

RF Signal Generator

IVI-C Programming Guide

E01A
Nov, 2023

1 Revision History

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

Version E01A at Introduction

This version, as the first version, will be compared with later versions. When the next version is released, the differences between the two versions will be marked.

2 Introduction

2.1 *Models Supported*

The series of SIGLENT spectrometer supporting this IVI-C driver is shown below.

Series	Release Version Supporting IVI-C Driver
SSG5000X/X-V	V1.1.1.1.9 and higher
SSG5080A	V1.0.0.2.2 and higher
SSG6000A	V1.0.0.2.2 and higher

2.2 *Software Requirement*

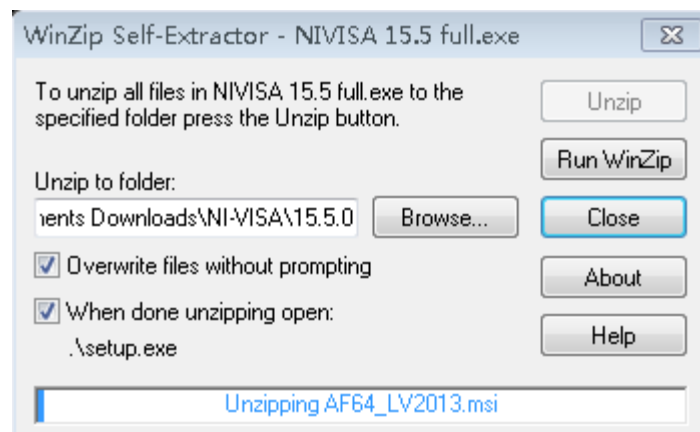
This chapter describes how to configure the IVI driver to control the instrument. If you want to use the IVI Driver, you must install NI-VISA, the IVI Compliance Package, and a C language development system that supports the IVI driver library.

2.3 *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 15.5 full 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:

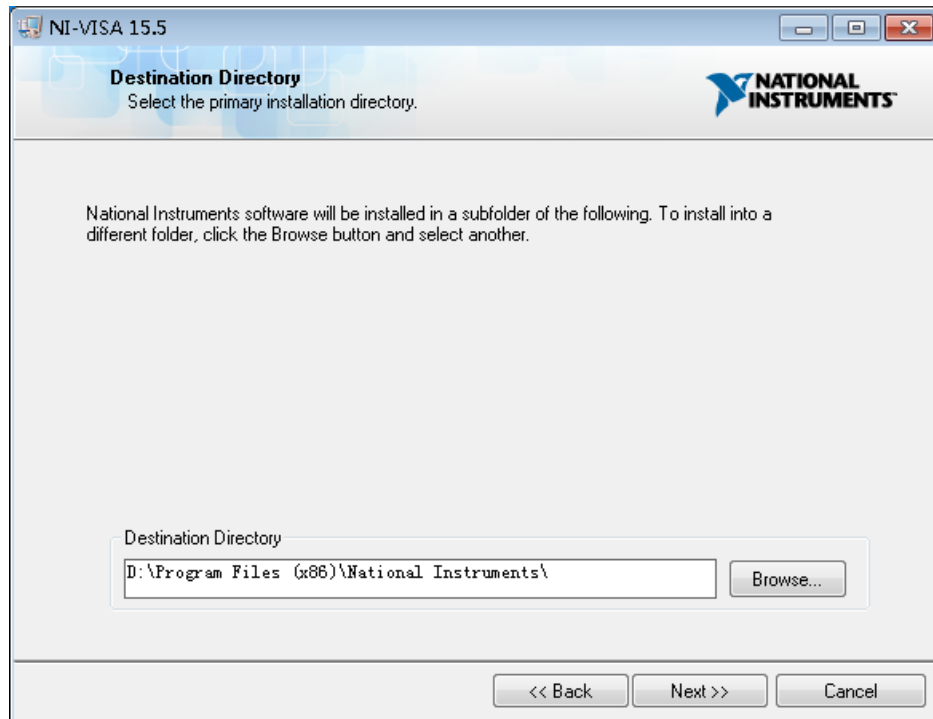


- b. Click Unzip, the installation process will automatically launch after unzipping files. If your computer needs to install .NET Framework 4, it may auto start.

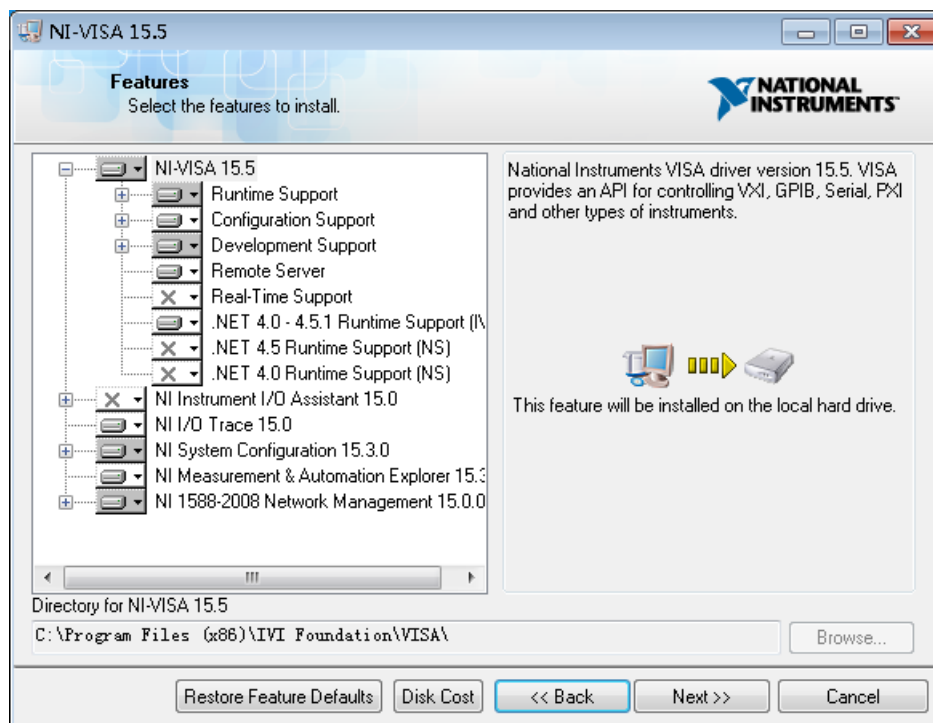


- c. The NI-VISA installing dialog is shown above. Click Next to start the installation

process.

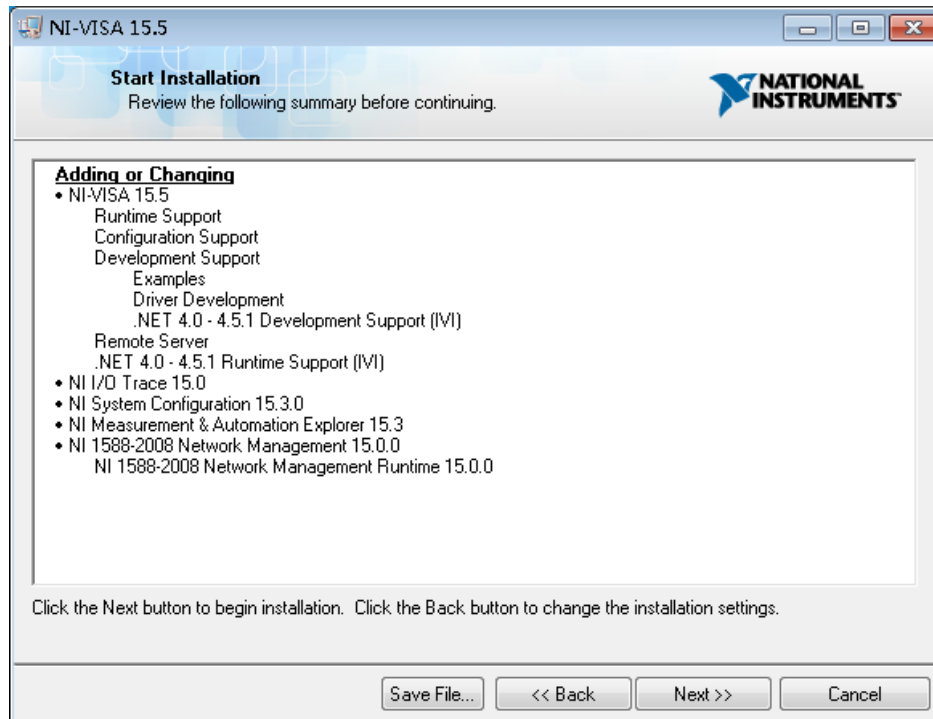


- d. Set the install path. The default path is “C:\Program Files\National Instruments\”. You can change it. Click Next.

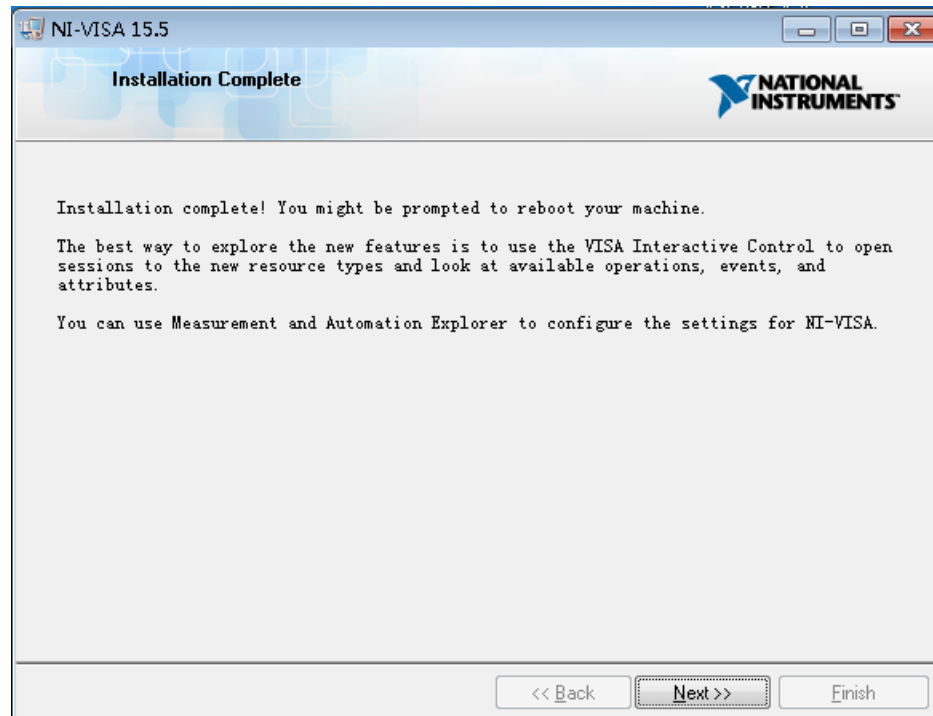


- e. Click Next twice, in the License Agreement dialog, select “I accept the above 2

License Agreement(s).” ,and click Next.



f. Click Next to begin the installation.



