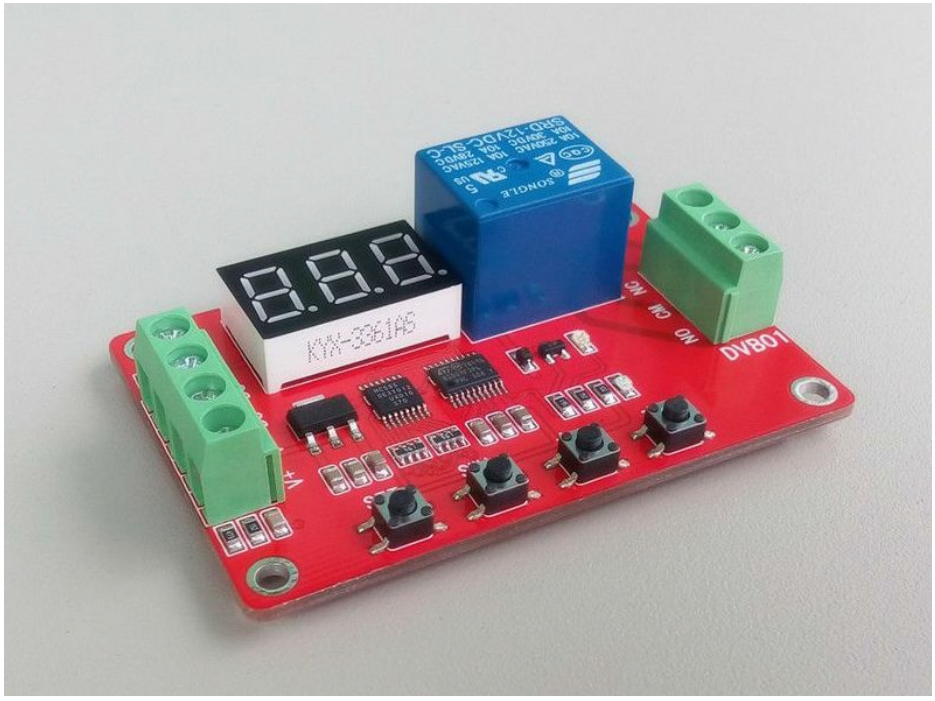
The user manual of DVB01

DVB01 is a multifunctional voltage monitoring controler, it adopt industrial-grade microcontroller as the main control unit and has some advantages of high-accuracy and wide-application.The controler has five preset functions and can be added other functions according to the user's demand. The module which have stable performances is made by high–quality components, it can be widely used in a variety of voltage measurement control occasions.

Functional Features:

1. Providing five functions for users to choose and fit more demand in application.
2. The users can set the lower limit voltage and upper limit voltage.
3. Measuring the direct voltage range from 0V to 100v, measurement accuracy is less than 0.1v.
4. The users can set independently and add automatic power saving function.
5. All the setting parameters can be automatically saved and the content is not lost when the power is off.



I. Module Function:

The users can select one of the following five kinds of functions,can set and save the parameters.when finished setting the parameters, it will be saved automatically and the content is not lost when the power is off.

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[Function 1]

Voltage measurement:If you select this function, the module relay not action, but the digital tube can display the current measurement of voltage.

[Function 2]

Charging mionitor:When the measurement voltage is lower than the preset voltage which is lower in V1 and V2,relay will suck, on the contry, when the measurement voltage is higher than the preset voltage which is higher in V1 and V2,the relay will will disconnect.

[Function 3]

Discharging mionitor: When the measurement voltage is higher than the preset voltage which is higher in V1 and V2,relay will suck, when the measurement voltage is lower than the preset voltage which is lower in T1 and T2, the relay will disconnect.

[Function 4]

Changes within the range: When the measurement voltage between V1 and V2, the relay will suck, but the other circumstances, the relay will disconnect.

[Function 5]

Changes beyond of the range：When the measurement voltage is lower than the preset voltage which is lower in V1 and V2 or the measurement voltage is higher than the preset voltage which is higher in V1 and V2, the relay will suck, but the other circumstances, the relay will disconnect.

