LinkZill

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TruEbox 01RC User Guide

V1.2

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TruEbox 01RC User Guide

Product Overview

The TruEbox 01RC is a portable precision resistance/capacitance measuring device. The device can measure real-time, accurate data, and send it to the mobile APP via Bluetooth to realize real-time data display, storage, and sharing. The TruEbox excels in fast response speed and high resolution, allowing applications in sensor characterization, portable electronic product development, sports health monitoring, biomedical testing, and other scenarios.

Parameter	Specification		
L×W×H	68×68×20 mm		
Weight	60 g		
Charging Interface	USB 2.0 Micro-B		
Test Interface	2×MCX connector (Single) + 10 pins FPC connector (Multichannel)		
Communication	Bluetooth		
Terminal	Phone (Android 4.0 or higher)		
Measurement Range	Resistance: 0-200 MΩ		
	Capacitance: 0-20 pF		
Duration	4 hours		
Data Output Rate	Resistance	Single	50 data points/second/channel
		Multichannel	Testing resistance<10MΩ 10 data points/second/channel
			Testing resistance≥10MΩ 4 data points/second/channel
	Capacitance	Single	50 data points/second/channel
		Multichannel	10 data points/second/channel
Save	Original data: .CSV; Image: .PNG		

Product List

Host	X1	Single-Channel MCX Alligator Clip Cable	X2
Charger	X1	USB Charging Cable	X1
User Guide	X1	Warranty Certificate	X1

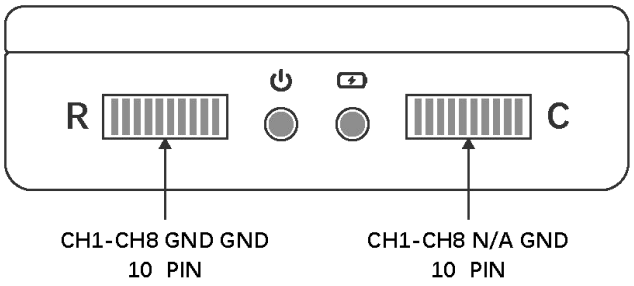
Optional Accessory

Single-Channel MCX Needle Tip Probe

Multi-Channel FPC Connector (Dupont Connector)

(1mm Spacing FPC Golden Finger)

Notice: Pin Assignment of Multi-channel Interface



Product Specification

Measurement Range and Accuracy

The product supports 6.5 gears of resistance from 0 to 200MΩ, allowing it to measure resistance change of 10ppm. The measurement accuracy is as follows:

Resistance Range	Accuracy	Measurement Accuracy
0 - 1k	0.1Ω	0.5%+3*accuracy/measured resistance
1k - 10k	1Ω	
10k – 100K	10Ω	
100K - 1M	100Ω	
1M - 10M	1kΩ	
10M – 200M	10kΩ	1.2%+5*accuracy/measured resistance

*** Notice: Previous data are based on the following conditions:**

1, Similar resistance on every channel; 2, Good electromagnetic shielding; 3, Temperature 23±5℃.

The relationship between the measured resistance and the test current is as follows:

Range of Measured Resistance	Test Current
0Ω~550Ω	18mA~2.77mA
550Ω ~5.5kΩ	2.77mA~0.28mA
5.5kΩ~55kΩ	0.28mA~27.69μA
55kΩ~550kΩ	27.69μA~2.77μA
550kΩ~2MΩ	2.77μA~0.6μA
2MΩ~200MΩ	0.6μA~8.57nA

Capacitance is measured between 0~20pF by 1fF. The measurement accuracy is as follows:

Range	Accuracy	Measurement Accuracy
0~10pF	0.01pF	1.5%+3*accuracy/measured capacitance
10~20pF	0.1pF	

Operating Manual

1. APP Installation:

Scan the QR code and press the button to download the application. Install the app.

