

MaxiBlink RGB – Construction Kit

Contents:

1 PCB "MaxiBlink RGB v1.0"	1 IC socket, 8-pin	25 Resistor, 2.7 kΩ (1 spare)
1 IC NE555 (Universal Timer)	1 IC socket, 14-pin	25 Resistor, 8.2 kΩ (1 spare)
1 IC 74HC86 (Quad XOR Gate)	3 IC socket, 16-pin	26 Resistors, 10 kΩ (1 spare)
3 IC 74HC174 (Hex D-Latch)	4 Ceramic capacitor, 100 nF	1 Micro-USB power connector
25 RGB LED, 5mm (1 spare)	1 Electrolytic cap., 100 μF	

General Soldering Advice

Insert the components one at a time and bend the leads outward slightly to prevent the component from falling out. Heat up the solder joint for a second before feeding some solder wire between the soldering iron's tip, the board and the component's lead. Wait for a few more seconds before removing the tip from the solder joint. Don't move the board until the solder has solidified. After soldering, trim the leads with a wire cutter to about 1 mm length.

See http://mightyohm.com/files/soldercomic/FullSolderComic_EN.pdf for more detailed instructions.

I recommended soldering the components in the order listed below.

1. Resistors (R1~R72, R97): Bend the leads 90° as close to the resistor body as possible before inserting them into the board. Orientation doesn't matter.



Resistor	Value	Colour Code
R1, R4, R7, ..., R70	2.7 kΩ	red, violet, red, gold
R2, R5, R8, ..., R71	8.2 kΩ	grey, red, red, gold
R3, R6, R9, ..., R72, R97	10 kΩ	brown, black, orange, gold

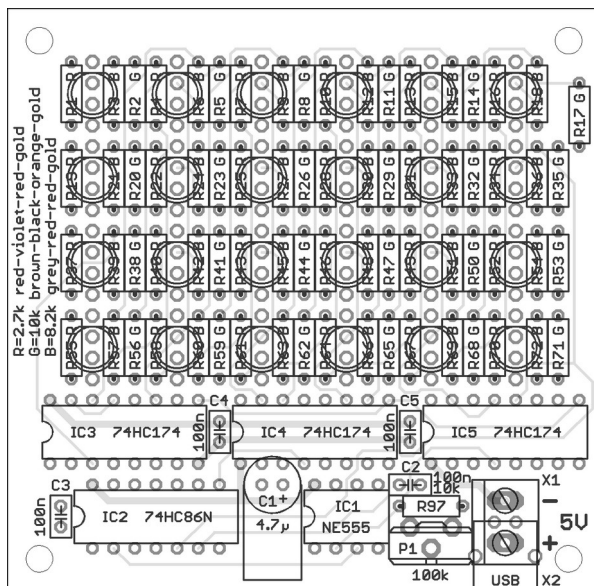
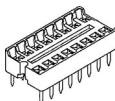
2. USB Connector (X2):

Apply some insulation tape or a piece of sticky label to the large pad on the PCB in the USB connector area, then insert the USB connector and solder all 4 pins.

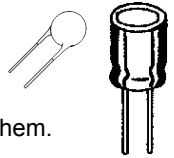


3. IC Sockets (IC1~IC5):

Insert the IC sockets into the board, making sure the orientation of the small notch matches the silkscreen outline. You can bend two diagonally opposite pins of the socket if you like to prevent the sockets from falling out before soldering.



4. Capacitors (C1~C5): Orientation is only important for the electrolytic capacitor (C1), the *negative* side is marked with a printed stripe with “-” signs. On the board, the *positive* side is marked with a “+”. Bend the leads 90° so the capacitor lies flat against the board before soldering. The other capacitors (C2~C5) are ceramic disc capacitors, orientation doesn’t matter for them.



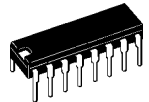
5. Potentiometer (P1): The potentiometer will only fit in one orientation. Make sure it’s straight and inserted as far as it’ll go before soldering.



6. LEDs (LED1~LED24): The flat side of the LEDs (closer to the longest pin) must match the outline printed on the PCB (or refer to the image on the first page of these instructions). Make sure to use the correct holes for each LED (aligned with the resistors on either side). Gently spread the leads until the LED will fit into the PCB, then push it down to the desired height. Leave at least 5 mm between the LED and the PCB to avoid spreading the leads too much. You can make a simple jig to ensure the LEDs are perfectly straight and at the same height by drilling 5 mm holes into a piece of perfboard (every 4th hole on standard 0.1” grid). Alternatively, files for a 3D-printed front bezel are available from the project webpage (see below) which will also serve as an assembly jig.



7. ICs (IC1~IC9): Insert the ICs into their corresponding sockets. You may have to bend the pins inward slightly before they will fit into the socket. Make sure the IC’s notches match those of the sockets and the silkscreen outlines. Sometimes, the notch on the IC is replaced by a tiny dot or indent near pin one, which should also face towards the notch of the socket (and silkscreen outline).



IC	Pins	Type
IC1	8	NE555
IC2	14	74HC86
IC3~5	16	74HC174

9. Connect Power: Connect a Micro-USB cable to the MaxiBlink RGB and plug the other end into a USB charger or power bank (don’t use a PC or other expensive equipment as a power source until you’re sure that everything is working). If you don’t want to use USB, you can solder wires to the two large pads marked “+” and “-” (either on the bottom side of the board, or don’t solder the USB connector and connect the wires to the top side) and supply 5 V from a different source. The circuit requires approx. 50 mA when all LEDs are lit (white).

If no LEDs light up after a few seconds, the circuit might have started up with all registers at zero. Try disconnecting and re-connecting power a few times. If that doesn’t help, use a small flat screwdriver to short pins 1 and 2 (bottom left corner) on any of the 74HC174 ICs together for a second or two, until some LEDs light up. If that still doesn’t work, or the LEDs turn off again as soon as you remove the screwdriver, verify that power is getting to the board, check your soldering and the component orientations.

To prevent having to short the two IC pins together to start the circuit, the PCB can be modified – see separate instruction sheet.

Questions? Problems? Comments? Ideas?

Please contact me! E-Mail: arne@blinkerarea.org

Project webpage:

de: http://wiki.blinkenarea.org/index.php/MaxiBlink_RGB

en: http://wiki.blinkenarea.org/index.php/MaxiBlink_RGBEnglish