
	System	SDM_ATTR_BEEP_STATE
	Data	SDM_ATTR_DATA_READ SDM_ATTR_DATA_LAST SDM_ATTR_DATA_POINT SDM_ATTR_DATA_READ_POINT SDM_ATTR_DATA_READ_REMOVE
	Others	SDM_ATTR_AUTO_ZERO SDM_ATTR_AUTO_RANGE_VALUE SDM_ATTR_ID_QUERY_RESPONSE

Basic Operation

Attributes that control the basic features of the Digital Multimeter.

SDM_ATTR_FUNCTION

Description

Measurement function.

Data type

ViInt32

Access

R/W

Common Control Functions

ViStatus **sdm_SetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 value);

ViStatus **sdm_GetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 *value);

Value Range

Explaination	Discrete Value	Value
	SDM_VAL_DC_VOLTS	1
	SDM_VAL_AC_VOLTS	2
	SDM_VAL_DC_CURRENT	3
	SDM_VAL_AC_CURRENT	4
	SDM_VAL_2_WIRE_RES	5
	SDM_VAL_4_WIRE_RES	101
	SDM_VAL_FREQ	104
	SDM_VAL_PERIOD	105
	SDM_VAL_TEMPERATURE	108
	SDM_VAL_DIODE	1001
	SDM_VAL_CONTINUITY	1002
	SDM_VAL_CAPACITANCE	1003

SDM_ATTR_RANGE

Description	Measurement function mode.
Data type	ViReal64
Access	R / W
Common Control Functions	ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value); ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);
Value Range	NULL

SDM_ATTR_RESOLUTION_ABSOLUTE

Description	Measurement Accuracy.
Data Type	ViReal64
Access	R / W
Common Control Functions	ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value); ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);
Value Range	1E-7 ~ 1E+1.
Associated Attributes	SDM_ATTR_FUNCTION and SDM_ATTR_RANGE.

SDM_ATTR_TRIGGER_DELAY

Description

Sets the delay between the trigger signal and the first measurement.

Data Type

ViReal64

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value);

ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);

Value Range

SDM4065A:

1 ~ 3600 (Unit: s).

SDM3045X/SDM3055X-E/SDM3055X/SDM3065X:

1 ~ 900 (Unit: s).

SDM_ATTR_TRIGGER_SOURCE

Description

Select measurement trigger source.

Data Type

ViInt32

Access

R / W

Common Control Functions

ViStatus **sdm_SetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 value);

ViStatus **sdm_GetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 *value);

Value Range

Explaination	Discrete Value	Value
Immediate	SDM_VAL_IMMEDIATE	1
External	SDM_VAL_EXTERNAL	2
Bus	SDM_VAL_SOFTWARE_TRIGGER	3
Internal	SDM_VAL_INTERNAL	4

Source

SDM_ATTR_CURRENT_AC_RANGE

Description Select a fixed measurement range for AC current measurements.

Data type ViReal64

Access R / W

Common Control Functions ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value);

ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);

Value Range 2e-4 ~ 10.0 (Unit: A).

Associated Attributes SDM_ATTR_CURENT_AV_RANGE_AUTO

SDM_ATTR_CURRENT_AC_RANGE_AUTO

Description Disables or enables autoranging for AC current measurements.

Data type ViBoolean

Access R / W

Common Control Functions ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

Associated Attributes SDM_ATTR_CURENT_AC_RANGE.

SDM_ATTR_CURRENT_AC_NULL_STATE

Description

Enables or disables the null function for AC current measurements.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

SDM_ATTR_CURRENT_AC_NULL_AUTO

Description

Enables or disables automatic null value selection for AC current measurements.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

Associated Attributes

SDM_ATTR_CURRENT_AC_NULL_STATE

SDM_ATTR_CURRENT_AC_NULL_VALUE

Description	Sets the null value for AC current measurements.
Data type	ViReal64
Access	R/W
Common Control Functions	ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value); ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);
Value Range	-11 ~ 11(Unit: A).
Note	To use the zero value, you must first set the SDM_ATTR_CURRENT_AC_NULL_STATE attribute zero switch, and set the SDM_ATTR_CURRENT_AC_NULL_AUTO attribute to disable automatic zero value selection before it can take effect.
Associated Attributes	SDM_ATTR_CURRENT_AC_NULL_STATE SDM_ATTR_CURRENT_AC_NULL_STATE

SDM_ATTR_CURRENT_AC_BANDWIDTH

Description	Sets the bandwidth for AC current measurements.
Data type	ViReal64
Access	R/W
Common Control Functions	ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value); ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);
Value Range	0 ~ 200.
Note	Applies only to the SDM3065X and SDM4065A.

SDM_ATTR_CURRENT_DC_RANGE

Description

Select a fixed measurement range for DC current measurements.

Data type

ViReal64

Access

R/W

Common Control Functions

ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value);

ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);

Value Range

2E-4 ~ 10.0(Unit: A).

Associated Attributes

SDM_ATTR_CURRENT_DC_RANGE_AUTO

SDM_ATTR_CURRENT_DC_RANGE_AUTO

Description

Disables or enables autoranging for DC current measurements.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

Associated Attributes

SDM_ATTR_CURRENT_DC_RANGE

SDM_ATTR_CURRENT_DC_NULL_STATE

Description

Enables or disables the null function for DC current measurements.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

SDM_ATTR_CURRENT_DC_NULL_AUTO

Description

Enables or disables automatic null value selection for DC current measurements.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

Associated Attributes

SDM_ATTR_CURRENT_DC_NULL_STATE

SDM_ATTR_CURRENT_DC_NULL_VALUE

Description	Sets the null value for DC current measurements.
Data type	ViReal64
Access	R/W
Common Control Functions	ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value); ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);
Value Range	-11 ~ 11(Unit: A).
Associated Attributes	SDM_ATTR_CURRENT_DC_NULL_STATE SDM_ATTR_CURRENT_DC_NULL_AUTO

SDM_ATTR_CURRENT_DC_NPLC

Description	Sets the integration time in number of power line cycles (PLC) for DC current measurements.
Data type	ViReal64
Access	R/W
Common Control Functions	ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value); ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);
Value Range	SDM3045X/SDM3055X-E/SDM3055X: 0.3 ~ 10 SDM3065X: 0.005 ~ 100 SDM4065A: 0.001 ~ 100

SDM_ATTR_CURRENT_DC_AZ_STATE

Description

Disables or enables the autozero mode for DC current measurements.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

SDM_ATTR_CURRENT_DC_FILTER

Description

Sets the filter switch configuration for DC current measurement mode.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

Note

Applies only to the SDM3045X, SDM3055X-E, SDM3065X and SDM4065A.

SDM_ATTR_VOLTAGE_AC_RANGE

Description Select a fixed measurement range for AC voltage measurements.

Data type ViReal64

Access R/W

Common Control Functions ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value);

ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);

Value Range 0.2 ~ 750 (Unit: V).

Associated Attributes SDM_ATTR_VOLTAGE_AC_RANGE_AUTO

SDM_ATTR_VOLTAGE_AC_RANGE_AUTO

Description Disables or enables autoranging for AC voltage measurements.