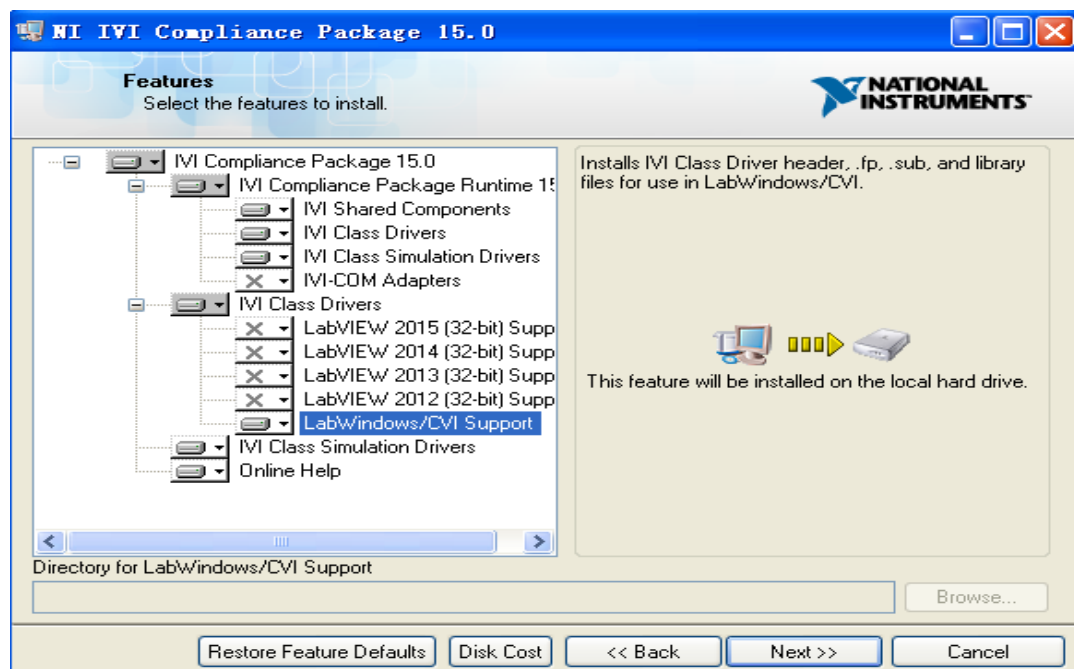
g. Wait until the installation is completed, and then reboot your PC.

2.4 Install the IVI Compliance Package

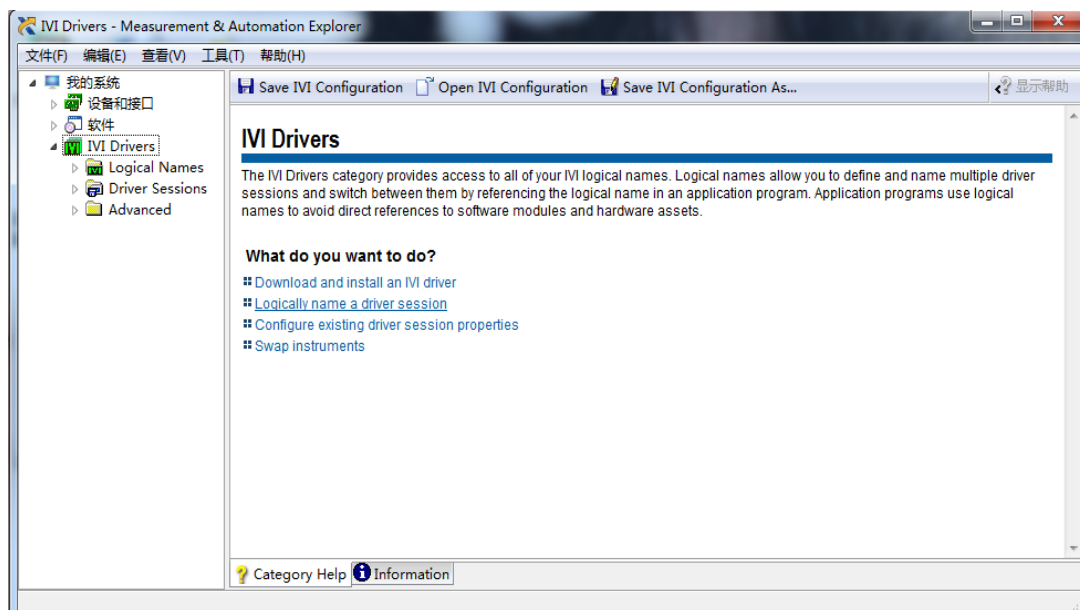
The IVI Compliance Package contains the IVI class drivers and supported libraries for developing and leveraging IVI-based applications.

You can get the IVI Compliance Package from <https://www.ni.com/zh-cn/support/downloads/drivers/download.ivi-compliance-package.html#329444>

- a. If the IVI Compliance Package is not installed, there is no IVI Drivers option in "My System".
- b. Install the IVI Compliance Package (ICP).



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



2.5 SSG IVI-C Driver Package List

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

File	Description
SiglentSSG_32.dll SiglentSSG_64.dll	A dynamic link library file, including variables, functions, and data interfaces for various attributes.
SiglentSSG_32.lib SiglentSSG_64.lib	An import library file, including the symbolic name and optional identification number of each exported function in the ssa.dll file.
ssg.h	A header file, including declarations of variables, functions, and data interfaces.

You include the ssg.h when programming the Siglent RF Signal Generator with the IVI driver, and load the ssg.dll dynamic file or ssg.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.

3 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.

3.1 IVI Data Type

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

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
ViAddr	Logical address type

3.2 Access IVI Attribute

User-callable functions are typically implemented by manipulating attributes. You can call SSG_SetAttribute or SSG_GetAttribute functions.

3.2.1 SetAttribute Function Group

3.2.1.1 SSG_SetAttributeViInt32(ViSession vi, ViConstString channelName, ViAttr attributeld, ViInt32 value)

Example: When you want to set the sweep mode, you can call the SSG_SetAttributeViInt32 function to change the sweep mode.

<i>SSG_SetAttributeViInt32(session, VI_NULL, SSG_ATTR_SWEEP_MODE, SSG_VAL_SWEEP_MODE_FREQ);</i>	
session	The instrument handle.
SSG_VAL_SWEEP_MODE_FREQ	Set the sweep mode as Freq

3.2.1.2 SSG_SetAttributeViReal64(ViSession vi, ViConstString channelName, ViAttr attributeld, ViReal64 value)

Example: When you want to set the RF output frequency, you can call the SSG_SetAttributeViReal64 function to set the frequency value.

<i>SSG_SetAttributeViReal64(session, VI_NULL, SSG_ATTR_FREQUENCY, 1e6);</i>	
session	The instrument handle.
1e6	Set the RF output frequency to 1MHz.

3.2.1.3 SSG_SetAttributeViString(ViSession vi, ViConstString channelName, ViAttr attributeld, ViConstString value)

Example: When you want to set the modulation signal source of the amplitude modulation, you can call the SSG_SetAttributeViString function to change the modulation signal source of the amplitude modulation.

<i>SSG_SetAttributeViString(session, VI_NULL, SSG_ATTR_AM_SOURCE, "EXternal");</i>	
session	The instrument handle.
"EXternal"	Select the modulation signal source for amplitude modulation

3.2.1.4 SSG_SetAttributeViBoolean(ViSession vi, ViConstString channelName, ViAttr attributeld, ViBoolean value)

Example: When you want to configure the RF output on or off, you can call the SSG_SetAttributeViBoolean function to set the state of the RF output.

<i>SSG_SetAttributeViBoolean(session, VI_NULL, SSG_ATTR_OUTPUT_ENABLED, VI_TRUE);</i>	
session	The instrument handle.
VI_TRUE	Configure the RF output ON.

3.2.2 GetAttribute Function Group

3.2.2.1 SSG_GetAttributeViInt32(ViSession vi, ViConstString channelName, ViAttr attributeld, ViInt32 *value)

Example: When you want to get the sweep mode, you can call the SSG_GetAttributeViInt32 function to obtain the sweep mode.

<i>SSG_GetAttributeViInt32(session, VI_NULL, SSG_ATTR_SWEEP_MODE, &value32);</i>	
session	The instrument handle.
value32	A ViInt32 type variable which is used to store the returned value of the active sweep mode.

3.2.2.2 SSG_GetAttributeViReal64(ViSession vi, ViConstString channelName, ViAttr attributeld, ViReal64 *value)

Example: When you want to get the RF output frequency, you can call the SSG_GetAttributeViReal64 function to get the output frequency value.

<i>SSG_GetAttributeViReal64(session, VI_NULL, SSG_ATTR_FREQUENCY, &value64);</i>	
session	The instrument handle.
value64	A ViReal64 type variable which is used to store the returned value of the RF output frequency.

3.2.2.3 SSG_GetAttributeViString(ViSession vi, ViConstString channelName, ViAttr attributeld, ViInt32 bufSize, ViChar value[])

Example: When you want to get the modulation signal source of the amplitude modulation, you can call the SSG_GetAttributeViString function to get the modulation signal source of the amplitude modulation.

<i>SSG_GetAttributeViString(session, VI_NULL, SSG_ATTR_AM_SOURCE, buffersize, str);</i>	
session	The instrument handle.
buffersize	A ViInt32 type variable.
str	A ViString type variable which is used to store the returned value.

3.2.2.4 SSG_GetAttributeViBoolean(ViSession vi, ViConstString channelName, ViAttr attributeld, ViBoolean *value)

Example: When you want to get the state of the RF output, you can call the SSG_GetAttributeViBoolean function to get the state of the RF output.

<i>SSG_GetAttributeViBoolean(session, VI_NULL, SSG_ATTR_OUTPUT_ENABLED, &boolean);</i>	
session	The instrument handle.
boolean	A ViBoolean type variable which is used to store the state of the RF output returned value.

4 Attributes

System		Attribute
Basic	1.	SSG_ATTR_FREQUENCY
	2.	SSG_ATTR_FREQUENCY_OFFSET
	3.	SSG_ATTR_DISP_FREQUENCY
	4.	SSG_ATTR_PHASE_OFFSET
	5.	SSG_ATTR_PHASE_RESET
	6.	SSG_ATTR_POWER_LEVEL
	7.	SSG_ATTR_LEVEL_OFFSET
	8.	SSG_ATTR_DISP_LEVEL
	9.	SSG_ATTR_ALC_STATUS
	10.	SSG_ATTR_ALC_ENABLED
	11.	SSG_ATTR_OUTPUT_ENABLED
	12.	SSG_ATTR_ANALOG_MOD_ENABLE
AM	1.	SSG_ATTR_AM_ENABLED
	2.	SSG_ATTR_AM_SOURCE
	3.	SSG_ATTR_AM_SHAPE
	4.	SSG_ATTR_AM_DEPTH
	5.	SSG_ATTR_AM_RATE
FM	1.	SSG_ATTR_FM_ENABLED
	2.	SSG_ATTR_FM_SOURCE
	3.	SSG_ATTR_FM1_SHAPE
	4.	SSG_ATTR_FM1_DEVIATION
	5.	SSG_ATTR_FM1_RATE
	6.	SSG_ATTR_FM_PHASE1
	7.	SSG_ATTR_FM1_SENSITIVITY
	8.	SSG_ATTR_FM2_SHAPE
	9.	SSG_ATTR_FM2_DEVIATION
	10.	SSG_ATTR_FM2_RATE
	11.	SSG_ATTR_FM_PHASE2
	12.	SSG_ATTR_FM1_PROPORTION
PM	1.	SSG_ATTR_PM_ENABLED
	2.	SSG_ATTR_PM_SOURCE
	3.	SSG_ATTR_PM_DEVIATION
	4.	SSG_ATTR_PM_SHAPE
	5.	SSG_ATTR_PM_RATE
Pulse	1.	SSG_ATTR_PULSE_MODULATION_ENABLED
	2.	SSG_ATTR_PULSE_MODULATION_SOURCE
	3.	SSG_ATTR_PULSE_MODULATION_EXTERNAL_POLARITY
	4.	SSG_ATTR_PULSE_OUTPUT_ENABLED
	5.	SSG_ATTR_PULSE_OUTPUT_POLARITY