⚠ **APP will need permission to access the Bluetooth/location/storage of the terminal device so that it can work normally. The accession will not do any harm to the terminal devices, please don't worry about the security of the APP.**

2. Device Connection:

a. Turn on the TruEbox 01RC. When powered on, the white indicator light should be on. If not, please charge the system for the low battery.

b. Switch the measurement gears based on your needs. Switch to "R" for resistance measurement, or "C" for capacitance measurement.

c. Open the "TruEbox" app. For first-time pairing, press the corresponding button (Resistance or Capacitance), and the window of "Available Devices" would pop out. Find and connect the device with Bluetooth address "20:XX:XX:XX:XX:XX" or Bluetooth name "RC10+serial number" (If the correct option is not available, please press the "Cancel" button and redo the previous procedures). Insert the Bluetooth password on the warranty certificate to activate the TruEbox.

⚠ **The TruEbox 01RC will connect to the application automatically after the first-time pairing (or shown as "RC10+serial number" in the "Paired Devices" window).**

3. Measurement:

a. Press the setting button to select single or multi-channel, adjust view time, and check the test speed.

b. Press the start button to start the test; press the pause button to stop the test. Please do not change the settings during the test to avoid data loss.

d. Press the save button to save the measured data. The data is saved in the file "LinkZill" of the root directory. After saving the data, you can check the options to share the measured data through email, Bluetooth et. al.

e. Press the return button to return to the previous page and reset the test.

Warnings:

⚠ Please use the original charger to avoid damage.

⚠ The charging indicator is red when the system is charging and change to green when the battery is full. To avoid damaging the system, please unplug the charger when the system is fully charged.

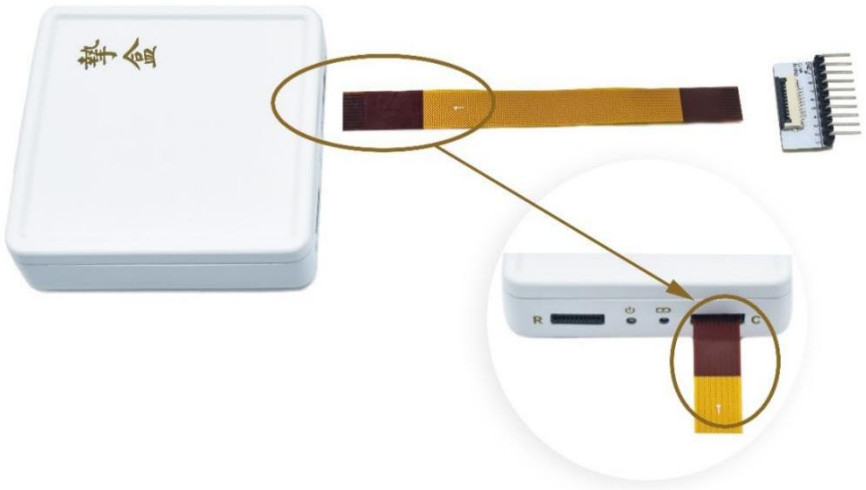
⚠ Please don't use the system in high temperature or high humidity environments. Don't throw the system into fire or water to avoid damage or explosion.

⚠ Please don't bash or drop the system from height to avoid damage.

Appendix A: Multi-Channel Resistance Testing Guide

Multi-Channel Accessory Guide

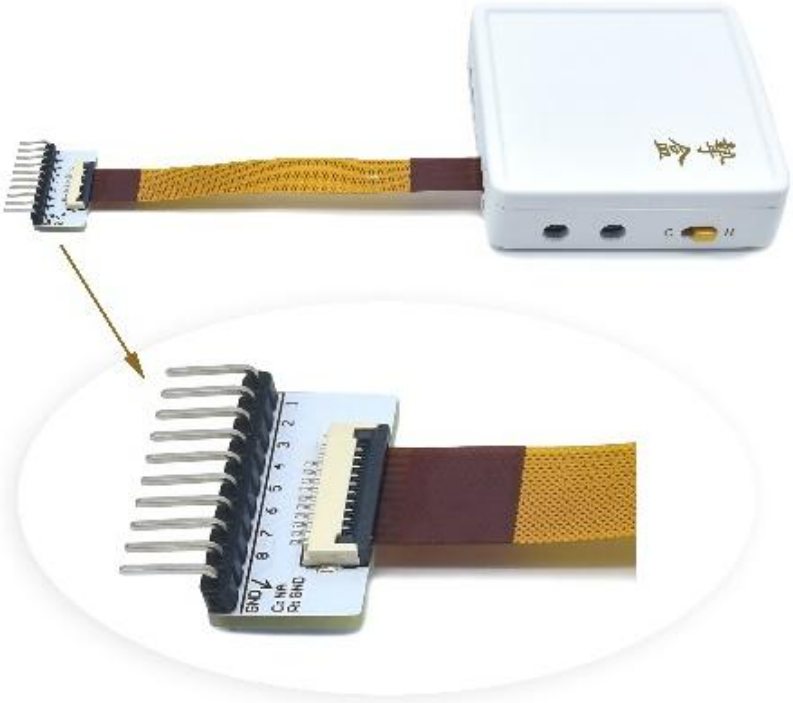
1. Plug the FPC with the brown side facing up and the arrow points to the TruEbox 01RC (for both resistor and capacitor).



