QUICK INSTALLATION GUIDE

412-10017-01

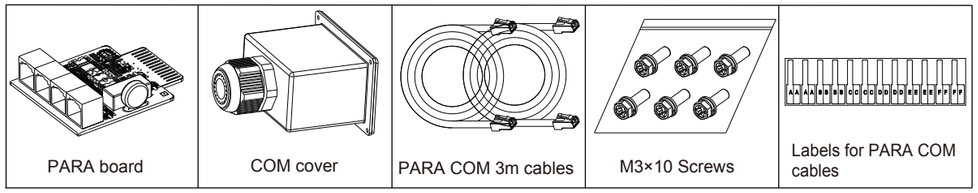
System Wiring and Commissioning for SMILE-G3 Single Phase Inverters Operation in Parallel

⚠ WARNING: Inverters that do not follow the same SN encoding rules have hardware differences. For example, inverters of SN **ALD00**XXXXXXXX and **ALD08**XXXXXXXX cannot operate in parallel. Please check the 4th and 5th digits of the inverters' SN.

⚠ NOTICE: Measurement unit at the feed-in point when inverters operate in parallel should use the meter type DTSU666-3*230V 250A/50mA (with CT). The CT solution for measurement unit at the feed-in point is only suitable for single inverter operating.

Note:
- Cann't connect all batteries together. The battery cluster connecting the each inverter must connect together.
- The number of batteries connected to each inverter should be same.
- The backup connection ports of SMILE-G3 single phase inverter must be connected parallel.
- The grid connection ports (symbolled with "AC") of SMILE-G3 single phase inverter must be connected parallel.
- All batteries must be of the same type.
- The number of parallel battery (for example, SMILE-G3-BAT-10.1P, SMILE-G3-BAT-8.2P) connected to each inverter is max. 6.
- The number of series battery (for example, SMILE-G3-BAT-3.8S, SMILE-G3-BAT-4.0S) connected to each inverter is max. 4.
- The number of inverters operation in parallel is max. 3.
- Each inverter operation in parallel must connected with PV modules.
- Each inverter operation in parallel must connected with battery.
- Each inverter should have the same PV installed capacity. Otherwise it will cause the battery SOC difference between the battery clusters.

01 SCOPE OF DELIVERY



PARA board | COM cover | PARA COM 3m cables | M3×10 Screws | Labels for PARA COM cables

02 AC WIRING TO GRID AND BACKUP COMBINER CABINET

Wiring sequence	From	Recommended Cable type*	To
1	Mains grid	Three-core (L, N and PE) outdoor copper cable, 25~35 mm²	Grid combiner cabinet
2	Grid combiner cabinet	Three-core (L, N and PE) outdoor copper cable, 6~10 mm²	Grid connection port of the host inverter
3	Grid combiner cabinet	Three-core (L, N and PE) outdoor copper cable, 6~10 mm²	Grid connection port of the follow inverter
4	Loads of backup side	Three-core (L, N and PE) outdoor copper cable, 16~35 mm²	Backup combiner cabinet
5	Backup combiner cabinet	Three-core (L, N and PE) outdoor copper cable, 6~10 mm²	Backup connection port of the host inverter
6	Backup combiner cabinet	Three-core (L, N and PE) outdoor copper cable, 6~10 mm²	Backup connection port of the follow inverter

*Depending on the inverter type and quantity and whether enabling the function "Charge Batteries from Grid".

03 UPGRADE FIRMWARE OF THE INVERTERS

Please comfirm the following connection

3.1. BAT power connection and grounding connection between the batteries connected to each inverter have finished.

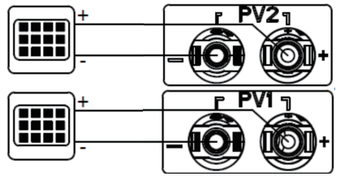
3.2. BMS communication connection between the batteries connected to each inverter have finished.

3.3. BAT power connection and grounding connection between the inverter and the first battery (directly below the inverter) have finished.

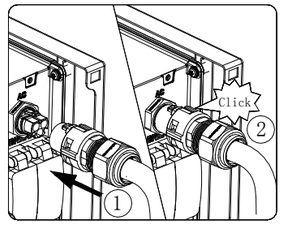
3.4. BMS communication connection between the inverter and the first battery (directly below the inverter) have finished.

3.5. Select one inverter which you want to set as host inverter later, finish meter communication connection between this inverter and meter, finish meter power supply connection between the meter and mains grid.

3.6. Please finish PV arrays connection to the inverters, refer to inverter quick installation guide chapter 4.4.



3.7. Wiring grid connector plugs, then insert the grid connector plugs into the sockets for the grid connection. When doing so, make sure to align the key on the grid socket with the keyway on the grid connector plug.

