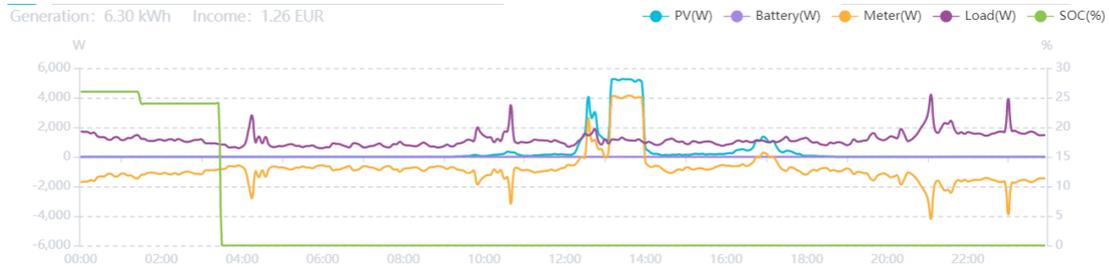


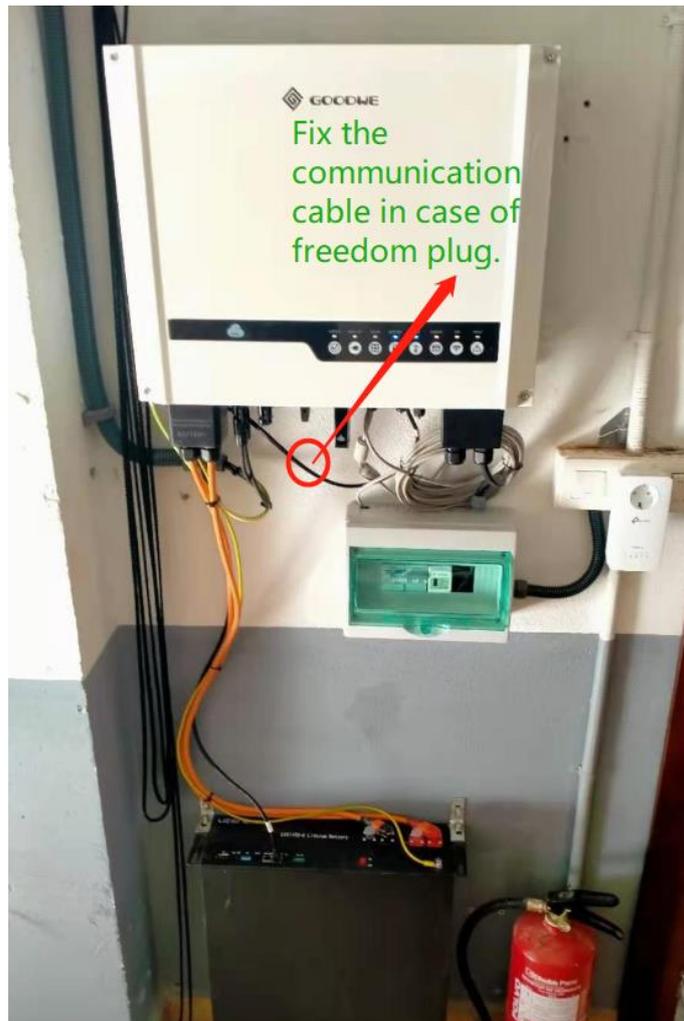
Why did the master in parallel-packs system suffer seriously under-voltage?

- ◆ **Question:** A 4 packs in parallel system, battery SOC dropped from 24% to ZERO suddenly. 10 days later, the master battery was found seriously over-discharged and the voltage was only 6.14V, while the rest 3 packs' voltages were about 44V. Why?



