

High Frequency Inverter 11K Mainboard Repair Guide V01

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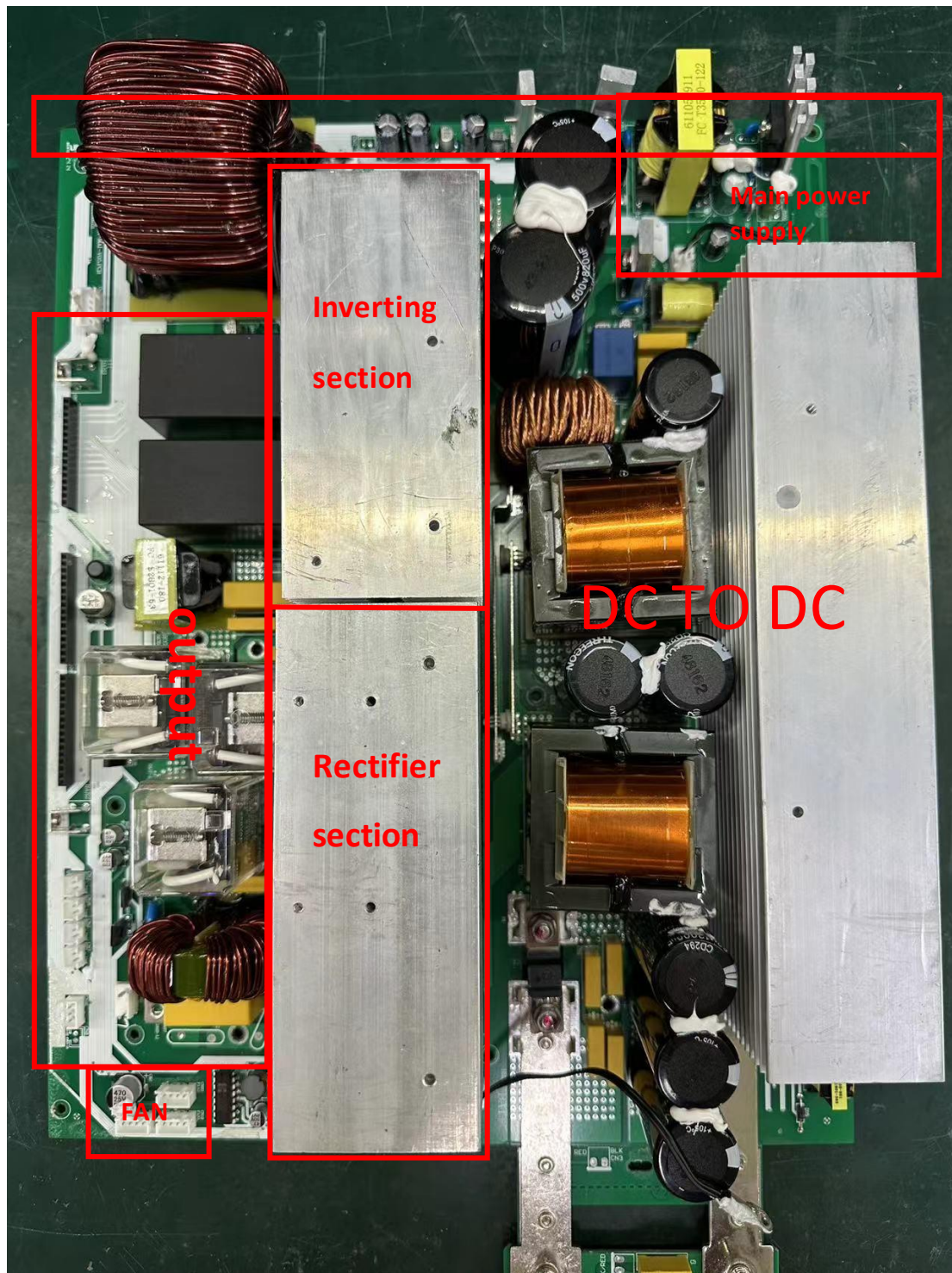
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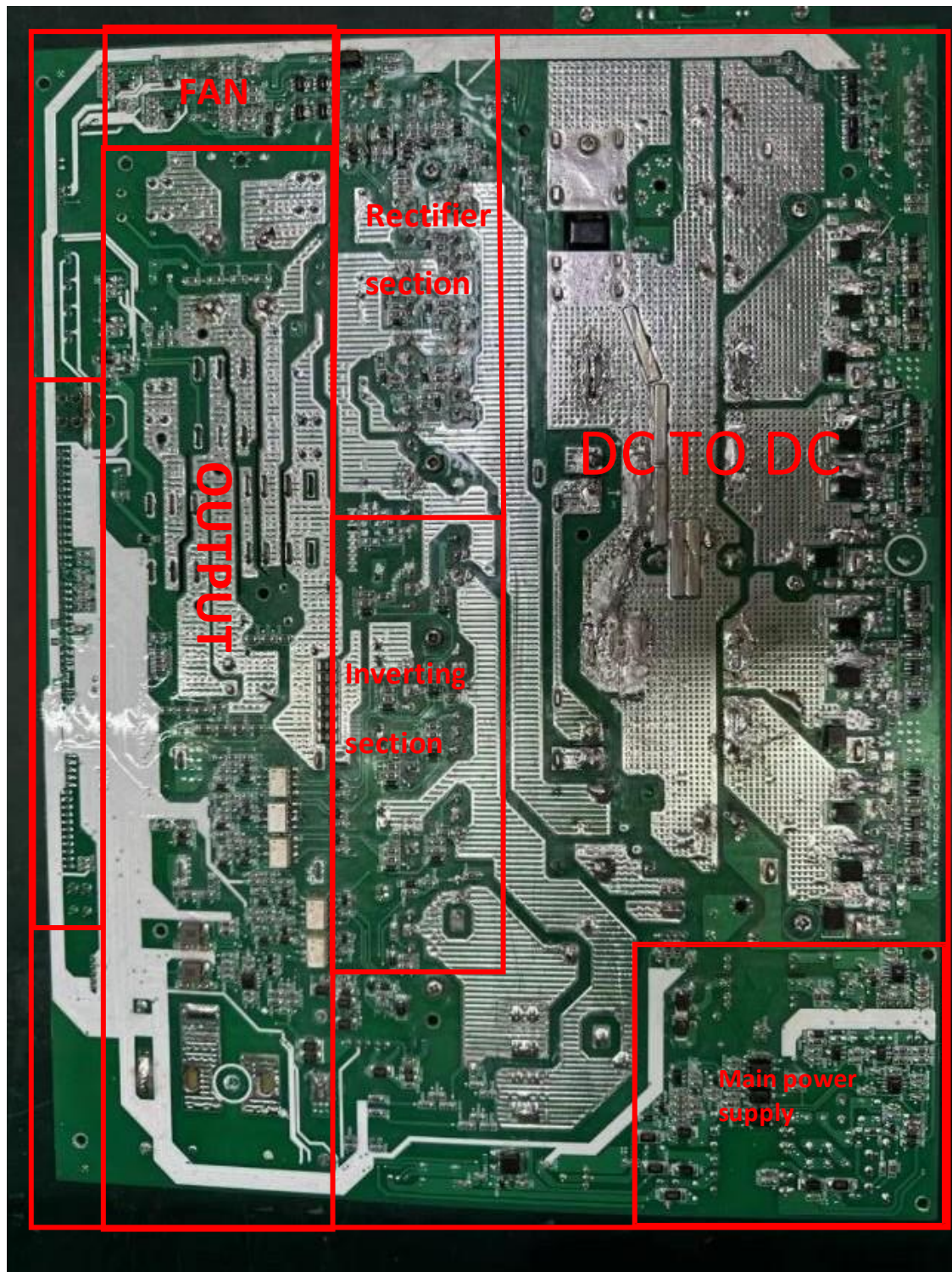
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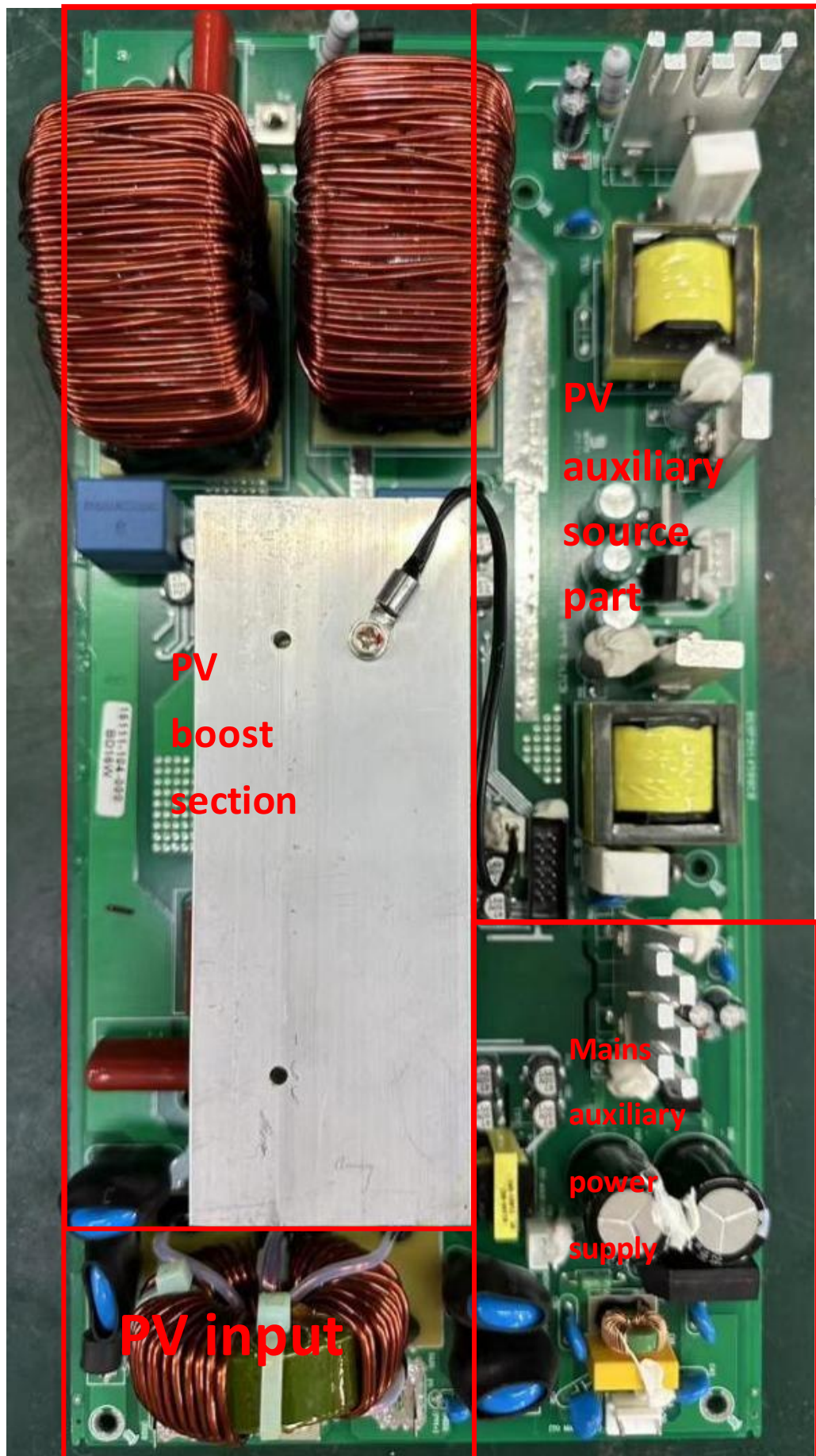
1. Preparation

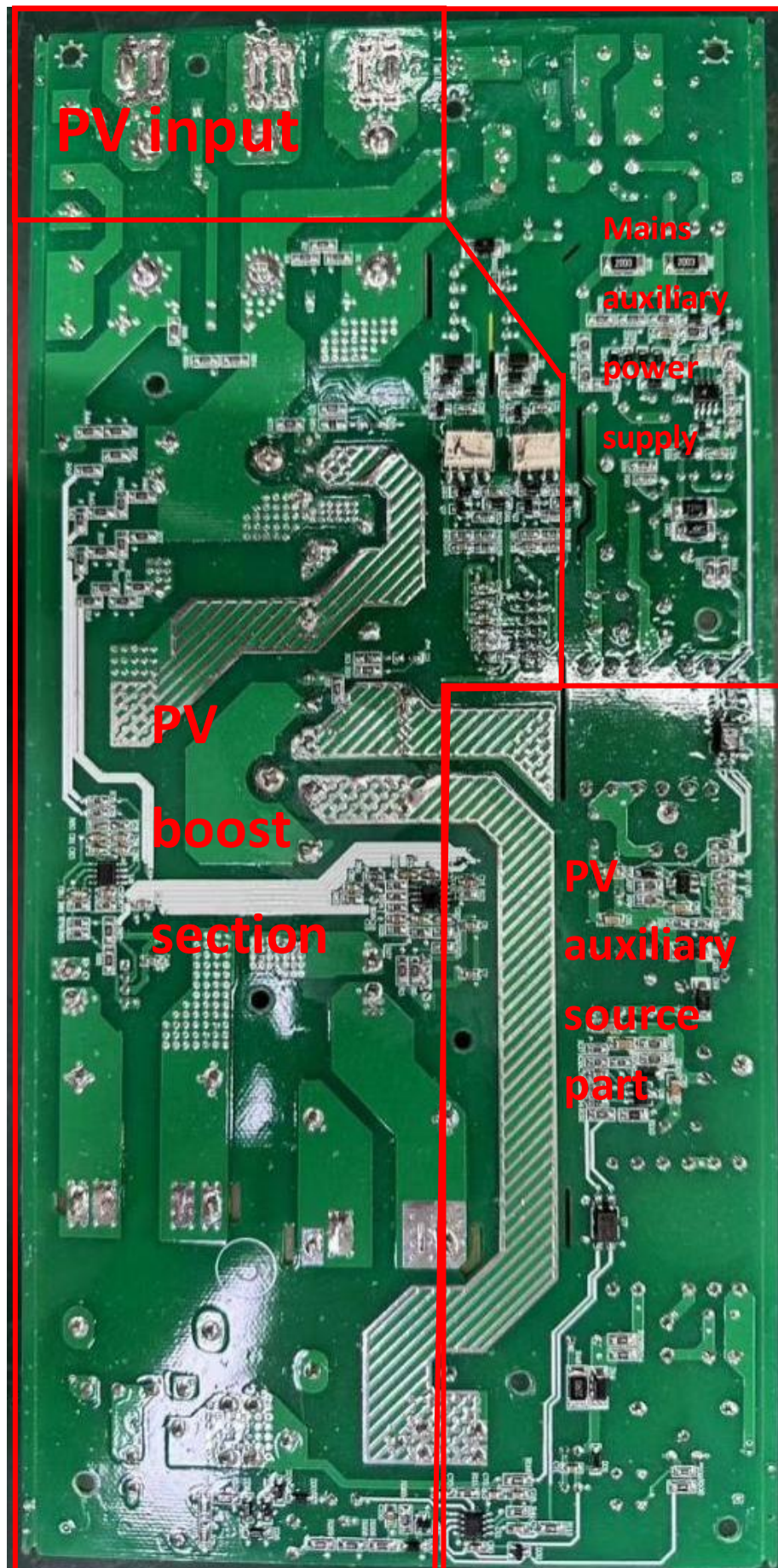
1.1 tool

Oscilloscope, isolation probe, isolation transformer, display screen , control board, communication board, connecting wires , multimeter, clamp meter, boat switch, two 4 P wire fans , soldering iron, tin wire, desoldering machine, screwdriver, hot air gun, and repair accessories .







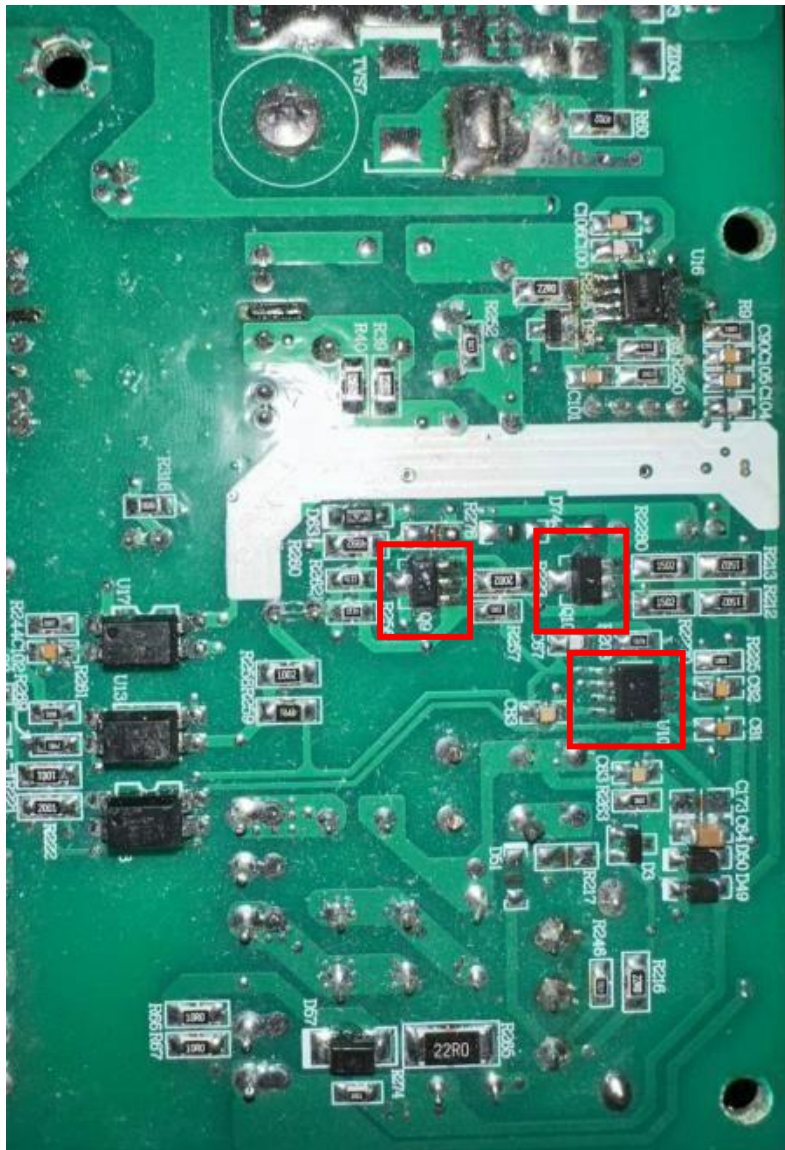


2. Motherboard troubleshooting method

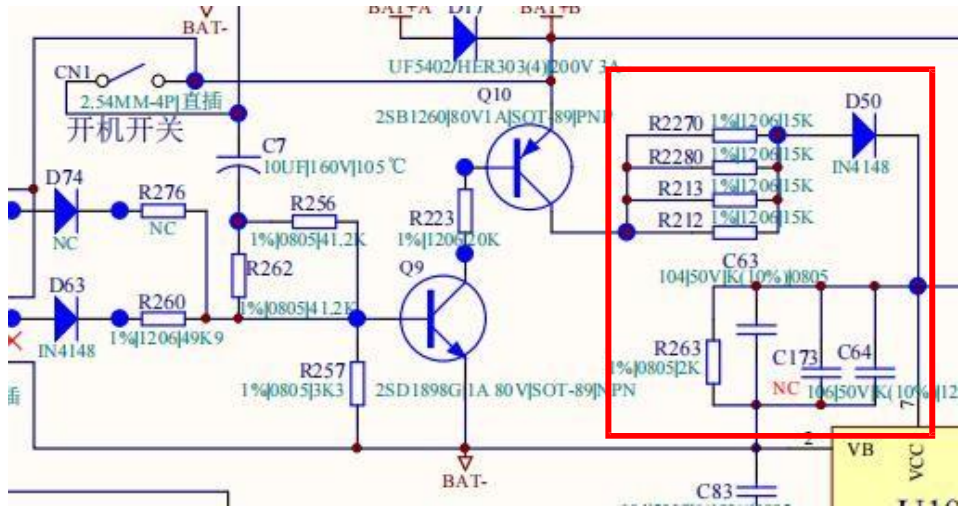
2.1 Auxiliary power supply abnormality

2.1.1 B AT cannot be turned on

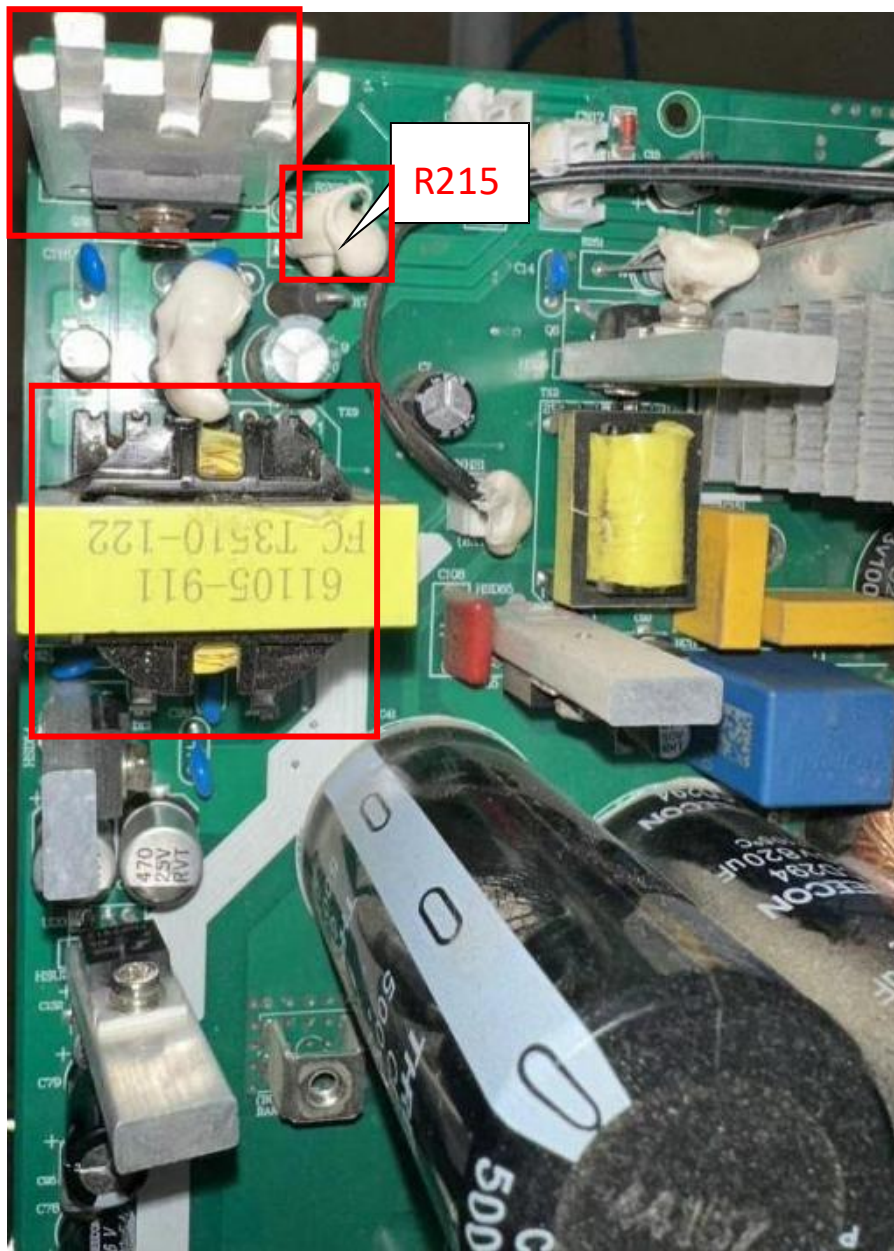
- 1, Confirm that the whole machine is wired correctly .
- 2, Disassemble the mainboard and check whether the components are poorly soldered , soldered , inserted upside down , or incorrectly.
- 3, Power on normally.
- 4, Measure whether transistors Q9 and Q10 are damaged. If normal, measure the voltage between pins 7 and 5 of U10 (about 8V).

