

Calculator Module DIY Kit

1.Introduction:

It is a calculator DIY soldering module.It can perform addition,subtraction,multiplication,division,negative numbers,and decimal point operations.

2.Feature:

- 1).It uses in-line components and is easy to solder.
- 2).It doesn't require a computer,the calculator kit is pre-programmed.
- 3)It is powered by a single CR2032 battery and can be carried anywhere without being tethered.
- 4).It can be turned on instantly,turned on at any time,and easy to use.
- 5).When not in use for a long time,it can automatically sleep,saving energy.

3.Parameter:

- 1).Product Name:Calculator DIY Soldering Module
- 2).Battery:CR2032
- 3).Digital Precision:6 digits
- 4).Welding Method:in-line component welding
- 5).Work Temperature:-25℃~85℃
- 6).Work Humidity:5%~95%RH
- 7).Size(Installed):90*91*18mm

4.Precautions for Welding and Installation:

- 1).The components are soldered on the front of the board (screen printing surface),from low to high,that is,first low-solder components,such as mega328 (pay attention to the IC direction),capacitors,resistors,battery holders,then solder the switch,and finally solder the digital tube .
- 2).Use diagonal pliers to cut the excess pins as short as possible.

5.Component Listing:

NO.	Component Name	PCB Marker	Parameter	QTY
1	Resistors	R1-R6	10Kohm	6
2	Capacitance	C1,C2	0.1uF 104	2
3	Digital Tube	U1,U2	0.36inch	2
4	ATMEGA328P-PU Chip	U3	DIP-28	1
5	CR2032 Battery	BT1	3V	1
6	CR2032 Battery Holder	BT1	26.5*20.5*3.7mm	1
7	Switch	S1-S17	12*12*7.3mm	17
8	Square Blue Lid	S1-S17	10*10*6mm	1
9	Square Transparent Lid	S1-S17	11.6*11.6*5mm	1
10	Acrylic Sheet		100*92*2.1mm	2
11	Acrylic Sheet		80*10*2.1mm	2
12	Acrylic Sheet		90*10*2.1mm	2
13	Screws			8
14	Nut			4
15	PCB board		90*83*1.6mm	1

Note:Users can complete the installation according to the PCB silk screen and component list.

6.Debugging Steps:

- 1).Plug in the CR2032 battery,and the digital tube displays CAL 1.5,indicating that the welding is successful.
- 2).Press the [C] Clear key to turn it on.
- 3).The calculator turns itself off after about 20 seconds of inactivity.

7.Application:

- 1). Training welding skills
- 2). DIY production
- 3). Project Design
- 4). Electronic competition

8. Note:

- 1). Up to 6 positive digits or 5 negative digits.
- 2). Numbers are rounded up to four decimal places. Six decimal places can be entered, but like the result, they are rounded up.
- 3). According to Arduino, only up to 6 digits of precision can be achieved.
- 4). Can't do zero calculations, like $5 + 0$.

