



[Instruments.uni-trend.com](https://instruments.uni-trend.com)

Signal Analyzer VNA User Manual

This manual is for:
UTS3000A series

V1.2

October 11th , 2025

Foreword

Thank you for choosing this brand-new UNI-T instrument. To ensure safe and correct usage, please read this manual thoroughly, especially the Safety Requirements part.

After reading this manual, it is recommended to keep the manual at an easily accessible place, preferably close to the device, for future reference.

1. User Guide

- [Inspect Packing List](#)
- [Safety Instruction](#)
- [Environmental Requirements](#)
- [Connecting Power Supply](#)
- [Electrostatic Protection](#)
- [Preparation Work](#)
- [Usage Tip](#)
- [Touch Operation](#)
- [Help Information](#)
- [Operation Mode](#)

This chapter introduces the safety instructions and basic information about using the signal analyzer.

Inspect Packing List

When you received the instrument, please inspect the packaging and packing list as follows:

- Inspect the packaging box for any damage or scratches caused by external forces and check the instrument's appearance for any damage. If you have any questions or issues with the product, please contact the distributor or local office.
- Carefully take out the goods and check them against the packing list.

Safety Instruction

This chapter contains information and warnings that must be observed. Ensure that the instrument is operated under the safe conditions. In addition to the safety precautions indicated in this chapter, you must also follow accepted safety procedures.

Safety Precautions		
Warning		Please follow these guidelines to avoid possible electric shock and risk to personal safety.
		Users must follow the following conventional safety precautions in operation, service, and maintenance of this device. UNI-T will not be liable for any personal safety and property loss caused by the user's' failure following the safety precautions. This device is designed for professional users and responsible organizations for measurement purposes. Do not use this device in any manner not specified by the manufacturer. This device is intended for indoor use only, unless otherwise stated in the product manual.
Safety Statements		
Warning		“Warning” indicates the presence of a hazard. It warns users to pay attention to a certain operation process, operation method or similar. Personal injury or death may occur if the rules in the “Warning” statement are not properly executed or observed. Do not proceed to the next step until you fully understand and meet the conditions stated in the “Warning” statement.
Caution		“Caution” indicates the presence of a hazard. It warns users to pay attention to a certain operation process, operation method or similar. Product damage or loss of important data may occur if the rules in the “Caution” statement are not properly executed or observed. Do not proceed to the next step until you fully understand and meet the conditions stated in the “Caution” statement.
Note		“Note” indicates important information. It reminds users to pay attention to procedures, methods, and conditions, etc. The contents of “Note” should be highlighted if necessary.
Safety Signs		
	Danger	It indicates danger of electric shock, which may cause personal injury or death.
	Warning	It indicates that there are factors you should be cautious of to prevent personal injury or product damage.

	Caution	It indicates danger, which may cause damage to this device or other equipment if you fail to follow a certain procedure or condition. If the “Caution” sign is present, all conditions must be met before you proceed to operation.
	Note	It indicates potential problems, which may cause failure of this device if you fail to follow a certain procedure or condition. If the “Note” sign is present, all conditions must be met before this device will function properly.
	AC	Alternating current of device. Please check the region’s voltage range.
	DC	Direct current device. Please check the region’s voltage range.
	Grounding	Frame and chassis grounding terminal
	Grounding	Protective grounding terminal
	Grounding	Measurement grounding terminal
	OFF	Main power off
	ON	Main power on
	Power	Standby power supply: When the power switch is turned off, this device is not completely disconnected from the AC power supply.
CAT I	Secondary electrical circuit connected to wall sockets through transformers or similar equipment, such as electronic instruments and electronic equipment with protective measures, and any high-voltage and low-voltage circuits, such as the copier in the office.	
CAT II	Primary electrical circuit of the electrical equipment connected to the indoor socket via the power cord, such as mobile tools, home appliances, etc. Household appliances, portable tools (e.g., electric drill), household sockets, sockets more than 10 meters away from CAT III circuit or sockets more than 20 meters away from CAT IV circuit.	
CAT III	Primary circuit of large equipment directly connected to the distribution board and circuit between the distribution board and the socket (three-phase distributor circuit includes a single commercial lighting circuit). Fixed equipment, such as multi-phase motor and multi-phase fuse box; lighting equipment and lines inside large buildings; machine tools and power distribution boards at industrial sites (workshops).	
CAT IV	Three-phase public power unit and outdoor power supply line equipment. Equipment designed to “initial connection,” such as power distribution system of power station, power instrument, front-end overload	

		protection, and any outdoor transmission line.
	Certification	CE indicates a registered trademark of EU.
	Certification	UKCA indicates a registered trademark of United Kingdom.
	Certification	Conforms to UL STD 61010-1 and 61010-2-030. Certified to CSA STD C22.2 No.61010-1 and 61010-2-030.
	Waste	Do not place equipment and accessories in the trash. Items must be properly disposed of in accordance with local regulations.
	EEUP	This environment-friendly use period (EFUP) mark indicates that dangerous or toxic substances will not leak or cause damage within this indicated time period. The environmentally friendly use period of this product is 40 years, during which it can be used safely. Upon expiration of this period, it should enter the recycling system.
Safety Requirements		
Warning		
Preparation before use		Please connect this device to AC power supply with the power cable provided. The AC input voltage of the line reaches the rated value of this device. See the product manual for specific rated value. The line voltage switch of this device matches the line voltage. The line voltage of the line fuse of this device is correct. This device is not intended for measuring the main circuit.
Check all terminal rated values		Please check all rated values and marking instructions on the product to avoid fire and the impact of excessive current. Please consult the product manual for detailed rated values before connection.
Use the power cord properly		You can only use the special power cord for the instrument approved by the local and state standards. Please check whether the insulation layer of the cord is damaged, or the cord is exposed, and test whether the cord is conductive. If the cord is damaged, please replace it before using the instrument.
Instrument Grounding		To avoid electric shock, the grounding conductor must be connected to the ground. This product is grounded through the grounding conductor of the power supply. Please be sure to ground this product before it is powered on.
AC power supply		Please use the AC power supply specified for this device. Please use the power cord approved by your country and confirm that the insulation layer is not damaged.
Electrostatic		This device may be damaged by static electricity, so it should be tested

prevention	in the anti-static area if possible. Before the power cable is connected to this device, the internal and external conductors should be grounded briefly to release static electricity. The protection grade of this device is 4 kV for contact discharge and 8 kV for air discharge.
Measurement accessories	Measurement accessories are of lower class, which are not applicable to main power supply measurement, CAT II, CAT III, or CAT IV circuit measurement. Probe subassemblies and accessories within the range of IEC 61010-031 and current sensors within the range of IEC 61010-2-032 can meet its requirements.
Use the input / output port of this device properly	Please use the input / output ports provided by this device in a proper manner. Do not load any input signal at the output port of this device. Do not load any signal that does not reach the rated value at the input port of this device. The probe or other connection accessories should be effectively grounded to avoid product damage or abnormal function. Please refer to the product manual for the rated value of the input / output port of this device.
Power fuse	Please use a power fuse of exact specification. If the fuse needs to be replaced, it must be replaced with another one that meets the specified specifications by the maintenance personnel authorized by UNI-T.
Disassembly and cleaning	There are no components available for operators inside. Do not remove the protective cover. Qualified personnel must conduct maintenance.
Service environment	This device should be used indoors in a clean and dry environment with ambient temperature from 0 °C to +40 °C. Do not use this device in explosive, dusty, or humid air.
Do not operate in humid environment	Do not use this device in a humid environment to avoid the risk of internal short circuit or electric shock.
Do not operate in flammable and explosive environment	Do not use this device in a flammable and explosive environment to avoid product damage or personal injury.
Caution	
Abnormality	If this device may be faulty, please contact the authorized maintenance personnel of UNI-T for testing. Any maintenance, adjustment or parts replacement must be done by the relevant personnel of UNI-T.
Cooling	Do not block the ventilation holes at the side and back of this device. Do not allow any external objects to enter this device via ventilation holes. Please ensure adequate ventilation and leave a gap of at least 15 cm on

	both sides, front and back of this device.
Safe transportation	Please transport this device safely to prevent it from sliding, which may damage the buttons, knobs, or interfaces on the instrument panel.
Proper ventilation	Poor ventilation will cause the device temperature to rise, thus causing damage to this device. Please keep proper ventilation during use, and regularly check the vents and fans.
Keep clean and dry	Please take actions to avoid dust or moisture in the air affecting the performance of this device. Please keep the product surface clean and dry.
Note	
Calibration	The recommended calibration period is one year. Calibration should only be conducted by qualified personnel.

Environmental Requirements

This instrument is suitable for the following environment:

- Indoor
- Pollution degree: Class 2
- For overvoltage: This product should be powered from a mains supply that complies with Overvoltage Category II, which is a typical requirement for connecting equipment via power cords and plugs.
- Operating: Altitude below 3,000 meters; non-operating: Altitude below 15,000 meters
- Unless otherwise specified, the operating temperature is 0 to +40°C; storage temperature is -20 to +70 °C.
- Operating: Humidity at temperatures below +35°C, ≤ 90% RH.; non-operating: Humidity at temperatures from +35 °C to 40 °C, ≤ 60% RH.

Note

There are ventilation openings on the rear and side panels of the instrument. Please ensure that air can flow through these vents. To prevent excessive dust from blocking the vents, clean the instrument housing regularly. The housing is not waterproof; please disconnect the power supply first and then wipe the housing with a dry cloth or a slightly moistened soft cloth.

Connecting Power Supply

The specification of the AC power supply is as shown in the following table.

Voltage Range	Frequency
100-240VAC (Fluctuations $\pm 10\%$)	50/60 Hz
100-120VAC (Fluctuations $\pm 10\%$)	400 Hz

Please use the attached power cord to connect to the power port.

