

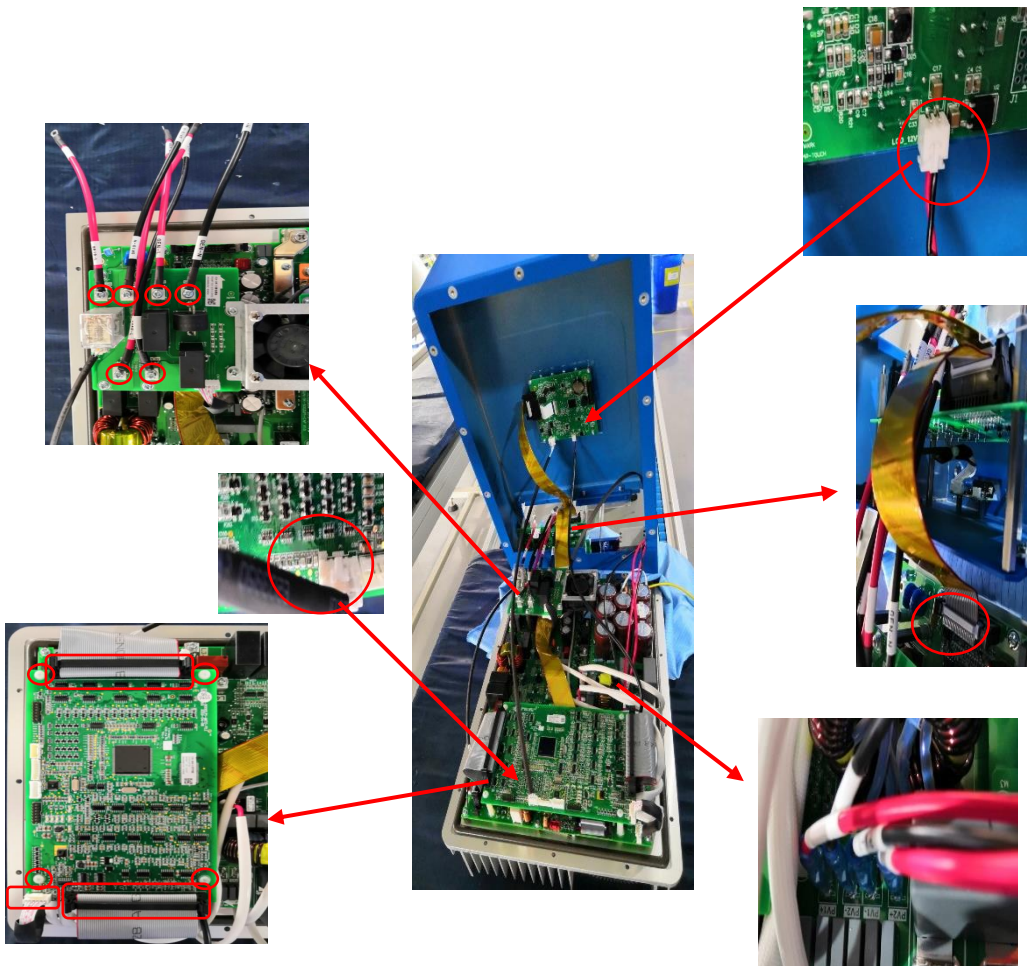
SUN-5K-SG Repair Guide

When you see this sub-guide, it indicates that there is a problem with the machine and needs to open the machine housing for service. Before opening the Inverter Shell, the inverter's power cables (including AC and DC) need to be disconnected altogether. Wait at least 5 minutes before you can proceed.

1. Remove the screws counterclockwise



2. After removing the housing, carefully remove the shell, the housing liquid crystal plate is connected to the inside of the machine. Take a photo of the interior and record the location of each harness to prevent errors during installation and send us photos.



Error	F-01	DC input polarity Reverse Fault
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Description

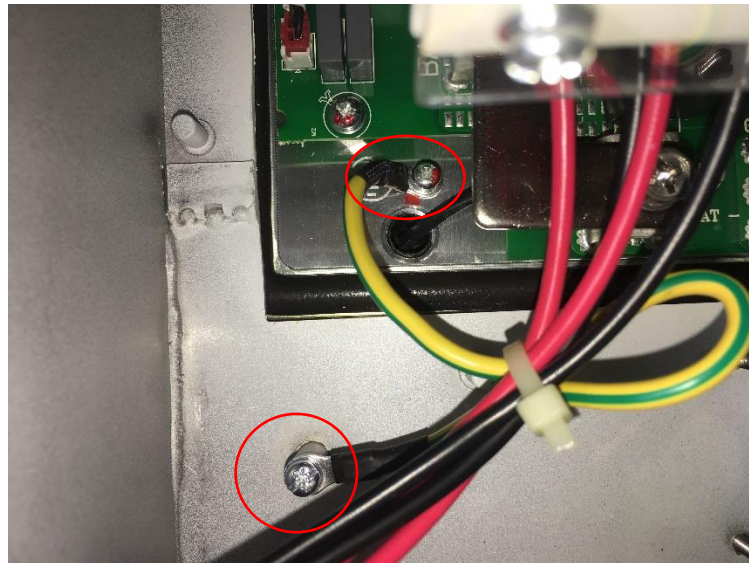
Turn off AC switch and DC switch, and check the PV panel DC input polarity.