	6.	SSG_ATTR_PULSE_MODE
	7.	SSG_ATTR_PULSE_INTERNAL_TRIGGER_PERIOD
	8.	SSG_ATTR_PULSE_WIDTH
	9.	SSG_ATTR_PULSE_DOUBLE_DELAY
	10.	SSG_ATTR_PULSE_DOUBLE_WIDTH
	11.	SSG_ATTR_PULSE_TRIGGER_OUT_ENABLED
	12.	SSG_ATTR_PULSE_TRIGGER_SOURCE
	13.	SSG_ATTR_PULSE_EXTERNAL_TRIGGER_SLOPE
	14.	SSG_ATTR_PULSE_EXTERNAL_TRIGGER_DELAY
	15.	SSG_ATTR_PULSE_EXTERNAL_GATE_POLARITY
LF	1.	SSG_ATTR_LF_GENERATOR_OUTPUT_ENABLED
	2.	SSG_ATTR_LF_GENERATOR_OUTPUT_AMPLITUDE
	3.	SSG_ATTR_LF_GENERATOR_FREQUENCY
	4.	SSG_ATTR_LF_LEVEL_OFFSET
	5.	SSG_ATTR_LF_GENERATOR_WAVEFORM
	6.	SSG_ATTR_LF_PHASE
	7.	SSG_ATTR_LF_GENERATOR_SWEEP_ENABLED
	8.	SSG_ATTR_LF_SWEEP_DIRCTION
	9.	SSG_ATTR_LF_SWEEP_START_FREQUENCY
	10.	SSG_ATTR_LF_SWEEP_STOP_FREQUENCY
	11.	SSG_ATTR_LF_SWEEP_CENTER_FREQUENCY
	12.	SSG_ATTR_LF_SWEEP_FREQUENCY_SPAN
	13.	SSG_ATTR_LF_SWEEP_TIME
	14.	SSG_ATTR_LF_SWEEP_TRIGGER_SOURCE
	15.	SSG_ATTR_LF_SWEEP_TRIGGER_EXT_SLOPE
	16.	SSG_ATTR_LF_SWEEP_SHAPE
	17.	SSG_ATTR_LF_SWEEP_SPACE
Sweep	1.	SSG_ATTR_SWEEP_MODE
	2.	SSG_ATTR_SWEEP_TYPE
	3.	SSG_ATTR_FREQUENCY_STEP_START
	4.	SSG_ATTR_FREQUENCY_STEP_STOP
	5.	SSG_ATTR_POWER_STEP_START
	6.	SSG_ATTR_POWER_STEP_STOP
	7.	SSG_ATTR_FREQUENCY_STEP_SCALING
	8.	SSG_ATTR_FREQUENCY_STEP_SIZE
	9.	SSG_ATTR_FREQUENCY_STEP_SHAPE
	10.	SSG_ATTR_FREQUENCY_STEP_DWELL
	11.	SSG_ATTR_SWEEP_POINTS
	12.	SSG_ATTR_SWEEP_DIRCTION
	13.	SSG_ATTR_SWEEP_SINGLE_STATUS
	14.	SSG_ATTR_EXECUTE_SINGLE_SWEEP
	15.	SSG_ATTR_SWEEP_TRIGGER_SOURCE
	16.	SSG_ATTR_SWEEP_POINT_TRIGGER_SOURCE

	17.	SSG_ATTR_SWEEP_TRIGGER_SLOPE
SENSOR	1.	SSG_ATTR_SENSOR_INFO
	2.	SSG_ATTR_SENSOR_MEASURE_ENABLED
	3.	SSG_ATTR_SENSOR_READ_VALUE
	4.	SSG_ATTR_SENSOR_LEVEL_CONTROL_STATE
	5.	SSG_ATTR_SENSOR_TARGET_LEVEL
	6.	SSG_ATTR_SENSOR_LIMIT_LEVEL
	7.	SSG_ATTR_SENSOR_CATCH_LEVEL
	8.	SSG_ATTR_SENSOR_STATISTICS_STATE
	9.	SSG_ATTR_SENSOR_STATISTICS_MAX
	10.	SSG_ATTR_SENSOR_STATISTICS_MIN
	11.	SSG_ATTR_SENSOR_STATISTICS_MEAN
	12.	SSG_ATTR_SENSOR_STATISTICS_COUNT
	13.	SSG_ATTR_SENSOR_STATISTICS_CLEAR
	14.	SSG_ATTR_SENSOR_AUTO_ZERO
	15.	SSG_ATTR_SENSOR_PERFORM_ZEROING
	16.	SSG_ATTR_SENSOR_MEAS_FREQUENCY_TYPE
	17.	SSG_ATTR_SENSOR_MEAS_FREQUENCY_MANUAL_VAL
	18.	SSG_ATTR_SENSOR_LEVEL_OFFSET_STATE
	19.	SSG_ATTR_SENSOR_LEVEL_OFFSET_VAL
	20.	SSG_ATTR_SENSOR_AVERAGING_TYPE
	21.	SSG_ATTR_SENSOR_AVERAGING_MANUAL_COUNT
	22.	SSG_ATTR_SENSOR_LOGGING_STATE

4.1 Base Attributes

4.1.1 Frequency

Attributes Defines	SSG_ATTR_FREQUENCY
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrFrequency_ReadCallback, SSGAttrFrequency_WriteCallback
High Level Functions	SSG_ConfigureRF/ SSG_ConfigureRFFreq
Description	Configure the frequency of the RF output signal.

Value Range	Depends on the maximum frequency
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4.1.2 Frequency Offset

Attributes Defines	SSG_ATTR_FREQUENCY_OFFSET
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrFrequencyOffset_ReadCallback SSGAttrFrequencyOffset_WriteCallback
High Level Functions	SSG_ConfigureRFFreq
Description	Set the frequency offset
Value Range	-200°9~200°9

4.1.3 Display Frequency

Attributes Defines	SSG_ATTR_DISP_FREQUENCY
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrDispFrequency_ReadCallback, SSGAttrDispFrequency_WriteCallback
High Level Functions	SSG_ConfigureRF/ SSG_ConfigureRFFreq
Description	Configure the display frequency of the RF.
Value Range	Depends on the maximum frequency

4.1.4 Phase

Attributes Defines	SSG_ATTR_PHASE_OFFSET
Data Type	ViReal64

Access	R/W
Common Control Functions	SSGAttrPhaseOffset_ReadCallback SSGAttrPhaseOffset_WriteCallback
High Level Functions	SSG_ConfigureRFPhase
Description	Set the phase offset value
Value Range	-360~360

4.1.5 Phase Reset

Attributes Defines	SSG_ATTR_PHASE_RESET
Data Type	NULL
Access	W
Common Control Functions	SSGAttrPhaseOffset_WriteCallback
High Level Functions	SSG_ConfigureRFPhaseReset
Description	Reset phase delta display
Value Range	NULL

4.1.6 RF Output Enabled

Attributes Defines	SSG_ATTR_OUTPUT_ENABLED
Data Type	ViBoolean
Access	R/W
Common Control Functions	SSGAttrOutputEnabled_ReadCallback SSGAttrOutputEnabled_WriteCallback
High Level Functions	SSG_ConfigureOutputEnabled
Description	Configure the RF output ON or OFF.
Value Range	0 1

4.1.7 Power/Level

Attributes Defines	SSG_ATTR_POWER_LEVEL
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrPowerLevel_ReadCallback SSGAttrPowerLevel_WriteCallback
High Level Functions	SSG_ConfigureRF/ SSG_ConfigureRFLevel
Description	Configure the power/level of the RF output signal.
Value Range	Depends on the device

4.1.8 Level Offset

Attributes Defines	SSG_ATTR_LEVEL_OFFSET
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrLevelOffset_ReadCallback SSGAttrLevelOffset_WriteCallback
High Level Functions	SSG_ConfigureRFLevel
Description	Set level offset
Value Range	-100~100

4.1.9 Display Level

Attributes Defines	SSG_ATTR_DISP_LEVEL
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrDispLevel_ReadCallback SSGAttrDispLevel_WriteCallback

High Level Functions	SSG_ConfigureRF/ SSG_ConfigureRFLevel
Description	Configure the power/level of the RF output signal.
Value Range	Depends on the device

4.1.10 ALC State

Attributes Defines	SSG_ATTR_ALC_STATUS
Data Type	ViInt32
Access	R/W
Common Control Functions	SSGAttrAlcStatus_ReadCallback SSGAttrAlcStatus_WriteCallback
High Level Functions	SSG_ConfigureALCState
Description	Set the state of automatic level control.

Value Range

Enumeration	Attribute Value Defines	value
OFF	SSG_VAL_ALC_STATE_OFF	0
ON	SSG_VAL_ALC_STATE_ON	1
AUTO	SSG_VAL_ALC_STATE_AUTO	2

4.2 Analog Modulation

4.2.1 Modulation Enabled

Attributes Defines	SSG_ATTR_ANALOG_MOD_ENABLE
Data Type	ViBoolean
Access	R/W
Common Control Functions	SSGAttrAnalogModEnable_ReadCallback SSGAttrAnalogModEnable_WriteCallback

High Level Functions	SSG_ConfigureAnalogMODEnabled
Description	Switch modulation on and off
Value Range	0 1

4.3 AM

4.3.1 AM Enabled

Attributes Defines	SSG_ATTR_AM_ENABLED
Data Type	ViBoolean
Access	R/W
Common Control Functions	SSGAttrAmEnabled_ReadCallback SSGAttrAmEnabled_WriteCallback
High Level Functions	SSG_ConfigureAMEnabled
Description	Configure the signal generator to apply amplitude modulation to the RF output signal.
Value Range	0 1

4.3.2 Source

Attributes Defines	SSG_ATTR_AM_SOURCE
Data Type	ViConstString
Access	R/W
Common Control Functions	SSGAttrAmSource_ReadCallback SSGAttrAmSource_WriteCallback
High Level Functions	SSG_ConfigureAMPParameter
Description	Select the modulation signal source for amplitude modulation
Value Range	"INTernal", "EXTernal", "INT,EXT"

4.3.3 Shape

Attributes Defines	SSG_ATTR_AM_SHAPE
Data Type	ViInt32
Access	R/W
Common Control Functions	SSGAttrAmShape_ReadCallback SSGAttrAmShape_WriteCallback
High Level Functions	SSG_ConfigureAMPParameter
Description	Configure the AM modulation waveform

Value Range

Enumeration	Attribute Value Defines	value
SINE	SSG_VAL_ANMOD_SHAPE_SINE	0
SQUAre	SSG_VAL_ANMOD_SHAPE_SQUARE	1

4.3.4 Depth

Attributes Defines	SSG_ATTR_AM_DEPTH
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrAmDepth_ReadCallback SSGAttrAmDepth_WriteCallback
High Level Functions	SSG_ConfigureAMPParameter
Description	Configure the overall modulation depth of the amplitude modulation in percent
Value Range	0~1

4.3.5 Rate

Attributes Defines	SSG_ATTR_AM_RATE
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Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrAmRate_ReadCallback SSGAttrAmRate_WriteCallback
High Level Functions	SSG_ConfigureAMParameter
Description	Configure the AM modulation frequency
Value Range	0.01~100000

4.4 FM

4.4.1 Enabled

Attributes Defines	SSG_ATTR_FM_ENABLED
Data Type	ViBoolean
Access	R/W
Common Control Functions	SSGAttrFmEnabled_ReadCallback SSGAttrFmEnabled_WriteCallback
High Level Functions	SSG_ConfigureFMEnabled
Description	Activate/Deactivate frequency modulation (FM)
Value Range	0 1

4.4.2 Source

Attributes Defines	SSG_ATTR_FM_SOURCE
Data Type	ViConstString
Access	R/W
Common Control Functions	SSGAttrFmSource_ReadCallback SSGAttrFmSource_WriteCallback
High Level Functions	SSG_ConfigureFM/ SSG_ConfigureFMSource

Description	Select the modulation signal source for frequency modulation (FM)
Value Range	"INT1", "INT2", "INT1,INT2", "EXTeRnal", "INT1,EXT", "DUAL"

4.4.3 Shape

Attributes Defines	SSG_ATTR_FM1_SHAPE/ SSG_ATTR_FM2_SHAPE
Data Type	ViInt32
Access	R/W
Common Control Functions	SSGAttrFm1Shape_ReadCallback SSGAttrFm1Shape_WriteCallback SSGAttrFm2Shape_ReadCallback SSGAttrFm2Shape_WriteCallback
High Level Functions	SSG_ConfigureFMParameter
Description	Selects the shape of the FM waveform