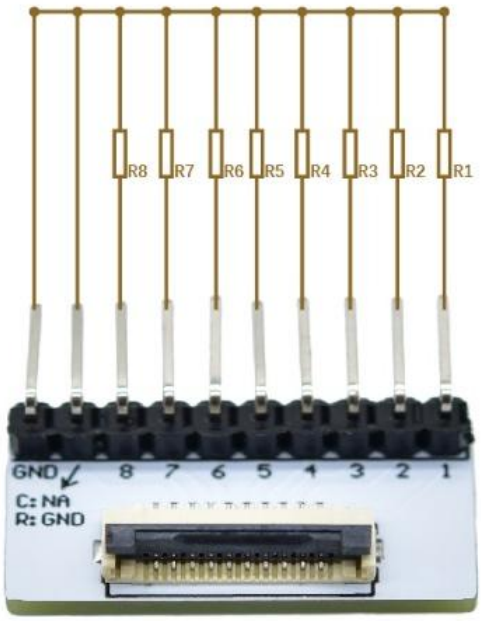
Demonstration:

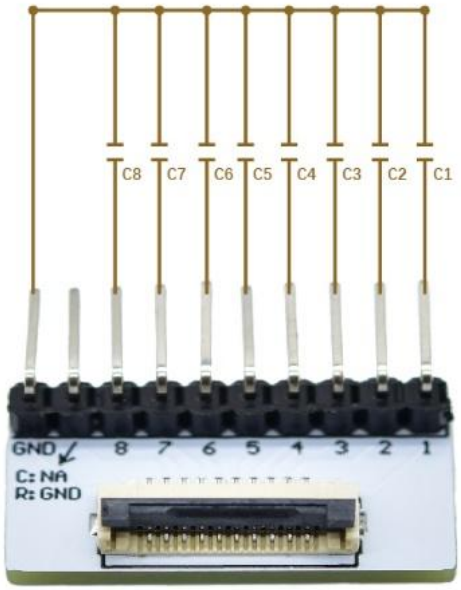
2. Flip the splint (in the arrow direction) to connect the multi-Channel adapter board and the FPC.

3. Cover the splint on the adaptor board.



4. Connection demonstration of the measured devices (*Notice: you can connect the devices to the TruEbox 01RC with adaptor board and Dupont Connector)





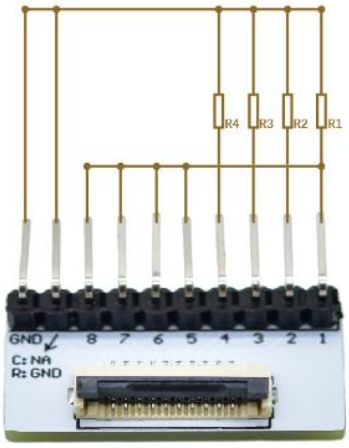
Notice:

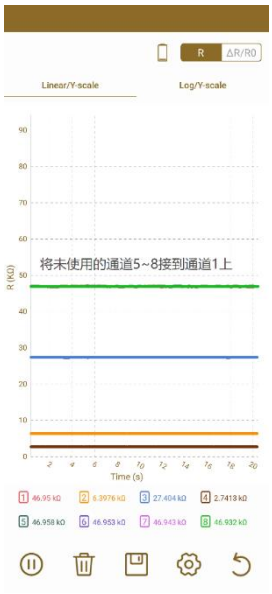
For accurate and stable results, please follow these conditions when measuring multi-channel resistance:

⚠ Avoid using the system in complex electromagnetic environments for test accuracy.

