

SHA850A Spectrum & Network Analyzer



Quick Guide

EN_01A

Guaranty and Declaration

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Trademark Information

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Declaration

- **SIGLENT** products are protected by patent law worldwide.
- **SIGLENT** reserves the right to modify or change parts of or all the specifications or pricing policies at company's sole decision.
- Information in this publication replaces all previous corresponding material.
- Any way of copying, extracting or translating the contents of this manual is not allowed without the permission of **SIGLENT**.
- **SIGLENT** will not be responsible for losses caused by either incidental or consequential in connection with the furnishing, use or performance of this manual as well as any information contained.

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.

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Important Safety Information

This manual contains information and warnings that must be followed by the user for safe operation and to keep the product in a safe condition.

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.

To Avoid Fire or Personal Injury

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.

Look Over All Terminals' Ratings

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

Equipment Maintenance and Service

When the equipment fails, please do not dismantle the machine for maintenance. The equipment contains capacitors, power supply, transformers, and other energy storage devices, which may cause high voltage damage. The internal devices of the equipment are sensitive to static electricity, and direct contact is easy to cause irreparable damage to the equipment. It is necessary to return to the factory or the company's designated maintenance organization for maintenance.

Be sure to pull out the power supply when repairing the equipment. Live line operation is strictly prohibited. The equipment can only be powered on when the maintenance is completed and the maintenance is confirmed to be successful.

Identification of Normal State of Equipment

After the equipment is started, there will be no alarm information and error information at the interface under normal conditions. The curve on screen will scan from left to right freely; if there is a button in the scanning process or is an alarm or error prompt, the device may be in an abnormal state. You need to view the specific prompt information. You can try to restart the setting. If the fault information is still in place, do not use it for testing. Contact the manufacturer or the maintenance department designated by the manufacturer to carry out maintenance to avoid sabotage data by fault operations or endanger the personal safety.

Not Operate with Suspected Failures

If you suspect that there is damage to the instrument, please let qualified service personnel check it.

Avoid Circuit or Wire Components Exposed

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

Do not operate in wet/damp conditions

Do not operate in an explosive atmosphere

Keep the surface of the instrument clean and dry







Not to use the equipment for measurements on mains circuits, not to use the equipment for measurements on voltage over the voltage range described in the manual. The maximum additional transient voltage cannot exceed 1300V.

The responsible body or operator should refer to the instruction manual to preserve the protection afforded by the equipment. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Any parts of the device and its accessories are not allowed to be changed or replaced, other than authorized by the manufacturer or agent.

Safety Terms and Symbols

When the following symbols or terms appear on the front or rear panel of the instrument or in this manual, they indicate special care in terms of safety.

| | |
|---|---|
|  | <p>This symbol is used where caution is required. Refer to the accompanying information or documents to protect against personal injury or damage to the instrument.</p> |
|  | <p>This symbol warns of a potential risk of shock hazard.</p> |
|  | <p>This symbol is used to denote the measurement ground connection.</p> |
|  | <p>This symbol is used to denote a safety ground connection.</p> |
|  | <p>This symbol shows that the switch is an On/Standby switch. When it is pressed, the analyzer's state switches between Operation and Standby. This switch does not disconnect the device's power supply. To completely power off the analyzer, the power cord must be unplugged from the AC socket after the instrument is in the standby state.</p> |
|  | <p>This symbol is used to represent alternating current, or "AC".</p> |
| <p>CAUTION</p> | <p>The "CAUTION" symbol indicates a potential hazard. It calls attention to a procedure, practice, or condition which may be dangerous if not followed. Do not proceed until its conditions are fully understood and met.</p> |
| <p>WARNING</p> | <p>The "WARNING" symbol indicates a potential hazard. It calls attention to a procedure, practice, or condition which, if not followed, could cause bodily injury or death. If a WARNING is indicated, do not proceed until the safety conditions are fully understood and met.</p> |


Working Environment

The design of the instrument has been verified to conform to EN 61010-1 safety standard per the following limits:

Environment

The instrument is used indoors and should be operated in a clean and dry environment with an ambient temperature range.