Data type ViBoolean

Access R / W

Common Control Functions ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

Associated Attributes SDM_ATTR_VOLTAGE_AC_RANGE

SDM_ATTR_VOLTAGE_AC_NULL_STATE

Description

Enables or disables the null function for AC voltage measurements.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

SDM_ATTR_VOLTAGE_AC_NULL_AUTO

Description

Enables or disables automatic null value selection for AC voltage measurements.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

Associated Attributes

SDM_ATTR_VOLTAGE_AC_NULL_STATE

SDM_ATTR_VOLTAGE_AC_NULL_VALUE

Description	Sets the null value for AC voltage measurements.
Data type	ViReal64
Access	R / W
Common Control Functions	ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value); ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);
Value Range	-825 ~ +825(Unit: V).
Associated Attributes	SDM_ATTR_VOLTAGE_AC_NULL_STATE SDM_ATTR_VOLTAGE_AC_NULL_AUTO

SDM_ATTR_VOLTAGE_AC_BANDWIDTH

Description	Sets the bandwidth for AC voltage measurements.
Data type	ViReal64
Access	R/W
Common Control Functions	ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value); ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);
Value Range	0 ~ 200.
Note	Applies only to the SDM3065X and SDM4065A.

SDM_ATTR_VOLTAGE_DC_RANGE

Description Select a fixed measurement range for DC voltage measurements.

Data type ViReal64

Access R/W

Common Control Functions ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value);

ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);

Value Range 0.2 ~ 1000(Unit: V).

Associated Attributes SDM_ATTR_VOLTAGE_DC_RANGE_AUTO

SDM_ATTR_VOLTAGE_DC_RANGE_AUTO

Description Disables or enables autoranging for DC voltage measurements.

Data type ViBoolean

Access R / W

Common Control Functions ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

Associated Attributes SDM_ATTR_VOLTAGE_DC_RANGE

SDM_ATTR_VOLTAGE_DC_NULL_STATE

Description

Enables or disables the null function for DC voltage measurements.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

SDM_ATTR_VOLTAGE_DC_NULL_AUTO

Description

Enables or disables automatic null value selection for DC voltage measurements.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

Associated Attributes

SDM_ATTR_VOLTAGE_DC_NULL_STATE

SDM_ATTR_VOLTAGE_DC_NULL_VALUE

Description

Sets the null value for AC voltage measurements.

Data type

ViReal64

Access

R/W

Common Control Functions

ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value);

ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);

Value Range

-1100 ~ 1100.

Associated Attributes

SDM_ATTR_VOLTAGE_DC_NULL_STATE
SDM_ATTR_VOLTAGE_DC_NULL_AUTO

SDM_ATTR_VOLTAGE_DC_AZ_STATE

Description

Disables or enables the autozero mode for DC voltage measurements.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

SDM_ATTR_VOLTAGE_DC_FILTER

Description

Sets the filter switch configuration for DC voltage measurement mode.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

Note

Applies only to the SDM3045X, SDM3055X-E, SDM3065X and SDM4065A

SDM_ATTR_VOLTAGE_DC_NPLC

Description

Sets the integration time in number of power line cycles (PLC) for DC voltage measurements.

Data type

ViReal64

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value);

ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);

Value Range

0.001 ~ 100.

Note:

SDM3045X/SDM3055X-E/SDM3055X: 0.3 ~ 10

SDM3065X: 0.005 ~ 100

SDM4065A: 0.001 ~ 100

SDM_ATTR_VOLTAGE_DC_IMPEDANCE

Description

Disables or enables automatic input impedance mode for DC voltage and ratio measurements.

Data type

ViInt32

Access

R / W

Common Control Functions

ViStatus **sdm_SetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 value);

ViStatus **sdm_GetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 *value);

Value Range

Explaination	Discrete Value	Value
10M	SDM_VAL_VOLT_DC_IMPENDANCE_10M	0
10G	SDM_VAL_VOLT_DC_IMPENDANCE_10G	1

Note

SDM3045X:

Applies only when range is 600mV.

SDM3055X / SDM3055X-E

Applies only when range is 200mV and 2V.

SDM3065X / SDM4065A

Applies only when range is 200mV, 2V and 20V.

SDM_ATTR_RES_RANGE

Description

Select a fixed measurement range for 2-wire resistance measurements.

Data type

ViReal64

Access

R/W

Common Control Functions

ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value);

ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);

Value Range

200 ~ 1E+8.

Associated Attributes

SDM_ATTR_RES_RANGE_AUTO

SDM_ATTR_RES_RANGE_AUTO

Description

Disables or enables autoranging for Resistance measurements.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

Associated Attributes

SDM_ATTR_RES_RANGE

SDM_ATTR_RES_NULL_STATE

Description

Enables or disables the null function for 2-wire resistance measurements.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

SDM_ATTR_RES_NULL_AUTO

Description

Enables or disables automatic null value selection for 2-wire resistance measurements.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

Associated Attributes

SDM_ATTR_RES_NULL_STATE

SDM_ATTR_RES_NULL_VALUE

Description

Sets the null value for 2-wire resistance measurements.

Data type

ViReal64

Access

R/W

Common Control Functions

ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value);

ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);

Value Range

1.1E+8 ~ 1.1E+8(Unit: Ω).

Associated Attributes

SDM_ATTR_RES_NULL_STATE
SDM_ATTR_RES_NULL_AUTO

SDM_ATTR_RES_NPLC

Description

Sets the integration time in number of power line cycles (PLC) for 2-wire resistance current measurements.

Data type

ViReal64

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value);

ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);

Value Range

SDM3045X/SDM3055X-E/SDM3055X: 0.3 ~ 10

SDM3065X: 0.005 ~ 100

SDM4065A: 0.001 ~ 100

SDM_ATTR_RES_AZ_STATE

Description

Disables or enables the autozero mode for 2-wire resistance measurements.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

SDM_ATTR_FRES_RANGE

Description Select a fixed measurement range for 4-wire resistance measurements.

Data type ViReal64

Access R/W

Common Control Functions ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value);

ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);

Value Range 200 ~ 1E+8.

Associated Attributes SDM_ATTR_FRES_RANGE_AUTO

SDM_ATTR_FRES_RANGE_AUTO

Description Disables or enables autoranging for 4-wire resistance measurements.

Data type ViBoolean

Access R / W

Common Control Functions ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

Associated Attributes SDM_ATTR_FRES_RANGE

SDM_ATTR_FRES_NULL_STATE

Description

Enables or disables the null function for 4-wire resistance measurements.

Data type

ViBoolean

Accesss

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

SDM_ATTR_FRES_NULL_AUTO

Description

Enables or disables automatic null value selection for 4-wire resistance measurements.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

Associated Attributes

SDM_ATTR_FRES_NULL_STATE

SDM_ATTR_FRES_NULL_VALUE

Description

Sets the null value for 4-wire resistance measurements.

Data type

ViReal64

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value);

ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);

Value Range

-1.1E+8 ~ 1.1E+8 (Unit: Ω).

