Tools you need:
①Iron (30W)   ④Tweezers
②Solder wire   ⑤Wire cutters
③Multimeter

Precautions:
①Check part values & quantities against part list
②Always meter resistor values before soldering
③Understand all part polarities and orientations

YBN-20 Binary Clock Kit Instructions

1. Choose a color combination

Color Combination \ Components Model	Hours R17 -- R23 LED17--LED23	Minutes R9 -- R16 LED9--LED16	Seconds R1 -- R8 LED1--LED8
	1. 2K Green LED	560R Red LED	150R Yellow LED
	1. 2K Green LED	150R Yellow LED	560R Red LED
	560R Red LED	150R Yellow LED	1. 2K Green LED
	560R Red LED	1. 2K Green LED	150R Yellow LED
	150R Yellow LED	560R Red LED	1. 2K Green LED
	150R Yellow LED	1. 2K Green LED	560R Red LED

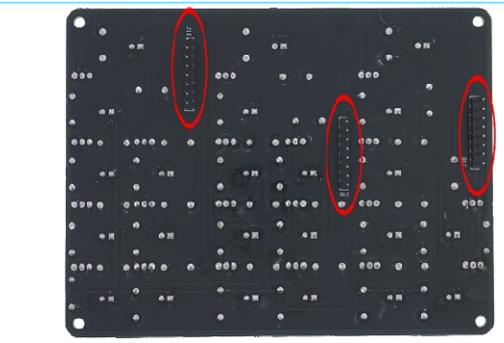## 2. Resistance
R24-R43   1K

3. Resistance
R17-R23   1.2K
R9-R16   560R   R1-R8   150R
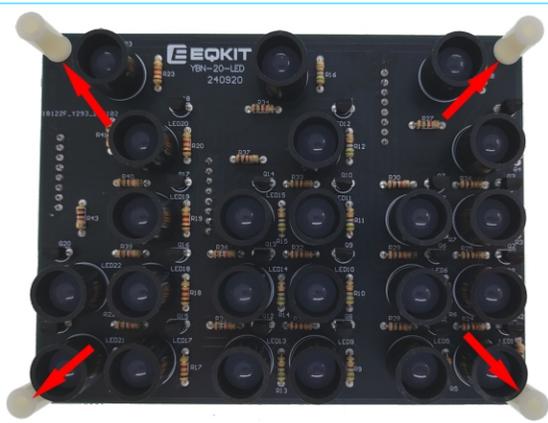
4. Transistor
Q1-Q20   S8550
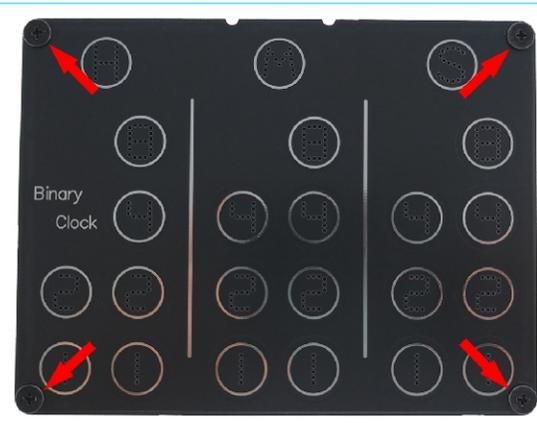
5. LED
LED17-LED23 G
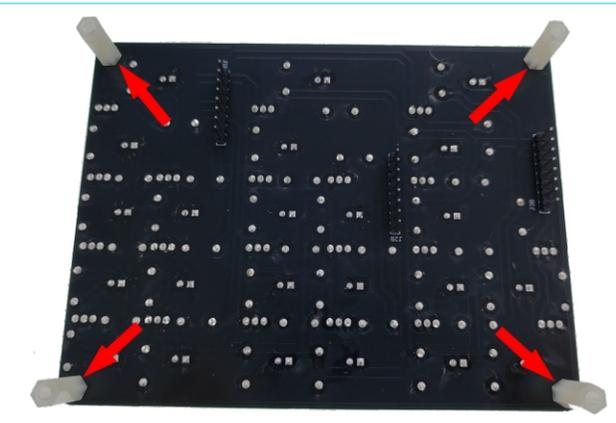LED9-LED16 R   LED1-LED8 Y