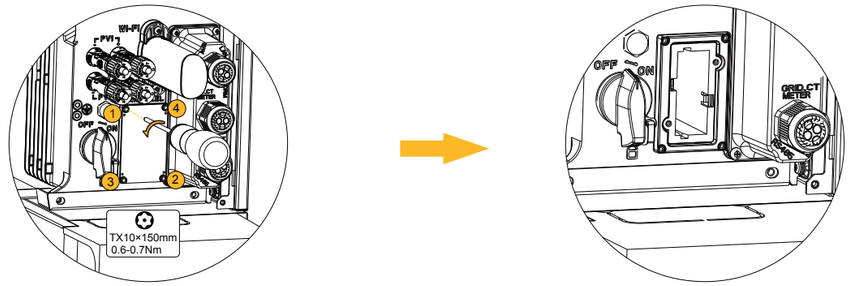


Electrical connection between grid connectors of the inverters and grid combiner cabinet have finished.

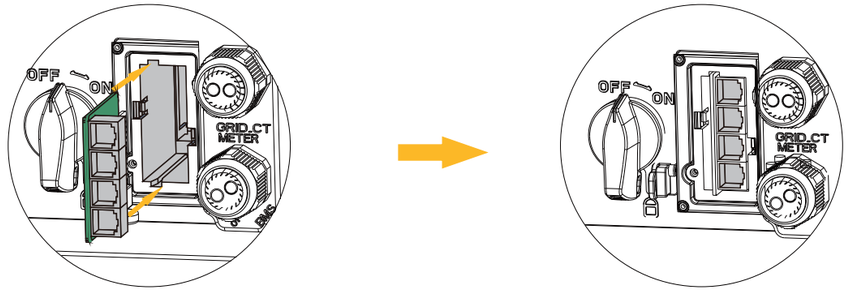
3.8. Wiring backup connector plugs, electrical connection between backup connector plugs of the inverters and backup combiner cabinet have finished.
Backup **disconnection** between each inverter and backup combiner cabinet, at this moment only switching off the backup circuit breakers are not enough yet, please must unplug the backup connector plug from the backup connector socket of each inverter.

3.9. Mount the PARA boards to the inverters operation in parallel, then do communication connections between these inverters, refer to the relative system wiring diagram of parallel installation.

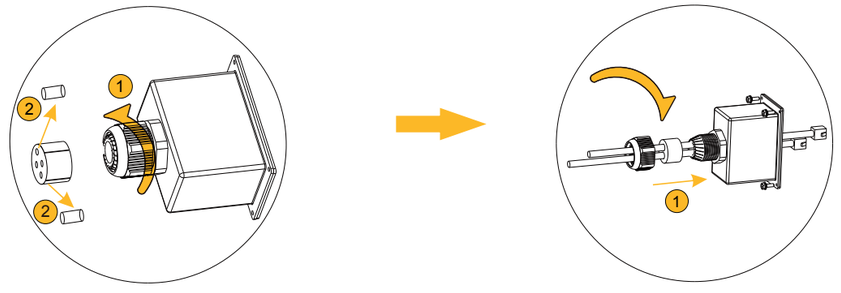
a. Disassemble the communication cover



b. Plug in the PARA board



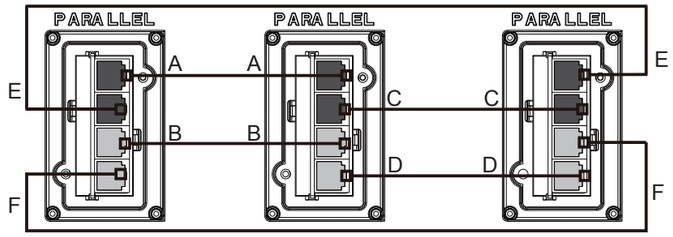
c. Take out the communication cables. Unscrew the swivel nut, remove the sealing ring and the sealing plugs. Pass the PARA COM cables through the swivel nut, cable gland body and the COM cover.



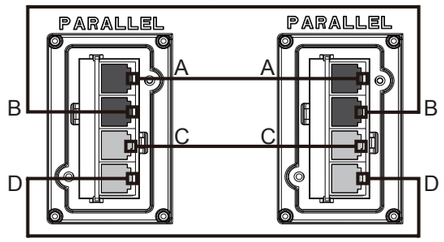
d. Wire the communication connection of inverters operation in parallel

⚠ NOTE: Attach two identical labels to both ends of one communication cable, to distinguish between different PARA COM cables.

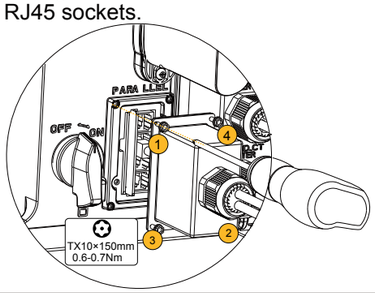
Parallel connection diagram for three inverters



Parallel connection diagram for two inverters



e. When securing the COM cover over the communication ports, tighten the cover in place and then lightly push the PARA COM cables into the cover as you tighten the strain relief nut onto PARA COM cables. This will ensure PARA COM cables are well-seated in the RJ45 sockets.



3.10. Install the WiFi modules or LAN cables connection to the inverters.
Configure the network and put the inverters online.

3.11. If the mains grid or PV power supply is stable, please perform the following actions:

1) Switch on the AC circuit breaker between grid connection ports of the inverters and the grid combiner cabinet.
2) Switch on the PV switches at the lower left of the inverters,
3) Switch on the battery circuit breakers of the inverters,
4) Switch on the battery circuit breakers of all batteries and then shortly press the battery power buttons of all batteries within 30 seconds (For series batteries, please skip this step.).

If only battery power is available, please switch on the battery circuit breakers of all inverters, then switch on the battery circuit breakers of all batteries and shortly press the battery power buttons of all parallel batteries within 30 seconds (For series batteries, please skip this step.).

Remarks:

Make sure that one of the stable power supply from Grid and PV is available, then inverter firmware (include EMS and DSP) and battery firmware can be upgraded at this time.

Only inverters firmware (include EMS and DSP) upgrading can be performed when only battery power supply is available.

3.12. Contact AlphaESS service to upgrade the firmware of the inverters and batteries supporting parallel operation. Check the LCD of all inverters to see whether the firmware version of the inverters and batteries is consistent with the reminders from AlphaESS service.

04 SET HOST MODE OF THE INVERTERS

4.1. Installer should execute parallel setting on the LCD of the inverter. Click menu “Setting”, “Function”, “Parallel”, “AC Parallel”, and set the “Host” for host inverter, set the “Follow” for other inverters. Click menu “Setting”, “Function”, “Parallel”, “DC Parallel”, and set the “single” for all inverters.

	AC Parallel	DC Parallel
Only one inverter	Host	Single
Other inverters	Follow	Single

4.2. Only set the local safety standard on the LCD of the host inverter.

4.3. Switch off all battery circuit breakers of the inverters.

4.4. Power off all batteries by pressing and holding the power button of the battery for 6 seconds, which is near the battery circuit breaker. (For series batteries, please skip this step.)

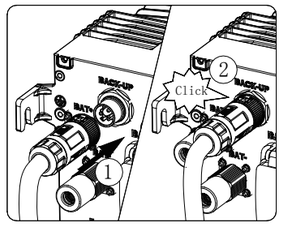
4.5. Switch off all battery circuit breakers of the batteries.

4.6. Switch off the PV switches of all inverters.

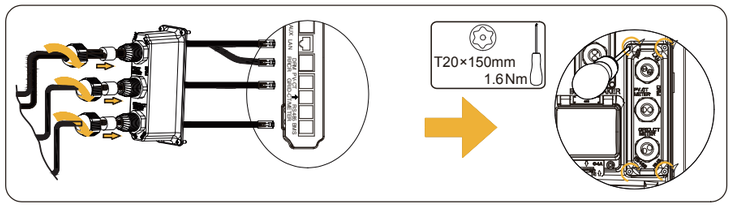
4.7. Switch off the AC circuit breakers between grid connection ports of the inverters and the grid combiner cabinet.

4.8. Make sure that the AC circuit breakers between backup connection ports of the inverters and the backup combiner cabinet are off state.

4.9. Insert the backup connector plugs into the sockets for the backup connection. When doing so, make sure to align the key on the backup socket with the keyway on the backup connector plug.



4.10. Place the COM connection cover against the inverter enclosure and tighten the 4 screws. When securing the cover over the communication ports, tighten the cover in place and then lightly push the communication cables into the cover as you tighten the strain relief gland onto the cables. This will ensure the communication cables are well-seated in the RJ45 ports.



4.11. Refer to the battery quick installation guide to mount the cable covers.
Refer to the inverter quick installation guide of chapter 8 to mount all covers.

05 POWER ON AND OFF THE SINGLE PHASE PARALLEL SYSTEM

5.1. Detailed steps for power on the single phase parallel system
Make sure the correct installation and electrical connection have been finished before power on.

a. Switch on the AC circuit breakers between backup connection ports of the inverters and the backup combiner cabinet.
b. Switch on the battery circuit breakers of all inverters.
c. Switch on the battery circuit breakers of all batteries.
d. Short press the battery power buttons. All power buttons should be shortly pressed within 30 seconds. (For series batteries, please skip this step.)
e. Switch on the AC circuit breakers between grid connection ports of the inverters and the grid combiner cabinet.
f. Switch on the PV switches of all inverters.

5.2. Detailed steps for power off the single phase parallel system

a. Switch off the AC circuit breakers between backup connection ports of the inverters and the backup combiner cabinet.
b. Switch off the PV switches of all inverters.
c. Switch off the AC circuit breakers between grid connection ports of the inverters and the grid combiner cabinet.
d. Power off all batteries by pressing and holding the power button of the battery for 6 seconds, which is near the battery circuit breaker. (For series batteries, please skip this step.)
e. Switch off the battery circuit breakers of all batteries.
f. Switch off the battery circuit breakers of all inverters.