Value Range

Enumeration	Attribute Value Defines	value
SINE	SSG_VAL_ANMOD_SHAPE_SINE	0
SQUAre	SSG_VAL_ANMOD_SHAPE_SQUARE	1
SAWTooth	SSG_VAL_ANMOD_SHAPE_SAWTOOTH	2
TRIangle	SSG_VAL_ANMOD_SHAPE_TRIANGEL	3

4.4.4 Rate

Attributes Defines	SSG_ATTR_FM1_RATE/ SSG_ATTR_FM2_RATE
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrFmRate_WriteCallback SSGAttrFmRate_WriteCallback

	SSGAttrFm1Rate_ReadCallback SSGAttrFm1Rate_WriteCallback SSGAttrFm2Rate_ReadCallback SSGAttrFm2Rate_WriteCallback
High Level Functions	SSG_ConfigureFMParameter
Description	Configure the modulation frequency of the FM waveform
Value Range	0.01~100000

4.4.5 Deviation

Attributes Defines	SSG_ATTR_FM1_DEVIATION/ SSG_ATTR_FM2_DEVIATION
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrFm2Deviation_ReadCallback SSGAttrFm2Deviation_WriteCallback SSGAttrFm1Deviation_ReadCallback SSGAttrFm1Deviation_WriteCallback
High Level Functions	SSG_ConfigureFM/ SSG_ConfigureFMParameter
Description	Configure the deviation value of the FM waveform
Value Range	1Hz~1MHz

4.4.6 Phase

Attributes Defines	SSG_ATTR_FM_PHASE1/ SSG_ATTR_FM_PHASE2
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrFmPhase1_ReadCallback SSGAttrFmPhase1_WriteCallback SSGAttrFmPhase2_ReadCallback SSGAttrFmPhase2_WriteCallback

High Level Functions	SSG_ConfigureFMParameter
Description	Configure the phase of the FM waveform
Value Range	-360~360

4.4.7 FM Int1 Proportion

Attributes Defines	SSG_ATTR_FM1_PROPORTION
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrFm1Proportion_ReadCallback SSGAttrFm1Proportion_WriteCallback
High Level Functions	SSG_ConfigureFMInt1Proportion
Description	Configure the proportion of the FM waveform1 when the FM Source is Dual
Value Range	0~1

4.5 PM

4.5.1 Enabled

Attributes Defines	SSG_ATTR_PM_ENABLED
Data Type	ViBoolean
Access	R/W
Common Control Functions	SSGAttrPmEnabled_ReadCallback SSGAttrPmEnabled_WriteCallback
High Level Functions	SSG_ConfigurePMEEnabled
Description	Activate/Deactivate phase modulation (PM)
Value Range	0 1

4.5.2 Source

Attributes Defines	SSG_ATTR_PM_SOURCE
Data Type	ViConstString
Access	R/W
Common Control Functions	SSGAttrPmSource_ReadCallback SSGAttrPmSource_WriteCallback
High Level Functions	SSG_ConfigurePM/ SSG_ConfigurePMPParameter
Description	Select the modulation signal source for phase modulation (PM)
Value Range	"INTernal", "EXTernal", "INT,EXT"

4.5.3 Deviation

Attributes Defines	SSG_ATTR_PM_DEVIATION
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrPmDeviation_ReadCallback SSGAttrPmDeviation_WriteCallback
High Level Functions	SSG_ConfigurePM/ SSG_ConfigurePMPParameter
Description	Configure the modulation deviation of the phase modulation (PM)
Value Range	0.01~5rad

4.5.4 Shape

Attributes Defines	SSG_ATTR_PM_SHAPE
Data Type	ViInt32
Access	R/W

Common Control Functions	SSGAttrPmShape_ReadCallback SSGAttrPmShape_WriteCallback
High Level Functions	SSG_ConfigurePMPParameter
Description	Selects the shape of PM

Value Range

Enumeration	Attribute Value Defines	value
SINE	SSG_VAL_ANMOD_SHAPE_SINE	0
SQUAre	SSG_VAL_ANMOD_SHAPE_SQUARE	1

4.5.5 Rate

Attributes Defines	SSG_ATTR_PM_RATE
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrPmRate_ReadCallback SSGAttrPmRate_ReadCallback
High Level Functions	SSG_ConfigurePMPParameter
Description	Configure the phase modulation (PM) frequency
Value Range	0.01~100000

4.6 Pulse

4.6.1 Enabled

Attributes Defines	SSG_ATTR_PULSE_MODULATION_ENABLED
Data Type	ViBoolean
Access	R/W
Common Control Functions	SSGAttrPulseModulationEnabled_ReadCallback

	SSGAttrPulseModulationEnabled_WriteCallback
High Level Functions	SSG_ConfigurePulseModulationEnabled
Description	Configure the signal generator to apply pulse modulation to the RF output signal.
Value Range	0 1

4.6.2 Source

Attributes Defines	SSG_ATTR_PULSE_MODULATION_SOURCE
Data Type	ViInt32
Access	R/W
Common Control Functions	SSGAttrPulseModulationSource_ReadCallback SSGAttrPulseModulationSource_WriteCallback
High Level Functions	SSG_ConfigurePulseModulationSource
Description	Select the trigger mode for pulse modulation

Value Range

Enumeration	Attribute Value Defines	value
INTernal	SSG_VAL_PULSE_MODULATION_SOURCE_INTERNAL	0
EXTernal	SSG_VAL_PULSE_MODULATION_SOURCE_EXTERNAL	1

4.6.3 External Polarity

Attributes Defines	SSG_ATTR_PULSE_MODULATION_EXTERNAL_POLARITY
Data Type	ViInt32
Access	R/W
Common Control Functions	SSGAttrPulseModulationExternalPolarity_ReadCallback SSGAttrPulseModulationExternalPolarity_WriteCallback

High Level Functions	SSG_ConfigurePulseModulationExternalPolarity
Description	Specifies the polarity of the external source signal

Value Range

Enumeration	Attribute Value Defines	value
NORMal	SSG_VAL_PULSE_MODULATION_EXTERNAL_POLARITY_NORMAL	0
INVerted	SSG_VAL_PULSE_MODULATION_EXTERNAL_POLARITY_INVERSE	1

4.6.4 Output Enabled

Attributes Defines	SSG_ATTR_PULSE_OUTPUT_ENABLED
Data Type	ViBoolean
Access	R/W
Common Control Functions	SSGAttrPulseOutputPolarity_ReadCallback SSGAttrPulseOutputPolarity_WriteCallback
High Level Functions	SSG_ConfigurePulseOutput
Description	Activate/Deactivate the pulse modulation
Value Range	0 1

4.6.5 Output Polarity

Attributes Defines	SSG_ATTR_PULSE_OUTPUT_POLARITY
Data Type	ViInt32
Access	R/W
Common Control Functions	SSGAttrPulseOutputPolarity_ReadCallback SSGAttrPulseOutputPolarity_WriteCallback
High Level Functions	SSG_ConfigurePulseOutput
Description	Specifies the polarity of the pulse output signal

Value Range

Enumeration	Attribute Value Defines	value
NORMAl	SSG_VAL_PULSE_OUTPUT_POLARITY_NORMAL	0
INVerted	SSG_VAL_PULSE_OUTPUT_POLARITY_INVERSE	1

4.6.6 Pulse Mode

Attributes Defines	SSG_ATTR_PULSE_MODE
Data Type	ViInt32
Access	R/W
Common Control Functions	SSGAttrPulseMode_ReadCallback SSGAttrPulseMode_WriteCallback
High Level Functions	SSG_ConfigurePulseMode
Description	Set the pulse mode as Single, Double or Train.

Value Range

Enumeration	Attribute Value Defines	value
SINGle	SSG_VAL_PULSE_MODE_SINGLE	0
DOUBle	SSG_VAL_PULSE_MODE_DOUBLE	1
PTRain	SSG_VAL_PULSE_MODE_TRAIN	2

4.6.7 Period

Attributes Defines	SSG_ATTR_PULSE_INTERNAL_TRIGGER_PERIOD
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrPulseInternalTriggerPeriod_ReadCallback SSGAttrPulseInternalTriggerPeriod_WriteCallback

High Level Functions	SSG_ConfigurePulseSingle
Description	Configure the period of the generated pulse. The period determines the repetition frequency of the internal signal
Value Range	40ns~300s

4.6.8 Width

Attributes Defines	SSG_ATTR_PULSE_WIDTH
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrPulseWidth_ReadCallback SSGAttrPulseWidth_WriteCallback
High Level Functions	SSG_ConfigurePulseSingle
Description	Configure the width of the generated pulse
Value Range	20ns~300s

4.6.9 Double Delay

Attributes Defines	SSG_ATTR_PULSE_DOUBLE_DELAY
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrPulseDoubleDelay_ReadCallback SSGAttrPulseDoubleDelay_WriteCallback
High Level Functions	SSG_ConfigurePulseDouble
Description	Configure the delay from the start of the first pulse to the start of the second pulse
Value Range	Depends on the pulse width

4.6.10 Double Width

Attributes Defines	SSG_ATTR_PULSE_DOUBLE_WIDTH
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrPulseDoubleWidth_ReadCallback SSGAttrPulseDoubleWidth_WriteCallback
High Level Functions	SSG_ConfigurePulseDouble
Description	Configure the width of the second pulse in the case of double pulse generation
Value Range	20ns~(300s-20ns)

4.6.11 Trigger Out Enabled

Attributes Defines	SSG_ATTR_PULSE_TRIGGER_OUT_ENABLED
Data Type	ViBoolean
Access	R/W
Common Control Functions	SSGAttrPulseTriggerOutEnabled_ReadCallback SSGAttrPulseTriggerOutEnabled_WriteCallback
High Level Functions	SSG_ConfigurePulseTriggerOut
Description	Activate/Deactivate the pulse trigger out.
Value Range	0 1

4.6.12 Trigger Source

Attributes Defines	SSG_ATTR_PULSE_TRIGGER_SOURCE
Data Type	ViInt32
Access	R/W

Common Control Functions	SSGAttrPulseTriggerSource_ReadCallback SSGAttrPulseTriggerSource_WriteCallback
High Level Functions	SSG_ConfigureTriggerSource
Description	Select the trigger source for pulse modulation

Value Range

Enumeration	Attribute Value Defines	value
AUTO	SSG_VAL_PULSE_TRIGGER_SOURCE_AUTO	0
SINGle	SSG_VAL_PULSE_TRIGGER_SOURCE_KEY	1
BUS	SSG_VAL_PULSE_TRIGGER_SOURCE_BUS	2
EXTeRnal	SSG_VAL_PULSE_TRIGGER_SOURCE_EXT	3
EGATe	SSG_VAL_PULSE_TRIGGER_SOURCE_EXT_GATE	4

4.6.13 Trigger Slope

Attributes Defines	SSG_ATTR_PULSE_EXTERNAL_TRIGGER_SLOPE
Data Type	ViInt32
Access	R/W
Common Control Functions	SSGAttrPulseExternalTriggerSlope_ReadCallback SSGAttrPulseExternalTriggerSlope_WriteCallback
High Level Functions	SSG_ConfigurePulseExternalTrigger
Description	Set the polarity of the active slope of an applied trigger at the PULSE EXT connector

Value Range

Enumeration	Attribute Value Defines	value
POSitive	SSG_VAL_PULSE_EXTERNAL_TRIGGER_SLOPE_POSITIVE	0
NEGative	SSG_VAL_PULSE_EXTERNAL_TRIGGER_SLOPE_NEGATIVE	1

4.6.14 Trigger Delay

Attributes Defines	SSG_ATTR_PULSE_EXTERNAL_TRIGGER_DELAY
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrPulseExternalTriggerDelay_ReadCallback SSGAttrPulseExternalTriggerDelay_WriteCallback
High Level Functions	SSG_ConfigurePulseExternalTrigger
Description	Configure the pulse delay
Value Range	140ns~300s

