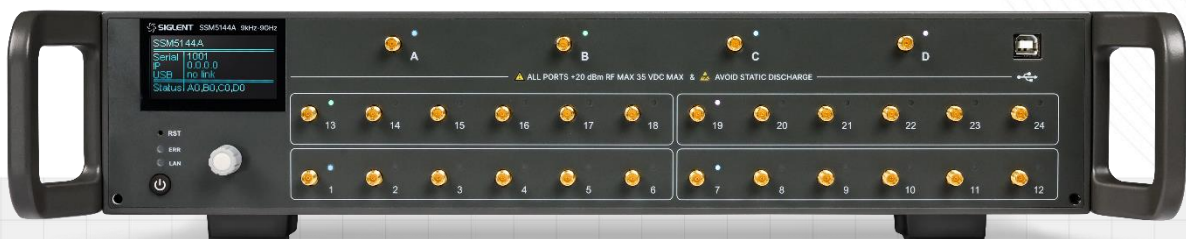


# SSM5000A Series

## Switch Matrix

User Manual

EN02B



SIGLENT TECHNOLOGIES CO.,LTD



## Category

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# 1 Copyright and Statement

## Copyright

**SIGLENT TECHNOLOGIES CO., LTD** All Rights Reserved.

## Trademark Information

**SIGLENT** is the registered trademark of SIGLENT TECHNOLOGIES CO., LTD.

## Declaration

- **SIGLENT** products are protected by patent law worldwide.
- Information in this publication replaces all previously corresponding material.
- **SIGLENT** reserves the right to modify or change parts of or all the specifications or pricing policies at the company's sole decision.
- Any method of copying, extracting or translating the contents of this manual is not allowed without the permission of **SIGLENT**.

## 2 General Safety Summary

Carefully read the following safety precautions to avoid any personal injury or damage to the instrument and any products connected to it. To avoid potential hazards, please use the instrument as specified:

- Only qualified technicians can carry out maintenance of the product.
- Only the power cord designed for the instrument and authorized by the local country could be used.
- The instrument is grounded through the protective earth conductor of the power cord. To avoid electric shock, please make sure the instrument is grounded correctly before connecting its input or output terminals.
- The potential of the signal wire ground is equal to the earth, so do not connect the signal wire to a high voltage.
- To avoid fire or electric shock, please look over all ratings and safety labels on the instrument. Before connecting the instrument, please read the manual carefully to gain more information about the ratings.
- Do not touch exposed contacts or components when the power is on.
- To avoid short-circuiting to the interior of the device or electric shock, please do not operate the instrument in a humid environment.
- To avoid damage to the device or personal injury, it is important to operate the device away from an explosive atmosphere.
- To avoid the influence of dust and moisture in the air, please keep the surface of the device clean and dry.

### Safety terms and symbols

**Terms on the product**, these terms may appear on the product.

**DANGER:** Indicates direct injuries or hazards that may happen.

**WARNING:** Indicates potential injuries or hazards that may happen.

**CAUTION:** Indicates potential damages to the instrument or other property that may happen.

**Symbols on the product**, these symbols may appear on the product:



Hazardous  
Voltage



Protective  
Ground



Warning



Earth Chassis  
Ground



Power Switch

### 3 General Inspection

#### **Inspect the shipping container**

Keep the shipping container or cushioning material until the contents of the shipment have been completely checked and the instrument has passed both electrical and mechanical tests. The consigner or carrier will be responsible for damages to the instrument resulting from shipment.

**SIGLENT** will not provide free maintenance or replacement.

#### **Inspect the instrument**

If the instrument is found to be damaged, defective, or fails in electrical or mechanical tests, please contact **SIGLENT**.

#### **Check the accessories**

Please check the accessories according to the packing list. If the accessories are incomplete or damaged, please contact your **SIGLENT** sales representative.

## 4 Preparing for Use

### 4.1 Dimensions

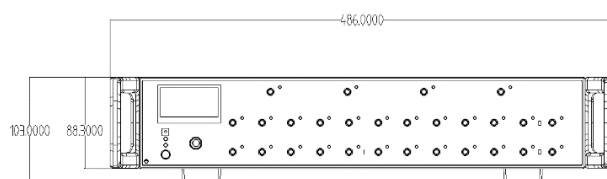


Figure 1 Front View (unit: mm)

