



RAYDON Electronics
Universal USB Analyzer
User Manual
Model: RA-170



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Version Control

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1 Summary

1.1 Product Introduction

This product is named "**Universal USB Analyzer**".

This device provides complete solutions for power bank, adapter/chargers, cables, cell phone battery, or any other USB/ micro USB/Type C devices charging, discharging status detecting, and capacity calculation. It includes Charging, Discharging, Capacity calculation etc. functions.

At the meantime, this device use high resolution colorful LCD display, shows voltage, current, capacity, power, temperature data, build-in CC loader, micro USB, USB, Type-C ports, to cover almost of device.

Ideal Power bank, charger/adapter, cables, cell phone and pad analyzing device for consumer electronics retailers and stores.

1.2 Product Function Objective

Here are Analyzer's base functional applications:

- All USB/Micro USB/Type C device supporting
- High resolution colorful LCD display, shows voltage, current, capacity, power, temperature data.
- Build-in CC loader that can fully discharge power bank to measure the current total capacity.
- Automatic recognize fast charger protocol.
- Detect power bank / other device discharging equivalent impedance and power.
- Power bank charging testing.
- This device can fully discharge power bank to measure the current total capacity
- Power interrupt data auto-save
- Temperature display
- Not just only power bank, build-in CC loader, micro USB, USB, Type-C ports, to cover almost of device.

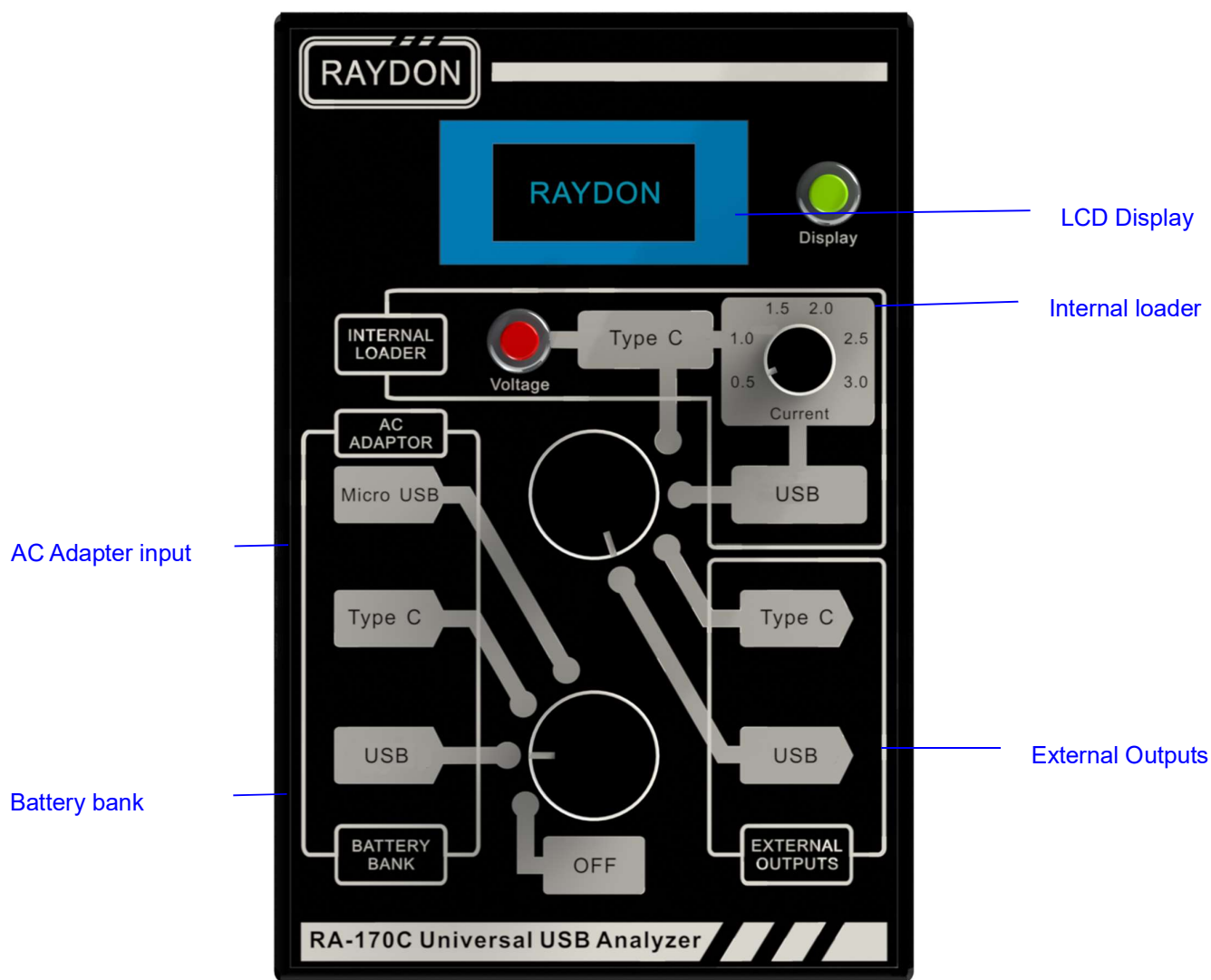
1.3 File Introduction

This manual illustrates Device's surface, function specification, connection and operation flow in detail, for Industrial Version.