9. Installation Tips:

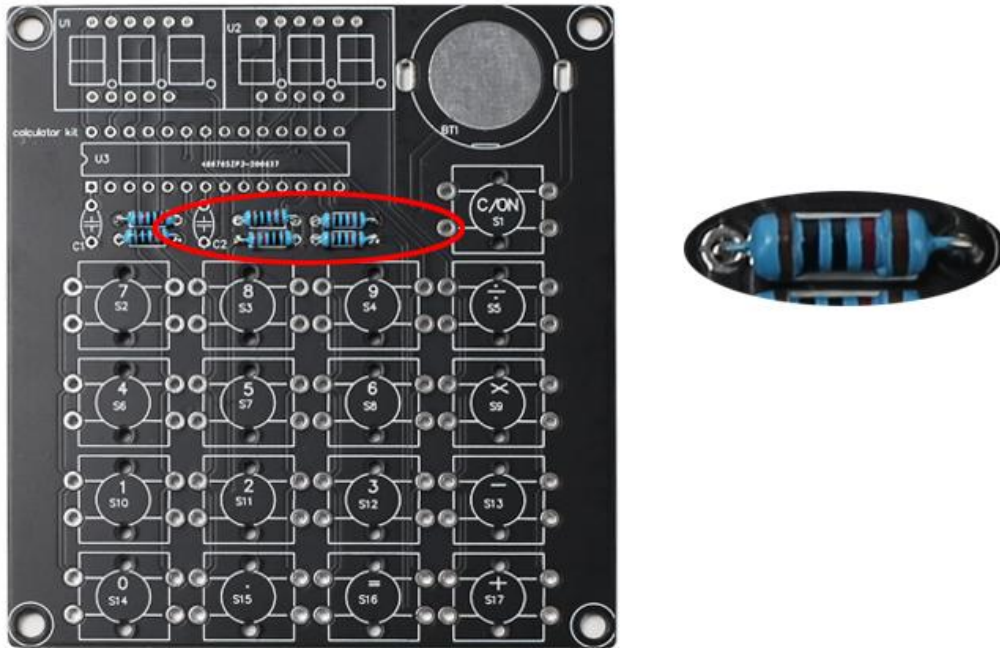
- 1). User needs to prepare the welding tool at first.
 - 1.1). Soldering iron (<50 Watt)
 - 1.2). Rosin core solder
 - 1.3). Wire cutters
 - 1.4). Wire strippers
 - 1.5). Philips screwdriver
- 2). Please be patient until the installation is complete.
- 3). The package is DIY kit. It needs finish install by user.
- 4). The soldering iron can't touch the components for a long time (1.0 second), otherwise it will damage the components.
- 5). Pay attention to the positive and negative of the components.
- 6). Strictly prohibit short circuit.
- 7). Install complex components preferentially.
- 8). Make sure all components are in right direction and right place.
- 9). It is strongly recommended to read the installation manual before starting installation!!!
- 10). Please wear anti-static gloves or anti-static wristbands when installing electronic components.

10. Installation Steps (Please be patient install!!!):

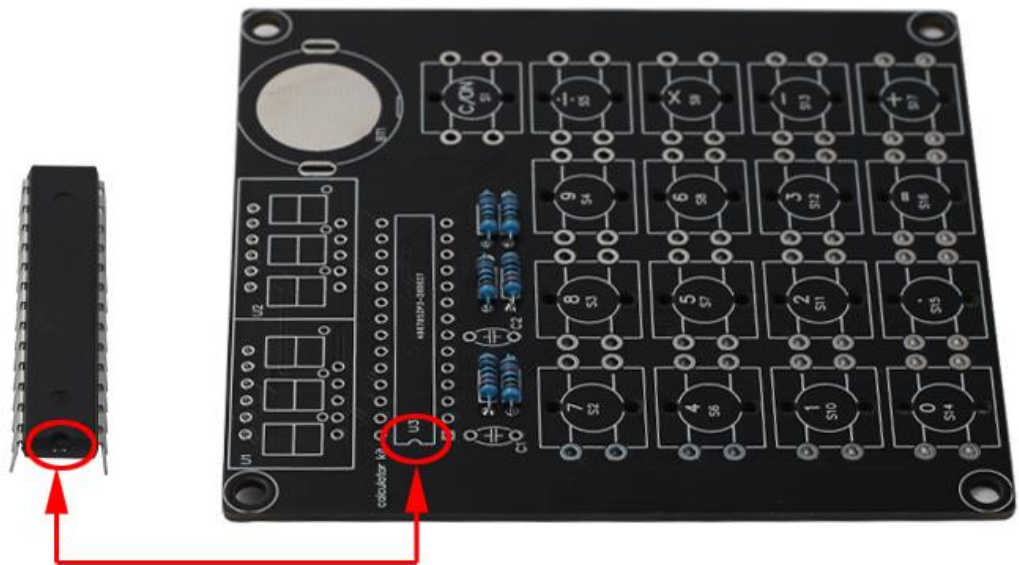
- 1). Step 1: Install six 10Kohm metal film resistors at R1, R2, R3, R4, R5, R6.
- 2). Step 2: Install 1 ATMEGA328P-PU chip at U3, verify and confirm the installation direction of MEGA328. The small semicircular notch on the PCB coincides with the semicircular notch of the MEGA328.
- 3). Step 3: After the MEGA328 is placed, select a lead angle to solder, and then solder the diagonally diagonal pins. After adjusting the position, solder the remaining pins in sequence.
- 4). Step 4: Install CR2032 battery holder at BT1, pay attention to the direction.
- 5). Step 5: After confirming the installation direction, straighten the pins of the CR2032 battery holder, insert them into the installation holes, and solder one of the pins. After adjusting the position, solder the remaining pins and the soldering is complete.
- 6). Step 6: Install two 104 capacitors at C1 and C2, regardless of polarity.
- 7). Step 7: Install a digital tube at U1, pay attention to the installation direction, the decimal point in the lower right corner of the number corresponds to the small white point on the board.
- 8). Step 8: Install a digital tube at U2, pay attention to the installation direction.
- 9). Step 9: Install 17 switches at S2-S17, the switches must be inserted to the end, otherwise it will affect the installation of the casing.
- 10). Step 10: Install the blue button caps on the 17 switches respectively.
- 11). Step 11: Tear off the small label with tweezers and stick it on the corresponding blue keycap.
- 12). Step 12: Install the screws and nuts on the mounting plate.
- 13). Step 13: Put on the transparent protective cover.
- 14). Step 14: Tear off the protective film on the surface of the acrylic case.
- 15). Step 15: Place the bottom acrylic plate first, then fix the 4 side acrylic plates, and finally cover the upper acrylic plate, and screw in the four long screws, do not tighten them too tightly.
- 16). Step 16: Insert CR2032 battery to start using.

