KITS EDUCATIONAL ELECTRONIC

AVT 1066

Compact, universal power supply

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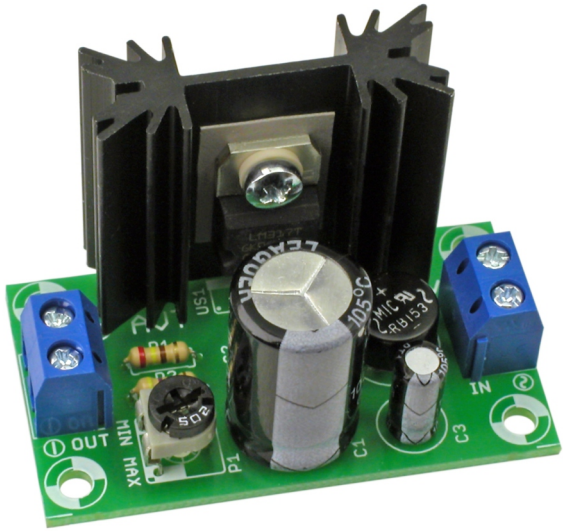

Complete power supply module, requiring only a network transformer. The module includes a rectifier, capacitive filter and stabilizer. The potentiometer is used to adjust the output voltage.

Specifications

- input power supply: 5-20V AC or 5-30V DC
- output voltage: 1.25-25V DC
- maximum output current: 1A
- includes rectifier, overcurrent ant shortcut protection

Functional description

Figure 1 shows the schematic of the stabilized power supply with LM317 integrated circuit. The rectifier bridge M1 rectifies the alternating voltage from the power transformer. When powered from DC power supply, the bridge prevents the input voltage from being inverted. Capacitor C1 filters the input voltage of the stabilizer. The stabilizer works in a typical application. The resistance R1 / R2 + P1 is responsible for setting the output voltage. The resistance values shown in the schematic allows to set the output voltage up to 25V.

It is sufficient for most applications. The maximum output current of the stabilizer is 1.5A, but it depends on the size of the heatsink. Notice, that at low output voltage and high current, the US1 chip will dissipate power. This power should be dissipated through the heatsink.

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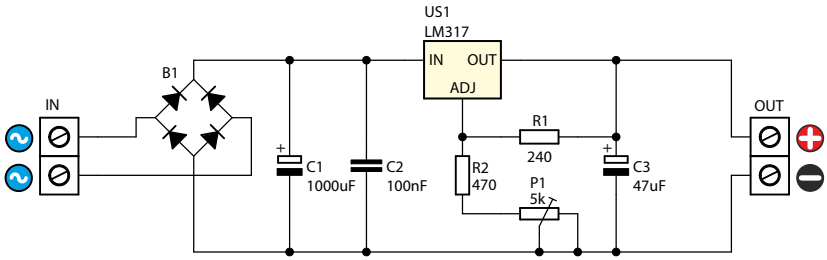

Figure 1. Schematic diagram

Assembly and test

Figure 2 shows the assembly diagram. Assembling such a simple module will not cause a problems and the ready-made power supply does not need to be adjusted. Without heatsink the US1 stabilizer is able to dissipate power up to 2W, therefore the output current have to be as low as 0,1A. With the heatsink delivered with the kit, the maximum output current is 1A.

In place of the mounting of the trimmer P1 conventional potentiometer or a switch with a suitably chosen resistors can be connected by wires. In order to obtain a voltage regulation range from 1.25V, place a wire instead of R2.

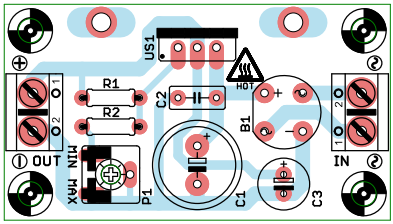

Figure 2. Components layout

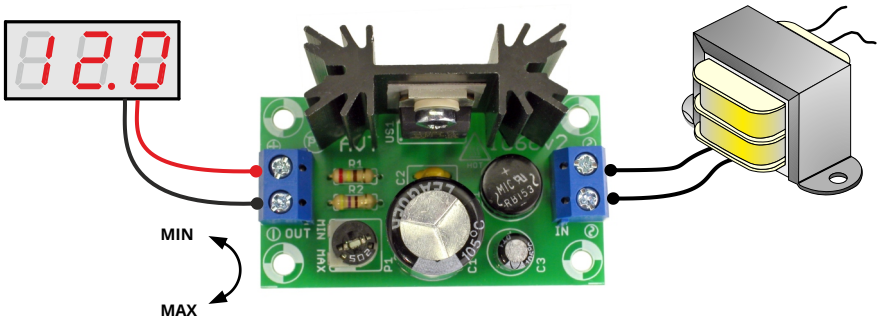

Figure 2. Connection example

Start off by soldering the printed circuit elements in order from smallest to largest. The unit assembled flawlessly, using the supplied components will operate immediately after switching on the power supply.