2 Surface and Structure

This chapter illustrates Analyzer's surface and structure.





3 Instructions for Full Color Display

3.1 Function Interface:



Measurement Main
Interface

▫ Introduction of Icon Function



1. Press and hold the button to choose this icon to open or close the screen
2. Press and hold the button to choose this icon to switch the temperature unit.
3. Press and hold the button to choose this icon to switch data group
4. Press and hold the button to choose this icon to clear data group.
5. Press and hold the button to choose this icon rotate the screen

▫ Main Measurement Interface.

6. Voltage Measurement
7. Current Measurement
8. Accumulated Capacity
9. Accumulated Energy
10. Temperature Measurement
11. Number of the Data Group in use
12. Load Equivalent Impedance
13. Power Measurement

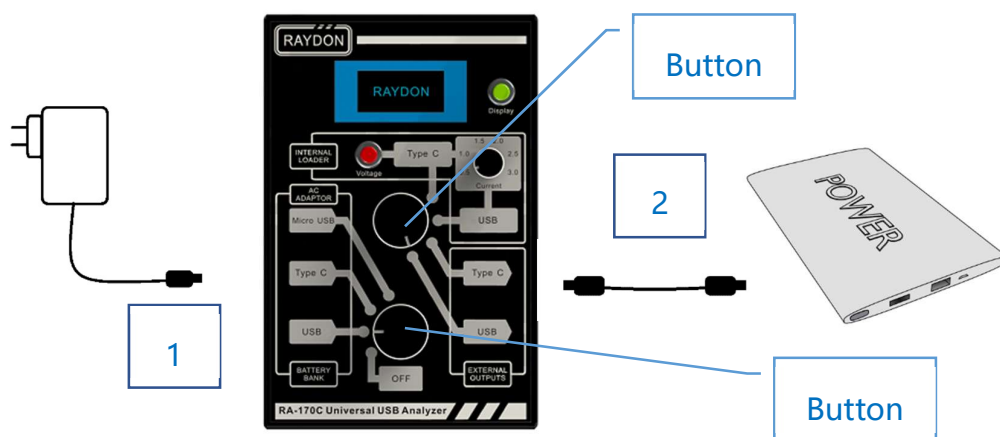


4 Instructions for Operation

Follow this operations, will check the detail data from LCD display.

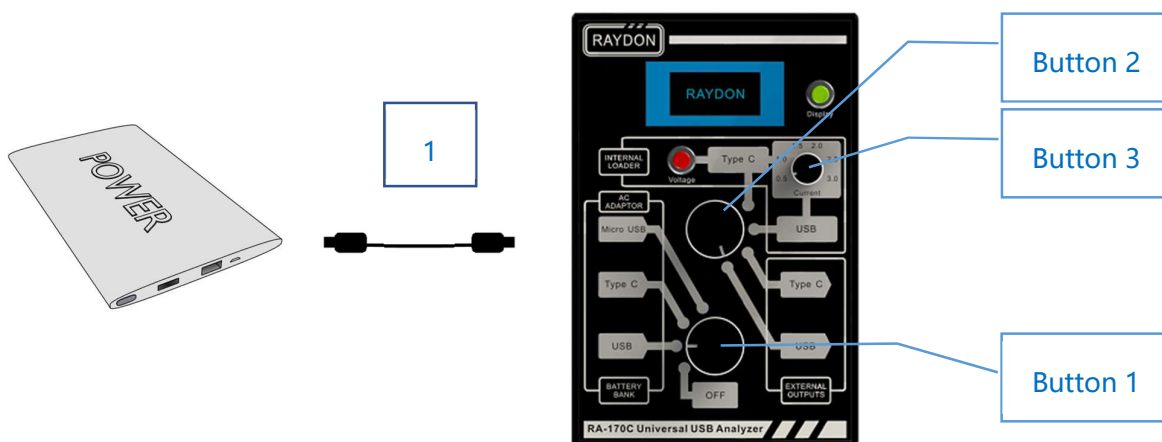
4.1 Power bank:

4.1.1 Power bank charging



- Step 1: Connect your adapter/charger to RA-170 according cable's port (USB, or Type C). In this example, we assume it's Type C.
- Step 2: Connect power bank to RA-170 by adapter's port, which is Type C in this example.
- Step 3: Rotate the button 1 to "Type C" port.
- Step 4: Rotate the button 2 to "EXTERNAL OUTPUTS" - "Type C" port.
-