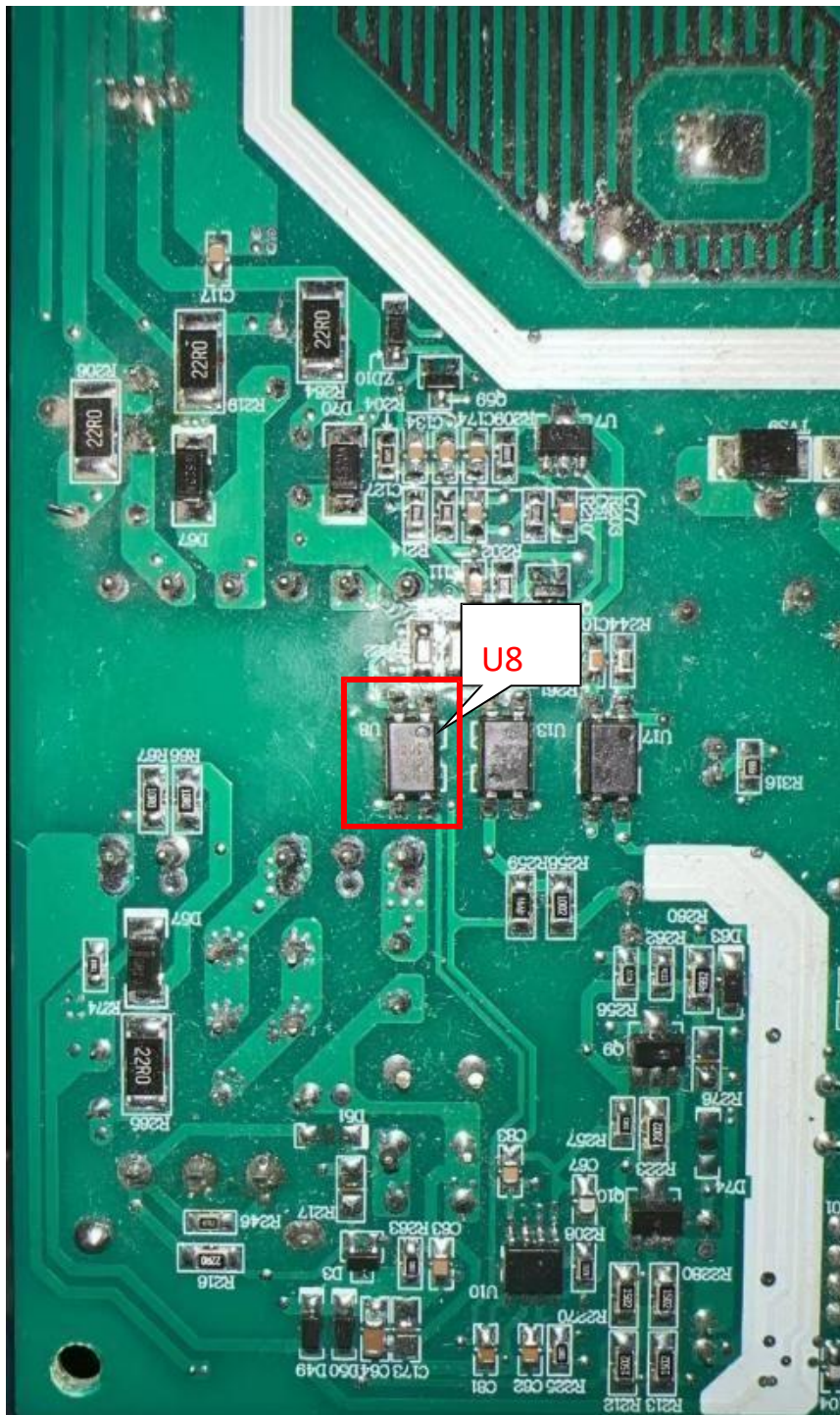


If abnormal, check whether the components here are damaged.



If U3 is normal, check whether Q36, TX9, R215, and U8 are damaged.

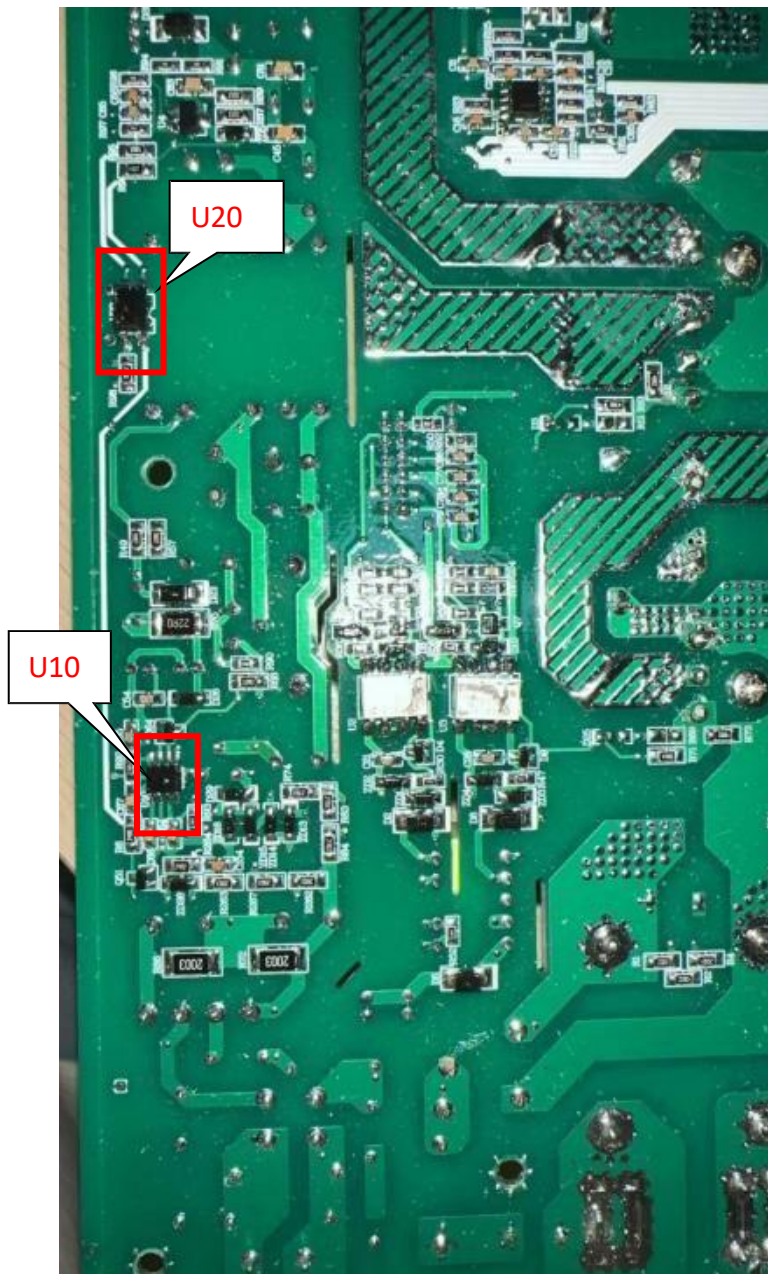


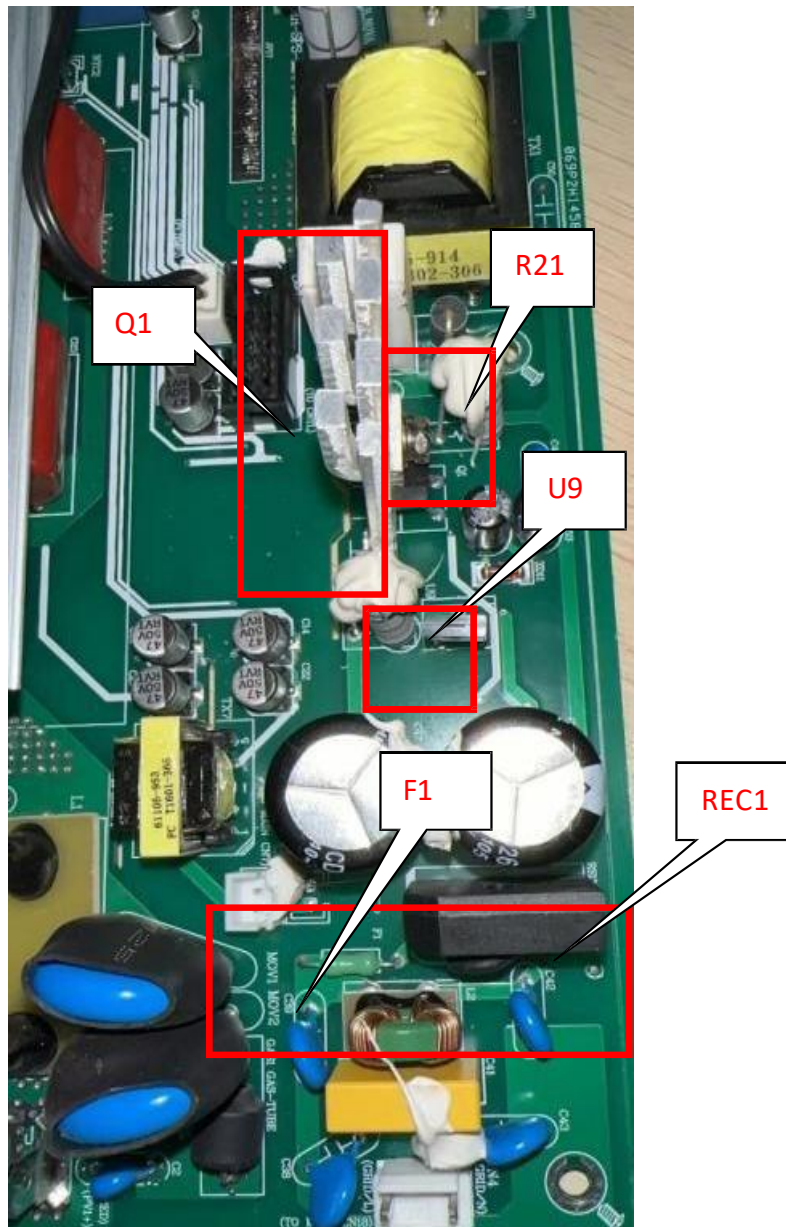


2.1.2 AC cannot turn on

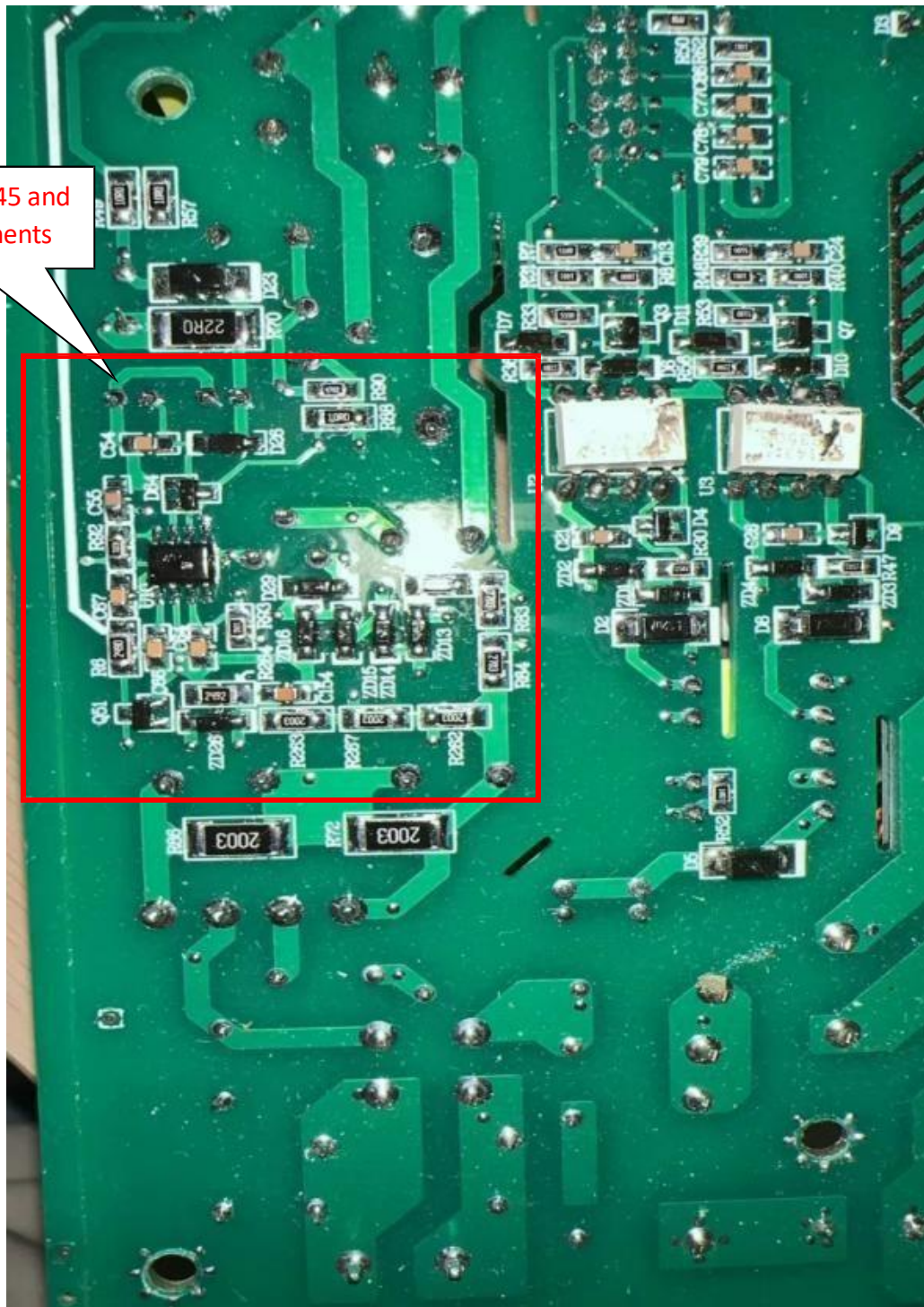
- 1, Confirm that the whole machine is wired correctly .
- 2, Connect B AT and observe whether the machine starts normally . If it starts normally , it is judged that the AC auxiliary power supply is faulty; if it cannot start , replace the control board and try again. If it cannot start, it is judged that the main power supply auxiliary power supply is faulty, please refer to 2.1.4 .

- 3, Disassemble the mainboard and check whether the components are poorly soldered , soldered , inserted upside down , or incorrectly.
- 4, Remove the control board .
- 5, The AC input terminal of the mainboard is connected to 100V AC voltage.
- 6, Measure whether F1, REC1, and U9 are working properly. If normal, measure the voltage between pin 7 and pin 5 of U10 (about 12V-13.5V).





- 7, If U10 is working properly, check whether Q1, R21 and U20 are normal and not damaged.
- 8, Measure whether the supply voltage of the chip power supply IC 3845 U 6 is normal (the voltage across the 7th and 5th pins). If there is no voltage, check whether the chip resistors R84, R 83, R74, chip voltage regulators ZD12, ZD14, ZD15, ZD16, chip diode D 84 , chip diode D29, transistor U9, plug-in resistor R21, and chip power supply IC 3845 U 10 are damaged . If there is voltage, check whether the chip resistors R6, R92, R93, R90, R88, chip voltage regulator ZD 26 , and transistor Q1 (need to check the front components) are damaged .

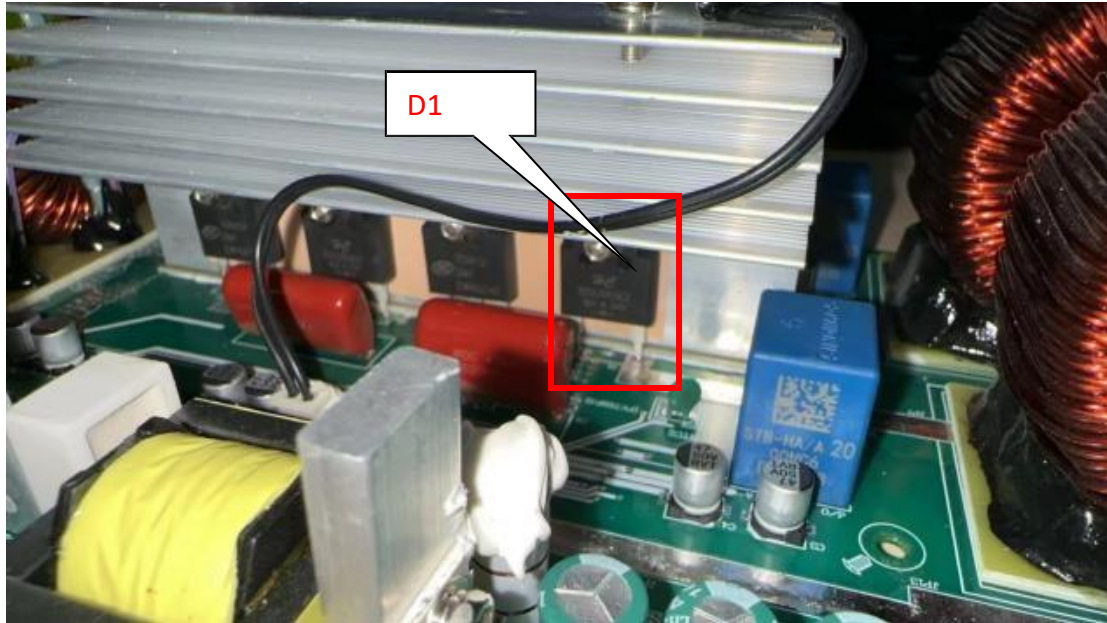


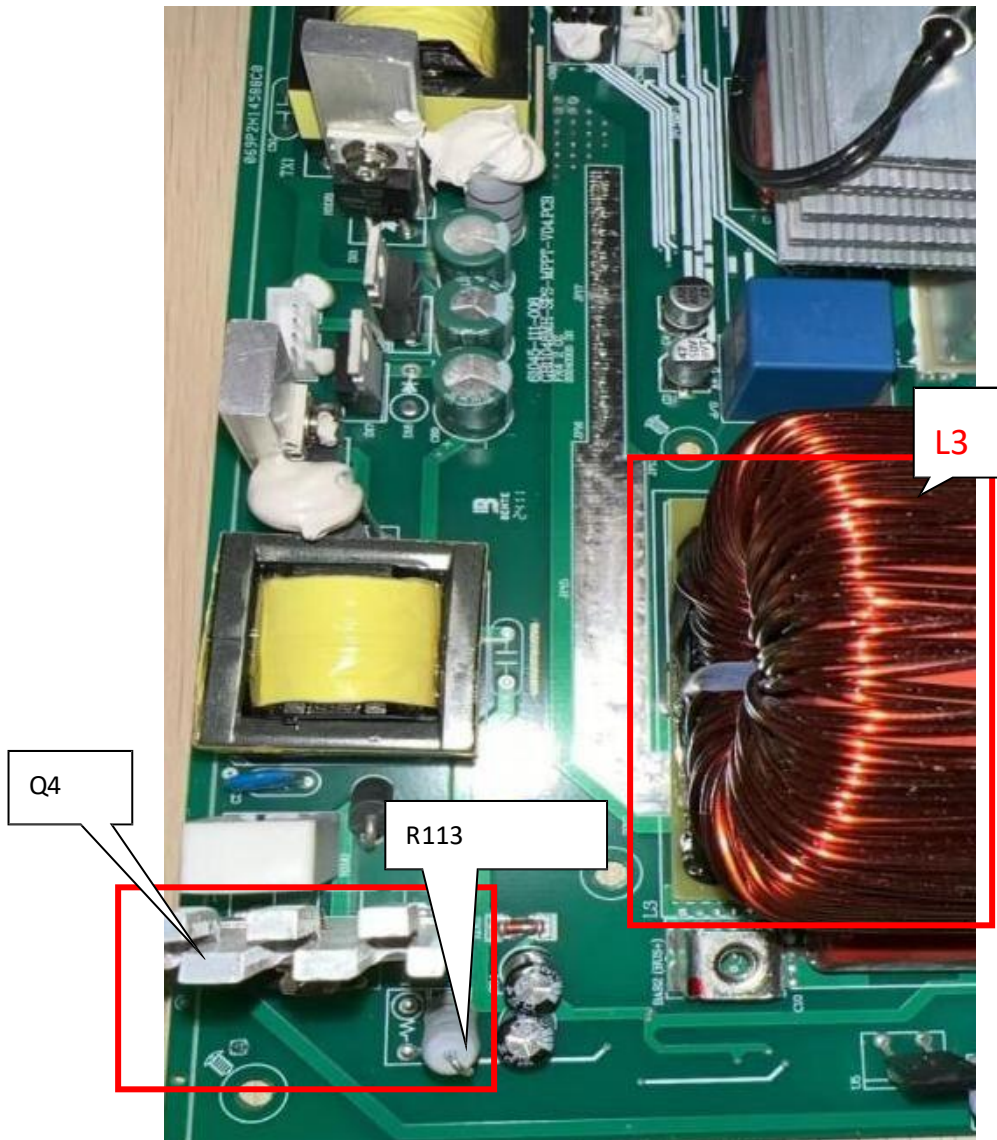
2.1.3 PV cannot be powered on

- 1, Confirm that the whole machine is wired correctly .
- 2, Connect BAT and observe whether the machine starts normally . If it starts normally , it is judged that the main power supply and auxiliary power supply are normal; if it cannot start, it is judged that the main power supply and auxiliary power supply are faulty, please refer to 2.1.4 .
- 3, Disassemble the mainboard and check whether the components are poorly soldered ,

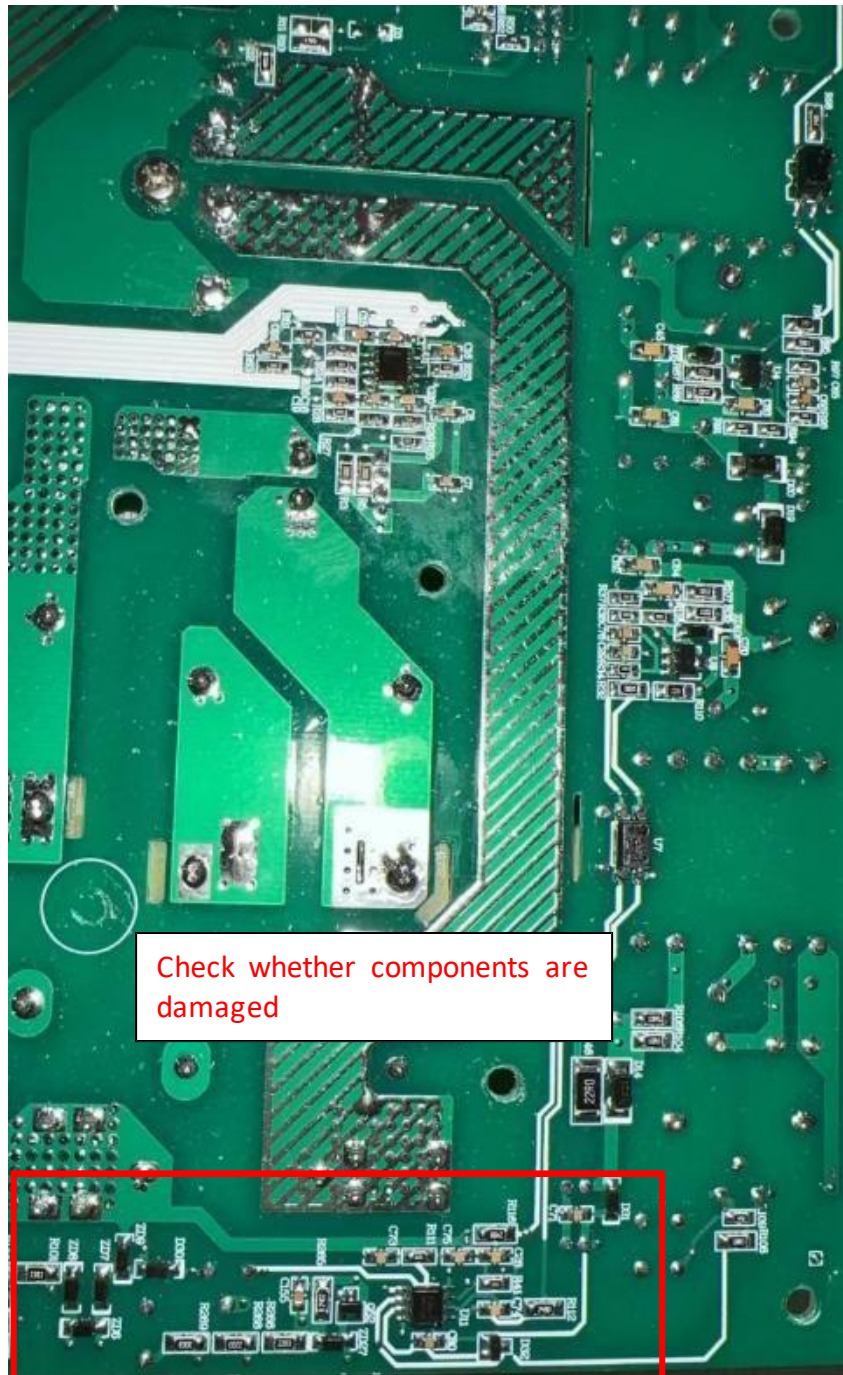
soldered , inserted upside down , or incorrectly.

- 4, Remove the control board .
- 5, The PV input terminal of the main board is connected to a 150V DC voltage .
- 9, Measure the voltage across the electrolytic capacitor C10 of the PV TO BUS part . If there is no voltage , check whether the diode D1 and inductor L3 are damaged .