6. Pin Header
J1B-J3B   8Pin

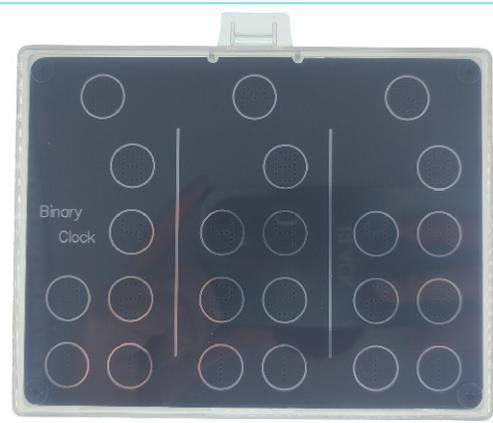## 7. LED Sleeve   M13X15

8. Hollow Nylon Column M3X15

9. Install panels and screws M3X20

10. Nylon Column M3X14

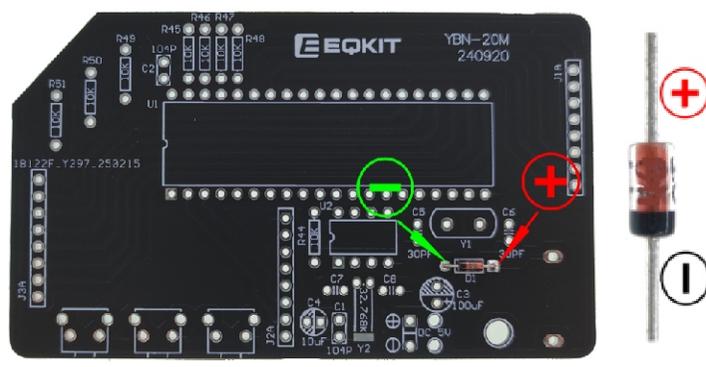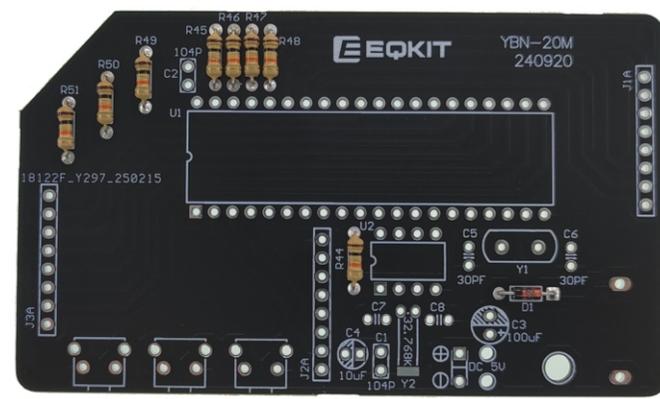**11.** Display board installed in the box

① Drill a power cord hole in this area

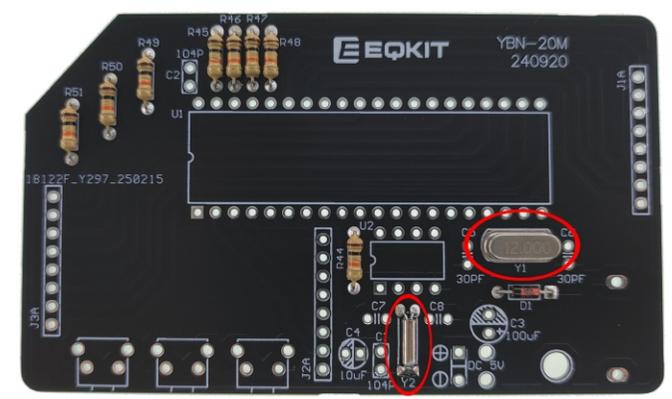② Use an electric drill or soldering iron to drill holes

