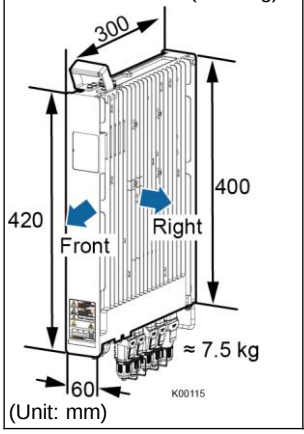
DPU40D-N06A3, DBU20B-N12A3, and DBU50B-N12A1 Distributed Power Quick Guide

Issue: 05
Date: 2020-02-29

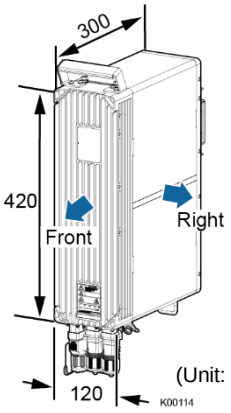
1 Overview

Power supply unit (PSU): DPU40D-N06A3 (≈ 7.5 kg)



(Unit: mm)

Lithium battery: DBU20B-N12A3 (≈ 20 kg) DBU50B-N12A1 (≈ 26 kg)



(Unit: mm)

Installation Scenario	Installation Method	Max. Capacity/Layer	Max. System Configuration
Small pole	Side mounting	2 PSUs +2 lithium batteries (Install the first battery exactly on the pole, the second battery on its left side, or two PSUs on its right side.)	4 DC PSUs (DPU40D) + 8 lithium batteries (DBU20B/DBU50B) **⚠ CAUTION** If the system configuration exceeds the maximum capacity/layer, install the modules on different layers.
Small pole, wall, large pole, channel steel, angle steel	Flush mounting	1 PSU + 1 lithium battery or 2 PSUs	

PSU Indicator	Color	Status	Meaning
Run indicator	Green	Off	The PSU has no power input (no AC input and no battery input)
		Steady on	Start / Self-check / Load (instantaneous status during startup or upgrade)
		Blinking slowly (0.5 Hz)	The PSU communicating with the host properly
		Blinking fast (4 Hz)	The PSU is not communicating with the host properly
Fault indicator	Red	Off	The PSU is proper
		Steady on	The PSU is faulty: Rectifier Fault/Monitoring Address Conflict/Monitoring Unit Fault
		Blinking slowly (0.5 Hz)	An alarm that can be cleared is generated on the PSU: Rectifier Protection/Power off/ Communication Failure/Rectifier Power Failure/Parallel Fail/AC Overvoltage/AC Undervoltage

Lithium Battery Indicator	Color	Status	Meaning
Run indicator (RUN)	Green	Off	The lithium battery has no power input or is faulty
		Steady on	Board startup / self-check / loading / activation / board power-on when no software is loaded
		Blinking slowly (0.5 Hz)	The lithium battery is communicating properly with monitoring equipment
		Blinking fast (4 Hz)	The lithium battery fails to communicate with monitoring equipment
Alarm indicator (ALM)	Red	Off	The lithium battery is proper
		Steady on	The lithium battery has alarms that cannot be cleared: Board Hardware Fault/Heater Fault/Electrochemical cell fault/Duplicate address
		Blinking slowly (0.5 Hz)	The lithium battery has alarms that can be cleared: Discharge Overcurrent Protection/Charge Overcurrent Protection/High Temperature protection/Low Temperature Protection/Abnormal shutdown/Charge Overcurrent Protection/Discharge Overcurrent Protection

