AVHzY CC1

AVHzY CC1 Type-C USB Power Meter User Manual

1. Introduction

The AVHzY CC1 is a compact and high-precision Type-C USB power meter designed to measure voltage, current, and power in USB-C connections. It supports advanced protocols like PD3.1, USB4, and Thunderbolt 4, making it suitable for a wide range of modern devices. This manual provides detailed instructions for its setup, operation, and maintenance.

2. Product Overview

The AVHzY CC1 features a 0.96-inch color IPS LCD screen for clear display of measurement data. It incorporates a 16-bit INA226 independent ADC chip for high accuracy and a 0.003R sampling resistor to minimize interference. The device is designed for direct pass-through operation with 24P USB-C male/female connectors.

Figure 1: AVHzY CC1 Type-C USB Power Meter displaying real-time measurements.

Figure 2: Detailed view of the AVHzY CC1 device.

3. Setup

The AVHzY CC1 is a plug-and-play device. No drivers are required for basic operation. To use the meter:

1. Connect the male USB-C end of the AVHzY CC1 to the power source (e.g., charger, power bank, computer USB-C port).
2. Connect your device (e.g., smartphone, laptop, tablet) to the female USB-C port of the AVHzY CC1 using a compatible USB-C cable.
3. The meter will automatically power on and begin displaying real-time voltage, current, and power readings.

4. Operating Instructions

The AVHzY CC1 features two control buttons, K- and K+, for navigating menus and adjusting settings. The device offers multiple display interfaces to show various data points.

Button Functions:

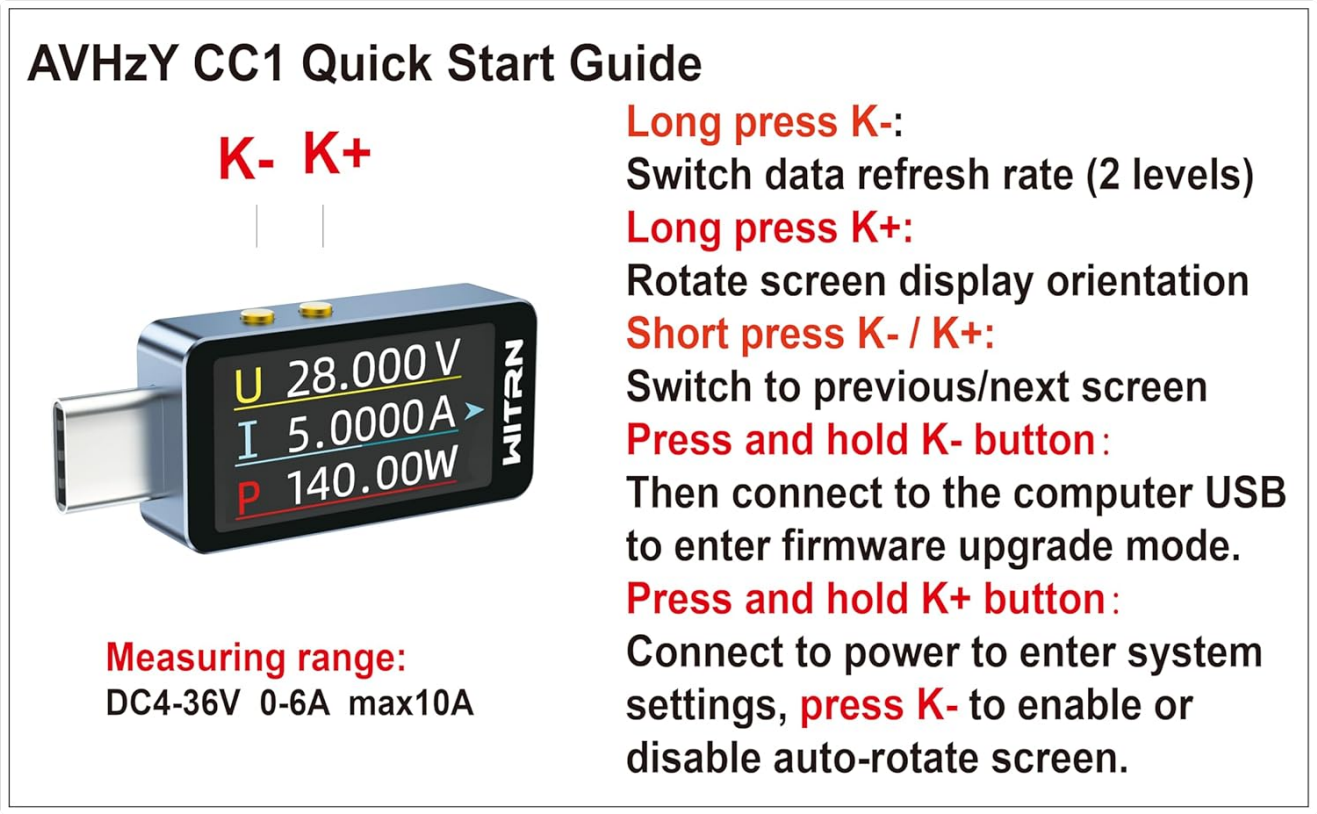

Figure 3: Quick Start Guide for button operations.

- **Short press K- / K+:** Switch between previous/next display screens (P1, P2, P3, P4).
- **Long press K-:** Switch data refresh rate (2 levels).
- **Long press K+:** Rotate screen display orientation.
- **Press and hold K- button, then connect to computer USB:** Enter firmware upgrade mode.
- **Press and hold K+ button, then connect to power:** Enter system settings. Press K- to enable or disable auto-rotate screen within settings.

Display Interfaces:

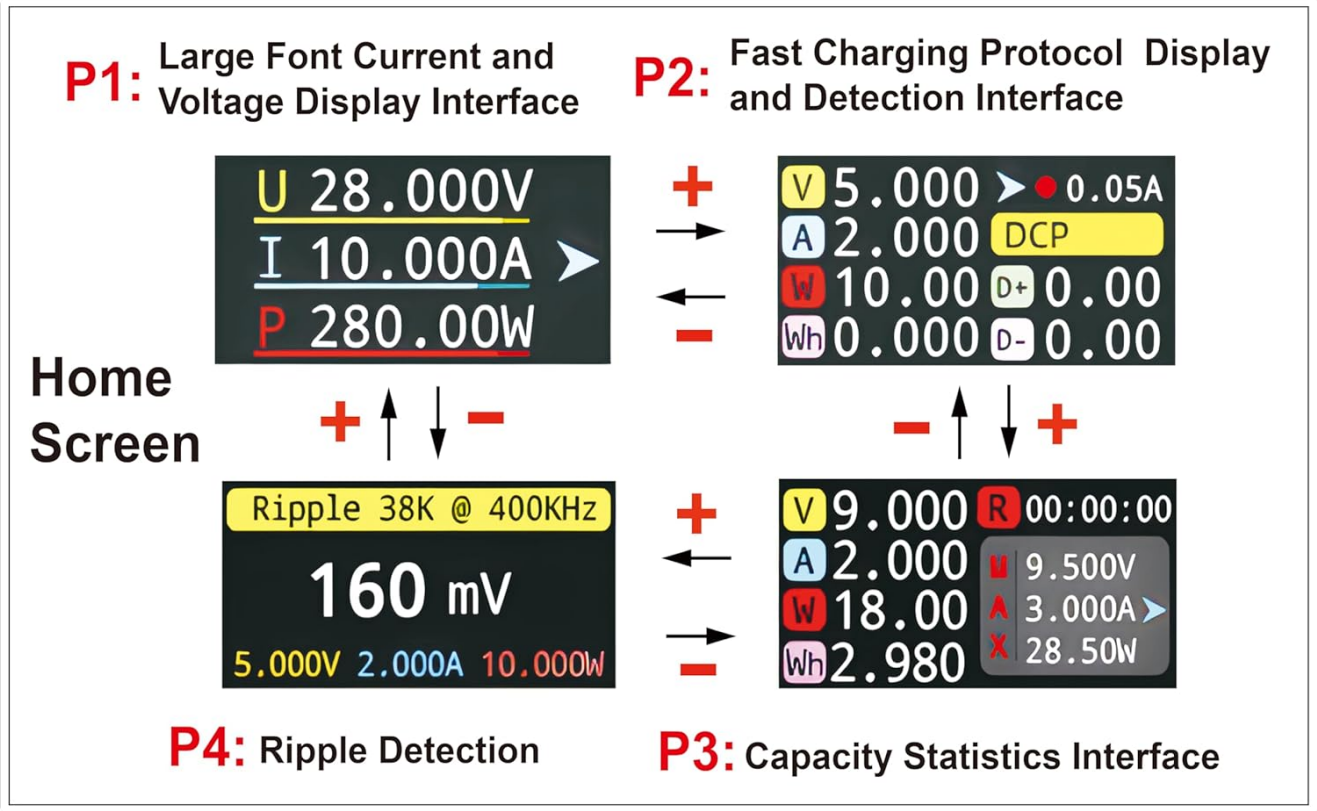

Figure 4: Overview of the four main display interfaces.