Kindy reminnder:

Controller will judge preset voltage V1 and V2, which one is the lower limit and upper limit voltage automatically according to the features. When user set the controller, no need to onsider the question which one is higher or lower and first or last.

II.Operating instructions:

Customers can select the function patterns by the keys and display, can also set the other parameters, when finished setting all the parameters, it can be saved automatically, not lost when power is off.The following is some descriptions about setting parameters.

[Keys]：there are four keys, namely: [SET]、[SWI]、[+] and [-].

The keys have short and long press, short press means press the button less than 1 seconds. long press means press the button more than 1 seconds until the function appears.

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[Operational mode]： There are two kinds, namely:[operational mode]and[parameter setting mode]

[Use preferences]： There are four kinds of parameters to set, namely from P-0 to P-3:

P-0：Setting five functions from F-01 to F-05.

P-1：Setting the voltage of V1 is between 00.0V and 99.9V.

P-3：Correcting the voltage, when flashes, it will display the current voltage value, then press [+] or [-] can correct the voltage value.

[Operational mode] When turn on, it will go into operational mode,digital tube display shows the current measured voltage value. **1.1 Short press the [SET]，** it will go out, but the procedures operact nomally.when press a second time, it will recover display, from going out to recoverring display, the module will not identify the other three buttons.

1.2 Long press[SWI], The digital display tube will blink two times, it enter into the power saving mode.After enter into the power saving mode, if no operation any button within 10 seconds, the digital display tube will turn off， but the procedure operact nomally, you can short press [SWI] restore display temporarily, you can also long press [SWI] again after the digital display tube restore display to exit automatic the power saving mode. the digital tube blink three times to indicate the setting is successful.

1.3 Long press [SET], enter into [parameter setting mode]:

2. [parameter setting mode]:

Under operational mode,long press the [SET], enter into the first level of the parameter setting mode menu. when enter into parameter setting mode, all the functions will stop running and enter into original state， when exit parameter setting mode, the module start running the selected function.

First level of the menu:

After enter into first level of the menu, the digital display tube displays “P- 0“， can set parameters PO, that is function setting, if press [SET]at this time, then enter into the second level of the menu, you can see the specific value of this parameter, press [SET] again to exit the first level of the menu.

2.1 Short press [SET], enter into the second level of the menu.

2.2 Short press [SWI], page down the menu, can switch the four parameters within “P- 0”to “P- 3”

2.3 long press [SET], save the parameters and enter into [operational mode]

The second level of the menu:

Based on the second level of the menu, it can set the specific parameters,the four

parameters of P0 to P3 are set up by the second level of the menu, after enter into the second level of the menu, The digital display tube will flash and display, it indicates the parameter can modify. Pressing [SWI] can switch the flashing digital tube position.

2.4 Short press [SET] can exit the first level of the menu:

2.5 Short press [SWI] can switch the selected digital tube, the selected digital tube will flash to display

2.6 Short press [+], the selected digital tube numerical + 1, add to the 9 to stop.

2.7 Short press[-], the selected digital tube numerical -1, reduced to 0 to stop.

2.8 long press [SET], save the parameters and enter into [operational mode].

Special instructions:

There are some differences about setting the parameters of P3 which is used to correct the voltage measurement. Entering into the parameters of P3, the digital display tube will display the current measured voltage value. All the digital display tubes flash, press [+] and [-] can correct the measurement values.

Setting the course: In order to protect lead-acid battery,when the battery voltage is less than 11V,the relay will disconnect won't allow the battery to discharge. when the battery voltage recover more than 12V, the relay will suck and the battery discharge normally. This application can select the function three, you can refer to the wiring diagram, we take the function 3 as an example:

Setting the parameters like these: P0 =" F - 3 ", P1 =" 1 2.0 ", P2 =" 1 1.0 "and the parameters needn't to set. The following is the setup process.

