



KADLU MAX

Stackable Commercial Lithium-ion
Battery System Installation Manual

Warning:

Please read this document completely before installing or using KADLU MAX home battery system. Not following the instructions and warnings provided here could lead to electrical shock, severe injury, or even death. It could also permanently damage the KADLU MAX home battery system.

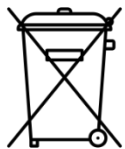
PRODUCT SPECIFICATIONS

All specifications and descriptions in this document are accurate as of the time of printing. However, because IGLU TECH is committed to continuous improvement, we may make product modifications at any time.

The images in this document are for demonstration purposes only. Product details may vary slightly depending on the version and region.

ERRORS OR OMISSIONS

If you notice any inaccuracies or omissions in this manual, please email: info@iglutech.eu



ELECTRONIC DEVICE: DO NOT THROW AWAY

Proper Disposal of batteries is required. Refer to your local codes for disposal requirements.

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IMPORTANT SAFETY INSTRUCTIONS

This manual contains important instructions for installing and maintaining the KADLU MAX home battery system. Please follow them carefully.

Installing and servicing the KADLU MAX home battery system requires expertise in high-voltage electricity and should only be carried out by IGLU TECH Certified Installers. IGLU TECH is not liable for injuries or property damage resulting from repairs by unqualified individuals or failure to follow these instructions. All warnings and cautions in this manual must be observed when using the KADLU MAX home battery system.

Symbols Used

These symbols indicate important safety information in this guide or on the equipment:



WARNING: indicates a hazardous situation which, if not avoided, could result in injury or death.



CAUTION: indicates a hazardous situation which, if not avoided, could result in minor injury or damage to the equipment.

NOTE: indicate an important step or tip that leads to the best results but is not safety or damage related.



REFER TO OPERATING INSTRUCTIONS: indicates that users should refer to operating or installation instructions before proceeding.



RISK OF ELECTRIC SHOCK: indicates components that present the risk of electrical shock.



CAUTION, RISK OF ELECTRIC SHOCK, ENERGY STORAGE TIMED DISCHARGE, Discharge time is 5 minutes from de-energization.



BIDIRECTIONAL TERMINIAL: indicates location of combined input/output connector on the equipment.



PROTECTIVE CONDUCTOR TERMINAL: indicates location of grounding connection on the equipment.

General Information

 **WARNING:** Reading this entire document before installing or using KADLU MAX. Failure to do so or to follow any of the instructions or warnings in this document can result in electrical shock, serious injury, or death or can damage KADLU MAX, potentially rendering it irreparable.

 **WARNING:** A battery can present a risk of electrical shock, fire, or explosion from vented gases. Observe proper precautions.

 **WARNING:** KADLU MAX installation must be carried out only by IGLU TECH Certified Installers who have been trained properly.

 **WARNING:** KADLU MAX is heavy. Use of Lift equipment is recommended.

 **WARNING:** Use KADLU MAX only as directed.

 **WARNING:** Do not use KADLU MAX if it is defective, appears cracked, broken, or otherwise damaged, or fails to operate.

 **WARNING:** Before beginning the wiring portion of the installation, ensure that KADLU MAX is switched off, and open any associated circuit breakers and disconnect switches (if applicable for the installation).

 **WARNING:** Do not attempt to open, disassemble, repair, tamper with, or modify KADLU MAX. KADLU MAX and its components are not user serviceable. Batteries in KADLU MAX are replaceable. Contact the IGLU TECH Certified Installer who installed the system for any repairs.

 **WARNING:** To protect KADLU MAX and its components from damage when transporting, handle with care. Do not impact, Pull, drag, or step on KADLU MAX. Do not subject KADLU MAX to any strong force. To help Prevent damage, leave KADLU MAX in its shipping packaging until it is ready to be installed.

 **WARNING:** Do not insert foreign objects into any part of KADLU MAX.

 **WARNING:** Do not expose KADLU MAX or its components to direct flame.

 **WARNING:** Do not install KADLU MAX near heating equipment.

 **WARNING:** Do not immerse KADLU MAX or its components in water or other fluids.

 **CAUTION:** Do not use solvents to clean KADLU MAX or expose KADLU MAX to flammable or harsh chemicals or vapors.

 **CAUTION:** Do not use fluids, parts or accessories other than those specified in this manual including use of non-genuine IGLU TECH parts or accessories, or parts or accessories not purchased directly from IGLU TECH or an IGLU TECH -certified party.

 **CAUTION:** Do not place KADLU MAX in a storage condition for more than one (1) month or permit the electrical feed on the KADLU MAX to be served for more than one (1) month, without placing KADLU MAX into a storage condition in accordance with IGLU TECH's storage specifications.

 **CAUTION:** Do not paint any part of KADLU MAX, including any internal or external components such as the exterior shell or casing.

 **CAUTION:** Do not connect KADLU MAX directly to photo voltaic (PV) solar wiring.

 **CAUTION:** When installing KADLU MAX in a garage or near vehicles, keep it out of the driving path. If possible, install KADLU MAX on a side wall and/or above the height of vehicle bumpers.

Environmental Conditions

 **WARNING:** Install KADLU MAX in a location that prevents damage from flooding.

 **WARNING:** Operating or storing KADLU MAX in temperatures outside its specified range might cause damage to KADLU MAX.

 **WARNING:** Do not expose KADLU MAX to ambient temperature above 40 °C or below -20 °C.

 **CAUTION:** Ensure that no water sources are above or near KADLU MAX, including downspouts, sprinklers, or faucets.

 **CAUTION:** Ensure that snow does not accumulate around KADLU MAX.

Date	Revision	Description	Owner
2025-01-01	V1.0	Initial Release	Dovydas
2025-06-09	V1.1	Initial Release	Revaz
2025-07-17	V1.2	Content correction	Dovydas
2025-08-07	V1.3	Content correction	Dovydas
2025-09-10	V1.4	Content correction	Revaz

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1. Scope

This product complies with the design requirements of environmental protection and personal safety. The storage, use and disposal of the products shall be carried out in accordance with the product manual, relevant contract or relevant laws and regulations.

