DC Dual Power Automatic Transfer Switch User Manual

Model # AB19

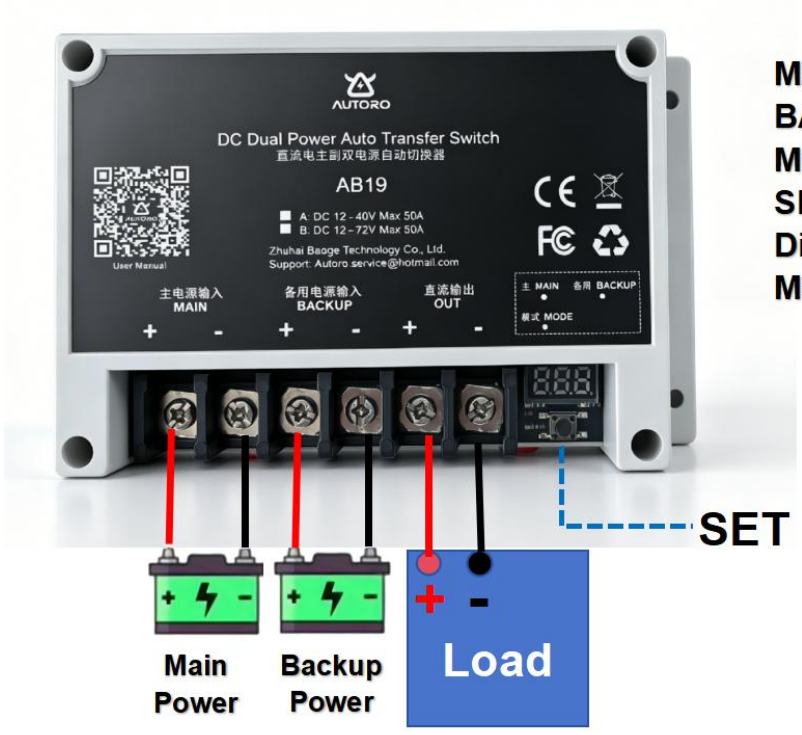
The AB19 is a high-speed dual-power automatic transfer module designed for DC power supply systems requiring backup power support. When the main power source is lost or its voltage becomes abnormal, the module automatically switches to the backup power source within <10ms, minimizing output interruption and ensuring continuous operation of downstream equipment.

1. Product Features

- **Dual Mode Selectable:** Switch between Default Mode and Custom Mode with a single press of the SET button.
- **Adjustable Thresholds:** In Custom Mode, the switchover voltage and recovery voltage can be freely set, with non-volatile memory.
- **Battery Protection**: Only one input path is conducted at any given time, preventing two batteries from discharging into each other.
- **Fast Switching:** Main/backup power switching delay < 10ms.
- **Battery Protection:** Only one input path is active at any time, preventing two batteries from discharging into each other.
- **Wide Voltage Input:** Available in 12–40V and 12–72V specifications.
- **High Current Output:** Maximum output current up to 50A.
- **Convenient Wiring:** Screw terminal connections – no soldering required.
- **Status Indication:** Main/backup power LED indicators.
- **Voltage Display:** Built-in digital display shows real-time output voltage.

2. Wiring and Interface Description

2.1 Wiring Diagram



MAIN:Main Power Output Indicator
BACKUP:Backup Power Output Indicator
MODE:Mode Indicator
SET:Voltage Setting Button
Digital Tube：Voltage Display
Max Current：50A

2.2 Interface Description

Interface Type	Label	Description
Power Input	MAIN+	Main Power Positive (+)
	MAIN-	Main Power Negative (-)
	BACKUP+	Backup Power Positive (+)
	BACKUP-	Backup Power Negative (-)
Power Output	OUT+	Load Device Positive (+)
	OUT-	Load Device Negative (-)
Display	Digital Tube	Displays current power voltage / set voltage value (Unit: V)
Control	SET	For mode switching, switchover voltage / recovery voltage parameter setting

2.3 Indicator Light Description

Indicator	Label	Color	Normal operation	Setup mode
Main power	MAIN	Red	On: power is supplied from the main source	On: setting switch voltage
Backup power	BACKUP	Blue	On: power is supplied from the backup source	On: setting restore voltage
Mode	MODE	Green	Off: default mode On: custom mode	

3. Operating Modes

The module provides two operating modes. Users can switch between them by short-pressing the **SET** button. The mode indicator is off in **Default Mode** and on in **Custom Mode**.

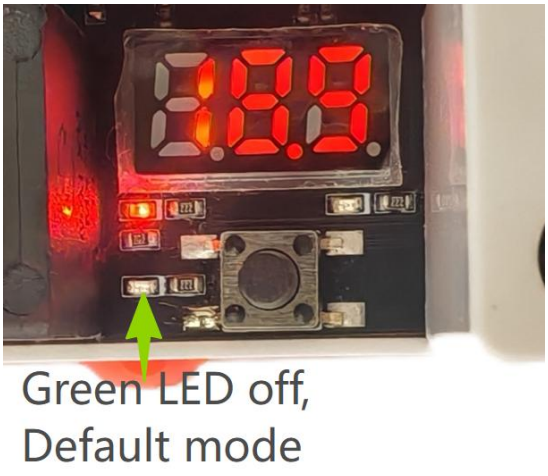
Mode Switching:

• Short press the **SET** button to switch between Default mode and Custom mode.

Special Note:

Regardless of the current operating mode (Default or Custom), if the backup voltage drops below 10.8V, the module will forcibly lock to the main power supply and will NOT switch to the backup source.

3.1 Mode 1: Default Mode



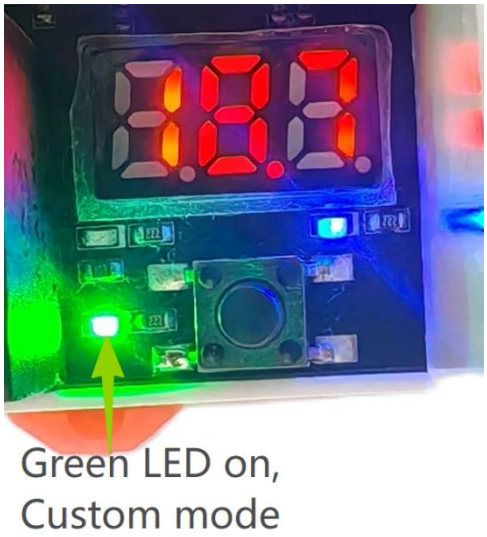
Feature: Ready to use out of the box – no settings required

Operating Logic:

• When main power is normal, the load is always powered by the main source
• When main power is interrupted or drops below 10V, the module automatically switches to backup power
• When main power is restored, it automatically switches back to the main path

Application Scenarios: Most standard applications – plug and play

3.2 Mode 2: Custom Mode



Feature: Users can set the switchover voltage and recovery voltage via the **SET** button, with non-volatile memory

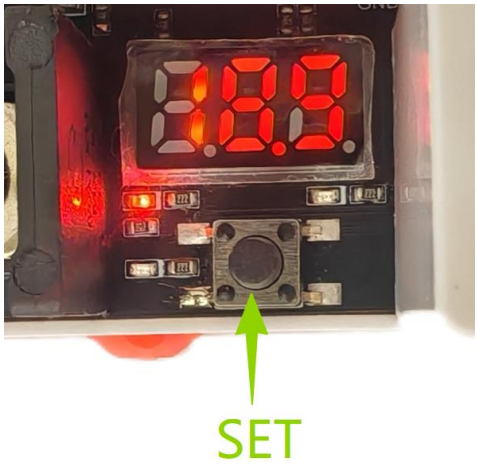
Operating Logic:

• **Main → Backup:** When the main voltage drops below the set switchover voltage AND the main voltage is lower than the backup voltage, the module switches to backup power
• **Backup → Main:** When the main voltage rises above the set recovery voltage, OR the main voltage is 1V higher than the backup voltage, the module switches back to main power

Application Scenarios: Systems requiring precise switchover point control, or applications using different battery types

4. Button Operation Instructions

The module has only one **SET** button, with different functions depending on the state:



4.1 Normal Operation State

Short press: Switch operating mode (Default Mode ↔ Custom Mode)
Long press (approx. 1 second): Enter voltage setting mode

4.2 Voltage Setting State

After entering setting mode, the digital display shows the current setting value, with one digit flashing.
Short press: The flashing digit cycles through values (0 → 1 → ... → 9 → 0)
Long press (approx. 1 second): Confirm the current digit and move to the next digit (ones → tens → hundreds)

After setting the hundreds digit of the switchover voltage, long-press again to move to the next setting item (switchover voltage → recovery voltage). After setting the hundreds digit of the recovery voltage, long-press again to save and exit.

5. Voltage Parameter Setting Instructions(Custom mode)

Before first use, please properly set the switchover voltage and recovery voltage according to the load's operating voltage range and current. T**he higher the load current, the higher the switchover and recovery 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.