1. When turn on, long press [SET], enter into the first level of the parameter setting mode menu, the digital display tube displays "P-0"， then short press [SET], enter into the second level of the menu, when the digital display tube displays "F - X "and the last digital tube flashes, correct the value of the last by choosing functions.
2. Press [+] and [-] can adjust the value of current digital tube, press [SWI] can switch the flashing digital tube, set the parameters P0: "F - 3"by pressing [+]and[SWI]
3. Then short press [SET], return to the interface of level, short press [SET] can choose parameters"P-1", set the parameters P1(V1): "1 2.0" by pressing [+] and [SWI]
4. Setting the parameters P2(V2): "1 1.0"in the same way.
5. Parameters P3 needn't to be set because it's not to be used in the process.
6. Long press [SET], saving settings， and exit [parameter setting mode],the function starts running immediately.

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III Wiring Reference:

DVB01 module requires the users to supply with DC 5v, 12v and 24v to be available. The relay of module DC power output can be controlled the load of 0v to 30v and 0A to 10A or the AC power output be controlled the load of 0v to 250v and 0A to 10A. The users can refer to the below two graphs which presents the wiring method of controlling modes. The first wiring diagram of DVB01 presents the module control the DC equipment

The second wiring diagram of DVB01 presents the module control the AC equipment.