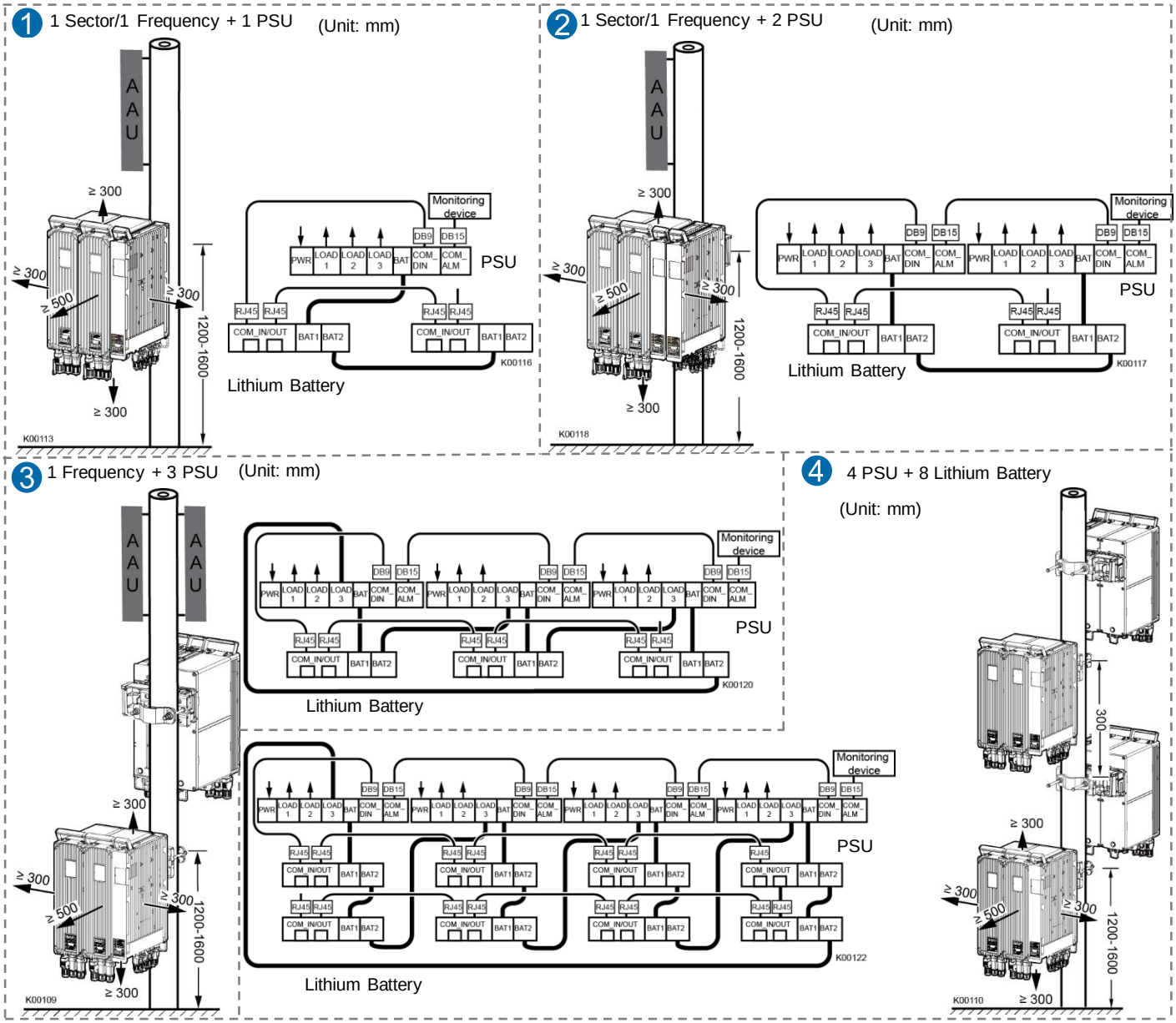
2 Installation Scenarios

NOTE

There are two pole-mounting scenarios. In the large pole scenario, the pole diameter is **114 mm to 400 mm**. In the small pole scenario, the pole diameter is **60 mm to 114 mm**. Select an appropriate pole based on site requirements. The following uses the small pole scenario as an example.

⚠ CAUTION

- If multiple PSUs are configured, they can be cascaded by connecting BAT and LOAD ports or by interconnecting LOAD ports. It is recommended that DC loads be equally distributed on the PSUs.
- This section uses a maximum of two lithium batteries as an example.



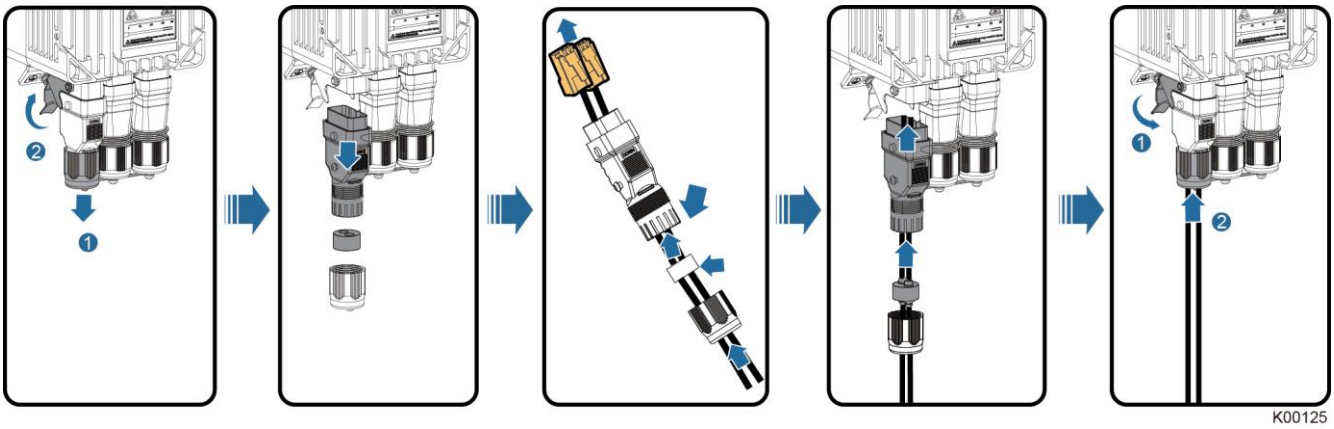
3 Installation Preparations

⚠ CAUTION

- Wear gloves during installation.
- Never install a module with power on. Ensure that the angle between a module and the line vertical to the ground is within 10degrees.
- Do not assemble a lithium battery with an RRU. Do not install a PSU on the left side of an RRU or lithium battery.
- The paint on the module exterior should be intact. If paint flakes off, repaint the area to avoid corrosion.
- An upstream AC SPD of at least 30 kA is required for the PSU.
- When securing a large-pole mounting kit, ensure that the hoops are closely attached to the pole and that there are no sundries between the hoops and the pole.
- When the PSU is assembled with the RRU or lithium battery, ensure that the PSU, RRU, and lithium battery are installed in thesame direction and that the handles are on the same side.
- After unpacking the equipment, you must power it on within 24 hours. When the equipment is maintained, the power-off duration cannot exceed 24 hours.
- If a lithium battery sunshade is configured, install the sunshade on the outer side of the lithium battery after installing the PSU and lithium battery.

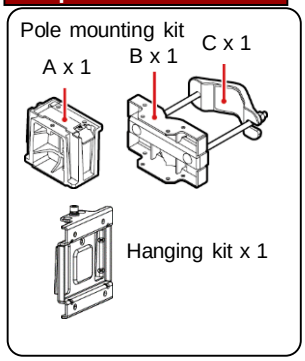
4 Installing PSUs and Lithium Batteries

4.1 Installing the RJ45 Communications Cable for a Lithium Battery



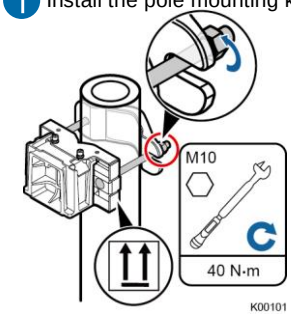
4.2 Flush Mounting on a Small Pole: 1 PSU as an Example (Pole Diameter: 60–114 mm)

Required Accessories

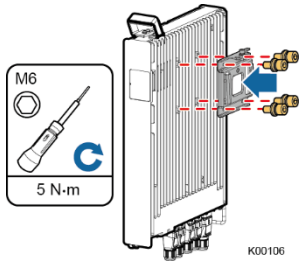


Installation Procedure

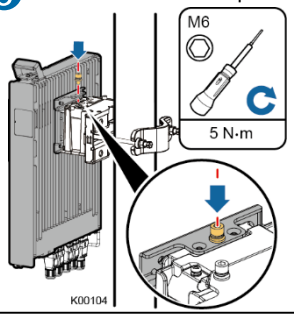
1 Install the pole mounting kits.