Error	F-02	DC insulation impedance permanent fault
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Description

The impedance between DC+ and ground or DC – and ground is too low, turn off the AC switch and DC switch, and then check whether the PV panel (aluminum frame) is grounded well and inverter is grounded well. Open the cover of inverter and then check the inside ground cable is fixed well on the shell.

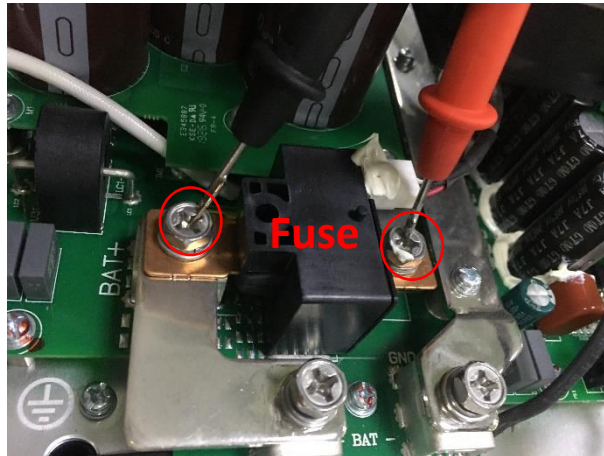


Error	F-03	DC leakage current fault
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Description

The inverter detect the DC leakage current is too high. Firstly, restart the inverter 2 or 3 times. Sometime battery fuse is damage so test the Fuse continuity by multimeter. If this issue still exists, please contact your installer or Deye service center.

Sometime DC-DC MOSFT damage or may DC-DC power supply have some issue



Error	F-04	Ground fault GFDI
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Description

It indicates the solar panel positive pole or negative pole connect to ground. Turn off the AC switch and DC switch, and then check whether solar panel output terminals connection is correct.

Error	F-05	Read the memory error
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Description

It indicates the failure in reading memory (EEPROM). Restart the inverter, check whether the error still exists. If still exists, please contact your installer to replace control board or Deye service center.

Error	F-06	Write the memory error
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Description

It indicates the failure in writing memory (EEPROM). Restart the inverter, check whether the error still exists. If still exists, please contact your installer to replace control board or Deye service center.

Error	F-07	DC/DC softstart fault
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Description

It caused by low bus voltage (below 50V)

1. Check the battery fuse; refer to **error code F03**
2. Restart and check whether it is in normal;
3. Seek help from us, if can't go back to normal state

Error	F-08	GFDI grounding touch failure
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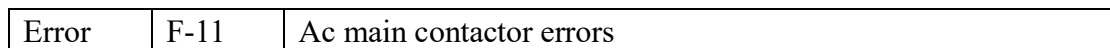
Description

No related to this machine

Description

Error	F-10	Aux Power Board Failure
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check MCU power supply 12V, if not ok then need to test 12-volt power supply circuit on top board,



Restart the inverter, if the error still exists, please contact Deye service.

Description

Error	F-13	Reserved
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It indicates inverter working mode change. Loss of one phase or AC voltage detection part damage or relays not closed.

1. wait for a minute and check
2. Seek help from us, if can't go back to normal state

Error	F-14	DC firmware over current
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Description

No related to this machine

Error	F-15	AC firmware over current
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Description

No related to this machine

Error	F-16	GFCI(RCD) AC leakage current fault
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Description

No related to this machine

Error	F-17	Three phase current, over-current fault
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Description

No related to this machine

Error	F-18	Read the memory error
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Description

It indicates the AC current exceeds the Max-current. Firstly, check the connected load power, make sure its power not exceed the inverter Max- AC output power. If the load power is within the range, may be something wrong with control card Firmware.

Restart and check weather its normal or abnormal. Please contact Deye service.

check AC sensor or detection circuit on control board or connection wire, sometime grid relay fault due to over current and sometime load relay contactor stuck by spark (high current) due to capacitive load (can be fix by connecting anti islanding contactor)

Error	F-19	Read the memory error
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Description

No related to this machine

Error	F-20	DC over current fault out of the hardware
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Description

check the PV input Polarity ,Check firstly PV module connection and battery connection, if these connection ok then check PV current sensor or LC current sensor or its control board detection circuit,

Turn off the DC switch and AC switch and then wait one minute, then turn on the DC/AC switch again

Also may it can be happen by overload

Error	F-21	DC leakage flow fault
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Description

No related to this machine

Error	F-22	Tz_EmergSStop_Fault
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Description

Earthing short (check GND (grounding) connection) This failure hardly happens

Error	F-23	AC leakage current is transient over current
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Description

check leakage sensor or circuit on top board

Error	F-24	DC insulation impedance failure
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Description

PV isolation resistance is too low

1. Check the connection of PV panels and inverter is firmly and correctly;
2. Check whether the PE cable of inverter is connected to ground;
3. Seek help from us, if cannot go back to normal state.

