

SSU5000A Series Mechanical Switch

Data Sheet

EN03B



SSU5000A

General Description

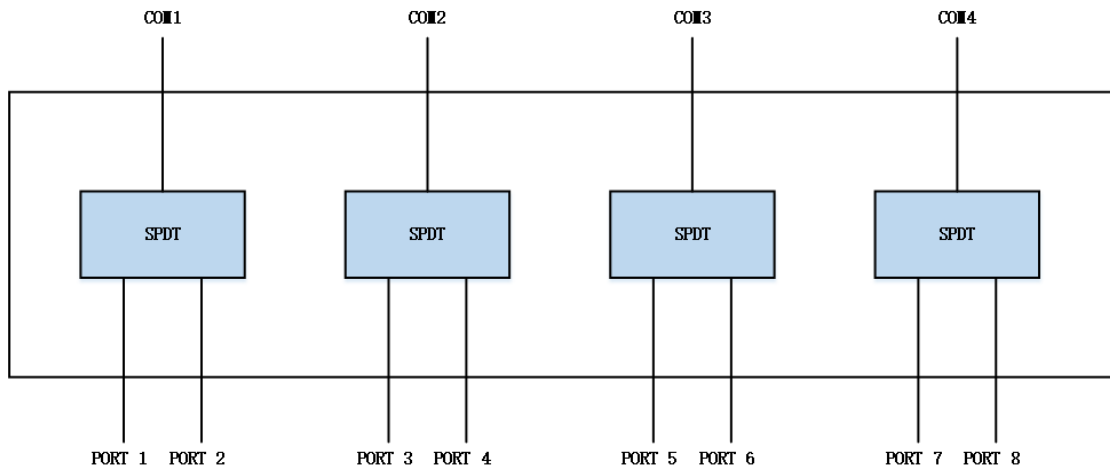
SSU5004A series mechanical switch, the last four digits of the model, the middle two digits indicate the frequency range, and the last number indicates the number of ports. Operating frequency range covers DC-50 GHz, contains 1-4 independent single - pole double - throw mechanical switches with SMA or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

Features

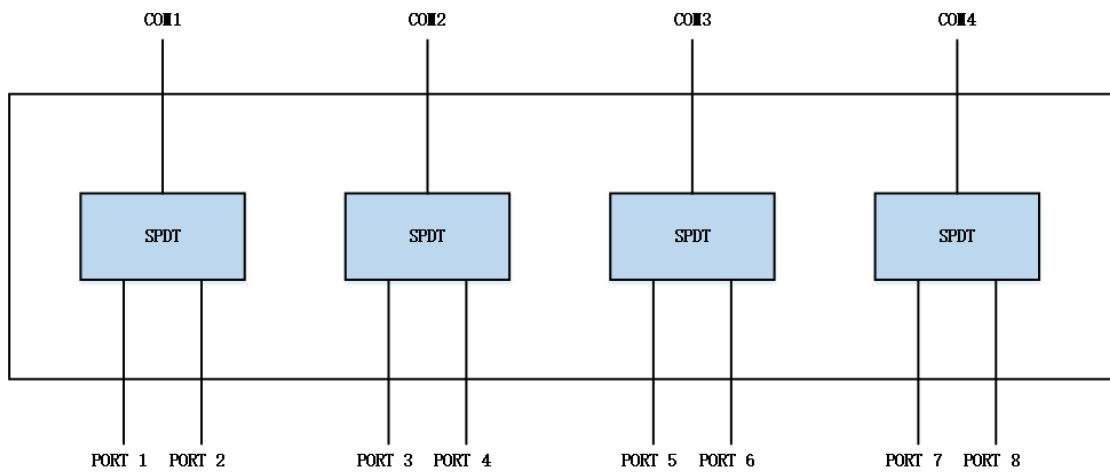
- Characteristic impedance: 50 Ω
- Highest frequency: 18GHz/ 26.5GHz/ 50GHz
- Maximum number of test ports:
12 (2 mechanical switches)
- RF connector: SMA Female or 2.4mm
Female
- Driving voltage: 12V
- Maximum driving current: 1.25A
- Control mode: USB