Note: Direct sunlight, electric heaters, and other heat sources should be considered when evaluating the ambient temperature.

| | |
|---|--|
|  | Warning: Do not operate the instrument in explosive, dusty or humid environments. |
|---|--|

Ambient Temperature

Operating: 0 °C to +50 °C

Non-operation: -30 °C to +70 °C

Note: Direct sunlight, radiators, and other heat sources should be considered when assessing the ambient temperature.

Humidity

Operating: 5% ~ 90 %RH, 30 °C , derate to 50 %RH at 40 °C

Non-operating: 5% ~ 95% RH

Altitude

Operating: ≤ 3,000 m, 25 °C

Non-operating: ≤ 12,000 m

Installation (overvoltage) Category

This product is powered by mains conforming to installation (overvoltage) Category II.

Note: Installation (overvoltage) category I refers to situations where equipment measurement terminals are connected to the source circuit. In these terminals, precautions are done to limit the transient voltage to a correspondingly low level.

Installation (overvoltage) category II refers to the local power distribution level which applies to equipment connected to the AC line (AC power).

Degree of Pollution

The analyzers may be operated in environments of Pollution Degree II.

Note: Degree of Pollution II refers to a working environment where dry and non-conductive pollution occurs. Occasional temporary conductivity caused by condensation is expected.

IP Rating

IP20 (as defined in IEC 60529).

Cooling Requirements

This instrument relies on the forced air cooling with internal fans and ventilation openings. Care must be taken to avoid restricting the airflow around the apertures (fan holes) at each side of the analyzer. To ensure adequate ventilation it is required to leave a 15 cm (6 inch) minimum gap around the sides of the instrument.



CAUTION: Do not block the ventilation holes located on both sides of the analyzer.



CAUTION: Do not allow any foreign matter to enter the analyzer through the ventilation holes, etc.

Power and Grounding Requirements

The instrument operates with a single-phase, 100 to 240 Vrms (+/-10%) AC power at 50/60 Hz (+/-5%), or single-phase 100 to 120 Vrms (+/-10%) AC power at 400 Hz (+/-5%).


No manual voltage selection is required because the instrument automatically adapts to line voltage.

Depending on the type and number of options and accessories (probes, PC port plug-in, etc.), the instrument can consume up to 193 W of power.

Note: The instrument automatically adapts to the AC line input within the following ranges:


| | | |
|------------------|---------------|---------------|
| Voltage Range: | 90 - 264 Vrms | 90 - 132 Vrms |
| Frequency Range: | 47 - 63 Hz | 380 - 420 Hz |

The instrument includes a grounded cord set containing a molded three-terminal polarized plug and a standard IEC320 (Type C13) connector for making line voltage and safety ground connection. The AC inlet ground terminal is connected directly to the frame of the instrument. For adequate protection against electrical shock hazards, the power cord plug must be inserted into a mating AC outlet containing a safety ground contact. Use only the power cord specified for this instrument and certified for the country of use.

| | |
|---|--|
|  | <p>Warning: Electrical Shock Hazard!</p> <p>Any interruption of the protective conductor inside or outside of the analyzer, or disconnection of the safety ground terminal creates a hazardous situation. Intentional interruption is prohibited.</p> |
|---|--|


The position of the instrument should allow easy access to the socket. To make the instrument completely power off, unplug the instrument power cord from the AC socket.

The power cord should be unplugged from the AC outlet if the analyzer is not to be used for a long time.

| | |
|---|--|
|  | <p>CAUTION: The outer shells of the front panel terminals are connected to the instrument's chassis and therefore to the safety ground.</p> |
|---|--|

Cleaning

Clean only the exterior of the instrument, using a damp, soft cloth. Do not use chemicals or abrasive elements. Under no circumstances allow moisture to penetrate the instrument. To avoid electrical shock, unplug the power cord from the AC outlet before cleaning.


| | |
|---|---|
|  | <p>Warning: Electrical Shock Hazard! No operator serviceable parts inside. Do not remove covers. Refer servicing to qualified personnel.</p> |
|---|---|

Abnormal Conditions

Do not operate the analyzer if there is any visible sign of damage or has been subjected to severe transport stresses.

If you suspect the analyzer's protection has been impaired, disconnect the power cord and secure the instrument against any unintended operation.

