



***Micsig***

Tablet Oscilloscope tBook mini TO1000 Series

# User Manual

Shenzhen Micsig Instruments Co., Ltd.

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Safety information provides warnings and cautions that help you operate the instrument safely and keep the instrument in a safe working condition.

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

To safely perform service on this product, see the Service safety summary that follows the General safety summary.

## 1.1 General safety summary

Use the product only as specified. Review the following safety precautions to avoid injury and prevent damage to this product or any products connected to it. Carefully read all instructions. Retain these instructions for future reference.

Comply with local and national safety codes.

For correct and safe operation of the product, it is essential that you follow generally accepted safety procedures in addition to the safety precautions specified in this manual.

The product is designed to be used by trained personnel only.

Only qualified personnel who are aware of the hazards involved should remove the cover for repair, maintenance, or adjustment.

Before use, always check the product with a known source to be sure it is operating correctly. This product is not intended for detection of hazardous voltages.

Use personal protective equipment to prevent shock and arc blast injury where hazardous live conductors are exposed.

While using this product, you may need to access other parts of a larger system. Read the safety sections of the other component manuals for warnings and cautions related to operating the system.

When incorporating this equipment into a system, the safety of that system is the responsibility of the assembler of the system.

### 1.1.1 To avoid fire or personal injury

**Use proper power cord.** Use only the power cord specified for this product and certified for the country of use. Do not use the provided power cord for other products.

**Ground the product.** This product is grounded through the grounding conductor of the power cord. To avoid electric shock, the grounding conductor must be connected to earth ground. Before making connections to the input or output terminals of the product, ensure that the product is properly grounded. Do not disable the power cord grounding connection.

**Power disconnect.** The power cord disconnects the product from the power source. See instructions for the location. Do not position the equipment so that it is difficult to operate the power cord; it must remain accessible to the user at all times to allow for quick disconnection if needed.

**Connect and disconnect properly.** Do not connect or disconnect probes or test leads while they are connected to a voltage source. Use only insulated voltage probes, test leads, and adapters supplied with the product, or indicated by Micsig to be suitable for the product.

**Observe all terminal ratings.** To avoid fire or shock hazard, observe all rating and markings on the product. Consult the product manual for further ratings information before making connections to the product. Do not exceed the Measurement Category (CAT) rating and voltage or current rating of the lowest rated individual component of a product, probe, or accessory. Use caution when using 1:1 test leads because the probe tip voltage is directly transmitted to the product.

Do not apply a potential to any terminal, including the common terminal, that exceeds the maximum rating of that terminal.

Do not float the common terminal above the rated voltage for that terminal.

**Do not operate without covers.** Do not operate this product with covers or panels removed, or with the case open. Hazardous voltage exposure is possible.

**Avoid exposed circuitry.** Do not touch exposed connections and components when power is present.

**Do not operate with suspected failures.** If you suspect that there is damage to this product, have it inspected by qualified service personnel.

Disable the product if it is damaged. Do not use the product if it is damaged or operates incorrectly. If in doubt about safety of the product, turn it off and disconnect the power cord. Clearly mark the product to prevent its further operation.

Before use, inspect voltage probes, test leads, and accessories for mechanical damage and replace when damaged. Do not use probes or test leads if they are damaged, if there is exposed metal, or if a wear indicator shows.

Examine the exterior of the product before you use it. Look for cracks or missing pieces.

Use only specified replacement parts.

**Use proper fuse.** Use only the fuse type and rating specified for this product.

**Wear eye protection.** Wear eye protection if exposure to high-intensity rays or laser radiation exists.

**Do not operate in wet/damp conditions.** Be aware that condensation may occur if a unit is moved from a cold to a warm environment.

**Do not operate in an explosive atmosphere.**

**Keep product surfaces clean and dry.** Remove the input signals before you clean the product.

**Provide proper ventilation.** Refer to the manual's installation instructions for details on installing the product so it has proper ventilation.

Slots and openings are provided for ventilation and should never be covered or otherwise obstructed. Do not push objects into any of the openings.

**Provide a safe working environment.** Always place the product in a location convenient for viewing the display and indicators.

Be sure your work area meets applicable ergonomic standards. Consult with an ergonomics professional to avoid stress injuries.

Use care when lifting and carrying the product. This product is provided with a handle for lifting and carrying.

Use only the Micsig rackmount hardware specified for this product.

### **1.1.2 Probes and test leads**

Before connecting probes or test leads, connect the power cord from the power connector to a properly grounded power outlet.

Keep fingers behind the finger guards on the probes.

Remove all probes, test leads and accessories that are not in use.

Use only correct Measurement Category (CAT), voltage, temperature, altitude, and amperage rated probes, test leads, and adapters for any measurement.

**Beware of high voltages.** Understand the voltage ratings for the probe you are using and do not exceed those ratings. Two ratings are important to know and understand:

- The maximum measurement voltage from the probe tip to the probe reference lead.
- The maximum floating voltage from the probe reference lead to earth ground.

These two voltage ratings depend on the probe and your application. Refer to the Specifications section of the manual for more information.



**WARNING.** To prevent electrical shock, do not exceed the maximum measurement or maximum floating voltage for the oscilloscope input BNC connector, probe tip, or probe reference lead.

**Connect and disconnect properly.** Connect the probe output to the measurement product before connecting the probe to the circuit under test. Connect the probe reference lead to the circuit under test before connecting the probe input. Disconnect the probe input and the probe reference lead from the circuit under test before disconnecting the probe from the measurement product.

**Connect and disconnect properly.** De-energize the circuit under test before connecting or disconnecting the current probe.

Connect the probe reference lead to earth ground only.

Do not connect a current probe to any wire that carries voltages above the current probe voltage rating.

**Inspect the probe and accessories.** Before each use, inspect probe and accessories for damage (cuts, tears, or defects in the probe body, accessories, or cable jacket). Do not use if damaged.

Do not connect a current probe to any wire that carries voltages above the current probe voltage rating.

## 1.2 Service safety summary

The Service safety summary section contains additional information required to safely perform service on the product. Only qualified personnel should perform service procedures. Read this Service safety summary and the General safety summary before performing any service procedures.

**To avoid electric shock.** Do not touch exposed connections.

**Do not service alone.** Do not perform internal service or adjustments of this product unless another person capable of rendering first aid and resuscitation is present.

**Disconnect power.** To avoid electric shock, switch off the product power and disconnect the power cord from the mains power before removing any covers or panels, or opening the case for servicing.

**Use care when servicing with power on.** Dangerous voltages or currents may exist in this product. Disconnect power, remove battery (if applicable), and disconnect test leads before removing protective panels, soldering, or replacing components.

**Verify safety after repair.** Always recheck ground continuity and mains dielectric strength after performing a repair.

### 1.3 Terms in the manual

These terms may appear in this manual:



**WARNING.** Warning statements identify conditions or practices that could result in injury or loss of life.

**CAUTION.** Caution statements identify conditions or practices that could result in damage to this product or other property.

Terms on the product

These terms may appear on the product:

- DANGER indicates an injury hazard immediately accessible as you read the marking.
- WARNING indicates an injury hazard not immediately accessible as you read the marking.
- CAUTION indicates a hazard to property including the product.

### 1.4 Symbols on the product

When this symbol is marked on the product, be sure to consult the manual to find out the nature of the potential hazards and any actions which have to be taken to avoid them. (This symbol may also be used to refer the user to ratings in the manual.)

The following symbols may appear on the product:



High Voltage



Protective Ground(earth) Terminal



Ground Terminal



Caution Refer to Manual



Chassis Ground



## 2.1 General introduction

tBook mini TO1000 series uses 8 inches industry TFT-LCD & 800\*600 pixels display resolution, 2 or 4 channels, 70MHz & 100MHz & 150MHz bandwidth, 1 G Sa/s sample rate & up to 28Mpts memory depth and supports multi-touch capacitive screen, 256 intensity grading display and also supports LAN, WiFi, HDMI, USB Host, USB Device, Trigger out port and like that. Therefore, this series is your best choice for testing work.

tBook mini TO1000 series integrates all of advantages in one instrument: super low budget, rapid response, easy operation, technology UI and abundant features.

## 2.2 Key features

- 70MHz, 100MHz, 150MHz bandwidth, 2 or 4 analog channels
- 1GSa/s real-time sample rate
- 14Mpts or 28Mpts memory depth
- Up to 80,000wfms/s waveform capture rate
- Up to 5 hours lithium battery (options)
- 8" TFT LCD & 800\*600 pixels high resolution Multi-touch capacitive screen
- Gradient waveform display with 256 intensity levels
- Trigger functions: Edge, Pulse Width, Logic, Video trigger, Time Out, Slope, Runt, Nth edge
- Built-in 8G memory, waveforms and screenshots can be viewed and edited in scope
- Various I/O port, LAN, Wi-Fi, USB2.0, USB Device, HDMI, Trigger out



### 3.1 Check shipped accessories

#### 3.1.1 Inspect the shipping container for damage.

If your shipping container appears to be damaged, keep the shipping container or cushioning material until you have inspected the contents of the shipment for completeness and have checked the oscilloscope mechanically and electrically.

#### 3.1.2 Verify that you received the following items and any optional accessories you may have ordered:

- Micsig tablet oscilloscope tBook mini TO1000 Series
- Power adaptor
- Power cord(country of origin determines specific type)
- Oscilloscope probes(Two probes for 2-channel models, four probes for 4-channel models)
- Quick-Start(Read it from the homepage of the Micsig TO1000 Series oscilloscope)
- BNC Cap

Accessories you may ordered:

- Carry Strap
- Handbag
- Screen protector film
- Battery

### 3.2 Operating requirements

Use the oscilloscope within the required operating temperature, power, altitude, and signal input voltage ranges to provide the most-accurate measurements and safe instrument operation.

