"PV Isolation low" troubleshoot guide

The inverter will detect the insulation resistance of the positive & negative input to earth before connecting to grid, if the resistance falls below the setpoint, the inverter will not connect to grid and indicate "PV Isolation low" on LCD display. This is not an inverter fault, the inverter only detects that fault before feeding in, which can appear during initial installation or develop in an existing PV system. If this fault is encountered, you need to check the insulation on DC side.

Possible cause:

1. Damaged PV panels or DC wires, such as mounting screw through the back of a module or a conducting wire pinched against a mounting rail;
2. Poor connection between PV panels caused by poor quality or aging of cable junction;
3. Water ingress or damp condensation in junction box due to not properly sealed junction box or DC isolator enclosure, which will lower the insulation resistance and cause an "PV Isolation low" fault.

General solution:

Check the earth wiring on AC side, check the isolation on DC side(PV side).

1. Check if the inverter is well grounded,

2. Switch off the DC isolator, unplug the DC connectors, then turn on the DC switch to measure the voltage of DC positive to ground and the voltage of DC negative to ground. The reading will be 0 under normal condition, if the voltage is not 0, you can locate the fault area by dividing the voltage by Voc of PV solar module, as in the below example, the Positive to ground voltage is 42V, Negative to ground voltage is 63V, then the fault is located between the 2 and 3 panels.

POS TO NEG = OPEN CIRCUIT VOLTAGE
POS TO GND = 0V, NEG TO GND = 0V

Where is the Ground Fault?

42 / 21 = 2 or 2nd module from the positive home run.
63/21 = 3 or 3rd module from the negative home run.

Positive to Ground 42 Volts

Negative to Ground 63 Volts
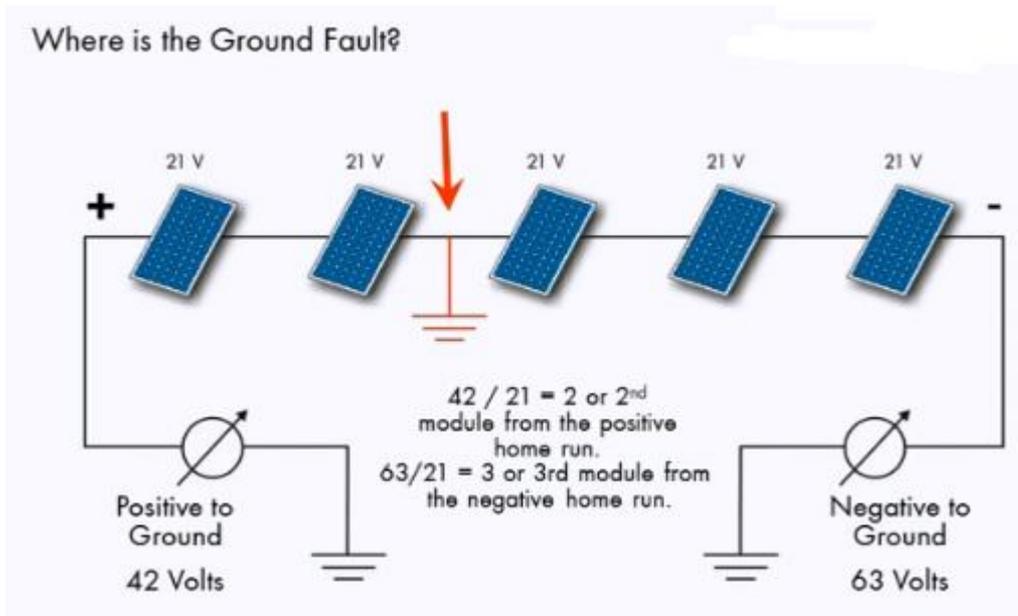
3. Then check whether DC wires are pinched between module frames and mounting structures, whether there is mounting screw through the back of a module, conductors rubbing against the roof, mouse chewing on conductors, broken PV modules, incorrect wiring of PV modules.