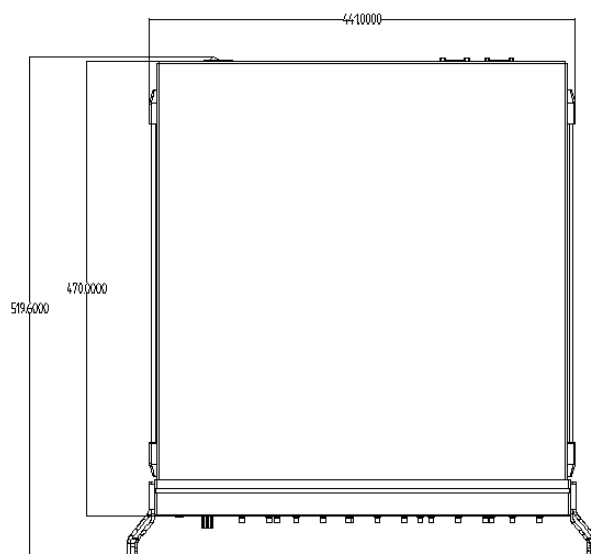


Figure 2 Top View (unit: mm)

### 4.2 Adjust the supporting legs

For benchtop operation, you may want to use the supporting legs. Adjust the supporting feet appropriately to tilt the equipment upwards.

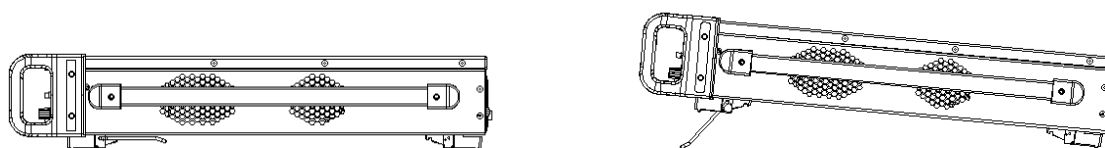


Figure 3 adjusting of supporting legs

### 4.3 Connect to AC power supply

The equipment accepts 100-240 V, 50/60Hz AC power supply. Please use the power cord provided in the accessory to connect the instrument to the power source.

## 4.4 Front Panel



Figure 4 Front panel

Table 1 Front panel area description:

No.	Items	Description
1	LCD Screen	2.4 inch LCD screen. Notes: Avoid touching the LCD screen with sharp objects.
2	RF Ports A-D	3.5mm female RF ports, source group, usually connect to the other instrument such as VNA, SA and so on.
3	RF Ports 1-24	3.5mm female RF ports, extended group, usually connect to the DUT.
4	USB Hub	USB port for host remote control.
5	Reset	Reboot system.
6	Indicator Lights	Warning indicator and LAN config indicator.
7	Power Switch	Power on/off.
8	Knob	Rotate the knob left or right to move a cursor (position of selected item) or change a parameter value, the effect of pressing the knob is the same as 'Enter'.
9	Supporting Legs	

### 4.4.1 Power switch

- Light-off indicates that the instrument is in the stand-by state. Pressing this button will cause the instrument to begin the start-up process and the power switch light will turn white.
- A White light constantly on indicates the instrument is in the operating state. A short press will cause the instrument to save the current settings and then return to the stand-by state and the light will turn Off.

### 4.4.2 RF connectors



Figure 5 Front panel RF connectors



- There are two groups of RF connectors. A-D are the source group, 1-24 are the extended group. A and B could be connected to one of 1-6 or 13-18 ports, but A and B can't be connected to the same number port simultaneously. Such as C and D ports, the number of ports can be connected to are 7-12 and 19-24.
- When a couple of RF connector are linked together, the corresponding port lights above the RF connectors will be lit up with the same color.
- To avoid damage to the instrument, the RF connector input signal must meet the following:  
The DC voltage and the maximum continuous RF power cannot exceed 35V and 20 dBm respectively.

## 4.5 Rear Panel




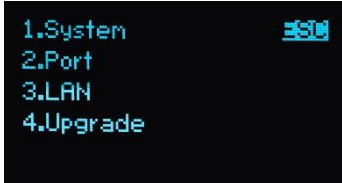
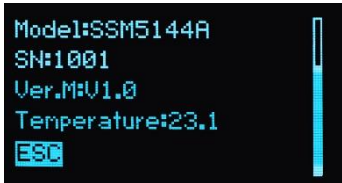
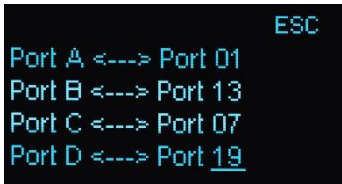

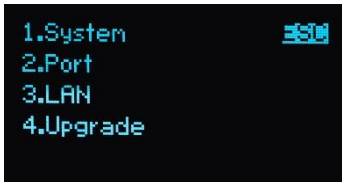
Figure 6 Rear panel

Table 2 Rear panel area description:

No.	Items	Description
1	Direct CTRL	Uses TTL voltage to control switches.
2	LAN	Network port for host to remote control.
3	USB	Plugged with U-disk for version upgrading.
	USB Device	USB port for data exchange with peripherals.
4	Fan	Used to cool down internal components of the instrument.
5	AC Power Port and Fuse	The equipment accepts 100-240V, 50/60Hz AC power supply. Please connect the equipment to the AC power supply with the supplied power cord. Make sure the current does not exceed the rated current of the fuse.
6	Handle	Portable handle to carry the instrument conveniently.

