





# Guaranty and Declaration

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## Declaration

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## 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.

# 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.

## **Use Proper AC Power Line**

Only the power cord designed for the instrument and authorized by local country should be used.

## **Ground the Instrument**

The instrument is grounded through the protective earth conductor of the power line. To avoid electric shock, please make sure the instrument is grounded correctly before connecting its input or output terminals.

## **Connect the Probe Correctly.**

If a probe is used, do not connect the ground lead to high voltage since it has isobaric electric potential as the ground.

## **Look Over All Terminals' Ratings**

To avoid fire or electric shock, please look over all ratings and sign instruction of the instrument. Before connecting the instrument, please read the manual carefully to gain more information about the ratings.

## **Use Proper Overvoltage Protection**

Make sure that no overvoltage (such as that caused by a thunderstorm) can reach the product, or else the operator might be exposed to danger of electrical shock.

## **Electrostatic Prevention**

Operate the instrument in an electrostatic discharge protective area environment to avoid damages induced by static discharge. Always ground both the internal and external conductors of the cable to release static before connecting.

## **Maintain Proper Ventilation**

Inadequate ventilation may cause increasing of the instrument's temperature, which will eventually damage the instrument. So keep well ventilated and inspect the intake and fan regularly.

## **Avoid Exposed Circuit or Components**

Do not touch exposed contacts or components when the power is on.

## **Do Not Operate Without Covers**

Do not operate the instrument with covers or panels removed.

## **Use Only the Specified Fuse.**

## **Keep Product Surfaces Clean and Dry.**

To avoid the influence of dust and/or moisture in the air, please keep the surface of the device clean and dry.

## **Do Not Operate in Wet Conditions.**

In order to avoid short circuiting to the interior of the device or electric shock, please do not operate the instrument in a humid environment.

## **Do Not Operate in an Explosive Atmosphere.**

In order to avoid damage to the device or personal injury, it is important to operate the device away from an explosive atmosphere.

# 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**



**Warning**



**Protective  
Ground**



**Earth Chassis  
Ground**

# SVA1000X

## Series Spectrum

## Analyzer Overview

SVA1000X series spectrum analyzer has a frequency range from 9 kHz up to 1.5 GHz; it is light weight and small size, with a user friendly interface, concise style of display, reliable measurement precision and plenty of RF measurement functions. Applicable to research and development, education, production, maintenance and other related fields that meets a wider range of application requirements.

## Features and Benefits

- All-Digital IF Technology
- Frequency Range from 9 kHz up to 1.5 GHz
- Up to 1.5 GHz Tracking Generator
- Vector Network Analyzer (Opt.)
- Distance to Fault (Opt.)
- Modulation Analysis (Opt.)
- Advanced Measurement Kit (Opt.)
- EMI Filter and Quasi Peak Detector Kit (Opt.)
- 10.1 inch WVGA(1024x600) Display, Multi-Touch Screen
- Remote Control in Web Browser or EasySpectrum

## 1.1 General Inspection

### 1. Inspect the shipping container

Keep the damaged 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.

### 2. Inspect the instrument

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

### 3. 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.

## 1.2 Preparing for Use

### 1.2.1 Adjust the Supporting Legs

Adjust the supporting legs properly to use them as stands to tilt the Spectrum Analyzer upwards for stable placement as well as easier operation and observation of the instrument.

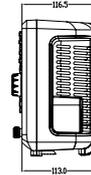


Figure 1  
before adjusting

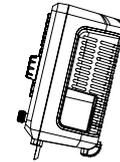


Figure 2  
after adjusting

### 1.2.2 Connect to AC Power Supply

The spectrum analyzer accepts 100-240V, 50/60/440Hz AC power supply. Please use the power cord provided as accessories to connect the instrument to the power source as shown in the figure below. Before power on, make sure the spectrum analyzer is protected by fuse.