Associated Attributes

SDM_ATTR_FRES_NULL_STATE
SDM_ATTR_FRES_NULL_AUTO

SDM_ATTR_FRES_AZ_STATE

Description

Disables or enables the autozero mode for 4-wire resistance measurements.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

SDM_ATTR_FRES_NPLC

Description	Sets the integration time in number of power line cycles (PLC) for 4-wire resistance measurements.
Data type	ViReal64
Access	R / W
Common Control Functions	ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value); ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);
Value Range	SDM3045X/SDM3055X-E/SDM3055X: 0.3 ~ 10 SDM3065X: 0.005 ~ 100 SDM4065A: 0.001 ~ 100

SDM_ATTR_FREQ_VOLT_RANGE

Description	Select a fixed measurement range for frequency measurements.
Data type	ViReal64
Access	R / W
Common Control Functions	ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value); ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);
Value Range	0.2 ~ 750 (Unit: V).
Associated Attributes	SDM_ATTR_FREQ_VOLT_RANGE_AUTO

SDM_ATTR_FREQ_VOLT_RANGE_AUTO

Description

Disables or enables autoranging for Frequency measurements.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

Associated Attributes

SDM_ATTR_FREQ_VOLT_RANGE

SDM_ATTR_FREQ_NULL_STATE

Description

Enables or disables the null function for frequency measurements.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

SDM_ATTR_FREQ_NULL_AUTO

Description

Enables or disables automatic null value selection for frequency measurements.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

Associated Attributes

SDM_ATTR_FREQ_NULL_STATE

SDM_ATTR_FREQ_NULL_VALUE

Description

Sets the null value for frequency measurements.

Data type

ViReal64

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value);

ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);

Value Range

-1.1E+6 ~ 1.1E+6 (Unit: V).

Associated Attributes

SDM_ATTR_FREQ_NULL_STATE
SDM_ATTR_FREQ_NULL_AUTO

SDM_ATTR_FREQ_APERTURE

Description	Sets the aperture time (gate time) for frequency measurements.
Data type	ViReal64
Access	R / W
Common Control Functions	ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value); ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);
Value Range	0.01~ 1 (Unit: s).

SDM_ATTR_PER_VOLT_RANGE

Description	Select a fixed measurement range for period measurements.
Data type	ViReal64
Access	R / W
Common Control Functions	ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value); ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);
Value Range	0.2 ~ 750 (Unit: V).
Associated Attributes	SDM_ATTR_PER_VOLT_RANGE_AUTO

SDM_ATTR_PER_VOLT_RANGE_AUTO

Description

Disables or enables autoranging for Period measurements.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

Associated Attributes

SDM_ATTR_PER_VOLT_RANGE

SDM_ATTR_PER_NULL_STATE

Description

Enables or disables the null function for period measurements.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

SDM_ATTR_PER_NULL_AUTO

Description

Enables or disables automatic null value selection for period measurements.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

Associated Attributes

SDM_ATTR_PER_NULL_STATE

SDM_ATTR_PER_NULL_VALUE

Description

Sets the null value for period measurements.

Data type

ViReal64

Access

R/W

Common Control Functions

ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value);

ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);

Value Range

-1.2E+6 ~ 1.2E+6.

Associated Attributes

SDM_ATTR_PER_NULL_STATE
SDM_ATTR_PER_NULL_AUTO

SDM_ATTR_PER_APERTURE

Description Sets the aperture time (gate time) for period measurements.

Data type ViReal64

Access R / W

Common Control Functions ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value);

ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);

Value Range 0.001 ~ 1 (Unit: s).

SDM_ATTR_TEMP_NULL_STATE

Description Enables or disables the null function for temperature measurements.

Data type ViBoolean

Access R / W

Common Control Functions ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

SDM_ATTR_TEMP_NULL_AUTO

Description

Enables or disables automatic null value selection for temperature measurements.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

Associated Attributes

SDM_ATTR_TEMP_NULL_STATE

SDM_ATTR_TEMP_NULL_VALUE

Description

Sets the null value for temperature measurements.

Data type

ViReal64

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value);

ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);

Value Range

-1.0E+15 ~ 1.0E+15.

Associated Attributes

SDM_ATTR_TEMP_NULL_STATE
SDM_ATTR_TEMP_NULL_AUTO

SDM_ATTR_TEMP_UNIT

Description

Select the units to use when measuring temperature.

Data type

ViInt32

Access

R / W

Common Control Functions

ViStatus **sdm_SetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 value);

ViStatus **sdm_GetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 *value);

Value Range

Explaination	Discrete Value	Value
	SDM_VAL_TEMP_UNIT_C	0
	SDM_VAL_TEMP_UNIT_F	1
	SDM_VAL_TEMP_UNIT_K	2

SDM_ATTR_CAP_RANGE

Description

Select a fixed measurement range for capacitance measurements.

Data type

ViReal64

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value);

ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);

Value Range

+2.0E-6 ~ 1.0E-1 (Unit: F).

Associated Attributes

SDM_ATTR_CAP_RANGE_AUTO

SDM_ATTR_CAP_RANGE_AUTO

Description

Disables or enables autoranging for temperature measurements.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

Associated Attributes

SDM_ATTR_CAP_RANGE

SDM_ATTR_CAP_NULL_STATE

Description

Enables or disables the null function for capacitance measurements.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

SDM_ATTR_CAP_NULL_AUTO

Description

Enables or disables automatic null value selection for capacitance measurements.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

Associated Attributes

SDM_ATTR_CAP_NULL_STATE

SDM_ATTR_CAP_NULL_VALUE

Description

Sets the null value for capacitance measurements.

Data type

ViReal64

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value);

ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);

Value Range

-1.1E+3 ~ +1.1E+3 (Unit: F).

Associated Attributes

SDM_ATTR_CAP_NULL_STATE
SDM_ATTR_CAP_NULL_AUTO

SDM_ATTR_CONT_THRESHOLD

Description

Set connectivity measurement threshold resistor value.

Data type

ViReal64

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value);

ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);

Value Range

0 ~ 2000 (Unit: Ω).

SDM_ATTR_CONT_VOLUME

Description

Sets the volume of the buzzer for continuity measurement.

Data type

ViInt32

Access

R / W

Common Control Functions

ViStatus **sdm_SetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 value);

ViStatus **sdm_GetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 *value);

Value Range

Explaination	Discrete Value	Value
	SDM_VAL_CONT_VOLUME_LOW	0
	SDM_VAL_ CONT_VOLUME_MIDDLE	1
	SDM_VAL_ CONT_VOLUME_HIGH	2

SDM_ATTR_DIODE_VOLUME

Description

Sets the volume of the buzzer for diode measurement.

Data type

ViInt32

Access

R / W

Common Control Functions

ViStatus **sdm_SetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 value);

ViStatus **sdm_GetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 *value);

Value Range

Explaination	Discrete Value	Value
	SDM_VAL_ CONT_VOLUME_LOW	0
	SDM_VAL_ CONT_VOLUME_MODDLE	1
	SDM_VAL_ CONT_VOLUME_HIGH	2

SDM_ATTR_TRIG_DELAY_AUTO

Description

Disables or enables automatic trigger delay.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

Associated Attributes

SDM_ATTR_TRIG_DELAY

SDM_ATTR_TRIGGER_COUNT

Description

Selects the number of triggers that are accepted by the instrument before returning to the "idle" trigger state.

Data Type

ViInt32

Access

R / W

Common Control Functions

ViStatus **sdm_SetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 value);

ViStatus **sdm_GetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 *value);

Value Range

1~1E+9

SDM_ATTR_TRIGGER_SLOPE

Description

Selects whether the instrument uses the rising edge (POS) or the falling edge (NEG) of the trigger signal on the rear-panel Ext Trig BNC connector when external triggering is selected; or the rising or falling edge of the input signal when level triggering is selected.