#### 3.2.1 Environment requirements

| Characteristic                         | Description           |
|--|-----------------------|
| Temperature (Operating /Non-operating) | 0°C~+45°C/-40°C~+60°C |
| Humidity (Operating /Non-operating)    | 5%~85% / 5%~90%, 25°C |
| Altitude (Operating / Non-operating)   | 3000 m / 12000 m      |

### 3.2.2 Environment requirements

| Characteristic                    | Description                       |              |
|-----------------------------------|-----------------------------------|--------------|
| Adapter Supply Voltage, Frequency | 100VAC to 240VAC , 50Hz / 60Hz    |              |
| Power Adapters                    | 12VDC *5A                         |              |
| Battery                           | Standard Lithium Battery capacity | 7.4V 8000mAh |
|                                   | Continuous Working Hours, Typical | 4 to 8 hours |

### 3.3 Input signal requirements

Keep the input signals within allowed limits to ensure the most accurate measurements and prevent damage to the analog and digital probes or instrument.

Make sure that input signals are within the following requirements.

| Input                         | Description  |
|-------------------------------|--|
| Input Coupling                | DC, AC, ground   |
| Input Impedance               | (1 MΩ±1%)    (14.5 pF±3 pF)  |
| Probe Attenuation Coefficient | 1mx-10kx, 1-2-5 step   |
| Differential delay, Typical   | Between any two channels which has same scales and couplings <40ps |

### 3.4 Secure (lock) the oscilloscope.

Lock an oscilloscope to a test bench or equipment rack to prevent property loss.








Attach a standard laptop security lock to the left side panel of the oscilloscope, to secure the oscilloscope to a workbench, rack, or other location.

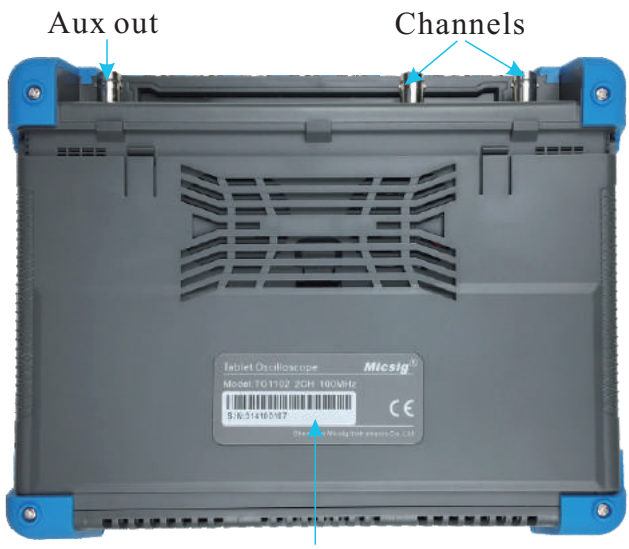


## Chapter 4 Getting acquainted with your instrument

### 4.1 Front panel and Rear panel



| Touch button  | Description   |
|---|---|
|    | <p><b>Run/Stop:</b> Touch to start / Stop acquisition</p>   |
|    | <p><b>Single SEQ:</b> Touch to trigger on a single waveform</p>   |
|    | <p><b>Auto:</b> Touch to activate automatic waveform setup<br/> <b>Note:</b> Automatic setup requires the frequency of the test signal to be at least 20Hz if the signal is sinusoidal. Otherwise, automatic setup may fail and the quick parameter measurement function displayed in the menu will also be unavailable.</p>      |
|    | <p><b>50%:</b> Touch to set:<br/> The vertical position of the current channel waveform to the zero point<br/> The horizontal position of the current channel waveform to center of the screen<br/> The trigger level to the center of the trigger channel's waveform<br/> The active cursor back to the center of the screen</p> |
|  | <p><b>Measure:</b> Touch to turn on / off measurement menu</p>  |
|  | <p><b>Trigger:</b> Touch to turn on / off trigger menu</p>  |
|  | <p><b>Home:</b> Touch to return to the home page</p>  |



Information: Brand, Model, S / N, Manufacturer

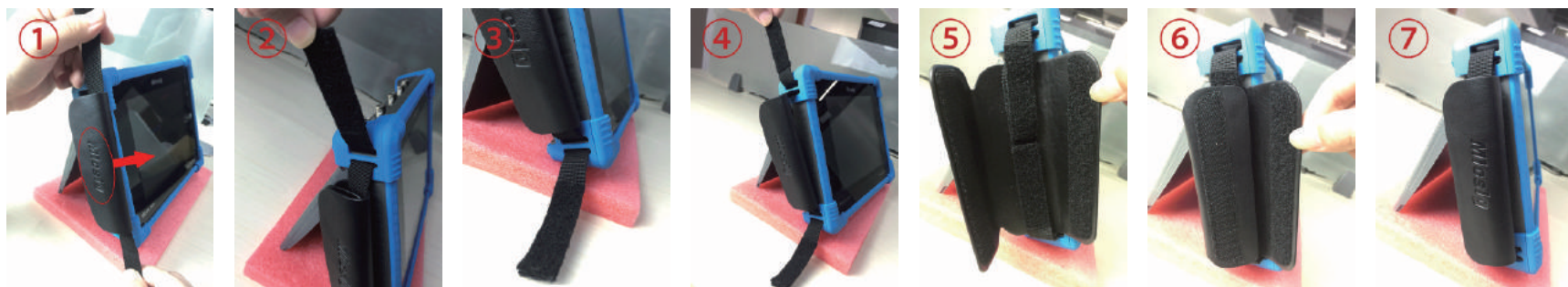
### 4.2 Using the stand

Pull the tilt stand upward, then you can open




Tilt stand

### 4.3 Installing the carry strap



### 4.4 Powering the oscilloscope

#### 4.4.1 Power ON




When you first time to use the oscilloscope, please connect the power cord to the oscilloscope, then press the right side power button  make oscilloscope forced shutdown.

Power requirements:

**Notes:** Line voltage, Line 100-120 Vac, 50/60/400 Hz  
Frequency, and power 100-240 Vac, 50/60 Hz 100 W max

If there is one battery in your oscilloscope, the battery will be activated when you turn on in the first time.

#### 4.4.2 Power Off

Press power button , enter the shutdown interface, tap  to turn off the oscilloscope.  
Press and hold the power button  make oscilloscope forced shutdown.

 **Warning:** Forced shutdown may cause losing data.

## 4.5 Probe compensation

Whenever you attach a passive probe (suggest to using standard accessories) for the first time to any input channel, compensate the probe to match it to the corresponding oscilloscope input channel.

Follow the steps to properly compensate your passive probe (eg. channel 1 compensation)

- 1) Connect the oscilloscope probe to channel 1, make sure probe in good contact.
- 2) Connect the probe to the calibration output signal and the probe ground to the ground terminal.



Properly compensated



Under compensated



Over compensated



- 3) If necessary, connect probe to other channels. Repeat as needed.

### **WARNING**

To avoid high voltage shock, please ensure that the probe insulation wire intact.

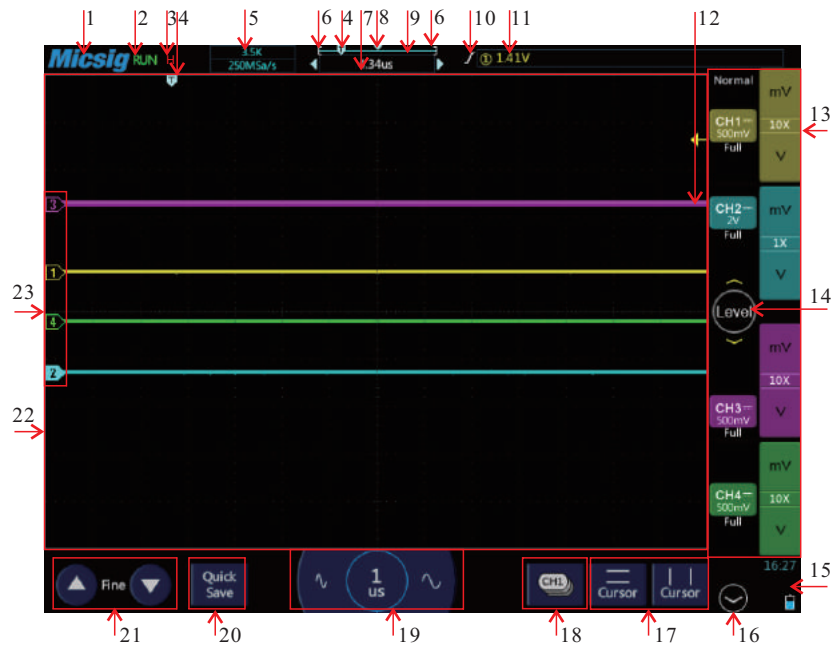
When using the probe keep your finger behind the safety ring to prevent electric shock.

Do not touch the probe head metal parts when the probe is connected to a voltage source in case of electrical shock.

Before any measurement, connect the probe ground to the ground.



#### 4.6 The user interface screen



Micsig tablet oscilloscope mini TO1000 Series Oscilloscope Display

1. Micsig logo
2. Oscilloscope status, including RUN, STOP, WAIT, Auto.
3. High capture rate (turn on status)
4. Trigger point
5. Memory depth, sampling rate
6. The full memory depth of waveform
7. Delay time
8. Waveform display area center line
9. Memory depth indicatrix
10. Trigger type
11. Trigger source, trigger level or thread
12. Trigger level viewer
13. CH1, CH2, CH3, CH4 channel controls, tap it to open/close channels Vertical controls, Tap mV or V to adjust the (vertical) voltage sensitivity setting
14. Trigger level slider, hold on the Level button to modify the trigger level through upward and downward
15. Computer/USB connection status, battery level, clock
16. Switch to MATH and REF(reference) channel
17. Cursor controls
18. Current channel controls, tap to select the current channel quickly
19. Time/Div tap s or ns to increase or decrease sweep speed (horizontal scale).
20. Waveform quick save, tap quicksave to save the waveform to reference channel quickly
21. Fine adjustment
22. Waveform display area
23. Desired channel controls

## 4.7 Instrument setting (system information, language, upgrade, WLAN)

### Information.

The system information contains machine model, bandwidth, serial number, version info, delivery date and installed options. Input the licence to install corresponding option.

