

## Product Datasheet - Technical Specifications



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# SSU5000A Series Mechanical Switch

Data Sheet

EN02A



# SSU5000A

## General Description

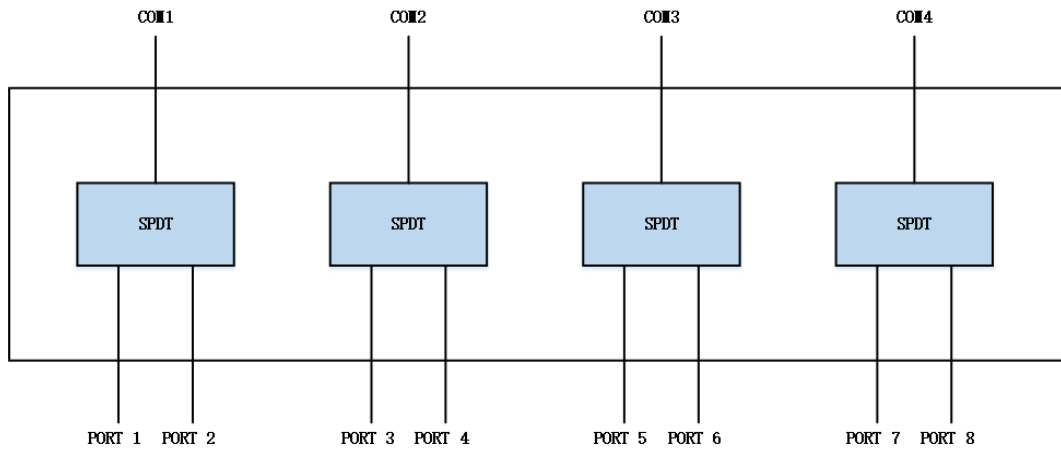
SSU5004A series mechanical switch, the last four digits of the model, the middle two digits indicate the frequency range, and the last number indicates the number of ports. Operating frequency range covers DC-50GHz, contains 1-4 independent single-pole double-throw mechanical switches with SMA or 2.4mm connectors, or single-pole six-throw mechanical switches, support TTL level control, can be widely used in multi-channel and multi-port test environment.

## Features

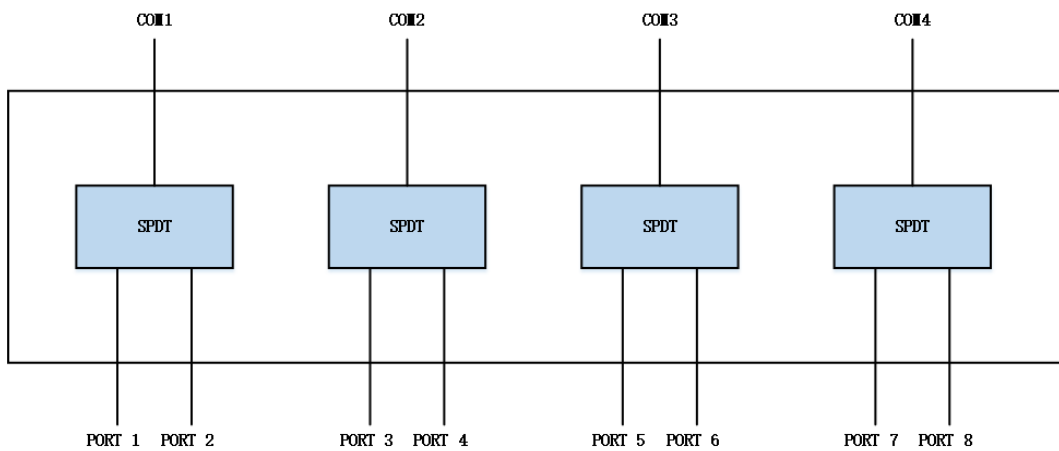
- Characteristic impedance: 50  $\Omega$
- Highest frequency:  
18GHz/26.5GHz/50GHz
- Maximum number of test ports:  
12(2 mechanical switches)
- RF connector: SMA Female or  
2.4mm Female
- Driving voltage: 12V
- Maximum driving current:1.25A
- Control mode: TTL