Data Type

ViInt32

Access

R / W

Common Control Functions

ViStatus **sdm_SetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 value);

ViStatus **sdm_GetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 *value);

Value Range

Explaination	Discrete Value	Value
Rising edge	SDM_VAL_POSITIVE	0
Failing edge	SDM_VAL_NEGATIVE	1

SDM_ATTR_SAMPLE_COUNT

Description

Specifies the number of measurements (samples) the instrument takes per trigger.

Data Type

ViInt32

Access

R / W

Common Control Functions

ViStatus **sdm_SetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 value);

ViStatus **sdm_GetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 *value);

Value Range

1 ~ 1,000,000,000

SDM_ATTR_AUTO_ZERO

Description

Disables or enables the autozero mode for measurements.

Data Type

ViInt32

Access

R / W

Common Control Functions

ViStatus **sdm_SetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 value);

ViStatus **sdm_GetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 *value);

Value Range

Explaination	Discrete Value	Value
Enable	SDM_VAL_AUTO_ZERO_ON	0
Disable	SDM_VAL_AUTO_ZERO_OFF	1

SDM_ATTR_AUTO_RANGE_VALUE

Description	Gets a fixed range value of the measurements.
Data Type	ViReal64
Access	RO
Common Control Functions	ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value);
Value Range	NULL

SDM_ATTR_BEEP_STATE

Description	Whether the buzzer sounds when warning.
Data type	ViBoolean
Access	R / W
Common Control Functions	ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value); ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);
Value Range	

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

SDM_ATTR_CALCULATE_CLEAR

Description Clears all limits, histogram data, statistics, and measurements.

Data type ViString

Access WO

Common Control Functions ViStatus **sdm_SetAttributeViString** (ViSession vi, ViConstString channelName, ViAttr attribute, ViConstString value);

Value Range NULL.

Associated Attributes SDM_ATTR_CALC_LIMIT_CLEAR
SDM_ATTR_CALC_TRANSFORM_HIST_CLEAR
SDM_ATTR_CALC_AVERAGE_CLEAR

SDM_ATTR_CALC_LIMIT_STATE

Description Enables or disables limit testing.

Data type ViBoolean

Access R / W

Common Control Functions ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

SDM_ATTR_CALC_LIMIT_CLEAR

Description	Clears front panel indications of limits being exceeded.
Data type	ViString
Access	WO
Common Control Functions	ViStatus **sdm_SetAttributeViString** (ViSession vi, ViConstString channelName, ViAttr attribute, ViConstString value);
Value Range	NULL.
Associated Attributes	SDM_ATTR_CALCULATE_CLEAR SDM_ATTR_CALC_LIMIT_STATE

SDM_ATTR_CALC_LIMIT_UPPER

Description	Sets an upper limit.
Data type	ViReal64
Access	R/W
Common Control Functions	ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value); ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);
Value Range	(-1.0E+15 ~ -1.0E-15) / 0.0(Default) / (+1.0E-15~+1.0E+15).
Associated Attributes	SDM_ATTR_CALC_LIMIT_STATE SDM_ATTR_CALC_LIMIT_LOWER

SDM_ATTR_CALC_LIMIT_LOWER

Description Sets an lower limit.

Data type ViReal64

Access R/W

Common Control Functions

ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value);

ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);

Value Range

(-1.0E+15 ~ -1.0E-15)
/ 0.0(Default)
/ (+1.0E-15~+1.0E+15).

Associated Attributes

SDM_ATTR_CALC_LIMIT_STATE
SDM_ATTR_CALC_LIMIT_UPPER

SDM_ATTR_CALC_TRANSFORM_HIST_STATE

Description Enables or disables histogram computation.

Data type ViBoolean

Access R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

SDM_ATTR_CALC_TRANSFORM_HIST_ALL

Description	Returns a comma-separated list of the lower and upper range values, the number of measurements, and the bin data collected since the last time the histogram data was cleared.
Data type	ViString
Access	RO
Common Control Functions	ViStatus **sdm_GetAttributeViString** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 bufSize, ViChar vale[]);
Value Range	NULL.
Associated Attributes	SDM_ATTR_CALC_TRANSFORM_HIST_STATE

SDM_ATTR_CALC_TRANSFORM_HIST_DATA

Description	Returns only the bin data..
Data type	ViString
Access	WO
Common Control Functions	ViStatus **sdm_SetAttributeViString** (ViSession vi, ViConstString channelName, ViAttr attribute, ViConstString value);
Value Range	NULL.
Associated Attributes	SDM_ATTR_CALC_TRANSFORM_HIST_STATE

SDM_ATTR_CALC_TRANSFORM_HIST_CLEAR

Description	Clears the histogram data and restarts histogram ranging if it is enabled.
Data type	ViString
Access	WO
Common Control Functions	ViStatus **sdm_SetAttributeViString** (ViSession vi, ViConstString channelName, ViAttr attribute, ViConstString value);
Value Range	NULL.
Associated Attributes	SDM_ATTR_CALC_TRANSFORM_HIST_STATE

SDM_ATTR_CALC_TRANSFORM_HIST_COUNT

Description	Returns the number of measurements collected since the last time the histogram was cleared.
Data type	ViInt32
Access	RO
Common Control Functions	ViStatus **sdm_GetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 *value);
Value Range	NULL.
Associated Attributes	SDM_ATTR_CALC_TRANSFORM_HIST_STATE

SDM_ATTR_CALC_TRANSFORM_HIST_POINT

Description

Sets the number of bins between the lower and upper range values for the histogram.

Data type

ViInt32

Access

RO

Common Control Functions

ViStatus **sdm_GetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 *value);

Value Range

SDM4065A: 15/30/60/150/300/600

Others: 10~400

Associated Attributes

SDM_ATTR_CALC_TRANSFORM_HIST_STATE

SDM_ATTR_CALC_TRANSFORM_HIST_RANGE_AUTO

Description

Enables or disables automatic selection of the histogram's lower and upper range values.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

SDM_ATTR_CALC_TRANSFORM_HIST_RANGE_LOWER

Description	Sets the histogram's lower range values.
Data type	ViReal64
Access	R/W
Common Control Functions	ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value); ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);
Value Range	(-1.0E+15 ~ -1.0E-15) / 0.0(Default) / (+1.0E-15~+1.0E+15).
Associated Attributes	SDM_ATTR_CALC_TRANSFORM_HIST_RANGE_AUTO SDM_ATTR_CALC_TRANSFORM_HIST_RANGE_UPPER

SDM_ATTR_CALC_TRANSFORM_HIST_RANGE_UPPER

Description	Sets the histogram's upper range values.
Data type	ViReal64
Access	R / W
Common Control Functions	ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value); ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);
Value Range	(-1.0E+15 ~ -1.0E-15) / 0.0(Default) / (+1.0E-15~+1.0E+15).
Associated Attributes	SDM_ATTR_CALC_TRANSFORM_HIST_RANGE_AUTO SDM_ATTR_CALC_TRANSFORM_HIST_RANGE_LOWER

SDM_ATTR_CALC_SCALE_STATE

Description

Enables or disables the scaling function.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

Note

Only available for ACV and DCV measurement functions.

SDM_ATTR_CALC_SCALE_FUNCTION

Description

Selects the operation performed by the scaling function.

