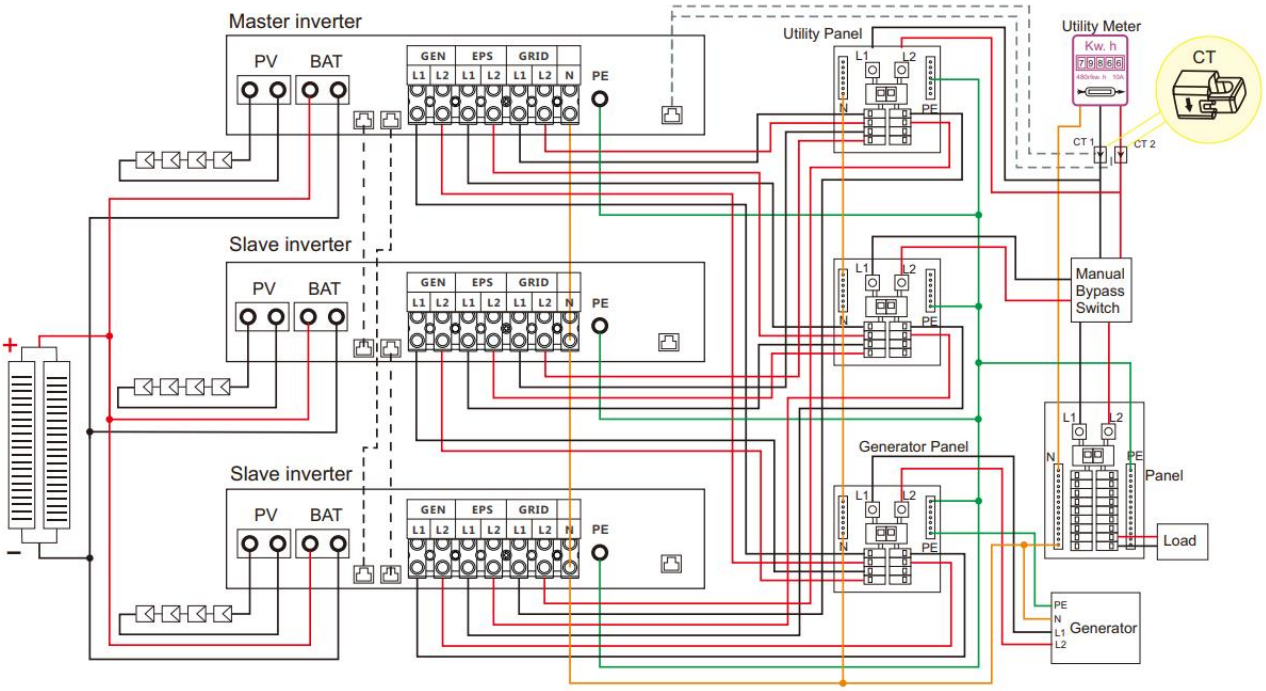
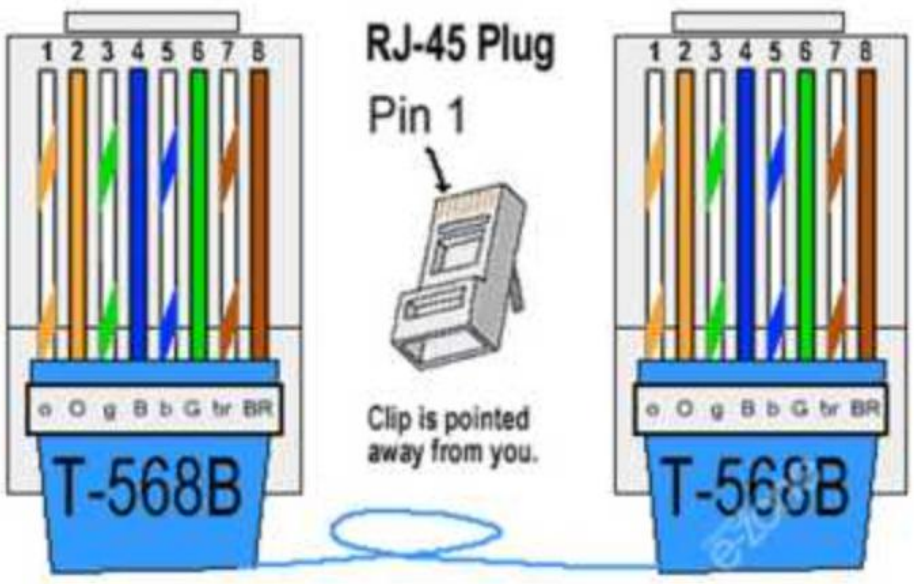
Split-phase paralleling Connection Guidance