2. Terminology and Basis for Writing

2.1. Definition of Terms

Battery Cell	The smallest energy storage unit, a basic electrochemical energy storage device, consisting of a positive electrode, a negative electrode, an electrolyte, a separator, and a casing, also called a cell.
Battery Module	Intermediate energy storage unit, a combination of several single-unit and circuit devices (monitoring and protection circuits, electrical and communication interfaces), also called modules, placed in a mechanical electrical unit.
Battery Pack	A power supply system consisting of several battery modules, circuit equipment (protection circuits, cell management systems, electrical and communication interfaces), and thermal management devices for powering electrical devices.
Controller	The device composed of BMS, and electrical circuit is used to monitor battery status, protect battery safety, and communicate with inverter and monitoring server.
Nominal Voltage	Indicates or identifies an appropriate voltage approximation for the cell.
Capacity	The amount of electricity that can be supplied by a fully charged battery under specified conditions. Usually expressed in Ah.
Energy Capacity	The energy that can be supplied by a fully charged cell under specified
	conditions. Usually expressed in Wh or kWh.
Nominal Capacity	At the beginning of life (BOL), the minimum capacity that can be provided by a fully charged cell at a rate of 1 C (C-rate).

Unit	"V" (Volt) Volt (V), voltage unit "A" (Ampere) Ampere (A), current unit "Ah" (Ampere-Hour) Ampere-hour (Ah), charge unit "Wh" (Watt-Hour) Watt-hour (Wh), unit of electrical energy "Ω" (Ohm) ohm (Ω), resistance unit °C (degree Celsius) Celsius (°C), temperature unit "mm" (millimeter) mm (mm), length unit "s" (second) seconds (s), time unit "kg" (kilogram) kilograms (kg), weight unit "Hz" (Hertz) Hertz (Hz), frequency unit
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Table 2-1 Definition of Terms

2.2. Abbreviations

BMS	Battery Management System
BMU	Battery Management Unit
BOL	Begin of Life
Busbar	Battery pole connecting rod
CAN	Controller Area Network
HV	High Voltage
LV	Low Voltage
OCV	Open Circuit Voltage
SOC	State of Charge
ESS	Energy Storage System
LFP	Lithium Ferrum Phosphate
SBC	Single Board Controller
DOD	Depth of discharge

Table 2-2 Abbreviation definitions

2.3. Battery system application

- PV power plant storage
- Island off-grid energy storage
- optical storage charge integration applications
- Micro-grid applications
- UPS power supply
- Power System 220V DC power supply

2.4. Product identity definition

K MAX XXX D

K: KADLU

MAX: High voltage Commercial battery system

XXX: from 300 to 600

D: Dominant (With PLC)

300 - 30kWh
350 - 35kWh
400 - 40kWh
450 - 45kWh
500 - 50kWh
550 - 55kWh
600 - 60kWh

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Rechargeable Lithium-ion Battery System

Controller Model: HVC1000

Operation Temp: -20°C~55°C

Input Current: 50A

Protection Class: I

IP Grade: IP20

Product design code:

IFpP/51/162/120/[1P16S]M/-20+50/90

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Controller Model Type: Master/Secondary

☐ D ☐ S

Configuration/Nominal Voltage/Rated Capacity/Energy/System Model

☐ 6P/307.2Vdc/100Ah/30.72kWh/KMAX300

☐ 7P/358.4Vdc/100Ah/35.84kWh/KMAX350

☐ 8P/409.6Vdc/100Ah/40.96kWh/KMAX400

☐ 9P/460.8Vdc/100Ah/46.80kWh/KMAX450

☐ 10P/512.0Vdc/100Ah/51.20kWh/KMAX500

☐ 11P/563.2Vdc/100Ah/56.32kWh/KMAX550

☐ 12P/614.4Vdc/100Ah/61.44kWh/KMAX600

2.5. Battery Pack label

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Product Name:

Rechargeable Lithium-ion Battery (KADLU MAX PACK)

Model: KMXH10051C20

Rated Energy/Voltage: 5.12 kWh/51.2 V

Rated Capacity: 100 Ah

Input Current: 50 A

Dimension(W*D*H): 440*530*132 mm

IP Grade: IP20

SN:□



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DANGER

HIGH VOLTAGE INSIDE



- Do not disassemble or repair without professional inspection.
- Do not drop, deform, impact, cut or spear with a sharp object.
- Do not place near flame.
- Do not put heavy things on battery.
- Keep away from moisture or liquid.
- Keep away from children, animals and insects.
- Contact the supplier within 24 hours if anything abnormal.

Emergency Situations

- If leaking, fire or damaged, switch off the breaker and keep away from the battery.
- Do not touch the leaking liquid.