Error	F-25	DC feedback fault
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Description

No related to this machine

Error	F-26	The DC busbar is unbalanced
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Description

No related to this machine

Error	F-27	DC end insulation error
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Description

No related to this machine

Error	F-28	Inverter 1 DC high fault
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Description

No related to this machine

Error	F-29	Parallel_CANBus_Fault
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Description

This fault only for inverters working in parallel mode

1. Check the parallel setting according to the instructions;
2. Check the connection of the CANBus;

parallel Mode Loss of communication CAN bus

3. Seek help from us if can not go back to normal state

Error	F-30	AC main contactor failure
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Description

No related to this machine

Error	F-31	Dc boost soft start
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Description

No related to this machine

Error	F-32	Inverter 2 dc high fault
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Description

No related to this machine

Error	F-33	AC over current
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Description

No related to this machine

Error	F-34	AC current over load
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Description

No related to this machine

Error	F-35	No AC grid
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Description

No Utility

1. Please confirm grid is lost or not;
2. Check the grid connection is good or not;
3. Check the switch between inverter and grid is on or not;
4. Seek help from us, if can not go back to normal state.

on no battery work mode not have grid then need to check grid detection circuit

Error	F-36	AC grid phase error
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Description

No related to this machine

Error	F-37	AC three-phase voltage unbalance failure
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Description

No related to this machine

Error	F-38	AC three-phase current unbalance failure
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Description

No related to this machine

Error	F-39	AC over current (one cycle)
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Description

No related to this machine

Error	F-40	DC over current
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Description

No related to this machine

Error	F-41	Parallel_system_Stop
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Description

In parallel system, due to other inverter faults.

1. Wait for minutes then check all inverters in this parallel system;
2. If inverter can't go back to normal state, record fault codes of all inverters, then seek help from us.

Error	F-42	AC line low voltage
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Description

Grid voltage fault

1. Check the AC voltage is in the range of standard voltage in specification;
2. Check whether grid AC cables are firmly and correctly connected;
3. Seek help from us, if can not go back to normal state.

Error	F-43	AC Line V,W over voltage
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Description

No related to this machine

Error	F-44	AC Line V,W low voltage
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Description

No related to this machine

Error	F-45	AC Line U,V over voltage
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Description

No related to this machine

Error	F-46/ 49	Bcakup_Battery_Fault
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Description

Backup battery fault.

1. Check the battery capacity;
2. Check the connection between batteries and inverters;
3. If inverter can't go back to normal after load reduction, seek help from us

Error	F-47	AC over frequency
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Description

Grid frequency out of range

1. Check the frequency is in the range of specification or not;
2. Check whether AC cables are firmly and correctly connected;
3. Seek help from us, if can not go back to normal state.

Error	F-48	AC lower frequency
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Description

Grid frequency out of range

1. Check the frequency is in the range of specification or not;
2. Check whether AC cables are firmly and correctly connected;
3. Seek help from us, if can not go back to normal state.

Error	F-49/ 46	Bcakup_Battery_Fault
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Description

Backup battery fault.

1. Check the battery capacity;
2. Check the connection between batteries and inverters;
3. If inverter can't go back to normal after load reduction, seek help from us

Error	F-50	V phase grid current DC component over current
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Description

No related to this machine

Error	F-51	W phase grid current DC component over current
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Description

No related to this machine

Error	F-52	AC inductor B, phase current DC current high
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Description

No related to this machine

Error	F-53	Read the memory error
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Description

No related to this machine

Error	F-54	AC inductor C, phase current DC current high
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Description

No related to this machine

Error	F-55	DC busbar voltage is too high
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Description

1. Check whether PV voltage is too high or battery voltage is too high.
2. If the PV voltage is too high, reducing the number of PV panel in series
3. Seek help from us, if cannot go back to normal state

Error	F-56	DC busbar voltage is too low
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Description

Battery voltage low

1. Check whether battery voltage is too low;
2. If the battery voltage is too low, using PV or grid to charge the battery;
3. Seek help from us, if can not go back to normal state.

Error	F-57	AC reverse irrigation
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Description

No related to this machine

Error	F-58	Battery over current
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Description

Check the battery discharge current weather is within the allowed range

If the fault still exist seek help from us

Error	F-59	AC grid V over current
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Description

No related to this machine

Error	F-60	AC grid W over current
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Description

No related to this machine

Error	F-61	Reactor A phase over current
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Description

No related to this machine

Error	F-62	Reactor B phase over current
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Description

No related to this machine

Error	F-63	ARC fault
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Description

- 1.ARC fault detection is only for US market;
2. Check PV module cable connection and clear the fault;
3. Seek help from us, if can not go back to normal state.