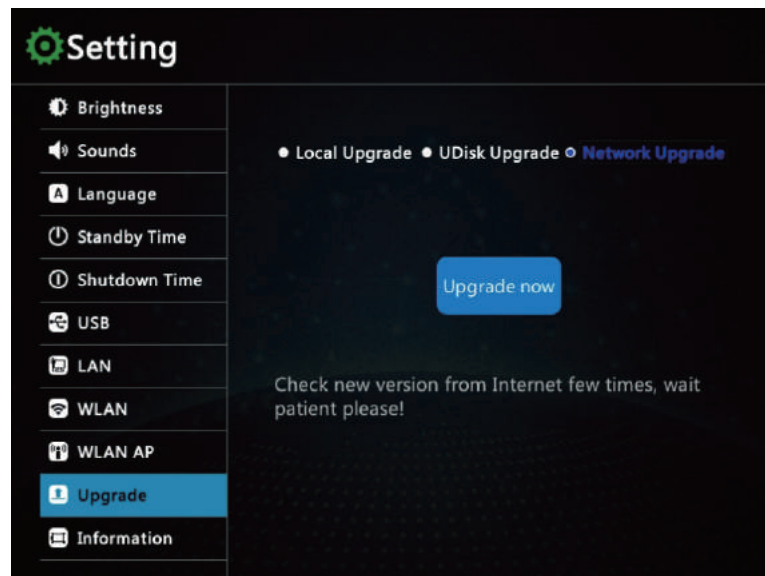
Optional: Storage 28M, Auto Range, Frequency Meter, WLAN, HDMI, High/Low pass, Vertical 500 $\mu$ V, Warranty (4-10) year.

### Language

Micsig TO1000 series supports kinds of languages, standard language is simplified Chinese and English.

### Upgrade

We support Local Upgrade, UDisk Upgrade, Network Upgrade.



### Local Upgrade

- 1) Downloaded upgrade package from the Micsig official website ([http://www.micsig.com/html/list\\_60.html](http://www.micsig.com/html/list_60.html))
- 2) Connect PC with USB
- 3) Set USB setting to USB Storage Device and put the package to oscilloscope
- 4) Set USB setting to USB Test & Measurement
- 5) Select Local Upgrade and tap Upgrade icon

## UDisk Upgrade

- 1) Downloaded upgrade package from the Micsig official website ([http://www.micsig.com/html/list\\_60.html](http://www.micsig.com/html/list_60.html))
- 2) Put the upgrade package into U disk root directory
- 3) Plug into this USB to oscilloscope and select upgrade setting to UDisk Upgrade
- 4) Tap Upgrade icon

## Network Upgrade

Connect to Wi-Fi, and set the upgrade setting to Network Upgrade, tap Upgrade now icon.

## WLAN

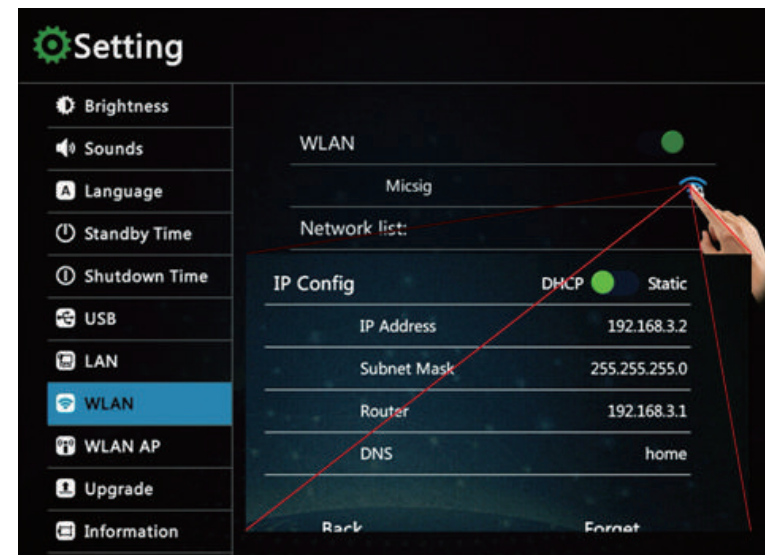
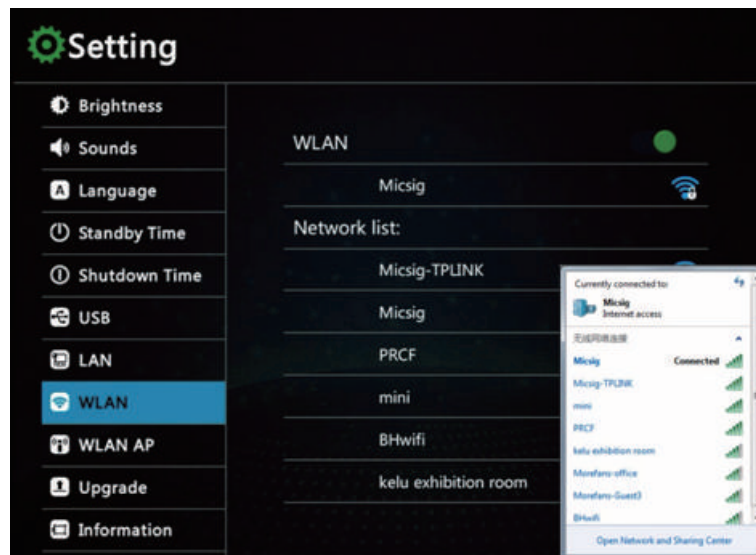
1. You can through Wi-Fi to manage your files in PC.

### Step 1

Connect to Wi-Fi and make sure it is the same channel with your target PC.

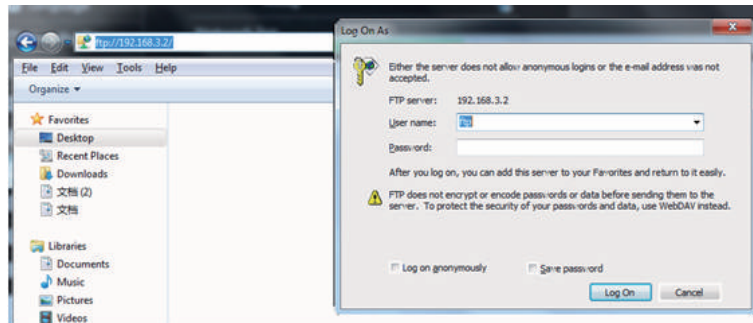
### Step 2

Click the blue Wi-Fi you connected, get the IP Address.



### Step 3

Input the IP Address to your PC address bar with ftp://  
Connect to FTP server, username and password were both ftp.



### Step 4

You can manage any files in your PC

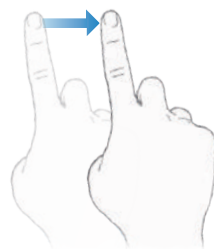


2.You can through Wi-Fi to upgrade to new version.

## 5.1 Gestures



Tap



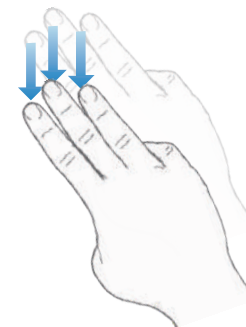
Swipe



Drag



Double fingers drag  
Global Fine Tuning



Triple fingers swipe  
ZOOM

### Basic Operation

#### ■ Tap

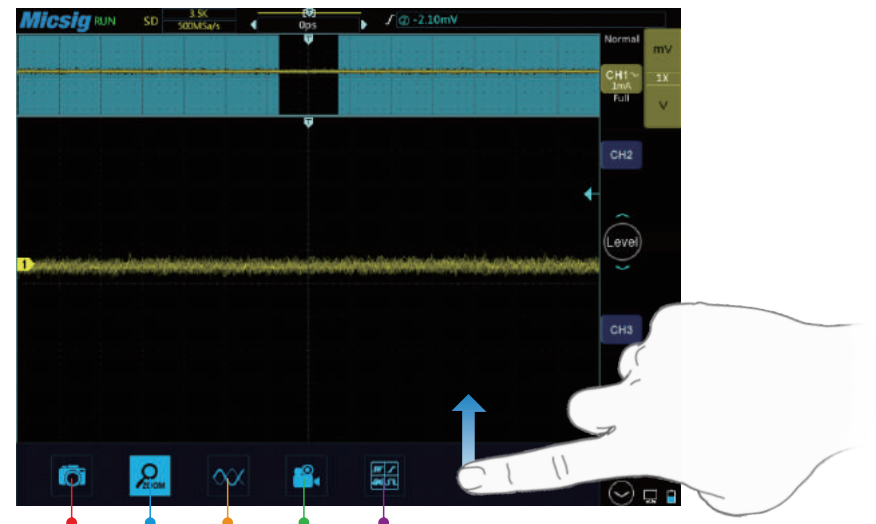
1. Tap screen button to active relative function
2. Tap any space of screen to exit the current menu

■ **Swipe**

1. Swipe downward / upward on the top of screen to turn on / off menu(Figure as below)



2. Swipe downward / upward on the left bottom of screen to turn on / off shortcut key (Figure as below)

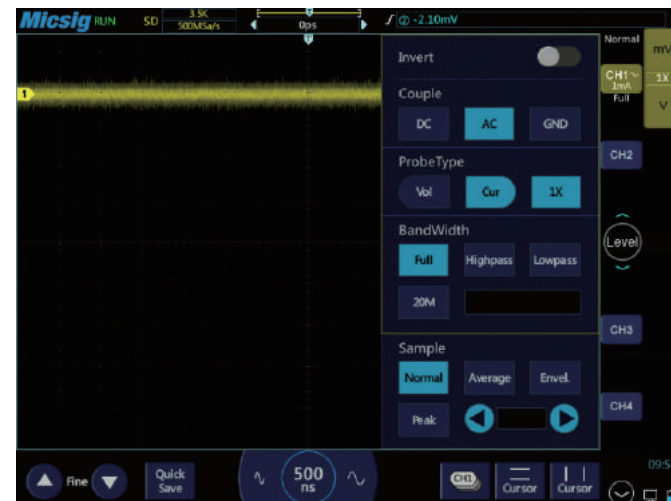


Swipe up on the bottom of screen to open the short cut key to get **Screenshot**, **ZOOM**, **High capture rate**, **Video record** and **All Measurements** in one time, tap it to turn on / off.Super easy!