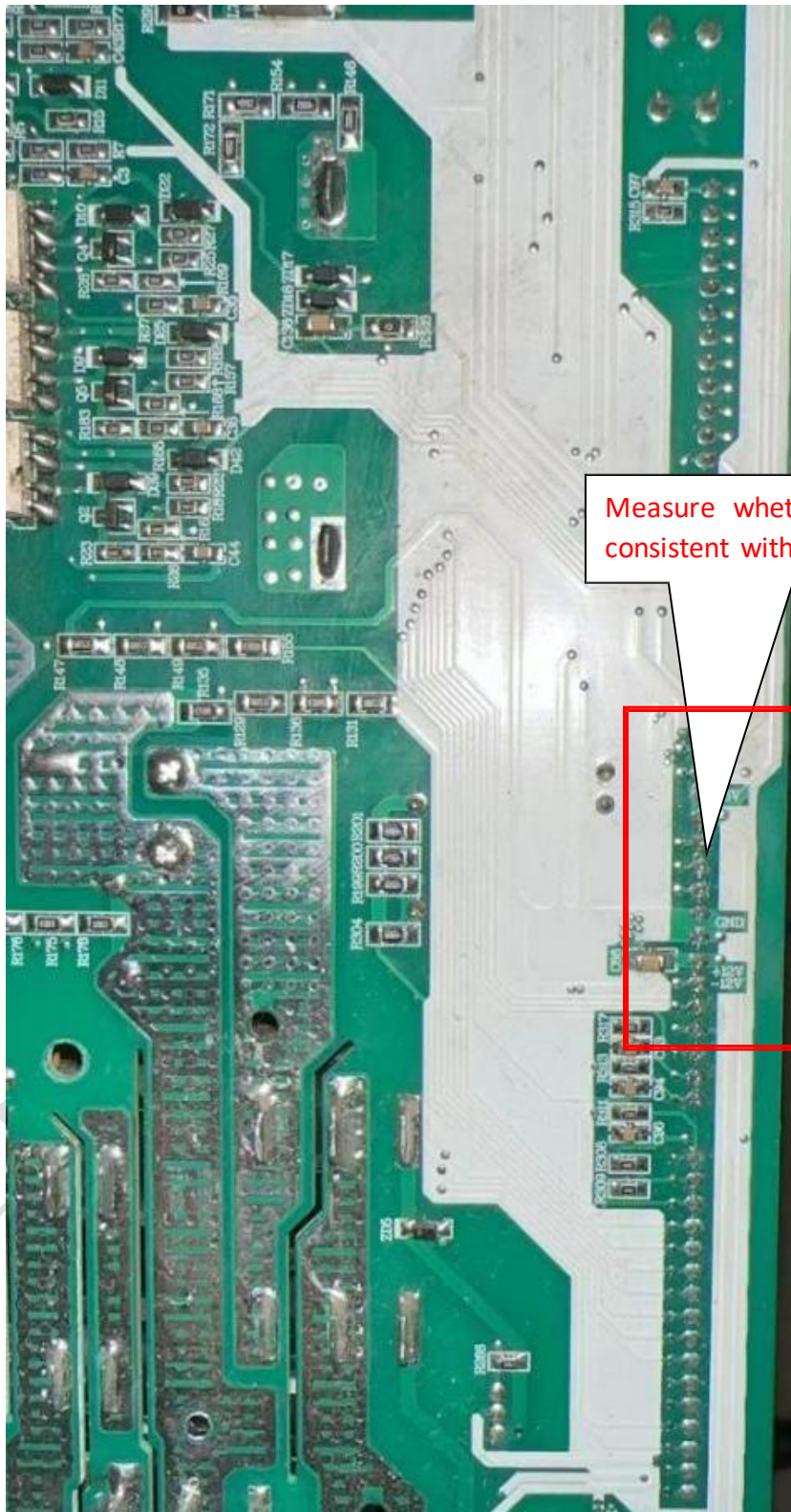
10, If there is voltage, measure the chip power supply IC 3845 U11 Is the power supply voltage normal (voltage across pin 7 and pin 5) . If there is no voltage, check whether the chip resistors R101, R102 , R103, chip voltage regulators ZD8, ZD6, ZD7, ZD9, D30, chip diode D84 , chip diode D32 , transistor U5, plug-in resistor R113, and chip power IC 3845 U10 are damaged . If there is voltage, check whether the chip resistors R111, R41, R109, R108, transistor Q4, and transformer TX2 (need to check the front components) are damaged .



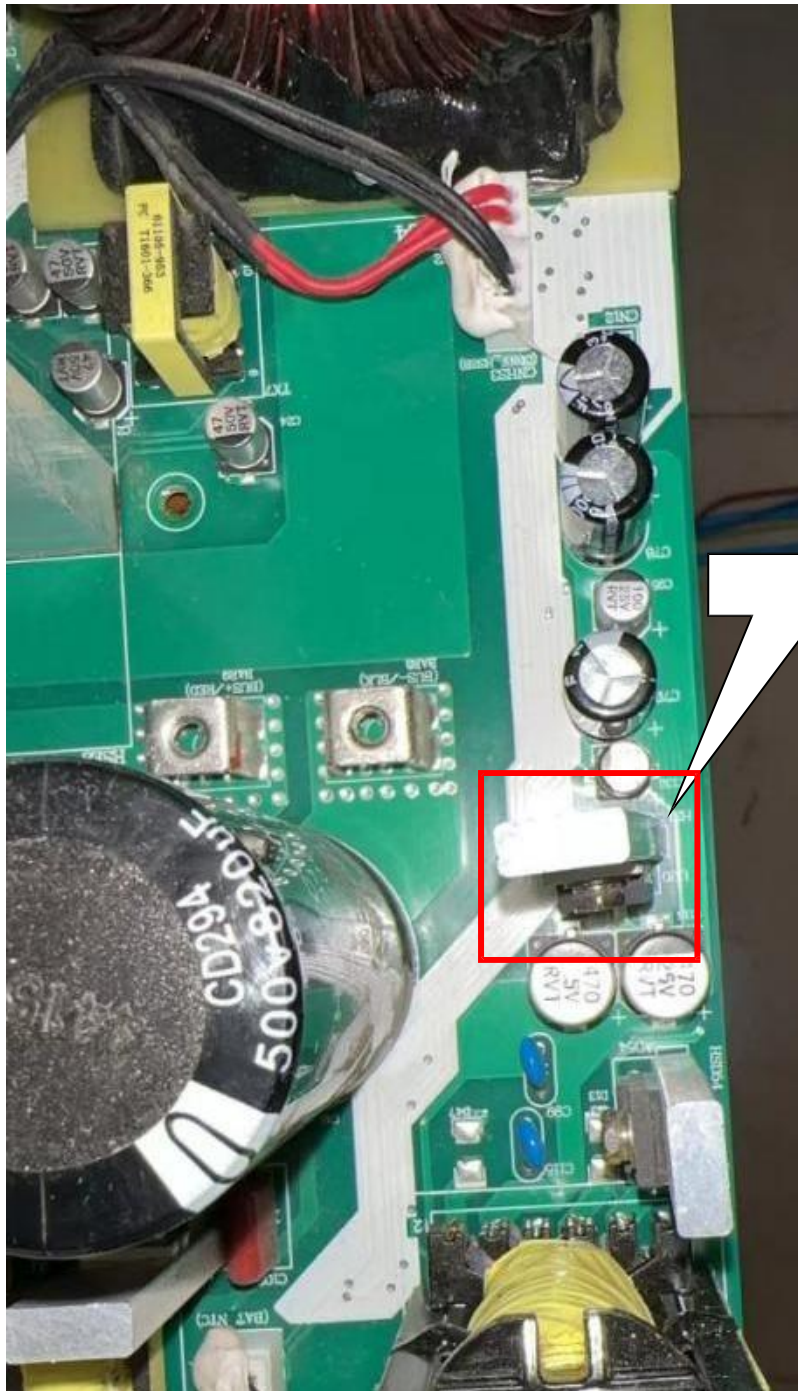
2.1.4 Main power supply failure

- 1, Disassemble the mainboard and check whether the components are poorly soldered , soldered , inserted upside down , or incorrectly.
- 2, Remove the control board.
- 3, Short-circuit pin 3 and pin 4 of the optocoupler U8 . 4 , Turn on the BAT power supply and the rocker switch.
- 5, Measure whether the +12V and -12V power supplies of the control circuit mainboard are

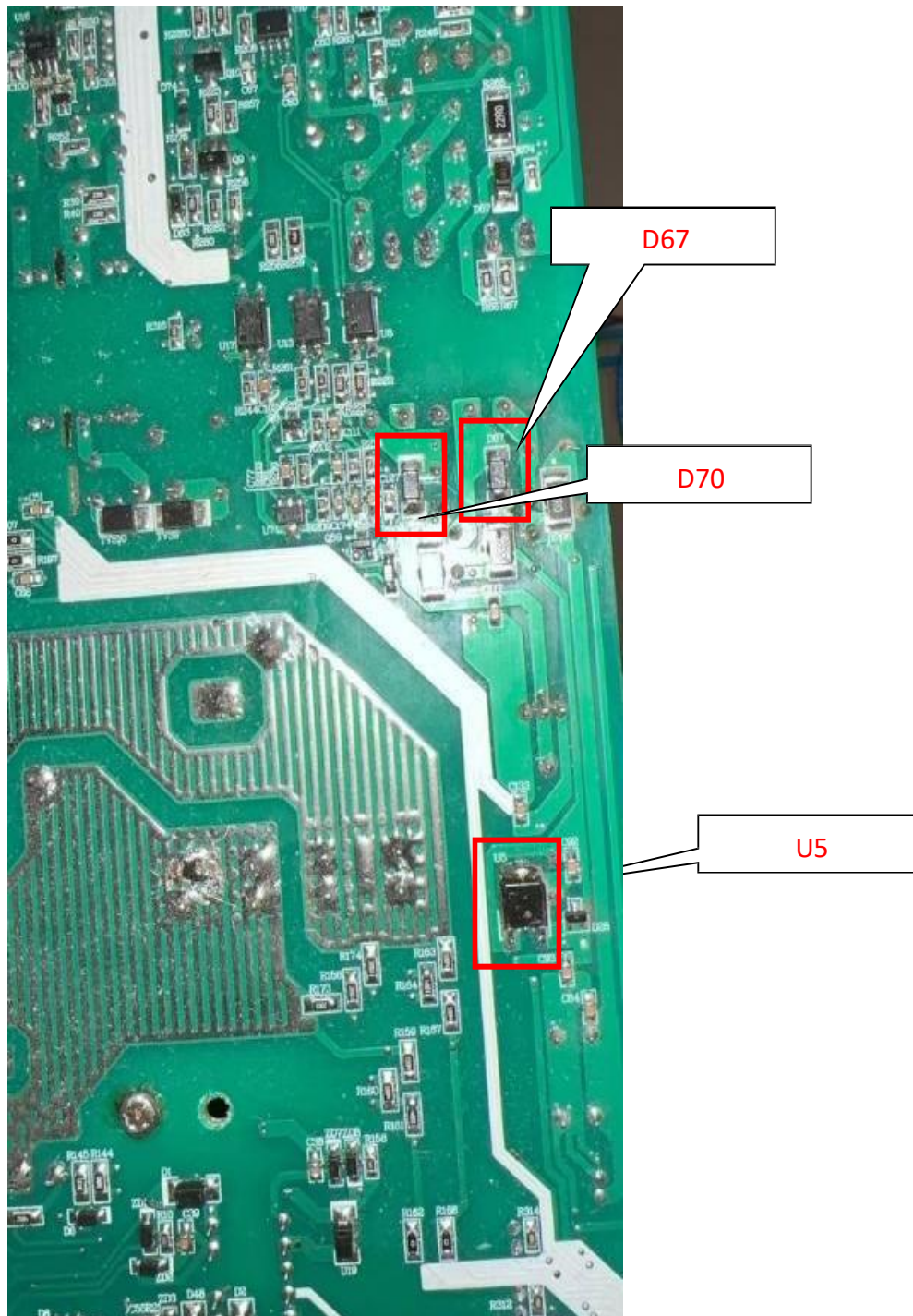
normal.



- 6,
- 7, If both are normal, check whether the SMD diode D54 and the three-terminal voltage regulator U5 are damaged. If there is no -12V power supply, check whether the SMD diode D70 and the three-terminal voltage regulator U20 are damaged.



U20

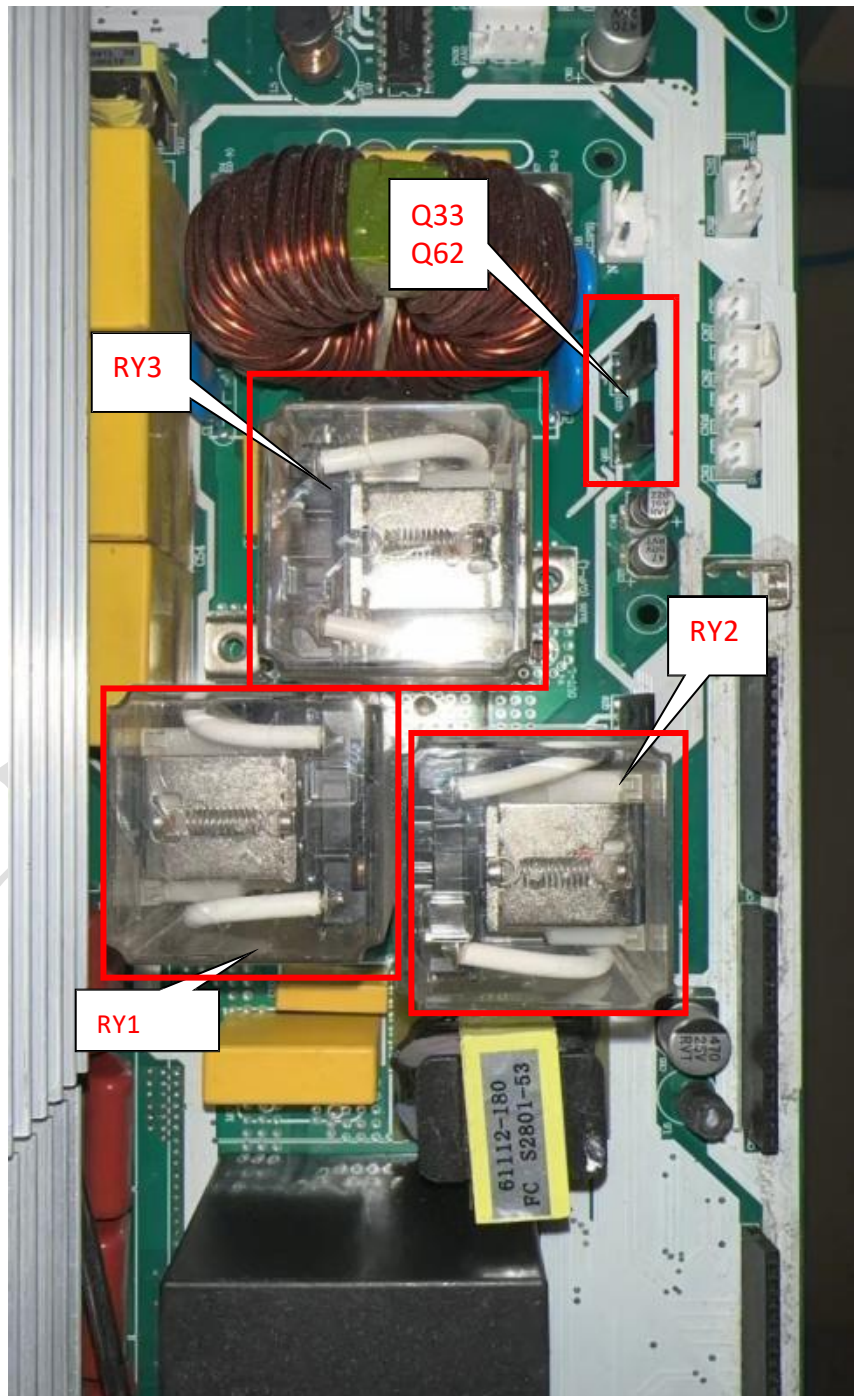


- 8, Measure the power supply voltage of the chip power supply IC 3845 U 3 to see if it is normal (the voltage between the 7th and 5th pins) . If there is no voltage, check whether the chip resistors R246, R225, chip diodes D57, D49, D50, chip diode D 37A , chip diode D 5 , transistor Q36, plug-in resistor R215, and chip power supply IC 3845 U3 are damaged . If there is voltage, check whether the power tube Q 15 **and its connected components** are damaged (see 2.1.1 for the location of the picture)
- 9, If it does not return to normal, check whether the optocoupler U8 is damaged.

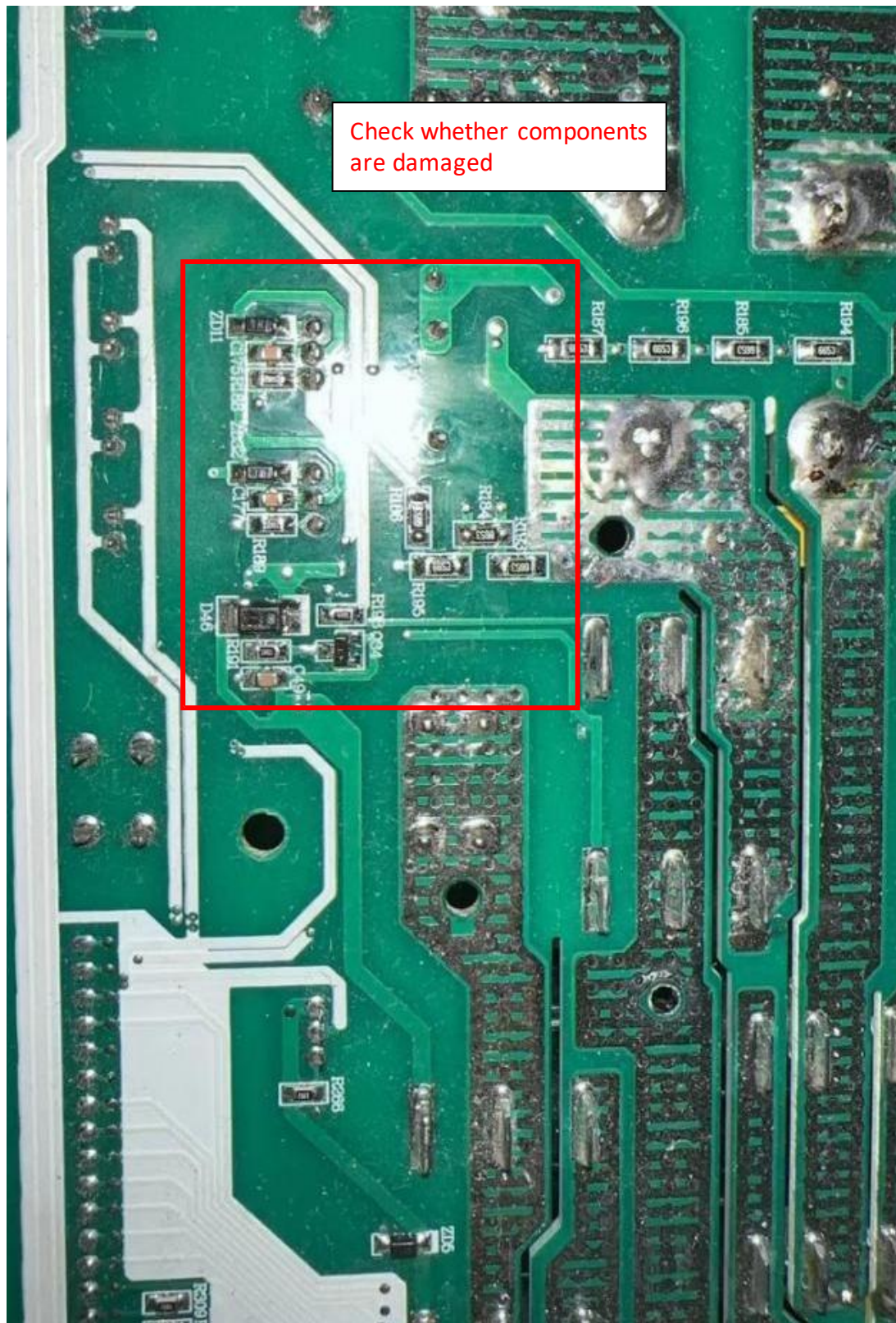
2.2 Abnormal charging

2.2.1 AC cannot charge

- 1, Confirm that the whole machine is wired correctly .
- 2, Check if the AC voltage display is abnormal. If abnormal, please refer to 2.4.3 .
- 3, After replacing the control board and trying again, if the display is still abnormal, it may be due to input relay failure.
- 4, It is necessary to confirm whether relays RY1, RY2 , RY3 **and their drive circuits** are damaged.



5,



2.2.2 PV cannot charge

- 1, Check whether the PV voltage display is abnormal. If abnormal, please refer to 2.4.4 . 2
- , Check whether the PV current display is abnormal. If abnormal, please refer to 2.4.5 .

2.3 Communication Abnormal

2.3.1 BMS communication abnormal

- 1, Confirm that the wiring of the whole machine is normal.
- 2, Replace the communication board.
- 3, Replace the control board.

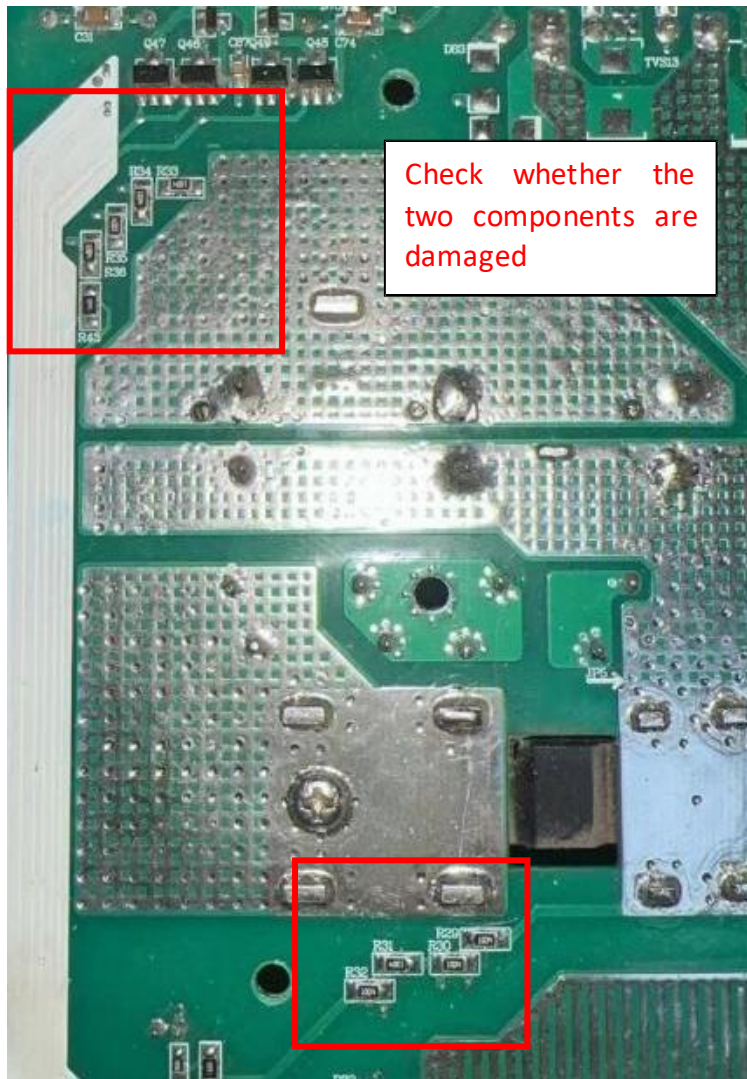
2.3.2 Host computer communication abnormal

- 1, Confirm that the wiring of the whole machine is normal.
- 2, Replace the communication board.
- 3, Replace the control board.

2.4 Display Abnormal

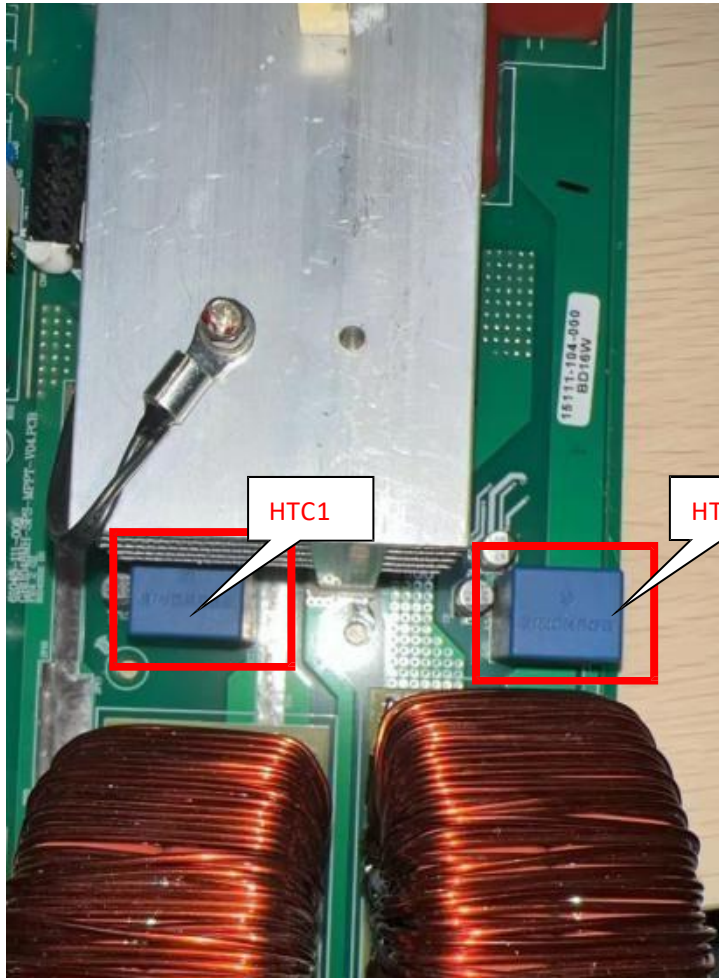
2.4.1 BAT voltage display abnormal

- 1, Confirm that the wiring of the whole machine is normal.
- 2, Start the machine and turn the display to the battery voltage page . If the displayed value is inconsistent with the actual input voltage , the battery voltage needs to be calibrated .
- 3, After replacing the control board , the display is still abnormal , which is judged to be a battery voltage sampling failure .
- 4, Disassemble the mainboard and check whether the components are poorly soldered, soldered, inserted upside down, or incorrectly.
- 5, It is necessary to check whether the BAT voltage detection chip resistors R29, R30, R31, R32, R33, R34, R35, R36, R43, and R38 are damaged .