Connecting to the service cable:

This instrument is a Class I safety product. The supplied power lead has reliable performance in terms of case grounding. This signal analyzer is equipped with a three-prong power cable that meets international safety standards. It provides good case grounding performance for the specifications of your country or region.

Please install the AC power cable as follows:

- Ensure the power cable is in good condition.
- Leave enough space for connecting the power cord.

Plug the attached three-prong power cable into a well-grounded power socket.

Electrostatic Protection

Electrostatic discharge may cause damage to components. Components can be invisibly damaged by electrostatic discharge during transportation, storage, and use.

The following measures can reduce the damage caused by electrostatic discharge:

- Test in an antistatic area as far as possible.
- Before connecting the power cable to the instrument, briefly ground the inner and outer conductors of the instrument to discharge static electricity.
- Ensure all instruments are properly grounded to prevent the accumulation of static.

Preparation Work

1. Connect the power cable and insert the power plug into a protective grounding outlet.
2. Press the power switch to enter standby mode.
3. Press the soft switch to power on the signal analyzer.

It takes about 30 seconds to initialize the boot, and then the signal analyzer enters the system default menu mode. To ensure optimal performance, it is recommended to warm up the signal analyzer for 45 minutes after powering on.

Usage Tip

Use an External Reference Signal

If you want to use an external signal source 10 MHz as a reference, please connect the signal source to the **10 MHz In** port on the rear panel. The measuring bar on the top of the screen will indicate “**Freq Ref: Ext.**”

Activate the Option

If you want to activate an option, you need to input the secret key for the option. Please contact the UNI-T office to purchase it.

Refer to the following steps to activate the option you have purchased:

1. Save the secret key into a USB drive and insert it into the signal analyzer.
2. Press the **[System]** key > **System Information** > **Add Token**.
3. Select the purchased secret key and press the **[ENTER]** key to confirm.

Touch Operation

The signal analyzer has a multipoint touch screen for various gesture operations, which include:

- Tap the top right of the screen to enter the main menu.
- Tap parameters or menus on the screen to select and edit them.
- Turn on and move the cursor.
- Use auxiliary quick keys to perform common operations.

Use **[Touch/Lock]** key to turn on/off the touch screen function.

Help Information

The signal analyzer's built-in help system provides help information for each functional key and menu control key on the front panel.

- Touch the left bottom of the screen  and a help dialog box will pop out in the center of the screen. Tap the support function to get a more detailed help description.
- After the help information is displayed in the center of the screen, tap “x” or any other key to close the dialog box.

Operation Mode

The signal analyzer offers various operating mode, press the **Mode** key to select it.

- Spectrum Analysis
- IQ analysis

- EMI
- Analog Demodulation
- Vector Signal Analysis
- Real-time Spectrum Analysis
- Vector Network Analysis (refer to Chapter 3 for more details)
- Phase Analysis
- Mode Presetting

Mode Presetting: Each operation mode has its own reset mode. The options include IQ analysis, EMI, analog demodulation, vector signal analysis, and phase analysis, which require purchase to activate. In different operation modes, the functional keys on the front panel may differ. This manual uses the vector network analysis mode as an example to introduce the user interface and functional keys.

2. User Interface

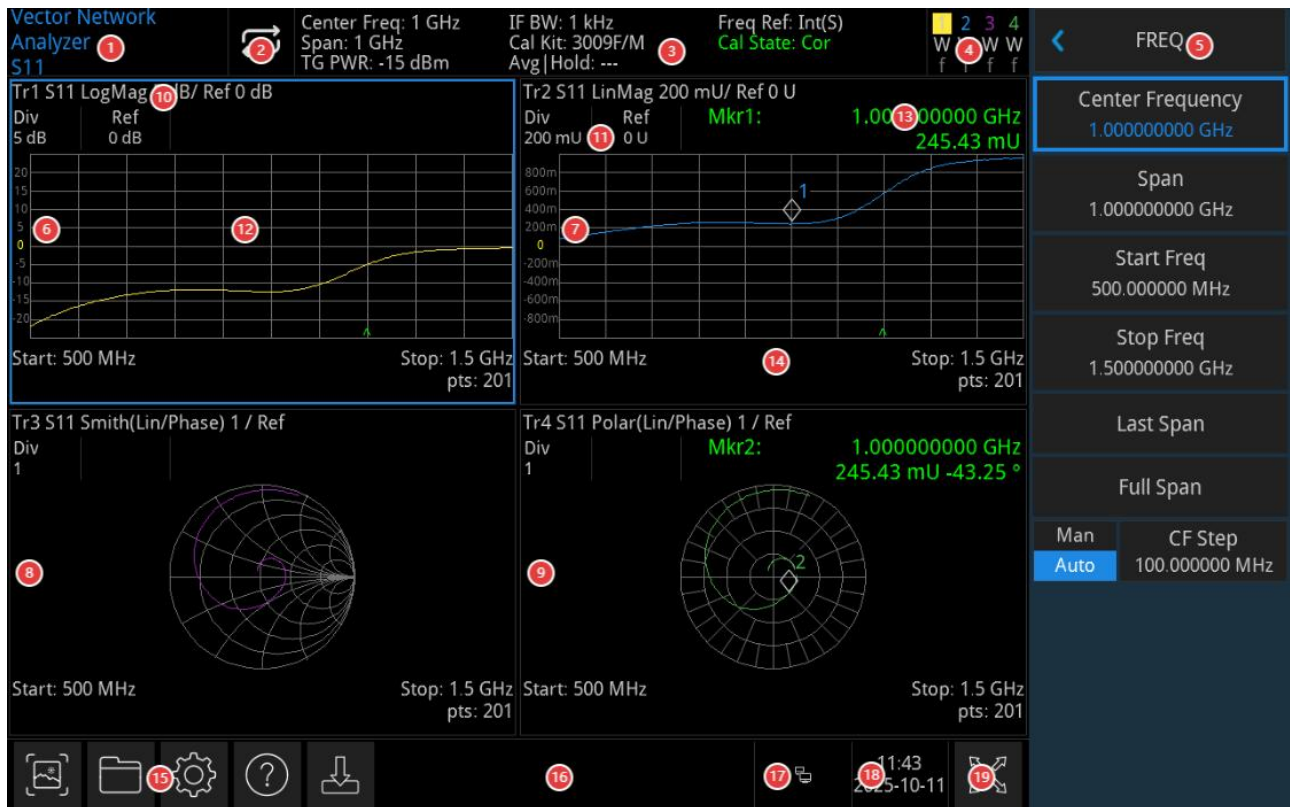


Figure 2-1 User Interface

1. Operating Mode: Including spectrum analysis, IQ analysis, EMI, analog demodulation, vector signal analysis, real-time spectrum analysis, vector network analysis, and phase noise analysis.
2. Sweep/Measurement: Tap switch icon to quickly step through the sweep mode, either single or continuous.
3. Measurement Bar: Displays measurement setting, including center frequency, sweep width, tracking source power, IF filter bandwidth, calibration components, and calibration status. Tap the icon to switch quickly.
4. Trace Indicator: Displays the trace line and detector information, including trace sequence number, trace type, and math operation type.

Note

The first line displays the number of the trace line; the color of the number and the trace should be the same. The second line displays the corresponding trace type, which includes W (Refresh), A (Trace Average), M (Max Hold), and m (Min Hold). The third line displays the math operation type (Highlight represents turning on math operation, while grey represents turning off math operation).

Tap screen's icon to switch quickly. The definitions of different letters are as follows:

- Letter in highlighted white: Indicates the trace is being updated.

- Letter in grey: Indicates the trace is not being updated.
5. Panel menu: The menu and function items to which the current function hard key belongs, including frequency, amplitude, bandwidth, trace, marker, and other function displays.
 6. Trace line 1 window: Displays the waveform or data of trace line 1.
 7. Trace line 2 window: Displays the waveform or data of trace line 2.
 8. Trace line 3 window: Displays the waveform or data of trace line 3.
 9. Trace line 4 window: Displays the waveform or data of trace line 4.
 10. Trace line format: Current trace line formats include LogMag, Phase, Delay, Smisth (Lin/Phase), Smisth (Log/Phase), Smisth (Re/Im), Smisth (R+jX), Smisth (G+jB), Polar (Lin/Phase), Polar (Log/Phase), Polar (Re/Im), LinMag, SWR, Real, Imag, ExpandPhase, and PositivePhase.
 11. Reference level and scale: Displays reference level and scale value.
 12. Grid: Displays trace, marker point, marker line, marker list.
 13. Cursor Measurement Result: Displays the cursor measurement results (frequency, amplitude).
 14. Data: Displays start frequency and stop frequency.
 15. Function Setting: Quick screenshot, file management system, setting system, help system, and file storage.
 - Quick Screenshot : Screenshots will be saved in the default file. If there is external storage, it will be preferentially saved to the external storage.
 - File Management System : Save corrections, limit values, measurement results, screenshots, traces, states, or other files into internal or external storage, and these settings can be recalled.
 - System Information : Browse the basic information and optional information.
 - Help System : Help navigation.
 - File Storage : Import or export state, trace + state, and measurement data.
 16. **System Log Dialog Box**: Click the blank area on the right of the file storage to view the instrument's operation log, alerts, and prompts.
 17. **Connection**: Displays the connection state of mouse, USB, and screen lock.
 18. **Date and Time**: Displays the current date and time.
 19. **Full Screen Switch**: Toggle full screen on or off. ON: the screen is stretched horizontally, and the key on the right side will be hidden automatically.