3. Specification

Key Item	S6	S7	S8	S9	S10	S11	S12
Battery Model	LFP						
System Model	KMAX300	KMAX350	KMAX400	KMAX450	KMAX500	KMAX550	KMAX600
Total Rated Energy [kWh]	30.72	35.84	40.96	46.08	51.2	56.32	61.44
Usable Capacity [kWh]	25.99	30.3	34.65	38.98	43.31	47.65	51.98
Pack Model	KMXH10051C20						
Rated Capacity [Ah]	100						
Recommend Depth of Discharge	80%						
Max Depth of Discharge	100%						
Module configuration	6 Series	7 Series	8 Series	9 Series	10 Series	11 Series	12 Series
Rated Voltage [Vdc]	307.2	358.4	409.6	460.8	512	563.2	614.4
Operating Voltage Range [Vdc]	268.8 ~ 350.4	313.6 ~ 408.8	358.4 ~ 467.2	403.2 ~ 525.6	448 ~ 584	492.8 ~ 642.4	537.6 ~ 700.8

Battery Max Continuous Charge/Discharge Power [kW]	15.36	17.92	20.48	23.04	25.6	28.16	30.72
SOC of Transportation	50-60%						
Charging Temperature [°C]	0 ~ 55						
Discharging Temperature [°C]	-20 ~ 55						
Storage Temperature [°C]	-20 ~ 55						
Working Humidity	20-80%						
Standard Max Continuous Charging Current [A]	50						
Standard Max Continuous Discharge Current [A]	50						
Peak Current [A]	70						
IP Rating	IP20						
Maximum Altitude	≤2000 m						
Recommended Indoor/Outdoor Usage	Indoor						
Dimensions[mm] (W x D x H)	550 x 635 x 1780						550 x 635 x 2027
Weight [kg]	350	395	440	485	530	575	620
Communication	CAN/RS485/LAN						
Parallel connection	≤10 clusters						

Table 3-1 Battery system specifications

3.1. System Performance Parameter

- The following uses 12 battery Packs as an example:

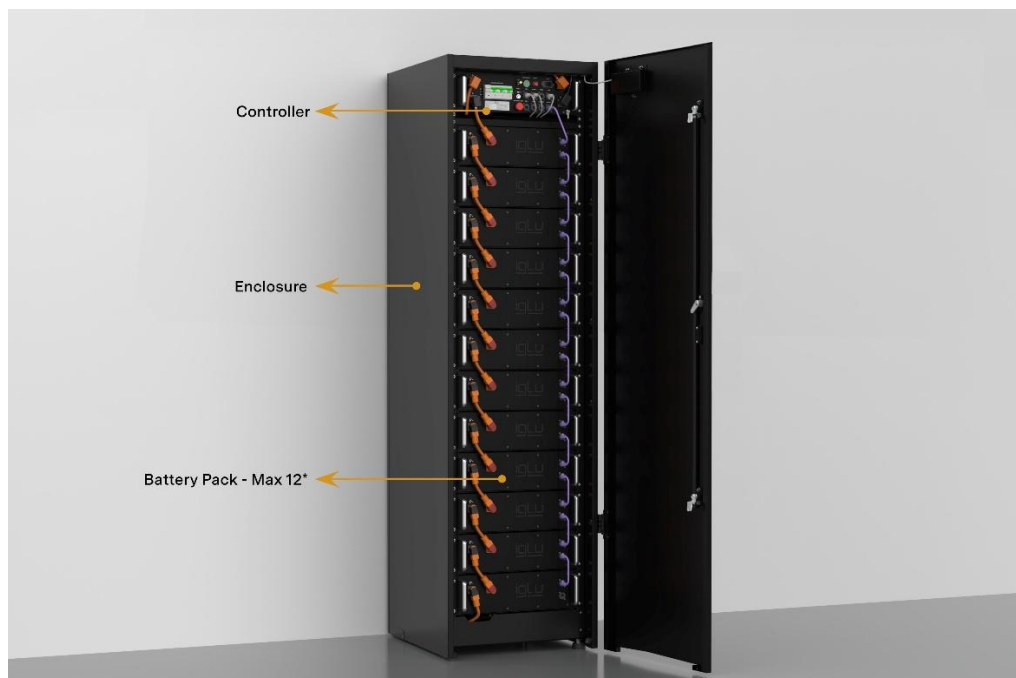


Figure 3-1 Model of battery system with 12 packs

3.2. Battery Pack

- Battery Pack Product parameters

Technical Specifications	
Model	KMXH10051C20
Module energy [kWh]	5.12
Cells	LFP Lithium Battery
Battery Module Voltage [Vdc]	51.2VDC
Battery Module Capacity [Ah]	100
Standard Charging current [A]	50
Max. charging, discharging current [A]	70 (With special setup)
Cell balancing	Passive Battery Optimizer
Cycles	6000 @ 80% DOD / 80% SOH/ 25 °C +/-2°C 0.5C/0.5C
Efficiency (Battery)	~97%
Operating voltage [V]	44.8 ~ 58.4
Operating temperature[°C]	-20 ~55
Sea level[A]	≤ 2 000 m above sea level N.N.
IP Grade	IP20
Weight [kg]	~ 45 kg
Dimensions [mm] (W x D x H)	440x530x132mm
Appearance color	Black, RAL9011(White RAL9016 optional, there are MOQ requirements)
Certificates/Norms Cells:	IEC 62619, UL 1642, UN 38.3
Module:	IEC62619, IEC61000, IEC62477, UN 38.3

Table 3-2 Technical specifications

- **Battery Pack Visual**



Figure 3-2 Battery pack visualization.

