



## Quick Start Guide

*UTG1000X Series Function/Arbitrary Waveform Generator*

## Foreword

*Dear Users,*

*Hello! Thank you for choosing this brand new UNI-T instrument. In order to use this instrument safely and correctly, 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.*

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*If the product is proved to be defective within the warranty period, UNI-T reserves the rights to either repair the defective product without charging of parts and labor, or exchange the defected product to a working equivalent product. Replacement parts and products may be brand new, or perform at the same specifications as brand new products. All replacement parts, modules, and products become the property of UNI-T.*

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*This warranty shall not apply to any defects or damages caused by accidental, machine parts' wear and tear, improper use, and improper or lack of maintenance. UNI-T under the provisions of this warranty has no obligation to provide the following services:*

- a) Any repair damage caused by the installation, repair, or maintenance of the product by non UNI-T service representatives.*
- b) Any repair damage caused by improper use or connection to an incompatible device.*
- c) Any damage or malfunction caused by the use of a power source which does not conform to the requirements of this manual.*
- d) Any maintenance on altered or integrated products (if such alteration or integration leads to an increase in time or difficulty of product maintenance).*

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## Chapter 1 Panel

### 1.1 Front Panel

The product has a simple, intuitive and easy to use front panel, as shown in the following figure.



#### 1. Display Screen

4.3 inch high resolution TFT color LCD clearly distinguishes the output status of channel 1 and channel 2, function menu and other important information through different colors. The humanized system interface makes human-computer interaction become easier and improves work efficiency.

#### 2. Function Key

Use Mode, Wave, and Utility key to set the modulation, fundamental wave selection and auxiliary function.

#### 3. Numerical Keyboard

Digit key 0-9, decimal point ".", symbol key "+/-" are used for inputting the parameter. The left key is used to backspace and delete the previous bit of the current input.

#### 4. Multifunction Knob / Arrow Key

Multifunction knob is used for changing number (rotate clockwise to increase number) or as the arrow key, press the knob to select the function or to confirm the setup parameter.

When using multifunction knob and arrow key to set the parameter, it is used to switch the digital bits or clear the previous bit or move (to left or right) cursor position.

#### 5. CH1/CH2 Output Control Key

Quickly to switch the current channel display on the screen (The highlighted CH1 info bar indicates the current channel, the parameter list displays the relevant information of CH1, so as to set the waveform parameters of channel 1.) If CH1 is the current channel (CH1 info bar is highlighted), press **CH1** key to quickly turn on/off CH1 output, or press **Utility** key to pop out the bar and then press **CH1 Setting** soft key to set. When channel output is enabled, the indicator light will be illuminated, the info bar will display the output mode ("Wave", "Modulate", "Linear" or "Logarithm") and output signal of the output port. When **CH1** key or **CH2** key is disabled, the indicator light will be extinguished; the info bar will display "OFF" and turn off the output port.

## 6. Channel 2

*Output interface of CH2*

## 7. Channel 1

*Output interface of CH1*

## 8. External Digital Modulation or Frequency Meter Interface or Sync Input Interface

*In ASK, FSK and PSK signal modulation, when the modulation source is selected externally, the modulation signal is input through the external digital modulation interface, and the corresponding output amplitude, frequency and phase are determined by the signal level of the external digital modulation interface. When the trigger source of the pulse string is selected to be external, a TTL pulse with specified polarity is received through the external digital modulation interface, which can start scanning or output the pulse string with specified number of cycles. When the pulse string mode is gated, the gating signal is input through the external digital modulation interface. When using the frequency meter function, the signal (compatible with TTL level) is input through this interface. It is also possible to output the trigger signal to the pulse string (when the trigger source is selected external, the trigger output option is hidden in the parameter list, because the external digital modulation interface cannot be used for input and output at the same time).*

## 9. Menu Operating Soft Key

*Select or view the contents of the labels (located at the bottom of the function screen) corresponding to the soft key labels, and set the parameters with the numeric keypad or multifunction knobs or arrow keys.*

## 10. Power Supply Switch

*Press the power supply switch to turn on the instrument, press it again to turn it off.*