Error	F-64	Heat sink high temperature failure
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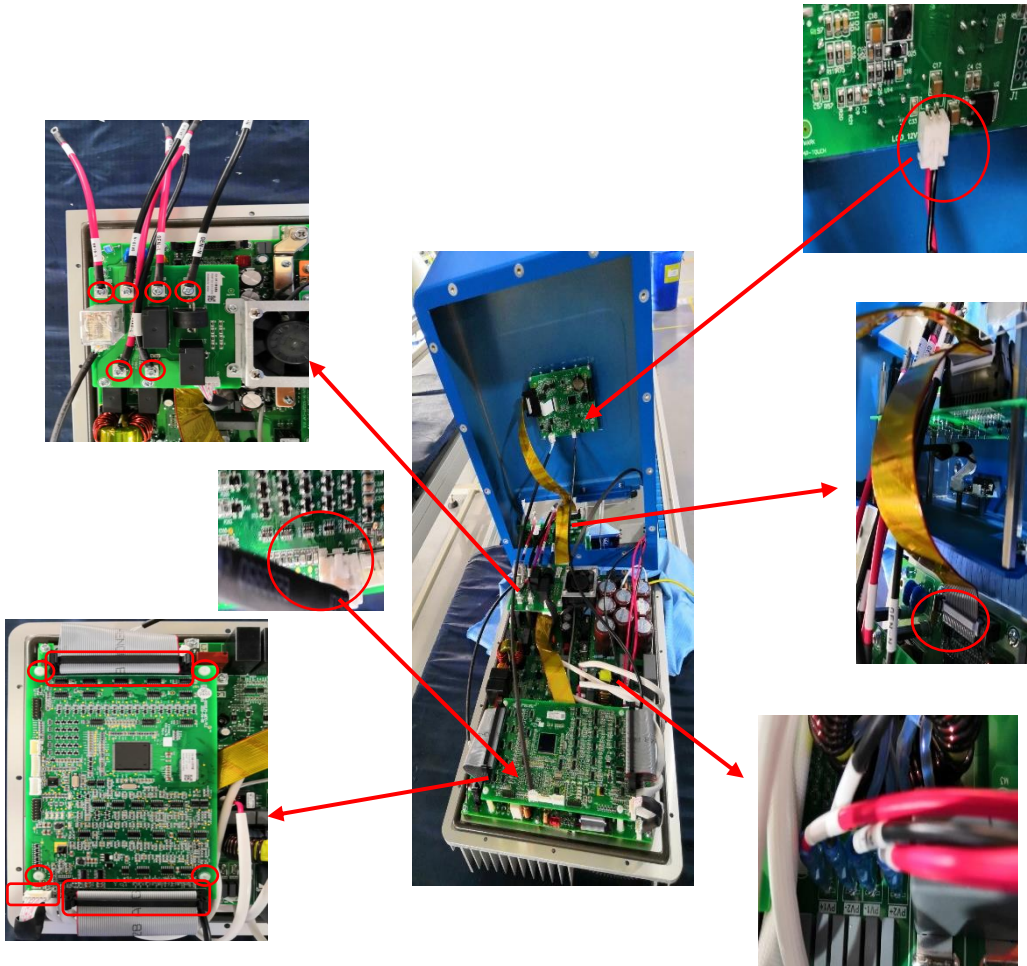
Description

Heat sink temperature is too high

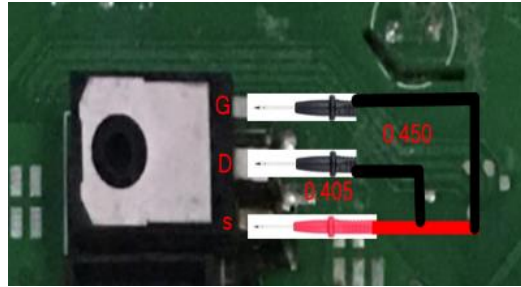
1. Check whether the work environment temperature is too high;
2. Turn off the inverter for 10mins and restart;
3. Seek help from us, if can not go back to normal state

IGBT Repairing Guide

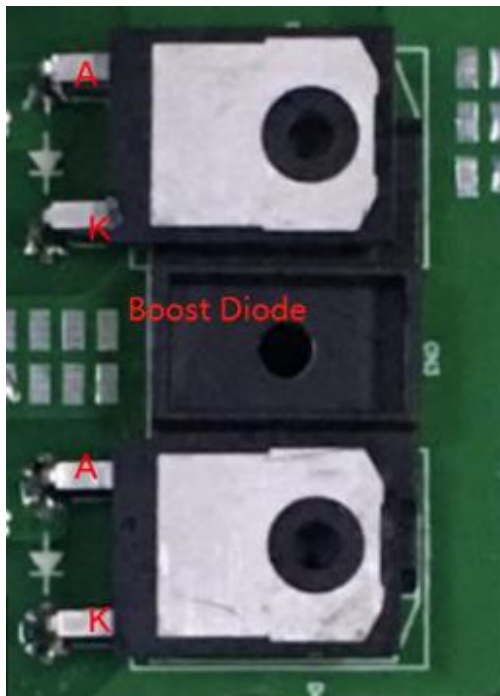
After removing the housing, carefully remove the shell, the housing liquid crystal plate is connected to the inside of the machine. Take a photo of the interior and record the location of each harness to prevent errors during installation and send us photos.