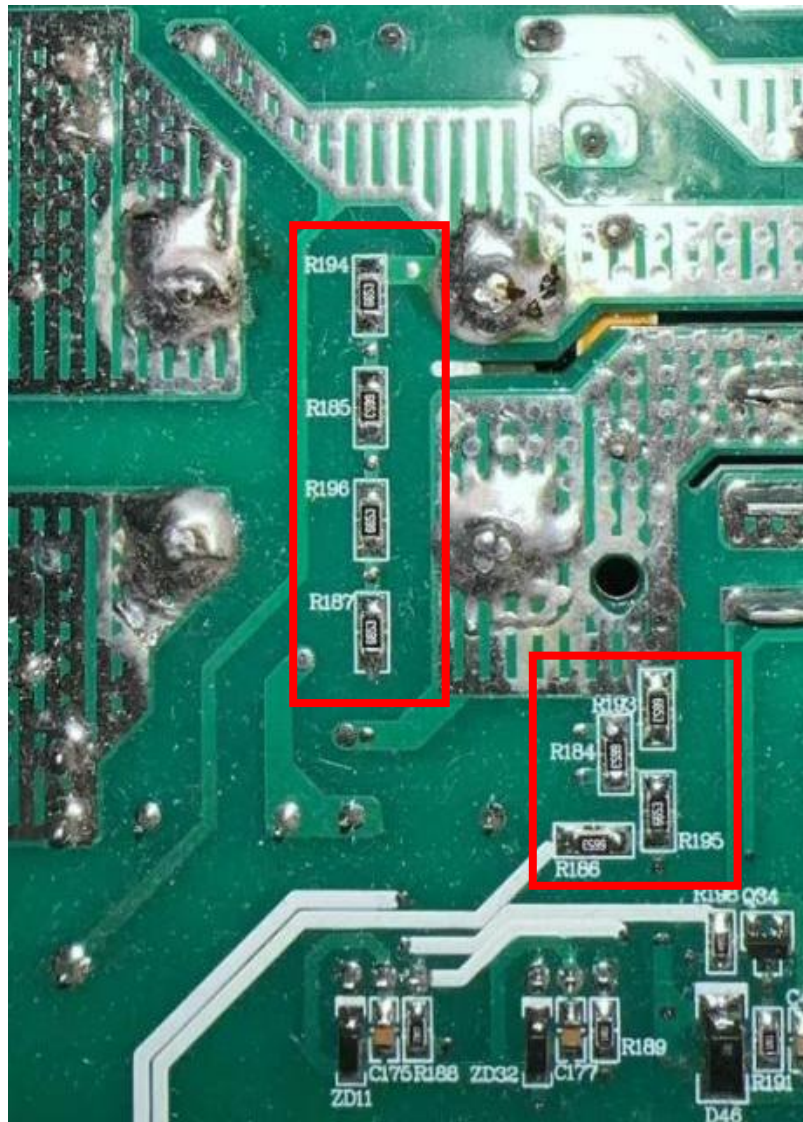
2.4.2 BAT current display is abnormal

- 1, Confirm that the wiring of the whole machine is normal .
- 2, After replacing the control board and trying again, it still shows abnormality, and it is judged that the current sensor detection is faulty.
- 3, Disassemble the mainboard and check whether the components are poorly soldered, soldered, inserted upside down, or incorrectly.
- 4, It is necessary to check whether the Hall sensors HTC1*2 and HTC2 are damaged .



2.4.3 AC voltage display abnormal

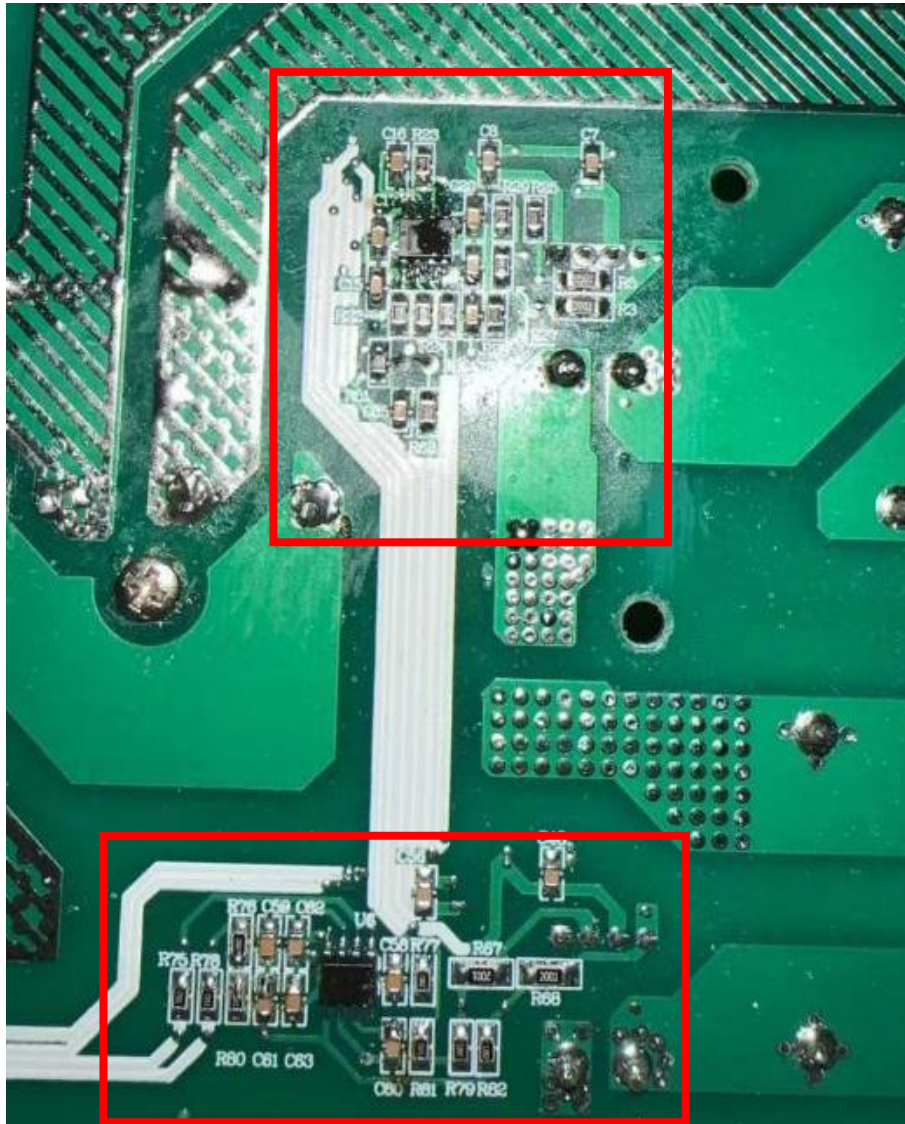
- 1, Confirm that the wiring of the whole machine is normal.
- 2, After replacing the control board and trying again , the display is still abnormal , which is judged to be an AC voltage detection failure.
- 3, Disassemble the mainboard and check whether the components are poorly soldered, soldered, inserted upside down, or incorrectly.
- 4, **It is necessary to check whether the chip resistors R193, R 184, R 195 , R 186, R 194, R 185, R 196, and R 187 are damaged.**
- 5,



2.4.4 PV voltage display is abnormal

- 1, Confirm that the wiring of the whole machine is normal.
- 2, After replacing the control board and trying again , the display is still abnormal , which is judged to be a PV voltage detection failure.

- 3, Disassemble the mainboard and check whether the components are poorly soldered, soldered, inserted upside down, or incorrectly.
- 4, It is necessary to check whether the components connected to the op amps TL072C U1A and TL072C U6A are damaged .



- 5, Replace op amps TL072C U1A and TL072C U6A .

2.4.5 PV current display is abnormal

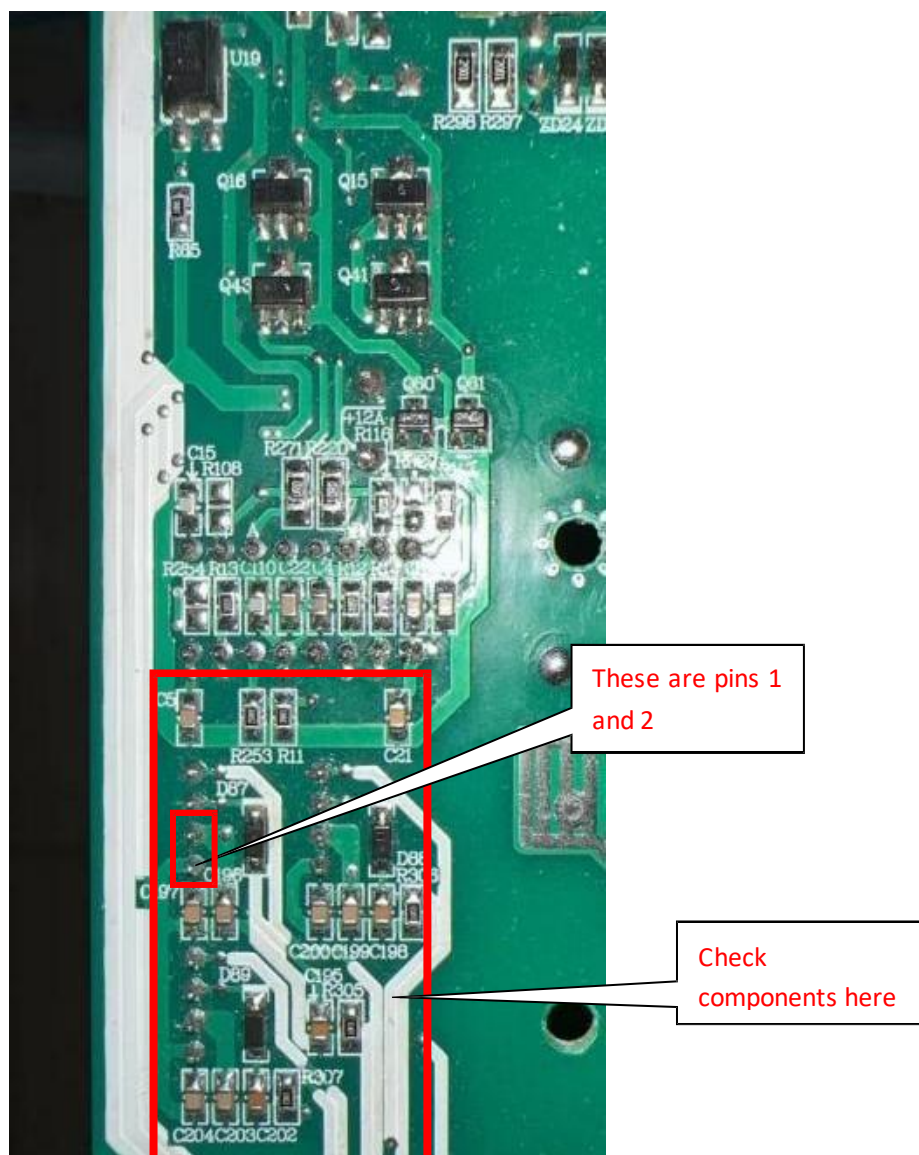
- 1, Confirm that the wiring of the whole machine is normal.
- 2, After replacing the control board and trying again, it still shows abnormality , which is judged to be PV current detection abnormality.
- 3, Disassemble the mainboard and check whether the components are poorly soldered, soldered, inserted upside down, or incorrectly.
- 4, It is necessary to check whether the components connected to the operational amplifiers TL072C U1A and TL072C U6A are damaged . (See 2.4.4 for pictures)
- 5, Replace op amps TL072C U1A and TL072C U6A .

- 6, Replace the Hall sensors HTC1 and HTC2. (See 2.4.2 for pictures)

2.5 Error code troubleshooting

2.5.1 Report "01" fan failure

- 1, Confirm that the wiring of the whole machine is normal.
- 2, Check if there is any obstacle blocking the fan.
- 3, Replace the fan and restart; if the problem persists, it is determined to be a fan driver problem.
- 4, Measure the voltage between pin 1 and pin 2 of fan sockets CN3 and CN4 to see if it is normal (+12V).

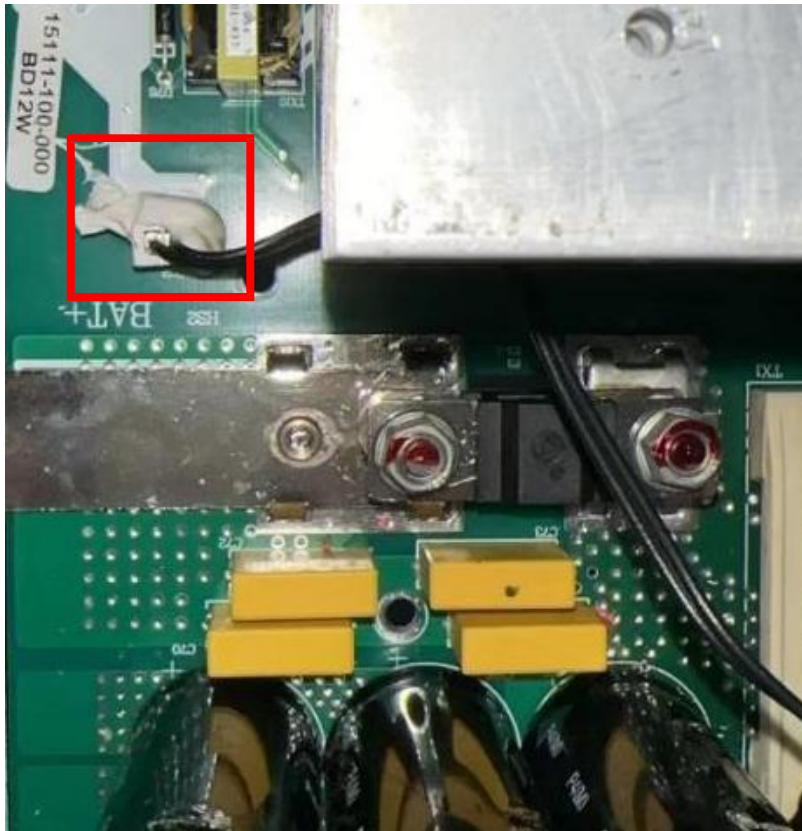


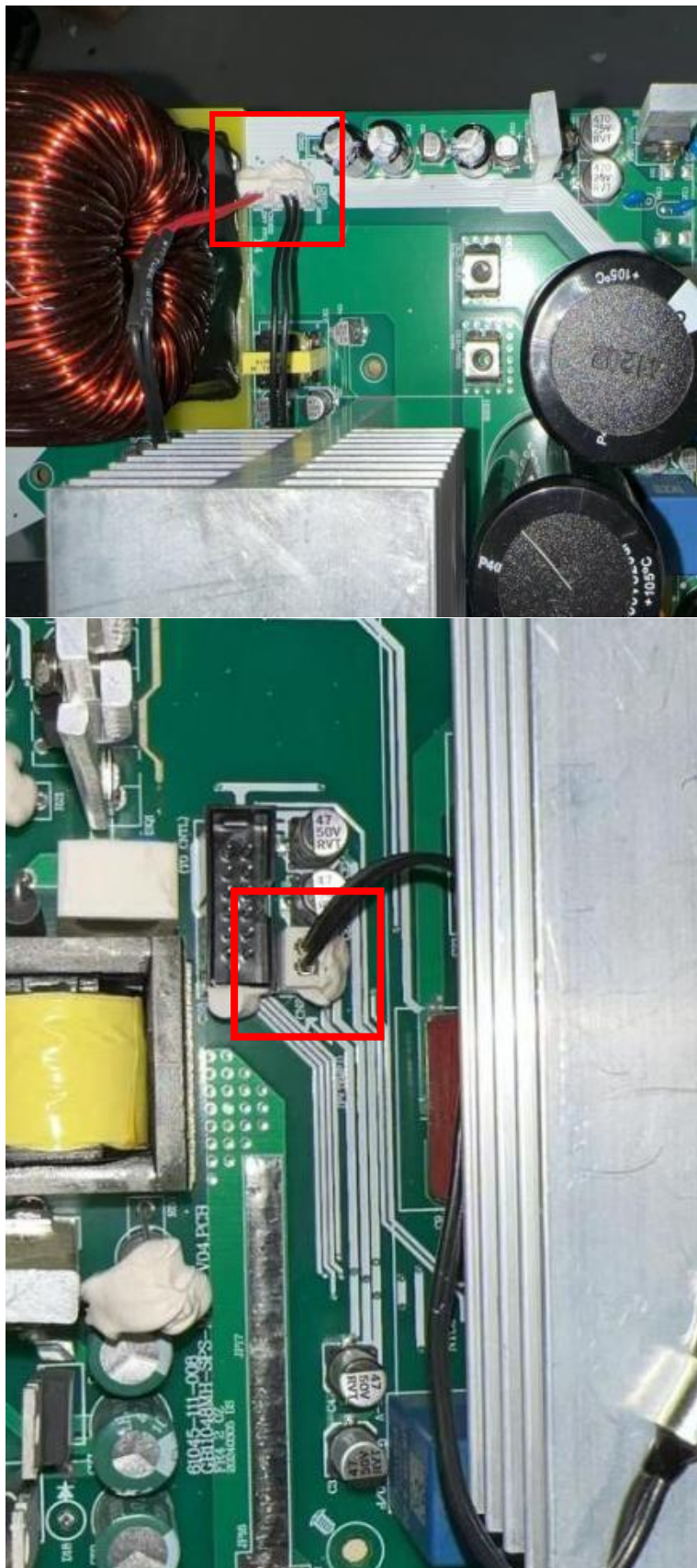
- 5, Disassemble the mainboard and check whether the components are poorly soldered, soldered, inserted upside down, or incorrectly.
- 6, It is necessary to check whether the chip diodes D87, D88, D89, chip resistors R305, R306,

R307, chip capacitors C195, C198, C202, C196, C197, C200, C203, C204, and electrolytic capacitor CE2 are damaged.

2.5.2 Report "02" over temperature or NTC not connected

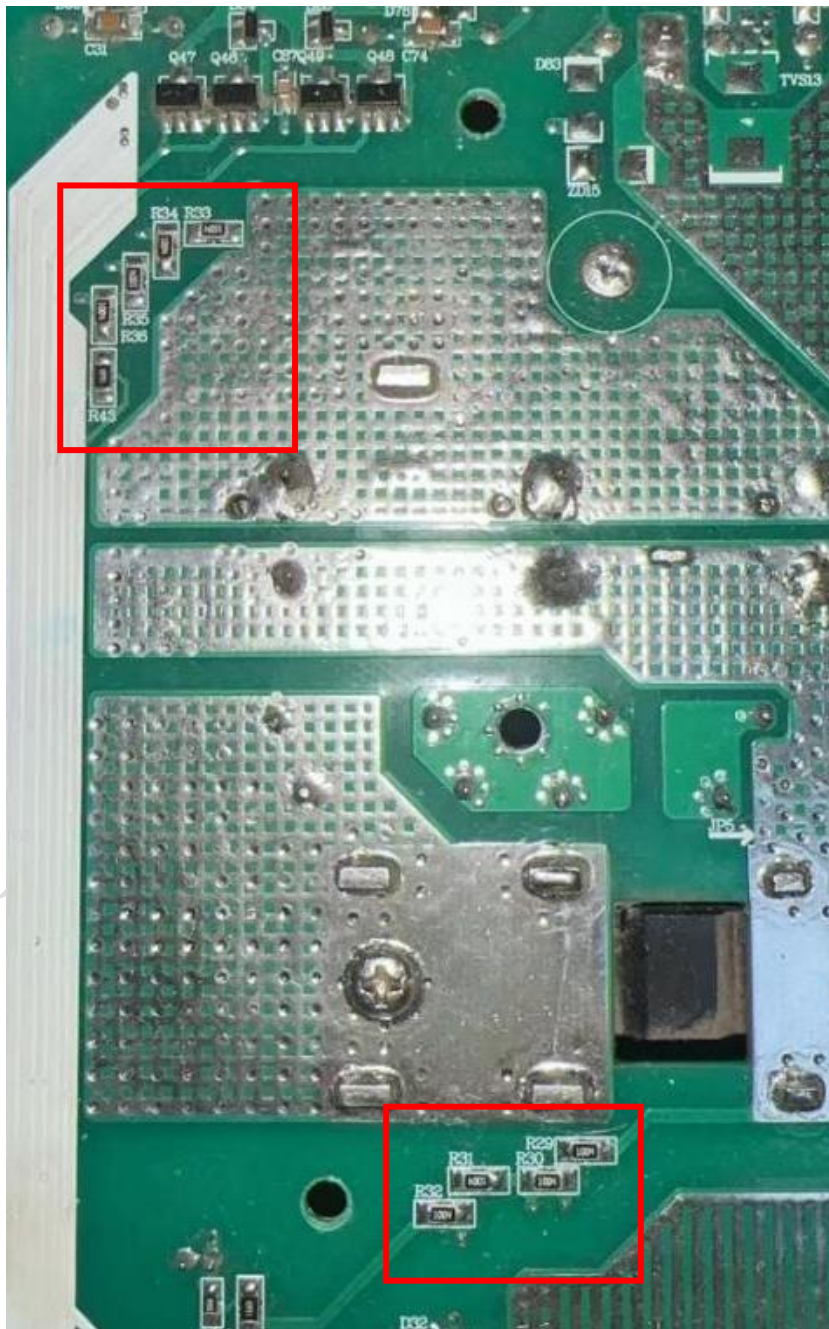
- 1, Confirm that the wiring of the whole machine is normal.
- 2, Replace thermistors CNHS1 , CNHS2, CNHS3, NTC2, CN2 and restart.
- 3, After replacing the control board, it still reports "02" , which is judged to be an NTC detection failure.
- 4, Disassemble the mainboard and check whether the components are poorly soldered, soldered, inserted upside down, or incorrectly.
- 5, It is necessary to check whether the chip resistors R312, R314, R313, R315, R311, R317, and R316 are damaged.