1. Split-phase paralleling wiring diagram(120/240 Split-phase)

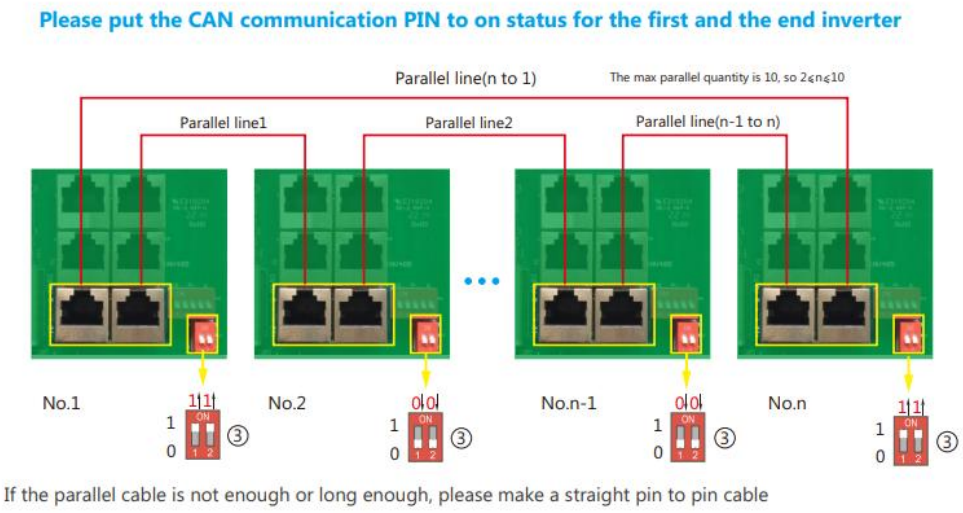


Please put the 2-bit CAN balancing resistor switch to ON status for the first and end inverter of the daisy chain loop.

2. Parallel communication



Please use full-pin PIN to PIN (T-568B) Cat5 Cable to parallel the inverters .



Turn on the 2-PIN DIP of the first and the last one

3. Parallel configuration via LCD

3.1. Firmware update for both the LCD and inverter

Step1: Please update the LCD before doing parallel configuration ，please refer to " LCD local update guidance"

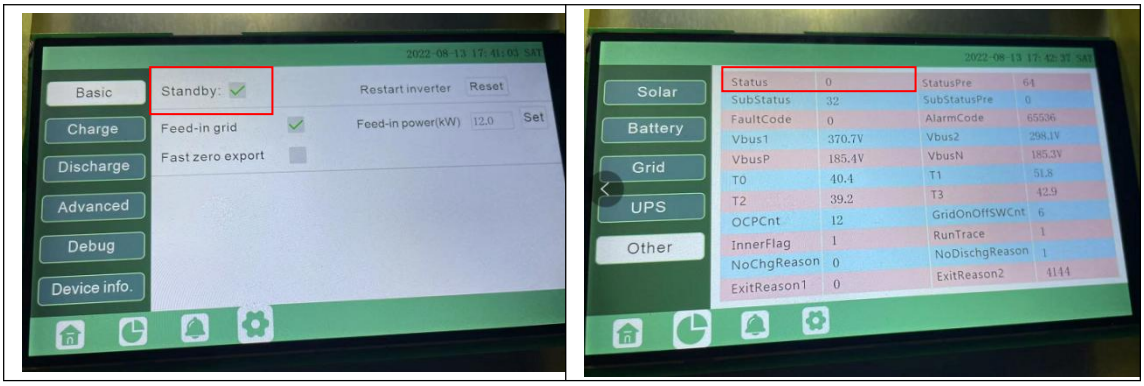
Step2: Tell Lux power to do firmware update for parallel functions online (before update the inverters , please check if the grid power is on , if the grid power is normal, please disable "offgrid output "via Advanced page, else if grid power is off ,please turn off the AC breaker .)