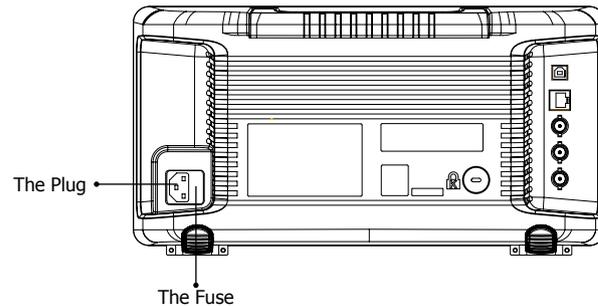


Figure 3 Power Cord  
Connection

## 1.3 The Front Panel



Figure 4 the Front Panel

- |  |                           |                             |                 |
|--|---------------------------|-----------------------------|-----------------|
| 1 User Graphical Interface,<br>touch support | 4 Knob                    | 7 RF Input, VNA port 2      | 10 USB Host     |
| 2 Menu Control Keys                          | 5 Numeric/letter Keyboard | 8 TG Output, VNA port 1     | 11 Power Switch |
| 3 Function Keys                              | 6 Arrow Keys              | 9 3.5 mm Earphone interface |                 |

### 1.3.1 Front Panel Function Keys

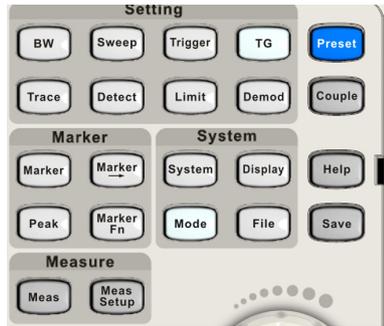


Figure 5 Function Keys area

#### Control Keys

**Frequency:** Set the parameters of frequency, and Peak → CF, CF → Step

**Span:** Set the parameters of span, and X-scale(Log-Linear) setup

**Amplitude:** Set the parameters of amplitude, including Ref Level, Attenuator, Preamp, etc ; and Correction setup

**Auto Tune:** Scan the full span rapidly and move the biggest signal to center freq, and automatically sets the optimal parameters according to the signal

#### Control Keys

**BW:** Set the parameters of RBW and VBW, Average Type (Log power, Power, Voltage), and Filter Type(-3 dB Gauss\ -6 dB EMI)

**Trace:** Select Trace, Trace setup and Trace math

**Sweep:** Set the parameters of sweep ,and EMI QPD Dwell Time

**Detect:** Select the Detector type for each trace independently

**Trigger:** Select triggers in Free Trigger, Video Trigger and External Trigger

**Limit:** Set the Pass\Fail Limit

**TG:** Set the parameters of tracking generator. Including TG Level, TG Level offset, Normalization setup. The backlight LED is on when TG source is on.

**Demod:** Set the demodulation parameters of the AM and FM for audio listening

### Meas Keys

**Meas:** In spectrum analyzer mode, selects the Advanced Measurement function. In non spectrum analyzer mode, select corresponding settings.

**Meas Setup:** Set the measurement parameters.

### Marker Keys

**Marker:** Set the Markers and Marker Table

**Marker → :** Set other system parameters on the basis of the current marker value.

**Marker Fn:** Special functions of the marker such as noise marker, N dB bandwidth measurement and frequency counter.

**Peak:** Search for the peak signal, peak search configuration and peak table.

### System Keys

**System:** Set the system parameters

**Mode:** Select the working mode between spectrum analyzer and other modes.

**Display:** Set the display parameters.

**File:** Use the file system and files

### Shortcut Keys

**Preset:** Sets the system to certain status

**Couple:** Set the parameters of some functions between auto and manual.

**Help:** Turn on the built-in help

**Save:** Save Shortcut Key

### 1.3.2 Front Panel Key Backlight

The on/off state and the color of the backlights of some keys at the front panel indicate the working state of the spectrum analyzer. The states are as listed below.

#### 1. Power Switch

- Flash on and off alternatively, in breathing state: indicate the unit is in stand-by state.
- Constant on: indicate the instrument is in normal operating state.

#### 2. Mode

When the function is Spectrum Analyzer, the backlight turns off. When in the other mode, the backlight turns on.

#### 3. TG

When the TG source is on, the backlight of TG turns on and turns off when the function is off.

### 1.3.3 Using the Numeric Keyboard

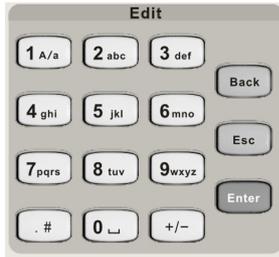


Figure 6 Numeric Keyboards

The analyzer provides a numeric keyboard at the front panel (as shown in the figure below). The numeric keyboard which supports English uppercase/lowercase characters, numbers and common symbols (including decimal point, #, space and +/-) are mainly used to edit file or folder name and set parameters.

1. +/-

In number input, set the sign of number; in file input, switch in number and letter.