3. Swipe left / right on the CH1 to turn on / off channel (Figure as below).

**Notes:**

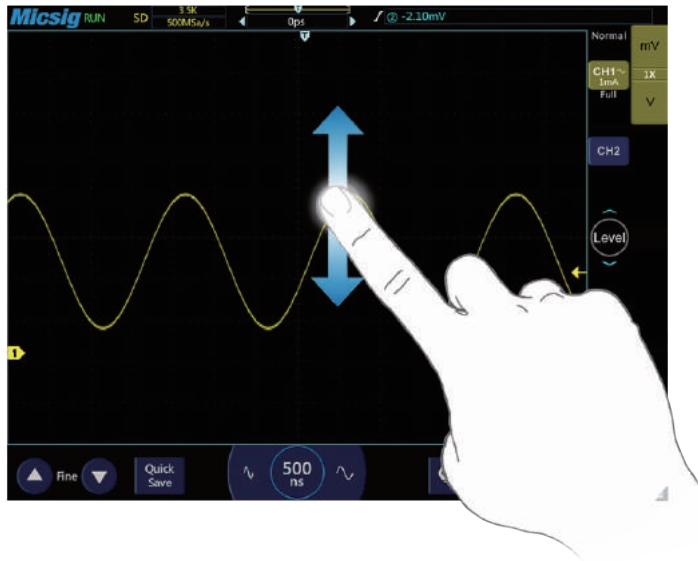
1. You need to tap channel icon to active channel setting firstly.
2. Tap any space to exit the channel setting.



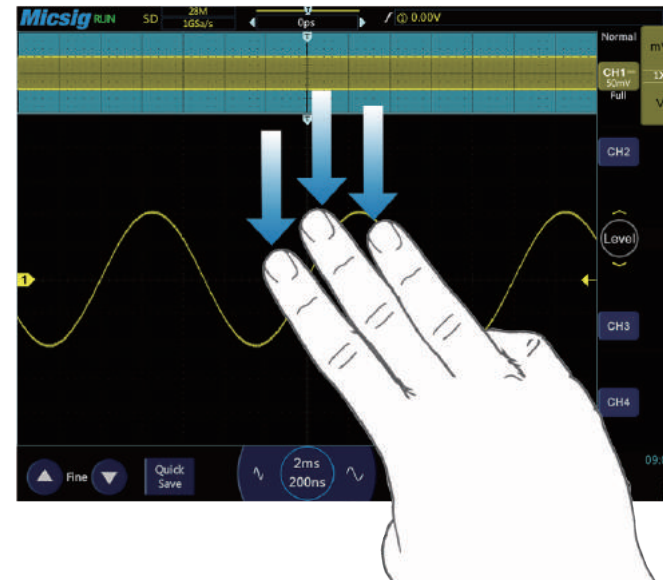


## ■ Drag

Put one finger on the waveform to drag for the coarse adjustment vertically or horizontally (Figure as below).



## ■ Triple fingers swipe (Figure as below)



Touch the top of the screen with three fingers and swipe down to turn on the ZOOM timeline directly, swipe up to close it.

**Note:** you can also use short key to get the ZOOM function.

## 5.2 Oscilloscope basic operation

tBook mini interface, Turn on On / off the channel menu, Waveform Positioning, Turn On Off main menu, Time base setting, Trigger Level setting, Auto, Auto measurements, Cursor, ZOOM, Save and View waveforms, MATH, Reference (REF), Bus Decoding, Screenshot, Mouse operation, Screen lock, View oscilloscope storage space, Probe compensation.

### 5.2.1 tBook mini interface

**tBook mini Interface**

Micsig RUN SD 2.8K 1GSa/s 0ps / 7.20mV

Normal CH1 ~ 1mA Full Full mV 1X V

CH2 CH3 CH4

Level

500 ns

Quick Save

CH1 Cursor Cursor

09:55

Turn On/Off channel

Increase vertical gain

Decrease vertical gain

Tap (Level) to open trigger level slider, then drag the trigger lever marker to the desired position.

Fine adjustment

Decrease sweep speed (zoom out)

Increase sweep speed

Channel selection

Tap (☑) to open Math, Reference and bus decoding channel setting.

Tape to open the time base circle.



### 5.2.2 Turn on On/off the channel menu

## Turn on On/off channel menu

**Normal** mV

**CH1 ~ 1mA Full** 1X

V

CH2

Level

CH3

CH4

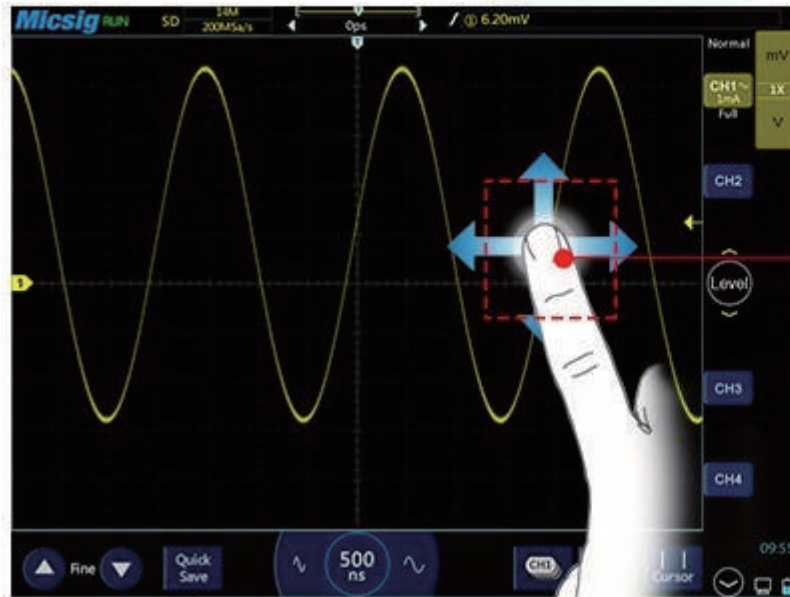
Tap CH1 to turn on the CH1 channel menu.

Channel configuration information

Tap any other place on screen to exit channel menu.

### 5.2.3 Waveform Positioning

## Waveform Positioning



Drag the waveform in the desired direction with the tip of your finger.  
Note: all waveforms will be moved simultaneously when you move the waveform position horizontally.

#### Select/unselect current channel

Tap **CH1** once to select desired channel you want to use, then you can easily to find desired waveform when there are many waveforms on the screen.

Note: When you open this function, you cannot drag the waveform directly.



### 5.2.4 Turn On / Off main menu

## Turn On/Off main menu

**Slide down on the top of screen to open main menu.**

**There are two methods to exit main menu:**

- ① Slide up on the top of screen.
- ② Tap any other place on screen.

**There are two methods to turn off quickmenu:**

- ① Drag menu sliding downward to turn off quickmenu.
- ② Tap clear area (no keys area) to turn off menu.

**Slide up on the bottom of screen to open the shortcut key.**

**Bottom Icons:** Screenshot, ZOOM, High Capture Rate, Video Record, All Measurements

**Measurement Data:** Freq. 1.000kHz, Amp. 19.4V, High 19.6V, Mean 10.5V, FOV 2.062%

**Channel Settings:** CH1, CH2, CH3 10.0V, CH4 10.0V

**Top Bar:** Micsig RUN, SD, 280K, 100kSa/s, 2ms, 1.02V

**Menu Options:** Measure, Save, Display, Trigger, Auto, Frequency Meter, Userset, Depth, Factory Reset, Self Adjust, Save Recovery

**Depth Settings:** Auto, 28/14/7M, 2.8/1.4/0.7M, 280/140/70K, 28/14/7K

**Level Control:** Level, mV

**Time:** 09:14



### 5.2.5 Time base setting

## Time base setting

The screenshot shows the Micsig oscilloscope interface. At the top, it displays 'Micsig RUN', 'SD', '14M', '200MSa/s', a time interval of '-7.2ms', and a voltage level of '4.80mV'. The main display shows a yellow sine wave on a grid. On the right side, there are channel settings: 'Normal', 'mV', 'CH1 ~ 1mA 1X Full V', 'CH2', 'CH3', and 'CH4'. A 'Level' knob is visible. At the bottom, there are controls for 'Fine', 'Quick Save', a time base knob set to '500 ns', and 'Cursor' buttons. A hand is shown interacting with the 'Level' knob and the time base knob.

Double tap the waveform to zoom in on the desired region.

**Time base knob:**  
Click on either the left or right of the knob to increase or decrease the time base, or rotate it like a standard knob.

Decrease sweep speed      Increase sweep speed  
Tap to open time base knob

The close-up shows a circular knob with a blue and dark blue gradient. It has a central 'S' and a '500s' label. Red dashed arrows indicate the direction of rotation.