3. Key Descriptions (VNA)

- [Frequency \(FREQ\)](#)
- [Amplitude \(AMPT\)](#)
- [Bandwidth \(BW\)](#)
- [Sweep \(Sweep\)](#)
- [Trace line \(Trace\)](#)
- [Marker \(Marker\)](#)
- [Peak value \(Peak\)](#)
- [Measurement \(Meas\)](#)
- [Measurement/Setup \(Meas/Setup\)](#)
- [Single \(Single\)](#)
- [Default setting \(Default\)](#)
- [System setting \(System\)](#)
- [File storage \(Save\)](#)
- [Touch/Lock \(Touch/Lock\)](#)
- [Mode \(Mode\)](#)

Note

- The key here is for the signal analyzer vector network analysis mode.
- For different models of equipment, the parameter configuration and range under each key menu are different, please refer to the corresponding data sheet of each model for specific parameter configuration.

Frequency (FREQ)

Press the **[FREQ]** key to enter the frequency function menu. Values with start and end frequencies are displayed at the bottom of the screen grid.

Center Frequency: Activates the center frequency function to set a specific frequency value at the horizontal center of the screen. The center frequency value can be changed by the user via numeric keys, knobs, arrow keys, or touch panel menus.

Sweep Width: Lets you enter a sweep range value. The user can change the sweep width value via numeric keys, knobs, arrow keys, or touch panel menus. Changing the sweep width will change the frequency range symmetrically by the center frequency. The reading of the swept width is the total display frequency range. To determine the sweep width for each horizontal scale division, the said sweep width should be divided by 10.

Note

- When adjusting the sweep width, the center frequency remains the same, and the start and cut-off frequencies will change.
- The minimum sweep width can be set to 0 Hz. The maximum sweep width is full sweep.

Start Frequency: Sets the start frequency value for the leftmost part of the grid. The left and right ends of the grid correspond to the start and end frequencies, respectively. The user can change the start frequency value via the number keys, knobs, arrow keys, or touch panel menus.

Cutoff Frequency: Sets the cutoff frequency value for the rightmost part of the grid. The left and right ends of the grid correspond to the start and end frequencies, respectively. The cut-off frequency value can be changed by the user via numeric keys, knobs, arrow keys, or touch panel menus.

Note

- Modification of the cut-off frequency will cause changes in the sweep width and center frequency, and changes in the sweep width will affect other system parameters.
- You cannot set the start frequency > cut-off frequency, otherwise the cut-off frequency will change to maintain a minimum difference of 100 Hz between the start frequency and the cut-off frequency.
- You cannot set the start frequency = cut-off frequency, otherwise the cut-off frequency will change to maintain a minimum difference of 100 Hz between the start frequency and the cut-off frequency.

Center Frequency Step: Setting the frequency step will change the length of the center, start, and off frequencies when stepping with the arrow keys, and the user can change the step value via the number keys, knobs, arrow keys, or touch panel menus.

In automatic mode, the center frequency is stepped by 1/10 of the sweep width.

Last Sweep Width: Sets the sweep width to the most recently modified sweep width.

Full Sweep Width: Sets the previous sweep width to the maximum value. The default value is the center frequency maximum of -100 kHz.

Amplitude (AMPT)

Press the **[AMPT]** key to activate the reference level function and enter the following amplitude setting menu. By adjusting the amplitude parameter, the signal under test can be displayed in the current window in a way that is easy to observe and has minimal measurement error. The amplitude parameters of each trace window are independent of each other, and if you select a trace window, you can modify the amplitude parameters of the trace window under the amplitude menu.

Reference Level: Set the reference level, press the **[AMPT]** key to activate this function. The reference level is the power, voltage value, or phase, etc., represented by the reference grid lines on the screen (depending on the trace format). The reference level can be changed by the user via numeric keys, knobs, arrow keys, or touch panel menus.

When the trace format is selected for Logarithmic Amplitude or Linear Amplitude, the reference value is at the top of the Y axis; it is in the middle of the Y-axis in other cases.

The reference values for each type of trace are as follows:

Trace format	Default value	Value range	Unit
Logarithmic amplitude	0	-500 G-500 G	dB
Phase	0	-500 G-500 G	Degree (°)
Group delay	0	-500-500	s, ms, us, ns, ps, fs, as
Linear amplitude	0	-500 G-500 G	None
Standing wave ratio	1.0	-500 G-500 G	None
Real part	0	-500 G-500 G	None
Imaginary part	0	-500 G-500 G	None
Phase extension	0	-500 G-500 G	Degree (°)
Positive phase	180	-500 G-500 G	Degree (°)
Log Mag(DTF)	0	-500G~500G	dB
Lin Mag(DTF)	0	-500G~500G	None
Return Loss(DTF)	0	-500G~500G	dB

Note

- When Smith and Polar are selected for trace format, you cannot set a reference value.

Reference Position: Sets the location of the reference line. The reference position allows you to adjust the vertical position of the currently selected trace on the screen. The reference position can be changed by the user via numeric keys, knobs, arrow keys, or touch panel menus.

When set to 5, the reference position of the trace is in the middle of the screen; When set to 0, it is at the bottom of the screen grid; When set to 10, it is at the very top of the screen grid.

Note

- When Smith and Polar Coordinates are selected for trace format, the reference position cannot be set.

Impedance: Set the input impedance when converting voltage to power, the default input impedance is 50 Ω , if the input impedance of the system under test to the signal analyzer is 75 Ω , you need to use a 75 Ω to 50 Ω adapter to connect the system under test to the signal analyzer, and set the input impedance to 75 Ω .

Scale: Sets the size of each tick on the vertical axis of the selected trace. The scale can be changed by the user via numeric keys, knobs, arrow keys, or touch panel menus. When selecting different trace formats, the default values and units of the vertical axis scale are different, as shown in the following table:

Trace format	Default value	Value range	Unit
Logarithmic amplitude	10	1 n-100 G	dB
Phase	90	0.01 n-100 G	Degree (°)
Group delay	10	0.01 ps-100 s	ns
Smith	1	0.003-20	None
Polar coordinates	1	0.003-20	None
Linear amplitude	100	0.01 μ -100 G	None
Standing wave ratio	1	0.01 μ -100 G	None
Real part	10	0.01 μ -100 G	None
Imaginary part	10	0.01 μ -100 G	None
Phase extension	90	0.01 n-100 G	Degree (°)
Positive phase	90	0.01 n-100 G	Degree (°)
Log Mag(DTF)	10	-500G~500G	dB
Lin Mag(DTF)	100m	-500G~500G	None
Return Loss(DTF)	10	-500G~500G	dB

Auto Scale: Automatically adjusts the scale and reference value of the currently selected trace so that the trace is displayed on the screen at the appropriate size for easy observation of the trace.

All Autoscale: Automatically adjusts the scale and reference values of all displayed traces so that the traces are displayed on the screen at the appropriate size. When all autoscales are set, the scales and reference values of the corresponding traces are automatically updated; the change adjustment of all automatic scales only affects the display and does not affect the measurement results.

Bandwidth (BW)

Press the **[BW]** key to activate the Resolution Bandwidth (IF BW) operation function and set BW related parameters, the options are: 100 Hz, 1 kHz, 10 kHz, 100 kHz, 1 MHz.

Reducing the IF BW of the receiver can reduce the effect of random noise on the measurement; reducing the IF BW to 1/10 of the original bandwidth reduces the local noise of the receiver by 10 dB.

Sweep (Sweep)

Press the **[Sweep]** key to enter the sweep settings menu, and set the sweep related parameters, including sweep time, sweep points, sweep time mode, etc.

Sweep Time Mode: Select the setting method of sweep time to "Auto" or "Manual", and the default mode is Automatic.

Sweep Time: Set the time for the instrument to complete a sweep within the sweep width. The user can change the sweep time via numeric keys, knobs, arrow keys, or touch panel menus.

Number of Sweep Points: Sets the number of points obtained for each sweep, that is, the number of points of the current trace. The number of sweep points can be changed by the user via numeric keys, knobs, arrow keys, or touch panel menus.

Note

- With the increase of the number of sweep points, the frequency resolution of the marked points increases, and the sweep speed decreases.
- Due to the limitation of the minimum sweep point interval, the sweep time will become longer when the number of sweep points is increased.
- To ensure accurate measurement calibration, make sure that the number of points used for calibration and measurement is the same.
- Changing the number of sweep points will affect several parameters of the system, so the

system will re-sweep and measure.

- During DTF measurement, the number of sweep points cannot be edited, and its value is automatically updated with the change of span, stop distance, and velocity factor.

Sweep/Measure (Single/Continuous): Set the sweep mode to single or continuous, the default is continuous sweep, and there is a corresponding status corresponding to the selected mode at the top of the screen.

Continuous Sweep: The  on the screen indicates continuous. In continuous sweep mode, after each sweep is completed, you can go directly to the next sweep.

Single Sweep: Set the current sweep mode to Single Sweep, and the  on the screen indicates a single sweep. When the current sweep is continuous, press the Sweep/Measure (Single/Continuous) key to enter a single sweep, and the Single key backlight is on, press the key to enter a single sweep and perform a sweep measurement.

Trace (Trace)

Press the **[Trace]** key to enter the trace setting menu and set the relevant parameters of the trace.

Select Trace: Select the working trace you want to use. Up to 4 traces can be displayed at the same time, each with a different color (Trace 1 is yellow; Trace 2 is blue, Trace 3 is purple, and Trace 4 is green).

Select the corresponding trace to set the corresponding trace parameters. By default, Trace 1 is selected and turned on, and the trace type is Refresh.

Next Trace: Select the next trace as the current working trace. (Each time this key is pressed, the current trace line will be upgraded to the trace with a larger number from the currently specified one.) Before the measurement parameters and more settings can be defined, the trace must be the working trace. To change the settings of the trace, use this key first to make the trace the working trace.

Trace Type: Sets the type of the currently selected trace. Depending on the selected trace type, the system calculates the sweep data accordingly and displays it only when the Trace Display is not Off.