2.5.3 Report "03" battery voltage is too high

- 1, Confirm that the wiring of the whole machine is normal.
- 2, Start the machine and turn the display to the battery voltage page . If the displayed value is inconsistent with the actual input voltage , the battery voltage needs to be calibrated .
- 3, After replacing the control board , it still reports "03" , which is judged to be a battery voltage sampling failure .
- 4, Disassemble the motherboard and check whether the components are poorly soldered, soldered, inserted upside down, or wrong. **Check whether the chip resistors R29, R30, R31, R32, R38, R33, R34, R35, R36, and R43 are damaged .**



2.5.4 Report "04" battery voltage is too low

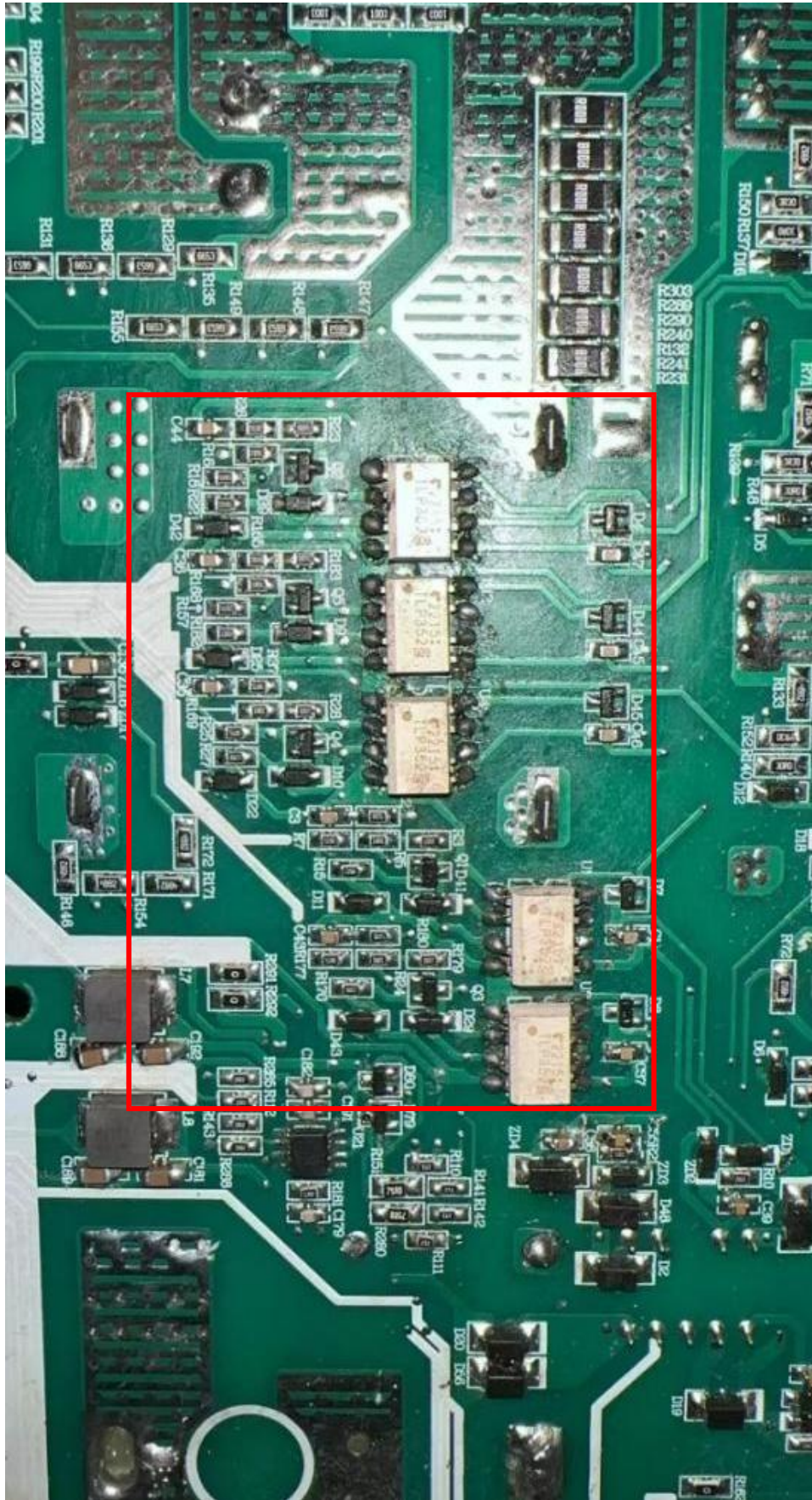
- 1, Confirm that the wiring of the whole machine is normal.
- 2, Start the machine and turn the display to the battery voltage page . If the displayed value is inconsistent with the actual input voltage , the battery voltage needs to be calibrated .
- 3, After replacing the control board , it still reports "04" , which is judged to be a battery voltage sampling failure .
- 4, Disassemble the mainboard and check whether the components are poorly soldered, soldered, inserted upside down, or incorrectly.
- 5, It is necessary to check whether the chip resistors R29, R30, R31, R32, R38, R33, R34, R35, R36, and R43 are damaged . (Refer to 2.5.3 for the picture)

2.5.5 Report "05" output short circuit or over temperature

- 1, Confirm that the wiring of the whole machine is normal.
- 2, Measure whether the output neutral and live wires are short-circuited.
- 3, Disassemble the mainboard and check whether the components are poorly soldered, soldered, inserted upside down, or incorrectly.
- 4, It is necessary to check whether the components connected to the output neutral and live wires are damaged . (Refer to 2.2.1 for the picture)

2.5.6 Report "06" output voltage is too high

- 1, Confirm that the wiring of the whole machine is normal .
- 2, After replacing the control board and trying again , it still reports "06", which is judged to be a BUS soft start failure.
- 3, Disassemble the mainboard and check whether the components are poorly soldered, soldered, inserted upside down, or incorrectly.
- 4, It is necessary to check whether the inverter drive parts U1, U2, U3, U4, and U12 are damaged.

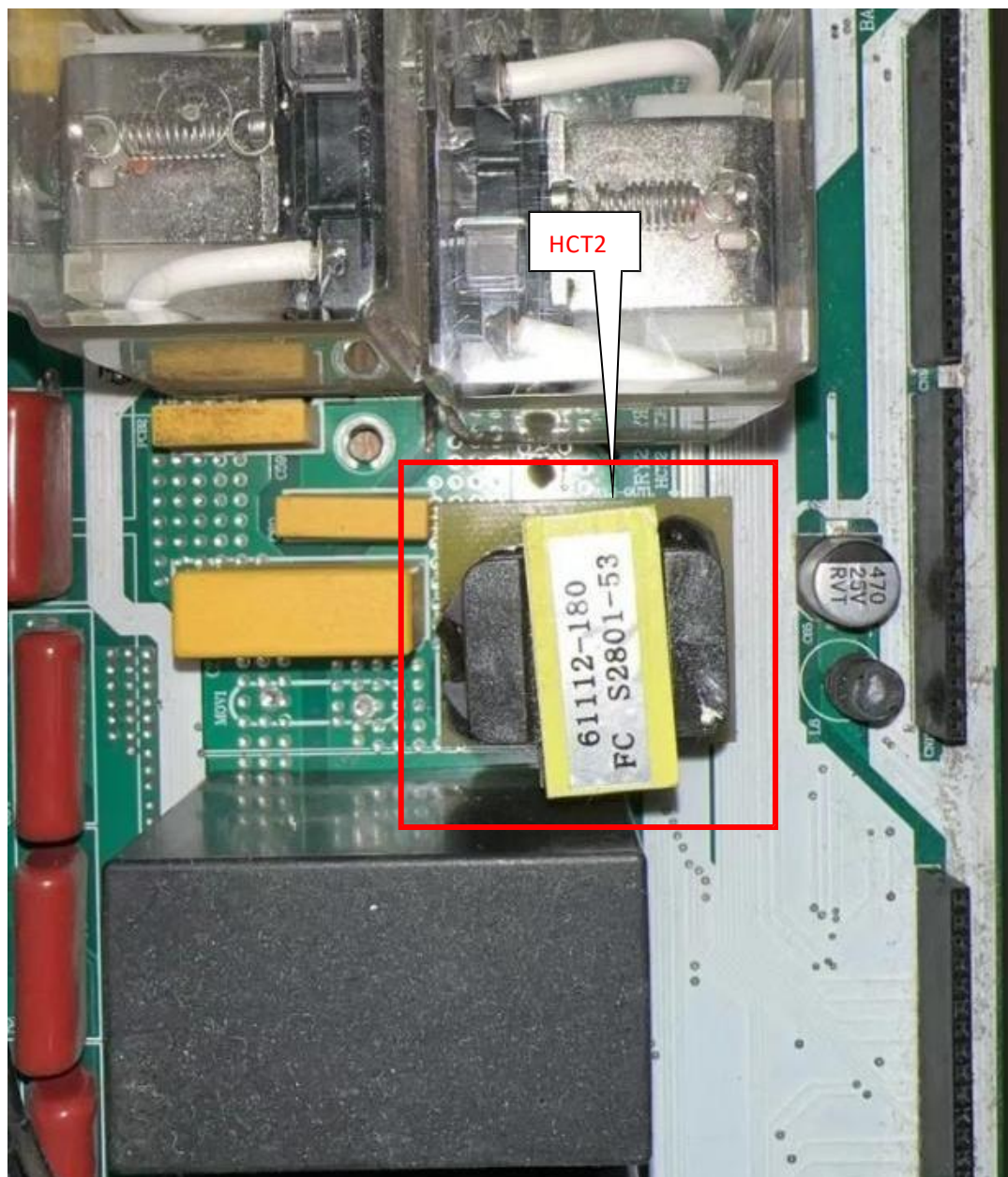


5, If it does not return to normal , it is judged as a BUS voltage detection failure .

- 6, It is necessary to check whether the chip resistors R162, R161, R160, R159, R166, R167, R164, and R163 are damaged .

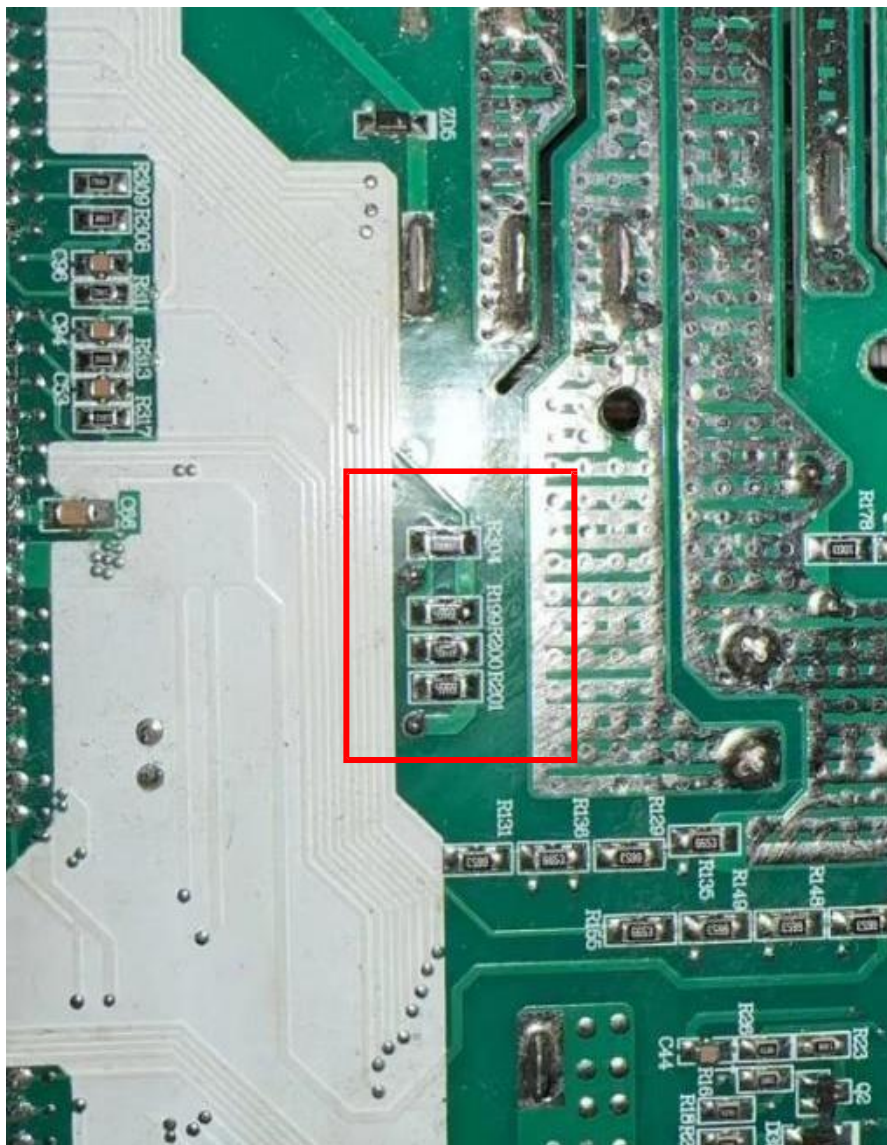
2.5.7 Report "07" overload timeout

- 1, Confirm that the wiring of the whole machine is normal.
- 2, Replace the control board . If it still reports "07" , it is considered a load detection failure. 3 , Disassemble the mainboard and check whether the components are poorly soldered, soldered, inserted upside down, or incorrectly.
- 4, It is necessary to check whether the chip resistors R304, R199, R200, R201 and transformer HCT2 are damaged.



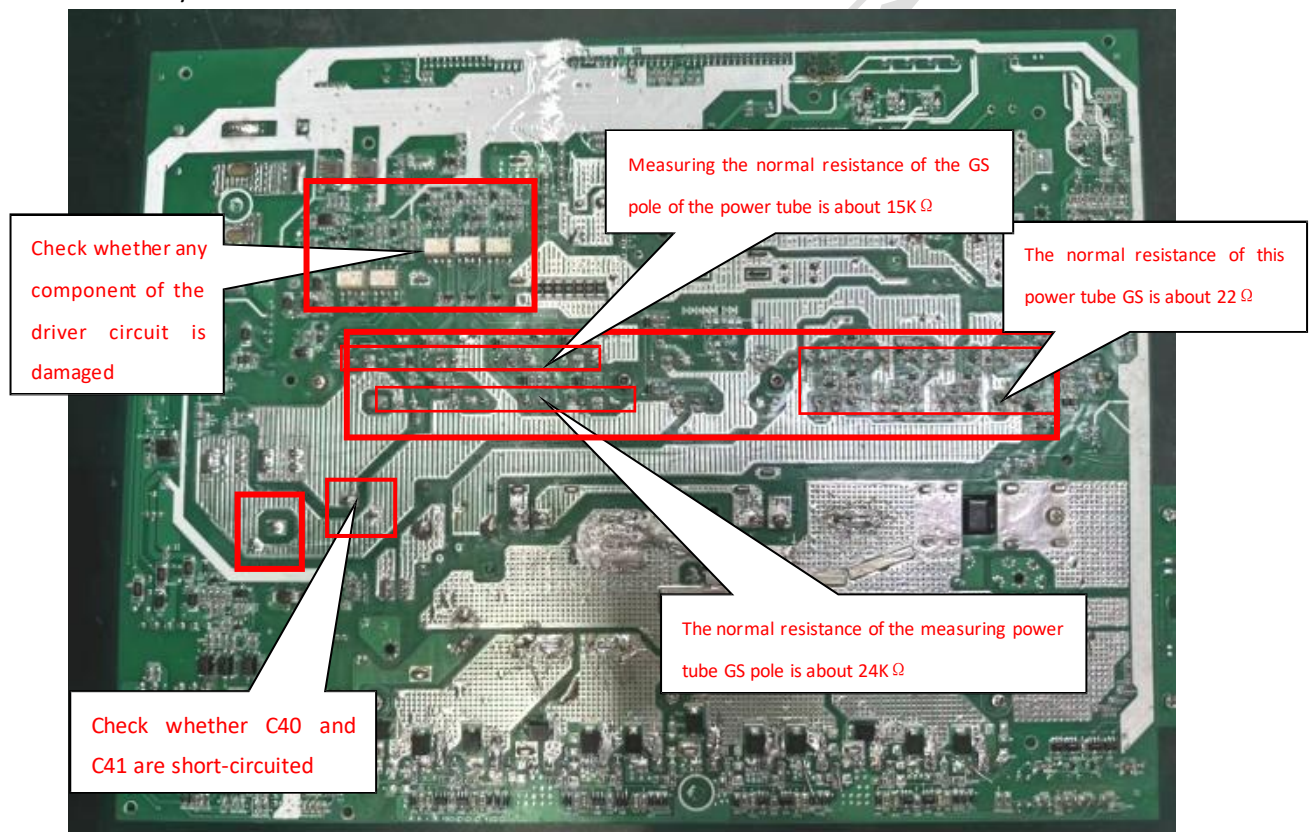
2.5.8 Report "08" BUS voltage is too high

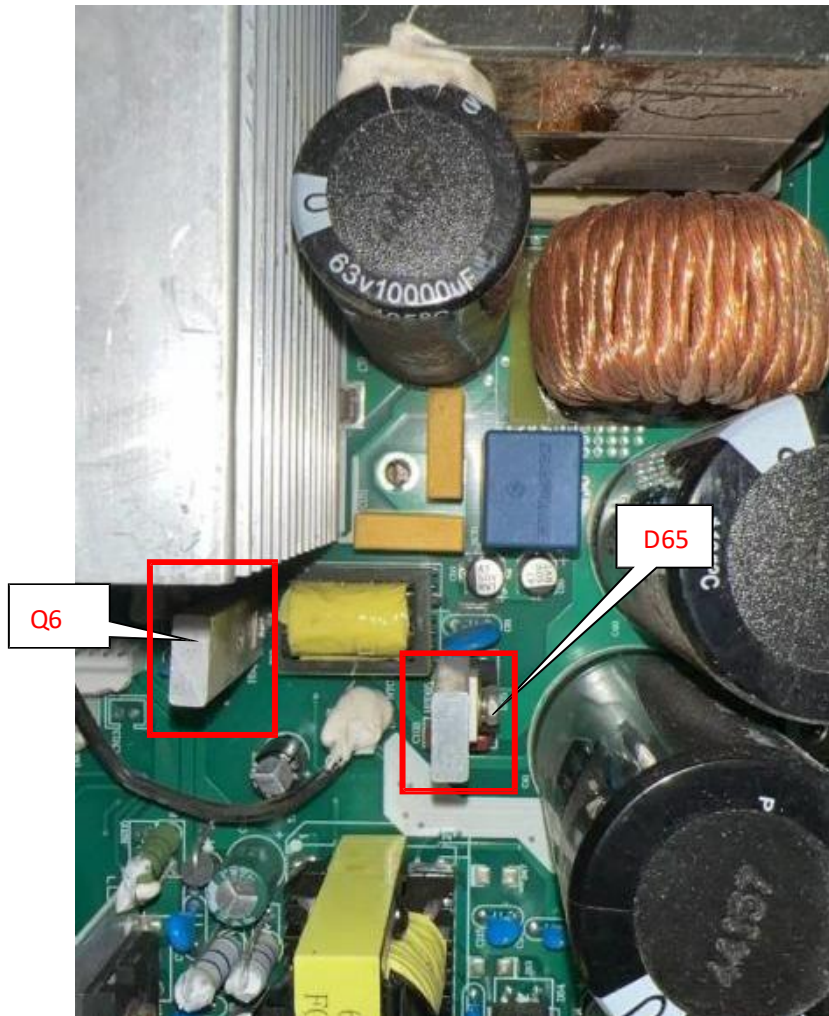
- 1, Confirm that the wiring of the whole machine is normal .
- 2, After replacing the control board and trying again , it still reports "08", which is judged to be a BUS soft start failure.
- 3, Disassemble the mainboard and check whether the components are poorly soldered, soldered, inserted upside down, or incorrectly.
- 4, It is necessary to check whether the inverter drive parts U1, U2, U3, U4, and U12 are damaged (see picture 2.5.6) .
- 5, If it does not return to normal , it is judged as a BUS voltage detection failure .
- 6, It is necessary to check whether the chip resistors R162, R161, R160, R159, R166, R167, R164, and R163 are damaged .



2.5.9 Report "09" BUS soft start failed

- 1, Confirm that **the wiring** of the whole machine is normal .
- 2, After replacing **the control board and trying again** , it still reports "09", which is judged to be a BUS soft start failure.
- 3, Disassemble the mainboard and check whether the components are poorly soldered, soldered, inserted upside down, or incorrectly.
- 4, Remove the control board .
- 5, Measure whether **the positive and negative electrodes of electrolytic capacitors C40 and C41 are short-circuited** . If short-circuited , check whether the power tubes Q35, Q28, Q31, Q27, Q30, Q45, Q29, Q37, QA1, QA2, QB2, QB3, QC1, QC2, QD2, QD3 and diode D65 are faulty.

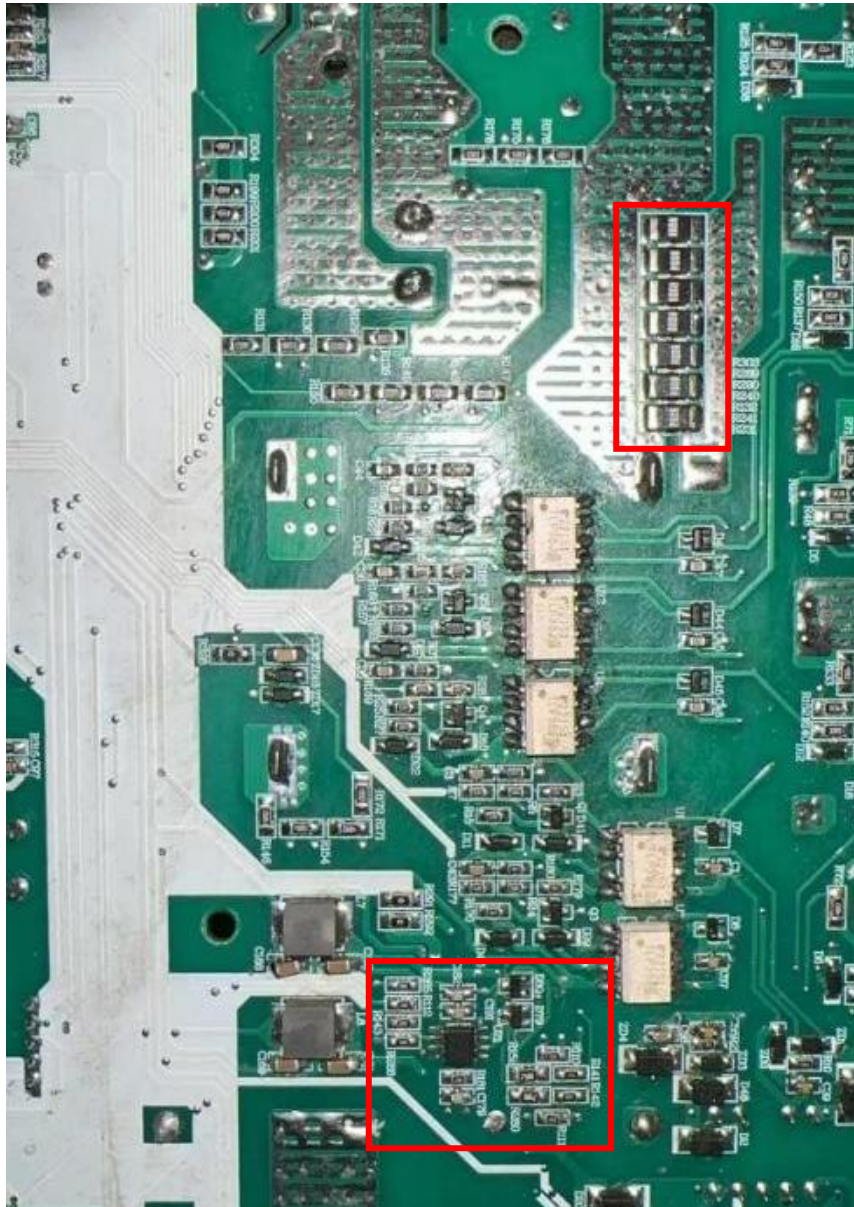




- 6, Turn on the BAT power supply and the rocker switch.
- 7, Measuring power chip IC The voltage between the 7th and 5th pins of 3845 U 10. If there is no voltage , check whether the diode D50 is faulty . (See 2.4.1 for the picture)
- 8, If there is voltage, check whether the SMD optocoupler U17 and its connected components, power tube Q6 , transformer TX2 and its connected components and its drive circuit (see pictures in 2.2.1, 2.4.1, 2.5.7) are damaged .

2.5.10 Report "51" overcurrent

- 1, Confirm that the wiring of the whole machine is normal .
- 2, After replacing the control board and trying again, it still reports "51", which is judged to be an inverter current detection failure .
- 3, Disassemble the mainboard and check whether the components are poorly soldered, soldered, inserted upside down, or incorrectly.
- 4, It is necessary to check whether the precision chip resistors R303, R289, R290, R240, R132, R241, R231 and op amp OP07 U21 are damaged .



2.5.11 Report "52" BUS voltage is too low

- 1, Confirm that the wiring of the whole machine is normal .
- 2, After replacing the control board and trying again , it still reports "52", which is judged to be a boost failure.
- 3, Disassemble the mainboard and check whether the components are poorly soldered, soldered, inserted upside down, or incorrectly.
- 4, It is necessary to check whether the TVS tubes TVS3, TVS4, TVS5, TVS6, TVS7, TVS8, TVS11, TVS12, TVS13, TVS14, TVS15, TVS16 power tubes Q18 , Q19 , Q20 , Q13 , Q11 , Q23 , Q17 , Q26 , Q40, Q38, Q21, Q24, Q27, Q31, Q30, Q45, Q28, Q35, Q29, Q37 are damaged.