## 5 User Interface

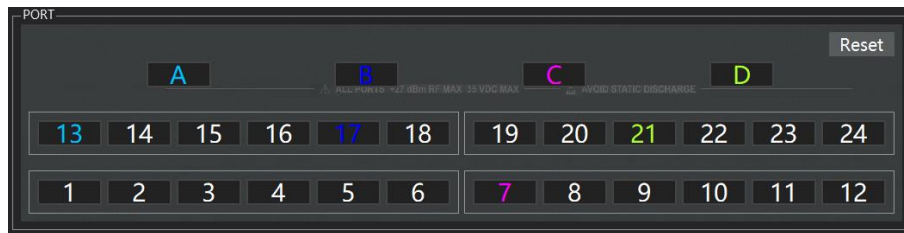
Table 3 User interface description:

Menu	Illustration	Function description
Status Display		The first display when instrument starts up. Display the model, serial number, IP address, USB port status, RF ports link status. Push the knob in this display will enter the first setting menu.
1'st setting menu		Includes 4 sub-menus. Rotating the knob will select one of them, then pushing knob will enter the selected sub-menu.
System menu		Display startup times, vendor, model, SN, soft version, mainboard temperature.
Port menu		Set the link config of ports. Four steps to config: 1. Rotate the knob to select one of the four ports (A-D); 2. push the knob to enter the config mode; 3. Rotate the knob to change the number of linked port; 4. push the knob to finish setting and return.
IP menu		The instrument supports DHCP and static IP modes. Rotate and push the knob to enter the mode setting (on/off item). When OFF (Static IP) is selected, Rotate and push the knob to config IP/SUB/GATE address.
Upgrade menu		When U-disk with version file is plugged, enter the Upgrade menu to upgrade the system.

## 6 Host computer interface

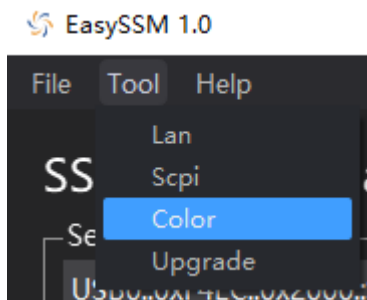
### 6.1 RF channel

1. Connect the device with a USB cable, click Rescan to get the device information and connect.
2. Click the RF connectors A-D first, and then click the RF connectors 1-24 that can be connected to it to complete a pair of gating channel settings. After the setting is completed, click again to cancel the gating setting. Click Reset to cancel all gating settings.

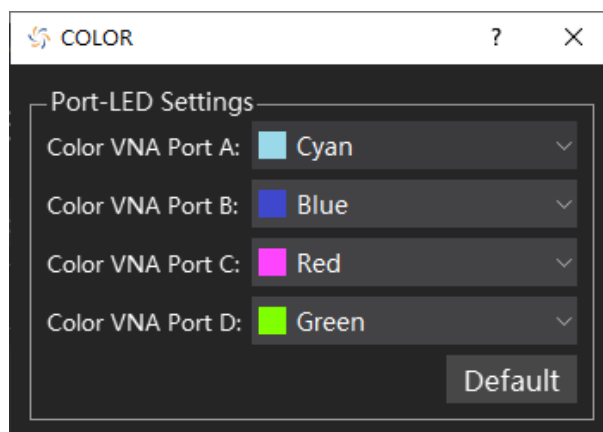


### 6.2 Port indicator

1. Connect the device with a USB cable, click Rescan to get the device information and connect. Then click the Tool-Color menu to enter the color setting interface.

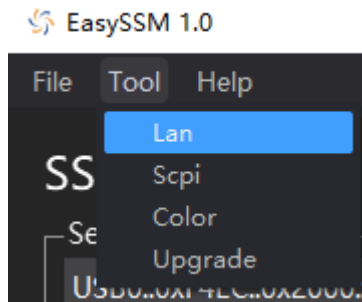


2. The color of RF connectors A-D and the connected RF connectors 1-24 can be configured through the drop-down menu bar. Click Default to restore the default color settings.