2. 1 A/a

In number input, enter number 1; in file input, switch between uppercase and lowercase letter.

3. . #

In number input, a decimal point; in English input, special character.

4. Back

In parameter editing, press this key to delete the character on the left of the cursor.

5. Esc

- During parameter editing process, press this key to clear the inputs in the active function area and exit parameter input.
- When the instrument is in remote mode, use this key to return to local mode.

6. Enter

In parameter editing, the system will complete the input and insert a default unit for the parameter.

### 1.3.4 Front Panel Connectors



Figure 7 Front Panel Connectors (1)

#### 1. Power Switch

Power on / Power down the instrument

#### 2. USB Host

- The analyzer can serve as a “host” device to connect external USB devices. This interface is available for USB storage devices, GPIB-USB card, mouse and keyboard, and Ecal for SVA model.
- Read and store the instrument state or trace in the USB storage device or store the contents currently displayed on the screen in the USB storage device in .png or .jpg or .bmp format.

#### 3. Earphone Jack

The analyzer provides AM and FM demodulations. Insert the earphone to the jack to acquire the audio output of the demodulated signal. You can turn on or off the earphone output and adjust the volume via Demod ->Volume.

#### CAUTION



For fear of damaging your hearing, please turn the volume down to zero and gradually turn the volume up after putting on the earphone.



4 Figure 8 Front Panel Connectors (2)

5

#### 4. TG SOURCE, VNA PORT 1

- The TG SOURCE can be connected to a DUT through a cable with an N male connector.
- In the VNA mode, this port is used as the single port of S11 and the output port of S21.



#### CAUTION

To avoid damage to the tracking generator, the reverse DC voltage cannot exceed 50 V

#### 5. RF INPUT, VNA PORT 2

- The RF INPUT can be connected to the device under test through a cable with an N male connector
- In the VNA mode, this port is used as the input port of S21.



#### CAUTION

To avoid damage to the instrument, for the signal input from the RF input terminal, the DC voltage component and the maximum continuous power of the AC (RF) signal component cannot exceed 50 V and +30 dBm respectively.

## 1.4 Rear Panel



Figure 9 Rear Panel

### 1. Handle

Pull up the handle vertically for easy carrying of the instrument. When you do not need the handle, press it down.

### 2. USB Device Interface

The analyzer can serve as a "slave" device to connect external USB devices. Through this interface, a PC can be connected to control the analyzer remotely through programming or PC software.

### 3. LAN Interface

Through this interface, the analyzer can be connected to your local network for remote control.

### 4. REF IN 10 MHz

The analyzer can use internal or external reference source.

- When a 10 MHz external clock signal is received through the [10 MHz IN] connector, this signal is used as the external reference source and "Ext Ref" is displayed in the status bar of the user interface. When the external reference is lost, transfinite or not connected, the instrument switches to its internal reference source automatically and "Ext Ref" on the screen disappears.
- The [10 MHz IN] and [10 MHz OUT] connectors are usually used to build synchronization among multiple instruments.

### 5. REF OUT 10 MHz

The analyzer can use internal or external reference source.

- When internal reference source is used, the [10 MHz OUT] connector can output a 10 MHz clock signal generated by the analyzer. This signal can be used to synchronize other instruments.
- The [10 MHz OUT] and [10 MHz IN] connectors are usually used to build synchronization among multiple instruments.

### 6. Trigger in

In external trigger mode, the connector receives an external trigger signal through a BNC cable.

### 7. Security Lock Hole

If needed, you can use a security lock (buy it yourself) to lock the analyzer to a desired location.

### 8. AC Power Supply and Fuse

The analyzer accepts 100-240V, 50/60/440Hz AC power supply. Please use the power cord provided as accessories to connect the instrument. Before power on, make sure the spectrum analyzer is protected by fuse.