## 5.2.6 Trigger Level setting

### Trigger level setting

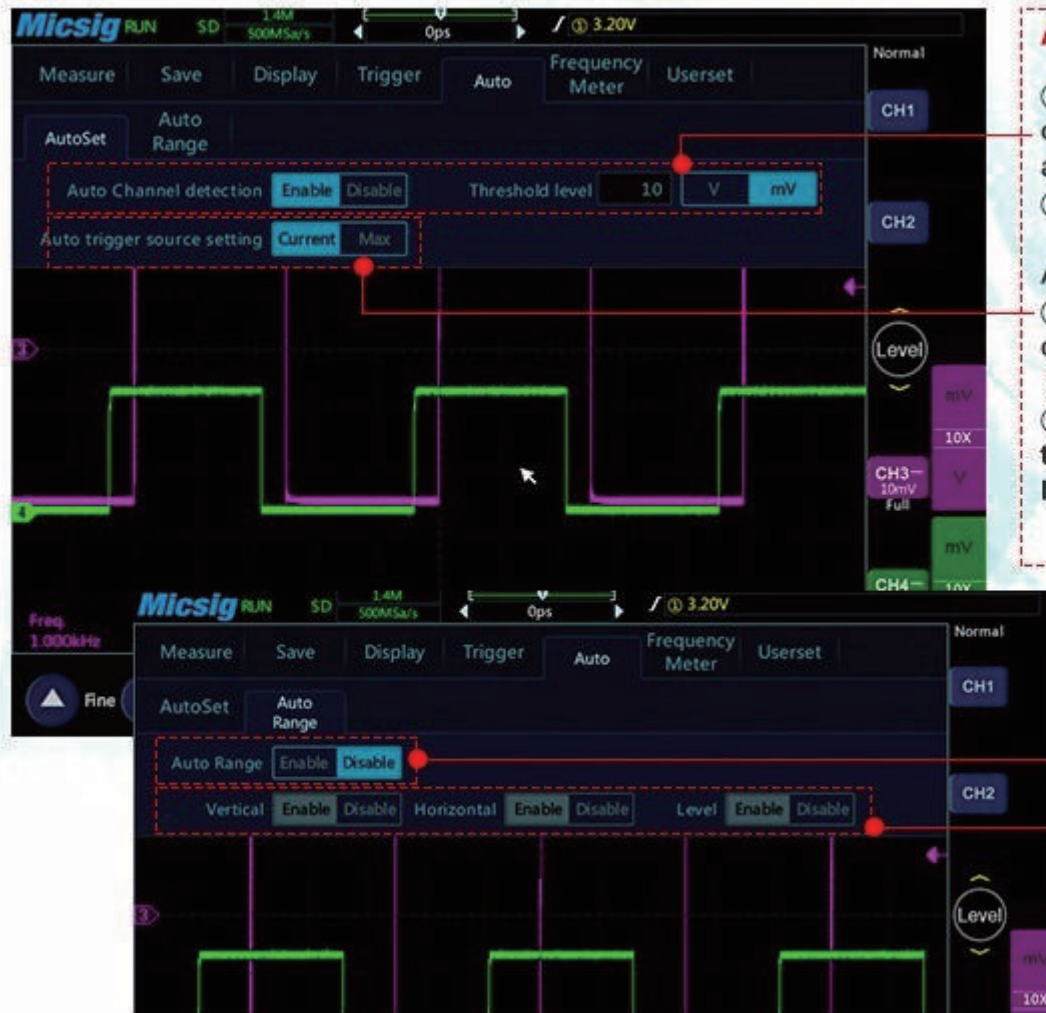
The screenshot displays the Micsig oscilloscope interface. At the top, the title "Trigger level setting" is centered. The main display shows a yellow sine wave on a black grid. The top status bar includes "Micsig RUN", "SD", "28M", "200MSa/s", a time scale of "-800us", and a trigger level of "380,0mV". On the right side, a vertical menu shows "mV", "1X", and "V". A blue double-headed arrow indicates the trigger level is set to 380mV. A hand icon is shown tapping the "Level" button in a circular inset on the right. Another hand icon is shown tapping the "V" button in a rectangular inset at the bottom right. The bottom control bar contains buttons for "Fine", "Quick Save", a "500 ns" time scale, "CH1", and "Cursor".

Tap **Level** to open trigger level slider, then drag the trigger lever marker to the desired position.

Tap **V** can switch quickly trigger source.

## 5.2.7 Auto

# Auto



**AutoSet**

- ① Automatically turn channels on/off depending on detected activity.
- ② threshold level setting.

Automatic trigger source setting

- ① "Current" always use the currently selected channel as the trigger source.
- ② "Max" automatically select the trigger channel based on signal levels.

**AutoRange**

To enable/disable AutoRange Function.

AutoRange control items:

- ① Vertical gain
- ② Horizontal time base
- ③ Trigger Level

Note: When opening **AutoRange**, **AutoSet** is invalid.



### 5.2.8 Auto measurements

## Auto measurements

The screenshot shows the Micsig oscilloscope interface with the following details:

- Top Bar:** Micsig RUN SD, 14M, 200MSa/s, -7.2ms, 9.60mV.
- Menu Bar:** Measure, Save, Display, Trigger, Auto, Frequency Meter, Userset.
- Channel Selection:** CH1 (1mA Full), CH2, CH3, CH4.
- Measurement Grid:** A grid of icons for various parameters: Period, Freq, RiseTime, FallTime, Delay, +Duty, -Duty, +Width, -Width, BurstW, ROV, FOV, Phase, PK-PK, Amp, High, Low, Max, Min, RMS, CRMS, Mean, CMean, Min, RMS, -Duty, High, Amp, PK-PK, FOV, ROV, Mean, +Width, and a clear button.
- Enabled Parameters (Bottom):**
  - Period: 19.99ms
  - +Duty: 49.32%
  - PKPK: 37.6mV
  - Phase: 0.000°
  - FOV: 4.545%
- Bottom Bar:** Fine, Quick Save, 500 ns, CH1, Cursor, Cursor, 10.06.

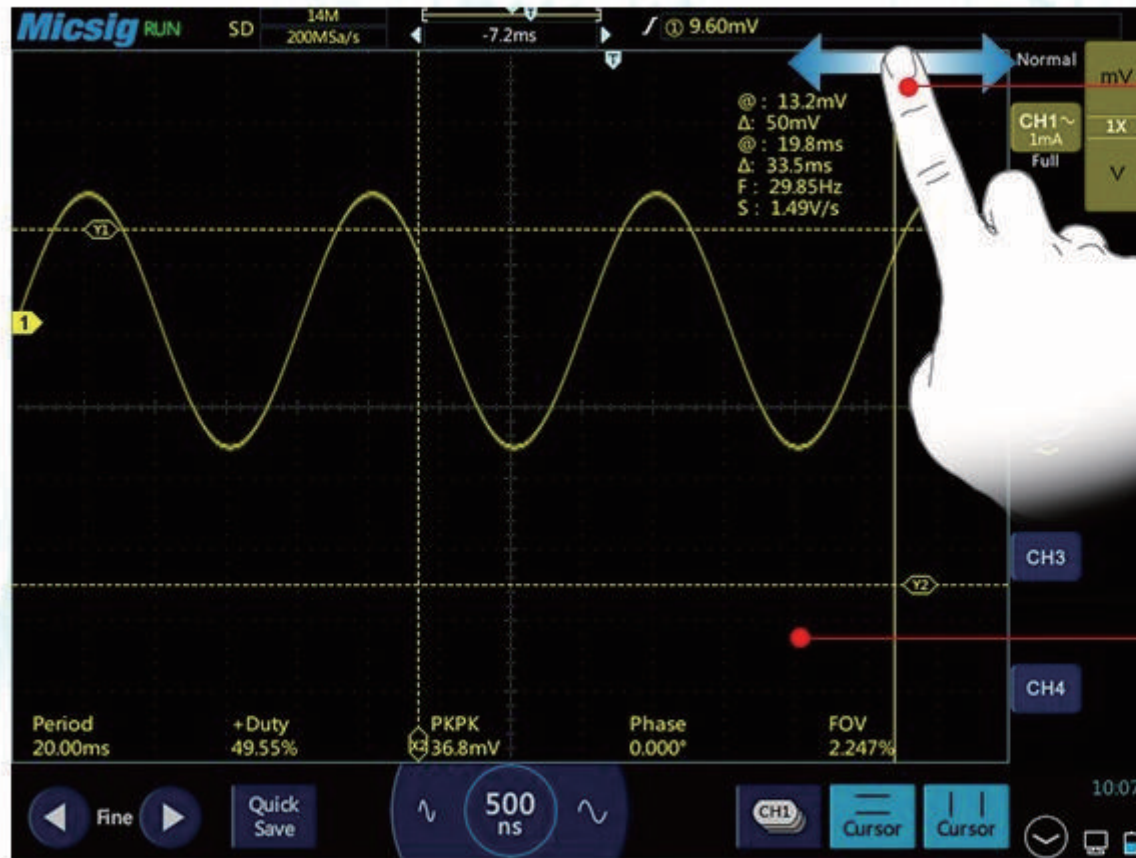
**Annotations:**

- A red dashed box highlights the measurement grid.
- A red arrow points from the text "Enabled measurement parameters are displayed here. Tap to turn a measurement off or tap clear to turn off all measurements." to the measurement grid.
- A yellow arrow points to the "Measure" button in the menu bar.

- Turn on auto measurement parameters**
- ① Tap **Measure** or swipe down on the top of screen to turn on main menu.
  - ② Select the desired channel firstly (if there is more than one channel open).
  - ③ Tap to turn on desired measure parameters.

### 5.2.9 Cursor

## Cursor



tap  $X_1$ ,  $X_2$ ,  $Y_1$ ,  $Y_2$ , to enable the cursor function. You can read the value on the top right corner.

Touch the screen with two fingers to simultaneously adjust cursor position.



### 5.2.10 ZOOM

**ZOOM**

Micsig RUN SD 3.5K 500MSa/s 0ps / 0.00V

Normal mV  
CH1 1X  
Full V



CH2

Level

CH3

CH4

10:08

Turn On/Off ZOOM  
Sliding upward on bottom of screen to turn on shortcut key, tap  to turn on and tap  again to turn off.

Waveform preview area

Main display area

Display sliding left or right on parts can position waveform concisely. Slide the waveform left or right to quickly position it in the main display.

### 5.2.11 Save and View waveforms

## Save and View waveforms




There are 2 methods to save waveforms:

① Save waveform through menu can set file format, save position & file name and so on.

② Tap "Quicksave" to use automatic settings and save the waveform immediately.

How to view waveforms:

Tap  to turn on reference channel setting menu and tap "recall" to display save list.

### 5.2.12 MATH

The screenshot displays the Micsig oscilloscope interface. At the top, the word "MATH" is prominently displayed in a stylized font. Below it, the main display area shows a waveform with a DC level of 1.020V, a frequency of 1.000kHz, and an amplitude of 894.6mV. The interface includes a "DoubleWave" menu with options for Source1 and Source2 (CH1-CH4) and mathematical operations (+, -, ×, ÷). Below this is an "FFT" section with "Line" and "dB" options, and a "Window" section with "Rectangle", "Hamming", "Blackman", and "Hanning" options. A hand icon is shown tapping the "MATH" button in the top right corner, which is labeled "MATH 500mV". Another hand icon is shown tapping a button in the bottom right corner, which is labeled "16:30".