**Diode and IGBT Testing**

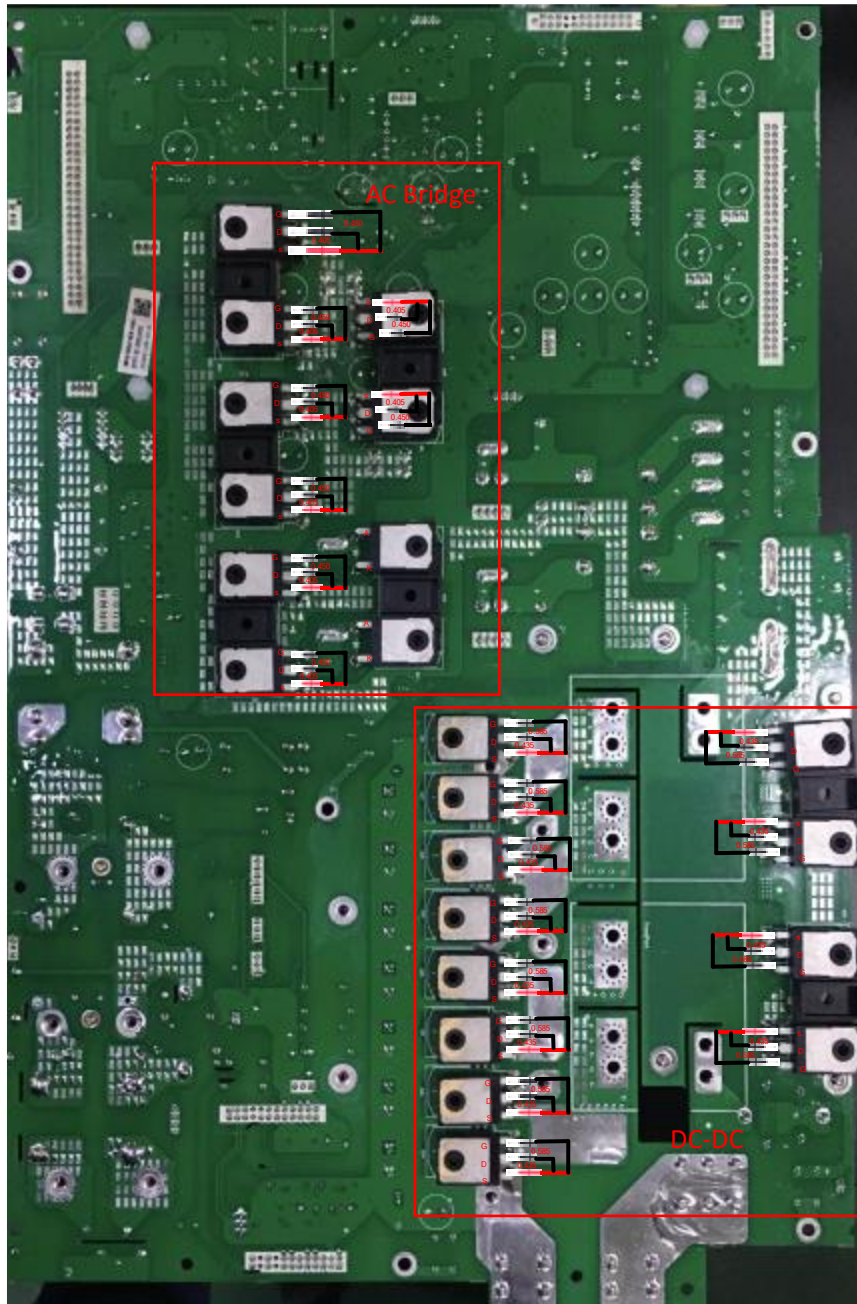
IGBT measurements is of paramount importance, and the motherboard needs to be removed no more than is required next. The universal meter needs to be selected into the diode gear when measuring the voltage drop of semiconductor devices such as IGBT and diode.



The above two figures are the measurement of the IGBT, set knob of multimeter to diode gear, red table pen corresponding to S-level, black pen corresponding to D-level, the value of 0.405V, black table pen point G-level value of about 0.450V. If the difference is too large, especially if the value is close to 0, the IGBT is damaged.

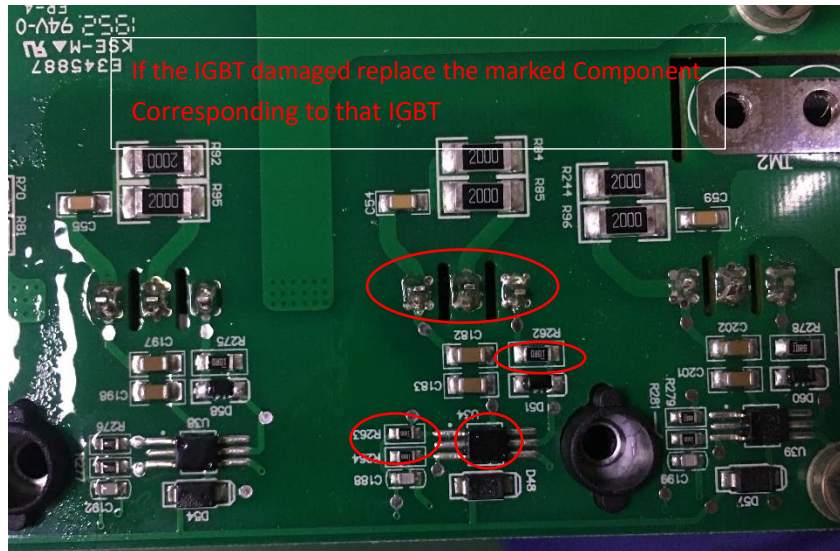


The above image is the data for measuring THE BOOST diode, the red pen to anode A, the black pen to the cathode K, the measured data as shown 0.33V. If the data difference is too large or close to 0 indicates that the diode is damaged.