- **Battery Pack Size Chart**

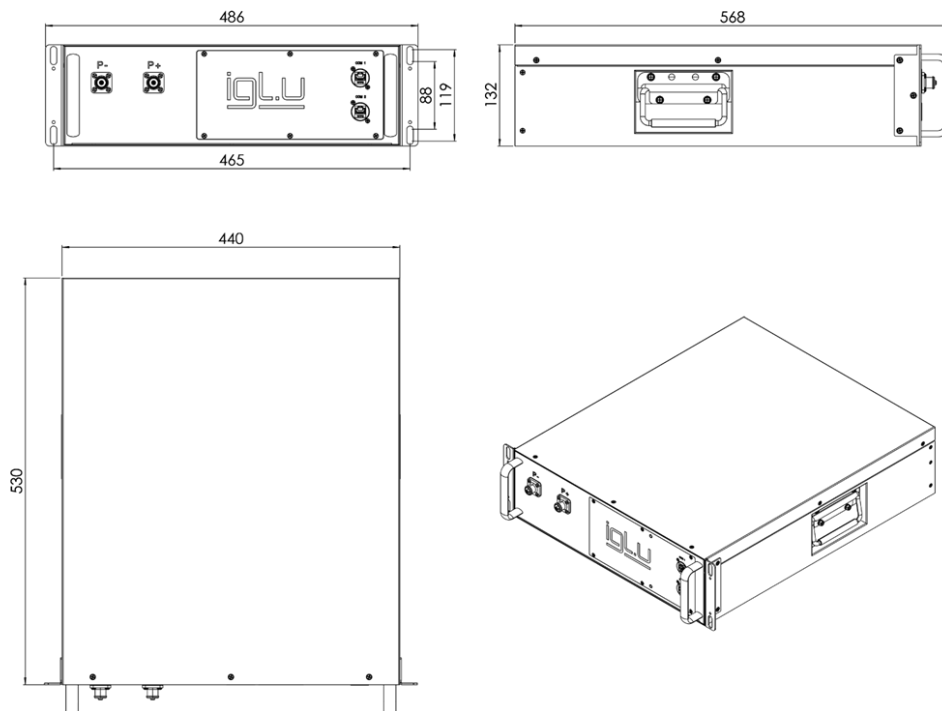


Figure 3-3 Battery pack dimensions.

3.3. High Voltage Controller

Technical Specifications	
Model	HVC1000
Max. Current	160A
Max. Voltage	750Vdc
Communication	CAN/RS485/LAN
Operating temperature	-20 to 55°C
Sea level	≤ 2 000 m above sea level N.N.
IP Grade	IP20
Weight	~22kg
Dimensions (W x D x H)	440x530x132mm
Appearance color	Black, RAL9011(White RAL9016 optional, there are MOQ requirements)

Table 3-3 High voltage controller technical data

- High voltage controller visual



Figure 3-4 High voltage controller visualization.

Controller Size Chart

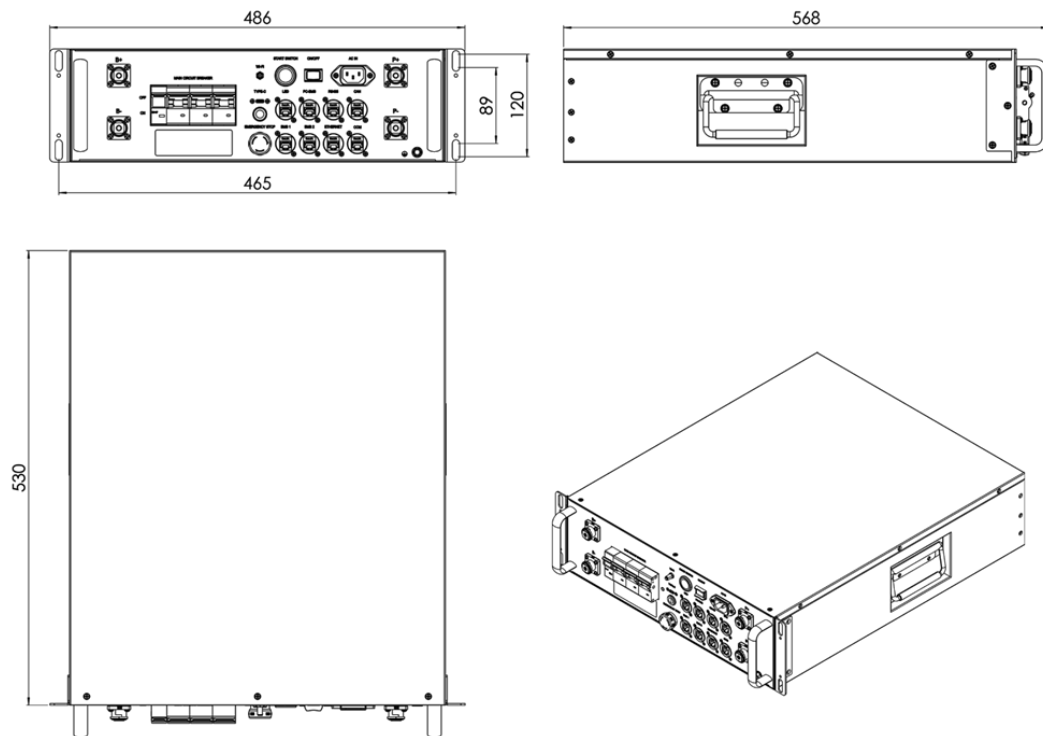


Figure 3-5 High voltage controller dimensions.