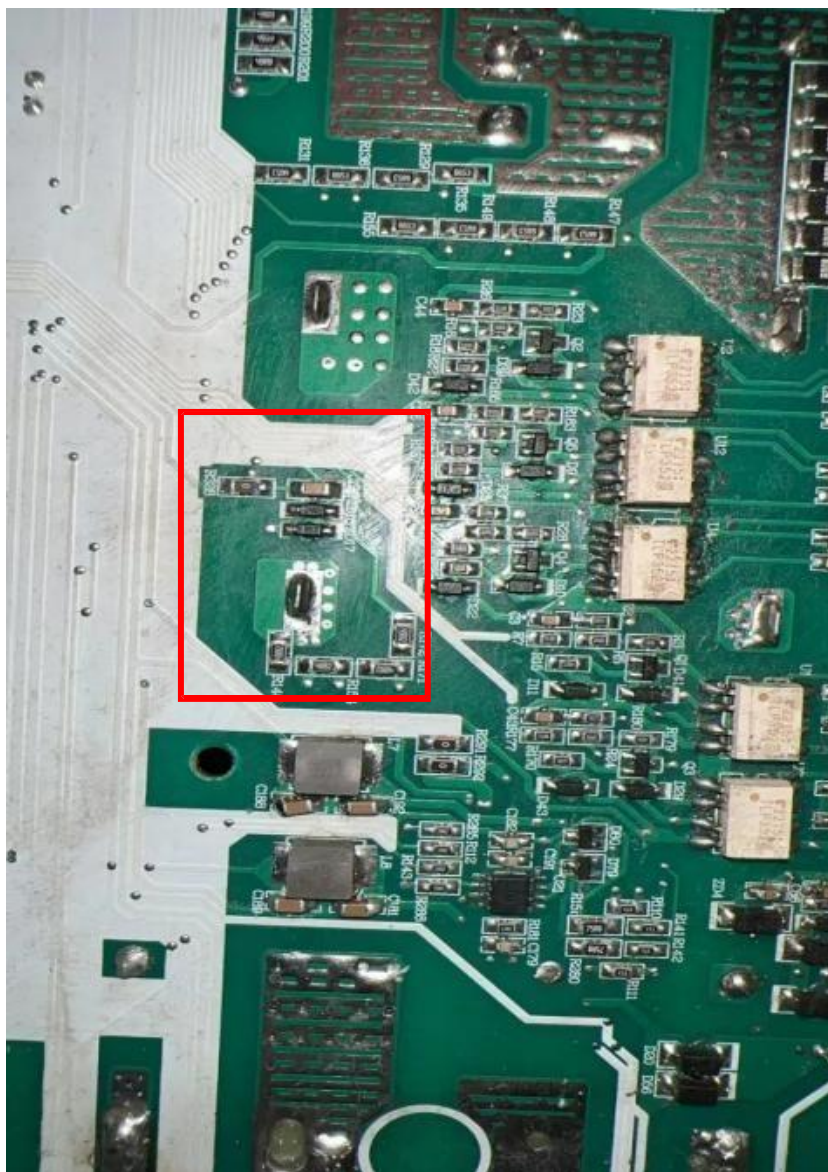
2.5.12 Report "53" Inverter soft start failure

- 1, Confirm that the wiring of the whole machine is normal .
- 2, After replacing the control board and trying again , it still reports "53", which is judged to be an inverter failure.
- 3, Disassemble the mainboard and check whether the components are poorly soldered, soldered, inserted upside down, or incorrectly.

-
- 4, It is necessary to check whether the power tubes QA1, QA2, QB2, QC2, QD3, QB3, QC1, and QD2 are damaged (see reference 2.5.9 for pictures) .

2.5.13 Report "55" DC component is too high

- 1, Confirm that the wiring of the whole machine is normal .
- 2, After replacing the control board and trying again, it still reports "55", which is judged as a DC component detection failure.
- 3, Disassemble the mainboard and check whether the components are poorly soldered, soldered, inserted upside down, or incorrectly.
- 4, It is necessary to check whether the chip resistors R172, R171, R154, R146, R328 and the chip regulator diodes ZD17 and ZD18 are damaged.



2.5.14 Report "57" current sensor failure

- 1, Confirm that the wiring of the whole machine is normal .
- 2, After replacing the control board and trying again, it still reports "57", which is judged to be a current sensor detection failure.
- 3, Disassemble the mainboard and check whether the components are poorly soldered, soldered, inserted upside down, or incorrectly.
- 4, It is necessary to check whether the chip IC U21 **and its connected components (see 2.5.10 for pictures)** are damaged .
- 5, It is necessary to check whether the transformer H CT 2 **and its connected components (see 2.4.2 for pictures)** are damaged .
- 6, It is necessary to check whether the Hall sensors HTC1*2, HTC2 **and their connected components (see 2.4.2 for pictures)** are damaged .

2.5.15 Report "58" output voltage is too low

- 1, Confirm that the wiring of the whole machine is normal .
- 2, After replacing the control board and trying again , it still reports "58", which is judged to be a BUS voltage detection failure.
- 3, Disassemble the mainboard and check whether the components are poorly soldered, soldered, inserted upside down, or incorrectly.
- 4, whether the chip resistors R162, R161, R160, R159, R166, R167, R164, and R163 are damaged **(see 2.5.8 for pictures)** .

2.5.16 Report "72" current sharing error

- 1, Confirm that the wiring of the whole machine is normal .
- 2, After replacing the parallel communication board and trying again, it still reports " 72 " , which is considered to be a problem with the parallel communication board.
- 3, Check whether the connection lines between the parallel communication board and the control board are normal, and confirm whether the components are poorly soldered, tinned, inserted reversely, or incorrectly.
- 4, Check whether the chip diodes D8, D10, chip ICs U1, U3, U4, U6, U9, and chip optocoupler U5 are damaged.

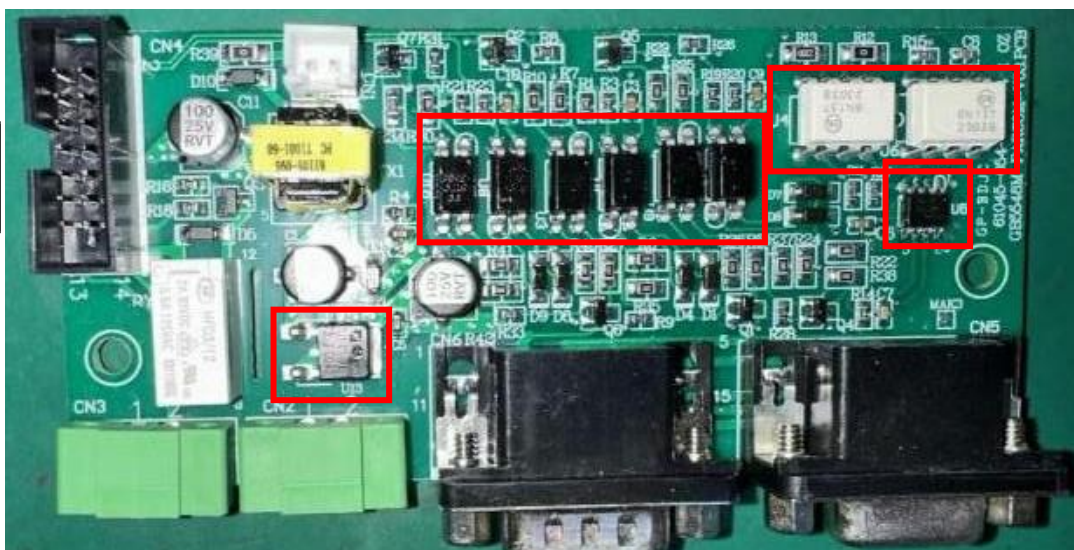
2.5.17 Report "80" CAN fault

- 1, Confirm that the wiring of the whole machine is normal .
- 2, After replacing the parallel communication board and trying again, it still reports " 80 " , which is considered to be a problem with the parallel communication board.
- 3, Check whether the connection lines between the parallel communication board and the

control board are normal, and confirm whether the components are poorly soldered, tinned, inserted reversely, or incorrectly.

- 4, Check whether the chip diodes D8, D10, chip optocouplers U1, U3, U7, U8, U9, U10, chip IC U5, U2 optocouplers U4, U6 are damaged. (Pictures can be found in 2.5.16)

The red boxes are fault points



5,

2.5.18 Report "81" host lost

- 1, Confirm that the wiring of the whole machine is normal .
- 2, After replacing the parallel communication board and trying again, it still reports " 81 " , which is considered to be a problem with the parallel communication board.
- 3, Check whether the connection lines between the parallel communication board and the control board are normal, and confirm whether the components are poorly soldered, tinned, inserted reversely, or incorrectly.
- 4, Check whether the chip diode D10, chip IC U5, U2, and transformer TX1 are damaged. (See 2.5.16 for pictures)

2.5.19 Report "82" synchronization loss

- 1, Confirm that the wiring of the whole machine is normal .
- 2, After replacing the parallel communication board and trying again, it still reports " 82 " , which is considered to be a problem with the parallel communication board.
- 3, Check whether the connection lines between the parallel communication board and the control board are normal, and confirm whether the components are poorly soldered, tinned, inserted reversely, or incorrectly.
- 4, Check whether the chip diodes D8, D10, chip optocouplers U1, U3, U7, U8, U9, U10, chip IC U5, U2 optocouplers U4, U6 are damaged. (Pictures can be found in 2.5.16)

2.6 Question Guide

2.6.1 TV S tube with load

It is necessary to check the DC TO BUS circuit and check whether the power tubes Q6 , Q8 , Q9 , Q10 , Q11 , Q12 , Q13 , Q53 , Q54, Q55, Q56, Q58, Q59, Q63, Q64, Q67 are damaged , poorly soldered , tinned, or wrong . (Pictures can be found in 2.5.11)

2.6.2 PV hits the chassis , pipe explodes or inverter power frequency arm is damaged

It is necessary to check the AC TO BUS circuit: whether the power tubes QA1, QA2, QC2, QC1 and their drive parts are damaged. (See 2.5.11 for pictures)

2.6.3 AC cannot charge but PV can

If the display is normal but there is no charging voltage, check whether the input relays RY2, RY3 and their drive circuits are faulty . (See 2.2.1 for pictures)

2.6.4 The battery voltage cannot be calibrated or the settings cannot be saved

Control board failure. Check whether the EEPROM U18 on the control board and its connected circuits are damaged , poorly soldered , tinned, or wrong .

2.6.5 The machine causes other machines to bypass the mains during the aging process

Relay RY4 or its drive circuit is faulty . (See 2.2.1 for pictures)

2.6.7 The machine cannot be turned on

- 1, Confirm that the wiring of the whole machine is normal .
- 2, Check whether the control board has a burned program, check the internal circuit of the machine to ensure that the circuit is correct, check whether the screws are tightened or not,

and whether the machine switch is normal.

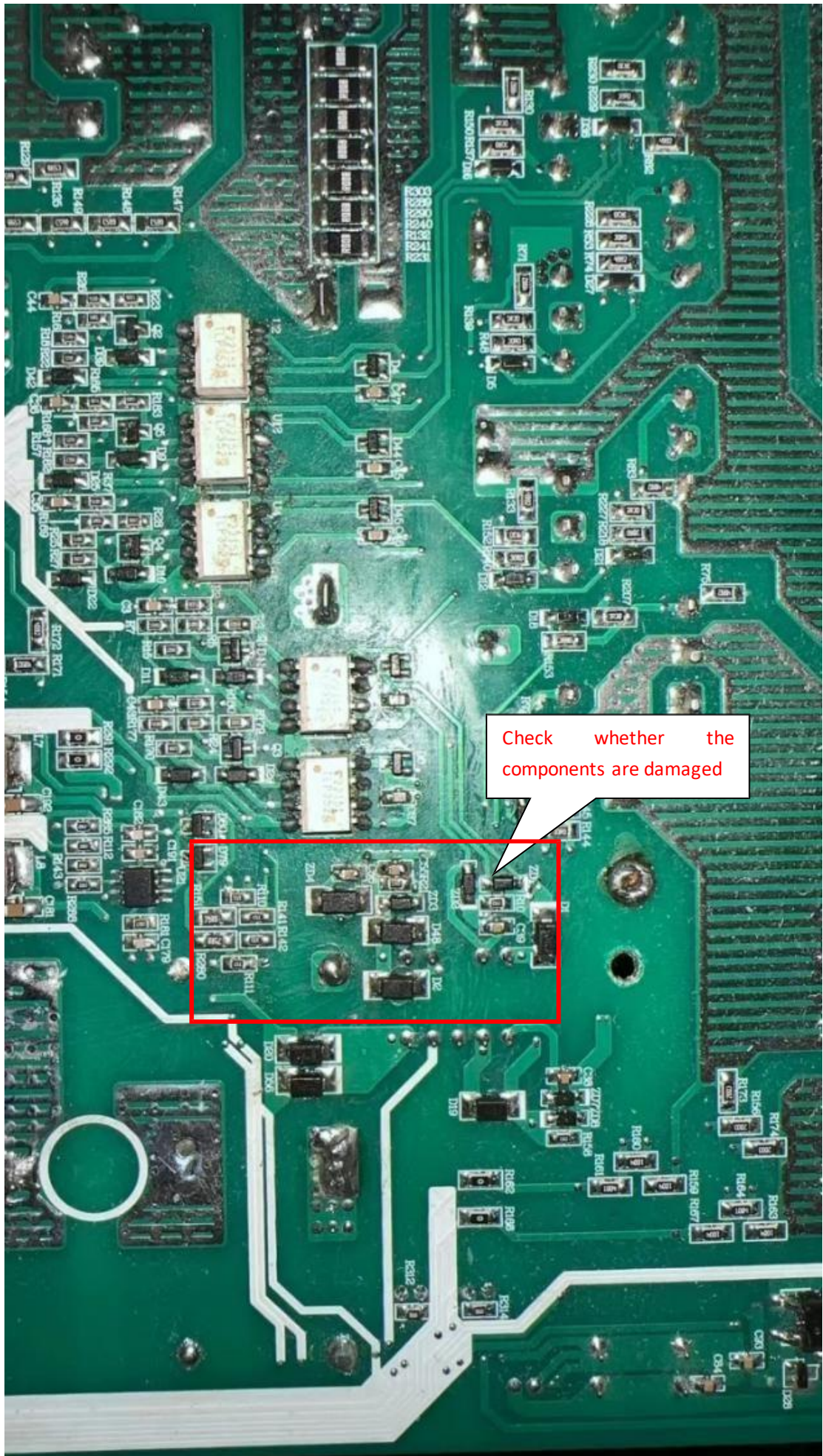
- 3, Disassemble the mainboard and check whether the components are poorly soldered, soldered, inserted upside down, or incorrectly.
- 5, It is necessary to check whether the TVS tubes TVS3, TVS4, TVS5, TVS6, TVS7, TVS8, TVS11, TVS12, TVS13, TVS14, TVS15, TVS16 power tubes Q18 , Q19 , Q20 , Q13 , Q11 , Q23 , Q17 , Q26 , Q40, Q38, Q21, Q24, Q27, Q31, Q30, Q45, Q28, Q35, Q29, Q37 are damaged (see 2.5.11 for pictures)

2.6.8 BAT voltage is pulled down

- 1, Confirm that the wiring of the whole machine is normal .
 - 2, Disassemble the mainboard and check whether the components are poorly soldered, soldered, inserted upside down, or incorrectly.
- Check whether the power tubes Q6, Q9, Q10, Q54, Q56, Q59, Q62, Q63, TVS 1 , TVS2, TVS3, and TVS4 are damaged. (See 2.5.11 for pictures)

2.6.9 Frequently damaged inverter tube

- 1, Confirm that the wiring of the whole machine is normal .
- 2, Disassemble the mainboard and check whether the components are poorly soldered, soldered, inserted upside down, or incorrectly.
- 3, Check whether the inverter power frequency arm and high frequency arm drive are abnormal. When the machine switch is closed, the drive waveform will be below zero when measured by the oscilloscope. If there is no response, it is judged as drive abnormality. Check whether the chip voltage regulator diodes ZD3, ZD4, chip capacitors C56, C55, chip electrolytic capacitors C6, C25, chip resistor R21, and chip diodes D48, D2 are damaged.



Check whether the components are damaged

2.6.10 Electric explosion pipe

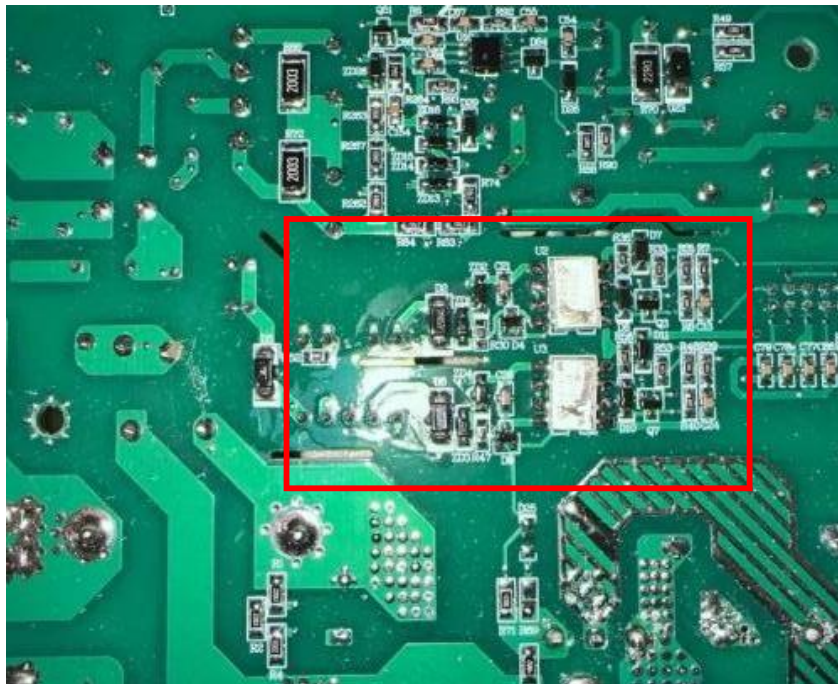
- 1, Confirm that the wiring of the whole machine is normal .
- 2, Disassemble the mainboard and check whether the components are poorly soldered, soldered, inserted upside down, or incorrectly.
- 3, Check whether the power tubes QA1, QA2, QB3, QD3, QC2, QB2, QC1, QD2 and their driving components are damaged. (See 2.5.11 for pictures)

2.6.11 No output when mains power is input

- 1, Confirm that the wiring of the whole machine is normal .
- 2, Disassemble the mainboard and check whether the components are poorly soldered, soldered, inserted upside down, or incorrectly.
- 3, Check relays RY2, RY3, RY1 and their drivers for abnormalities. (See 2.2.1 for pictures)

2.6.12 PV short circuit or PV broken tube

- 1, Confirm that the wiring of the whole machine is normal .
- 2, Replace the parallel communication board and try again. If the problem persists, it is considered that the main board is abnormal.
- 3, Disassemble the mainboard and check whether the components are poorly soldered, soldered, inserted upside down, or incorrectly.
- 4, Check the power tubes Q2, Q5 and their drivers, and focus on checking whether the chip voltage regulator diodes ZD1, ZD2, ZD3, ZD4, chip electrolytic capacitors C14, C22, C25, C27, chip resistors R30, R47, diodes D2, D8, and transformer TX7 are abnormal.
- 5, When using an oscilloscope to detect the drive, it is consistent with the inverter tube drive. Close the machine switch and the oscilloscope will show negative pressure. If there is negative pressure, it is normal. Otherwise, the drive is abnormal.



2.6.13 Buzzer abnormality

- 1, Confirm that the wiring of the whole machine is normal .
- 2, Replace the control board and try again. If the problem persists, it is considered that the control board is abnormal.
- 3, Check whether the components on the control board are poorly soldered, soldered, inserted

upside down, or incorrectly.

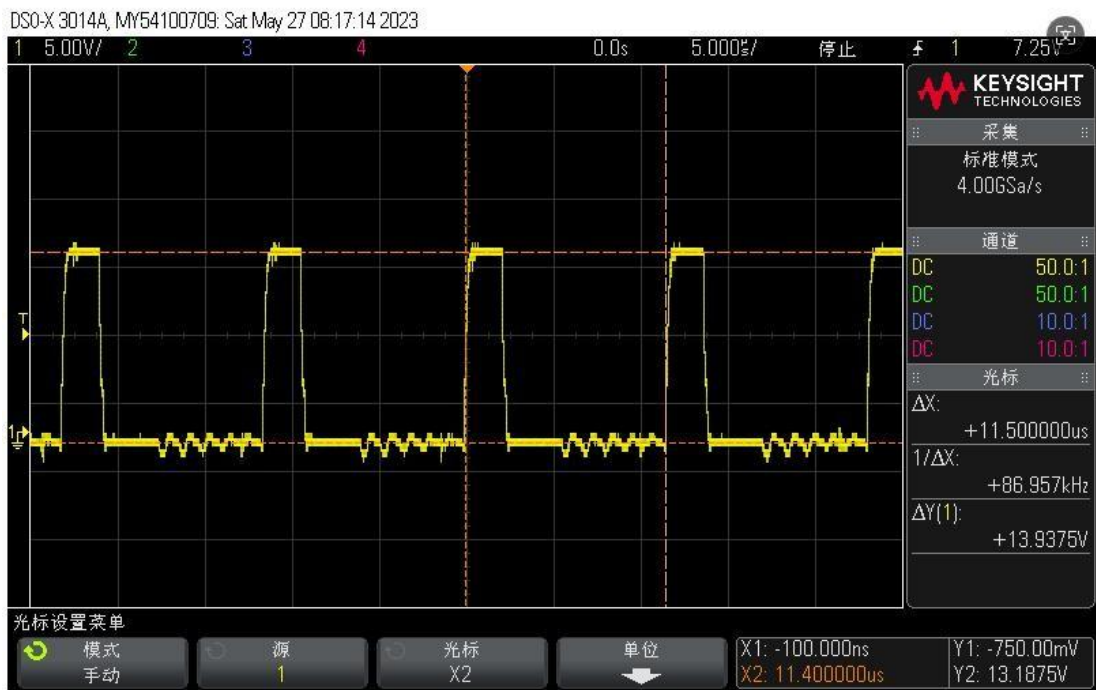
- 4, Check whether the chip capacitor CE6 and buzzer BVZ1 on the control board are abnormal.



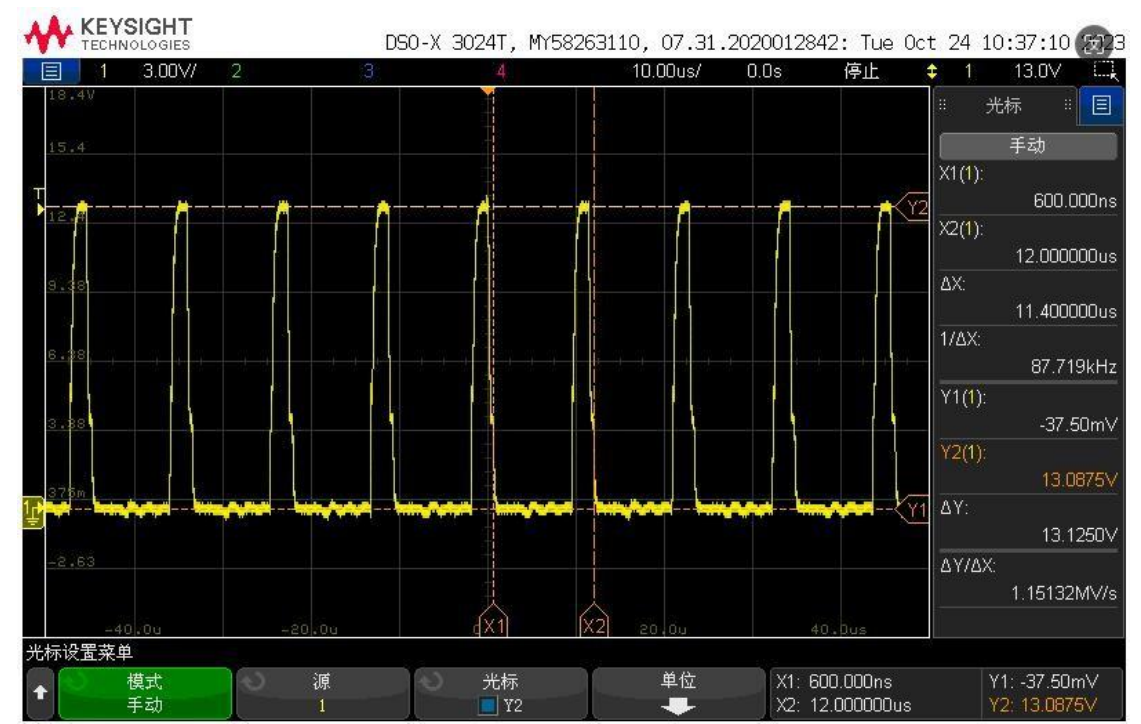
Pin 3 is the current protection waveform. The amplitude cannot exceed 1V when measured by an oscilloscope.