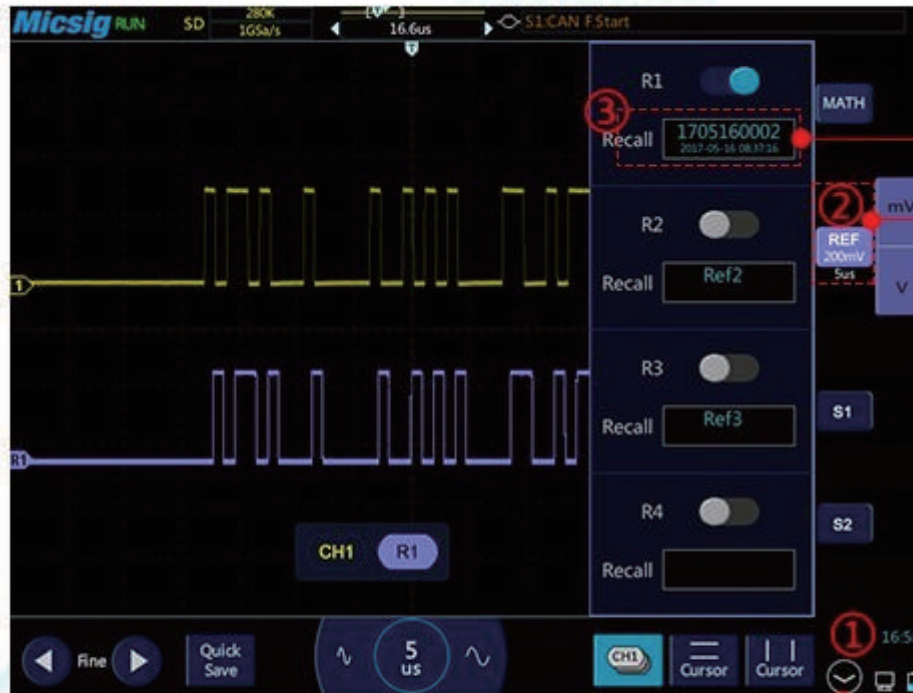
② Tap Math to open math channel.


① Tap [MATH] to switch to Math, Reference and bus decoding channel.




### 5.2.13 Reference (REF)

## Reference (REF)

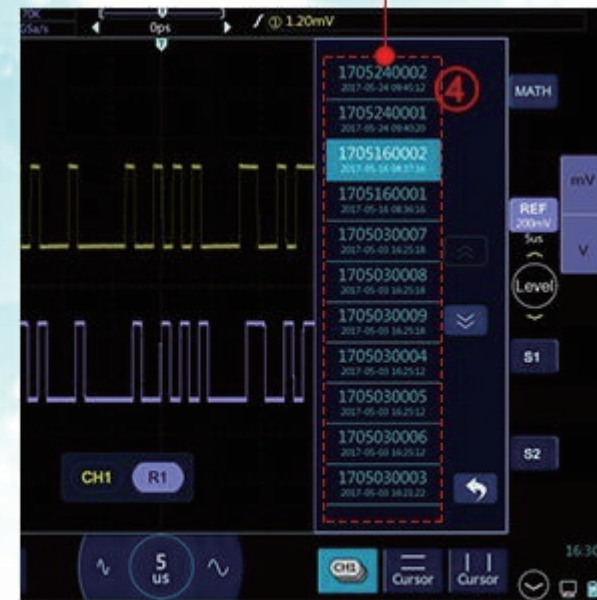


① Tap  to switch to Math, Reference and bus decoding channel.

③ Tap to open Recall box.

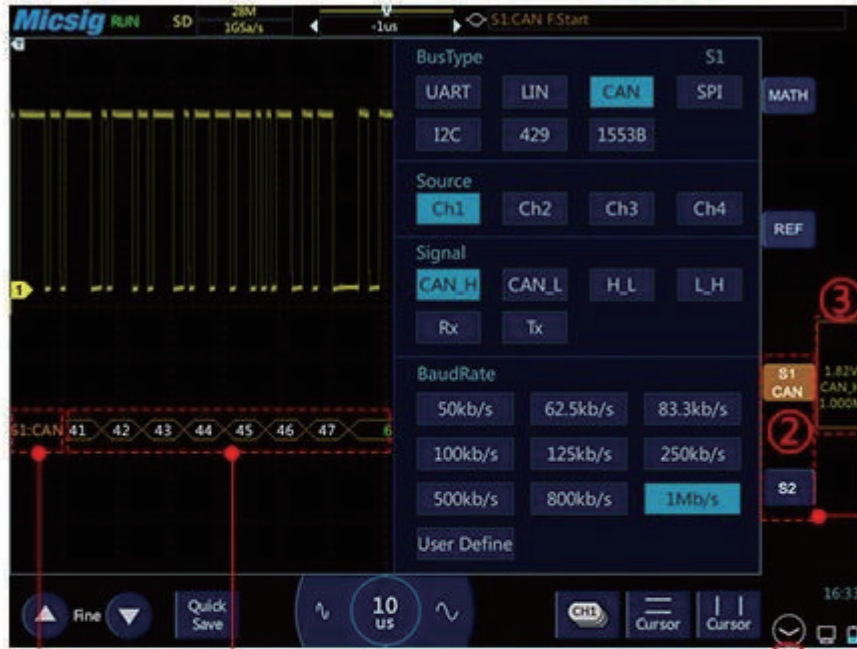
② Tap  to turn On/Off all reference channel waveforms.

④ Tap to select the corresponding waveform.




### 5.2.14 Bus Decoding

## Bus Decoding



Bus channel and BusType

Bus Decoding

① Tap  to switch to Math, Reference and bus decoding channel.

③ Tap to open slip bar, slip up and down to adjust threshold value.


② Turn on/off bus decoding channel menu.




### 5.2.15 Screenshot

## Screenshot



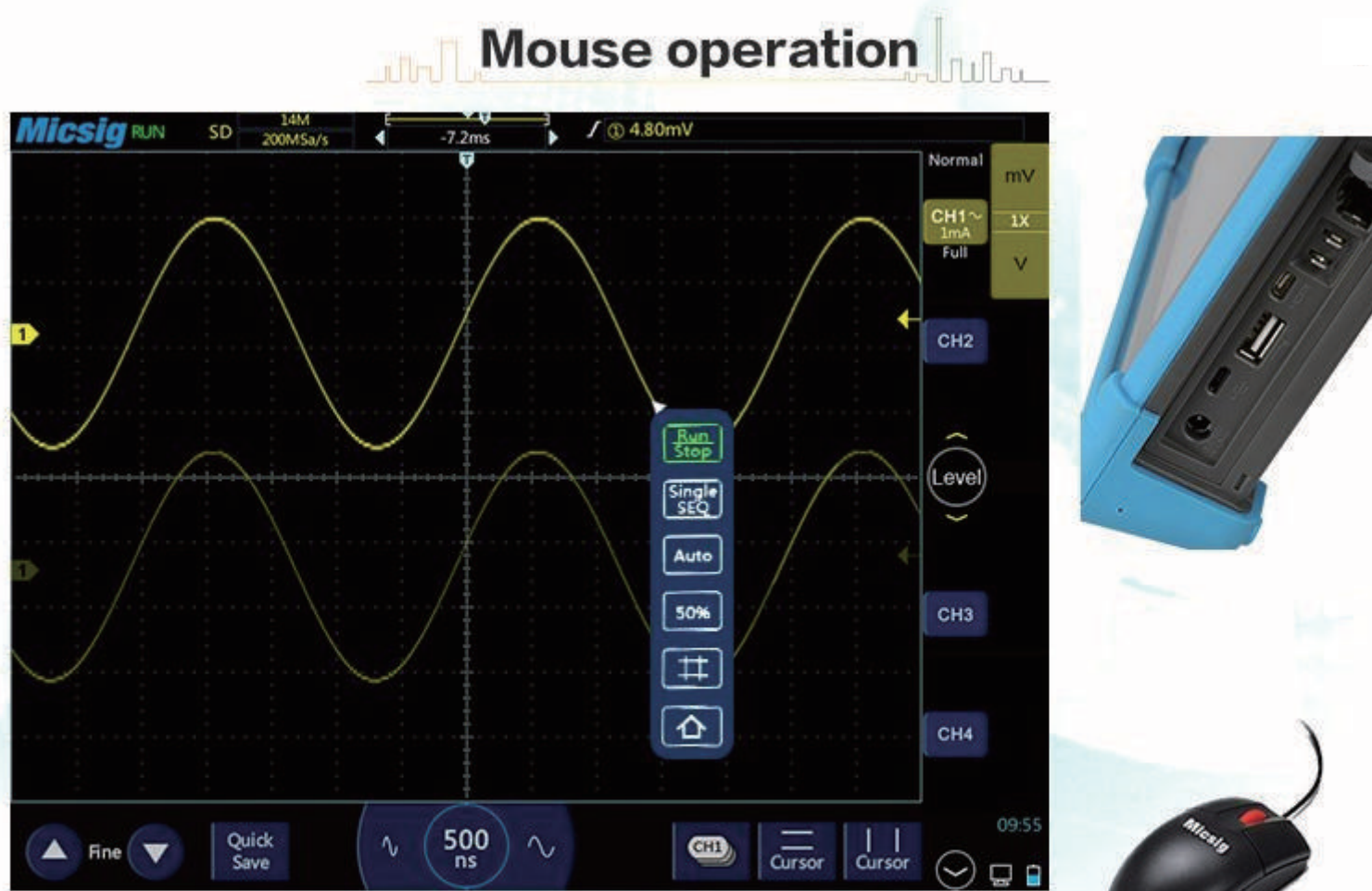
Sliding upward on bottom of screen to turn on shortcut key, tap  to capture a screenshot.

Back to home page, tap  and to view screenshots.