## 11. USB Interface

*This instrument supports FAT32 format USB with the maximum capacity of 32G. It can be used to read or import arbitrary waveform data files stored in USB through USB interface. Through this USB port, the system program can be upgraded to ensure that the function/arbitrary waveform generator is the latest released program version of the company.*

### Notes

*The channel output interface has overvoltage protective function; it will be generated when the following condition is met.*

*The amplitude of the instrument is larger than 250 mVpp, input voltage is larger than  $\pm 12.5V$ , frequency is less than 10 kHz.*

*The amplitude of the instrument is less than 250 mVpp, input voltage is larger than  $\pm 2.5V$ , frequency is less than 10 kHz.*

*When the overvoltage protective function is enabled, the channel automatically disconnects the output.*

## 1.2 Rear Panel

As shown in the following figure,



### 1. Power Output

Output interface of power

### 2. USB Interface

The USB interface is used to connect to the host computer software to control the instrument (e.g., upgrade the system program to ensure that the current function/arbitrary waveform generator program is the latest version released by the company).

### 3. Safety Lock

Safety lock (sold separately) can be used for the instrument stay at fixed position.

### 4. AC Power Input Interface

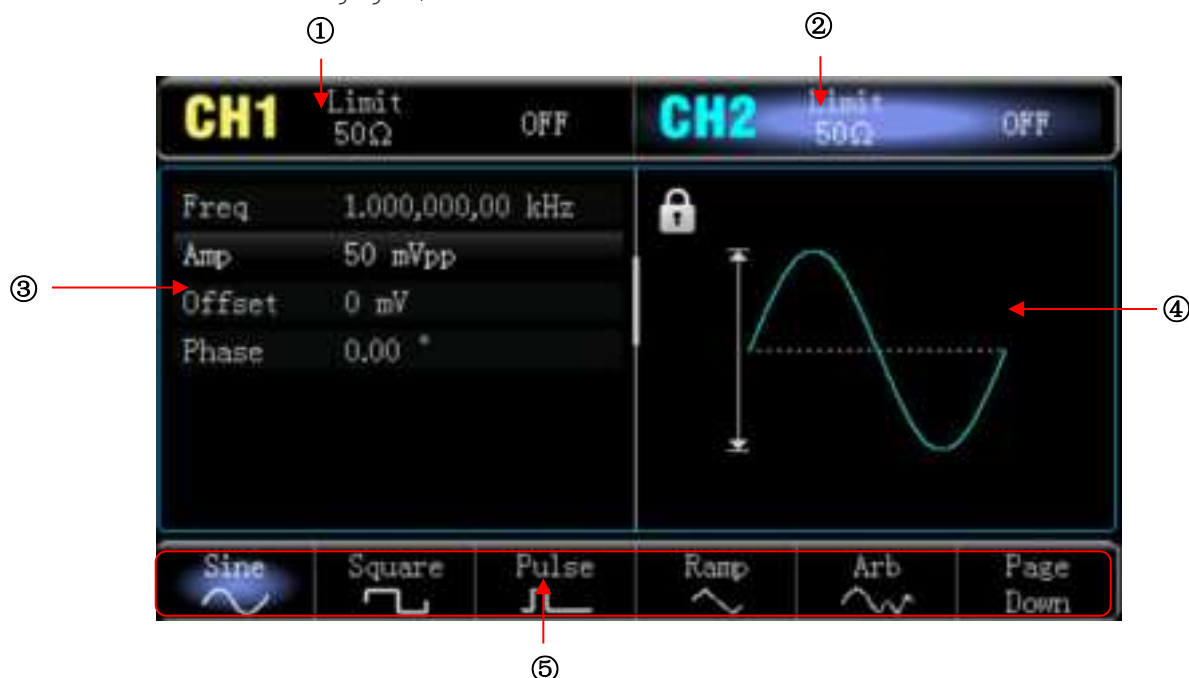
AC power specification of UTG1000X function/arbitrary waveform generator is 100~240V, 45~440Hz; Power fuse: 250V, T2A. If the waveform generators needs to output high SNR signal, it is recommended use the official standard power adaptor.