Proper use of the instrument depends on careful reading of all instructions and labels.

| | |
|---|---|
|  | <p>Warning: Any use of the analyzer in a manner not specified by the manufacturer may impair the instrument's safety protection. This instrument should not be directly connected to human subjects or used for patient testing.</p> |
|---|---|

Safety Compliance

U.S. nationally recognized testing laboratory listing

1. UL 61010-1:2012/R: 2018-11. Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use – Part 1: General Requirements.
2. UL 61010-2-030:2018. Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use – Part2-030: Particular requirements for testing and measuring circuits.

Canadian certification

1. CAN/CSA-C22.2 No. 61010-1:2012/A1:2018-11. Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use – Part 1: General Requirements.
2. CAN/CSA-C22.2 No. 61010-2-030:2018. Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use – Part 2 - 030: Particular requirements for testing and measuring circuits.

General Inspection

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.

Inspect the instrument

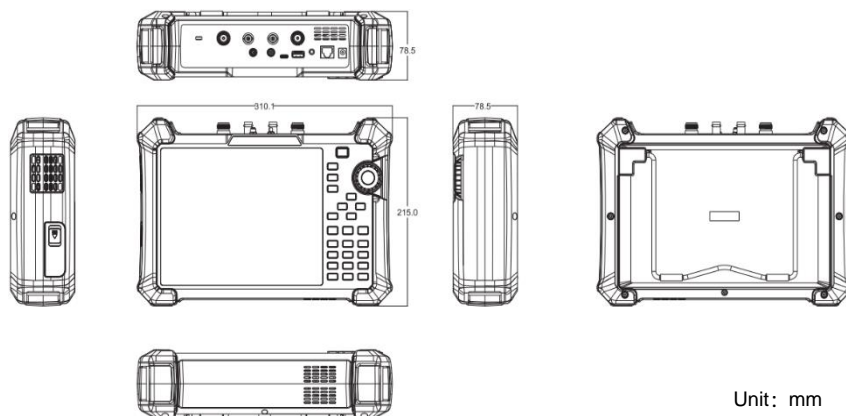
If the instrument is found to be damaged, defective or fails in electrical or mechanical tests, please contact **SIGLENT**.

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.

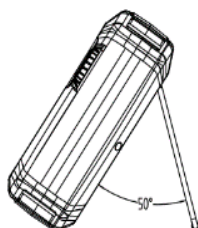
Preparing for Use

Appearance and Dimension



Front and lateral View

The included tilting stand is available for desktop operation. The tilting bracket provides a backward tilt for improved stability. To deploy the tilt bracket, pull the bottom of the tilt bracket away from the back of the instrument. To retract the tilting bracket, push the bottom of the bracket toward the back of the instrument.

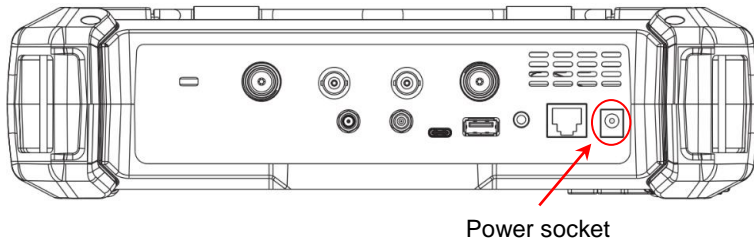


Side View

Power Supply Information


The battery that comes with the SHA800A may need to be recharged before use. The device can use the supplied AC-DC adapter (refer to the product technical data sheet for ordering information). The specifications of the input AC power supply are: 100-240V, 50/60Hz; Or charge through the on-board DC adapter in the accessory.

Specifically, the analyzer can be connected to the adapter according to the power socket shown in the figure below.