4.6.15 Ext Gate Polarity

Attributes Defines	SSG_ATTR_PULSE_EXTERNAL_GATE_POLARITY
Data Type	ViInt32
Access	R/W
Common Control Functions	SSGAttrPulseExternalGatePolarity_ReadCallback SSGAttrPulseExternalGatePolarity_WriteCallback
High Level Functions	SSG_ConfigurePulseExtGatePolarity
Description	Specifies the polarity of the external gating trigger signal

Value Range

Enumeration	Attribute Value Defines	value
NORMAL	SSG_VAL_PULSE_EXTERNAL_GATE_POLARITY_NORMAL	0
INVERTed	SSG_VAL_PULSE_EXTERNAL_GATE_POLARITY_INVERSE	1

4.7 LF

4.7.1 Output Enable

Attributes Defines	SSG_ATTR_LF_GENERATOR_OUTPUT_ENABLED
Data Type	ViBoolean
Access	R/W
Common Control Functions	SSGAttrLfGeneratorOutputEnabled_ReadCallback SSGAttrLfGeneratorOutputEnabled_WriteCallback
High Level Functions	SSG_ConfigureLFGeneratorOutput
Description	Configure the output enable/disable of the LF generator
Value Range	0 1

4.7.2 Amplitude

Attributes Defines	SSG_ATTR_LF_GENERATOR_OUTPUT_AMPLITUDE
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrLfGeneratorOutputAmplitude_ReadCallback SSGAttrLfGeneratorOutputAmplitude_WriteCallback
High Level Functions	SSG_ConfigureLFGeneratorOutput
Description	Configure the output voltage of the LF generator
Value Range	1Mv~3V

4.7.3 Offset

Attributes Defines	SSG_ATTR_LF_LEVEL_OFFSET
Data Type	ViReal64
Access	R/W

Common Control Functions	SSGAttrLfLevelOffset_ReadCallback SSGAttrLfLevelOffset_WriteCallback
High Level Functions	SSG_ConfigureLFGeneratorOffset
Description	Configure the output offset of the LF generator
Value Range	-2V~2V

4.7.4 Frequency

Attributes Defines	SSG_ATTR_LF_GENERATOR_FREQUENCY
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrLfGeneratorFrequency_ReadCallback SSGAttrLfGeneratorFrequency_WriteCallback
High Level Functions	SSG_ConfigureLFGenerator
Description	Configure the LF generators output frequency
Value Range	0.01~1MHz

4.7.5 Waveform

Attributes Defines	SSG_ATTR_LF_GENERATOR_WAVEFORM
Data Type	ViInt32
Access	R/W
Common Control Functions	SSGAttrLfGeneratorWaveform_ReadCallback SSGAttrLfGeneratorWaveform_WriteCallback
High Level Functions	SSG_ConfigureLFGenerator
Description	Configure the LF generators waveform.

Value Range

Enumeration	Attribute Value Defines	value
SINE	SSG_VAL_LF_WAVE_SINE	0
SQUare	SSG_VAL_LF_WAVE_SQUARE	1
TRIangle	SSG_VAL_LF_WAVE_TRIANGLE	2
SAWTooth	SSG_VAL_LF_WAVE_SAWTOOTH	3
DC	SSG_VAL_LF_WAVE_DC	4

4.7.6 Phase

Attributes Defines	SSG_ATTR_LF_PHASE
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrLfPhase_ReadCallback SSGAttrLfPhase_WriteCallback
High Level Functions	SSG_ConfigureLFGeneratorPhase
Description	Configure the output phase of the LF generator
Value Range	-360~360

4.7.7 LF Sweep Enabled

Attributes Defines	SSG_ATTR_LF_GENERATOR_SWEEP_ENABLED
Data Type	ViBoolean
Access	R/W
Common Control Functions	SSGAttrLfGeneratorSweepEnabled_ReadCallback SSGAttrLfGeneratorSweepEnabled_WriteCallback
High Level Functions	SSG_ConfigureLFSweepEnabled

Description	Enable/disable of the LF sweep
Value Range	0 1

4.7.8 LF Sweep Direction

Attributes Defines	SSG_ATTR_LF_SWEEP_DIRECTION
Data Type	ViInt32
Access	R/W
Common Control Functions	SSGAttrLfSweepDirection_ReadCallback SSGAttrLfSweepDirection_WriteCallback
High Level Functions	SSG_ConfigureLFSweepParameter
Description	Configure the LF sweep direction.

Value Range

Enumeration	Attribute Value Defines	value
UP	SSG_VAL_LF_SWEEP_DIRECTION_UP	0
DOWN	SSG_VAL_LF_SWEEP_DIRECTION_DOWN	1

4.7.9 Start Freq

Attributes Defines	SSG_ATTR_LF_SWEEP_START_FREQUENCY
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrLfSweepStartFrequency_ReadCallback SSGAttrLfSweepStartFrequency_WriteCallback
High Level Functions	SSG_ConfigureLFSweepStartStopFreq
Description	Configure the start frequency for the LF sweep.
Value Range	0.01 ~ 1e6

4.7.10 Stop Freq

Attributes Defines	SSG_ATTR_LF_SWEEP_STOP_FREQUENCY
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrLfSweepStopFrequency_ReadCallback SSGAttrLfSweepStopFrequency_WriteCallback
High Level Functions	SSG_ConfigureLFSweepStartStopFreq
Description	Configure the stop frequency for the LF sweep.
Value Range	0.01 ~ 1e6

4.7.11 Center Freq

Attributes Defines	SSG_ATTR_LF_SWEEP_CENTER_FREQUENCY
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrLfSweepCenterFrequency_ReadCallback SSGAttrLfSweepCenterFrequency_WriteCallback
High Level Functions	SSG_ConfigureLFSweepStartStopFreq
Description	Configure the center frequency for the LF sweep.
Value Range	0.01 ~ 1e6

4.7.12 Freq Span

Attributes Defines	SSG_ATTR_LF_SWEEP_FREQUENCY_SPAN
Data Type	ViReal64
Access	R/W

Common Control Functions	SSGAttrLfSweepFrequencySpan_ReadCallback SSGAttrLfSweepFrequencySpan_WriteCallback
High Level Functions	SSG_ConfigureLFSweepCenterSpanFreq
Description	Configure the frequency span for the LF sweep.
Value Range	0.01 ~ 1e6

4.7.13 Sweep Time

Attributes Defines	SSG_ATTR_LF_SWEEP_TIME
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrLfSweepTime_ReadCallback SSGAttrLfSweepTime_WriteCallback
High Level Functions	SSG_ConfigureLFSweepParameter
Description	Configure the sweep time for the LF sweep.
Value Range	1.0e-3 ~ 500

4.7.14 Trigger Mode

Attributes Defines	SSG_ATTR_LF_SWEEP_TRIGGER_SOURCE
Data Type	ViInt32
Access	R/W
Common Control Functions	SSGAttrLfSweepTriggerSource_ReadCallback SSGAttrLfSweepTriggerSource_WriteCallback
High Level Functions	SSG_ConfigureLFSweepParameter
Description	Configure the trigger source for the LF sweep.

Value Range

Enumeration	Attribute Value Defines	value
AUTO	SSG_VAL_LF_SWEEP_TRIGGER_SOURCE_IMMEDIATE	0
KEY	SSG_VAL_LF_SWEEP_TRIGGER_SOURCE_KEY	1
BUS	SSG_VAL_LF_SWEEP_TRIGGER_SOURCE_SOFTWARE	2
EXT	SSG_VAL_LF_SWEEP_TRIGGER_SOURCE_EXTERNAL	3

4.7.15 Trigger Slope

Attributes Defines	SSG_ATTR_LF_SWEEP_TRIGGER_EXT_SLOPE
Data Type	ViInt32
Access	R/W
Common Control Functions	SSGAttrLfSweepTriggerExtSlope_ReadCallback SSGAttrLfSweepTriggerExtSlope_WriteCallback
High Level Functions	SSG_ConfigureLFSweepExtSlope
Description	Configure the external trigger slope for the LF sweep.

Value Range

Enumeration	Attribute Value Defines	value
POS	SSG_VAL_LF_SWEEP_TRIGGER_SLOPE_POSITIVE	0
NEG	SSG_VAL_LF_SWEEP_TRIGGER_SLOPE_NEGATIVE	1

4.7.16 Sweep Shape

Attributes Defines	SSG_ATTR_LF_SWEEP_SHAPE
Data Type	ViInt32
Access	R/W
Common Control Functions	SSGAttrLfSweepShape_ReadCallback

	SSGAttrLfSweepShape_WriteCallbackk
High Level Functions	SSG_ConfigureLFSweepParameter
Description	Configure the LF sweep shape

Value Range

Enumeration	Attribute Value Defines	value
SAWTooth	SSG_VAL_LF_SWEEP_SHAPE_SAWTOOTH	0
TRiangle	SSG_VAL_LF_SWEEP_SHAPE_TRIANGLE	1

4.7.17 Sweep Space

Attributes Defines	SSG_ATTR_LF_SWEEP_SPACE
Data Type	ViInt32
Access	R/W
Common Control Functions	SSGAttrLfSweepSpace_ReadCallback SSGAttrLfSweepSpace_WriteCallback
High Level Functions	SSG_ConfigureLFSweepParameter
Description	Configure the LF sweep spacing

Value Range

Enumeration	Attribute Value Defines	value
LINear	SSG_VAL_LF_SWEEP_SPACE_LINEAR	0
LOGarithmic	SSG_VAL_LF_SWEEP_SPACE_LOGARITHMIC	1

4.8 Sweep

4.8.1 Sweep Mode

Attributes Defines	SSG_ATTR_SWEEP_MODE
Data Type	ViInt32

Access	R/W
Common Control Functions	SSGAttrSweepMode_ReadCallback SSGAttrSweepMode_WriteCallback
High Level Functions	SSG_Configureweep
Description	Activate frequency or/and level sweep

Value Range

Enumeration	Attribute Value Defines	value
OFF	SSG_VAL_SWEEP_MODE_OFF	0
FREQuency	SSG_VAL_SWEEP_MODE_FREQ	1
LEVel	SSG_VAL_SWEEP_MODE_LEVEL	2
LEV_FREQ	SSG_VAL_SWEEP_MODE_FREQ_LEVEL	3

4.8.2 Sweep Type

Attributes Defines	SSG_ATTR_SWEEP_TYPE
Data Type	ViInt32
Access	R/W
Common Control Functions	SSGAttrSweepType_ReadCallback SSGAttrSweepType_WriteCallback
High Level Functions	SSG_ConfigureweepType
Description	Configure sweep type as step sweep or list sweep.