2 Install the PSU hanging kit.

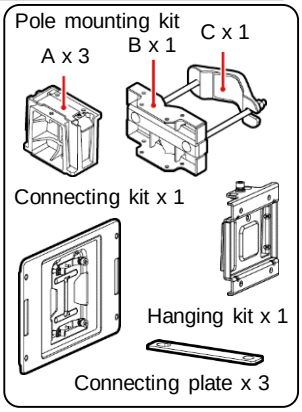


3 Install the PSU to the pole.



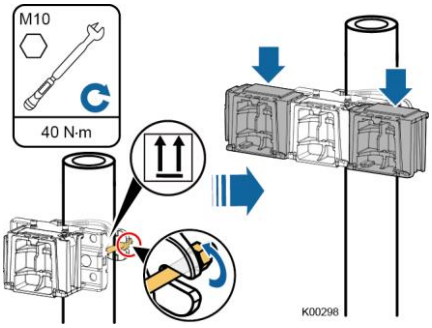
4.3 Side Mounting on a Small Pole: 2 PSUs + 2 Lithium Batteries as an Example (Pole Diameter: 60–114 mm)

Required Accessories

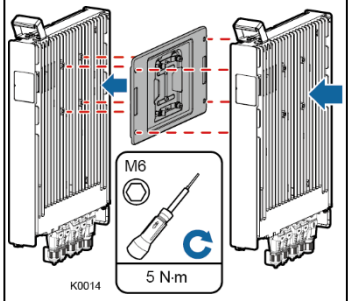


Installation Procedure

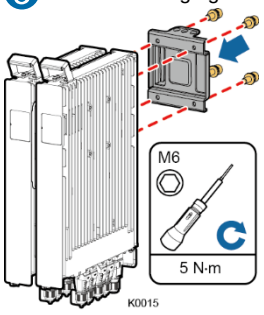
1 Install the pole mounting kits.



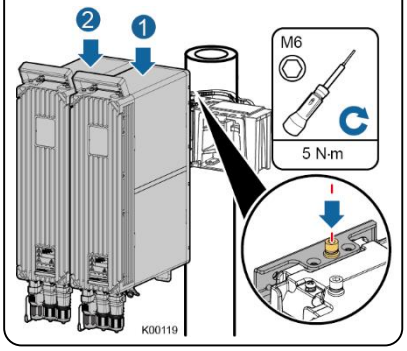
2 Install the connecting kit.



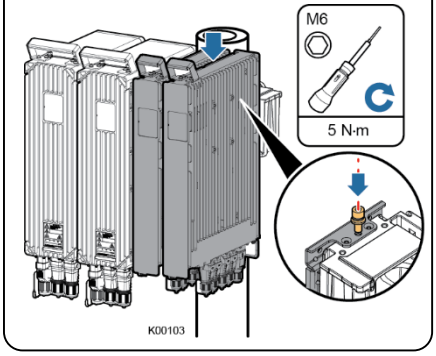
3 Install the hanging kit.



4 Install the lithium batteries to the pole.

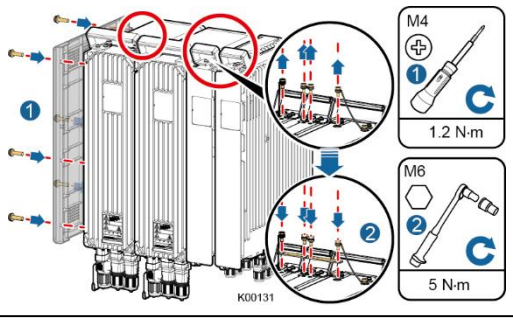


5 Install the PSUs to the pole.



6 Install the the connecting plates.

If a sunshade is configured, install the sunshade on the lithium battery.



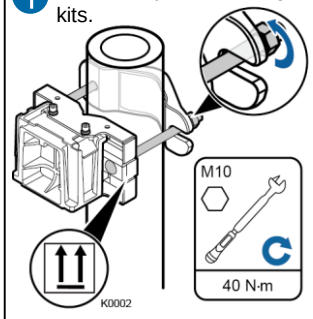
4.4 Flush Mounting on a Small Pole: 1 PSU + 1 Lithium Battery as an Example (Pole Diameter: 60–114 mm)

Required Accessories

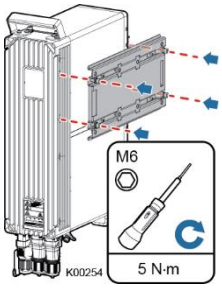
Pole mounting kit
A x 1
B x 1
C x 1
Attachment kit x 2
Connecting plate x 1

Installation Procedure

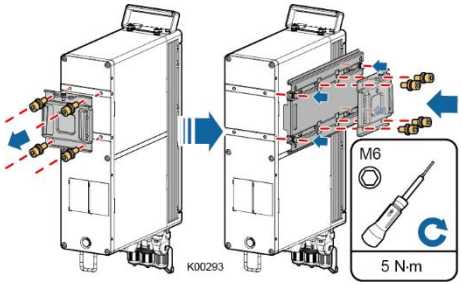
1 Install the pole mounting kits.



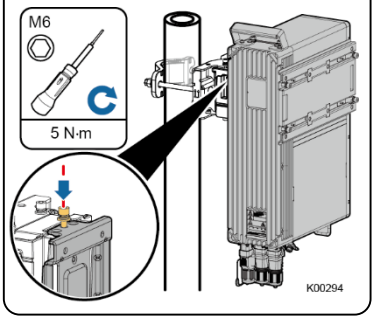
2 Install the attachment kit on lithium battery right side.



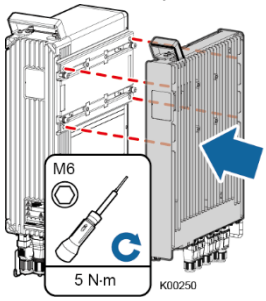
3 Install the attachment kit and connecting kit to the lithium battery.