4.1.2 Power bank Discharge and capacity detective

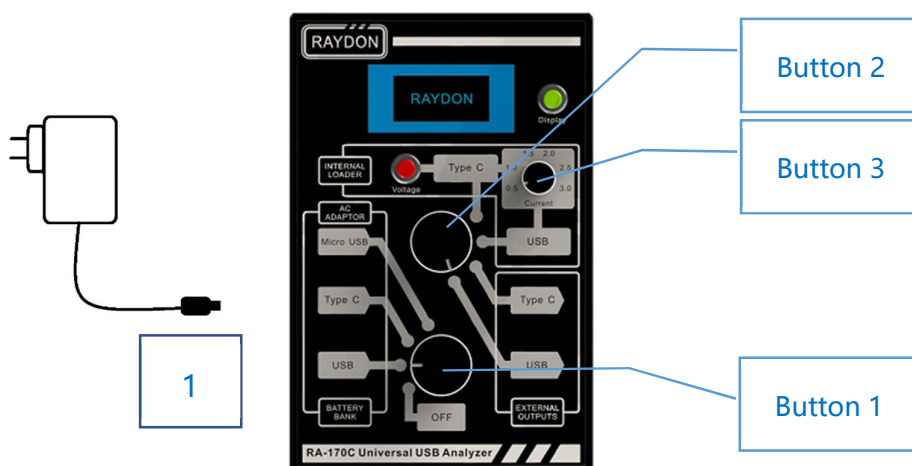




- Step 1: Connect power bank to RA-170 according cable's port (USB, or Type C). In this example, we assume it's Type C.
- Step 2: Rotate the button 1 to "Type C" port.
- Step 3: Rotate the button 2 to "INTERNAL LOADER"- "Type C" port.
- Step 4: Rotate the button 3 and press button "Voltage" to select the current and voltage by your power bank's output specification.

4.2 Charger/Adapter:

4.2.1 Charger/Adapter charging feature

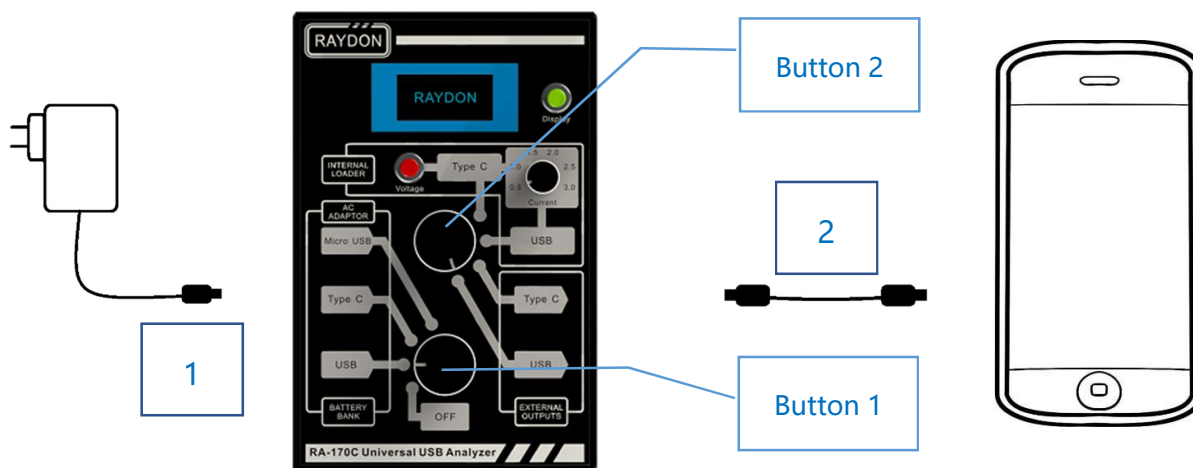


- Step 1: Connect your charger/adapter to RA-170 according cable's port (USB, or Type C). In this example, we assume it's Type C.
- Step 2: Rotate the button 1 to "Type C" port.
- Step 3: Rotate the button 2 to "INTERNAL LOADER"- "Type C" port.
- Step 4: Rotate the button 3 and press button "Voltage" to select the current and voltage by your charger/adapter's output specification.



4.3 Device

4.3.1 Device charging feature



- Step 1: Connect your adapter/charger to RA-170 according cable's port (USB, or Type C). In this example, we assume it's Type C.
- Step 2: Connect power bank to RA-170 by adapter's port, which is Type C in this example.
- Step 3: Rotate the button 1 to "Type C" port.
- Step 4: Rotate the button 2 to "EXTERNAL OUTPUTS"-"Type C" port.

4.4 Cables

4.4.1 Cables test feature

* Please check power bank operations.



5 Specification

Voltage Range	3.70-25.00V
Voltage Resolution	0.01V
Voltage Accuracy	$\pm (0.8\%+0.01)$ V
Current Range	0-3.000A
Current Resolution	0.001A
Current Accuracy	$\pm (1\%+0.004)$ A
Capacity Range	0-99999mAh
Energy Range	0-99999mWh-999.99Wh
Power Range	0-75W
Load impedance Range	1 Ω -9999.9 Ω
Temperature Range	0°C~80°C/32°F~176°F
Temperature Accuracy	$\pm 3^{\circ}\text{C}/\pm 6^{\circ}\text{F}$
Temperature normal limit	0-45°C/32°F~113°F
Fast charging recognition mode	QC1.0, QC2.0, QC3.0, QC4.0, SCP, FCP, MTP Pump Express, APPLE, Android DCP, SAMSUNG, USB-PD, VOOC
Charging input	5V/0-3A



6 Accessories

1	USB cable	
2	Type C cable	



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