

Tablet Oscilloscope Quick Guide

For tBook Series

Shenzhen Micsig Instruments Co., Ltd.



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Version

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Product certification

MICSIG guarantees this product conforms to national and industrial standards in China as well as the CE standard. Other international standard conformance certification is in progress.

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Learn more about Tablet Oscilloscope

Feature

Simple and new experience on new generation	
---------------------------------------------	--

10.1" display, 1024*600 high resolution, display waveform details perfectly.

31 auto measurements, tap select and cancel the wanted type directly.

15,000mAh Li-ion battery, up to 8 working hours. (Optional).

Deeper memory depth, observe general signal and details easily.

Tablet compact design, multi-touch operation. All operation by tap or slide, more humanized.

High capture rate to capture abnormal events.

4G built-in storage, you can name the waveform by typing the soft keyboard.

60mm and 1.77kg ultra-thin body, easy to take .

Get rid of buttons and knobs, more durable.

Tablet Oscilloscope tBook Series

Model	TO102	TO102A	TO152	TO152A	то202	TO202A	
Model	TO104	TO104A	TO154	TO154A	то204	TO204A	
Bandwidth	100MHz	100MHz	150MHz	150MHz	200MHz	200MHz	
Risetime	≤3.5ns	≤3.5ns	≤2.3ns	≤2.3ns	≤1.75ns	≤1.75ns	
Real-time Sampling rate	1GS/s	2GS/s	1GS/s	2GS/s	1GS/s	2GS/s	
Memory depth	18M	18M					
Channels	2/4						
Waveform capture rate	50,000 wfms/s						
Display screen	10.1" TFT LCD Multi point touchable capacitive screen, Resolution: 1024 *600 pixels						
Operation	Mouse, Multi-touch: tap, swipe, pinch						
Dimensions & weight	275mm * 210mm * 60mm, 1770g						
Optional functions	Software optional: • 250,000wfms/s waveform capture rate for TO*** model • 500,000wfms/s waveform capture rate for TO***A model • 90M memory depth • 50Ω Input impedance • XY mode Hardware optional: • 15,000mAh Built-in battery						



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tBook appearance

Rear panel & Side panel



No.	Description
1	2/4 Input channels
2	Oscilloscope info: Model, Input Channels, Bandwidth, Sampling Rate, SN
3	Open device stand
4	Power
5	USB Device for connecting PC
6	USB Host for connecting U flash disk and mouse
7	GND
8	Charging interface



Front panel

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	Run Stop	
15:04	Single SEQ	10.1 TFT LCD 1024*600pixel
Oscilloscope	Auto	
Multi point touchable capatitive screen	3	Control Area
	=	
Photos Setting System Help	۵	
Screen capture view system information	5	
Tablet Oscilloscope t	Book	

Control icon	Description
Run Stop	Active to run/stop acquisition
Single SEQ	Active to single trigger mode
Auto	Active to waveform auto mode Note: Auto setting requires that the frequency of the signal under test should be no lower than 20Hz if the signal under test is Sine. Otherwise, the waveform auto setting function may be invalid and the quick parameter measurement function displayed in the menu will also be unavailable.
50%	 To 50% icon: Active the vertical position of the current channel waveform to zero point Active the horizontal position of the current channel waveform to screen center Active the trigger level to the center of trigger channel waveform Active cursor back to the screen center
	Menu button: turn on/off the latest function menu
	Home page
Ĵ	Back or turn off menu

Oscilloscope interface



- 9 The Vertical scale of CH1, CH2, CH3 and CH4
- 10 The vertical scale and time base of math channel and reference channel
- 11 The timebase of input channel
- 12 Scale, cursor, trigger level
- 13 Display PC connection, U disk icon, battery level, lock and time



tBook operation

Multi-Touch screen

So easy to operate your tBook with bellowing finger gestures - tap, slide, swipe and pinch/stretch.





Channel Setting

Note:

- 1. CH1 The grey icon indicates the channel is off, tap to turn on it.
- 2. CH1 The colorful icon indicates the channel is on, tap to active it as the current channel or

tap twice to turn off it.

3. When the channel number (CH1) is lighted, it indicates it is the current channel, tap to

turn off it.

- 4. **1** It indicates it is the current channel.
- 5. **1** It indicates the channel is working; tap to active it as the current channel.



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Slide waveform horizontally and Vertically

Note: Single finger slide the waveform fast, double finger slide to fine tune.



Timebase adjustment (Four ways)



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Vertical scale adjustment



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Math channel & Reference channel

Cursor operation

Note: Single finger slide the cursor line fast, double finger slide to fine tune.





Screen lock & unlock



Main menu

Note: Tap	Measure	Storage	Display	Trigger	Zoom	UserSet	to enter the corresponding
sub monu							

sub-menu.







Automatic measurement menu

Storage menu

Note: You can view the waveform photos you saved under the photos icon in the home page.





Display menu



Trigger menu





ZOOM function

Note: ZOOM is not available when high refresh mode is active.



