EDUCATIONAL ELECTRONIC KITS

Alarm Clock
Educational Soldering Kit

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AVT EDU633

ZOOM

A practical clock kit with an alarm function. Outfitted with a straightforward LED display and brightness regulation circuit, conditional to the ambient light, the Alarm Clock maintains operation even when the power supply is cut.

Specifications

- time display in hour, minute format
- alarm clock with snooze function
- simple, two-button control
- automatic display brightness regulation
- power supply: 5 VDC (USB B cable - not included)

How to use

You can control the alarm clock with the use of two buttons: MODE and SET. Diagram picturing the use of the clock is shown on Figure 3.
While the clock is working, pressing and holding the S2 button will turn the alarm on/off. When the alarm is activated, the display will show the set time for a few seconds.
The diode set by the minute number shows whether the alarm is on or off. If the alarm is active, the diode is on.
After the alarm starts, pressing either of the buttons shuts it off, activating the snooze function (the alarm diode starts flashing). After the alarm starts again, pressing either of the buttons starts the snooze function, etc. Really great function for the laid-back...
To turn off the alarm and the snooze press and hold the S2 button. The alarm will also turn off after leaving it unattended for approx. 90 seconds. To completely turn the alarm on/off press and hold the S2 button while the clock is in normal mode.
The quickest way to learn the functions of this alarm clock, is to try it in practice. After a short while the use will become intuitive.