11. Install shown steps:

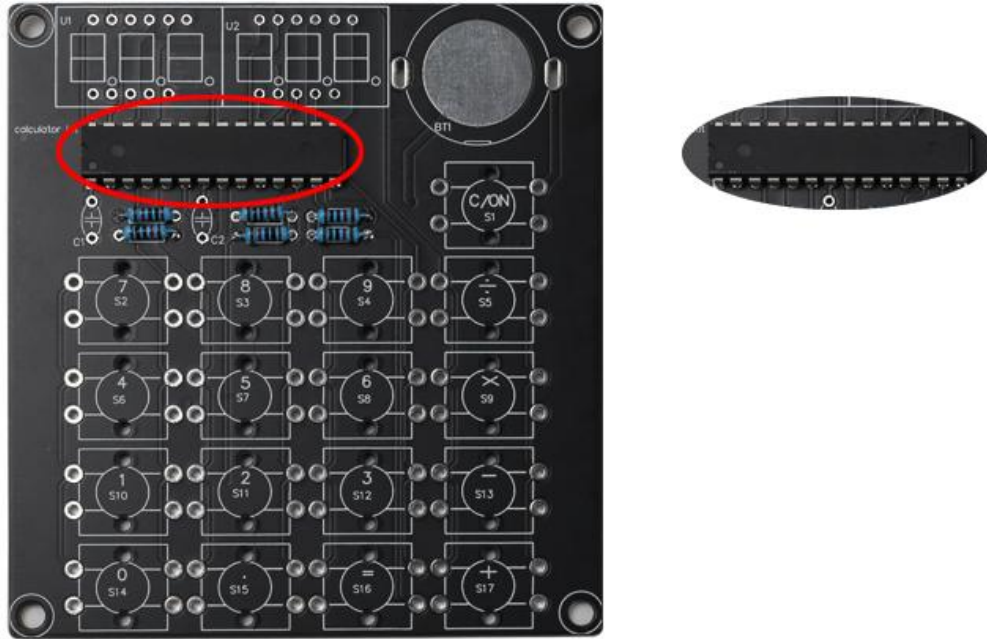
Step 1: Install a 10Kohm metal film resistor at R1.



