Simple Servo Motor Tester

(designed by Andrey Samokhin)
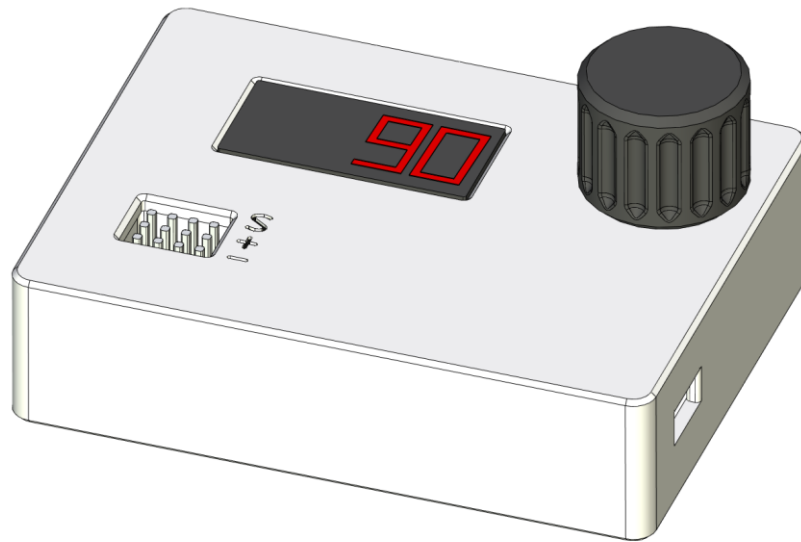
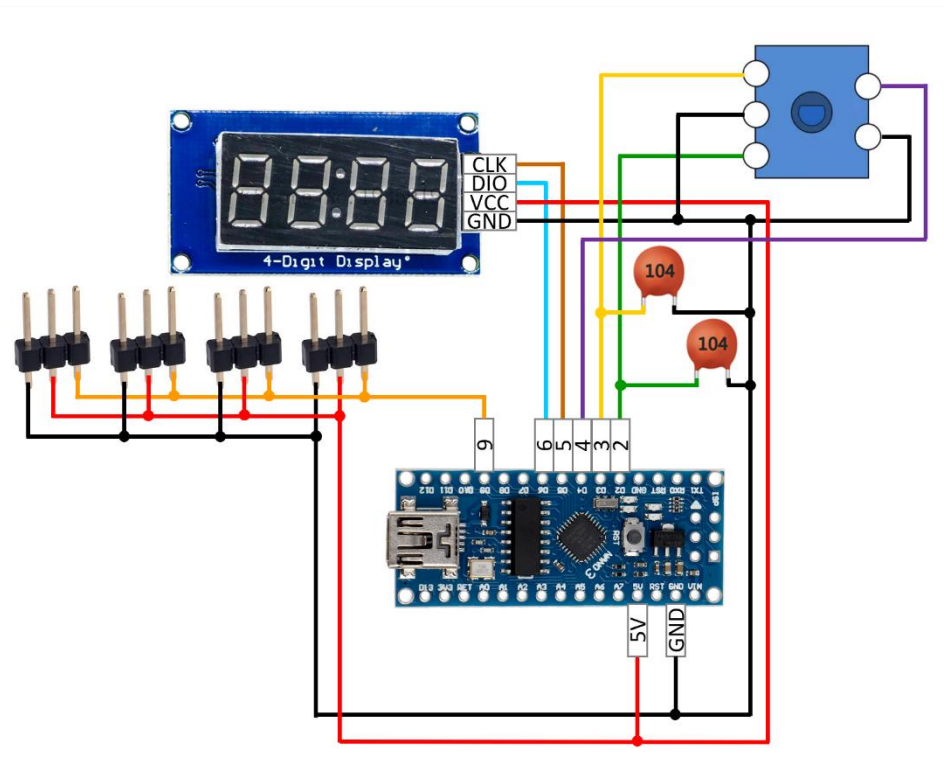
Assembly Instructions