12. Drill the power cord hole

① Insert the 70-80MM length power cord into the hole

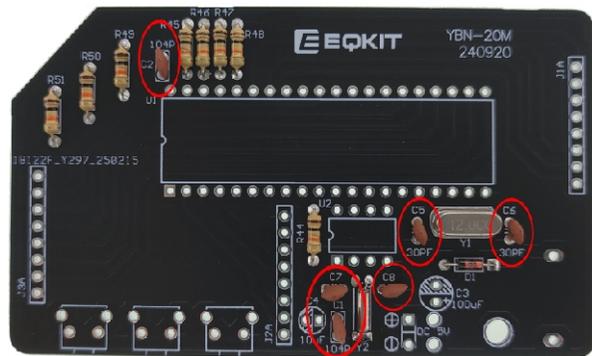**13.** ② Tie a knot inside the box

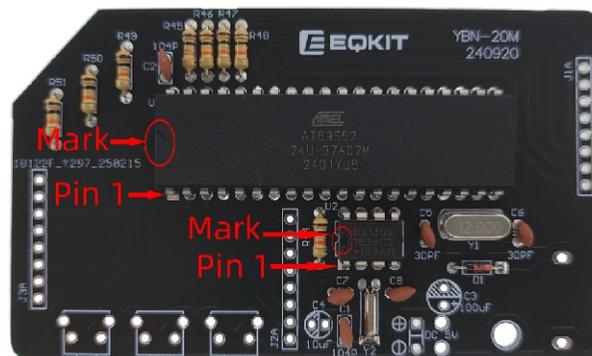**14.** Diode D1 1N60P

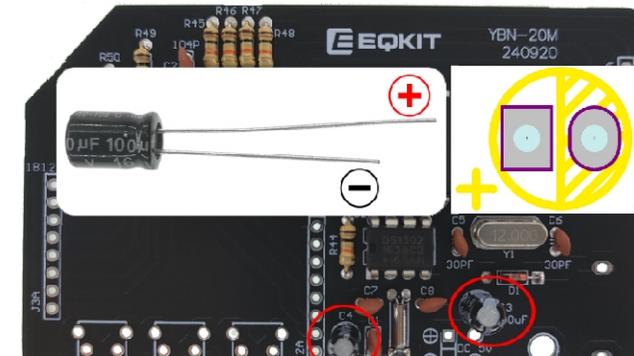**15.** Resistance R44-R51 10K

16. Crystal Oscillator Y1 12MHz Y2 32.768KHz

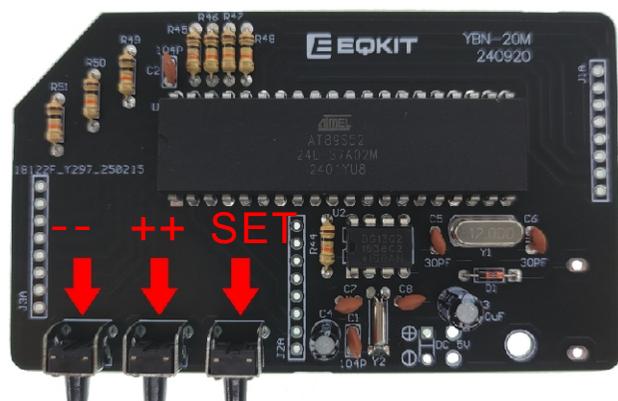**17.** Ceramic Capacitors | C1 C2 104PF / C5 C6 30PF / C7 C8 15PF

