

Troubleshooting guide for Growatt 30-50K TL3-S/NS Three-Phase Inverters

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1 General

This document is applicable for Growatt 30000TL3-S, 33000TL3-S, 40000TL3-S/NS and 50000TL3-S three-phase inverters.

An error message will be displayed on the LCD screen while fault occurs. The faults can be categorized as *inverter fault* and *system fault*. All faults will stop inverter power generation. Accompanied with red LED indicator ON immediately, and showing consistent until the fault had been cleared.

When a *Warning* message is shown on inverter LCD display, the inverter will continue working but will be accompanied by flashing red LED indicator.

You may be advised to contact Growatt in some circumstance, please provide the following information.

Information concerning the inverter:

- Serial number
- Model number
- Error or warning message on LCD
- Brief description of the problem
- Grid voltage measured
- DC input voltage
- Can you reproduce the failure? If yes, how to?
- Did the problem occur before?
- What were the ambient conditions when the problem occurred?

Information concerning the PV panels:

- Manufacturer name and model number of the PV panel
- Output power of the panel
- Voc of the panel
- Vmp of the panel
- Imp of the panel
- Number of panels in each string
- How many strings connected in one MPP tracker
- If it is necessary to replace the unit, please ship it with the original box.


2 List of faults for Growatt 30-50KTL3-S/NS

Showing On LCD	Code	Description
Warning code		
e.g. LCD Shows "Warning 100"	100	Malfunction with the fan
	101	Communication error between M3 board and PID board
	103	Fail to read EEPROM
	104	Firmware version mismatch
	105	Fail to write EEPROM
	106	Problem of SPD
	109	Boost abnormal
	StrUnusual Warning	String current unbalance/PV module mismatch
	StrFuseOpen Warning	PV string fuse burnt
Inverter Fault (error code)		
e.g. LCD shows "Error 101"	101	Communication error, M3 board(Slave CPU) doesn't receive data from DSP board(Main CPU) over 20 times
	103	StrReverse Error/StrShort Error
	106	The ISO values from M3 and DSP are inconsistent
	107	The GFCI values from M3 and DSP are inconsistent
PV Power low	108	SPS on main board abnormal
	111	IGBT drive fault
	112	AFCI Fault
	114	AFCI Module self-checking Fault
	117	Relay fault
	121	Communication error, DSP doesn't receive data from M3 over 20 times.
	122	Bus voltage abnormal
System Fault		
No AC Connection	124	The grid is not connected to the inverter
PV Isolation Low	125	PV Insulation value is out of range
Residual I High	126	Redundant current is outrange
Output High DCI	127	Output current DC bias is high
PV Voltage High	128	PV input voltage is greater 1000V
AC V Outrange	129	The grid voltage is out of range
AC F Outrange	130	The grid frequency is out of range

PV SW Set Error	/	PV module set wrong

3 Warning messages

3.1 Warning 100

Code	Detailed content	LCD/LED Display; Buzzer
100	Malfunction with the fan	 LCD: Display as figure LED: Continued flicker Red light (5Hz) Buzzer : -

Note 1: The Growatt inverter TL3-(N)S has three fans (one internal and two outside).

Fan	internal	Outside A	Outside B
Fault Message	WARNING: FAN 3	WARNING: FAN 1	WARNING: FAN 2
Shown on LCD	WARNING: FAN1,3		\
	\	WARNING: FAN 1,2	
	WARNING: FAN2,3	\	WARNING: FAN2,3
	WARNING: FAN 1,2,3		

Troubleshooting:

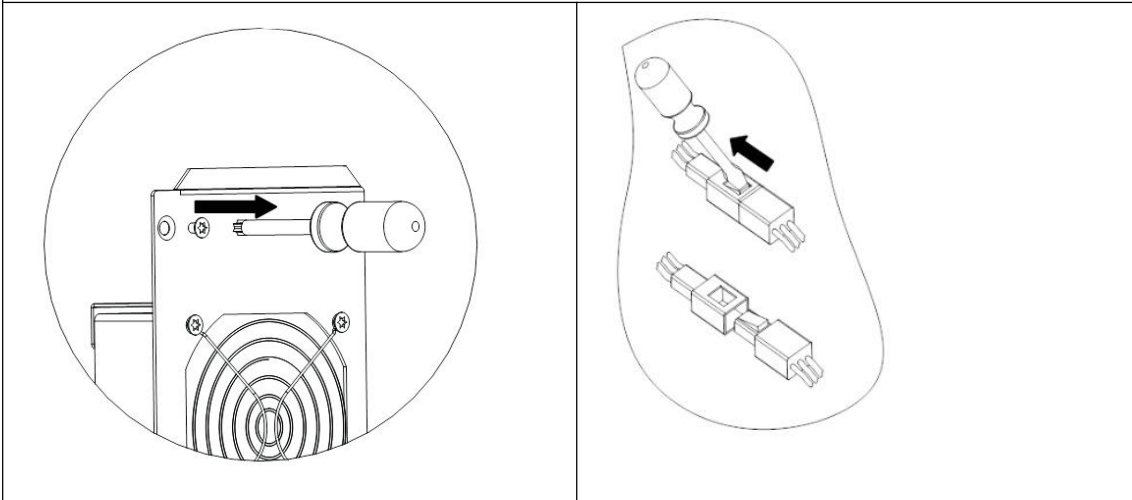
1. Turn off the DC and AC switch, then check whether the fan is stuck by some obstructions. If fans or grills are just covered by soft dust particles, stones or snow lump, using tools such as vacuum cleaner to clean the fans, then to turn on all the switch again, check whether the error still exist.

2. After clean the fans but the error is still exist, turn off the DC and AC switch again, using a screwdriver to take out the fans and replace it:

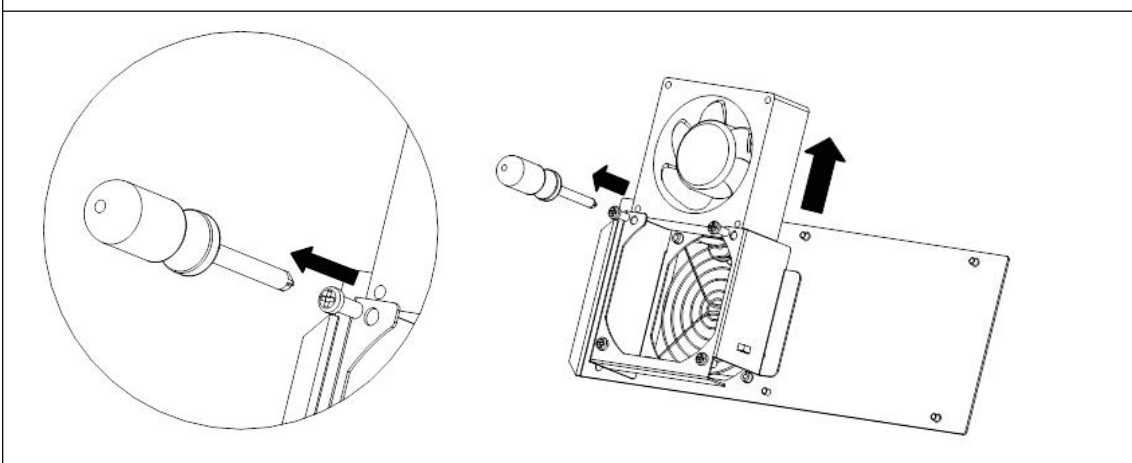
- a. Use the socket head screwdriver to remove the side baffle of the fan;
 - b. disconnect the cable between fan and connecting line;
 - c. remove the screw on the clapboard, and then to clear the dust;
 - d. if still doesn't work, then need to replace the fan with a new one;
3. If the problem still exists, please contact Growatt.