### 5. Grounding Connector

It provides an electrical ground connection point for attaching an antistatic wrist strap to reduce electrostatic damage (ESD) while you are handling or connecting the DUT.

### 1.3 Function Interface

As shown in the following figure,



1. CH1 info, the currently selected channel will be highlighted.

"50Ω" indicates the impedance 50Ω to be matched at the output port (1Ω to 999Ω can be adjustable, or high impedance, the factory default is Highz.)

 indicates the current mode is sine wave. (In different working modes, it may be "fundamental wave", "modulation", "linear", "logarithmic" or "OFF".)

2. CH2 info is the same as CH1.
3. Wave parameter list: Display the parameter of the current wave in a list format. If an item indicates pure white in the list, then it can be set by the menu soft key, numerical keyboard, arrow keys and multifunction knob. If the bottom color of the current character is the color of the current channel (it is white when the system is in setting), it means that this character enters the editing state and the parameters can be set with the arrow keys or numeric keyboard or multifunction knob.
4. Wave Display Area: Display the current wave of the channel (it can distinguish the current belongs to which channel by the color or CH1/CH2 info bar, the wave parameter will display in the list at the left side.) Notes: There is no wave display area when the system is set up. This area is expanded into a list of parameters.
5. Soft Key Label: To identify the function menu soft key and the menu operation soft key. Highlight: It indicates that the right center of the label displays the color of the current channel or the gray when the system is in setting, and the font is pure white.

## Chapter 2 User's Guide

This manual includes safety requirements and the operation of UTG1000X series function/arbitrary generator.

### 2.1 Inspecting Packaging and List

When you receive the instrument, please make sure to check the packaging and list by the following steps:

- Check whether the packing box and padding material are extruded or teased caused by external forces, and the appearance of the instrument. If you have any questions about the product or need consulting services, please contact the distributor or local office.
- Carefully take out the article and check it with the packing list.

### 2.2 Safety Requirements

This section contains information and warnings that must be followed to keep the instrument operating under safety conditions. In addition, user should also follow the common safety procedures.

### Safety Precautions

|         |                                                                                                                                                                                                                                                                                                                                                                          |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Warning | Please follow the following 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 to follow the following safety precautions. This device is designed for professional users and responsible organizations for measurement purposes. |
|         | Do not use this device in any way not specified by the manufacturer. This device is only for indoor use unless otherwise specified in the product manual.                                                                                                                                                                                                                |

### Safety Statements

|         |                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Warning | "Warning" indicates the presence of a hazard. It reminds 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 reminds 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 the "Note" should be highlighted if necessary.

## Safety Sign

|                                                                                     |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------------------------------------------------------------------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | <b>Danger</b>       | <i>It indicates possible danger of electric shock, which may cause personal injury or death.</i>                                                                                                                                                                                                                                                                                                                                         |
|    | <b>Warning</b>      | <i>It indicates that you should be careful to avoid personal injury or product damage.</i>                                                                                                                                                                                                                                                                                                                                               |
|    | <b>Caution</b>      | <i>It indicates possible 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.</i>                                                                                                                                                                                      |
|    | <b>Note</b>         | <i>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.</i>                                                                                                                                                                                              |
|    | <b>AC</b>           | <i>Alternating current of device. Please check the region's voltage range.</i>                                                                                                                                                                                                                                                                                                                                                           |
|    | <b>DC</b>           | <i>Direct current device. Please check the region's voltage range.</i>                                                                                                                                                                                                                                                                                                                                                                   |
|    | <b>Grounding</b>    | <i>Frame and chassis grounding terminal</i>                                                                                                                                                                                                                                                                                                                                                                                              |
|   | <b>Grounding</b>    | <i>Protective grounding terminal</i>                                                                                                                                                                                                                                                                                                                                                                                                     |
|  | <b>Grounding</b>    | <i>Measurement grounding terminal</i>                                                                                                                                                                                                                                                                                                                                                                                                    |
|  | <b>OFF</b>          | <i>Main power off</i>                                                                                                                                                                                                                                                                                                                                                                                                                    |
|  | <b>ON</b>           | <i>Main power on</i>                                                                                                                                                                                                                                                                                                                                                                                                                     |
|  | <b>Power Supply</b> | <i>Standby power supply: when the power switch is turned off, this device is not completely disconnected from the AC power supply.</i>                                                                                                                                                                                                                                                                                                   |
| <b>CAT I</b>                                                                        |                     | <i>Secondary electrical circuit connected to wall sockets through transformers or similar equipment, such as electronic instruments and electronic equipment; electronic equipment with protective measures, and any high-voltage and low-voltage circuits, such as the copier in the office.</i>                                                                                                                                        |
| <b>CAT II</b>                                                                       |                     | <i>CATII: 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.</i>                                                                        |
| <b>CAT III</b>                                                                      |                     | <i>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).</i> |
| <b>CAT IV</b>                                                                       |                     | <i>Three-phase public power unit and outdoor power supply line equipment.</i>                                                                                                                                                                                                                                                                                                                                                            |