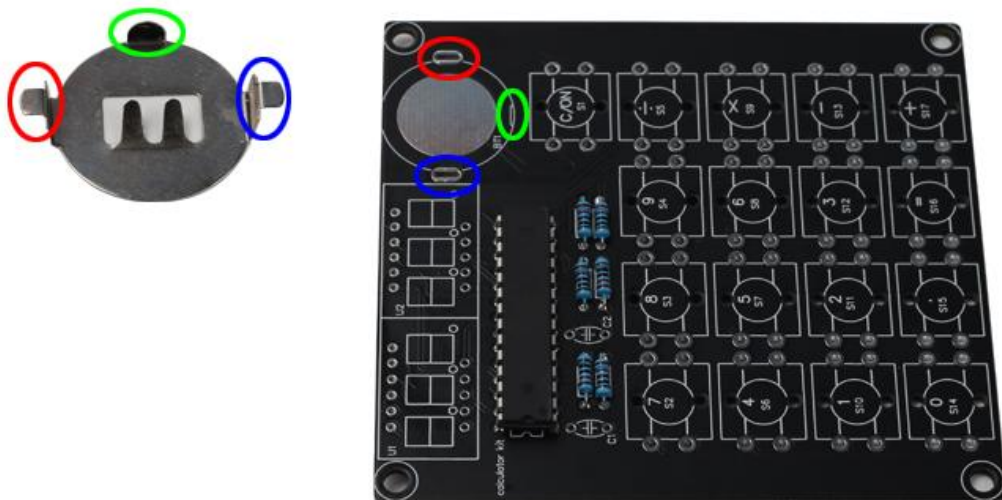
Step 2: Install 1 ATMEGA328P-PU chip at U3, verify and confirm the installation direction of MEGA328. The small semicircular notch on the PCB coincides with the semicircular notch of the MEGA328.



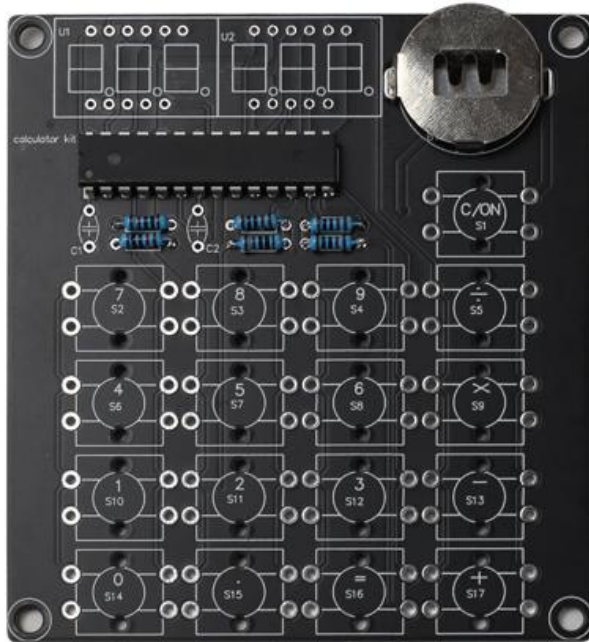
Step 3: After the MEGA328 is placed, select a lead to solder, and after soldering, solder the diagonally opposite pins. After adjusting the position, solder the remaining pins in sequence.



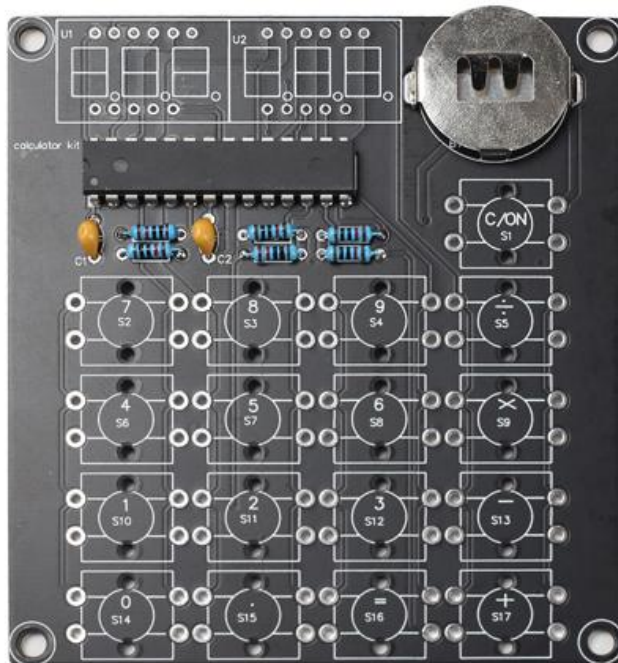
Step 4: Install the CR2032 battery holder at BT1, pay attention to the direction.