### 5.2.16 Mouse operation

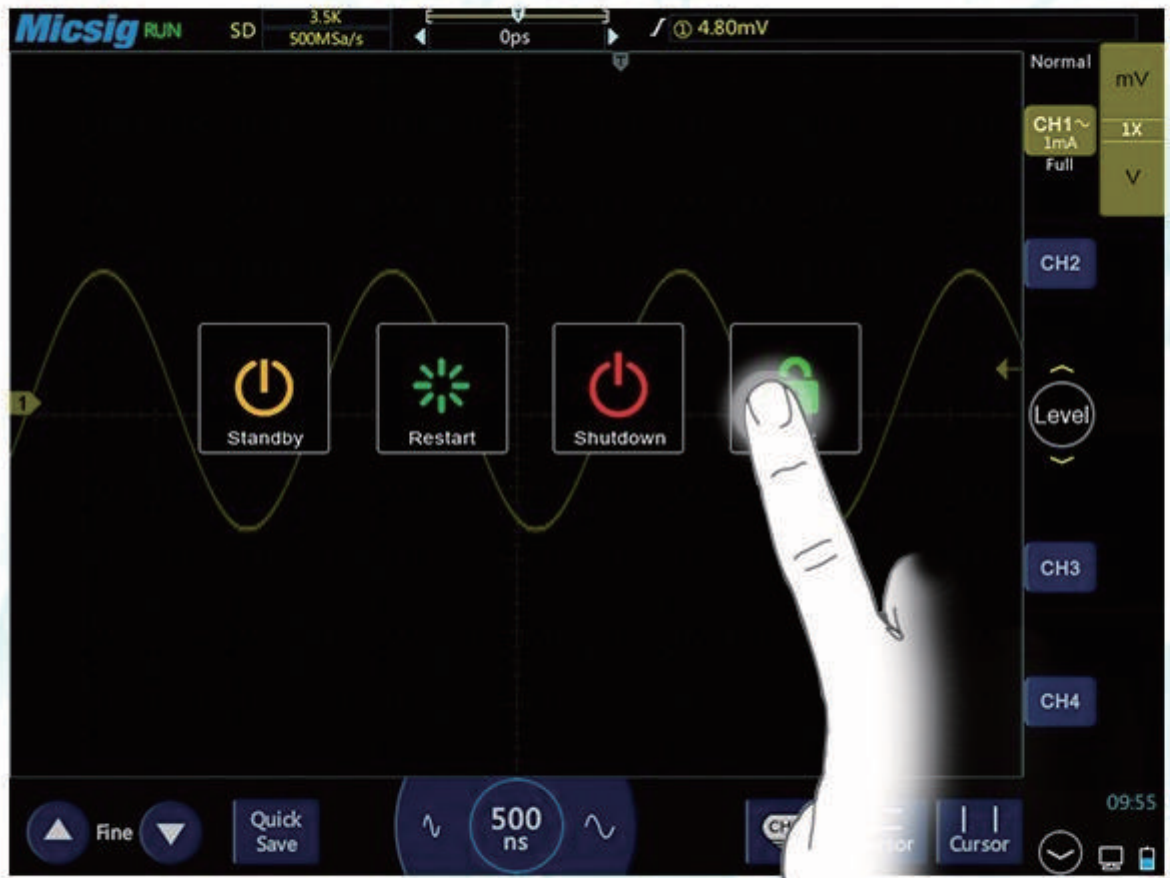


Connect the mouse to the "USB Host" port. Right click to open a menu. Left click to perform the same action as a finger tap.

Note: Unless otherwise configured, touch operation will be disabled while a mouse is connected.

## 5.2.17 Screen lock

# Screen lock



- ① Press and tap to lock screen, will be shown in the right low corner after locking.
- ② Press again and tap to unlock screen.



### 5.2.18 View oscilloscope storage space

## View oscilloscope storage space

**Setting**

- Brightness
- Sounds
- Language
- Standby Time
- Shutdown Time
- USB**
- LAN
- WLAN
- WLAN AP
- Upgrade
- Information

USB

- USB Test & MeasureMent
- USB Storage Device ✓

10:24  
24.2.2017

MicSig, Files, Setting, Guide, Photos, VideoPlay

① Tap setting on the home page to enter system setting.  
② Select USB storage device.

③ Connect computer with USB cable to open MicSig file and can view saved waveform & screenshot.

| 名称         | 修改日期             | 类型  | 大小 |
|------------|------------------|-----|----|
| refwave    | 2016-06-03 14:08 | 文件夹 |    |
| screen_cap | 2016-06-07 19:56 | 文件夹 |    |
| UserGuide  | 2013-10-09 12:05 | 文件夹 |    |

## 5.2.19 Probe compensation

### Probe compensation



- ① Connect probe to probe Compensation Signal Output Terminal.
- ② Using a Philips head screwdriver, turn the probe compensation adjustment screw near the BNC connector until the square wave appears to be free of distortion.

### 5.3 Optional function upgrade

The screenshot shows the 'Setting' application interface. On the left is a sidebar with menu items: Brightness, Sounds, Language, Standby Time, Shutdown Time, USB, LAN, WLAN, WLAN AP, Upgrade, and Information. The main area displays system information: Machine Model (TO1104), Bandwidth (100MHz), Serial Number (310000004), Version Info (6.1.290(Beta)), and Delivery date (2017-05-16 13:41). Below this is the 'Licence' section with a text input field containing 'HYUIIJHFSSETGGJ' and an 'Install' button. A red box highlights the 'Licence' input field and the 'Install' button, with an arrow pointing to the text 'Input licence code'. Below the licence section is a list of optional functions. A red box highlights the 'Auto Range' and 'Frequency Meter' options, with an arrow pointing to the text 'Disabled options'. Another red box highlights the 'Storage 28M', 'Vertical 500uV', 'WLAN', 'High/Low pass', 'UART', 'LIN', and 'SPI' options, with an arrow pointing to the text 'Enabled options'.

Step 1. Input licence code

Step 2. Click install and wait to reboot

### 6.1 Computer software Instruction


**Note:**

- 1, If you need to use USB cable to connect scope, before you install the PC software, you need to install NI-VISA Driver. Or you do not need.
- 2, The PC software only supports Win7 OS or above.
- 3, The PC software requires oscilloscope firmware program 6. X. 212 or above

#### Step 1. install the PC software

Download the programming from Micsig official website then install it.  
Programming name: RemoteDisplaySetup.exe  
Website : <http://www.micsig.com/Item/list.asp?id=64>

#### Step 2. connecting the PC software

You can use USB connection or Wi-Fi connection to connect the PC software.  
Double click the setup to open the PC software, Click Net or USB  Net  USB to select USB connection or Wi-Fi connection, when the indicator  is green, the oscilloscope connection is successful.

#### Step 3. here is the interface of PC software.



## 6.2 APP- (android/iOS)

### Android:

Download: [http://www.micsig.com/html/list\\_64.html](http://www.micsig.com/html/list_64.html)

### iOS:

Download: <https://itunes.apple.com/us/app/id1277619178?mt=8>

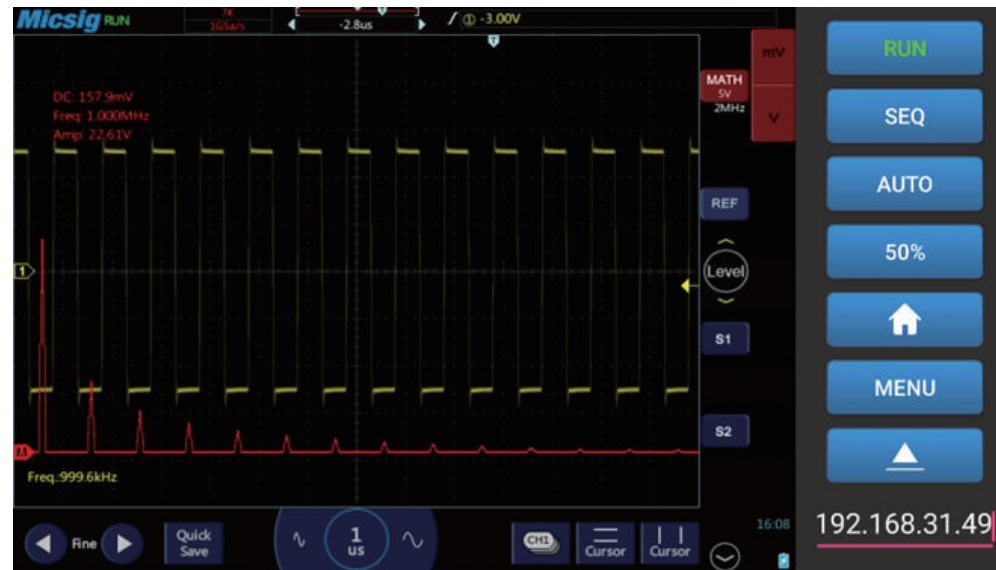
Or go App Store search “micsig” to install.



There are two methods to connect your oscilloscope to the app:

1. Open your oscilloscope WALN AP and connect to your mobile phone, input the oscilloscope IP 192.168.1.254 into the app to finish connection.
2. Connect oscilloscope and the mobile phone to the same Wi-Fi, get the IP address from oscilloscope and input to the app to finish connection.





Connection finished

\* We highly recommend you connect your oscilloscope to the app through method one.

