FDY10 Battery Tester

User Manual

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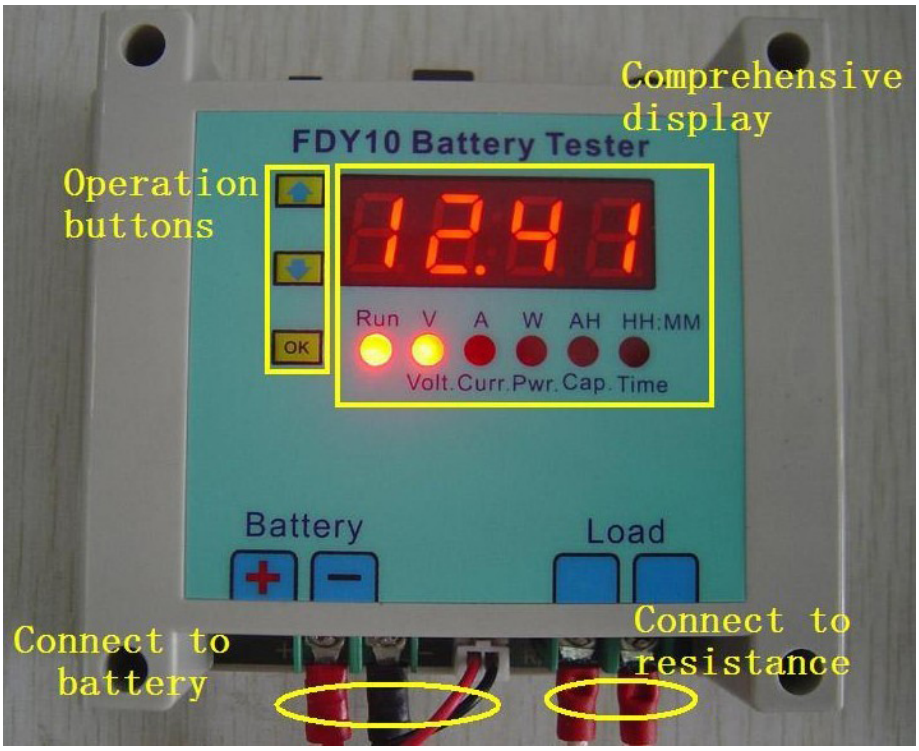
SUMMARIZE:

FDY10-S Battery tester structural design in reasonable, easy to carry, may detection battery capacity, can also measure battery discharge time and discharge AH. Comprehensive detection and measure two function new type measure equipment. Can adaptive from 1V to 20V voltage range different varieties different types, Measure battery varieties: Ni-Cd, Li-Ion, Pb, Ni-Mh, Ag-Zn, LMP, Li-po, Pb... Measure current range from 0.1A to 10A auto constant current, set stop discharge voltage range from 0V to 20V,when discharging LED can real time display battery voltage ,Current, Power, AH and total time. When stop discharge LED display AH and discharge time.

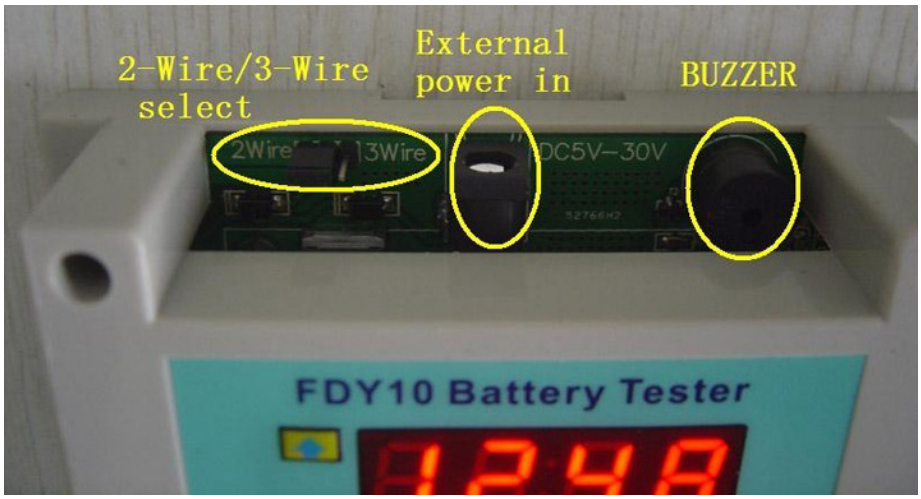
FEATURES:

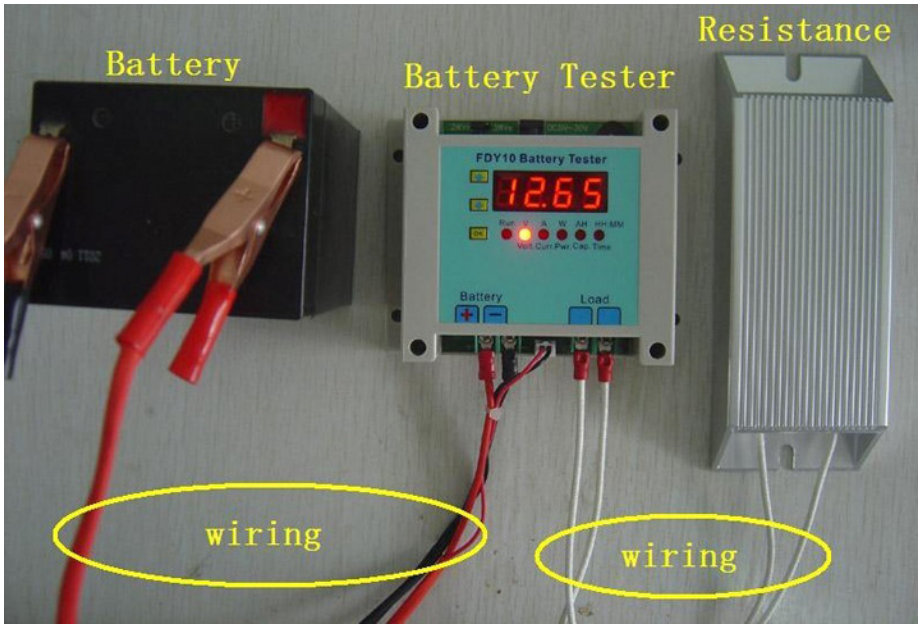
- Structure extremely compact, easy to carry.
- Main tester and heating load kit separation design, safety in long time continuous work.
- Use 4-wire measurement, eliminating the voltage drop due to the internal resistance of the cable (the connection between the battery and the tester) measurement error, more accurate measurements.
- Display part use 6 LED indicator and 4 Digital display, 6LED indicator show display details, 4 Digital display show battery parameter in resolution 0.01V, 0.01A.
- Automatic switching display all the battery main parameter: volt, amp, watt, AH, running hour.
- With BUZZER warning when discharge process stop.
- Support 2-Wire and 3-Wire connection mode, 3-wiring mode provides wider voltage measure range.
- Battery voltage automatically adapt, product automatically adapt to 12V and 16V, automatically set stop discharge voltage to 10.5V or 14V.
- With quickly test function, in 1 to 10 minutes test battery capacity.
- Constant resistance mode, can shield PWM CC function, user can free to select different resistance according to different battery.