4. Check whether the enclosure of junction box or DC isolator is properly sealed to against water ingress or condensation.

If problem persists after replacing,

The problem can be solved by changing the detecting threshold to a lower value, but there will be a risk of electric shock or fire if the ground fault sustain. Whether to do the change is decided by the customer, Growatt assume no reliability for the risk or consequence of the changing.

Please follow the procedures below to change detect value of grounding resistance.

a. Connect the inverter to your computer via RS232, you can use a USB to RS232 converter cable if your laptop has no RS232 port(9 pins, D type), but make sure the driver for the cable is properly installed. You can check that on Device Manager, if the driver is successfully installed, a USB serial port will be shown under "Ports(COM & LPT), otherwise you will see a yellow exclamation mark or question mark icon.
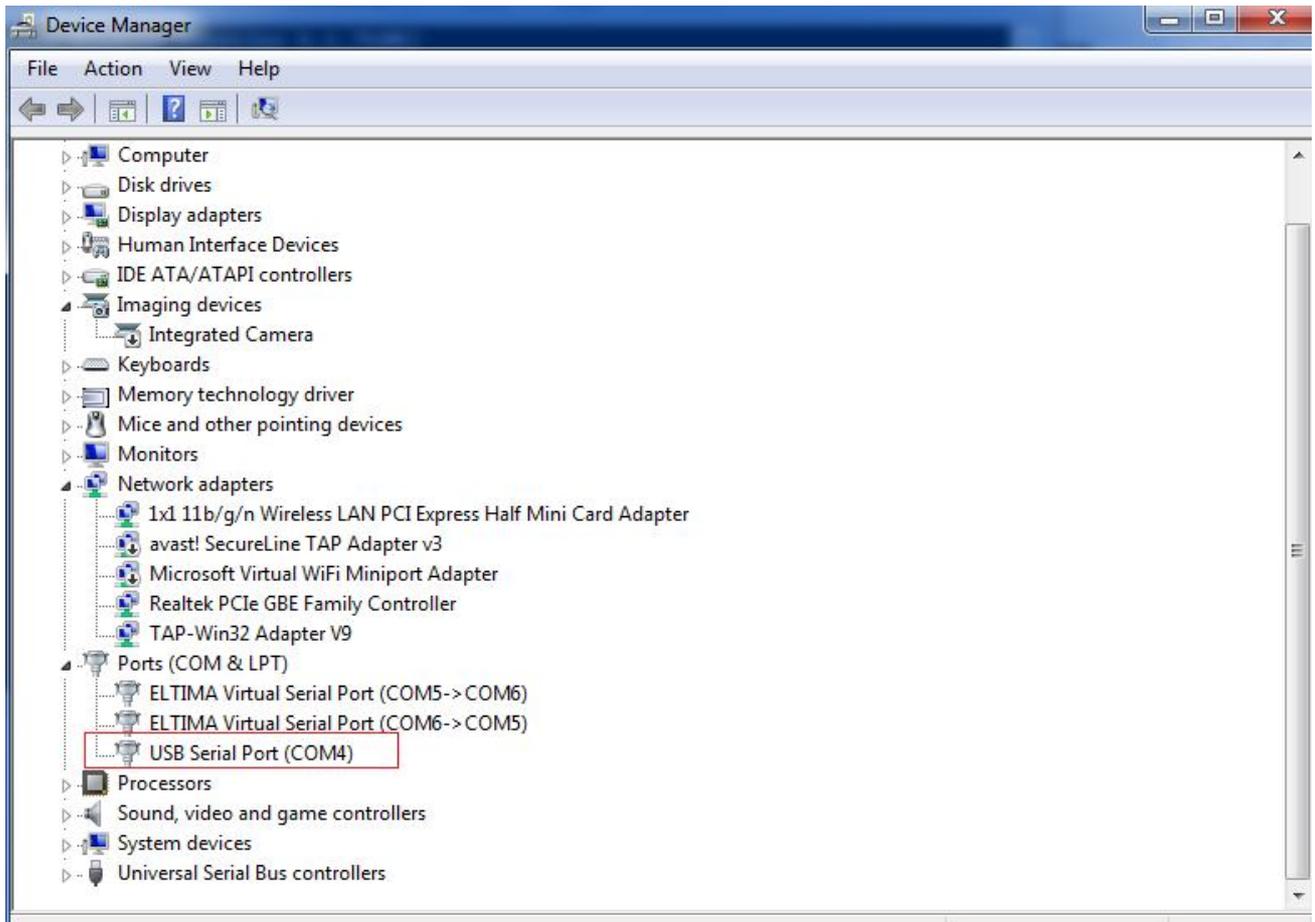