Replace fans steps:

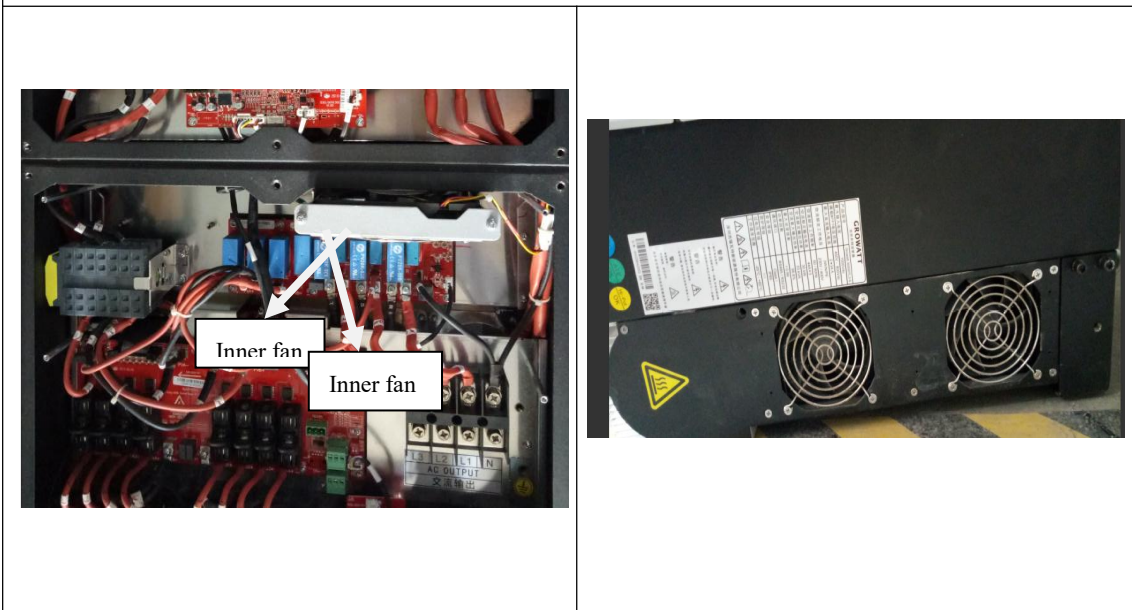
1、 remove the side baffle of the fan and disconnect the cable ;



2.remove the screws, and install the new fans.




3.connect the cables and to fix the fans to the main structure;



4.turn on the inverter and to see whether the inverter is normal

Warning

3.2 Warning 101

Code	Detailed content	LCD/LED Display; Buzzer
101	Communication error between M3 board and PID board	 <p>LCD: Display as figure LED: Continued flicker Red light (5Hz) Buzzer : -</p>


Troubleshooting:

1. Please power off the inverter completely till there is nothing displayed on LCD and restart, observe whether the warning is cleared.
2. If the warning is not cleared, please check the connection between M3 and PID if loose, and check if there is sps voltage to PID board.
3. If the error still exist, please refer the below to replace the PID board .

Remove the fuse board, PID board is under the fuse board.



3.3 Warning 103

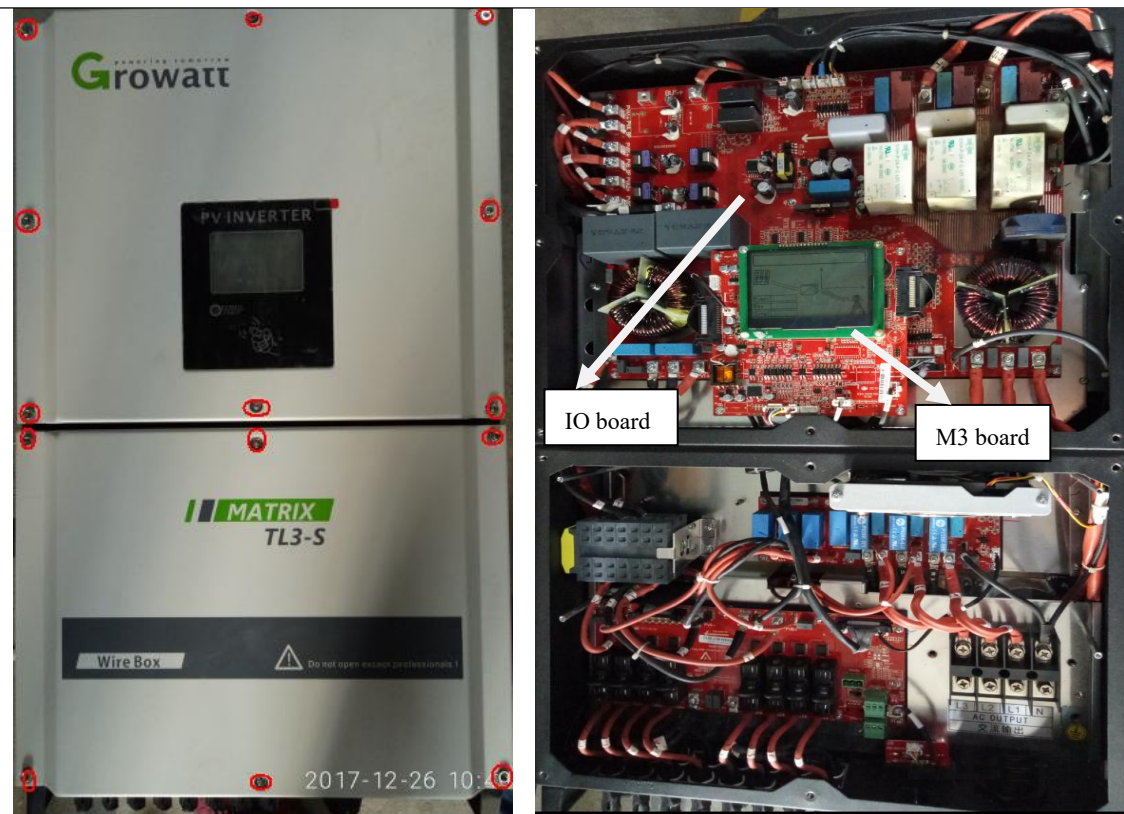
Code	Detailed content	LCD/LED Display; Buzzer
103	Fail to read EEPROM	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> WARNING:103  </div> LCD: Display as figure LED: Continued flicker Red light (5Hz) Buzzer : -

Troubleshooting:

1. Please power off the inverter completely till there is nothing displayed on LCD and restart inverter, observe whether the warning is cleared.
2. If the warning is still, please use software to reset the model value and serial number (S/N), and then restart the inverter
3. If the error still exist, please refer to figures below to replace the M3 board .

Open the front cage figure:

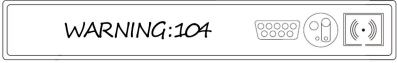
1.remove the screws;



2. remove the cable on M3 board and replace it.

