DC Main/Backup Power Automatic Switch User Manual

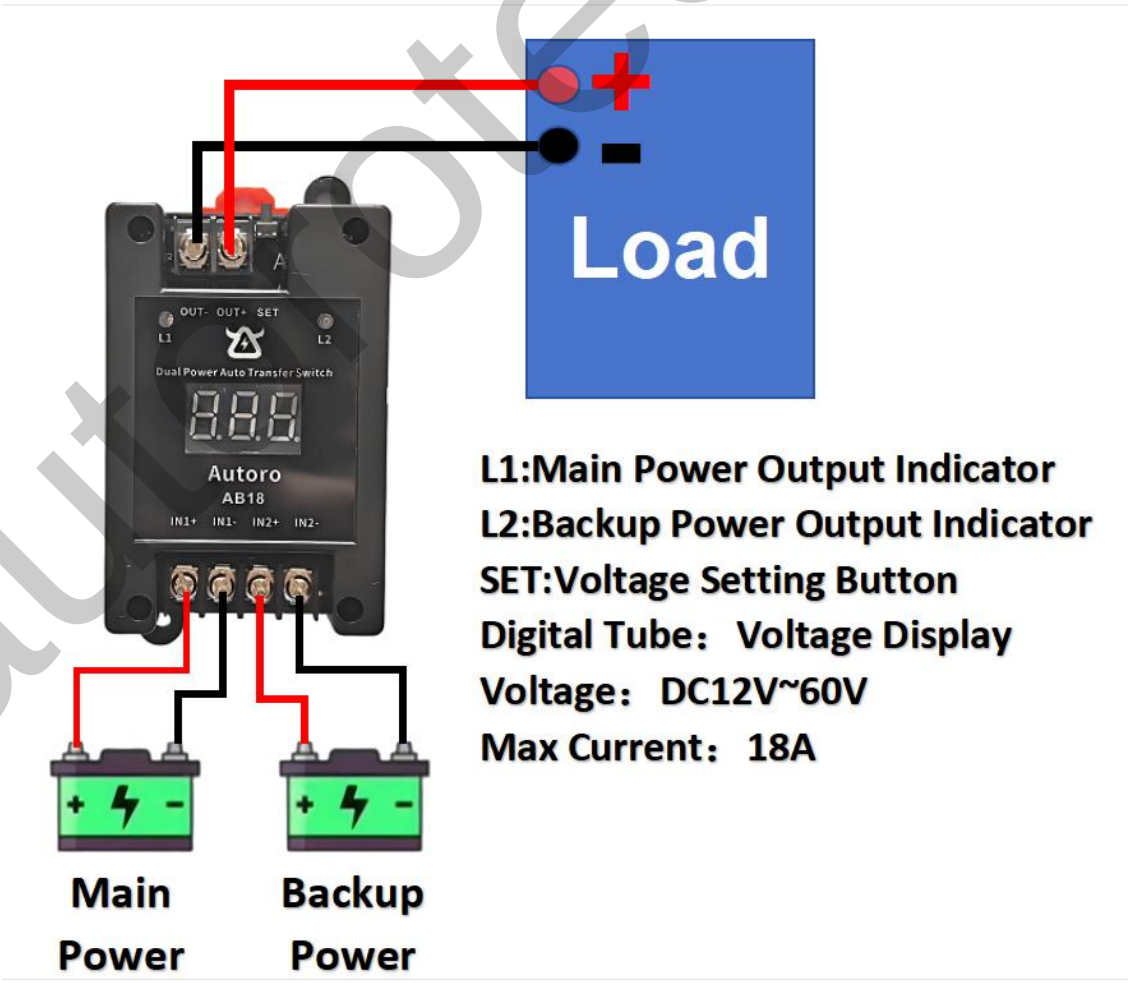
Model # AB18

The AB18 is a DC main/backup power automatic switch. It is specifically designed for DC power supply systems requiring backup power, allowing flexible setting of the cut-off and restoration voltages to achieve seamless switching between the main and backup power sources, providing uninterrupted DC power protection for critical loads. The product is widely used in fields with stringent requirements for DC power continuity, such as communication base stations, industrial automation control, security monitoring systems, and energy storage facilities.

Product Features

- **Flexible Settings**: The cut-off and restoration voltages for the main power can be customized via a button to adapt to different application scenarios.
- **Fast Switching**: Extremely low delay during switching between main and backup power.
- **Battery Protection**: Only one input path is conducted at any given time, preventing two batteries from discharging into each other.
- **Wide Voltage Input**: Supports 12V to 60V DC input.
- **High Current Output**: Maximum continuous output current of 18A.
- **Convenient Wiring**: All interfaces use terminal blocks for easy installation.