|                                                                                   |                      |                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------------------------------------------------------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                   |                      | Equipment designed to “initial connection”, such as power distribution system of power station, power instrument, front-end overload protection, and any outdoor transmission line.                                                                                                                                                       |
|  | <b>Certification</b> | CE indicates a registered trademark of EU                                                                                                                                                                                                                                                                                                 |
|  | <b>Certification</b> | UKCA indicates a registered trademark of UK                                                                                                                                                                                                                                                                                               |
|  | <b>Certification</b> | ETL indicates a registered trademark of Intertek. It conform to UL STD 61010-1 and 61010-2-030, CSA STD C22.2 No.61010-1 and 61010-2-030.                                                                                                                                                                                                 |
|  | <b>Waste</b>         | This product complies with the marking requirements of WEEE Directive (2002/96/EC). This additional label indicates that this electrical / electronic product must not be discarded in household waste.                                                                                                                                   |
|  | <b>EFUP</b>          | 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 environment-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                                |                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Preparation before use</b>          | <p>Please connect this device to AC power supply with the power cable provided;</p> <p>The AC input voltage of the line reaches the rated value of this device. See the product manual for specific rated value.</p> <p>The line voltage switch of this device matches the line voltage;</p> <p>The line voltage of the line fuse of this device is correct.</p> <p>It not used for measuring the main circuit,</p> |
| <b>Check all terminal rated values</b> | Please check all rated values and marking instructions on the product to avoid fire and impact of excessive current. Please consult the product manual for detailed rated values before connection.                                                                                                                                                                                                                 |
| <b>Use the power cord properly</b>     | 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.                                                                                                      |
| <b>Instrument Grounding</b>            | 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.                                                                                                                                                                                      |
| <b>AC power supply</b>                 | 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.                                                                                                                                                                                                                                                  |

|                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Electrostatic prevention</b>                              | <i>This device may be damaged by static electricity, so it should be tested 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.</i>                                                                                                          |
| <b>Measurement accessories</b>                               | <i>Measurement accessories are of lower class, which are definitely 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 sensor within the range of IEC 61010-2-032 can meet its requirements.</i>                                                                                                                                                |
| <b>Use the input / output port of this device properly</b>   | <i>Please use the input / output ports provided by this device in a properly 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.</i> |
| <b>Power fuse</b>                                            | <i>Please use power fuse of specified specification. If the fuse needs to be replaced, it must be replaced with another one that meets the specified specifications (Class T, rated current 5A, rated voltage 250V) by the maintenance personnel authorized by UNI-T.</i>                                                                                                                                                                                                      |
| <b>Disassembly and cleaning</b>                              | <i>There are no components available to operators inside. Do not remove the protective cover. Maintenance must be carried out by qualified personnel.</i>                                                                                                                                                                                                                                                                                                                      |
| <b>Service environment</b>                                   | <i>This device should be used indoors in a clean and dry environment with ambient temperature from 10 °C ~+40 °C。<br/>Do not use this device in explosive, dusty or humid air.</i>                                                                                                                                                                                                                                                                                             |
| <b>Do not operate in humid environment</b>                   | <i>Do not use this device in a humid environment to avoid the risk of internal short circuit or electric shock.</i>                                                                                                                                                                                                                                                                                                                                                            |
| <b>Do not operate in flammable and explosive environment</b> | <i>Do not use this device in a flammable and explosive environment to avoid product damage or personal injury.</i>                                                                                                                                                                                                                                                                                                                                                             |
| <b>Caution</b>                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Abnormality</b>                                           | <i>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.</i>                                                                                                                                                                                                                                                               |
| <b>Cooling</b>                                               | <i>Do not block the ventilation holes at the side and back of this device;<br/>Do not allow any external objects to enter this device via ventilation holes;<br/>Please ensure adequate ventilation, and leave a gap of at least 15 cm on both sides, front and back of this device.</i>                                                                                                                                                                                       |

