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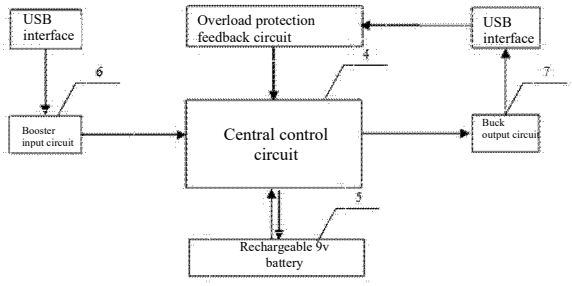
1 page of Claims
1 page of Specification
1 page of Attached Drawings

(54) Title of Utility Model

RECHARGEABLE DIGITAL MULTIMETER

(57) Abstract

A rechargeable digital multimeter, mainly comprising a mini-USB interface, a USB 2.0 interface, an overload protection feedback circuit, a central control circuit, a rechargeable 9V battery, an input booster circuit, and a buck output circuit. By combining a regular digital multimeter with a USB power supply, booster circuit, and buck circuit, it achieves the function of providing external power and being able to charge with a USB power supply. The present utility model has comprehensive functions, wide applications, reasonable structure, safety, and convenience, and is equipped with a charging function.



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1. A rechargeable digital multimeter, mainly comprising a USB interface (1), a USB 2.0 interface (2), an overload protection feedback circuit (3), a central control circuit (4), a rechargeable 9V battery (5), an input booster circuit (6), and a buck output circuit (7), characterized in that: the USB interface (1) connects to the input booster circuit (6), the input booster circuit (6) connects to the central control circuit (4), the overload protection feedback circuit (3) connects to the central control circuit (4), the USB 2.0 interface (2) connects to the overload protection feedback circuit (3), the central control circuit (4) connects to buck output circuit (7), and the rechargeable 9V battery (5) connects to the central control circuit (4).

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RECHARGEABLE DIGITAL MULTIMETER

[0001] Technical field This utility model relates to a daily use product, specifically a digital multimeter.

[0002] Prior art With the popularization of digital multimeters, some of their own problems have also emerged. Firstly, a digital multimeter typically uses a 9V stacked battery. This type of battery is usually disposable and will cause certain pollution to the environment after it is used. Additionally, when measuring digital circuits with it, an independent 5V power supply is often needed to power the digital circuit, which requires multiple devices and is inconvenient in operation. By combining a regular digital multimeter with a USB power supply, booster circuit, and buck circuit, the function of external power supply USB power charging is achieved.

[0003] Summary of the Utility Model The objective of this utility model is to provide a digital multimeter that can be powered externally and can charge a multi-purpose electric meter with a USB power supply.

[0004] The present utility model mainly comprises a Mini-USB interface, a USB 2.0 interface, an overload protection feedback circuit, a central control circuit, a rechargeable 9V battery, an input booster circuit, and a buck output circuit.

[0005] In use, the booster circuit raises the 5V DC generated by the USB power supply to approximately 9.3V that can charge the 9V battery. The buck circuit is designed to convert the 9V power supply within the multimeter into 5V DC usable by digital circuits. The central control circuit is responsible for coordinating the operation of each part. The overload protection portion will instruct the central control circuit to disconnect the connection between the circuit and the rechargeable battery in case of accidental short circuit. At the same time, a buzzer will emit three short beeps and the power supply will automatically shut off. To restart and use again, the power button is pressed and held for three seconds.

[0006] Compared with existing technologies, the beneficial effects of the present utility model are: comprehensive functions, wide applications, reasonable structure, safety and convenience, and a charging function.

[0007] Brief Description of Attached Drawings Figure 1 is a block diagram of the circuit structure of the present utility model;

[0008] Figure 2 is an appearance design diagram of the present utility model;

[0009] Specific Embodiments As in the schematic three-dimensional structure diagram shown in Figure 1, it mainly comprises a USB interface 1, a USB 2.0 interface 2, an overload protection feedback circuit 3, a central control circuit 4, a rechargeable 9V battery 5, an input booster circuit 6, and a buck output circuit 7. The USB interface 1 connects to the input booster circuit 6, the input booster circuit 6 connects to the central control circuit 4, the overload protection feedback circuit 3 connects to the central control circuit 4, the USB 2.0 interface 2 connects to the overload protection feedback circuit 3, the central control circuit 4 connects to the buck output circuit 7, and the rechargeable 9V battery 5 connects to the central control circuit 4.