Value Range

Enumeration	Attribute Value Defines	value
LIST	SSG_VAL_SWEEP_LIST	0
STEP	SSG_VAL_SWEEP_STEP	1

4.8.3 Start Frequency

Attributes Defines	SSG_ATTR_FREQUENCY_STEP_START
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrFrequencyStepStart_ReadCallback SSGAttrFrequencyStepStart_WriteCallback
High Level Functions	SSG_ConfigureweepStepRangeParams
Description	Configure the start frequency for the step sweep.
Value Range	Depends on the frequency range

4.8.4 Stop Frequency

Attributes Defines	SSG_ATTR_FREQUENCY_STEP_STOP
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrFrequencyStepStop_ReadCallback SSGAttrFrequencyStepStop_WriteCallback
High Level Functions	SSG_ConfigureweepStepRangeParams
Description	Configure the stop frequency for the step sweep.
Value Range	Depends on the frequency range

4.8.5 Start Level

Attributes Defines	SSG_ATTR_POWER_STEP_START
Data Type	ViReal64
Access	R/W

Common Control Functions	SSGAttrPowerStepStart_ReadCallback SSGAttrPowerStepStart_WriteCallback
High Level Functions	SSG_ConfigureweepStepRangeParams
Description	Configure the start level for the step sweep.
Value Range	Depends on the level range

4.8.6 Stop Level

Attributes Defines	SSG_ATTR_POWER_STEP_STOP
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrPowerStepStop_ReadCallback SSGAttrPowerStepStop_WriteCallback
High Level Functions	SSG_ConfigureweepStepRangeParams
Description	Configure the stop level for the step sweep.
Value Range	Depends on the level range

4.8.7 Sweep Points

Attributes Defines	SSG_ATTR_SWEEP_POINTS
Data Type	ViInt32
Access	R/W
Common Control Functions	SSGAttrSweepPoints_ReadCallback SSGAttrSweepPoints_WriteCallback
High Level Functions	SSG_ConfigureweepPointsNum
Description	Configure the number of steps in an RF sweep
Value Range	2~65535

4.8.8 Dwell Time

Attributes Defines	SSG_ATTR_FREQUENCY_STEP_DWELL
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrFrequencyStepDwell_ReadCallback SSGAttrFrequencyStepDwell_WriteCallback
High Level Functions	SSG_ConfigureweepStepRangeParams
Description	Configure the duration of the individual sweep step for the step sweep.
Value Range	10ms~100s

4.8.9 Sweep Shape

Attributes Defines	SSG_ATTR_FREQUENCY_STEP_SHAPE
Data Type	ViInt32
Access	R/W
Common Control Functions	SSGAttrFrequencyStepShape_ReadCallback SSGAttrFrequencyStepShape_WriteCallback
High Level Functions	SSG_ConfigureweepShape
Description	Configure the sweep shape.

Value Range

Enumeration	Attribute Value Defines	value
SAWtooth	SSG_VAL_FREQUENCY_STEP_SCALING_SAWTOOTH	0
TRIangle	SSG_VAL_FREQUENCY_STEP_SHAPE_TRIANGLE	1

4.8.10 Sweep Space

Attributes Defines	SSG_ATTR_FREQUENCY_STEP_SCALING
Data Type	ViInt32
Access	R/W
Common Control Functions	SSGAttrFrequencyStepScaling_ReadCallback SSGAttrFrequencyStepScaling_WriteCallback
High Level Functions	SSG_ConfigureweepStep
Description	Configure the sweep spacing

Value Range

Enumeration	Attribute Value Defines	value
LINear	SSG_VAL_FREQUENCY_STEP_SCALING_LINEAR	0
LOGarithmic	SSG_VAL_FREQUENCY_STEP_SCALING_LOGARITHMIC	1

4.8.11 Frequecny Step

Attributes Defines	SSG_ATTR_FREQUENCY_STEP_SIZE
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrFrequencyStepSize_ReadCallback SSGAttrFrequencyStepSize_WriteCallback
High Level Functions	SSG_ConfigureweepStep
Description	Configure the sweep step in linear sweep space.
Value Range	

4.8.12 Sweep Direction

Attributes Defines	SSG_ATTR_SWEEP_DIRCTION
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Data Type	ViInt32
Access	R/W
Common Control Functions	SSGAttrSweepDirction_ReadCallback SSGAttrSweepDirction_WriteCallback
High Level Functions	SSG_ConfigureweepDirection
Description	Configure the sweep direction.

Value Range

Enumeration	Attribute Value Defines	value
FWD	SSG_VAL_SWEEP_DIRECTION_UP	0
REV	SSG_VAL_SWEEP_DIRECTION_DOWN	1

4.8.13 Single Sweep Enabled

Attributes Defines	SSG_ATTR_SWEEP_SINGLE_STATUS
Data Type	ViBoolean
Access	R/W
Common Control Functions	SSGAttrSweepSingleStatus_ReadCallback SSGAttrSweepSingleStatus_WriteCallback
High Level Functions	SSG_ConfigureweepSingleEnabled
Description	Enable or disable the single sweep.

4.8.14 Execute Single Sweep

Attributes Defines	SSG_ATTR_EXECUTE_SINGLE_SWEEP
Data Type	ViInt32
Access	W

Common Control Functions	SSGAttrExecuteSingleSweep_WriteCallback
High Level Functions	SSG_ExecuteSingleSweep
Description	Execute a single sweep.

4.8.15 Trigger Source

Attributes Defines	SSG_ATTR_SWEEP_TRIGGER_SOURCE
Data Type	ViInt32
Access	R/W
Common Control Functions	SSGAttrSweepTriggerSource_ReadCallback SSGAttrSweepTriggerSource_WriteCallback
High Level Functions	SSG_Configureweep
Description	Configure the trigger source.

Value Range

Enumeration	Attribute Value Defines	value
AUTO	SSG_VAL_SWEEP_TRIGGER_SOURCE_IMMEDIATE	0
KEY	SSG_VAL_SWEEP_TRIGGER_SOURCE_KEY	1
BUS	SSG_VAL_SWEEP_TRIGGER_SOURCE_SOFTWARE	2
EXT	SSG_VAL_SWEEP_TRIGGER_SOURCE_EXTERNAL	3

4.8.16 Point Trigger Source

Attributes Defines	SSG_ATTR_SWEEP_POINT_TRIGGER_SOURCE
Data Type	ViInt32
Access	R/W

Common Control Functions	SSGAttrSweepPointTriggerSource_ReadCallback SSGAttrSweepPointTriggerSource_WriteCallback
High Level Functions	SSG_Configureweep
Description	Configure the point trigger source

Value Range

Enumeration	Attribute Value Defines	value
AUTO	SSG_VAL_SWEEP_TRIGGER_SOURCE_IMMEDIATE	0
KEY	SSG_VAL_SWEEP_TRIGGER_SOURCE_KEY	1
BUS	SSG_VAL_SWEEP_TRIGGER_SOURCE_SOFTWARE	2
EXT	SSG_VAL_SWEEP_TRIGGER_SOURCE_EXTERNAL	3

4.8.17 Trigger Slope

Attributes Defines	SSG_ATTR_SWEEP_TRIGGER_SLOPE
Data Type	ViInt32
Access	R/W
Common Control Functions	SSGAttrSweepTriggerSlope_ReadCallback SSGAttrSweepTriggerSlope_WriteCallback
High Level Functions	SSG_ConfigureweepExtTrigSlope
Description	Configure the external trigger slope

Value Range

Enumeration	Attribute Value Defines	value
POSitive	SSG_VAL_SWEEP_TRIGGER_SLOPE_POSITIVE	0
NEGative	SSG_VAL_SWEEP_TRIGGER_SLOPE_NEGATIVE	1

4.9 SENSOR

4.9.1 Sensor Info

Attributes Defines	SSG_ATTR_SENSOR_INFO
Data Type	ViConstString
Access	R
Common Control Functions	SSGAttrSensorInfo_ReadCallback
High Level Functions	SSG_GetSensorInfo
Description	Read the information of the sensor connected to SSG.
Value Range	None

4.9.2 Sensor State

Attributes Defines	SSG_ATTR_SENSOR_MEASURE_ENABLED
Data Type	ViBoolean
Access	R/W
Common Control Functions	SSGAttrSensorMeasureEnabled_ReadCallback SSGAttrSensorMeasureEnabled_WriteCallback
High Level Functions	SSG_ConfigureensorMeasEnabled
Description	Enable/disable sensor measurement.
Value Range	0 1

4.9.3 Measurement

Attributes Defines	SSG_ATTR_SENSOR_READ_VALUE
Data Type	ViReal64
Access	R

Common Control Functions	SSGAttrSensorReadValue_ReadCallback
High Level Functions	SSG_GetSensorMeasVal
Description	Read sensor measurement value.
Value Range	None

4.9.4 Level Control State

Attributes Defines	SSG_ATTR_SENSOR_LEVEL_CONTROL_STATE
Data Type	ViBoolean
Access	R/W
Common Control Functions	SSGAttrSensorLevelControlState_ReadCallback SSGAttrSensorLevelControlState_WriteCallback
High Level Functions	SSG_ConfigureensorLevelControl
Description	Enable/disable sensor level control.
Value Range	0 1

4.9.5 Target Level

Attributes Defines	SSG_ATTR_SENSOR_TARGET_LEVEL
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrSensorTargetLevel_ReadCallback SSGAttrSensorTargetLevel_WriteCallback
High Level Functions	SSG_ConfigureensorLevelControl
Description	Configure the target level for the sensor level control.
Value Range	-120 ~ 20

4.9.6 Limit Level

Attributes Defines	SSG_ATTR_SENSOR_LIMIT_LEVEL
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrSensorLimitLevel_ReadCallback SSGAttrSensorLimitLevel_WriteCallback
High Level Functions	SSG_ConfigureensorLevelControl
Description	Configure the limit level for the sensor level control.
Value Range	-120 ~ 20

4.9.7 Catch Level

Attributes Defines	SSG_ATTR_SENSOR_CATCH_LEVEL
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrSensorCatchLevel_ReadCallback SSGAttrSensorCatchLevel_WriteCallback
High Level Functions	SSG_ConfigureensorLevelControl
Description	Configure the catch level for the sensor level control.
Value Range	0 ~ 50

4.9.8 Statistics State

Attributes Defines	SSG_ATTR_SENSOR_STATISTICS_STATE
Data Type	ViBoolean
Access	R/W

Common Control Functions	SSGAttrSensorStatisticsState_ReadCallback SSGAttrSensorStatisticsState_WriteCallback
High Level Functions	None
Description	Enable/disable sensor statistics state.
Value Range	0 1

4.9.9 Statistics Max value

Attributes Defines	SSG_ATTR_SENSOR_STATISTICS_MAX
Data Type	ViReal64
Access	R
Common Control Functions	SSGAttrSensorStatisticsMax_ReadCallback
High Level Functions	None
Description	Read the max value of the sensor statistics result.
Value Range	None

4.9.10 Statistics Min Value

Attributes Defines	SSG_ATTR_SENSOR_STATISTICS_MIN
Data Type	ViReal64
Access	R
Common Control Functions	SSGAttrSensorStatisticsMin_ReadCallback
High Level Functions	None
Description	Read the min value of the sensor statistics result.
Value Range	None

4.9.11 Statistics Mean Value

Attributes Defines	SSG_ATTR_SENSOR_STATISTICS_MEAN
Data Type	ViReal64
Access	R
Common Control Functions	SSGAttrSensorStatisticsMean_ReadCallback
High Level Functions	None
Description	Read the mean value of the sensor statistics result.
Value Range	None

4.9.12 Statistics Count

Attributes Defines	SSG_ATTR_SENSOR_STATISTICS_COUNT
Data Type	ViInt32
Access	R
Common Control Functions	SSGAttrSensorStatisticsCount_ReadCallback
High Level Functions	None
Description	Read the statistics count of the sensor statistics result.
Value Range	None

4.9.13 Clear Statistics

Attributes Defines	SSG_ATTR_SENSOR_STATISTICS_CLEAR
Data Type	ViInt32
Access	W
Common Control Functions	SSGAttrSensorStatisticsClear_WriteCallback

High Level Functions	None
Description	Clear the sensor statistics result.
Value Range	None

4.9.14 Auto Zero

Attributes Defines	SSG_ATTR_SENSOR_AUTO_ZERO
Data Type	ViInt32
Access	R/W
Common Control Functions	SSGAttrSensorAutoZero_ReadCallback SSGAttrSensorAutoZero_WriteCallback
High Level Functions	None
Description	Configure the type of the sensor auto zero.

Value Range

Enumeration	Attribute Value Defines	value
INTernal	SSG_VAL_SENSOR_AUTO_ZERO_INTERNAL	0
EXTernal	SSG_VAL_SENSOR_AUTO_ZERO_EXTERNAL	1

4.9.15 Execute Auto Zero

Attributes Defines	SSG_ATTR_SENSOR_PERFORM_ZEROING
Data Type	ViInt32
Access	W
Common Control Functions	SSGAttrSensorPerformZeroing_WriteCallback
High Level Functions	None
Description	Execute auto zero for the sensor.