3.2. **Parallel configurations via LCD**

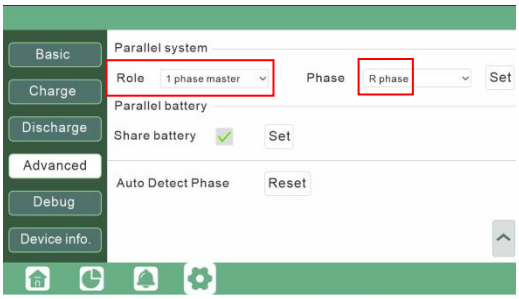
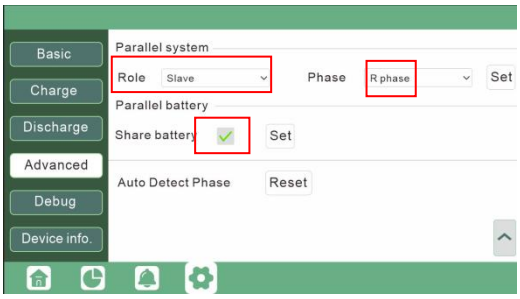
Please follow the steps below to configure parallel settings：

Step1： make sure power cables and parallel comms cables have been wired correctly and also make sure the DIP configurations are correct.

Step2： Power On inverter and make inverters **standby** (set standby via Basic page), and inverter status should be "**0**"



Step3: Set one of them as **single-phase master unit** and the others to be slave unit. And at the same time enable battery shared mode.

	
1 unit as 1Phase Master The others as Slave Composed phase set to R phase. All inverters set to “Share Battery”	1 unit as 1Phase Master The others as Slave All inverters set to “Share Battery”

Make sure the safety standard and grid type configurations are consistent.

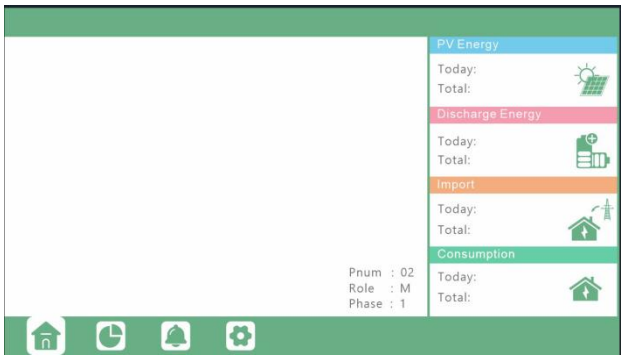
4. Parallel info in home page

After successfully configuring the parallel settings , there is parallel info at the bottom of home page

Pnum： Pnum stands for “parallel number” ,

Role： M stands for Master and S stands for Slave ;

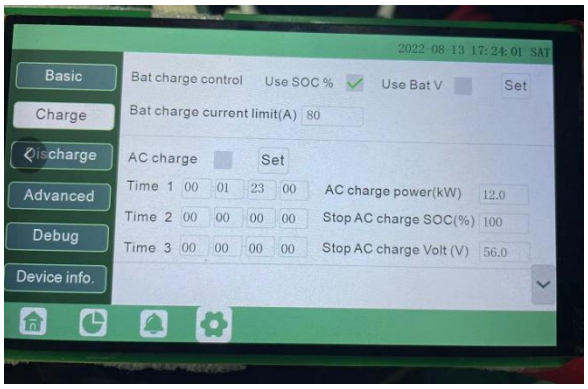
Phase： 3 means Composed Phase of each unit ， if there are 3 units ,they will be 1，2，3 respectively



5. Battery configuration

The battery comms cable must be connected to the master unit

The charge and discharge limitations are based on the master unit, so you can just do discharge and charge limitation to master unit.



