C&I Grid-Tried Solution Technical Disclosure

Applicable to LUNA2000-215-2S10 (C&I Hybrid-Cooling ESS)



Security Level:

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2. Selection of Key Components
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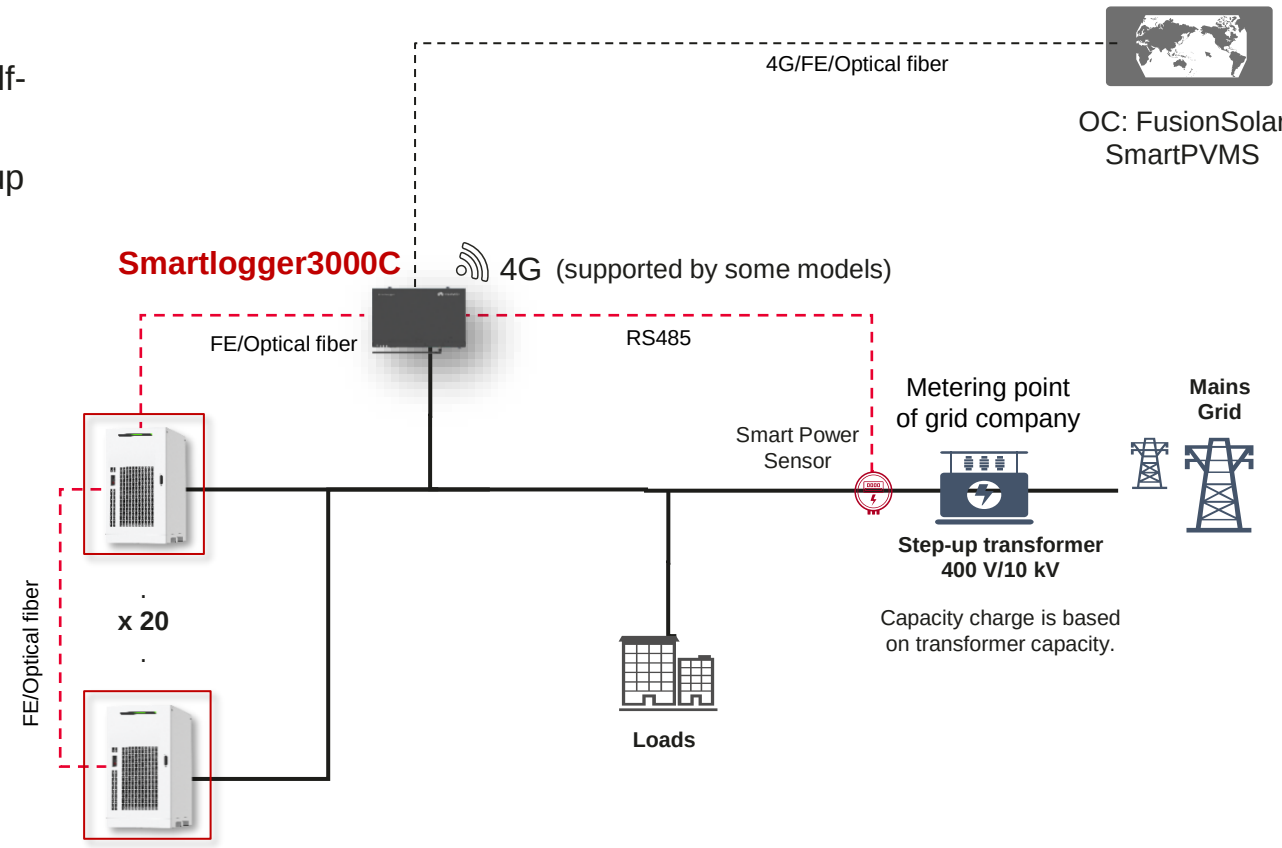
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Typical Scenarios of C&I Grid-Tired Solution

Typical ESS-only Scenario 1.1: ESS Low-Voltage Grid Connection/Scenario Description

- **Working mode**: In the ESS-only scenario, the ESS can work in charge/discharge based on third-party dispatch(3rd Party EMS exist), Self-consumption, TOU(Time of Use, or Energy Arbitrage), or Peak Shaving.
- **Typical scenario**: 0.5C ESS charge/discharge rate; 2-hour power backup
- **Auxiliary power**: Independent grid is the first choice for the auxiliary power supply of ESSs. For the 380 V, 400 V, or 415 V power grid, the auxiliary power can be obtained **from phase C of the PCS outlet**.
- **Meter at PCC(Point of Common Coupling):** Only Huawei C&I meters are supported (SmartPS-80AI-T0). Customers need to purchase CTs (XXX A/5 A or 1 A) with a minimum precision of 0.5s.
- **Maximum communication distance**:

Wire Type	Distance/m
RS485	1, 000
MBUS cables(single-core/ multi-core)	400/ 1, 000
FE cables	100
optical cables(with 1000M/ 100M optical modules)	10, 000/ 12, 000



Scenario constraints:

- Applies to the scenario where a SINGLE Smartlogger and a SINGLE grid connection point are used.
- A SINGLE Smartlogger3000C supports a maximum of **20** C&I Hybrid-Cooling ESS.
- When the ESS works in TOU(Time of Use, or Energy Arbitrage), or Peak Shaving mode, the Smartlogger prevents the ESS feeding power to the grid.

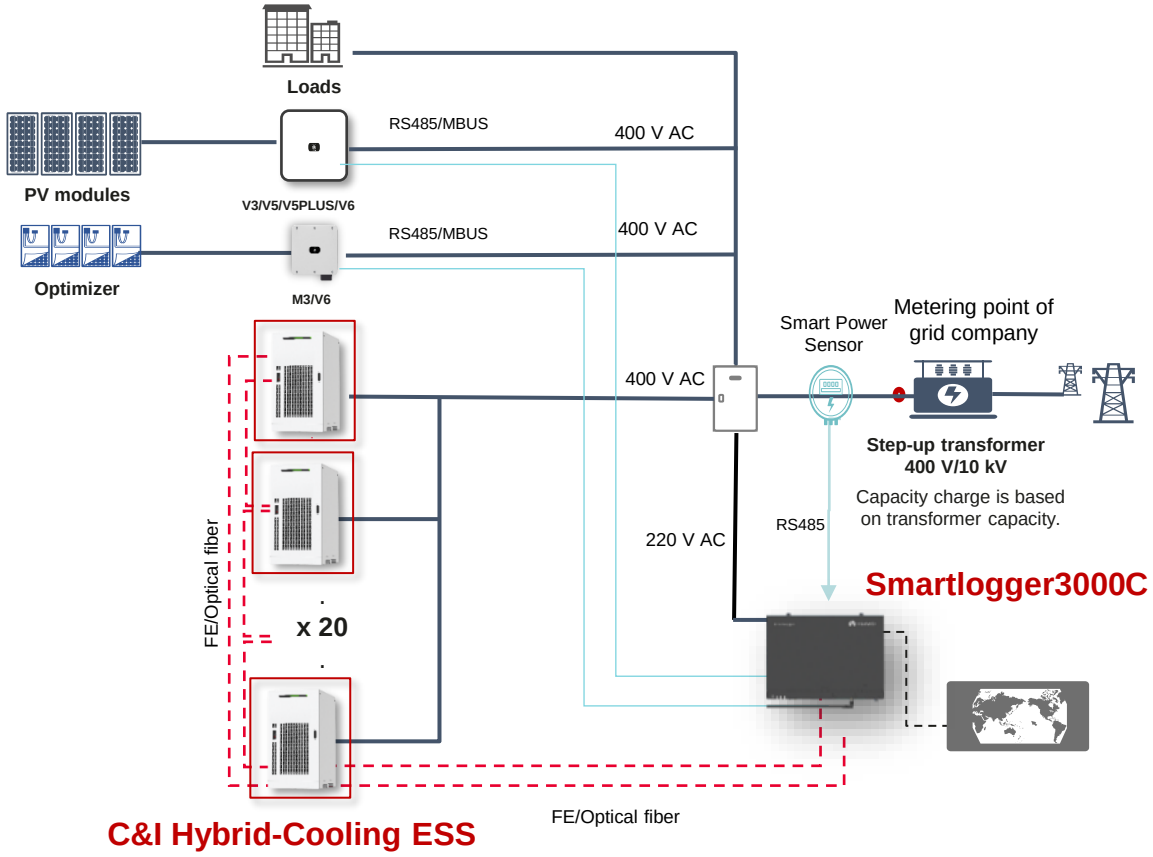
Typical ESS-Only Scenario 1.1: ESS Low-Voltage Grid Connection/Main Devices

No.	Device	Specifications	Unit	Quantity	Supplier	Remarks
1	Smart String ESS	LUNA2000-215-2S10	-	**≤ 20**	Huawei	
2	SACU	SmartLogger3000C(02312SCU-017)	-	**1**	Huawei	
3	Expansion module	SmartModule	-	1	Huawei	Mandatory for 2–20 ESSs
4	Management system	FusionSolar	-	1	Huawei	
5	Three-phase meter	SmartPS-80AI-T0	-	1	Huawei	CTs (XXX A/5 A or 1 A) with a minimum precision of 0.5s are required.
6	AC power cable between the Smart String ESS and the DC LV Panel	ZC-0.6/1 kV-YJV22-4 x 95 mm^2 + 1 x 50 mm^2 copper cable	m	xx	Separately purchased by the customer	Rated power: 108 kW
7	Auxiliary power cable between the DC LV Panel and the Smart String ESS	ZC-0.6/1 kV-YJV22-2 x 6 mm^2 copper cable	m	xx	Separately purchased by the customer	Maximum auxiliary power per ESS: 5.5 kVA

Typical PV+ESS Scenario 2.1: PV+ESS Low-Voltage Grid Connection/Scenario Description

- **Working mode**: In the PV+ESS scenario, the ESS can work in charge/discharge based on third-party dispatch (3rd Party EMS exist), Self-consumption, TOU(Time of Use, or Energy Arbitrage), or Peak Shaving.
- **Typical scenario**: 0.5C ESS charge/discharge rate; 2-hour power backup
- **Auxiliary power**: Independent grid is the first choice for the auxiliary power supply of ESSs. For the 380 V, 400 V, or 415 V power grid, the auxiliary power can be obtained **from phase C of the PCS outlet**.
- **Meter at PCC(Point of Common Coupling):** Only Huawei C&I meters are supported (SmartPS-80AI-T0). Customers need to purchase CTs (XXX A/5 A or 1 A) with a minimum precision of 0.5s.
- **Maximum communication distance**:

Wire Type	Distance/m
RS485	1, 000
MBUS cables(single-core/ multi-core)	400/ 1, 000
FE cables	100
optical cables(with 1000M/ 100M optical modules)	10, 000/ 12, 000



Scenario constraints:

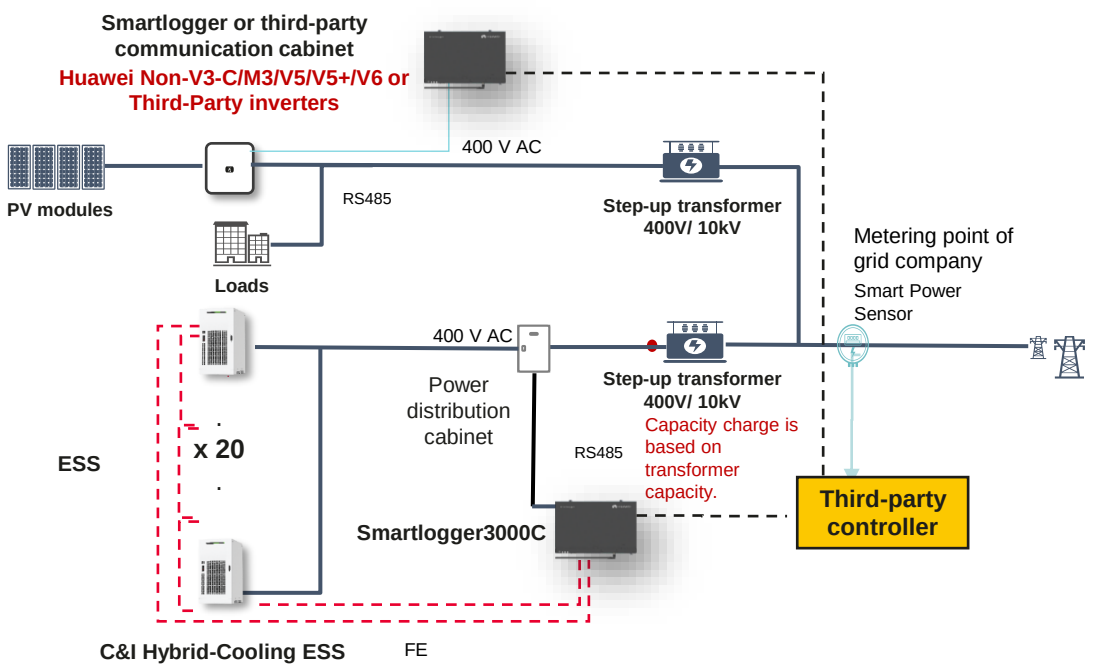
- Applies to the scenario where a SINGLE Smartlogger and a SINGLE grid connection point are used.
- A single Smartlogger3000C supports a maximum of **20** ESSs and **30** PV inverters (V3-C/M3/V5/V5+/V6 series inverters) are supported.
- PV inverters of different models can be used together. A maximum of 115 optimizers can be configured for a single M3 inverter, and a maximum of 240 optimizers can be configured for a single V6 inverter.
- The V3-C/M3/V5/V5+/V6 inverters can be connected in parallel with the ESS and support Feed-in control.
- When the ESS works in TOU(Time of Use, or Energy Arbitrage), or Peak Shaving mode, the Smartlogger prevents the ESS from feeding power to the grid.
- MBUS networking: applicable only to medium-voltage grid-tired scenarios or non-low-voltage utility grid scenarios.

Typical PV+ESS Scenario 2.1: PV+ESS Low-Voltage Grid Connection/Main Devices

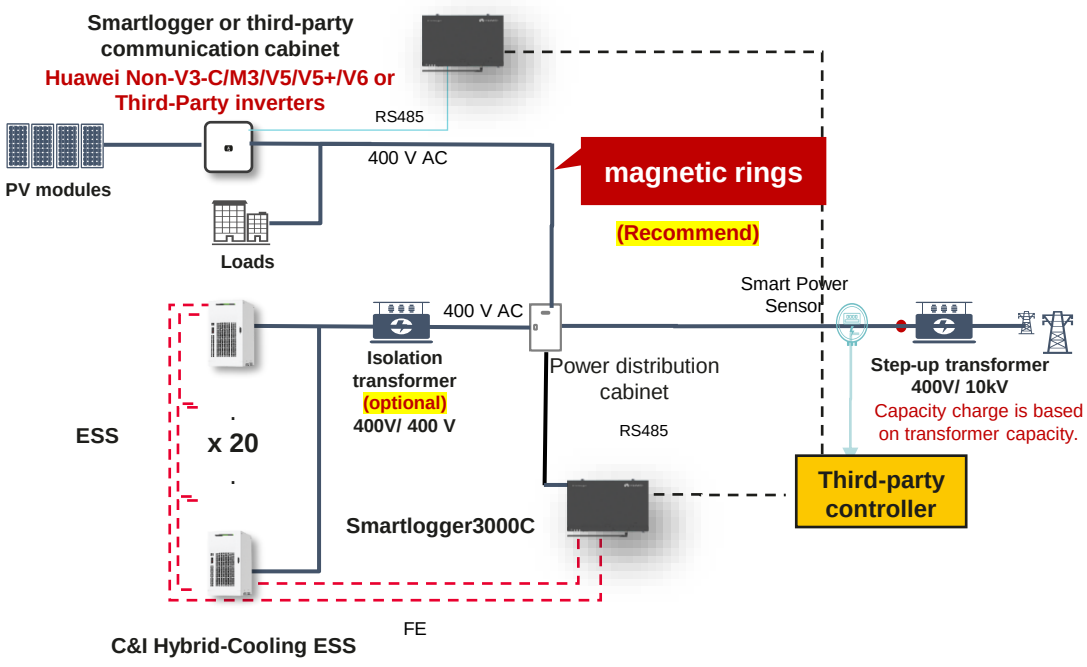
No.	Device	Specifications	Unit	Quantity	Supplier	Remarks
1	Smart String ESS	LUNA2000-215-2S10	-	**≤ 20**	Huawei	
2	SACU	SmartLogger3000C(02312SCU-017)	-	**1**	Huawei	
3	Expansion module	SmartModule	-	1	Huawei	Mandatory for 2–20 ESSs
4	PV inverter	V3-C/M3/V5/V5+/V6	-	**≤ 30**	Huawei	
5	Optimizer	Compatible with the inverter	-	Depending on the actual number of PV modules	Huawei	Optional
6	Management system	FusionSolar	-	1	Huawei	
7	Three-phase meter	SmartPS-80AI-T0	-	1	Huawei	CTs (XXX A/5 A or 1 A) with a minimum precision of 0.5s are required.
8	AC power cable between the Smart String ESS and the DC LV Panel	ZC-0.6/1 kV-YJV22-4 x 95 mm² + 1 x 50 mm² copper cable	m	xx	Separately purchased by the customer	Rated power: 108 kW
9	Auxiliary power cable between the DC LV Panel and the Smart String ESS	ZC-0.6/1 kV-YJV22-2 x 6 mm^2 copper cable	m	xx	Separately purchased by the customer	Maximum auxiliary power per ESS: 5.5 kVA

Typical PV+ESS Scenario 3.1: Parallel Connection of C&I Hybrid-Cooling ESS and Huawei Non-V3-C/M3/V5/V5+/V6 or Third-Party Inverters/Scenario Description

Scenario 1 PV+ESS Medium-voltage coupling



Scenario 2 PV+ESS Low-voltage coupling

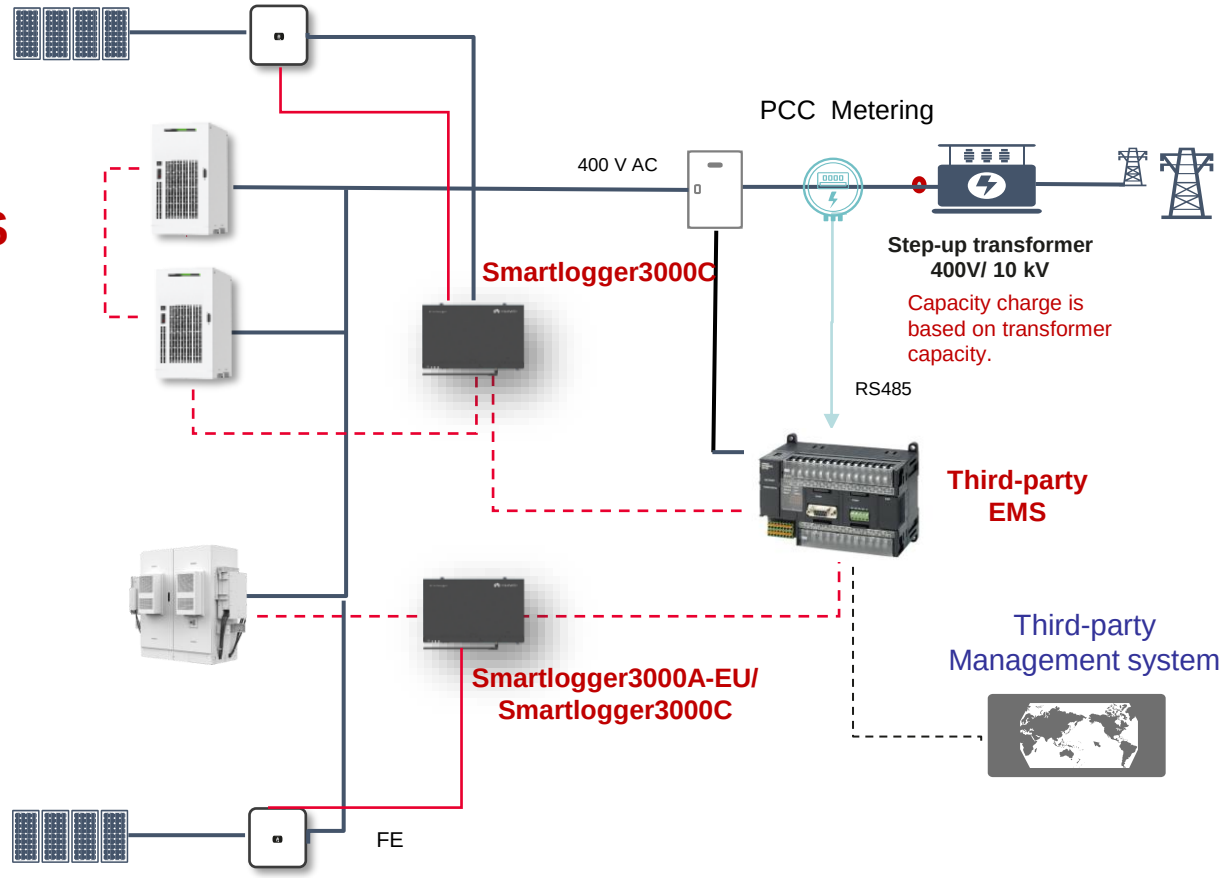


- In Grid-tired scenarios, if Huawei C&I Smart PCS software is upgraded to PCS2000MA V100R023C00SPC130 or later, Huawei C&I Hybrid-Cooling ESS can be connected to a non-V3/M3/V5/V5+/V6 inverter in parallel in low-voltage coupling mode without an isolation transformer.
- When a Huawei C&I Hybrid-Cooling ESS is connected to a non-V3-C/M3/V5/V5+/V6 inverter or Third-Party inverter in parallel in **low-voltage coupling** mode without an isolation transformer, circulating current and resonance may still occur, causing ESS derating or faults. If this risk exists, add **magnetic rings(recommend)** or an **isolation transformer(optional)**.
- C&I ESS auxiliary power cannot be drawn from the inverter output terminal. It is recommended that the power be drawn from an independent main grid supply or inside the cabinet.
- In this scenario, the C&I PV system and ESSs are connected to independent Smartloggers. A single Smartlogger supports a maximum of 20 C&I ESSs .
- In this scenario, a third-party EMS must be added to control the Smartloggers connected to the PV system and ESS. The third-party EMS implements functions for the site such as Feed-in control(or zero-export), Self-consumption, TOU(Time of use, or Energy Arbitrage), and Peak Shaving and other working mode.

Typical PV+ESS Scenario 3.2:
Parallel Connection of C&I Hybrid-Cooling ESS and C&I Air-Cooling ESS/Scenario Description

C&I Hybrid-Cooling ESS

C&I Air-Cooling ESS



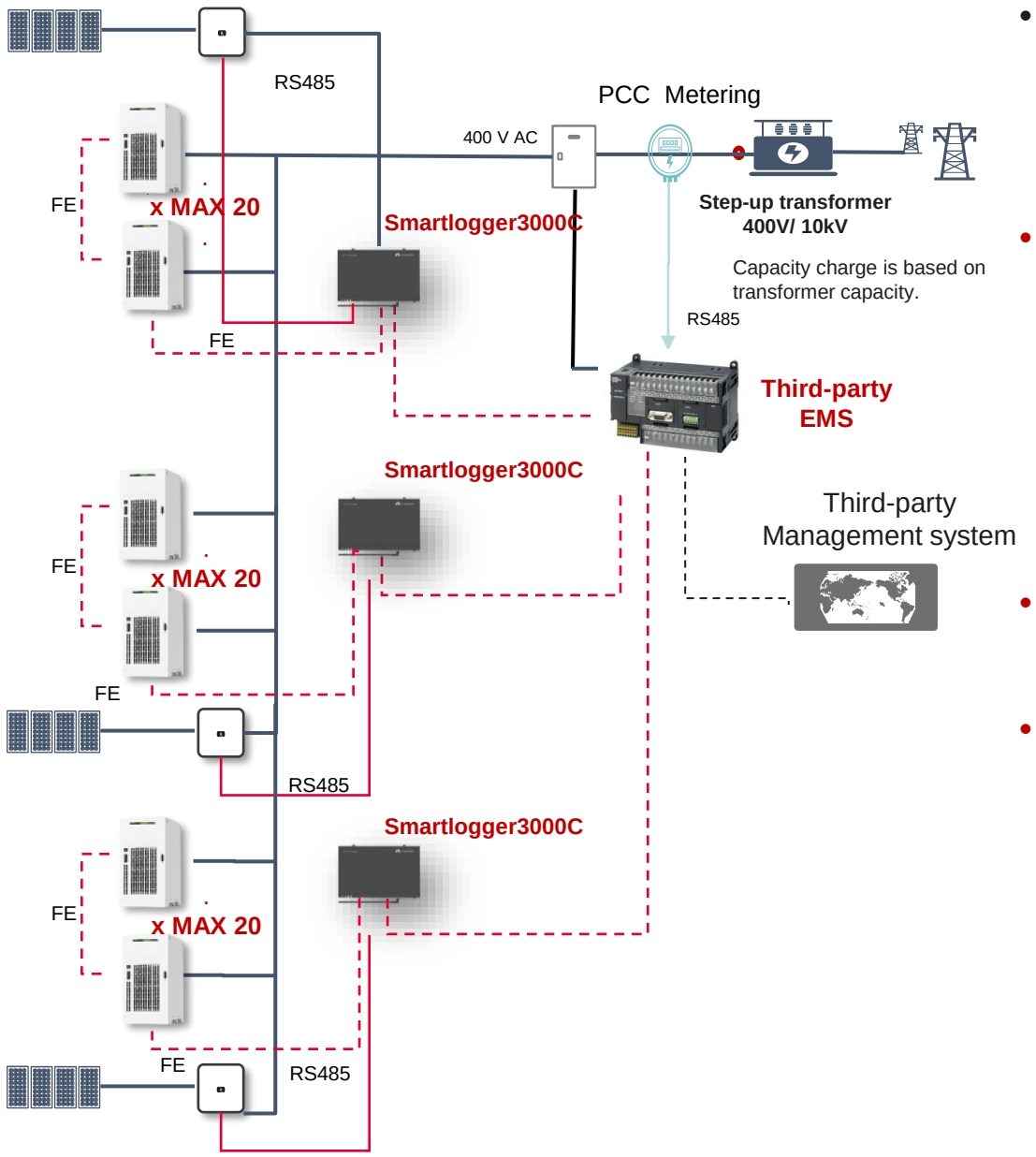
- In this scenario, a third-party EMS must be added to control the Smartloggers connected to the C&I Hybrid-Cooling ESS and C&I Air-Cooling ESS.
- The third-party EMS implements functions for the site such as Feed-in control(or zero-export), Self-consumption, TOU(Time of use, or Energy Arbitrage), and Peak Shaving and other working mode.
- Smartlogger3000A-EU BOM: 02312SCU-004
- Smartlogger3000C BOM: 02312SCU-017

Typical PV+ESS Scenario 3.3:
Parallel Connection of 20~50 C&I Hybrid-Cooling ESS /Scenario Description

C&I Hybrid-Cooling ESS Array X
No. of ESS for Array X ≤ 20

C&I Hybrid-Cooling ESS Array Y
No. of ESS for Array Y ≤ 20

C&I Hybrid-Cooling ESS Array Z
No. of ESS for Array Z ≤ 20



- In this scenario, a third-party EMS must be added to control the Smartloggers connected to the different **C&I Hybrid-Cooling ESS Array**.
- There is no restriction on the brand of the third-party EMS. The third-party EMS implements functions for the site such as Feed-in control(or zero-export), Self-consumption, TOU(Time of use, or Energy Arbitrage), and Peak Shaving and other working mode.
- For SINGLE Smartlogger, number of ESS of each Sub-Array should less than **20**.
- For SINGLE PCC(Point of Common Coupling) transformer, total number of ESS among different Array should less than **50**.

No. of ESS for Array X/Y/Z ≤ 20
No. of ESS for Array X+Y+Z ≤ 50

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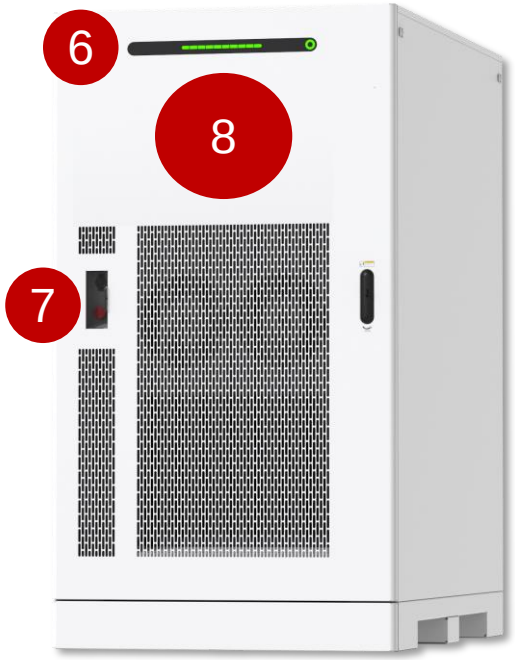
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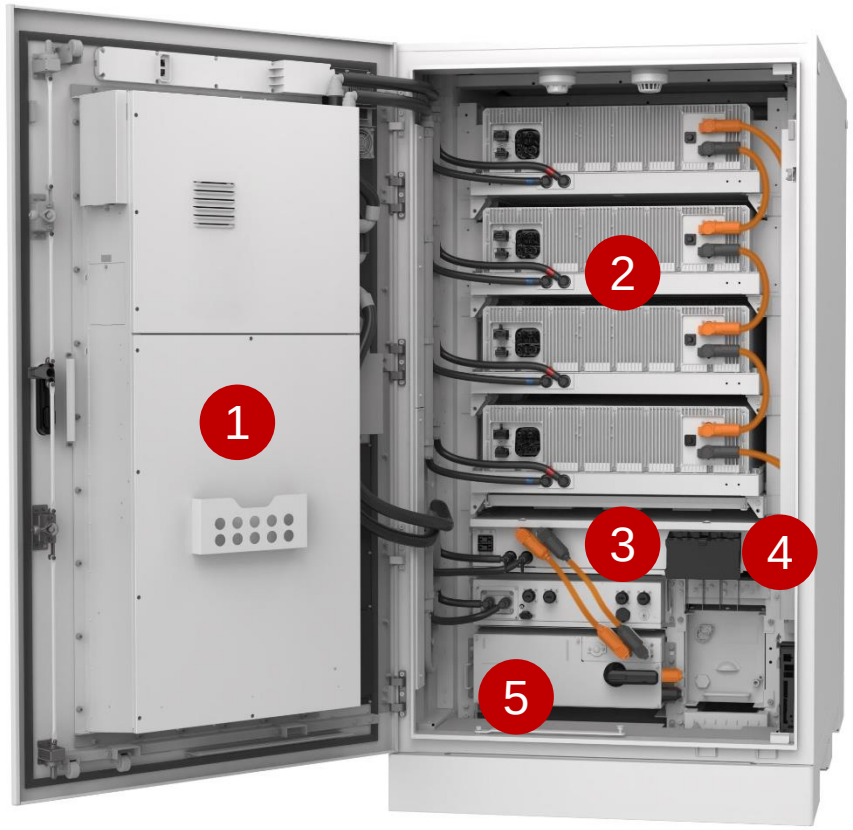
1. Typical Scenarios
2. **Selection of Key Components**
3. Communication Networking
4. Installation and Deployment

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Selection of Key Components

C&I Hybrid-Cooling ESS Overview





1: LTMS(Liquid Thermal Mgmt. Sys.)
2: Battery pack (including pack optimizer 2.0)
3: Smart PCS
4: AC output port
5: RCM(Rack Controller Module)

6: Fire alarm horn/strobe & Running status display
7: Emergency stop switch
8: Document paste area (including warning information and document QR codes)

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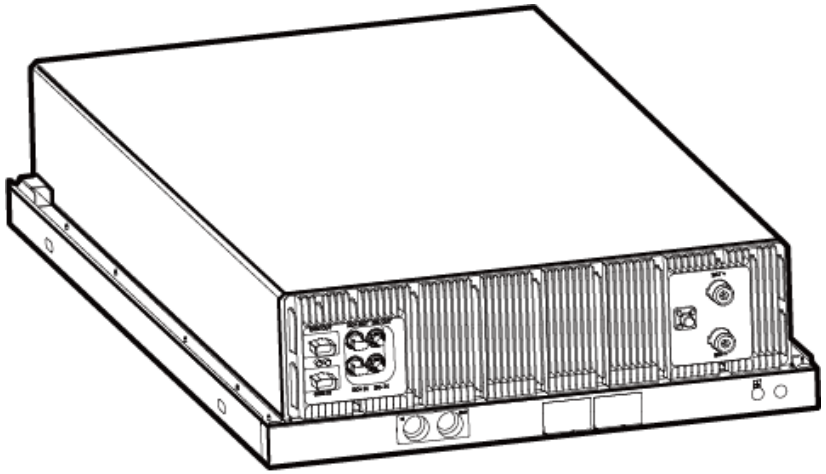
C&I Hybrid-Cooling ESS/ Specification

Technical Specifications	Value
DCDC configuration per ESS	No DCDC
Battery configuration per ESS	(1P60S)4S
Maximum battery capacity per ESS (kWh)	215
Supported charge/discharge rate	108
Intra-cabinet balancing mode	Battery pack-level active balancing
Cabinet dimensions (W x H x D)	1150 x 1800 x 2100
Weight (with battery packs)	2.8 tons
IP rating	IP55
Operating temperature	–30°C to +55°C (derated when the temperature is higher than 50°C. For details, see the derating curve.)
Storage temperature	–35°C to +60°C
Operating humidity	0–100% (non-condensing)
DC surge protection	Type II (AC port)
EMC requirement	Class B
Maximum operating altitude	4000 m
Battery cooling mode	Hybrid Cooling
Fire suppression system	Aerosol
Auxiliary power supply	176–300 V AC, single-phase
System communications port	Ethernet/Optical fiber (optional)
System communications protocol	Modbus-TCP
Environmental protection compliance	RoHS 6
Certification standards	GB/T 36276-2018, IEC 62619, IEC 62477-1, etc.

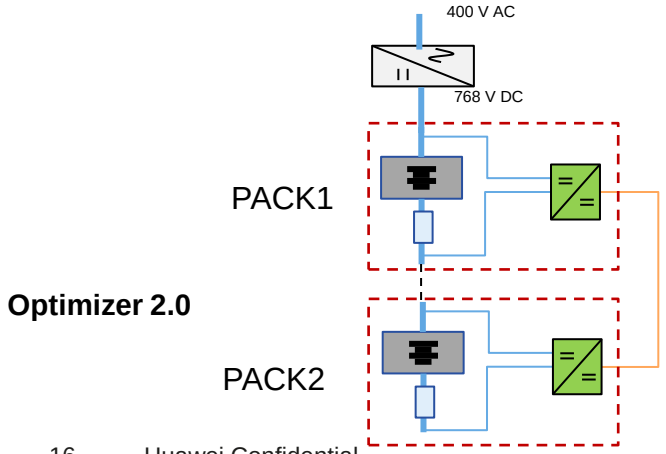
Smart string ESS/ Specification

Technical Specifications	Value
Overview	0.5CP, without DCDC, 380/400/415 VAC output
Nominal energy of a battery rack (kWh)	215.0
Rated charge/discharge rate of a battery rack (C)	0.5
Battery pack model	LUNA2000-54-2E1
Rated battery capacity (Ah)	280.0
Battery rack configuration	(1P60S)4S
Rated power grid voltage (V)	380/400/415
DCDC configuration of a battery rack	0
PCS configuration of a battery rack	1
RCM disconnector	0
Pack-level optimization 2.0	4
GTM region	Global
Pack-level gaseous fire suppression system	0
Aerosol fire suppression in the power cabin	1
Cabinet-level exhaust system	0
Aerosol space-level fire suppression	1
Explosion vent	Top-mounted explosion vent
EMC requirement	Class B
Certification standards	GB/T 36276-2018, IEC 62619, IEC 62477-1, etc.

Battery Pack/ Specification

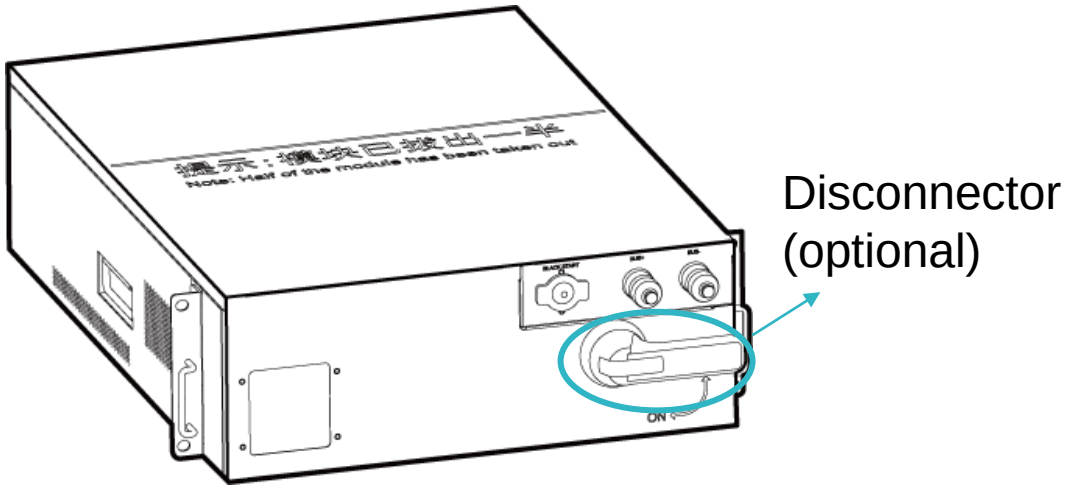


A battery pack is composed of cells connected in series and parallel (1P60S in this solution). It is the minimum energy storage unit that stores or provides energy. Data such as the battery voltage, battery current, and battery temperature is reported.



Technical Specifications	Value
Cell capacity	3.2 V/280 Ah
Cell material	LFP
Battery configuration	1P60S
Operating voltage	162–216 V
Rated voltage	192 V
Supported charge/discharge rate	≤ 0.5CP
Nominal capacity	53.8 kWh
Weight	≤ 410 kg
Dimensions (W x H x D)	810 mm x 245 mm x 1333 mm
Cooling	Bottom plate liquid cooling
IP rating	IP65
Operating temperature	–30°C to +55°C
Storage temperature	0°C to 40°C
Transportation temperature	–35°C to +60°C
Balancing mode	Passive balancing between cells/Pack-level active balancing
Communications port	CAN 2.0/Daisy chain

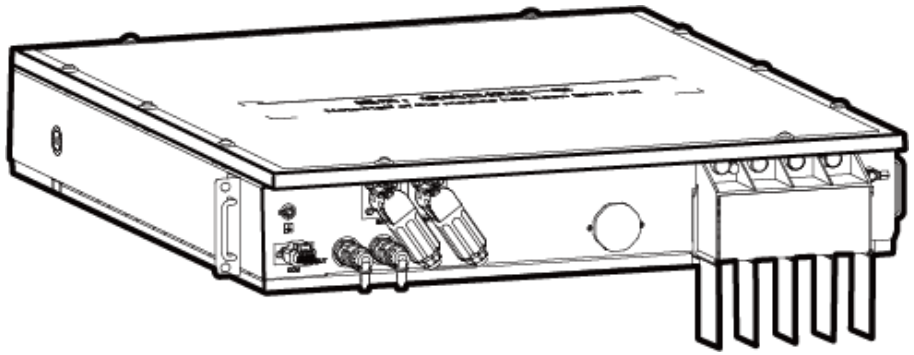
Smart Rack Controller Module(RCM)/ Specification



The RCM consists of the battery control unit (BCU), rack power control board (RPCB), contactor, fuse, power copper bar, and heat dissipation fan. The RPCB contains the low-voltage auxiliary power supply for the ESS and provides two 12V DC power supplies, one for the LTMS and the other for low-voltage electrical devices. The BCU is the main control unit of the ESS. It communicates with external devices in the northbound direction and controls and manages internal devices in the southbound direction. The RCM also provides an independent 220V AC power supply for air conditioners, which is controlled by a circuit breaker.

Technical Specifications	Value
AC voltage	120–300 V AC
Bus voltage	280–1100 V DC
BAT voltage	280–1100 V DC
Operating temperature	–30°C to +55°C
Storage temperature	–35°C to +60°C
Dimensions (W x H x D)	538 mm x 200 mm x 750 mm
Weight	≤ 40 kg
IP rating	IP20

Smart PCS/ Specification



Converts 648 - 864V DC voltage into 380 - 415V AC voltage, supports 3-phase 4-wire and 100% unbalanced loads, uses CAN FD for communication, and supports hardware rapid shutdown.

	Technical Specifications	Value
Conversion efficiency	Maximum efficiency	98.60%
DC side	Number of inputs	1
	Maximum input voltage (safety design compliance, not the operating voltage)	1100 V DC (1000 V for the North America version) (Refer to the operating voltage range. This value only ensures that the PCS is not damaged at the maximum input voltage.)
	Minimum startup voltage	550 V
	Rated input voltage	768 V DC
	Operating voltage	550–950 V (HVRT or LVRT if the voltage goes beyond this range)
Grid connection features	Rated AC voltage	380 V AC/400 V AC/415 V AC/420 V AC/440 V AC/480 V AC
	Rated power on the AC side	108 kW
	Maximum apparent power on the AC side	118.8 kVA (running for 10 mins when the ESS works at 40°C and 1.1 times overload); 129.6 kVA (running for 1 min when the ESS works at 30°C and 1.2 times overload)
	Maximum active power on the AC side	118.8 kW (running for 10 mins when the ESS works at 40°C and 1.1 times overload); 129.6 kW (running for 1 min when the ESS works at 30°C and 1.2 times overload)
	Rated current on the AC side	164.1 A @ 380 V AC
	Maximum current on the AC side	180.5 A @ 380 V AC (10 min) 196.9 A @ 380 V AC (1 min)
	Supported power grid frequency	50 Hz/60 Hz
	Power factor	–1 to +1
	AC THDi	< 3%
General parameters	Dimensions	≤ 820 mm x 1200 mm x 160 mm (W x D x H)
	Weight	< 105 kg (excluding coolant)
	IP rating	IP54
	Operating temperature	–25°C to +65°C (started properly at –30°C)
	Operating humidity	5% to 95%
	Maximum operating altitude	When the altitude is within 4000 m, the voltage is not derated. The PCS supports full load operation when the ESS works at 0 m at 50°C or at 2000 m at 40°C.
	Input and output terminal	Input: waterproof quick connector; output: OT/DT terminal
	Standby power	≤ 18 W
	Noise	≤ 65 dBA (considering the ESS working conditions)
	Display	LED indicator
	Networking mode	1. Two CAN communications ports: (a) Monitoring CAN: CAN-FD (hand-in-hand connection supported) (b) Control CAN: CAN-FD (hand-in-hand connection supported) 2. FAST I/O port
	USB 2.0	/
	Cooling mode	Smart liquid cooling
	Topology	Transformerless in off-grid scenarios

Smartlogger3000C/ Specification

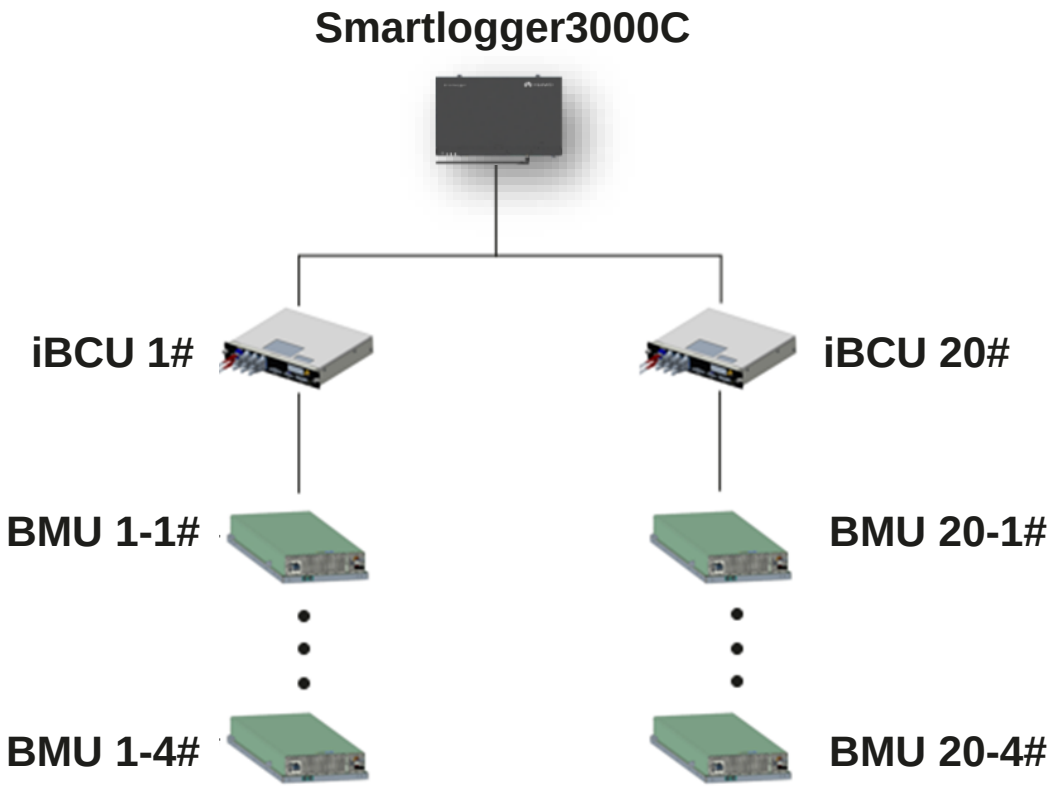


SmartLogger3000C

Technical Specifications	Value
Power adapter	AC input: 100–240 V, 50/60 Hz
	DC output: 12 V/2 A
DC power supply	24 V, 0.8 A
Power consumption	SmartLogger3000A (typical): 8 W
	SmartLogger3000B (typical): 9 W
	SmartLogger3000B + SmartModule1000A (typical): 10 W
	Maximum: 15 W
Dimensions (W x H x D)	Including mounting ears: 259 mm x 160 mm x 59 mm
	Excluding mounting ears: 225 mm x 160 mm x 44 mm
Net weight	2 kg
Operating temperature	–40°C to +60°C
Storage temperature	–40°C to +70°C
Relative humidity	5%–95% RH
IP rating	IP20
Installation mode	Installed on a wall or guide rail
Maximum operating altitude	4000 m
Pollution degree	2
Corrosion level	B
Ethernet ports (WAN and LAN)	Two 10M/100M/1000M auto-sensing ports
Ethernet optical ports (SFP)	Two ports, supporting 100M/1000M SFP/eSFP optical modules
MBUS ports	One port, supporting a maximum AC input voltage of 800 V
RS485 (COM)	Three ports; supported baud rates: 1200 bps, 2400 bps, 4800 bps, 9600 bps, 19200 bps, 115200 bps
USB	USB2.0
Power output port	One port; DC output: 12 V, 0.1 A
Digital input (DI) port	Four inputs; supports only the access from relay dry contacts
Digital output (DO) port	Two ports; relay dry contact outputs, with NO or NC contacts; 12 V/0.5 A signal voltage
Analog input (AI) port	Four inputs; AI1: supports 0–10 V voltage (passive); AI2–AI4: support 4–20 mA or 0–20 mA input current (passive)
4G antenna port (4G)	One port; SMA-K (external screw inner hole) port, used with an antenna that has the SMA-J (internal screw inner pin) port

Intelligent BMS

The internal monitoring unit of the ESS consists of the intelligent battery control unit(iBCU) and battery monitoring unit (BMU).
The external monitoring unit of the ESS is the Smartlogger.
In the single-cabinet scenario, the Smartlogger can be placed inside or outside the ESS.



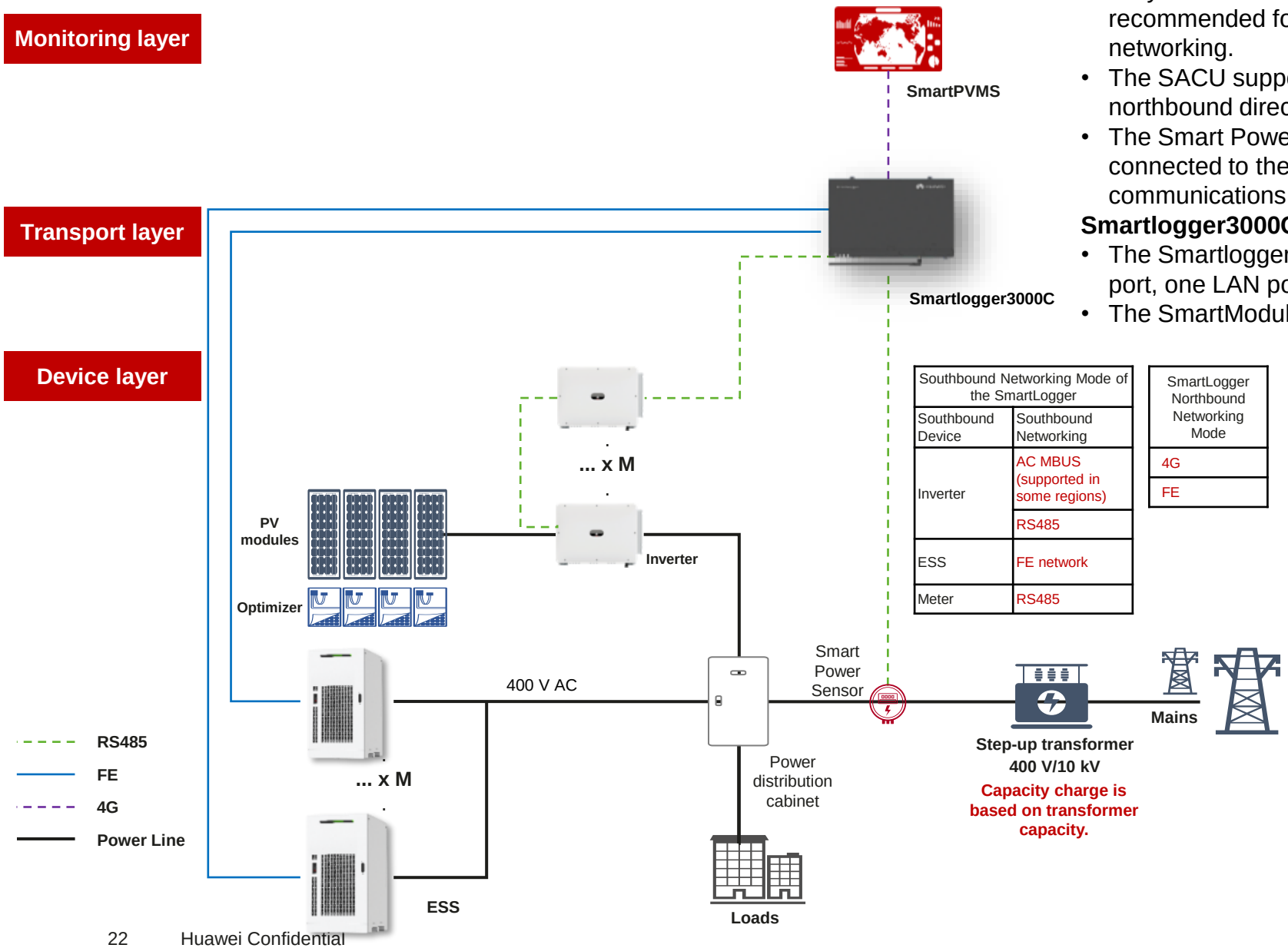
Level	Function
Level 1 BMU	1. Monitors cell voltage and temperature, and aggregates and reports the collected data. 2. Checks the sampling circuit in real time, ensuring sampling reliability. 3. Activates the active balancing module in the pack.
Level 2 iBCU	1. Receives the cell voltage and temperature reported by the BMU through daisy chain communication. 2. Controls the active balancing module in the pack through CAN communication and balances capabilities between packs. 3. Receives the total rack voltage and current reported by the RPCB and calculates the SOC. 4. Calculates the battery rack SOH. 5. Manages the normal running and alarm information of batteries in the rack, controls the charge and discharge currents of the battery rack based on control requirements, and delivers balancing commands based on the battery status in the rack. 6. Connects to the environment management system and fire suppression system in the southbound direction to monitor the operating environment and fire protection status of the ESS. 7. Obtains the alarms and protection status of the ESS to ensure the safe operation of the system.

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Communication Networking



Southbound Networking Mode of the SmartLogger	
Southbound Device	Southbound Networking
Inverter	AC MBUS (supported in some regions)
	RS485
ESS	FE network
Meter	RS485

SmartLogger Northbound Networking Mode
4G
FE

Networking Mode of Device Layer

- Only RS485 networking is supported on the PV side. FE networking is recommended for the ESS. The ESS also supports optical fiber networking.
- The SACU supports FE or 4G communication networking in the northbound direction.
- The Smart Power Sensor (electric meter) at the grid connection point is connected to the RS485 port on the SmartLogger3000 through an RS485 communications cable.

Smartlogger3000C

- The Smartlogger3000C comes standard with two optical ports, one WAN port, one LAN port, and three RS485 ports.
- The SmartModule provides four LAN ports and three RS485 ports.

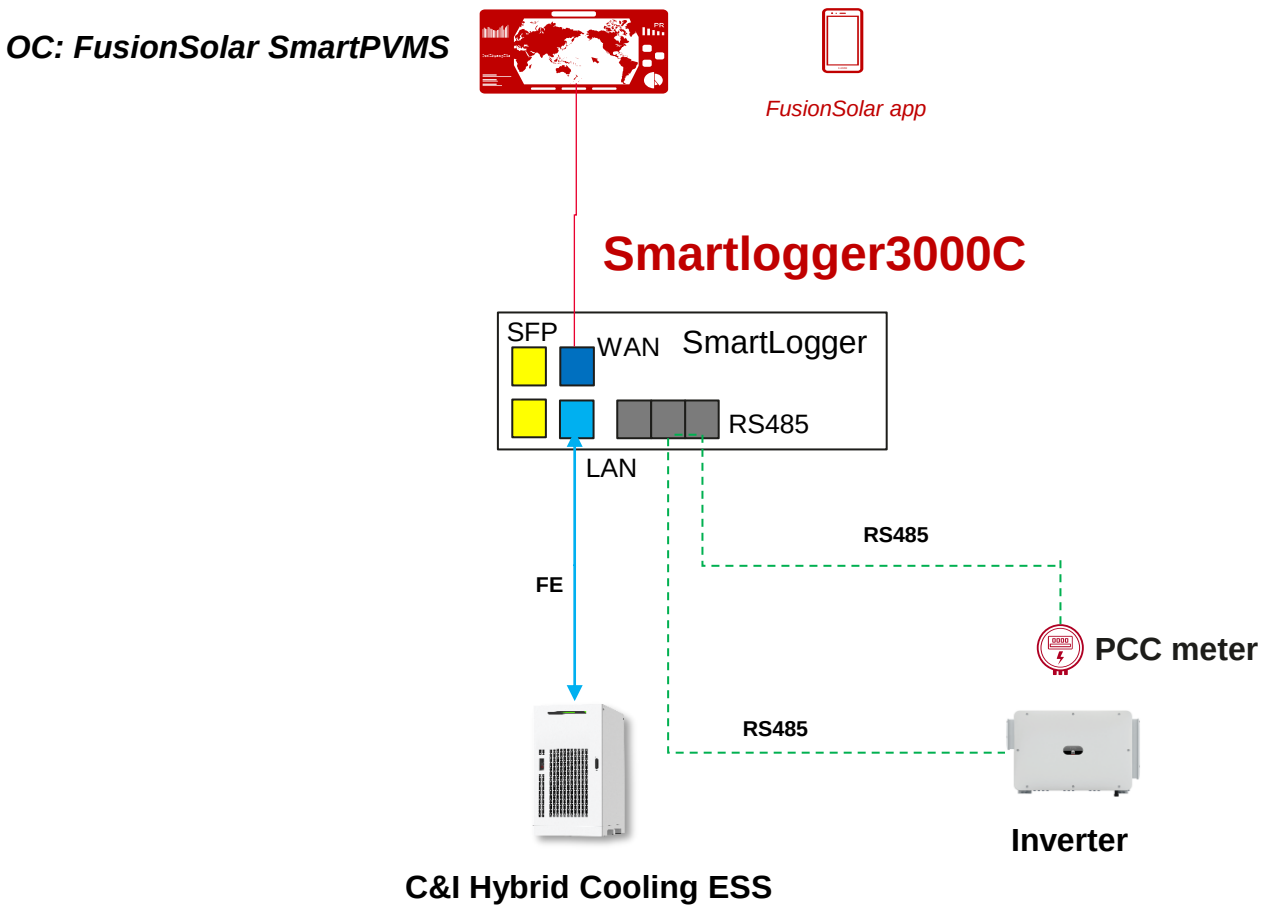
Component	Model	Optimizer Compatibility	AC MBUS	RS485
Inverter	M3, V6	Supported	Conditionally supported	Supported
	V3-C, V5, V5+	Not supported	Conditionally supported	Supported

Component	Model	Fiber Ring Network	FE Star Network
ESS	ESS	Supported	Supported

Component	Model	RS485	
Meter	DTSU666-HW	Supported	DTSU666-HW	Supported
	YDS60-80	Supported	YDS60-80	Supported

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Network Diagram 3.1 — FE Ring Network (1 ESS)



The Smartlogger can be integrated into the ESS in the single-ESS scenario in which the ESS is connected to the management system.

Northbound networking of the Smartlogger:

- FE
- (Optical fiber
- 4G (supported by some models)

Southbound networking of the SmartLogger:

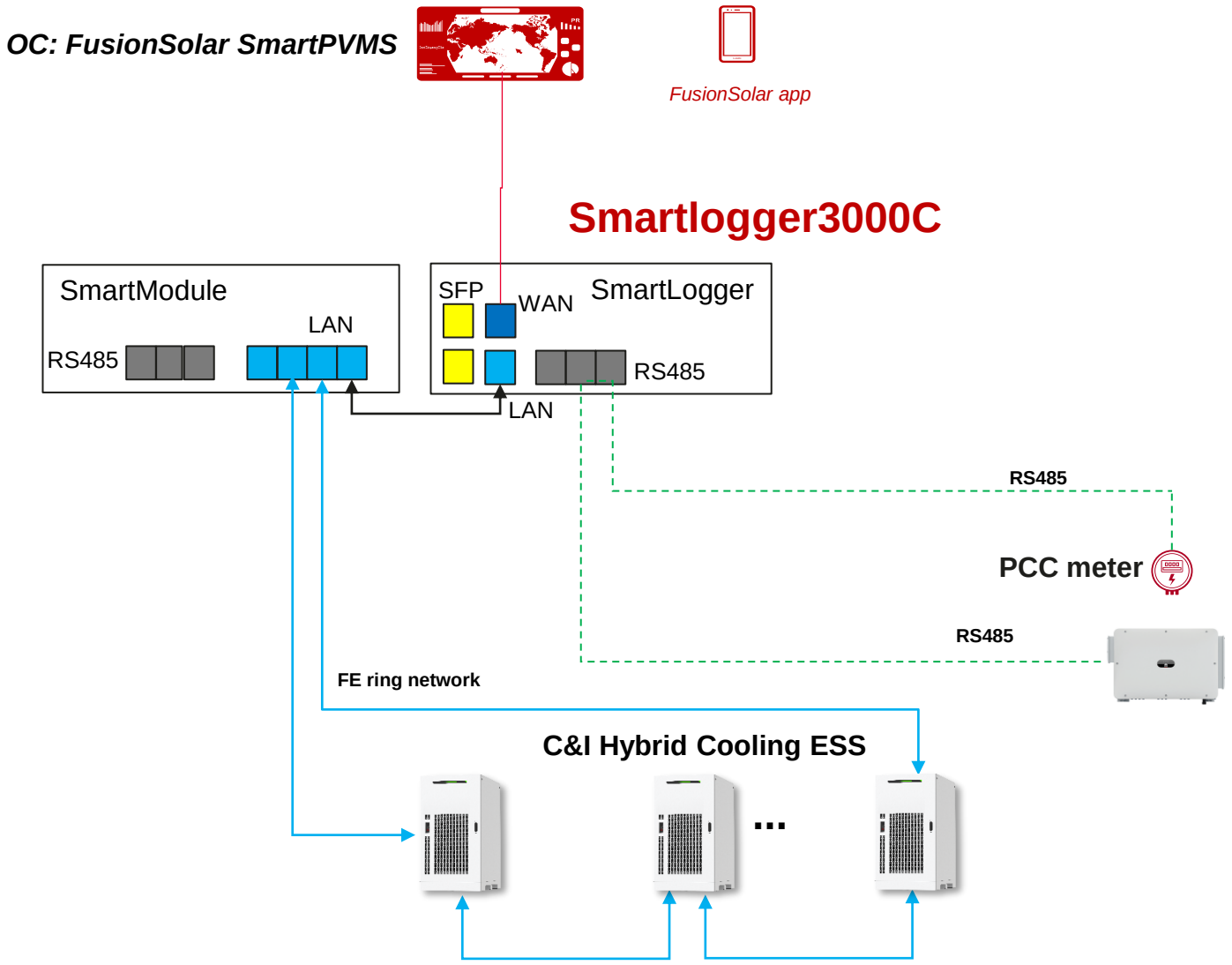
- Inverter: RS485
- ESS: FE ring network
- PCC Meter: RS485

Communication distance:

- RS485: 1000 m
- FE: 100 m
- MBUS (multi-core cable): 1000 m;
- MBUS (single-core cable): 400 m

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Network Diagram 3.2 — FE Ring Network (2–20 ESSs)



Northbound networking of the Smartlogger:

- FE
- (Optical fiber
- 4G (supported by some models)

Southbound networking of the SmartLogger:

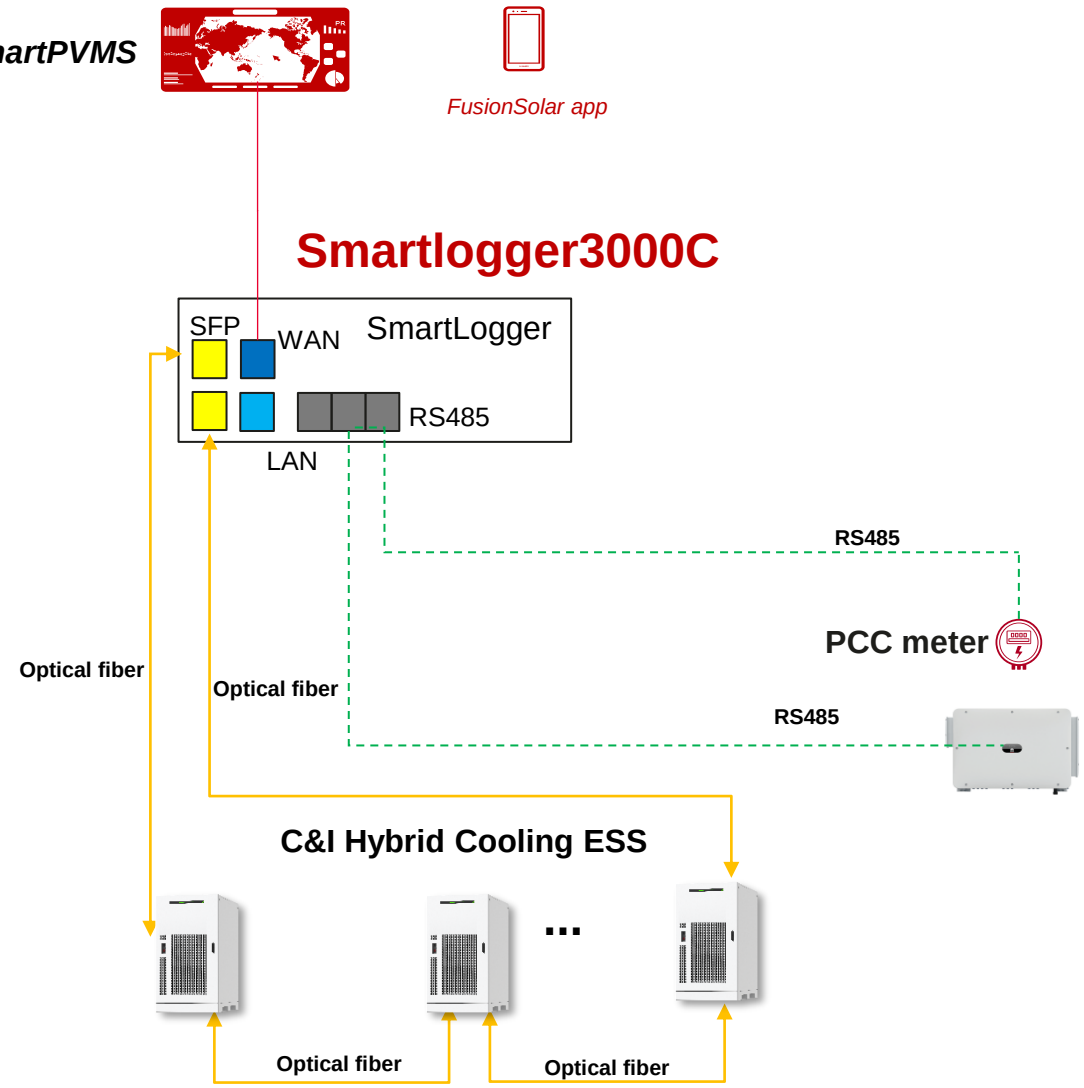
- Inverter: RS485
- ESS: FE ring network
- PCC Meter: RS485

Communication distance:

- RS485: 1000 m
- FE: 100 m
- MBUS (multi-core cable): 1000 m;
- MBUS (single-core cable): 400 m

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Network Diagram 3.3 — Fiber Ring Network (2–20 ESSs)



Northbound networking of the Smartlogger:

- FE
- (Optical fiber
- 4G (supported by some models)

Southbound networking of the SmartLogger:

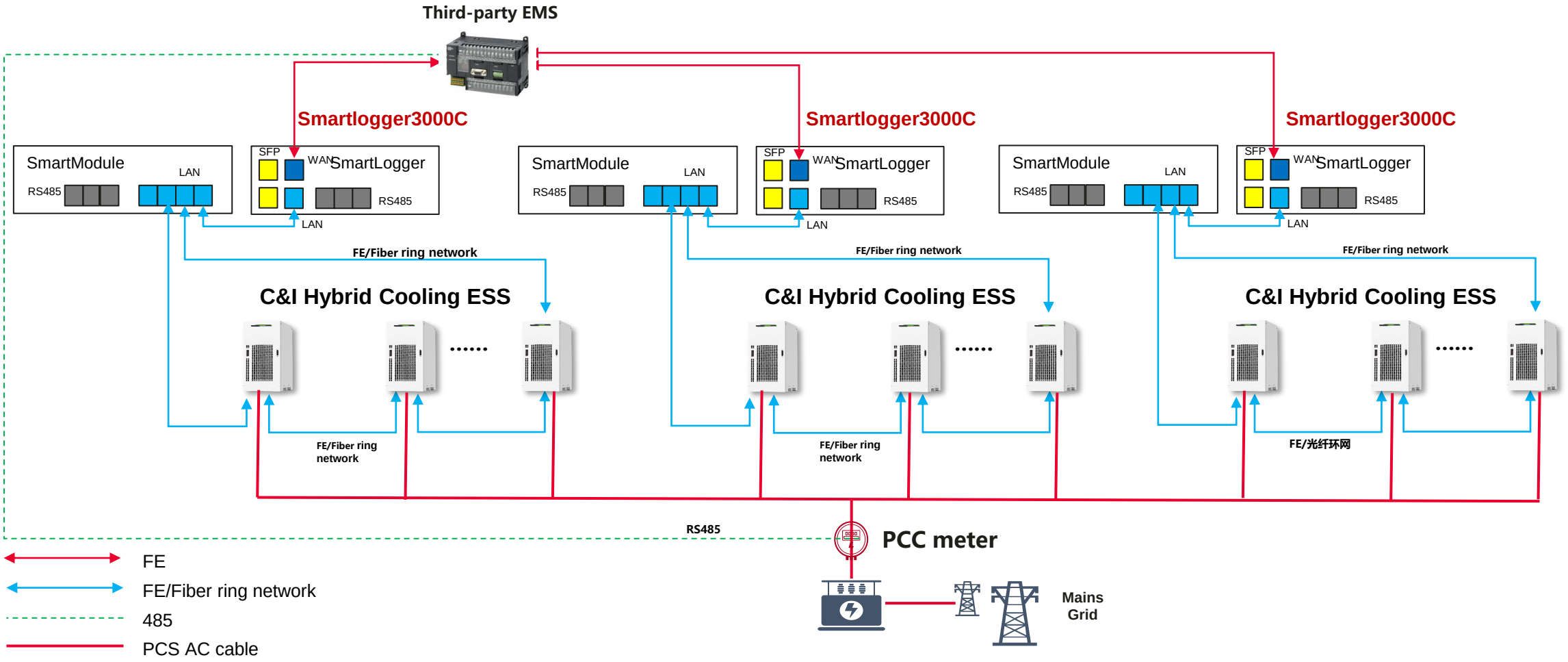
- Inverter: RS485
- ESS: FE ring network
- PCC Meter: RS485

Communication distance:

- RS485: 1000 m
- FE: 100 m
- MBUS (multi-core cable): 1000 m;
- MBUS (single-core cable): 400 m

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Network Diagram 3.3 — FE/Fiber Ring Network (>20 ESSs)



- In this scenario, a third-party EMS must be added to control the PV and ESS via multiple Smartloggers.
- The third-party EMS implements functions for the site such as Feed-in control, Self-consumption, TOU(Energy Arbitrage), and Peak Shaving and other working mode.
- The third-party EMS must be able to access the Smartlogger and communicate with the Smartlogger using the **IEC104** and **Modbus** protocols.

Northbound networking of the Smartlogger:
- FE
- Optical fiber
- 4G (supported by some models)

Southbound networking of the Smartlogger:
- Inverter: AC MBUS or RS485
- ESS: fiber ring network (A single ring network supports a maximum of 20 ESSs.)

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Contents

1. Typical Scenarios of C&I Grid-Tired Solution
2. Single-Line Diagrams of Typical ESS Components and Selection of Key Components
3. C&I Communication Networking
4. **Installation and Deployment**

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Safety Requirements

ESS Site Selection Requirements

The site of the ESS must meet the site selection requirements in the user manual.

- There must be no combustible materials within 3 m of the ESS or the site to prevent fire from spreading. (Exemption: Single specimens of trees, shrubbery, or cultivated ground cover such as green grass, ivy, succulents, or similar plants used as ground covers shall be permitted to be exempt provided that they do not form a means of readily transmitting fire.)
- You are advised not to add any overhead structure above the ESS. If an overhead structure is necessary in special scenarios, the following conditions must be met: The distance between the overhead structure and the top of the ESS shall be greater than 3 m. The overhead structure shall be non-combustible.
- The ESS located outdoors must be at least 10 ft (3.048 m) away from lot lines, public ways, buildings, combustible materials, hazardous materials, high-piled stock, parking spaces, and other exposure hazards not associated with electrical grid infrastructure.
- If either of the following conditions is met, the distance between the ESS and the production building shall be permitted to be reduced to 3 ft (0.914 m). In addition, clearance requirements for equipment transportation, installation, and maintenance shall be considered.

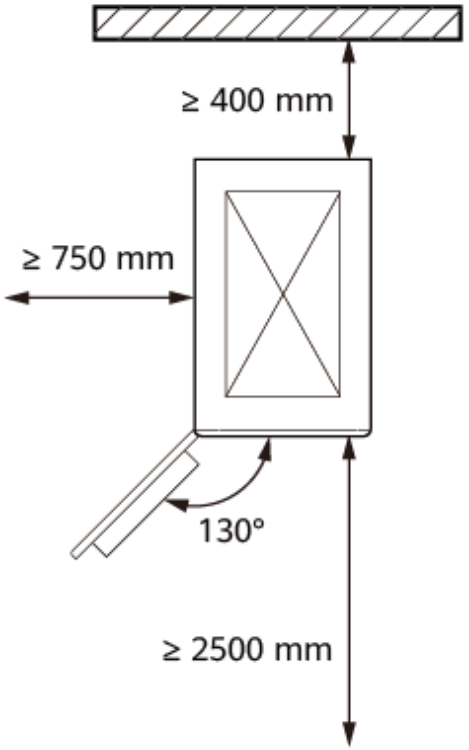
There are 1-hour freestanding fire walls, extending 5 ft (1.5 m) above and extending 5 ft (1.5 m) beyond the physical boundary of the ESS installation.

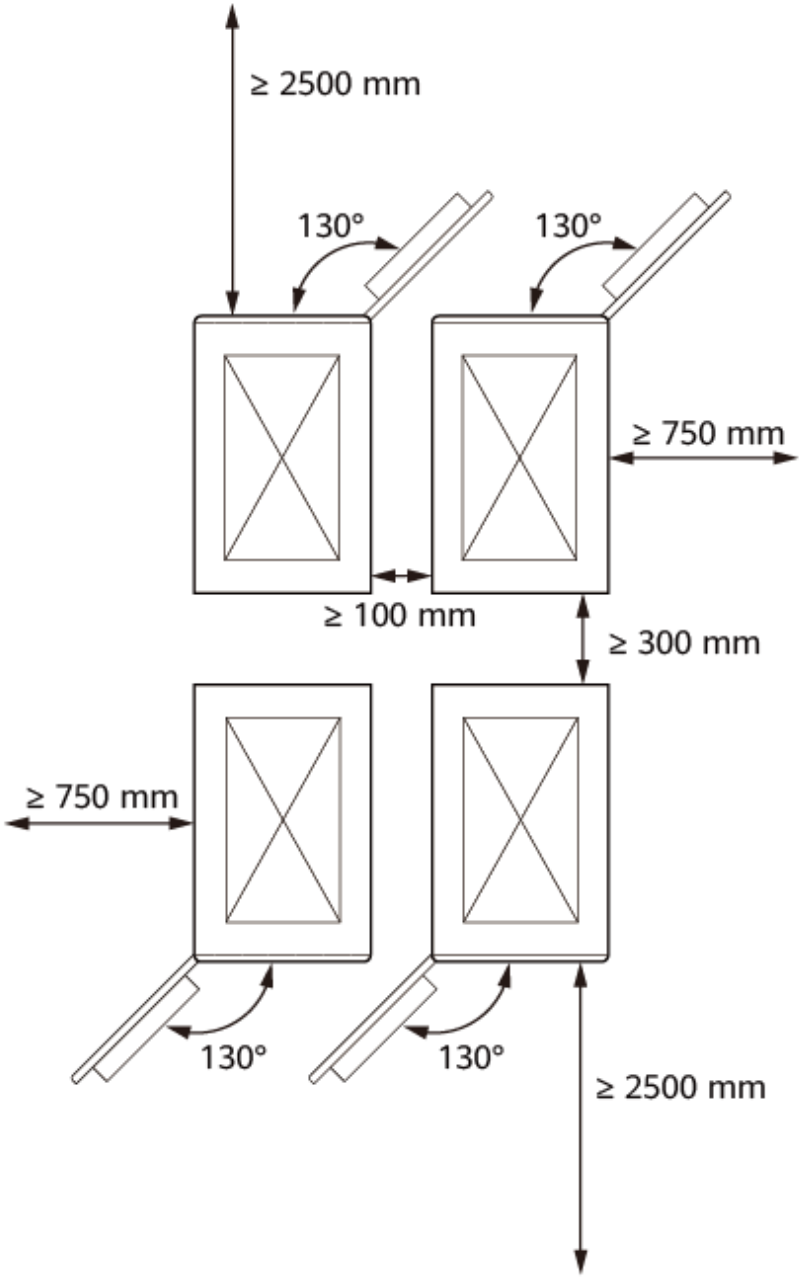
Non-combustible exterior walls with no openings or combustible overhangs are provided on the walls adjacent to the ESS and the fire resistance rating of the exterior walls complies with 2-hour fire resistance rating of ASTM E119 or UL 263.

- The distance between the exhaust device of an ESS and the heating and ventilation vents, air intake vents of air conditioners, windows, doors, unloading platforms, and fire sources of other buildings or facilities must be greater than 4.6 m.

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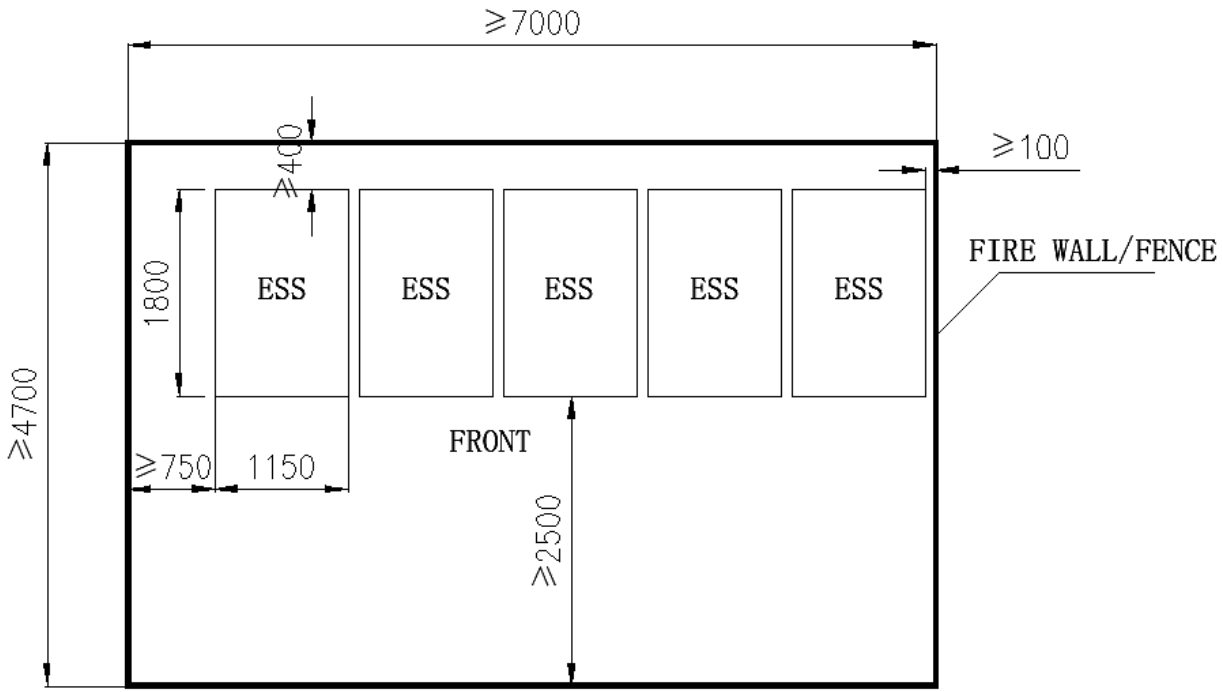
Array Layout (For Reference)



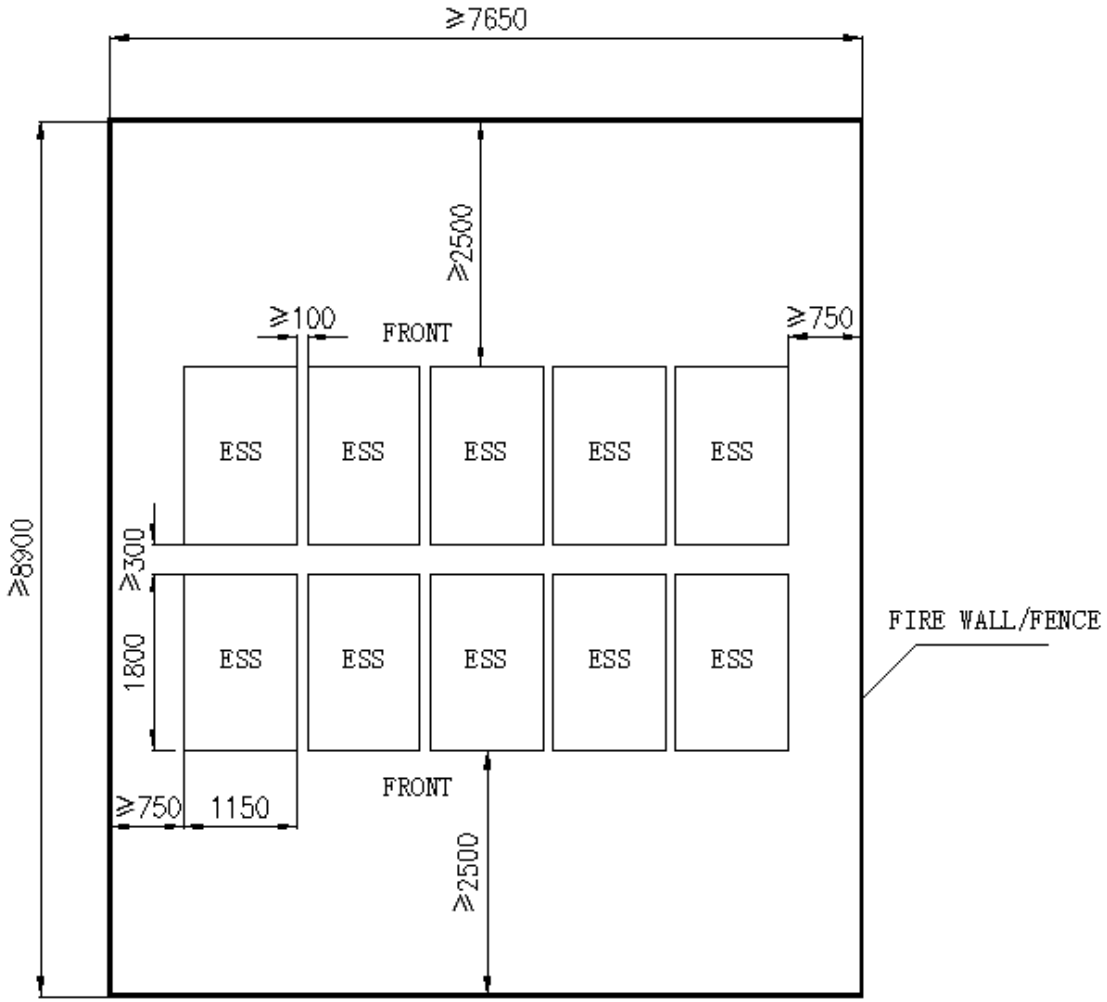


Array Layout (For Reference): Outdoor Installation at open area is MANDATORY

Typical array layout (1 MWh) (single-row layout)



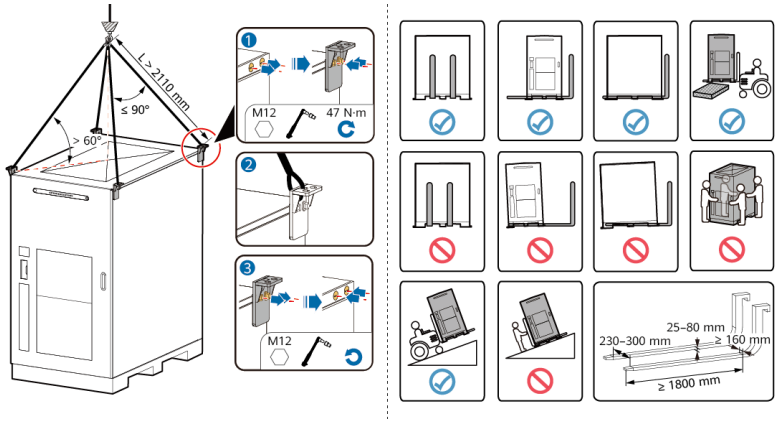
Typical array layout (2.15 MWh) (dual-row back-to-back layout)



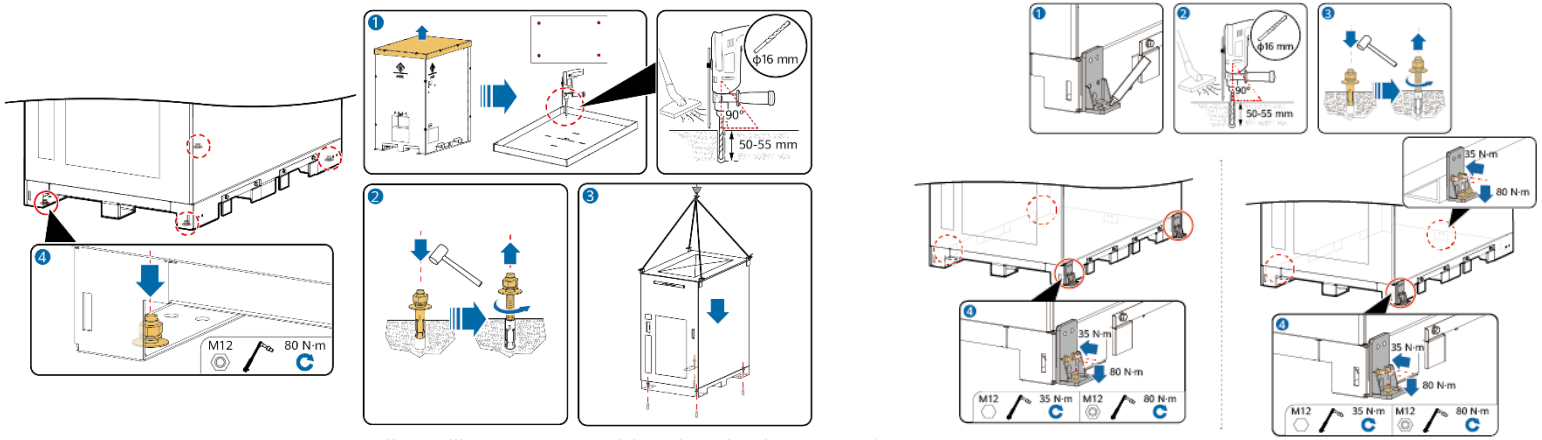
Installation Process

Onsite ESS Installation Procedure

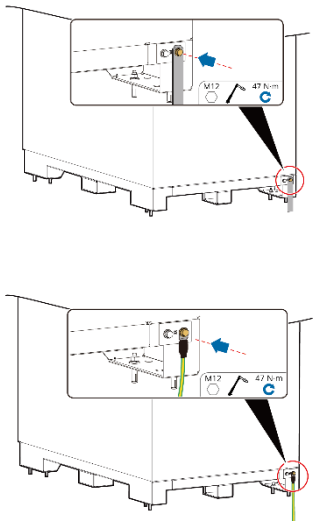
Step 1: Transport the ESS using a crane or forklift.



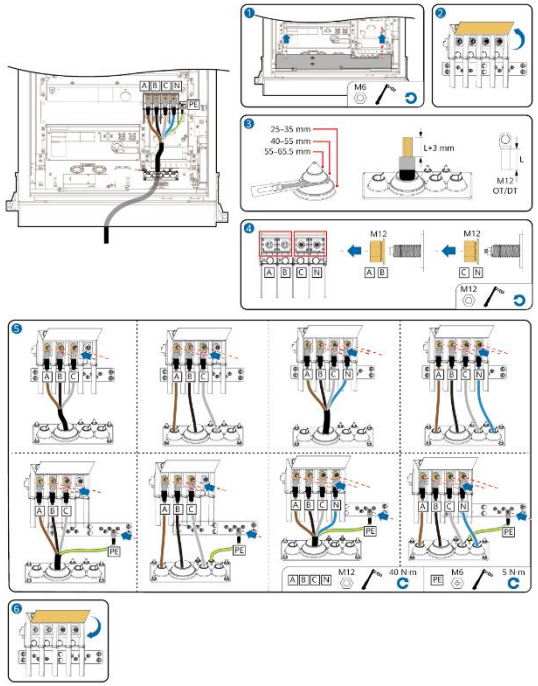
Step 2: Secure the ESS. (Bolts are recommended. You may use connecting brackets for installation.)



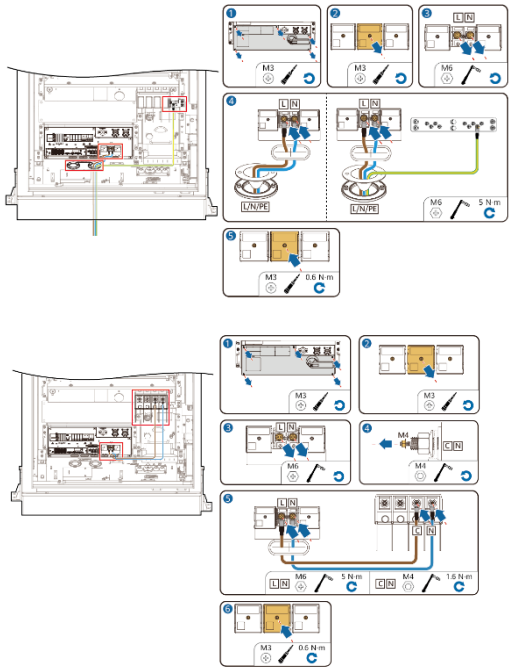
Step 3: Install a PE cable for the ESS (either one).



Step 4: Install PCS AC power cables.



Step 5: Install auxiliary power cables (to obtain power from either inside or outside the cabinet).

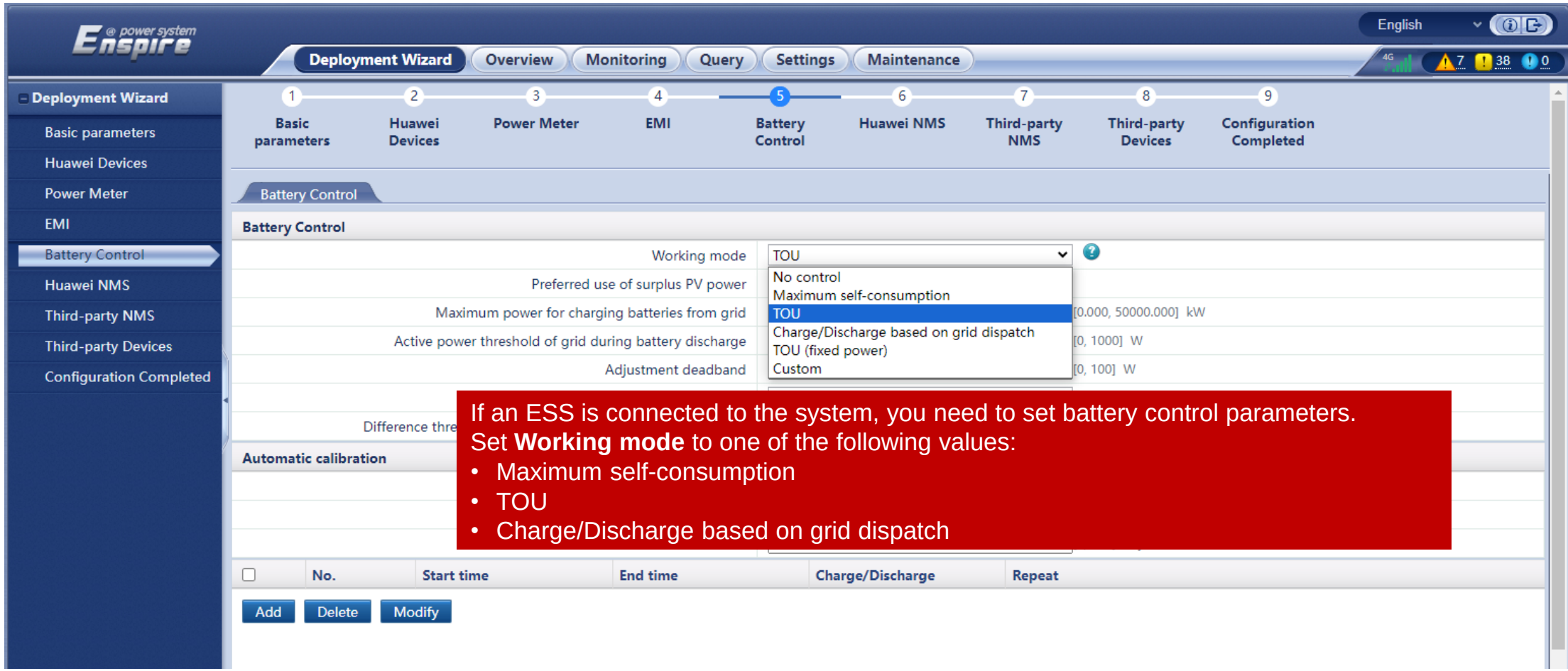


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Deployment Wizard

ESS - Deployment Wizard (SmartLogger WebUI)

- Basic parameters
- Huawei Devices
- Power Meter
- EMI
- **Battery Control**
- Huawei NMS
- Third-party NMS
- Third-party Devices
- Configuration Completed



If an ESS is connected to the system, you need to set battery control parameters.
Set **Working mode** to one of the following values:

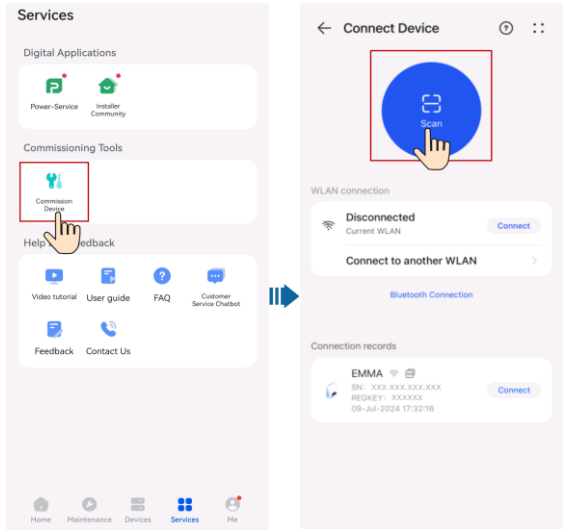
- Maximum self-consumption
- TOU
- Charge/Discharge based on grid dispatch

For details about the deployment configuration, see the *Commercial and Industrial On-Grid Energy Storage Solution Quick Guide (Based on 215KWH Series ESS)*.
5 System Commissioning (Web)
https://support.huawei.com/enterprise/en/doc/EDOC1100394512/5a6fb6e0/system-commissioning-web

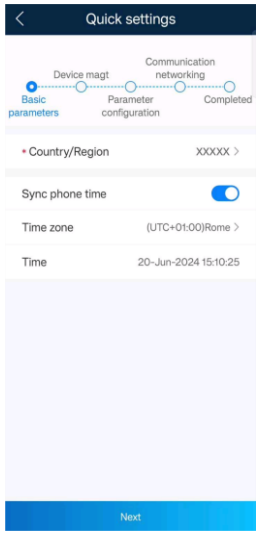
ESS - Deployment Wizard (App)

- Set the startup authorization code.
- Set basic parameters.
- Device management
- Parameter settings
- Communication networking
- Complete quick settings.
- Battery control
- Capacity control
- Scheduling control Setting complete

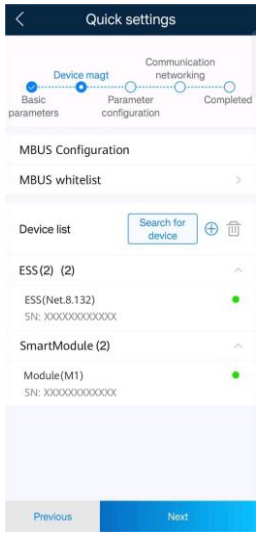
Quick settings: Log in to the FusionSolar app as the installer and choose **Services** > **Commission Device**.



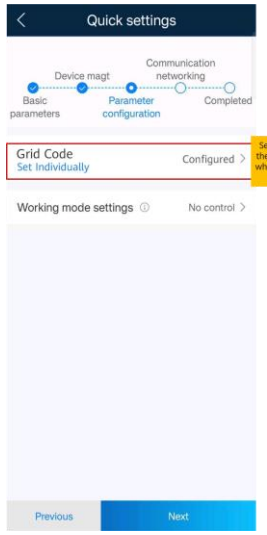
Basic parameters



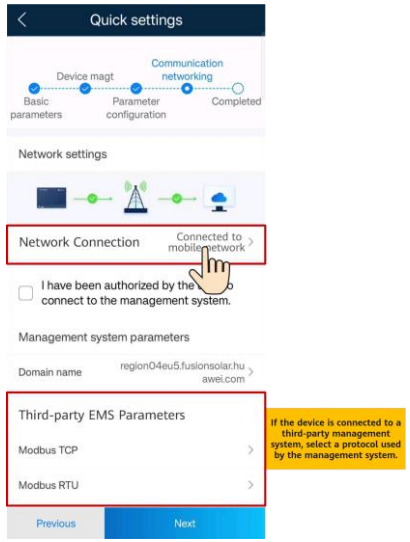
Device management



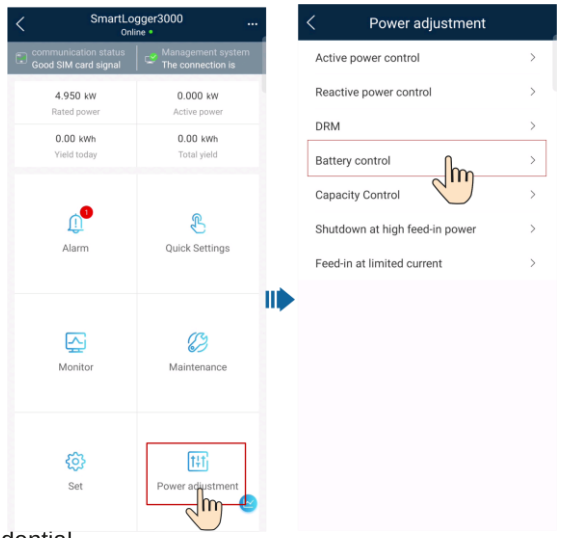
Parameter settings



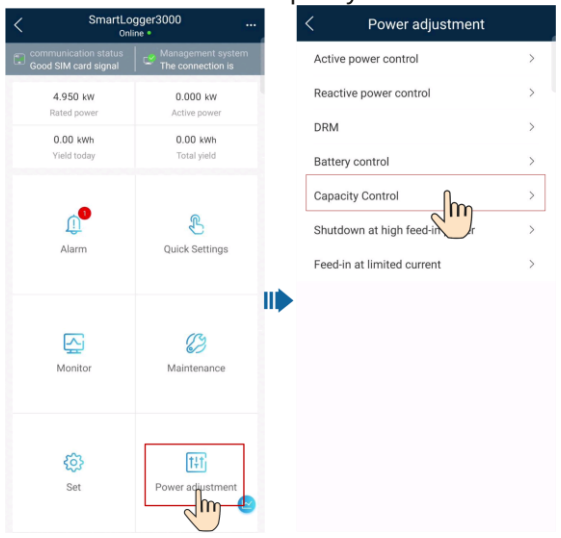
Communication networking



Battery control



Capacity control



Download and install the app.

Method 1: Download and install the app from the app store.

- Huawei mobile phone users: Search for **FusionSolar** in Huawei AppGallery.
- iPhone users: Search for **FusionSolar** in App Store.
- Other mobile phone users: See method 2.

Method 2: Scan the QR code to download and install the app.

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Thank you.

Bring digital to every person, home and organization for a fully connected, intelligent world.

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