Rear View and Power

- ◆ Adapter factory configuration is the 12V 4A
- ◆ Battery factory installed, the user can change itself

| | |
|---|---|
|  | <p>WARNING</p> <p>This instrument can only use Siglent approved batteries, adapters and chargers. When using an onboard DC adapter, always ensure that the power supply is rated at least 75 W @ 15 VDC and that there is no dust or debris on the socket. If the adapter plug becomes hot during operation, discontinue use immediately. Siglent recommends taking out the batteries when devices aren't used for too long.</p> |
|---|---|

Front Panel



The Front Panel





Front Panel Description

| NO. | Name | Description |
|-----|------------------------|--|
| 1 | LCD Screen | 8.4 inch multi-touch screen, resolution 800*600 |
| 2 | Power Switch | Stand by status: Orange Power on status: White Short press: To Stand by status with current state saved Long press: To Stand by status without current state saved |
| 3 | Function Keys | Complete the function control and parameter input of the analyzer, and most operations can be completed by the touch screen. Press Lock to turn off/on the keyboard and touch functions. |
| 4 | Three-dimensional knob | Complete the quick adjustment and selection of parameters. |

| | | |
|---|-----------------------|--|
| 5 | Fan vent | Built-in fan external exhaust port. Please ensure that this vent is unblocked. |
| 6 | Battery case cover | Internal battery protection cover. Remove during battery replacement. |
| 7 | Detachable hand strap | Convenient hand force, can be installed on both sides. |



Shortcut Keys Description





| Name | Description |
|---|--|
|  | The menu selection window pops up on the screen, and you can use the touch screen control to directly enter a function menu. |
|  | Shortcut screenshot button to save the current screen display as a picture. Save parameters, such as path, reverse color, and screenshot area, to be set in System > File . |
|  | Measurement control, pause or resume the current measurement process. When the button light is on, the measurement is suspended. When the button light is off, the measurement is resumed. |
|  | Key and touch screen lock control. When the button light is on, all key pad buttons and touch screen buttons except the Lock button are locked to prevent misoperation. |













The function key part of the front panel is the reuse key of menu selection mode and value input mode, which can be switched by **Enter** and **Esc** :

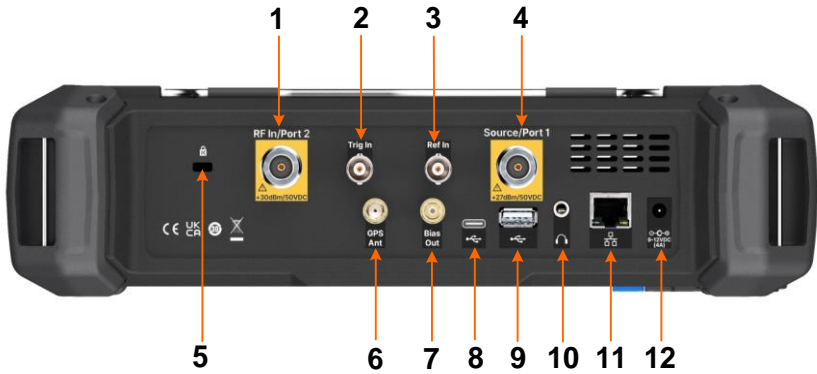
- ◆ Under default reset, the operation interface is in menu selection mode, and function keys will be identified as the blue silk screen function identifier on the upper side of the key. Use **Enter** to switch from menu selection mode to value input mode.
- ◆ When the operation interface is in value input mode, the multiplex key will be identified as the white silk screen digital identifier inside the key. You can use **Esc** to switch from value input mode to menu selection mode.

Function Keys Description

| Name | Description |
|---|--|
|  | Menu selection mode, to select the analyzer operation mode, such as spectrum analysis mode, antenna and cable test mode, network analyzer mode, etc. |
|  | In menu selection mode, control of mode measurement parameters, such as average times, specific test items, etc. |
|  | In menu selection mode, frequency parameters are controlled. In time domain analysis, length (distance) parameters are controlled. |
|  | Menu selection mode, bandwidth class parameter control, such as RBW, VBW, IFBW and so on. |