Warning

3.4 Warning 104

Code	Detailed content	LCD/LED Display; Sound
104	Firmware version mismatch	 <p> LCD : Display as figure LED : Continued flicker Red light (5Hz) Buzzer : - </p>

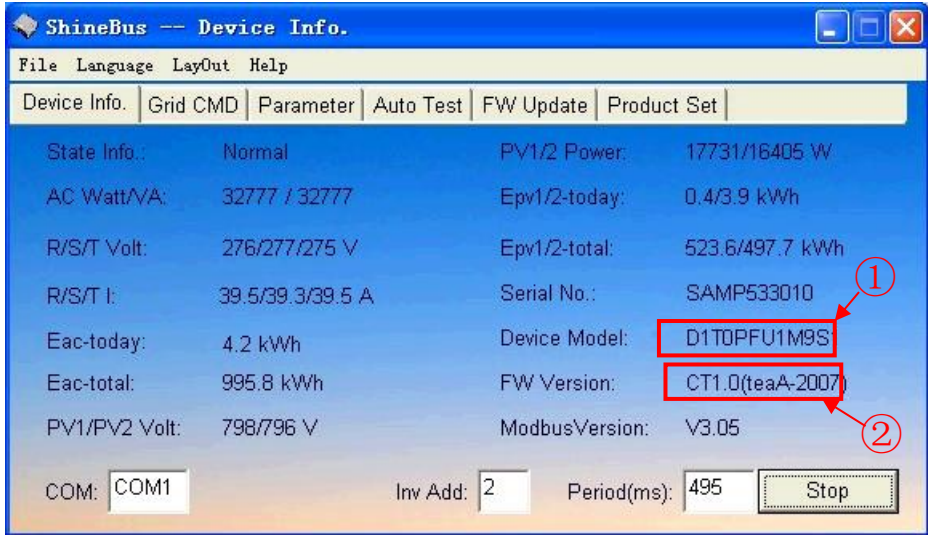
Troubleshooting:

1. Model list:

SN	TYPE	MODEL
1	30000TL3-S	A0B0D1T6PFU1M8S1
2	33000TL3-S	A0B0D1T6PFU1M9S1
3	40000TL3-S/NS	A0B0D1T6PFU1MBS1
4	50000TL3-S	A0B0D1T6PFU1MDS1

2. use shinebus software to check the software version and Model information.

Device Info option information:



indicate: ①MODEL; ②software version;

2. check if model number ended with S matches FW version, if not, you can upgrade FW by shinebus, here are some examples below

NOTE:before upgrading, please check the FW code by shinebus then you can

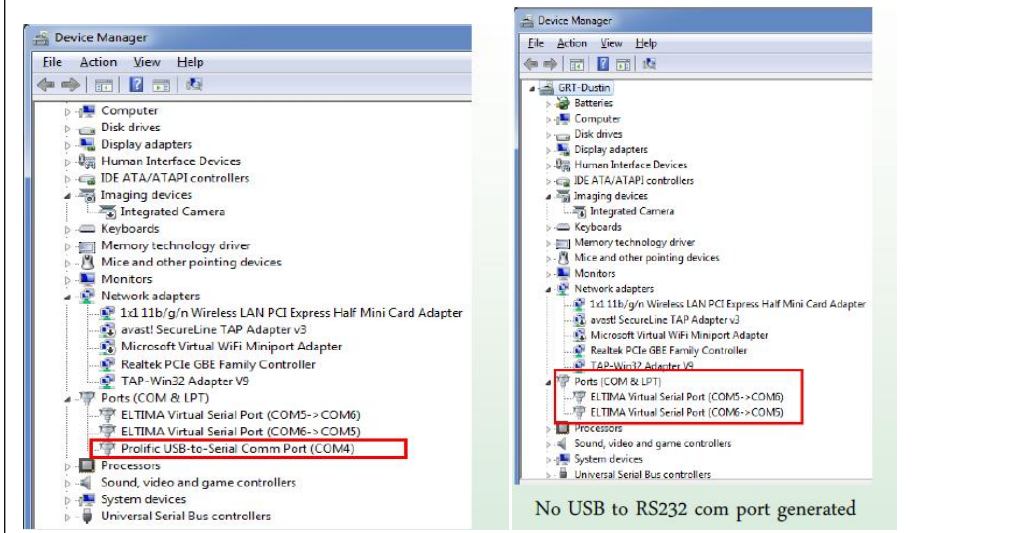
choose one of them below correctly.

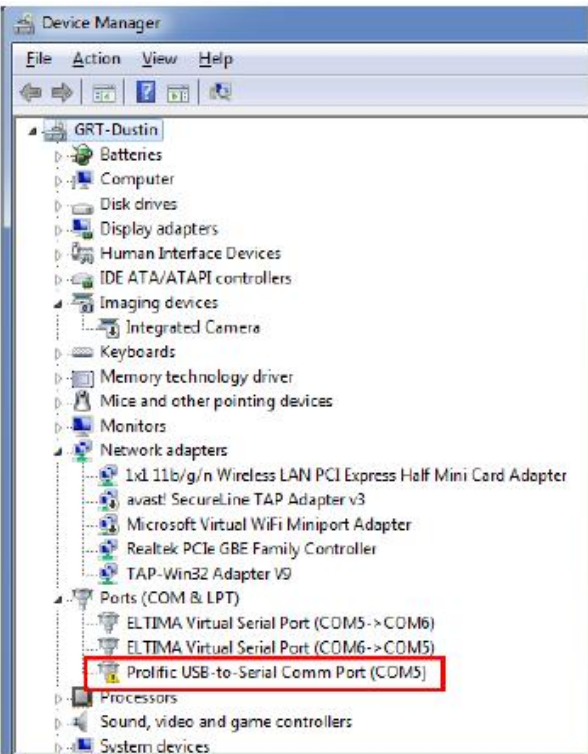
country area	Model number ended with S	FW code
Euro(VDE0126-1-1)	S1	Tfaa****,tgaa****, thaa****
Italy(CEI0-21)	S4	Thca****
Hungary	SC	Thba****

3. If the problem still exist, please contact Growatt.;

COM port check:

Plug the USB to RS232 cable to the USB port of your computer, open “Device Manager” to check whether a serial com port has been created under entry “Ports (COM&LPT). If there is a yellow question mark or exclamation mark on the icon or there is no com port generated, please re-install the driver



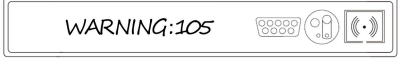


The screenshot shows the Windows Device Manager window for user 'GRT-Dustin'. The 'Ports (COM & LPT)' category is expanded, showing three devices: 'ELTIMA Virtual Serial Port (COM5->COM6)', 'ELTIMA Virtual Serial Port (COM6->COM5)', and 'Prolific USB-to-Serial Comm Port (COM5)'. The 'Prolific USB-to-Serial Comm Port (COM5)' device has a yellow exclamation mark icon next to it, indicating a driver issue. A red rectangular box highlights this device. The window title bar reads 'Device Manager' and the menu bar includes 'File', 'Action', 'View', and 'Help'.

An yellow exclamation on the icon, driver was not install successfully

Warning

3.5 Warning 105


Code	Detailed content	LCD/LED Display; Buzzer
105	Fail to write EEPROM	 <p>LCD : Display as figure LED : Continued flicker Red light (5Hz) Buzzer : -</p>

Troubleshooting:

1. restart the inverter to see whether the inverter running without warning 105.
2. if problem still exist, please contact Growatt to replace the M3 board.

