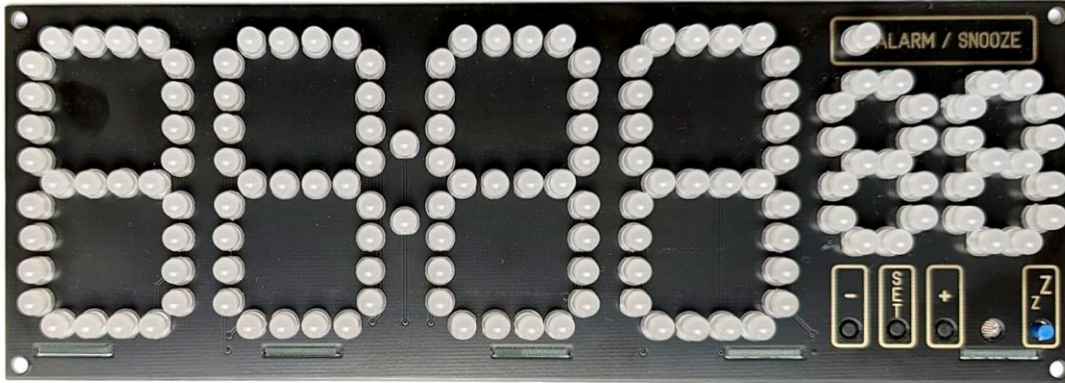# LED Clock DIY Kit with Melody Alarm for Arduino Nano V3

A large LED clock that is powered by an Arduino Nano* and a real-time clock chip.

We provide a demo code (download) that shows time and date, day of week, offers three independent alarms with adjustable snooze time, and different brightness settings.

The included dual-color LEDs emit green light in one polarity and red light in the other one.

You can have your clock red or green, or the seconds and the colon in a different color. It is up to you. Just don't mix colors within the same segment.

The demo code synchronizes the clock with the time on your computer the moment you upload the code using the Arduino IDE.

The provided demo code works as follows: To change settings, you press the [SET] button and use the [+] and [-] buttons to scroll through the menu. Pressing the [SET] button again will change the currently selected setting or let you change the alarm time, for example.

The clock will go back to display the time (and date, if selected) after a few seconds without any button pressed.

Specifications:

- front PCB size: 210x75mm
- main PCB size: 210x43mm
- LEDs: 143 x 5mm, red & green
- MCU: socket for Arduino Nano
- sound chip: socket for HK66T
- RTC chip: DS1307N
- power supply: 5V, 200mA
- backup battery: CR2032

ASSEMBLING

Since there are only through-hole parts in the bag, assembling the kit only requires basic soldering skills. If you are new to your electronics hobby, we recommend you watch some videos on YouTube first, before you start assembling. Make sure you have a piece of thick foam in about the size of your PCB handy to keep the parts in place when you flip the PCB with the lose parts over before you solder them. For the least frustration, we recommend assembling the kit in the following order:

1. Start with the parts that have the lowest profile: All resistors on the mainboard, then the crystal and the 3-pin socket for the melody chip. Proceed with the transistors and the socket for the RTC chip. Now add the buzzer, battery holder, power port and headers for the Nano module. Finish it up with the 4 buttons. Don't install the light sensor yet, this will be a later task.

2. Try the LED polarity and colors using the included 3V button cell. For a very short time, touch the poles on the coin cell with the LED leads to check the colors. Compare with the print on the back of the display PCB: it explains which polarity will result in which LED color.

3. It was the best way for us to start with all LEDs in segments A, D and G. Then we assembled all segments B and C. In the next step, all segments E and F. First, we solder only one lead of every LED. Then we check that everything looks fine and correct those LEDs that don't look straight. Now we trim the leads with a shear cutter before we solder the 2nd lead of each LED.

4. After both PCBs are fully assembled, we need to marry them. Set the mainboard PCB into the slots of the display PCB in a 90-deg. Angle and connect the outer 2 pads on each PCB with a blob of solder on the bottom side of the mainboard PCB. Check if everything is straight and good-looking, then correct, if necessary, and proceed with all other connections on both sides of the mainboard PCB to provide sufficient stability.

5. Now it is time to install the photo resistor (light sensor). You must bend its leads in a certain shape to make it fit into its spot on the mainboard PCB so that can "look" through the hole between the buttons on the display PCB and catch the light in your room. The light sensor is for a possible future update of the demo code, or for your own development, to create an auto-dimming feature. With the release of this kit and the first demo code, the light sensor is not being used.

6. Since the description of buttons and functions depends on the program you upload to the Nano, we added this information to the header of the demo code.

⇨ For additional information and demo code visit www.universal-solder.ca/26888

Connecting the 2 PCBs
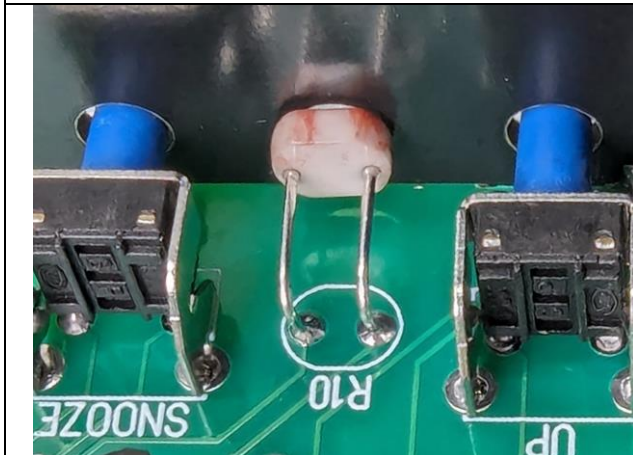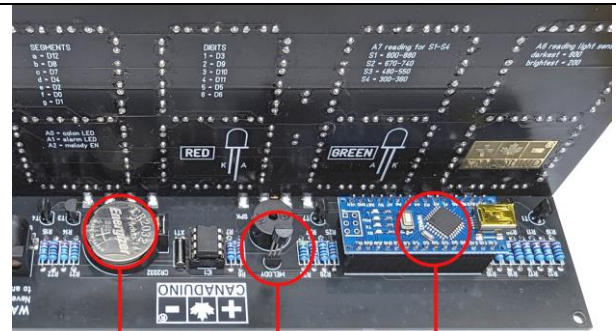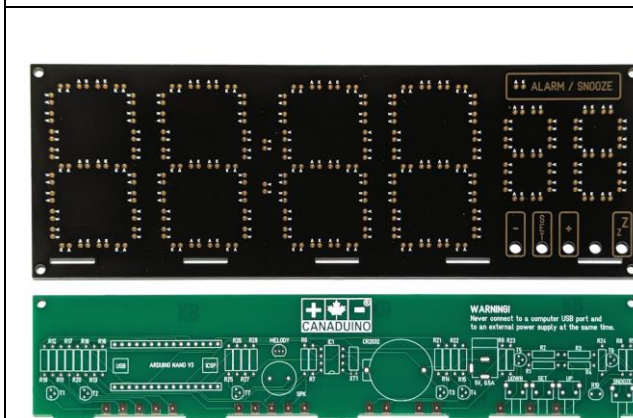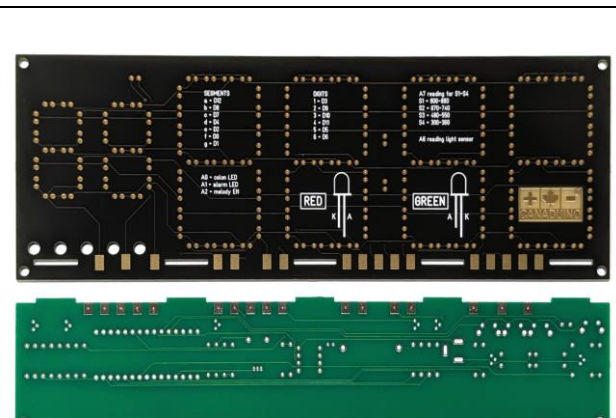

Solder blobs for contact and stability

Photo resistor position

Sound chip and Arduino Nano not included

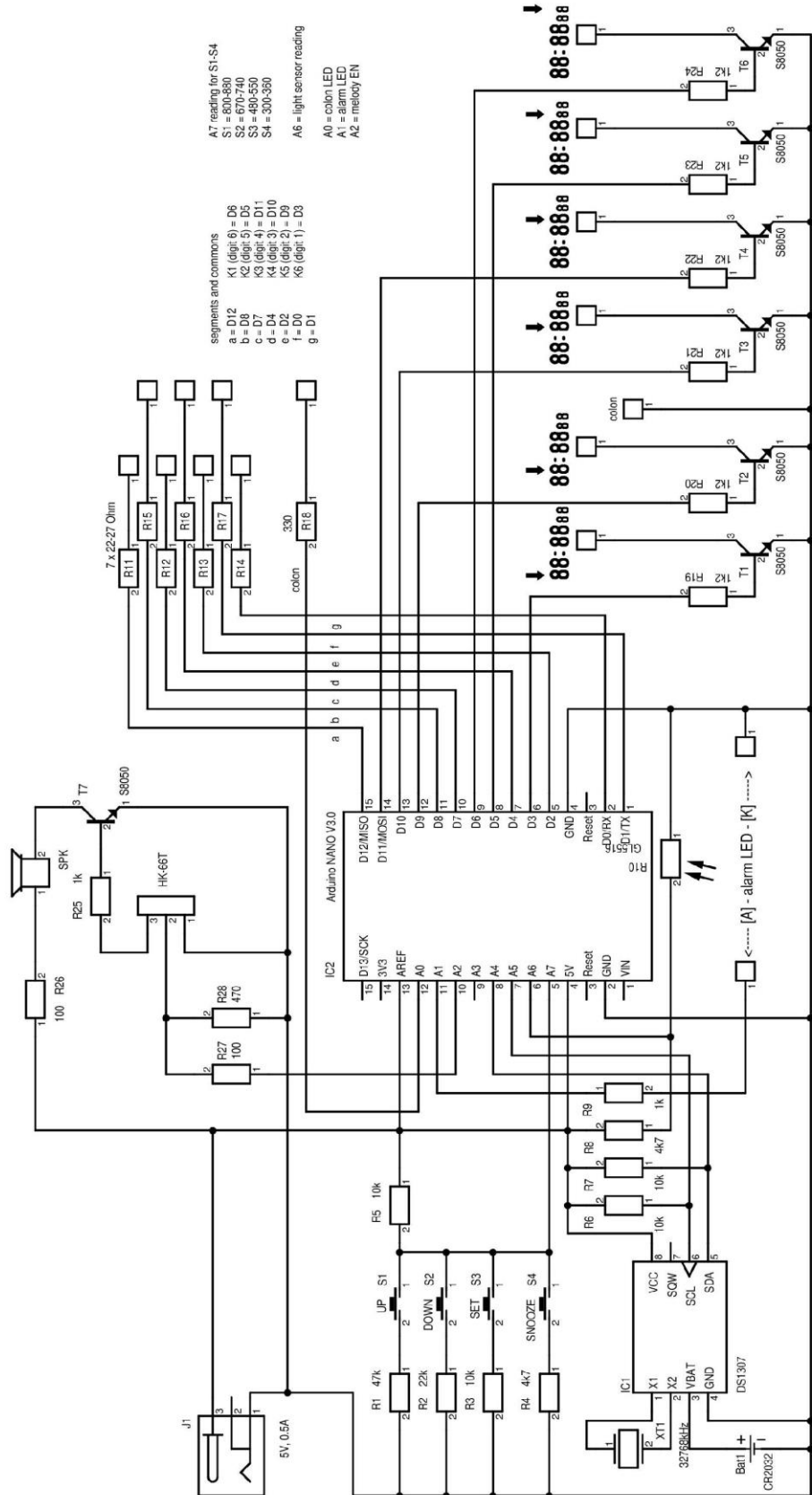These options are not included.

RTC Backup Battery | Sound Chip for Alarm | Arduino Nano or compatible

PCB view 1

PCB view 2

A7 reading for S1-S4
S1 = 800-880
S2 = 670-740
S3 = 480-550
S4 = 300-350

A6 = light sensor reading

A0 = colon LED
A1 = alarm LED
A2 = melody EN

segments and commons
a = D12   K1 (digit 6) = D6
b = D8   K2 (digit 5) = D5
c = D7   K3 (digit 4) = D11
d = D4   K4 (digit 3) = D10
e = D2   K5 (digit 2) = D9
f = D0   K6 (digit 1) = D3
g = D1

7 x 22-27 Ohm