1. **Refresh:** Each point of the trace takes the data after the real-time sweep.
2. **Trace Average:** Each point of the trace shows the result of averaging the data from multiple sweeps. This type of trace appears smooth.
3. **Maximum Hold:** Updates the display data when a new maximum value is generated.
4. **Minimum Hold:** Updates the display data when a new minimum value is generated.

Trace Update: Turns trace update on or off, which is on by default.

Trace Display: Set the display content of the currently selected trace, the options are Data, Memory, Data & Memory, Off. Defaults to data.

Note

- You need to perform the "Data-> Memory" operation before the trace can display the memory data.
- The "Data-> Memory" operation is not performed, and the two options of "Memory" and "Data & Memory" are grayed out and cannot be selected.
- When you select the Close Trace option, the trace is not displayed.

Data-> Memory: Keeps the measurement data of the currently selected trace in memory. You can use the stored traces to compare the data traces on the screen. After performing "Data-> Memory" first, an additional trace that can be called a storage trace is displayed on the screen when selecting traces to display "Memory" and "Data & Memory". This stored trace is slightly darker than the trace showing the measurement data, so it is distinguished.

Trace Format: Set the display format of the selected trace, such as logarithmic amplitude, phase, group delay, smith, polar coordinates, linear amplitude, SWR, real part, imaginary part, extended phase, positive phase, Log Mag(DTF), Lin Mag(DTF), and Return Loss(DTF).

1. **Logarithmic amplitude:** The trace represents the logarithmic amplitude of the measurement result, and the amplitude of the signal is converted to decibel units for display.
2. **Phase:** The trace represents the phase of the measurement result and is displayed in degrees (°) from -180° to +180°.
3. **Group Delay:** The trace represents the signal transmission delay in the DUT, measured in seconds (s).
4. **Smith:** Smith chart format to display impedance based on DUT reflection measurements. In this format, the trace is drawn at the same position as in the polar format. The Smith chart format allows the user to select any of the following data sets as the display result of the Marker:
 - Linear/Phase:** Linear amplitude and phase.
 - Logarithmic/Phase:** Logarithmic amplitude and phase.
 - Real/imaginary:** real and imaginary.
 - R+jX:** Impedance diagram. R: Resistance; X: Reactance. The units are all Ω .
 - G+jB:** Admittance chart. G: Conductance; B: Susceptance. The units are all S.
5. **Polar coordinates:** The distance from the trace to the polar coordinate origin represents the amplitude of the measurement result (linear), the amplitude is expressed as the displacement

from the origin (linear), and the phase is expressed at the angle deviating from the positive X-axis counterclockwise. The polar form allows the user to select any of the following data sets as the display result of the Marker:

Linear/Phase: Linear amplitude and phase.

Logarithmic/Phase: Logarithmic amplitude and phase.

Real/Imaginary: Real and imaginary.

6. **Linear Amplitude:** The trace represents the linear amplitude of the measurement result.
7. **SWR:** The trace represents the VSWR, $SWR = (1+\rho)/(1-\rho)$, where ρ represents the reflection coefficient (Unit: None).
8. **Real part:** The trace represents the actual number part of the measured complex parameter.
9. **Imaginary part:** The trace represents the measured complex parameter, and its imaginary part.
10. **Extended Phase:** The trace represents the phase of the measurement result and can display the phase above $+180^\circ$ and below -180° in degrees ($^\circ$).
11. **Positive Phase:** The trace represents the phase of the measurement result, showing the range $[0^\circ, 360^\circ]$ in degrees ($^\circ$).
12. **Log Mag(DTF):** The traces represent the time-domain logarithmic magnitude under DTF measurements in dB, which is only applicable to DTF measurements.
13. **Lin Mag(DTF):** The traces represent the time-domain linear magnitude under DTF measurements and are only applicable to DTF measurements.
14. **Return Loss(DTF):** The trace represents the return loss under DTF measurement in dB and is only applicable to DTF measurement.

Type of math operation: After performing the Data-> Memory operation, you can perform data calculations between the measured data and the stored trace.

1. **Data/Memory:** Measured data divided by data in the stored trace.
2. **Data * memory:** Measured data multiplied by the data in the stored trace.
3. **Data-Memory:** Measured data minus the number in the stored trace.
4. **Data + Memory:** Measured data plus the number in the stored trace.
5. **Off:** Disable the arithmetic function.

Note

- The trace operation functions are mutually exclusive, that is, when an operation function is applied to a trace, the last selected operation function will be turned off.

Marker (Marker)

Press the **[Marker]** key to access the panel menu of the marker function, which can be used to select the type and number of markers, etc. The marker point, a diamond-shaped marker, can be used to read the amplitude, frequency, or distance of each point on the trace, as shown in Figure 3-1 below.

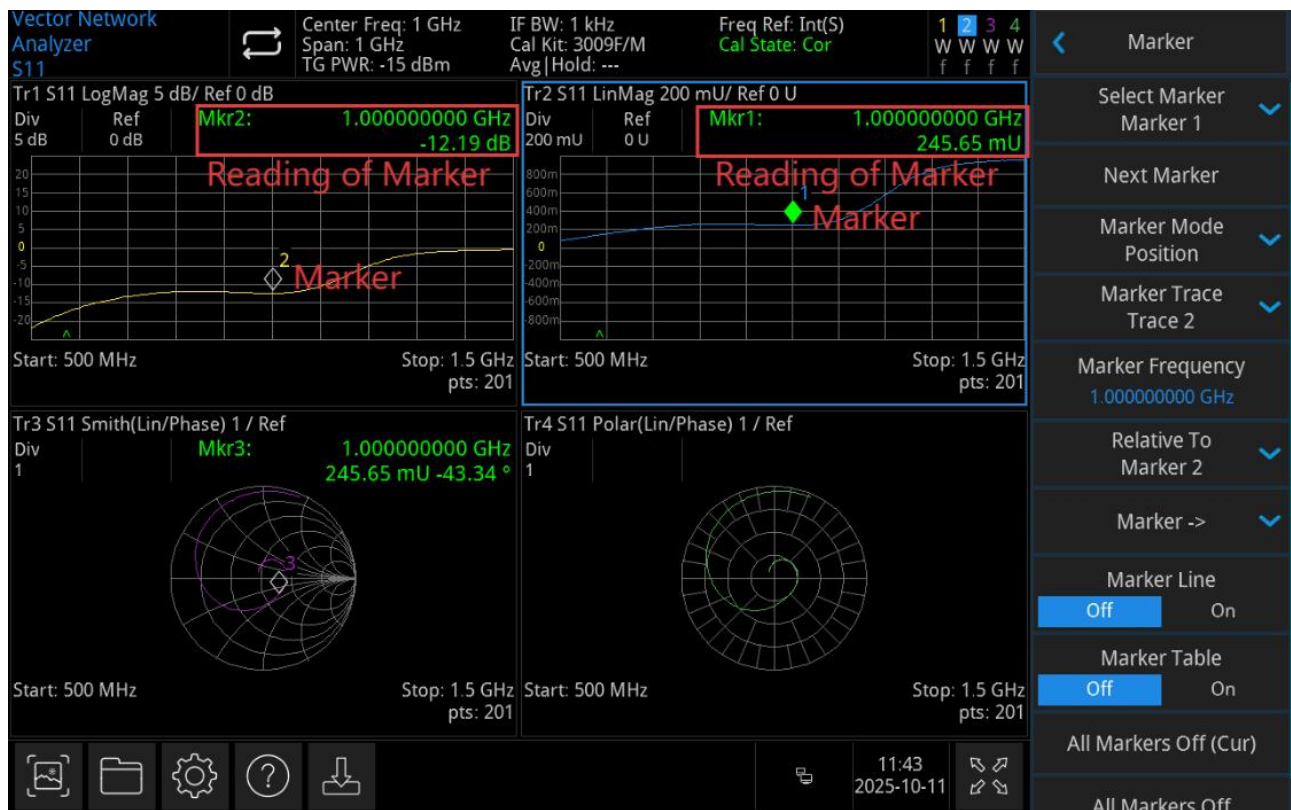


Figure 3-1 Marker

Select marker: The instrument provides a total of 10 cursors, and cursor 1 is turned on by default. After you select the cursor, you can set parameters such as the type of cursor, the trace to be marked, and so on. The currently open cursor will be marked on the trace selected by the Marker Trace, and the measurement results bar in the upper right corner of the screen will show the reading of the currently active cursor at the marker. Before you can open the cursor in a trace window, you need to set the trace to the current trace.

Next marker: Automatically switches to the next marker for the current marker.

Marker Mode: Set the cursor types, including normal, difference Δ , and off.

1. **Normal:** Used to measure the X (frequency or time) and Y (amplitude) values of a certain point on the trace, after selecting "Normal", a cursor identified by the current cursor number will appear on the trace, such as "1", pay attention to the following points during use.
If there is no currently active cursor, activates a cursor at the center frequency of the current trace.

Displays the current cursor reading in the upper right corner of the screen.

2. **Difference Δ :** Used to measure the difference between the "reference point" and the "point on the trace": X (frequency or distance) and Y (amplitude) values. When you select Difference, a pair of cursors will appear on the trace: a reference cursor (marked with "x") and a difference cursor (marked with " Δ "), with the following points in mind:

If there is currently an active cursor, activate a reference cursor at the current cursor, otherwise activate both the reference cursor and the difference cursor at the center frequency.

When you change the position of the difference cursor, the reference cursor position remains the same, and the frequency (distance) difference between the two cursors changes.

The measurement results bar in the upper right corner of the screen shows the frequency (distance) difference and amplitude difference between the two cursors.

3. **Off:** Turn off the currently selected cursor, and the cursor information displayed on the screen and the cursor-related functions will also be turned off.