|                            |                                                                                                                                                                                    |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Safe transportation</b> | Please transport this device safely to prevent it from sliding, which may damage the buttons, knobs or interfaces on the instrument panel.                                         |
| <b>Proper ventilation</b>  | 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. |
| <b>Keep clean and dry</b>  | 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.                                  |
| <b>Note</b>                |                                                                                                                                                                                    |
| <b>Calibration</b>         | The recommended calibration period is one year. Calibration should only be carried out by qualified personnel.                                                                     |

## 2.3 Environmental Requirements

This instrument is suitable for the following environment:

- Indoor use
- Pollution degree 2
- In operating: altitude lower than 2000 meters; in non-operating: altitude lower than 15000 meters;
- Unless otherwise specified, operating temperature is 10 to +40°C; storage temperature is -20 to + 60°C
- In operating, humidity temperature below to +35°C, ≤90% relative humidity;  
In non-operating, humidity temperature +35°C to +40°C, ≤60% relative humidity

There are ventilation opening on the rear panel and side panel of the instrument. So please keep the air flowing through the vents of the instrument housing. To prevent excessive dust from blocking the vents, please 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.

## 2.4 Connect Power Supply

The specification of input AC power:

| Voltage Range               | Frequency |
|-----------------------------|-----------|
| 100-240VAC (fluctuant ±10%) | 50/60Hz   |
| 100-120VAC (fluctuant ±10%) | 400Hz     |

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

Connecting to service cable

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

Please install AC power cable as follow,

- Ensure the power cable is in a good condition.
- Leave enough space for connecting the power cord.
- Plug the attached three-prong power cable into a well-grounded power socket.

## 2.5 Electrostatic Protection

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

The following measure can reduce the damage of electrostatic discharge.

- Testing in anti-static area as far as possible
- Before connecting the power cable to the instrument, inner and outer conductors of the instrument should be briefly grounded to discharge static electricity;
- Ensure all the instruments are properly grounded to prevent the accumulation of static.

## 2.6 Preparation

1. Connect the power supply wire; plug the power socket into the protective grounding socket;  
According to your view to adjust the alignment jig.

2. Press the software switch  on the front panel, the instrument is booting-up.

## 2.7 Remote Control

UTG1000X series function/arbitrary waveform generator supports communication with the computer via USB interface. User can use SCPI via USB interface and combined with programming language or NI-VISA to remote control the instrument and operating other programmable instrument which is also supports SCPI.

The detailed information about the installation, remote control mode and the programming, please refer to UTG1000X Series Programming Manual at the official website  
<http://www.uni-trend.com>

## 2.8 Help Information

UTG1000X series function/arbitrary waveform generator has built-in help system for each function key and menu control key. Long press any soft key or button to check help information.

## Chapter 3 Quick Start

## 3.1 Output Fundamental Wave

### 3.1.1 Output Frequency

The default waveform is a sine wave with frequency 1 kHz, amplitude 100 mV peak-to-peak (connect with 50Ω port).

The specific steps to change the frequency to 2.5 MHz,

Press **Wave** → **Sine** → **Frequency** key in turn, use numerical keyboard to input 2.5 and then select the unit of the parameter to **MHz**.

### 3.1.2 Output Amplitude

The default waveform is a sine wave with amplitude 100 mV peak-to-peak (connect with 50Ω port).

