

## **The Instruction of 0-30V Adjustable voltage / regulated power supply**

This is a high-quality continuous adjustable power supply and the input voltage is 0-30v. Current limiting circuit also includes in Output voltage. This power supply can effectively control the output constant current from 2mA to 3A. The advantage of this regulated power supply is necessary for most of experiment circuit. You can switch the power supply without worrying about damaging the experiment circuit when mistaken-operating, because this regulated power supply can control the maximum current.

### **Technical Specification as follow,**

Input Voltage: AC24V

Max Input Current: 3A

Output Voltage:0-30V in adjustment

Output Current: 2mA-3A in adjustment

Max Output voltage ripple: 0.01%

### **Circuit characteristic:**

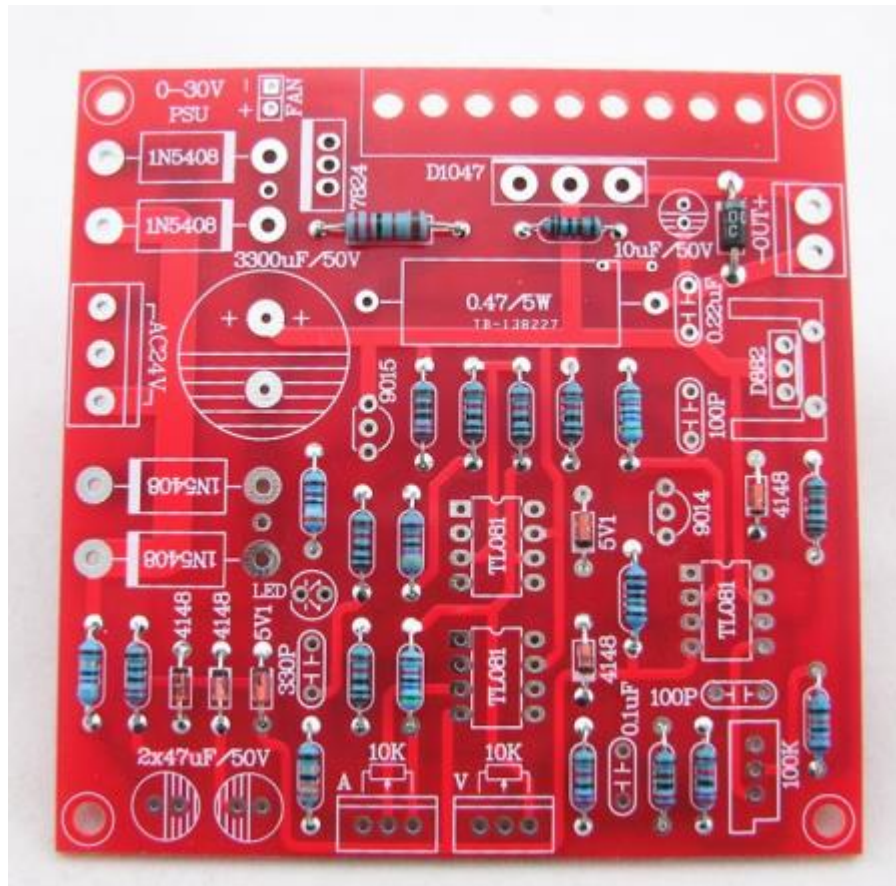
- 1.All are thru-hole components, convenient for installation and maintenance
- 2.Easily adjust the output voltage.
- 3.LED display the limited output current.
4. Provide overcurrent fault protection.