3.4. High voltage controller front panel interface

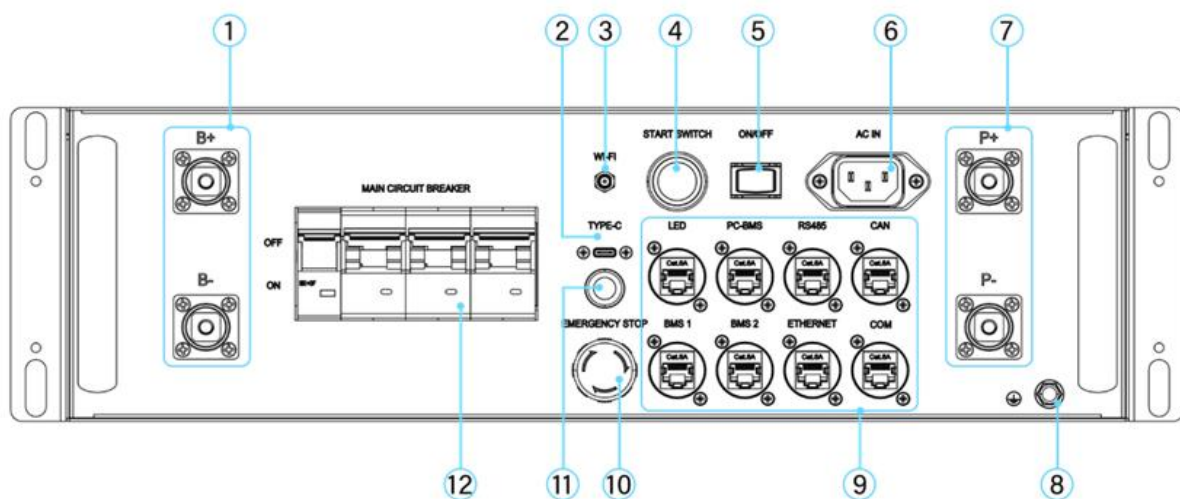


Figure 3-6 High voltage controller front panel interface.

- **High voltage controller front panel interface description:**

NO.	Item	Description	Remarks
1	Battery side input	B+, B - interface, battery to control box input	M6
2	Connection	Type – C connection for SBC programing	TYPE-C
3	Wi-Fi Port	Wi-Fi stick interface allows for remote observation of battery operation status. See Wi-Fi Port for details	
4	Start Switch	Push button for BMS start	
5	AC Switch	AC ON / OFF switch	
6	AC in	230VAC power supply	C14
7	Controller output to inverter	P+, P- controller output interface, to inverter	
8	Grounding point	Grounding	PE
9*	Communication Port	LED communication; PC to BMS communication; RS485 communication; CAN communication; BMS 1 and BMS 2 communication; Ethernet communication; COM Controller to Battery pack communication;	RJ45
10	EMERGENCY STOP	Emergency stop button, in case of emergency, pressing the emergency stop button can disconnect the output circuit	
11	Indicator	Status indicator light	
12	Main Circuit Breaker	Main circuit breaker, controlling the output status of B+ and B -	

Table 3-4 High voltage controller front panel interface description

- **Communication port - 9* RJ45 name and descriptions**

RJ45 Name	Pin No.	Pin Definition	Description	Remarks
LED	1	5V+	Power supply positive +	
	4	GND	Power supply negative -	
	5	DIN	Digital input for LED	
PC-BMS	5	USB GND	External PC communication	
	6	USB DATA-	External PC communication	
	7	USB DATA+	External PC communication	
	8	USB PWR	External PC communication	
RS485 (Modbus)	1	RS485_B	Modbus communication with inverter	
	2	RS485_A	Modbus communication with inverter	
	3	GND	Modbus communication with inverter	
CAN (Inverter)	4	CAN H	CAN communication with inverter	

	5	CAN L	CAN communication with inverter	
	6	GND	CAN communication with inverter	
BMS 1	1	CAN H	Master/Slave BMS CAN communication interface	
	2	CAN L	Master/Slave BMS CAN communication interface	
	3	GND	Master/Slave BMS CAN communication interface	
	4	PWR	Master/Slave BMS CAN communication interface	
BMS 2	1	CAN H	Master/Slave BMS CAN communication interface	
	2	CAN L	Master/Slave BMS CAN communication interface	
	3	GND	Master/Slave BMS CAN communication interface	
	4	PWR	Master/Slave BMS CAN communication interface	
ETHERNET	Standard B type RJ45 connection			
COM	1	CAN H	BMU CAN communication	
	2	CAN L	BMU CAN communication	
	3	GND	BMU CAN communication	
	4	PWR	BMU CAN communication	

Table 3-5 RJ45 port description

4. Installation

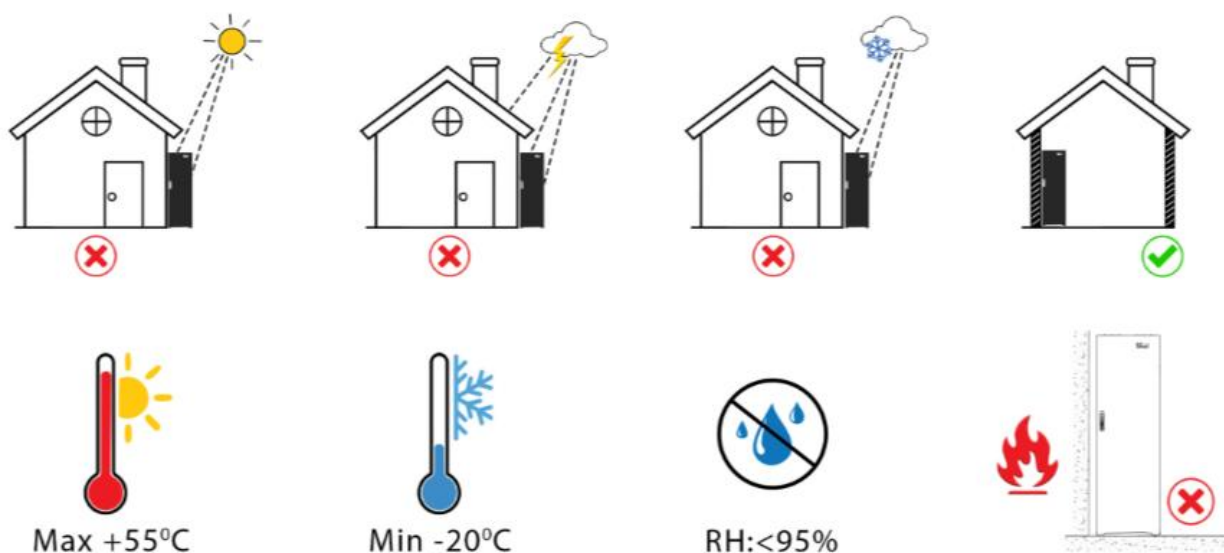
4.1. Installation preparation

- Prepare equipment and tools for installation. (table)
- Confirm that the DC breaker is in the OFF state to ensure that it is no live operation.