Warning

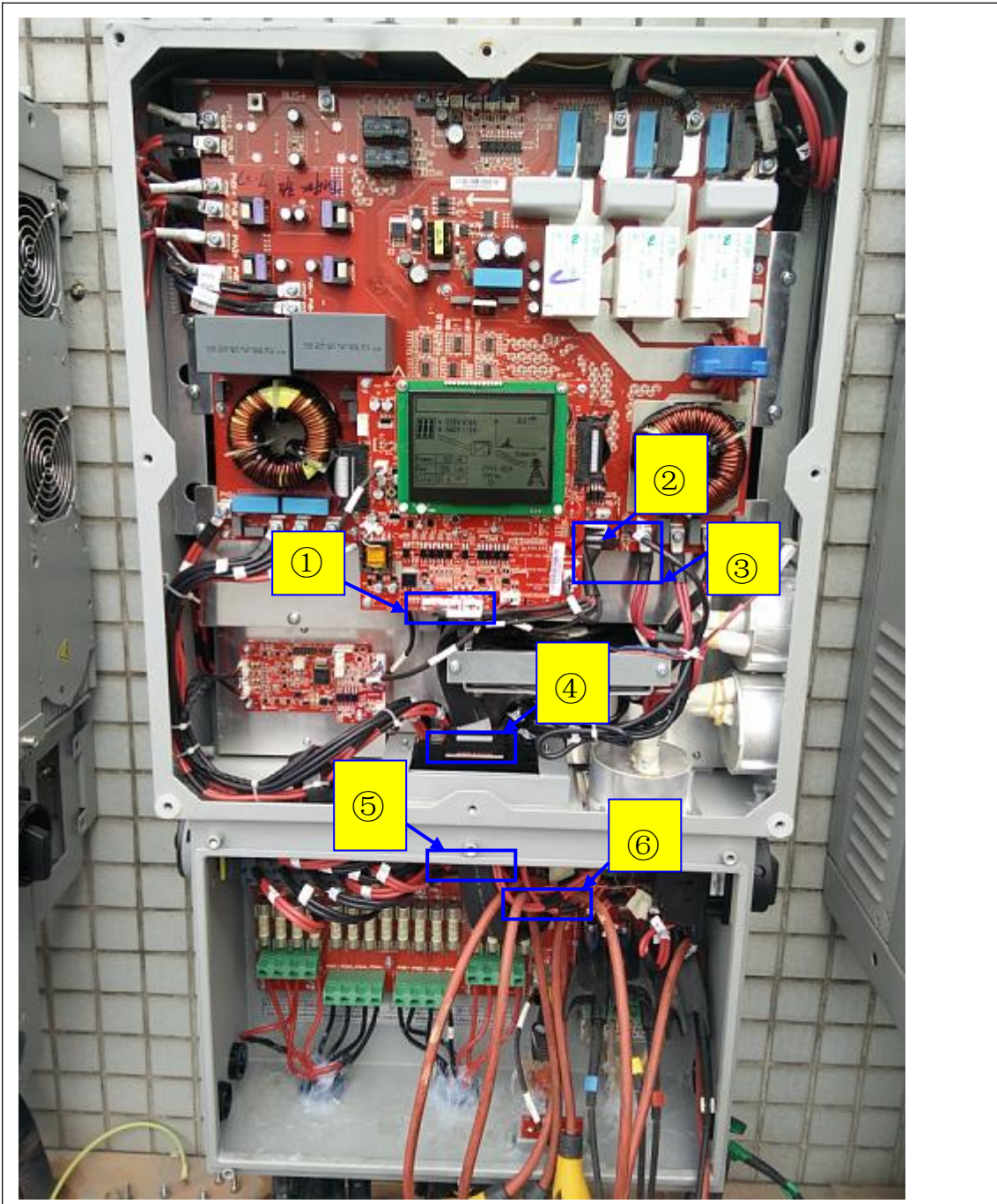
3.6 Warning 106

Code	Detailed content	LCD/LED Display; Buzzer
106	The problem of SPD	 <p>LCD : Display as figure LED : Continued flicker Red light (5Hz) Buzzer : -</p>

Troubleshooting:

1. Turn of the DC and AC switch, check whether the cable between SPD is fastened well.
2. Check the cable between COM board and terminal to see whether it fastened well inside the wire box.
3. check the cable between 26PIN Rows of line terminal and IO board whether it fasten well.
- 4.check the cable between IO board and M3 board 14 PIN whether it fasten well.
- 5.if the error still exist, please contact Growatt service.


Warning 106 cable check :



① 6PIN cable on M3 board	② 14PIN cable on IO board
③ 26PIN cable on IO board	④ 26PIN cable inside Rows of line terminal
⑤ 26PIN cable on Rows of line terminal	⑥ 26PIN cable on port board

Warning

3.7 Warning 109

Code	Detailed content	LCD/LED Display; Buzzer
109	Boost abnormal	 <p>LCD : Display as figure LED : Continued flicker Red light (5Hz) Buzzer : -</p>

Troubleshooting:

1. Restart the inverter and check PV string voltage and connection.
2. If the error still exists, please to replace main board, which is under the IO board.
3. If the error still exists, please contact Growatt service to replace an inverter

3.8 StrUnusual Warning

Principle of warning:

String unusual warning consists of two possibility problems with String current unbalance and PV module mismatch, which is determined by the string voltage and string current. So for String current unbalance, it occurs when one string current has been working with abnormal current than average current strings for long time. For PV module mismatch, which means strings with different open voltage in parallel connected to inverter before starting transmitting power to grid. there will be some current follow from one string with high open voltage to string with low open voltage.

Troubleshooting:

1. If this warning occurs soon after inverter start generating power, which means one of strings PV voltage is much lower than other strings, you have to check the open voltage of string if it is normal.
2. If this warning occurs after inverter has been generating power for long time, which means there are some pannels with problems, like hot spot or shadows on it and so on. You can find this strings with smaller current by observing LCD of inverter, then you need to check panels one by one.
3. After checking, if no problem with string and pannels, there may be some problem with fuse board or PID board, have to contact with Growatt to disable this warning via shinebus or server , or replace board.




3.9 StrFuesOpen Warning

Troubleshooting:

1. Switch off DC and AC, open the front case of inverter.
2. Check fuse of string with warning by multimeter, if fuse is burnt and replace it.
3. If no problem with fuse, inverter still got warning after restart inverter. please contact with Growatt to replace the fuse board.