- **P1: Large Font Current and Voltage Display Interface (Home Screen)**
  Shows primary voltage (U), current (I), and power (P) in large, easy-to-read fonts.
- **P2: Fast Charging Protocol Display and Detection Interface**
  Displays detailed voltage, current, power, and D+/D- line voltages, useful for identifying fast charging protocols.
- **P3: Capacity Statistics Interface**
  Records and displays accumulated capacity (Ah) and energy (Wh) over time. Also shows maximum (MAX) and average (AVG) values for voltage, current, and power.
- **P4: Ripple Detection**
  Displays the ripple voltage in mV, along with current voltage, current, and power.

Advanced Button Operations (within specific screens):

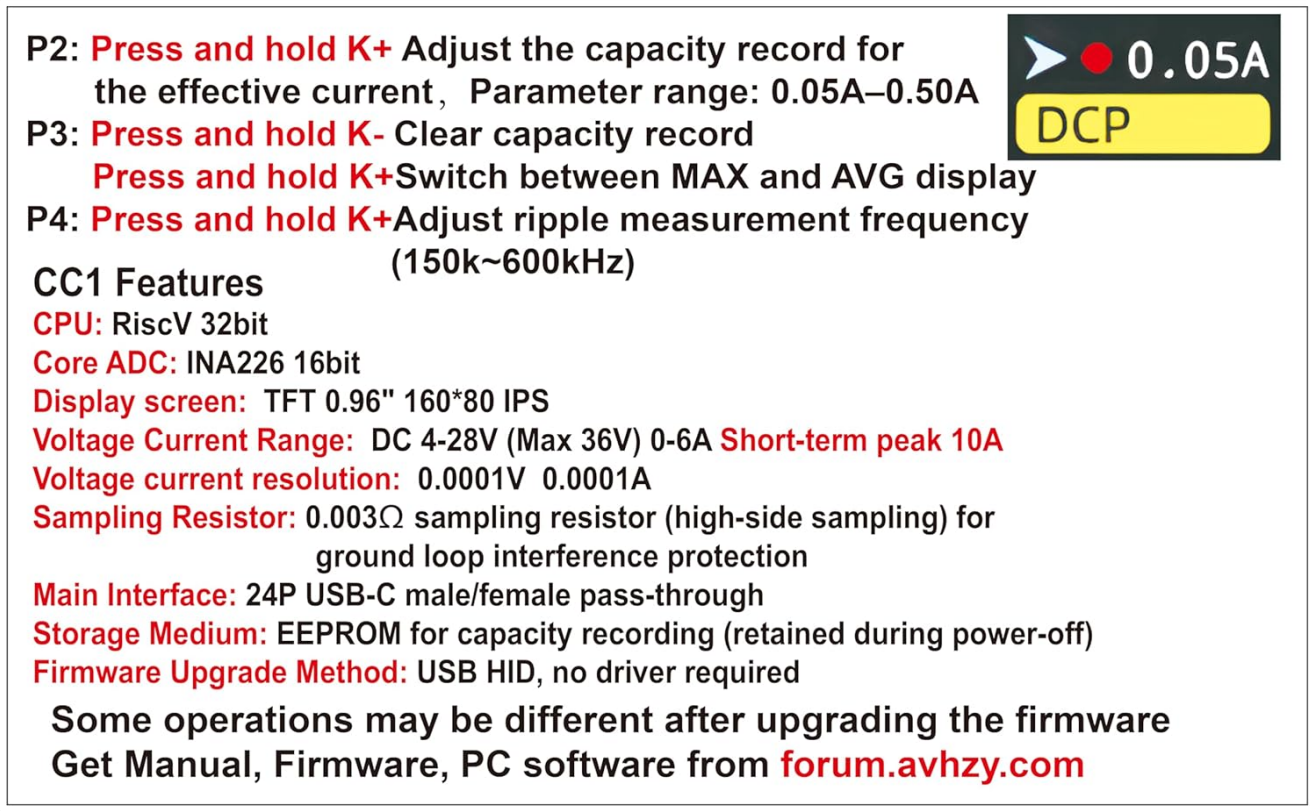

Figure 5: Advanced button operations and features summary.

