SBH100/150/200/ 250/300/350/400

High Voltage LFP Battery

HIGH POWER

- Up to 50A continuous charging and discharging current, 8 modules unit power up to 28 kW
- Up to 100 % usable energy

SAFETY

- Lithium iron phosphate Battery
- Multi-stages protection design and extensive safety certification

FLEXIBILITY

- Extendable during lifetime
- Support 2-8 modules per unit, max. 4 units in parallel, 10–160 kWh capacity range

EASY INSTALLATION

- Plug and play, no cable needed between battery modules

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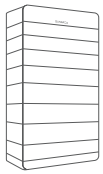
Clean power for all

Type designation	SBH100	SBH150	SBH200	SBH250	SBH300	SBH350	SBH400
Technical properties	 2 modules	 3 modules	 4 modules	 5 modules	 6 modules	 7 modules	 8 modules
System data							
Battery type	LiFePO4 Prismatic Cell						
Battery module	5.0 kWh , 45 kg						
Energy (useable) *	10.0 kWh	15.0 kWh	20.0 kWh	25.0 kWh	30.0 kWh	35.0 kWh	40.0 kWh
Nominal voltage	140.8 V	211.2 V	281.6 V	352.0 V	422.4 V	492.8 V	563.2 V
Rated DC power	7.04 kW	10.56 kW	14.08 kW	17.60 kW	21.12 kW	24.64 kW	28.16 kW
Operating voltage	118.8V-160.6V	178.2V-240.9V	237.6V-321.2V	297V-401.5V	356.4V-481.8V	415.8V-562.1V	475.2V-642.4V
Max. charging/discharging current: continuous	50 A						
Depth of discharge	Max. 100 % DOD (settable)						
Short circuit current	3500 A						
Display	SOC indicator , Status indicator						
Communication interface	CAN						
Protection							
Over/under voltage protection	Yes						
Over current protection	Yes						
Over/under temperature protection	Yes						
DC breaker	Yes						
General data							
Dimensions (W*H*D)	675 * 580 * 350 mm	675 * 740 * 350 mm	675 * 900 * 350 mm	675 * 1060 * 350 mm	675 * 1220 * 350 mm	675 * 1380 * 350 mm	675 * 1540 * 350 mm
Weight	106 kg	151 kg	196 kg	241 kg	286 kg	331 kg	376 kg
Installation location	Indoor / Outdoor						
Mounting method	Floor stand						
Operating ambient temperature range	Charge：0 ℃ - 50 ℃ Discharge：-20 ℃ - 50 ℃						
Degree of protection	IP55						
Allowable relative humidity range	0 % - 95 % no condensing						
Max. operating altitude	Max. 2000 m						
Cooling method	Natural convection						
Certificates	CE, CEC, IEC 62619, IEC 62040, UN 38.3, VDE 2510-50, IEC 62477, IEC 63056						
Warranty**	10 Years						

* Test conditions: 25 ℃ , 100 % depth of discharge (DOD), 0.2C charge&discharge
** Refer to battery warranty letter for conditional application

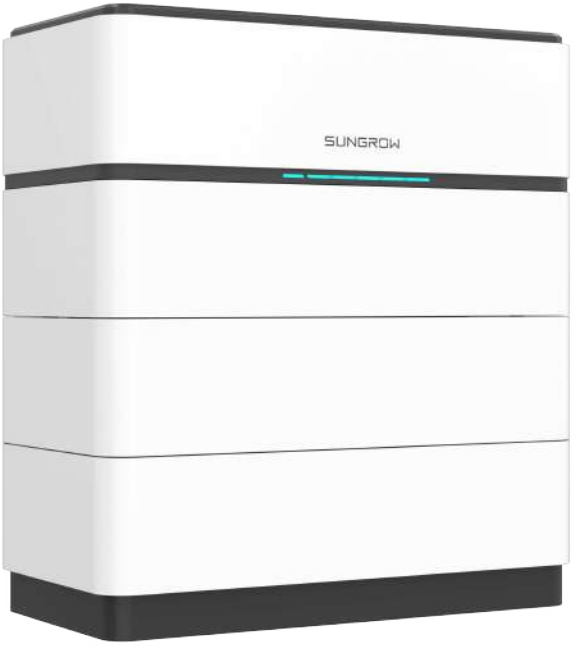
SUNGROW
Clean power for all

Quick Installation Guide

High Voltage LFP Battery

SBH100 / SBH150 / SBH200 / SBH250

SBH300 / SBH350 / SBH400



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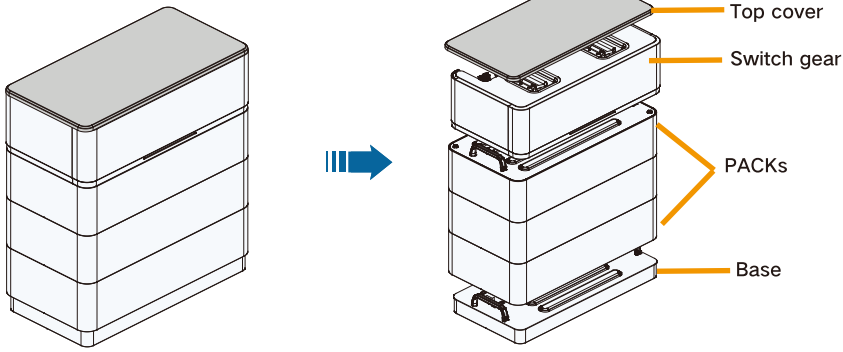
Technology Innovations

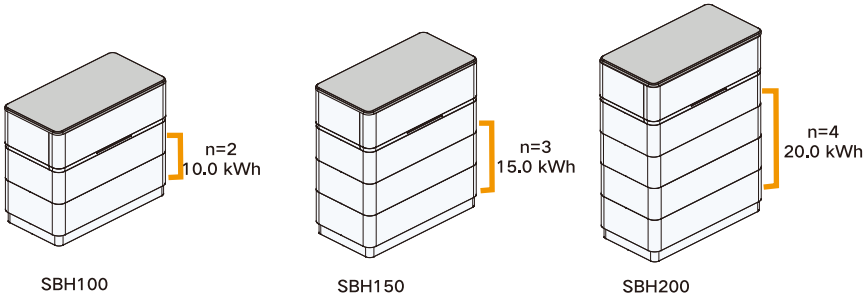
SBH100-400-QIMUL-Ver11-202306

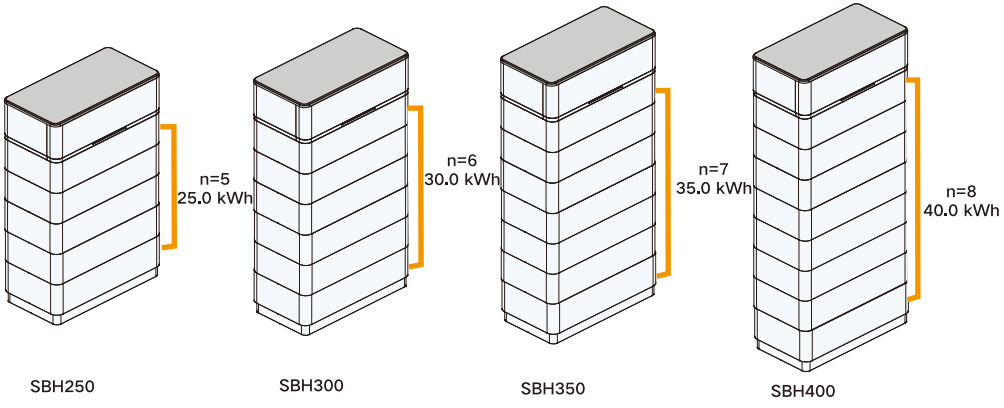
NOTICE

For safety instructions, please refer to the last section of this guide.

Product Introduction

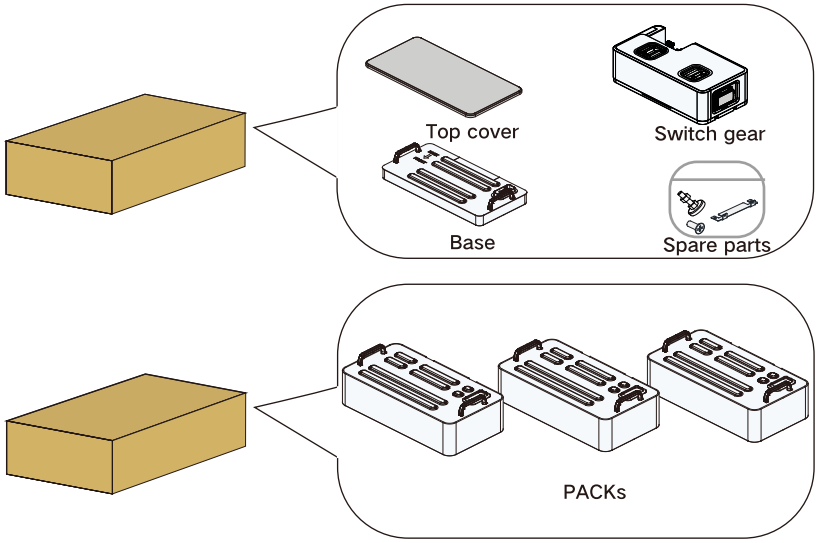




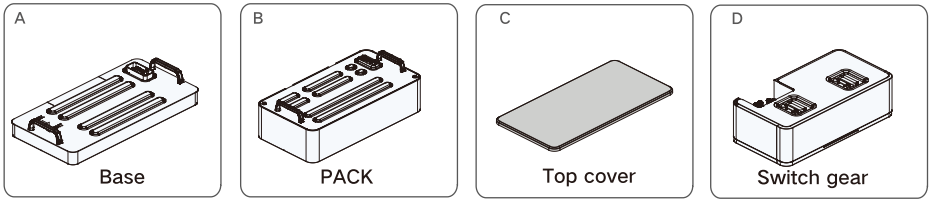


n=number of PACKs

Scope of Delivery

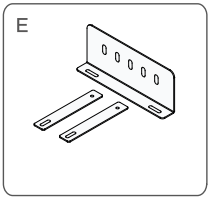


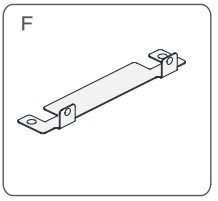
Major Components:

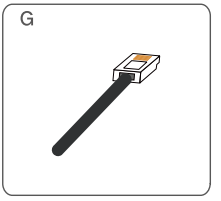


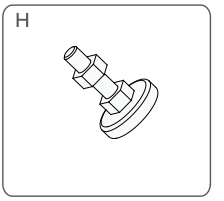
No.	Model	Base	PACKs	Top cover	Switch gear
1	SBH100	1	2	1	1
2	SBH150	1	3	1	1
3	SBH200	1	4	1	1
4	SBH250	1	5	1	1
5	SBH300	1	6	1	1
6	SBH350	1	7	1	1
7	SBH400	1	8	1	1

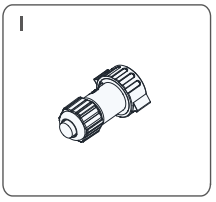
Spare parts:

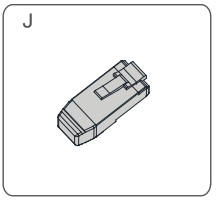


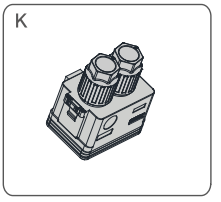


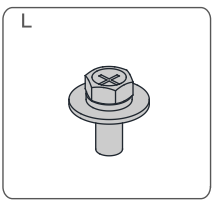


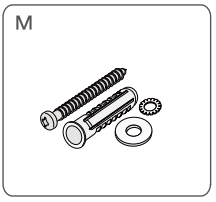


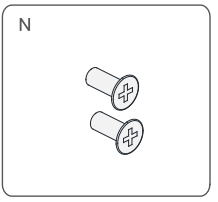


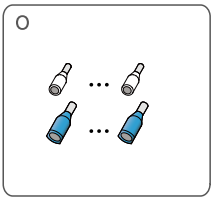


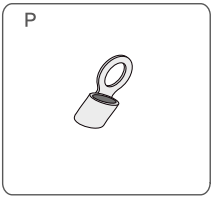


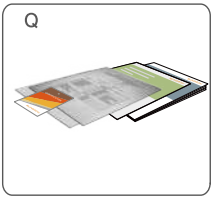






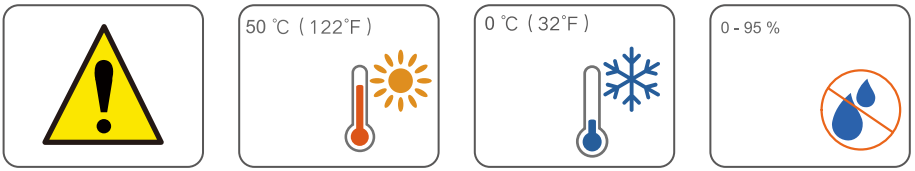


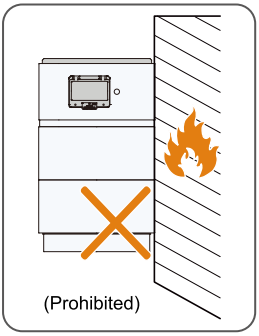


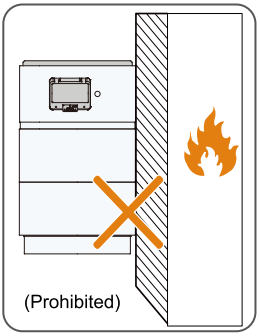


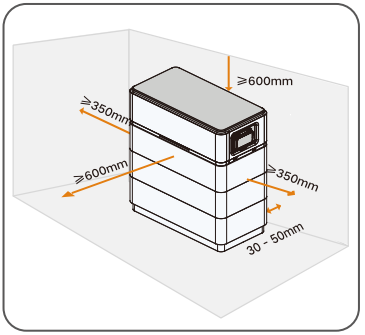
No.	Name	Quantity
E	Battery fixing bracket	1
F	Switch gear fixing bracket	2
G	Communication cable	1
H	Footpads	4
I	Communication connector	2
J	Termination resistor	1
K	Power connector	1
L	M5 screw assembly	5
M	Expansion bolt	3
N	M4 countersunk screw	6
O	Cold-pressed terminal	2
P	OT terminal	1
Q	Quick installation guide	1

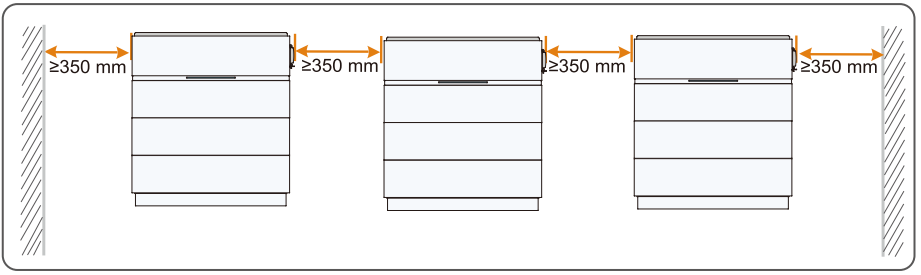
Mounting location

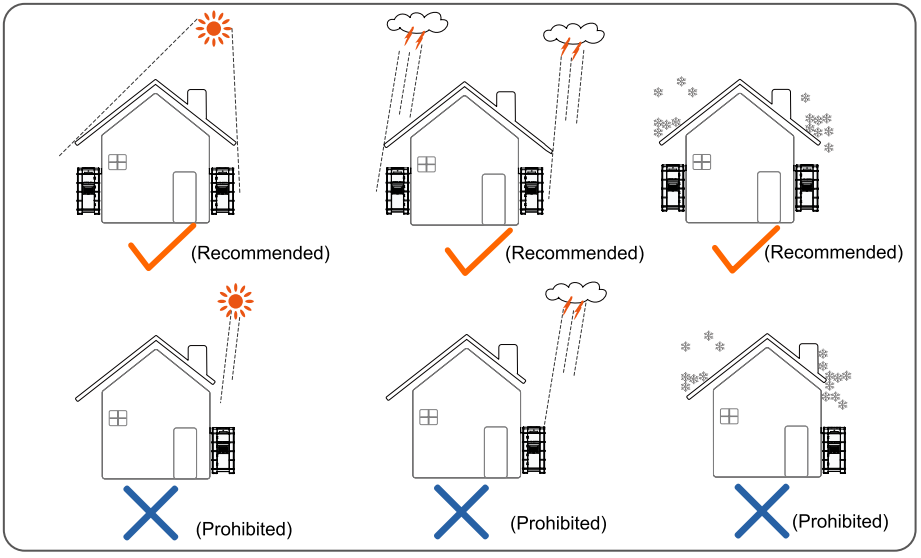








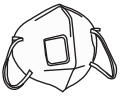




Installation Tools

Goggles

Dust mask



Protective gloves

Insulated shoes

Electric screwdriver
ST6.3, M4, M5, M6

Utility knife

Marker

Rubber mallet

Wrench:16 mm,
17 mm, 35 mm

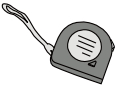
Crimping tool

Level

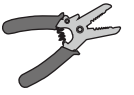
Hammer drill:
φ10

Phillips screwdriver:
ST6.3, M4, M5, M6

Measuring tape



Wire stripper



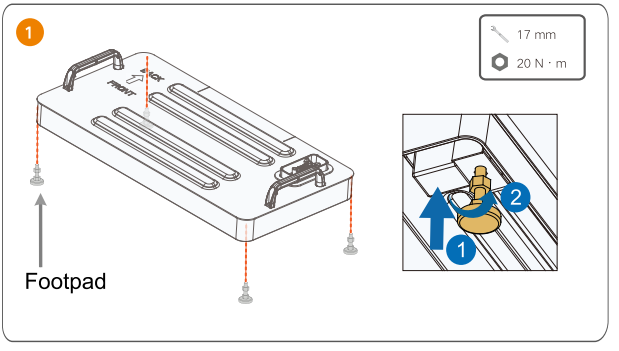
Hydraulic plier

Heat gun

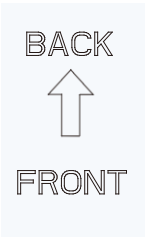
Allen wrench

Tube terminal
crimping tool(10mm²)

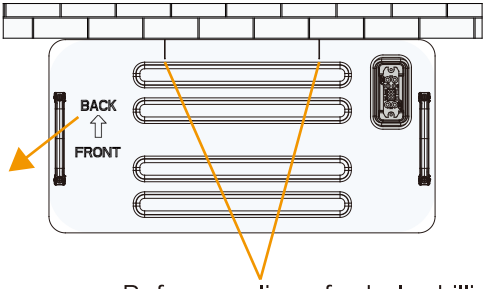
Mounting



2

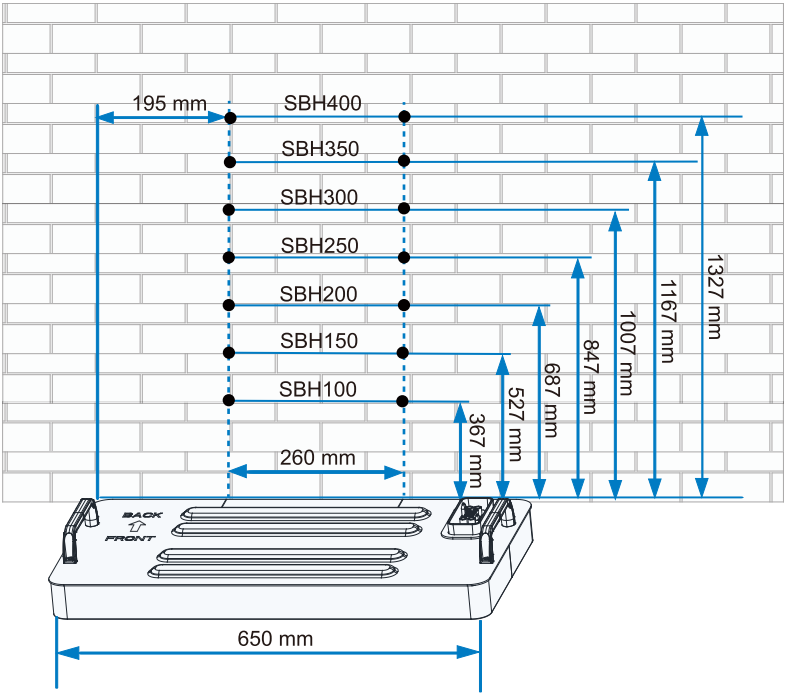


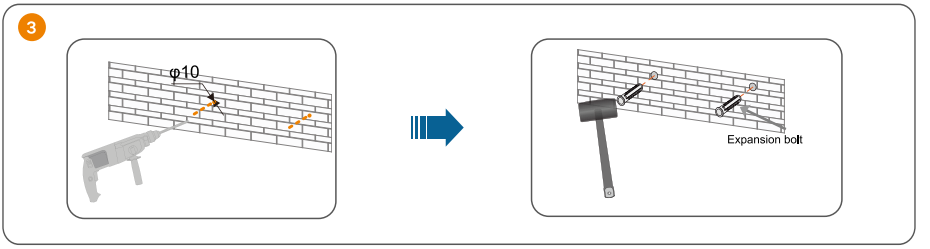
Directional sign on the base

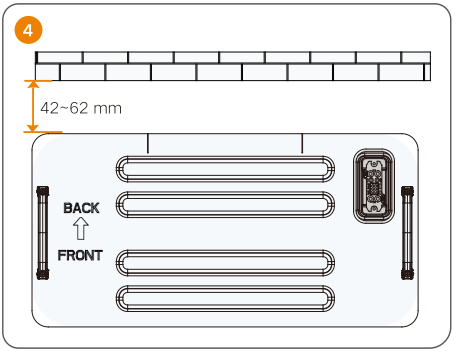


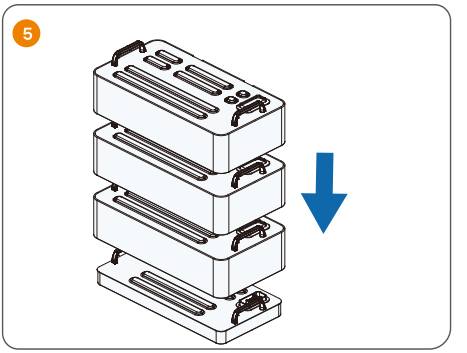
Reference lines for hole drilling
(Used for determining the spacing between
the two holes at the ends of the battery fixing bracket)