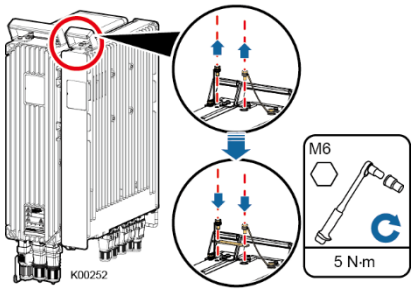
4 Install the lithium battery to the pole.



5 Install the PSU to the lithium battery.



6 Install the connecting plate.



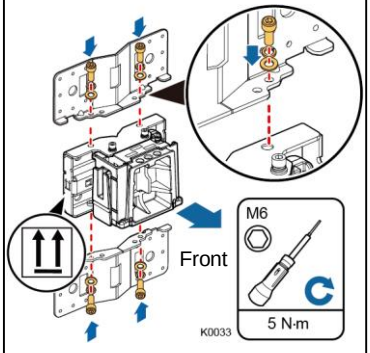
4.5 Flush Mounting on a Large Pole: 2 PSUs + 1 Lithium Battery as an Example (Pole Diameter: 114–400 mm)

Required Accessories

Large pole installation kit x 2 sets
Pole mounting kit
A x 2
B x 2
C x 0
Connecting kit x 1
Attachment kit x 1
Hanging kit x 1
Connecting plate x 1

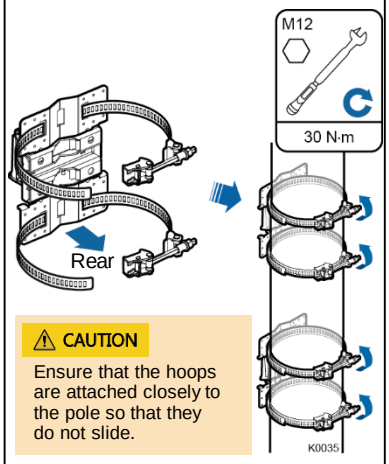
Installation Procedure

1 Assemble the large pole installation kits.



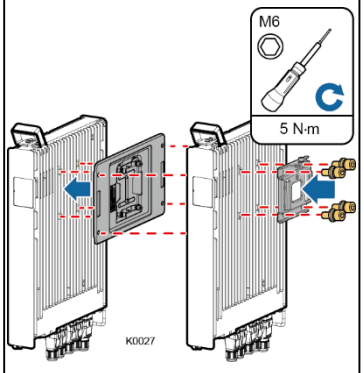
2 Secure the large pole installation kits to the large pole.

(Unit: mm)

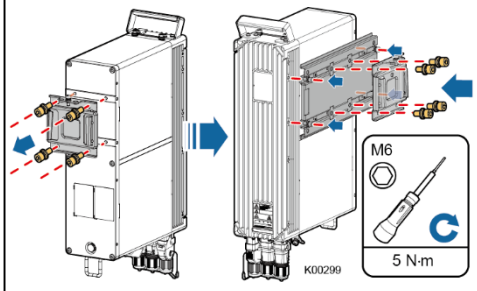


⚠ CAUTION
Ensure that the hoops are attached closely to the pole so that they do not slide.

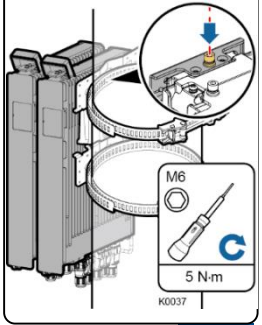
3 Assemble the PSUs and install the PSU hanging kit.



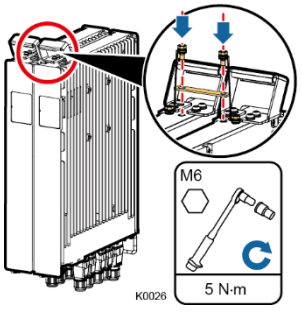
4 Install the attachment kit and hanging kit on lithium battery right side.



5 Install the PSUs to the upper layer of the large pole.

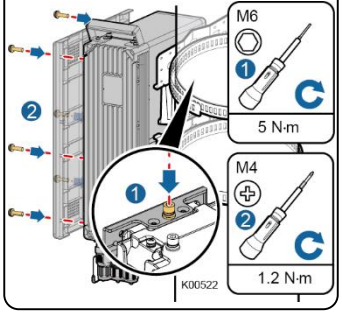


6 Install the connecting plate.



7 Install the lithium battery to the lower layer of the large pole.

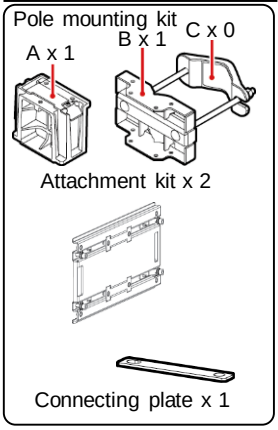
If a sunshade is configured, install the sunshade on the lithium battery.



4.6 Flush Mounting on a Wall (Mode 1): 1 PSU + 1 Lithium Battery as an Example

⚠ CAUTION The wall must be able to bear a weight four times the weight of all PSUs and lithium batteries and the bolts' pulling force of 1.25 kN vertical to the wall.

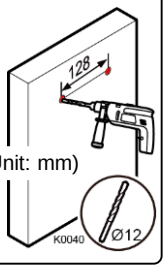
Required Accessories



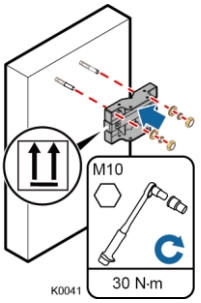
Installation Procedure

1 Install expansion anchor bolts.

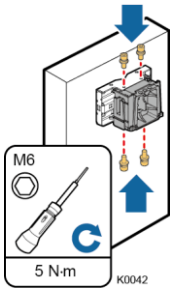
Hole depth: 55–60 mm



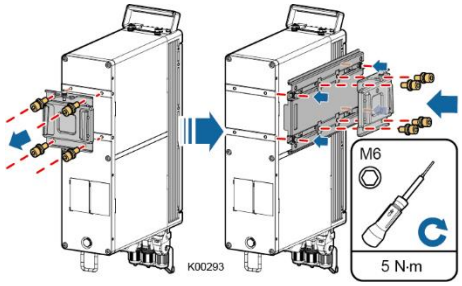
2 Install pole mounting kit B.