The specific steps to change the amplitude to 300mVpp,

Press **Wave** → **Sine** → **Amp** key in turn, use numerical keyboard to input 300 and then select the unit of the parameter to **mVpp**.

### 3.1.3 DC Offset Voltage

DC offset voltage of the waveform is 0V sine wave in default (connect with 50Ω port).

The specific steps to change DC offset voltage to -150mV,

Press **Wave** → **Sine** → **Offset** key in turn, use numerical keyboard to input -150 and then select the unit of the parameter to **mVpp**.

Notes: Multifunction and arrow key can also be used to set the parameter.

### 3.1.4 Phase

The phase of the waveform is 0° in default.

The specific steps to set the phase to 90°,

Press **Phase** key, use numerical keyboard to input 90 and then select the unit of the parameter to **°**.

### 3.1.5 Duty Cycle of pulse Wave

The default frequency of impulse wave is 1 kHz, duty cycle 50%.

The specific steps to set duty cycle to 25% (limited by a minimum pulse width specification of 80ns),

Press **Wave** → **pulse** → **Duty** key in turn, use numerical keyboard to input 25 and then select the unit of the parameter to **%**.

### 3.1.6 Symmetry of Ramp Wave

The default frequency of ramp wave is 1 kHz, take triangular wave with the symmetry 75% as an example,

Press **Wave** → **Ramp** → **Symmetry** key in turn, use numerical keyboard to input 75 and then select the unit of the parameter to **%**.

### 3.1.7 DC

The default DC is 0 V.

The specific steps to change DC to 3 V,

Press **Wave** → **Next Page** → **DC** key in turn, use numerical keyboard to input 3 and then select the unit of the parameter to **V**.

### 3.1.8 Noise Wave

The default amplitude is 100 mVpp, DC offset is 0 V quasi Gaussian noise.

Take the setting of quasi Gaussian noise with amplitude 300 mVpp, DC offset 1 V as an example,

Press **Wave** → **Next Page** → **Noise** → **Amp** key in turn, use numerical keyboard to input 300 and then select

the unit of the parameter to **mVpp**, press **Offset** key, use numerical keyboard to input 1 and then select the unit of the parameter to **V**.

### 3.1.9 Power Output

The full bandwidth of built-in power pre-amplifier can reach to 100 kHz, the maximum output power 4W, output slew rate is greater than 18V/μs.

press **CH2** → **PA Output** → **On**. Power output is enabled which means the power pre-amplifier output is

activated, output interface is on the rear panel, BNC port.

## 3.2 Auxiliary Function

Utility can set and browse the following functions:

### 3.2.1 Channel Setting

Select **Utility** → **CH1 Setting** (or CH2 Setting) to set the channel.

#### 1. Channel Output

Select **Channel Output**, it can select "OFF" or "ON".

Notes: Press **CH1**, **CH2** key on the front panel to quick enable the channel output.

#### 2. Channel Reverse

Select **Channel Reverse**, it can select "OFF" or "ON".

#### 3. Sync Output

Select **Sync Output**, it can select "CH1", "CH2" or "OFF".

#### 4. On-Load

Select **Load**, input range is 1Ω to 999Ω, or it can select 50Ω, high impedance.

#### 5. Amplitude Limit

It supports amplitude limit output to protect on-load. Select **Amp Limit**, it can select "OFF" or "ON".

#### 6. Upper Limit of Amplitude

Select **Upper** to set the upper limit range of the amplitude.

#### 7. Lower Limit of Amplitude

Select **Lower** to set the lower limit range of the amplitude.

### 3.2.2 Frequency Meter

This function/arbitrary waveform generator can measure the frequency and duty cycle of compatible TTL level signals. The range of measurement frequency is 100mHz~100MHz. When use the frequency meter, the compatible TTL level signal is input via external digital modulation or frequency meter port (FSK/CNT/Sync connector).

Select **Utility** → **Frequency Meter** to read "frequency", "period" and "duty cycle" value of the signal in the parameter list. If there is no signal input, the parameter list of the frequency meter is always display the last measured value. The frequency meter will only refresh the display if a TTL level compatible signal is input via an external digital modulation or frequency meter port (FSK/CNT/Sync connector).