6. Commissioning the parallel system

Before turning on the inverters , please make sure Single-phase paralleling wiring has been done correctly.

Step1. Turn on the battery and make sure the battery communication works on all inverters

Step2. Check the parallel info via Home page (Pnum, Role, and composed phase)

Step3. Turn on “Off-grid output “ function via Advanced page

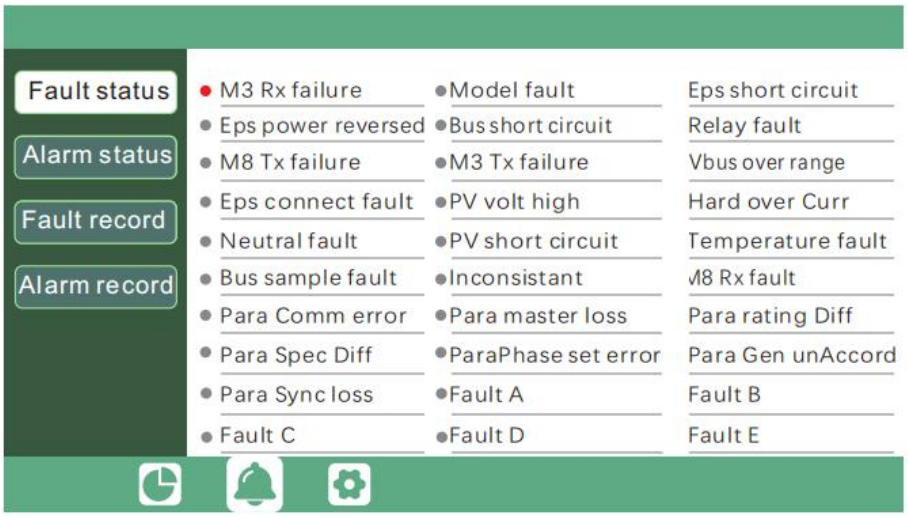
Step4. Before connecting loads to EPS output ,please check the EPS output of both L1 and L2, L1 and N.

Step5. Add some small loads to EPS output and check .

Step6. Finish the commissioning .

If all steps above work normally ,please power off the inverters and then turn on the grid power to self-adjust the composed phases properly. Else if there is any fault or alarm code , please refer to the “Troubleshooting” list below.

7. Troubleshooting

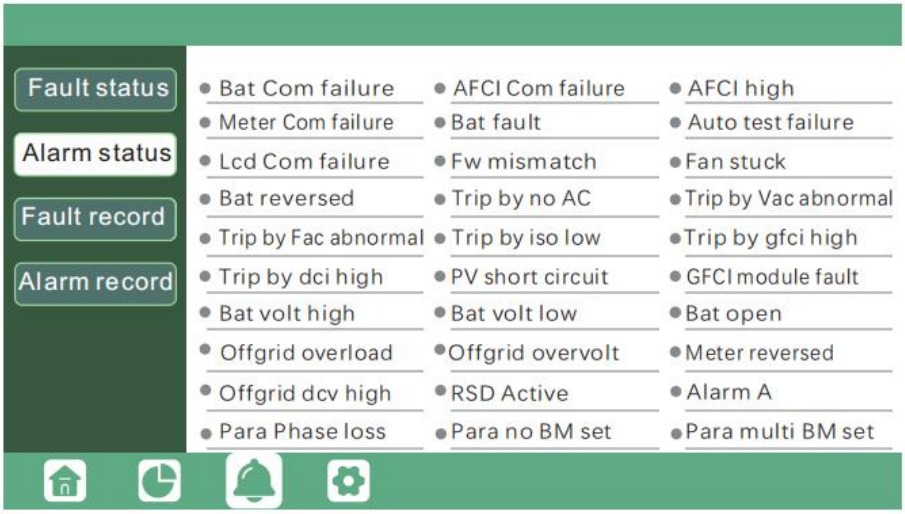


Fault	Meaning	Troubleshooting
M3 Rx failure	M3 microprocessor fails to receive data from DSP	Restart inverter, if the error still exists, contact Luxpower service or your inverter supplier.
Model fault	Incorrect model value	
Eps short circuit	Inverter detected short-circuit on EPS output terminals	1. Check if the L1, L2 and N wires are connected correctly at inverter EPS output port; 2. Disconnect the EPS breaker to see if fault remains. If fault persists, contact Luxpower service or your inverter supplier.

Eps power reversed	Inverter detected power flowing into EPS port	Restart inverter, if the error still exists, contact Luxpower service or your inverter supplier.
Bus short circuit	DC Bus is short circuited	
Relay fault	Relay abnormal	
M8 Tx failure	DSP fails to receive data from M8 microprocessor	
M3 Tx failure	DSP fails to receive data from M3 microprocessor	
Vbus over range	DC Bus voltage too high	Please check if the PV string voltage is within the inverter specification. If string voltage is within range, and this fault still appears, contact Luxpower service or your inverter supplier.
Eps connect fault	EPS port and grid port are connected mixed up	Check if the wires on EPS port and grid port are connected correctly. If the error exists, contact Luxpower service or your inverter supplier.
PV volt high	PV voltage is too high	Please check if the PV string voltage is within the inverter specification. If string voltage is within range, and this fault still appears, contact Luxpower service o your inverter supplier.
Hard over curr	Hardware level over current protection triggered	Restart inverter, if the error still exists, contact Luxpower service or your inverter supplier.
Neutral fault	Voltage between N and PE is greater than 30V	Check if the neutral wire is connected correctly.

PV short circuit	Short circuit detected on PV input	Disconnect all PV strings from the inverter. If the error persists, contact Luxpower service or your inverter supplier.
Temperature fault	Heat sink temperature too high	Install the inverter in a place with good ventilation and having no direct sunlight. If the installation site is okay, please check if the NTC connector inside the inverter is loose.
Bus sample fault	Inverter detected DC bus voltage lower than PV input voltage	Restart inverter, if the error still exists, contact Luxpower service or your inverter supplier.
Inconsistant	Sampled grid voltage values of DSP and M8 microprocessor are inconsistent	
M8 Rx fault	M8 microprocessor fails to receive data from DSP	
Para Comm error	Parallel communication abnormal	1.Please check whether the connection of the parallel cable is loose, please connect the parallel cable correctly 2.Please check and make sure the PIN status of CAN communication cable from the first to the end inverter rightly.
Para master loss	No master in the Parallel system	1.If a master has been configured in the system, the fault will be automatically removed after the master works. If so, you can ignore it. 2.If a master has not been configured in the system, and there are only slaves in the system, please set the master first. Note: For single unit running system, the role of the inverter should be set as "1 phase master"

Para rating Diff	Rated power of parallel inverters are inconsistent	Please confirm that the rated power of all inverters are the same, or you can contact Luxpower service to confirm
Para Phase set error	Incorrcet setting of phase in parallel	Please confirm that the wiring of the parallel system is correct first. In this case, then connect each inverter to the grid, the system will automatically detect the phase sequence, and the fault will be automatically resolved after the phase sequence is detected.
Para Gen unAccord	Inconsistent generator connect in parallel	Some inverters are connected to generators, some are not. please confirm that all inverters in parallel are connected to generators together or none of them are connected to generators
Para sync loss	Parallel internal fault	Restart inverter, if the error still exists, contact Luxpower service or your inverter supplier