**Component list:**

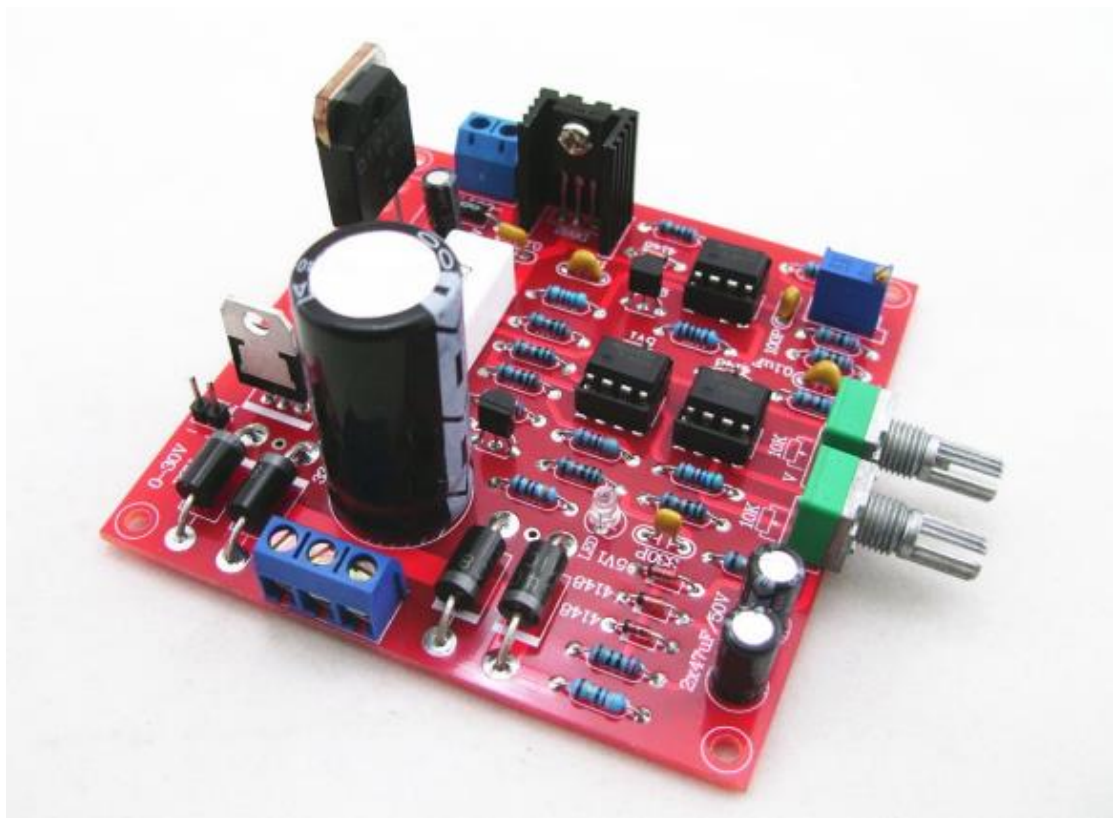
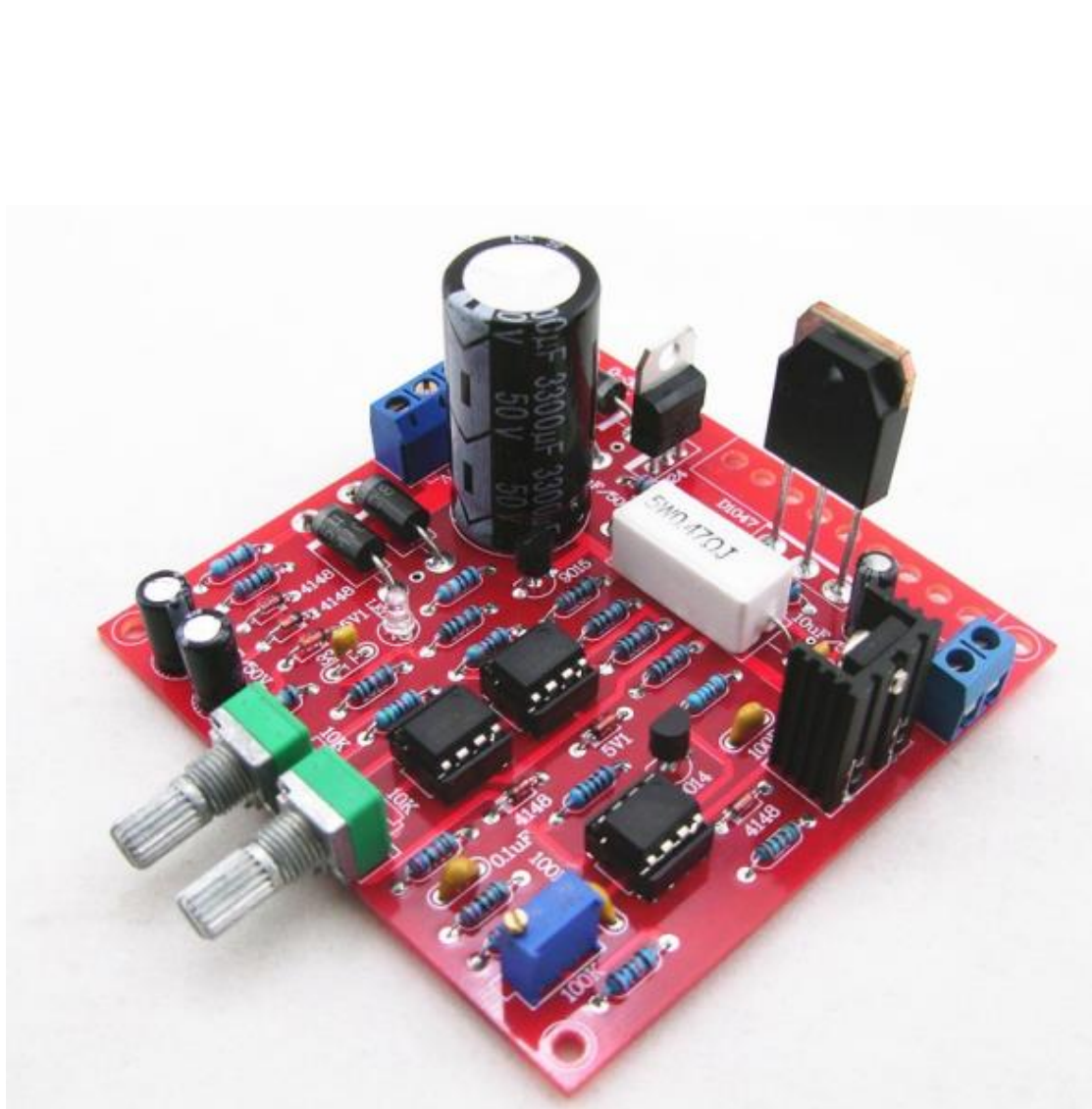
R1=2.2K 1W	C4=100nF
R2=82R	C5=220nF
R3=220R	C6=100P
R4=4.7K	C7=10uF/50V
R5 , R6 , R13 , R20 , R21=10K	C8=330P
R7=0.47R 5W	C9=100P
R8, R11=27K	D1,D2,D3,D4=1N5408
R9, R19=2.2K	D5,D6=1N4148
R10=270K	D7,D8=5.1V DZ
R12, R18=56K	D9,D10=1N4148
R14=1.5K	D11=1N4004
R15,R16=1K	Q1=9014
R17=33R	Q2=2SD882
R22=3.9K	Q3=9015
RV1=100K 3296	Q4=2SD1047
P1,P2=10K B	U1,U2,U3=TL081
C1=3300Uf/50V	D12=LED
C2,C3=47uF/50V	