- **On P2 screen, press and hold K+:** Adjust the effective current threshold for capacity recording. Parameter range: 0.05A–0.50A.
- **On P3 screen, press and hold K-:** Clear the recorded capacity data.
- **On P3 screen, press and hold K+:** Switch between MAX and AVG display for voltage, current, and power.
- **On P4 screen, press and hold K+:** Adjust ripple measurement frequency (150kHz–600kHz).

5. Features

- **Wide Measurement Range:** Measures DC voltage from 4V to 28V (max 36V) and current from 0A to 6A (10A short-term peak).
- **High Resolution:** Voltage and current resolution of 0.0001V and 0.0001A for precise readings.
- **Bidirectional Detection:** Supports current flow in both directions.
- **Capacity and Energy Recording:** Records capacity up to 9999Ah and energy up to 9999Wh.
- **Offline Storage:** EEPROM for capacity recording ensures data is retained even after power-off.
- **High-Precision ADC:** Utilizes INA226 16-bit independent ADC chip with a 0.003R sampling resistor for accurate measurements and common grounding interference avoidance.
- **Advanced Protocol Support:** 24P USB-C pass-through supports PD3.1, USB4, and Thunderbolt 4 charging and data transfer.
- **High Transmission Speed:** Capable of supporting data transfer speeds up to 40Gbps, with actual tests reaching 2000M+ with compatible coaxial cables and SSD boxes.
- **Firmware Updatable:** Firmware can be updated via USB HID without requiring specific drivers.
- **Compact Design:** External dimensions of 31.8×16.1×8.1mm (without USB-C connector) for portability.

6. Specifications

Manufacturer	AVHzY
Model Number	CC1
Measuring Voltage Range	DC 4V ~ 28V (Max 36V)
Measuring Current Range	0A ~ 6A (10A short-term peak)
Voltage Resolution	0.0001V
Current Resolution	0.0001A
Capacity Recording	0 ~ 9999Ah
Energy Recording	0 ~ 9999Wh
Display	0.96 inch color IPS LCD, 80x160 resolution
ADC Core	INA226 16-bit independent ADC chip
Sampling Resistor	0.003Ω (high-side sampling)
Main Interface	24P USB-C male/female direct passage
Storage Medium	EEPROM (power-off memory)
Firmware Update	USB HID driver-free
External Dimensions	31.8 × 16.1 × 8.1 mm (without USB-C connector)
Supported Protocols	PD3.1, USB4, Thunderbolt 4
Max Data Transmission Speed	40Gbps
Item Weight	40 g
Colour	Grey
UPC	735209487122

7. Firmware Update

The AVHzY CC1 firmware can be updated to enhance functionality or fix issues. Follow these steps:

1. Download the latest firmware and PC software from the official AVHzY forum: forum.avhzy.com.
2. Ensure the AVHzY CC1 is disconnected from any power source.
3. Press and hold the **K-** button on the device.
4. While holding the **K-** button, connect the AVHzY CC1 to your computer's USB port. The device should enter firmware upgrade mode.
5. Follow the instructions provided by the PC software to complete the firmware update.

Note: Some operations or display interfaces may change after a firmware upgrade. Refer to the latest documentation on the AVHzY forum for updated information.

8. Care and Maintenance

- Keep the device dry. Moisture can damage electronic components.
- Avoid extreme temperatures. Do not expose to direct sunlight or very cold environments.
- Handle with care. Do not drop or subject the device to strong impacts.
- Clean the screen and body with a soft, dry cloth. Do not use harsh chemicals or abrasive cleaners.
- Ensure USB-C connectors are free from dust and debris before connecting.

9. Troubleshooting

- **Device does not power on:** Ensure it is correctly connected in-line between a powered source and a device drawing power. Check if the power source is active.
- **No readings displayed:** Verify both ends of the meter are securely connected. Ensure the connected device is actively drawing power.
- **Inaccurate readings:** Ensure the connections are stable. High-quality cables are recommended. If issues persist, consider updating the firmware.
- **Screen orientation is incorrect:** Long press the K+ button to rotate the screen. Alternatively, enter system settings (press and hold K+ then connect to power) and use K- to toggle auto-rotate.
- **Cannot enter firmware upgrade mode:** Ensure the K- button is held down before connecting to the computer's USB port.

10. Support and Resources

For further assistance, updated manuals, firmware, or PC software, please visit the official AVHzY forum:

forum.avhzy.com