| | |
|---|---|
|  | <p>In menu selection mode, control cursor Marker parameters, such as cursor type, cursor positioning, noise cursor, N dB bandwidth, etc.</p> |
|  | <p>Menu selection mode, for amplitude class parameters control, such as scale and unit, as well as preattenuator, preamplifier, amplitude correction, etc.</p> |
|  | <p>In the menu selection mode, control the scanning parameters, such as scanning time and type, scanning number, trigger, gating, etc.</p> |
|  | <p>In the menu selection mode, control the peak parameters, such as peak search, peak rule setting, etc.</p> |
|  | <p>In menu selection mode, trace parameters are controlled, such as trace state, detection, mathematical calculation, normalization, etc.</p> |
|  | <p>In menu selection mode, control the parameters of limit line, such as limit line editing, margin, test state setting, etc.</p> |
|  | <p>In menu selection mode, port calibration of antenna and cable test mode and network analysis mode is carried out, such as selecting the type of mechanical calibration part, user-defined calibration part parameters, loading electronic calibration part, etc.</p> |
|  | <p>In menu selection mode, reset parameters can be controlled, such as reset status definition, power-on status definition, user status definition, etc.</p> |
|  | <p>In the menu selection mode, you can perform file operations, such as saving and invoking files, and viewing file browsers.</p> |
|  | <p>In menu selection mode, the system general information view, version and calibration operation, as well as input and output port Settings, screen display Settings, etc.</p> |

Rear Panel



Rear Panel

Rear Panel Description

| NO. | Name | Description |
|-----|--------------|---|
| 1 | RF In/Port 2 | Signal input: 50Ω N female connector. Maximum input ± 50 VDC, + 30 dBm. |
| 2 | Trig In | Trigger input is a BNC female connector. When the analyzer uses an external trigger mode, the connector receives a rising or falling edge of an external trigger signal that is used to establish event synchronization. |
| 3 | Ref In | Reference clock input, BNC female connector. The analyzer can use an internal reference clock or an external reference clock. If the instrument detects a signal from an external 10 MHz reference clock, it automatically uses the signal as the analyzer's reference clock source. At this time the screen status bar frequency reference display external; When the external 10 MHz reference signal is lost, |

| | | |
|---|---------------|---|
| | | <p>exceeded, or not connected, the analyzer's reference clock is automatically switched to the internal 10 MHz reference clock, and the screen frequency reference bar will display the internal.</p> <p>[Ref In] is used to establish clock synchronization between multiple instruments.</p> |
| 4 | Source/Port 1 | <p>The signal output and input terminals are 50Ω N female connectors.</p> <p>In spectrum analysis mode, signal output as an independent signal source.</p> <p>In the network analysis mode, as the excitation and receiving interface, this port built-in coupler, to achieve a single port vector network analysis function.</p> |
| 5 | K-groove | <p>Slots are provided to accept Kensington® cable locks.</p> |
| 6 | GPS Ant | <p>The GPS antenna port is a SMA female connector used to install the GPS antenna and receive GPS satellite signals.</p> <p>Can provide 3.3V DC feed for active GPS antenna.</p> |
| 7 | Bias Out | <p>The offset voltage output port is a 50 Ω female SMB connector.</p> <p>Used to provide bias voltage for external signal amplifiers, such as tower amplifiers.</p> |
| 8 | USB Device | <p>The main USB port is TypeC. The analyzer can be used as a slave device and connected to a PC via USB cable. The PC uses the USB-TMC protocol to remotely control the analyzer.</p> |
| 9 | USB Host | <p>USB slave port, TypeB. The analyzer can be used as the main device and is connected to external USB devices through this port. For example,</p> <p>Connect external extended memory to read files in memory, or store the current instrument state, data,</p> |

| | | |
|----|-----------------------|--|
| | | <p>or current screen display content into memory;</p> <p>Connect a USB keyboard, USB mouse, or other USB receiver; Connect USB-GPIB adapter to realize GPIB remote control of analyzer;</p> <p>Connect electronic calibration parts to realize automatic calibration of analyzer.</p> |
| 10 | Audio output | <p>3.5mm headphone jack. The analyzer provides AM and FM demodulation functions.</p> <p>The headphone jack is used to insert the headphone to listen to the audio output of the demodulation signal. You can turn on or off the headset and adjust the volume of the headset through the menu.</p> |
| 11 | LAN | <p>RJ45 ports. The analyzer is connected to the LAN through network cable, and can be viewed and controlled remotely through VXI, Socket protocol, or a web browser.</p> |
| 12 | External power supply | <p>2.5mm x 5.5mm barrel connector, connected to 12V 4A power adapter charging port, center positive.</p> <p>Used to power devices and charge batteries.</p> |



WARNING

The analyzer does not support DC input. To avoid damage to the instrument, the DC voltage component of the signal reaching the RF input must not exceed 50 V.