## First step

Install the resistance, the diode and other component as the PCB indicates. Please make sure resistance is correct with the multimeter, and the diode should be in the correct model and installing direction.



Install other component in accordance with the principle that from largest to smallest, lowest to highest.



The potentiometer can be installed directly on the board, or with socket and wires. You may also replace it with multiturn potentiometer, which makes adjustment more precise.

After installing all components, and checked them out without problem, you may power on and take a trial run. Please make sure Q4(D1047) has enough big heat sinks before power on. If the heat sinks is not big enough, you may cool it with extra fan. There is a 24V port for the fan on the board, and the heat sinks should be insulated from the circuit.

### **Circuit Adjustment:**

Adjust the potentiometer (the green one indicated V) to the smallest position value(the smallest position value anticlockwise) with changing voltage. Adjust RV1, and make output voltage to 0V. (It may appear negative voltage or the value is very low during adjusting. Please use it with digital multimeter). It is unnecessary to adjust the maximum output voltage. When using 24 AC input, the output is about 30.3V.

### **Calibrated current:**

Use the external load resistor 10 $\Omega$  (ensure it has adequate power), Add the voltage to 1V slowly, adjust the Current-Limited potentiometer(the green one indicated A) to luminescent tube to shine. At this time, the limiting current of the circuit is 0.1A, please note down the position of of the potentiometer. Adjusting it to 2V, 5V, 10V, 20V, 30V and other values, then get their corresponding output current. The calculation formula is:  $I=U/R=U/10=0.1U$ . 10 $\Omega$ loaded, when U is 30V,  $I=3A$ (maximum output). You may also change it with other load resistance in different resistance value only if it has adequate power and been cooled enough.

### **Attention:**

The transformer uses more than 80W, single 24V or dual 12V (the center of the head unoccupied). If the voltage decrease dramatically when using high-power output, then it needs replaced by the transformer that offering more power.

Output control tube D1047 needs be insulated from circuit when installing the radiator. It is because this circuit is linear stabilized voltage supply, if it works with low voltage and high current for long time, the voltage of the control tube decrease a lot. Please make sure D1047 is well-cooled.

Power making is the circuit with heavy current and high voltage. Please double check the components model and make sure it is installed correctly.