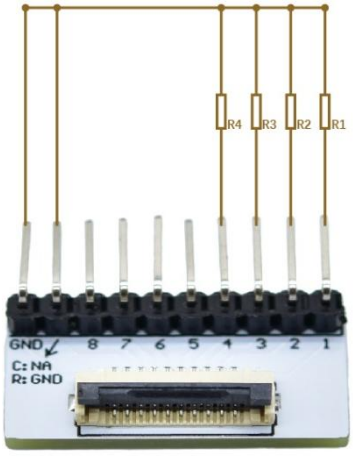
⚠ Please connect the unused channel to the device to avoid floating ground for test accuracy (as the coming picture shows).

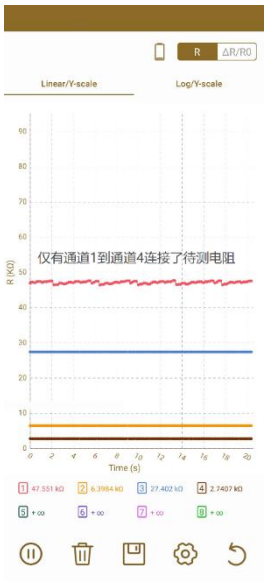
⚠ When measuring the resistance of multiple devices, please connect the adjacent devices in the order of smallest resistance difference for test accuracy.





Short the floating channels 5-8 to channel 1





Floating ground on channel 5-8

* Please connect the unused channel to the device to avoid floating ground for test accuracy.

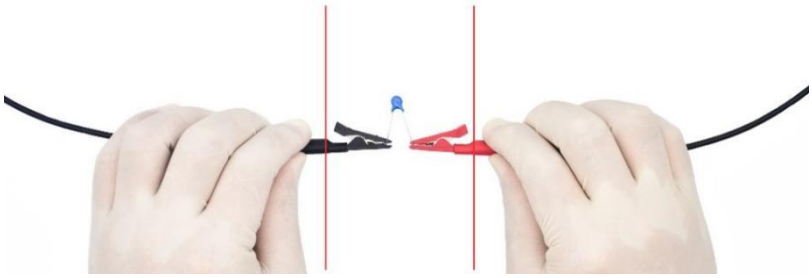
Appendix B: Single-Channel Capacitor Testing Guide

TruEbox 01RC is a high-precision micro-capacitance measuring device and is vulnerable to external interference during the measurement. For test accuracy, please follow the coming recommendations:

1. Place the tips of the clips horizontally and avoid contact. [1]

2. Avoid overlapping cables. [2]

3. Hold the end of the clips gently when needed. Avoid touching the area between the red lines. [3]



[1]: Different placement may raise the measured data by 0.17~0.3pF.

[2]: Overlapping cables may raise the measured data by 0.03~0.1pF.

[3]: Hands touching may cause an error by 0.07pF (compared to direct contact).

Notice: No metal objects nor phones are allowed within 10cm of the clips (e.g. nearby phone may cause an error by 0.3pF).

Others:

1. The software may correct the data when measuring stable parasitic capacitance. When the parasitic capacitance changes according to the mechanical movement, temperature, humidity, or human contact, the test may be inaccurate. For better accuracy, please follow the previous instructions, and test the device repeatedly with dry and clean clips.
2. All indicators (accuracy, error, etc.) are based on the standard clips.
3. Do not squeeze the cable or the measured data may raise by 0.03pF.
4. TruEbox 01RC is a high-precision micro-capacitance measuring device. Do not use the system in complex electromagnetic environments for test accuracy.

Appendix C: Toxic and Hazardous Substances Report

Name and Amount of the Hazardous Substances in the Product

Component	Toxic and Hazardous					
	Pb	Hg	Cd	Cr(VI)	PBB	PBDE
Case	○	○	○	○	○	○
Control Board	×	○	○	○	○	○
Battery	○	○	○	○	○	○
Cable Component	×	○	○	○	○	○
Charging Cables	○	○	○	○	○	○
Accessories	○	○	○	○	○	○

The table is based on the standard of SJ/T 11364.

○: The amount of the hazardous substances in the component is below the standard of GB/T 26572.

×: The amount of the hazardous substances in the component is over the standard of GB/T 26572.