Data type

ViInt32

Access

R / W

Common Control Functions

ViStatus **sdm_SetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 value);

ViStatus **sdm_GetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 *value);

Value Range

Explaination	Discrete Value	Value
DB	SDM_VAL_CALC_SCALE_DB	0
DBM	SDM_VAL_CALC_SCALE_DBM	1

Note

Only available for ACV and DCV measurement functions.

Associated Attributes

SDM_ATTR_CALC_SCALE_STATE

SDM_ATTR_CALC_SCALE_REFERENCE_AUTO

Description

Enables or disables automatic reference selection for the dB scaling functions.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

Associated Attributes

SDM_ATTR_CALC_SCALE_STATE
SDM_ATTR_CALC_SCALE_FUNCTION

SDM_ATTR_CALC_SCALE_DB_REFERENCE

Description

Stores a relative value in the multimeter's dB Relative Register. When the dB function is enabled, this value is subtracted from each voltage measurement after the measurement is converted to dBm.

Data type

ViReal64

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value);

ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);

Value Range

-200.0 dBM ~ +200.0 dBM.

Associated Attributes

SDM_ATTR_CALC_SCALE_FUNCTION

SDM_ATTR_CALC_SCALE_DBM_REFERENCE

Description

Selects the reference resistance for converting voltage measurements to dBm. This reference value affects the dBm and dB scaling functions.

Data type

ViReal64

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value);

ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);

Value Range

SDM4065A:
2,4,8,16,50,75,93,110,124,125,135,150,250,300,500,600,800,900,1000,1200,8000
Other:
50,75,93,110,124,125,135,150,250,300,500,600,800,900,1000,1200,8000

Associated Attributes

SDM_ATTR_CALC_SCALE_FUNCTION

SDM_ATTR_CALC_AVERAGE_STATE

Description

Enables or disables statistics computation.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

SDM_ATTR_CALC_AVERAGE_ALL

Description	Returns the arithmetic mean (average), standard deviation, minimum value and maximum value of all measurements taken since the statistics were last cleared.
Data type	ViString
Access	RO
Common Control Functions	ViStatus **sdm_GetAttributeViString** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 bufSize, ViChar value[]);
Value Range	NULL.
Associated Attributes	SDM_ATTR_CALC_AVERAGE_STATE

SDM_ATTR_CALC_AVERAGE_AVERAGE

Description	Returns the arithmetic mean (average) value of all measurements taken since the statistics were last cleared.
Data type	ViReal64
Access	R/W
Common Control Functions	ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value); ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);
Value Range	NULL.
Associated Attributes	SDM_ATTR_CALC_AVERAGE_STATE SDM_ATTR_CALC_AVERAGE_ALL

SDM_ATTR_CALC_AVERAGE_COUNT

Description	Returns the average count of all measurements taken since the statistics were last cleared.
Data type	ViInt32
Access	RO
Common Control Functions	ViStatus **sdm_GetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 *value);
Value Range	NULL.
Associated Attributes	SDM_ATTR_CALC_AVERAGE_STATE SDM_ATTR_CALC_AVERAGE_ALL

SDM_ATTR_CALC_AVERAGE_MAXIMUM

Description	Returns the arithmetic maximum value of all measurements taken since the statistics were last cleared.
Data type	ViReal64
Access	RO
Common Control Functions	ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value);
Value Range	NULL.
Associated Attributes	SDM_ATTR_CALC_AVERAGE_STATE SDM_ATTR_CALC_AVERAGE_ALL

SDM_ATTR_CALC_AVERAGE_MINIMUM

Description	Returns the peak-to-peak statistics value of all measurements taken since the statistics were last cleared.
Data type	ViReal64
Access	RO
Common Control Functions	ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value);
Value Range	NULL.
Associated Attributes	SDM_ATTR_CALC_AVERAGE_STATE SDM_ATTR_CALC_AVERAGE_ALL

SDM_ATTR_CALC_AVERAGE_PTPEAK

Description	Returns the arithmetic minimum value of all measurements taken since the statistics were last cleared.
Data type	ViReal64
Access	RO
Common Control Functions	ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value);
Value Range	NULL.
Associated Attributes	SDM_ATTR_CALC_AVERAGE_STATE SDM_ATTR_CALC_AVERAGE_ALL

SDM_ATTR_CALC_AVERAGE_SDEVIATION

Description	Returns the arithmetic standard deviation value of all measurements taken since the statistics were last cleared.
Data type	ViReal64
Access	RO
Common Control Functions	ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value);
Value Range	NULL.
Associated Attributes	SDM_ATTR_CALC_AVERAGE_STATE SDM_ATTR_CALC_AVERAGE_ALL

SDM_ATTR_CALC_AVERAGE_CLEAR

Description	Clears all computed statistics: minimum, maximum, average, peak-to-peak, count and standard deviation.
Data type	ViString
Access	WO
Common Control Functions	ViStatus **sdm_SetAttributeViString** (ViSession vi, ViConstString channelName, ViAttr attribute, ViConstString value);
Value Range	NULL.
Associated Attributes	SDM_ATTR_CALC_AVERAGE_STATE

SDM_ATTR_DATA_READ

Description	Starts a new set of measurements, waits for all measurements to complete, and transfers all available measurements.
Data type	ViString
Access	RO
Common Control Functions	ViStatus **sdm_GetAttributeViString** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 bufSize, ViChar value[]);
Value Range	NULL.
Note	

SDM_ATTR_DATA_LAST

Description	Returns the last measurement taken.
Data type	ViReal64
Access	RO
Common Control Functions	ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value);
Value Range	NULL.

SDM_ATTR_DATA_POINT

Description	Returns the total number of measurements currently in reading memory.
Data type	ViInt32
Access	R / W
Common Control Functions	ViStatus **sdm_SetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 value); ViStatus **sdm_GetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 *value);
Value Range	SDM4065A: 1 ~ 2E+6 SDM3045X/SDM3055X-E/SDM3055X/SDM3065X: 1 ~ 10000.

SDM_ATTR_DATA_READ_POINT

Description	Returns the total number of current measurement data.
Data type	ViInt32
Access	R / W
Common Control Functions	ViStatus sdm_SetAttributeViInt32 (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 value); ViStatus sdm_GetAttributeViInt32 (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 *value);
Value Range	SDM4065A: 1 ~ 2E+6 SDM3045X/SDM3055X-E/SDM3055X/SDM3065X: 1 ~ 10000.
Note	
Associated Attributes	SDM_ATTR_DATA_READ_REMOVE

SDM_ATTR_DATA_READ_REMOVE

Description	Reads and erases all measurements from reading memory up to the specified <max_readings>.
Data type	ViString
Access	RO
Common Control Functions	ViStatus **sdm_GetAttributeViString** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 bufSize, ViChar value[]);
Value Range	SDM4065A: 1 ~ 2E+6 SDM3045X/SDM3055X-E/SDM3055X/SDM3065X: 1 ~ 10000.
Associated Attributes	SDM_ATTR_DATA_READ_POINT

SDM_ATTR_ID_QUERY_RESPONSE

Description	Get device information of connected instruments.
Data type	ViString
Access	RO
Common Control Functions	ViStatus **sdm_GetAttributeViString** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 bufSize, ViChar value[]);

SDM_ATTR_SCANNER_SWITCH

Description Turn the scanner function on or off.

Data type ViBoolean

Access R / W

Common Control Functions ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

SDM_ATTR_SCANNER_STATE

Description Check whether the scanner card is installed.