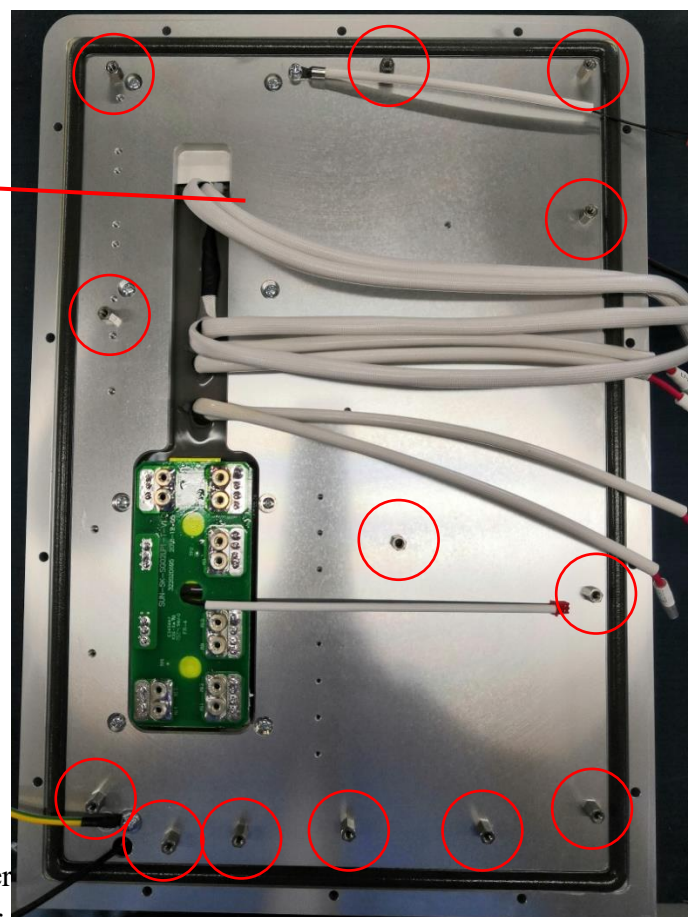
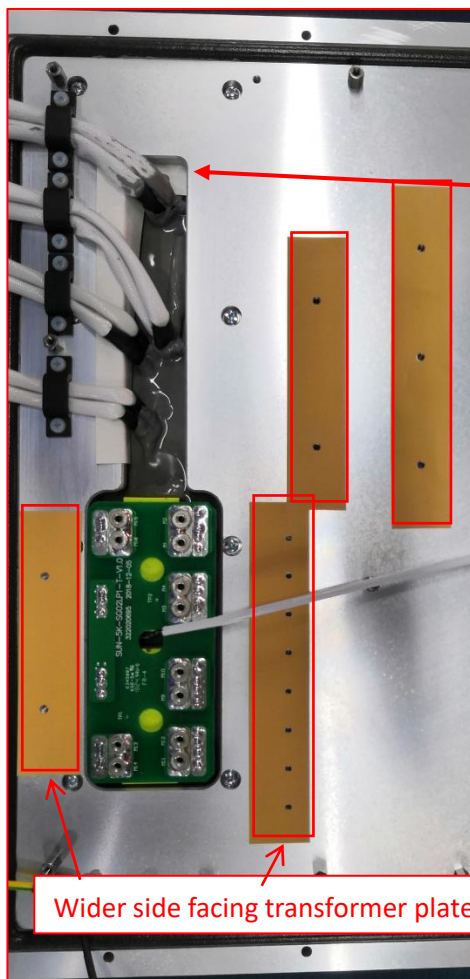


If the IGBT is damaged, the corresponding drive also needs to be measured or replaced directly as shown in diagram below.

Example of the following diagram, the following device is: R? 10R0 resistance; Q; U? To drive optocoupled, pay attention to the direction. The points on the device are in the same direction as the white dots on the board. And there is one end of the three feet close to the IGBT. Ensure that all damaged IGBTs are replaced.