## Block diagrams

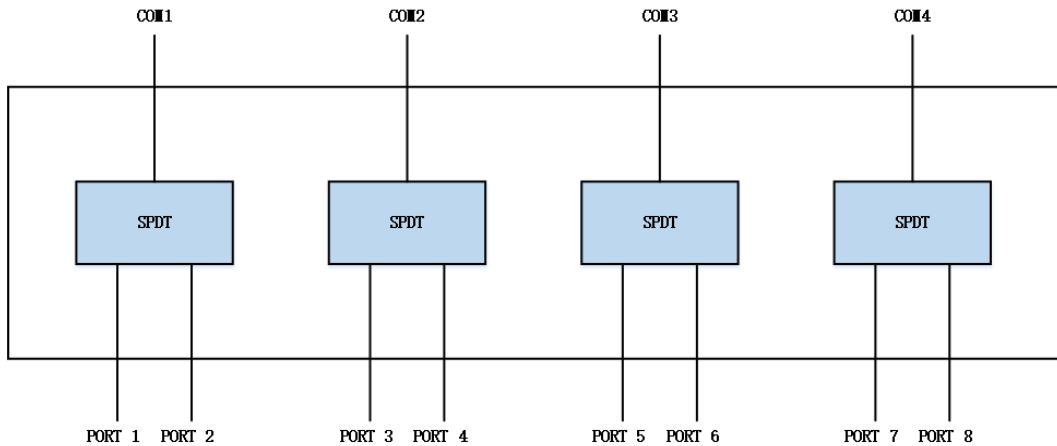
According to the highest working frequency, the switch module can be divided into three models: DC-18GHz, DC-26.5GHz and DC-50GHz. Each model contains four independent single-pole double-throw mechanical switches. The TTL level can be used to control the switching status of each mechanical switch.



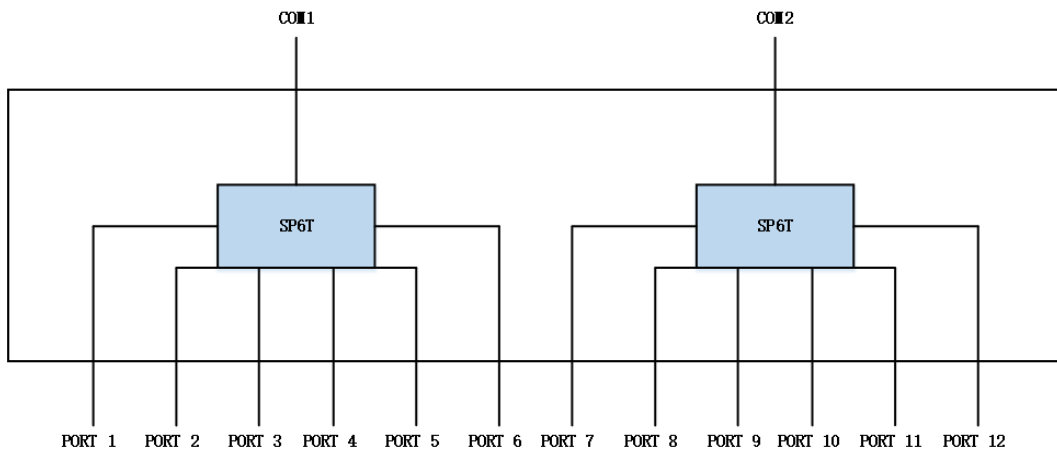
SSU5184A (DC-18GHz)



SSU5264A (DC-26.5GHz)



SSU5504A(DC-50GHz)



SSU5266A(DC-26.5GHz)

## Definitions

The data in this manual are technical indicators that include the measurement uncertainty unless otherwise noted.

**Specifications:** All products are guaranteed to meet published specifications at room temperature (approximately 25°C), unless otherwise noted.

**Typical:** Performance deemed typical implies that 80 percent of the measurement results will meet the typical published performance with a 95th percentile confidence level at room temperature (approximately 25°C). Typical performance is not warranted and does not include measurement uncertainty.

**Nominal:** This value indicates the expected mean or average performance, or an attribute whose performance is by design, such as the 50 Ohm connector.