b. Open the parameter setting software, ShineBus, enter the serial port number your computer is using to communicate with the inverter(can be found in Device Manager of your computer), then click "Start", the basic information of the inverter will be shown on this page,
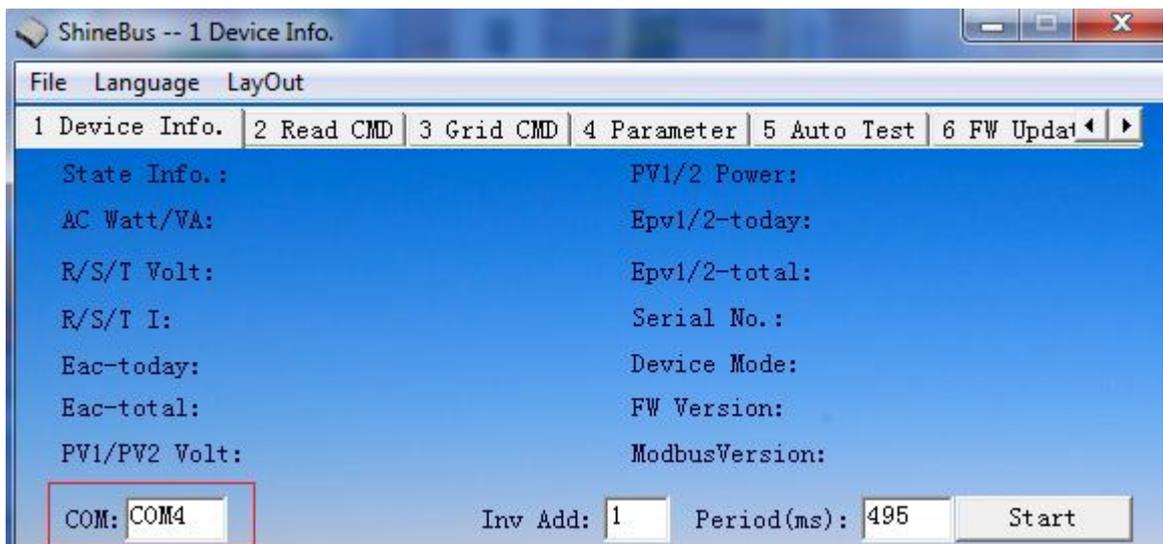
Device Info. Interface of Shine Bus
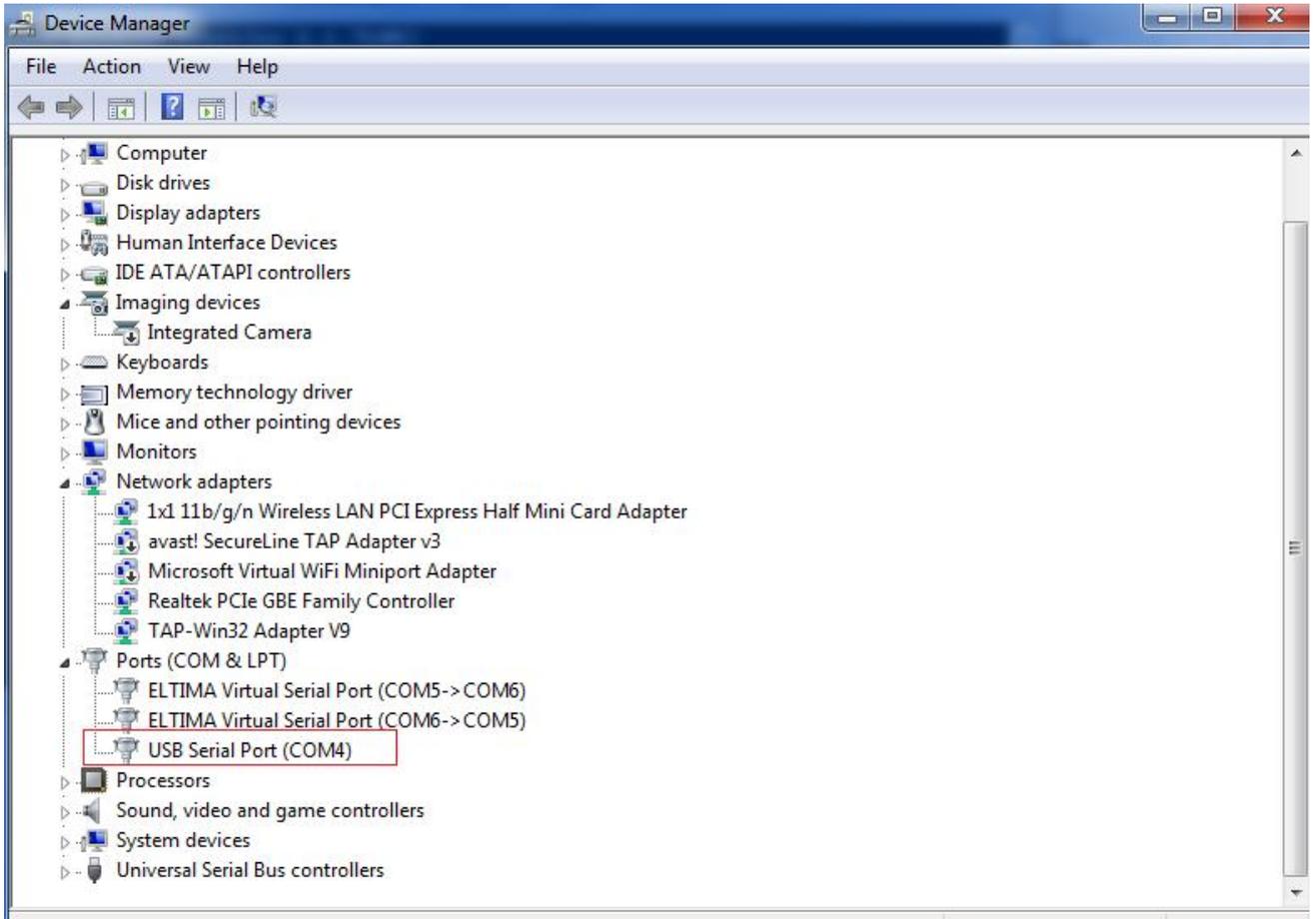
Device Manager of computer
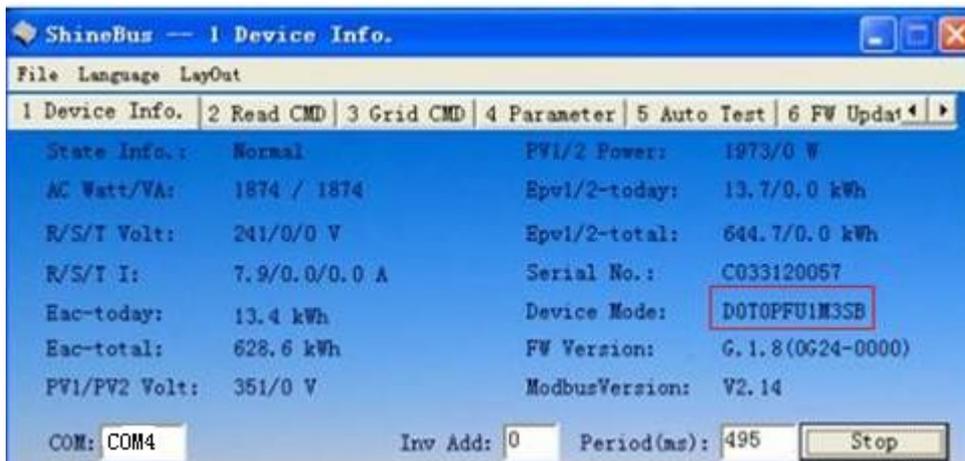
Basic information of inverter

