V1.3 2026-6-30

ET 50-100kW
Solution Manual_EN

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NOTE

Due to product version upgrades or other reasons, the contents of this document may be updated from time to time. Unless otherwise specified, the contents of this document do not replace the safety precautions on the product label. All descriptions in this document are for guidance only.

Preface

Overview

This document mainly describes the networking applications, system wiring, device commissioning, and other related content of the solar-plus-storage solution. Safety precautions, product introductions, site selection requirements, and maintenance information for the devices included in the solution are described in the user manuals of the corresponding devices.

Symbol Definitions

⚠DANGER
Indicates a highly potential hazard which, if not avoided, will result in death or serious injury.
⚠WARNING
Indicates a moderate potential hazard which, if not avoided, may result in death or serious injury.
⚠CAUTION
Indicates a low level of potential hazard which, if not avoided, may result in moderate or minor injury to personnel.
NOTE
Highlights and supplements the content, and may also provide tips or tricks for optimal use of the product, helping you solve a problem or save time.

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1 System Overview

System Overview

The Commercial and Industrial Smart Inverter Solution integrates inverters, static transfer switch cabinets, batteries, smart meters, smart communication sticks, and other equipment. In a PV system, it converts solar energy into electrical energy or purchases electricity from the grid to meet commercial and industrial electricity demands. In the system, energy IoT devices identify the overall power status and manage and control power-consuming equipment, thereby intelligently managing electricity for load supply, battery storage, or grid export.

⚠WARNING

1. PV systems are not suitable for connecting equipment that relies on a stable power supply, such as life-sustaining medical equipment. Ensure that a system power outage cannot cause personal injury.
2. In PV systems, avoid using loads with high starting current as much as possible, such as high-power water pumps. Otherwise, excessive instantaneous current may cause off-grid output failure.
3. If no battery is configured in the PV system, the BACK-UP function is not recommended; otherwise, it may cause system outage risk.
4. Battery Current may be affected by factors such as temperature, humidity, and weather conditions, which may cause battery current limiting and affect load capacity.
5. When the inverter triggers Overload Protection once, it can restart automatically; if it occurs multiple times, the restart time will be extended. To restart the inverter as soon as possible, restart it immediately via the SEMS+ App.
6. The system supports half-wave loads. Half-wave loads: some old or non-EMC-compliant appliances (such as hair dryers and small heaters using half-wave rectification).

Parameters	Single-Phase Grid	Three-Phase Grid
Rated Power of a Single Motor Load (kVA)	6	15

Parameters	Single-Phase Grid	Three-Phase Grid
Sum of Rated Power of Motor Loads (kVA)	0.5*Pn/3	0.5*Pn
Capacitive Load (kVA)	0.33*Pn/3	0.33*Pn
Half-Wave Load (kVA)	4	-

Note:

1. Pn: rated output power of the inverter.
2. If the Rated Power of a single motor load is greater than or equal to the nominal value in the table above, VFD/VSD must be configured.
3. If two or more units are paralleled, the allowable total motor load power = Pn × 50% × number of paralleled units × 80%.
4. The total load power must not exceed the total system power. Calculate according to the specific application conditions.

Table3 Inverter Off-Grid Load Capacity

1.1 Grid-Tied Scenario

The system always remains connected to and synchronously operates with the grid, following the principle of "Self-consumption, with surplus electricity fed into the grid". PV generation is prioritized for local loads, and the energy storage system charges/discharges according to tariff periods or Operating Mode to achieve economic functions such as peak-valley arbitrage and demand management.

Features

- The system relies on the grid for operation.
- In the event of a Grid Power Outage, the inverter must immediately stop output and cannot supply power to the load.

Applicable scenarios

The grid power supply is stable, saving electricity costs or increasing the PV self-consumption rate, and system shutdown during power outages is acceptable.

Single-unit Scenario

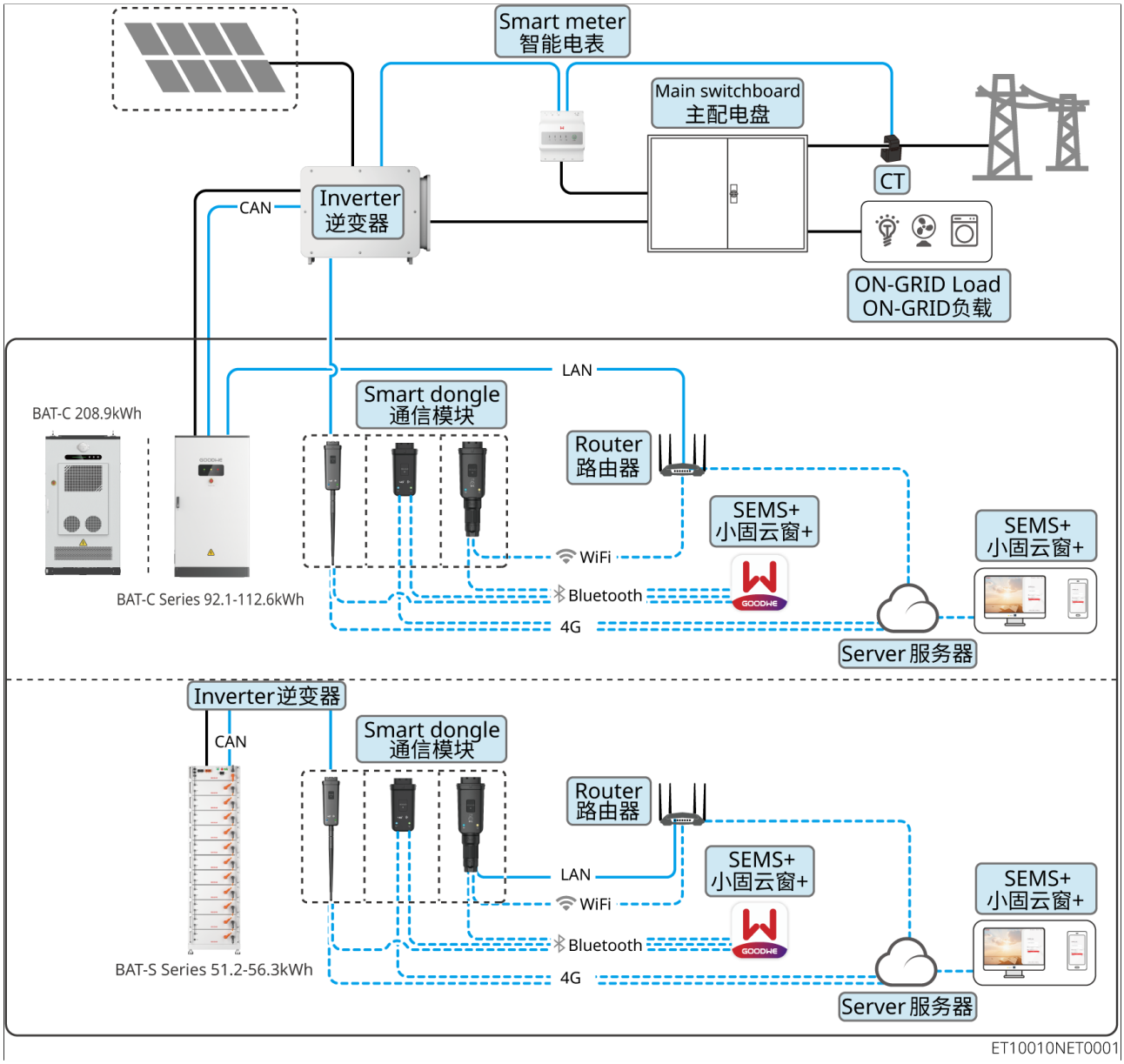


Figure1 Grid-connected scenario (single unit, withBAT 51.2-56.3kWh, BAT 92.1-112.6kWh, or BAT-C 208.9kWh)

Parallel Scenario

NOTE

- BAT-C 92.1-112.6kWh,BAT-C 208.9kWh
  - The battery has a built-in Ezlink module. Each inverter connects to the battery system via a smart communication stick, and the battery system transmits parallel operation information to the smart energy control box.
- BAT-S 51.2-56.3kWh
  - The battery does not have a built-in Ezlink module. Each inverter transmits individual inverter information to the smart energy control box via a smart communication stick.

Type 1: BAT 51.2-56.3Kwh

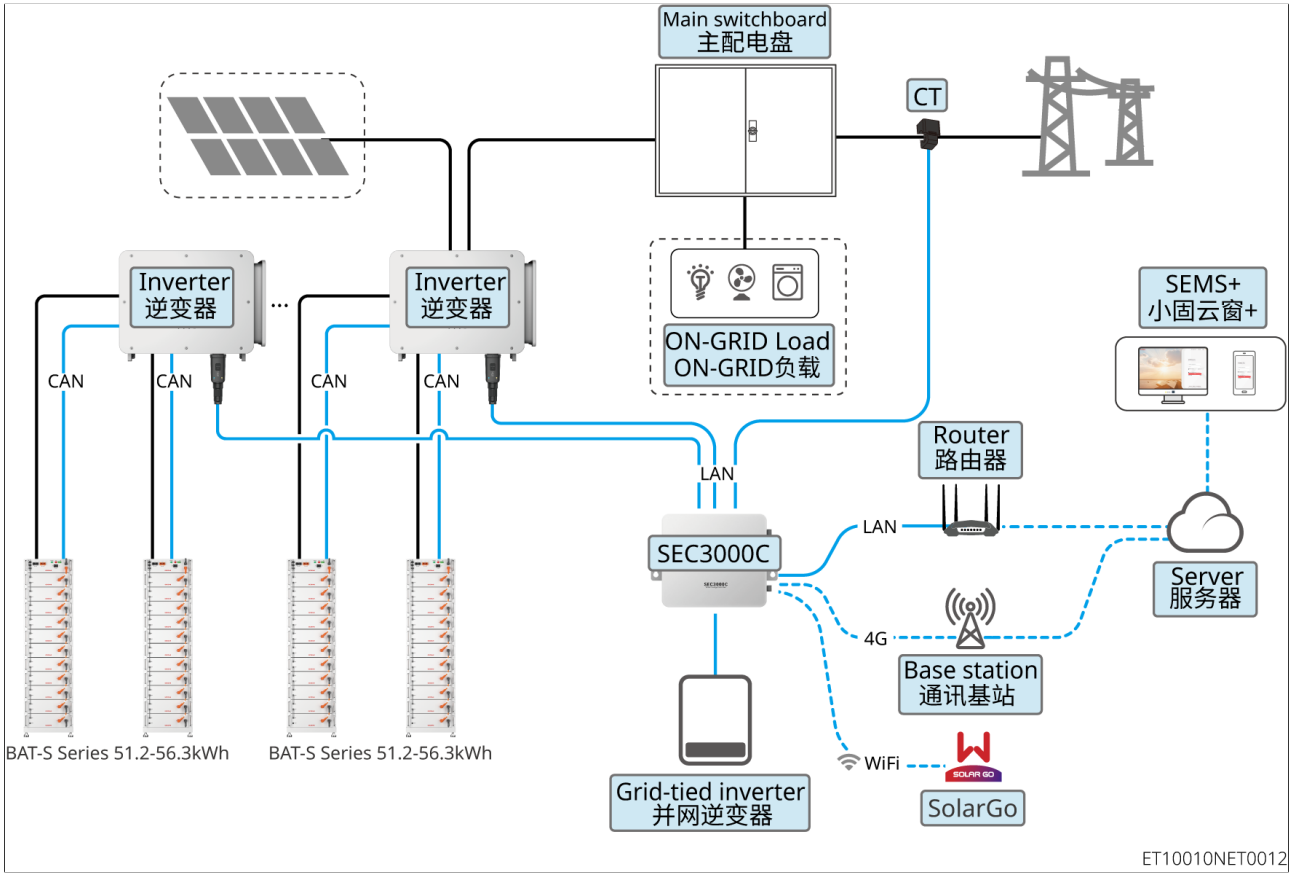


Figure2 Grid-connected scenario (parallel, withBAT 51.2-56.3kWh)

Type 2: BAT 92.1-112.6Kwh, BAT-C 208.9Kwh

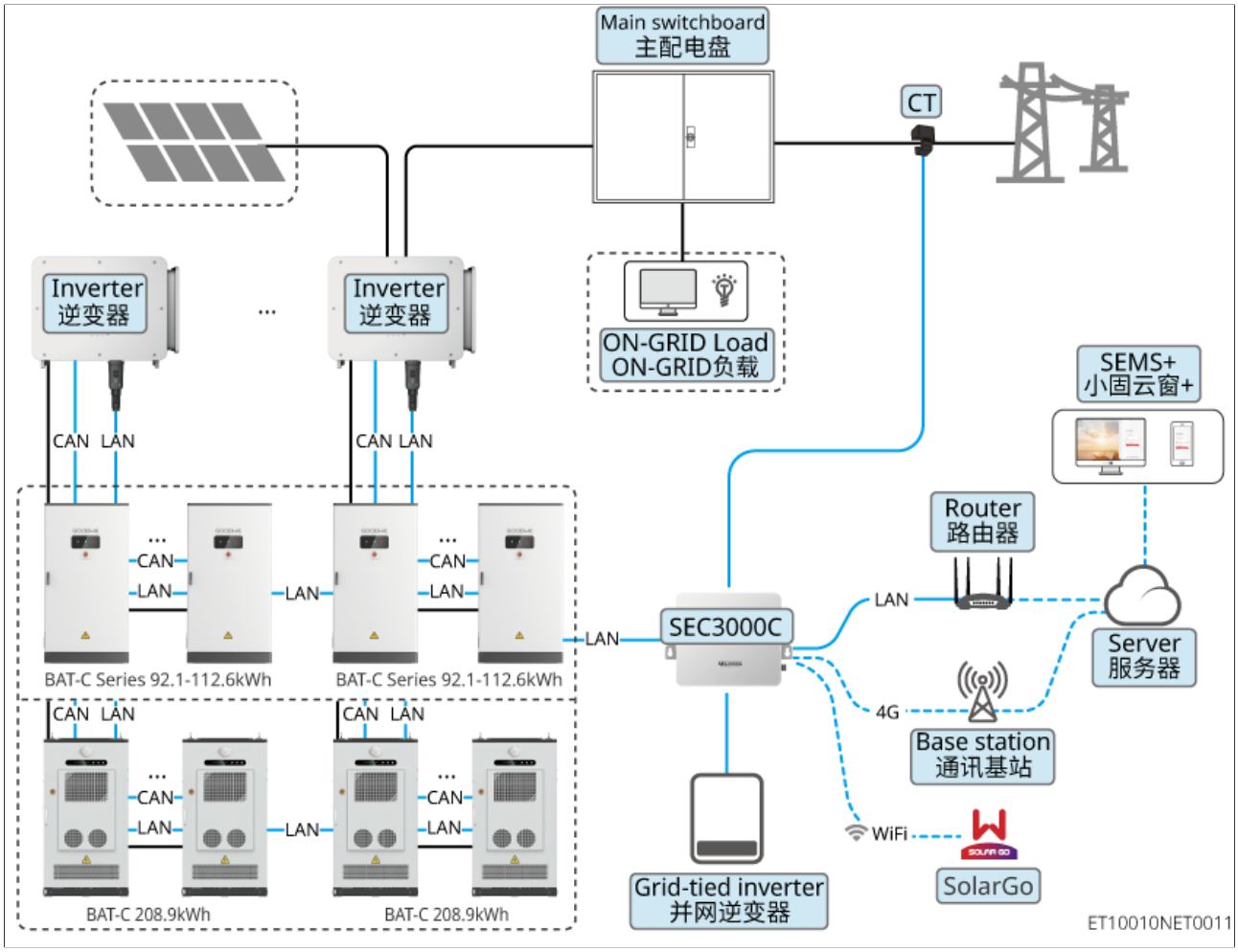


Figure3 Grid-connected scenario (parallel, withBAT 92.1-112.6kWh or BAT-C 208.9kWh)

Device Type	Model	Description
Hybrid Inverter	GW50K-ET-L-G10 GW75K-ET-G10 GW80K-ET-G10 GW99.99K-ET-G10 GW100K-ET-G10	

Device Type	Model	Description
AC-coupled inverter	GW75K-BT-G10 GW80K-BT-G10 GW99.99K-BT-G10 GW100K-BT-G10	• The system supports a maximum of 15 inverters in parallel. • The inverter has two battery input terminals. The two battery terminals can be connected in parallel to the same battery system or independently to two battery systems. Each battery input terminal can be connected to batteries according to the maximum number of battery units in a parallel cluster. • Software Version Requirements: ◦ The inverter ARM software version is 2.184 or above. ◦ The inverter DSP software version is 2.212 or above.
Battery system	BAT-S series GW40.9-BAT-I-G10 GW46.0-BAT-I-G10 GW51.2-BAT-I-G10 GW56.3-BAT-I-G10	• The battery system can be connected in parallel clusters with up to 6 units. • Battery systems of different models cannot be mixed and used in parallel clusters. • To ensure full-power charging/discharging of the inverter and improve the reliability and load capacity of system battery balancing operation, priority should be given to balanced connection through two battery ports; connecting only one battery branch to the inverter battery port is not recommended. • When GW40.9-BAT-I-G10 or GW46.0-BAT-I-G10 batteries are used in the system, the inverter's full power output cannot be achieved.

Device Type	Model	Description
	BAT-C series GW61.4-BAT-AC-G10 GW92.1-BAT-AC-G10 GW102.4-BAT-AC-G10 GW112.6-BAT-AC-G10	• The battery system can be connected in parallel clusters with up to 4 units. Battery systems of different models cannot be mixed and used in parallel clusters. • When GW61.4-BAT-AC-G10 batteries are used in the system, to ensure full-power charge/discharge of the inverter and improve the system's battery balance operation reliability and load-carrying capability, balanced connection through two battery ports is preferred; connecting only one battery bank to the inverter battery port is not recommended.
	BAT-C series GW208.9-BAT-LC-G10	The battery system supports up to4 units in parallel clusters
Smart Energy Control Box	SEC3000C	• (Optional) Used in parallel scenarios. • SEC main program version is V7.5.32 or above.
Smart meter	GM330	• (Optional) Used in the grid-connected scenario in single-unit systems. • Shipped with the inverter
CT	-	Can be purchased from GoodWe or self-purchased; CT ratio requirement: nA/5A • nA: CT primary input current, n ranges from 200 to 5000. • 5A: CT secondary output current.

Device Type	Model	Description
Smart communication stick	WiFi/LAN Kit-20	It can upload system operation information to the monitoring platform viaWiFi or LAN signal
	4G Kit-CN-G21 4G Kit-G20	• (Optional) Used in single-unit scenarios. • System operation information can be uploaded to the monitoring platform via 4G signal.

Table5 System component description for the grid-connected scenario

1.2 On/off-Grid Scenario

Under normal conditions, the system operates in grid-tied mode. In the event of a grid fault or power outage, it automatically disconnects from the grid and switches to off-grid mode to supply power to loads independently.

Core Features

- When grid-connected, the functions are the same as those in the grid-tied scenario.
- The inverter must work with the STS to achieve On/Off-grid switching. When a Grid Power Outage occurs, the system switches to off-grid operation to supply power to BACK-UP loads. When the grid power fails:
  - When the generator is Not Connected in the system, PV generation or battery discharge supplies power to the load.
  - When a generator is connected in the system, the generator startup conditions and logic can be set according to customer requirements for use by loads.
- When grid power is restored, the system automatically switches back to grid-tied operation.
- The inverter can continue to operate in off-grid mode, maximizing the utilization of solar energy.

Applicable scenarios

Locations with moderate grid stability or clear requirements for power supply continuity, balancing economy and backup power reliability.

Single-unit Scenario

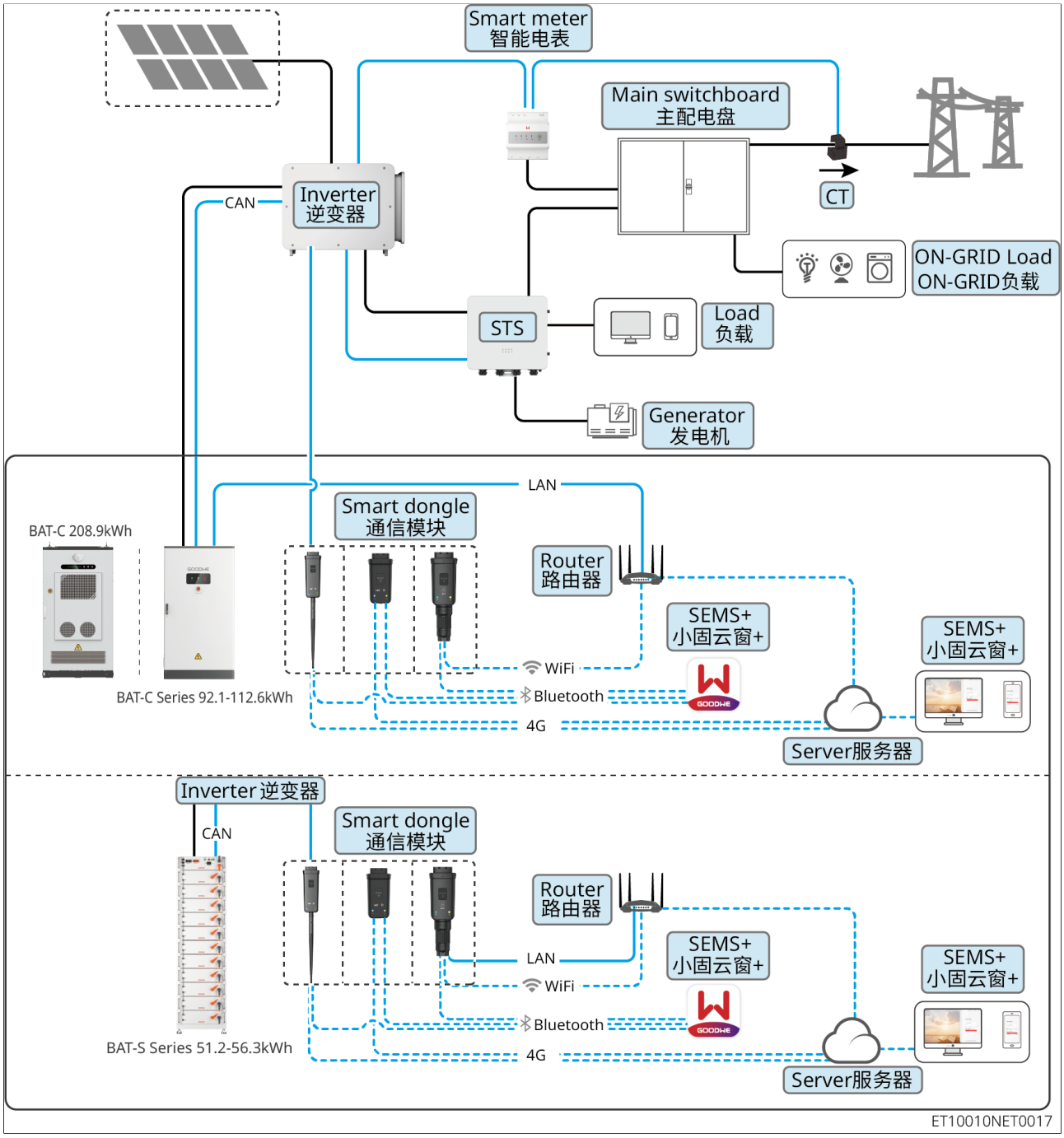


Figure4 On/Off-grid scenario (single unit)

Parallel Scenario

NOTE

- BAT-C 92.1-112.6kWh,BAT-C 208.9kWh
  - The battery has a built-in Smart Ezlink module. Each inverter connects to the battery system via a smart communication stick, and the battery system sends the parallel operation information to the Smart Energy Control Box.
- BAT-S 51.2-56.3kWh
  - When the battery does not have a built-in Smart Ezlink module, each inverter transmits the information of a single inverter to the Smart Energy Control Box via a smart communication stick.

Type 1: BAT 51.2-56.3Kwh

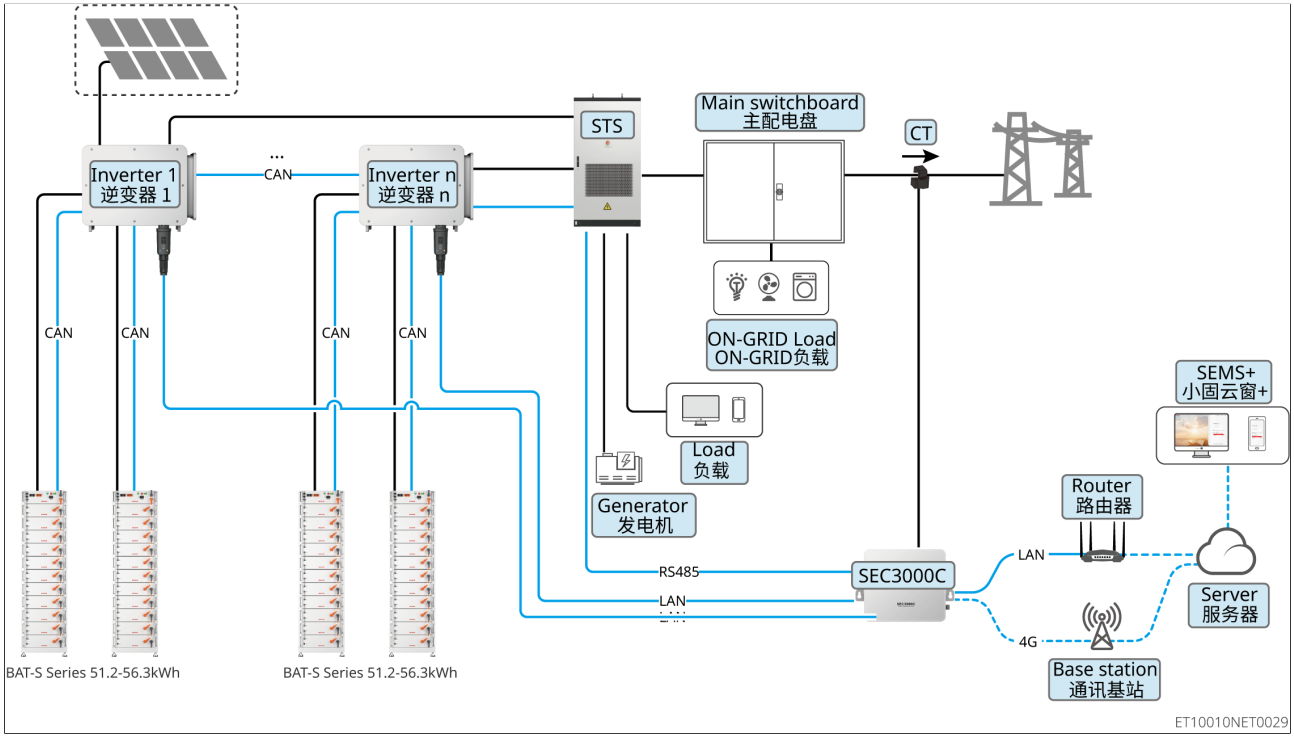


Figure5 On/Off-grid scenario (parallel operation, withBAT 51.2-56.3kWh)

Type 2: BAT 92.1-112.6Kwh, BAT-C 208.9Kwh

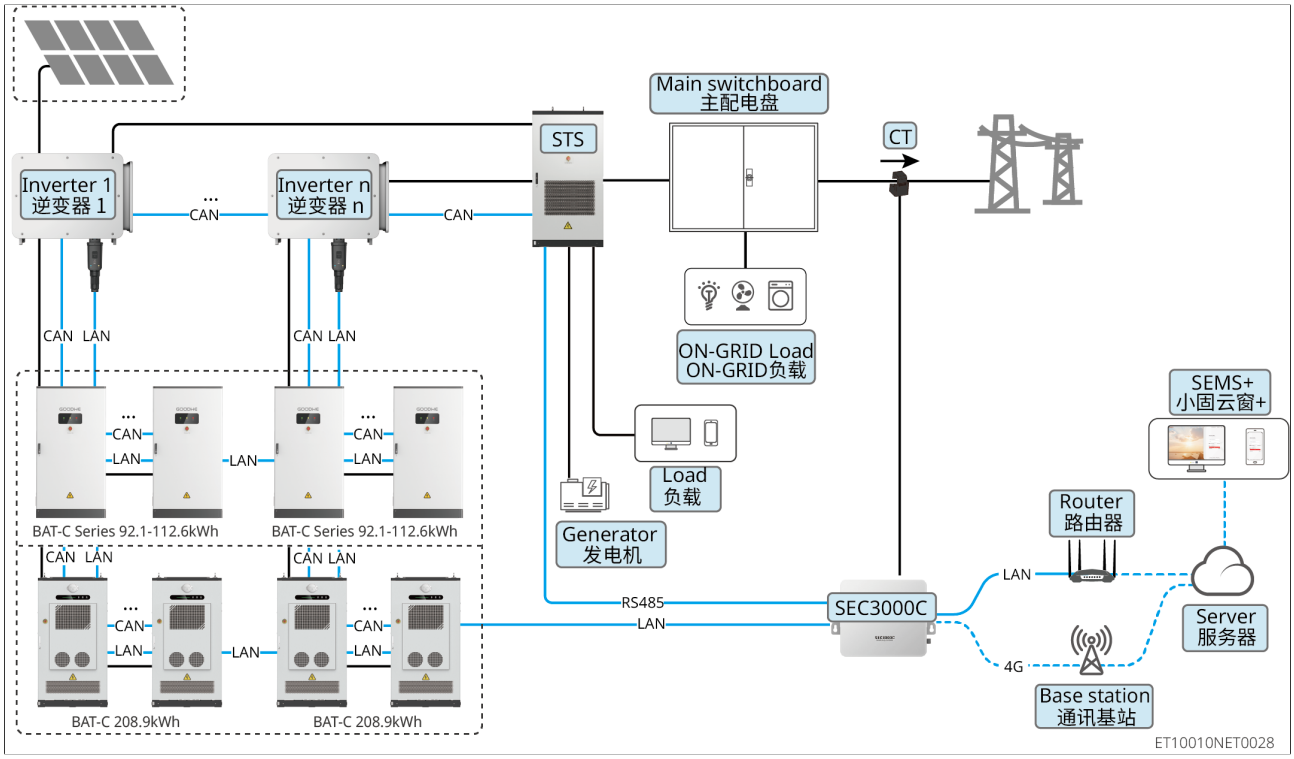


Figure6 On/Off-grid scenario (parallel operation, withBAT 92.1-112.6kWh or BAT-C 208.9kWh)

Device Type	Model	Description
Hybrid Inverter	GW50K-ET-L-G10 GW75K-ET-G10 GW80K-ET-G10 GW99.99K-ET-G10 GW100K-ET-G10	• The system supports a maximum of 6 inverters in parallel operation. • The inverter has 2 pairs of battery input terminals. The two battery terminals can be connected in parallel to the same battery system or independently to two battery systems. Each pair of battery input terminals can be connected to batteries according to the maximum number of battery units supported in one parallel cluster. • Software Version Requirements: ◦ ARM software version is3.193or above ◦ DSP software version is3.306or above
AC-coupled inverter	GW75K-BT-G10 GW80K-BT-G10 GW99.99K-BT-G10 GW100K-BT-G10	

Device Type	Model	Description
Battery system	GW51.2-BAT-I-G10 GW56.3-BAT-I-G10	• The battery system can be connected in parallel clusters with up to 6 units. • Battery systems of different models cannot be mixed and used in parallel clusters. • To ensure full-power charging/discharging of the inverter and improve the reliability and load capacity of system battery balancing operation, priority should be given to balanced connection through two battery ports; connecting only one battery branch to the inverter battery port is not recommended.
	GW92.1-BAT-AC-G10 GW102.4-BAT-AC-G10 GW112.6-BAT-AC-G10	The battery system can be connected in parallel clusters with up to 4 units. Battery systems of different models cannot be mixed and used in parallel clusters.
	GW208.9-BAT-LC-G10	The battery system supports up to4 units in parallel clusters

Device Type	Model	Description
STS	GW125K-STS-G10 GW375K-STS-A-G10 GW750K-STS-A-G10	• The BACK-UP port supports connection of critical loads. • Number of Supported Inverters: ◦ 125K: wall-mounted; Rated Power of grid side, BACK-UP port and SMART-PORT port is 125kW@400V; supports connection of 1 hybrid inverter (or AC-coupled inverter). ◦ 375K: cabinet type; Rated Power of grid side, BACK-UP port and SMART-PORT port is 375kW@400V/200kW@220V; supports connection of 3 hybrid inverters (or AC-coupled inverters). ◦ 750K: cabinet type; Rated Power of grid side, BACK-UP port and SMART-PORT port is 750kW@400V/400kW@220V; supports connection of 6 hybrid inverters (or AC-coupled inverters). • Software version is 3.304 or above.
Smart Energy Control Box	SEC3000C	• (Optional) Required in parallel operation scenarios. • Software version is7.18or above

Device Type	Model	Description
Smart meter	GM330	• For partial backup in a single-unit scenario, a smart meter and CT must be connected; they are not required for whole-house backup scenarios. ◦ Partial backup: Loads are connected to the grid side and the BACK-UP port of the STS. ◦ Whole-house backup: All loads are connected to the BACK-UP port of the STS. • Smart meter: Shipped with the inverter.
CT	-	• CT: Can be purchased from GoodWe or purchased separately. • CT ratio requirement: nA/5A ◦ nA: CT primary input current, n ranges from 200 to 5000. ◦ 5A: CT secondary output current.
Smart communication stick	WiFi/LAN Kit-20	It can upload system operation information to the monitoring platform viaWiFi or LAN signal
	4G Kit-CN-G21 4G Kit-G20	• (Optional) Used in single-unit scenarios. • System operation information can be uploaded to the monitoring platform via 4G signal.

1.3 Microgrid Scenario

This system takes the priority of ensuring load power supply as the core principle and consists of key equipment such as hybrid inverters (or AC-coupled inverters), STS,

and smart energy control boxes. The system supportsthe following functions:

- During grid-connected operation, the smart energy controller centrally dispatches the hybrid inverter (or AC-coupled inverter) to execute preset charging/discharging strategies based on system operating status (such as load demand, stored energy, and PV output). The electricity generated by the system is supplied to local loads or fed into the grid.
- During a Grid Power Outage, the hybrid inverter (or AC-coupled inverter) works with the STS to implement On/Off-grid switching, ensuring uninterrupted operation of loads while becoming the grid-forming power source within the microgrid. The PV grid-connected inverter connected to the BACK-UP port continues to operate normally, supplying power to BACK-UP loads or charging the battery.
  - When the generator is Not Connected in the system, PV generation or battery discharge supplies power to the load.
  - When a generator is connected in the system and PV generation and battery discharge are already sufficient for the load, the generator does not start.
  - When a generator is connected in the system and PV generation and battery system discharge cannot meet the load demand, the generator starts to supply power to the load, and PV and generator output charge the battery.
- After the grid is restored, the system can automatically switch to grid power supply.

Single-unit Scenario

Type 1

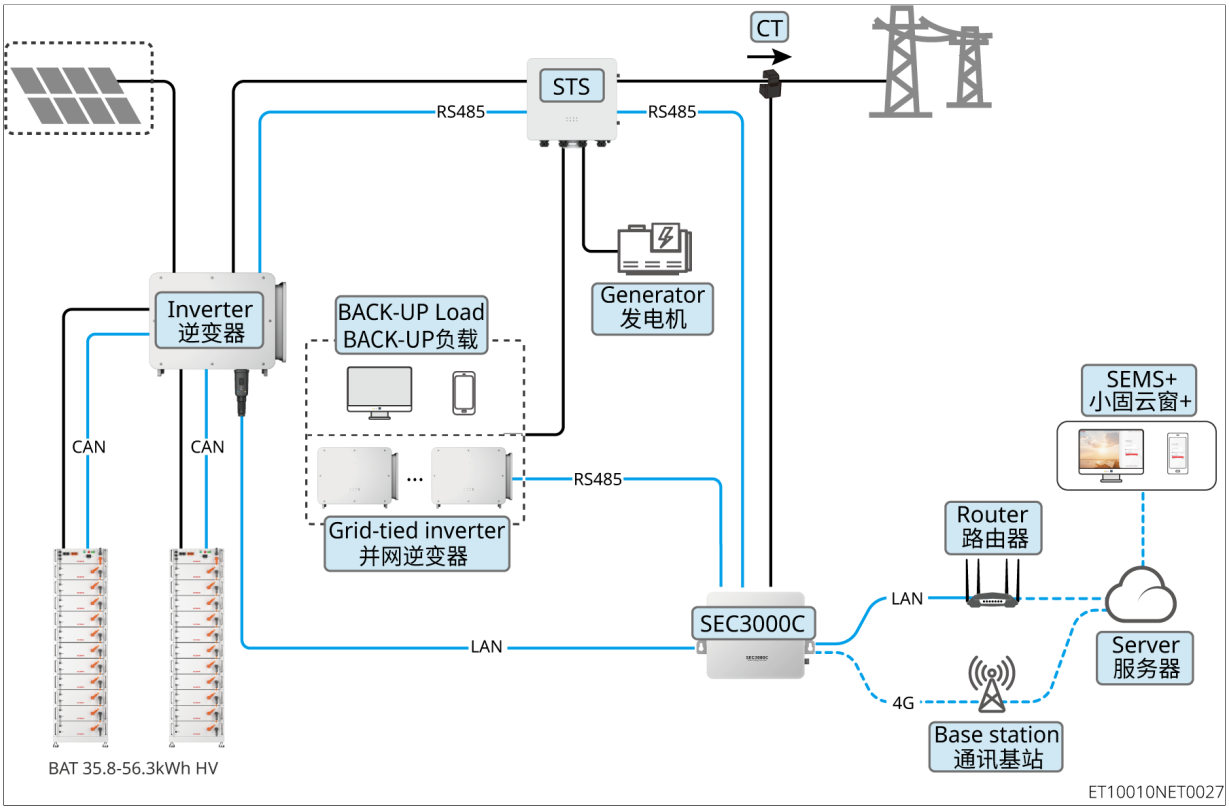


Figure7 Microgrid Scenario (single-unit, withBAT 51.2-56.3kWh)

Type 2

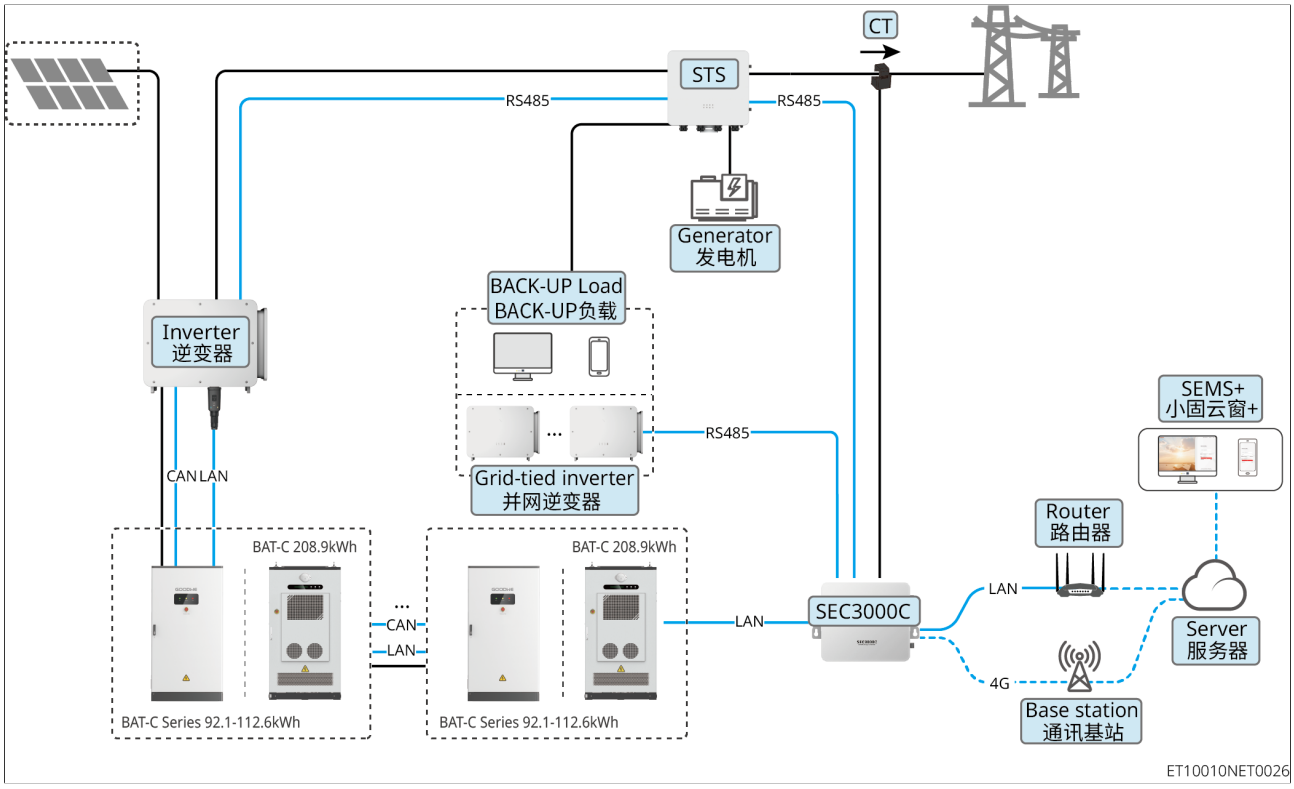


Figure8 Microgrid Scenario (single-unit, withBAT 92.1-112.6kWh or BAT-C 208.9kWh)

Parallel Scenario

Type 1

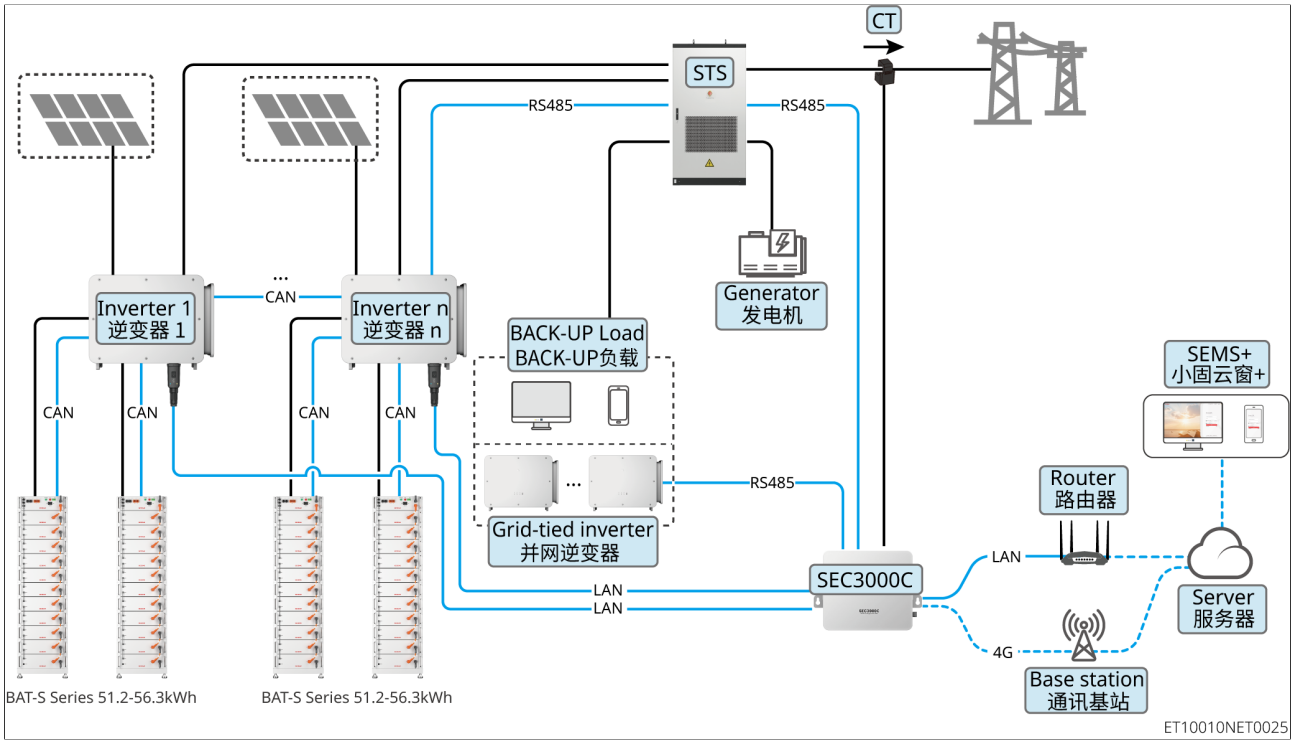


Figure9 Microgrid Scenario (parallel, withBAT 51.2-56.3kWh)

Type 2

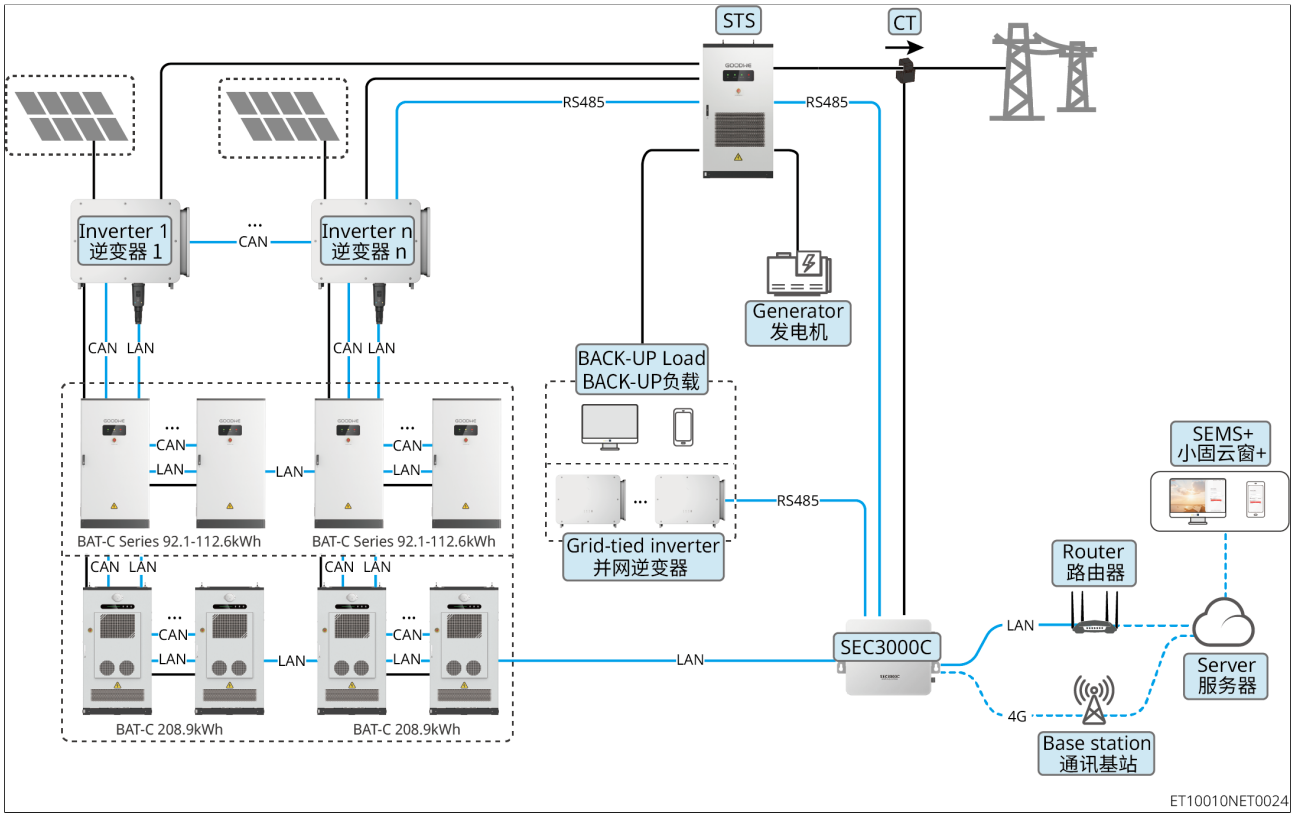


Figure10 Microgrid Scenario (parallel, withBAT 92.1-112.6kWh or BAT-C 208.9kWh)

Device Type	Model	Description
Hybrid Inverter	GW50K-ET-L-G10 GW75K-ET-G10 GW80K-ET-G10 GW99.99K-ET-G10 GW100K-ET-G10	

Device Type	Model	Description
AC-coupled inverter	GW75K-BT-G10 GW80K-BT-G10 GW99.99K-BT-G10 GW100K-BT-G10	• The system supports a maximum of 6 inverters in parallel operation. • The inverter has 2 pairs of battery input terminals. The two battery terminals can be connected in parallel to the same battery system or independently to two battery systems. Each pair of battery input terminals can be connected to batteries according to the maximum number of battery units supported in one parallel cluster. • Software Version Requirements: ◦ ARM software version is3.193or above ◦ DSP software version is3.306or above
Battery system	GW51.2-BAT-I-G10 GW56.3-BAT-I-G10	• The battery system can be connected in parallel clusters with up to 6 units. • Battery systems of different models cannot be mixed and used in parallel clusters. • To ensure full-power charging/discharging of the inverter and improve the reliability and load capacity of system battery balancing operation, priority should be given to balanced connection through two battery ports; connecting only one battery branch to the inverter battery port is not recommended.
	GW92.1-BAT-AC-G10 GW102.4-BAT-AC-G10 GW112.6-BAT-AC-G10	The battery system can be connected in parallel clusters with up to 4 units. Battery systems of different models cannot be mixed and used in parallel clusters.

Device Type	Model	Description
	GW208.9-BAT-LC-G10	The battery system supports up to4 units in parallel clusters
STS	GW125K-STS-G10 GW375K-STS-A-G10 GW750K-STS-A-G10	• The SMART-PORT port supports connection of a Diesel Generator or large loads, but does not support simultaneous connection. • The BACK-UP port supports connection of grid-tied inverters, loads, UPS and other devices. When a grid-tied inverter is connected, the system forms a PV-storage microgrid system. • Number of Supported Inverters: ◦ 125K: wall-mounted; Rated Power of grid side, BACK-UP port and SMART-PORT port is 125kW@400V; supports connection of 1 hybrid inverter (or AC-coupled inverter). ◦ 375K: cabinet type; Rated Power of grid side, BACK-UP port and SMART-PORT port is 375kW@400V/200kW@220V; supports connection of 3 hybrid inverters (or AC-coupled inverters). ◦ 750K: cabinet type; Rated Power of grid side, BACK-UP port and SMART-PORT port is 750kW@400V/400kW@220V; supports connection of 6 hybrid inverters (or AC-coupled inverters). • Software version is 3.304 or above.

Device Type	Model	Description
Grid-tied inverter	-	• Only grid-tied inverters of the same brand as the hybrid inverter (or AC-coupled inverter) can be connected to ensure consistent communication protocol. • The Rated Power of the grid-tied inverter must be lower than the rated charging power of the battery. If the inverter power is too large, curtailment may occur in some cases. • For the model compatibility list of grid-tied inverters, please consult pre-sales technical support. • The number of parallel grid-tied inverters should be determined according to the number of parallel units supported by the corresponding model.
Smart Energy Control Box	SEC3000C	• A Smart Energy Control Box must be configured in the microgrid system. • Software version is7.18or above
CT	-	Can be purchased from GoodWe or self-purchased; CT ratio requirement: nA/5A • nA: CT primary input current, n ranges from 200 to 5000. • 5A: CT secondary output current.
Smart communication stick	WiFi/LAN Kit-20	It can upload system operation information to the monitoring platform viaWiFi or LAN signal

2 Material Preparation

2.1 Switch Preparation

⚠WARNING

- The common contact of the Automatic Transfer Switch (ATS) must be on theBACK-UPload side of the inverter, and must not be connected to theGRIDterminal. If it is connected to theGRIDterminal, the inverter off-grid mode and bypass mode will operate simultaneously. When the grid is powered off, the distribution cabinet connected to the inverterGRIDport will still have high voltage, which may cause electric shock.
- The parallel system supports generator integration. If connecting a generator, please ensure:
  - The generator power must be greater than the total power of all loads on the BACKUP port.
  - The current capacity of the associated ATS must be able to meet the total current demand when all inverters output at Rated Power simultaneously.

No.	Circuit Breaker	Specification	Remarks
	Circuit Breaker Between Inverter and STS (Optional) Inverter GRID circuit breaker BACK-UP load circuit breaker Smart-Port circuit breaker	• For the same model, ATS switch and BACK-UP load circuit breaker specifications are consistent. • Circuit breaker specification: 4P circuit breaker*1, Nominal Voltage ≥400V, Rated Current requirements are as follows (N is the number of inverters in the system): ◦ GW50K-ET-L-G10: Rated Current ⩾160A x N GW75K-ET-G10: Rated Current ⩾160A x N ◦ GW80K-ET-G10: Rated Current ⩾160A x N	Customer-supplied

No.	Circuit Breaker	Specification	Remarks
		◦ GW99.99K-ET-G10: Rated Current ⩾180Ax N ◦ GW100K-ET-G10: Rated Current ⩾225A xN • When an STS device is configured in the system, the inverter AC port is connected to the GRID port of the STS. The circuit breakers in the system are described as follows: ◦ Switch between the inverter and STS ▪ GW125K-STS-G10 does not have a built-in switch between the inverter and STS; an optional configuration is required. ▪ GW375K-STS-A-G10 and GW750K-STS-A-G10 have built-in switches between the inverter and STS. Please decide whether additional configuration is required based on local regulatory requirements. ◦ BACK-UP load circuit breaker: The device is not built-in (https://en.goodwe.com/Ftp/EN/Downloads/User%20Manual/GW_SEMS%20Portal-User%20Manual-EN.pdf). Please configure according to local regulatory requirements. ◦ Smart-Port circuit breaker: The device is not built-in (https://en.goodwe.com/Ftp/EN/Downloads/User%20Manual/GW_SEMS%20Portal-User%20Manual-EN.pdf). Please configure according to local regulatory requirements.	

No.	Circuit Breaker	Specification	Remarks
2	Battery switch	Optional configuration according to local laws and regulations • 2P DC Switch x 2 (must be configured for each battery port) • Rated Current ⩾125A • Nominal Voltage ⩾1000V	Customer-supplied
3	Residual Current Protection Device	Optional configuration according to local laws and regulations • Type A • GRID side: 1000mA • BACK-UP side: 500-1000mA	Customer-supplied
4	Meter switch	Nominal Voltage: 380V/400V Rated Current: 0.5A	Customer-supplied
5	Load circuit breaker	The specification requirements must be determined based on the actual load.	Customer-supplied
*1: In Australia and New Zealand, the GRID and BACK-UP load circuit breakers are 3P.			

2.2 Cable Preparation

No.	Type	Cable	Recommended Specification	How to Obtain
1	Protection Ground Wire	Inverter and STS Protection Ground Wire	• Single-Core Outdoor Copper Cable • Conductor cross-sectional area: 25-35mm²	Customer-supplied

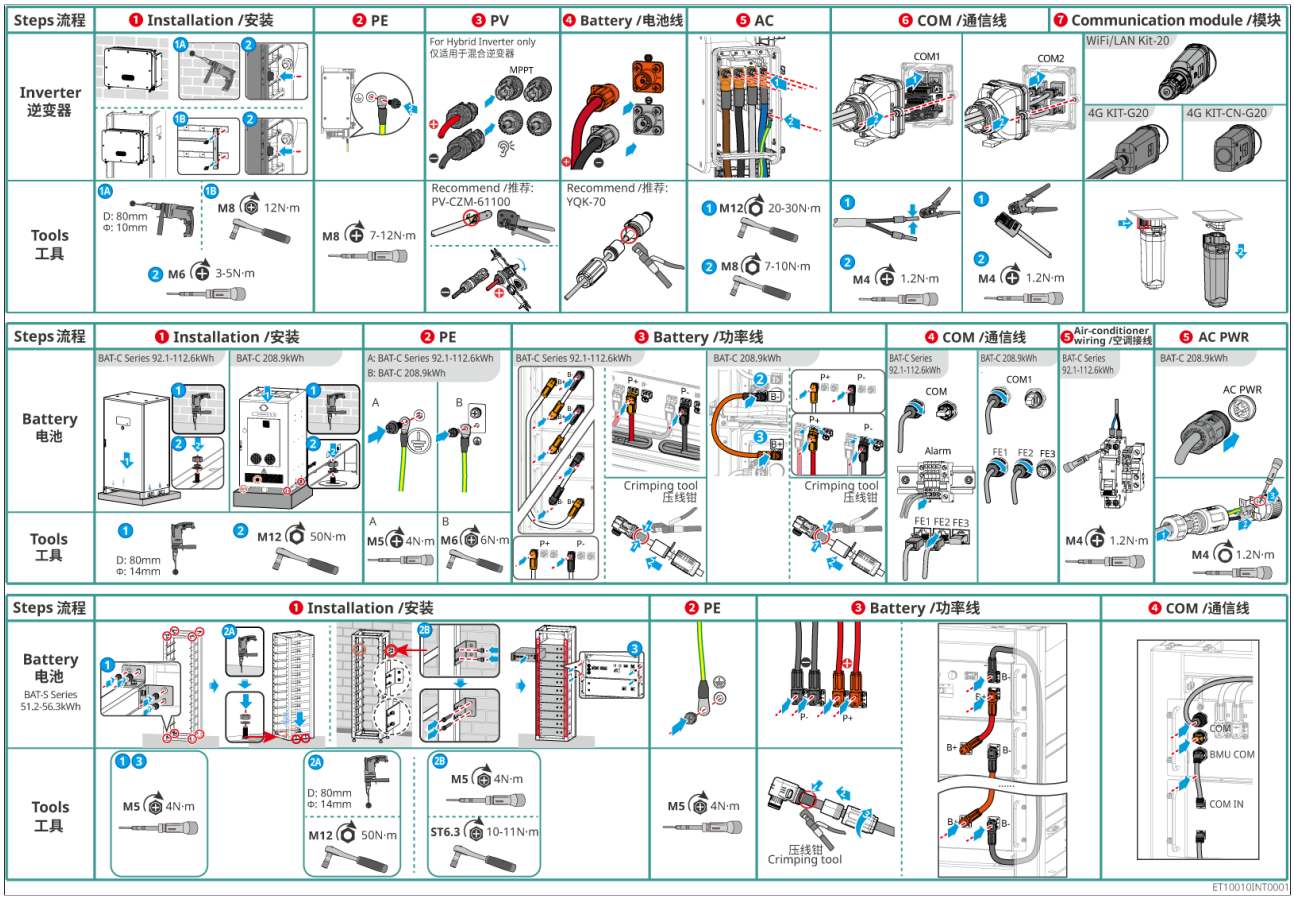
No.	Type	Cable	Recommended Specification	How to Obtain
2		BAT Series 51.2-56.3kWh High-Voltage Battery	• Single-Core Outdoor Copper Cable • Conductor cross-sectional area: 6-10mm²	Customer-supplied
		BAT Series 92.1-112.6kWh Commercial & Industrial Battery System	• Single-Core Outdoor Copper Cable • Conductor cross-sectional area: 16-25mm²	Customer-supplied
		BAT-C Series 208.9kWh Commercial & Industrial Battery System	• Single-Core Outdoor Copper Cable • Conductor cross-sectional area: 16-25mm²	Customer-supplied
3	Power Cable	PV DC Cable	• Industry-standard outdoor PV cable • Conductor cross-sectional area: 4-6mm² • Cable outer diameter: 4.7mm-6.4mm	Customer-supplied
4		Battery DC Cable	• Single-Core Outdoor Copper Cable • Conductor cross-sectional area: 25mm² • Cable outer diameter: 9.4mm-10.6mm	Self-provided / use the pre-assembled cable harness shipped with the product

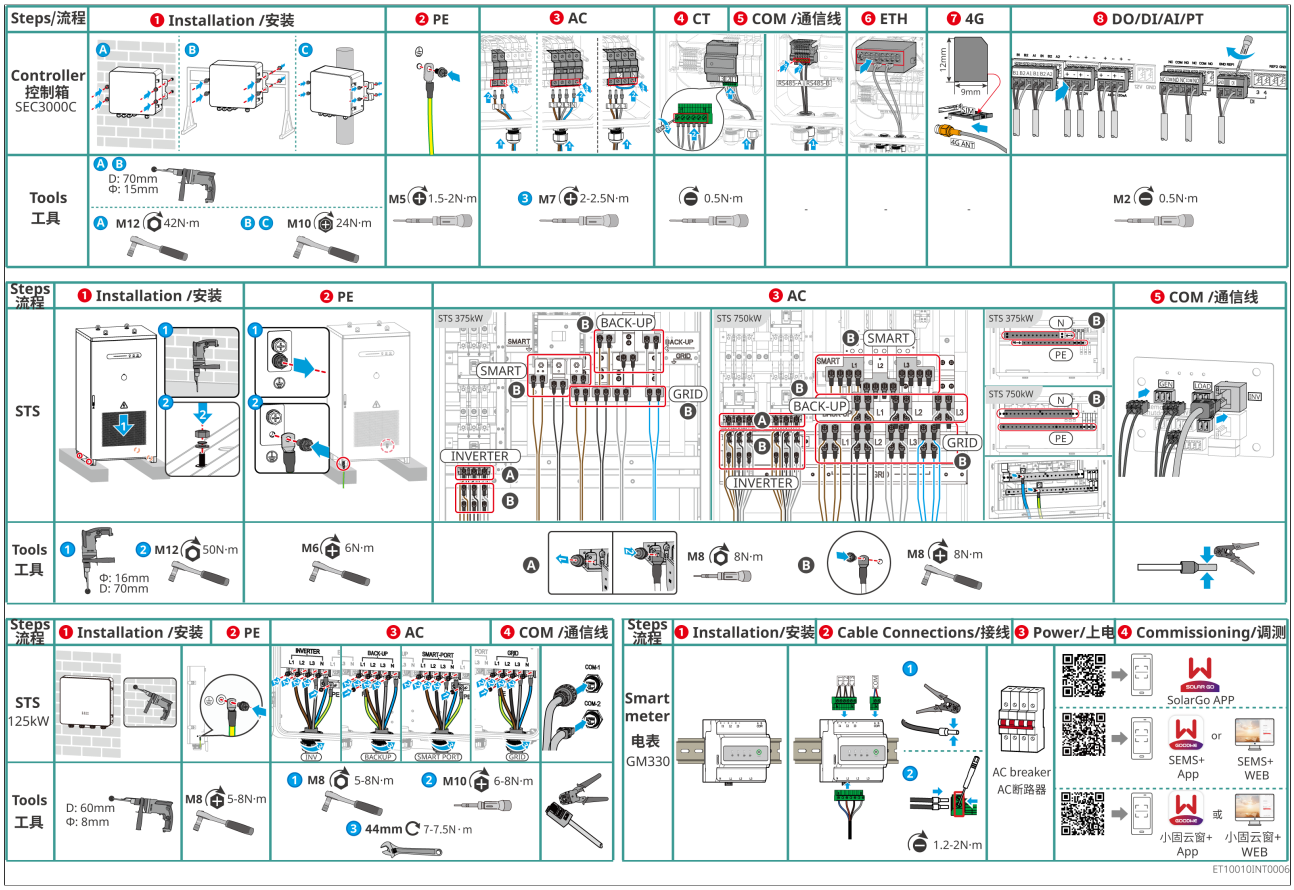
No.	Type	Cable	Recommended Specification	How to Obtain
5		Battery cluster parallel cable: BAT Series 51.2-56.3kWh High-Voltage Battery	• Single-Core Outdoor Copper Cable • Conductor cross-sectional area: 25mm² • Cable outer diameter: 9mm-11mm	Customer-supplied
		Battery cluster parallel cable: BAT Series 92.1-112.6kWh Commercial & Industrial Battery System	• Single-Core Outdoor Copper Cable • Conductor cross-sectional area: 50mm² • Cable outer diameter: 13mm-14mm	Customer-supplied
		Battery cluster parallel cable: BAT-C Series 208.9kWh Commercial & Industrial Battery System		Customer-supplied
6		Inverter AC Cable SMART-PORT AC cable (STS) BACK-UP AC cable (STS) GRID AC cable (STS)	• Single-Core Outdoor Copper Cable • Conductor cross-sectional area: 50-70mm² • Cable outer diameter: 22mm-43mm	Customer-supplied
7		Smart meter power cable	• Outdoor copper-core cable • Conductor cross-sectional area: 0.5-1mm²	Customer-supplied

No.	Type	Cable	Recommended Specification	How to Obtain
8		SEC3000C three-phase AC cable	• Single-Core Outdoor Copper Cable • Conductor cross-sectional area: 2.5mm²-6.0mm² • Cable outer diameter: 1.8mm-2.8mm	Customer-supplied
9	Communication cable	Battery BMS communication cable	-	Included in the box
10		Meter RS485 communication cable	-	RJ45-to-2PIN terminal adapter cable and standard network cable, included in the box
11		Battery parallel-cluster communication cable / cloud board communication cable	CAT 5E or higher shielded network cable with RJ45 connectors, EIA/TIA 568B standard	Customer-supplied
12		Communication cable (DO, GEN, Remote Shutdown, RSD, DRM/RCR, EMS, charging pile)	• Shielded cable meeting local standards • Conductor cross-sectional area: 0.2mm²-0.4mm² • Cable outer diameter: 5mm-8mm	Customer-supplied

No.	Type	Cable	Recommended Specification	How to Obtain
13		Inverter-to-STS communication cable	• Standard network cable: CAT 5E or higher standard network cable and RJ45 plug • Length: 10m	Customer-supplied
14		Meter CT cable	• Single-Core Outdoor Copper Cable • Conductor cross-sectional area: 1.3mm²-2.3mm² • Cable outer diameter: 1.3-1.7mm	Customer-supplied

3 Installation Process




Steps/流程
❶ Installation /安装
❷ PE
❸ AC
❹ CT
❺ COM /通信线
❻ ETH
❼ 4G
❽ DO/DI/AI/PT
Controller 控制箱 SEC3000C
Tools 工具
D: 70mm Φ: 15mm
M12 42N·m
M10 24N·m
M5 1.5-2N·m
M7 2-2.5N·m
0.5N·m
M2 0.5N·m
STS
BACK-UP
SMART
GRID
INVERTER
STS 375kW
STS 750kW
M6 6N·m
M8 8N·m
❺ COM /通信线
STS 125kW
D: 60mm Φ: 8mm
M8 5-8N·m
M10 6-8N·m
44mm 7-7.5N·m
Steps 流程
❶ Installation/安装
❷ Cable Connections/接线
❸ Power/上电
❹ Commissioning/调测
Smart meter 电表 GM330
AC breaker AC断路器
1.2-2N·m
SolarGo APP
SEMS+ App
or
SEMS+ WEB
小固云窗+ App
或
小固云窗+ WEB
ET10010INT0006

4 Installation Requirements

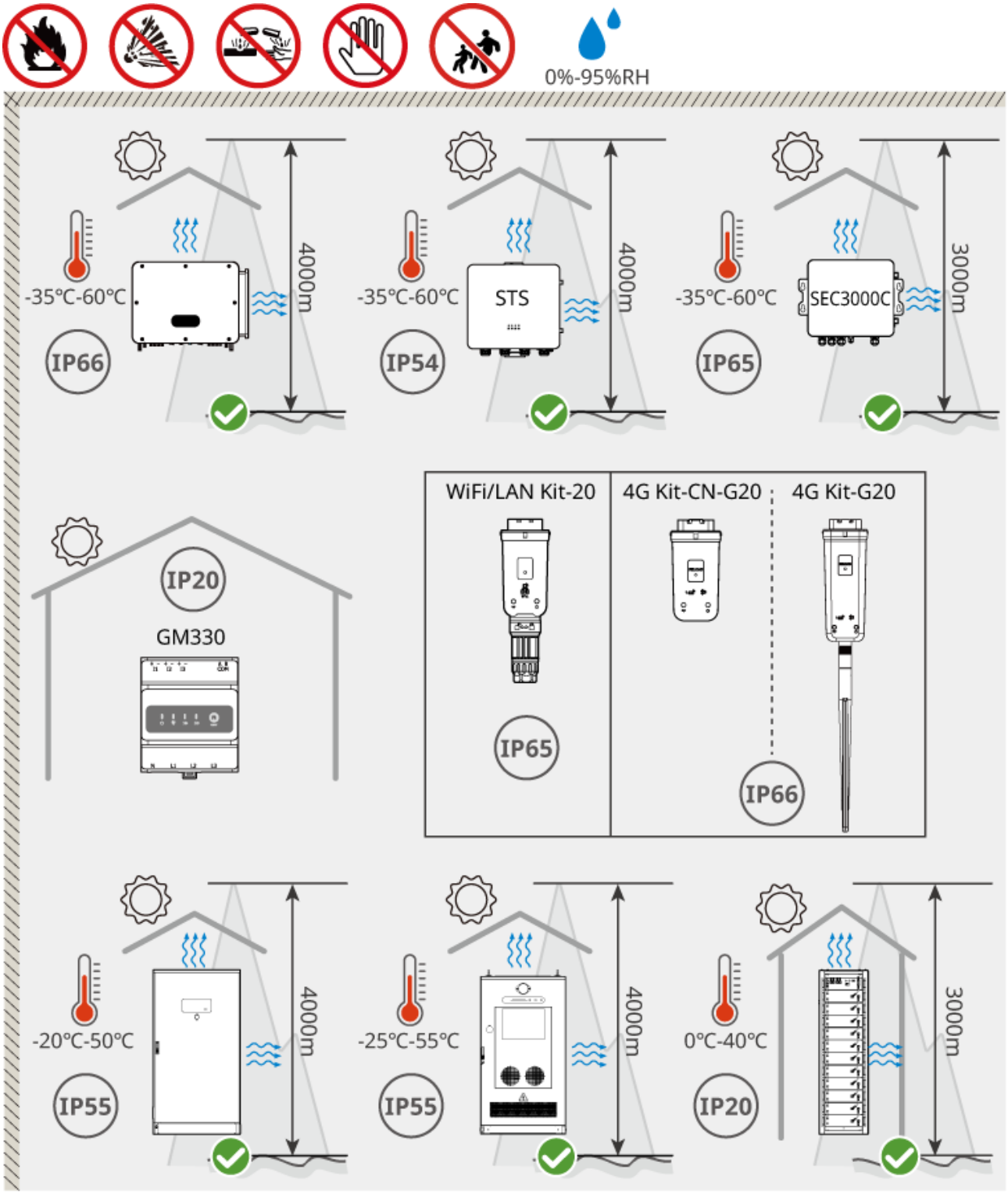
4.1 Installation Environment Requirements

1. The equipment must not be installed in flammable, explosive, corrosive, or similar environments.
2. The temperature and humidity of the installation environment must be within suitable ranges.
3. The installation location must be out of reach of children and avoid positions where it can be easily touched.
4. During inverter operation, the enclosure temperature may exceed 60°C. Do not touch the enclosure before it cools to prevent burns.
5. The equipment must be installed away from direct sunlight, rain, snow accumulation, and other such conditions. It is recommended to install it in a sheltered location; if necessary, build a sunshade canopy.
6. Adverse environmental conditions such as direct sunlight and high temperature may cause inverter output power derating.
7. The installation space must meet the equipment ventilation and heat dissipation requirements, as well as the operation space requirements.
8. The installation environment must meet the Ingress Protection Rating of the equipment.
   - The inverter and Smart Communication Stick are suitable for indoor and outdoor installation.
   - The electricity meter is suitable for indoor installation.
   - BAT series 51.2-56.3 kWh high-voltage battery must be installed indoors and kept ventilated.
   - BAT series 92.1-112.6 kWh commercial and industrial battery system is suitable for indoor and outdoor installation.
   - BAT-C series 208.9 kWh commercial and industrial battery system is suitable for indoor and outdoor installation.
9. The installation height of the equipment must facilitate operation and maintenance, ensuring that the indicator lights and all labels are easy to view and the wiring terminals are easy to operate.
10. The installation altitude of the equipment must be lower than the Max. Operating Altitude.
11. The battery system must be installed on a flat and dry ground; it must not be recessed or tilted. It is strictly prohibited to install it in an environment with

accumulated water.

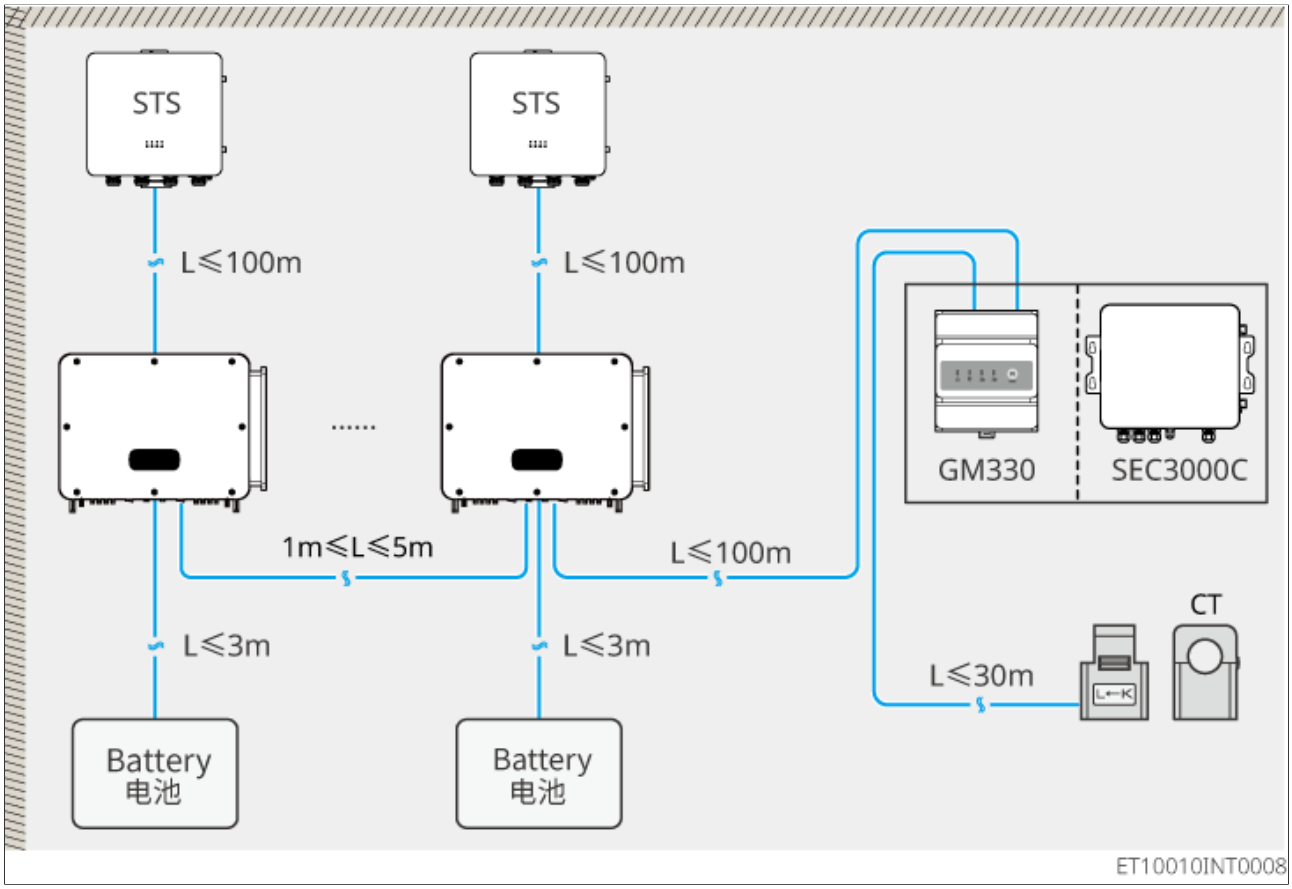
12. The battery system must not be installed on ground prone to water accumulation or subsidence. Ensure that the ground can bear the Weight of the battery system.
13. Before installing equipment outdoors in salt-damage areas, consult the equipment manufacturer. Salt-damage areas mainly refer to areas within 500 m of the coast. The affected area depends on sea breeze, precipitation, terrain, and other conditions.
14. Keep away from strong magnetic field environments to avoid electromagnetic interference. If there are radio stations or wireless communication devices below 30 MHz near the installation location, install the equipment according to the following requirements:

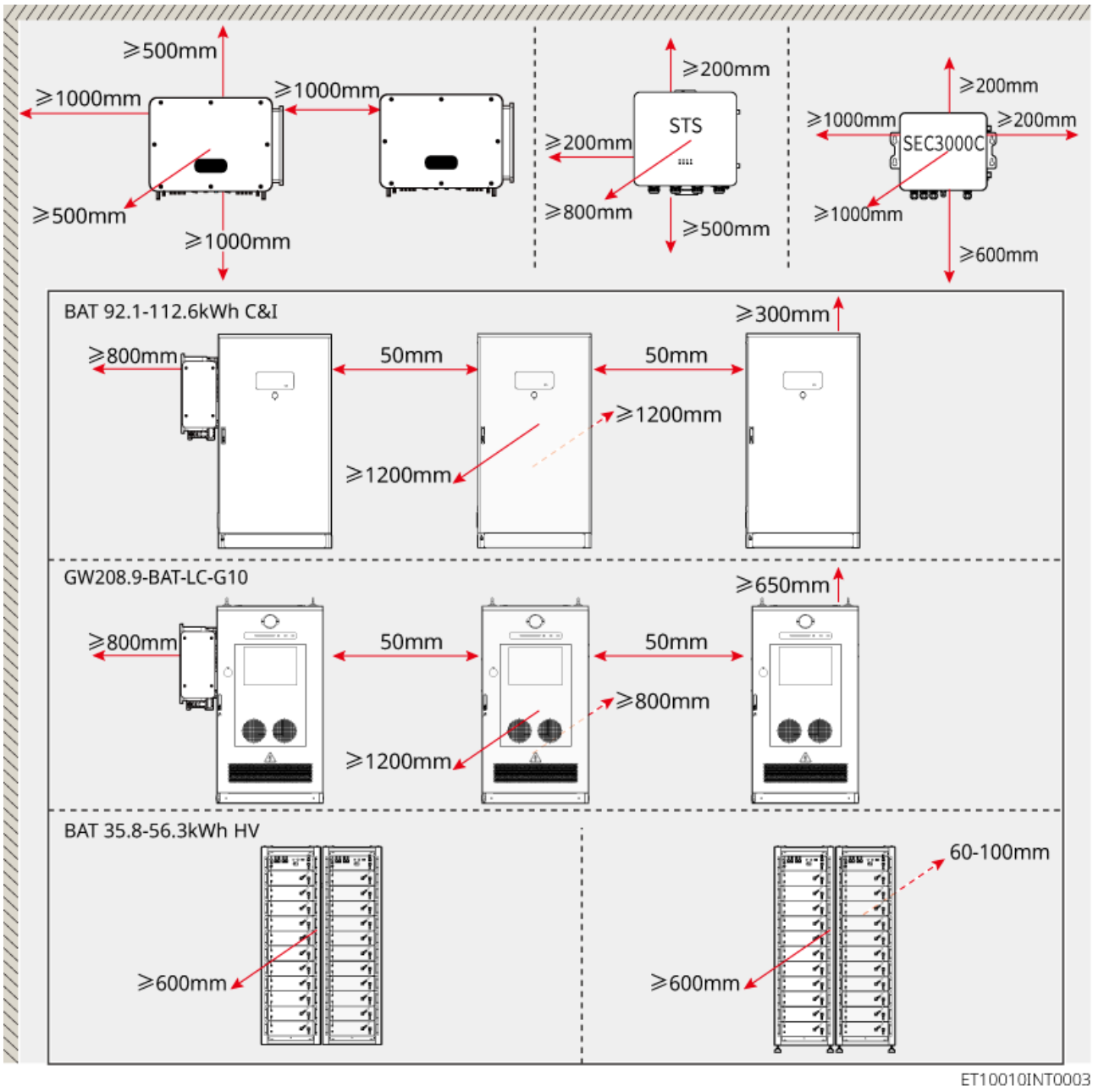
- Inverter: Add a multi-turn ferrite core to the DC input cables or AC output cables of the inverter, or add a low-pass EMI filter; alternatively, keep the distance between the inverter and the wireless electromagnetic interference equipment more than 30 m.
- Other equipment: Keep the distance between the equipment and the wireless electromagnetic interference equipment more than 30 m.



4.2 Installation Space Requirements

When installing equipment in the system, reserve sufficient space around the equipment to ensure adequate installation and heat dissipation space.





ET10010INT0003

5 Detailed System Wiring Diagram

NOTE

- If the energy storage system needs to use the off-grid function, it must be equipped with a Static Transfer Switch (STS) cabinet.
- No circuit breaker may be connected between the inverter and the Static Transfer Switch (STS) cabinet.

5.1 Grid-Tied Scenario

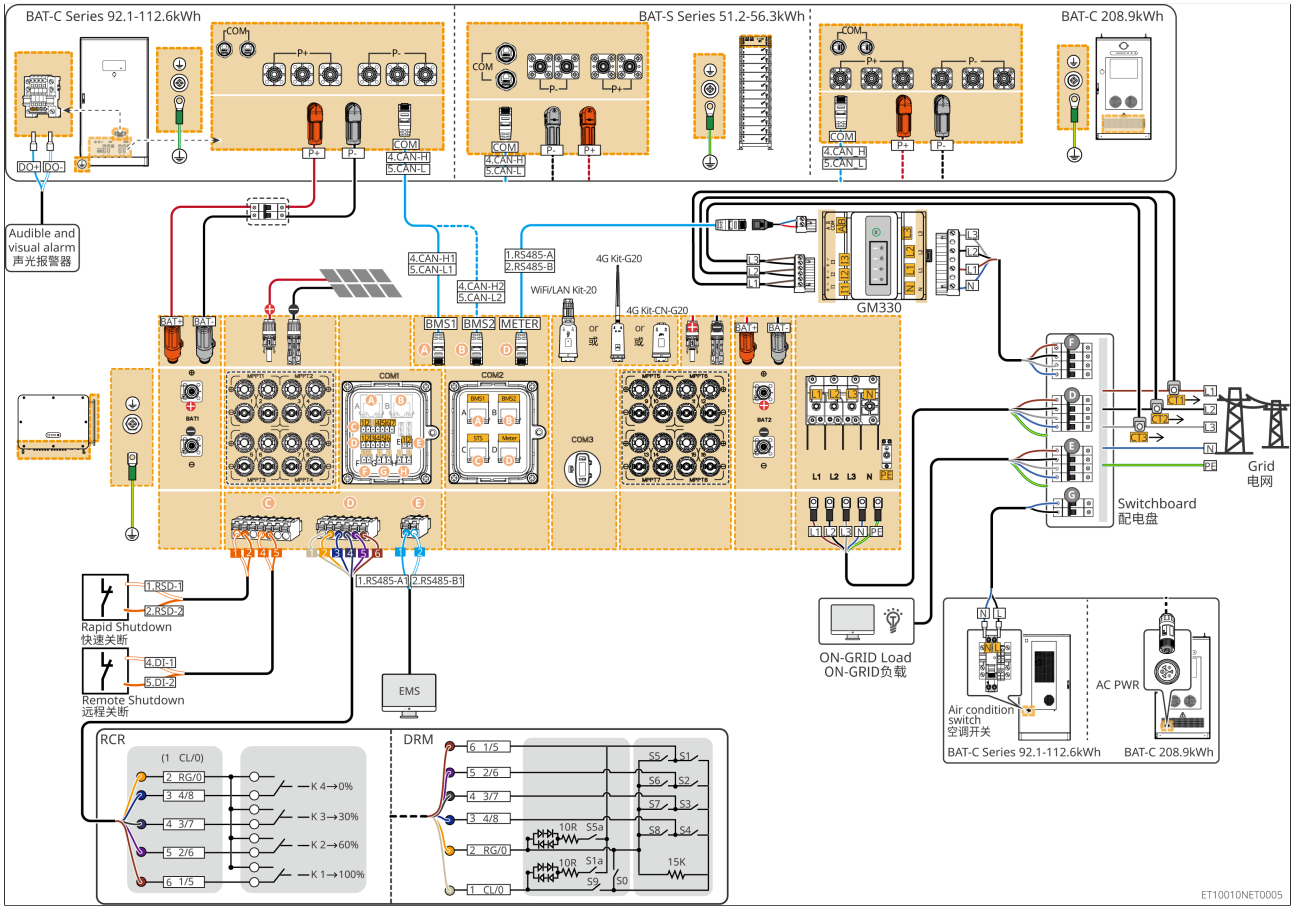


Figure11 On-grid scenario (single unit)

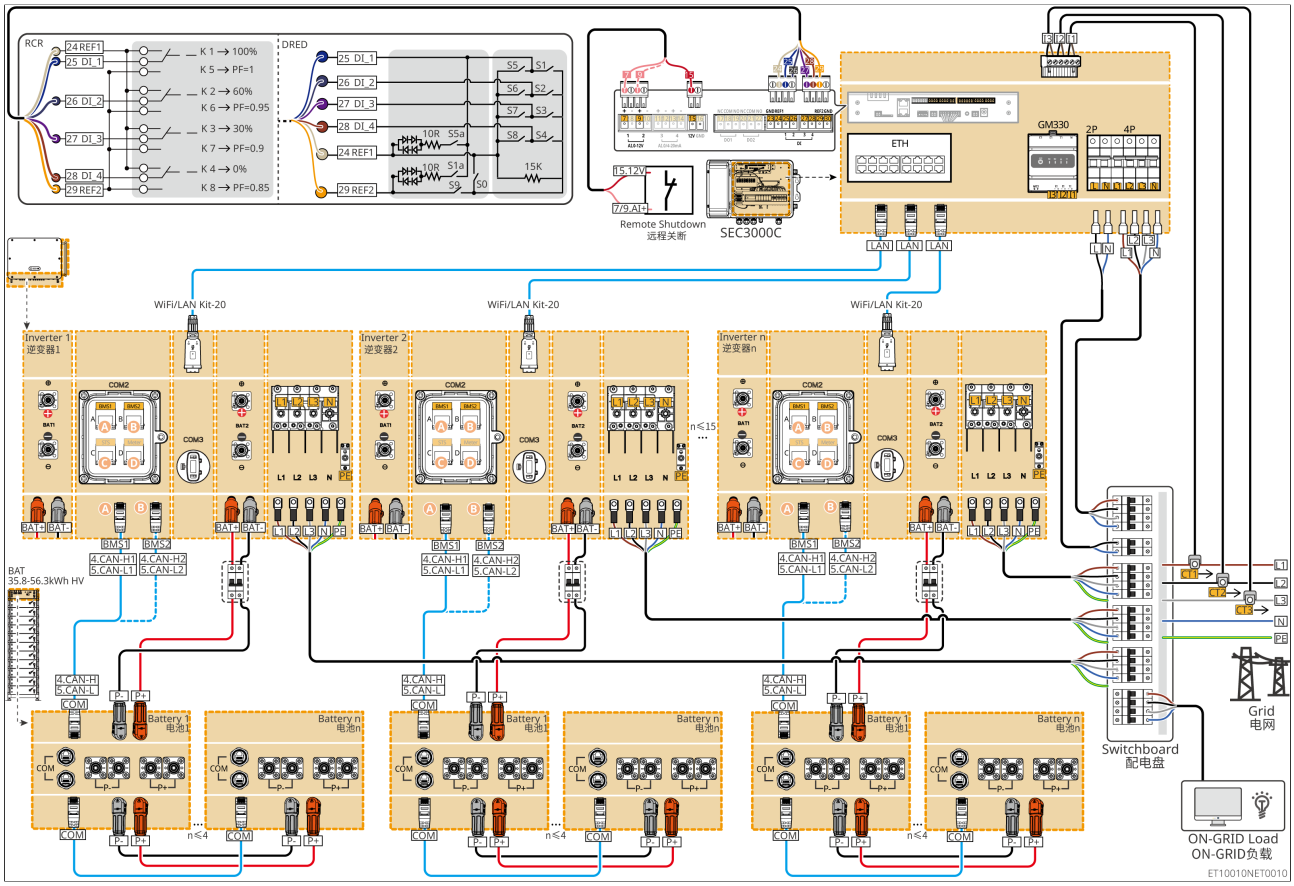


Figure12 On-grid scenario (multiple units, withBAT 51.2-56.3kWh)

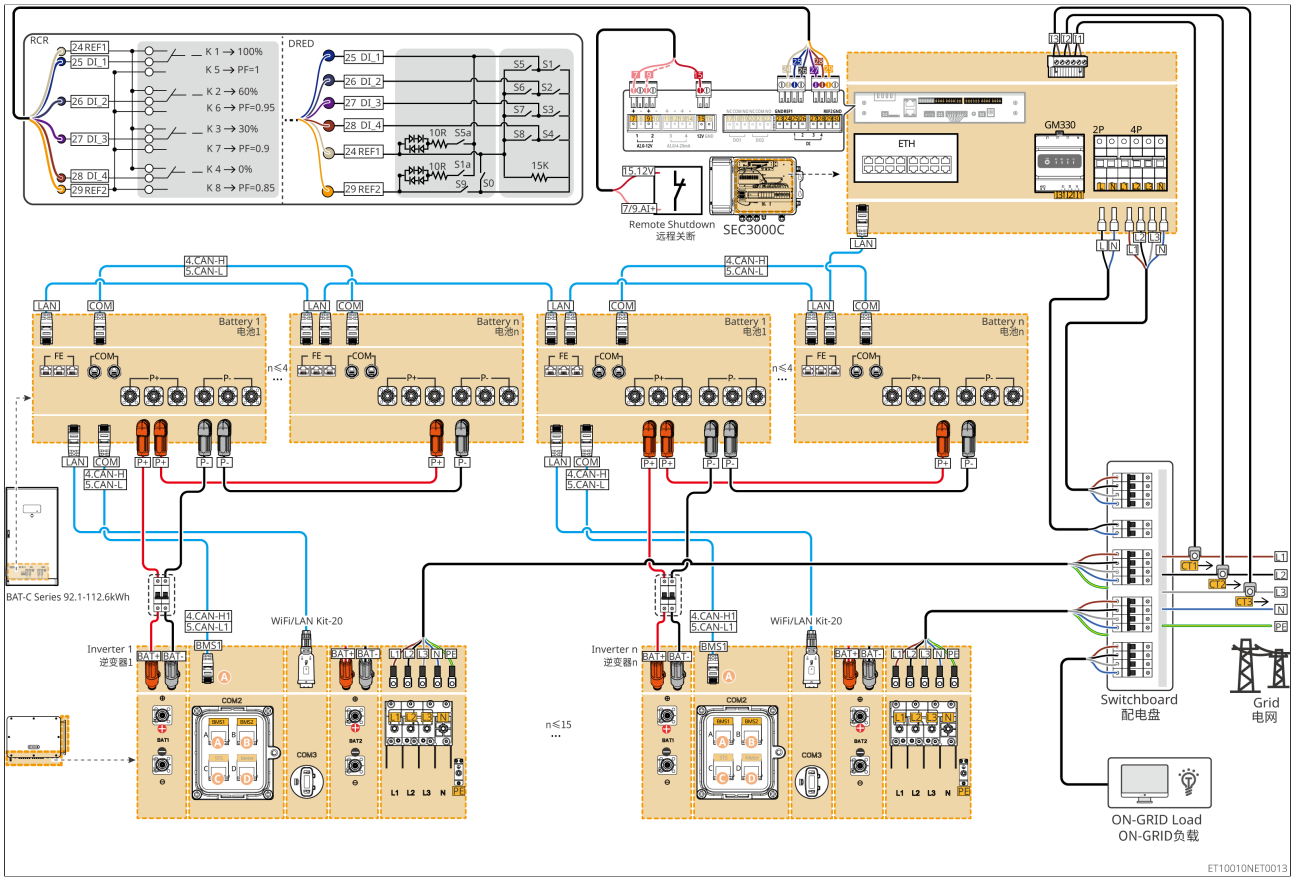


Figure13 On-grid scenario (multiple units, with BAT 92.1-112.6kWh)

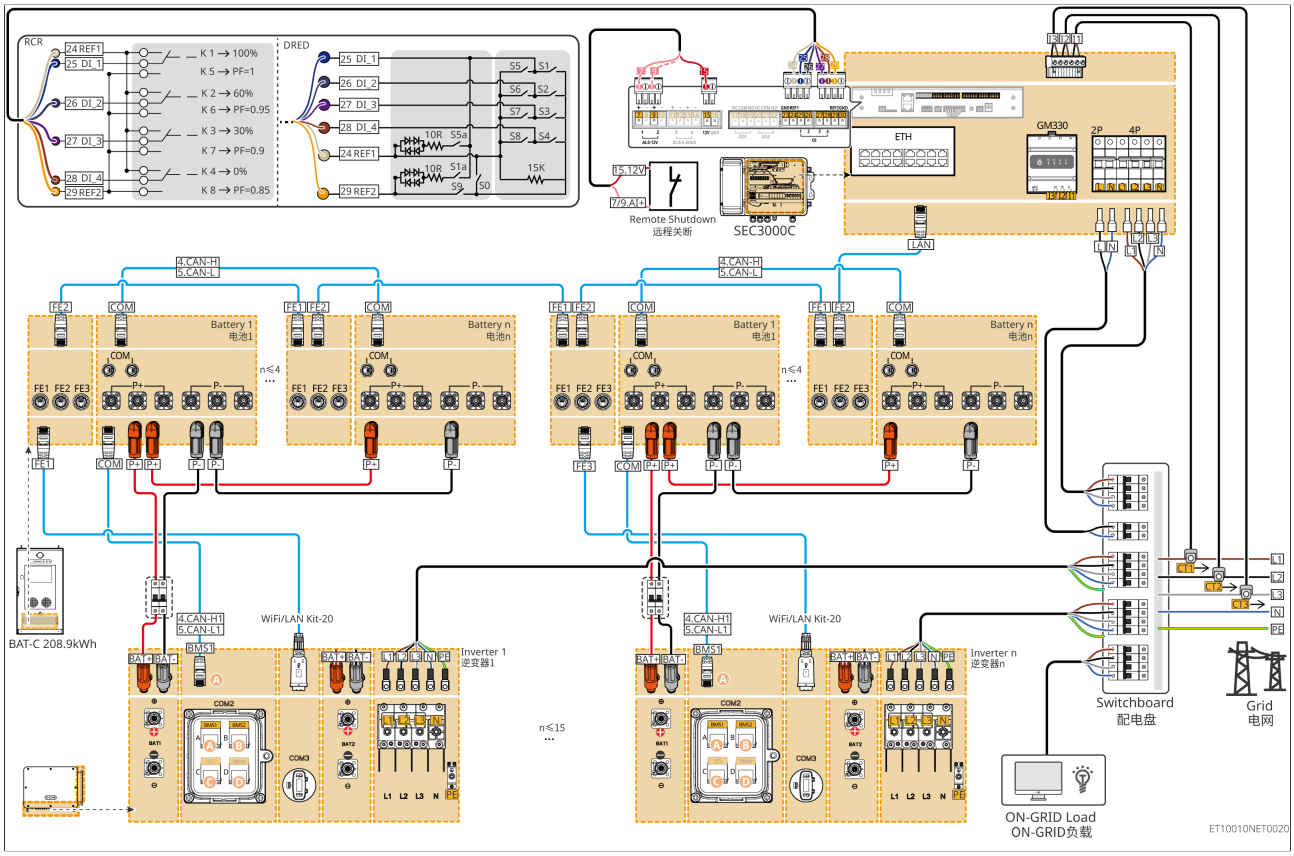


Figure14 On-grid scenario (multiple units, withBAT-C 208.9kWh)

5.2 On/off-Grid Scenario

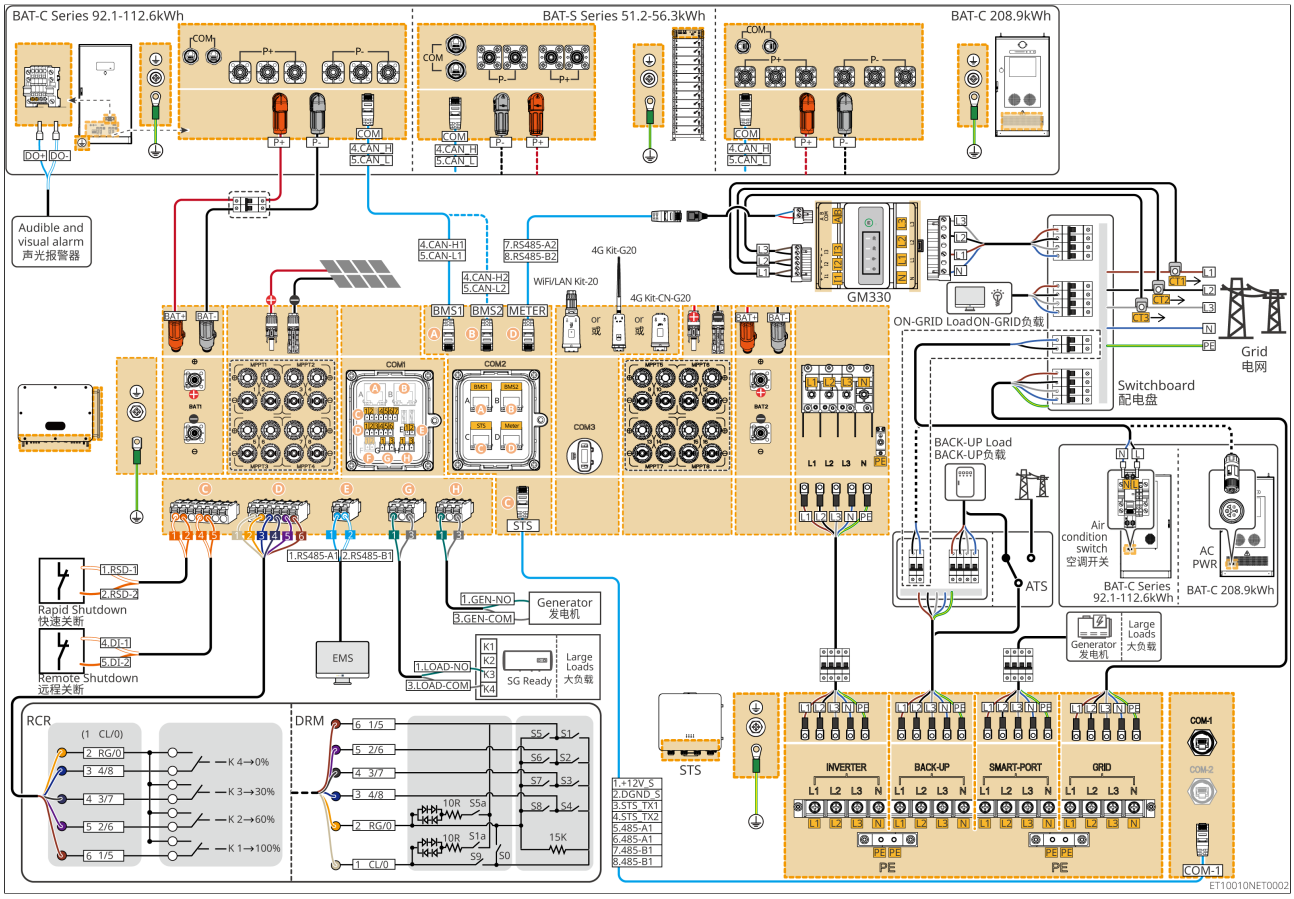


Figure15 On/Off-grid scenario (single unit, partial backup power)

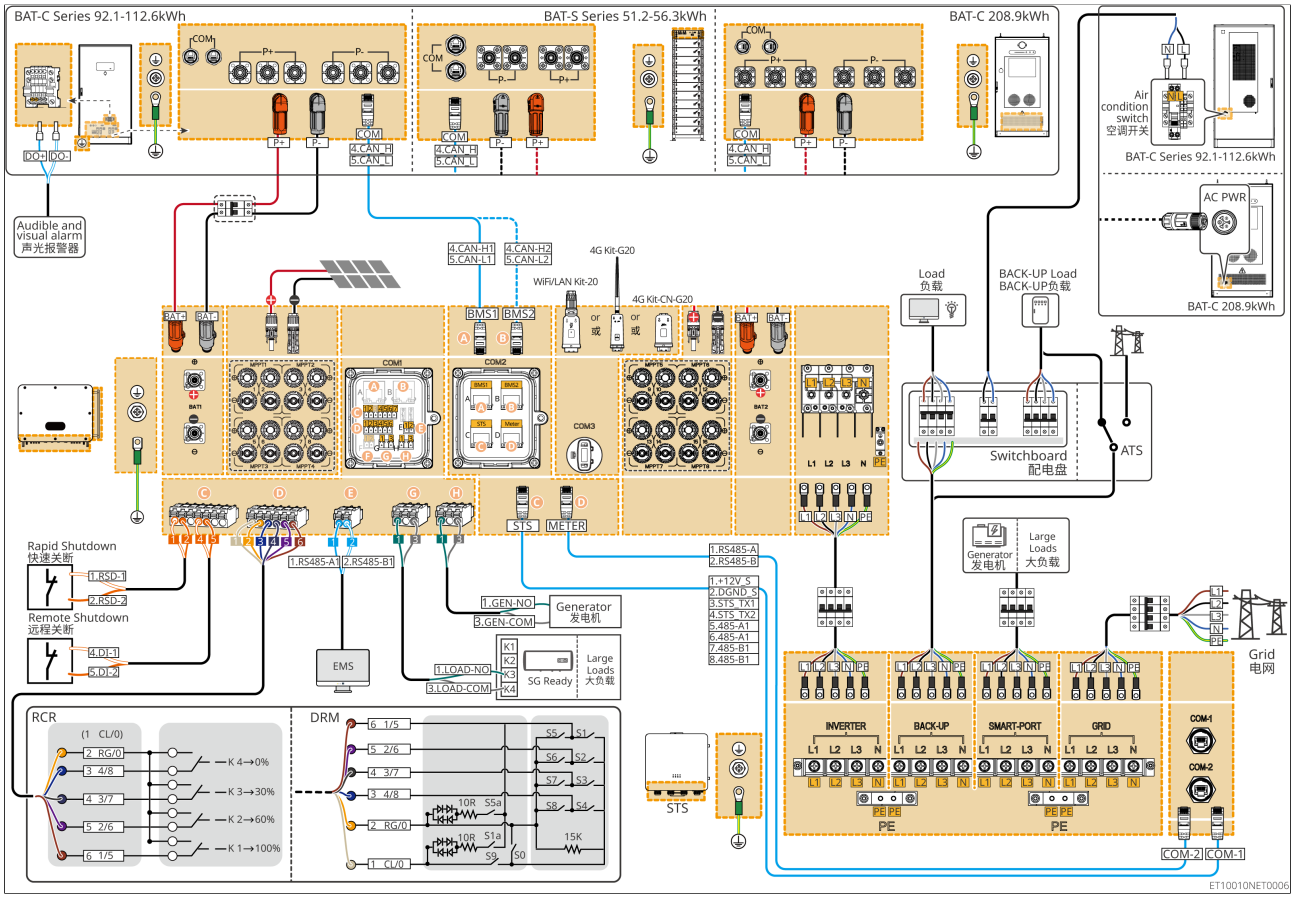


Figure16 On/Off-grid scenario (single unit, whole-house backup power)

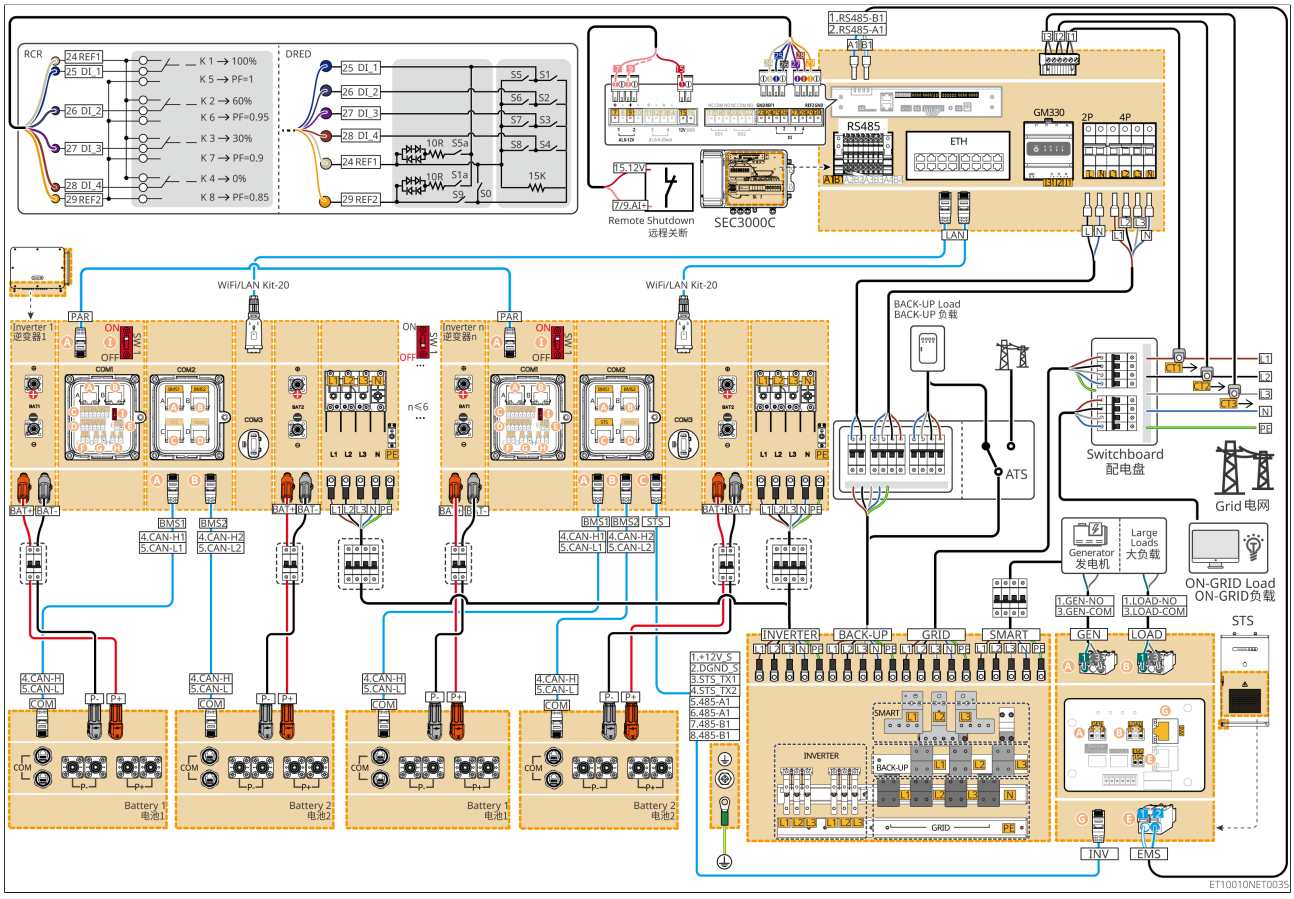


Figure17 On/Off-grid scenario (multiple units, with BAT 51.2-56.3kWh)

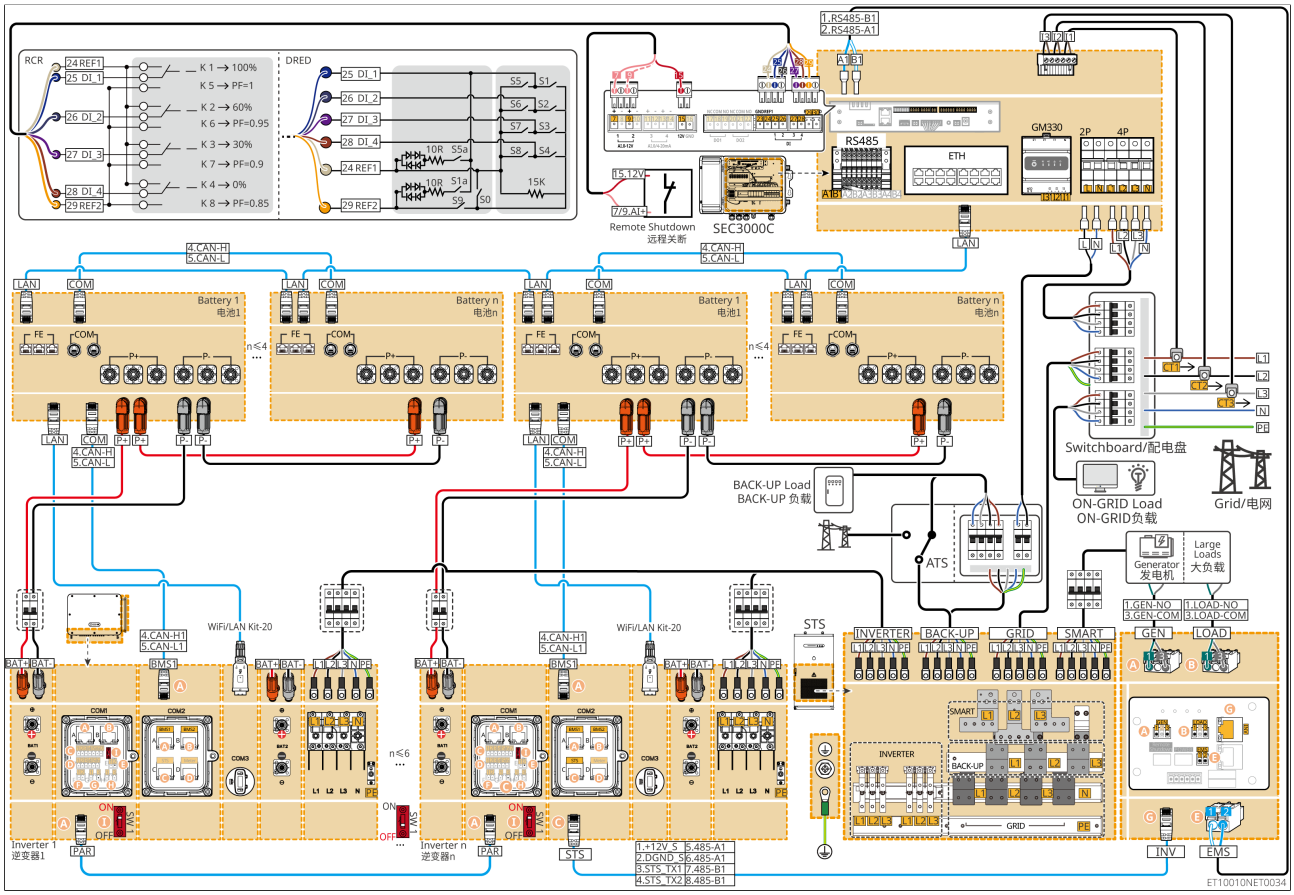


Figure18 On/Off-grid scenario (multiple units, with BAT 92.1-112.6kWh)

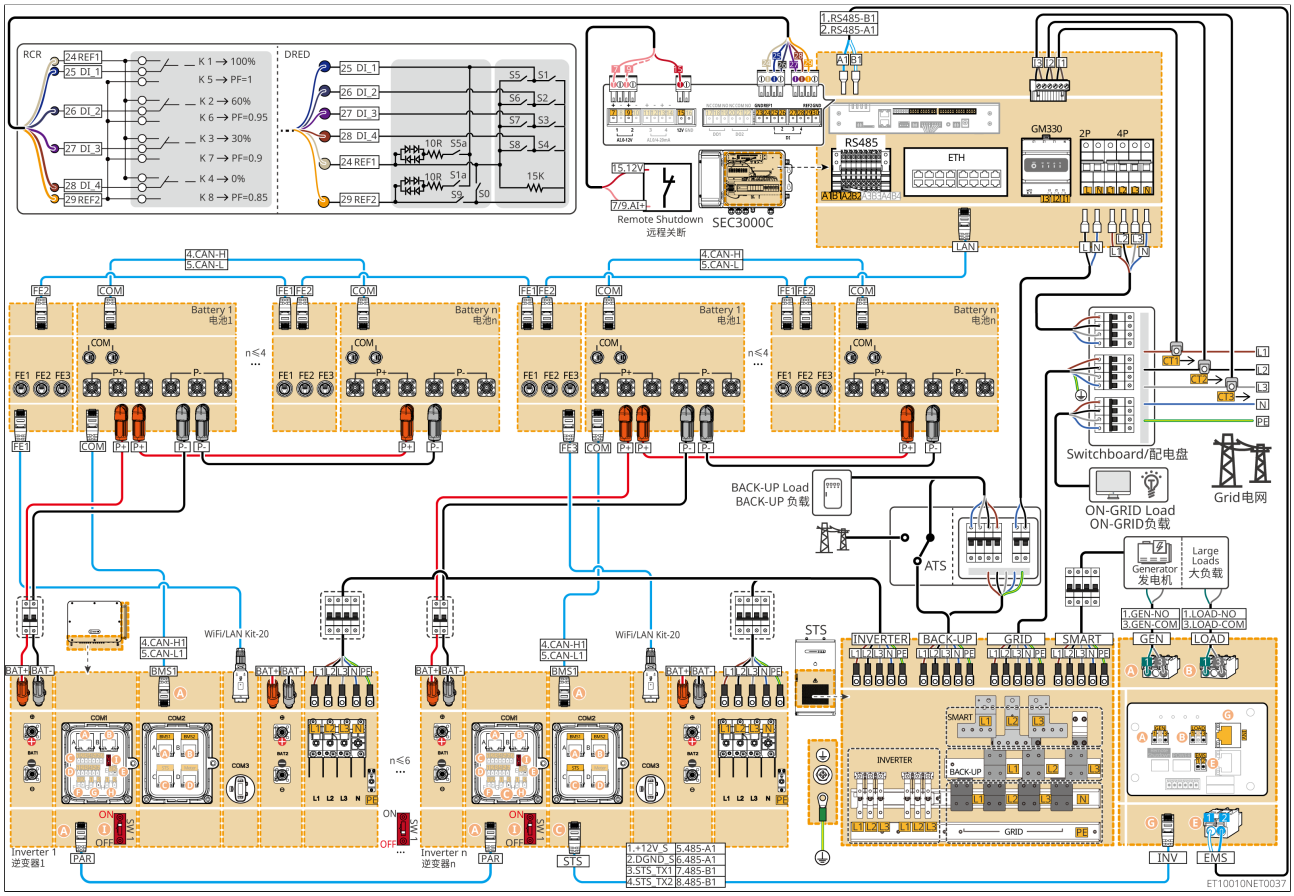


Figure19 On/Off-grid scenario (multiple units, with BAT-C 208.9kWh)

5.3 Microgrid Scenario

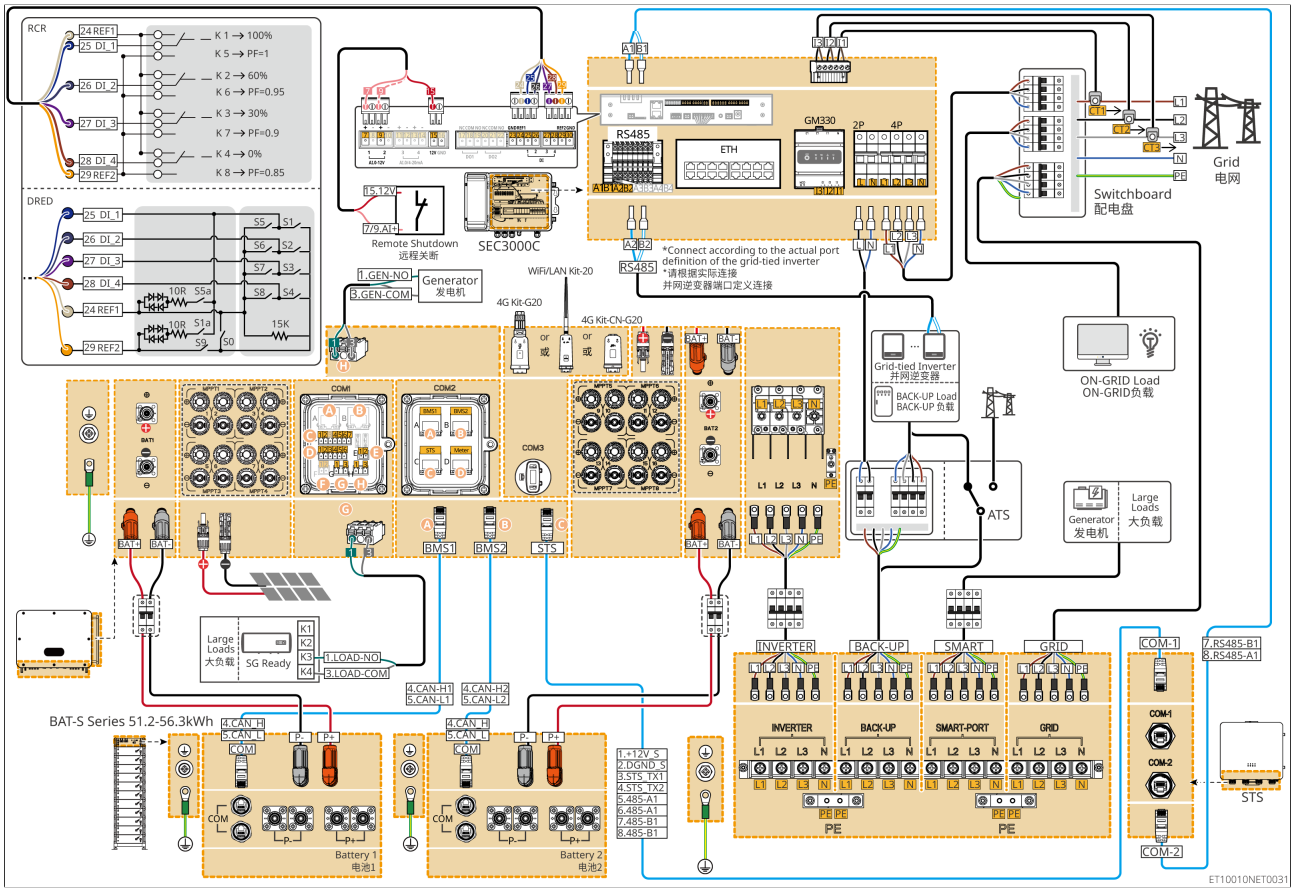


Figure20 Microgrid Scenario (single unit, with BAT 51.2-56.3kWh)

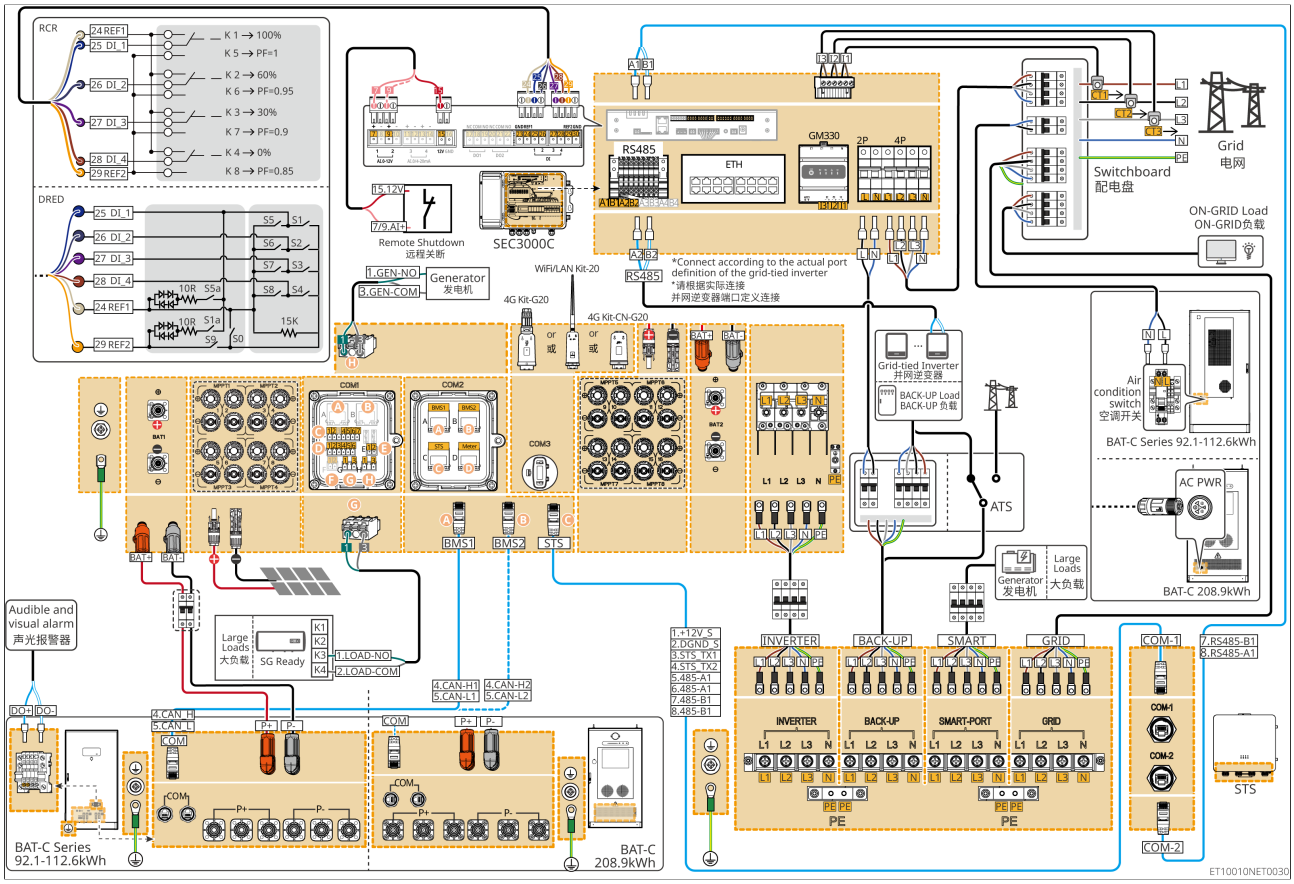


Figure21 Microgrid Scenario (single unit, with BAT 92.1-112.6kWh and BAT-C 208.9kWh)

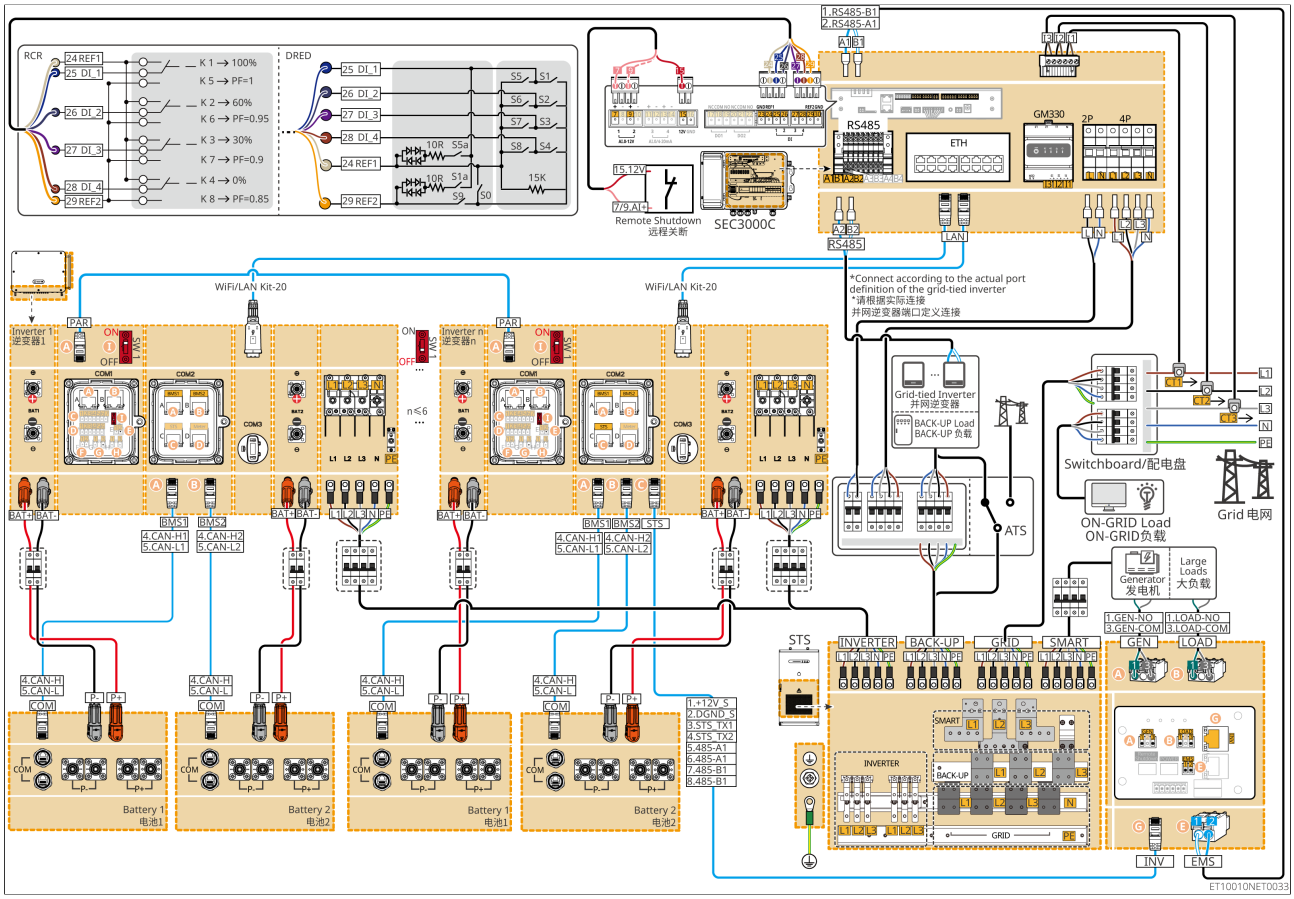


Figure22 Microgrid Scenario (multiple units, with BAT 51.2-56.3kWh)

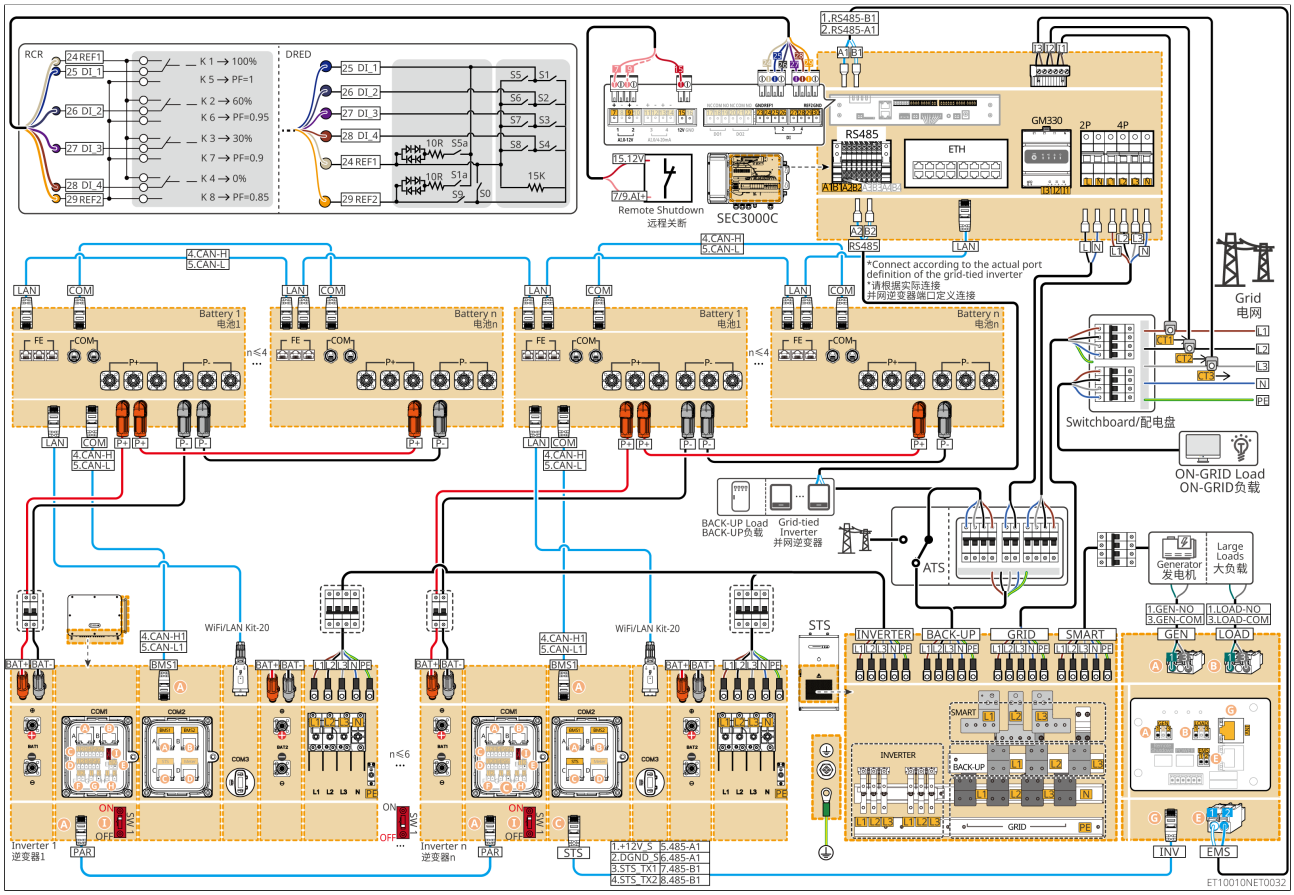


Figure23 Microgrid Scenario (multiple units, with BAT 92.1-112.6kWh)

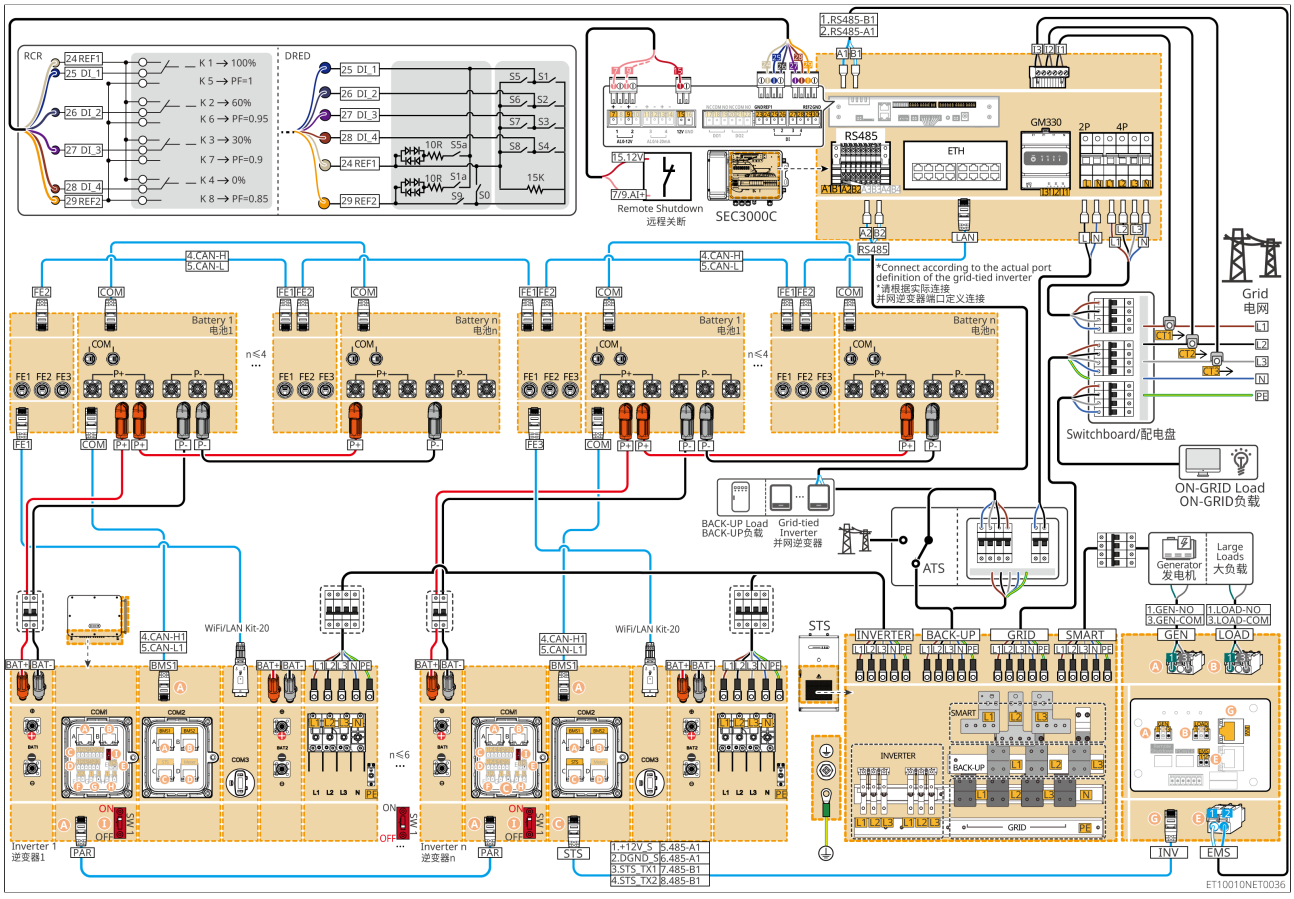


Figure24 Microgrid Scenario (multiple units, with BAT-C 208.9kWh)

5.4 Battery System Wiring Diagram

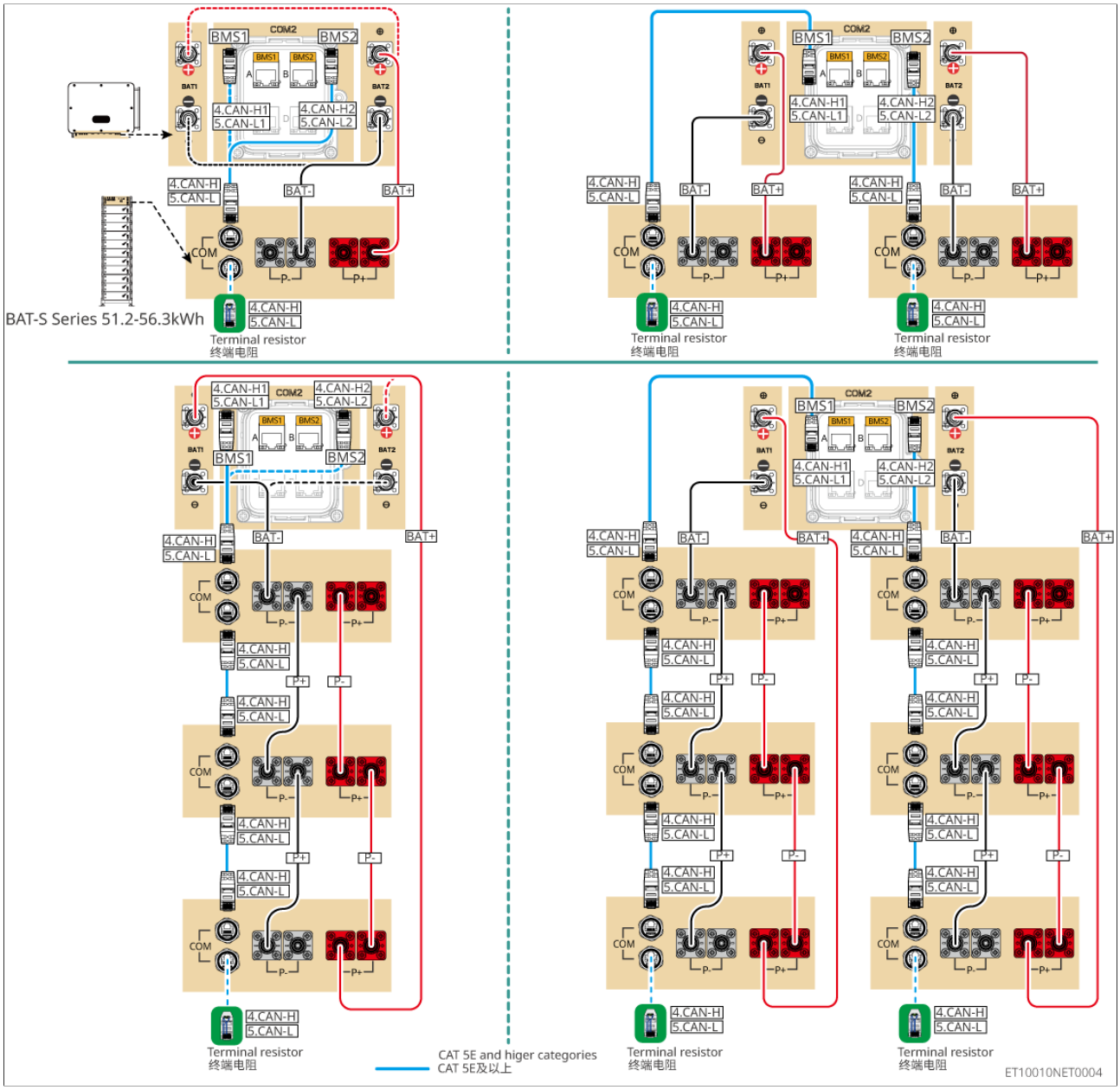


Figure25 Battery system wiring diagram (BAT 51.2-56.3kWh)

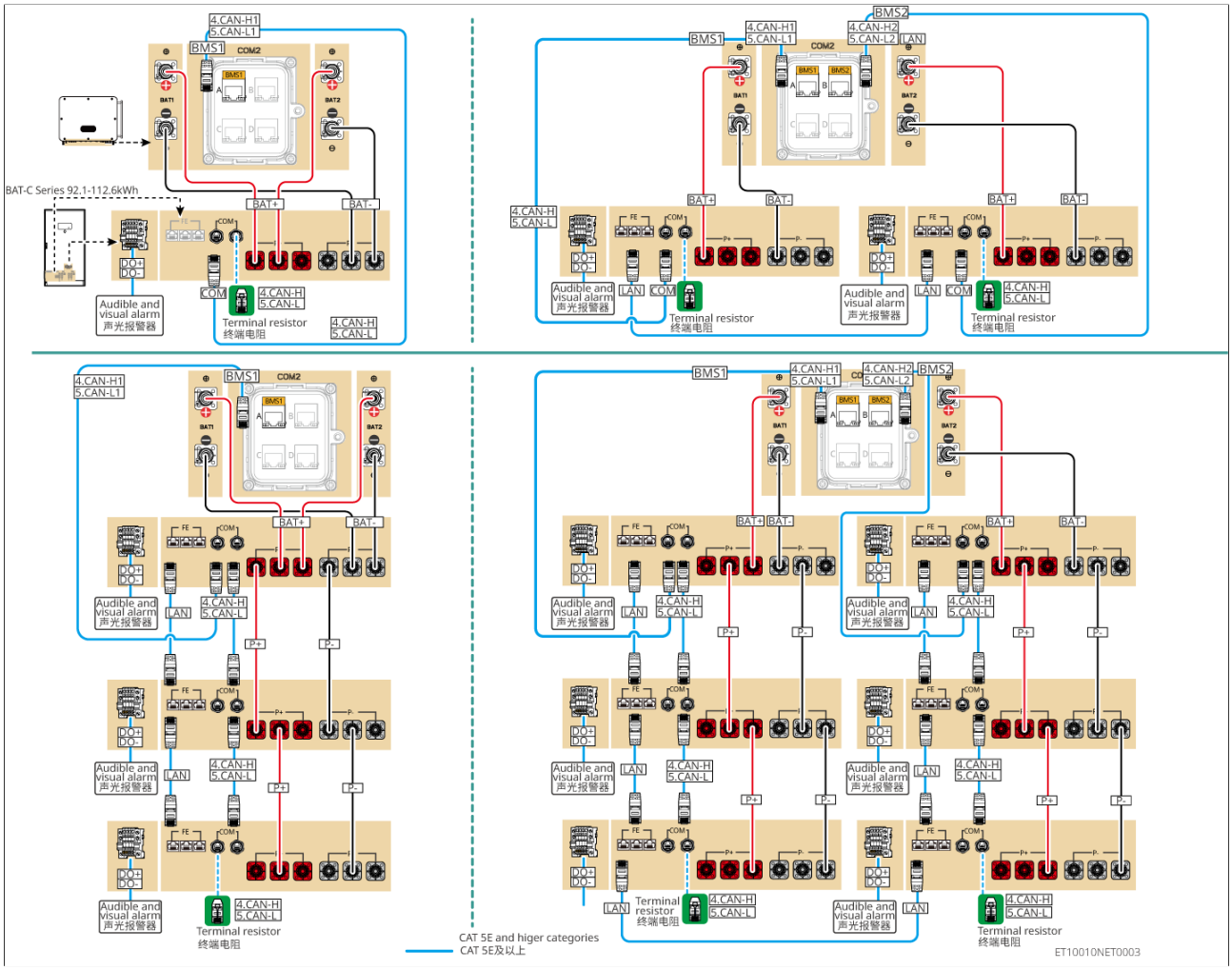


Figure26 Battery system wiring diagram (BAT 92.1-112.6kWh)

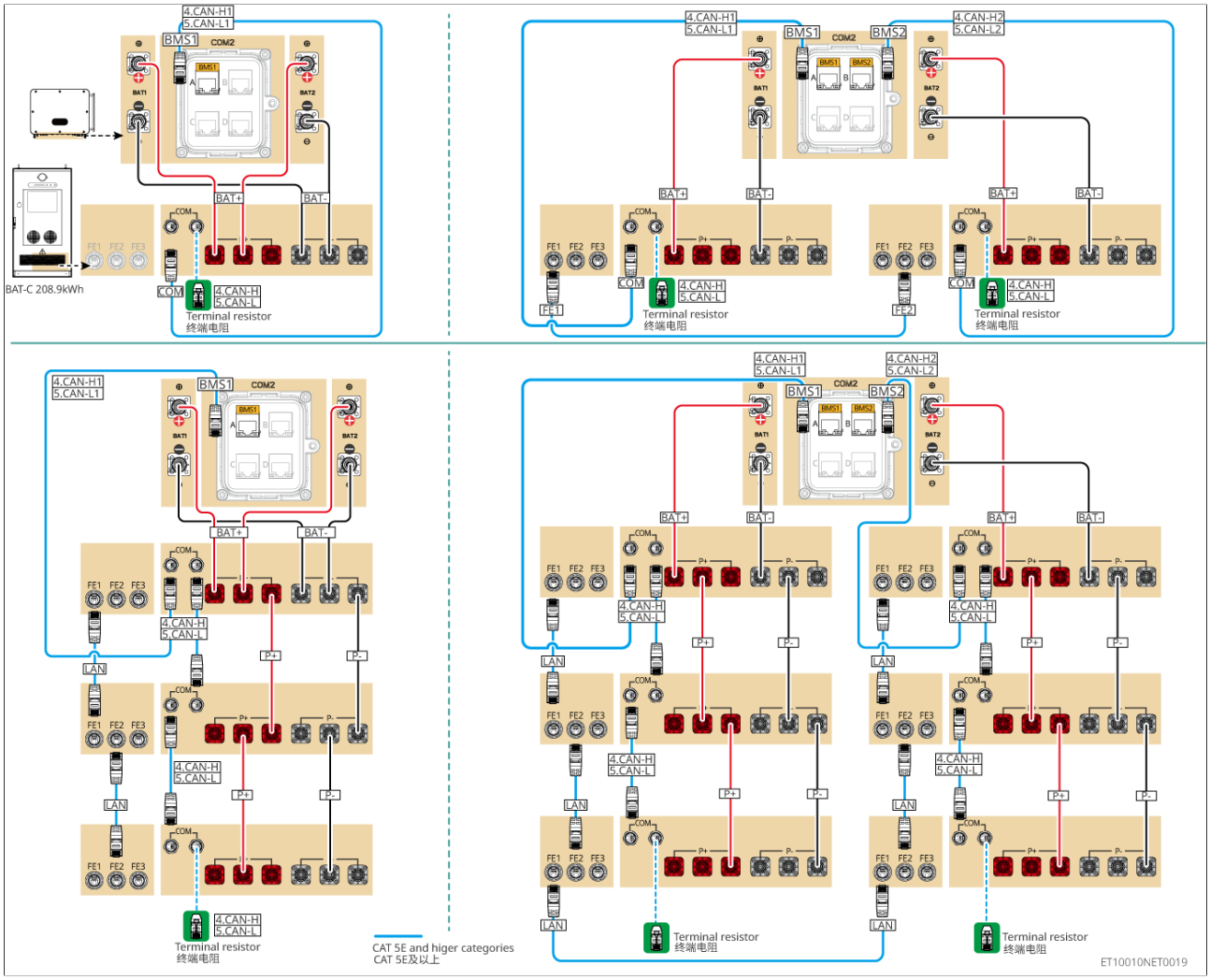


Figure27 Battery system wiring diagram (BAT-C 208.9kWh)

6 System Power-On

⚠WARNING

When multiple inverters are present in the system, ensure that all slave inverters are energized on the AC side within one minute after the master inverter is energized on the AC side.

NOTE

When the PV system has no https://en.goodwe.com/Ftp/EN/Downloads/User%20Manual/GW_SEMS%20Portal-User%20Manual-EN.pdf PV generation and the grid is abnormal, if the inverter cannot operate normally, the battery black start function can be used to force the battery to discharge and start the inverter. The inverter can then enter off-grid mode, and the battery supplies power to the load.

- BAT series 25.6-56.3kWh high-voltage battery black start procedure: After closing the molded-case circuit breaker, the RUN indicator flashes, and the FAULT indicator remains off. Press and hold RUN for 5s. If the sound of the contactor closing is heard and RUN turns solid on, the black start is successful. If the RUN indicator keeps flashing and the FAULT indicator remains off, the black start has failed. After a failed black start, press and hold RUN for 5s to repeat the black start procedure. If it fails again, contact GoodWe after-sales personnel.
- BAT series 92.1-112.6kWh commercial and industrial battery system black start procedure: refer to the power-on/off steps.
- For other batteries, the black start procedure is the same as the power-on steps.

Before the power-on operation of the BAT series 92.1-112.6kWh commercial and industrial battery system, ensure that the battery EPO switch is in the released state. Release procedure: Turn the EPO switch clockwise.



6.1 Grid-Tied Scenario

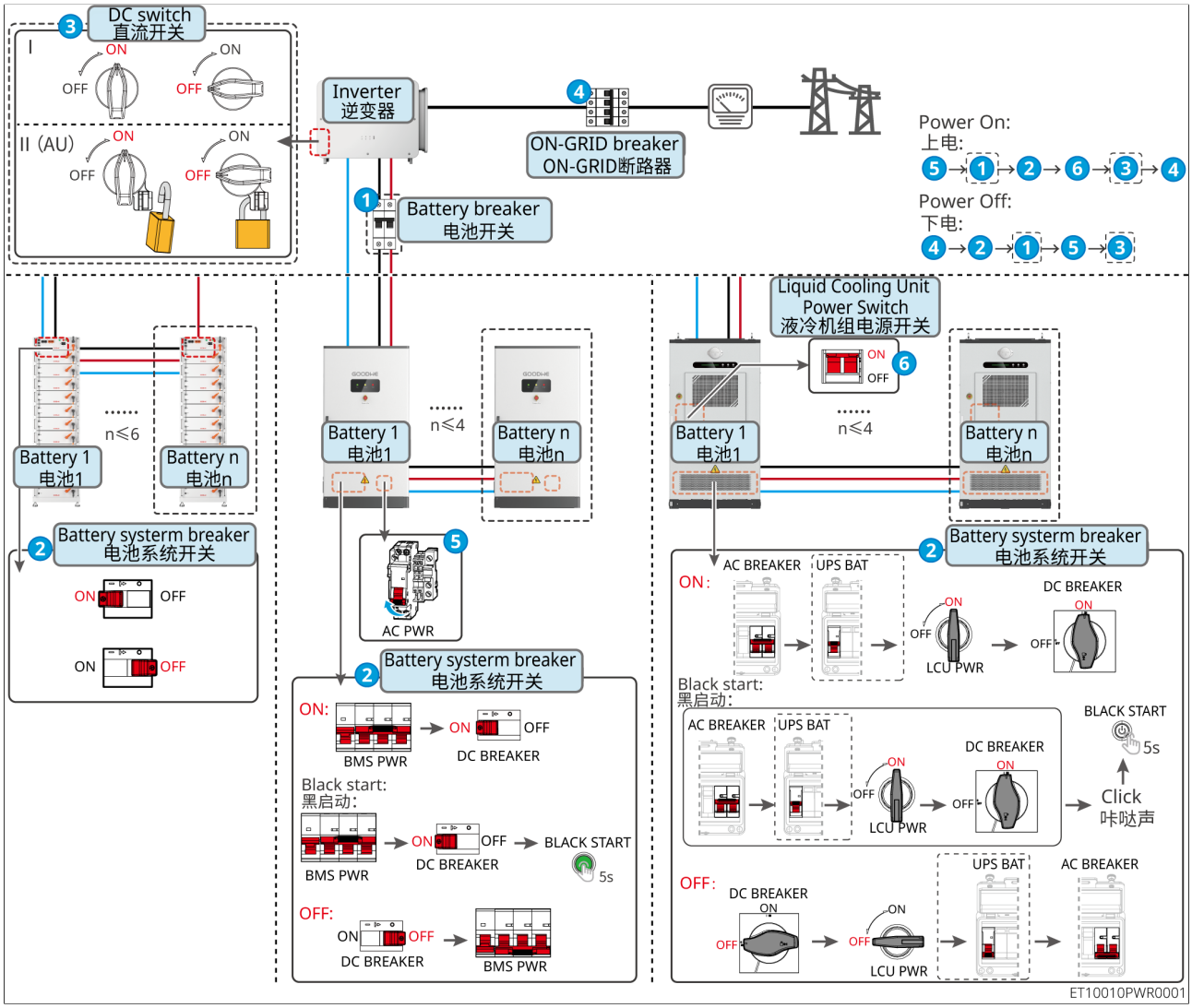


Figure28 On-grid scenario (single unit)

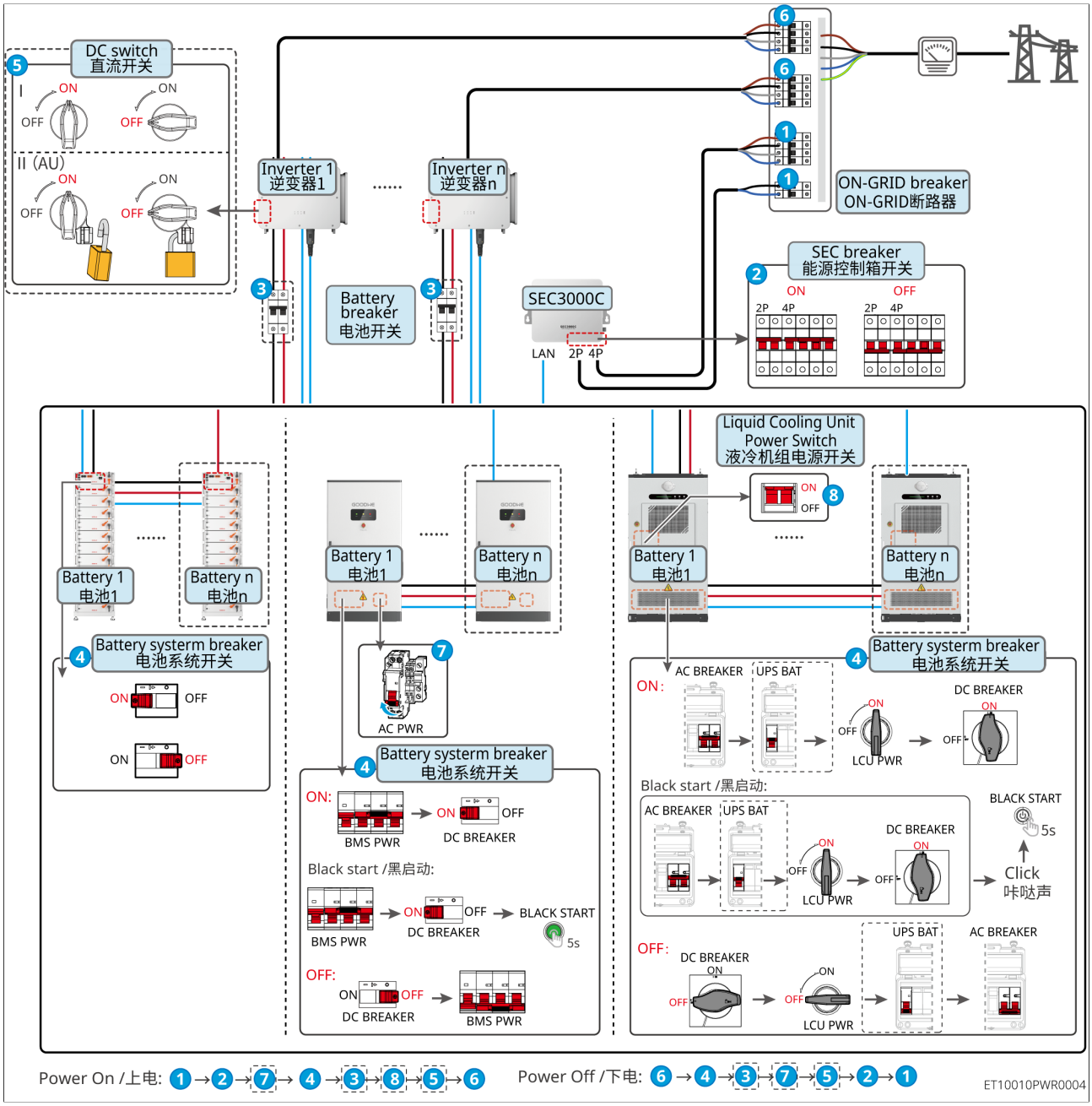


Figure29 On-grid scenario (parallel operation)

6.2 On/off-Grid Scenario & Microgrid Scenario

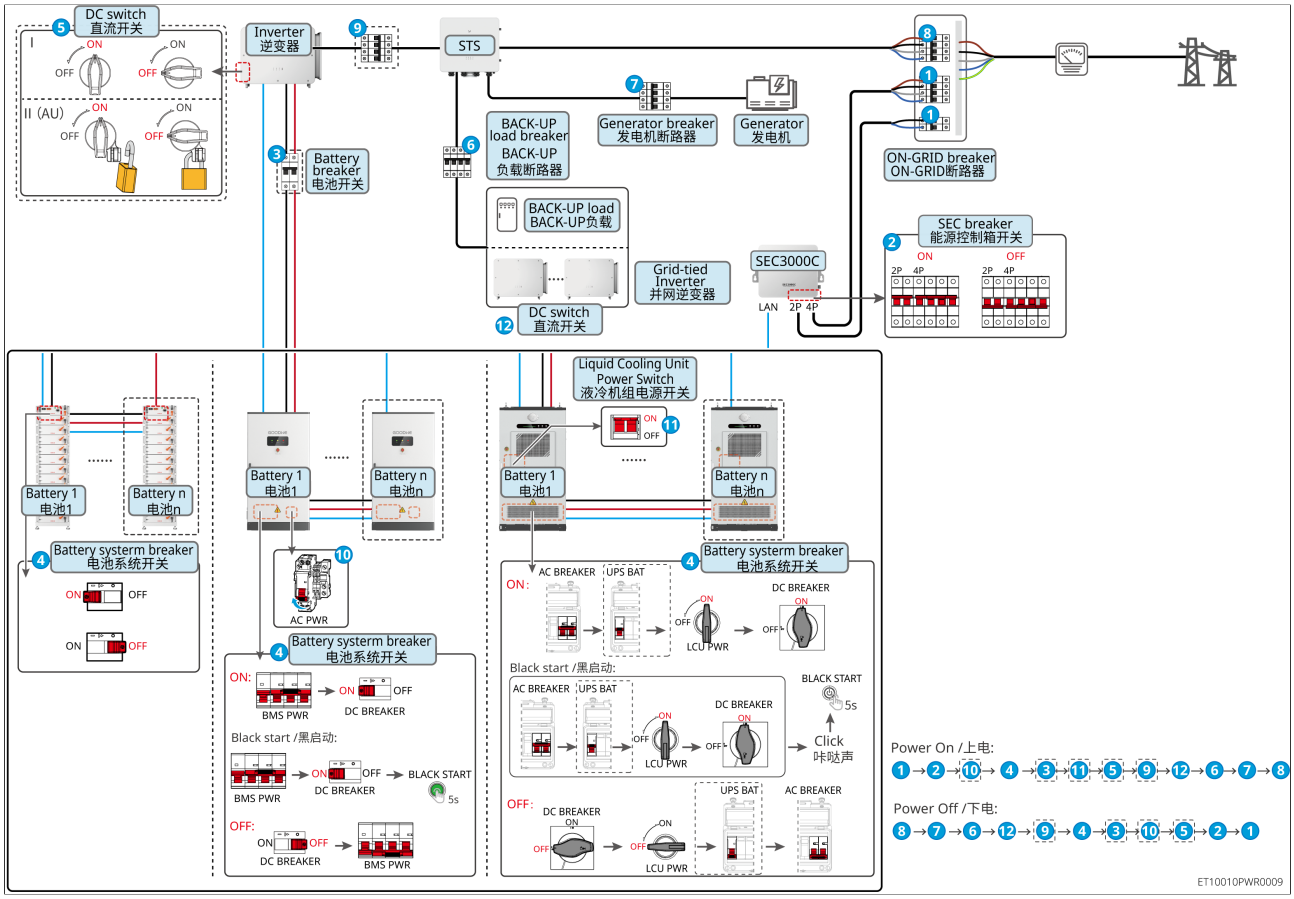


Figure30 On/Off-grid scenario & Microgrid Scenario (single unit)

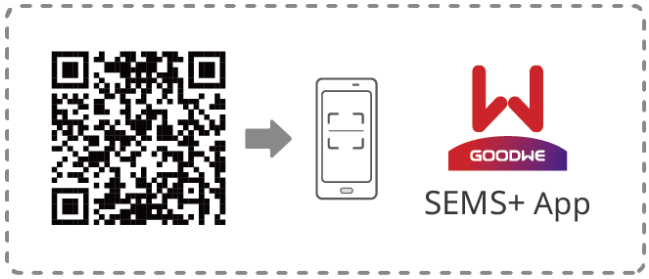
7 System Commissioning

7.1 Power Station Monitoring via SEMS+

SEMS+ is a monitoring platform that can communicate with devices via WiFi, LAN, or 4G. The following are common functions of SEMS+:

1. Manage organization or user information, etc.
2. Add and monitor power station information, etc.
3. Maintain equipment.

Scan the QR code below to download and install.



SEMS0164

For detailed functions, please refer to the SEMS+ User Manual. The user manual can be obtained from the official website or by scanning the following QR code.

7.2 Perform Device Commissioning Through the SEC3000C Embedded Web

The SEC3000C Smart Energy Control Box is a dedicated device for the PV power generation system monitoring and management platform. It can be used to collect data from devices in the PV power generation system, such as grid-tied inverters,

energy storage inverters, and meters; store logs; and send the data to the monitoring and management platform, enabling centralized monitoring, operation, and maintenance of the PV system.

8 Contact Details

GoodWe Technologies Co., Ltd.
No. 90 Zijin Rd., New District, Suzhou, China
en.goodwe.com
service@goodwe.com