Block diagrams

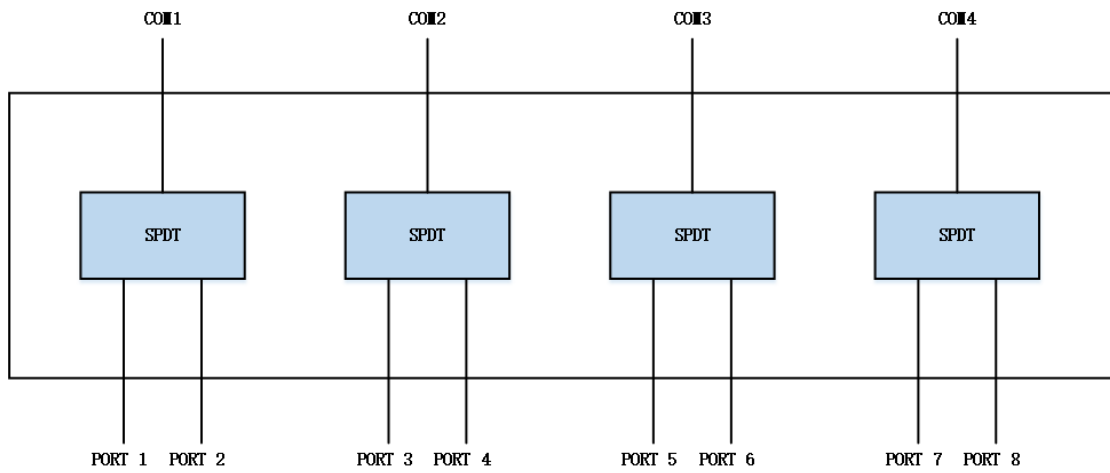
According to the highest working frequency, the switch module can be divided into three models: DC-18GHz, DC-26.5GHz and DC-50GHz. Each model contains four independent single-pole double-throw mechanical switches. The USB can be used to control the switching status of each mechanical switch.



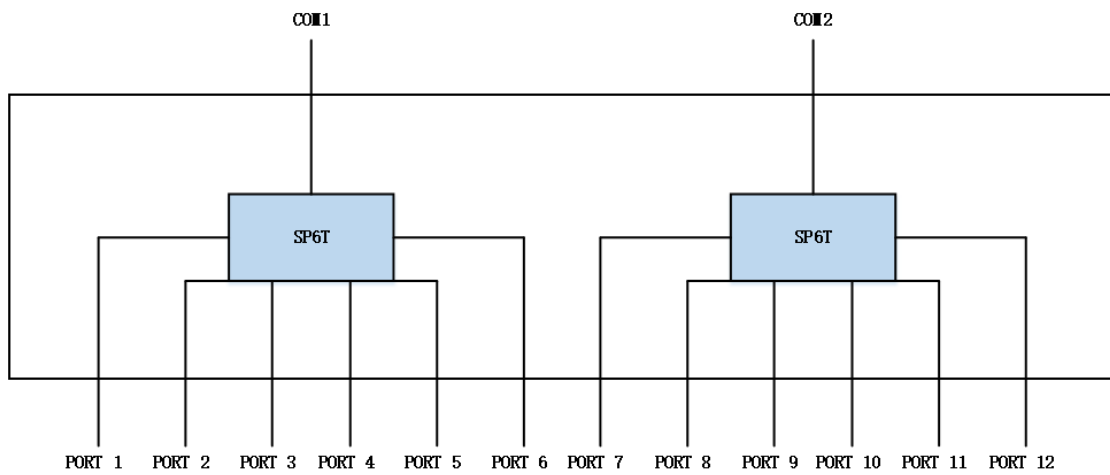
SSU5184A (DC-18GHz)



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 |

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 | SETP=14 <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> [states] = 1110(binary) = 14(decimal) | 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 |

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)