Wiring Diagram



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Interface Description

Interface Type	Label	Description
Power Input	IN1+	Main Power Positive (+)
	IN1-	Main Power Negative (-)
	IN2+	Backup Power Positive (+)
	IN2-	Backup Power Negative (-)
Power Output	OUT+	Load Device Positive (+)
	OUT-	Load Device Negative (-)
Indicator	L1	Main Power Output / Cut-off Voltage Setting Indicator
	L2	Backup Power Output / Restoration Voltage Setting Indicator
Digital Tube	Centered	Displays current power voltage / set voltage value (Unit: V)
Setting Button	SET	Used for setting cut-off voltage / restoration voltage parameters

Automatic Switching Logic

Main Power → Backup Power:
Automatically switches to backup power supply when the main power voltage falls below the set cut-off voltage **AND** the main power voltage is lower than the backup power voltage.
Backup Power → Main Power:
Automatically switches back to main power supply when the main power voltage rises above the set restoration voltage **OR** the main power voltage is higher than the backup power voltage by 1V.





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Voltage Parameter Setting Instructions

Before initial use, it is essential to reasonably set the cut-off and restoration voltages according to the load's operating voltage range and current. The higher the load operating current, the higher the cut-off and restoration voltages should be set.

1. Cut-off Voltage Setting

The cut-off voltage should be set higher than the load's minimum normal operating voltage. This ensures the device switches to the backup power source promptly when the main power voltage drops, preventing abnormal shutdown or unstable operation of the load.

- **Low Current Example**: If the load operating voltage range is 12V–24V with a working current of 1A, the cut-off voltage can be set above 12.5V.
- **High Current Example**: If the load operating voltage range is 12V–24V with a working current of 10A, it is recommended to set the cut-off voltage above 14V to meet the demands of stable switching under higher current.

2. Restoration Voltage Setting

The restoration voltage must be set higher than the configured cut-off voltage. This ensures the device switches back to main power supply only after the main power voltage has recovered to a sufficiently high and safe range, thereby avoiding frequent switching near the cut-off voltage point.

- **Low Current Example**: If the cut-off voltage is set to 12.5V, it is recommended to set the restoration voltage above 12.8V.
- **High Current Example**: If the cut-off voltage is set to 14V, to maintain sufficient hysteresis and prevent frequent switching, it is recommended to set the restoration voltage above 16V.

Note:

Always refer to the load device's technical specifications and allow for a reasonable margin when setting voltages. Improper settings may cause abnormal load operation or frequent power switching.

Button Operation Instructions



Button Function Definition

•**Short Press**: In voltage setting mode, cycles through changing the value (0–9) of the **currently blinking** digit on the digital display.

•**Long Press (approx. 1 second)**:

- In normal operating state**: Enters** voltage setting mode.

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- In voltage setting mode**: Confirms** the current setting digit and **switches to** the next setting position (e.g., the next digit or the next voltage parameter).

Voltage Setting Operation Procedure

Step 1: Enter Setting Mode

During normal device operation, **long press the SET button** to enter voltage setting mode.

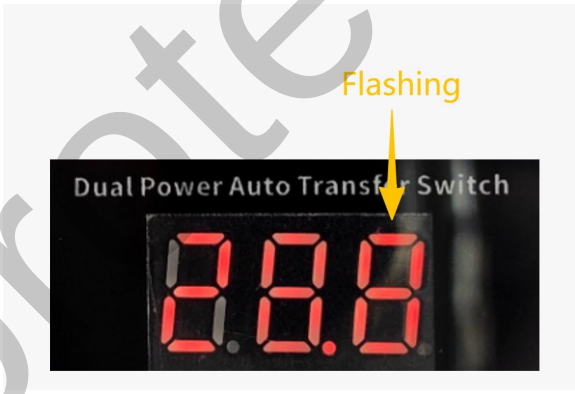
Visual Cue: The **L1** indicator lights up, indicating the start of **cut-off voltage** setting. The rightmost digit on the digital display starts blinking.



Step 2: Set Cut-off Voltage

You will now set the ones, tens, and hundreds digits of the cut-off voltage in sequence.

• **Set Ones Digit**: The rightmost (ones) digit is blinking. **Short press the SET button** to adjust its value (0-9).