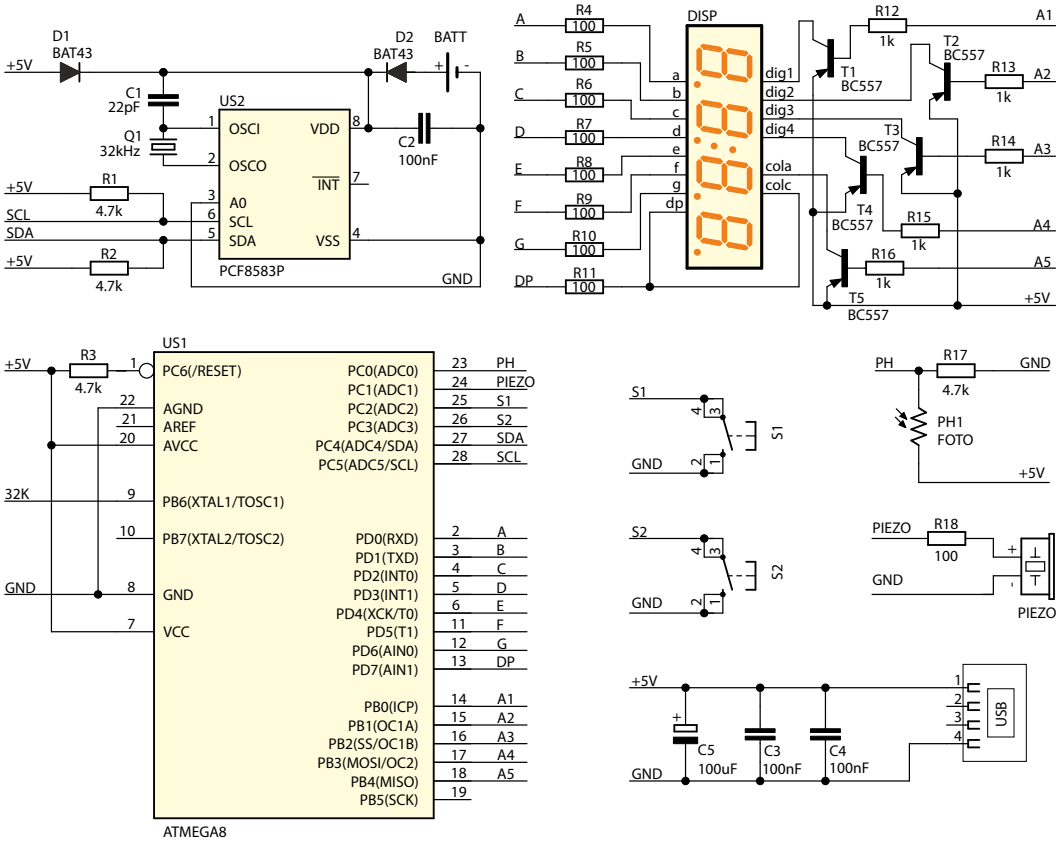


Figure 1. Schematic diagram

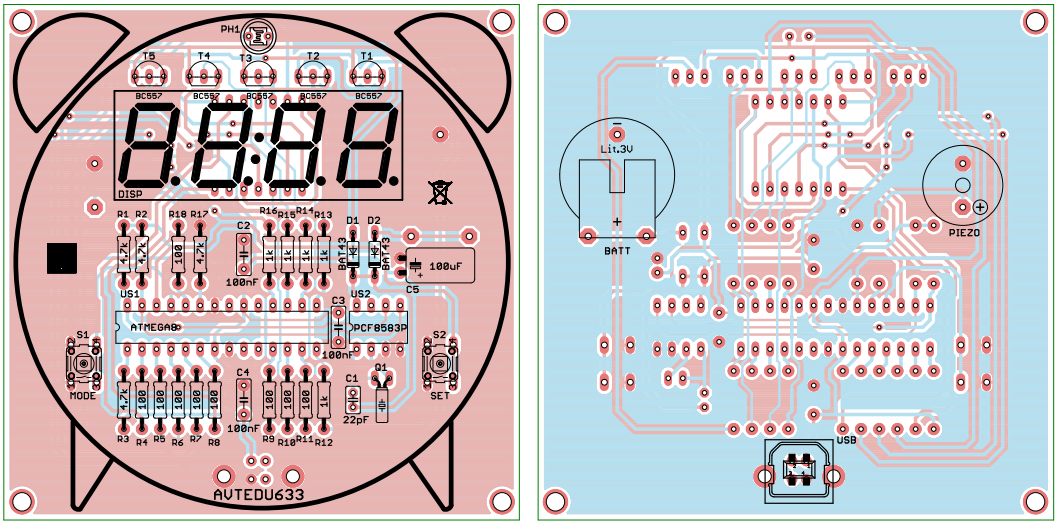


Figure 2. Position of the elements on the printed circuit board

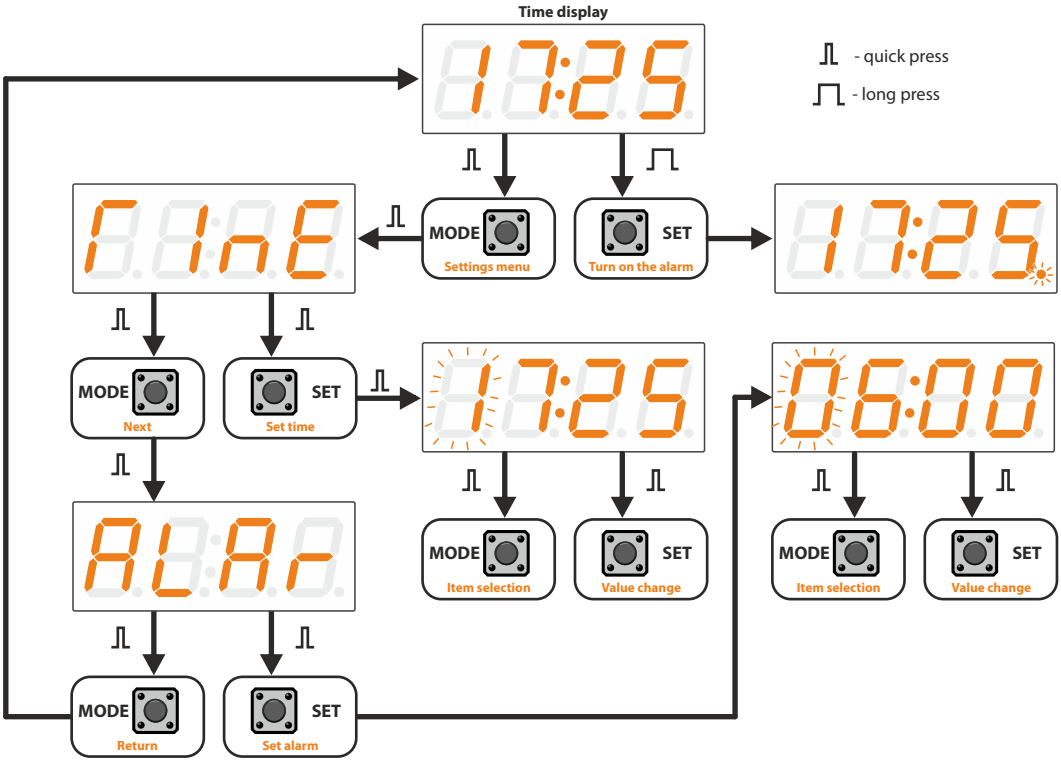
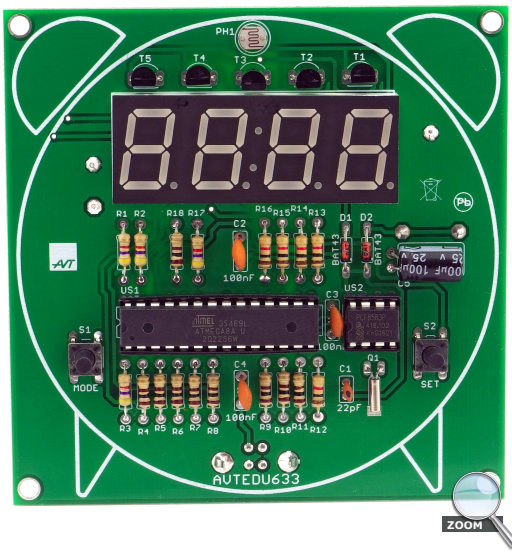
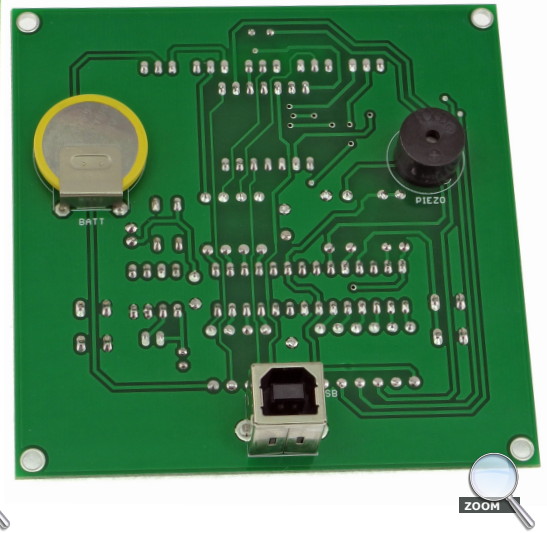