If possible, add an isolated DC component to the RF input of the analyzer before signal measurement.



WARNING

In order to avoid damage to the instrument, the DC voltage component of the signal input to the RF input should not exceed 50 V;

When the frequency is greater than 10 MHz, the maximum continuous power of the RF signal shall not exceed +33 dBm.

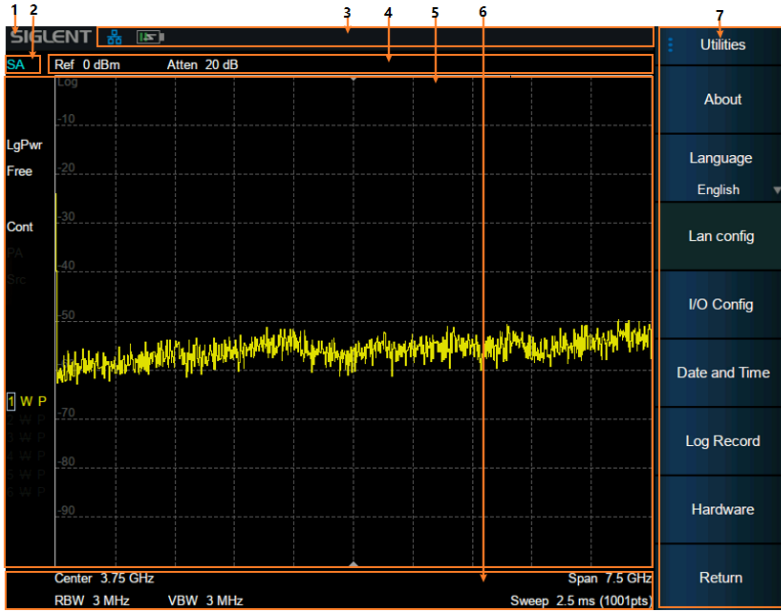
When the frequency is less than 10 MHz, the maximum continuous power of the RF signal should not exceed +20 dBm.



WARNING

Before connecting any signal, short connect the inner core of the test cable to the housing floor to release the static electricity accumulated on the inner core of the test cable.

User Interface



User Interface of spectrum analyzer mode

Spectrum Analyzer Mode User Interface

| NO. | Name | Description |
|-----|------------------------|--|
| 1 | SIGLENT | SIGLENT logo |
| 2 | Mode/ Measure | Indicate the current working mode and measurement function of the analyzer, and click to switch, such as spectrum analysis mode, real-time spectrum mode, etc. |
| 3 | Hardware status bar | Indicates the status of hardware, interfaces, etc. |

| | | |
|---|------------------------|--|
| 4 | Measurement status bar | Indicates measurement status of reference level, attenuation, cursor, etc. |
| 5 | Result display area | The measurement results are displayed in various forms such as spectral lines, cursors, tables and constellation charts. |
| 6 | Scan parameter area | Indicates and controls major scan parameters. |
| 7 | Menu area | Used to configure measurement Settings. |

Touch screen and mouse operation

The analyzer provides a 8.4 inch multi-touch screen and supports various gesture operations including:

- ◆ Slide the waveform left and right or up and down in the measurement result area to change the X-axis center coordinate or Y-axis reference coordinate. Perform two-points scaling in the waveform area to change the X-axis span.
- ◆ The waveform is scaled horizontally at two points in the measurement result area to change the X-axis display range.
- ◆ Click the shortcut menu area, working status area, scanning parameter area and menu area for function selection.
- ◆ Click editable parameters, virtual numeric keyboard or QWERT keyboard will pop up, parameter or text editing.
- ◆ Open and drag the cursor.
- ◆ When the mouse is connected, clicking the left mouse button has the same effect as a single touch.

You can turn the touch screen function on and off via **Lock** .