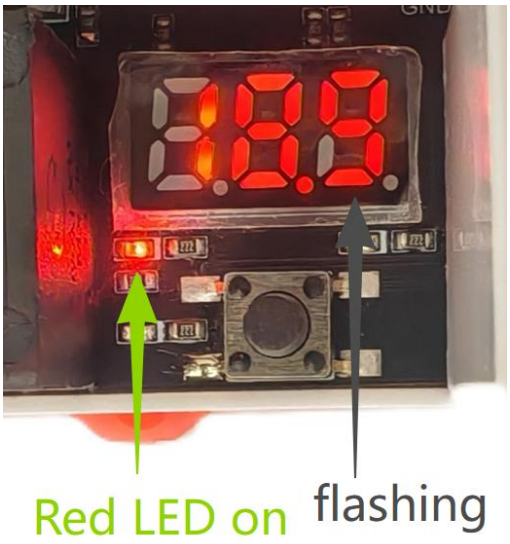
2. Restoration Voltage Setting
The restoration voltage must be set higher than the configured cut-off voltage. This ensures the device switches back to main power supply only after the main power voltage has recovered to a sufficiently high and safe range, thereby avoiding frequent switching near the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

6. Voltage Setting Operation Procedure

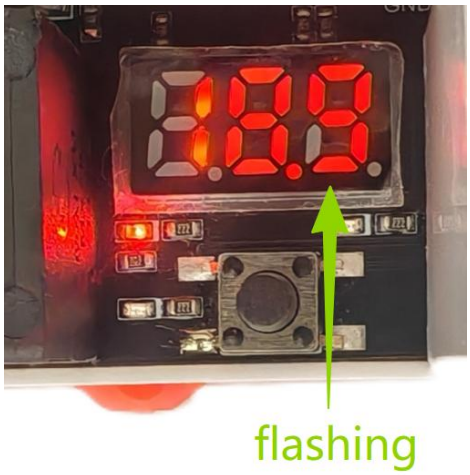
Step 1: Enter Setting Mode
During normal device operation, **long press the SET button** to enter voltage setting mode.
Visual Cue: The main power indicator (RED) turns on, indicating switchover voltage setting is active. The rightmost digit on the display starts flashing.



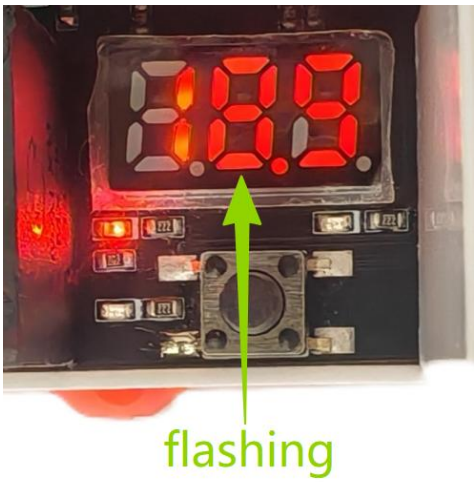
Step 2: Set Cut-off Voltage

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

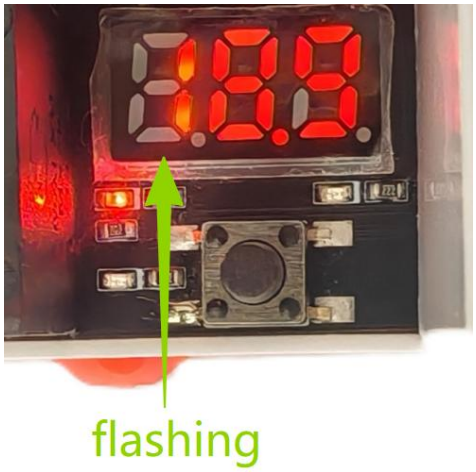
- **Set Ones Digit**: The rightmost (ones) digit is blinking. **Short press the SET button** to adjust its value (0-9).



- **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.



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

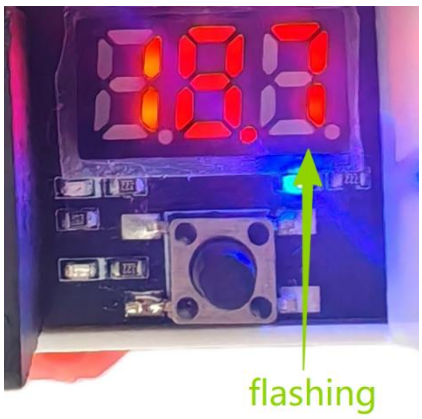
Step 3: Set Restoration Voltage

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

Visual Cue: The main power indicator (RED) turns off, and the backup power indicator (BLUE) turns on, indicating recovery voltage setting is active. The rightmost digit on the display starts flashing.



- **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 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.

Contact & Support

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