4 Inverter fault Error code

4.1 Error 101

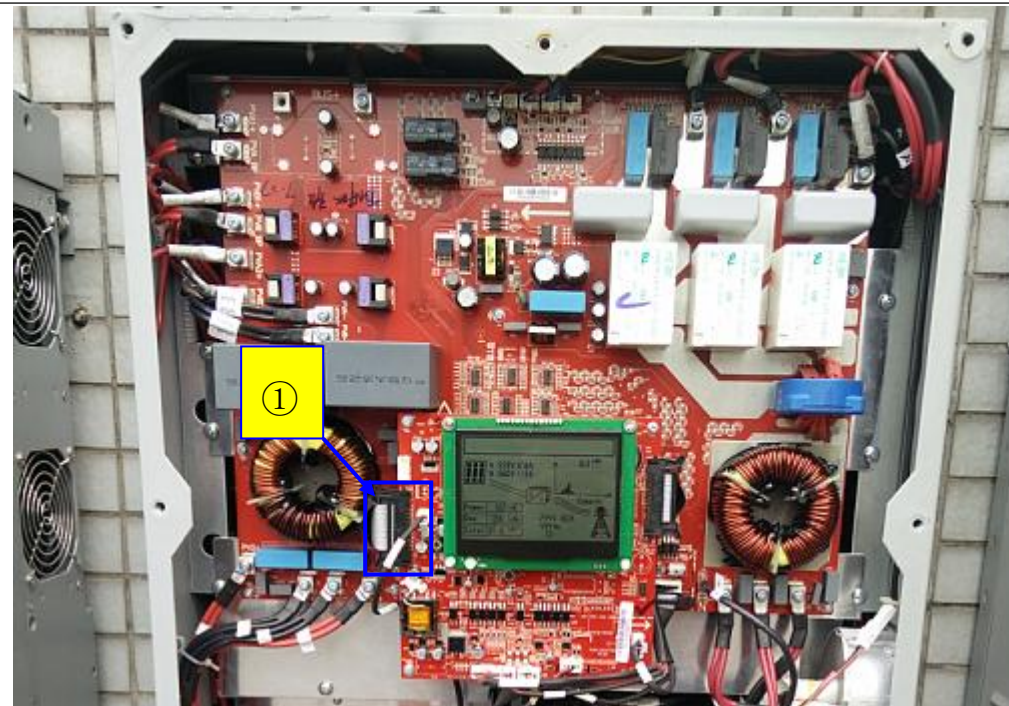
Code	Detailed content	LCD/LED Display; Buzzer
101	Communication error, M3 board(Slave CPU) doesn't receive from IO board(Main CPU) over 20 times	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <i>ERROR:101</i>    </div> LCD : Display as figure LED : Sustained Red light Buzzer : -

Troubleshooting:

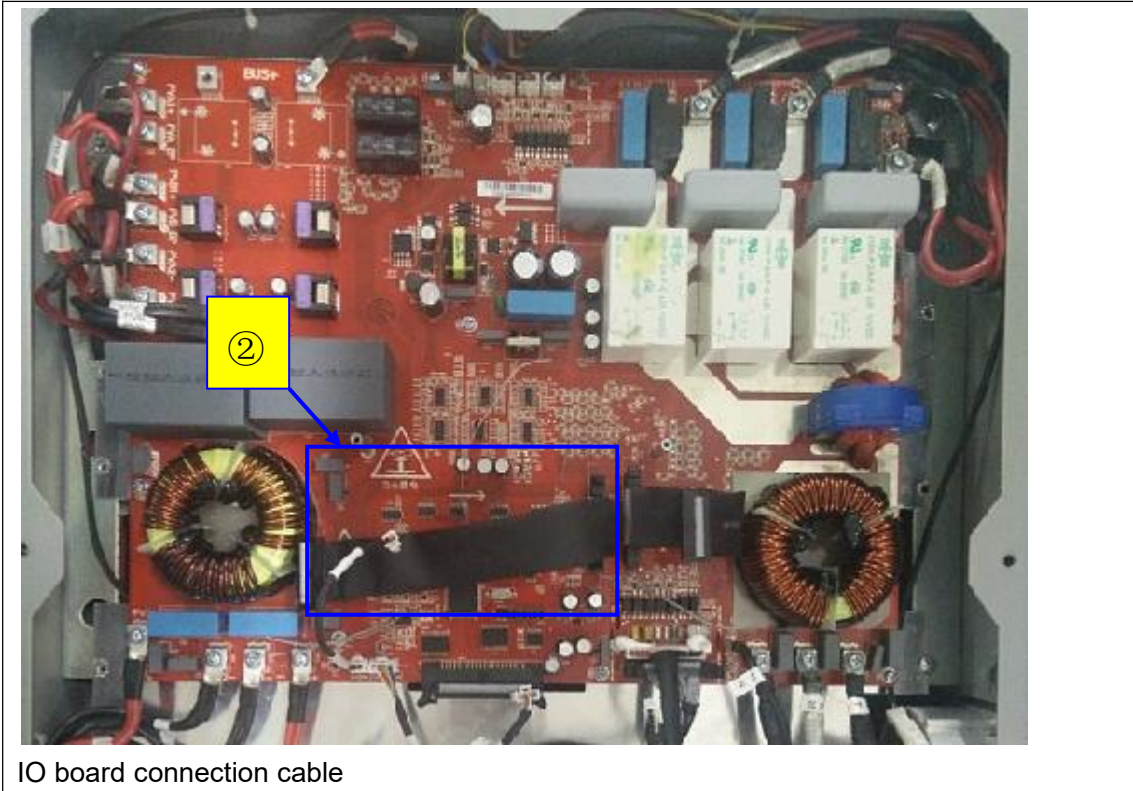
1. Communication error, M3 board doesn't receive data from IO board, make sure you have updated the firmware totally, if not completely updated, it would cause this error;
2. please power off inverter and open the inverter cover to confirm the signal cable between control board and COM board
3. if the error still exist, please contact Growatt service;

101 error wiring double check figure :

26PIN cable: ①&②;




M3 board connection cable



IO board connection cable

Inverter Fault


4.2 Error 103

Code	Detailed content	LCD/LED Display; Buzzer
103	StrReverse Error/StrShort Error	 <p>LCD : Display as figure LED : Sustained Red light Buzzer : -</p>

Troubleshooting:

1. please check PV strings input if reversed or short circuit.
2. Restart the inverter.
3. if the error still exist, please contact Growatt service.

4.3 Error 106


Code	Detailed content	LCD/LED Display; Buzzer
106	The ISO values from M3 and DSP are inconsistent	 <p>LCD : Display as figure LED : Sustained Red light Buzzer : -</p>

Troubleshooting:

1. please check the model information, the detail please refer to warning 104.
2. please turn off the DC and AC switch, remove the front cage, to see whether the cable between IO board and M3 board is fasten well.
3. if the error still exist, please contact Growatt service.

Inverter Fault

4.4 Error 107


Code	Detailed content	LCD/LED Display; Buzzer
107	The GFCI values from M3 and DSP are inconsistent	 <p>LCD : Display as figure LED : Sustained Red light Buzzer : -</p>

Troubleshooting:

1. please check the model information, the detail please refer to warning 104
2. please turn off the DC and AC switch, remove the front cage, to see whether the cable between IO board and M3 board is fasten well.
3. if the error still exist, please contact Growatt service.