## Specifications

Model: SSU5181A SSU5182A SSU5183A SSU5184A			
Specification:	DC-6GHz	6GHz-12GHz	12GHz-18GHz
VSWR:	<1.2	<1.3	<1.4
Insertion loss (dB):	<0.2	<0.3	<0.4
Isolation (dB):	<-70	<-70	<-60
Model: SSU5261A SSU5262A SSU5263A SSU5264A			
Specification:	DC-6GHz	6-12GHz	12-18GHz
VSWR:	<1.25	<1.4	<1.5
Insertion loss (dB):	<0.2	<0.4	<0.5
Isolation (dB):	<-70	<-60	<-60
Model: SSU5501A SSU5502A SSU5503A SSU5504A			
Specification:	DC-6GHz	6-18GHz	18-40GHz
VSWR:	<1.2	<1.3	<1.6
Insertion loss (dB):	<0.2	<0.3	<0.6
Isolation (dB):	<-80	<-70	<-70
Model: SSU5265A SSU5266A			
Specification:	DC-3GHz	3-8GHz	8-12.4GHz
VSWR:	<1.2	<1.3	<1.4
Insertion loss (dB):	<0.2	<0.3	<0.4
Isolation (dB):	<-80	<-70	<-60

## Remote control

The mechanical switch supports communication with compatible computers via USB interface. By using this interface, in combination with programming languages and/ or NI-VISA software, users can remotely control the mechanical switch.

### 1. Get Model Name

Command Format	MN?
Instruction	Returns the model name of the connected device.
Parameter Type	None

Parameter Range	None
Return	model name
Example	MN? Return:SSU5184A

## 2. Get Serial Number

Command Format	SN?
Instruction	Returns the serial number of the connected device.
Parameter Type	None
Parameter Range	None
Return	serial number
Example	SN? Return:10001

## 3. Get Software Version

Command Format	SV?
Instruction	Returns the software version of the connected device.
Parameter Type	None
Parameter Range	None
Return	software version
Example	SV? Return:V1.0.0.0

## 4. Set Single Switch State(SSU5264A)

Command Format	SET[switch_name]=[state]
Instruction	Sets an individual switch state whilst leaving any other switches unchanged.
Parameter Type	character; Boolean
Parameter Range	A~D; 0~1
Return	None
Example	Set switch A to state 0 ( Com port connected to port 1 ) SETA=0 Set switch C to state 1 ( Com port connected to port 2 )

	SETC=1
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5. Get Single Switch State(SSU5264A)

Command Format	GET[switch_name]?
Instruction	Returns an individual switch state.
Parameter Type	character
Parameter Range	A~D
Return	0~1
Example	Get switch B state GETB? Return:0

6. Set All Switches State(SSU5264A)

Command Format	SETP=[states]															
Instruction	Sets the states of all switches simultaneously.															
Parameter Type	Integer (decimal)															
Parameter Range	0~15															
Return	None															
Example	<p>SETP=14</p> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Bit</th> <th>Bit3</th> <th>Bit2</th> <th>Bit1</th> <th>Bit0(LSB)</th> </tr> </thead> <tbody> <tr> <td>Switch</td> <td>D</td> <td>C</td> <td>B</td> <td>A</td> </tr> <tr> <td>Value</td> <td>1</td> <td>1</td> <td>1</td> <td>0</td> </tr> </tbody> </table> <p>[states] = 1110(binary) = 14(decimal)</p>	Bit	Bit3	Bit2	Bit1	Bit0(LSB)	Switch	D	C	B	A	Value	1	1	1	0
Bit	Bit3	Bit2	Bit1	Bit0(LSB)												
Switch	D	C	B	A												
Value	1	1	1	0												

7. Get All Switch State(SSU5264A)

Command Format	SWPORT?
Instruction	Returns the states of all switches.
Parameter Type	None
Parameter Range	None
Return	The states of all switches (decimal)



Example	SWPORT? Return:14
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#### 8. Set Single Switch State(SSU5266A)

Command Format	SP6T[switch_name]:STATE:[state]
Instruction	Sets an individual switch state whilst leaving any other switches unchanged.
Parameter Type	character; Boolean
Parameter Range	A~B; 0~6
Return	None
Example	Set switch A to state 1 ( Com port connected to port 1 ) SP6TA:STATE:1

#### 9. Get Single Switch State(SSU5266A)

Command Format	SP6T[switch_name]:STATE?
Instruction	Returns an individual switch state.
Parameter Type	character
Parameter Range	A~B
Return	0~6
Example	Get switch A state SP6TA:STATE? Return:1

### Firmware operation

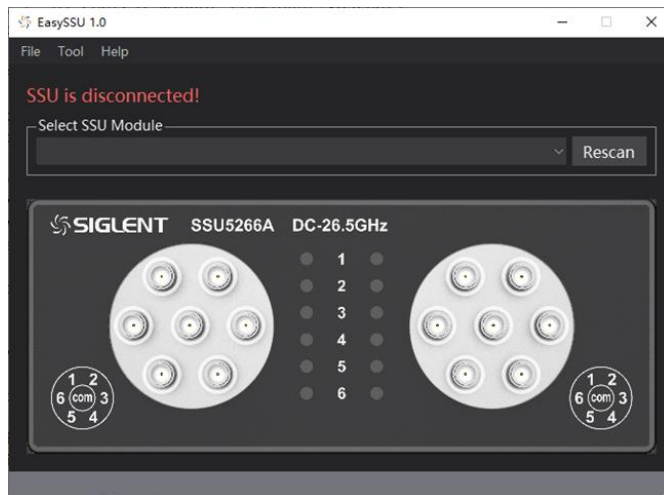
The user can switch the state of the switch through the control software (EasySSU).