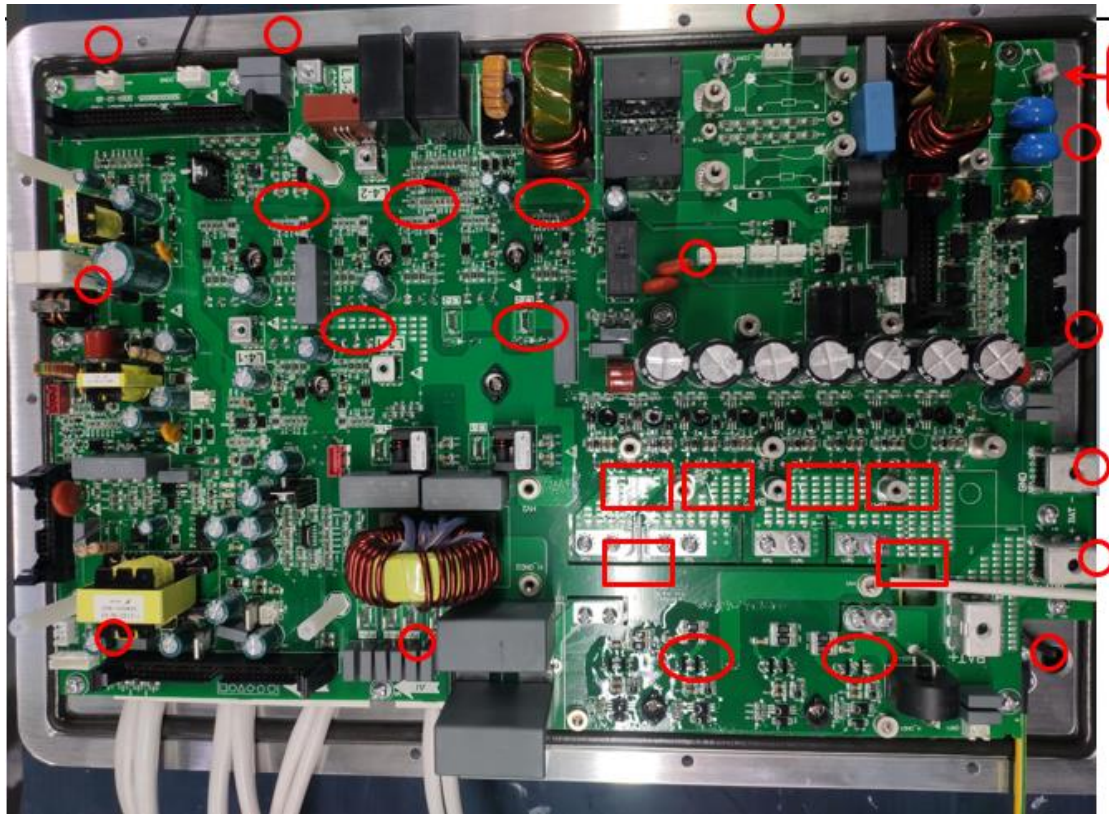


After the replacement is complete, check the internal inductor or all other harnesses for breakage, whether there is direct contact with the shell. For example, in several locations below, whether the inductor line is broken. This is important and is an important factor in whether the machine can be repaired, so be sure to check carefully. And make to measure the resistance between the inductor harness to the housing, which should be infinity.

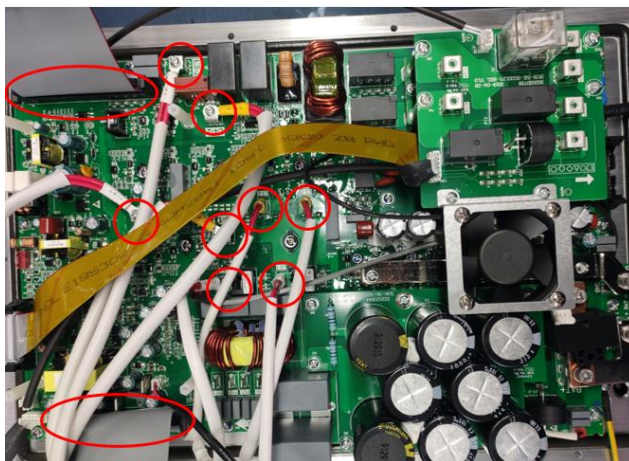


per
nder the insulation sheet is well-placed, comm

the pad well and then lock all locks and studs.

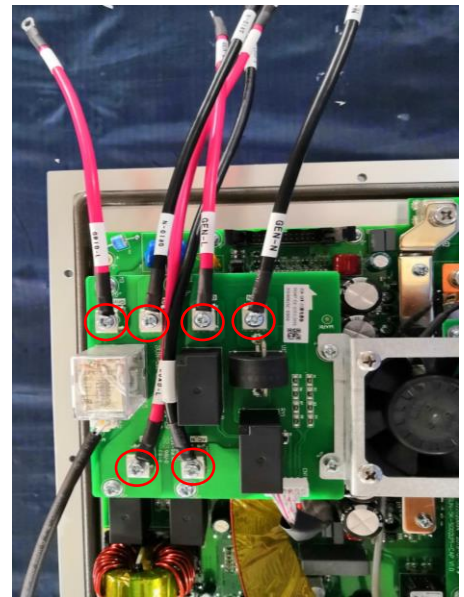
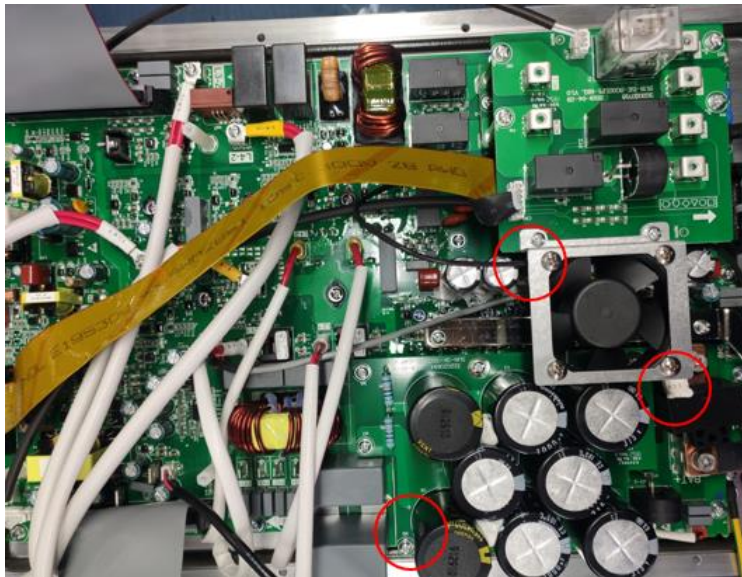


Install the control panel and plug in the harness.