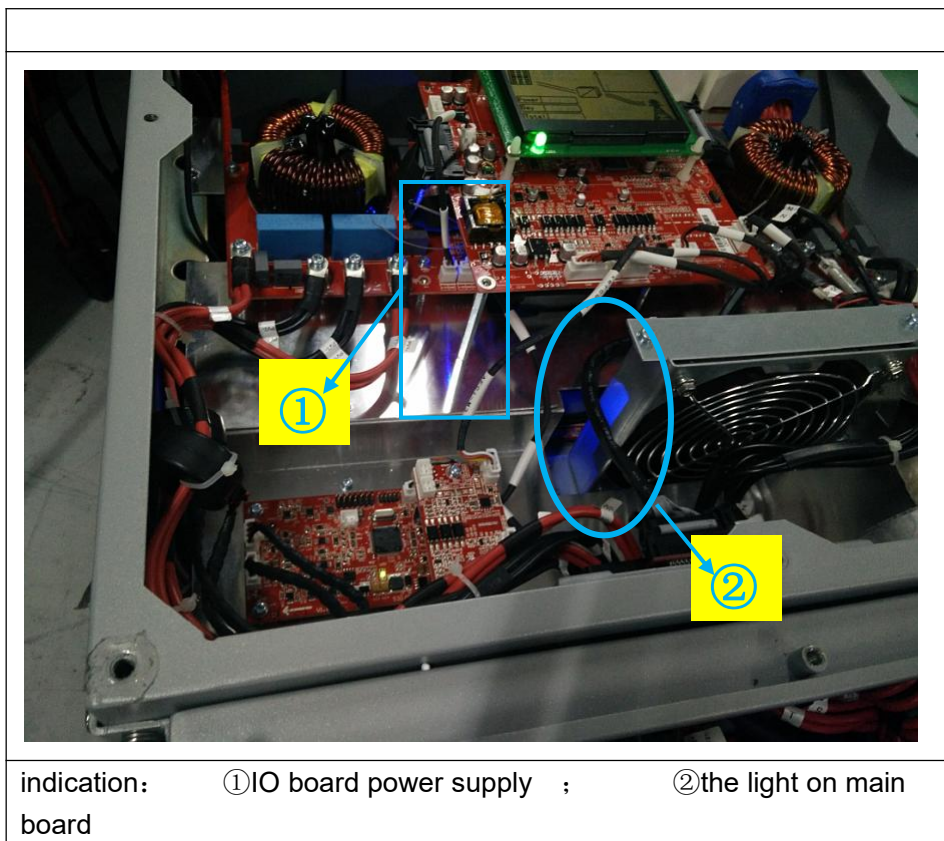
Inverter Fault

4.5 Error 108

Code	Detailed content	LCD/LED Display; Buzzer
108	PV power low	 LCD : Display as figure LED : Sustained Red light Buzzer : -

Troubleshooting:

1. check the PV and AC wiring connection.
2. remove the front cage, and to see whether the light as below is lighten. If not, please turn off the DC and AC switch, check the PIN cable between main board and IO board

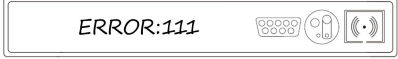


4. check main board if burnt.
3. if the error still exist, please

ase contact Growatt service.

Inverter Fault

4.6 Error 111

Code	Detailed content	LCD/LED Display; Buzzer
111	IGBT drive fault	 LCD : Display as figure LED : Sustained Red light Buzzer : -

Troubleshooting:

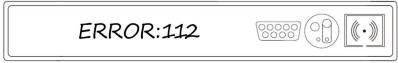
1. Switch OFF DC & AC switches, check the connections between the 40pin flat cable on the mainboard to I/O board.
2. Remove the front cover, and then unscrew the M3 board, I/O board. Use a multi-meter to check the 3 phase IGBT module R/S/T; If there is any inconsistent to the following pictures, please inform Growatt for further support.

	Neutral to S3	BUS+ to S1	S1 to S3	S1 to BUS-
R				
S				
T				

3. If the problem persists, please contact Growatt for further assistance.


Inverter Fault

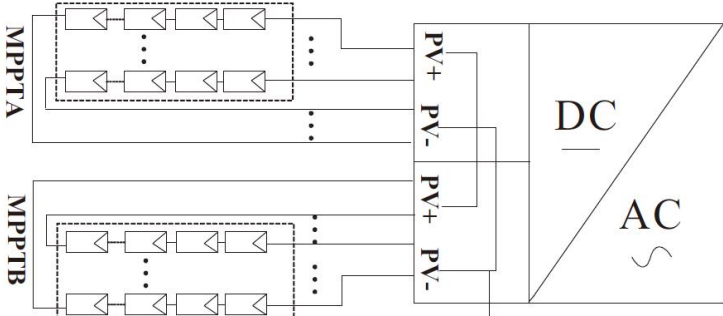
4.7 Error 112

Code	Detailed content	LCD/LED Display; Buzzer
112	AFCI Fault	 LCD : Display as figure LED : Sustained Red light Buzzer : Buzzing

Troubleshooting:

1. Switch OFF DC & AC switches, check carefully the wires on DC input side, whether is any damage or burn out.
 2. Remove the front cover, replace the AFCI magnetic ring, then switch back on DC & AC again for a try.
 3. If the problem still exist, please replace the AFCI and the AFCI detecting module.
- See below pictures for details;
4. Please make sure the a PV string should only connect to ONE MPPT tracker.

S1	S2
	
ON	ON
STATE 4	

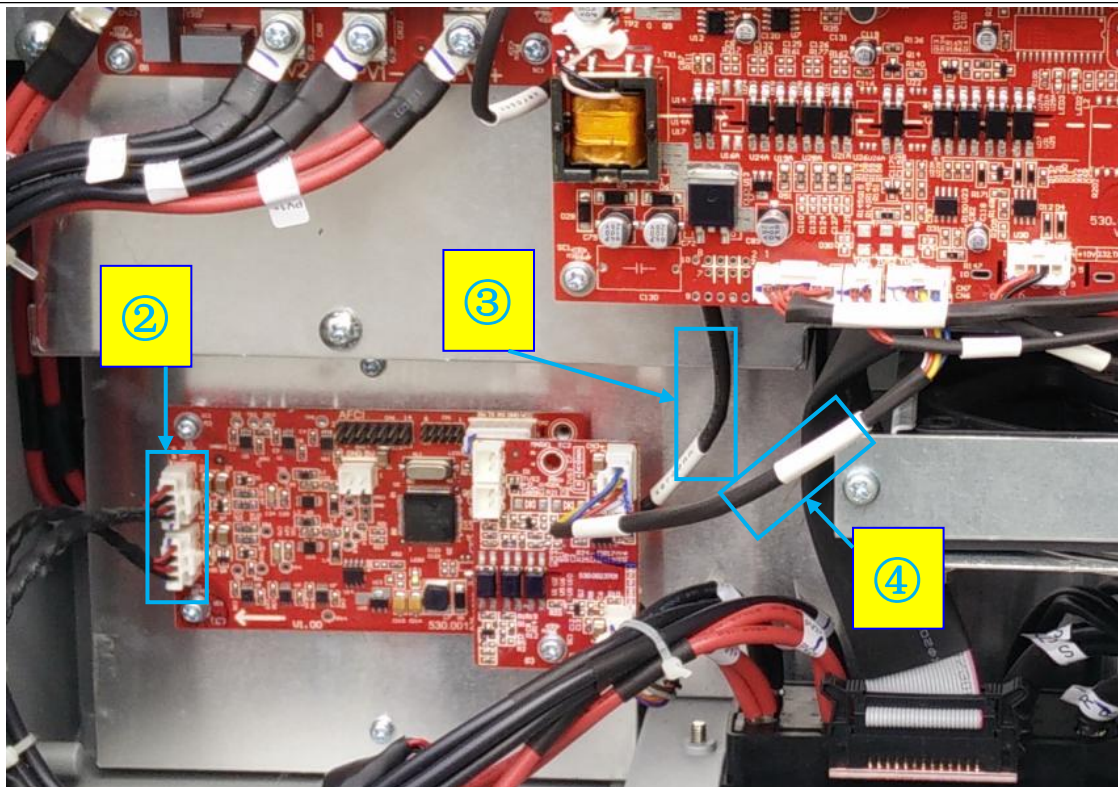
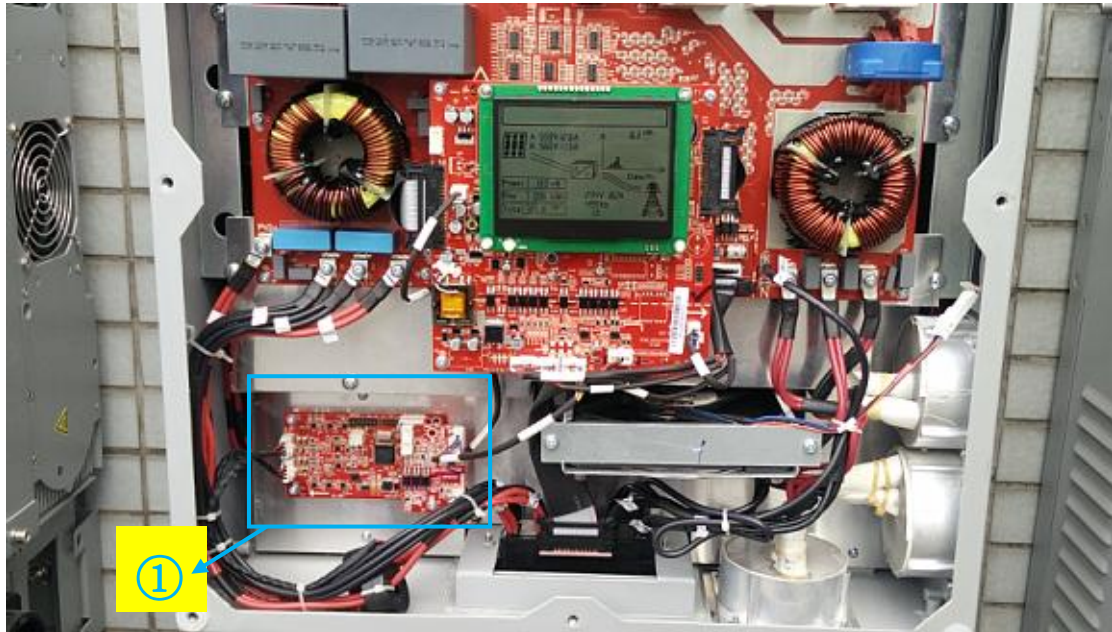