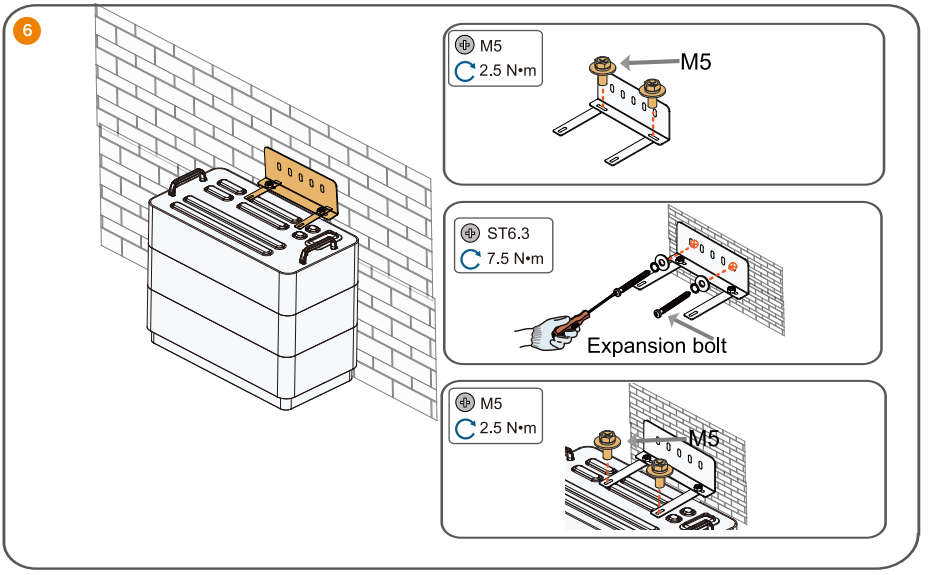
front of the base (FRONT) →back of the base (BACK)

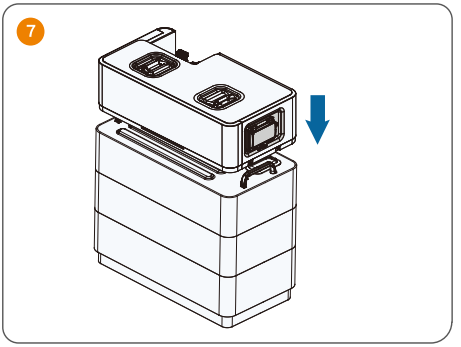


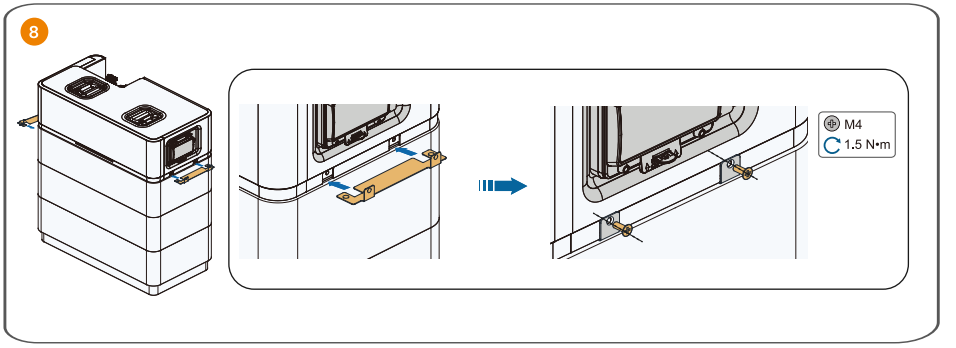

3
φ10
Expansion bolt


4
42~62 mm
BACK
FRONT

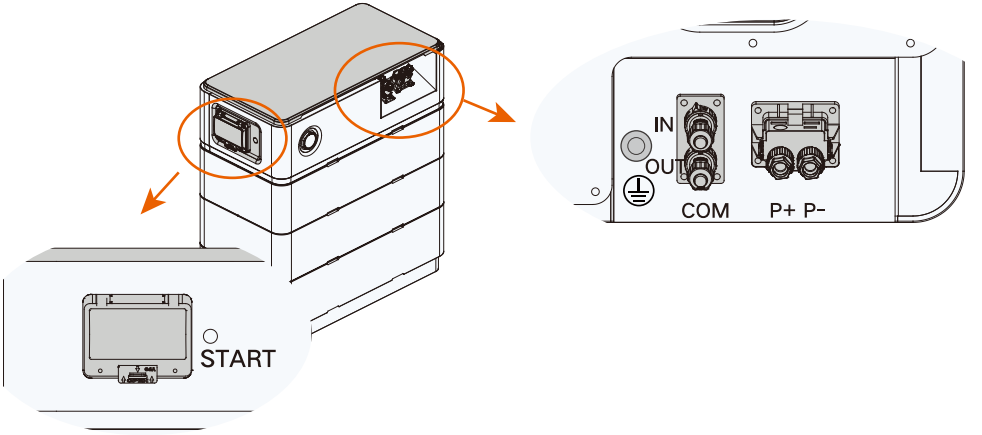

5


6
M5
2.5 N•m
M5
ST6.3
7.5 N•m
Expansion bolt
M5
2.5 N•m
M5

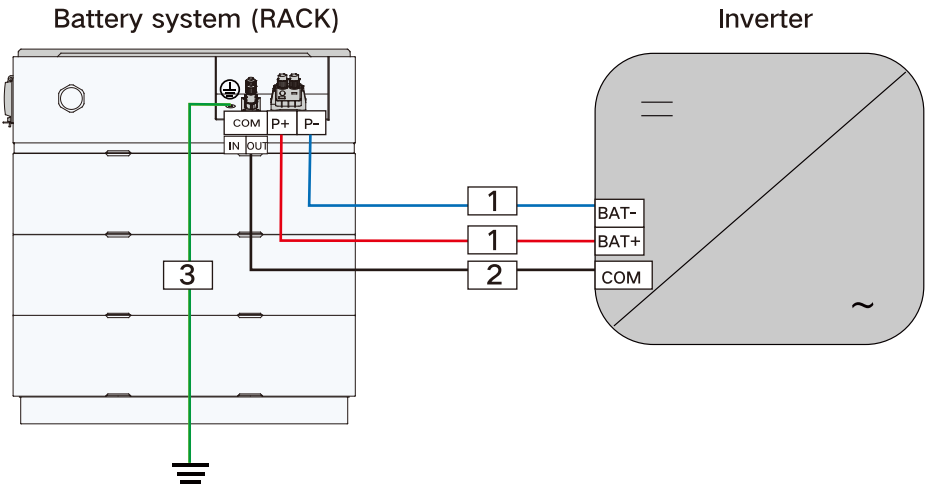




Terminal Description

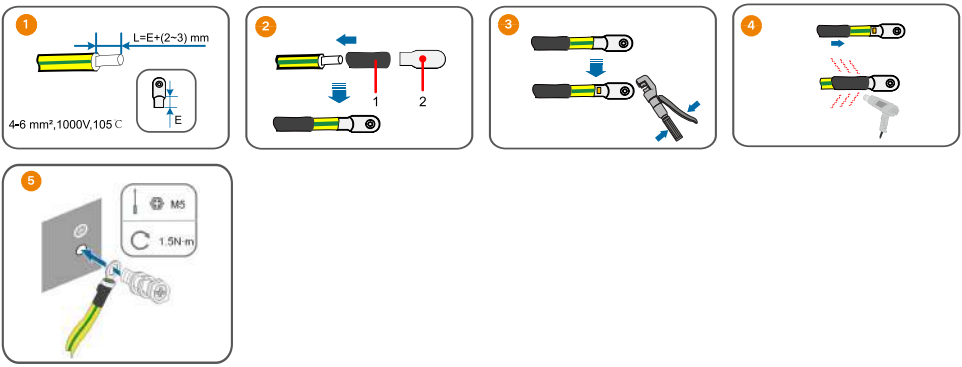


Electrical Connection Overview

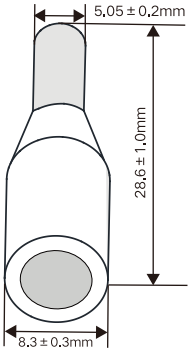


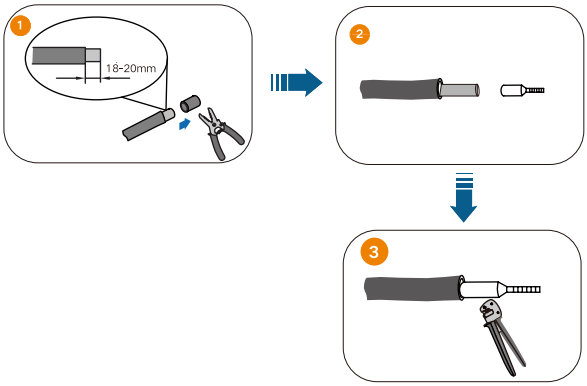
No.	Cable	Type	Cable Diameter	Cross-section
1	DC cable	Multi-core PV cable, able to withstand voltages of >1100V	6 - 9 mm	10 - 16 mm^2 (7 - 5AWG)
2	Communication cable (provided as one of the accessories)	/	/	/
3	PE Cable	Outdoor multi-core copper-conductor cable, able to withstand a voltage of 1000V and work at the temperature of 105℃.	6 - 9 mm	10 - 16 mm^2 (7 - 5AWG)

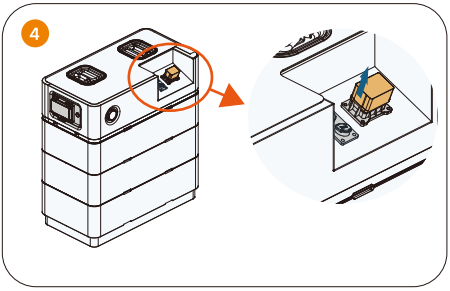
PE Cable

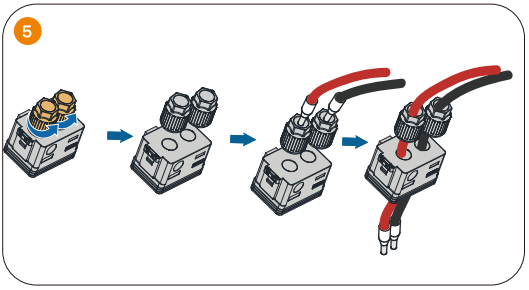


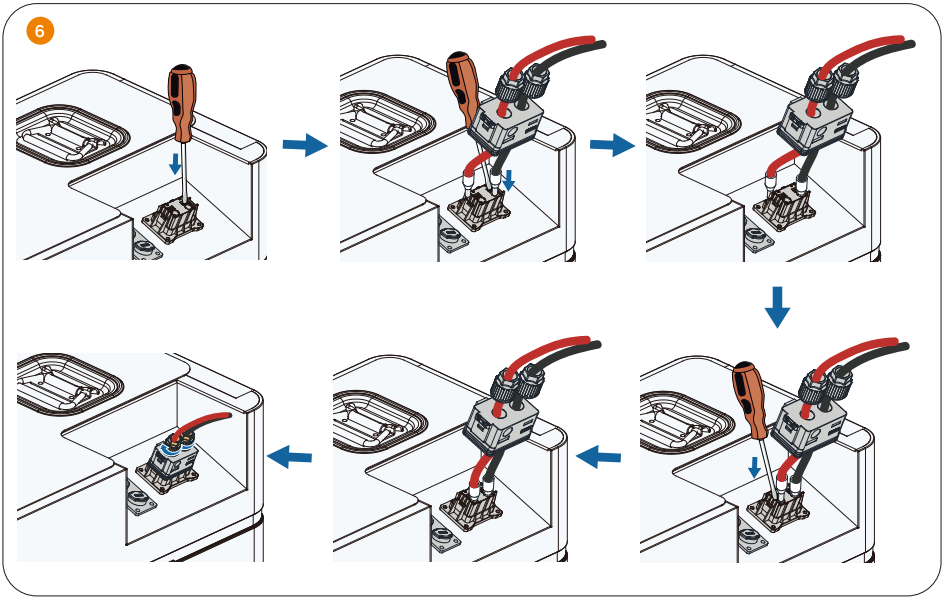
Battery power Cable

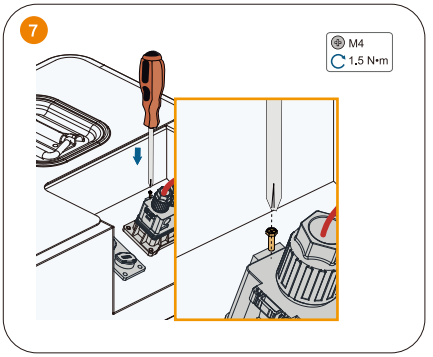






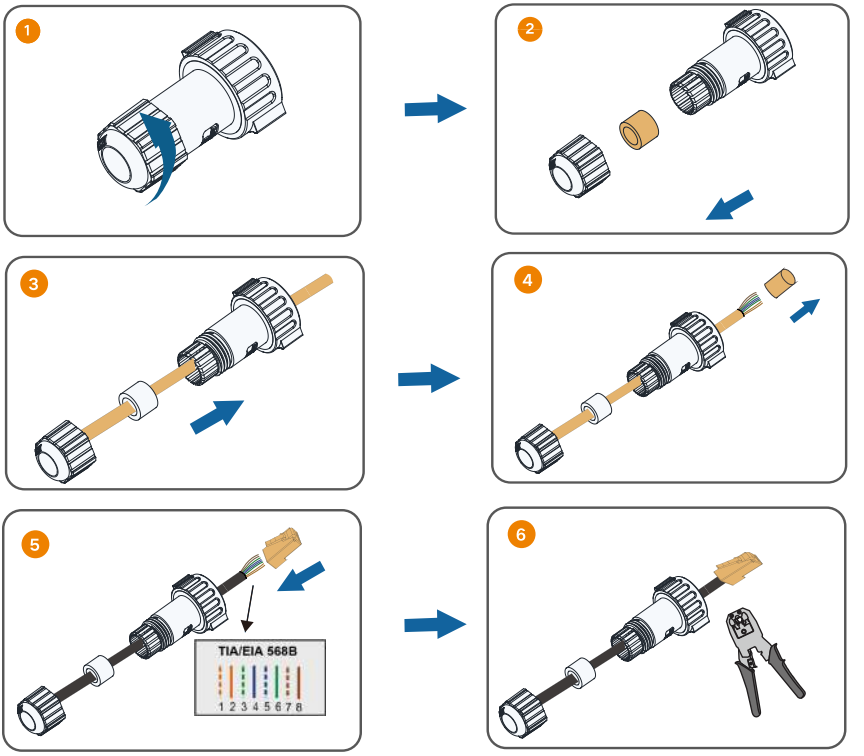


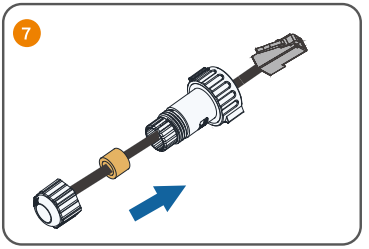


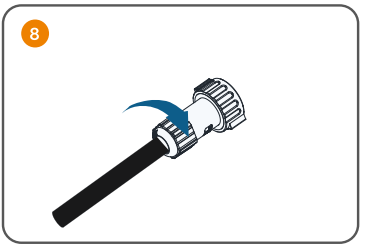


Communication Connector

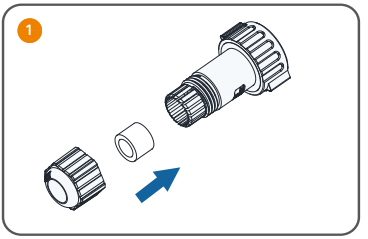
Communication connector：

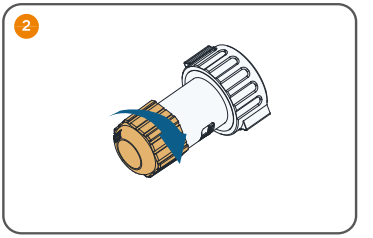


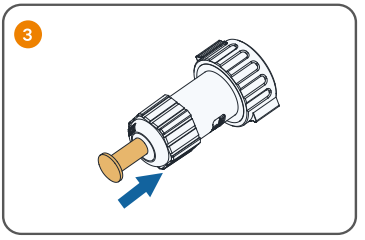


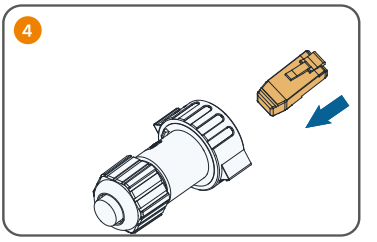


Termination resistor:

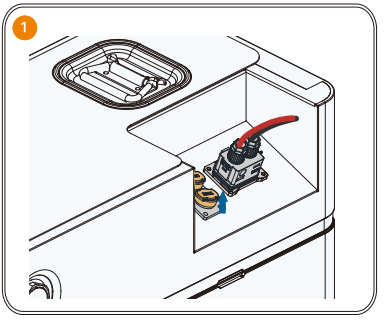


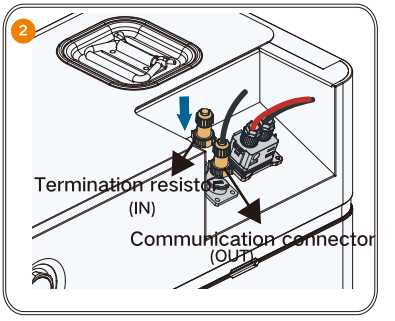


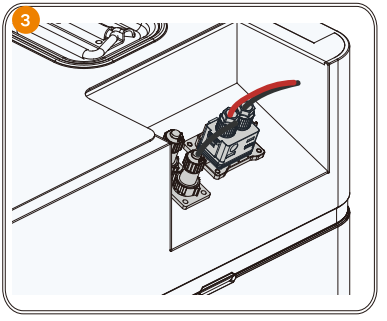




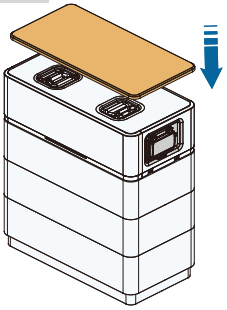
Cable connection:



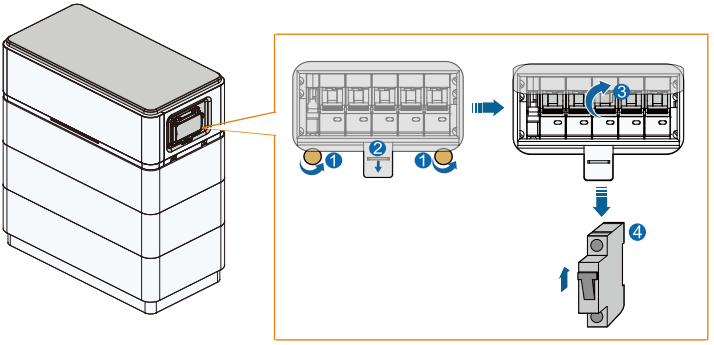




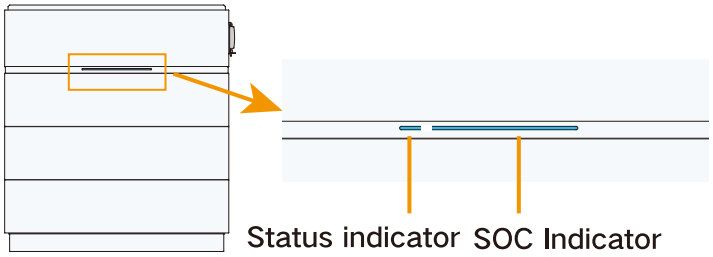
Top Cover Assembling



Power on



LED Indicator



SOC Indicator:

SOC Indicator	SOC
	0
	0 < SOC≤20%
	20% < SOC≤40%
	40% < SOC≤60%
	60% < SOC≤80%
	SOC > 80%

SOC indicator	Status	Description
	Steady on	The battery system works normally
	Blinking	The battery system is being charged/discharged

Status indicator :

Status indicator	Color	Status	Description
	Blue	Steady on	The battery system works normally
		Blink slow (at an interval of 1s)	The battery system is booting or in standby mode
		Blink fast (at an interval of 0.5s)	The battery system is being upgraded, tested, or calibrated
	Red	Steady on	Battery system fault
		Blink slow (at an interval of 1s)	Battery system alarm
	Grey	Off	No fault has occurred to the battery system

1. Contents may be periodically updated or revised due to product development. The information in this guide is subject to change without notice. In no case shall this guide substitute for the user manual or related notes on the device.
2. Make sure to read over, fully understand and strictly follow the detailed instructions of the user manual and other related regulations before installing the equipment. The user manual can be downloaded by visiting the website at http://support.sungrowpower.com/; or it can be obtained by scanning the QR code on the side of the equipment or the back cover of this guide.
3. All operations can be performed only by qualified personnel, that must be trained for installation and commissioning of electrical system, as well as dealing with hazards, have knowledge of the manual and of the local regulations and directives.
4. Before installation, check that the package contents are intact and complete compared to the packing list. Contact SUNGROW or the distributor in case of any damaged or missing components.
5. The cable used must be intact and well insulated. Operation personnel must wear proper personal protective equipment (PPE) all the time.
6. Any violation could result in personal death or injury or device damage, and will void the warranty.

Safety

The battery has been designed and tested strictly according to international safety regulations. Read all safety instructions carefully prior to any work and observe them at all times when working on or with the battery. Incorrect operation or work may cause:

- injury or death to the operator or a third party;
- damage to the battery or other properties.

The warning label on the battery body are as follows.

	Pay attention to the danger. Do not operate this product in the live status!
	Read the manual before any operation of this product.
	Do not dispose in trash. Compacting a lithium ion battery is dangerous as it can explode.
	No open flames Do not expose to flame, incinerate, puncture, or impact
	Electric shock hazard Serviced by qualified personnel only. Out of reach from children.
	Please recycle battery. Do not discard.
	This is a protective grounding terminal, which should be grounded securely to protect the safety of operators.
	TÜV mark of conformity.
	TÜV mark of conformity.
	CE mark of conformity. EU/EEA Importer.
	UKCA mark of conformity.

⚠ DANGER

Risk of explosion

- Do not subject the battery to any strong force.
- Do not mechanically damage the battery (pierce, deform, strip down, etc.)
- Do not heat the battery or dispose of the battery in a fire.
- Do not install the battery in potentially explosive environments.
- Do not soak the battery in water or expose it to moisture or liquids.

⚠ DANGER

Risk of fire

- Do not expose the battery to temperatures in excess of 60°C.
- Do not place the battery near a heat source, such as direct sunlight, a fireplace, a thermally uninsulated wall exposed to sunlight, hot water, or a heater.
- Keep sources of ignition such as sparks, flames, and smoking materials away from the battery.

⚠ DANGER

Risk of electric shock

- Do not disassemble the battery.
- Do not handle a wet battery or use wet tools.
- Do not soak the battery in water or expose it to moisture or liquids.
- Keep the battery away from children and animals.
- Wear suitable clothing, guards and gloves to prevent you from direct contact with the DC voltage.
- Use insulated tools during working with battery.
- Set aside metal jewelry before working on the DC circuit.