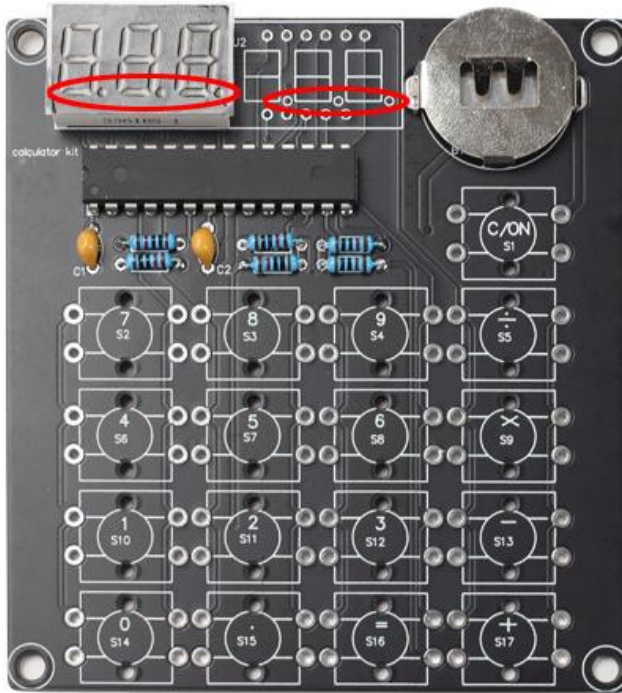
Step 5: After confirming the installation direction, straighten the pins of the CR2032 battery holder, insert them into the mounting holes, and solder one of the pins. After adjusting the position, solder the remaining pins, and the soldering is complete.



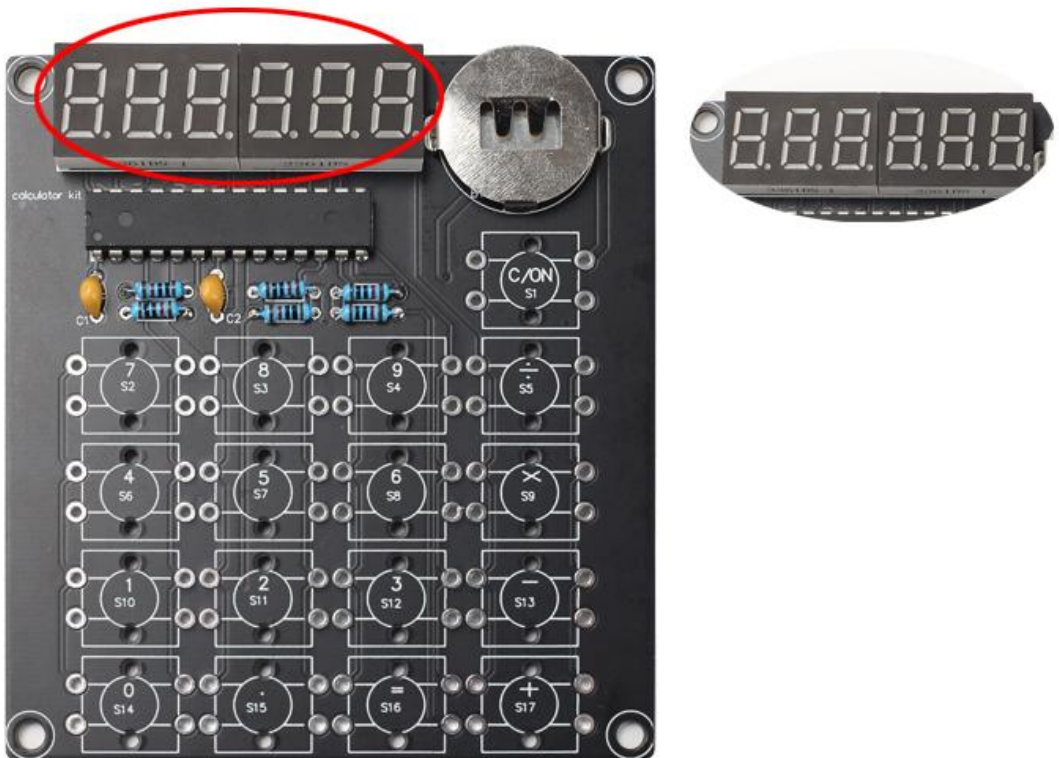
Step 6: Install two 104 capacitors at C1 and C2, regardless of polarity.