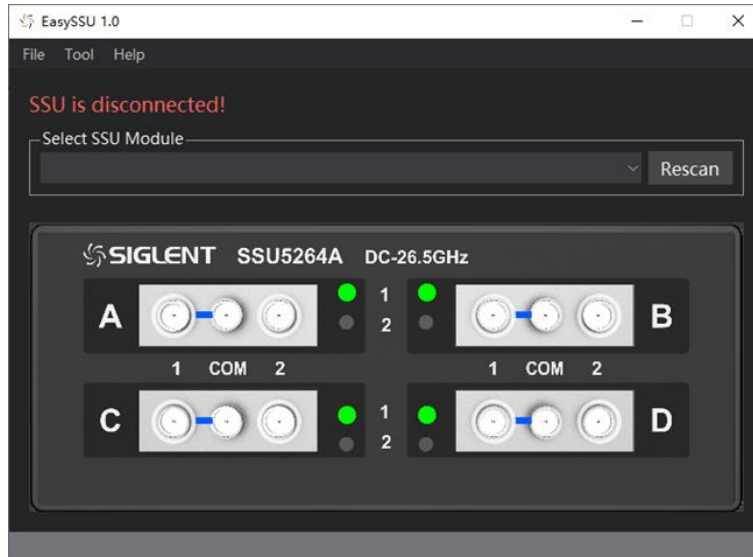
| | |
|-----------------|--|
| Command Format | SP6T[switch_name]:STATE? |
| Instruction | Returns an individual switch state. |
| Parameter Type | character |
| Parameter Range | A~B |
| Return | 0~6 |
| Example | Get switch A state SP6TA:STATE? Return:1 |

Firmware operation

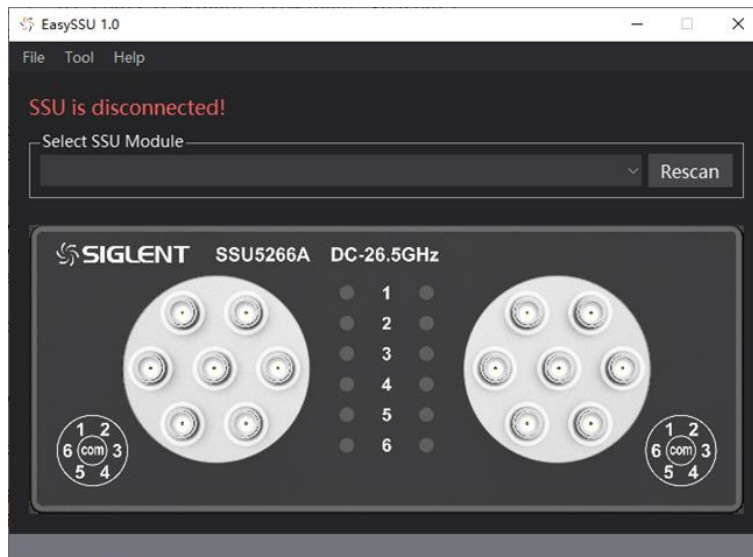
The user can switch the state of the switch through the control software (EasySSU).