Data type ViBoolean

Access RO

Common Control Function ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

Associated Attributes SDM_ATTR_DATA_READ_POINT

SDM_ATTR_SCANNER_START_SWITCH

Description

Start or stop scanning card measurement.

Data type

ViBoolean

Access

R / W

Common Control Functions

ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

SDM_ATTR_SCANNER_FUNC

Description

Configuring scanner cycle mode.

Data type

ViInt32

Access

R / W

Common Control Functions

ViStatus **sdm_SetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 value);

ViStatus **sdm_GetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 *value);

Value Range

Explaination	Discrete Value	Value
SCAN	SDM_VAL_SCANNER_RUNC_SCAN	0
STEP	SDM_VAL_SCANNER_RUNC_STEP	1

SDM_ATTR_SCANNER_DELAY

Description Configure the delay time of the scanner function.

Data type ViReal64

Access R / W

Common Control Functions ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value);

ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);

Value Range 0s ~ 3600s

SDM_ATTR_SCANNER_COUNT_AUTO

Description Turn on or off the switch of automatic count.

Data type ViBoolean

Access R / W

Common Control Functions ViStatus **sdm_GetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean *value);

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

SDM_ATTR_SCANNER_COUNT

Description	Set the number of cycle measurements.
Data type	ViInt32
Access	R / W
Common Control Functions	ViStatus **sdm_SetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 value); ViStatus **sdm_GetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 *value);
Value Range	1 ~ 1000000.

SDM_ATTR_SCANNER_DATA_POINTS

Description	Returns the total number of measurements in the memory of the current scanner.
Data type	ViInt32
Access	RO
Common Control Functions	ViStatus **sdm_GetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 *value);
Value Range	0 ~ 4000.

SDM_ATTR_SCANNER_LIMIT_HIGH

Description	Set the upper limit measurement channels of the current scanner.
Data type	ViInt32
Access	R / W
Common Control Functions	ViStatus **sdm_SetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 value); ViStatus **sdm_GetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 *value);
Value Range	1 ~ 16
Associated Attributes	SDM_ATTR_SCANNER_LIMIT_LOW SDM_ATTR_SCANNER_MEAS_CHN

SDM_ATTR_SCANNER_LIMIT_LOW

Description	Set the lower limit measurement channels of the current scanner.
Data type	ViInt32
Access	R / W
Common Control Functions	ViStatus **sdm_SetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 value); ViStatus **sdm_GetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 *value);
Value Range	1 ~ 16
Associated Attributes	SDM_ATTR_SCANNER_LIMIT_HIGH SDM_ATTR_SCANNER_MEAS_CHN

SDM_ATTR_SCANNER_MEAS_CHN

Description	Returns the current measurement channel.
Data type	ViInt32
Access	RO
Common Control Functions	ViStatus **sdm_SetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 value); ViStatus **sdm_GetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 *value);
Value Range	1 ~ 16
Associated Attributes	SDM_ATTR_SCANNER_LIMIT_LOW SDM_ATTR_SCANNER_LIMIT_HIGH

SDM_ATTR_SCANNER_RANGE

Description	Returns the current range setting of the scanner function.
Data type	ViString
Access	RO
Common Control Functions	ViStatus **sdm_GetAttributeViString** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 bufSize, ViChar value[]);

SDM_ATTR_SCANNER_FREQ

Description	Configure the display mode of the scanner frequency measurement mode.
Data type	ViString
Access	R / W
Common Control Functions	ViStatus **sdm_GetAttributeViString** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 bufSize, ViChar value[]);
Associated Attributes	SDM_ATTR_SCANNER_PER

SDM_ATTR_SCANNER_PER

Description	Configure the display mode of the scanner frequency measurement mode.
Data type	ViString
Access	R / W
Common Control Functions	ViStatus **sdm_GetAttributeViString** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 bufSize, ViChar value[]);
Associated Attributes	SDM_ATTR_SCANNER_FREQ

SDM_ATTR_SCANNER_IMPEDANCE

Description

Reads and erases all measurements from reading memory up to the specified <max_readings>.

Data type

ViInt32

Access

R / W

Common Control Functions

ViStatus **sdm_SetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 value);

ViStatus **sdm_GetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 *value);

Value Range

Explaination	Discrete Value	Value
10M	SDM_VAL_SCANNER_IMPEDANCE_10M	0
10G	SDM_VAL_SCANNER_IMPEDANCE_10G	1

SDM_ATTR_SCANNER_TEMP_RTD

Description

Configure the thermal resistance sensor model under the scanner.

Data type

ViString

Access

WO

Common Control Functions

ViStatus **sdm_GetAttributeViString** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 bufSize, ViChar value[]);

Associated Attributes

SDM_ATTR_SCANNER_TEMP_THER

SDM_ATTR_SCANNER_TEMP_TRAN

SDM_ATTR_SCANNER_TEMP_THER

Description	Configure the thermocouple sensor model under the scanner.
Data type	ViString
Access	WO
Common Control Functions	ViStatus **sdm_GetAttributeViString** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 bufSize, ViChar value[]);
Associated Attributes	SDM_ATTR_SCANNER_TEMP_RTD SDM_ATTR_SCANNER_TEMP_TRAN

SDM_ATTR_SCANNER_TEMP_TRAN

Description	Query the sensor model under the scan card.
Data type	ViString
Access	RO
Common Control Functions	ViStatus sdm_GetAttributeViString(ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 bufSize, ViChar value[]);
Associated Attributes	SDM_ATTR_SCANNER_TEMP_RTD SDM_ATTR_SCANNER_TEMP_THER

SDM_ATTR_SCANNER_TEMP_UNIT

Description

Configure the temperature measurement mode unit under the scanner.

Data type

ViInt32

Access

R / W

Common Control Functions

ViStatus **sdm_SetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 value);

ViStatus **sdm_GetAttributeViInt32** (ViSession vi, ViConstString channelName, ViAttr attribute, ViInt32 *value);

Value Range

Explaination	Discrete Value	Value
C	SDM_VAL_TEMP_UNIT_C	0
F	SDM_VAL_TEMP_UNIT_F	1
K	SDM_VAL_TEMP_UNIT_K	2

SDM_ATTR_SCANNER_BEEPER_STATE

Description

Set the buzzer switch status.

Data type

ViBoolean

Access

WO

Common Control Functions

ViStatus **sdm_SetAttributeViBoolean** (ViSession vi, ViConstString channelName, ViAttr attribute, ViBoolean value);

Value Range

Explaination	Discrete Value	Value
Disable	VI_FALSE	0
Enable	VI_TRUE	1

SDM_ATTR_SCANNER_FREQ_APERTURE

Description	Configure the gate time for the scanner frequency measurement mode.
Data type	ViReal64
Access	R / W
Common Control Functions	ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value); ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);
Value Range	0.001 / 0.01 / 0.1 / 1
Associated Attributes	SDM_ATTR_SCANNER_PER_APERTURE

SDM_ATTR_SCANNER_PER_APERTURE

Description	Configure the gate time for the scanner period measurement mode.
Data type	ViReal64
Access	R / W
Common Control Functions	ViStatus **sdm_GetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 *value); ViStatus **sdm_SetAttributeViReal64** (ViSession vi, ViConstString channelName, ViAttr attribute, ViReal64 value);
Value Range	0.001 / 0.01 / 0.1 / 1
Associated Attributes	SDM_ATTR_SCANNER_FREQ_APERTURE

High Level Functions

- **sdm_init (ViRsrc resourceName, ViBoolean IDQuery, ViBoolean resetDevice, ViSession* vi);**

  This function creates a new IVI session.