Mark Traces: Select the traces marked by the current cursor as: Trace 1, Trace 2, Trace 3, and Trace 4.

Marker Frequency: The frequency of the marked point on the trace, which can be changed by the user via the numeric keys, knobs, arrow keys, or touch panel menus. When the marker pattern is Difference, the tag is changed to "Marker Δ Frequency".

Relative: Used to measure the difference between two cursor difference points, which can be marked on different traces at the same time.

Marker->: Sets other system parameters of the signal analyzer (e.g., center frequency, reference level) with the value of the current cursor, and if no cursor is currently open, press the Marker menu to automatically activate a cursor.

-> **Center Frequency:** Sets the center frequency of the signal analyzer to the frequency at the current cursor.

- When the Normal cursor is selected, the center frequency is set to the frequency at the cursor.
- When the Difference cursor is selected, the center frequency is set to the frequency at the difference cursor.

-> **Center Frequency Step:** Set the center frequency step of the signal analyzer to the frequency at the current cursor.

- When the Normal cursor is selected, the center frequency step is set to the frequency at the

cursor.

- When the Difference cursor is selected, the center frequency step is set to the frequency difference between the difference cursor and the reference cursor.

-> **Start Frequency:** Sets the start frequency of the signal analyzer to the frequency at the current cursor.

- When the Normal cursor is selected, the start frequency is set to the frequency at the cursor.
- When the Difference cursor is selected, the start frequency is set to the frequency at the difference cursor.

-> **Cutoff Frequency:** Set the cut-off frequency of the signal analyzer to the frequency at the current cursor.

- When the Normal cursor is selected, the cutoff frequency is set to the frequency at the cursor.
- When the Difference cursor is selected, the cut-off frequency is set to the frequency at the difference cursor.

-> **Reference Level:** Sets the reference level of the signal analyzer to the amplitude of the valid marker and moves the marker point to the reference level (reference position).

- When the Normal cursor is selected, set the marker amplitude of the signal analyzer to the current reference level amplitude.
- When the Difference cursor is selected, if the current cursor is a reference cursor, the reference value is set to the amplitude at the reference cursor. If the current cursor is a Difference cursor, the reference value is set to the amplitude at the Difference cursor.
- When the selected trace format is Smith and polar coordinates, the "-> reference level" function is invalid.

Marker Line (Off/On): Turns the marker line on or off.

When the marker line is opened, the cross line is displayed at the amplitude point indicated by the cursor, and the width of the horizontal line and the height of the vertical line are consistent with the length and height of the waveform display area grid.

If the cursor is not in the viewport, extend the marker line to the display area, which is useful for cursors outside the display area, and the cursor extension line indicates the amplitude of the cursor so that the contrast can be observed.

Marker List: Turns the marker list on or off.

When you open the marker list, all open cursors are displayed as a list in the lower window of the split screen. The display includes cursor number, mark mode, mark trace number, X-axis reading, and amplitude. The marker list allows you to view the measured values of multiple measurement

points.

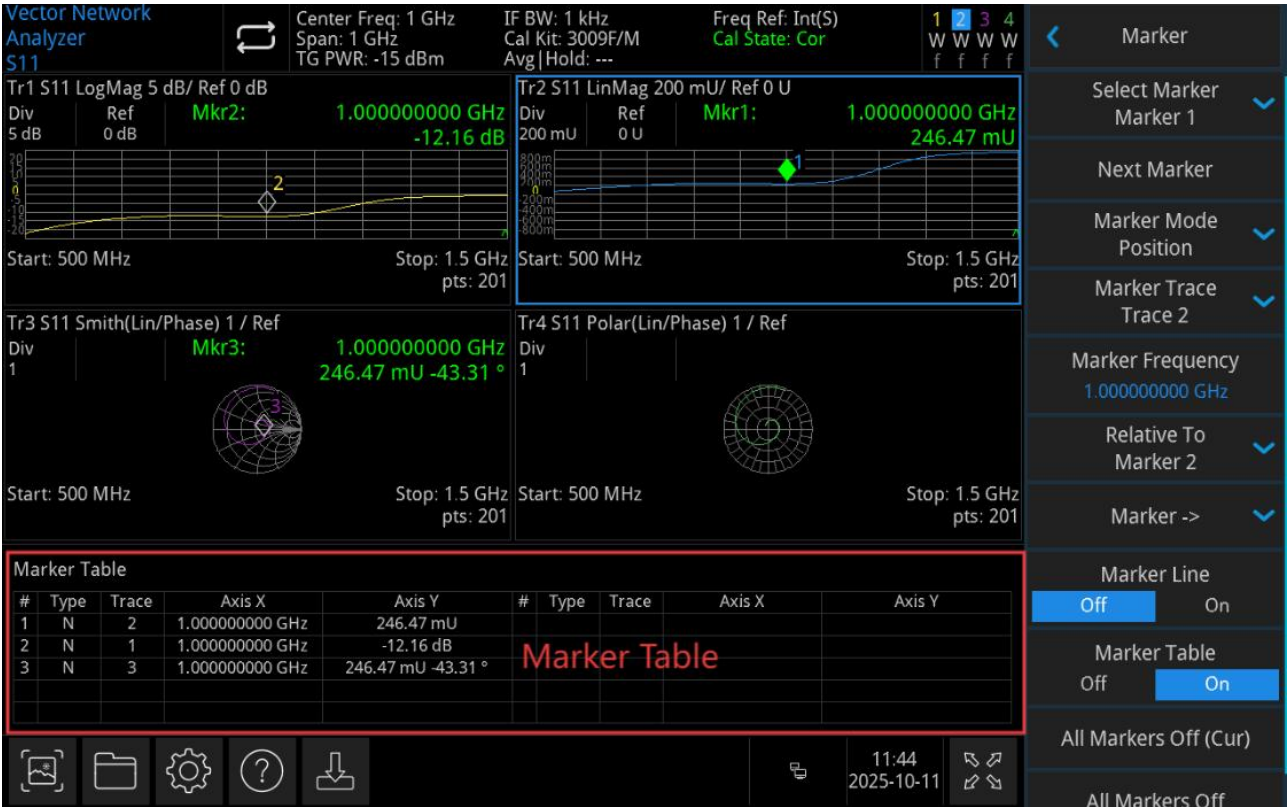


Figure 3-2 Marker list

Close Current: Closes all marker points for the currently selected window.

Close All: Closes all markers for all windows.

Peak (Peak)

Press the **[Peak]** key to open the settings menu of the peak search and perform the peak search function once.

Peak search: Search for the highest amplitude peak in the trace with normal marker mode and display its frequency and amplitude values, press to perform a peak search function once.

Next Peak: Finds the peak on the trace that is second only to the current peak in amplitude and satisfies the search criteria and marks it with a cursor. If there is no peak, the mark will not move.

Next Peak on Left: Finds the peak that is to the left of the current peak and is closest to it that satisfies the search criteria and marks it with the cursor.

Next Peak on Right: Finds the peak on the trace to the right of the current peak and is closest to it that satisfies the search criteria and marks it with the cursor.

Lowest Peak: Finds the smallest amplitude value on the trace and marks it with a cursor.

Continuous Peak Search (On/Off): Turns Continuous Peak Search on or off (off by default).

When Continuous Peak Search is turned on, the signal analyzer automatically performs a peak search after each sweep to track the measured signal.

Measurement (Meas)

Press the **[Meas]** key to open the measurement selection menu, under which there are three measurement functions: S11 , S21 and DTF.

S11: Provides reflection coefficient measurement, which measures the ratio of the reflected signal to the incident signal of the DUT and the physical quantities derived from it. Select S11 and press the [Meas Setup] key to set the parameters.

S21: Provides a transmission coefficient measurement that measures the coefficient of change of the signal through the DUT in the positive direction (from port 1 to port 2), showing how much loss or gain the DUT causes. Select S21 and press the [Meas Setup] key to set the parameters.

Press the **[Meas Setup]** key to set the relevant parameters.

DTF : The fault location function is used to locate the exact location of a possible fault in a communication system or other circuit network. After selecting "DTF", Press the **[Meas Setup]** key to set the relevant parameters.

Note

Before starting the measurement, you need to first select a trace as the current working trace, then press the **[Meas]** key to open the measurement selection menu, and then select the measurement type for this trace; each trace can be independently configured with its own measurement type (except for DTF)。

Measurement Setup (Meas/Setup)

Press the **[Meas Setup]** key to open the parameter setting menu corresponding to the measurement function selected by the current **[Meas]** function key.

Window Layout: Set the form of trace display in the window, you can choose to set the following settings: single window, left and right windows, upper and lower windows, left and right and lower windows, upper and lower and right windows, and four windows.

Trace Layout: Set the number of traces that can be displayed in each window. The options available are: 1 trace per window and 2 traces per window.

Measurement Reset: Resets the measurement/setting parameters of the current measurement mode to factory defaults.

S11

Average Time: Specifies the number of counts for the trace average, maximum, and minimum holds. The user can change the average time via numeric keys, knobs, arrow keys, or touch panel menus. The corresponding traces are averaged, and the higher the times, the smoother the trace display. In the Trace Average, Maximum Hold, and Minimum Hold modes, the sweep cannot be stopped until the set average number of sweeps is reached for a single measurement.

Aperture: Set the aperture for group delay calculation. The aperture Δf is used as the aperture step and is input as an integer. The aperture step corresponds to the distance between two scan points.

The group Delay at each scan point is calculated:

$$Delay = -\frac{\Delta\phi_{deg}}{360^\circ \cdot \Delta f}$$

Here, the aperture Δf is the finite frequency interval around the scanning point f_0 , and the analyzer measures the corresponding phase change $\Delta\Phi$.