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

1) SSU5264A

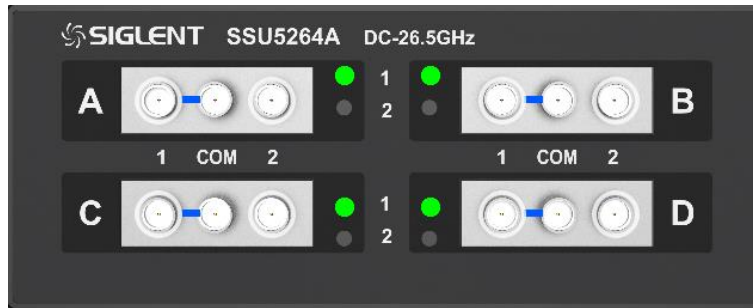


2) SSU5266A

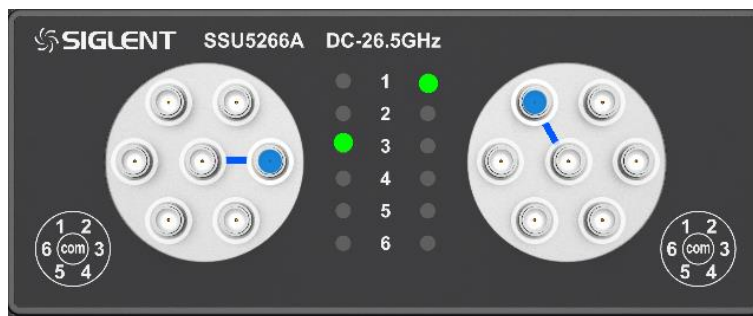


2. Click the switch button to complete the switch state change.

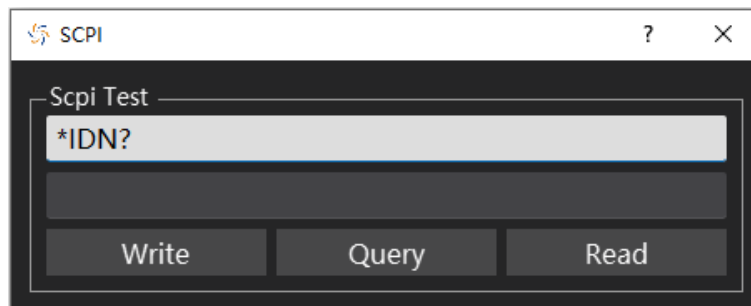
1) SSU5264A



2) SSU5266A



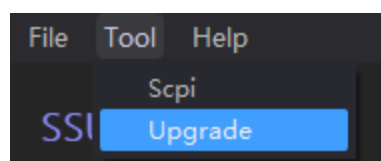
3. Test the SCPI command



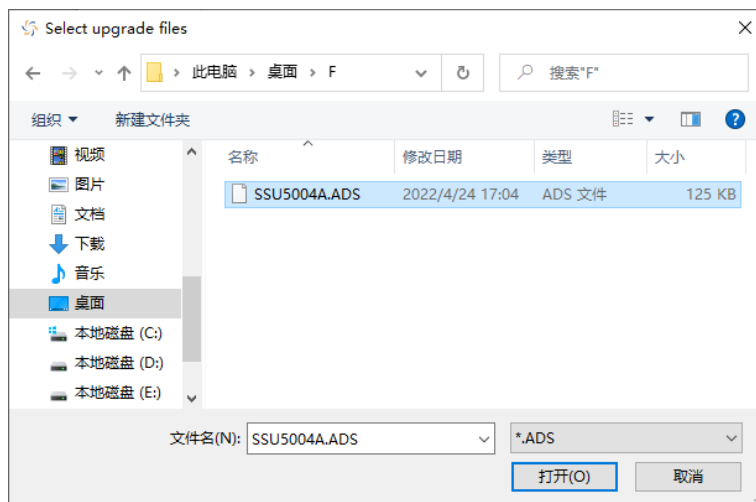
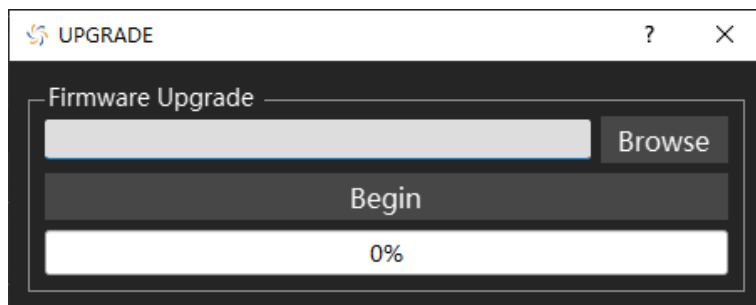
4. Firmware upgrade

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 |
| Switch life | |
| 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 |
| Environmental and physical characteristics | |
| 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 | 10g |
| Shock | 500g |

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 |



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.

Headquarters:

SIGLENT Technologies Co., Ltd
Add: Bldg No.4 & No.5, Antongda Industrial
Zone, 3rd Liuxian Road, Bao'an District,
Shenzhen, 518101, China
Tel: + 86 755 3688 7876
Fax: + 86 755 3359 1582
Email: sales@siglent.com
Website: int.siglent.com

North America:

SIGLENT Technologies America, Inc
6557 Cochran Rd Solon, Ohio 44139
Tel: 440-398-5800
Toll Free: 877-515-5551
Fax: 440-399-1211
Email: info@siglentna.com
Website: www.siglentna.com

Europe:

SIGLENT Technologies Germany GmbH
Add: Staetzlinger Str. 70
86165 Augsburg, Germany
Tel: +49(0)-821-666 0 111 0
Fax: +49(0)-821-666 0 111 22
Email: info-eu@siglent.com
Website: www.siglenteu.com

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