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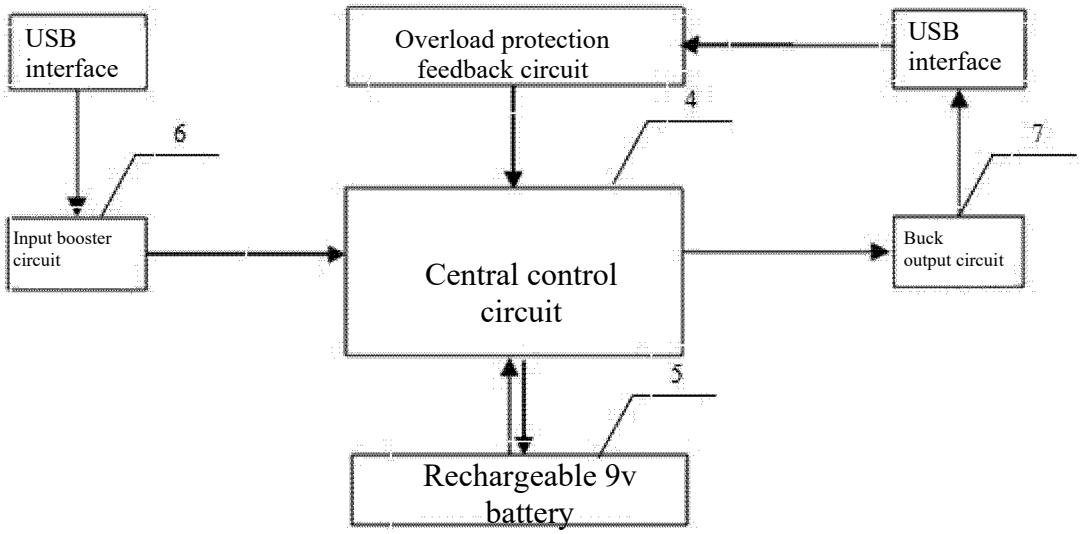

Figure 1

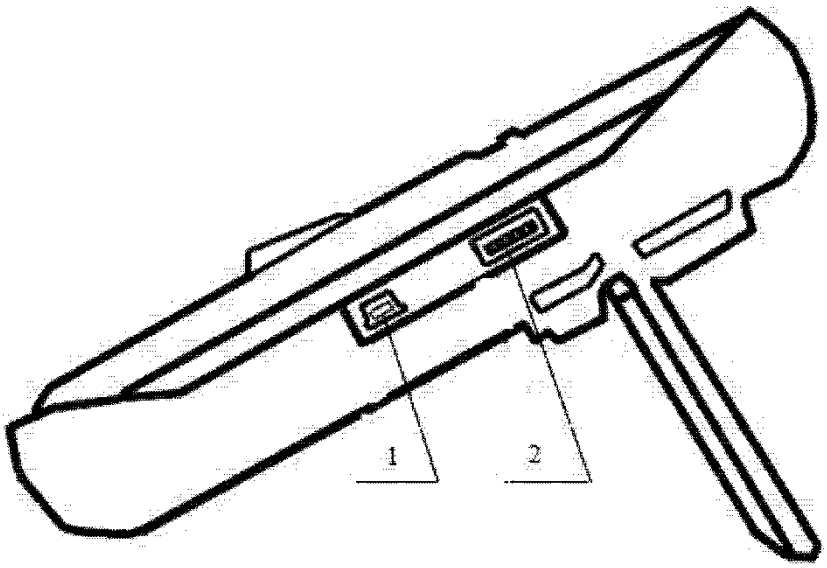

Figure 2

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CERTIFICATE OF TRANSLATION ACCURACY

I, Joseph Schwartzman, declare:

1. I am a Translator at Transperfect Translations, Inc. and I specialize in translating Chinese to English.

2. I have a BA in Chinese from Vassar College and have been working as a linguist since 2012.

3. I submit this declaration to certify the accuracy of the English translation of the Chinese Utility Model Patent No. CN 202512152 U under 37 C.F.R. § 1.68.

4. My statements are based on personal knowledge of my review of the Chinese Utility Model Patent No. CN 202512152 U and its Chinese-to-English translation. If called as a witness about the facts contained in these statements, I could testify competently based on such personal knowledge and the investigation I have conducted.

5. All statements made herein of my own knowledge are true, and all statements made on information and belief are believed to be true. Further, I am aware that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. § 1001. I declare under penalty of perjury that to the best of my knowledge, the foregoing is true and correct.

6. I also understand that by submitting this declaration I may be asked to appear for a deposition asking me questions limited to the material in my declaration. With my signature below, I agree to make reasonable efforts to make myself available for such a deposition at a reasonable place in the United States and time of my choosing.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge. Executed this 1st day of February 2024 in the Kings County of the State of New York.

Joseph Schwartzman

Sworn to before me this
February 1, 2024

Signature, Notary Public

Regina J. Brooks
Notary Public State of New York
No. 01BR6110377 Kings County
Commission Expires 06/23/2026

Stamp, Notary Public