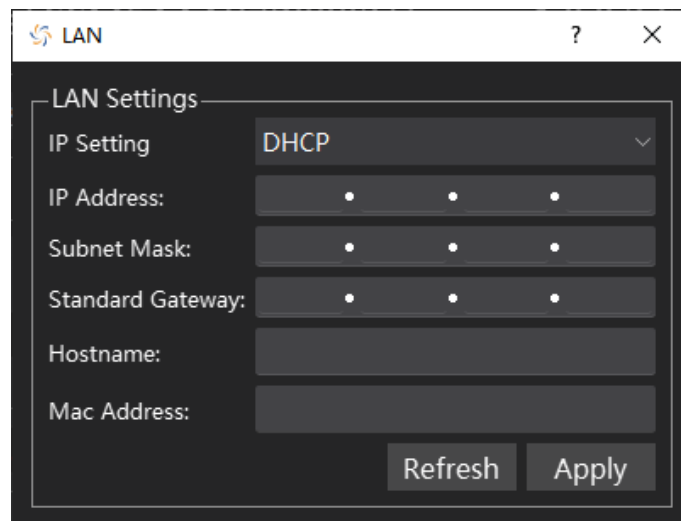


## 6.3 Network

1. Connect the device with a USB cable, click Rescan to get the device information and connect. After connecting to the network, click the Tool-Lan menu to enter the network setting interface.

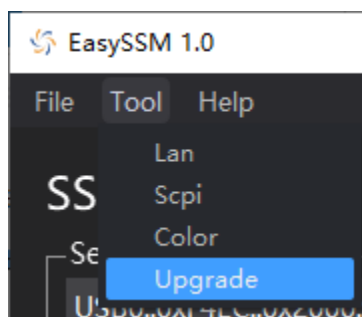


2. Click Refresh to obtain the machine network information and display it. After modifying the network information, click Apply to configure the modified network information to the device.

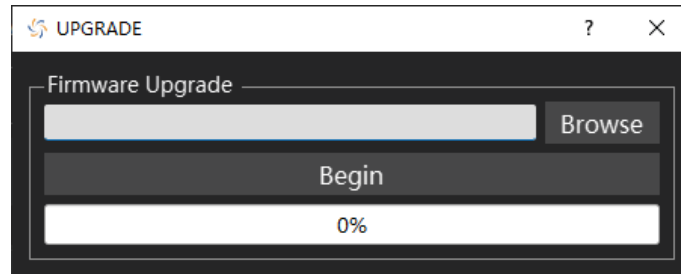


## 6.4 Firmware upgrade

1. Download the firmware package from official SIGLENT websites only
2. Connect PC to instrument with USB cable. Run the EasySSM, click Rescan to get the device information and connect ,enter the menu Tool-Upgrade.



3. Click the Browse button to choose the firmware file, then click Begin button to update the system software.
4. 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.



**Note:** Please ensure that line power is constant during the upgrade by using an Uninterruptible Power Supply (UPS), Failure to maintain line power may be cause upgrade failure or instrument damage.

## 7 SCPI Instructions

### 7.1 Device Information

#### 1. Get Instrument Information (\*IDN?)

Command Format	*IDN?
Instruction	Returns the information of the connected device.
Example	*IDN? Return: Siglent,SSM5344A,1001,V1.0

#### 2. Get Model Name (SHOW:MNAME?)

Command Format	SHOW:MNAME?
Instruction	Returns the model name of the connected device.
Example	SHOW:MNAME? Return: SSM5344A

#### 3. Get Serial Number (SHOW:SERial?)

Command Format	SHOW:SERial?
Instruction	Returns the serial number of the connected device.
Example	SHOW:SERial? Return: 1001

#### 4. Get Software Version (SHOW:SVERsion?)

Command Format	SHOW:SVERsion?
Instruction	Returns the software version of the connected device.
Example	SHOW:SVERsion? Return: V1.0

### 7.2 Network

#### 1. Get Network Status (SHOW:LAN:LINK?)

Command Format	SHOW:LAN:LINK?
Instruction	Returns the status of network. 1: connected; 0: not connected
Example	SHOW:LAN:LINK? Return: 1

**2. Configure Host (SET:LAN:HOST:NAME)**

Command Format	SET:LAN:HOST:NAME <String>
Instruction	Configures the host name.
Example	SET:LAN:HOST:NAME SSM5344A_DEV1

**3. Query Host Name (SHOW:LAN:HOST:NAME?)**

Command Format	SHOW:LAN:HOST:NAME?
Instruction	Returns the name of host.
Example	SHOW:LAN:HOST:NAME? Return: SSM5344A_DEV1

