



BlueArk X5

C & I PV+ESS All-in-One System

Quick Installation Manual



TCL Digital Power Co.,Ltd

 <https://tcldigitalpower.com>

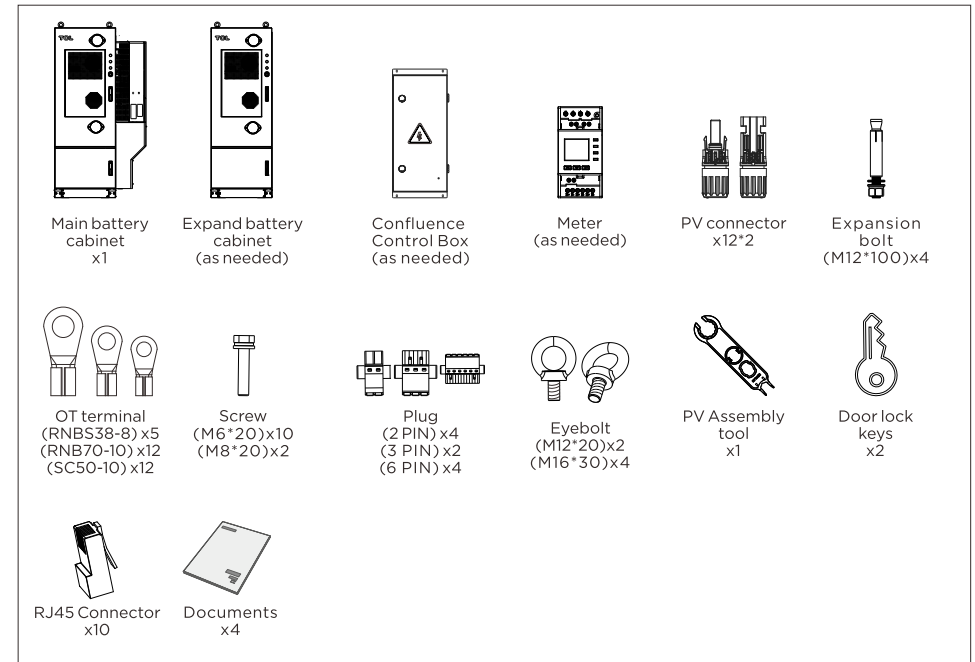
 F5 Building, TCL International E-City, Xili , Nanshan District,
Shenzhen, Guangdong Province,China

Safety Declaration

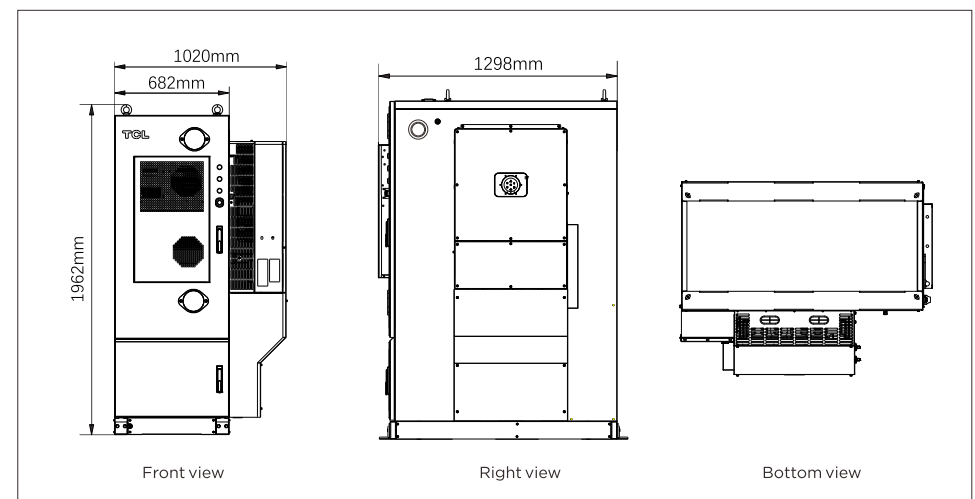
- All operations of the equipment must be carried out by professional technicians. Professional technicians must undergo specialized training, thoroughly read the manual and master the relevant safety matters of the operation, be familiar with local standards and the relevant safety regulations of the electrical system.
- If you fail to follow the requirements of this document and the user manual when operating the equipment, resulting in casualties or equipment damage, the equipment manufacturer shall not bear any responsibility.

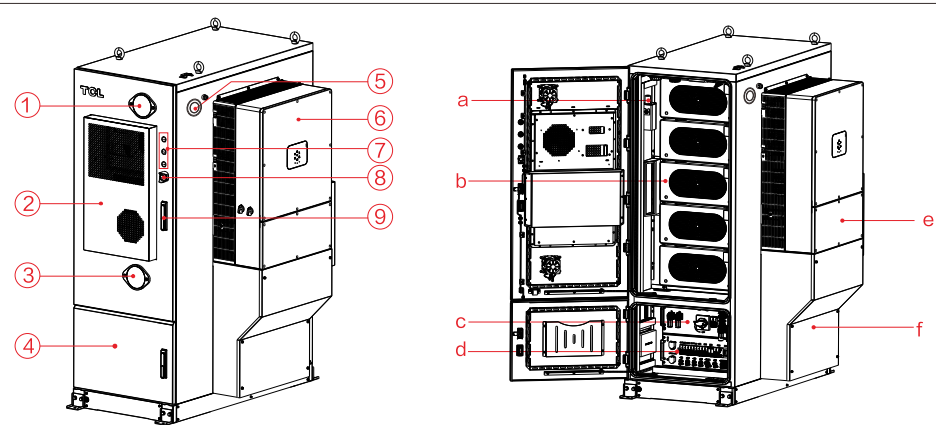
1. Product Description

1.1 List of Deliverables



1.2 Product Component Description

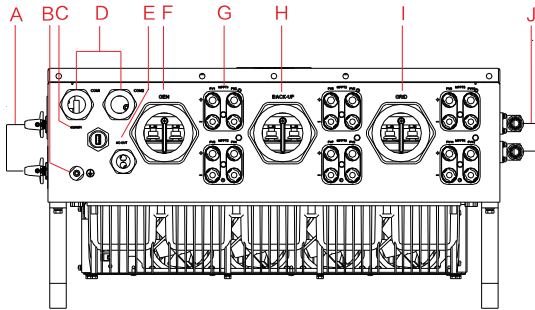




No.	Module name	No.	Module name
1	Exhaust air outlet	6	Hybrid inverter
2	Conditioner	7	Status indicator light
3	Exhaust air inlet	8	Emergency stop button
4	Distribution room	9	Door lock
5	Sound and light alarm		

No.	Module name	No.	Module name
a	Aerosol fire extinguisher	d	Distribution box
b	Battery pack	e	Inverter wiring area
c	High-voltage box	f	Access hatch room

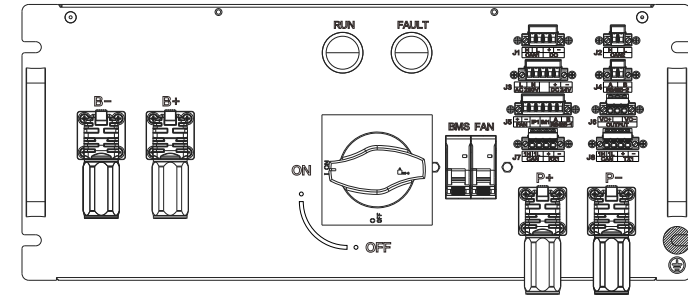
1.3 Hybrid Inverter Port Description



No.	Name	Explain	No.	Name	Explain
A	DC SWITCH	DC switch	F*	GEN	Generator connection
B	Grounding port	Ground connection	G	MPPT1-6	PV input connection
C	4G/WIFI	The USB interface is used for 4G/WiFi communication.	H	BACK-UP	Backup load port
D	COM1,COM2	Communication port	I	GRID	Power grid port
E	AC-OUT	220V AC power supply output connection	J	BAT+,BAT-	Battery port

*Notes: Do not use RCD for diesel generator circuit breaker connection.

1.4 High-Voltage Box Port Description



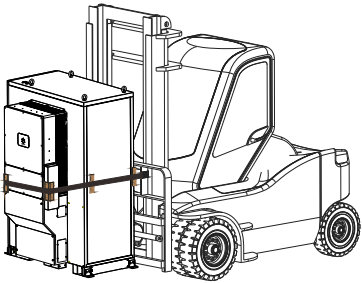
Name	Description	Function
B+/B-	Battery Terminal Connector	Connects to the overall positive and negative terminals of the entire battery cluster.
P+/P-	Hybrid inverter terminal connector	Connects to the positive and negative terminals of the hybrid inverter.
RUN	RUN Indicator	Green light illuminates when main contactor is closed
FAULT	Fault Indicator	Three-level alarm and contactor disengagement illuminate red light
J1	PCS Communication and Emergency Stop Interface	CAN1H/L: CAN communication with PCS; DO+/-: Emergency stop signal for PCS
J2	Debug Port	CAN2H/L: Debug port
J3	Power Input	AC230V L/N: Switching power supply AC input; DC24V 3: Main Control Unit (BCU) power supply input.
J4	RS485 Communication	RS485-2A/B: RS485 communication with EMS
J5	BMU Power Supply and Communication	Power supply and communication between the master controller and the next-level BMU
J6	DC24V Output	DC 24V power output from high-voltage box: 300W
J7	CAN1H/1L, RX1+/1-	CAN communication and addressing input with master controller BAU
J8	CAN1H/1L, TX1+/1-	CAN communication and addressing output with the next-level master control unit (BCU)

2. Transportation and Installation Requirements

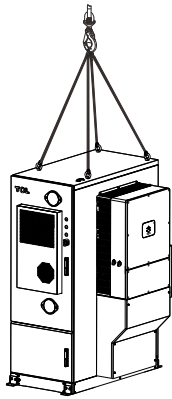
2.1 Portage

When moving by forklift, the following requirements must be met:

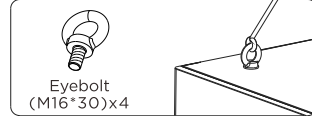
1. Forklift carrying capacity ≥ 5 tons;
2. Fork length ≥ 1200 mm.



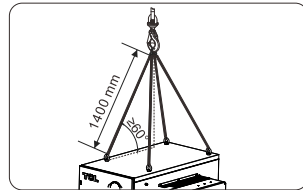
If the transportation route is not accessible to forklifts, please use a crane to move the equipment.



1. Fix the lifting rope at the lifting ring.

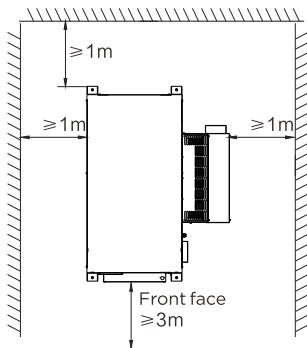


2. Fix the other end of the lifting rope onto the crane hook. When the lifting rope is straightened, the angle between it and the top of the cabinet should be greater than 60° .

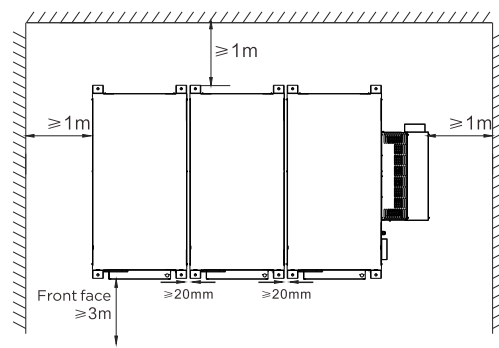


2.2 Safety Distance Requirements

Recommended installation space for a single device:

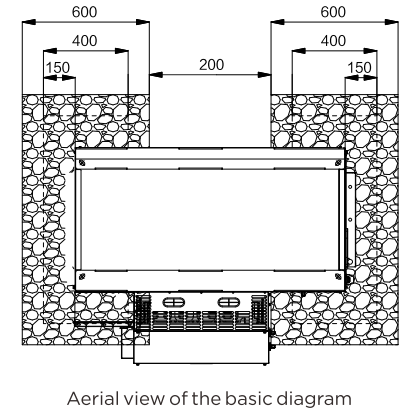
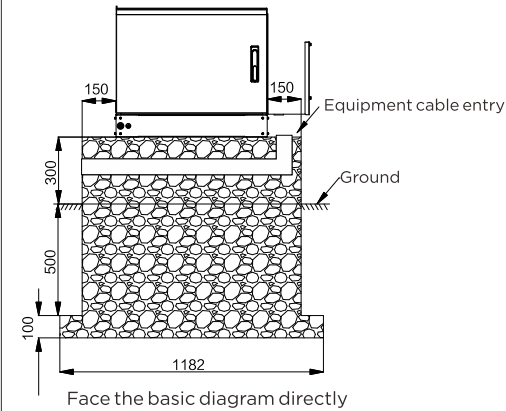


Battery capacity expansion recommended installation space:



2.3 Foundation Recommendation

Basic Installation Diagram:

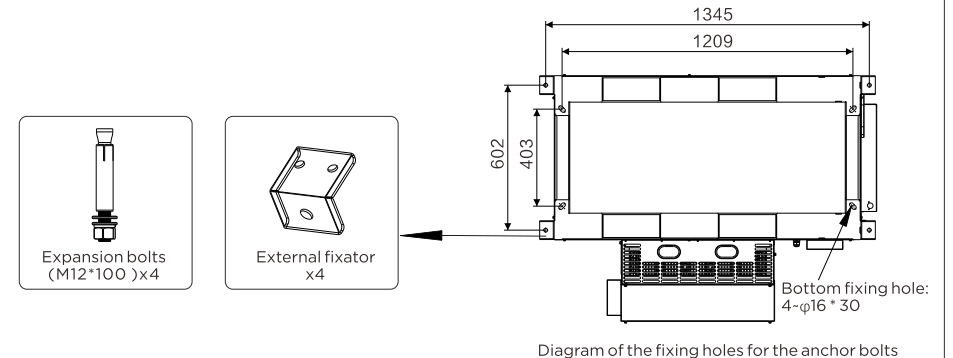


Recommendations for Equipment Base Construction:

1. The foundation shall be constructed with C25 cast-in-place concrete and brick masonry. The surface protective layer shall be no less than 20 mm thick, and the levelness tolerance shall be ≤ 3 mm.
2. Equipment may be formally installed only after the concrete has reached at least 75% of its design strength (curing time: 10-14 days).
3. Equipment trench drainage shall be connected to the nearest stormwater well via a 100 mm (DN100) PE pipe.

2.4 Fixed Installation

After confirming that the foundation construction meets the requirements and is sufficiently dry, solid, and flat, the outdoor cabinet of the system is lifted to the designated position. Use the fastening bolts provided in the shipping accessories to fix the outdoor cabinet of the system to the foundation.

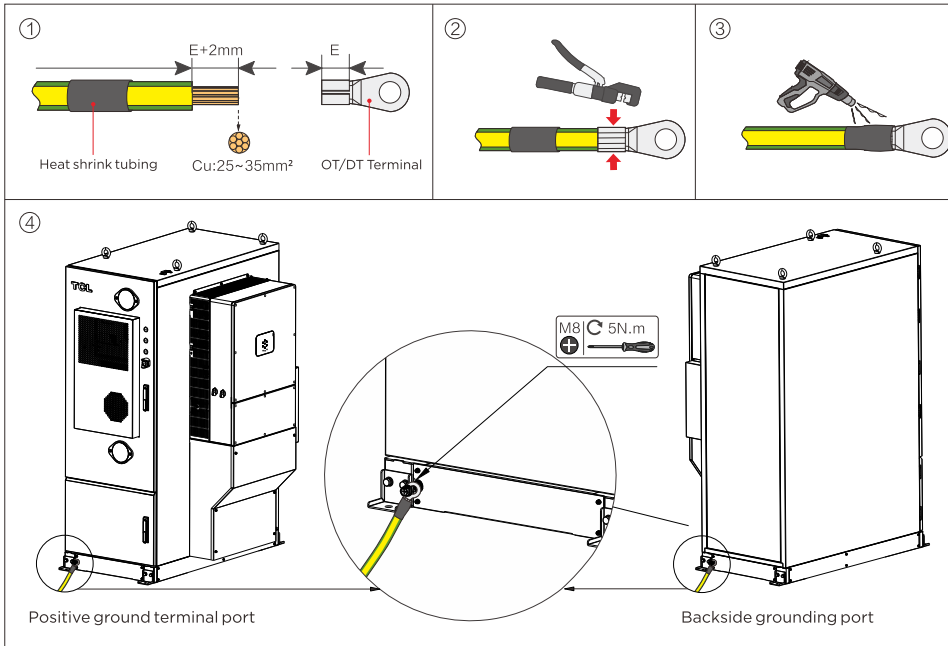


3. Cable connection

3.1 Cable Preparation

Name	Recommended specifications for copper wire conductors		Recommended terminal connector	Recommended circuit breaker specifications (provided by the user)
	Single-player mode	Parallel operation		
City wire cable	50mm ² /400V	70mm ² /400V	RNB70-10/SC50-10 OT/DT	200A
Load cable	25mm ² /400V	50mm ² /400V	RNB70-10/SC50-10 OT/DT	100A
Generator cable	50mm ² /400V	70mm ² /400V	RNB70-10/SC50-10 OT/DT	200A
Communication side grounding cable	25mm ²	35mm ²	RNBS38-8 OT/DT	/
Grounding of the cabinet	25-35mm ²	25-35mm ²	RNBS38-8 OT/DT	/
Photovoltaic cable	4-6mm ² /1000V	4-6mm ² /1000V	MC4	/
Electricity supply control signal cable	0.5mm ²	0.5mm ²	(Self-provided)	/
Communication shielding twisted pair wire	0.5mm ²	0.5mm ²	(Self-provided)	/
Network cable	CAT 5E outdoor shielded network cable	/	Shield the RJ45 connector	/

3.2 Ground Wire Connection



3.3 AC Cable Connection

The wiring steps are as follows:

Step 1: Disconnect the upstream AC circuit breaker and use a multimeter to verify the terminals are de-energized.

Step 2: Insert the cable through the cable entry hole into the AC wiring area of the cabinet.

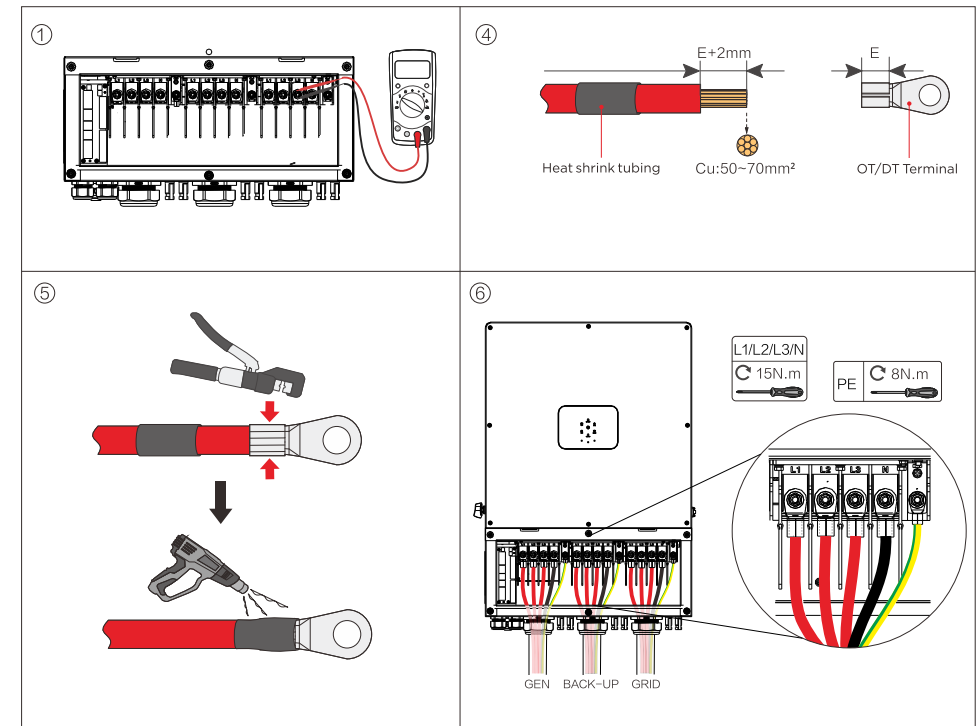
Step 3: Ensure the AC cable connection sequence is correct.

Step 4: Use wire strippers to remove the cable insulation, exposing the copper conductors.

Step 5: Crimp using OT terminals.

Step 6: Secure the grid, generator, and backup cables to the machine's terminals marked L1, L2, L3, and N using RNB70-10/SC50-10 OT/DT connectors. Connect the PE terminal using RNBS38-8 OT/DT connectors. Tightening torque: L1/L2/L3/N : 15 N·m and PE: 8 N·m.

Step 7: After completing the wiring, gently pull the cables to ensure sufficient slack.



3.4 Photovoltaic Input Connection

PV cable connection guideline:

Evenly distribute the PV input cables across the PV input terminals.

Maximize the number of MPPT inputs.

PV strings connected to the same MPPT circuit must use solar panels of the same model and the same quantity.

Number of PV array	Inverter PV terminal	Number of PV array	Inverter PV terminal
1	PV1	7	PV1,2,3,5,7,9,11
2	PV1,3	8	PV1,2,3,4,5,7,9,11
3	PV1,3,5	9	PV1,2,3,4,5,6,7,9,11
4	PV1,3,5,7	10	PV1,2,3,4,5,6,7,8,9,11
5	PV1,3,5,7,9	11	PV1,2,3,4,5,6,7,8,9,10,11
6	PV1,3,5,7,9,11	12	PV1,2,3,4,5,6,7,8,9,10,11,12

The wiring procedure is as follows:

Step 1: Loosen the locking screws on the positive and negative terminals.

Step 2: Use wire strippers to strip the insulation at the cable end, exposing 8-10 mm of the wire core.

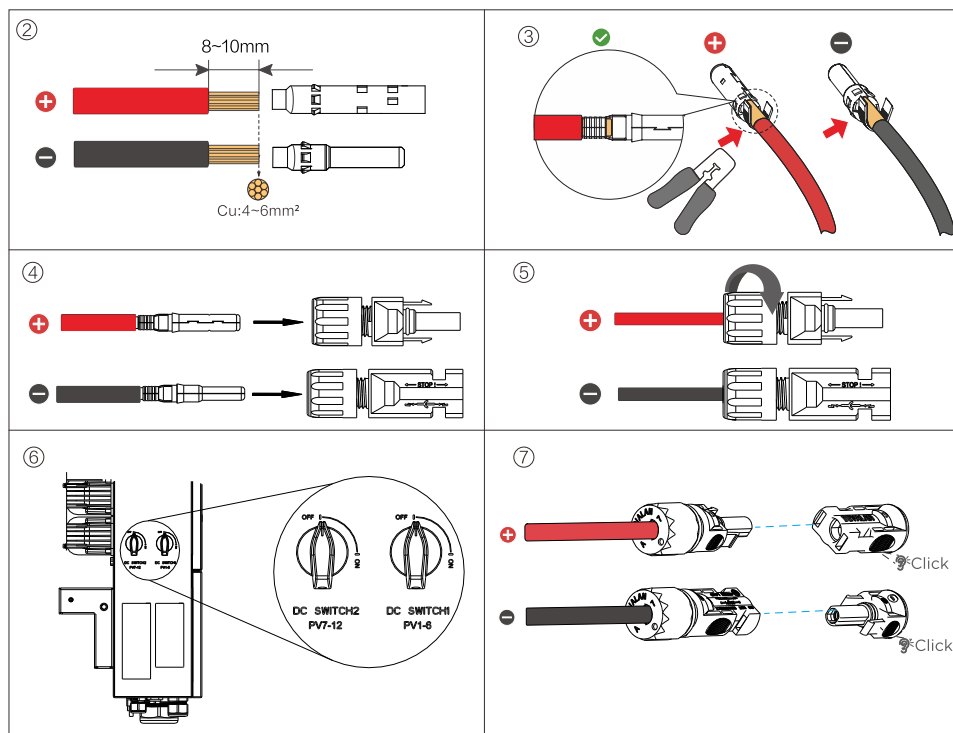
Step 3: Insert the cable end into the sleeve and assemble the cable end using crimping pliers.

Step 4: Insert the assembled cable end into the positive and negative connectors. Gently pull back the latches to ensure a secure connection.

Step 5: Tighten the locking screws on the positive and negative cable connectors.

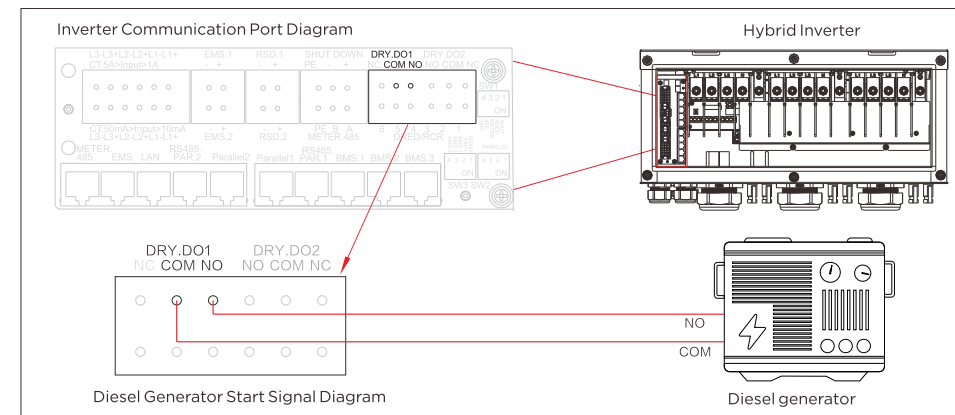
Step 6: Ensure the DC switch on the hybrid inverter is in the OFF position.

Step 7: Insert the positive and negative cable connectors into the corresponding positive and negative PV ports on the inverter until you hear a "click" to ensure a secure connection.

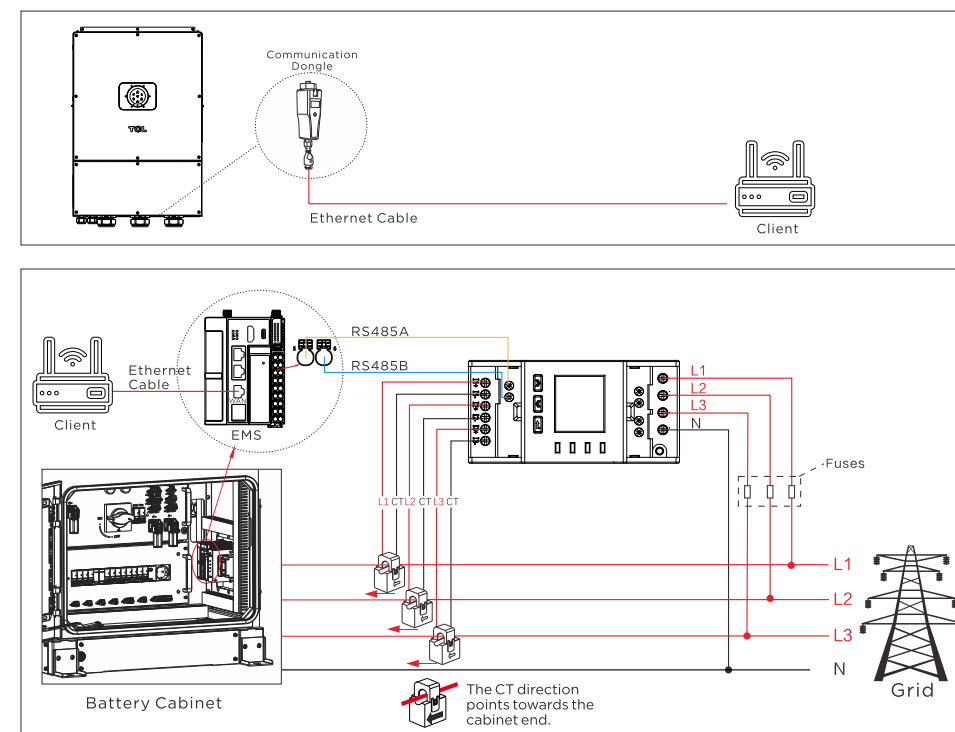


3.5 Connection of Diesel Generator

When running independently, the dry contact port DO1 of the hybrid inverter can be used to start and stop the diesel generator.

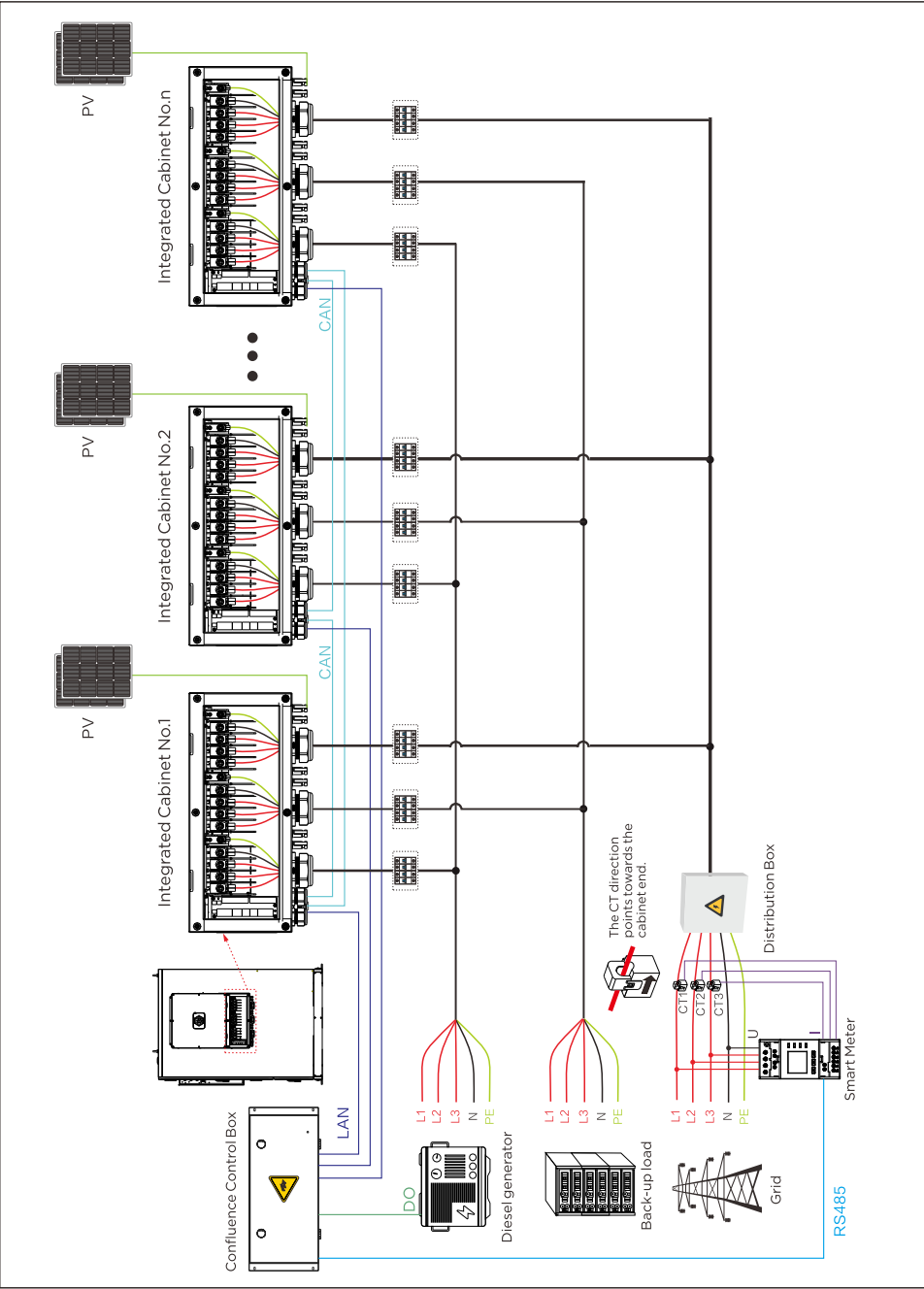


3.6 Communication Cable Connection

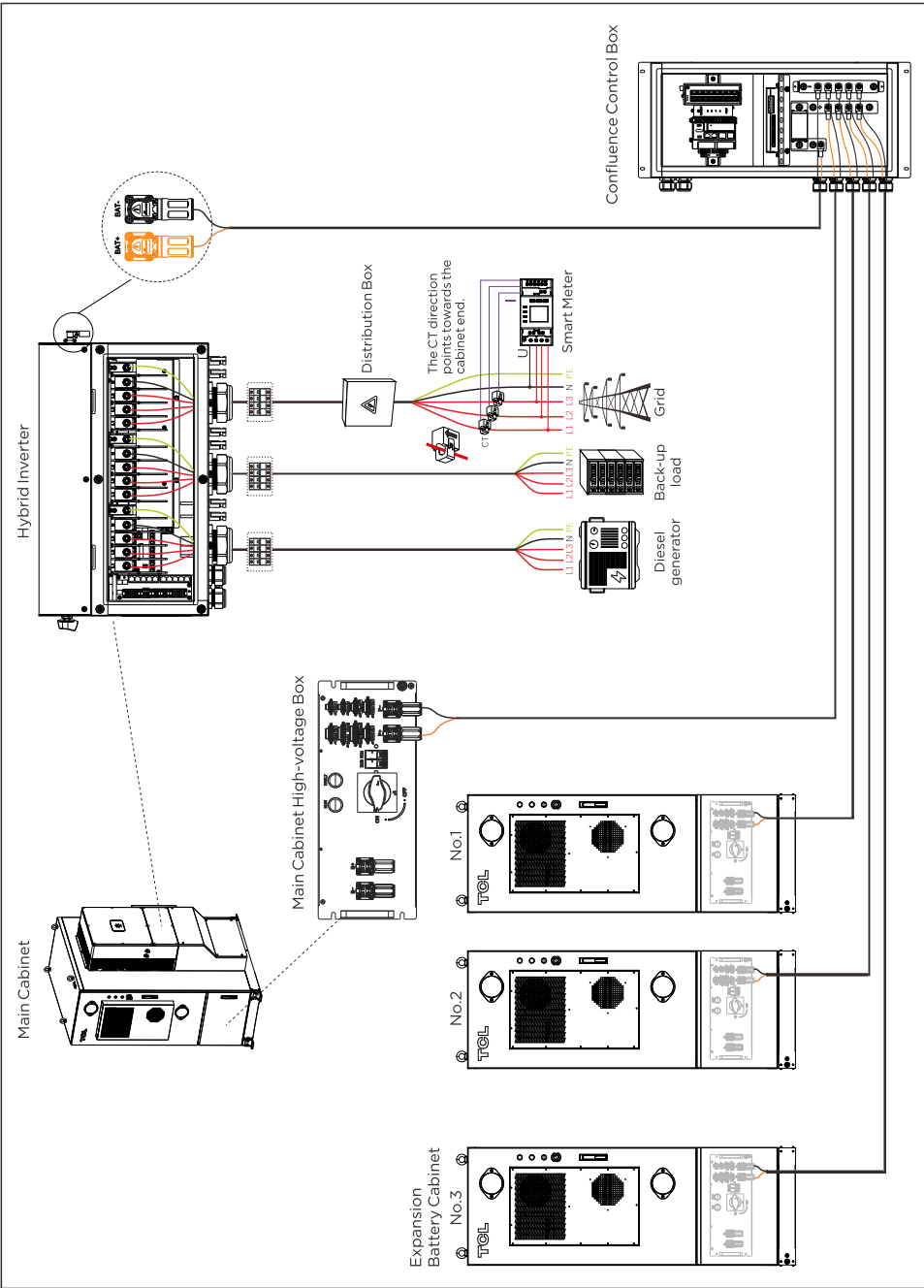


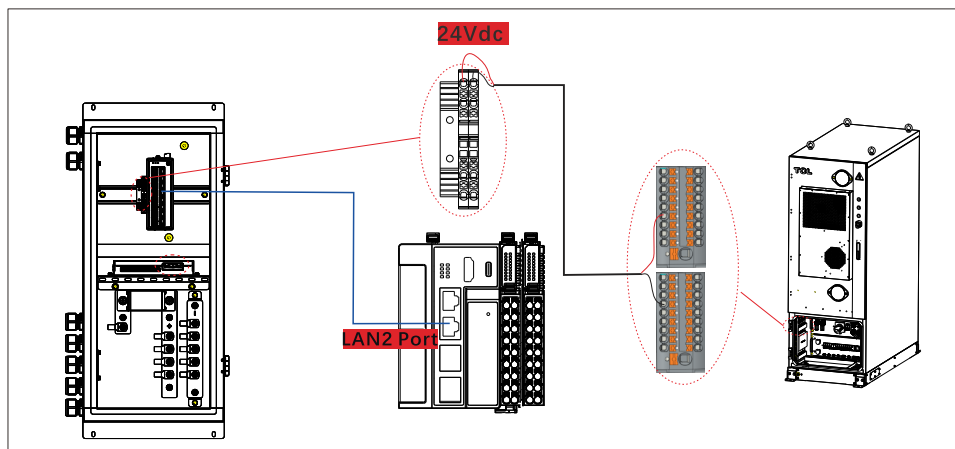
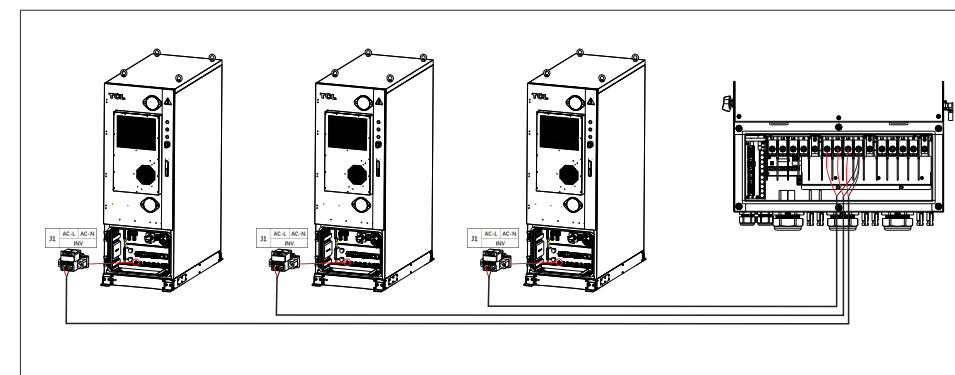
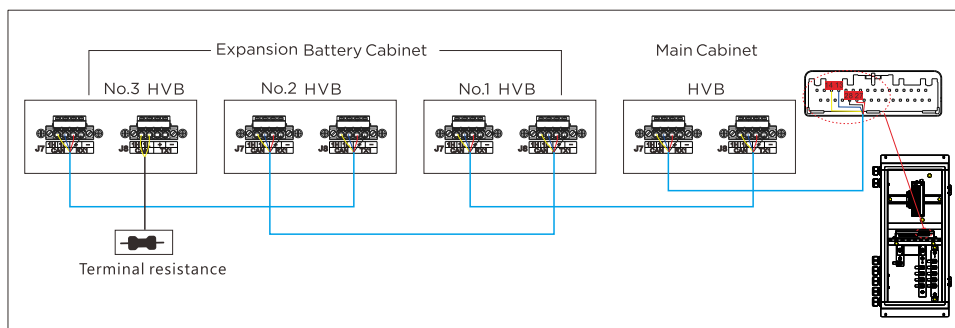
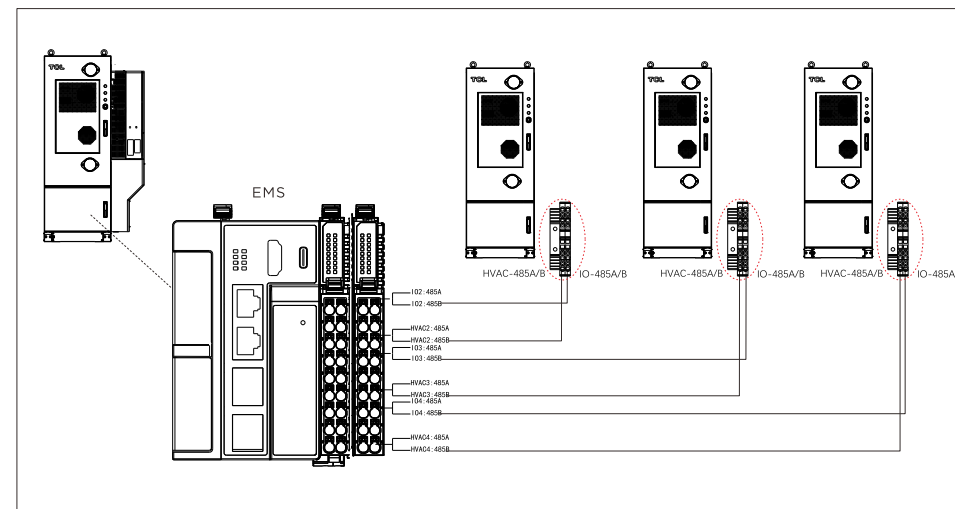
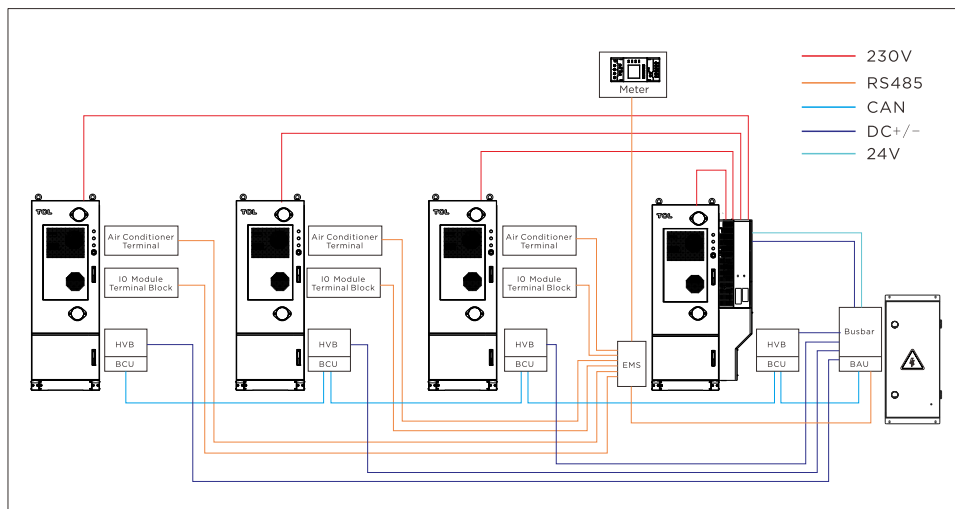
It is recommended to prioritize wired network for stable data transmission.

3.7 Parallel Connection



3.8 Expansion of Battery Cabinet Wiring





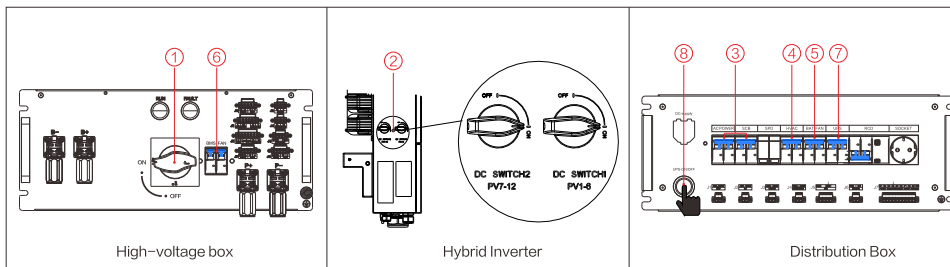
4. System Power On and Power Off

4.1 Pre-power-on Inspection

No.	Check items	Acceptance criteria
1	Appearance of the equipment	The appearance of the equipment is in good condition, without any damage, rust or peeling paint. If there is any peeling paint, please carry out the painting repair operation. The equipment labels are clearly visible. Damaged labels should be replaced promptly.
2	Appearance of the cable	The flexible conduit cable is in good condition, and the protective layer of the cables is intact with no obvious damage.
3	Cable connection	The terminal components are made in accordance with the specifications and are securely connected; the positions of the cable connections are the same as designed.
4	Cable wiring	The wiring is straight and orderly, with no crossover within the cabinet, meeting the principle of separating power and signal lines. The cables should be left with sufficient slack as per the requirements and must not be pulled tight. The wire connection joints should be cut neatly without any exposed sharp edges.
5	Switch	The PCS DC switch and circuit breaker are in the OFF position.

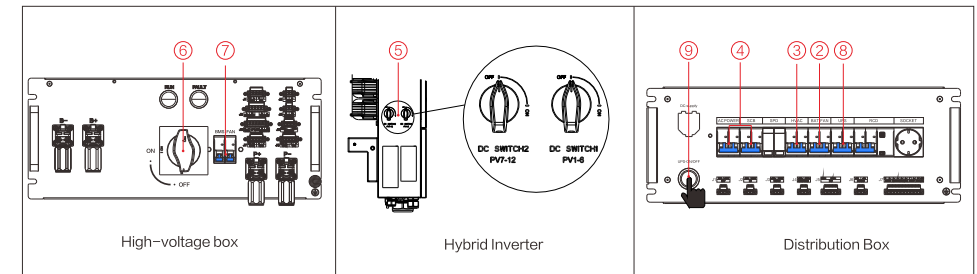
4.2 System Power On

1. Rotate the handle of the DC circuit breaker in the rotating high-voltage box to "ON".
2. Rotate the DC switch handle of the rotary mixer to "ON".
3. Close the auxiliary power switch AC POWER (main power switch) and the lightning protection switch SCB (power distribution switch with lightning protection).
4. Close the HVAC power switch, and the air conditioner will be powered on.
5. Close the BAT-FAN power switch, and the fan of the battery pack will be powered on.
6. Close the switches of the high-pressure box BMS and FAN.
7. Close the UPS power supply switch.
8. Press and hold the UPS-ON/OFF switch for at least 1 second. When you see the high-voltage box indicator light and the water immersion indicator light turn on, it indicates that the BMS, fire protection system, and control power supply have completed the power-on process.
9. Start up the control system of the operation control platform.



4.3 System Power Off

1. Shut down the operation control platform control system and disconnect the battery contactor (in case of emergency shutdown, you can press the emergency stop button on the cabinet).
2. Disconnect the power switch for the BAT-FAN. The fan of the battery PACK will be powered off.
3. Disconnect the power switch for the HVAC system. The air conditioner will power off.
4. Disconnect the auxiliary power switch AC POWER (main power switch) and the lightning protection switch SCB (power distribution switch with lightning protection).
5. Rotate the DC switch handle of the rotary mixer to "OFF".
6. Rotate the handle of the DC circuit breaker in the rotating high-pressure box to "OFF".
7. Disconnect the switches of the high-voltage box BMS and FAN;
8. Disconnect the UPS power supply switch;
9. Press and hold the UPS-ON/OFF switch. When you see the UPS indicator light go out, the BMS, fire protection, and control power supplies have completed the power-down process.



5. Services and Contact



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warranty agreement

Service Email:

- ▶ Australia: db-service.au@tcl.com
- ▶ Europe: db-service.eu@tcl.com
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