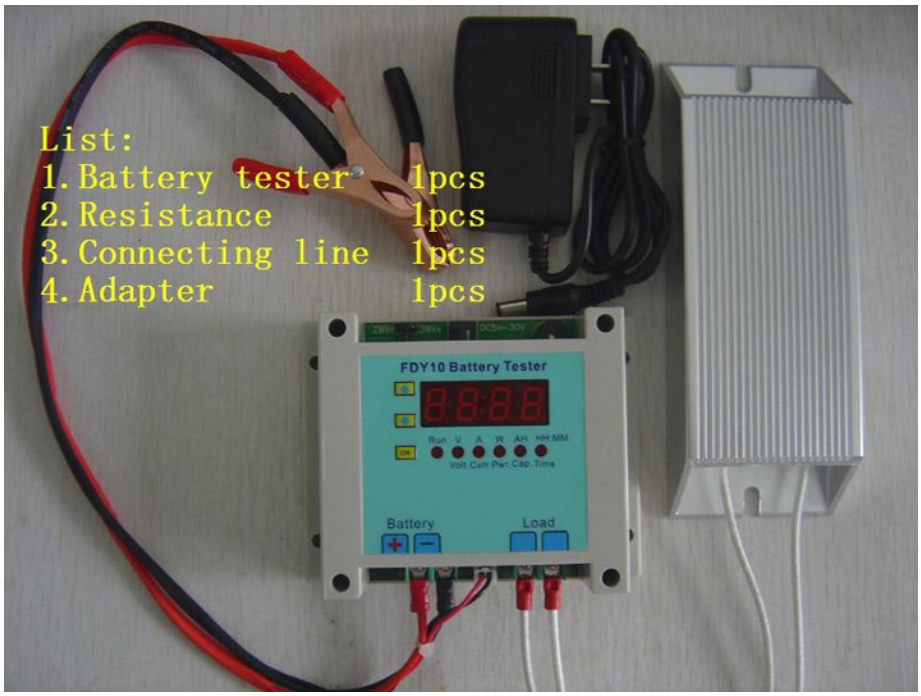
TESTER VIEW


Comprehensive display
FDY10 Battery Tester
Operation buttons
12.41
Run V A W AH HH:MM
OK
Volt. Curr. Pwr. Cap. Time
Battery
Load
Connect to battery
Connect to resistance


Buzzer
Power Supply
2/3 Wire


2-Wire/3-Wire
select
External
power in
BUZZER
2Wire
3Wire
DC5V-30V
FDY10 Battery Tester
12.48


Battery
Battery Tester
Resistance
FDY10 Battery Tester
12.65
Battery
Load
wiring
wiring


List:
1. Battery tester 1pcs
2. Resistance 1pcs
3. Connecting line 1pcs
4. Adapter 1pcs
FDY10 Battery Tester
Battery
Load

SPECIFICATION:

- Set the battery discharge current:

  If the measured battery voltage is low, user can free to set current between 0.1A ~ 10A; If the battery voltage over 10V, user can free to set current between 0.4A ~ 10A. Step value in setting mode is 0.1A, press and hold can faster set step in 1A, If open the constant resistance function mode, the setting is invalid, actual discharging current is determined by the resistance of the battery voltage and external power, please refer the detail in ***OPERATION*** section.
- Stop discharge voltage: 0.00V to 20.00V, voltage setting step in 10V is 0.01V; setting step over 10V is 0.1V.
- Measuring voltage accuracy: 4 Digital display, 10mV to 20, accurate 10mV, error 0.5%.
- Measuring current accuracy: 4 Digital display,0A to 10A,accurate to 10mA, error 1%.
- Measuring power accuracy: 4 Digital display, accurate to 100mW.
- Battery capacity accuracy: less 100AH accurate to 10mAH, more than 100AH, accurate 100mAH, maximum displayed value 999.9AH.
- Discharge time display: Hour (2 digital): Minute (2 digital), for example 02:15, means two hours fifteen minutes.
- Voltage automatic recognition: in setup model open automatic recognition, less than 15V battery is recognition 12V battery. More than 15V battery is recognition 16V battery.