4.9.16 Frequency Type

Attributes Defines	SSG_ATTR_SENSOR_MEAS_FREQUENCY_TYPE
Data Type	ViInt32
Access	R/W
Common Control Functions	SSGAttrSensorMeasFrequencyType_ReadCallback SSGAttrSensorMeasFrequencyType_WriteCallback
High Level Functions	None
Description	Configure the frequency type the sensor measured.

Value Range

Enumeration	Attribute Value Defines	value
RF	SSG_VAL_SENSOR_MAES_FREQUENCY_AUTO	0
USER	SSG_VAL_SENSOR_MAES_FREQUENCY_MANUAL	1

4.9.17 Frequency Manual Value

Attributes Defines	SSG_ATTR_SENSOR_MEAS_FREQUENCY_MANUAL_VAL
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrSensorMeasFrequencyManualVal_ReadCallback SSGAttrSensorMeasFrequencyManualVal_WriteCallback
High Level Functions	None
Description	Configure the manual frequency the sensor measured.
Value Range	Depends on the sensor connected to SSG.

4.9.18 Level Off State

Attributes Defines	SSG_ATTR_SENSOR_LEVEL_OFFSET_STATE
Data Type	ViBoolean
Access	R/W
Common Control Functions	SSGAttrSensorLevelOffsetState_ReadCallback SSGAttrSensorLevelOffsetState_WriteCallback
High Level Functions	SSG_ConfigureensorLevelOffsetEnabled
Description	Enable/disable sensor level offset state.
Value Range	0 1

4.9.19 Level Offset

Attributes Defines	SSG_ATTR_SENSOR_LEVEL_OFFSET_VAL
Data Type	ViReal64
Access	R/W
Common Control Functions	SSGAttrSensorLevelOffsetVal_ReadCallback SSGAttrSensorLevelOffsetVal_WriteCallback
High Level Functions	SSG_ConfigureensorLevelOffsetVal
Description	Configure the level offset for the sensor.
Value Range	-200 ~ 200

4.9.20 Averaging Type

Attributes Defines	SSG_ATTR_SENSOR_AVERAGING_TYPE
Data Type	ViInt32
Access	R/W

Common Control Functions	SSGAttrSensorAveragingType_ReadCallback SSGAttrSensorAveragingType_WriteCallback
High Level Functions	None
Description	Configure the averaging type of the sensor measurement.

Value Range

Enumeration	Attribute Value Defines	value
AUTO	SSG_VAL_SENSOR_AVERAGING_TYPE_AUTO	0
USER	SSG_VAL_SENSOR_AVERAGING_TYPE_MANUAL	1
NSRatio	SSG_VAL_SENSOR_AVERAGING_TYPE_FIXED_NOISE	2

4.9.21 Averaging Count

Attributes Defines	SSG_ATTR_SENSOR_AVERAGING_MANUAL_COUNT
Data Type	ViInt32
Access	R/W
Common Control Functions	SSGAttrSensorAveragingManualCount_ReadCallback SSGAttrSensorAveragingManualCount_WriteCallback
High Level Functions	None
Description	Configure the averaging count of the manual averaging for the sensor.
Value Range	1~65536

4.9.22 Logging

Attributes Defines	SSG_ATTR_SENSOR_LOGGING_STATE
Data Type	ViBoolean
Access	R/W

Common Control Functions	SSGAttrSensorLoggingState_ReadCallback SSGAttrSensorLoggingState_WriteCallback
High Level Functions	None
Description	Enable/disable sensor logging state.
Value Range	0 1

5 High Level Functions

5.1 Base

5.1.1 SSG_ConfigureRF

Description

Configure the frequency and the power/level of the RF output signal.

C Function Prototype

```
ViStatus _VI_FUNC SSG_ConfigureRF(  
  
                                ViSession  vi,  
  
                                ViReal64   frequency,  
  
                                ViReal64   powerLevel)
```

Parameters

Inputs	Description	Base Type
vi	Instrument handle	ViSession
frequency	Output frequency	ViReal64
powerLevel	Output Power/Level	ViReal64

5.1.2 SSG_ConfigureRFFreq

Description

Configure the frequency and frequency offset of the RF output signal.

C Function Prototype

```
ViStatus _VI_FUNC SSG_ConfigureRFFreq(  
  
    ViSession    vi,  
  
    ViReal64     frequency,  
  
    ViReal64     freqOffset)
```

Parameters

Inputs	Description	Base Type
vi	Instrument handle	ViSession
frequency	Output frequency	ViReal64
freqOffset	Frequency offset	ViReal64

5.1.3 SSG_ConfigureOutputEnabled

Description

Configure the RF output ON or OFF.

C Function Prototype

```
SSG_ConfigureOutputEnabled(  
  
    ViSession    vi,  
  
    ViBoolean     outputEnabled)
```

Parameters

Inputs	Description	Base Type
vi	Instrument handle	ViSession
outputEnabled	RF output state	ViBoolean

5.1.4 SSG_ConfigureRFPhase

Description

Set the phase offset value

C Function Prototype

```
SSG_ConfigureRFPhase (ViSession vi,  
  
ViReal64 phaseOffset)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
phaseOffset	Phase offset value	ViReal64

5.1.5 SSG_ConfigureRFPhaseReset

Description

Set the current phase to zero

C Function Prototype

```
SSG_ConfigureRFPhaseReset (ViSession vi)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession

5.1.6 SSG_ConfigureRFLevel

Description

Configure the power/level and level offset of the RF output signal.

C Function Prototype

```
SSG_ConfigureRFLevel (ViSession vi,  
  
                      ViReal64 level,  
  
                      ViReal64 levelOffset)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
level	power/level	ViReal64
levelOffset	level offset	ViReal64

5.1.7 SSG_ConfigureALCState

Description

Activate/deactivate automatic level control.

C Function Prototype

```
SSG_ConfigureALCState(  
  
                      ViSession vi,  
  
                      ViInt32 state)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
state	Reference ALC State	ViInt32

5.2 AM

5.2.1 SSG_ConfigureAnalogMODEnabled

Description

Switch modulation on and off

C Function Prototype

```
SSG_ConfigureAnalogMODEnabled(ViSession vi,  
  
                                ViBoolean enabled)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
enabled	Enable/disable	ViBoolean

5.2.2 SSG_ConfigureAMEnabled

Description

Configure the signal generator to apply amplitude modulation to the RF output signal.

C Function Prototype

```
SSG_ConfigureAMEnabled(  
  
                        ViSession vi,  
  
                        ViBoolean enabled)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
enabled	Enable/disable	ViBoolean

5.2.3 SSG_ConfigureAMPParameter

Description

Configure the attributes that control the signal generator's amplitude modulation. These attributes are the modulation source, shape, rate and depth.

C Function Prototype

```
SSG_ConfigureAMPParameter(ViSession vi,  
  
                           ViConstString source,  
  
                           ViInt32 shape,  
  
                           ViReal64 rate,  
  
                           ViReal64 depth)
```

Parameters

Inputs	Description	Base Type
vi	Instrument handle	ViSession
source	Source	ViConstString
shape	Shape	ViInt32
rate	Modulation rate	ViReal64
depth	Modulation depth	ViReal64

5.3 FM

5.3.1 SSG_ConfigureFMEnabled

Description

Configure the signal generator to apply frequency modulation to the RF output signal.

C Function Prototype

```
SSG_ConfigureFMEnabled(  
  
    ViSession    vi,  
  
    ViBoolean    enabled)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
enabled	Enable/disable	ViBoolean

5.3.2 SSG_ConfigureFM

Description

Configure the attribute that control the signal generator's frequency modulation. The attributes are the modulation deviation and the modulating source(s).

C Function Prototype

```
SSG_ConfigureFM(  
  
    ViSession    vi,  
  
    ViConstString source,  
  
    ViReal64     deviation)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
source	Source	ViConstString
deviation	modulation deviation	ViReal64

5.3.3 SSG_ConfigureFMSource

Description

Configure the source that control the signal generator's frequency modulation.

C Function Prototype

```
SSG_ConfigureFMSource (ViSession vi,  
  
                       ViConstString source)
```

Parameters

Inputs	Description	Base Type
vi	Instrument handle	ViSession
source	Source	ViConstString

5.3.4 SSG_ConfigureFMParameter

Description

Configure the attribute that control the signal generator's frequency modulation. The attributes are the modulation deviation, shape, phase and the modulating rate. It has two channels, and different sources

have different configurable parameters.

C Function Prototype

```
SSG_ConfigureFMParameter(ViSession vi,  
  
                          ViInt32 channel,  
  
                          ViInt32 shape,  
  
                          ViReal64 deviation,  
  
                          ViReal64 rate,  
  
                          ViReal64 phase)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
channel	Two channels can be set	ViInt32
shape	Shape	ViInt32
deviation	Modulation deviation	ViReal64
rate	Modulation rate	ViReal64
phase	Phase	ViReal64

5.3.5 SSG_ConfigureFMInt1Proportion

Description

Set the proportion of the FM waveform1 when the FM Source is Dual

C Function Prototype

```
SSG_ConfigureFMInt1Proportion(ViSession vi,  
  
                               ViReal64 proportion)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
proportion	Proportion value	ViReal64

5.4 PM

5.4.1 SSG_ConfigurePMEnabled

Description

Configure the signal generator to apply phase modulation to the RF output signal.

C Function Prototype

```
SSG_ConfigurePMEnabled(  
  
                        ViSession  vi,  
  
                        ViBoolean  enabled)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
Enabled	PM enable/disable	ViBoolean

5.4.2 SSG_ConfigurePM

Description

Configure the attribute that control the signal generator's phase modulation. The attributes are the

modulation deviation and the modulating source(s).

C Function Prototype

```
SSG_ConfigurePM(  
  
    ViSession      vi,  
  
    ViConstString  source,  
  
    ViReal64       deviation)
```

Parameters

Inputs	Description	Base Type
vi	Instrument handle	ViSession
source	Source	ViConstString
deviation	modulation deviation	ViReal64

5.4.3 SSG_ConfigurePMPParameter

Description

Configure the attribute that control the signal generator's phase modulation. The attributes are the modulation deviation , shape and the modulating rate.

C Function Prototype

```
SSG_ConfigurePMPParameter (ViSession vi,  
  
    ViConstString source,  
  
    ViInt32 shape,  
  
    ViReal64 deviation,  
  
    ViReal64 rate)
```

Parameters

Inputs	Description	Base Type
vi	Instrument handle	ViSession
source	Source	ViConstString
shape	Shape	ViInt32

deviation	Modulation deviation	ViReal64
rate	Modulation rate	ViReal64

5.5 *Pulse*

5.5.1 SSG_ConfigurePulseModulationEnabled

Description

Configure the signal generator to apply pulse modulation to the RF output signal.

C Function Prototype

```
SSG_ConfigurePulseModulationEnabled(
    ViSession  vi,
    ViBoolean  enabled)
```

Parameters

Inputs	Description	Base Type
vi	Instrument handle	ViSession
enabled	Pulse enable/disable	ViBoolean

5.5.2 SSG_ConfigurePulseModulationSource

Description

Configure the source the signal generator's uses for pulse modulation of the RF.

C Function Prototype

```
SSG_ConfigurePulseModulationSource(  
  
    ViSession  vi,  
  
    ViInt32    source)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
source	Source	ViInt32

5.5.3 SSG_ConfigurePulseModulationExternalPolarity

Description

Specifies the polarity of the external source signal.

C Function Prototype

```
SSG_ConfigurePulseModulationExternalPolarity(  
  
    ViSession  vi,  
  
    ViInt32    polarity)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
polarity	External Polarity	ViInt32

5.5.4 SSG_ConfigurePulseMode

Description

Configure the pulse mode as Single, Double or Train.

C Function Prototype

```
SSG_ConfigurePulseMode(  
  
    ViSession    vi,  
  
    ViInt32      pulseMode)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
pulseMode	Pulse Mode	ViInt32

5.5.5 SSG_ConfigurePulseSingle

Description

Configure the period and width for the pulse generator within the RF signal generator.