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Component list

Resistors:
R1 .....240Ω (red-yellow-brown-gold)
R2 .....470Ω (yellow-violet-brown-gold)
P1 .....trimmer potentiometer 5kΩ
Capacitors:
C1: .....1000µF !
C2: .....100nF (marked as 104)
C3: .....47µF !
Semiconductors:
B1: .....bridge rectifier !
US1: .....LM317 !
Others:
IN, OUT:.....2-pin terminal block connector
heatsink + fixing elements

While assembling the components marked with an exclamation mark attention should be paid to their polarity. Symbols of the components on the PCB as well as photos of assembled sets may come in useful. To access high-resolution images, download the PDF file.

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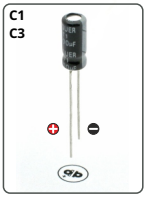
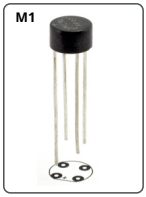
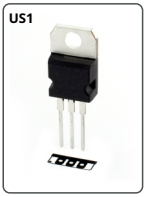
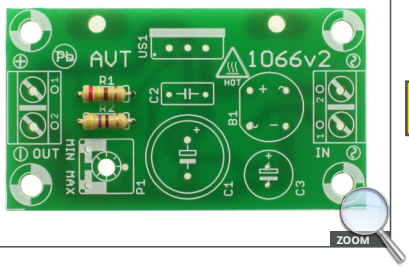




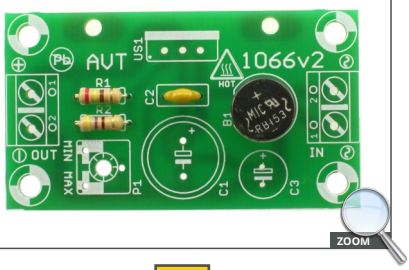


Assembly in 4 steps

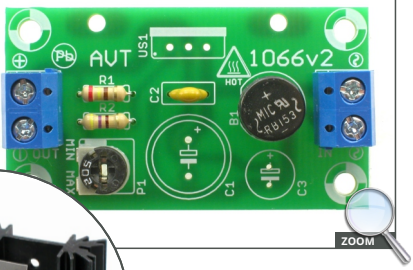
1 Solder resistors R1, R2



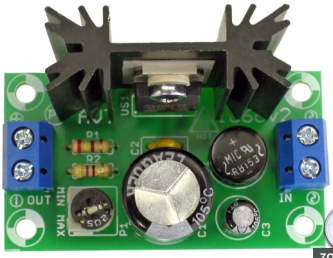
2 Solder capacitior C1 and bridge B1

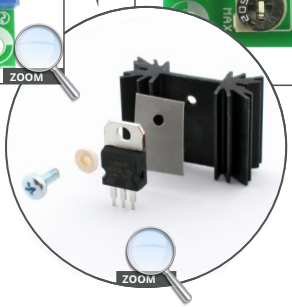


3 Solder potentiometer P1 and connectors



4 Solder capacitiors C1, C3 and US1





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Notes

Thank you for purchasing AVT product. Please take your time to read carefully the important information below concering use of this product.

Educational Electronics Kits are intended for educational and demonstration purposes only. They are not intended for use in commercial applications. If they are used in such applications the purchaser assumes all responsibility for ensuring compliance with all local laws. In addition, they cannot be used as a part of life support systems, or systems that for use as or as a part of life support systems, or systems that might create a hazardous situation of any kind.

• Battery or wall-adaptor are safe devices. They do not require special attention unless main voltage is connected to an output e.g. a relay.
• If the kit is used to switch currents greater than 24V it is necessary to have the installation and performed by a trained professional authorized for such work. The kit may only be used in such application if it was installed in a safe to touch enclosure.
• Never exceed the limits or ratings listed in the 'Specifications' section at the this user guide.
• If the kit is used in schools or educational facilities or similar institutions the operation must be supervised by trained and authorized staff.
• The product itself and all parts thereof (including packing material) are not suitable toys for childern! (choking hazard, risk of electric shock, ...)

Failures in modern electronic component are very rare as 95% of non-working kits are due to poor soldering or components placed in the wrong location or orientation so please check your work carefully.

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