  Notes: This function only work when power on, please use 2 wire connections.
- Battery over-voltage protection: when connection battery voltage more than 20V, tester will lock the discharge process, over 40V will damage product!
- Build in reverse polarity protection function: When battery positive and negative polarities wiring wrong, the test meter will not damage, but please don't keep this condition in long time.
- Display model: user free to change main display use ⬆ and ⬇ key. Or set automatic switching mode show the battery parameter in turn.
- Star/Stop: Press "OK" key for start, press again stop. Time and capacity is accumulate, press and hold ⬇ key for reset the memory, or auto-reset when power off.
- Discharge warning's: the display flick and buzzer warning when discharge stop, press any key to stop warning.
- External power resistance cooling model: when discharge process the resistance is very hot! Please avoid touch and place in safety place.
- Dimensions: Product: 116*90*40mm, High-power resistance: 165*60*30mm
- Weight: 190g, High-power resistance: 450g

OPERATION:

This product can use external power, in 3-Wire model, if the battery voltage above 5V, do not need external power, use 2-Wire.

Following operation guide use 2-Wire model:

1.- Set Product wire jump to 2-Wire mode.

2.- First wiring 1Ω/200W resistance, then wire battery to tester, positive and negative polarities wiring correct.

Notes: please check reliable connection of the wiring, or will damage the connection terminal!!

3.- After power on the tester will automatic work, default display voltage value, stop discharge voltage is 10.5V, default discharge current is 10A.

4.- If want to change current, press ⬇ key, LED lamp "A" is flashing

Then press ⬆ and ⬇ key, to set quick discharge amp value: 1A, 2A…10A.

Press "OK" key enter quit. this is quickly setting mode, if want to set detail amp value in step 100mA, please access the setup mode.

Notes: If want to change stop discharge voltage, also need access setup mode.

5.- Access setup mode: press and hold "**OK**" key, voltage LED lamp flashing, means now In setup mode. Press "**OK**" key to select different setup function:

Digital display	**Voltage**	**Current**	**ES-n**	**AU-n**	**F-00**	**Cr-n**
LED	"V" flashing	"A" flashing	/	/	/	/
Function	1	2	3	4	5	6
Introduction	Stop discharge voltage	Discharge Current	Save quit	Automatic voltage recognition	Quickly test time(min)	Constant resistance

5.1.- Function 1 (setup battery stop discharge voltage):

Press ⬆ key and ⬇ key increase and decrease voltage value, press and hold key can change value quickly. When voltage precision is 10mV less than 10V setting, over 10V, for quickly setup voltage step value is 100mV.

5.2.- Function 2 (setup battery discharge current):

Press ⬆ key and ⬇ key decrease and increase current value, press and hold can change value step quickly.

5.3.- Function 3 (save and exit):

After setup finish, press⬆ and⬇key change the display show "**ES-y**", press "**OK**" key, means save change and exit setup mode. if you don't want save changes, please press and hold "**OK**" key for exit without save.

5.4.- Function 4 (automatic voltage recognition):

Notes: This function default is off, battery voltage is 12V or 16V, and you can open this function.

Press ⬆ or ⬇ key change the display show "**AU-y**", save and exit.

In automatic voltage recognition mode:

5.4.1- If connected battery voltage is 12V, when tester power on, BUZZER will has 1 long tweet and 1 short tweet;

5.4.2- If connect to battery voltage is 16V, when product on BUZZER 1 long tweet and 2 short tweet.

Notes: Automatic voltage recognition only work when tester power on, change the battery need power off, so suit in the 2-Wire connection mode.

5.5.- Function 5 (quickly test setup):

Notes: This function default is off, display show "**F-00**", means not use quickly test function.

Setup value is "**F-01**" to "**F-10**", mean discharge time is “1minute” to “10minute”, press ⬆ or ⬇ key set quickly test time, after setup save and exit. In quickly test, quick test time is the configure time.

5.6.- Function 6 (constant resistance mode)

Notes: This function default is off, tester automatic set PWM, to make sure discharge amp equal to setup value.

Press ⬆ key or ⬇ key, display show "**Cr-y**", after setup save and exit. The discharge ampere

will determine by the battery voltage and the external discharge resistor, more calculation method please refer to *supplementary explanation*.

6.- Finish configure, press "**OK**" key, LED "RUN" is on, mean the tester start battery discharging, current can arrive to configuration value in few seconds.