Figure 3. Diagram picturing the use of the clock



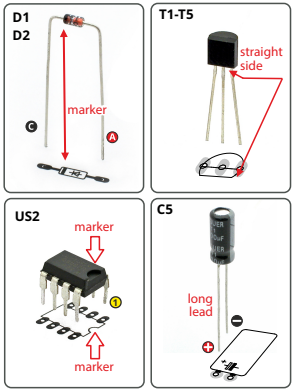


Zalecana kolejność montażu:

R1-R3, R17:.....4,7kΩ resistor (yellow-violet-red-gold)
R4-R11, R18:.....100Ω resistor (brown-black-brown-gold)
R12-R16:.....1kΩ resistor (brown-black-red-gold)
D1, D2: .....BAT43 diode!
Q1:.....32kHz resonator (mounted on its side)
PH1:.....photoresistor
C1:.....22pF capacitor (can be marked as 22)
C2-C4:.....100nF capacitor (can be marked as 104)
US1:.....ATMEGA8A + IC socket!
US2:.....PCF8583P + IC socket!
C5:.....100µF capacitor ! (mounted on its side)
DISP:.....4 number display
T1-T5: .....BC557 or similar !
S1, S2:.....microswitch

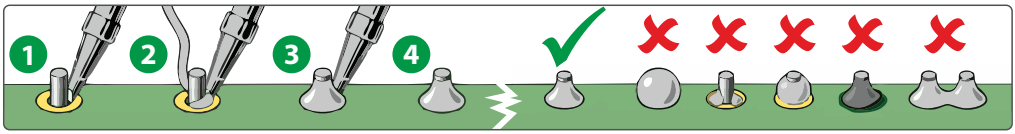
Elements set on the soldering side

PIEZO:.....buzzer with generator !
USB:.....USB socket
BATT:.....CR2032 battery



Begin by soldering the elements onto the circuit board in order from smallest to largest.
When assembling the elements marked with "!" pay attention to their polarity and placing of the notch.
To get access to assembly tips and high-resolution pictures, download the .pdf file.

Assembly instructions



1. Touch the tip of the soldering iron to the end of the element near the soldering field
2. Next, apply tin solder
3. After the cone forms, remove tin solder first, and then the soldering iron
4. The whole process should take approx. 2-3 seconds.

The cleanness of the soldered surfaces, right amount of flux in the solder, adequately high temperature (320-360°C), and sufficient amount of solder are necessary to complete a correct bonding.
Too much tin solder can result in forming a ball instead of a cone or joining of two adjacent soldering points.
Inadequate temperature, amount of tin solder or impurities can lead to so called "cold solder joints, i.e. solder and the flux can' t moisten the two surfaces and the resulting solder point is fragile and in time will oxidize, break, and stop working.

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This symbol means do not dispose of your product with your other household waste. Instead, you should protect human health and the environment by handing over your waste equipment to a designated collection point for the recycling of waste electrical and electronic equipment.