When set the Growatt TL3-US in parallel mode, you must using the standard line to connect PVA+to PVB+, and PVA - to PVB -.

The inverter has double MPPT's, it is recommended for each MPPT to work independently, do not use parallel wiring at DC side (Parallel wiring can make 2 MPPT's become 1 MPPT, this can improve the efficiency in some cases). If the MPPT's are parallel wired at inverter it may cause the AFCI trigger mistakenly.

5. If the problem persist, please contact Growatt for further assistance.


AFCI connections:



① AFCI Location (30-50K TL3-S)	②:AFCI detecting module 4 pin flat cable * 2
② :AFCI detecting and power line	④:AFCI RS485 cable

Inverter Fault

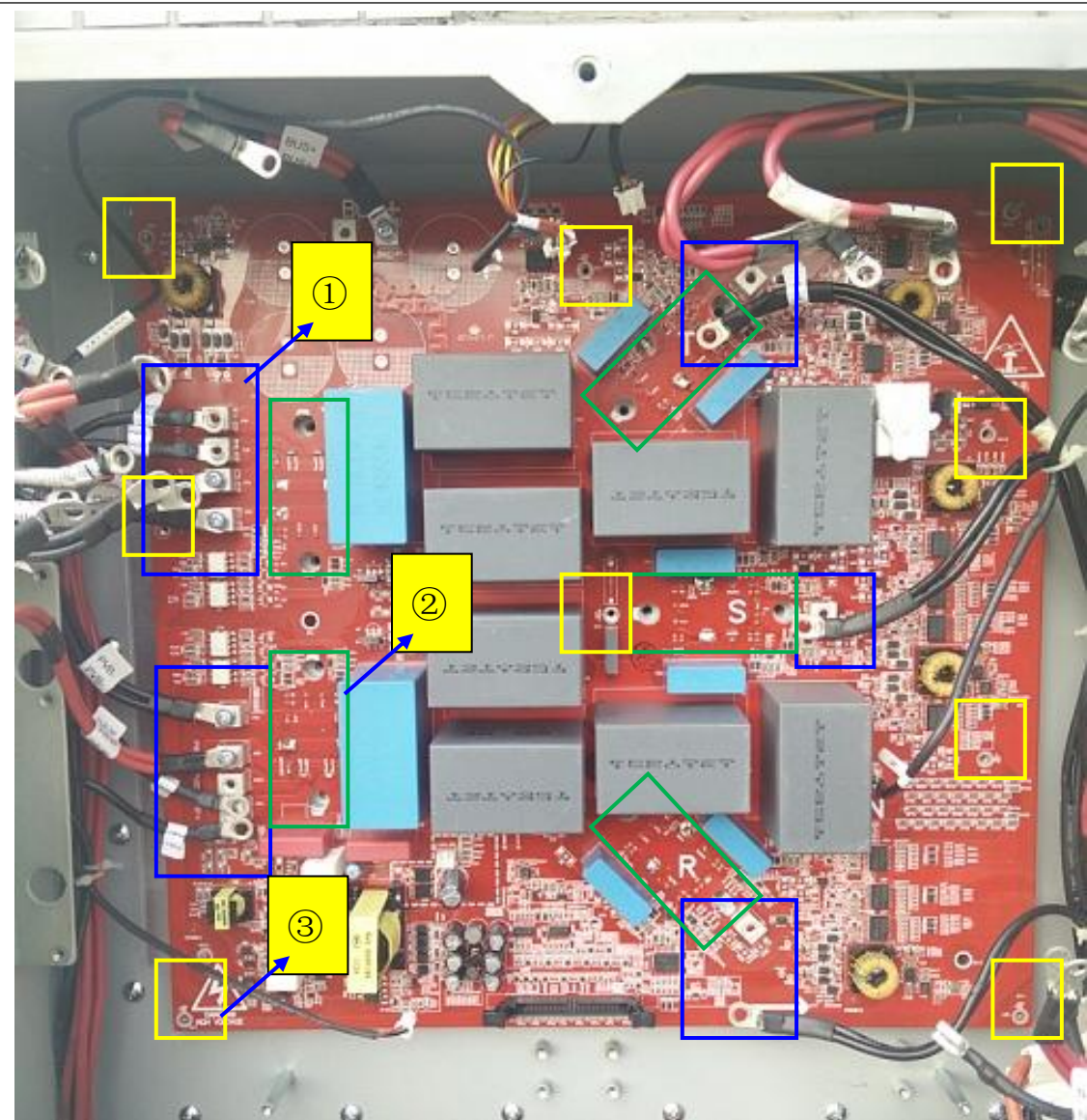
4.8 Error 114

Code	Detailed content	LCD/LED Display; Buzzer
114	AFCI Module self-checking Fault	 <p>LCD : Display as figure LED : Sustained Red light Buzzer : Buzzing</p>

Troubleshooting:

1. Switch OFF DC & AC switches, check carefully the wires on DC input side, whether is any damage or burn out.
2. Remove the front cover, replace the AFCI magnetic ring, then switch back on DC & AC again for a try.
3. If the problem still exist, please replace the AFCI and the AFCI detecting module. See below pictures for details;
4. If the problem persist, please contact Growatt for further assistance.


Remove Mainboard:



① :For cable M4 cross screw	② :For module M4 cross screw
③: For main board M3 cross screw	

Inverter Fault

4.9 Error 117

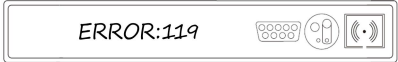
Code	Detailed content	LCD/LED Display; Buzzer
117	Relay fault. Relay check fails 6 times	 LCD : Display as figure LED : Sustained Red light Buzzer : -

Troubleshooting:

1. Switch OFF DC & AC switches, wait for LCD going out. Then switch back DC & AC switch on. To try whether the problem can be solved;
2. If the problem persist, please contact Growatt for further assistance.