1. Connect the device with a USB cable, click Rescan to get the switch information and connect.

1) SSU5264A

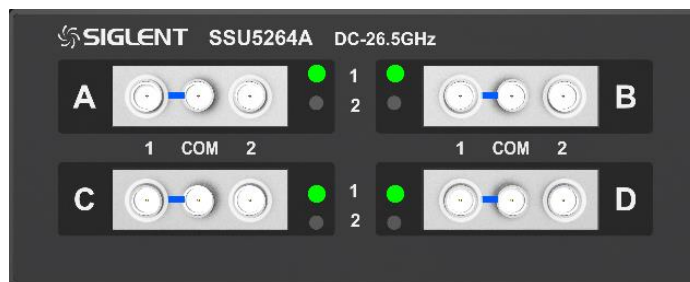


2) SSU5266A

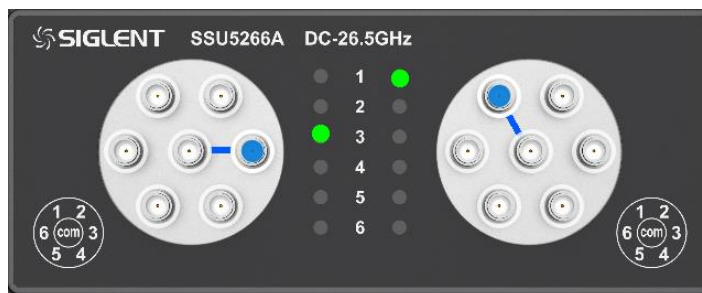


2. Click the switch button to complete the switch state change.

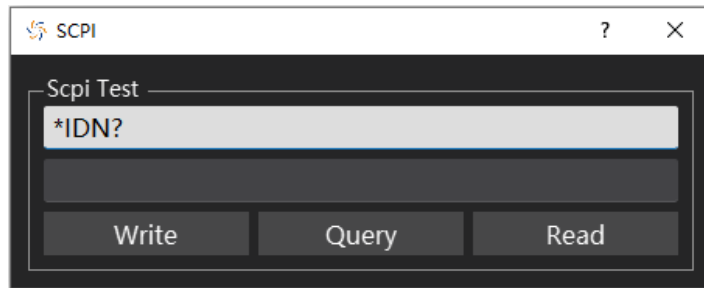
1) SSU5264A



2) SSU5266A



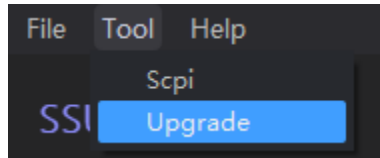
3. Test the SCPI command



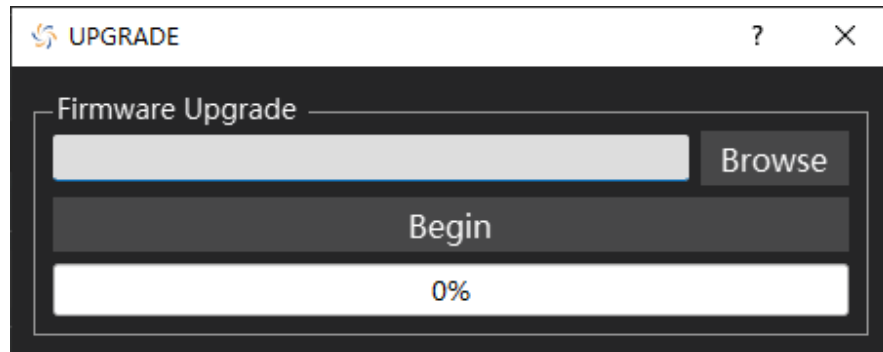
4. Firmware upgrade

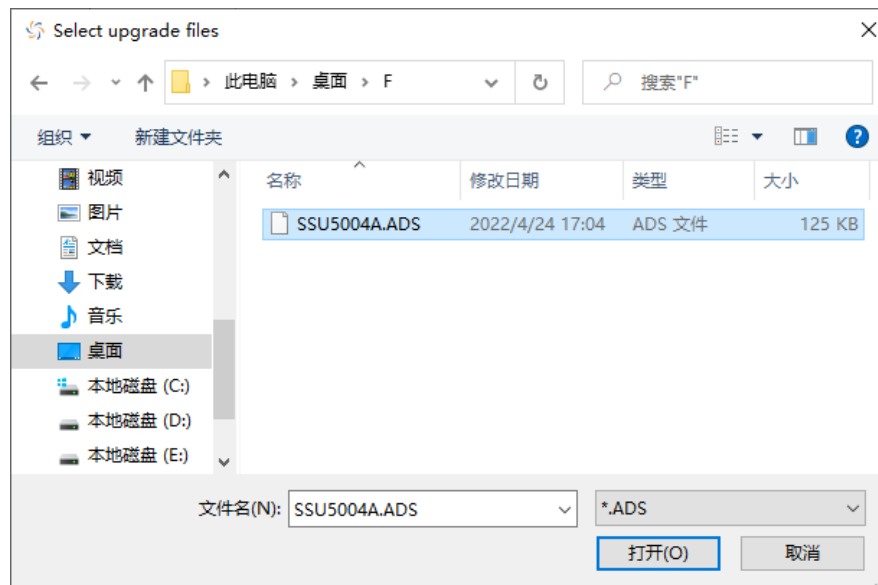
Follow this procedure to update the instrument firmware:

1. Download the firmware package from official SIGLENT websites only.
2. Connect PC to instrument with USB cable. Run the EasySSU, enter the menu Tool-Upgrade.



3. Click the Browse button to choose the firmware file, then click Begin button to update the system software. The progress bar will appear on the screen while updating, the instrument will restart automatically if updates succeed or display a pop-up prompt box if updates fail.





## Switching times

Model	Switching time
SSU5181A, SSU5182A, SSU5183A, SSU5184A	<15ms
SSU5261A, SSU5262A, SSU5263A, SSU5264A	<20ms
SSU5501A, SSU5502A, SSU5503A, SSU5504A	<20ms
SSU5265A, SSU5266A	<15ms

## General data

Description	Characteristics
Temperature	-25 to 65°C
Size	Length×Width×High=153mm×62.4mm×137.5mm
Weight	885g
<b>Switch life</b>	
SSU5181A,SSU5182A,SSU5183A,SSU5184A	2,000,000 cycles