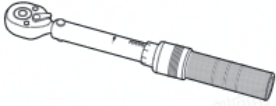
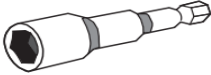
4.2. Requirements for Installation Location

- A solid support surface must be available (e.g., concrete or masonry).
- The installation location must be inaccessible to children.
- The installation location must be suitable for the weight and dimensions of the rack and battery system.
- The installation location must not be exposed to direct solar irradiation.
- Keep away from metal conductive dust.
- Keep away from water source, heat source and inflammable and explosive articles

- The installation location must not be close to the fire.
- The storage temperature should be between $-20^{\circ}\text{C} \sim +55^{\circ}\text{C}$.
- The operating temperature should be between $-20^{\circ}\text{C} \sim +55^{\circ}\text{C}$.
- The ambient humidity should be between 20-80%.



4.3. Tools

		
Torque screwdriver	Phillips-screwdriver bit	Hex-key bit
		
Phillips-head screwdriver	Torque wrench	Wrench
		
Cylinder screwdriver bit	Scissor	tie

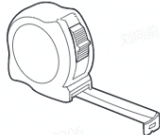
		
level	Drill	Tape measure
		
Hammer	Twist drill	Marker pen

Figure 4-1 Tools list

4.4. Safety Gear

Wear the following safety gear when dealing with the battery system. Installation personnel must meet the relevant requirements of international standards.

		
Insulated gloves	Safety goggles	Safety shoes

Figure 4-2 Safety gear list

4.5. Dimensions and Space Requirements

Rack requires adequate clearance for installation. Do not mount any other objects within the clearance space (Table 4-1), except those explicitly required by the installation (e.g. conduct, a junction box, or an electrical disconnect depending on local installation code).

- Rack dimensions

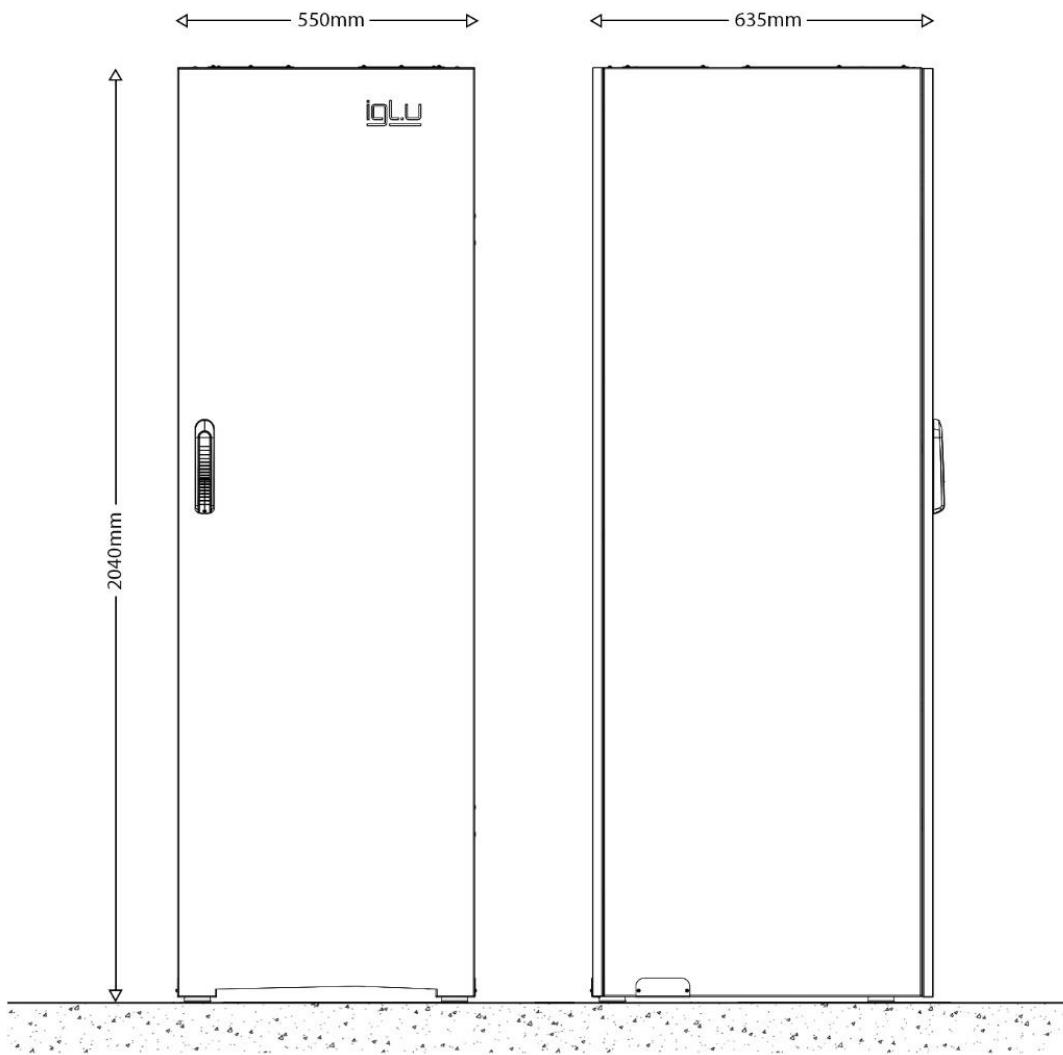


Figure 4-2 Rack dimensions.