Touch Operations

| NO. | Name | Description |
|-----|------------------|--|
| 1 | Click | Most controls just need to be tapped, touched and released. |
| 2 | Double click | Some controls require double clicking. If the second press is not detected within a specific time period, the operation is cancelled or treated as a single press. |
| 3 | Press and drag | Some objects can be dragged. This is done by gently holding down the action object and dragging it to a new position while releasing it. For example, you can drag items such as tags, limit line nodes, and center frequencies by dragging tracks left or right. |
| 4 | Pinch or release | Some projects can be scaled down or expanded. This is done by pressing down with two fingers at the same time and gently holding the item as you pull the fingers closer or further, then releasing. You can pull items in and out, such as frequency spans, by touching and holding the trace in two locations, then pulling your finger closer to narrow the span or pulling your finger further to widen it. |

Firmware Operation

Check System Information

Users can get the system information by press **System** > “System” > “About”, including:

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

Load Option

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

1. Press **System** > “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 load the .lic file provided by pressing **File** > “Load” from internal memory or USB stick.

The option will be enabled after rebooting.

Firmware Upgrade

Follow this procedure to update the instrument firmware:

1. Download the firmware package from an official **SIGLENT** website.
2. Extract and copy the .ADS file into the root directory of an USB storage device.
3. Plug the USB stick into the USB Host connector. Press **System** > **System** > **Update**, find the .ADS file in USB storage device.
4. Press the **Load**, the analyzer will perform the update process automatically.



CAUTION:

The upgrade process will take several minutes. When the upgrade is completed, the machine will reboot.

Any interruption during the update process will result in update failure and system data loss. This is **not covered under the warranty** and the user will bear repair costs and shipping.

Do not remove the USB storage device until the update is finished.

Remote Control

The 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 a SCPI (Standard Commands for Programmable Instruments) compliant command set, LabVIEW and IVI (Inter-changeable Virtual Instrument), to interoperate with other programmable instruments.

You can also remotely monitor and control the analyzer in Web Browser.

For more details, refer to the “User Manual” or contact your nearest **SIGLENT** office.

Service and Support

SIGLENT warrants that the products that it manufactures and sells will be free from defects in materials and workmanship for a period of three years (accessories for a period of one year) from the date of shipment from an authorized Siglent distributor.

If the product proves defective within the respective period, **SIGLENT** will provide repair or replacement as described in the complete warranty statement. To arrange for service or obtain a copy of the complete warranty statement, please contact your nearest **SIGLENT** sales and service office. Except as provided in this summary or the applicable warranty statement, **SIGLENT** makes no warranty of any kind, express or implied, including without limitation the implied warranties of merchantability and fitness for a particular purpose. In no event shall **SIGLENT** be liable for indirect, special, or consequential damages.

Troubleshooting

Before calling **SIGLENT**, or returning an analyzer for service, perform the quick checks listed below. These checks may eliminate the problem.

If the problem remains still, please contact **SIGLENT** and provide your device information in the back of the analyzer.

1. The Power Switch is still dark after power on:

- (1) Check that the power is connected / working.
- (2) Check the power cord has been connected correctly.
- (3) Check the power fuse. If a new fuse needs to be installed, please use a specified fuse.

2. The analyzer's screen is still dark (no display) after power on:

- (1) Check whether the fan is running while the screen is dark, maybe the LCD cable is loose.
- (2) Check whether the fan is not running while screen is dark, maybe it has failed to start up.

Do not disassemble the instrument by yourself and contact **SIGLENT**.

3. The control panel is unresponsive or gives a wrong response:

- (1) Press all the keys at the front panel to check if all of them are normal after power on.
- (2) Press **System** > "Self Test" > "Key Test" to check if all the keys are working properly.
- (3) If all the keys are not working, the numeric keyboard connection might be loose or the numeric keyboard is broken.
- (4) If the touch screen is not working, check if the Touch is ON in **Display** > Touch Settings menu.

- (5) Check whether the analyzer is locked in a remote control; if so, press **Esc** to unlock it.

Do not disassemble the instrument by yourself and contact **SIGLENT**.

4. The traces on the screen do not update for a long period of time:

- (1) Check whether the traces are in View or other status; if so, change to Clear&Write to activate it.
- (2) Verify whether all the trigger conditions have been met and whether there is a valid trigger signal inputting.
- (3) Check whether the analyzer is in a Limit test.
- (4) Check whether the analyzer is in a single sweep.
- (5) Check whether the current sweep time is too long.
- (6) Check whether the analyzer is in a Demod listening and the Demod time is too long.
- (7) Check whether the analyzer is in an EMI measurement mode, and the Sequence is not in a Scan status.