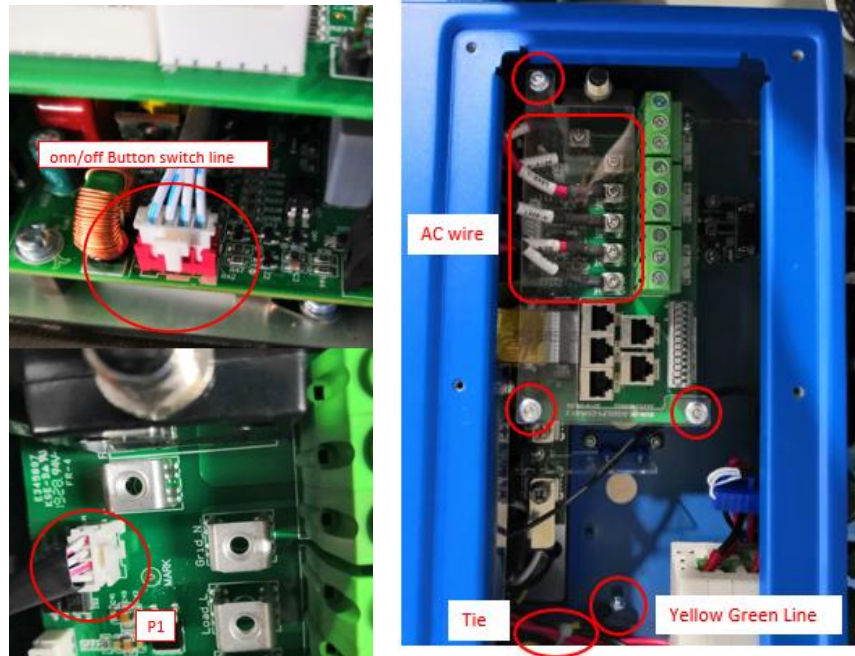


1. Insert the L1/L2 inductive wire reed terminal into the corresponding position of the motherboard, pay attention to the contents of the line label and the motherboard silk screen
2. Take the cross-head screw s4 L3/L4 inductive wire fastening lock attached to the corresponding position of the motherboard, pay attention to the contents of the line label and the motherboard silk screen consistent

3. Take 60P gray line, no insertion of the corresponding position of the motherboard, as shown in the figure.
4. Use a tie to put the left inductive line as illustrated, pay attention to the inductive line can not be higher than the plastic stud
6. Take the control board x1, plastic screws, the control plate fastening lock attached to the motherboard plastic stud, pay attention to the direction of the control board
7. Insert the other end of the 60P gray line into the corresponding position of the control board

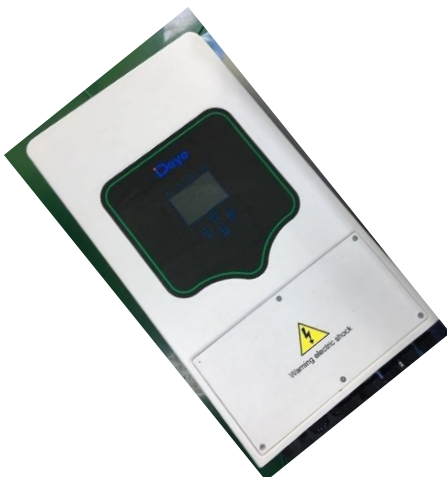


1. Put back the capacitor plate
2. Take the cable total 6pcs, cross disk screw 6pcs, it is locked attached to the relay board connection terminal, pay attention to the contents of the line label and PCB silk screen consistent
3. Take the cross-disk head screw 1pcs, the upper right corner of the motherboard screws.



1. Pass the button switch cable through under the control panel and plug in the red socket
2. Cover the housing above the radiator
3. Insert the other end of the motherboard 4P line into the connection plate P1 position
4. put back the cross head screw s6 the AC wire on the relay board, the lock of 6 is attached to the connection plate, pay attention to the wire label and PCB silk screen consistent, pay attention to the wire well buried under the shell
5. Take the cross head screw x1 to lock the yellow green line on the radiator to the corresponding position on the shell, as shown in the figure
6. Place, button switch cable, empty PV line to be organized and tied near the side wall of the shell with a tie, as shown in the figure
7. Take the plexiglass cover x1, flange nut s3, attach its fastening lock to the connection plate

Install the top cover of the machine and test the machine.



After installation if still have problem seek help to the Deye Service.