18. Chips | U1 AT89S52 / U2 DS1302

Mark → / Pin 1 → / Mark → / Pin 1 →

19. Electrolytic Capacitors | C3 100uF/16V / C4 10uF/25V

20. Switch | S1-S3 卧式6X6X8

-- ++ SET
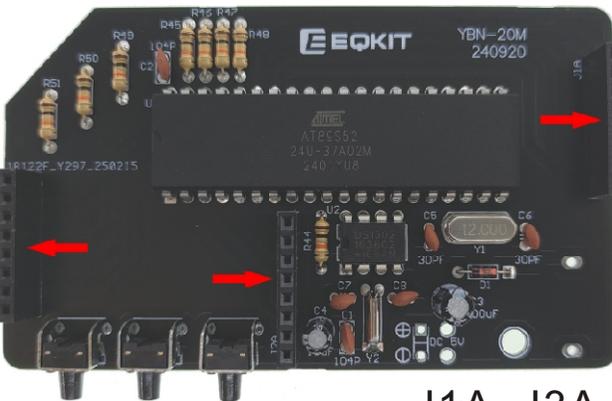
21. Female Header | J1A-J3A 8 PIN

22. Battery Holder | BT1 CR1220

电池极性｜弹片正极 电路板负极 / Mark
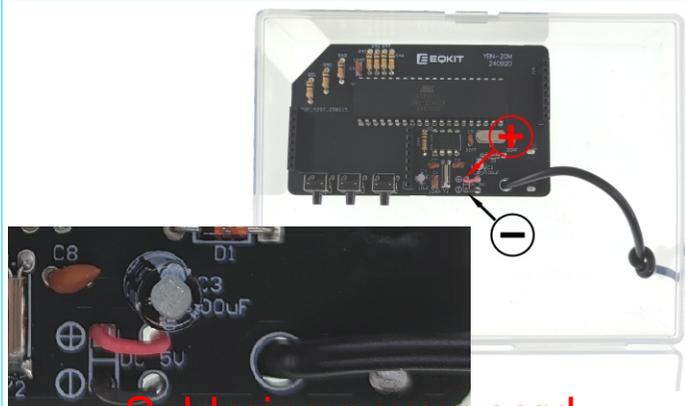
23. Soldering power cord / Ensure correct polarity

24. The mainboard and display board are combined together
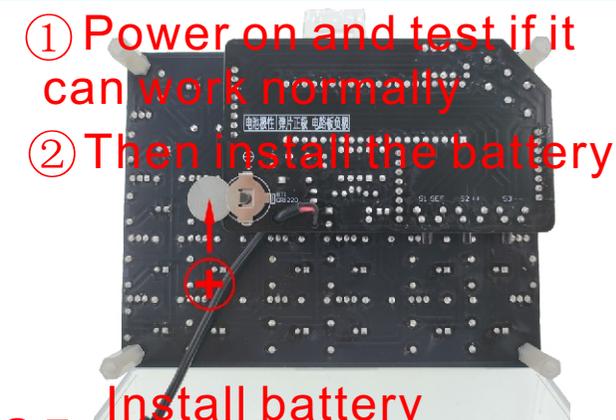
25. ①Power on and test if it can work normally / ②Then install the battery / Install battery / Ensure correct polarity

Hours | Minutes | Seconds
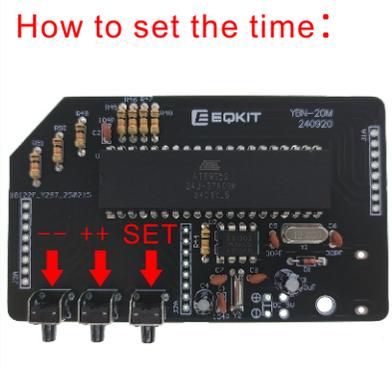
| Tens | Ones | Tens | Ones | Tens | Ones |
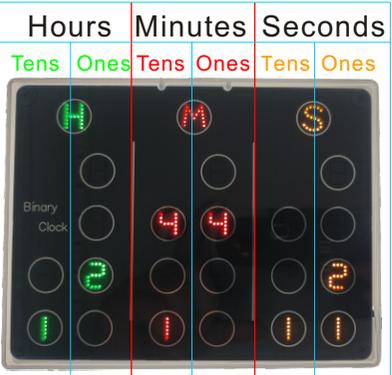
How to read time:

The numbers displayed in hours, minutes, and seconds

Single digit plus single digit, Ten digits plus ten digits, No display represents 0,

The time shown in the left picture is

12:54:13

How to set the time:

1. Press the SET button once SET HOURS (Press -- or++)
2. Press the SET button again Set minutes (Press -- or++)
3. Press the SET button again Seconds start counting from zero and return to the Display time interface

-- ++ SET

Schematic Diagram

Main Board

Display Board

U1 AT89S52
U2 DS1302
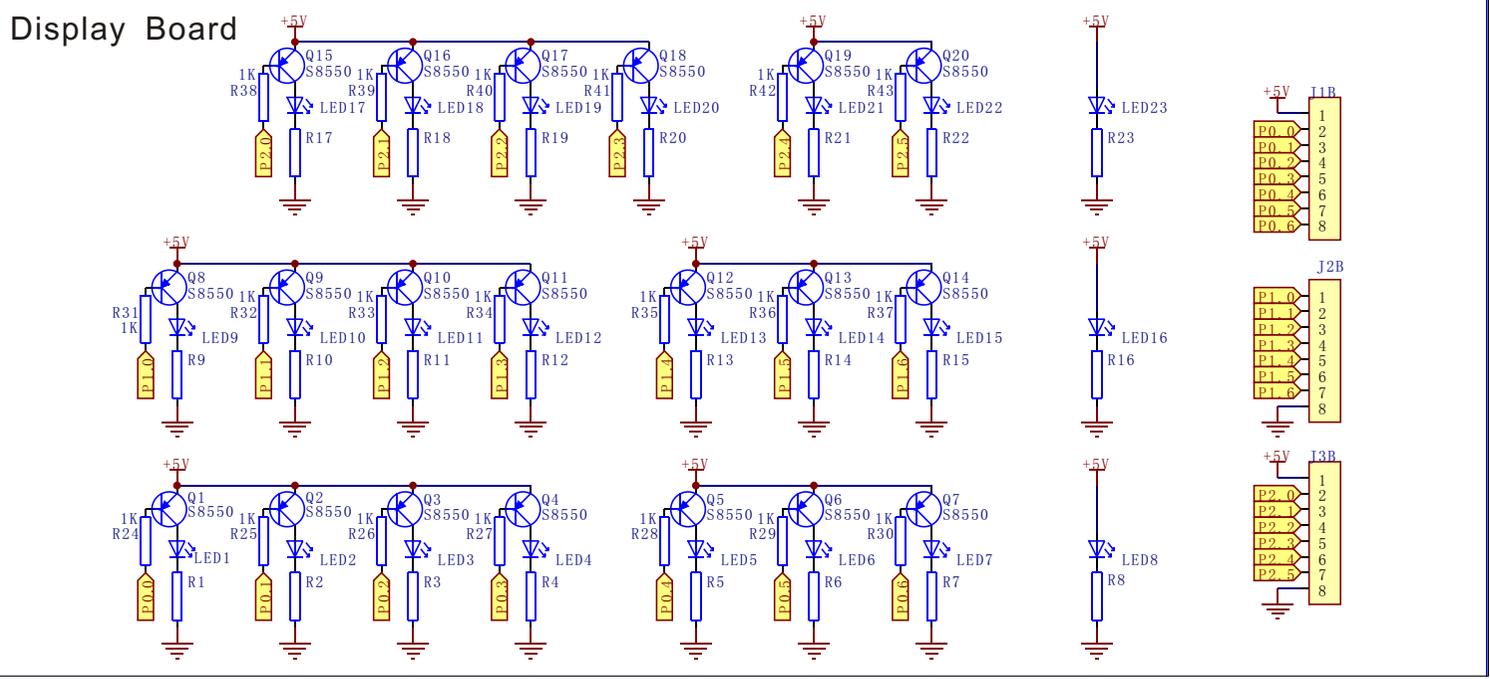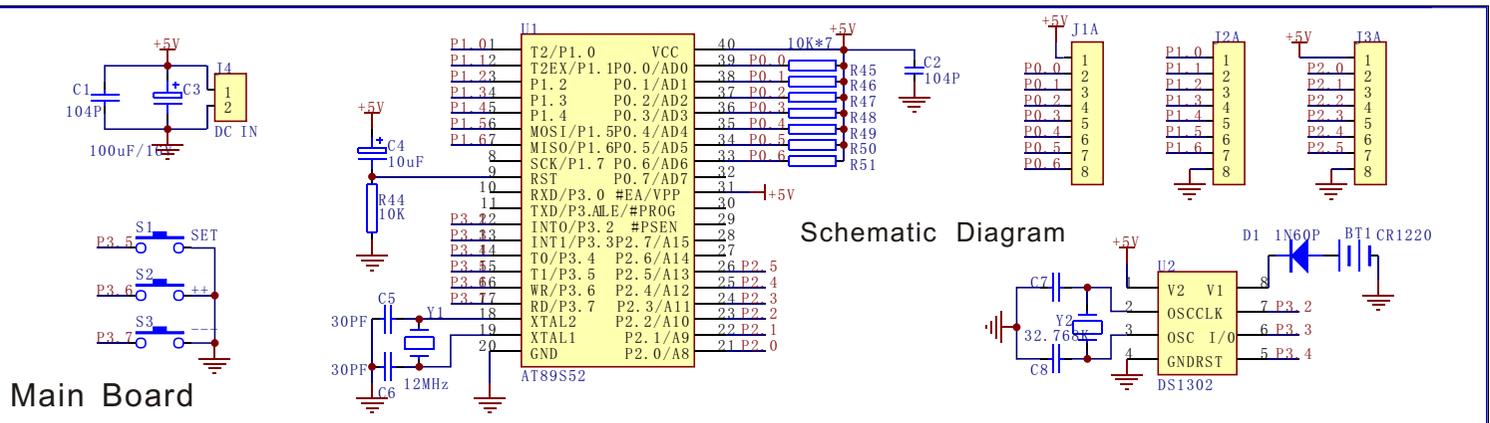
Name	Model	Code	QTY
YBN-20 Binary Clock Kit Component List			
YBN-20M Control Board			
Resistance	10K	R41--R48	8
Ceramic Cap	15PF	C7 C8	2
	30PF	C5 C6	2
	104PF	C1 C2	2
Electrolytic Cap	10uF/25V	C4	1