5. Wrong measurement results or poor precision:

- (1) Check whether all the external devices are successfully connected and are working normally.
- (2) Get some knowledge of the signal under measurement and set appropriate instrument parameters.
- (3) Make measurements under proper conditions, for example:
 - ◆ Warm-up the instrument appropriately;
 - ◆ Operate the instrument under the specified environment temperature;
 - ◆ Check if the AMPTD -> "Correction" is ON in SA or VNA mode.

- (4) Calibrate the instrument regularly to reduce or avoid errors that might occur over time.

If you need a specific calibration after the stated calibration period, contact **SIGLENT** or get paid service from authorized measurement agencies.

6. System Message:

The instrument may display prompt messages, error messages or state messages according to the current working status. These messages are displayed to help you to use the instrument correctly and are not instrument failures.

Table 1 Operation Messages

| User system message | Message on screen |
|------------------------------------|--|
| System message description (1~199) | |
| SWT_OOR (1) | Sweep time out of range |
| RBW_OOR (2) | RBW out of range |
| SWT_CCOFM (3) | Can't change the sweep time in FFT mode |
| MRKT_UNDEF (4) | Undefined marker type |
| MRKFT_UNDEF (5) | Undefined marker function type |
| MRKDT_UNDEF (6) | Undefined marker delta pair type |
| MRKRT_UNDEF (7) | Undefined marker read out type |
| TRCT_UNDEF (8) | Undefined trace type |
| DETT_UNDEF (9) | Undefined detect type |
| SCA_CSWL (10) | Can't set the Scale/Div with linear |
| MRKT_IOFF (11) | The marker type is OFF, please open the current marker |
| MRK_NDELTA (12) | The marker type is not Delta |

| | |
|--------------------------|---|
| MRKRT_MBST (13) | The marker read out type must be set time |
| MATHT_UNDEF (14) | Undefined math type |
| XML_ANIE (15) | XML attribute node import error |
| XSCA_MBSLIZS (16) | X Scale must be set liner in zero span |
| TG_AXIS_XSCA (17) | The Scale type must be logarithm when normalize |
| SCALE_TG_AXIS (18) | Scale type cannot be changed to linear while normalize on |
| PEAK_UNFOUND (19) | No peak found. Please change the search setting |
| IMD_FREQ_OOR (20) | Frequency of intermodulation products out of range |
| AUTO_FAIL (21) | Auto tune process failed |
| EXT_REF_PLUG_IN (22) | EXT ref plug in |
| EXT_REF_PLUG_OUT (23) | EXT ref plug out |
| REF_PLL_UNLOCK (24) | Ref pll unlock |
| SIG_NOT_STB (25) | Signal is not stable enough to track |
| QP_RBW_OOR (26) | RBW out of range when do quasi peak scan |
| LAN_PLUG_IN (150) | Ethernet cable plug in |
| LAN_PLUG_OUT (151) | Ethernet cable plug out |
| IP_CONFLICT (152) | IP address conflict |
| IP_INVALID (153) | IP address invalid |
| NETM_INVALID (154) | Netmask address invalid |
| GWAY_INVALID (155) | Gateway address invalid |
| S21_NORMALIZE_DONE (183) | Normalization of S21 done |
| VNA_AUTO_CAL_DONE (184) | Auto calibration of VNA done |

| Execution error (400~599) | |
|---------------------------|---|
| LCF_DTFERR (400) | Load configurations failed, due to file error |
| Device error (600~799) | |
| FUF_DTVERR (600) | Firmware upgrade failed, due to the version error |
| FUF_DTRERR (601) | Firmware upgrade failed, due to the ram error |
| FUF_DTFERR (602) | Firmware upgrade failed, due to the file error |
| FUF_DTFVERR (603) | Firmware upgrade failed, due to verify the file error |
| FUF_DTUZFERR (604) | Firmware upgrade failed, due to unzip the file error |
| LIC_INVALID (605) | License is invalid! |
| ADC_ERROR (606) | Warning, ADC Overload! |

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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