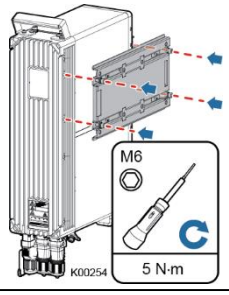
3 Install pole mounting kit A.



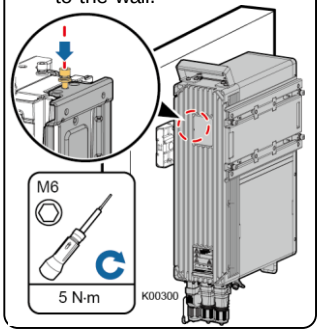
4 Install the attachment kit and hanging kit on lithium battery left side.



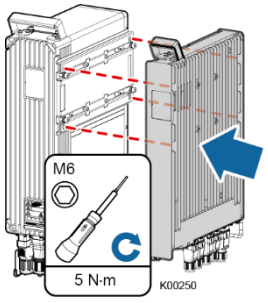
5 Install the attachment kit on lithium battery right side.



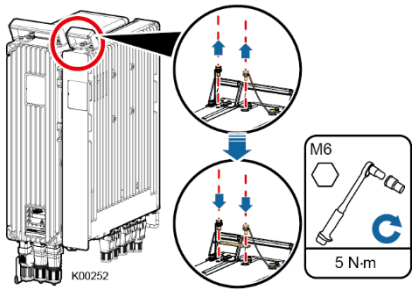
6 Install the lithium battery to the wall.



7 Install the PSU to the lithium battery.



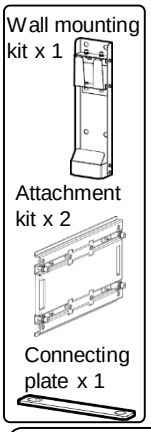
8 Install the connecting plate.



4.7 Flush Mounting on a Wall (Mode 2): 1 PSU + 1 Lithium Battery as an Example

⚠ CAUTION The wall must be able to bear a weight four times the weight of all PSUs and lithium batteries and the bolts' pulling force of 1.25 kN vertical to the wall.

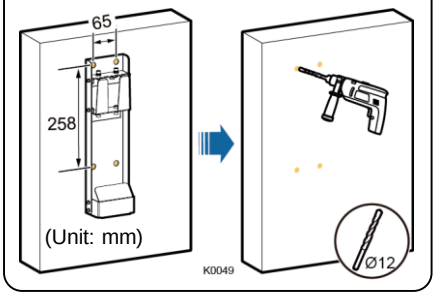
Required Accessories



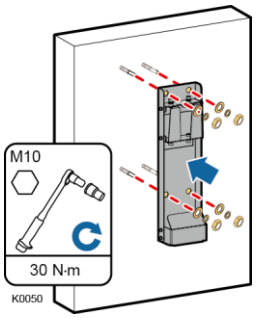
Installation Procedure

1 Install expansion anchor bolts.

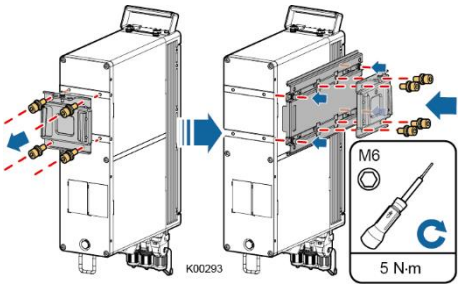
Hole depth: 55–60 mm



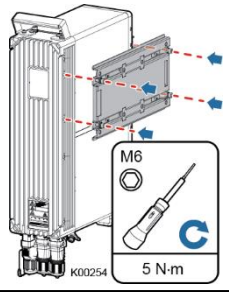
2 Install the wall mounting kit.



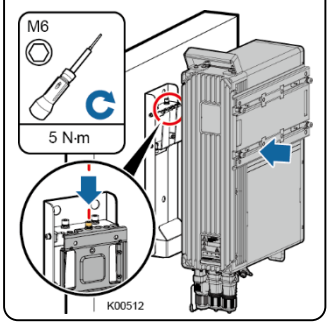
3 Install the attachment kit and hanging kit on lithium battery left side.



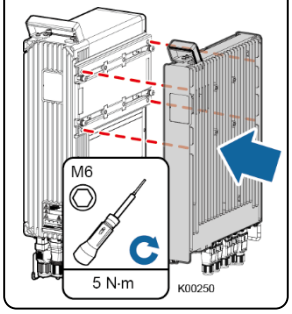
4 Install the attachment kit on lithium battery right side.



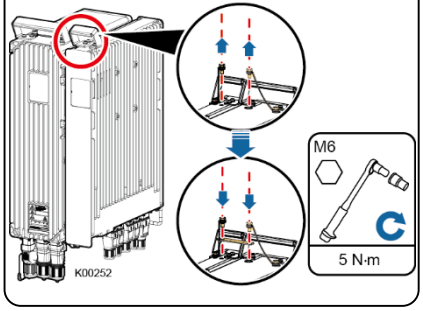
5 Install the lithium battery to the wall.



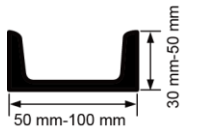
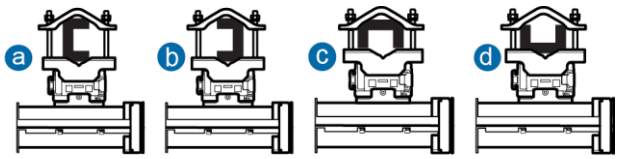
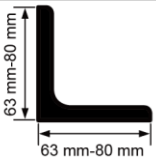
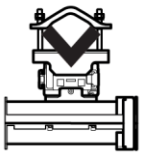
6 Install the PSU to the lithium battery.