Parameter	Description
resourceName	An IVI logical name or an instrument specific string that identifies the address of the instrument, such as a VISA resource descriptor string.
IDQuery	Specifies whether to verify the ID of the instrument
resetDevice	Specifies whether to reset the instrument
*vi	Unique identifier for an IVI session.
Example: sdm_Init ("TCPIP0::10.11.13.218::inst0::INSTR ", VI_TRUE, VI_FALSE, &session);	

- **sdm_initWithOptions (ViRsrc resourceName, ViBoolean IDQuery, ViBoolean resetDevice, ViConstString optionString, ViSession* vi);**

  This function creates a new IVI session.

Parameter	Description
resourceName	An IVI logical name or an instrument specific string that identifies the address of the instrument, such as a VISA resource descriptor string.
IDQuery	Specifies whether to verify the ID of the instrument
resetDevice	Specifies whether to reset the instrument
optionString	A string that allows the user to specify the initial values of certain inherent attributes
*vi	Unique identifier for an IVI session.
Example: sdm_InitWithOptions ("TCPIP0::10.11.13.218::inst0::INSTR ", VI_TRUE, VI_FALSE, "Simulate=0,RangeCheck=1,QueryInstrStatus=0,Cache=0", &session);	

- **sdm_close (ViSession vi)**

  This function is to finish an IVI driver session.

Parameter	Description
vi	Unique identifier for an IVI session.
Example: sdm_close(vi);	

- **sdm_LockSession (ViSession vi, ViBoolean *callerHasLock);**

This function is used to obtains a multithread lock on the instrument session.

Parameter	Description
vi	Unique identifier for an IVI session.
callerHasLock	Session thread lock, generally the parameter passed is VI_NULL.
Example: sdm_LockSession (session, VI_NULL);	

- **sdm_UnlockSession (ViSession vi, ViBoolean *callerHasLock);**

This function is used to releases a lock that the Lock Session function acquires.

Parameter	Description
vi	Unique identifier for an IVI session.
callerHasLock	Session thread lock, generally the parameter passed is VI_NULL.
Example: sdm_UnlockSession (session, VI_NULL);	

- **sdm_ConfigureMeasurement (ViSession vi, ViInt32 function, ViReal64 range, ViReal64 resolution);**

This function is used to select the function, range and resolution.

Parameter	Description
vi	Unique identifier for an IVI session.
function	Sets the measure function of measurement.
range	Sets the range of measurement.
resolution	Sets the measurement data accuracy
Example: sdm_ConfigureMeasurement(session, SDM_VAL_DC_VOLTS, 200.0, 0.00001);	

- **sdm_ConfigureTrigger (ViSession vi, ViInt32 triggerSource, ViReal64 triggerDelay);**

This function is used to configure the trigger source and trigger delay.

Parameter	Description
vi	Unique identifier for an IVI session.
triggerSource	Sets the trigger source of measurement.
triggerDelay	Sets the trigger delay of measurement.

Example: sdm_ConfigureTrigger (session, SDM_VAL_IMMEDIATE, 5);

- **sdm_Read (ViSession vi, ViInt32 maxTime, ViReal64 *reading);**

  Starts a new set of measurements, waits for all measurements to complete, and transfers all available measurements.

Parameter	Description
vi	Unique identifier for an IVI session.
maxTime	Set the timeout for session communication.
reading	Returns the measured data.
Example: sdm_Read (session, 1000, &value);	

- **sdm_Fetch (ViSession vi, ViInt32 maxTime, ViReal64 *reading);**

  Waits for measurements to complete and copies all available measurements to the instrument's output buffer.

Parameter	Description
vi	Unique identifier for an IVI session.
maxTime	Set the timeout for session communication.
reading	Returns the measured data.
Example: sdm_Fetch (session, 1000, &value);	

- **sdm_Abort(ViSession vi);**

  Aborts a measurement in progress, returning the instrument to the trigger idle state.

Parameter	Description
vi	Unique identifier for an IVI session.
Example: sdm_Abort(session);	

- **sdm_Initiate(ViSession vi);**

  Changes the state of the triggering system from "idle" to "wait-for-trigger", and clears the previous set of measurements from reading memory.

Parameter	Description
vi	Unique identifier for an IVI session.
Example: sdm_Initiate (session);	

- **sdm_IsOverRange(ViSession vi, ViReal64 measurementValue, ViBoolean *isOverRange);**

  This function is used to determine whether the measured value exceeds the range of the measurement range.

Parameter	Description
vi	Unique identifier for an IVI session.
measurementValue	Value used to determine whether it is out of range
isOverRange	Return judgment result.
Example: sdm_IsOverRange (session, 1000.56, &flag);	

- **sdm_SendSoftwareTrigger(ViSession vi);**

  This function is used to send a software trigger signal (Set the trigger source to software bus BUS trigger).

Parameter	Description
vi	Unique identifier for an IVI session.
Example: sdm_SendSoftwareTrigger (session);	

- **sdm_GetAutoRangeValue(ViSession vi, ViReal64 *autoRangeValue);**

  This function obtain the current automatic range value.

Parameter	Description
vi	Unique identifier for an IVI session.
autoRangeValue	Return range value of automatic range
Example: sdm_GetAutoRangeValue (session, &autovalue);	

- **sdm_ConfigureTriggerSlope (ViSession vi, ViInt32 polarity);**

  This function used to configure the slope type of the trigger output signal.

Parameter	Description
vi	Unique identifier for an IVI session.
polarity	The slope type of the trigger output signal.
Example: sdm_ConfigureTriggerSlope (session, SDM_VAL_POSITIVE);	

- **sdm_ConfigureAutoZeroMode (ViSession vi, ViInt32 autoZeroMode);**

This function is used to disables or enables the autozero mode for present measurements.

Parameter	Description
vi	Unique identifier for an IVI session.
autoZeroMode	Auto-zero configuration state.
Example: sdm_ConfigureTriggerSlope (session, SDM_VAL_AUTO_ZERO_ON);	

- **sdm_InvalidateAllAttributes (ViSession vi);**

This function invalidates the cached values of all attributes for the session.

Parameter	Description
vi	Unique identifier for an IVI session.
Example: sdm_InvalidateAllAttributes (session);	

- **sdm_reset(ViSession vi);**

This function is used to reset the instrument.

Parameter	Description
vi	Unique identifier for an IVI session.
Example: sdm_reset (session);	

- **sdm_ResetWithDefaults(ViSession vi);**

This function is used to reset the instrument using the default configuration.

Parameter	Description
vi	Unique identifier for an IVI session.
Example: sdm_ResetWithDefaults (session);	

- **sdm_self_test(ViSession vi, ViInt16 *selfTestResult, ViChar selfTestMessage[]);**

This function causes the instrument to perform a self test.