**4. DHCP Switch (SET:LAN:DHCP)**

Command Format	SET:LAN:DHCP <Int>
Instruction	Turns on/off DHCP. 0: off; 1:on
Example	SET:LAN:DHCP 1

**5. Query DHCP Status (SHOW:LAN:DHCP?)**

Command Format	SHOW:LAN:DHCP?
Instruction	Queries DHCP status. 0: off; 1:on
Example	SHOW:LAN:DHCP? Return: 1

**6. Configure IP Address (SET:LAN:IP)**

Command Format	SET:LAN:IP <String>
Instruction	Configures IP address.
Example	SET:LAN:IP 192.168.1.10

**7. Query IP Address (SHOW:LAN:IP?)**

Command Format	SHOW:LAN:IP?
Instruction	Returns the string of IP.
Example	SHOW:LAN:IP? Return: 192.168.1.10

**8. Configure Subnet Mask (SET:LAN:SNMask)**

Command Format	SET:LAN:SNMask <String>
Instruction	Configures subnet mask.
Example	SET:LAN:SNMask 255.255.255.0

**9. Query Subnet Mask (SHOW:LAN:SNMask?)**

Command Format	SHOW:LAN:SNMask?
Instruction	Returns the string of subnet mask.
Example	SHOW:LAN:SNMask? Return: 255.255.255.0

**10. Configure Gateway (SET:LAN:GW)**

Command Format	SET:LAN:GW <String>
Instruction	Configures gateway IP.
Example	SET:LAN:GW 192.168.1.1

**11. Query Gateway (SHOW:LAN:GW?)**

Command Format	SHOW:LAN:GW?
Instruction	Returns the string of gateway IP.
Example	SHOW:LAN:GW? Return: 192.168.1.1

**7.3 Others****1. Configure RF Link (ROUTe)**

Command Format	ROUTe <String>
Instruction	Configures the RF switches, set the ports linked.
Example	ROUTe A1,B2,C20,D21

**2. Query RF Link (ROUTes?)**

Command Format	ROUTes?
Instruction	Returns the partner ports of 4 VNA ports (A, B, C, D)
Example	ROUTes? Return: 1,2,20,21



**3. Query Available RF Link (SHOW:ROUTes?)**

Command Format	SHOW:ROUTes?
Instruction	Returns all the available link partners.
Example	(model 12A as example) SHOW:ROUTes? Return: A1,A2,A3,A4,A5,A6,B1,B2,B3,B4,B5,B6

**4. Configure Indicator Lights (SET:COLOR)**

Command Format	SET:COLOR <Char>,<String>
Instruction	Configures the color of port indicator lights. Ports: A, B, C, D color: BLUE, CYAN, GREEN, RED
Example	SET:COLOR A,RED

**5. Query Port Light Color (GET:COLOR?)**

Command Format	GET:COLOR? <Char>
Instruction	Returns the color of the required port. Ports: A, B, C, D
Example	GET:COLOR? A Return: RED

**6. Query Instrument Temperature (SHOW:TEMPerature?)**

Command Format	SHOW:TEMPerature?
Instruction	Returns the temperature of instrument (centigrade).
Example	SHOW:TEMPerature? Return: 27.5

## 8 Firmware Operation

### 8.1 Check system information

Enter the System sub-menu to check the system information, including:

- Startup times
- Vendor
- Product model
- Serial number
- Software version
- Mainboard temperature

### 8.2 Firmware upgrade

Follow this procedure to update the instrument firmware:

1. Download the firmware package from official SIGLENT websites only.
2. Extract and copy the .ADS file into the root directory of a USB stick.
3. Insert the USB stick into a USB port, Enter  , and select the update file, click  to update the system software.
4. 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.

**Note:** Please ensure that line power is constant during the upgrade by using an Uninterruptible Power Supply (UPS), Failure to maintain line power may be cause upgrade failure or instrument damage.

## 9 Help Information

Connect our sales rep for more information and help.

## 10 Remote Control

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

## 11 Product Certification

**SIGLENT** guarantees this product conforms to the national and industrial standards in China as well as the ISO9001: 2008 standard and the ISO14001: 2004 standard. Other international standard conformance certification is in progress.

## 12 For more Product Information

You can obtain the instrument information and installation status of all options through Utility menu, for more information of this product, please refer to the following manuals (you can also download them from the **SIGLENT** web site):

**SSM5000A Series Switch Matrix user manual:**

Provides detailed introductions of the functions of this instrument.

**SSM5000A Series Switch Matrix Data Sheet:**

Provides the main characteristics and specifications of this instrument.



## About SIGLENT

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

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

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