- single rack space requirements

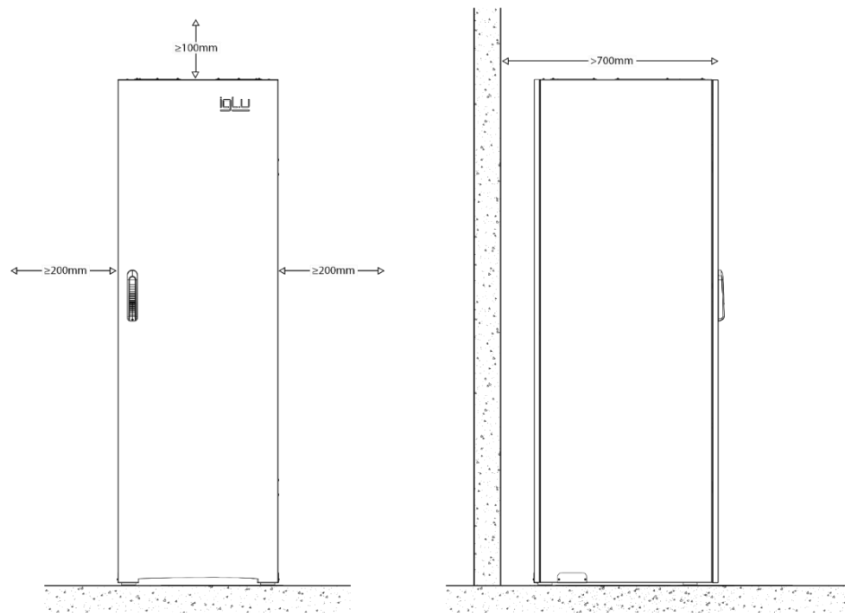


Figure 4-3 Space requirements.

- Multiple racks in parallel placement

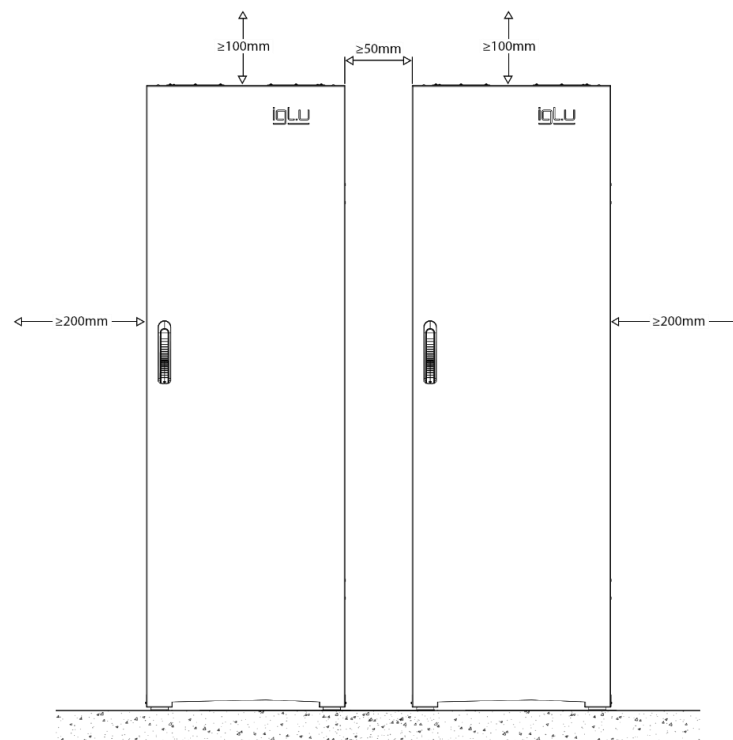


Figure 4-4 Parallel racks

Space Requirements	
Min. clearance from left side	≥200mm
Min. clearance from right side	≥200mm
Min. clearance above	≥100mm
Min. clearance between two sides in parallel	≥50mm
Min. clearance at the bottom	Floor installation
Max. slope	+/- 2 degree side-to-side +/- 5 degree front-to-back

Table 4-1 Space requirements for mounting the rack

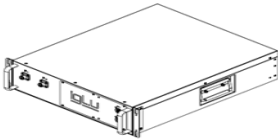
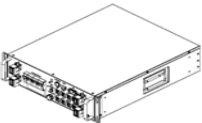
4.6. Unpacking inspection

- When the equipment arrives at the installation site, loading and unloading should be performed according to the rules and regulations, to prevent them from being exposed under sunlight. Battery should not be installed in direct sunlight.
- Before unpacking, the total number of packages shall be indicated according to the shipping list attached to each package, and the case shall be checked for good condition.
- In the process of unpacking, handle with care and protect the surface coating of the object.
- Open the package, the installation personnel should read the technical documents, verify the list, according to the configuration table and packing list, ensure objects are complete and intact, if the internal packing is damaged, should be examined and recorded in detail.