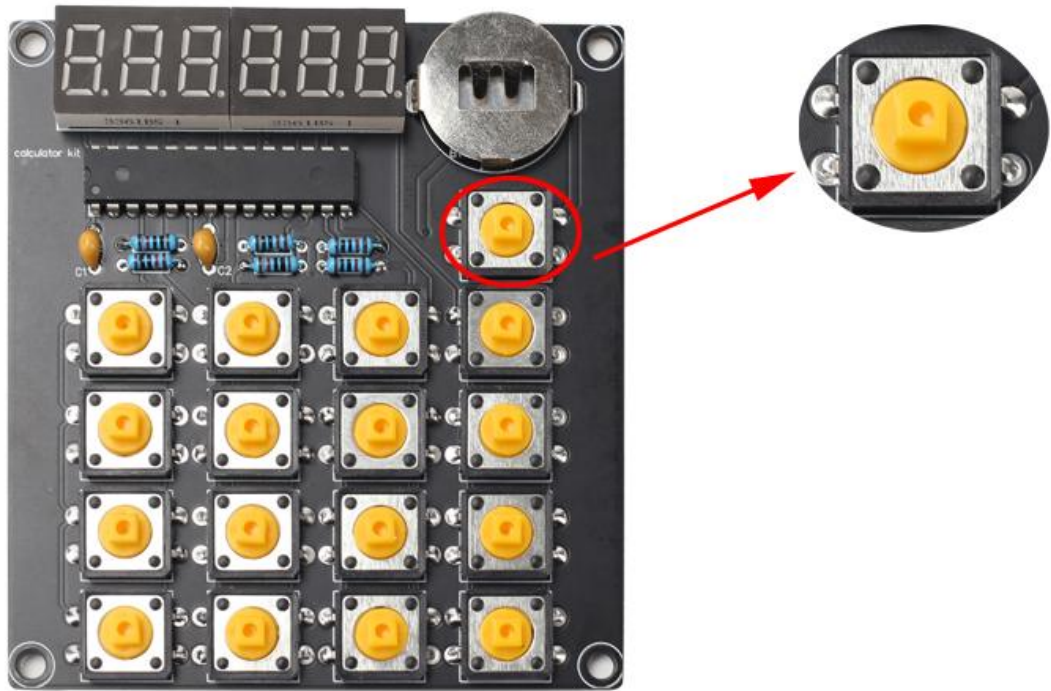
Step 7: Install a digital tube at U1, pay attention to the installation direction, the decimal point in the lower right corner of the number corresponds to the small white point on the board.