Tablet Oscilloscope tBook mini TO1000 Data Sheet

| <b>Model</b>                  |                    | <b>TO1072</b> | <b>TO1074</b> | <b>TO1102</b> | <b>TO1104</b> | <b>TO1152</b> |
|-------------------------------|--------------------|---------------|---------------|---------------|---------------|---------------|
| channels                      |                    | 2             | 4             | 2             | 4             | 2             |
| Bandwidth                     |                    | 70 M          | 70M           | 10 0M         | 10 0M         | 15 0M         |
| Rise time                     |                    | 5ns           | 5 ns          | 3.5 ns        | 3.5 ns        | 2.3 ns        |
| Real time sampling rate (1CH) |                    | 1G Sa/s       | 1G Sa/s       | 1G Sa/s       | 1G Sa/s       | 1G Sa/s       |
| Real time sampling rate (2CH) |                    | 500M Sa/s     | 500M Sa/s     | 500M Sa/s     | 500M Sa/s     | 500M Sa/s     |
| Real time sampling rate (4CH) |                    | -             | 25 0M Sa/s    | -             | 250M Sa/s     | -             |
| Peak mode (1CH)               |                    | 1 ns          | 1ns           | 1n s          | 1n s          | 1n s          |
| Peak mode (2CH)               |                    | 2ns           | 2ns           | 2ns           | 2ns           | 2ns           |
| Peak mode (4CH)               |                    | -             | 4ns           | -             | 4ns           | -             |
| Standard                      | Memory depth (1CH) | 14M           | 14M           | 28 M          | 28 M          | 28 M          |
|                               | Memory depth (2CH) | 7M            | 7M            | 14 M          | 14 M          | 14 M          |
|                               | Memory depth (4CH) | -             | 3.5 M         | -             | -             | -             |
|                               | Memory depth (2CH) | 14 M          | 14 M          | 14 M          | 14 M          | 14 M          |
|                               | Memory depth (4CH) | -             | 7M            | -             | -             | -             |

## Specifications

### Vertical system

|                       |                                      |
|-----------------------|--------------------------------------|
| Bandwidth limitation  | 20MHz, high pass, low pass           |
| Input coupling        | DC, AC, GND                          |
| Input impedance s     | $1M\Omega \pm 1\%    14.5pF \pm 3pF$ |
| Vertical resolution   | 8bits                                |
| DC gain accuracy      | $< \pm 2\% (1M\Omega)$               |
| vertical scale        | 1mV/div to 5V/div ( $1M\Omega$ )     |
| Channel to channel    | $\geq 40dB (100:1)$                  |
| Offset range          | $\pm 6div$                           |
| Maximum input voltage | CAT I 300V ( $1M\Omega$ )            |

### Horizontal system

|                       |                       |
|-----------------------|-----------------------|
| Time base range       | 2ns/div ~ 1ks/div     |
| Time base delay range | -14 divisions to 14ks |
| Time base accuracy    | $\pm 20ppm$           |

### Sampling system

|                                       |   |
|---------------------------------------|---|
| Sampling mode                         | Real time sample rate   |
| Peak sampling                         |   |
| Sample rate 1G Sa/s                   | All the sampling glitches in scanning rate are narrow to single channel 1 ns, dual channel 2 ns. four channel 4ns |
| Max duration in the max sampling rate |   |
| Sample rate 1G Sa/s                   | 28/14ms   |
| Sample rate 500MSa/s                  | 56/28ms   |
| Sample rate 250MSa/s                  | 56/28ms   |
| Average                               | Average of sampling for N times<br>N is chosen from 2, 4, 8, 16, 32, 64, 128, 256                                 |



|                                      |   |
|--------------------------------------|---|
| Envelope                             | Envelope of sampling for N times<br>N is chosen from 2, 4, 8, 16, 32, 64, 128, 256, $\infty$  |
| <b>Trigger and decodingsystem</b>    |   |
| Trigger mode                         | Normal, Auto, and Single  |
| Trigger coupling                     | DC, AC, HF reject( >50KHz ), LF reject( <50KHz ), noise reject  |
| hold off range                       | 200ns to 10s  |
| Trigger type                         |   |
| Edge                                 | Positive, negative, or either slope on any channel input. Coupling includes DC, AC, HF reject, LF reject, and noise reject.   |
| Pulse Width                          | Trigger on width of positive or negative pulses that are >, <, =, $\neq$ , or inside/outside a specified period of time (8ns~10s).  |
| Logic                                | Trigger when any logical pattern of channels goes false or stays true for specified period of time (8ns~10s). Any input can be used as a clock to look for the pattern on a clock edge. Pattern (AND, OR, NAND, NOR) specified for all input channels defined as High, Low, or Don't Care |
| Video trigger                        | Trigger on all lines or individual lines, odd / even or all fields on PAL / 625SECAM, NTSC / 525, 720P, 1080I, 1080P video signals.   |
| Time out                             | Trigger on an event which remains high, low, oreither, for a specified time period. Selectable from   |
| Slope                                | Positive slope (Great than, lower than, within specific interval)<br>Negative slope (Great than, lower than, within specific interval)  |
| Runt                                 | Trigger on a pulse that crosses one threshold but fails to cross a second threshold before crossing the first again. Event can be time- or logic qualified.   |
| Nth edge                             | Edge type: Risingm Falling<br>Idle time: 16ns to 4s<br>Number of edges 1 to 65535   |
| Serial bus trigger and decoding type | UART (optional), I2C (optional), SPI (optional),CAN(optional), LIN(optional)  |

| <b>Waveform measurement</b> |   |
|-----------------------------|---|
| Cursor                      | Horizontal Cursor, Vertical Cursor, Cross Cursor  |
| Auto measurements           | 23, of which up to five can be displayed on-screen at any one time. Measurements include: Period, Frequency, Rise Time, Fall Time, Delay, Positive duty Cycle, Negative Duty Cycle, Positive Pulse Width, Negative Pulse Width, Burst Width, Positive Overshoot, Negative Overshoot, Phase, Peak to Peak, Amplitude, High, Low, Max, Min, Mean, Cycle Mean, RMS, Cycle RMS. |
| Waveform math               |   |
| Dual Waveform               | Add, subtract, multiply, and divide waveforms   |
| FFT                         | Spectral magnitude. Set FFT Vertical Scale to Linear RMS or dBV RMS, and FFT Window to Rectangular, Hamming, Hanning, or Blackman-Harris.   |

| <b>Display system</b>           |  |
|---------------------------------|--|
| Display type                    | 8" TFT LED Multi point touchable capacitive screen |
| Display resolution              | 800*600  |
| Max touch point on touch screen | 5 points   |
| Operation way                   | Full touch   |
| Afterglow time                  | Auto, 10ms to 10s, ∞                               |
| Time Base format                | YT, XY, Roll, Zoom                                 |
| Expansion bench mark            | Center, Trigger Position                           |
| Waveform display                | Brightness is adjustable, point ,Line              |
| Grid                            | 14*10 div, Brightness of the grid is adjustable    |
| Grey level                      | 256 level  |
| Time                            | YES  |
| Language                        | English, Chinese, customized                       |

| <b>Storage</b>   |               |
|------------------|---------------|
| Storage media    | Local, U Disk |
| Built-in storage | 8G            |

|   |                                |
|---|--------------------------------|
| Storage format                          | csv , wav, bin                 |
| Waveform storage number                 | Unlimited                      |
| waveform storage name                   | Support                        |
| display the reference waveform quantity | 4 piece                        |
| screenshot                              | Support                        |
| User setting number storage             | Unlimited                      |
| User name setting                       | Support, soft keyboard input   |
| Flash format                            | Comply with industry standards |

### Interface

|                        |  |
|------------------------|--|
| USB2.0interface        | Support USB mass storage devices, can read and write |
| Micro USB2.0 interface | 1, support read and write                            |
| DCinterface            | 1, for charging                                      |
| Probe calibration port | 1KHz, 2Vpp   |
| LAN                    | Support  |
| Micro HDMI             | Optional   |
| Wi-Fi                  | Optional   |

### Power source

|                            |                       |
|----------------------------|-----------------------|
| Power source voltage       | 100 to 240V AC50/60Hz |
| Power consumption          | <60W                  |
| Fuse                       | 12V DC, 5A            |
| Built-in Battery(Optional) | 7.4V, 8000mAh         |

### Environment

|               |               |
|---------------|---------------|
| Temperature   |               |
| Operating     | 0°C to 45°C   |
| Non-operating | -40°C to 60°C |

|               |  |                 |
|---------------|--|-----------------|
| Humidity      |  |                 |
| Operating     |  | 5% to 85%, 25°C |
| Non-operating |  | 5% to 90%, 25°C |
| Altitude      |  |                 |
| Operating     |  | <3000m          |
| Non-operating |  | <12000m         |

### Physical characteristics

|            |  |       |
|------------|--|-------|
| Dimensions |  |       |
| Height     |  | 210mm |
| Width      |  | 250mm |
| Depth      |  | 55mm  |
| Weight     |  |       |
| Net        |  |       |
| 2CH Bare   |  | 1040g |
| 4CH Bare   |  | 1125g |

## Ordering information

Step 1: Select tBook\_mini series model

| tBook_mini family |   |
|-------------------|---|
| TO1072            | Tablet oscilloscope tBook mini, 70MHz 2 analog channels, Max sample Rate Analog channel up to1G Sa/s  |
| TO1074            | Tablet oscilloscope tBook mini, 70MHz 4 analog channels, Max sample Rate Analog channel up to1G Sa/s  |
| TO1102            | Tablet oscilloscope tBook mini, 100MHz 2 analog channels, Max sample Rate Analog channel up to1G Sa/s |
| TO1104            | Tablet oscilloscope tBook mini, 100MHz 4 analog channels, Max sample Rate Analog channel up to1G Sa/s |

|        |   |
|--------|---|
| TO1152 | Tablet oscilloscope tBook mini, 150MHz 2 analog channels, Max sample Rate Analog channel up to1G Sa/s |
|--------|---|

**Standard accessories**

|                     |   |
|---------------------|---|
| Tablet oscilloscope | 1   |
| Power plug          | 1   |
| Power adapter       | 1   |
| Probes              | probes spec depends on oscilloscope model, 2pcs for 2 channel, 4 pcs for 4 channel<br>10X, Input capacitance: 1X: 85pF-120p, 10X, 16pF-20pF, Input Voltage: 1X: <300V DC + Peak AC, 10X: <600V DC + Peak AC                                       |
| Warranty            | Repair Service 3 Years (including warranty)<br>Probes and accessories are not covered by the oscilloscope warranty and service offerings. Refer to the datasheet of each probe and accessory model for its unique warranty and calibration terms. |
| BNC Cap             | Quantity depends on oscilloscope channel. 2 or 4.   |

**Optional accessories**

|                                 |                                   |
|---------------------------------|-----------------------------------|
| tBook miniBattery               | 7.4V /8000mAh, Li-ion, recharging |
| Screen protector film           | Plastic, same size with screen.   |
| Carry strap                     | Leather carry strap, Black        |
| High voltage differential probe | 1300Vpk/100MHz , DP10013          |
| Handbag                         | Black nylon                       |

**This information is subject to change without notice.**

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