⚠ NOTICE

Comply with local standards for use with the battery.

DE

1. Die Inhalte können aufgrund der Produktweiterentwicklung regelmäßig aktualisiert oder überarbeitet werden. Die Informationen in diesem Handbuch können ohne vorherige Ankündigung geändert werden. In keinem Fall ersetzt diese Anleitung das Benutzerhandbuch oder zugehörige Hinweise auf dem Gerät.
2. Stellen Sie sicher, dass Sie alle Anweisungen des Benutzerhandbuchs und andere damit zusammenhängende Vorschriften gelesen und vollständig verstanden haben und diese genau befolgen, bevor Sie das Gerät installieren. Das Benutzerhandbuch kann von der Website unter http://support.sungrowpower.com/ heruntergeladen werden. Alternativ können Sie den QR-Code an der Seite des Geräts oder auf der Rückseite dieses Handbuchs scannen.
3. Alle Arbeiten dürfen nur von qualifiziertem Personal ausgeführt werden, das für die Installation und Inbetriebnahme elektrischer Anlagen sowie den Umgang mit Gefahren geschult ist, das Handbuch kennt und mit den örtlichen Vorschriften und Richtlinien vertraut ist.
4. Vergewissern Sie sich vor der Installation, dass der Paketinhalt gemäß der Packliste vollständig und funktionsfähig ist. Kontaktieren Sie SUNGROW oder Ihren Händler im Falle von beschädigten oder fehlenden Bauteilen.
5. Das verwendete Kabel muss intakt und gut isoliert sein. Das Fachpersonal muss stets geeignete Schutzausrüstung (PSA) tragen.
6. Das Nichteinhalten von Anweisungen kann zu Tod oder Verletzungen von Menschen oder zu Schäden am Gerät führen und hat ein Erlöschen der Garantie zur Folge.

Sicherheit

Die Batterie wurde streng nach internationalen Sicherheitsvorschriften entworfen, gefertigt und getestet. Studieren Sie vor der Durchführung jeglicher Arbeiten an oder mit der Batterie die Sicherheitshinweise und beachten Sie diese strengstens. Falsche Bedienung oder Betrieb können:

- zu Verletzungen oder zum Tod des Betreibers oder eines Dritten führen
- Beschädigung der Batterie oder anderen Eigentums verursachen

Die Warnhinweise auf dem Batteriegehäuse lauten wie folgt.

	Beachten Sie das Gefahrenpotential. Betreiben Sie dieses Produkt nicht im spannungsführenden Zustand!
	Lesen Sie das Handbuch, bevor Sie dieses Produkt in Betrieb nehmen.
	Nicht über den Hausmüll entsorgen. Das Komprimieren einer Lithium-Ionen-Batterie birgt die Gefahr einer Explosion.
	Keine offenen Flammen Nicht in Flammen setzen, verbrennen, durchstechen oder stoßen
	Gefahr durch Stromschlag Die Wartung darf nur von qualifiziertem Personal durchgeführt werden. Außer Reichweite von Kindern halten.
	Bitte recyceln Sie die Batterie. Nicht entsorgen.
	Dies ist eine schützende Erdungsklemme. Diese muss sicher geerdet werden, um die Sicherheit der Bediener zu gewährleisten.
	Das TÜV-Prüfzeichen.
	Das TÜV-Prüfzeichen.
	CE-Prüfzeichen. EU-/EWR-Importeur.
	UKCA-Prüfzeichen.

⚠ GEFAHR

Explosionsgefahr

- Setzen Sie die Batterie keinen starken Kräften aus.
- Beschädigen Sie die Batterie nicht mechanisch (durchstechen, verformen, abisolieren usw.).
- Erhitzen Sie die Batterie nicht und entsorgen Sie sie nicht im Feuer.
- Installieren Sie die Batterie nicht in explosionsgefährdeten Umgebungen.
- Tauchen Sie die Batterie nicht in Wasser ein und setzen Sie sie keiner Feuchtigkeit oder Flüssigkeit aus.

⚠ GEFAHR

Brandgefahr

- Setzen Sie die Batterie keinen Temperaturen über 60 °C aus.
- Stellen Sie die Batterie nicht in der Nähe einer Wärmequelle auf, wie z. B. direktem Sonnenlicht, einem Kamin, einer thermisch nicht isolierten Wand, die Sonnenlicht ausgesetzt ist, heißem Wasser oder einer Heizung.
- Halten Sie Zündquellen wie Funken, Flammen und rauchende Materialien von der Batterie fern.

⚠ GEFAHR

Gefahr eines elektrischen Schlages

- Nehmen Sie die Batterie nicht auseinander.
- Hantieren Sie nicht mit einer nassen Batterie und verwenden Sie keine nassen Werkzeuge.
- Tauchen Sie die Batterie nicht in Wasser ein und setzen Sie sie keiner Feuchtigkeit oder Flüssigkeit aus.
- Halten Sie die Batterie von Kindern und Tieren fern.
- Tragen Sie geeignete Kleidung, Schutzausrüstung und Handschuhe, um sich vor direktem Kontakt mit der Gleichspannung zu schützen.
- Verwenden Sie bei Arbeiten an der Batterie isolierte Werkzeuge.
- Legen Sie jeglichen Metallschmuck ab, bevor Sie am Gleichstromkreis arbeiten.

⚠ HINWEIS

Halten Sie die örtlichen Normen für die Verwendung mit der Batterie ein.

IT

1. Il contenuto può essere aggiornato o modificato periodicamente, in seguito allo sviluppo del prodotto. Le informazioni in questa guida sono soggette a variazione senza preavviso. In nessun caso la presente guida sostituisce il Manuale utente o le note correlate sul dispositivo.
2. Prima dell'installazione dell'apparecchiatura, assicurarsi di leggere con attenzione, comprendere a fondo e attenersi rigorosamente alle istruzioni dettagliate nel Manuale utente e ad altre normative. Il Manuale utente può essere scaricato visitando il sito Web all'indirizzo http://support.sungrowpower.com/; oppure può essere ottenuto scansionando il codice QR sul lato dell'apparecchiatura o sul retro di questa guida.
3. Tutte le attività possono essere eseguite esclusivamente da personale qualificato che deve essere formato per l'installazione e la messa in servizio di sistemi elettrici, nonché nella gestione dei pericoli associati a tali attività, conoscere il contenuto del manuale, le normative locali e le direttive locali.
4. Prima dell'installazione, verificare che il contenuto della confezione sia integro e completo rispetto alla distinta del contenuto dell'imballo. In caso di componenti mancanti o danneggiati, contattare SUNGROW o il distributore.
5. Il cavo usato deve essere intatto e ben isolato. Il personale operativo deve sempre indossare dispositivi di protezione individuale (DPI) appropriati.
6. Qualsiasi violazione potrebbe causare lesioni personali o il decesso oppure danni al dispositivo e renderà nulla la garanzia.

Sicurezza

La batteria è stata progettata e testata rigorosamente in riferimento a normative di sicurezza internazionali. Leggere con attenzione tutte le istruzioni di sicurezza prima di qualsiasi procedura e farvi riferimento ogni volta che si opera con o sulla batteria. Il funzionamento o l'utilizzo scorretti possono causare:

- lesioni o il decesso dell'operatore o di una terza parte;
- danni alla batteria o ad altre proprietà.

Le etichette di avvertenza presenti sulla struttura esterna della batteria sono le seguenti.

	Prestare attenzione al pericolo. Non intervenire su questo prodotto quando è alimentato.
	Leggere questo manuale prima di eseguire qualsiasi operazione sul prodotto.
	Non smaltire nei rifiuti domestici. Compattare una batteria agli ioni di litio è pericoloso poiché può esplodere.
	Non utilizzare fiamme libere Non esporre a fiamme, incenerire, forare o colpire
	Pericolo di scosse elettriche La manutenzione deve essere eseguita solo personale qualificato. Tenere lontano dalla portata dei bambini.
	Riciclare la batteria. Non smaltire.
	Questo è un terminale di messa a terra di protezione che deve essere saldamente collegato a terra per proteggere la sicurezza degli operatori.
	Marchio di conformità TÜV.
	Marchio di conformità TÜV.
	Marchio di conformità CE. Importatore UE/SEE.
	Marchio di conformità UKCA.

⚠ PERICOLO

Rischio di esplosione

- Non sottoporre la batteria a forze intense.
- Non danneggiare meccanicamente la batteria (forare, deformare, smontare, ecc.)
- Non riscaldare la batteria o smaltirla nel fuoco.
- Non installare la batteria in ambienti potenzialmente esplosivi.
- Non immergere la batteria in acqua o esporla a umidità o liquidi.

⚠ PERICOLO

Rischio di incendio

- Non esporre la batteria a temperature superiori a 60 °C.
- Non posizionare la batteria vicino a una fonte di calore, come la luce solare diretta, un camino, una parete esposta al sole e priva di isolamento termico, acqua calda o un riscaldatore.
- Mantenere la batteria lontana dalle fonti di innesco come scintille, fiamme e materiali per fumatori.

⚠ PERICOLO

Rischio di scosse elettriche

- Non smontare la batteria.
- Non manipolare una batteria bagnata o utilizzare utensili bagnati.
- Non immergere la batteria in acqua o esporla a umidità o liquidi.
- Mantenere la batteria lontana da bambini e animali.
- Indossare indumenti, protezioni e guanti adeguati per prevenire il contatto diretto con la tensione CC.
- Utilizzare utensili isolati durante il lavoro con la batteria.
- Non indossare gioielli in metallo quando si interviene sul circuito CC.

⚠ AVVISO

Rispettare le normative locali per l'uso della batteria.

1. Le contenu peut être périodiquement mis à jour ou révisé en raison du développement constant du produit. Les informations contenues dans ce guide sont soumises à des modifications sans préavis. En aucun cas ce guide n'a pas pour objet de remplacer le manuel utilisateur ou les notes relatives à l'appareil.
2. Assurez-vous de lire attentivement, de comprendre dans leur ensemble et de strictement suivre les instructions détaillées du manuel utilisateur et des autres réglementations qui y sont liées avant d'installer l'équipement. Vous pouvez télécharger le manuel d'utilisation en visitant le site Web à l'adresse http://support.sungrowpower.com/ ; vous pouvez également l'obtenir en scannant le code QR situé sur le panneau latéral de l'équipement ou au dos de la couverture de ce guide.
3. Toutes les opérations peuvent être uniquement réalisées par du personnel qualifié qui doit être formé à l'installation et à la mise en service du système électrique, ainsi qu'à la gestion des risques, et qui connaît le manuel ainsi que les réglementations et les directives locales.
4. Avant l'installation, veuillez vérifier que le contenu de l'emballage est intact et complet en le comparant à la liste de conditionnement. Contactez SUNGROW ou le distributeur en cas de composants endommagés ou absents.
5. Le câble utilisé doit être intact et bien isolé. Le personnel opérationnel doit porter un équipement de protection individuelle approprié (EPI) à tout moment.
6. Toute violation pourrait entraîner un préjudice corporel ou la mort, ou des dommages sur l'appareil, et annulera la garantie.

Sécurité

La batterie a été conçue et testée conformément aux normes de sécurité internationales. Lisez attentivement toutes les instructions de sécurité avant d'effectuer tout travail et respectez-les lorsque vous travaillez sur ou avec la batterie. Toute opération ou tout travail incorrect peut causer :

- des blessures/la mort de l'opérateur ou d'une autre personne ;
- endommager la batterie ou d'autres biens.

L'étiquette d'avertissement se trouve sur le boîtier de la batterie comme suit.

	Faites attention au danger. Ne faites pas fonctionner ce produit lorsqu'il est sous tension !
	Lisez le manuel avant tout fonctionnement du produit.
	Veuillez ne pas éliminer dans la poubelle. Compacter une batterie ion-lithium est dangereux car elle peut exploser.
	Pas de flammes ouvertes Veuillez ne pas exposer aux flammes, incinérer, perforer ou choquer
	Danger d'électrocution Entretenu par du personnel qualifié uniquement. Tenez hors de portée des enfants.
	Veuillez recycler la batterie. Ne la jetez pas.
	C'est une borne de mise à la terre de protection, qui doit être mise à la terre de façon sûre pour la sécurité des opérateurs.
	Marquage de conformité TÜV.
	Marquage de conformité TÜV.
	Marquage de conformité CE. Importateur UE/EEE.
	Marquage de conformité UKCA.

⚠ DANGER

Risque d'explosion

- Ne soumettez pas la batterie à une force puissante.
- Ne provoquez pas de dommages mécaniques sur la batterie (perforation, déformation, démontage, etc.)
- Ne chauffez pas la batterie et ne la jetez pas dans un feu.
- N'installez pas la batterie dans des environnements à risque d'explosion.
- Ne pas tremper la batterie dans l'eau ou l'exposer à l'humidité ou à des liquides.

⚠ DANGER

Risque d'incendie

- N'exposez pas la batterie à des températures dépassant les 60 °C.
- Ne placez pas la batterie à proximité d'une source de chaleur, telle que les rayons du soleil, une cheminée, un mur exposé à la chaleur du soleil sans isolation thermique, de l'eau chaude ou un chauffage.
- Maintenez les sources d'inflammation telles que les étincelles, les flammes et les matériaux fumants à distance de la batterie.

⚠ DANGER

Danger d'électrocution

- Ne démontez pas la batterie.
- Ne manipulez pas une batterie humide et n'utilisez pas d'outils humides.
- Ne plongez pas la batterie dans l'eau et ne l'exposez pas à l'humidité ou à des liquides.
- Tenez la batterie hors de portée des enfants et des animaux.
- Portez des vêtements, des protections et de gants adaptés pour éviter tout contact direct avec la tension CC.
- Utilisez des outils isolés pendant le travail sur la batterie.
- Mettez de côté les bijoux métalliques avant de travailler sur le circuit CC.

⚠ AVIS

Conformez-vous aux normes locales pour une utilisation avec la batterie.

NL

1. Door de ontwikkeling van het product wordt de inhoud regelmatig bijgewerkt of herzien. De informatie in deze handleiding kan zonder voorafgaande kennisgeving worden gewijzigd. Deze handleiding dient in geen geval als vervanging van de gebruikershandleiding en aanvullende toelichtingen van het apparaat.
2. Zorg dat alles volledig gelezen en begrepen is voordat u overgaat tot installatie van de apparatuur en voer alles strikt uit volgens de beschrijvingen in deze handleiding. De gebruikershandleiding kan worden gedownload vanaf de website http://support.sungrowpower.com/ of worden opgevraagd door het scannen van de QR-code aan de zijkant van het apparaat of de achterzijde van deze handleiding.
3. Alle werkzaamheden moeten worden uitgevoerd door gekwalificeerd personeel, dat getraind is in de installatie en ingebruikname van elektrische systemen en in de omgang met gevaren, en kennis moet hebben van de lokale voorschriften en richtlijnen.
4. Controleer voor installatie de inhoud van de verpakking op beschadiging en bekijk de volledigheid van de levering aan de hand van de pakbon. Neem contact op met SUNGROW of de distributeur indien er sprake is van beschadiging of ontbrekende onderdelen.
5. De gebruikte kabel moet onbeschadigd en goed geïsoleerd zijn. Technisch personeel moet tijdens het werk te allen tijde persoonlijke beschermingsmiddelen (PBM) dragen.
6. Niet navolgen van deze instructies kan leiden tot (dodelijk) lichamelijk letsel of beschadiging van het apparaat, waardoor het recht op garantie komt te vervallen.

Veiligheid

De accu is ontwikkeld en getest overeenkomstig de internationale veiligheidsvoorschriften. Lees voorafgaand aan elk werk aan de accu altijd eerst de veiligheidsinstructies en neem deze te allen tijde in acht. Een verkeerde bediening of toepassing kan leiden tot:

- ernstig of dodelijk letsel bij de gebruiker of een derde partij;
- schade aan de accu of andere eigendommen.

Op de behuizing van de accu zijn de volgende waarschuwingslabels aangebracht.

	Let op gevaar. Niet werken met dit product wanneer het onder spanning staat!
	Lees voor elk gebruik van dit product altijd eerst de handleiding.
	Niet weggooien bij het huishoudelijk afval. Een lithium-ionaccu kan exploderen tijdens het samenpersen van afval.
	Geen open vuur Niet blootstellen aan vuur of schokken en niet verbranden of doorboren
	Gevaar van elektrische schokken Onderhoud uitsluitend toegestaan voor gekwalificeerd personeel. Buiten bereik van kinderen houden.
	Gelieve de accu te recyclen. Niet weggooien.
	Deze aardaansluiting moet veilig worden geaard om de veiligheid van de gebruiker te beschermen.
	TÜV-conformiteitsmarkering.
	TÜV-conformiteitsmarkering.
	CE-conformiteitsmarkering. EU/EER Importeur.

⚠ GEVAAR

Risico op explosie

- Geen zware druk uitoefenen op de accu.
- De accu niet mechanisch beschadigen (doorboren, vervormen, demonteren, etc.)
- De accu niet verhitten of weggooien in vuur.
- De accu niet installeren in omgevingen met explosiegevaar.
- De accu niet onderdompelen in water of blootstellen aan vocht of vloeistoffen.

⚠ GEVAAR

Risico op brand

- De accu niet blootstellen aan temperaturen hoger dan 60 °C.
- De accu niet plaatsen in de buurt van een warmtebron, zoals direct zonlicht, een open haard, een niet thermisch geïsoleerde wand die is blootgesteld aan zonlicht, heet water of een verwarming.
- De accu weghouden van ontstekingsbronnen zoals vonken, vlammen en brandende rookwaren.

⚠ GEVAAR

Risico op elektrische schok

- De accu niet demonteren.
- Een vochtige accu niet vastpakken of behandelen met vochtig gereedschap.
- De accu niet onderdompelen in water of blootstellen aan vocht of vloeistoffen.
- De accu weghouden van kinderen en dieren.
- Draag geschikte beschermende kleding en handschoenen om direct contact met de DC-spanning te voorkomen.
- Gebruik geïsoleerd gereedschap tijdens werkzaamheden aan de accu.
- Verwijder metalen sieraden voorafgaand aan werkzaamheden aan het DC-circuit.

⚠ LET OP

Het gebruik van de accu moet voldoen aan de lokale voorschriften.

PL

1. Treść niniejszego podręcznika może być okresowo aktualizowana w wyniku rozwoju produktu. Informacje zawarte w tym podręczniku mogą być zmieniane bez powiadamiania. W żadnym razie niniejszy przewodnik nie zastępuje instrukcji użytkownika ani uwag dotyczących urządzenia.
2. Należy dokładnie przeczytać instrukcję obsługi, w pełni zrozumieć zawarte w niej zasady i ściśle ich przestrzegać, podobnie jak innych związanych z tym regulacji, zanim przystąpi się do montażu aparatury. Instrukcję obsługi można pobrać ze strony internetowej http://support.sungrowpower.com/ lub skanując kod QR znajdujący się z boku urządzenia lub na tylnej okładce niniejszego dokumentu.
3. Wszystkie operacje mogą być wykonywane tylko przez wykwalifikowany personel, który musi być przeszkolony w zakresie montażu i uruchamiania instalacji elektrycznych oraz postępowania z zagrożeniami, a także znać instrukcję obsługi oraz miejscowe przepisy i wytyczne.
4. Przed przystąpieniem do montażu porównać zawartość opakowania z listem przewozowym i sprawdzić, czy jest nienaruszona i kompletna. W razie uszkodzenia lub braku komponentów powiadomić SUNGROW lub dystrybutora.
5. Podłączane kable muszą być nienaruszone i dobrze izolowane. Personel obsługowy musi nosić przez cały czas odpowiedni sprzęt ochrony osobistej (SOO).
6. Każde naruszenie instrukcji może doprowadzić do śmierci, obrażeń ciała lub uszkodzenia urządzenia oraz utraty gwarancji.

Bezpieczeństwo

Akumulator został skonstruowany i przetestowany ściśle według międzynarodowych przepisów dotyczących bezpieczeństwa. Przed przystąpieniem do pracy należy przeczytać uważnie wszystkie instrukcje, a następnie przestrzegać ich przez cały czas pracy z akumulatorem. Nieprawidłowe obsługiwanie lub wykonywanie prac może doprowadzić do:

- obrażeń ciała lub śmierci operatora, lub osoby postronnej;
- uszkodzenia akumulatora lub innego mienia.

Na korpusie akumulatora znajdują się następujące etykiety ostrzegawcze:

	Należy uważać na zagrożenie. Nie dotykać tego produktu, gdy znajduje się pod napięciem!
	Przed dotknięciem tego produktu przeczytać instrukcję obsługi.
	Nie wyrzucać do śmieci. Zgniatanie akumulatora litowo-jonowego jest niebezpieczne, ponieważ może on eksplodować.
	Nie stosować otwartego płomienia Nie wystawiać na działanie płomienia, nie spalać, nie dziurawić i nie uderzać
	Niebezpieczeństwo porażenia prądem elektrycznym Serwisowanie tylko przez osoby wykwalifikowane. Trzymać poza zasięgiem dzieci.
	Akumulator należy oddać do recyklingu. Nie wyrzucać.
	To jest zacisk uziemienia ochronnego, który musi być poprawnie uziemiony w celu zapewnienia bezpieczeństwa operatorów.
	Oznaczenie zgodności TÜV.
	Oznaczenie zgodności TÜV.

CE	Oznaczenie zgodności CE. Importer do UE/EOG.
UKCA	Oznaczenie zgodności UKCA.

⚠ NIEBEZPIECZEŃSTWO

Ryzyko wybuchu

- Nie przykładać do akumulatora żadnej dużej siły.
- Nie uszkadzać mechanicznie akumulatora (przebicie, odkształcanie, rozbieranie itp.)
- Nie podgrzewać akumulatora ani nie wrzucać go do ognia.
- Nie montować akumulatora w atmosferze potencjalnie wybuchowej.
- Nie namaczać akumulatora w wodzie ani nie wystawiać go na działanie wilgoci lub cieczy.

⚠ NIEBEZPIECZEŃSTWO

Ryzyko pożaru

- Nie wystawiać akumulatora na działanie temperatur przekraczających 60°C.
- Nie trzymać akumulatora w pobliżu źródła ciepła, jak bezpośrednie działanie promieni słonecznych, kominek, ściana bez izolacji termicznej wystawiona na działanie promieni słonecznych, gorąca woda lub grzejnik.
- Nie zbliżać się do akumulatora z żadnymi źródłami zapłonu, jak iskry, płomienie i materiały do palenia tytoniu.

⚠ NIEBEZPIECZEŃSTWO

Ryzyko porażenia prądem

- Nie rozmontowywać akumulatora.
- Nie dotykać mokrego akumulatora ani nie używać mokrych narzędzi.
- Nie namaczać akumulatora w wodzie ani nie wystawiać go na działanie wilgoci lub cieczy.
- Trzymać akumulator z dala od dzieci i zwierząt.
- Nosić stosowne ubranie, osłony i rękawice, aby chronić się przed bezpośrednią stycznością z napięciem prądu stałego.
- Prac przy akumulatorze wykonywać izolowanymi narzędziami.
- Zdjąć metalową biżuterię przed przystąpieniem do pracy przy obwodzie prądu stałego.

⚠ UWAGA

Stosować się do lokalnych przepisów podczas korzystania z akumulatora.

ES

1. El contenido puede actualizarse o revisarse periódicamente debido al desarrollo del producto. La información contenida en esta guía puede cambiarse sin previo aviso. Esta guía no sustituirá en ningún caso al manual del usuario o a las notas relacionadas en el dispositivo.
2. Asegúrese de leer, comprender bien y seguir estrictamente las instrucciones detalladas del manual del usuario y otras normativas asociadas antes de instalar el equipo. El manual del usuario se puede descargar en el sitio web: http://support.sungrowpower.com/; también se puede obtener escaneando el código QR que se encuentra en el lateral del equipo o en la contraportada de esta guía.
3. Solo el personal cualificado puede realizar las operaciones y debe estar capacitado para llevar a cabo la instalación y puesta en marcha del sistema eléctrico, así como para lidiar con los riesgos, tener conocimiento del manual y de las normativas y directivas locales.
4. Antes de instalarlo, compruebe que el contenido del paquete esté intacto y que no falte nada en comparación con el albarán. Póngase en contacto con SUNGROW o con el distribuidor en caso de que falte algún componente o de que estén dañados.
5. El cable usado debe estar intacto y bien aislado. El personal de operación debe llevar el equipo de protección personal (EPP) adecuado en todo momento.
6. Cualquier incumplimiento podría ocasionar la muerte o lesiones personales o daños al dispositivo, y anulará la garantía.

Seguridad

La batería se ha diseñado y probado rigurosamente de acuerdo con las normas internacionales de seguridad. Lea todas las instrucciones de seguridad detenidamente antes de realizar ningún trabajo y mírelas en todo momento cuando trabaje en la batería o con esta. Un funcionamiento o un trabajo incorrectos pueden causar:

- lesión o muerte del operador o de un tercero;
- daños a la batería u otros bienes.

La etiqueta de advertencia en el cuerpo de la batería es la siguiente.

	Preste atención a los peligros. No utilice este producto en estado activo.
	Lea el manual antes de realizar ninguna operación en este producto.
	No lo tire a la basura. La compactación de una batería de iones de litio es peligrosa, ya que puede explotar.
	No exponer a llamas abiertas No lo exponga a una llama, incinere, perfore o golpee.
	Peligro por descarga eléctrica. Solo el personal cualificado puede suministrarlo. Fuera del alcance de los niños.
	Recicle la batería. No desechar.
	Se trata de un terminal de protección a tierra, que debe conectarse a tierra de forma segura para proteger la seguridad de los operadores.
	Marca de conformidad TÜV.
	Marca de conformidad TÜV.

CE	Marca de conformidad CE. Importador para UE/EEE.
UKCA	Marca de conformidad UKCA.

⚠ PELIGRO

Riesgo de explosión.

- No someta la batería a ninguna fuerza fuerte.
- No dañar mecánicamente la batería (agujerearla, deformarla, rayarla, etc.)
- No caliente la batería o se deshaga de la misma en un fuego.
- No instale la batería en entornos potencialmente explosivos.
- No sumerja la batería en agua ni la exponga a la humedad o a los líquidos.

⚠ PELIGRO

Riesgo de incendio

- No exponga la batería a temperaturas superiores a 60 °C.
- No coloque la batería cerca de una fuente de calor, como luz directa, una chimenea, una pared expuesta al sol, agua caliente o un calentador sin aislar.
- Mantenga las fuentes de ignición, como chispas, llamas y materiales humeantes, lejos de la batería.

⚠ PELIGRO

Riesgo de descarga eléctrica.

- No desmonte la batería.
- No manipule una batería húmeda o emplee herramientas húmedas.
- No sumerja la batería en agua ni la exponga los líquidos a la humedad.
- Mantenga la batería alejada de niños y animales.
- Utilice ropa, protecciones y guantes adecuados para evitar el contacto directo con la tensión continua.
- Emplee herramientas aislantes mientras manipule la batería.
- Aparte las joyas metálicas antes de trabajar en el circuito de corriente continua.

⚠ AVISO

Cumplir con las normas locales para el uso de la batería.

PT

1. O conteúdo poderá ser periodicamente atualizado ou revisto consoante o desenvolvimento do produto. As informações incluídas neste guia estão sujeitas a alterações sem aviso. Este guia não deverá, em circunstância alguma, substituir o manual de utilizador ou as notas relacionadas com este dispositivo.
2. Antes de instalar o equipamento, certifique-se de que lê atentamente, compreende e segue estritamente as instruções detalhadas do manual de utilizador, bem como outras regulamentações relacionadas. Para transferir o manual de utilizador, visite o website em http://support.sungrowpower.com/; ou então pode digitalizar o código QR na parte lateral do equipamento ou no verso deste guia.
3. Todas as operações devem ser realizadas apenas por pessoal qualificado que tenha recebido formação na instalação e colocação em funcionamento do sistema elétrico, bem como saiba resolver os perigos, conheça o manual e as diretivas e os regulamentos locais.
4. Antes da instalação, verifique se o conteúdo da embalagem está intacto e completo quando comparado com a lista de embalagem. Contacte a SUNGROW ou o distribuidor no caso de quaisquer componentes danificados ou em falta.
5. O cabo utilizado tem de estar intacto e bem isolado. O pessoal das operações tem de usar sempre equipamento de proteção individual (EPI) adequado.
6. Qualquer violação pode resultar na morte, em lesões ou ainda em danos no dispositivo, o que irá anular a garantia.

Segurança

A bateria foi concebida e testada rigorosamente de acordo com regulamentações de segurança internacionais. Leia as instruções de segurança atentamente antes de realizar qualquer trabalho e respeite-as sempre quando trabalhar na ou com a bateria. A operação ou utilização incorreta pode causar:

- lesões ou morte do operador ou de terceiros;
- danos na bateria ou noutros bens.

A etiqueta de aviso na estrutura da bateria é apresentada a seguir.

	Preste atenção ao perigo. Não opere este produto se energizado!
	Leia o manual antes de realizar qualquer operação neste produto.
	Não coloque no lixo. É perigoso compactar uma bateria de ião de lítio pois pode explodir.
	Não expor a chamas Não exponha a chamas, incineração, perfuração ou impacto
	Perigo de choque elétrico Assistência realizada apenas por pessoal qualificado. Manter fora do alcance das crianças.
	Recicle a bateria. Não deite fora.
	Trata-se de um terminal de ligação à terra de proteção, ligação essa que pode ser feita de modo seguro para manter a segurança dos operadores.
	Marca de conformidade TÜV.
	Marca de conformidade TÜV.

CE	Marca de conformidade CE. Importador da UE/EEE.
UKCA	Marca de conformidade UKCA.

⚠ PERIGO

Risco de explosão

- Não sujeite a bateria a forças excessivas.
- Não danifique mecanicamente a bateria (perfurar, deformar, retirar o invólucro, etc.)
- Não aqueça a bateria nem elimine a bateria no fogo.
- Não instale a bateria em ambientes potencialmente explosivos.
- Não mergulhe a bateria em água nem a exponha à humidade ou a líquidos.

⚠ PERIGO

Risco de incêndio

- Não exponha a bateria a temperaturas superiores a 60 °C.
- Não coloque a bateria perto de uma fonte de calor, como a luz solar direta, uma fogueira, uma parede sem isolamento termicamente exposta à luz solar, água quente ou um aquecedor.
- Mantenha fontes de ignição, como faíscas, chamas e tabaco afastados da bateria.

⚠ PERIGO

Risco de perigo elétrico

- Não desmonte a bateria.
- Não manuseie uma bateria húmida nem utilize ferramentas molhadas.
- Não mergulhe a bateria em água nem a exponha a humidade ou líquidos.
- Mantenha a bateria afastada de crianças e animais.
- Utilize vestuário adequado, proteções e luvas para impedir o contacto direto com a tensão CC.
- Utilize ferramentas com isolamento quando manusear a bateria.
- Retire as bijuterias de metal antes de trabalhar no circuito CC.

⚠ ADVERTÊNCIA

Siga as regras locais relativas à utilização da bateria.

SV

1. Innehållet kan då och då uppdateras eller revideras på grund av att produkten utvecklas. Informationen i den här guiden kan ändras utan föregående meddelande. Den här guiden ska under inga omständigheter ersätta användarmanualen eller tillhörande information om enheten.
2. Se till att du läser igenom, fullt förstår och strikt följer de detaljerade anvisningarna i användarmanualen och andra tillhörande bestämmelser innan du installerar utrustningen. Användarmanualen kan laddas ner från webbplatsen på http://support.sungrowpower.com/ eller hämtas genom att skanna QR-koden på sidan av utrustningen eller på baksidan av den här guiden.
3. Åtgärder får endast utföras av behörig personal, som måste vara utbildad för installation och driftsättning av elektriska system. De måste även kunna hantera risker samt ha kunskap om manualen och lokala föreskrifter och direktiv.
4. Före installationen ska du kontrollera att innehållet i förpackningen är intakt och fullständigt jämfört med packsedeln. Kontakta SUNGROW eller distributören om någon komponent är skadad eller saknas.
5. Kabeln som används måste vara intakt och väl isolerad. Driftpersonalen måste hela tiden använda korrekt personlig skyddsutrustning.
6. Om detta inte följs kan det orsaka dödsfall, personskador eller skador på enheten och leda till att garantin inte längre gäller.

Säkerhet

Batteriet har konstruerats och testats strikt enligt internationella säkerhetsbestämmelser. Läs alla säkerhetsanvisningar noga innan arbete utförs och följ dem hela tiden vid arbete på eller med batteriet. Felaktiga åtgärder eller felaktigt arbete kan leda till att:

- operatören eller en tredje part skadas eller dör
- batteriet eller andra tillbehör skadas.

Varningsetiketten på batteriet ser ut enligt nedan.

	Var uppmärksam på riskerna. Använd inte den här produkten i driftsatt läge!
	Läs manualen innan du utför någon åtgärd på den här produkten.
	Kassera inte som hushållsavfall. Det är farligt att kompaktera ett litiumjonbatteri eftersom det kan explodera.
	Inga öppna lågor Utsätt inte för lågor, förbränning, punktering eller slag
	Risk för elstötar Service får endast utföras av behörig personal. Förvaras utom räckhåll för barn.
	Återvinn batteriet. Kassera det inte.
	Detta är en skyddsjordterminal, som ska jordas på ett säkert sätt för att skydda operatörerna.
	TÜV-märkning om överensstämmelse.
	TÜV-märkning om överensstämmelse.
	CE-märkning om överensstämmelse. Importör för EU/EES.
	UKCA-märkning om överensstämmelse.

⚠ FARA

Explosionsrisk

- Utsätt inte batteriet för någon stark kraft.
- Skada inte batteriet mekaniskt (borra, deformera, montera isär osv.)
- Värm inte upp batteriet och kasta det inte i en öppen eld.
- Installera inte batteriet i en potentiellt explosiv miljö.
- Blötlägg inte batteriet i vatten och utsätt det inte för fukt eller vätskor.

⚠ FARA

Brandrisk

- Exponera inte batteriet för temperaturer över 60 °C.
- Placera inte batteriet nära en värmekälla såsom direkt solljus, en eldstad, en termiskt oisolerad vägg exponerad för solljus, varmt vatten eller en värmare.
- Håll antändningskällor som gnistor, flammor och rökmaterial borta från batteriet.

⚠ FARA

Risk för elstötar

- Montera inte isär batteriet.
- Hantera inte ett blött batteri och använd inte blöta verktyg.
- Sänk inte ner batteriet i vatten och exponera det inte för fukt eller vätskor.
- Håll batteriet borta från barn och djur.
- Använd lämplig klädsel, skydd och handskar för att förhindra direktkontakt med likspänningen.
- Använd isolerade verktyg vid arbete med batteriet.
- Ta av och lägg undan metallsmycken innan du arbetar på likströmskretsen.

⚠ OBSERVERA

Följ lokala användningsstandarder för batteriet.

More information in the QR code or
at http://support.sungrowpower.com/

SUNGROW

Sungrow Power Supply Co., Ltd.

www.sungrowpower.com

MH00286900-6

QIMUL M+H-002869

SUNGROW
Clean power for all

User Manual

High Voltage LFP Battery

SBH100/150/200/250/300/350/400

Iris Hellas
Technology Innovations
www.irishellas.com

SBH100-400-UEN-Ver11-202306

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About This Manual

The manual mainly describes the product information, guidelines for installation, operation and maintenance. The manual cannot include complete information the system (i.e. the hybrid inverter), just the battery. The reader can get additional information about other devices at **www.sungrowpower.com** or on the webpage of the respective component manufacturer.

Validity

This manual is valid for the following battery models:

- SBH100
- SBH150
- SBH200
- SBH250
- SBH300
- SBH350
- SBH400

They will be referred to as "battery" hereinafter unless otherwise specified.

Target Group

This manual is intended for battery owners who will have the ability to interact with the battery and qualified personnel who are responsible for the installation and commissioning of the battery. Qualified personnel should have the following skills:

- Training for installation and commissioning of electrical system, as well as dealing with hazards
- Knowledge of the manual and other related documents
- Knowledge of the local regulations and directives

How to Use This Manual

Read the manual and other related documents before performing any work on the battery. Documents must be stored carefully and be available at all times.

Images in this manual are for reference only. The actual product received may differ.

Contents may be periodically updated or revised due to the product development. It is probably that there are changes of manual in the subsequent battery edition. The latest manual can be acquired via visiting the website at **support.sungrowpower.com**.

Symbols

Important instructions contained in this manual should be followed during installation, operation and maintenance of the hybrid inverter. They will be highlighted by the following symbols.

⚠ DANGER

Indicates a hazard with a high level of risk that, if not avoided, will result in death or serious injury.

⚠ WARNING

Indicates a hazard with a medium level of risk that, if not avoided, could result in death or serious injury.

⚠ CAUTION

Indicates a hazard with a low level of risk that, if not avoided, could result in minor or moderate injury.

NOTICE

Indicates a situation that, if not avoided, could result in equipment or property damage.

Indicates additional information, emphasized contents or tips that may be helpful, e.g. to help you solve problems or save time.

Abbreviation

BMS: Battery Management System

BMU: Battery Management Unit

CAN: Controller Area Network

CMU: Battery Cluster Management Unit

LFP: Lithium iron phosphate

SOC: State of Charge

MCB: Miniature DC circuit breaker

Contents

1 Safety Instructions

When installing, commissioning, operating, and maintaining the product, strictly observe the labels on the product and the safety requirements in the manual. Incorrect operation or work may cause:

- Injury or death to the operator or a third party.
- Damage to the product and other properties.

⚠ WARNING

- **Do not operate the product and cables (including but not limited to moving the product, installing the product, operating the product and cables, powering up the product, maintaining the product, and working at heights) in harsh weather conditions such as flooding, lightning, rain, snow, and level 6 or stronger wind.**
- **In case of fire, evacuate from the building or product area and call the fire alarm. Re-entry into the burning area is strictly prohibited under any circumstances.**

NOTICE

- **Tighten the screws with the specified torque using tools when fastening the product and terminals. Otherwise, the product may be damaged. And the damage caused is not covered by the warranty.**
- **Learn how to use tools correctly before using them to avoid hurting people or damaging the device.**
- **Maintain the device with sufficient knowledge of this manual and use proper tools.**

- The safety instructions in this manual are only supplements and cannot cover all the precautions that should be followed. Perform operations considering actual onsite conditions.
- SUNGROW shall not be held liable for any damage caused by violation of general safety operation requirements, general safety standards, or any safety instruction in this manual.
- When installing, operating, and maintaining the product, comply with local laws and regulations. The safety precautions in this manual are only supplements to local laws and regulations.

1.1 Notices for Safe Use

Read all safety instructions carefully prior to any work and observe them at all times when working on or with the battery. Failure to observe the precautions described in this section can cause serious injury to persons or damage to property.

⚠ DANGER

Risk of explosion

- **Do not subject the battery to any strong force.**
- **Do not mechanically damage the battery (pierce, deform, strip down, etc.)**
- **Do not heat the battery or dispose of the battery in a fire.**
- **Do not install the battery in potentially explosive environments.**
- **Do not place the battery in water or other liquids.**

⚠ DANGER

- **Do not place the battery near a heat source, such as direct sunlight, a fireplace, a thermally uninsulated wall exposed to sunlight, hot water, or a heater.**
- **Keep sources of ignition such as sparks, flames, and smoking materials away from the battery.**

⚠ DANGER

Risk of electric shock

- **Do not disassemble the battery.**
- **Do not handle a wet battery or use wet tools.**
- **Do not soak the battery in water or expose it to moisture or liquids.**
- **Keep the battery away from children and animals.**
- **Wear suitable clothing, guards and gloves to prevent you from direct contact with the DC voltage.**
- **Use insulated tools during working with battery.**
- **Set aside metal jewelry before working on the DC circuit.**

1.2 Battery Handling Information

NOTICE

Follow local standards to use the battery.

Any man-made damage will void the limited warranty for the battery. Handle the battery with care to protect it from damage.

- Use the battery only as intended and designed.
- The battery must only be installed at a suitable location.
- Make sure the battery is well connected to ground before use.
- Do not use the battery if it is defective, appears cracked, broken or damaged, or fails to operate.
- Do not use the battery together with other types of batteries.
- Do not pull, drag or step on the battery.
- Do not leave any foreign objects inside the battery.
- Do not repair or modify the battery. It is not user serviceable.
- Do not pull out any cables when the battery is powered on.
- Do not damage the sheath of cables, wire harness and connectors.
- While the battery is charged, used and stored, keep it away from materials that are prone to electric discharge, including static discharge.
- Keep the battery away from babies and children to avoid any accidents.
- Cover terminals with insulating tape before proper disposal.
- Avoid direct contact with rain, snow, and water, and prevent the battery from falling and mechanical impact during battery transportation.

1.3 Emergency Situations

1.3.1 Leaking Batteries

Abuse/misuse/damage of the battery may cause increasing of internal pressure in the battery cells. It may result in the electrolyte venting. In the event that battery electrolyte is released:

- Do not enter the room under any circumstance.
- Avoid contact with the leaking liquid or gas.
- Call the Local Emergency number or Fire Brigade if necessary.

If one is exposed to the leaking substance, follow the suggestions below to minimize the chance of injury:

- Inhalation: Evacuate the contaminated area, and seek medical aid.
- Eye contact: Rinse eyes with copious amounts of water for at least 15 minutes, and seek medical aid immediately.
- Skin contact: Wash the affected area thoroughly with plenty of water for at least 15 minutes. If possible, remove or saturate contaminated clothing with water. Seek medical aid if the patient is distressed.

- Ingestion: Induce vomiting, and seek medical aid immediately.

Wipe out the contacted area with a sponge or cloth that is soaked in water until you obtain medical aid. These materials can damage skin and eyes, causing blindness.

1.3.2 Fire

Fire may occur with the battery despite its careful design. Likewise, a fire or unusually high temperatures near the battery can cause it to catch fire.

Protective equipment

A respirator is not required during normal operations.

In the event of a fire, hazardous fumes including carbon monoxide, carbon dioxide, and/or various hydrocarbons may be emitted. To comply with the Personal Protective Equipment Directive (89/686/EEC), use a full-face self-contained breathing apparatus (SCBA) with full protective gear during fire fighting.

Fire fighting

NOTICE

In the event of a fire, only qualified firefighters with appropriate protective equipment are permitted to enter the room where the battery is located.
It may take a long time to completely extinguish the fire. Consider allowing the system to burn. Smoke indicates that the battery is still burning. Always note that there is a risk of the battery re-igniting.

Proceed as follows for fire-fighting.

1 Shut off any connected power system or electronics such as the battery, battery isolator, PV DC isolator(s), AC isolator, solar supply main switch and normal supply main switch.

2 Perform an adequate knock down on the fire before entering the incident's hot zone.

3 If the battery catches fire, turn off the battery MCB immediately.

4 The use of fire extinguishing sand, carbon dioxide fire extinguishers can briefly extinguish open fires, water is the best way to control the spread of fire, but the use of water fire extinguishing needs to wear electrical insulation protective equipment to avoid electric shock.

5 Since the battery may re-ignite at any time due to the high temperature of the internal chemical reaction, please use a large amount of water to continuously cool the battery for 30-60min after extinguishing the open flame, and wear electrical insulation protective equipment to avoid electric shock during this process.

6 If the fire is not from the battery and has not spread to it yet, use an ABC fire extinguisher to extinguish the fire. Remove batteries and other ignition sources from the scene of a fire.

1.3.3 Wet Batteries

If the battery is submerged in water, do not let people access it, and then contact Sungrow or an authorized service partner for technical support.

If a battery is submerged in water or flooded, first, switch off all circuit breakers in the system to cut off the power supply to the battery. Wait until floodwaters subside and do not approach near battery. If someone needs to go into the flooded water, wear insulated full length rubber boots and gloves.

Do not use a flooded battery again.

1.3.4 Damaged Batteries

The battery consists of lithium-ion cells. These are considered dry cell batteries. If the battery is damaged, only a small amount of battery fluid can leak.

A damaged battery can cause rapid heating of the battery cells. If you notice smoke coming from the battery area, assume that the battery is burning and take appropriate action as described in "1.3.2 Fire".

Damaged batteries are dangerous and must be handled with extreme caution. They are not fit for use and may pose a danger to people or property. If a battery seems to be damaged:

1 Pack it in its original container.

2 Store it in a separated room like the installation place.

3 Contact SUNGROW.

⚠ DANGER

A damaged battery may release dangerous material and a flammable gas mixture. Never try to repair the battery even if you are a qualified electrician.

2 Product Description

2.1 Product Introduction

Overview

As an important part of the PV power generation system, SBH100-400 high-voltage battery system works in conjunction with the hybrid inverter to store energy and supply it later for household use.

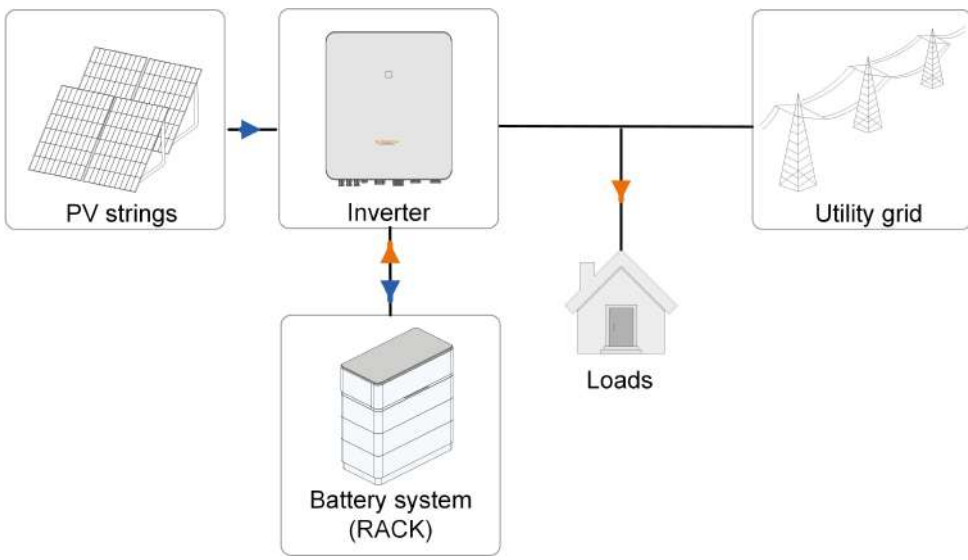
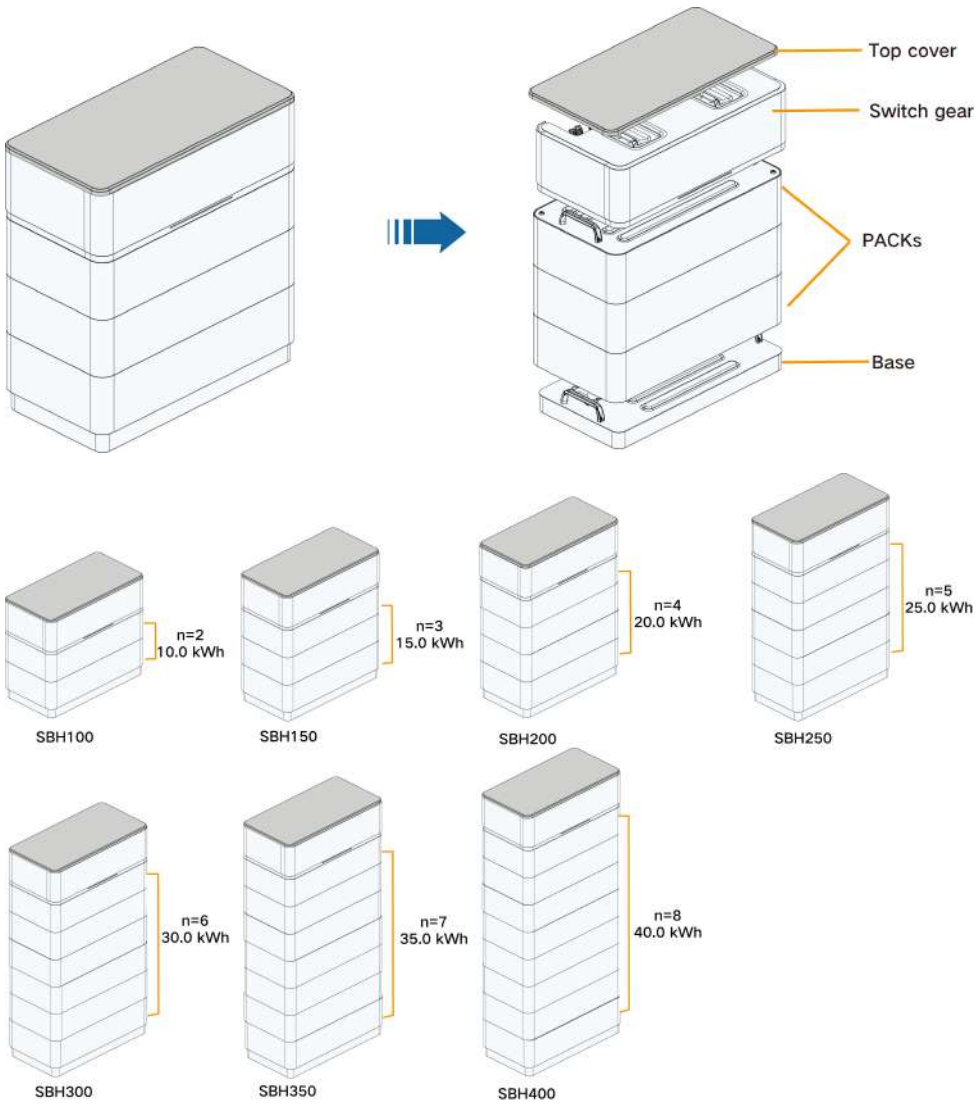


figure 2-1 System Diagram

Product Introduction

The battery system (RACK) is composed of a top cover, a switch gear, PACKs (battery modules), and a base. The system operates at voltages ranging from 118.8V to 642.4V, allowing 2-8 PACKs to be stacked and connected in series (**n**=number of PACKs in the figures below).



*The images shown are for illustration purposes only. The actual product may vary.

table 2-1 System Composition

No.	Battery system	Base	PACK	Switch gear	Top cover
1	SBH100	1	2	1	1
2	SBH150	1	3	1	1
3	SBH200	1	4	1	1
4	SBH250	1	5	1	1
5	SBH300	1	6	1	1
6	SBH350	1	7	1	1
7	SBH400	1	8	1	1

2.2 Component Introduction

Switch Gear

The switch gear is equipped with a DC circuit breaker and a BMU, etc., and is used for battery monitoring, energy transmission, and signal interaction.

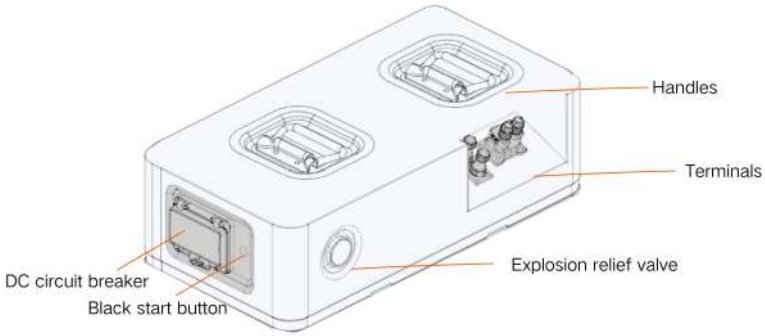


table 2-2 Parameters of the Switch Gear

Parameter	Value
Dimensions (W*H*D)	675 ± 5 mm * 194 ± 5 mm * 350 ± 5 mm (handles and terminals not counted)
Weight	11±1kg
Current range	-65 to 65A
Voltage range	0 to 650V

Do not rotate the explosion relief valve.

PACK

The PACK is used for energy storage and supply. A single PACK is composed of cells connected in series. Data such as cell temperature and voltage are collected and then transmitted to the BMU inside the switch gear for processing.

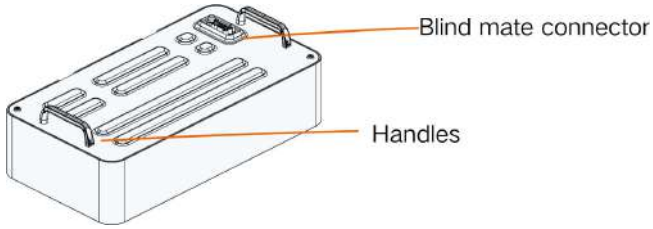


table 2-3 PACK Parameters

Parameter	Value
Dimensions (W*H*D)	675 ± 5 mm * 160 ± 5 mm * 350 ± 5 mm (handles and the connector not counted)
Weight	45±2kg

Rated capacity	72Ah
Rated energy	5.0kWh
Voltage range	55 to 80.3V

Base

The base is used for holding the switch gear and the PACKs.

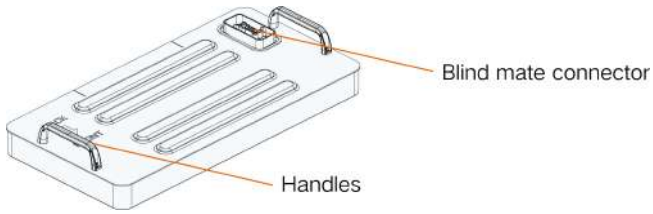


table 2-4 Base Parameters

Parameter	Value
Dimensions (W*H*D)	650 ± 5 mm * 55 ± 5 mm * 325 ± 5 mm (handles, foot-pads, and the connector not counted)
Weight	2.5kg±1kg

2.3 Symbols on the Product

Symbol	Explanation
	Pay attention to the danger. Do not operate this product in the live status!
	No open flames Do not expose to flame, incinerate, puncture, or impact.
	Electric shock hazard Serviced by qualified personnel only. Out of reach from children.
	TÜV mark of conformity
	TÜV mark of conformity
CE	CE mark of conformity EU/EEA Importer
UK CA	UKCA mark of conformity
	Do not dispose in trash. Compacting a lithium ion battery is dangerous as it can explode.

Symbol	Explanation
	Please recycle this lithium ion battery. Do not discard.
	Read the user manual before maintenance!
	This is a protective grounding terminal, which should be grounded securely to protect the safety of operators.

2.4 LED Indicators

The battery system is equipped with two LED indicators, SOC indicator and status indicator.

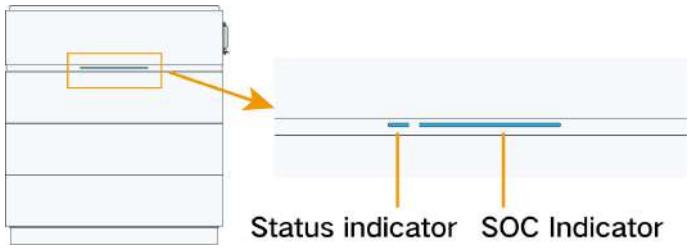


figure 2-2 LED Indicators

SOC Indicator

The SOC indicator indicates the current SOC of the battery. The indicator is designed with 5 bars in total, each for 20% SOC.

SOC Indicator	SOC
	0
	0<SOC≤20%
	20%<SOC≤40%
	40%<SOC≤60%
	60%<SOC≤80%
	SOC > 80%

SOC indicator	Status	Description
	Steady on	The battery system works normally
	Blinking	The battery system is being charged/discharged

Status indicator

The status indicator indicates the current status of the battery system, as shown in the table below.

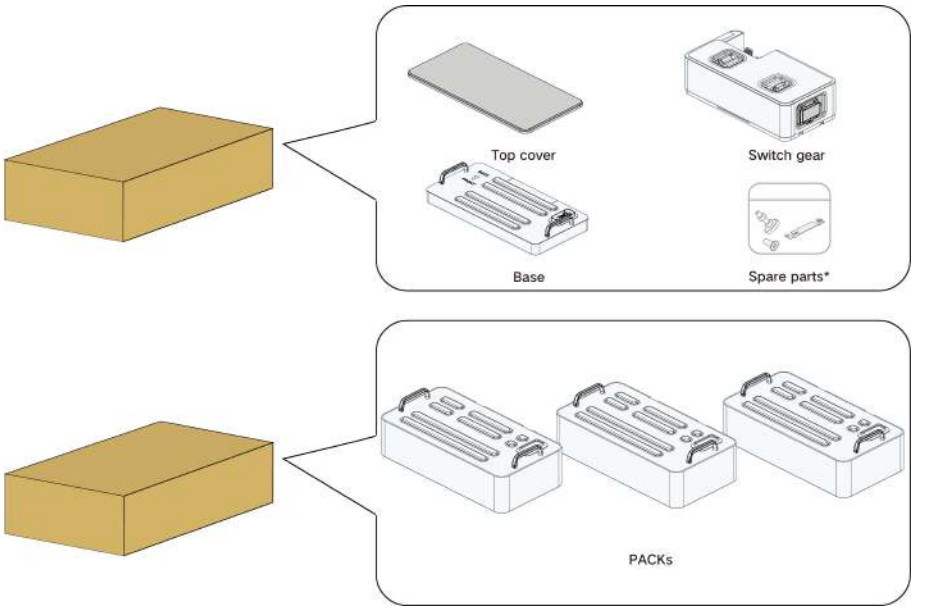
Status indicator	Color	Status	Description
	Blue	Steady on	The battery system works normally
		Blink slow (at an interval of 1s)	The battery system is booting or in standby mode
		Blink fast (at an interval of 0.5s)	The battery system is being upgraded, tested, or calibrated
	Red	Steady on	Battery system fault
		Blink slow (at an interval of 1s)	Battery system alarm
	Grey	Off	No fault has occurred to the battery system

*The images shown are for illustration purposes only. The actual product may vary.

3 Unpacking and Storage

3.1 Unpacking and Inspection

The product has undergone strict tests and inspections before delivery. However, as it may still get damaged during transportation, please carry out a thorough inspection before signing the delivery receipt.



*Please refer to "3.2 Scope of Delivery" for the list of parts and components.

- Inspect the packaging box for any damages.
- Check the delivered items for quantity and see if the delivery matches the order placed according to the packing list.
- Unpack and inspect the items inside for any damages.

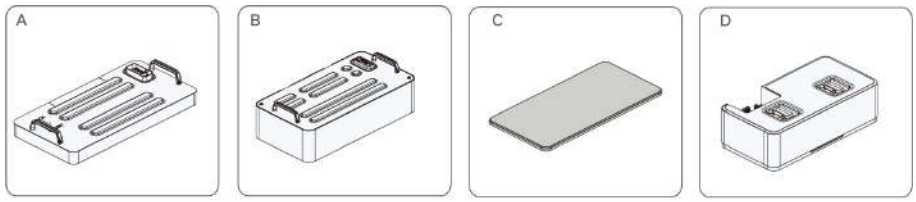
Contact the transport company or SUNGROW in case of any damages or missing items, and provide relevant photos or the name/quantity of the missing items for better services.
Do not throw away the original packaging box. It is recommended to store the device in its original packaging after it is decommissioned.

NOTICE

Inspect the product for any external damages or damages to the structural parts, and check if the packing list matches the order placed. In case of any problem with the above-mentioned inspection items, do not install the device and contact SUNGROW in time.
If any tool is used for unpacking, be careful not to damage the product.

3.2 Scope of Delivery

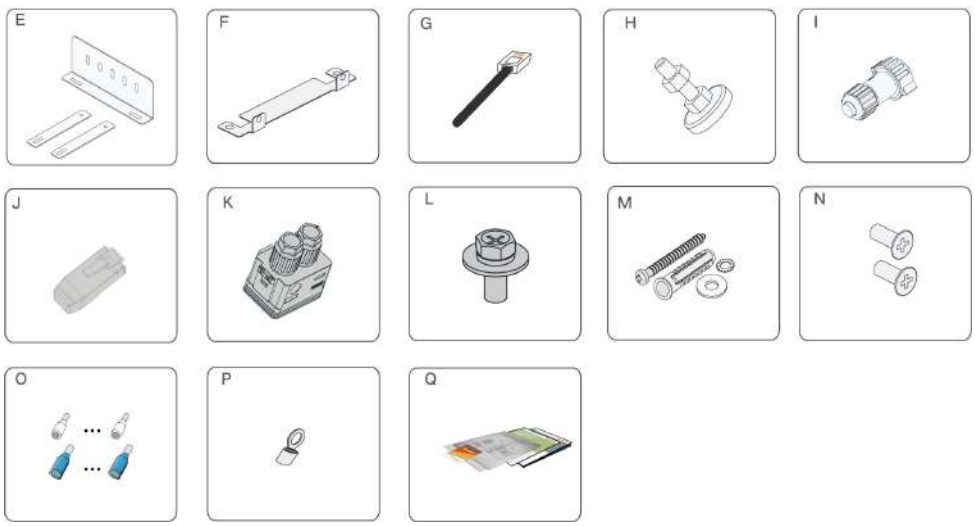
Main Components



Item	Name	Quantity
A	Base	1
B	PACK	2 - 8
C	Top cover	1
D	Switch gear	1

1. The images shown here are for illustration purposes only. The actual product may vary.

Parts



Item	Name	Quantity
E	Battery fixing bracket	1 set
F	Switch gear fixing bracket	2
G	Communication cable	1
H	Footpads	4
I	Communication connector	2
J	Termination resistor	1
K	Power connector	1
L	M5 screw assembly	5
M	Expansion bolt	3
N	M4 countersunk screw	6
O	Cold-pressed terminal	2
P	OT terminal	1
Q	Quick installation guide	1

3.3 Storage

Proper storage is required if the battery is not installed immediately.

- Store the battery in the original packing case with the desiccant inside.
- Store the battery in a clean and dry place, without exposure to sunlight and rain.
- The storage location must be free of harmful gases, flammable/explosive products and corrosive chemicals. The battery should be prevented from mechanical impact, high pressure, high-intensity magnetic field and direct exposure to sunlight.
- The battery should be stored at ambient temperatures of -10℃ to 35℃. The recommended storage time is ≤ 6 months, and the maximum storage time should not exceed 12 months.
- The battery should be charged, if it has been stored for over 12 months under specific conditions, till the system SOC reaches 40%. It is recommended to charge the battery using force mode, which can be enabled by setting the inverter.
- The storage relative humidity must be always between 0 and 95%, non-condensing.
- The number of stacking layers of battery modules with package must not exceed 6. It is strictly forbidden to directly stack batteries without package.
- The packing should be upright.
- Regularly inspect the package for damage and insect bites. If any damage is found, the product should be replaced immediately.

If the battery is stored over one year, 5% - 8% of the capacity may lose irreversibly.

4 Mounting

4.1 Safety during Mounting

⚠ WARNING

This product or system must be operated by professionals!

Failure to follow the safety instructions in this manual or operation of this product or system by non-professionals may cause severe personal injury or major property damage.

⚠ WARNING

Strictly follow local relevant standards and requirements in the whole process of installation.

4.2 Location Requirements

Select an optimal mounting location for safe operation, long service life and expected performance.

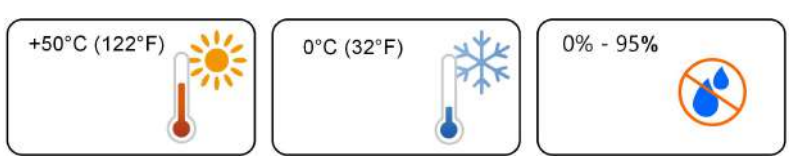
The battery with IP55 can be installed both indoors and outdoors.

Install the battery in a place convenient for electrical connection, operation, and maintenance.

- The battery with IP55 can be installed both indoors and outdoors.
- Install the battery in a place convenient for electrical connection, operation, and maintenance.
- Do not install the device in areas within 500 meters of the coastline or prone to sea winds. Otherwise, the battery may get corroded, thus resulting in fire.
- The installation environment must be free of inflammable or explosive materials.
- Keep the device out of the reach of children.

Installation Environment Requirements

- The battery should be well ventilated. Ensure air circulation.
- The temperature and humidity should meet the following requirements:



- Avoid direct exposure to sun, rain and snow.

The battery system may derate if the ambient temperature goes higher than 40℃.

Installation Angle Requirements

It is recommended to adopt the wall-mounting installation for the battery system. Do not install it askew.

Installation Carrier Requirements

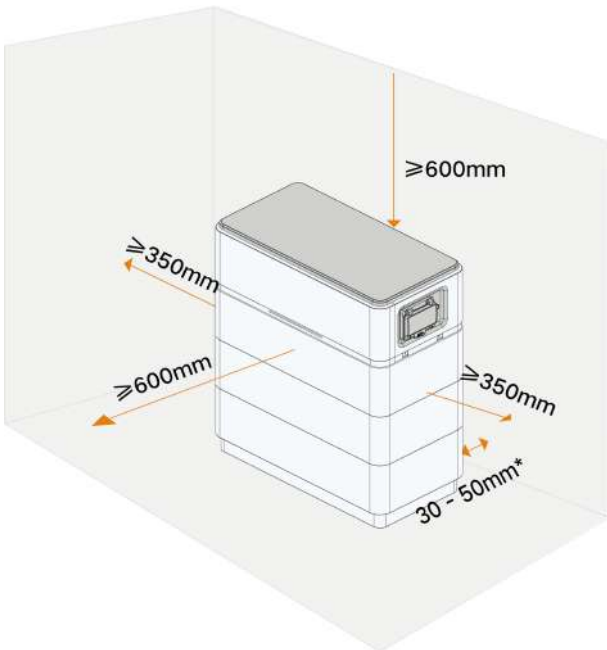
The battery system should be positioned close to the wall and fitted using the battery fixing bracket, so as to prevent it from tipping over.

The support structure, to which the battery system is fitted, should be fireproof and not made of flammable materials.

Please make sure the support structure is solid enough to hold the device.

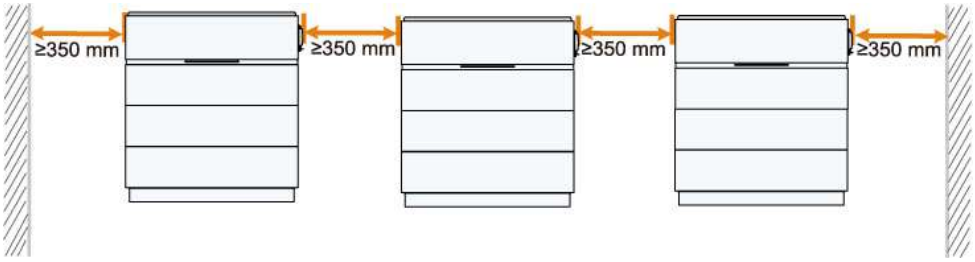
Installation Clearance Requirements

Reserve enough clearance around the battery to ensure sufficient space for heat dissipation.



* This distance is the distance between the RACK and the wall.

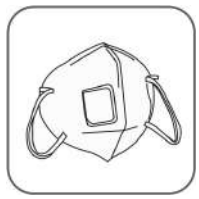
In case of multiple batteries, reserve specific clearance between the batteries.



4.3 Installation Tools

Installation tools include, but are not limited to, the following recommended ones. If necessary, use other auxiliary tools on site.

table 4-1 Tool specification

 Goggles	 Dust mask	 Safety gloves	 Safety shoes
 Utility knife	 Marker	 Rubber mallet	 Measuring tape
 Level	 Hammer drill (φ10)	 Torque screwdriver (ST6.3, M4, M5, M6)	 Torque wrench (16mm, 17mm, 35mm)

Hydraulic pliers

Heat gun

M4 Allen wrench

Terminal crimping tool (10mm^2, cold-pressed terminal)

Wire stripper

Crimping tool (4-6mm^2)

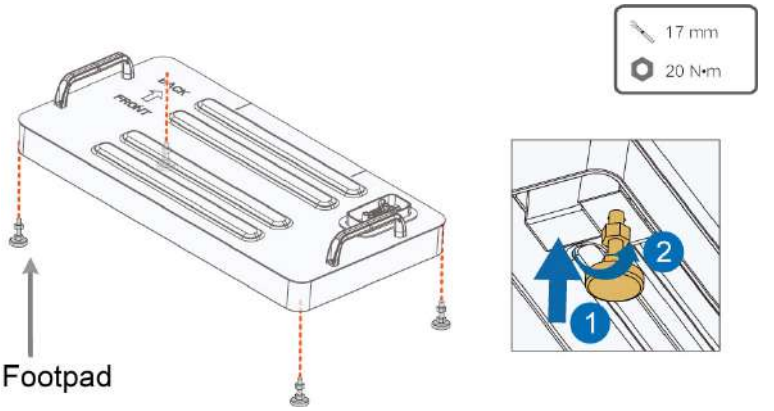
Electric drill (ST6.3, M4, M5, M6)

4.4 Battery System Installation

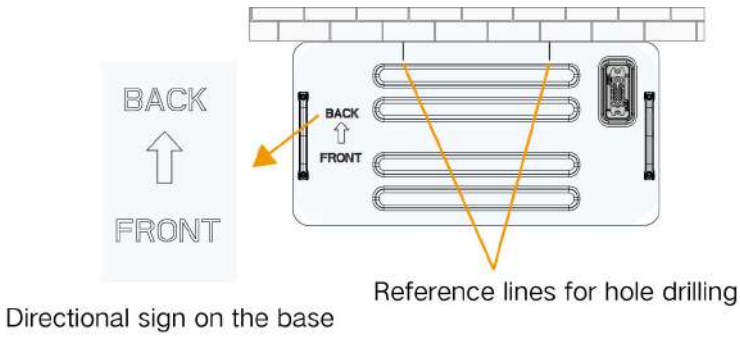
Installation should be conducted on a flat surface in an open space.

The installation process is illustrated with SBH150 as an example.

step 1 Fit the footpads onto the battery base to make it level.

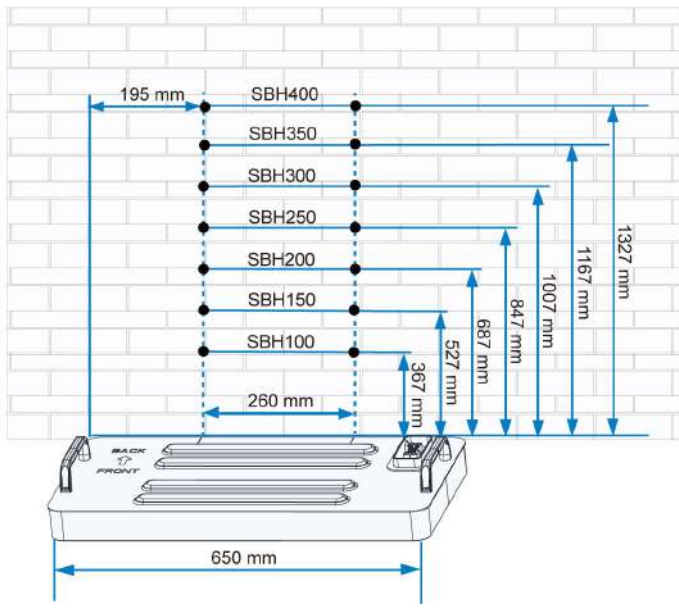


step 2 Mark the locations of holes for installing the battery fixing bracket. Position the base with its back against the wall, mark the installation position of the battery fixing bracket, and then move the base away.



Directional sign on the base

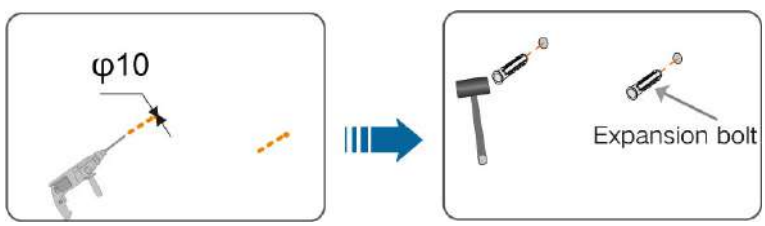
Reference lines for hole drilling



Reference lines for hole drilling: Used for determining the spacing between the two holes at the ends of the battery fixing bracket.

Directional sign on the base: Used for identifying the front and the back of the base. The arrow points from FRONT to BACK.

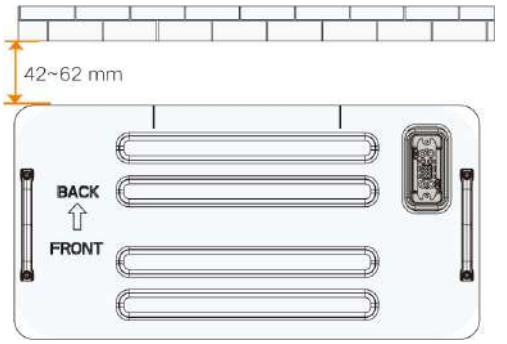
step 3 Drill holes according to the markings, and fit the expansion bolts.



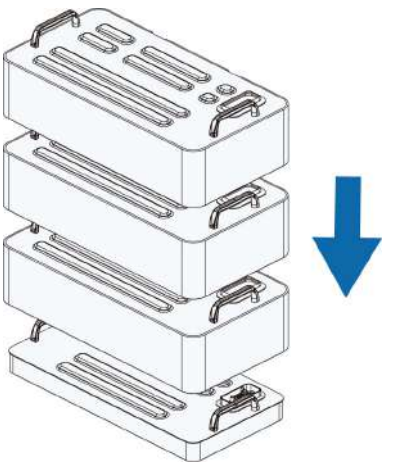
NOTICE

Please wear goggles and masks while drilling holes, so as to protect your eyes and respiratory system from dust and dirt. Clean the dust around in time after finishing drilling.

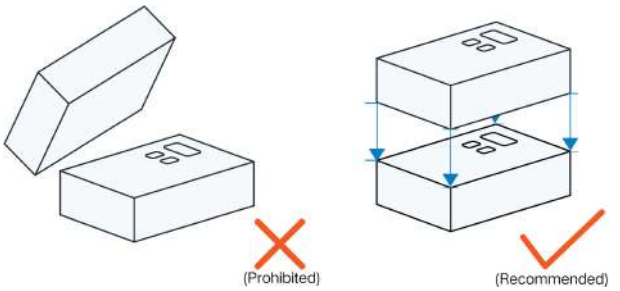
step 4 Position the base 42-62mm away from the wall, so that the battery fixing bracket can be installed.



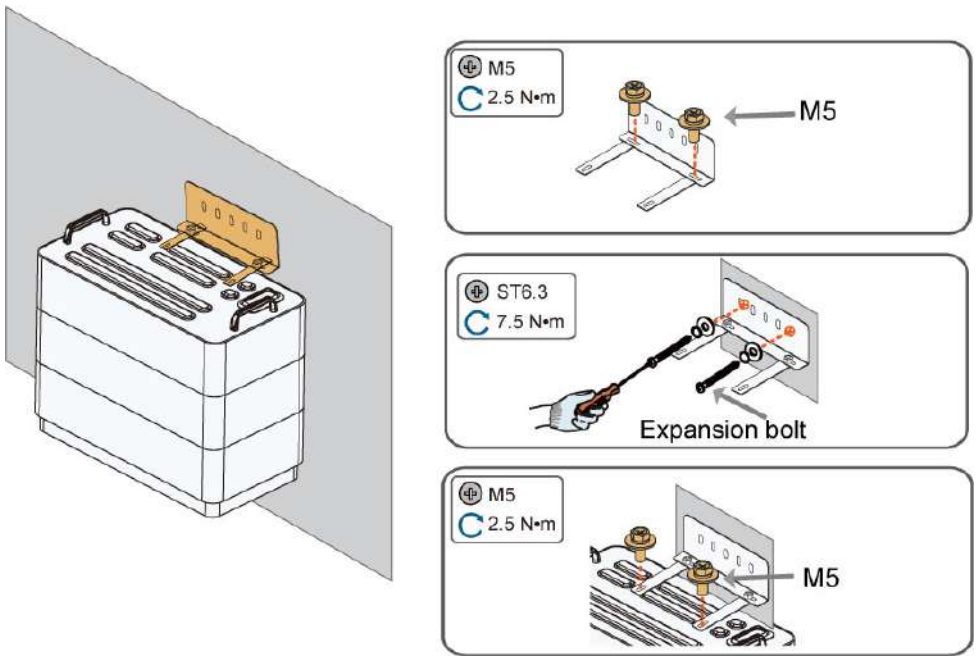
step 5 Place the PACKs on the base one by one from bottom to top.



Do not tip the PACK on one side during installation.



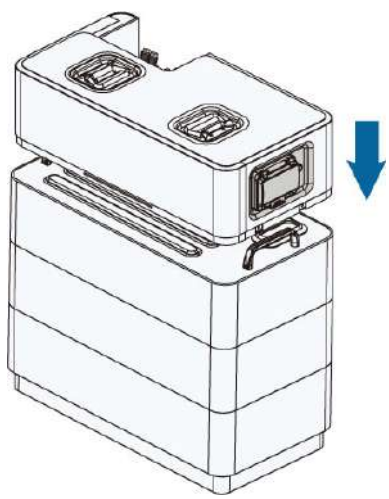
step 6 Install the battery fixing bracket, to make sure the battery system will not tip over.



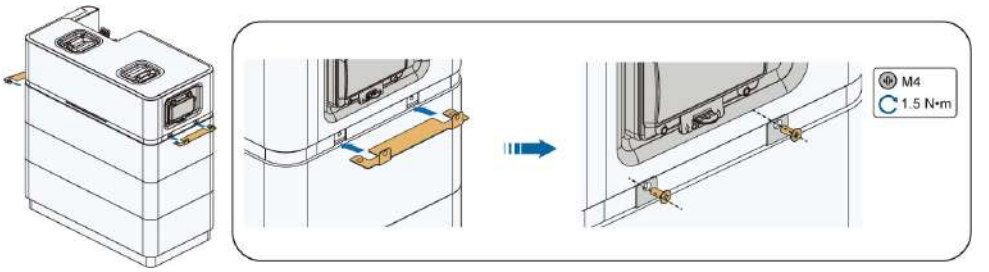
The battery fixing bracket should be installed on the top PACK.

The installation position can be adjusted slightly through the slotted holes on the back.

step 7 Assemble the switch gear.



step 8 It is needed to install the switch gear fixing bracket, so as to prevent arc faults caused by moving the switch gear by mistake. Insert the bracket into the gap between the switch gear and the PACK, and fix it using screws.



- - End

5 Electrical Connection

5.1 Safety Instructions

DANGER

- **Operators must wear proper personal protective equipment during electrical connections.**
- **Must ensure that cables are voltage-free with a measuring instrument before touching DC cables.**
- **Ensure that the battery system is undamaged and all cables are voltage free before performing electrical work.**
- **Batteries deliver electric power, resulting in burns or a fire hazard when they are short circuited, or wrongly installed.**

WARNING

Damage to the product caused by incorrect wiring is not covered by the warranty.

- **Electrical connection must be performed by professionals.**
- **All cables used in the system must be firmly attached, properly insulated, and adequately dimensioned.**

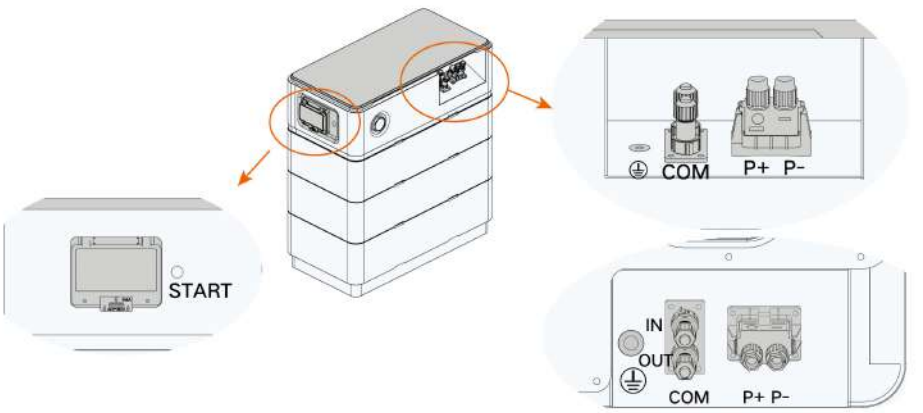
NOTICE

All electrical connections must comply with local and national / regional electrical standards.

- **All vacant terminals must be covered with waterproof covers to prevent affecting the protection rating.**
- **When laying out communication cables, separate them from power cables and keep them away from strong interference sources to prevent communication interruption.**
- **Cables used by the user shall comply with the requirements of local laws and regulations.**
- **The cable colors in figures in this manual are for reference only. Please select cables according to local cable standards.**

5.2 Terminal Description

Electrical terminals are set on the switch gear, as shown below.



*The images shown are for illustration purposes only and may not be an exact representation of the actual product.

Name	Mark	Note
Battery DC input terminal	P+ P-	P+: Connected to the positive terminal of the hybrid inverter P-: Connected to the negative terminal of the hybrid inverter
Communications terminal	COM	Two communication ports are available. IN is used for connecting the termination resistor, while OUT for the hybrid inverter.
PE terminal	⏚	Used for reliable grounding of the battery system.
DC circuit breaker	/	Used to turn on/off the battery system, as well as enable short-circuit protection, by breaking or closing the DC circuit.
Black start button	START	To enable black start of the battery system.

5.3 Electrical Connection Overview

The electrical connection between the battery system and the inverter is illustrated in the figure below.

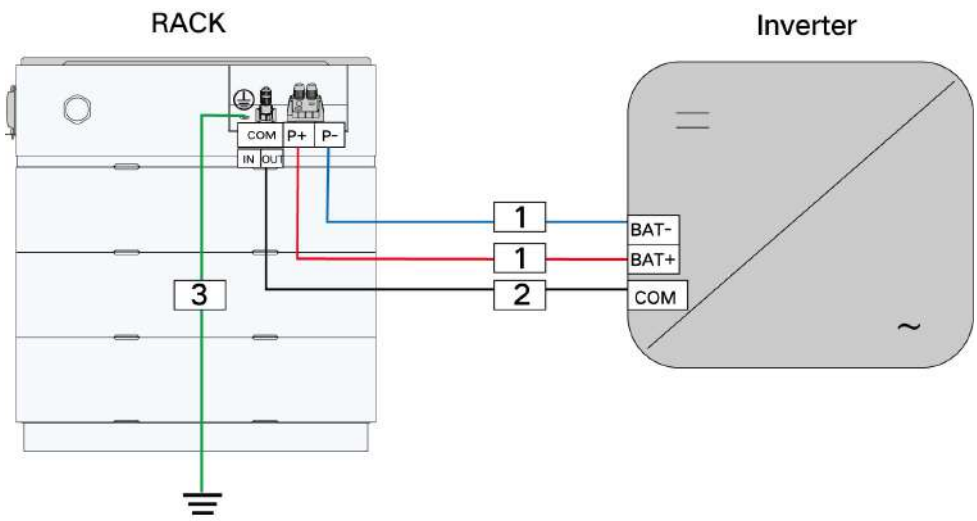


figure 5-1 Diagram of Electrical Connection Between the Battery System and the Inverter

table 5-1 Cable Requirements

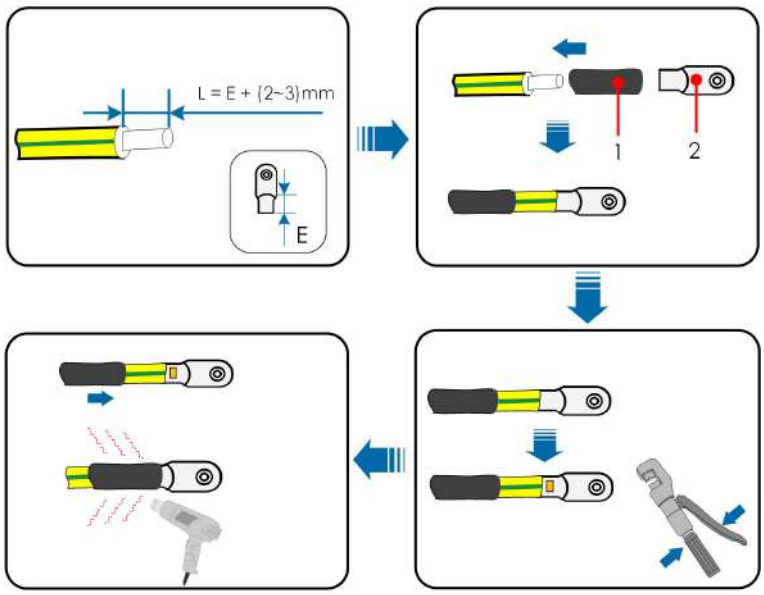
No.	Name	Type	Specification	
			Outer diameter (mm)	Cross-sectional area of conductor (mm^2)
1	DC cable	Multi-core PV cable, able to withstand voltages of >1100V	6 - 9	10 - 16 (7 - 5AWG)
2	Communication cable	Cat5e shielded network cable (provided as one of the accessories)	/	/
3	PE cable	Outdoor multi-core copper-conductor cable, able to withstand a voltage of 1000V and work at the temperature of 105℃	6 - 9	10 - 16 (7 - 5AWG)

5.4 PE Cable Connection and Disconnection

Connect the PE cable

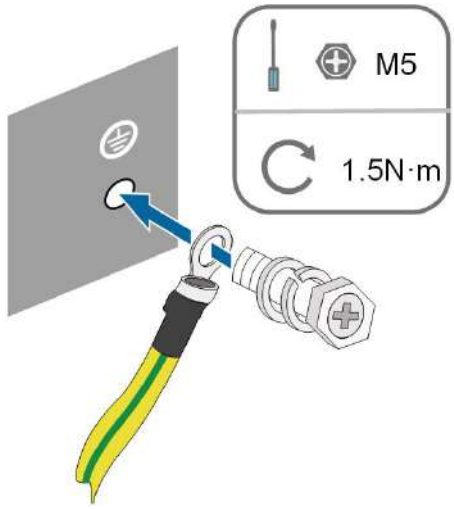
The PE cable should be prepared by the customer separately.

1. Crimp OT/DT terminals on the cable to get it ready.



(1) Heat shrink tubing (2) OT/DT terminal

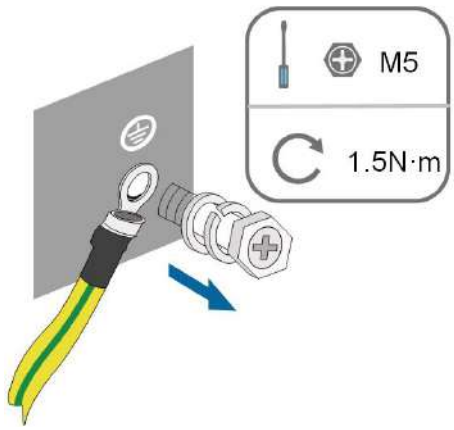
2. Remove the screw from the PE terminal. Position the cable, fit the screw back, and fasten the cable using a screwdriver.



3. Apply silicone or painting to the PE terminal for corrosion protection.

Disconnect the PE cable

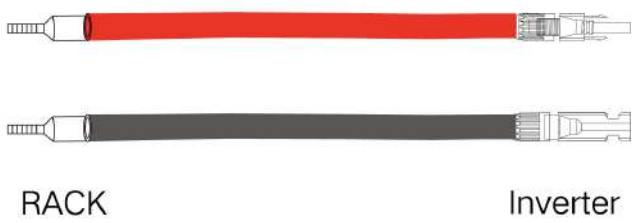
Remove the screw from the PE terminal, and move the cable away.



5.5 DC Cable Connection

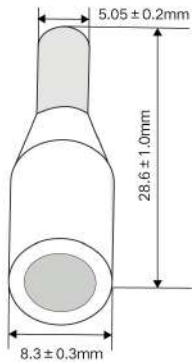
5.5.1 Assemble DC Connectors

The DC cables are connected to the battery system on one side and to the inverter on the other side, as shown in the figure below.

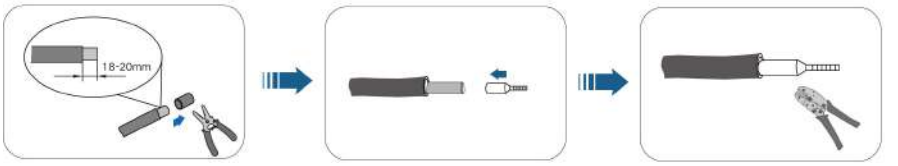


Assemble the cold-pressed terminal for connection on battery side

The dimensions of the cold-pressed terminal are shown in the figure below.

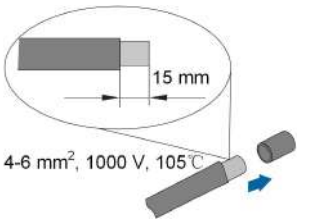


Remove the insulation of the DC cable by approximately 18–20mm using a wire stripper. Insert the stripped cable into the cold-pressed terminal, and crimp it using a crimping tool.

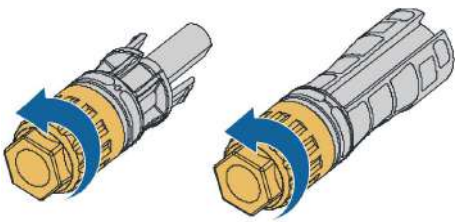


Assemble the connectors for battery connection on inverter side

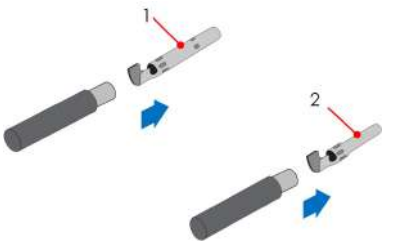
1. Remove the insulation of the DC cables, both by approximately 15mm.



2. Remove the swivel nuts from the connectors.

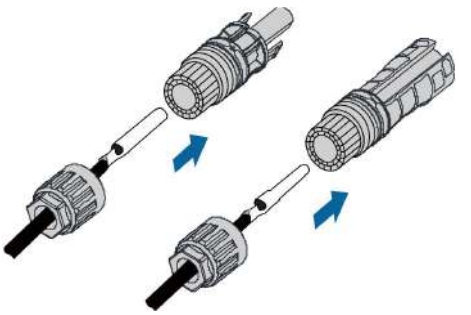


3. Crimp the corresponding wiring terminals on the cable wires using a crimping tool.

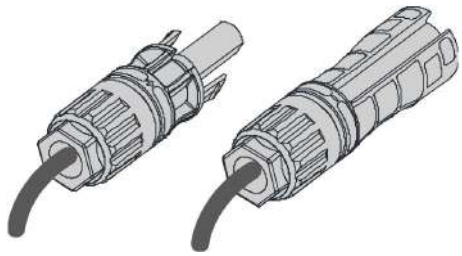


1: Positive cold-pressed terminal 2: Negative cold-pressed terminal

4. Lead the cables through the cable glands, and insert them into the insulators respectively until they snap into place. Pull gently the cables backward to make sure the connection is secure.



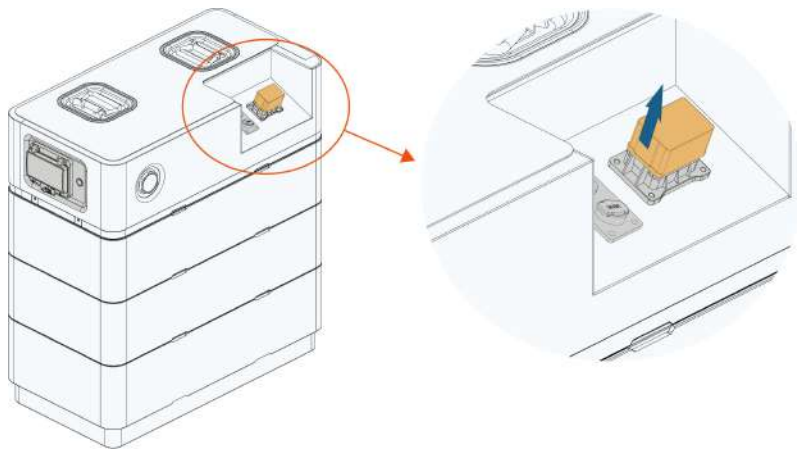
5. Fit the swivel nuts onto the connectors and tighten them. Pull gently the cables backward to make sure the connection is secure.



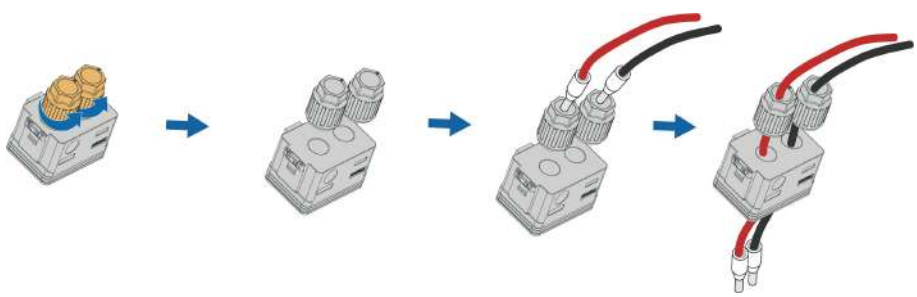
5.5.2 DC Cable Connection and Disconnection

Connect the DC cables

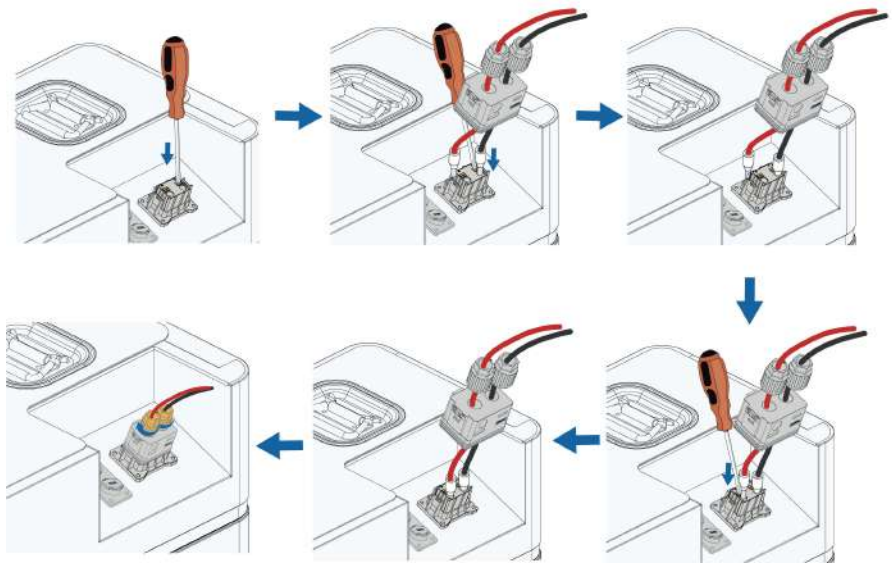
1. Remove the dust cover from the port for DC cable connection.



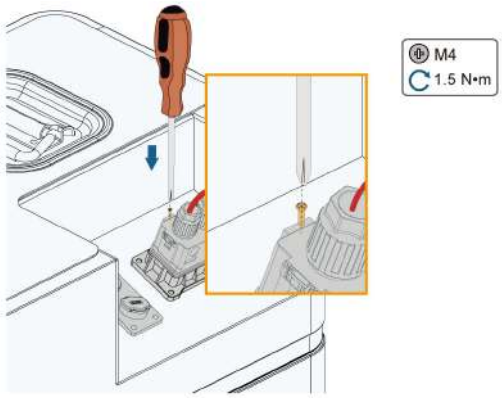
2. On the battery side, lead the DC cables through the power connector.



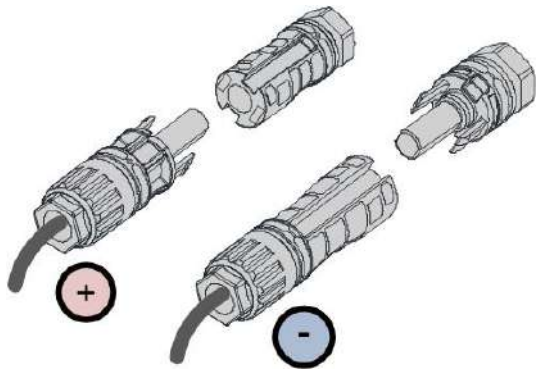
3. Insert the slotted screwdriver straight into the DC port, and press down on the screwdriver. The cable terminals can now be inserted into the corresponding ports. Release the pressure on the screwdriver, and the DC cables will be secured automatically.



4. Fix the power connector with screws.



5. On the inverter side, connect the connectors of the DC cables to the corresponding BAT terminals of the inverter, and make sure they "click" into place.



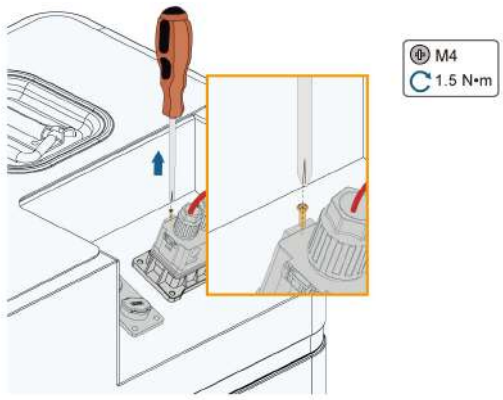
6. Pull gently the DC cables backward to check whether the connection is secure.

Disconnect the DC cables

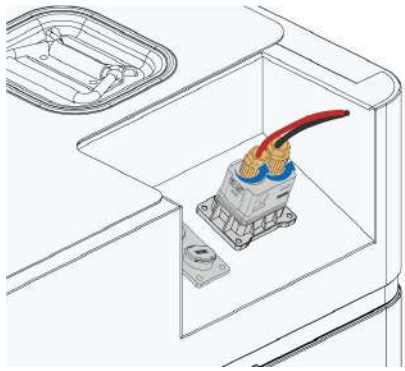
NOTICE

Check whether the system is powered, or let it stand for a while before disconnecting the cables.

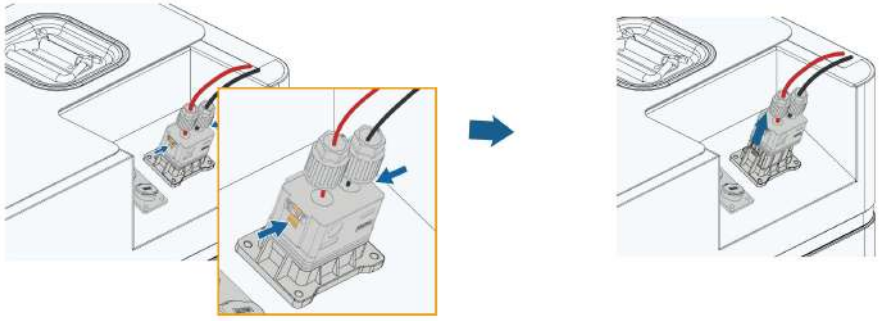
1. Remove the fixing screws from the power connector.



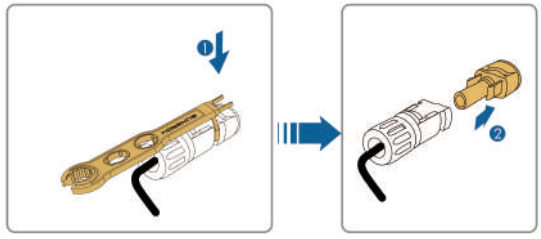
2. Rotate anticlockwise the waterproof terminals at the end of the connector.



3. On the battery side, pull the DC cables out directly.



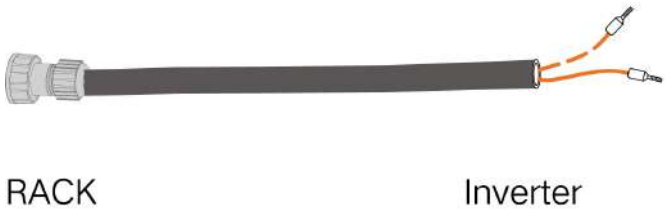
4. On the inverter side, loosen the locking element of the connector with a dismantling wrench, and fit the waterproof plug.



5.6 Communication Cable Connection

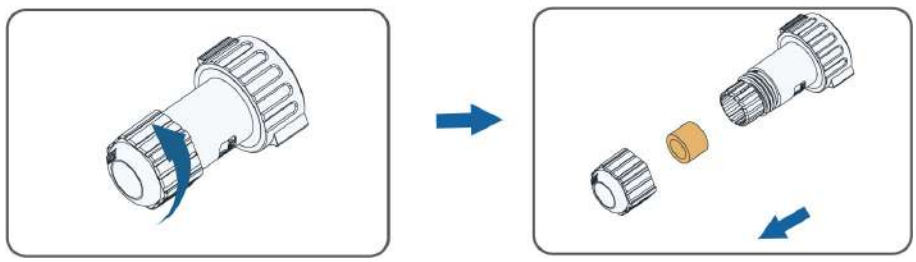
5.6.1 Assemble Communication Connectors and Termination Resistor

The communication cable is connected to the battery system on one side and to the inverter on another side, as shown in the figure below.

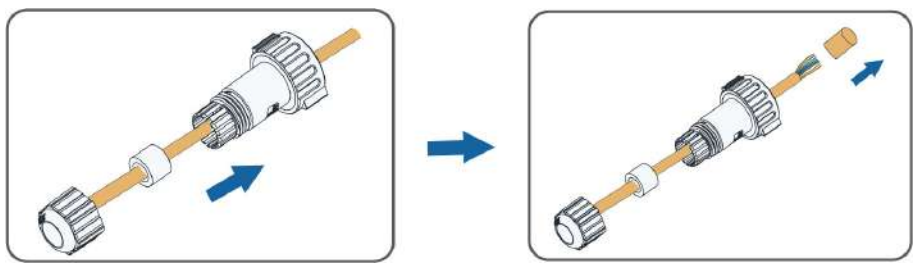


Assemble the communication connector for connection on battery side

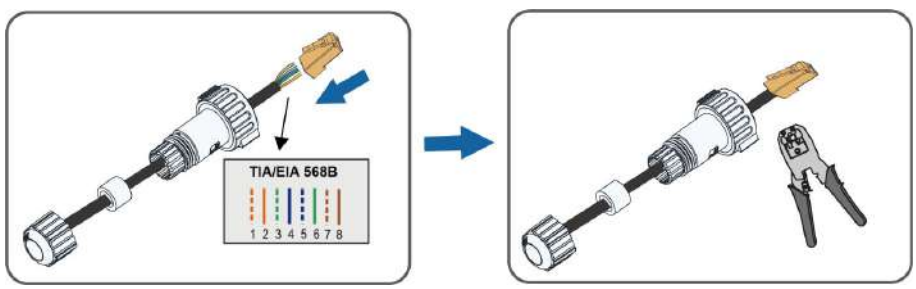
1. Unscrew the swivel bolt from the communication connector, and remove the rubber washer inside.



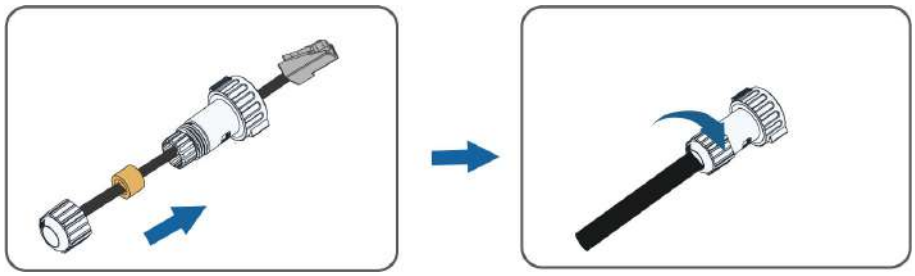
2. Lead the communication cable through the communication connector, and remove the insulation of the cable from one side by approximately 10-15mm.



3. Attach the RJ45 connector, and crimp it using the RJ45 crimping tool.

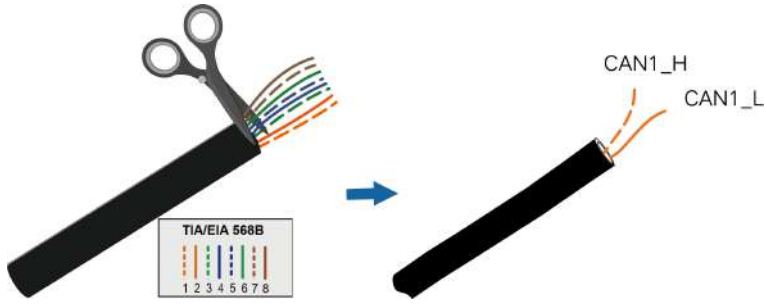


4. Put the rubber washer back, and then tighten the bolt.

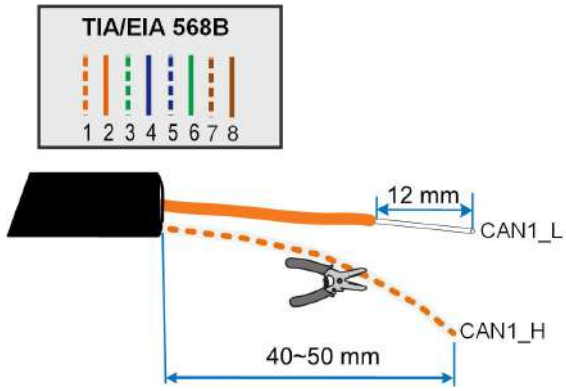


Assemble the wiring terminal for connection on inverter side

1. Remove the insulation of the communication cable from the other side. Keep signal wires CAN1_H (orange-white wire) and CAN1_L (orange wire), and cut off the unused signal wires.



2. Remove the insulation of the signal wires, both by 12mm.

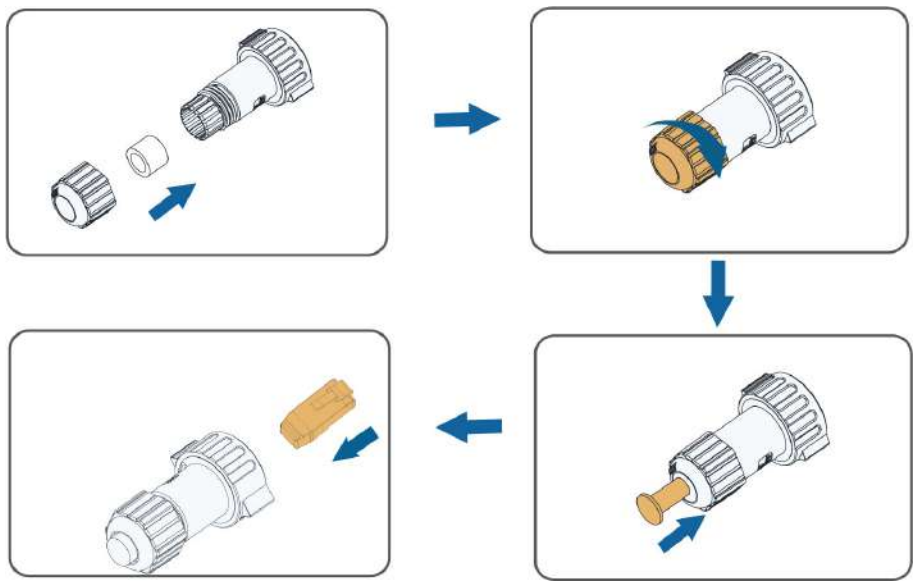


3. Insert the stripped wires into the corresponding cold-pressed terminals, and crimp them using a crimping tool.

Install the termination resistor

To improve the communication quality of the battery system, a termination resistor should be connected to the COM IN port on the switch gear. The installation process is illustrated as follows.

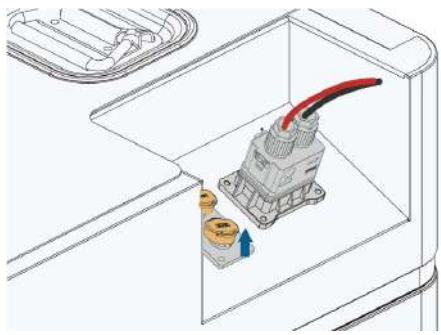
Fit the termination resistor into the communication connector.



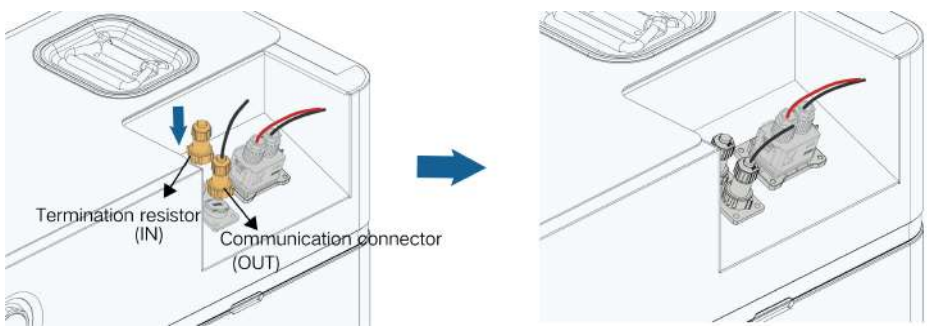
5.6.2 Communication Cable Connection and Disconnection

Connect the communication cable

1. Remove the waterproof plug from the COM port of the battery.

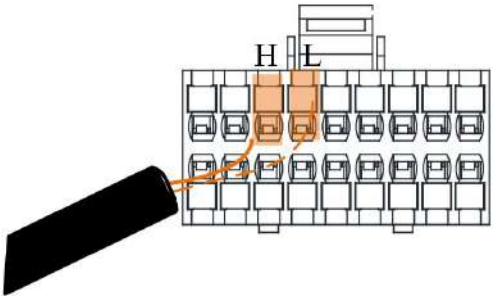


2. Insert the communication cable and the termination resistor respectively into the OUT and IN ports of the communication terminal, and make sure they "click" into place.



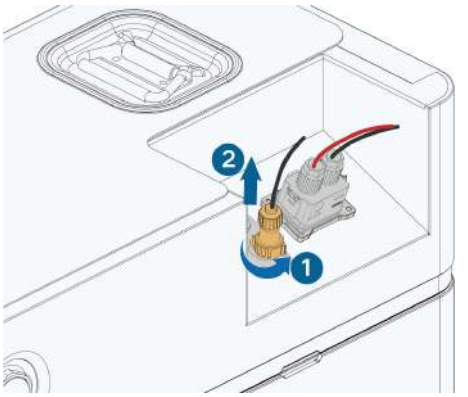
Be sure to install a termination resistor, otherwise, the battery communication cannot be enabled.

3. Connect the other side of the communication cable to the H and L of the COM port of the inverter.

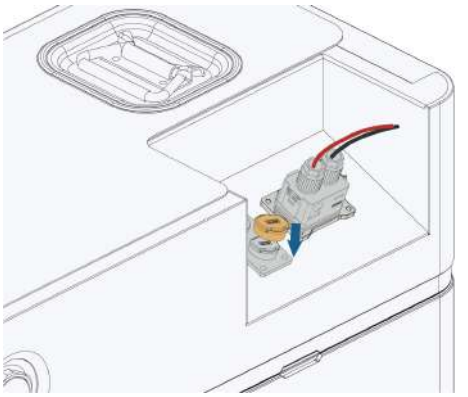


Disconnect the communication cable

1. Pull the communication connector out of the COM port of the battery.

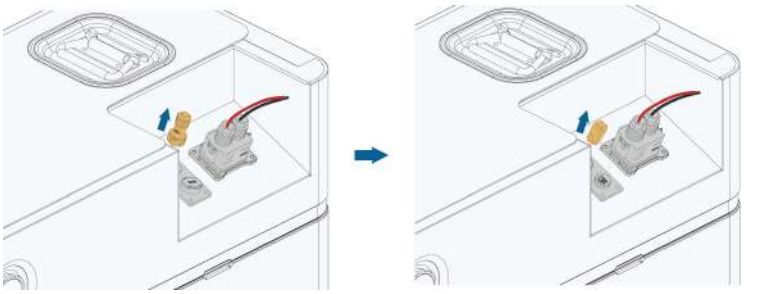


2. Fit the waterproof plug.

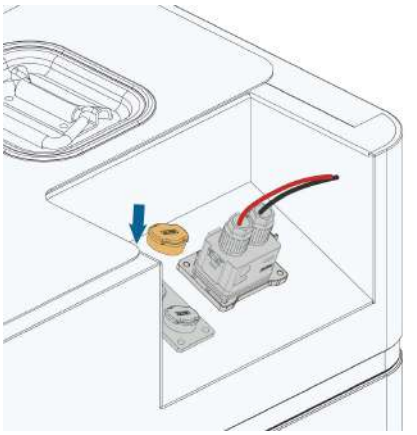


Remove the termination resistor

1. Pull the termination resistor out of the COM port of the battery.

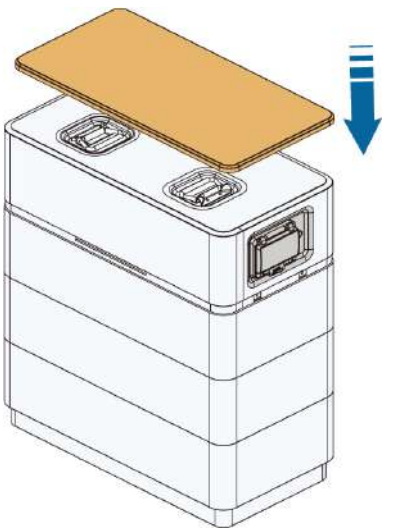


2. Fit the waterproof plug.



5.7 Top Cover Assembling

Assemble the top cover after the electrical connection is completed and the cables are confirmed to be correctly and firmly connected.