User set



Probe compensation



System upgrade

Note: Please download software package at link: <u>http://www.micsig.com/en/down.asp</u>





Tablet Oscilloscope Safety Information

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General Safety Summary

- To use the instrument safely, please follow safety precautions carefully and obey the well-known safety procedures.
- Only trained personnel can operate maintenance procedure.
- Only professional personnel can repair, maintain and calibrate.
- If circuit or wire exposed, please use protect equipment to avoid current impact.
- If the instrument connected to some system, assembler is responsible for the safety.
- Only the power cord designed for the instrument and authorized for use within the local country could be used.
- To avoid electric shock, it is essential to connect the earth terminal of the power cord to ground.
- Please don't connect the probe to high voltage.
- Make sure that no overvoltage can reach the product, or else the operator might be exposed to the danger of electrical shock.
- To avoid fire or shock hazard, observe all ratings and markers on the instrument and check your manual for more information about ratings before connecting the instrument.
- In order to avoid short circuiting to the interior of the device or electric shock, please do not
 operate the instrument in a humid environment.
- Operate the instrument in an electrostatic discharge protective area to avoid damage induced by static discharges. Always ground both the internal and external conductors of the cable to release static before connecting it to the instrument.



Safety Terms and Symbols

Safety notes in this manual. Below safety notes and symbols will be seen throughout this manual.

- Warning denotes a hazard. It calls attention to all conditions and actions may result in injury or loss of life.
- **Caution** denotes a hazard. It calls attention to all conditions and actions may result in damage or destruction of the instrument.

Terms Used on the Product. These terms may appear on the Product:

- **Danger** means while you are in violation of the provisions of this tag may immediately cause damage to you
- **Warning** means while you are in violation of the provisions of this tag may not immediately cause damage to you.
- **Caution** means cause damage to the product or others.

Symbols Used on the Product. These symbols may appear on the product:

4	\triangle		rt-r	÷
Hazardous	Safety	Protective	Chassis	Test
Voltage	Warning	Earth Terminal	Ground	Ground



Measurement Category

Tablet oscilloscope measurement category

• 300V CAT I (1MΩ input), 5V(50Ω iput);

• This oscilloscope can only be used for measurements within its specified measurement categories.

Measurement Category Definitions

Measurement category I is for measurements performed on circuits not directly connected to MAINS. Examples are measurements on circuits not derived from MAINS, and specially protected (internal) MAINS derived circuits. In the latter case, transient stresses are variable; for that reason, the transient withstand capability of the equipment is made known to the user.

Measurement category II is for measurements performed on circuits directly connected to the low voltage installation. Examples are measurements on household appliances, portable tools and similar equipment.

Measurement category III is for measurements performed in the building installation. Examples are measurements on distribution boards, circuit-breakers, wiring, including cables, bus-bars, junction boxes, switches, socket-outlets in the fixed installation, and equipment for industrial use and some other equipment, for example. Stationary motors with permanent connection to the fixed installation.

Measurement category IV is for measurements performed at the source of the low-voltage installation. Examples are electricity meters and measurements on primary over current protection devices and ripple control units.

Pollution Degree: Degree 2

Pollution Degree Definitions

Pollution degree 1

• No pollution or only dry, non-conductive pollution occurs. The pollution has no influence. For example: a clean room or air-conditioned office environment.

Pollution degree 2

• Normally only dry, non-conductive pollution occurs. Occasionally a temporary conductivity caused by condensation may occur. For example: general indoor environment.

Pollution degree 3

 Conductive pollution occurs, or dry, non-conductive pollution occurs which becomes conductive due to condensation which is expected. For example: Sheltered outdoor environment.

Pollution degree 4

• Pollution that generates persistent conductivity through conductive dust, rain, or snow. For example: outdoor locations.



Operation instruction

Please confirm before use

- Operating temperature: $-10^{\circ}C \sim 40^{\circ}C$;
- Battery charging temperature: 0°C~40°C;
- Relative humidity: < 95% RH;
- Operating altitude: < 3000m;
- Power input: specified power adapter;
- Input voltage : AC 100~240V, 50~60HZ.

Connecting probe

• Choose right probe, connect the probe to scope.

Power supply

• The instrument has to be power supplied by specified power adapter or battery. The power adapter input voltage must conform with installation(overvoltage) category II.



Tips for use Oscilloscope

Before use, please ensure the probe compensation setting is correct (See the Quick Guide)



Waveform of each Channel display in different color, please input probe compensation test signal before use, when the probe connects to oscilloscope, please ensure the ground terminal of probe is grounding.

When there is signal input, but there is no signal on screen or only see signal burr, please check the following setting.

- To check whether the probe is connect with signal cable
- Whether both ends of probe is connected well
- Whether input channel is open
- Whether the waveform display beyond the screen range

Please check the following points if you can't get stable waveform display

- Trigger level and setting of trigger source
- Please choose SEQ mode for Occasional signal
- Please choose normal trigger mode when input complicated signal, such as the trigger simultaneously signal

When you input 2 or more signals, If you observe one stable signal waveform only and others are unstable, the reason is that the frequency of input signals are different. Choose trigger source to make the signal waveforms be displayed stable one after one.



General Care and Cleaning

General Care

- Keep oscilloscope in ventilated and dry environment
- Do not store or leave the instrument where it may be exposed to direct sunlight for long periods of time.

Cleaning

Clean the instrument regularly according to its operating conditions. To clean the exterior surface;

- 1. Disconnect the instrument from all power sources;
- 2. Clean the loose dust on the outside of the instrument with a lint-free cloth (with mild detergent or water). When cleaning the LCD, take care to avoid scarifying it.

- To avoid damages to the instrument, do not expose it to caustic liquids.
- Far away abrasive material
- To avoid injury resulting from short circuit, make sure the instrument is completely dry before reconnecting it to a power source