Parameter	Description
vi	Unique identifier for an IVI session.
selfTestResult	Return the instrument self-test result.
selfTestMessage	Return the self-test result expression string.
Example: sdm_self_test (session, &selfTestResul, selfTestMessage);	

- **sdm_revision_query (ViSession vi, ViChar instrumentDriverRevision[], ViChar firmwareRevision[]);**

Obtains the revision of the IVI specific driver and the firmware revision of the instrument

Parameter	Description
vi	Unique identifier for an IVI session
instrumentDriverRevision	Returns the revision of the IVI specific driver
firmwareRevision	Returns the firmware revision of the instrument
Example: sdm_self_test (session, instrumentRevision, firmwareRevision);	

- **sdm_error_query (ViSession vi, ViInt32 *errorCode, ViChar errorMessage[]);**

Queries the instrument and returns instrument specific error information.

Parameter	Description
vi	Unique identifier for an IVI session.
errorCode	Instrument error code
errorMessage	Instrument error message
Example: sdm_error_query (session, &errorCode, errorMessage);	

- **sdm_GetError(ViSession vi, ViStatus *code, ViInt32 bufferSize, ViChar description[]);**

This function is used to get the error information.

Parameter	Description
vi	Unique identifier for an IVI session.
code	Return the error code.
bufferSize	Specify the length of character data to be obtained.
description	Return the error description expression string.

Example: sdm_GetError (session, &errorCod, bufferSize, description[]);

- **sdm_ClearError(ViSession vi);**

This function retrieves and then clears the IVI error information for the session or the current execution thread.

Parameter	Description
vi	Unique identifier for an IVI session.
Example: sdm_ClearError (session);	

- **sdm_error_message (ViSession vi, ViStatus errorCode, ViChar errorMessage[256]);**

Translates the error return value from a driver function to a user-readable string.

Parameter	Description
vi	Unique identifier for an IVI session.
errorCode	Return the error code.
errorMessage	Return the error message.
Example: sdm_error_ message (session, errorCode, errorMessage);	

- **sdm_ReadRouteChannelData (ViSession vi, ViInt32 channel, ViReal64* reading);**

This function reads the lastest scanner data of specify channel from instrument.

Parameter	Description
vi	Unique identifier for an IVI session.
Channel	A channel number.
reading	Return the lastest reading of the specify channel.
Example: sdm_ReadRouteChannelData (session, SDM_VAL_CH_1, &reading);	

- **sdm_ReadRouteData(ViSession vi, ViInt32 arraySize, ViReal64 readingArray[], ViInt32 *actualPts);**

This function reads scanner data of specify channel from instrument.

Parameter	Description
vi	Unique identifier for an IVI session.
arraySize	Array size.

readingArray	Array to store the readings.
actualPts	The actual number obtained.
Example: ViReal64 reading_array[20] = {0}; ViInt32 actPts = 0; sdm_ReadRouteData (session, 10, reading_array, &actPts);	

- **sdm_RemoveRouteData (ViSession vi, ViInt32 number, ViInt32 arraySize, ViReal64 readingArray[], ViInt32 *actualPts);**

  This function read and erase a specified amount of measurement data from the scanner measurement reading memory.

Parameter	Description
vi	Unique identifier for an IVI session.
number	Number of readings to remove.
arraySize	Array size.
readingArray	Array to store the readings.
actualPts	The actual number obtained.
Example: ViReal64 reading_array[20] = {0}; ViInt32 actPts = 0; sdm_RemoveRouteData (session, 10, 20, reading_array, &actPts);	

- **sdm_GetRouteRelative(ViSession vi, ViInt32 mode, ViBoolean* value);**

  This function reads scanner data from instrument.

Parameter	Description
vi	Unique identifier for an IVI session.
mode	Measure mode.
value	The relative state value.
Example: ViBoolean state = VI_FALSE; sdm_GetRouteRelative (session, SDM_VAL_DC_VOLTS, &state);	

- **sdm_ConfigureRouteRelative (ViSession vi, ViInt32 mode, ViBoolean value);**

  This function configure the relative of specify measure mode.

Parameter	Description
vi	Unique identifier for an IVI session.
mode	Measure mode.
value	Return the state value of realtive.
Example: sdm_ConfigureRouteRelative (session, SDM_VAL_DC_VOLTS, VI_TRUE);	

- **sdm_GetRouteChannelParam (ViSession vi, ViInt32 channel, ViInt32 bufSize, ViChar value[]);**

This function reads scanner channel parameters from instrument.

Parameter	Description
vi	Unique identifier for an IVI session.
channel	Channel id.
bufSize	The size of the receive buffer.
value	The buffer stores the channel parameters.
Example: ViChar buffer[100] = “”; sdm_GetRouteChannelParam (session, SDM_VAL_CH_1, 100, buffer);	

- **sdm_ConfigureRouteChannelParam (ViSession vi, ViInt32 channel, ViBoolean state, ViInt32 mode, ViString range, ViString speed, ViInt32 cycle);**

This function configures scanner channel parameter of the instrument.

Parameter	Description
vi	Unique identifier for an IVI session.
channel	Channel id.
state	State of scanner function.
mode	Measure mode.
range	Range of the measure mode.
speed	Sample speed of the measure mode.
cycle	The number of single executions for each channel.
Example: sdm_ConfigureRouteChannelParam (session, SDM_VAL_CH_1, VI_TRUE, SDM_VAL_DC_VOLTS, “2V”, “LOW”, 1);	

Programming Example

The example is running in an environment where NI-VISA 20.0, LabWindow/CVI 2017, and IVI Compliance Package 20.0 are installed.

Using dynamic link library

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <Windows.h>
#include "sdmh"

#define   SDM_EXAMPLE_INSTR_RES_ADDR   "TCPIP0::10.13.255.134::inst0::INSTR"
#define   SDM _EXAMPLE_INIT_OPTION
 "Simulate=0,RangeCheck=0,QueryInstrStatus=0,Cache=1"
#define BUFFER_SIZE 512L

ViSession session;
ViStatus status;

void main()
{
    ViChar      str[BUFFER_SIZE];

    //Connect the instrument
    status = sdm_InitWithOptions(SDM_EXAMPLE_INSTR_RES_ADDR,
                                 VI_TRUE,
                                 VI_FALSE,
                                 SDM_EXAMPLE_INIT_OPTION,
                                 &session);

    sdm_reset(session);

    // Set measurement function to DCV
    sdm_SetAttributeViInt32(session,
                            "",
```

```
                                SDM_ATTR_FUNCTION,
                                SDM_VAL_DC_VOLTS);

    sdm_SetAttributeViInt32(session,
                                "",
                                SDM_ATTR_TRIGGER_SOURCE,
                                SDM_VAL_IMMEDIATE);

    sdm_SetAttributeViInt32(session,
                                "",
                                SDM_ATTR_TRIGGER_COUNT,
                                10);

    sdm_Initiate(session);

    ViReal64    reading
    sdm_Fetch(session, 2000, &reading);

    system("cmd /C pause");
}



}
```

About SIGLENT

SIGLENT is an international high-tech company, concentrating on R&D, sales, production and services of electronic test & measurement instruments.

SIGLENT first began developing digital oscilloscopes independently in 2002. After more than a decade of continuous development, SIGLENT has extended its product line to include digital oscilloscopes, isolated handheld oscilloscopes, function/arbitrary waveform generators, RF/MW signal generators, spectrum analyzers, vector network analyzers, digital multimeters, DC power supplies, electronic loads and other general purpose test instrumentation. Since its first oscilloscope was launched in 2005, SIGLENT has become the fastest growing manufacturer of digital oscilloscopes. We firmly believe that today SIGLENT is the best value in electronic test & measurement.

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