

# EKP-E150203-ELBT

## Electronic Load & Battery Tester

### User's Manual

#### Rev 1.0



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## 1. General Description

The electronic load & battery tester (part no. EKP-E150203-ELBT) is a professional instrument for electronic makers to test their power supply's capability or the batteries' capacity. The unit we describe here is just such a device featured with high quality, high reliability, and easy for use. The unit could be configured to a traditional electronic load or a battery tester, by pressing and holding the "Run" button while the unit is powered on. It utilizes a MCU to control the voltage and the current's magnitude. Nevertheless, the unit also integrates an error detect function, which will alert when the errors occurs and gives an error code displayed on the 7-segment LED for reference. The Voltage and the Current values are displayed separately on 2 7-segment LEDs, and their values could be set by rotating the EC11 encoder on the right side of the control board. A smart fan controlling mechanism is also integrated on board, which will protect the unit from over heating and keep it safe. Overall, the EKP-E150203-ELBT should be a nice handy tool for electronic makers & builders.

## 2. Specification

**DC Power:** 12V

**Discharge Mode:** CC or Continuous Current

**Discharge Current:** 0.2 ~ 9.99A

**Discharge Voltage:** 1.00 ~ 30.00V

**Tuning Steps (Current):** 0.01A or 0.1A

**Tuning Steps (Voltage):** 0.1 V or 1V

**Deviations (Voltage):** 1%  $\pm$  0.02V

**Deviations (Current):** 0.7%  $\pm$  0.01A

**Voltage Tuning Range:** 1.0 ~ 25V

**Max Power Consumption:** 60W

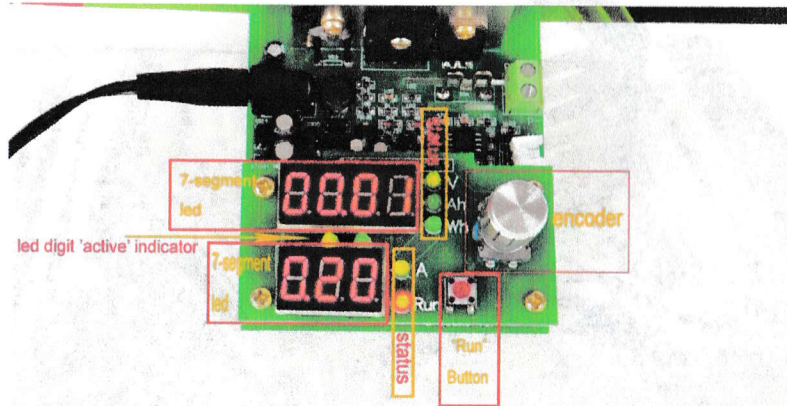
**The Max Counting Value for Battery Test:** 999.9Ah or 9999Wh

**Size:** 100 x 70 x 57 (mm), 3.93" x 2.75" x 2.24"

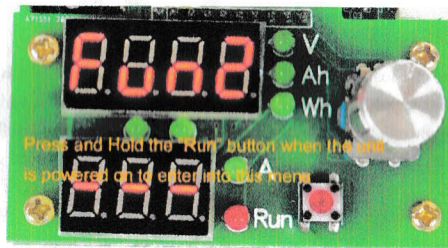
**Weight:** 185g / 0.41 lb



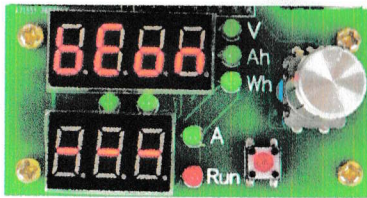
### 3. Operation



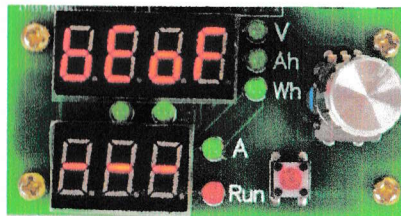
Function 1: Electronic Load (by default)  
Rotate the Encoder to switch to Function 2