- ◆ **Answer:**

Firstly, the loss of communication between the battery and the inverter is the main reason. If the communication cable is freely plugged into the inverter, the connection is easily to be loose. Thus the communication is lost, and it is recommended to **fix the inverter side of the communication cable in case of freedom plug.**



Secondly, **the discharge mos keeps closed in sleep mode** is the reason why the master suffered seriously under voltage after the communication between the battery and the



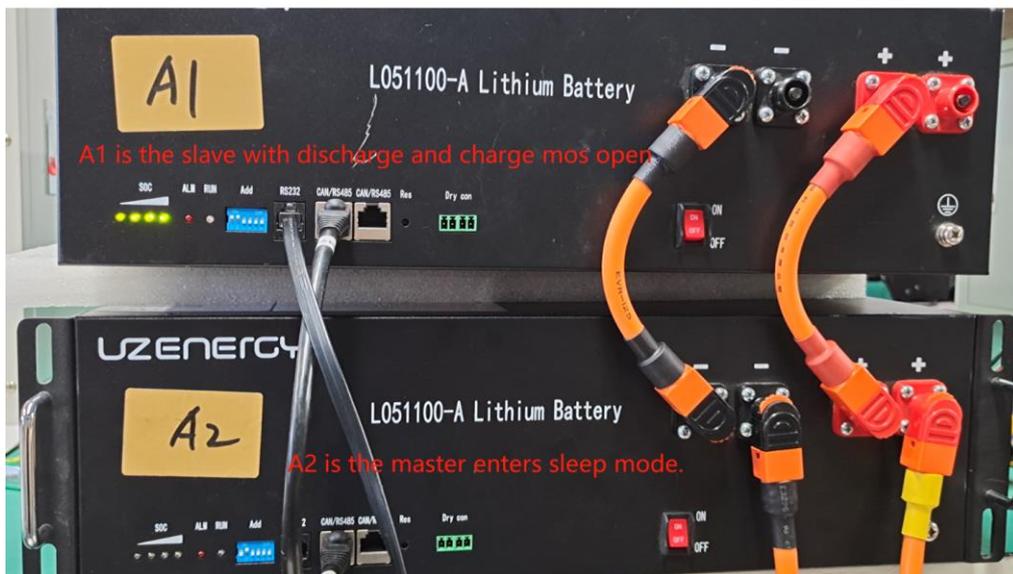
inverter is lost. As we know, when pack voltage is under 48V or cell voltage is under 2.8V, meanwhile, no current, then the battery will enter sleep mode. So, in this case, the master entered sleep mode before it discharged to under-voltage-protect. Then the communication between batteries lost and the rest pack stopped discharging and charging. As the discharge mos was still on and the discharge current was less than 1A which could not be measured effectively by BMS, the master battery could not be waken up and disconnect discharge mos when under-voltage-protect, it just kept discharging and suffered seriously under-voltage. **To solve this problem, the discharge mos open in sleep mode would be updated in our new BMS firmware.**

Shown as below are our validation test results:

- [1] When battery enters sleep mode, the discharge mos is still closed and a normal output voltage is measured.



- [2] When the master enters sleep mode, the slave stops discharging and charging.





The screenshot shows the BMS software interface for LM-M01A-YZ107_200528. It includes several panels: 'PARAM' with a table of battery parameters, 'Protect Status' and 'Alarm Status' with indicator lights, and 'Normal Status' with a battery level bar and various status indicators. A red box highlights the 'Charge_MOS_Open' and 'Discharge_MOS_Open' indicators in the Normal Status section. A red arrow points to this box with the text: "The upper computer shows the slave stops charging and discharging."

Caption	Value	Unit
V_SUM	53.46	V
V_AVG	3.341	V
V_MAX	3.368	V
V_MIN	3.328	V
V_DIFF	0.040	V
Current	0.00	A
Capacity_Full	100.00	Ah
Capacity_S...	99.50	Ah
Loop_count	13	#
TEMP1	29	°C
TEMP2	29	°C
TEMP3	29	°C

[3] The master discharges with a current of 0.5A, and this current is too small to be measured by BMS, so that the master would not be woke up. The master keeps discharging without a stop even when under-voltage-protect.