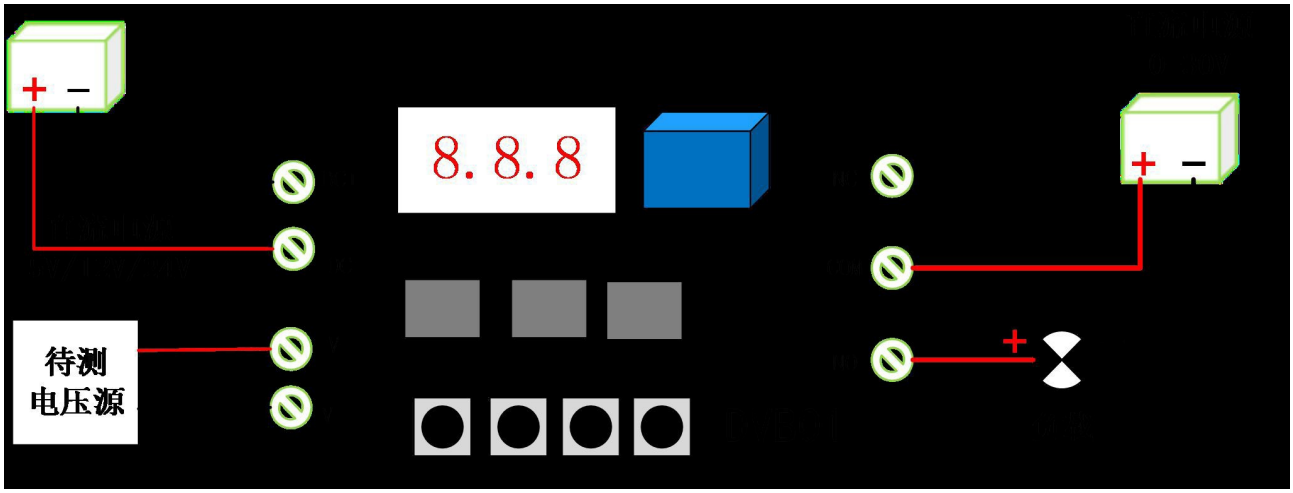

Illustration 1:The first wiring diagram of DVB01

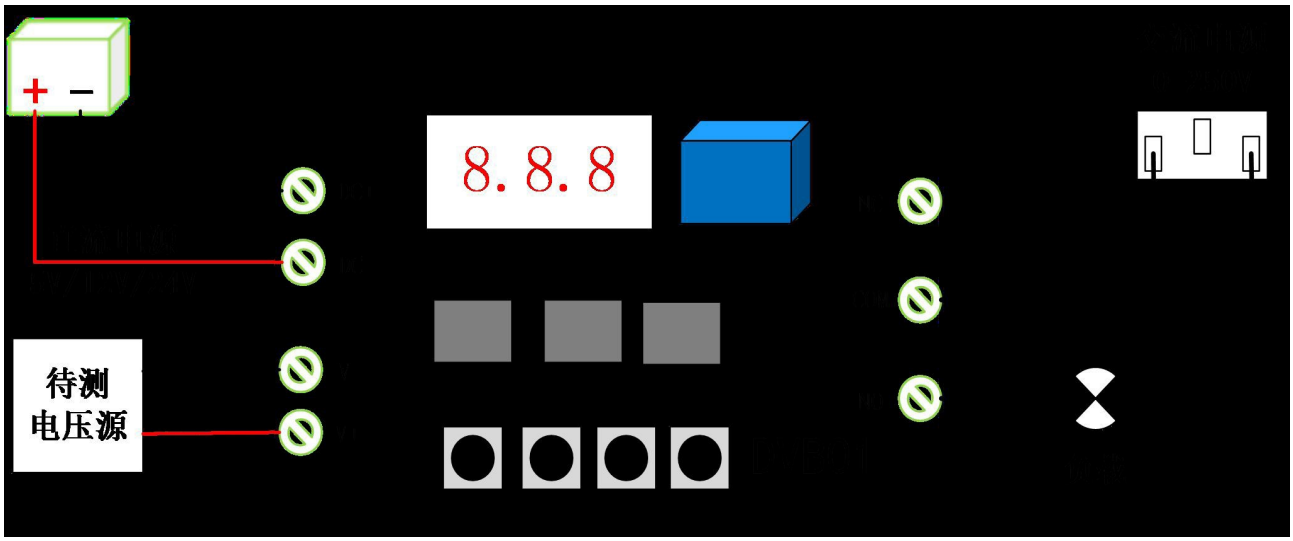

Illustration 2:The second wiring diagram of DVB01

Kindly reminder:

If user's load and DVB01 module use a same DC power supply, it is possible because of the power supply capacity is insufficient or wiring connections unfit the module appears unstable phenomenon occasionally, please use the following (even if no found the problem, it should follow the recommendation):

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1. Separate wiring: The positive DC power supply should draw two lines, one link DVB01 of DC+ interface of modules, the other link NO interface for load use, so the negative should also be dealt with like this.
2. Replace the output current power: If it is the motors and other instructive or capacitive load, the capacity power of DC power should choose bigger, such as the use of 1A, 3-5A power to choose more reasonable, because the motors starting current is 3-7 times of the rated current, if the power supply capacity is too small, it will result in the voltage dropped instantly and cause DVB01 module reset.
3. Shunt capacitors: If the above two measures fail to achieve the desired effect, please Shunt an electrolytic capacitors of 470uf/35v or above capacity between DC+ and DC-.

IV Electrical parameters:

Operating voltage: 5V、12Vand24V（+/-10%）

Working current: 5v/less than 90mA （when the relay is not operating less than 12mA,turn off the display less than 3mA）2V/ less than 50mA（when the relay is not operating less than 12mA,turn off the display less than 3mA）24V/ less than 35mA（when the relay is not operating less than 12mA,turn off the display less than 3mA

Working temperature: recommend -20℃—60℃（limit -30℃—70 ℃）

Measuring range: recommend -30℃—120℃（limit -45℃—120℃）

Lode capacity: The normally opening port of module normally maximum lode capacity:

DC 0-30V/10A,AC 0-250V/10A

The normally closed port of module maximum lode capacity:

DC 0-28V/10A，AC 0-125V/10A

Use restriction:

(1) Relay life is loaded with action 100,000 times, therefore more suitable for use in low frequency and high current pull control of the situation, is not suitable for repeated use in the fast-action situations.

(2) Note consider relay port lode margin, purely resistive load more than doubled to left margin, ordinary inductive or capacitive loads must be least three times more margin.

V Module interface:

Module Voltage/Signal Input: There are four interfaces, all interfaces have terminal for the users' convenience.

1. DC+:DC power positive

2. DC-:DC power negative
3. V+: Measure the positive of voltage
4. V-：Measure the negative of voltage

Module Output： There are three interfaces, all interfaces have terminal

1. NO: Normally open interface, the rely becomes vacant before, after pull-in short with the COM.
2. COM：Common interface.
3. NC: Normally closed interface, short with COM become vacant after pull-in.

VI Module Size

Dimensions: 67mm*44mm*20mm (L*W*H), refer to below in detail.