Now press ⬆ can switch to show different parameters in main display. If you want automatic display, long press ⬆ key, the BUZZER tweet means tester in automatic display mode, will show each battery parameter in 3 seconds interval

Notes: AH and discharging time is accumulated value, digital display "**.**" flashing, time display "**:**" flashing mean in running mode.

7.- In the process of discharge, battery voltage is decrease, when battery voltage less than configuration voltage, tester will automatic stop discharge. If use quickly test model, when time counter to zero will stop battery discharge, display flashing and BUZZER alarm user to check the result. Tester will show battery capacity, user can press any key stop alarm. And press ⬆ key to see each parameter test result.

8.- In AH value display screen, press and hold key ⬇ can reset AH to zero; in discharging time display screen, press and hold key ⬇ can reset time to zero.

Notes: Both values will automatic reset to zero after power off.

9.- Remove battery clip, product automatic power off, then can start another battery test.

10.- If user want accurate test result or test low voltage battery like Li battery, we suggest to use 3-Wire connection, in this mode need connect AUX power, other configuration is the same as the two wire mode.

Product wire jump to 3-Wire mode, connect the DC5V power adapter,(or use your local adapter, DC output 5~30V) system start discharging.

Notes: In 3-Wire mode, first connected the aluminum resistor and the power adapter, then configure the parameter values, finally connect the measured battery to start test. need to manually cleared AH and discharging time when replace the battery.

SUPPLIMENTARY EXPLANATION

1. Quickly test is the unique function of FDY battery tester, do not need battery full charged, nor discharge to stop voltage. If battery SOC is 25% -75%, the test result has higher accuracy.

Notes: Set a suitable discharge amp value and discharge time is necessary to increase the accuracy of test, specifically, because different battery have unique discharge curve, so please try to find the best configuration value suit for your battery, user can following three principles:

1.1.- Different battery has different stop discharge voltage.

1.2.- Maximum discharging amp always 1C. For example battery capacity is 3AH, maximum amp set 3A, and battery discharge time can set 1minute. Set smaller discharge amp and longer test time will make the test result has higher accuracy, Blue Jay listed below an experience table, for reference:

Battery types	Voltage is 12V Capacity is 12AH			Voltage is 3.7V Capacity is 2.5AH		
Stop Voltage	10.5V	10.5V	10.5V	3.0V	3.0V	3.0V
Current	10A	5A	3A	2A	1A	0.6A
Test Time	1minute	2minutes	3minutes	1minute	2minutes	3minutes

1.3.- If quickly test battery capacity has deviation, you can charge battery full, and do the full time discharging test.

1.4.- You can try different Quickly test amp and test time to find the experience value of correct capacity, so that you can establish your own experience in database for test such of similar battery in your application.

2.- If the battery voltage value less than 10V, maximum current is not to 10A,

Calculate Formula: **Current = Voltage / Resistance(1 ohm)**

For example battery voltage value is 3.7V, maximum current value is 3.7A, you can increase current in following two method:

2.1.- Change smaller resistance, according decrease resistance value can increase discharge amp value.

Notes: when test higher voltage battery **must** change resistance to **1 ohm** or tester will not work.

2.2.- If still using the 1 ohm resistor, user can parallel a 100uH toroid inductor. Only to make sure the toroid inductor can reach 10A maximum current. Blue Jay also provide this inductance for user testing.

3.- FDY tester provide constant resistance test mode.

In this mode do not use PWM automatic constant current. The battery discharge directly through the connected resistance, in this model do not use constant current, But also affect the measurement accuracy of the AH.

Current calculation Formula: **Current = Battery / Resistance**.

ATTENTION:

Do not Reverse polarity when you wiring!!
Do not use this test in over measurement range!!
Under full load discharge mode, the high power resistors temperature is very high, please placed in a safe place, to prevent scalding accidents.

PARKING LIST:

FDY10-S	1PCS
High-power resistance (1Ω/200W)	1PCS
DC5V Power	1PCS
Test clip wire	1PCS

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