## 1.5 User Interface

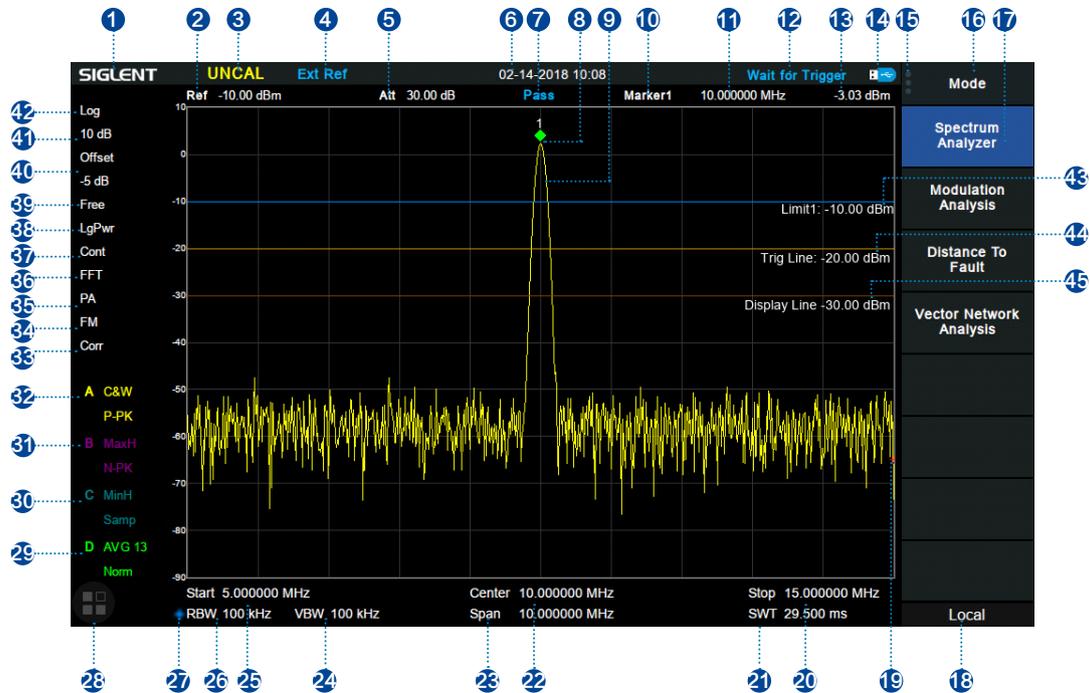


Figure 10 User Interface

NO.	Name	Description	NO.	Name	Description
1	SIGLENT	Logo of SIGLENT	16	Menu title	Function of the current menu.
2	Ref	Reference level	17	Menu items	Menu items of the current function
3	UNCAL	When the sweep time less than the auto couple time, the measure result may be inaccuracy, appear "UNCAL"	18	Operation status	Local is local mode, Remote is remote mode, Upgrade means the instrument is upgrading
4	EXT REF	Ext 10 MHz reference clock detected indicator	19	Sweep progress indication	Indicates the currently scanned frequency position
5	Att	Attenuator Value	20	Stop frequency	Stop frequency value
6	Day and time	System time	21	Sweep time	Sweep time
7	Pass/Fail status	Limit Pass/Fail status	22	Center frequency	Center frequency value
8	Marker	Current active marker	23	Span	Span value
9	Trace	Active trace	25	Start frequency	Start frequency value
10	Marker instruction	current marker, touch to open a new marker	26	RBW	Resolution bandwidth
11	Marker x value	Unit: frequency, frequency delta or time	27	Manually instructions	When it appears, this parameter is not automatically coupled but manually configured
12	State indication	Auto Tune: Automatically sets the optimal parameters according to the characteristics of the signal	28	Touch assistant	Click to open the commonly used functions for measurement, such as peak search. Touch Assist can be moved to any position on the screen and it can be turned off
13	Marker y value	Amplitude value or amplitude delta value			
14	USB storage device identification	The identification is displayed when a USB flash drive is inserted			
15	Main menu touch logo	Clicking this button will bring up the main menu			

NO.	Name	Description
29	Trace status	Can set the trace A B C D parameters.
30		Trace mode:
31		C&W: Clear Write, MaxH: Max Hold, MinH: Min Hold, View: View, AVG: Video average and times.
32		Detect type: P-PK: Positive peak, N-PK: Positive peak, Samp: Sample, Norm: Normal, AVG: average, Q-PK: Quasi-peak

NO.	Name	Description
33	Correction	When present, indicates that there is a user-configured amplitude correction
34	AM or FM	AM or FM identification
35	PA	Enable or disable Pre-amplifier
36	FFT	Sweep mode is FFT
37	Single or Continue	Sweep mode single or continue
38	Average type	Log power Power Voltage power
39	Trigger type	Free Video External trigger
40	Ref offset	34: Ref offset identification; 35: Ref offset value
41	Scale/Div	Scale value
42	Scale type	Logarithm or linearity
43	Limit line	Limit Pass/Fail level
44	Trigger level	Video trigger level
45	Display line	Reference display line

## 1.6 Firmware Operation

### 1.6.1 Check System Information

Users can get the system information by press **System**->"**System Info**", including

- Product Model, Serial and Host ID.
- Software Version and hardware Version.
- Option Information.