### 3.2.3 System

Select **Utility** → **System** key to enter System setting.

Remarks: Due to the system selection menu **System**, there are two pages, you need to press **Next** key to turn page.

#### 1. Start Phase

Select **PhaseSync** to "Independent" or "Sync".

Independent: The output phase of CH1 and CH2 output phase is not associated;

Sync: The output start phase of CH1 and CH2 is synchronized.

#### 2. Language

Press **Language** to set the system language.



### 3. Beep

Set whether has beeper alarm when press the key, press **Beep** to select ON or OFF.

### 4. Digital Separator

Set the separator for the numerical value between in parameters of channel, press **NumFormat** to select comma, space or none.

### 5. Backlight

Set the brightness for the backlight of screen, press **BackLight** to select 10%, 30%, 50%, 70%, 90% or 100%.

### 6. Screen Saver

Press **ScrnSvr** to select OFF, 1 minute, 5 minutes, 15 minutes, 30 minutes or 1 hour. When there is no arbitrary operation, the instrument enters the screen saver state as the setting time. When **Mode** turns blinking, press arbitrary key to recover.

### 7. Default Setting

Restore to the factory setting.

### 8. Help

Built-in help system is provides help text for key or menu on the front menu. Help topic can also provide help text. Long press any one of soft key or button to check help information, such as press **Wave** key to check. Press arbitrary key or rotary knob to exit the help.

### 9. About

Press **About** to check model's name, version info and company's website.

### 10. Upgrade

The instrument is supports connect to the computer to upgrade, the specific steps as follows,

- a. Connecting to the computer via USB;
- b. Press and hold **Utility** knob to turn on the power supply of signal source and then release the button;
- c. Use write tool to write the firmware to the signal source and then restart the instrument.

## Chapter 4 Troubleshooting

Possible faults in use of UT1000X and troubleshooting methods are listed below. Please handle fault as the corresponding steps. If it cannot be handled, please contact with the distributor or local office and provide the model information (press **Utility** → **System** → **About** to check).

### 4.1 No Display on Screen

If the waveform generator is blank screen when press the power switch on the front panel.

- 1) Inspect whether power source is connected well.
- 2) Inspect whether power button is pressed.
- 3) Restart the instrument.
- 4) If the instrument still can't work, please contact with the distributor or local office for product maintenance service.

### 4.2 No Waveform Output

In correct setting but the instrument has no waveform output display.

- 1) Inspect whether BNC cable and the output terminal is connected well
- 2) Inspect whether **CH1**, **CH2** button is turned on.
- 3) If the instrument still can't work, please contact with the distributor or local office for product maintenance service.

## Chapter 5 Appendix

### 5.1 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:

Please use a soft cloth to wipe the dust outside the instrument.

When cleaning the LCD screen, please pay attention and protect the transparent LCD screen.

*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.*

## **5.2 Warranty**

*UNI-T (UNI-TREND TECHNOLOGY (CHINA) CO., LTD.) ensures the production and sale of products, from authorized dealer's delivery date of one year, without any defects in materials and workmanship. If the product is proven to be defective within this period, UNI-T will repair or replace the product in accordance with the detailed provisions of the warranty.*

*To arrange for repair or acquire warranty form, please contact the nearest UNI-T sales and repair department.*

*In addition to permit provided by this summary or other applicable insurance guarantee, UNI-T does not provide any other explicit or implied guarantee, including but not limited to the product trading and special purpose for any implied warranties.*

*In any case, UNI-T does not bear any responsibility for indirect, special, or consequential loss.*

## **5.3 Contact Us**

*If the use of this product has caused any inconvenience, if you in mainland China you can contact UNI-T company directly.*

*Service support: 8am to 5.30pm (UTC+8), Monday to Friday or via email. Our email address is [infosh@uni-trend.com.cn](mailto:infosh@uni-trend.com.cn)*

*For product support outside mainland China, please contact your local UNI-T distributor or sales center.*

*Many UNI-T products have the option of extending the warranty and calibration period, please contact your local UNI-T dealer or sales center.*

*To obtain the address list of our service centers, please visit our website at URL: <http://www.uni-trend.com>*