The aperture must be adjusted according to the measured conditions. The small aperture increases the noise in the group delay. Large aperture tend to minimize the effects of noise and phase uncertainty, but at the expense of frequency resolution. Phase distortions with a frequency narrower than the aperture, that is, linear phase deviations, are easily covered and cannot be measured.

Calibration: In a single-port calibration, the calibration coefficient at the point is measured by connecting the open-circuit standard component, short-circuit calibrator, and load standard component to the test port (port 1). This calibration method effectively eliminates reflection tracking errors, directivity errors, and source matching errors of the test setup during reflection measurements using this port. The calibration is only valid for the current measurement and will need to be redone when switching to an S21 measurement.

When measuring the S11, a single-port calibration is used.

1. **Open Circuit:** Perform a calibration measurement for start piece.
2. **Short circuit:** Perform a calibration measurement for short-circuit piece.

3. **Load:** Perform a calibration measurement for load piece.
4. **Done:** Maintain the calibration coefficient.

Clear: Clears the calibration coefficients that have been maintained.

Calibration component: Before performing calibration, you need to select a calibration component, including 3009F/M, Custom1, Custom2, default 3009F/M, Custom1 and Custom2 as custom components.

The default parameters for Kit1 are as follows:

Type	Offset length	Z_0	Insertion loss	Parameters			
Open circuit component	14.89 m			C0 (fF)	C1 (fF/GHz)	C2 (fF/GHz ²)	C2 (fF/GHz ³)
				-2.71202	2.47817088	-0.19730637	-0.02094
Short circuit component	13.47 m			L0 (fF)	L1 (fF/GHz)	L1 (fF/GHz ²)	L1 (fF/GHz ³)
				-18.165068	28.77678	-8.6055475	-0.6595
Matching component		50					
Pass-through component	0.000 m		0.00 B				

The default parameters for Kit2 are as follows:

Type	Offset length	Z_0	Insertion loss	Parameters			
Open circuit component	0.00 m			C0 (fF)	C1 (fF/GHz)	C2 (fF/GHz ²)	C2 (fF/GHz ³)
				0.000	0.000	0.000	0.000
Short circuit component	0.00 m			L0 (fF)	L1 (fF/GHz)	L1 (fF/GHz ²)	L1 (fF/GHz ³)
				0.000	0.000	0.000	0.000
Matching component		50Ω					
Pass-through	0.000 m		0.00dB				

component							
-----------	--	--	--	--	--	--	--

Note

- Kit1 and Kit2 are system calibration components, and the corresponding standard parameters are not recommended.
- Kit2 is suitable for VNA calibration $\leq$ the 1.5 GHz frequency range.
- If you select the "Custom" calibration component, you need to configure it according to the actual situation.

S21

Average Time: Specifies the number of counts for the trace average, maximum, and minimum holds. The user can change the average time via numeric keys, knobs, arrow keys, or touch panel menus. The corresponding traces are averaged, and the higher the times, the smoother the trace display. In the Trace Average, Maximum Hold, and Minimum Hold modes, the sweep cannot be stopped until the set average number of sweeps is reached for a single measurement.

Calibration: When measuring on the S21, the calibration coefficient is measured by connecting a pass-through standard component to two ports. This calibration method effectively eliminates transmission tracking errors when using transmission test setups for these ports. The calibration is only valid for the current measurement and needs to be redone when the frequency range is modified or when switching to an S11 measurement.

1. **Pass-through:** Perform a pass-through calibration measurement.
2. **Done:** Maintain the calibration coefficient.

Clear: Clears the saved calibration coefficients.

Calibration Components: Refer to S11 Calibration Components.

DTF

Average Time: Specifies the number of counts for the trace average, maximum, and minimum holds. The user can change the average time via numeric keys, knobs, arrow keys, or touch panel menus. The corresponding traces are averaged, and the higher the times, the smoother the trace display. In the Trace Average, Maximum Hold, and Minimum Hold modes, the sweep cannot be stopped until the set average number of sweeps is reached for a single measurement.

Calibration: Refer to S11 Calibration.

Clear: Clears the saved calibration coefficients.

Calibration Components: Refer to S11 Calibration Components.

Unit: Sets the display unit for the termination distance, in meters or inches. Default "meters".

Stop Distance: The maximum testable distance for fault fixed-point analysis is set. Stop distance, span, sweep points and velocity factor maintain the following coupling relationship:

$$\text{SweepPoints} = \frac{\text{Span} \times \text{StopDistance} \times 2}{3 \times 10^8 \times \text{VelocityFactor}} + 1$$

Among them, when the span, stop distance and velocity factor change, the system will automatically update the value of the sweep points.

Velocity Factor: Set the speed factor of the cable to be measured relative to the speed of light in vacuum, and the speed factor in common media is as follows:

Polyethylene medium 0.66, PTFE medium: 0.7.

Specific Loss: Set the loss factor of the cable to be tested. The cable loss is used to compensate for the attenuation of the excitation signal at different positions of the cable.

FFT Filter: Sets the type of the FFT window function. UTS3000A series supports five window functions: Gaussian, flat top, rectangular, Hanning, Hamming. According to the actual measurement needs, select the appropriate filter type, can refer to the following table.

FFT Filter	Spectral leakage	Amplitude accuracy	Frequency resolution
Gaussian	medium	good	medium
Flattop	good	excellent	poor
Rectangular	poor	poor	excellent
Hanning	good	medium	good
Hamming	good	medium	good

Single (Single)

Press the **[Single]** key, the shortcut of sweep mode. See "[Sweep/Measurement](#)" in the Sweep section of Chapter 4 for specific instructions.

Tracking Generator (TG)

Press the **[TG]** key to enter the tracking source settings panel menu.

The tracking source is turned on by default and is not allowed to be turned off, the backlight of the [TG] key on the front panel is lit, and the **[Gen Output 50Ω]** connector on the front panel will output a signal of the same frequency as the current sweep signal, and the power of the signal can be set through the menu.

Amplitude: Sets the output power of the tracking source signal, and the user can change the amplitude value via the numeric keys, knobs, arrow keys, or touch panel menus.

Default Setting (Default)

Press the **[Default]** key to provide a convenient starting environment for measurements.

Press **[Default]** to reset > perform factory settings as follows:

1. Reset the VNA mode parameters of the signal analyzer.
2. Go to the frequency menu.
3. Set default values for certain environmental parameters.
4. Clear the input and output caches, calibration data, and all trace data.
5. Only one window is open.
6. The status is directly set to 0.

The default values of the key parameters after reset are as follows:

Menu	Parameter	Default value
Frequency	Center frequency	(Maximum frequency-20 MHz)/2
Frequency	Start frequency	20 MHz
Frequency	Cut-off frequency	Maximum frequency
Frequency	Mid-frequency step	Sweep width/10
Frequency	Mid-frequency step mode	Automatic
Frequency	Sweep width	Maximum frequency-20 MHz
Amplitude	Reference value	The trace format is logarithmic amplitude, phase, group delay, linear amplitude, real part, imaginary part: 0 The trace format is VSWR: 0 The trace format is extended phase, positive phase: 0
Amplitude	Reference position	The trace format is VSWR: 0 The trace format is logarithmic amplitude, phase,

		group delay, linear amplitude, real part, imaginary part, extended phase, positive phase: 5
Amplitude	Scale	The trace format is logarithmic amplitude, real part, imaginary part: 10 The trace format is phase, positive phase, extended phase: 90 The trace format is group delay: 1ns The trace format is VSWR, Smith, Polar coordinates: 1 The trace format is linear amplitude: 100
Bandwidth	Mid-frequency filter bandwidth	1 kHz
Sweep	Sweep time	1.795s/Automatic
Sweep	Sweep mode	Continuous
Sweep	Number of sweep points	201
Trace	Select trace	1
Trace	Trace type	Refresh
Trace	Trace update	On
Trace	Trace display	Data
Trace	Trace format	S11: Logarithmic amplitude S21: Logarithmic amplitude DTF: Log Mag(DTF)
Trace	Type of arithmetical operation	Off
Marker	Select marker	Marker 1
Marker	Marker type	Normal
Marker	Relative	Marker 2
Marker	Marker frequency	20 MHz
Marker	Marker line	Off
Marker	Marker list	Off
Peak	Continuous peak	Off
Measurement	Measurement function	S11
Measurement Setup	Average number of holds	100
Measurement Setup	Calibration component	3009F/M
Measurement Setup	Type of calibration component	Pass-through component

Measurement Setup	Window layout	S11: Single window S21: Single window DTF: Single window
Measurement Setup S11	Aperture	10
Measurement Setup DTF	Unit	meter
Measurement Setup DTF	Stop Distance	6.72m
Measurement Setup DTF	Velocity Factor	0.66
Measurement Setup DTF	Specific Loss	0dB/m
Measurement Setup DTF	FFT Filter	GAUSSIAN

Note: The above table shows the reset parameters of UTS3000A.

System Setting (System)

Press the **[System]** key to enter the settings interface, where you can access the signal analyzer system information, basic settings, and network settings.

System Information: Enter the menu of the system information panel to view the basic information and option information.

1. Basic information: including product name, manufacturer, product model, serial number, software version number, IF hardware version number, RF hardware version number, IF logic version number, RF logic version number, etc.
2. Option information: You can check the version number and status of the option.

Setting: After entering the settings panel menu, you can make basic settings and network settings.

1. Basic settings

Language settings: Chinese, English, and German.

Time format: 12 hours and 24 hours.

Date/Time: Touch this area to pop up the setting box, swipe the number up and down to modify, touch "√" to confirm and close the setting box after the setting is completed.

Image Format: Set the format in which the screenshot is saved, including bmp, jpeg, and png.

Power-on parameters: Set the system parameter settings to be loaded after power-on, there are default, last and preset for selection.

Backlight: Slide the scroll bar to change the screen brightness.

Volume: Slide the scroll bar to change the volume of the headphones and the amplifier.

HDMI: High-definition multimedia interface, touch "☐" and check the blank box, which means that the interface is open.

Invert Screenshot: Set the inverted color processing of screenshot images.

Preset file: Use the saved settings when powering up and use the configuration file to set the parameters when the power-on parameter is preset after powering up.

Shutdown Confirmation: After checking Shutdown Confirmation, the system will pop up a confirmation shutdown prompt box when you press the power key to shut down.

2. Network settings

Adapter: LAN switch, touch "☐" to check the blank box, which means that LAN is enabled.

DHCP: Touch "☐" and select a blank box to automatically obtain the network configuration, and if it is not checked, it means that the network configuration is manually set.

IPv4 address: The format of the IP address is nnn.nnn.nnn.nnn, the first nnn ranges from 1 to 223, and the other three nnns range from 0 to 255, it is recommended to consult with the network administrator for an available IP address.

Subnet mask: The subnet mask is in the format of nnn.nnn.nnn.nnn, where nnn ranges from 0 to 255. You are advised to consult your network administrator for an available subnet mask.

Gateway settings: The format of the gateway is nnn.nnn.nnn.nnn, the first NN ranges from 1 to 255, and the other three NNNs range from 0 to 255, it is recommended to consult with the network administrator for an available gateway address.

MAC address: Physical address, used to confirm the location of network equipment address, also called hardware address, length is 48 bits (6 bytes), composed of hexadecimal numbers, divided into the first 24 bits and the last 24 bits, the format is xx-xx-xx-xx-xx-xx, the first 24 bits are called the organization unique identifier, and the last 24 bits are assigned by the manufacturer itself, called the extended identifier.

3. Interface settings

Web Login Username: Set the username to log in to the browser. The web address is http://IP, in which the IP address is the IPv4 address set by the network, for example, http://192.168.20.117.

Web Login Password: Set the username to log in to the browser. After successful login, you can control the instrument, execute SCPI commands, network settings and other operations on the browser.

Once the web login username and password are set, the device can be remotely controlled

using a PC or mobile terminal's web browser, mimicking the touchscreen/mouse clickable display function, just like a physical instrument, and the operation is as follows:

(1) LAN access

The computer and the signal analyzer are required to be in the same LAN and can ping each other. View the signal analyzer's local IP via the Signal Analyzer System-Setting menu, and then access the signal analyzer by accessing the http://ip port in a browser.

Example:

Computer IP: 192.168.20.3

Signal Analyzer IP: 192.168.20.117

Use 192.168.20.117 to access the signal analyzer in the computer browser, view the basic information, and perform operations such as instrument control, network settings, password settings, and SCPI command control, as shown in Figure 3-3 below:

UNI-T

Sign Out

Home

Instrument Control

LAN Config

Password Set

SCPI Command

Service & Support

Help

Basic info

Manufacturer	UNI-TREND
Model	UTS3084A
Serial Number	ASAS063600365
Firmware Version	V1.04.0008

LAN info

IP Address	192.168.20.242
Mask	255.255.254.0
Gateway	192.168.20.1
MAC	24:A7:20:1C:42:CA

Notice

Browser Require	The browser needs to support websocket. It is recommended to use chrome V102.0.5005.115 and above.
Network Bandwidth Require	≥100Mbps
Max Connection	1
Display Device Require	1080p LCD recommended

Figure 3-3 Web Basic Information

When viewing instrument control, network settings, password settings, and SCPI command control, you need to log in. For the username and password required to log in, see Web Login Username and Web Login Password in API settings. After logging in, view and control the signal analyzer, as shown in Figure 3-4 below:

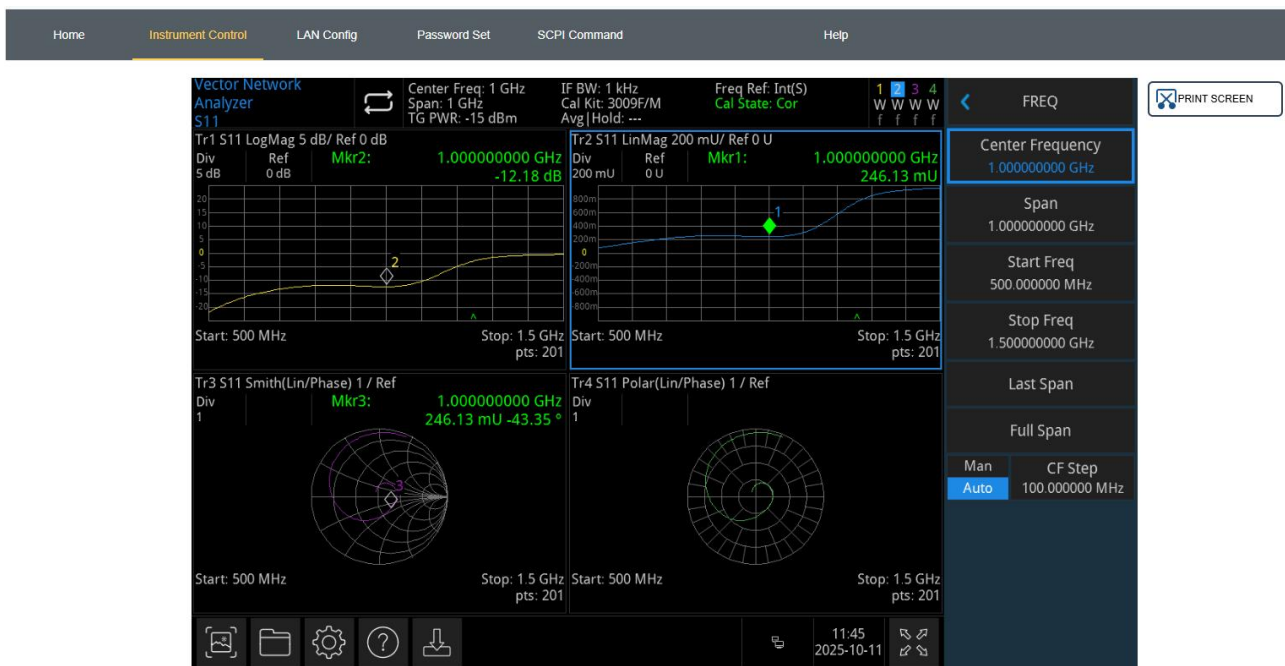


Figure 3-4 Web Instrument Control

Operations that can be performed on the touch screen of a physical instrument, such as selecting a menu panel, clicking function keys, entering numbers and characters, dragging a mark, etc., can also be operated on this web page, and the screen can also be printed.

(2) Extranet access

- The signal analyzer is plugged into a network cable and the network is connected to the Internet.
- Enable the FRP proxy service on the server.
- Configure the Signal Analyzer FRP Proxy IP and Port.
- Browser access proxy `http://IP: web_port` port to access the signal analyzer, the access interface is the same as the above.

Note: The Instrument uses FRP intranet penetration mode to achieve external network access, and the FRP version is 0.34.0. The machine has FRP-0.34.0 client, it needs to be used with the server, the server needs to open the FRP server, and the FRP server port connected by the client is 7000, so the server needs to be configured `bind_port = 7000`.

(3) Network setting

Set and modify the network information of the signal analyzer and the FRP agent, as shown in Figure 3-5 below:

UNI-T

HomeInstrument Control**LAN Config**Password SetSCPI CommandService & SupportHelp

LAN Info

Type

DHCP

Item	Value
IP	192.168.20.242
Mask	255.255.254.0
Gateway	192.168.20.1

Modify LAN Config

Confirm

Frp Proxy Info

Item	Value
Frp IP	121.37.220.55
Web Port	9000
Pic Port	9002
Ctrl Port	9001

Modify Frp Proxy

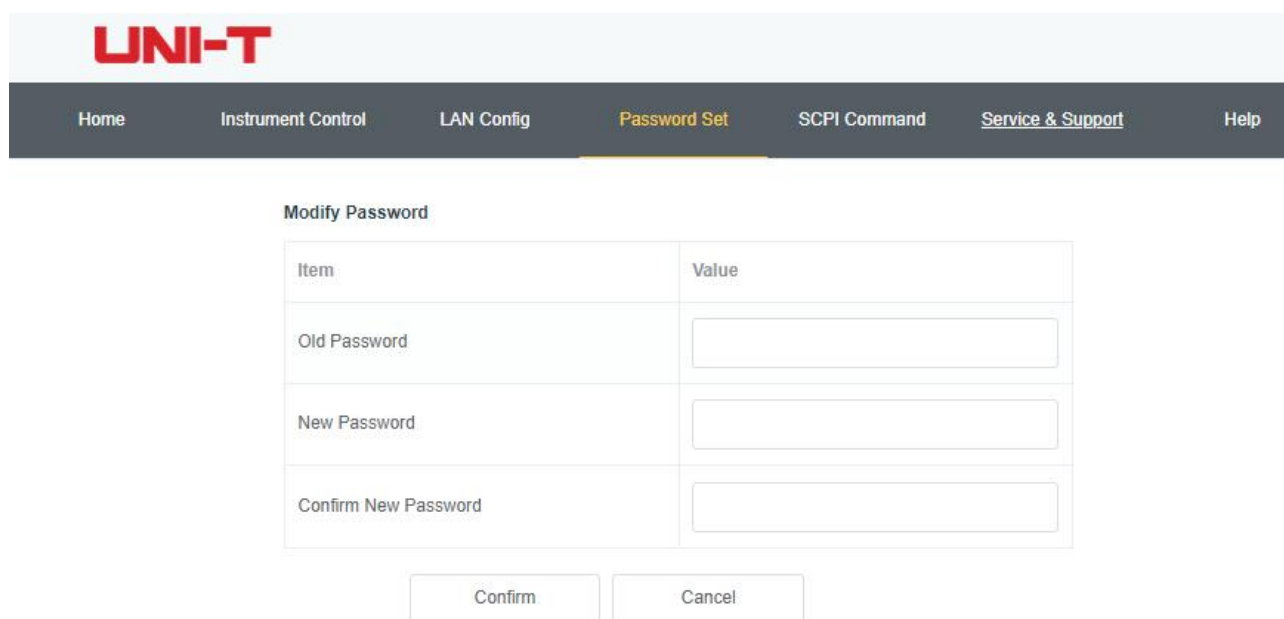
Query Frp Used Port

Confirm

Figure 3-5 Web Network Settings

(4) Password setting

Set and modify the web login password of the signal analyzer, as shown in Figure 3-6 below, and the original password can be viewed under the Physical Instrument ->System->Setting-> interface settings.