5.8 Battery Cascading

RACKs (battery systems) can be connected in parallel, allowing for at most 4 RACKs to be cascaded. Please make sure the usable energy of each RACK is the same when cascading the RACKs.

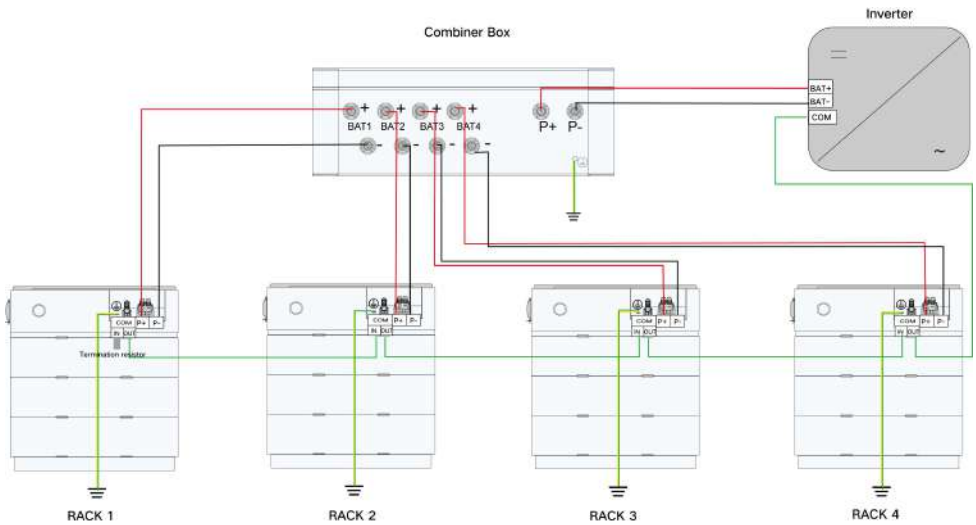


figure 5-2 Battery Cascading Diagram

6 Commissioning

6.1 Inspection before Commissioning

Check the following items before starting the battery:

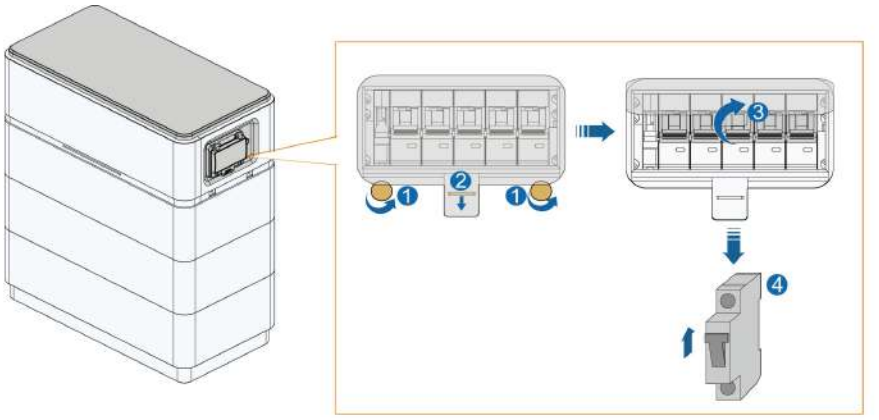
- Check that the battery system has been installed completely.
- Check that the appearance of the battery system is intact.
- Check that the battery system output wiring harness is correctly connected to the positive and negative terminals of the battery and hybrid inverter to avoid misconnection and reverse connection.

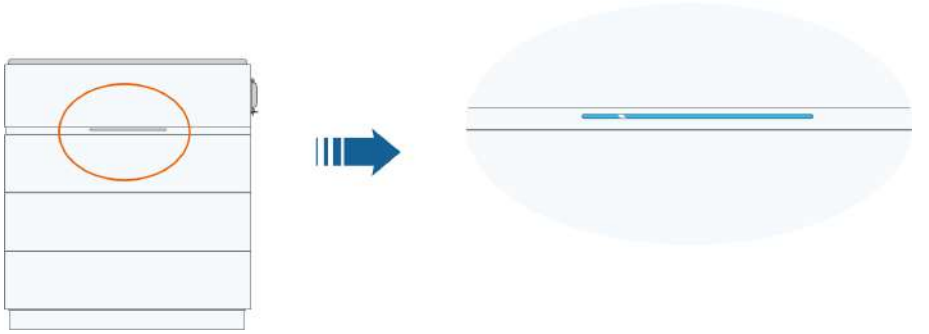
The battery should be used in conjunction with the inverter. Please turn off the inverter or the battery when it is not in use. Otherwise, if the whole system is left running for a long period of time, the problem of deep discharge may arise, thus damaging the battery.

6.2 Commissioning Procedure

If the requirements of the inspection items above are all met, please proceed with the following steps to start the battery system for the first time.

step 1 Open the protective cover of the DC circuit breaker, and pull the switch up. The status indicator then blinks blue. When the indicator is steady blue, it indicates that the battery system has been powered on and is working normally.





Please refer to "2.4 LED Indicators" for the description of LED indicator status.

It is required to press the black start button at the first start-up of the system.

- - End

7 Battery Decommissioning

The battery in the system should be decommissioned once the hybrid inverter is out of service. Proceed with the following steps to decommission the battery.

step 1 Shut off the DC circuit breaker of the battery system.

step 2 One minute after the DC circuit breaker is shut off, disconnect and remove the power cables and communication cable.

- - End

Contact SUNGROW for battery disposal.

8 Battery Augmentation

Battery charging and discharging may take a long time. Therefore, before adding a new PACK, please refer to the document *Brief Introduction of Battery Augmentation* on https://support.sungrowpower.com/ and charge/discharge the on-site battery system via remote control, so as to prevent the installer from waiting on site.

⚠ WARNING

Before adding a new PACK, be sure to charge/discharge the on-site battery system via iSolarCloud App according to the document mentioned above. After the settings are completed successfully, battery charging/discharging will start automatically, until the SOC of the battery on site is the same as that of the PACK to be added. Otherwise, the battery system may not work normally after the new PACK is added, and the problems arising therefrom will not be covered by warranty.

9 Troubleshooting and Maintenance

9.1 Troubleshooting

Fault Name	Fault Code	Corrective Measure
Battery fault	703, 711, 712, 715, 717	1. Generally, the fault will disappear by itself within 20 min. 2. In the event of continual and frequent occurrence of this fault, please switch off the battery system, and contact the installer or manufacturer to check whether the inverter is damaged. 3. Please contact the installer or the manufacturer if the issue persists for a long time. Switch off the battery system immediately if the SOC drops below 3% to avoid damage caused by battery over-discharge.
	707, 733	1. Check whether there is a heat source near the battery system, and measure the ambient temperature. The operating temperature range of the battery system is 0 to 55℃ for charging, and -20 to 55℃ for discharging. Please check whether the ambient temperature or the battery temperature goes beyond this range. In case the battery is placed near a heat source or in an unventilated environment, or the ambient temperature is too high, please improve the installation environment for the battery system. 2. Please contact the installer or the manufacturer if the issue persists for a long time. Switch off the battery system immediately if the SOC drops below 3% to avoid damage caused by battery over-discharge.

Fault Name	Fault Code	Corrective Measure
	708, 734	1. The operating temperature range of the battery system is 0 to 55℃ for charging, and -20 to 55℃ for discharging. Please check whether the ambient temperature or the battery temperature falls below this range. In case the ambient temperature is too low, please improve the installation environment for the battery system. 2. Please contact the installer or the manufacturer if the issue persists for a long time. Switch off the battery system immediately if the SOC drops below 3% to avoid damage caused by battery over-discharge.
	714	1. Check whether the communication cable between the battery and the inverter is incorrectly or loosely connected. 2. Replace the communication cable if the problem is not resolved. 3. Please contact the installer or the manufacturer if the issue persists for a long time. Switch off the battery system immediately if the SOC drops below 3% to avoid damage caused by battery over-discharge.
	732	1. Please contact the installer or manufacturer to upgrade the hybrid inverter, WiNet, and battery software to the latest version. 2. Please contact the installer or the manufacturer if the issue persists for a long time. Switch off the battery system immediately if the SOC drops below 3% to avoid damage caused by battery over-discharge.
	735, 736, 737	1. Generally, the battery will return to normal automatically; 2. If the problem is not resolved, switch off the battery system, and restart it after 5 minutes. 3. Please contact the installer or the manufacturer if the issue persists for a long time. Switch off the battery system immediately if the SOC drops below 3% to avoid damage caused by battery over-discharge.

Fault Name	Fault Code	Corrective Measure
	739	1. Switch off the battery system, and restart it after 5 minutes. 2. Please contact the installer or the manufacturer if the issue persists for a long time. Switch off the battery system immediately if the SOC drops below 3% to avoid damage caused by battery over-discharge.
	740	1. Check whether the client RACK is incorrectly or loosely connected. Switch off the battery, and restart it after 5 minutes. 2. Please contact the installer or the manufacturer if the issue persists for a long time. Switch off the battery system immediately if the SOC drops below 3% to avoid damage caused by battery over-discharge.
	741	1. Please contact the installer or manufacturer to upgrade the hybrid inverter, WiNet, and battery software to the latest version. 2. If the problem is not resolved, please check whether the system configuration is correct (SUNGROW single-phase hybrid inverter used with battery system consisting of 2~6 PACKs; SUNGROW three-phase hybrid inverter used with battery system consisting of 3~8 PACKs). 3. Please contact the installer or the manufacturer if the issue persists for a long time. Switch off the battery system immediately if the SOC drops below 3% to avoid damage caused by battery over-discharge.
	742	1. Please check whether the power cables are connected in inverse or poorly connected. 2. Please contact the installer or the manufacturer if the issue persists for a long time. Switch off the battery system immediately if the SOC drops below 3% to avoid damage caused by battery over-discharge.

Fault Name	Fault Code	Corrective Measure
	743, 744, 745	1. Generally, the battery will return to normal automatically; 2. If the problem is not resolved, please upgrade the battery software. 3. Please contact the installer or the manufacturer if the issue persists for a long time. Switch off the battery system immediately if the SOC drops below 3% to avoid damage caused by battery over-discharge.
	746	1. Please contact the installer or manufacturer to upgrade the hybrid inverter, WiNet, and battery software to the latest version. 2. If the problem is not resolved, please contact the installer to change the order of PACKs and re-install the battery system. 3. Please contact the installer or the manufacturer if the issue persists for a long time. Switch off the battery system immediately if the SOC drops below 3% to avoid damage caused by battery over-discharge.
	747	1. Switch off the battery system, and restart it after 5 minutes. 2. If the problem is not resolved, please upgrade the battery software. 3. Please contact the installer or the manufacturer if the issue persists for a long time. Switch off the battery system immediately if the SOC drops below 3% to avoid damage caused by battery over-discharge.

Fault Name	Fault Code	Corrective Measure
Battery alarm	833	1. Please contact the installer or manufacturer to upgrade the hybrid inverter, WiNet, and battery software to the latest version. 2. If the problem is not resolved, please check whether the system configuration is correct (SUNGROW single-phase hybrid inverter used with battery system consisting of 2~6 PACKs; SUNGROW three-phase hybrid inverter used with battery system consisting of 3~8 PACKs). 3. If the problem is not resolved, please contact the installer to change the order of PACKs and re-install the battery system. 4. Please contact the installer or the manufacturer if the issue persists for a long time. Switch off the battery system immediately if the SOC drops below 3% to avoid damage caused by battery over-discharge.
	932, 939, 964	1. Generally, the battery will return to normal automatically. 2. Please contact the installer or the manufacturer if the issue remains unresolved for a long term. Turn off the battery immediately if the SOC drops below 3% to avoid damage caused by battery over-discharge..
	937, 941, 942	1. Generally, the battery will return to normal automatically. 2. If the problem is not resolved, please upgrade the battery software. 3. Please contact the installer or the manufacturer if the issue remains unresolved for a long term. Turn off the battery immediately if the SOC drops below 3% to avoid damage caused by battery over-discharge..

Fault Name	Fault Code	Corrective Measure
	933	1. Check whether there is a heat source near the battery system, and measure the ambient temperature. The operating temperature range of the battery system is 0 to 55℃ for charging, and -20 to 55℃ for discharging. Please check whether the ambient temperature or the battery temperature goes beyond this range. In case the battery is placed near a heat source or in an unventilated environment, or the ambient temperature is too high, please improve the installation environment for the battery system. 2. Please contact the installer or the manufacturer if the issue persists for a long time. Switch off the battery system immediately if the SOC drops below 3% to avoid damage caused by battery over-discharge.
	934	1. The operating temperature range of the battery system is 0 to 55℃ for charging, and -20 to 55℃ for discharging. Please check whether the ambient temperature or the battery temperature falls below this range. In case the ambient temperature is too low, please improve the installation environment for the battery system. 2. Please contact the installer or the manufacturer if the issue persists for a long time. Switch off the battery system immediately if the SOC drops below 3% to avoid damage caused by battery over-discharge.
	935	1. Generally, the battery will return to normal automatically. 2. If the problem is not resolved, switch off the battery system, and restart it after 5 minutes. 3. Please contact the installer or the manufacturer if the issue remains unresolved for a long term. Turn off the battery immediately if the SOC drops below 3% to avoid damage caused by battery over-discharge..

9.2 Maintenance

NOTICE

Please contact SUNGROW when adding any new PACK for capacity expansion, and perform the operation following the instructions provided by SUNGROW. Otherwise, the system performance may be affected, and the system may not be able to work normally.

The recommended maintenance intervals are listed as follows, which however should be adjusted according to the actual installation environment.
The maintenance interval of the product is subject to factors such as power plant size, location, and site conditions. It is necessary to shorten the interval and increase the frequency of maintenance for products working in sandy or dusty environments.

Items to be inspected once a year

Inspection item	Inspection method
PACK status and cleanliness	The following items should be inspected. Take corrective actions immediately for items that fail the inspection: • Check if there is any damage to or deformation of the PACK and its internal components. • Check if the internal components make abnormal noises during running. • Check if the temperature inside the RACK goes too high. • Check if the humidity and the amount of dust inside the PACK are in the normal range. Clean the PACK if necessary.
Warning signs	Check if warning labels and signs are legible and clean. Clean them if necessary.
Cable	Check if the switch gear is correctly connected to the hybrid inverter.
Corrosion	Check if the PACK has oxidized or rusted inside.

Items to be inspected every six months

Inspection item	Inspection method
Switch gear and PACKs	The following items should be inspected. Take corrective actions immediately for items that fail the inspection: • Check if there are flammables near the PACKs. • Check if the PACK is firmly fixed on the wall, and if the fixing points are rusted or corroded. • Inspect the switch gear and the PACKs for any damage, paint peeling-off, oxidation, etc.
Wiring and cable laying	Do not perform any inspection unless all the components inside the PACKs are powered off. Take corrective actions immediately for items that fail the inspection during the inspection process • Check whether the cables are laid in compliance with relevant standards without short-circuit. Take corrective actions immediately for anything abnormal. • Check if water has penetrated into the PACKs. • Check if the cable is loosely connected. If so, fasten it at the required torque.
Grounding	Check if the system is correctly grounded.
Functions	Check if the current, voltage, and temperature of the PACKs are in the normal range.

NOTICE

Battery capacity auto-calibration is available, however only when SUNGROW hybrid inverters are used.

10 Appendix

10.1 Technical Data

table 10-1 Technical parameters of high voltage LFP battery(SBH100 / SBH150 / SBH200 / SBH250).

Parameters	SBH100	SBH150	SBH200	SBH250
Technical properties	2 modules	3 modules	4 modules	5 modules
System Data				
Battery Type	LiFePO4 Prismatic Cell			
Battery Module	5.0kWh, 46kg			
Energy (usable) [1]	10.0kWh	15.0kWh	20.0kWh	25.0kWh
Nominal voltage	140.8 V	211.2 V	281.6 V	352.0 V
Operating voltage	118.8~160.6V	178.2~240.9V	237.6~321.2V	297~401.5V
Rated DC power	7.04 kW	10.56 kW	14.08 kW	17.60 kW
Max. charging / discharging current: continuous	50 A			
Depth of discharge	Max. 100%DOD (settable)			
Display	SOC indicator, Status indicator			
Communication interface	CAN			
Protection				
Over / under voltage protection	Yes			
Over current protection	Yes			
Over / under temperature protection	Yes			
DC breaker	Yes			
General Data				
Dimensions (W*H*D)	675*580*350mm	675*740*350mm	675*900*350mm	675*1060*350mm
Weight	108 kg	154 kg	200 kg	246 kg
Installation location	Indoor / Outdoor			

Parameters	SBH100	SBH150	SBH200	SBH250
Mounting method	Floor stand			
Operating temperature	Charge: 0 to 55℃ Discharge: -20 to 55℃			
Degree of protection	IP55			
Allowable relative humidity range	0% to 95% no condensing			
Max. operating altitude	Max. 2000 m			
Cooling method	Natural convection			
Warranty[2]	10 Years			

1: Test conditions: 25℃, 100% depth of discharge (DOD), 0.2C charge

2: Refer to battery warranty letter for conditional application.

table 10-2 Technical parameters of high voltage LFP battery(SBH300 / SBH350 / SBH400).

Parameters	SBH300	SBH350	SBH400
Technical properties	6 modules	7 modules	8 modules
System Data			
Battery Type	LiFePO4 Prismatic Cell		
Battery Module	5.0kWh, 46kg		
Energy (usable)[1]	30.0kWh	35.0kWh	40.0kWh
Nominal voltage	422.4 V	492.8 V	563.2 V
Operating voltage	356.4 V~481.8 V	415.8 V~562.1 V	475.2 V~642.4 V
Rated DC power	21.12 kW	24.64 kW	28.16 kW
Max. charging / discharging current: continuous	50 A		
Depth of Discharge	Max. 100% DOD(settable)		
Display	SOC indicator, Status indicator		
Communication interface	CAN		
Protection			
Over / under voltage protection	Yes		
Over current protection	Yes		
Over / under temperature protection	Yes		
DC breaker	Yes		
General Data			

Parameters	SBH300	SBH350	SBH400
Dimensions (W*H*D)	675*1220*350mm	675*1380*350mm	675*1540*350mm
Weight	292kg	338kg	384kg
Installation location	Indoor / Outdoor		
Mounting method	Floor stand		
Operating temperature	Charge: 0 to 55℃ Discharge: -20 to 55℃		
Degree of protection	IP55		
Allowable relative humidity range	0% to 95% no condensing		
Max. operating altitude	Max. 2000 m		
Cooling method	Natural convection		
Warranty[2]	10 Years		

1: Test conditions: 25℃, 100% depth of discharge (DOD), 0.2C charge

2: Refer to battery warranty letter for conditional application.

10.2 FAQs

10.2.1 Battery Not Charging

1. Please wait 5~10 minutes for data refresh of iSolarCloud App.
2. If the problem persists, try charging the battery by enabling force mode. If the battery can be charged now, please contact the hybrid inverter installer or manufacturer.
3. Check if the current battery SOC is the same as the set SOC upper limit of the hybrid inverter. Once the battery SOC reaches or goes beyond the SOC upper limit, the battery cannot be charged (please set the value to 50~100 as needed).
4. If the problem is still not resolved, please check the system for any faults and take countermeasures according to the fault code.
5. If the problem is still not resolved, check whether the ambient temperature is near or below 0℃. Switch off the battery in the event of the temperature falling below 0℃, and restart and charge it when the temperature rises up to over 5℃.
6. If the problem persists, check whether there is a heat source near the battery and whether the ambient temperature goes higher than 55° C. Switch off the battery in the event of the temperature exceeding 55° C, and restart and charge it when the temperature falls below 40°C.
7. Contact the installer or manufacturer if the problem can still not be resolved. Switch off the battery immediately once the SOC drops below 3%.

10.2.2 Battery Not Discharging

1. Please wait 5-10 minutes for data refresh of iSolarCloud App.

2. If the problem persists, try discharging the battery by enabling force mode. If the battery can discharge now, please contact the hybrid inverter installer or manufacturer.
3. Check if the current battery SOC is the same as the set SOC lower limit of the hybrid inverter. Once the battery SOC reaches or falls below the SOC lower limit, the battery will not discharge (please set the value to 5-50 as needed).
4. If the problem is still not resolved, please check the system for any faults and take countermeasures according to the fault code.
5. Check whether there is a heat source near the battery and whether the ambient temperature goes higher than 55°C. Switch off the battery in the case of the temperature exceeding 55°C, and restart and discharge it when the temperature falls below 40°C.
6. Contact the installer or manufacturer if the problem can still not be resolved. Switch off the battery immediately once the SOC drops below 3%.

10.2.3 SOC Jump

1. Occasional occurrence of SOC jump is considered to be a normal phenomenon, which does not affect the normal operation of the system.
2. In case the SOC jump issue occurs frequently, please contact the installer or manufacturer.

10.2.4 Battery Upgrade

1. Please contact the installer or manufacturer for iSolarCloud upgrade, if needed.
2. If the iSolarCloud is updated, please upgrade the software of the hybrid inverter, the communication module, and the battery at the same time. Otherwise, there may be problems arising from the mismatch of software versions.
3. Please contact the installer or manufacturer immediately in case of anything abnormal during or after the upgrade.

10.3 Quality Assurance

When product faults occur during the warranty period, SUNGROW will provide free service or replace the product with a new one.

Evidence

During the warranty period, the customer shall provide the product purchase invoice and date. In addition, the trademark on the product shall be undamaged and legible. Otherwise, SUNGROW has the right to refuse to honor the quality guarantee.

Conditions

- After replacement, unqualified products shall be processed by SUNGROW.
- The customer shall give SUNGROW a reasonable period to repair the faulty device.

Exclusion of Liability

In the following circumstances, SUNGROW has the right to refuse to honor the quality guarantee:

- The free warranty period for the whole machine/components has expired.
- The device is damaged during transport.
- The device is incorrectly installed, refitted, or used.
- The device operates in harsh conditions beyond those described in this manual.
- The fault or damage is caused by installation, repairs, modification, or disassembly performed by a service provider or personnel not from SUNGROW.
- The fault or damage is caused by the use of non-standard or non-SUNGROW components or software.
- The installation and use range are beyond stipulations of relevant international standards.
- The damage is caused by unexpected natural factors.

For faulty products in any of above cases, if the customer requests maintenance, paid maintenance service may be provided based on the judgment of SUNGROW.

10.4 Contact Information

In case of questions about this product, please contact us.

We need the following information to provide you the best assistance:

- Model of the device
- Serial number of the device
- Fault code/name
- Brief description of the problem

For detailed contact information, please visit: **https://en.sungrowpower.com/contactUS**