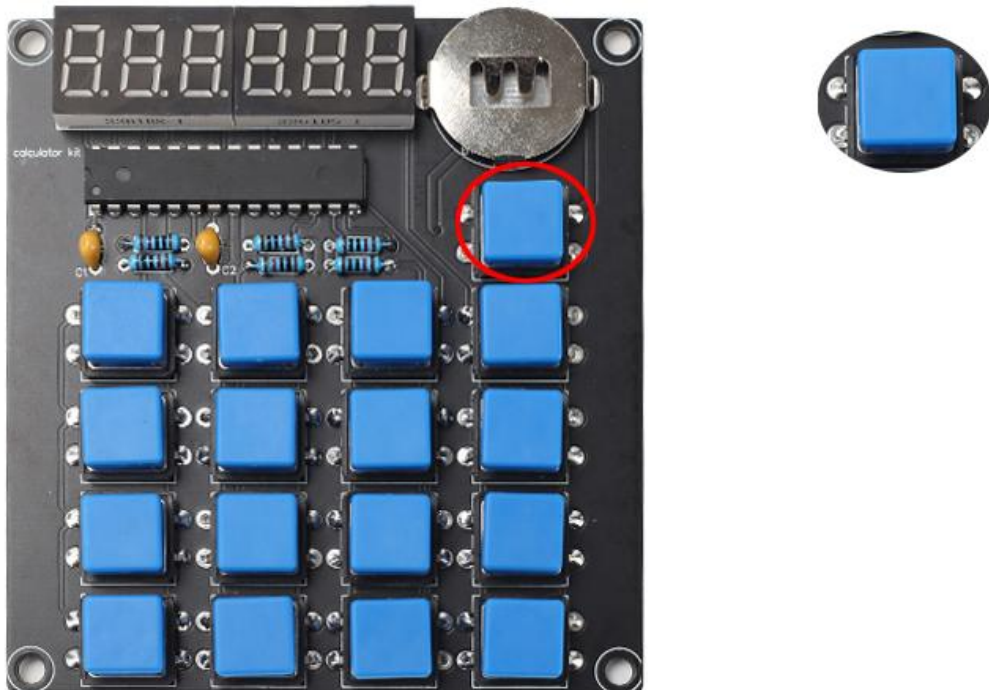
Step 8: Install a digital tube at U2, pay attention to the installation direction.



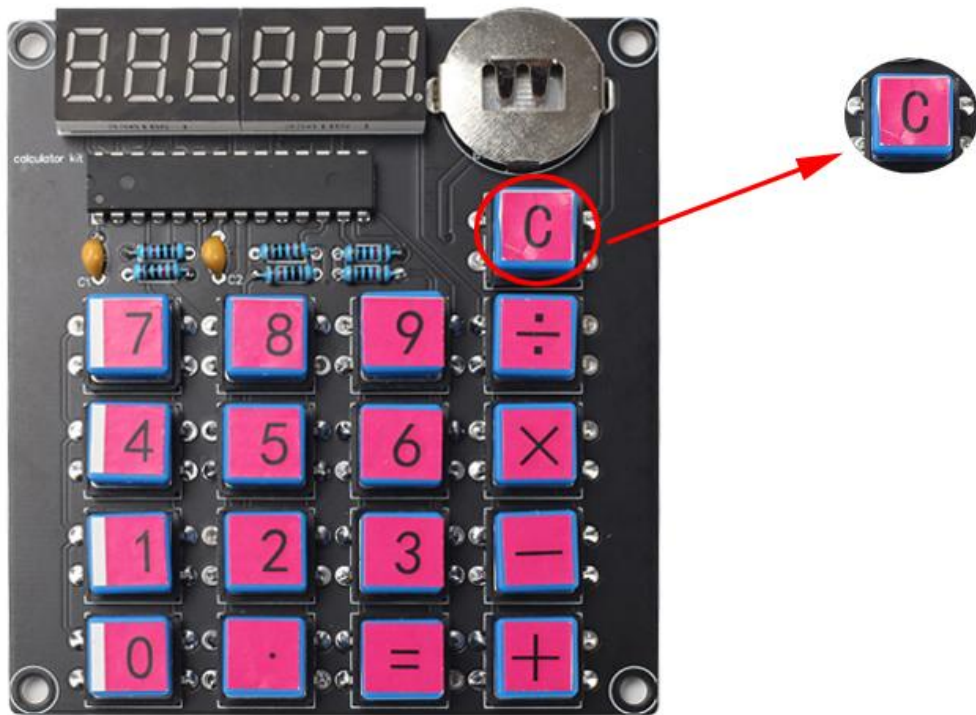
Step 9: Install 17 switches at S2-S17, the switches must be inserted to the end, otherwise it will affect the housing installation.