Packing list is as follows:

Note: The 12 battery packs are used as reference, and the shipment is subject to actual conditions

Item	Specification	Quantity	Figure	Remarks
Rack	KMAXD-12S	1 PCS		

Battery pack	Model: KMXH10051C20, 51.2Vdc 100Ah	1 PCS	12 set		According to customer selection of electricity configuration
	Series power cable	1 PCS			
	Series communication cable	1 PCS			
	Screws M4x12	4 PCS			
Controller	Model: HVC1000	1 PCS			
Controller accessories	Controller to battery communication cable,0.2M	1 PCS			
	Ground cable,1,0M	1 PCS			
	Controller positive to battery positive power cable,2.1M	1 PCS			
	Controller negative to battery negative power cable,0.165M	1PCS			
	Communication cable Battery to Battery,2.0M	1PCS			Optional for Dominant/Secondary units
	Screw, M6x16	4PCS			
	Screw, M4x12	4PCS			
	Positive Connector plastic cover	2PCS			
	Negative Connector plastic cover	2PCS			
	Wifi stick	1PCS			Optional

User Manual	A5, Color printing	1 PCS	/	
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Table 4-2 List of components

5. Controller ports description

5.1. Status indicator

- **Red color**- main circuit breaker is off
- **No color** – main DC contactor is off
- **Green color** – system is ready.

5.2. Start switch

- **Green color** – on state.
- **No color** – off state.

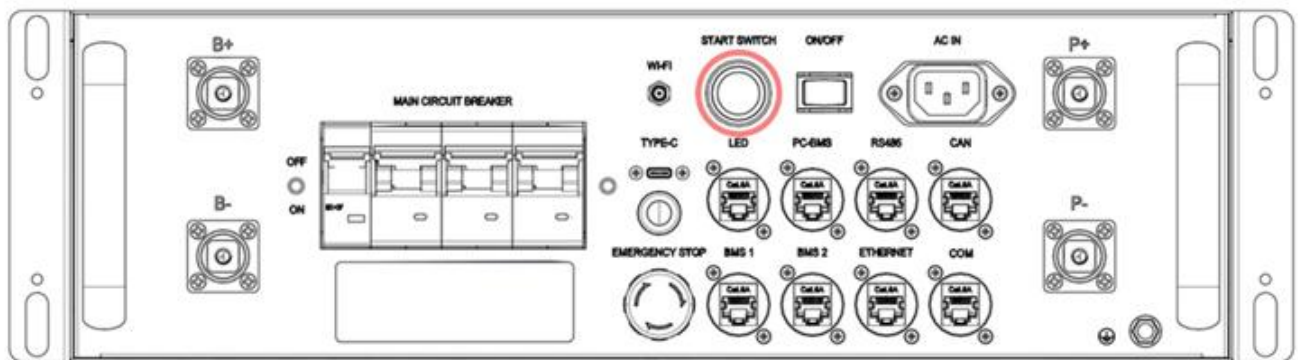
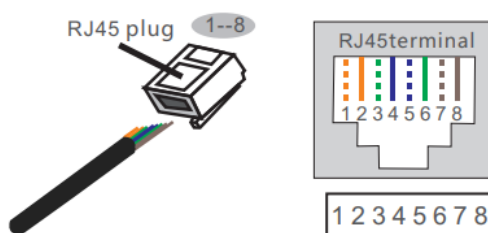


Figure 5-1 Main controller

5.3. Installer port descriptions



Correspondence between the cables and the stitches of plug

Pin 1: white and orange ; Pin 2: orange
 Pin 3: white and green; Pin 4: blue
 Pin 5: white and blue; Pin 6: green
 Pin 7: white and brown; Pin 8: brown

Figure 5-2 RJ45 pinout by color and order

- COM port description

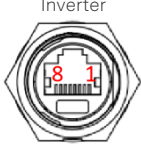
COM communication port		
	No.	Name
	1	CAN H
	2	CAN L
	3	GND
	4	PWR (24VDC)
	5	/
	6	/
	7	/
	8	/

Table 5-1 COM port connection

- CAN port description

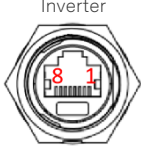
CAN communication port		
	No.	Name
	1	/
	2	/
	3	/
	4	CAN H
	5	CAN L
	6	GND
	7	/
	8	/

Table 5-2 CAN port connection

- RS485/MODBUS port description

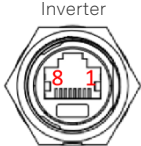
RS485/MODBUS communication port		
	No.	Name
	1	RS485_B
	2	RS485_A
	3	GND
	4	/
	5	/
	6	/
	7	/
	8	/

Table 5-3 RS485/MODBUS connection

- BMS1 & BMS2 port description

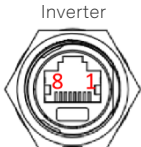
BMS1 & BMS2 communication port		
	No.	Name
	1	CAN H
	2	CAN L
	3	GND
	4	PWR (24VDC)
	5	/
	6	/
	7	/
	8	/

Table 5-4 BMS1 & BMS2 connection

- LED port description

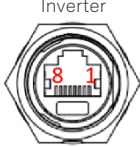
LED communication port		
	No.	Name
	1	5VDC +
	2	GND
	3	DIN
	4	/
	5	/
	6	/
	7	/
	8	/

Table 5-5 LED connection

5.4. Service port descriptions.

Note: these ports are designated only for service purposes. It can be used by IGLU TECH representatives.

- PC-BMS communication port,

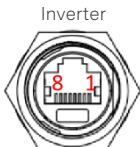
PC-BMS communication port		
	No.	Name
	1	/
	2	/
	3	/
	4	/
	5	USB GND
	6	USB DATA -
	7	USB DATA +
	8	USB PWR +5V

Table 5-6 PC-BMS connection

- Type – C port.

Note: This port is used for programing SBC. It can only be used by IGLU TECH representatives.

6. Installation Steps

Step 1	
Installation preparation	1. The environment meets all technical requirements
	2. