Version 01

Installation Guide

CESS-105K215AL

Smart Energy,

Sustainable Solutions

Contents

1 Installation of Equipment

Industrial and commercial storage 215kWh outdoor energy storage cabinet (size: 1500*1490*2348mm; weight: 2500kg).

2 Installation Site Selection

Re-siting is recommended when the site cannot be safely spaced to meet the relevant state standards. Site selection should avoid scenarios that are not recommended by industry standards and regulations, including, but not limited to, the following lots, areas, and places:

- Strong vibrations, strong noise sources and strong electromagnetic field interference areas;
- Places that generate or have dust, fumes, harmful gases, corrosive gases, etc;
- Sites where corrosive, flammable, or explosive substances are produced or stored, within the blast hazard;
- Places where underground facilities are already in place, densely populated places, high-rise buildings, underground buildings;
- Undesirable geologic conditions such as rubbery and weak soils, ground prone to waterlogging and subsidence;
- Areas within the boundaries of a mining trap (staggered) area that could be flooded by a dam or dike break;
- Earthquake faults and seismic zones with an intensity of defense higher than nine degrees, with mudslides, landslides, quicksand, caves and other direct hazards;
- Important sanitary protection areas for water supply sources;
- Historic Monuments and Sites Conservation Area;
- The site should be located outdoors, as far as possible away from offices and dense population, and there is no warehouse of hazardous chemicals within 20 meters;
- As close as possible to the power distribution room, the furthest distance from the power distribution room should not exceed 100 meters, to facilitate cable arrangement.
- If there is no more suitable site, it is recommended to install a firewall with a fire resistance of not less than 3h for safety protection, and at the same time to consider the space requirements for transportation, installation and maintenance of the equipment, it is recommended to refer to T/CEC 373-2020: the length and height of the firewall should be beyond the outer contour of the energy storage cabinet by 1 meter each.

3 Installation of Required Equipment and Work Tools

Table 1 List of Installation Tools for Individual Units

No.	Name	Specification	Quantities	Note
1	forklift trucks	5t	1	
2	drilling apparatus	14mm and 16mm drill bits	1	
3	expansion bolt	M12*8	8	keep
4	tape rule	S: Cabinet type	1	
5	Screwdriver Set	Φ6 and Φ8 crosses should be included	1	Torque 12NM
6	a tube for wrapping	Includes Φ5 to Φ30	1	Torque 12NM
7	L-shaped hexagonal tool	Need to include 7mm	1	Torque 12NM
8	multimeter	2000V	1	
9	……			