Function 2: Battery Tester  
Rotate the Encoder to switch to Function 1



bEon: Beep is ON  
Rotate the Encoder to switch to bEoF



bEoF: Beep is OFF  
Rotate the encoder to switch to bEon

#### 3.1 Function Setting

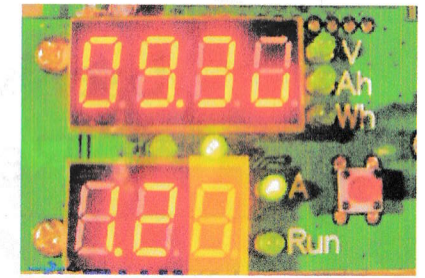
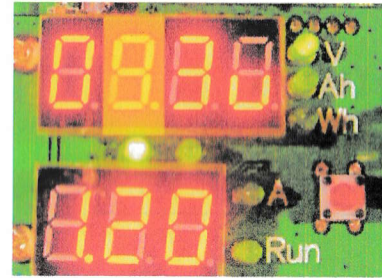
- The unit could be set to work as an electronic load or a battery tester, and it's set to work as an electronic load by default when it's firstly powered on. The function 1 is defined as an electronic load, while the function 2 is defined as a battery tester. To switch between the 2 functions is easy, just press and hold the "Run" button when the unit is powered on.

will get into the function selection menu, and the led displays "Fun1" or "Fun2". Rotate the encoder will switch between "Fun1" or "Fun2".

- When you finish the function selection, then just press the "Run" button to enter into the next setting. The led will display "bEon" or "bEoF". The "bEon" means to enable the buzzer alarm, while the "bEoF" means to disable the buzzer alarm. Please rotate the encoder to choose "bEon" or "bEoF", then press the "Run" button to exit the function setting menu and restart the unit.

#### 3.2 Electronic Load Function

- When it's in "Fun1", rotate the encoder to change up and down the current or voltage values. Press down the encoder will switch between the voltage and current setting mode. The "V" led will be ON if it's in voltage setting mode, and the "A" led will be ON if it's in currents setting mode. Rotate the encoder clockwise or counter-clockwise will increase or decrease the voltage or the current values. The led digit "active" indicator will tell you which digit is in active now for changing up or down. Just as the following pictures:



- When it's in "Fun1", press the "Run" button will make the unit start working. If a power source is connected to P+ and P- terminals, the unit will start to discharge the power source. Press the "Run" button again, the unit will stop discharging. When the unit is in running, the upper 7-segment led displays the actual voltage from the power source tested, and the lower 7-segment led displays the discharging current. Once if the voltage from the power source falls down, and it's lower than the preset value in the previous steps, the buzzer will start to alarm, and the "Run" led is flashing.
- You can change the current values when the unit is in running by pressing down the encoder to switch to the current setting mode and rotating it to make the current values up and down. But, you can not change the voltage values when the unit is in running, except that you stop the unit from running by pressing down the "Run" button.
- You are only allowed to change down the current values when the buzzer is alarming.

#### 3.3 Battery Tester Function

- Before testing, please make sure the battery being tested is fully charged.
- Switch the unit to "Fun2" and power it on, connect the battery to the P+ and P- terminals.
- Now you can rotate the encoder to change up or down the threshold voltage and discharging current values. The "V" led will be ON if it's in voltage setting mode, and the "A" led will be ON if it's in currents setting mode. Rotate the encoder clockwise or counter-clockwise will increase or decrease the voltage or the current values. The led digit "active" indicator will tell you which digit is in active now for changing up or down. See the pictures in the previous steps.
- If everything is ready, press down the "Run" button and the unit is now going to work. It will detect the battery tested automatically, if there is something wrong, it will give an error code displayed on the 7-segment led.
- When it's in the testing process, the upper 7-segment led will display the battery voltage and the battery discharging capacity in Ah and Wh alternately. When the voltage of the battery gets down to the preset threshold voltage, the testing process is completed, and the buzzer starts to alarm.
- Pressing down the "Run" button will stop the alarm, rotate the encoder to read the battery discharging results in Ah or Wh.

If you press down the "Run" button again, the battery's discharging data will be cleared and the unit return to the initial state waiting for the next test.

**Notes:**

1. You can change up and down the current values during the test, but if you need to re-set the discharging threshold voltage, you need to press down the "Run" button for a pause, then rotate the encoder to change up or down the voltage value. Press the "Run" button again will go back to the test, or press and hold the button for a while will cancel the test and clear the tested data.
2. The unit records all of the working status including the preset voltage and current values in the memory, so do not worry about the loss of data caused by a sudden power loss. It will restore to the previous state if the power comes on.

## **4. Error Code Explanation**

**Err1:** Voltage from the battery is beyond the testing range

**Err2:** Voltage from the battery is lower than the preset threshold voltage, or a reversed polarity connection

**Err3:** The battery's internal resistance is too high to sustain the preset discharging current

**Err4:** Internal error

**Err6:** DC power supply error, please use a standard 12V DC source as the power supply, with the current limitation higher than 500mA

**otP:** Over heat protection

**Ert:** Temperature sensor error

**ouP:** Voltage from the connected power source is beyond the test range ( Fun1)

**oPP:** The instantaneous power dissipation is beyond the test range (Fun1)