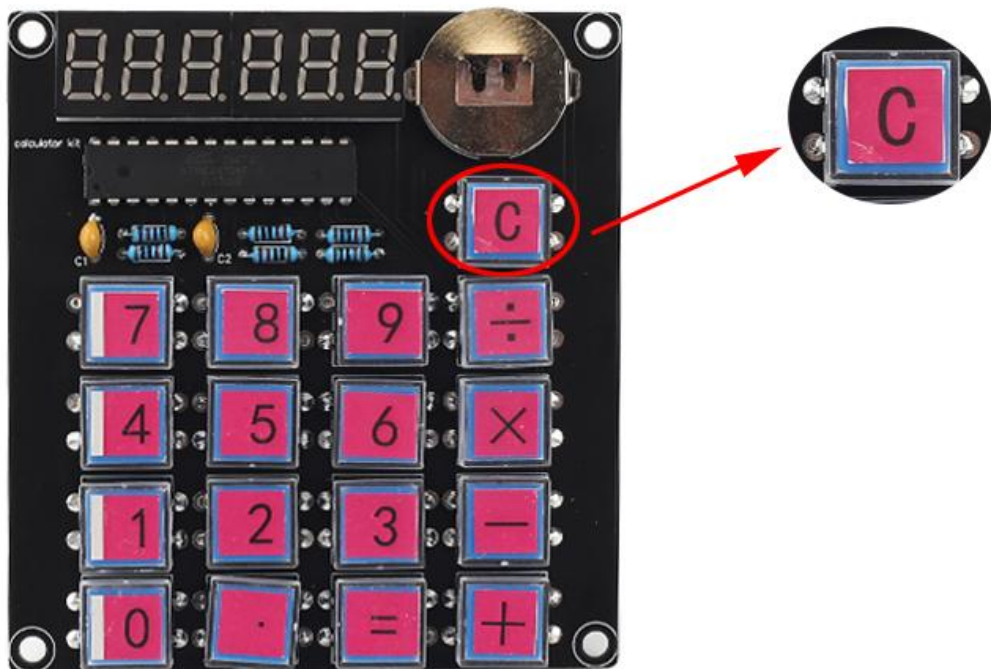
Step 10: Install blue keycaps on each of the 17 switches.



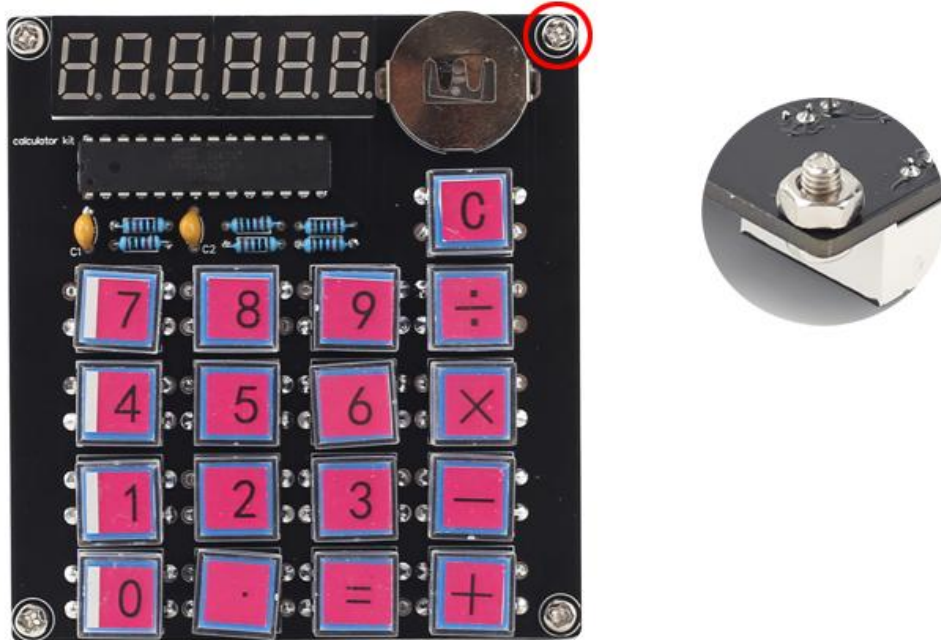
Step 11: Tear off the small label with tweezers and stick it on the corresponding blue keycap.



Step 12: Cover with clear protective cover.



Step 13: Install the screws and nuts on the mounting plate.



Step 14: Peel off the protective film on the surface of the acrylic case.



Step 15: First place the bottom acrylic plate, then fix the 4 side acrylic plates, and finally cover the upper acrylic plate, and screw in the four long screws, do not tighten them too tightly.



Step 16: Insert a CR2032 battery to get started.