C Function Prototype

```
SSG_ConfigurePulseSingle(  
  
    ViSession    vi,  
  
    ViReal64      pulsePeriod,  
  
    ViReal64      pulseWidth)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
pulsePeriod	Pulse period	ViReal64
pulseWidth	Pulse width	ViReal64

5.5.6 SSG_ConfigurePulseDouble

Description

Configure the pulse generator within the RF signal generator. Specifies double pulse delay and width.

C Function Prototype

```
SSG_ConfigurePulseDouble(  
  
    ViSession    vi,  
  
    ViReal64     delay,  
  
    ViReal64     width)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
delay	Double pulse delay time	ViReal64
width	Double pulse width	ViReal64

5.5.7 SSG_ConfigurePulseOutput

Description

Configure the output and polarity of the pulse generator within the RF signal generator.

C Function Prototype

```
SSG_ConfigurePulseOutput(  
  
    ViSession    vi,  
  
    ViInt32      polarity,  
  
    ViBoolean     enabled)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
polarity	Output Polarity	ViInt32

enabled	Pulse output enable/disable	ViBoolean
---------	-----------------------------	-----------

5.5.8 SSG_ConfigureTriggerSource

Description

Specifies the trigger source.

C Function Prototype

```
SSG_ConfigureTriggerSource(ViSession vi,
                           ViInt32 triggerSource)
```

Parameters

Inputs	Description	Base Type
vi	Instrument handle	ViSession
triggerSource	Trigger Source	ViInt32

5.5.9 SSG_ConfigurePulseExternalTrigger

Description

Configure the trigger slope and delay of the external trigger signal for the pulse modulation.

C Function Prototype

```
SSG_ConfigurePulseExternalTrigger(
    ViSession vi,
    ViInt32 polarity,
    ViReal64 delay)
```

Parameters

Inputs	Description	Base Type
vi	Instrument handle	ViSession
polarity	Trigger Slope	ViInt32
delay	Trigger delay time	ViReal64

5.5.10 SSG_ConfigurePulseExtGatePolarity

Description

Configure the polarity of the external gating signal for the pulse modulation.

C Function Prototype

```
SSG_ConfigurePulseExtGatePolarity(  
  
    ViSession    vi,  
  
    ViInt32      polarity)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
polarity	Ext Gate Polarity	ViInt32

5.5.11 SSG_ConfigurePulseTriggerOut

Description

Configure the output state of the pulse trigger signal.

C Function Prototype

```
SSG_ConfigurePulseTriggerOut(  
  
    ViSession    vi,  
  
    ViBoolean     enabled)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
enabled	Enable/disable	ViInt32

5.6 LF

5.6.1 SSG_ConfigureLFGenerator

Description

Configure the LF generators output frequency and waveform.

C Function Prototype

```
SSG_ConfigureLFGenerator(  
  
    ViSession    vi,  
  
    ViReal64     frequency,  
  
    ViInt32      waveform)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
frequency	LF output frequency	ViReal64
waveform	LF Waveform	ViInt32

5.6.2 SSG_ConfigureLFGeneratorOutput

Description

Configure the attributes of the LF generator (within the RF signal generator). These attributes are the output voltage and output enable/disable.

C Function Prototype

```
SSG_ConfigureLFGeneratorOutput(  
  
    ViSession    vi,  
  
    ViReal64     amplitude,  
  
    ViBoolean     enabled)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession

amplitude	The LF output level	ViReal64
enabled	The LF output enable/disable	ViBoolean

5.6.3 SSG_ConfigureLFGeneratorOffset

Description

Configure the level offset of the LF generator (within the RF signal generator).

C Function Prototype

```
SSG_ConfigureLFGeneratorOffset(ViSession vi,
                                ViReal64 levelOffset)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
levelOffset	Level offset value	ViReal64

5.6.4 SSG_ConfigureLFGeneratorPhase

Description

Configure the phase of the LF generator (within the RF signal generator).

C Function Prototype

```
SSG_ConfigureLFGeneratorPhase(ViSession vi,
                                ViReal64 phase)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
phase	phase	ViReal64

5.6.5 SSG_ConfigureLFSweepEnabled

Description

Configure the state of the LF sweep.

C Function Prototype

```
SSG_ConfigureLFSweepEnabled(  
  
    ViSession    vi,  
  
    ViBoolean    enabled)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
enabled	The LF sweep enable/disable	ViBoolean

5.6.6 SSG_ConfigureLFSweepStartStopFreq

Description

Configure the start and stop frequency of the LF sweep.

C Function Prototype

```
SSG_ConfigureLFSweepStartStopFreq(ViSession vi,  
  
                                   ViReal64 startFreq,  
  
                                   ViReal64 stopFreq)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
startFreq	Start frequency of the LF sweep	ViReal64
stopFreq	Stop frequency of the LF sweep	ViReal64

5.6.7 SSG_ConfigureLFSweepCenterSpanFreq

Description

Configure the center frequency and frequency span of the LF sweep.

C Function Prototype

```
SSG_ConfigureLFSweepCenterSpanFreq(ViSession vi,  
  
                                     ViReal64 centerFreq,  
  
                                     ViReal64 freqSpan)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
centerFreq	Center frequency of the LF sweep	ViReal64
freqSpan	Frequency span of the LF sweep	ViReal64

5.6.8 SSG_ConfigureLFSweepParameter

Description

Configure the source, shape, spacing, sweep direction and sweep time of the LF sweep.

C Function Prototype

```
SSG_ConfigureLFSweepParameter(ViSession vi,  
  
                               ViInt32 source,  
  
                               ViInt32 shape,  
  
                               ViInt32 space,  
  
                               ViInt32 direction,  
  
                               ViReal64 dwell)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
source	Trigger Mode	ViInt32

shape	LF Sweep Shape	ViInt32
space	LF Sweep Space	ViInt32
direction	LF Sweep Direction	ViInt32
dwel1	Sweep time	ViReal64

5.6.9 SSG_ConfigureLFSweepExtSlope

Description

Configure the slope of the external trigger signal for the LF sweep.

C Function Prototype

```
SSG_ConfigureLFSweepExtSlope(ViSession vi,
                               ViInt32 slope)
```

Parameters

Inputs	Description	Base Type
vi	Instrument handle	ViSession
slope	Trigger Slope	ViInt32

5.7 Sweep

5.7.1 SSG_ConfigureSweep

Description

Configure the sweep mode, trigger source and point trigger source that control the sweep frequencies

of the generator's output signal.

C Function Prototype

```
SSG_ConfigureSweep(  
  
    ViSession    vi,  
  
    ViInt32      mode,  
  
    ViInt32      triggerSource,  
  
    ViInt32      pointTriggerSource)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
mode	Sweep Mode	ViInt32
triggerSource	Trigger Source	ViInt32
pointTriggerSource	Point Trigger Source	ViInt32

5.7.2 SSG_ConfigureSweepType

Description

Configure the sweep type as step sweep or list sweep.

C Function Prototype

```
SSG_ConfiguresweepType(  
  
    ViSession    vi,  
  
    ViInt32      item)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
item	Sweep Type	ViInt32

5.7.3 SSG_ConfigureSweepStepRangeParams

Description

Configure the attributes that control the sweep frequencies and levels of the generator's output signal. These attributes are start and stop frequency, start level, stop level and dwell time.

C Function Prototype

```
SSG_ConfigureSweepStepRangeParams(ViSession vi,  
  
                                   ViReal64 startFreq,  
  
                                   ViReal64 stopFreq,  
  
                                   ViReal64 startLevel,  
  
                                   ViReal64 stopLevel,  
  
                                   ViReal64 dwellTime)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
startFreq	Start frequency	ViReal64
stopFreq	Stop frequency	ViReal64
startLevel	Start level	ViReal64
stopLevel	Stop level	ViReal64
dwellTime	Dwell time	ViReal64

5.7.4 SSG_ConfigureSweepPointsNum

Description

Configure sweep points of the generator's output signal.

C Function Prototype

```
SSG_ConfigureSweepPointsNum(ViSession vi,  
  
                             ViInt32 space,  
  
                             ViInt32 points)
```

Parameters

Inputs	Description	Base Type
vi	Instrument handle	ViSession
space	Sweep Space	ViInt32
points	Sweep Points Number	ViInt32

5.7.5 SSG_ConfigureSweepStep

Description

Configure the attributes that control the sweep frequencies of the generator's output signal. These attributes are scaling and stop frequency step size.

C Function Prototype

```
SSG_ConfigureSweepStep(ViSession vi,  
  
                        ViInt32 space,  
  
                        ViReal64 freqStepSize)
```

Parameters

Inputs	Description	Base Type
vi	Instrument handle	ViSession
space	Sweep Space	ViInt32
freqStepSize	Frequency step size	ViReal64

5.7.6 SSG_ConfigureSweepShape

Description

Configure the sweep shape that control the sweep frequencies of the generator's output signal.

C Function Prototype

```
SSG_ConfigureSweepShape(ViSession vi,  
  
ViInt32 shape)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
shape	Sweep Shape	ViInt32

5.7.7 SSG_ConfigureSweepDirection

Description

Configure the sweep direction that control the sweep frequencies of the generator's output signal.

C Function Prototype

```
SSG_ConfigureSweepDirection(ViSession vi,  
  
ViInt32 direction)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
direction	Sweep Direction	ViInt32

5.7.8 SSG_ConfigureSweepSingleEnabled

Description

Enable or disable the single sweep of the generator's output signal.

C Function Prototype

```
SSG_ConfigureSweepSingleEnabled(ViSession vi,  
  
                                ViBoolean singleEnabled)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
singleEnabled	Enable / disable	ViBoolean

5.7.9 SSG_ExecuteSingleSweep

Description

Start a single sweep of the generator's output signal when single sweep enabled.

C Function Prototype

```
SSG_ExecuteSingleSweep(ViSession vi)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession

5.7.10 SSG_ConfigureSweepExtTrigSlope

Description

Configure the trigger slope of the external trigger signal for sweep.

C Function Prototype

```
SSG_ConfigureSweepExtTrigSlope(ViSession vi,  
  
                                ViInt32 slope)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
slope	Trigger Slope	ViInt32

5.7.11 SSG_ExecuteBusTrigger

Description

Send *TRG to the instrument.

C Function Prototype

```
SSG_ExecuteBusTrigger(ViSession vi)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession

5.8 SENSOR

5.8.1 SSG_GetSensorInfo

Description

Read the sensor information connected to SSG.

C Function Prototype

```
SSG_GetSensorInfo(  
  
    ViSession    vi,  
  
    ViConstString *sensorInfo)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
sensorInfo	Sensor information	ViConstString

5.8.2 SSG_ConfigureSensorMeasEnabled

Description

Configure the state of the sensor measurement.

C Function Prototype

```
SSG_ConfigureSensorMeasEnabled(  
  
    ViSession    vi,  
  
    ViBoolean    enabled)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
enabled	Enable/disable	ViBoolean

5.8.3 SSG_GetSensorMeasVal

Description

Read the sensor measurement value.

C Function Prototype

```
SSG_GetSensorMeasVal(  
  
    ViSession    vi,  
  
    ViReal64     *value)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
value	Sensor measurement value	ViReal64

5.8.4 SSG_ConfigureSensorLevelControl

Description

Configure the level control of the sensor measurement.

C Function Prototype

```
SSG_ConfigureSensorLevelControl(  
  
    ViSession    vi,  
  
    ViReal64     targetLevel,  
  
    ViReal64     limitLevel,  
  
    ViReal64     catchLevel,  
  
    ViBoolean     enabled)
```

Parameters

Inputs	Description	Base Type
Vi	Instrument handle	ViSession
targetLevel	Target Level	ViReal64
limitLevel	Limit Level	ViReal64

catchLevel	Catch Level	ViReal64
enabled	Enable/disable	ViBoolean