UNI-T

Home Instrument Control LAN Config **Password Set** SCPI Command Service & Support Help

Modify Password

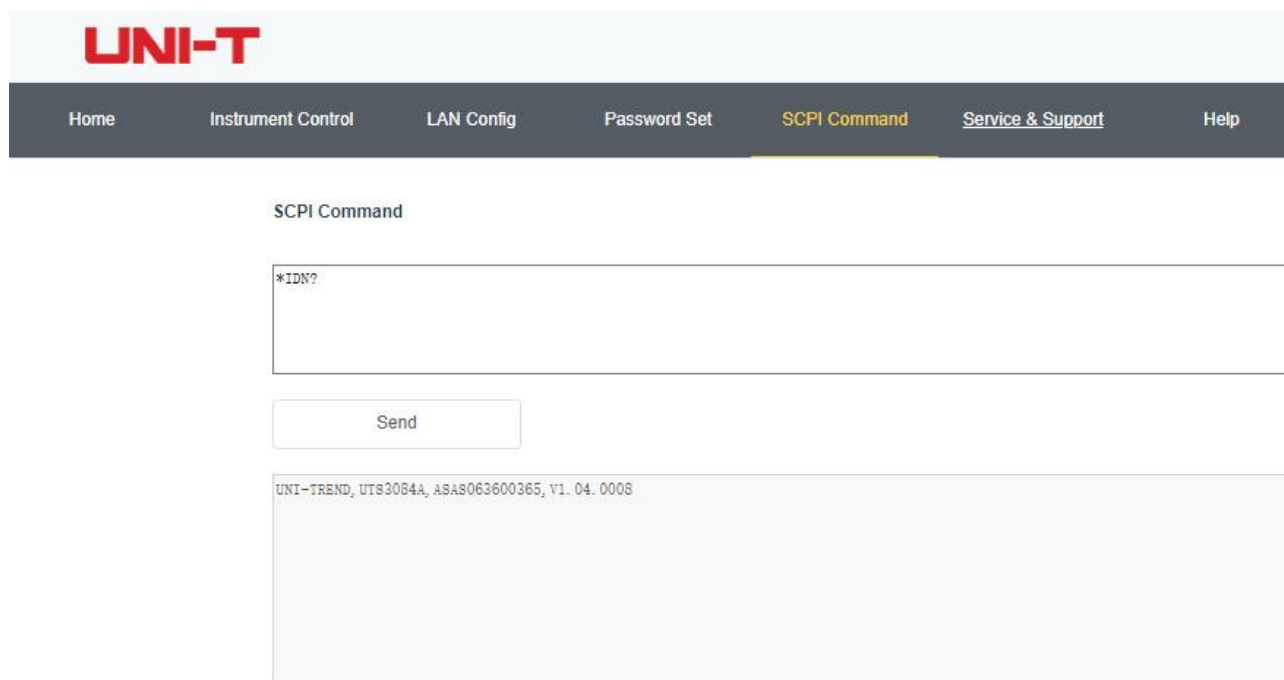
Item	Value
Old Password	
New Password	
Confirm New Password	

Confirm Cancel

Figure 3-6 Web Password Settings

(5) SCPI command

Execute the SCPI command, as shown in Figure 3-7 below, enter the command in the SCPI command edit box, click the "Send Command" key, and print the execution result to the report column below.



UNI-T

Home Instrument Control LAN Config Password Set **SCPI Command** Service & Support Help

SCPI Command

*IDN?

Send

UNI-TREND, UTS3084A, ASAS063600365, V1. 04. 0008

Figure 3-7 SCPI Command Control

Restore Default: Enter the Restore Default panel menu to restore the operation.

1. **Settings:** Restore the system settings (restore the signal analyzer system settings to the default state).
2. **Data:** Clear the data (all the data saved by the signal analyzer are deleted).

3. **All:** Restore all settings (restore all settings of the signal analyzer to the default state and clear the user data).

File Storage (Save)

Press the **[Save]** key to enter the save interface, and the file types that can be saved by the instrument include status, trace + status.

Status: Press the status panel menu to enter the state saving menu. The status can be saved to the instrument.

1. Press the Export key to save the current state with either the default file name or the file name entered by the user.
2. After selecting the status file, press the import key to read the current state file.

Trace + Status: Press the Trace + Status panel menu to enter the Trace and Status Save menu. Instrument status and selected traces can be saved to a file.

Select Traces: Containing four traces to choose from.

1. Press the Export key to save the current status and traces with either the default file name or the file name entered by the user.
2. After selecting the file, press the import key to read the current trace + status file.

Export: Exports the file of the current selected type.

Import: Imports the data of current selected file. (This key is hidden when no file is selected)

Touch Lock (Touch Lock)

Press the **[Touch/Lock]** key, the key turns green to indicate that the touch function is locked, and the light is off to indicate that the touch function is enabled. Press the **[Esc]** key to exit the lock screen.

Mode (Mode)

Press the **[Mode]** key to open the Mode selection window, you can select: IQ analysis, EMI, analog demodulation, vector signal analysis, real-time spectrum analysis, vector network analysis, and phase noise analysis. If there are options that need to be activated separately, please go to the official website to download the required instructions.

Note

- This key is designed for UTS3000A series models.
- For each working mode, you can select specific measurements. For spectrum analysis mode, channel power, time domain power, occupied bandwidth, third-order intermodulation, adjacent channel power, spectrum monitoring, carrier-to-noise ratio and harmonic can be selected. For IQ analysis mode, complex spectrum and IQ waveform can be selected. For EMI mode, spectrum sweep can be selected. For analog demodulation mode, amplitude modulation, frequency modulation and phase modulation can be selected. For real-time spectrum analysis mode, spectrum & PvT can be selected. For vector network analysis mode, S11 , S12 and DTF can be selected.

4. Appendix

Maintenance and Cleaning

(1) General Maintenance

Keep the instrument away from the direct sunlight.

Caution

Keep sprays, liquids, and solvents away from the instrument or probe to avoid damaging the instrument or probe.

(2) Cleaning

Check the instrument frequently according to the operating condition. Follow these steps to clean the external surface of the instrument:

- a. Please use a soft cloth to wipe the dust outside the instrument.
- b. When cleaning the LCD screen, please pay attention and protect the transparent LCD screen.
- c. When cleaning the dust screen, use a screwdriver to remove the screws of the dust cover and then remove the dust screen. After cleaning, install the dust screen in sequence.
- d. Please disconnect the power supply, then wipe the instrument with a damp but not dripping soft cloth. Do not use any abrasive chemical cleaning agent on the instrument or probes.

Warning

Please confirm that the instrument is completely dry before use, to avoid electrical shorts or even personal injury caused by moisture.

Intellectual Property Statement

Copyright © 2024 by UNI-T Technology (China) Co., Ltd. All rights reserved.

UNI-T products are protected by patent rights in China and foreign countries, including awarded and pending patents.

UNI-T is the registered trademark of Uni-Trend Technology (China) Co., Ltd.

Licensed software products are properties of Uni-Trend and its subsidiaries or suppliers, all rights reserved. This manual contains information that replaces all earlier published versions.

Limited Warranty and Liability

Uni-T guarantees that the Instrument product is free from any defect in material and workmanship within three years from the purchase date. This warranty does not apply to damages caused by accident, negligence, misuse, modification, contamination, or improper handling. If you need a warranty service within the warranty period, please contact your seller directly. Uni-T will not be responsible for any special, indirect, incidental, or subsequent damage or loss caused by using this device. For the probes and accessories, the warranty period is one year. Visit instrument.uni-trend.com for full warranty information.



Learn more at: www.uni-trend.com



Register your product to confirm your ownership. You will also get product notifications, update alerts, exclusive offers and all the latest information you need to know.

UNI-T is the licensed trademark of UNI-TREND TECHNOLOGY (CHINA) CO., Ltd.

UNI-T products are protected under patent laws in China and internationally, covering both granted and pending patents. Licensed software products are the properties of UNI-Trend and its subsidiaries or suppliers, all rights reserved. This manual contains information that replaces all earlier published versions. The product information in this document subject to update without notice. For more information on UNI-T Test & Measure Instrument products, applications, or service, please contact UNI-T instrument for support, the support center is available on www.uni-trend.com -> instruments.uni-trend.com

<https://instruments.uni-trend.com/ContactForm>

Headquarter

UNI-TREND TECHNOLOGY (CHINA)
CO., Ltd.
Address: No.6, Industrial North 1st
Road, Songshan Lake Park, Dongguan
City, Guangdong Province, China
Tel: (86-769) 8572 3888

Europe

UNI-TREND TECHNOLOGY EU
GmbH
Address: Steinerne Furt 62, 86167
Augsburg, Germany
Tel: +49 (0)821 8879980

North America

UNI-TREND TECHNOLOGY US INC.
Address: 2692 Gravel Drive,
Building 5, Fort Worth, Texas 76118
Tel: +1-888-668-8648