The voltage of pin 4 is about 2.4V Pin 8 is the reference voltage 5V

Q14 GS waveform reference amplitude is about 14V



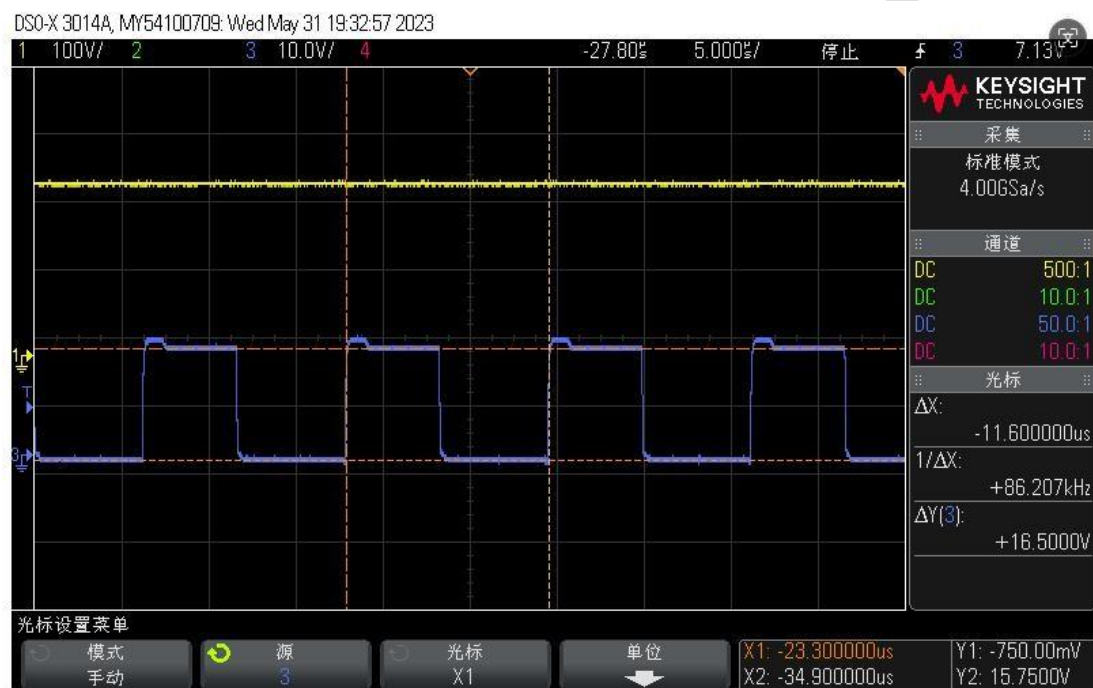
Q36 waveform reference reference battery voltage 52V amplitude is about 13V



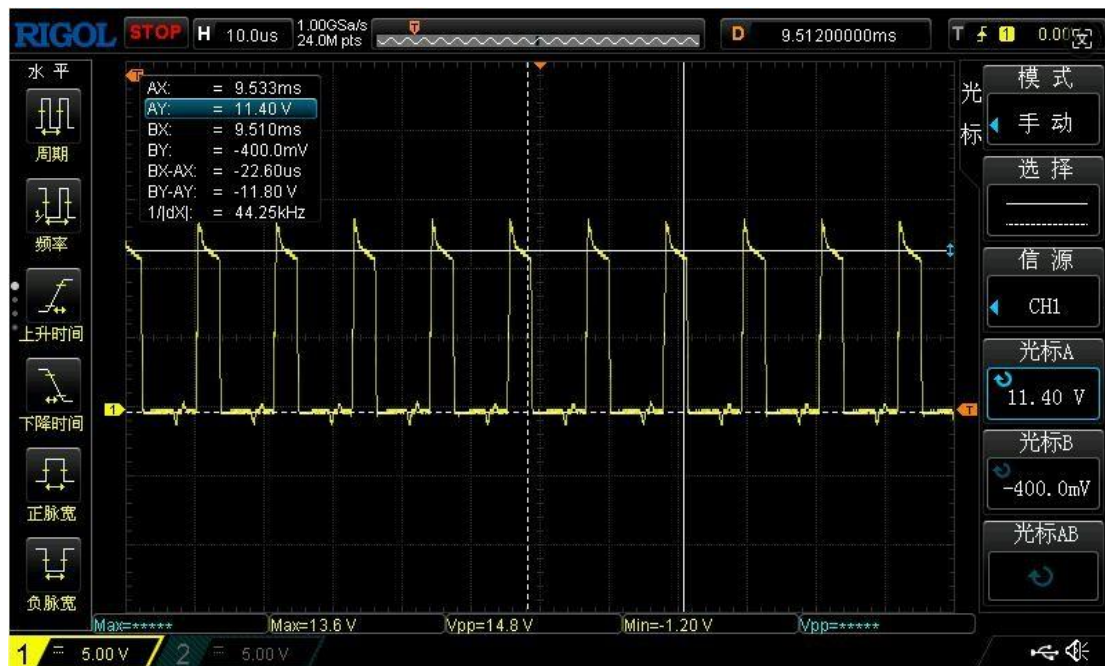
3.BUS slow start part

U5 3845 Waveform Reference

pin 7 and pin 5 is normally about 17 V. The waveform of pin 6 is shown in the figure below. The frequency of pin 6 is about 86K HZ

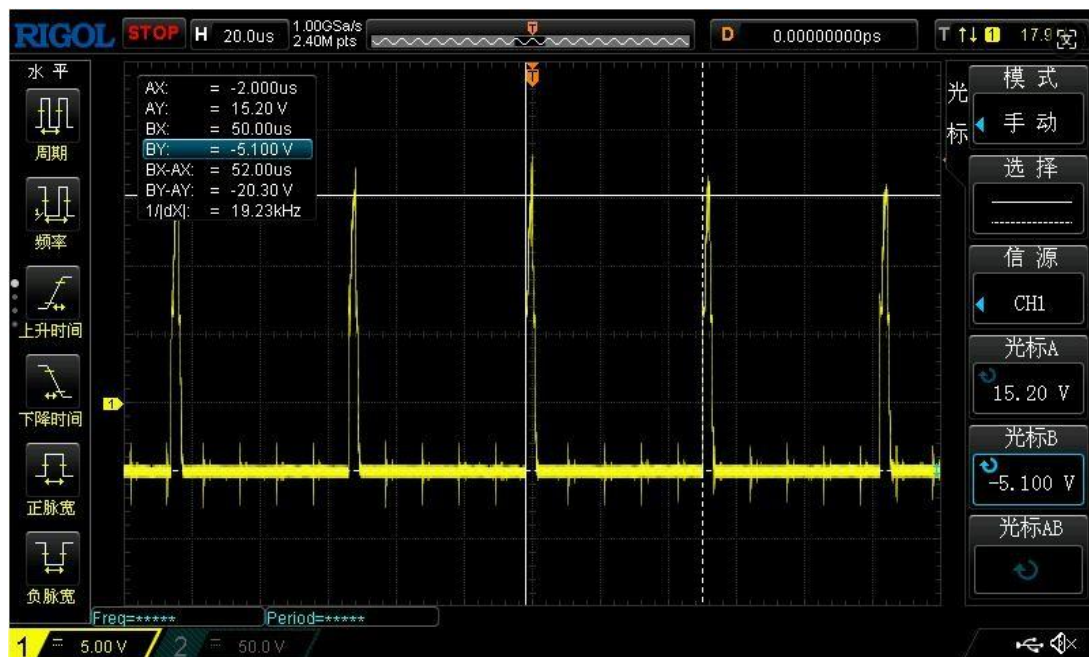


Q6 GS waveform reference amplitude is about 11V and frequency is 86KHz

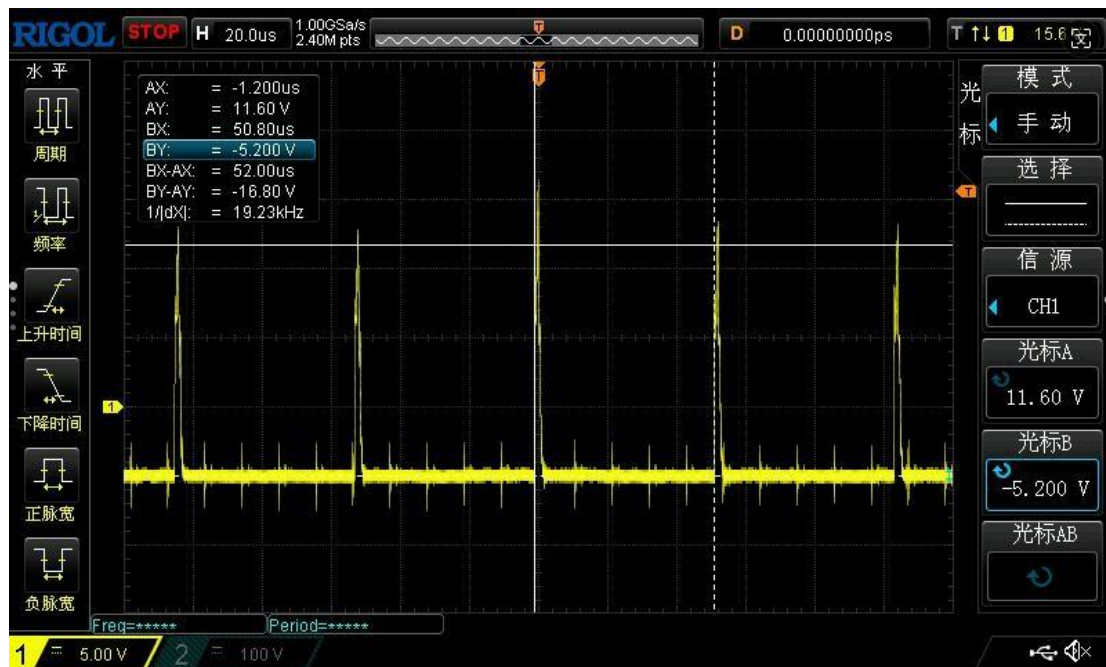


2. PV to BUS part PV is 350V

The reference amplitude of Q2 GS drive waveform is about 15V and the frequency is 19KHz



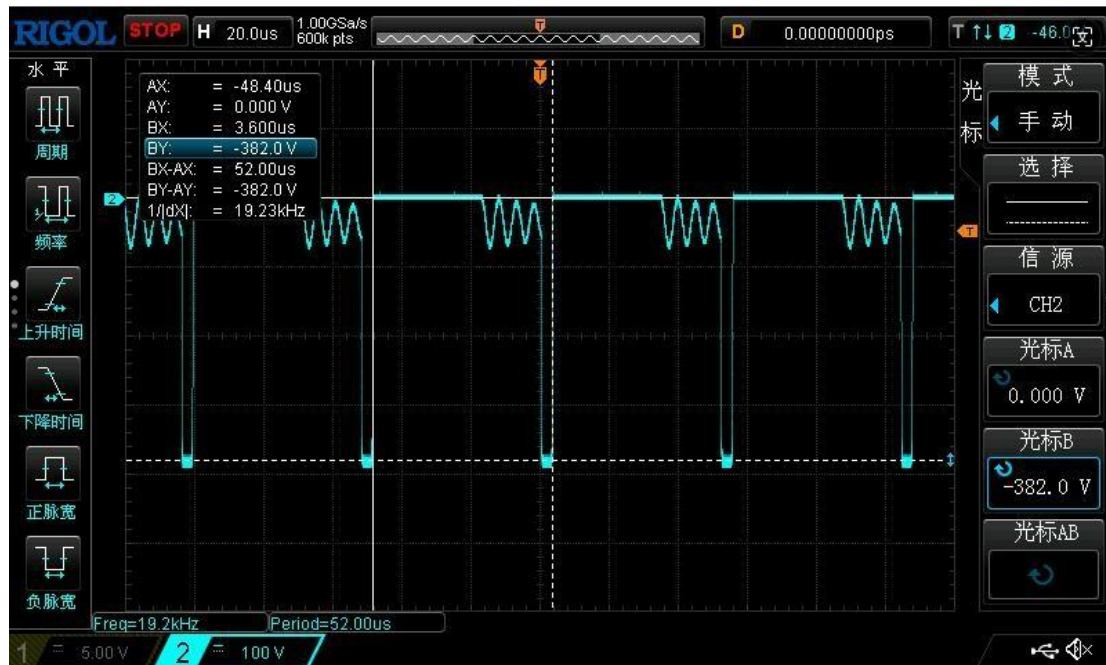
Q5 GS drive waveform reference amplitude is about 11.6V frequency is 19.23KHz



The reference amplitude of D1 waveform is about -384V and the frequency is 19.23KHz



The D24 waveform reference amplitude is approximately -382V and the frequency is 19.23KHz



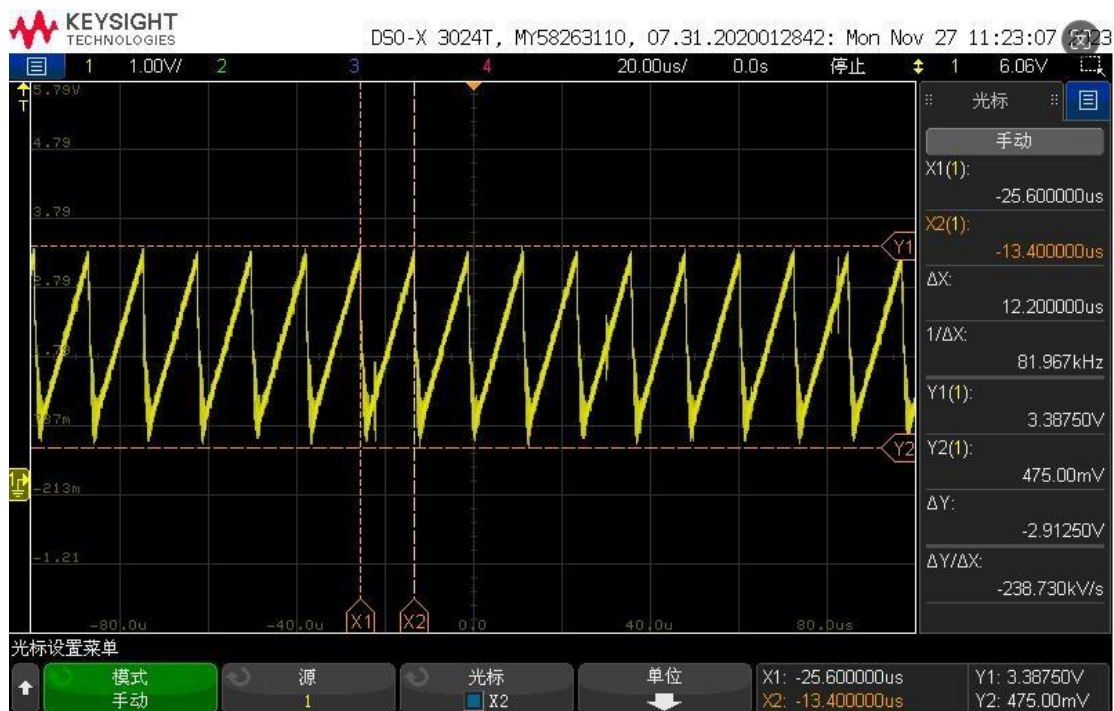
3. DC TO BUS

1.1 3525 pin reference

The voltage of pin 1 is 5V and the voltage of pin 2 is 5V.

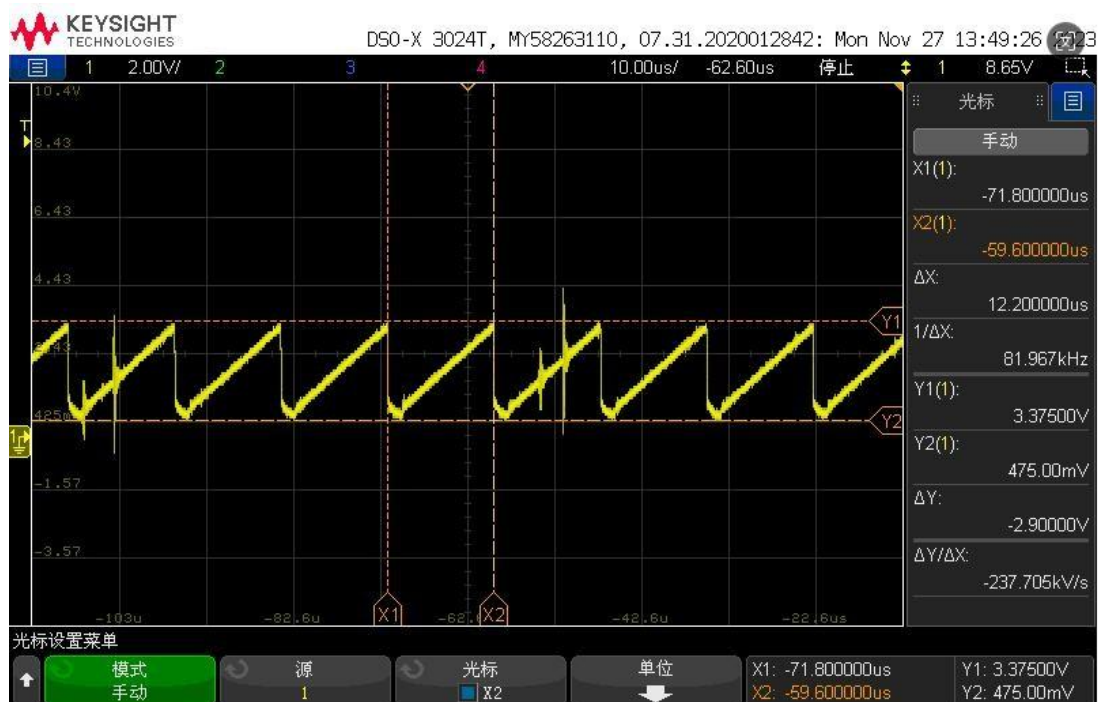
4-pin measurement cannot turn on

The reference amplitude of the waveform at pin 5 is about 3V and the frequency is about 81KHz



The voltage of pin 6 is about 3.6V

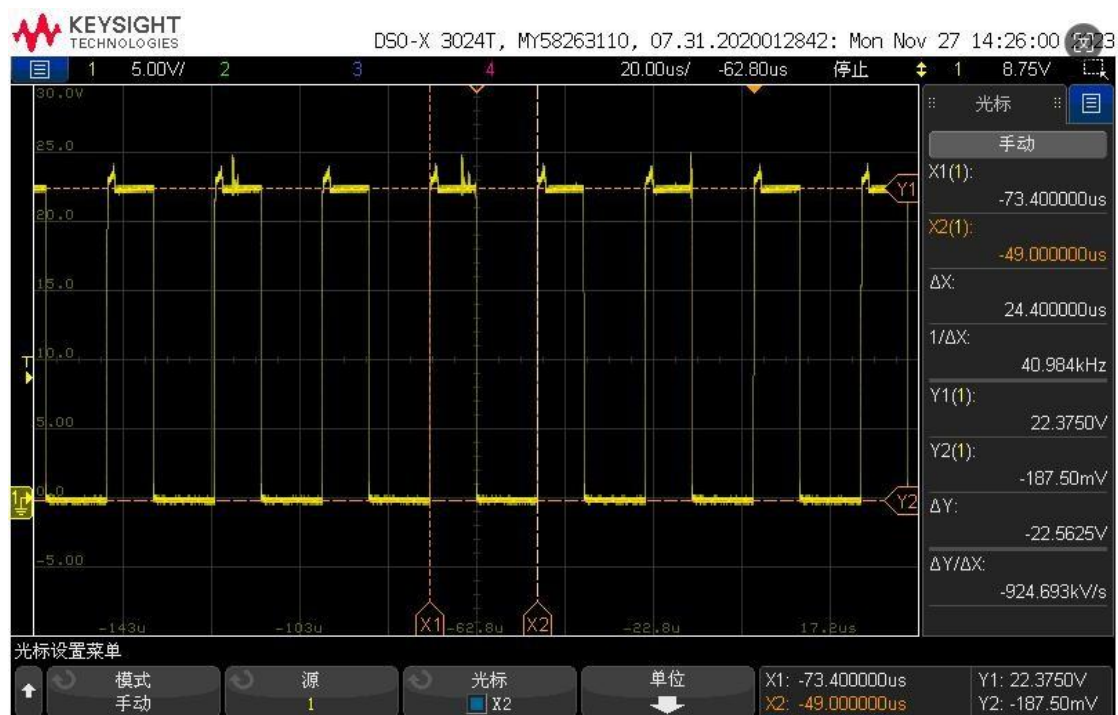
The reference amplitude of the waveform at pin 7 is about 3.3V and the frequency is about 81KHz



The voltage of pin 8 is about 4.7V

The voltage of pin 9 is about 5V

The reference amplitude of the waveform at pin 11 is about 22V and the frequency is about 40KHz



12-pin signal ground

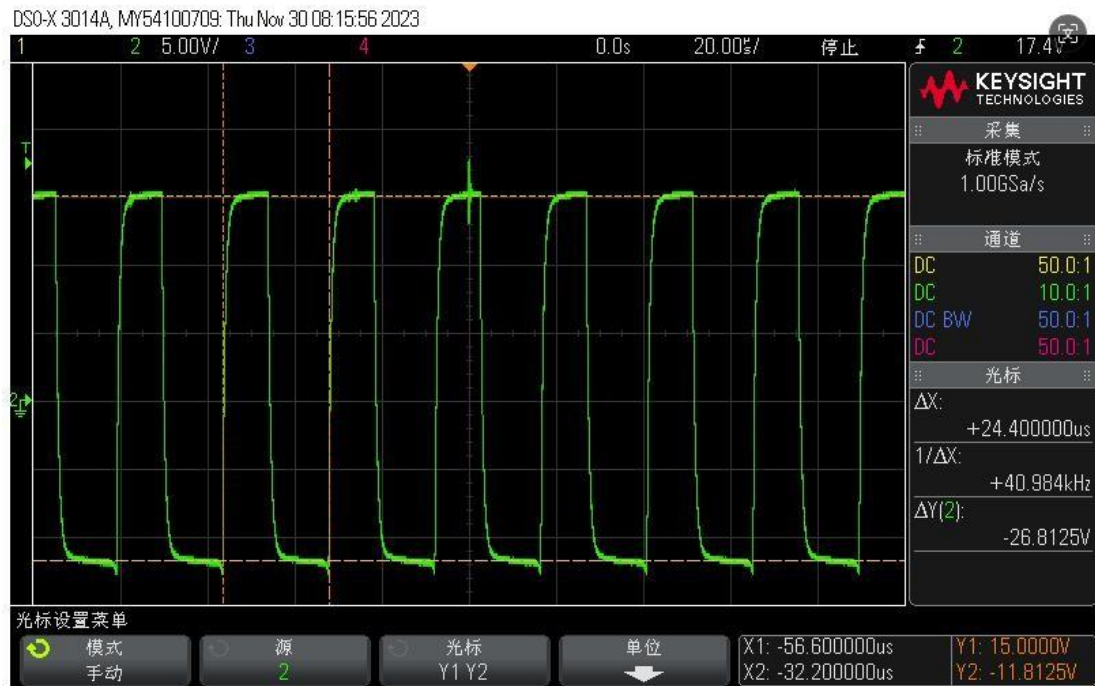
The voltage of pin 13 is about 23V

The waveform of pin 14 is similar to that of pin 11

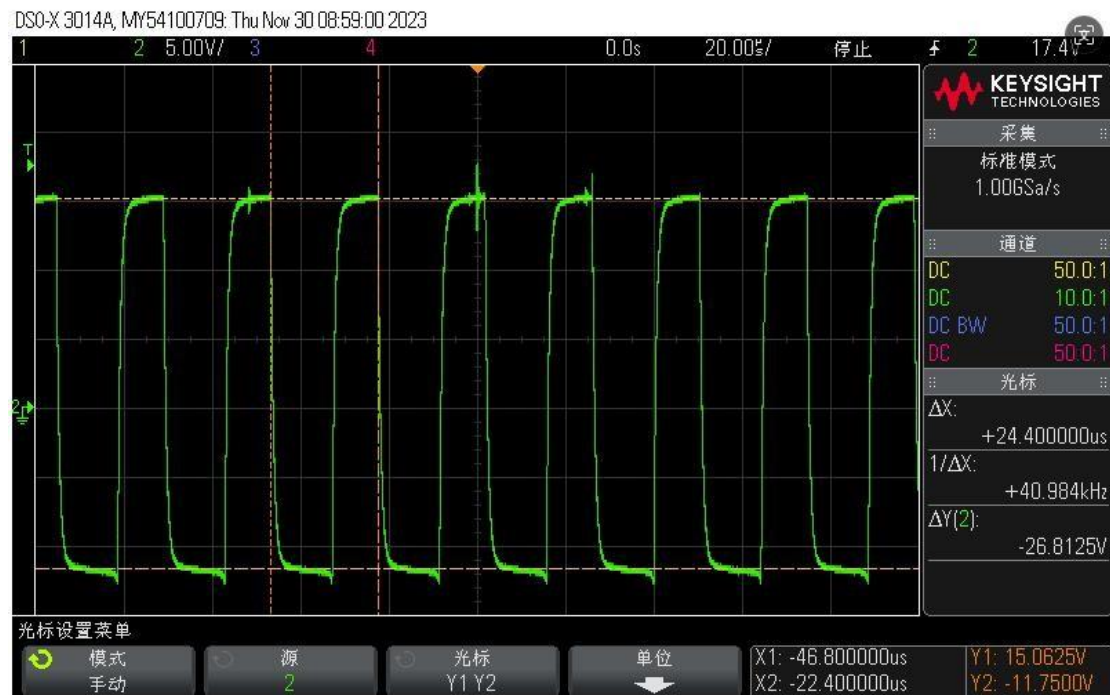
Pin 15 is the same as pin 13 and the voltage of pin 16 is about 5V