Inverter Fault

4.10 Error 119

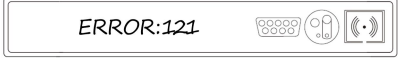
Code	Detailed content	LCD/LED Display; Buzzer
119	GFCI fault.	 <p>LCD : Display as figure LED : Sustained Red light Buzzer : -</p>

Troubleshooting:

1. Switch OFF DC & AC switches, wait for LCD going out. Then switch back DC & AC switch on. To try whether the problem can be solved;
2. If the problem persist, please contact Growatt for further assistance.

Inverter Fault

4.11 Error 121


Code	Detailed content	LCD/LED Display; Buzzer
121	Communication error, IO board doesn't receive data from M3 (communication) board over 20 times.	 <p>LCD : Display as figure LED : Sustained Red light Buzzer : -</p>

Troubleshooting:

1. Switch OFF DC & AC switches, wait for LCD going out. Then switch back DC & AC switch on. To try whether the problem can be solved;
2. If the problem still exist, please remove the inverter front cover, check the stability of the 26 pin flat cable connections between the M3 board and I/O board.
3. If the problem persists, please contact Growatt for further assistance.

Inverter Fault

4.12 Error 122


Code	Detailed content	LCD/LED Display; Buzzer
122	Bus voltage abnormal	 <p>LCD : Display as figure LED : Sustained Red light Buzzer : -</p>

Troubleshooting:

1. Switch OFF DC & AC switches, wait for LCD going out. Then use a multi-meter to check the PV string voltage between the PV+ and PV-, the PV string voltage should below 1000v. If the PV voltage too high, please remove some panels from string.
2. Switch back the DC & AC switch on, to see whether the error recovered.
3. If the PV voltage is OK but the problem persist, please contact Growatt for further assistance.

5 System Fault

5.1 No AC Connection


Code	Detailed content	LCD/LED Display; Buzzer
124	The grid is not connected to the inverter	 <p>LCD : Display as figure LED : Sustained Red light Buzzer : -</p>

Troubleshooting:

1. Check the inverter AC wiring, whether connected according to R/S/T/N/PE symbol correctly;
2. Check the AC switch is in ON status;
3. Use a multi-meter to check the 3 phase voltage on inverter AC terminal.;
4. If the problem persist, please contact Growatt for further assistance.

System Fault

5.2 PV Isolation Low


Code	Detailed content	LCD/LED Display; Buzzer
125	PV Insulation value is outrange	 LCD : Display as figure LED : Sustained Red light Buzzer : -

Troubleshooting:

1. Check the inverter AC wiring, whether connected according to R/S/T/N/PE symbol correctly; Make sure the inverter casing PE terminal was connected to grid PE properly;
2. Remove the inverter front cover, check the screw earthing in I/O board is firmly.
3. Make sure there is no water or moistened in the inverter earthing system.
4. If the problem persist, please contact Growatt for further assistance.

System Fault

5.3 Residual I High




Code	Detailed content	LCD/LED Display; Buzzer
126	Redundant current is outrange	 LCD : Display as figure LED : Sustained Red light Buzzer : -

Troubleshooting:

1. Switch OFF DC & AC switches, wait for inverter LCD going out. Check carefully the wires on DC input & AC output side, whether is any damage or burn out, or there is possible current leaking.
2. Switch back on DC & AC again to see whether inverter can recover.
3. If the problem persist, please contact Growatt for further assistance.

System Fault

5.4 Output High DCI


Code	Detailed content	LCD/LED Display; Buzzer
127	Output current DC bias is high	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> Output High DCI    </div> LCD : Display as figure LED : Sustained Red light Buzzer : -

Troubleshooting:

1. Switch OFF DC & AC switches, wait for inverter LCD going out. Then switch back on DC & AC again to see whether inverter can recover.
2. If the problem persist, please contact Growatt for further assistance.

System Fault

5.5 PV Voltage High


Code	Detailed content	LCD/LED Display; Buzzer
128	PV input voltage is above 1000V	 <p>LCD : Display as figure LED : Sustained Red light Buzzer : -</p>

Troubleshooting:

1. Switch OFF DC & AC switches, wait for LCD going out. Then use a multi-meter to check the PV string voltage between the PV+ and PV-, the PV string voltage should below 1000v. If the PV voltage too high, please remove some panels from string. The PV voltage should not exceed 1000v at any time.
2. If the measured PV voltage is between 480 – 1000v, please switch ON the DC switch, check the PV voltage displaying on the LCD, compare this value with the measured voltage to see whether there is big difference. If it is OK, please switch back the AC switch to try running inverter.
3. If the PV voltage is OK but the problem persist, please contact Growatt for further assistance.

System Fault

5.6 AC V Outrange


Code	Detailed content	LCD/LED Display; Buzzer
129	The grid voltage is out of range	 <p>LCD : Display as figure LED : Sustained Red light Buzzer : -</p>

Troubleshooting:

1. Switch OFF DC & AC switches, wait for LCD going out. Then use a multi-meter to check the AC voltage between R/S/T/N on the inverter AC terminal, the measured AC L-N voltage should be between 250 – 305v.
2. If the measured PV voltage is between 250 – 305v, please switch ON the DC and AC switch, check the AC L1/L2/L3 voltage displaying on the LCD, compare this value with the measured voltage to see whether there is a big difference. If it is OK, please wait for the inverter to connect to the grid.
3. If the PV voltage is OK but the problem persists, please contact Growatt for further assistance.

System Fault

5.7 AC F Outrange


Code	Detailed content	LCD/LED Display; Buzzer
130	The grid frequency is outrange	 LCD : Display as figure LED : Sustained Red light Buzzer : -

Troubleshooting:

1. Switch OFF DC & AC switches, wait for LCD going out. Then switch back ON the DC & AC switches again to see the error message cleared.
2. check the AC frequency displaying on the inverter LCD, to see whether it is within the permitted range (59.3-60.5 Hz). Restart the inverter to double check the AC frequency displaying on the inverter LCD
3. If the AC frequency is OK but the problem persist, please contact Growatt for further assistance.

System Fault

5.8 PV SW Set Error

Code	Detailed content	LCD/LED Display; Buzzer
	PV module set wrong	 LCD : Display as figure LED : Sustained Red light Buzzer : -

Troubleshooting:

1. Please check the DIP switch status and the wiring is consistent. See below picture for detailed information. If it is OK, please switch OFF DC and AC switches, wait for LCD going out. Then switch back ON the DC & AC switches again to see the error message cleared.
2. Please check whether the 26 pin flat cable connections are firmly.
3. If the problem persist, please contact Growatt for further assistance.

Switch status		Wiring diagram	
S1	S2		
OFF	OFF		
STATUS 1			
S1	S2		
ON	OFF		
STATUS 2			
S1	S2		
OFF	ON		
STATUS 3			
S1	S2		
ON	ON		
STATUS 4			
		<p>When set the Growatt TL3-S in parallel mode, you must using the standard line to connect PVA+to PVB+, and PVA - to PVB</p>	

6 Contact

For warranty claim or technical support please contact our service center:

Headquarter: Service hot line: +86 755 27471942

Email: service@ginverter.com

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