

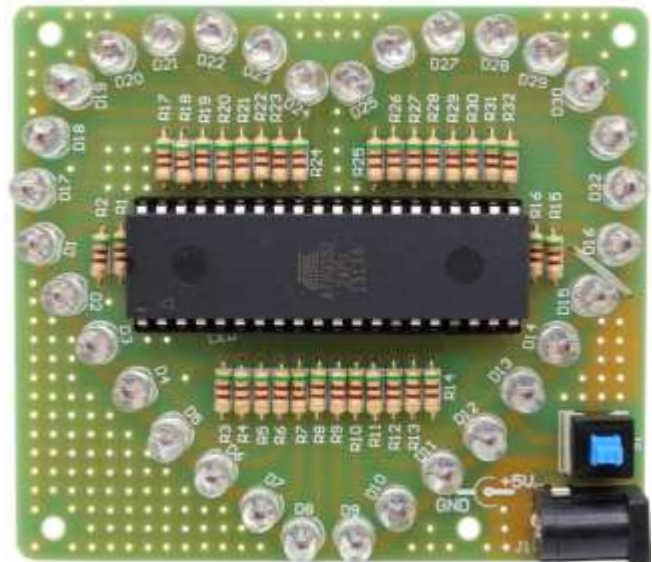
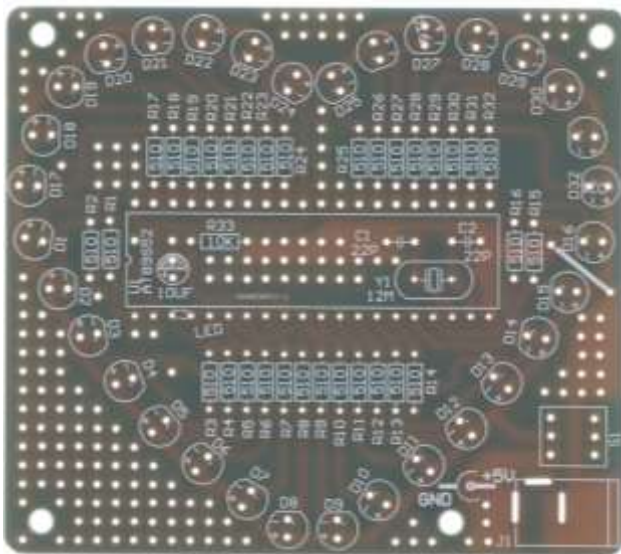


Do-It-Yourself LED Colorful Heart Display Kit

The **LED Heart** is a very complex, yet simple design which drive 32 high-intensity multi-color LEDs in the shape of a heart, displaying various elegant and hypnotizing lighting sequences driven by an advanced microcontroller. Overall board size measures 3.4" x 3" (85mm x 75mm) with traces on one side only and a high-contrast white silk-screen displaying component placement.

Available only as a kit, this design can be easily built in one evening with the assistance of these instructions.

Powering the display is accomplished with the included USB cable which can be connected to an available USB port on a desktop or notebook or alternately powered by a USB charging power supply.



Kits are supplied with all component necessary to build the LED Heart Display. Soldering is required for the completion of the kit with a standard low-wattage soldering iron with a narrow tip.

Component List

Resistors:

- [] (32) 510 ohm 1/4 watt resistor **R1-R32**
- [] (1) 10K ohm 1/4 watt resistor..... **R33**

Capacitors:

- [] (2) 22pF **C1, C2**
- [] (1) 10uF 25v Electrolytic Capacitor..... **C3**

Crystal:

- [] (1) 11Mhz – 12Mhz Crystal..... **Y1**

Semiconductors:

- [] (32) Multi-color LEDs **D1-D32**
- [] (1) 40-Pin Microcontroller..... **U1**

Sockets, Connectors and Switches:

- [] (1) 40-pin DIP Socket..... **U1**
- [] (1) Power Switch..... **S1**
- [] (1) Power Connector (2.1mm) **J1**
- [] (1) USB to 2.1mm Power Cable **S1**

Main Board:

- [] (1) Single Sided PCB..... **PCB**

Assembly Instructions

The design of the board positions several components beneath the microcontroller inside of the IC socket. This is where we shall begin assembling the unit.

- ❖ Install R33 (10K ohm resistor, Brown-Black-Orange Gold) along with capacitors C1 and C2 (33pf)
- ❖ Now install C3 (10uf) observing the correct polarity and position it so that it lays on its side
- ❖ The crystal, Y1, can now installed into the board

This takes care of the installation of the components under the microcontroller. Now we can move on to the remainder of the board.

- ❖ There are now 32 pieces of 510 ohm resistors (Green-Brown-Brown) which can be installed into the board at positions R1 to R32
- ❖ After all the resistors are installed, there is one jumper which must be installed on the board. You can use one of the discarded legs of the resistors. The jumper is labeled on the board and is located in the middle-right side just between resistor R15 and R16 directly in-between D15 and D16

- ❖ Now install the 32 LEDs to the board. Note that the LED has one short lead and one long. The long lead is the anode (positive) and goes into the hole on the board labelled with a + sign. Ensure the LEDs are flush to the board when installing
- ❖ The power switch, can now be installed into position S1 along with the power jack at J1
- ❖ The IC socket can now be installed at U1 to the board. Make note that Pin 1 of the microcontroller is located on the left side of the board. Position the socket to fit onto the board around the components installed in the first steps
- ❖ This only leaves the microcontroller for installation. When installing, make sure that pin one is located on the left side of the board
- ❖ This completes the assembly of the board

Powering Up Your LED Heart

To power-up the board, simply install the included cable into the power jack at J1 and plug the other end of the cable into a USB port on a computer or to a USB charger.

Once connected, press the power switch at S1 to power up the unit and enjoy the various sequences.