Alarm	Meaning	Troubleshooting
Bat com failure	Inverter fails to communicate with battery	Check if communication cable is correct, and if you have chosen the correct battery brand on inverter LCD. If all is correct but this error persists, please contact Luxpower service or your inverter supplier.
AFCI com failure	Inverter fails to communicate with AFCI module	Restart inverter, if the error persists, contact Luxpower service or your inverter supplier.
AFCI high	PV arc fault is detected	Check each PV string for correct open circuit voltage and short circuit current. If the PV strings are in good condition, please clear the fault on inverter LCD.
Meter com failure	Inverter fails to communicate with the meter	1. Check if the communication cable is connected correctly and in good condition. 2. Restart inverter. If the fault persists, contact Luxpower service or your inverter supplier.
Bat Fault	Battery cannot charge or discharge	1.Check the battery communication cable for correct pinout on both inverter and battery end; 2. Check if you have chosen an incorrect battery brand; 3. Check if there is fault on battery's indicator. If there is fault, please contact your battery supplier.

Auto test failure	Auto test failed	Only applied to Italy model
Lcd com failure	LCD fails to communicate with M3 microprocessor	Restart inverter. If fault still exists, contact Luxpower service or your inverter supplier.
Fwm mismatch	Firmware version mismatch between the microprocessors	
Fan stuck	Cooling fan(s) are stuck	
Trip by gfci high	Inverter detected leakage current on AC side	1.Check if there is ground fault on grid and load side; 2.Restart inverter. If the fault remains, contact Luxpower service or your inverter supplier.
Trip by dci high	Inverter detected high DC injection current on grid port	Restart inverter. If the fault remains, contact Luxpower service or your inverter supplier.
PV short circuit	Inverter detected short circuited PV input	1.Check if each PV string is connected correctly; 2.Restart inverter. If the fault remains, contact Luxpower service or your inverter supplier.
GFCI module fault	GFCI module is abnormal	Restart inverter. If fault still exists, contact Luxpower service or your inverter supplier.
Bat volt high	Battery voltage too high	Check if battery voltage exceeds 59.9V, battery voltage should be within inverter specification.
Bat volt low	Battery voltage too low	Check if battery voltage is under 40V, battery voltage should be within inverter specification.
Bat open	Battery is disconnected from inverter	Check battery breaker or battery fuse.
Offgrid overload	Overload on EPS port	Check if load power on inverter EPS port is within inverter specification.
Offgrid overvolt	EPS voltage is too high	Restart inverter. If fault still exists, contact Luxpower service or your inverter supplier.
Meter reversed	Meter is connected reversely	Check if meter communication cable is connected correctly on inverter and meter side.
Offgrid dcv high	High DC voltage component on EPS output when running off-grid	Restart inverter. If fault still exists, contact Luxpower service or your inverter supplier.
RSD Active	Rapid shutdown activated	Check if the RSD switch is pressed.
Para phase loss	Phase losing in parallel system	Please confirm that the wiring of the inverter is correct. If the master is set to 3 Phase master, the number of parallel inverters needs to be ≥3.(And the grid input of each inverter should be connected with Grid L1, L2, L3 rightly) If the master is set to 2x208 master, the number of parallel inverters needs to be ≥2. (And the grid input of each inverter should be connected with Grid L1, L2, L3 rightly)
Para no BM set	Master isn't set in the parallel system	Please set one of the inverters in the parallel system as the master
Para multi BM set	Multiple Masters have been set in the parallel system	There are at least two inverters set as Master in the parallel system, please keep one Master and the other set as Slave

Notice:

1) **Make sure the the power rate of the inverters are the same**
2) **Make sure the LCD ,COM and DSP support parallel connection function**
3) **Make sure the grid power of 3 phase on or off at the same time**
4) **Make sure the control board support parallel connection function (Contact Luxpower and track the inverter batch)**