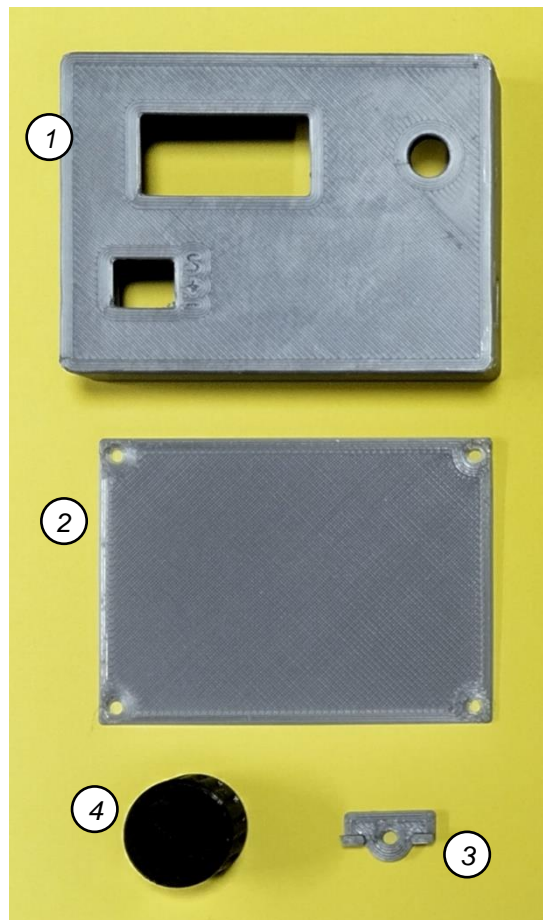(Version 0.1, Dec 2023)

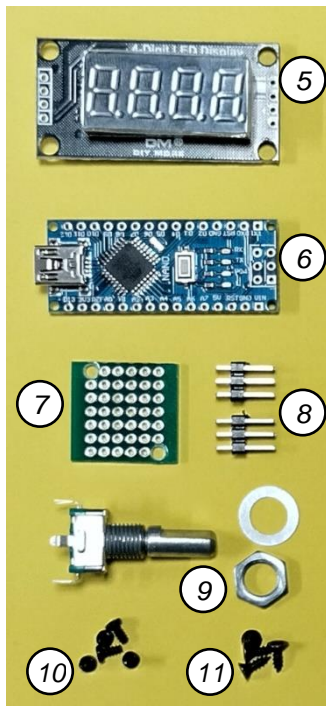Fig. 1. Electrical circuit.
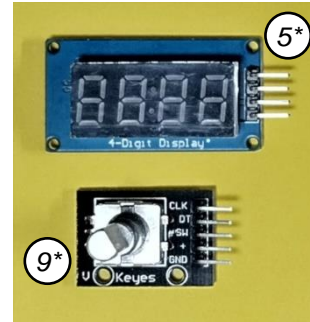

Fig. 2. 3D printed parts.

Fig. 3. Other parts.

Fig. 4. Another 4-digit display and encoder module suitable for the project.

Table 1. Part list.

PART #	PART NAME	QTY
1	Case (3D printed)	1
2	Case lid (3D printed)	1
3	Arduino board holder (3D printed)	1
4	Encoder knob (3D printed)	1
5	4-digit LED display (TM1637)	1
6	Arduino Nano*	1
7	A piece of prototype board	1
8	Pin header 2x3	2
9	Encoder EC11	1
10	Screw 2x4	5 or 7
11	Self-tapping screw 2x6.5	4
12	Capacitor, 100 nF (THT)	2
13	Wires	–

* An Arduino Nano board with a size of 18x44mm should be used.

Step 1
Print the plastic parts:
- `servo_tester_case.stl`
- `servo_tester_lid.stl`
- `arduino_holder.stl`
- `knob_half_shaft.stl` or `knob_plum_shaft.stl` (in the case of 3D printed knobs, a 0.2mm tolerance was found to be optimal for a well-calibrated 3D printer).

Step 2
Upload the `servo_tester.ino` sketch to an Arduino Nano board.