SSU5261A,SSU5262A,SSU5263A,SSU5264A	5,000,000 cycles
SSU5501A,SSU5502A,SSU5503A,SSU5504A	5,000,000 cycles
SSU5265A,SSU5266A	5,000,000 cycles
<b>Environmental and physical characteristics</b>	
SSU5181A,SSU5182A,SSU5183A,SSU5184A	
Vibration	10g
Shock	30g
SSU5261A,SSU5262A,SSU5263A,SSU5264A	
Vibration	10g
Shock	500g
SSU5501A,SSU5502A,SSU5503A,SSU5504A	
Vibration	10g

Shock	500g
SSU5265A,SSU5266A	
Vibration	
Shock	

## Ordering Information

Model	Product Description
SSU5181A	DC-18GHz, including one SPDT mechanical switch
SSU5182A	DC-18GHz, including two SPDT mechanical switches
SSU5183A	DC-18GHz, including three SPDT mechanical switches
SSU5184A	DC-18GHz, including four SPDT mechanical switches
SSU5261A	DC-26.5GHz, including one SPDT mechanical switch
SSU5262A	DC-26.5GHz, including two SPDT mechanical switches
SSU5263A	DC-26.5GHz, including three SPDT mechanical switches
SSU5264A	DC-26.5GHz, including four SPDT mechanical switches
SSU5265A	DC-26.5GHz, including one SP6T mechanical switch
SSU5266A	DC-26.5GHz, including two SP6T mechanical switches
SSU5501A	DC-50GHz, including one SPDT mechanical switch
SSU5502A	DC-50GHz, including two SPDT mechanical switches
SSU5503A	DC-50GHz, including three SPDT mechanical switches
SSU5504A	DC-50GHz, including four SPDT mechanical switches

Standard Configurations	Quantity
USB-cable	1
Quick-start	1
AC-DC adapter	1
Power cord	1
Certificate of qualification	1