c. Change the tab to "7 Product Set", Type **PEU1MXS3**(Mx means output power level, the value of X can be found in the below table) in the **Mode:** filed, and click "**Set**".   then the setting is done.

ShineBus -- 7 Product Set

File   Language   LayOut

3 Grid CMD | 4 Parameter | 5 Auto Test | 6 FW Update | 7 Product Set

Mode: PDU1M6S3   Set State:

SerialNo.:

Input No. :   Input Module:

Real No. :   Real Module:

COM: COM4   Inv Add: 1   Period(ms): 495   Set
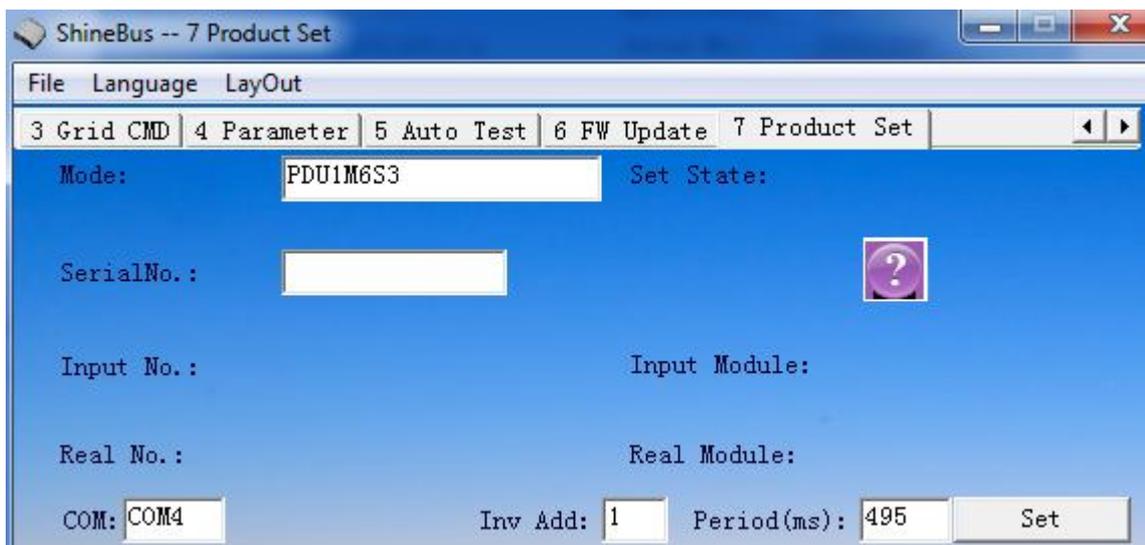
The value of X in Model

Table 1 **Mx** stands for the power level of the inverter

Product (Growatt 1000-5000TL)	Mx
Sungold 1500TL	1
Sungold 2000TL	2
Sungold 3000TL	3
Sungold 4600TL	5
Sungold 5000TL	6

Product (Growatt 2500/3000MTL)	Mx
Growatt 2500MTL	2
Growatt 3000MTL	3

Product(Growatt 3600-5000MTL)	Mx
Growatt 3600MTL	3
Growatt 4200MTL	4
Grwoatt 4600MTL	5
Growatt 5000MTL	6