1.2 Power tube drive waveform reference (power tubes in the same group have the same waveform)

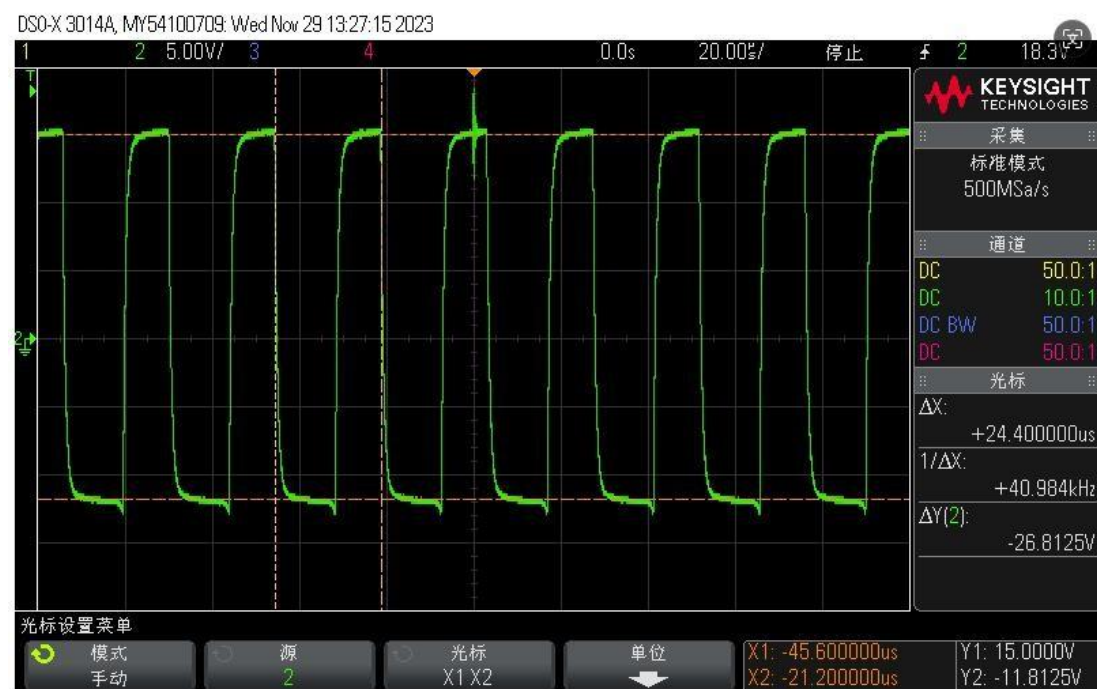
The reference amplitude of Q17 driving waveform is about 15V and the frequency is 40KHz



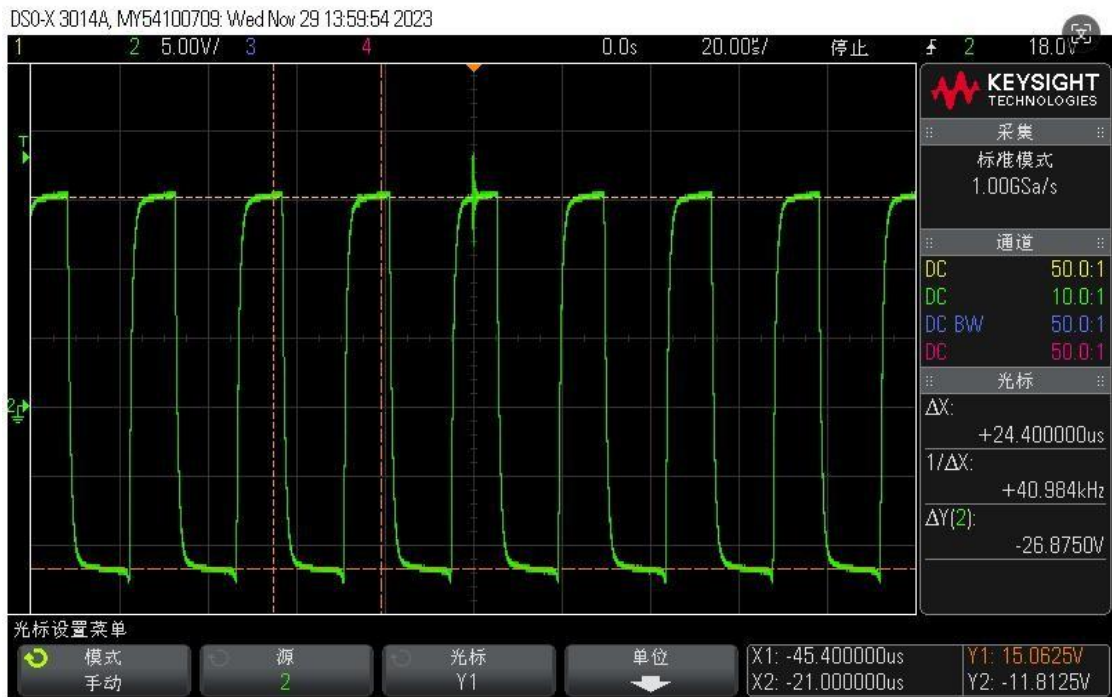
The reference amplitude of Q13 driving frequency is about 15V and the frequency is 40KHz



Q24 drive waveform reference amplitude is about 15V frequency 40KHz

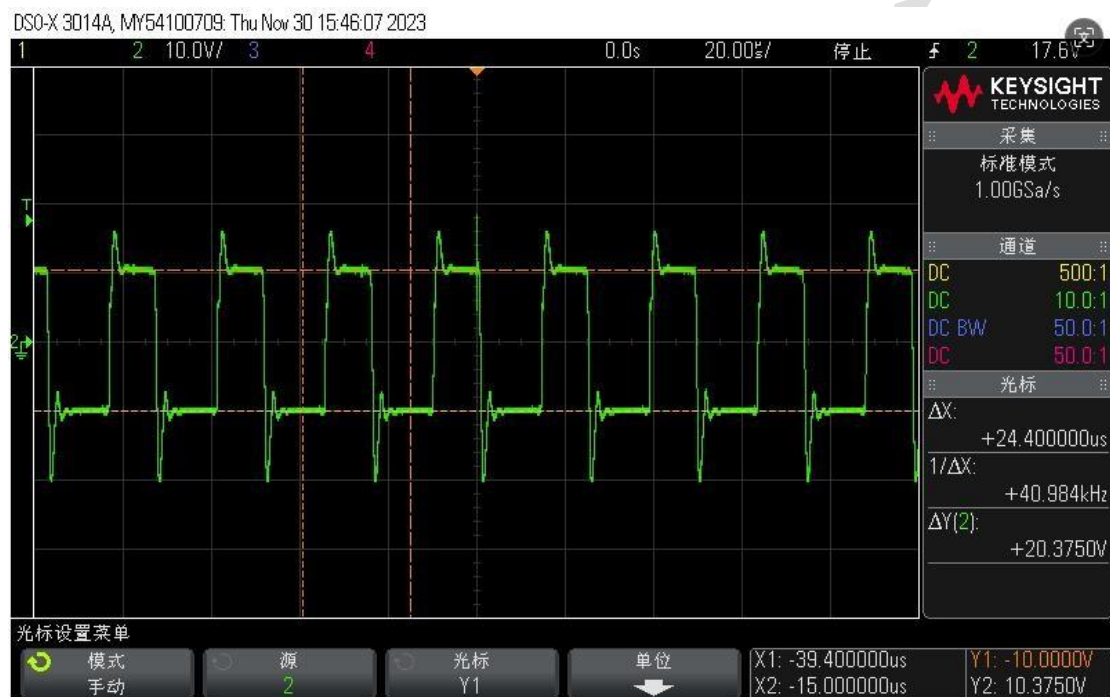


The reference amplitude of Q40 driving waveform is about 15V and the frequency is 40KHz

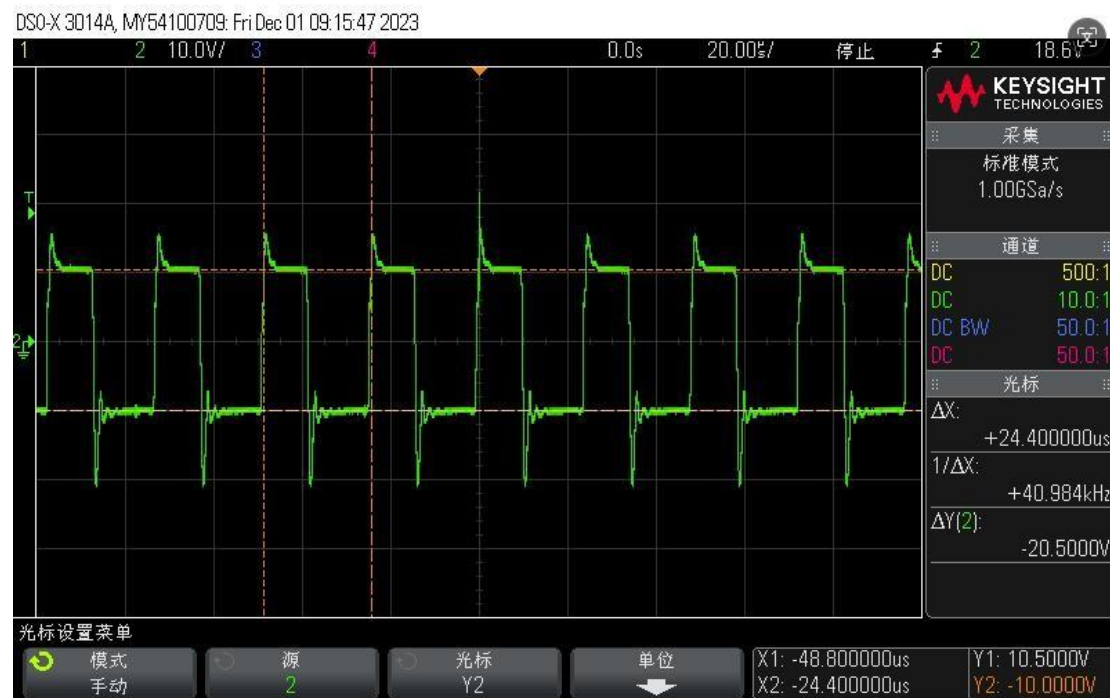


1.3 Synchronous rectifier tube drive waveform reference (the same group of tube drive waveform is consistent)

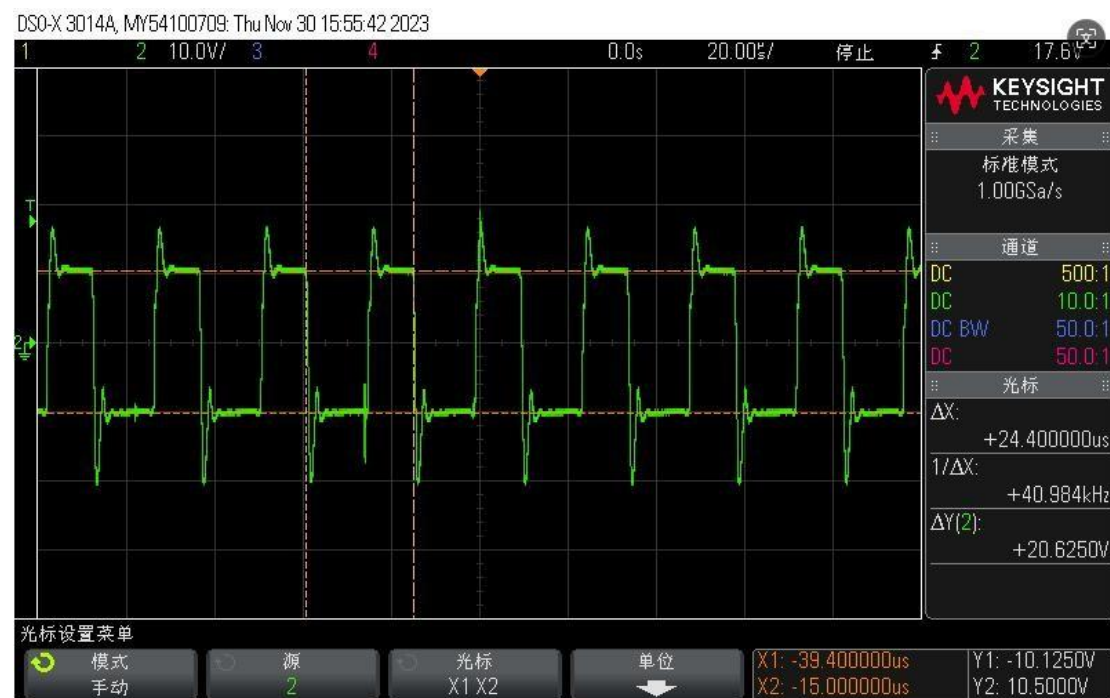
The reference amplitude of Q27 driving waveform is about 11V and the frequency is about 40KHz



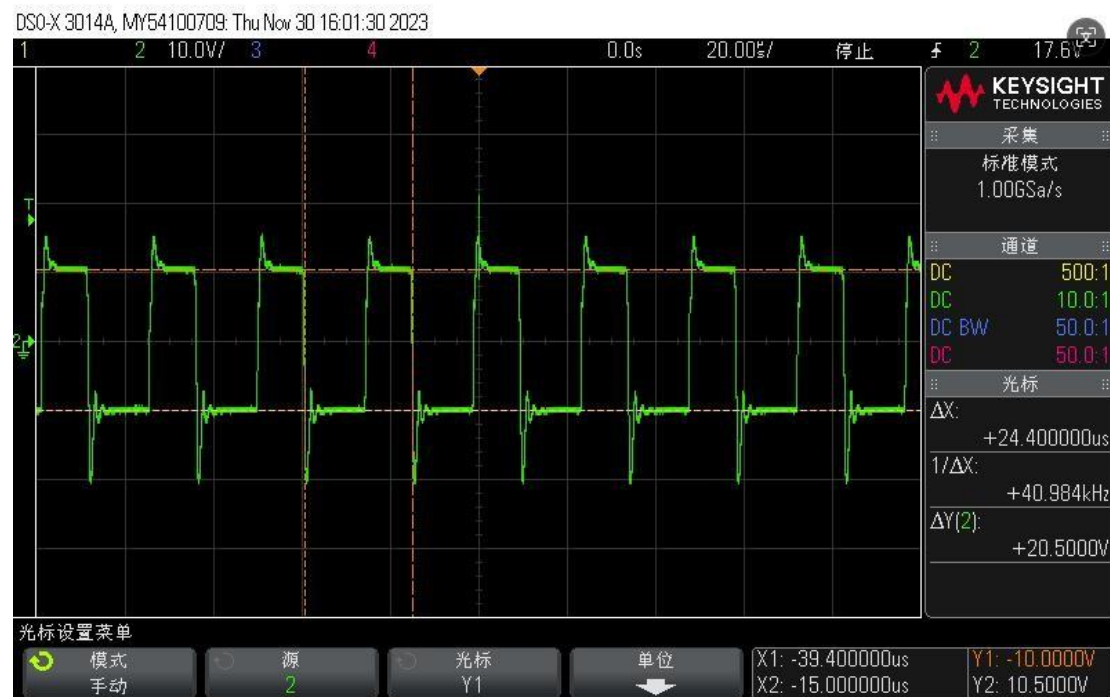
The reference amplitude of Q30 driving waveform is about 10.5V and the frequency is about 40KHz



The reference amplitude of Q28 driving waveform is about 10.5V and the frequency is about 40KHz



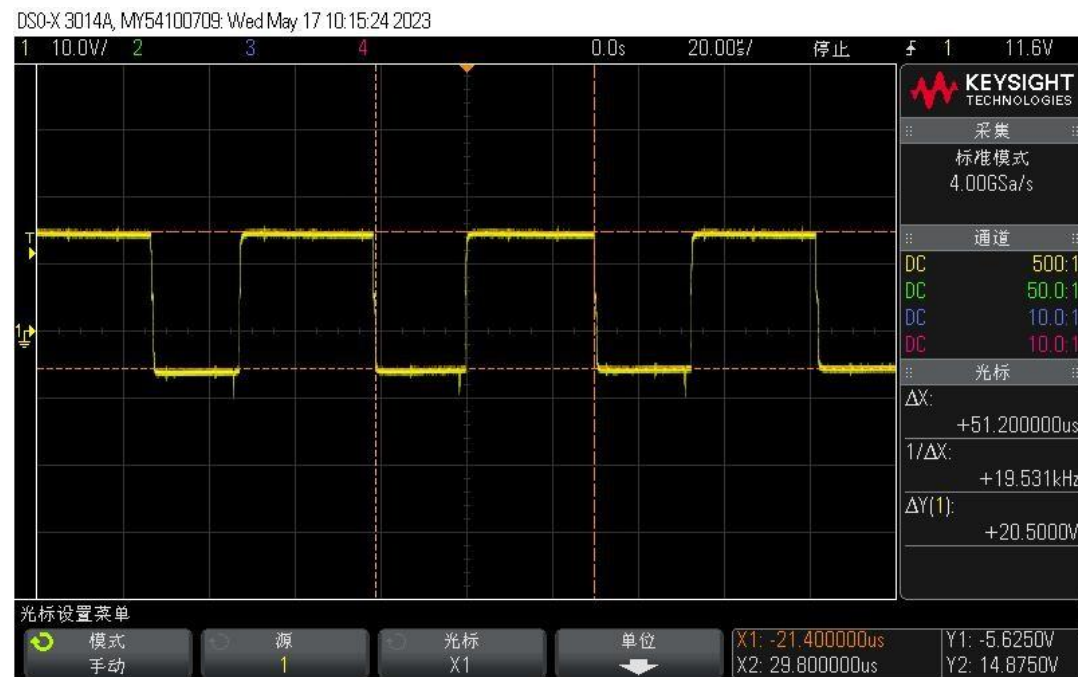
The reference amplitude of Q29 driving waveform is about 10.5V and the frequency is 40KHz



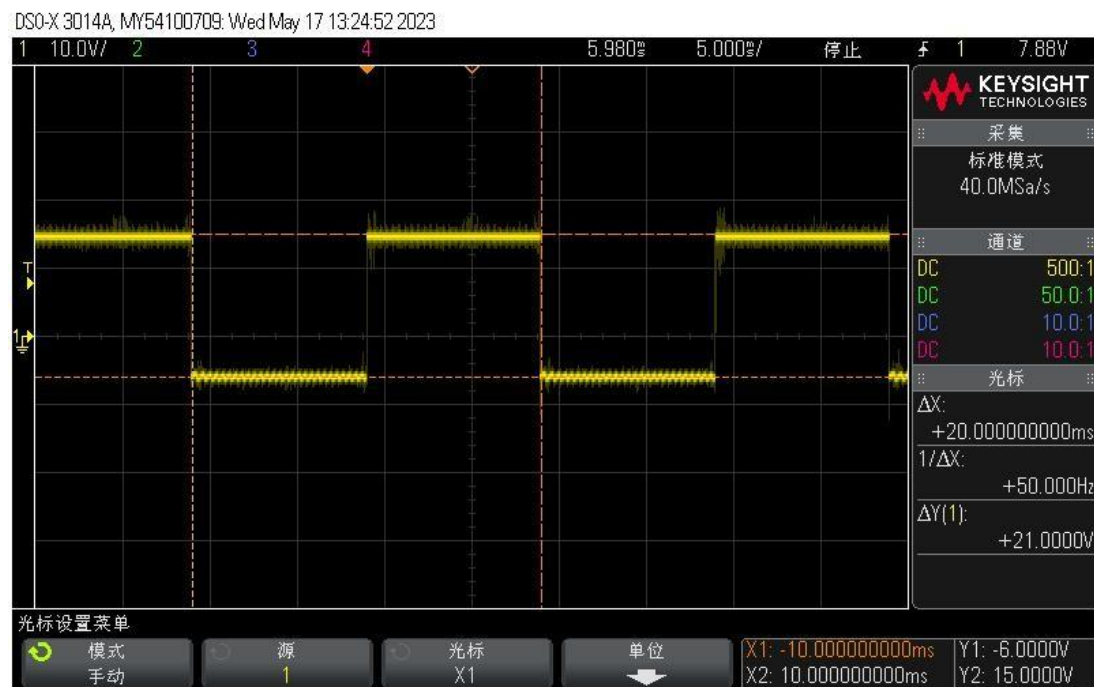
4. BUS TO INV part (same group of drivers)

1.1 Inverter drive wave reference

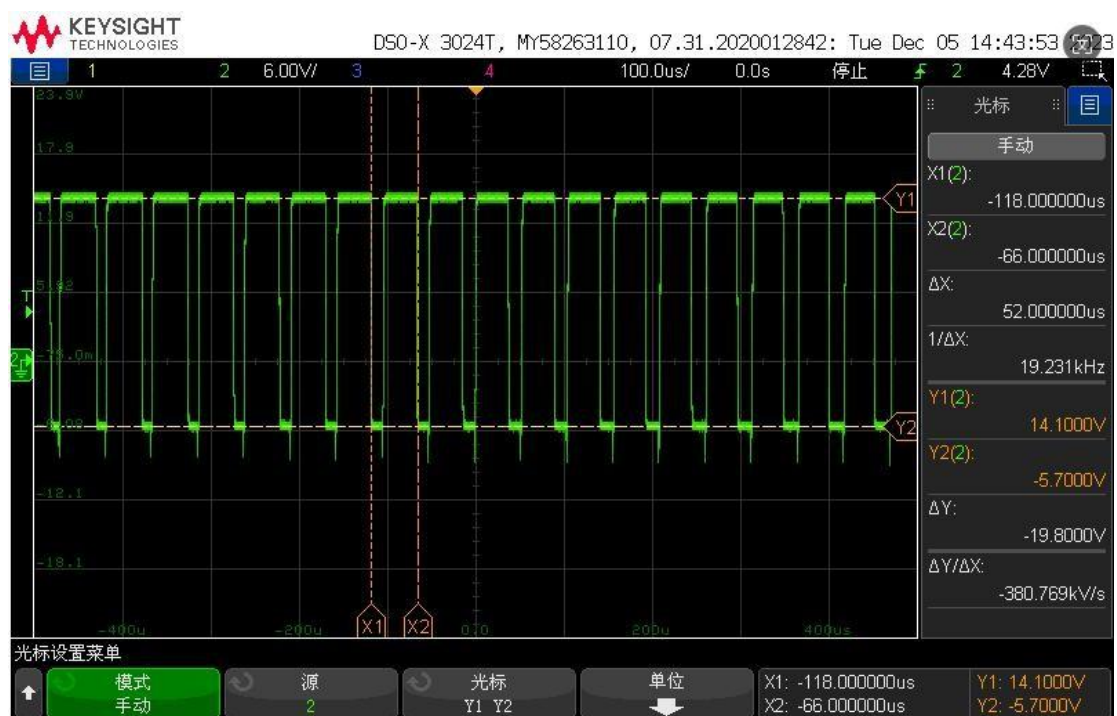
The reference amplitude of the QB2 high-frequency arm inverter drive waveform is about 14.87V and the frequency is 19.53KHz



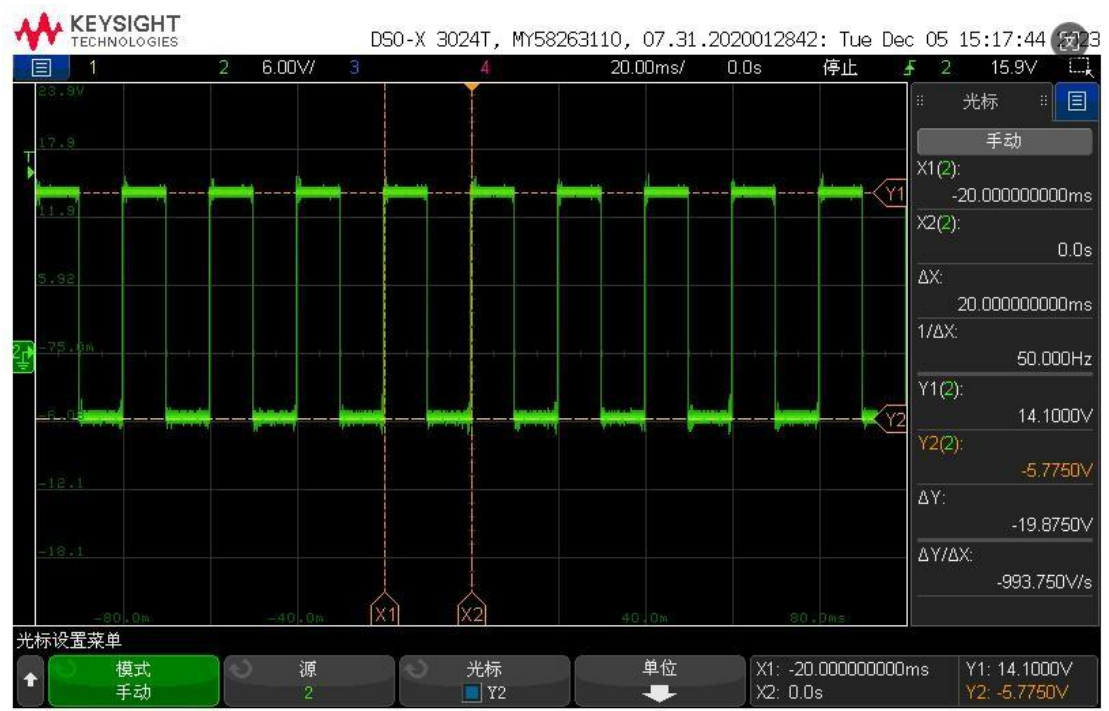
The reference amplitude of the inverter drive waveform of the QA1 power frequency arm is about 15V and the frequency is 50Hz



The reference amplitude of the inverter drive waveform of the QD2 power frequency arm is about 14V and the frequency is 19.23KHz



The reference amplitude of the inverter drive waveform of the QC1 power frequency arm is about 15V and the frequency is 50Hz



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