7 Install the connecting plate.



4.8 Flush Mounting on Channel or Angle Steel

Channel steel size and installation method		
Angle steel size and installation method		

NOTE

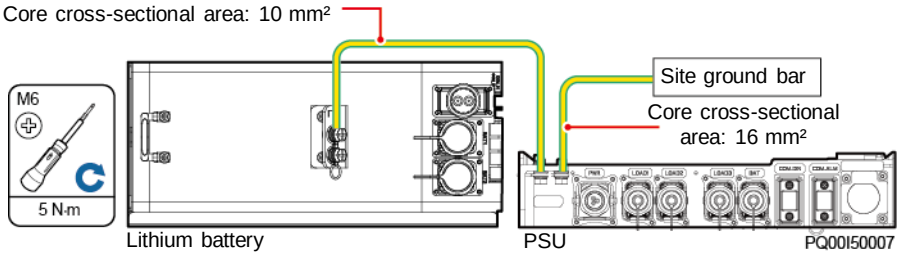
- As shown in the left figures, when the narrow edge size of channel steel is less than 40 mm, only installation methods a and b are supported.
- When channel or angle steel is used for installation, each layer supports a maximum of 1 PSU + 1 lithium battery or 2 PSUs. Refer to the procedure for flush mounting on a small pole.

5 Installing Cables

5.1 Installing a Ground Cable

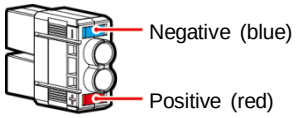
NOTE

The following figure uses one PSU and one lithium battery as an example.

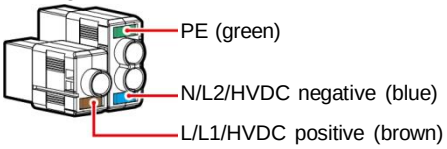


5.2 Preparing AC and DC Cables

DC wiring terminal



AC wiring terminal



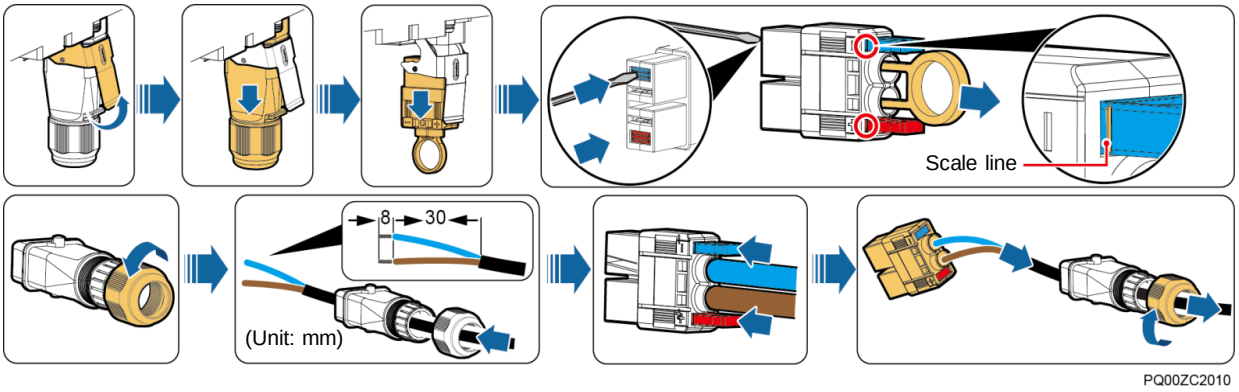
Cable Type	Core Cross-Sectional Area	Cable Outer Diameter
AC (3-core)	2–4 mm²	9.0–14.5 mm
DC (2-core)	3.3–6 mm² (O-type DC power cable) 4–10 mm² (D-type DC power cable)	

NOTE

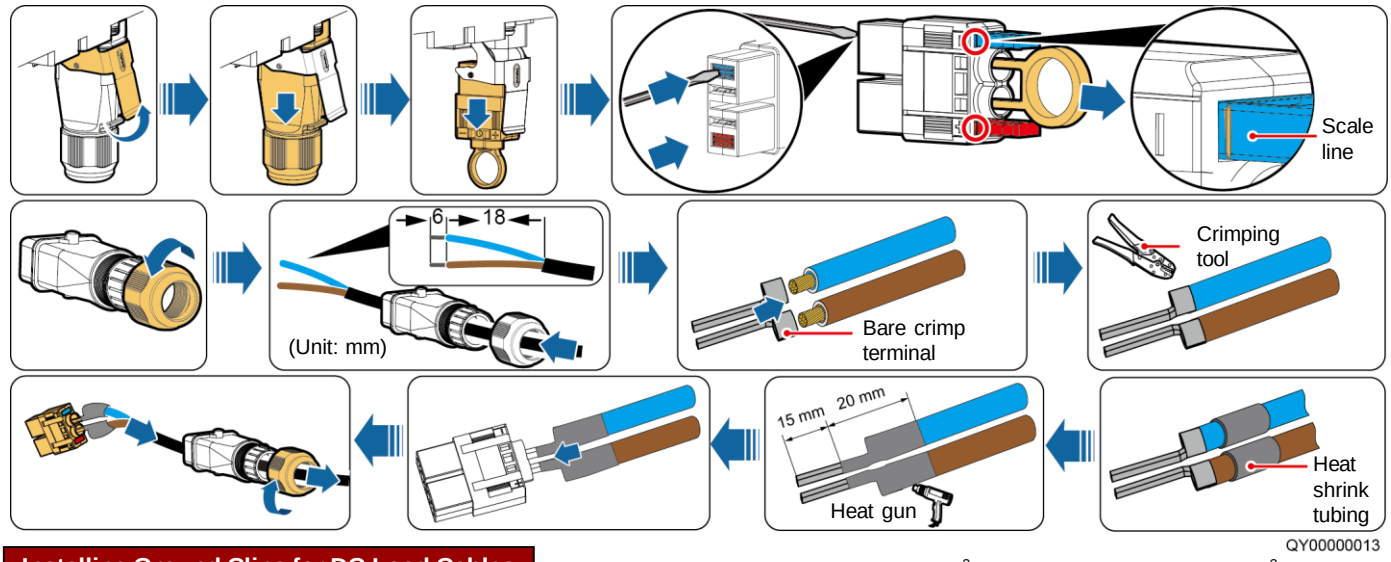
- PSU load cables and AC input cables should be prepared onsite. DC load cables are used as an example here. Refer to this procedure when preparing AC cables.
- Multi-core cables should be used as AC and DC power cables; otherwise, water may seep into the waterproof connectors.
- Before assembling the waterproof connector, check whether the connection between the cable and terminal is firm and reliable.