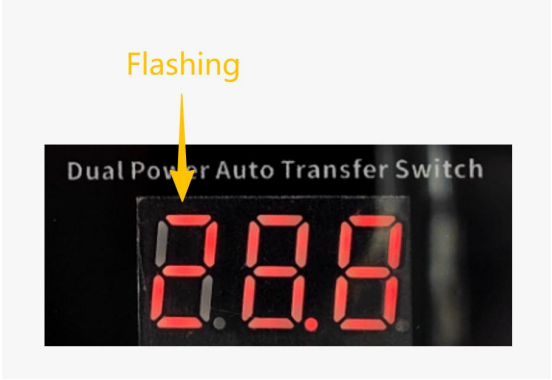
• **Switch to Tens Digit**: After confirming the ones digit value, **long press the SET button**. The blinking position will **shift left** to the middle (tens) digit.



• **Set Tes Digit**: **Short press the SET button** to adjust the value of the middle (tens) digit.

• **Switch to & Set Hundreds Digit**: **Long press the SET button** again. The blinking position shifts left to the leftmost (hundreds) digit. **Short press the SET button** to adjust its value.

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• **Complete Cut-off Voltage Setting**: After setting the hundreds digit value, **long press the SET button** again to proceed to the next setting item.

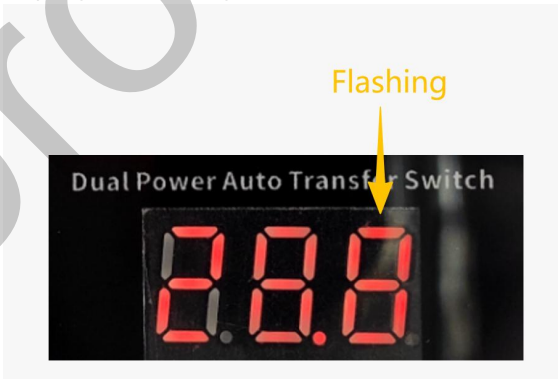
Step 3: Set Restoration Voltage

After completing the cut-off voltage setting and a long press, the device automatically enters restoration voltage setting.

Visual Cue: The **L1** indicator turns off, and the **L2** indicator lights up, indicating the start of **restoration voltage** setting. Similarly, the rightmost (ones) digit starts blinking.



• **Set Ones Digit**: The rightmost (ones) digit is blinking. **Short press the SET button** to adjust its value (0-9).

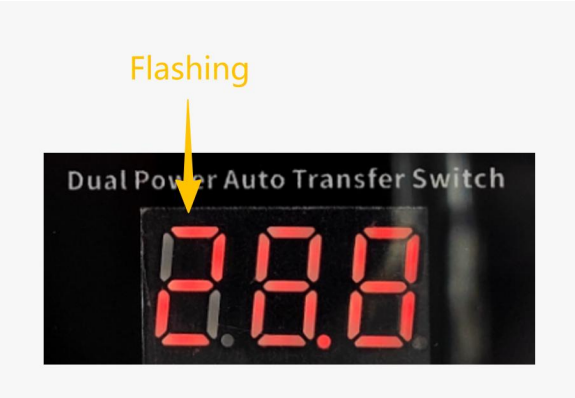


• **Switch to Tens Digit**: After confirming the ones digit value, **long press the SET button**. The blinking position will **shift left** to the middle (tens) digit.



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• **Set Tens Digit**: **Short press the SET button** to adjust the value of the middle (tens) digit.
• **Switch to & Set Hundreds Digit**: **Long press the SET button** again. The blinking position shifts left to the leftmost (hundreds) digit. **Short press the SET button** to adjust its value.



• **Complete Restoration Voltage Setting.**

Step 4: Save and Exit

You can complete the settings and exit using either of the following methods:

• **Method 1 (Manual Save)**: After setting the highest (hundreds) digit of the restoration voltage, **long press the SET button**. The device will **save all settings**, automatically exit setting mode, and return to normal operation.

•**Method 2 (Auto Save)**: If there is **no button operation for over 10 seconds** during the voltage setting process, the device will **automatically save the current settings**, exit setting mode, and return to normal operation.

Typical Applications

This product is suitable for various systems with stringent requirements for DC power continuity and equipped with backup batteries, for example:

• **Communication Systems**: Power backup for outdoor communication base stations, optical transceivers, routers, etc.
• **Security & Surveillance**: Uninterrupted power supply for outdoor cameras, access control controllers, alarm systems.
• **Industrial Control**: Power redundancy for PLC controllers, data acquisition modules, sensor networks.
• **Energy Storage & Backup Systems**: Battery switching management for small-scale energy storage units, solar power systems.

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