### 1.6.2 Load Option

Refer to the procedures below to activate the options you have purchased.

1. Press **System** ->"Load Option"
2. Enter the license key in the onscreen window. Press **Enter** to confirm your input and terminate the license key input. Or
3. Load the .lic file provided by pressing **File** ->"**Load**" from internal memory or USB stick.

The option will be enabled after rebooting.

### 1.6.3 Firmware Upgrade

Follow this procedure to finish the firmware update:

1. Download the firmware package from official website.
2. Extract and copy the .ADS file into the root directory of a USB stick.
3. Plug the USB stick into the USB Host connector. Press **System**->"**System Info**"-> "**Firmware Update**", find the .ADS file in USB stick.

4. Press the "**Load**", the analyzer will perform the update process automatically.

The upgrade procedure will take several minutes. Once the upgrade is completed, please follow the instruction to reboot.

Any interruption during the update process will result in update failure and system data lost. Do not remove the USB storage device until the update is finished.

## 1.7 Mode

The spectrum analyzer offers a variety of operating modes (needs to purchase option activations). Selecting via the **Mode** key enables:

- Spectrum Analyzer
- Modulation Analysis (AMA/DMA)
- Vector Network Analysis (VNA) (Only for SVA model)
- Distance To Fault (DTF) ( Only for SVA model)

Front panel keys may be different in different modes.

## 1.8 Touch Operation

Spectrum Analyzer has a 10.1 inch touch screen and supports various gesture operations. Include:

- Click on the upper right corner of the screen to enter the main menu;
- Swipe up and down or left and right in the waveform area to change the X-axis center coordinate or Y-axis reference level;
- Perform two-points scaling in the waveform area to change the X-axis span;
- Click on a screen parameter or menu for parameter selection or editing;
- Open and drag the marker;
- Use auxiliary shortcuts to perform common operations.

You can turn the touch screen function on and off via **Display->"Touch Settings"**

## 1.9 Remote Control

The spectrum analyzer supports communication with computers via USB, LAN, and GPIB-USB interfaces. By using these interfaces, in combination with programming languages and/or NI-VISA software, users can remotely control the analyzer based on SCPI (Standard Commands for Programmable Instruments) command set, Labview and IVI (Interchangeable Virtual Instrument), to interoperate with other programmable instruments.

You can also remote monitor and control the analyzer in Web Browser or EasySpectrum.

For more details, refer to 'Programming Guide'.

## 1.10 Using Built-in Help

The built-in help system provides information about every function key at the front panel and every menu soft key.

- Press **Help** and a prompt about how to obtain help information will be shown at the center of the screen. Then, press the key that you want to get help of and the relevant help information will be shown at the center of the screen.
- When the help information show at the center of the screen. Press the Help button; it will close the help information.

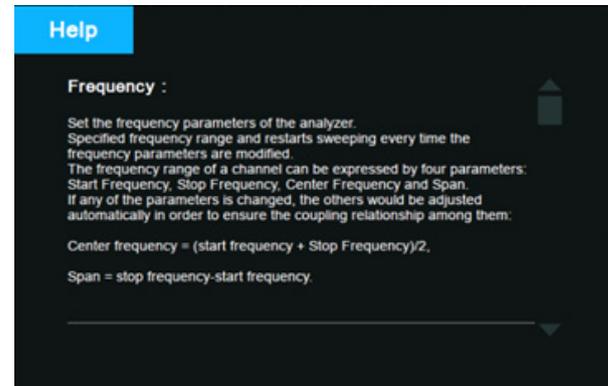


Figure 11 help information

## **1.11 Contact Us**

China:

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 3661 5186

Fax: + 86 755 3359 1582

Email: sales@siglent.com;

Website: <http://www.siglent.com/ens/>

USA:

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@siglent.com

Website: [www.siglentamerica.com](http://www.siglentamerica.com)

Europe:

SIGLENT TECHNOLOGIES EUROPE GmbH

ADD: Liebigstrasse 2-20, Gebaeude 14, 22113 Hamburg Germany

Tel: +49(0)-819-95946

Fax: +49(0)-819-95947

Email: info-eu@siglent.com

Website: [www.siglenteu.com](http://www.siglenteu.com)