Preparing DC Cables and Connecting Waterproof Connectors

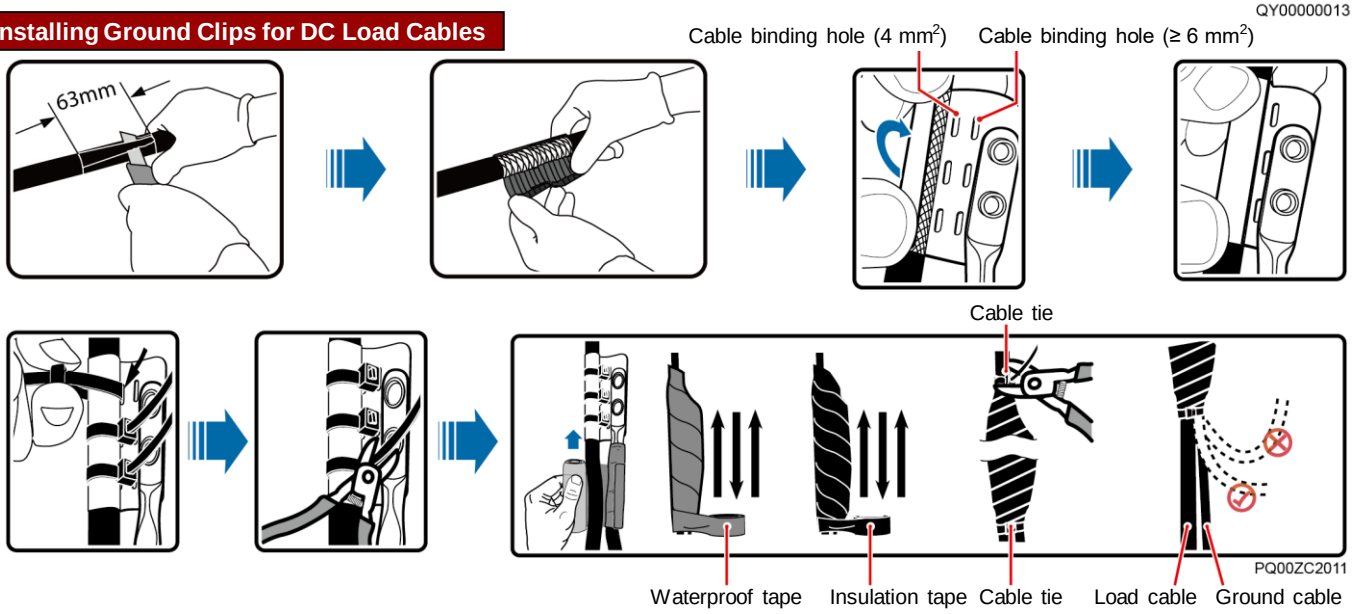
- **If the cable diameter is ≤ 6 mm², prepare cables as follows:**



- **If the cable diameter is > 6 mm², prepare cables as follows:**



Installing Ground Clips for DC Load Cables

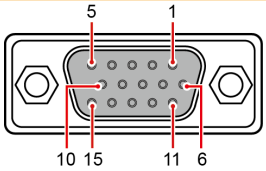


5.3 Installing Power Cables and Communications Cables

⚠ CAUTION

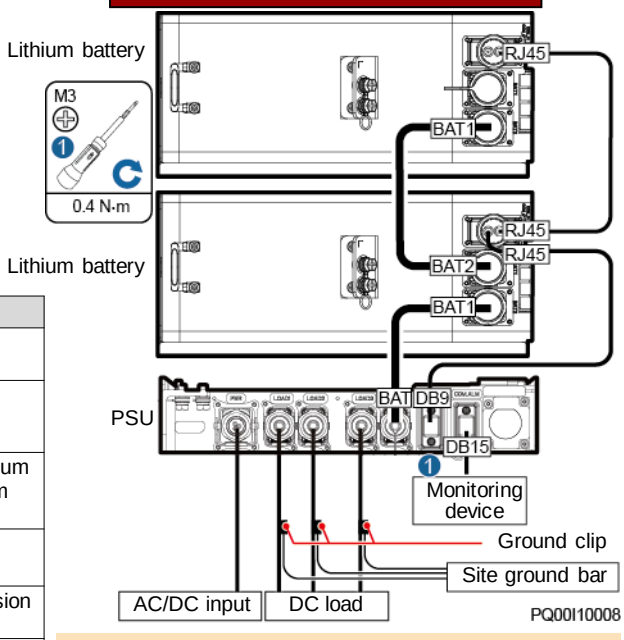
- The system does not simultaneously support AC input and DC input.
- Ensure that caps and waterproof connectors are installed at all idle ports on the modules.
- Ensure that cables are securely connected to terminals.

DB15 Female Connector Definition



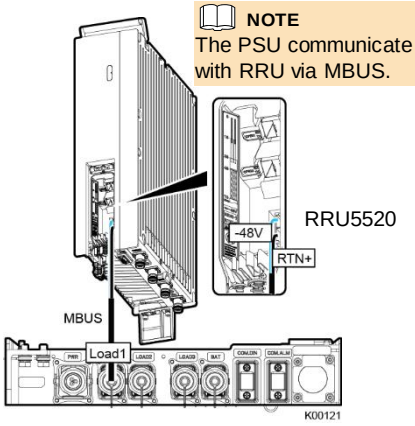
Pin	Signal Name	Description	Pin	Signal Name	Description
1	ALM1+	AC outage alarm (High resistance: alarm; low resistance: normal; < 30 V/4 mA)	9	RS485_RX+	Northbound RS485 reception +
2	ALM1-		10	RS485_RX-	Northbound RS485 reception –
3	ALM2+	A PSU is faulty.	11	ALM4+	Anyone PSU or lithium battery has an alarm that can be cleared.
4	ALM2-		12	ALM4-	
5	ALM3+	A lithium battery is faulty.	13	NC	NC
6	ALM3-				
7	RS485_TX+	Northbound RS485 transmission +	14	CANH	CAN data transmission and reception H
8	RS485_TX-	Northbound RS485 transmission –	15	CANL	CAN data transmission and reception L