Step 3
Cut a piece of prototype PCB (6x7 holes). Drill out two corner holes with a 2mm bit (Fig. 3). Solder pin headers in the middle of the board (Fig. 5).
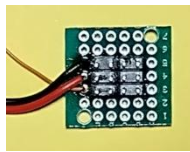

Fig. 5. A piece of prototype PCB with soldered pin headers.

Step 4
Solder all electronic components according to the electrical circuit (Fig. 1). It is recommended to solder two ceramic capacitors (nevertheless, the encoder should work without them).

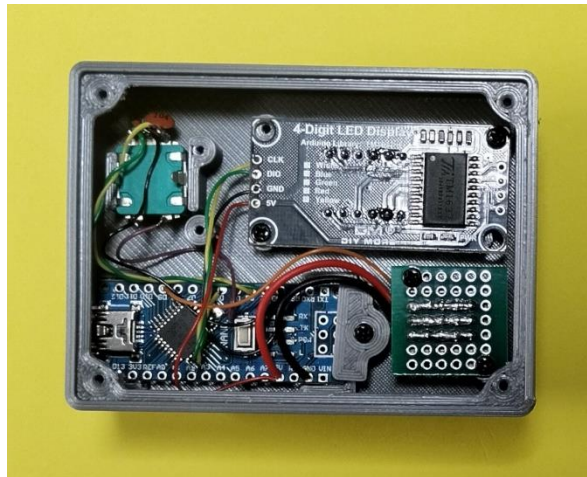**Step 5**
Mount all components inside the case (Fig. 6).

Fig. 6. The case with installed electronic components.

Step 6
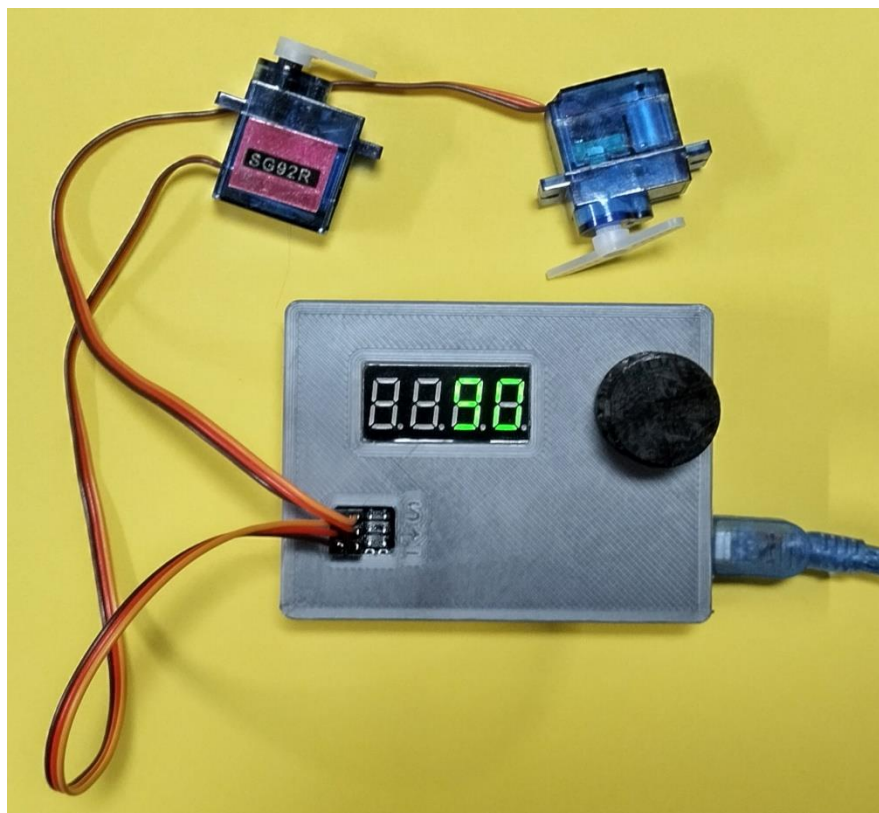Attach the lid with 4 self-tapping screws. The fully assembled servo motor tester is shown in Fig. 7.

Fig. 7. The fully assembled servo tester.