4 Pre-installation Inspection

4.1 Mechanical Installation

- After making sure that there is no abnormality in the product and all accessories are complete, you can refer to the following suggestions for mechanical installation;
- According to the product size in advance to select the equipment installation location, good positioning and fixing, the proposed foundation as shown in Figure 1;
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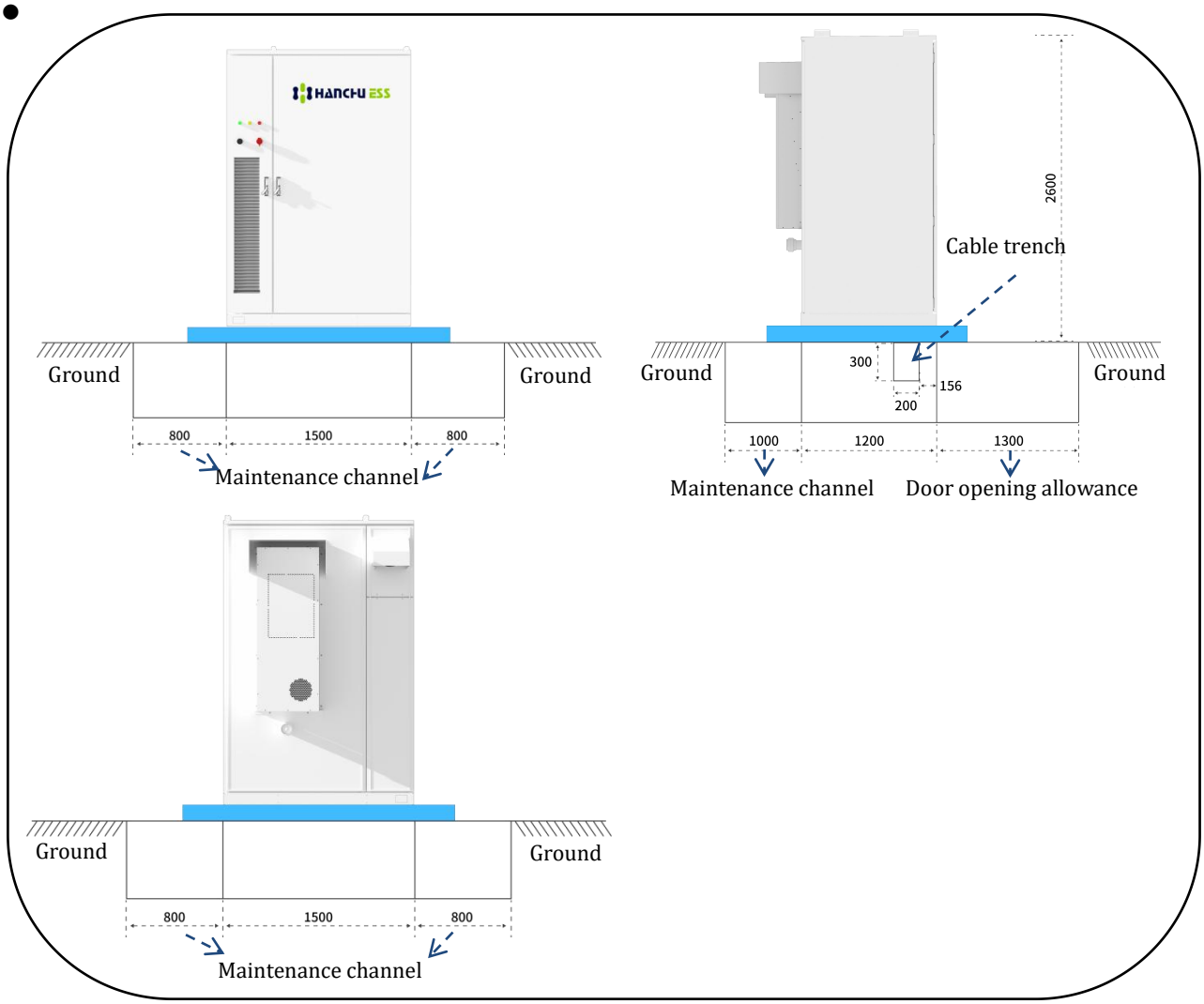

Figure 1 Equipment installation in place

- Depending on the weight of the equipment, the characteristic value of the foundation bearing capacity is not lower than the design value;
- In order to prevent rainwater from entering, it is recommended that the product be installed on top of a concrete raised platform, the height of which is recommended to be 300-400mm and higher than the highest historical local flood level.

4.2 Electricity Safety

- Prior to installation, it is necessary to understand local electrical regulations and circuit controls to ensure that the power conditions meet the equipment's operating requirements;
- The power supply should maintain stability and safety, and the circuit wiring should be correct to avoid short circuit, leakage and other safety hazards;
- The installation of energy storage equipment must be in accordance with the installation instructions or relevant standards for standardized operation to ensure that the quality of the installation meets the standard requirements;
- The installation site should have grounding, lightning protection and anti-static treatment to minimize equipment damage.

5 Installation of Equipment in Place

5.1 Product Handling

- When using a forklift to move, ensure that the forklift has sufficient load capacity, and note that the center of gravity of the equipment needs to fall between the feet of the forklift, to prevent personal injury and equipment damage, as shown in the following figure 2.

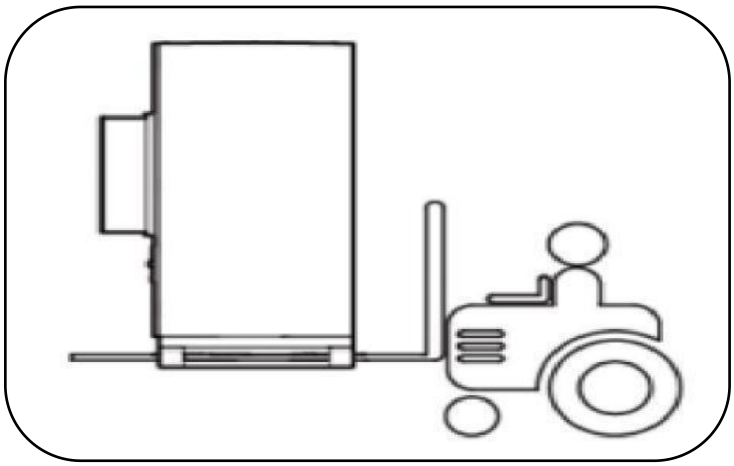

Figure 2 Equipment installation in place

- With battery transit, forklift truck load capacity needs to be ≥3t. without battery transit, forklift truck load capacity needs to be ≥1.5t.
- Recommended fork knife length ≥1.5m, width 80cm~160cm, thickness 25cm~70cm.
- Avoid vibration and collision during loading and unloading to protect the equipment intact.

5.2 Cabinet Fixing Methods

Expansion bolts of M12*80 are used on site to fix and install the equipment, and the bolt position dimensions are as follows:

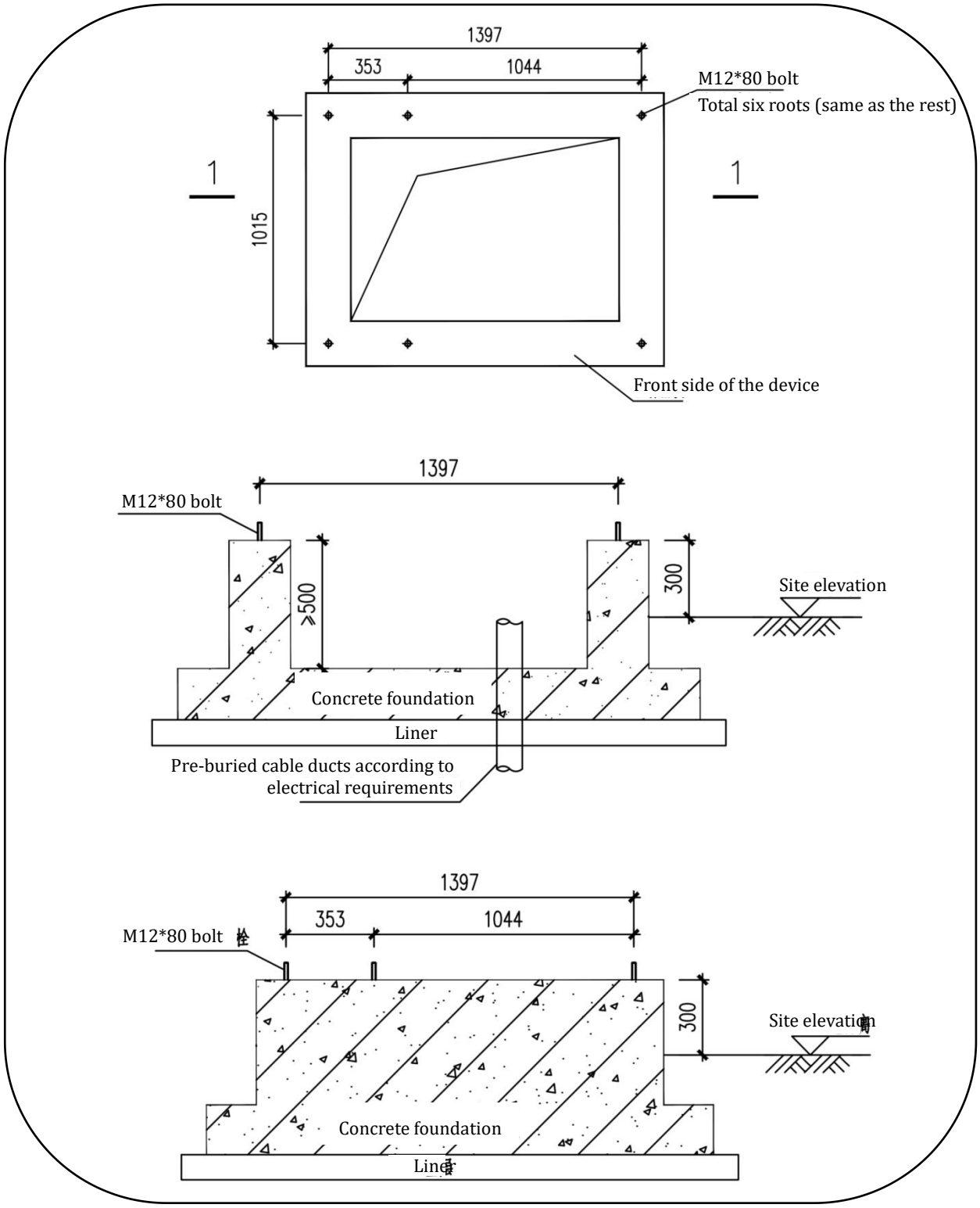

Figure 3 Schematic diagram of equipment mounting holes

6 Equipment Grounding

Grounding requirements for reliable grounding, to ensure that the grounding resistance is less than 4Ω.

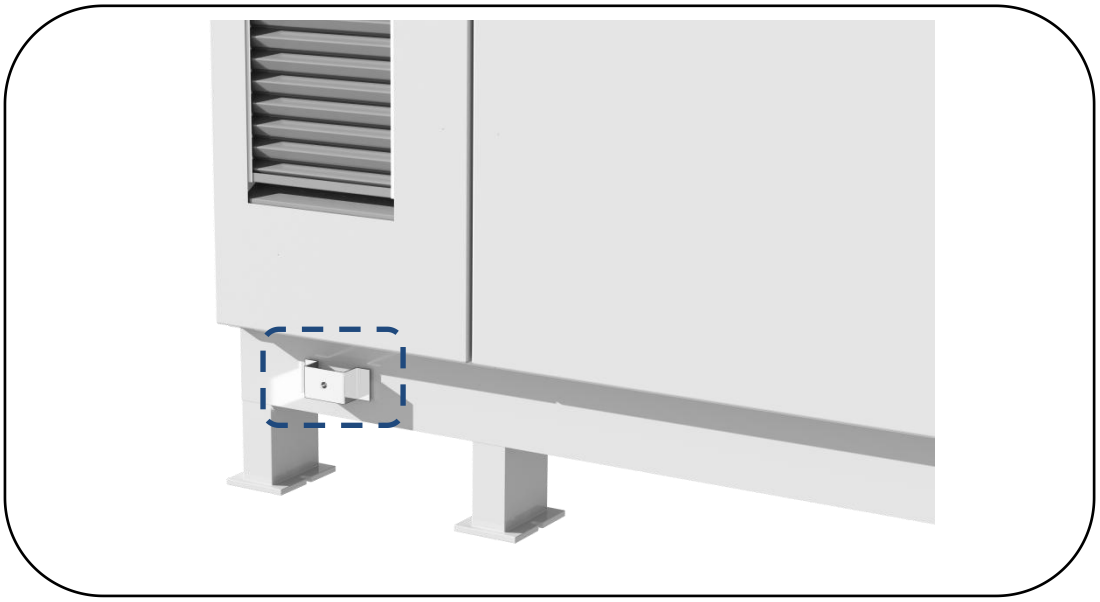

Figure 4 Equipment grounding schematic

7 Inter-cabinet Cable Connections

7.1 Description of Equipment Terminal Blocks

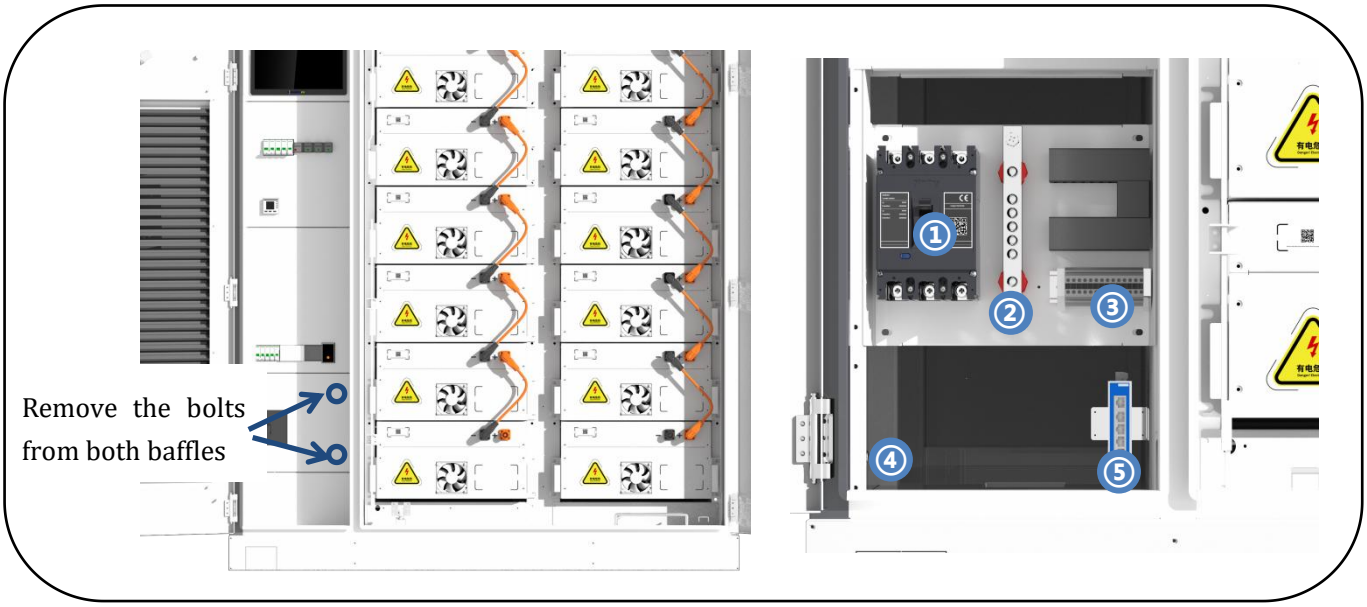

Figure 5 Schematic diagram of device wiring terminals

Table 2 Inter-cabinet cable connection table

No.	Equipment Name	Use
1	AC main circuit breaker	The left side of the lower end is connected to the A-phase cable of the grid-connecting cabinet.
		Lower centre connects to phase B cable of the grid-connecting cabinet
		Lower right to the parallel cabinet C-phase cable
2	Copper busbar assembly - zero busbar	N-phase cable of the grid-connecting cabinet
3	Copper busbar assembly - ground busbar	Ground
4	Switch	Connection from the cabinet high-voltage box network cable connector

No.	5			
Equipment Name	TB10 External Communication Terminal Block			
Use	Colors and Numbering Tubes		beginning	finishing line
485 Cable	yellow-brown	EMS:485:0A	Cabinet 1:TB10:2	Cabinet 2:TB10:2
	blue	EMS:485:0B	Cabinet 1:TB10:4	Cabinet 2:TB10:4
CAN Synchronization Cable	yellow-brown	PCS:CANH	Cabinet 1:TB10:7	Cabinet 2:TB10:7
	blue	PCS:CANL	Cabinet 1:TB10:8	Cabinet 2:TB10:8
Carrier Cable	yellow-brown	PCA:INV	Cabinet 1:TB10:11	Cabinet 2:TB10:11
	blue	PCS:CARRIER	Cabinet 1:TB10:12	Cabinet 2:TB10:12
Busbar 485 Cable	yellow-brown	Meter:485A	Meter:485A	Mainframe:TB10:5
	blue	Flyer Meter:485B	Flyer Meter:485B	Mainframe:TB10:6

Anti Backflow 485 Cable	yellow-brown	Anti-reverse current meter:485A	Anti-reverse current meter:485A	Host:TB10:13
	blue	Anti-reverse current meter:485B	Anti-reverse current meter:485B	Host:TB10:14

Table 3 Inter-cabinet cable connection table

Inter-cabinet cable recommendation form

No.		6			
Use	**Cable Specification**	**Colors and Numbering Tubes**		**beginning**	**finishing line**
Anti Backflow 485 Cable	RVSP-2*0.75mm² Communication Twisted Pair Cable	yellow-brown	Anti-reverse current meter:485A	Anti-reverse current meter:485A	Host:TB10:13
		blue	Anti-reverse current meter:485B	Anti-reverse current meter:485B	Host:TB10:14
power cable (of an appliance etc)	BVR-450/750-50mm² fire retardant cable	black	Yellow Heat Shrink Tubing	AC Main Circuit Breaker Lower Phase A Interface	Grid-connected cabinet A-phase interface
power cable (of an appliance etc)	BVR-450/750-50mm² fire retardant cable	black	Green Heat Shrink Tubing	AC Main Circuit Breaker Lower B-phase Connection	Grid-connected cabinet B-phase interface
power cable (of an appliance etc)	BVR-450/750-50mm² fire retardant cable	black	Red Heat Shrink Tubing	AC Main Circuit Breaker Lower Phase C Interface	Grid-connected cabinet C-phase interface
power cable (of an appliance etc)	BVR-450/750-50mm² fire retardant cable	black	Blue Heat Shrink Tubing	AC main breaker lower N-phase interface	N-phase interface for grid-connected cabinets

Master-Slave Connection Cable Recommendations

No.		7			
Equipment Name		TB10 External Communication Terminal Block			
Use	Cable Specification	Colors and Numbering Tubes		beginning	finishing line
485 Cable	RVSP-2*0.75mm² Communication Twisted Pair Cable	yellow-brown	EMS:485:0A	Cabinet 1:TB10:2	Cabinet 2:TB10:2
		blue	EMS:485:0B	Cabinet 1:TB10:4	Cabinet 2:TB10:4
CAN Synchronization Cable	RVSP-2*0.75mm² Communication Twisted Pair Cable	yellow-brown	PCS:CANH	Cabinet 1:TB10:7	Cabinet 2:TB10:7
		blue	PCS:CANL	Cabinet 1:TB10:8	Cabinet 2:TB10:8
Carrier Cable	RVSP-2*0.75mm² Communication Twisted Pair Cable	yellow-brown	PCA:INV	Cabinet 1:TB10:11	Cabinet 2:TB10:11
		blue	PCS:CARRIER	Cabinet 1:TB10:12	Cabinet 2:TB10:12
Busbar 485 Cable	RVSP-2*0.75mm² Communication Twisted Pair Cable	yellow-brown	Meter:485A	Meter:485A	Mainframe:TB10:5
		blue	Flyer Meter:485B	Flyer Meter:485B	Mainframe:TB10:6
Anti Backflow 485 Cable	RVSP-2*0.75mm² Communication Twisted Pair Cable	yellow-brown	Anti-reverse current meter:485A	Anti-reverse current meter:485A	Host:TB10:13
		blue	Anti-reverse current meter:485B	Anti-reverse current meter:485B	Host:TB10:14
power cable (of an appliance etc)	BVR-450/750-50mm² fire retardant cable	black	Yellow Heat Shrink Tubing	AC Main Circuit Breaker Lower Phase A Interface	Grid-connected cabinet A-phase interface
power cable (of an appliance etc)	BVR-450/750-50mm² fire retardant cable	black	Green Heat Shrink Tubing	AC Main Circuit Breaker Lower B-phase Connection	Grid-connected cabinet B-phase interface
power cable (of an appliance etc)	BVR-450/750-50mm² fire retardant cable	black	Red Heat Shrink Tubing	AC Main Circuit Breaker Lower Phase C Interface	Grid-connected cabinet C-phase interface
power cable (of an appliance etc)	BVR-450/750-50mm² fire retardant cable	black	Blue Heat Shrink Tubing	AC main breaker lower N-phase interface	N-phase interface for grid-connected cabinets

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