1 PSU + 2 Lithium Batteries



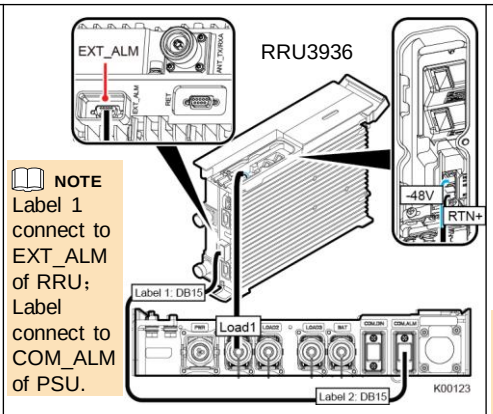
NOTE The PSU is connected to the RRU and BBU to communicate with the NetEco or U2000.

The PSU connect with RRU5XXX (RRU5520 as an example)



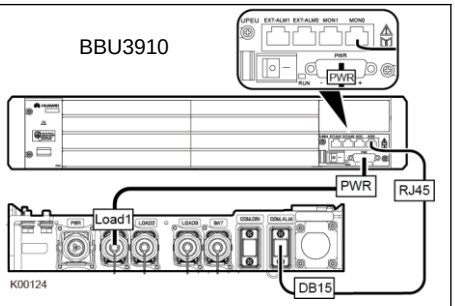
NOTE
The PSU communicate with RRU via MBUS.

The PSU connect with RRU3XXX (RRU3936 as an example)



NOTE
Label 1 connect to EXT_ALM of RRU; Label connect to COM_ALM of PSU.

The PSU connect with BBU (BBU3910 as an example)



NOTE
When the U2000 is used for management, if port MON0 is occupied and port MON1 is used, change the connection serial port number on the U2000 to 1.

6 Verifying the Installation

1. Check that the mounting kits are securely installed and all screws are tightened.
2. Check that all cables are reliably connected with correct polarity and there is no short circuit.
3. Check whether any screw hole is not installed with a screw. If yes, install a screw in the hole.

7 Power-On Commissioning

1. Measure the PSU input voltage. Ensure that AC input voltage is in the range of 85–300 V AC and the HVDC input voltage is in the range of 90–400 V DC.
2. Check the indicators on the PSUs and lithium batteries. Ensure that the green indicators are blinking slowly and red indicators are off.
3. Measure the DC output voltage at each load port. Ensure that the voltage is in the range of–42 V DC to –58 V DC.
4. Observe the power system for about 15 minutes. If no alarm indicator is on, the system is running properly.

8 LIVE-C APP（Only PSU 02312NGM Supports This Function）

8.1 Installing the LIVE-C APP

NOTE
- There is a mobile phone running Android 4.3 or later.
- The mobile phone can properly connect to the Internet.
- The PSU needs to support the mobile app function and the connection mode is Bluetooth connection or WiFi connection.

1. Obtain the latest LIVE-C APP installation package from Huawei technical support.
2. Install the LIVE-C APP on the mobile phone.

LIVE-C APP iCON

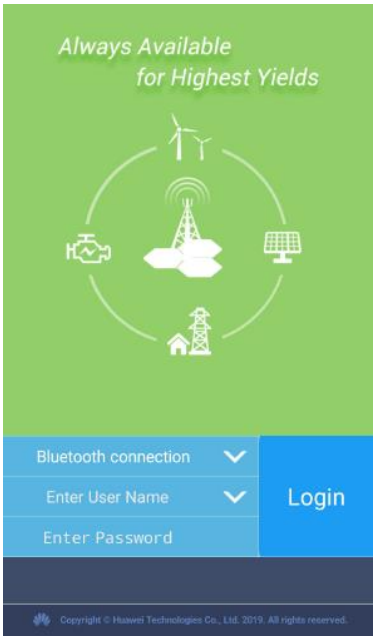
8.2 Logging In to the LIVE-C APP

Prerequisite

The mobile phone should be within 10 m away from the power equipment.

CAUTION
- After the first login, change the password in time to ensure account security and prevent unauthorized network attacks, such as data tampering.
- Huawei will not be liable for any security issues caused by your failure to change the default password in time or password loss after changing. (The password cannot be retrieved if it is lost.)

Password Change: **System Settings** > **Change Password**.



Procedure

1. Tap the LIVE-C APP icon access the home page.
2. Tap **Power System Delivery**, access the login screen.
3. Tap **Bluetooth connection** in the login screen of the APP, to search and connect for power equipment with Bluetooth nearby.

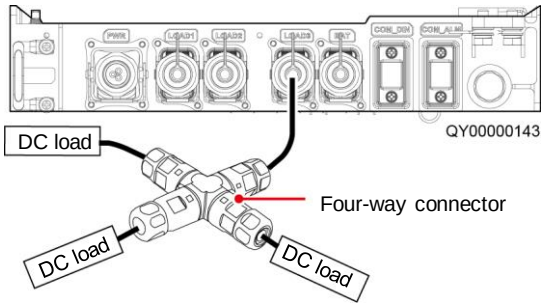
NOTE
- The mobile phone app may be occasionally disconnected due to difference in phone model and Bluetooth signal strength. Please try again 5 minutes later.
- Certain mobile phones may fail to connect in automatic Bluetooth pairing mode due to Android system differences. Please select the manual pairing mode to connect. Locate the pairing request in the notice column and enter the pairing PIN 0000 or 000000.
- The power equipment SN and Bluetooth name have the same last six digits.

4. Enter the user name and password. (initial user name: liveapp, initial password: Changeme_123)
5. Tap **Login** to access **Main Function Menu** and view the operating parameters of the power equipment.

9 Follow-up Operations

1. Reinstall caps and waterproof connectors on all unused ports of the modules.
2. Ensure that the paint on the module exterior is intact. If paint has flaked off, repaint the area to avoid corrosion.
3. Clean the site and leave.

FAQ：How Do I Expand the Capacity of DC Loads?



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