	100uF/16V	C3	1
Diode	1N60P	D1	1
Crystal oscillator	12MHz	Y1	1
	32.768KHz	Y2	1
Chip	AT89S52	U1	1
	DS1302	U2	1
Switch	6*6*8	S1--S3	3
Female Header	8 PIN	J1A--J3A	3
Battery Shrapnel	CR1220	BT1	1
Battery	CR1220	1	1
Power Cord	USB	L=100CM	1
PCB	YBN-20M	90X53mm	1
YBN-20-LED Light Board			
Resistance	1K	R24--43	20
	150R Match Yellow LED	R1--R8	8
	560R Match Red LED	R9--R16	8
	1.2K Match Green LED	R17--R23	8
LED	10mm Yellow LED	LED1--LED8	8
	10mm Red LED	LED9--LED16	8
	10mm Green LED	LED17--LED23	7
Transistors	S8550	Q1--Q20	20
Pin Header	8 PIN	J1B--J3B	3
PCB	YBN-20-LED	124X94mm	1
YBN-20-TOP Panel and others			
LED sleeves	M13x15	Black	23
Hollow Nylon Columns	M3x15	White	4
Nylon Columns	M3x14	White hexagonal	4
Screws	M3X20	Flat Head	4
PCB Panel	YBN-20-TOP	124X94mm	1
Box	129.5x100x35	Transparent	1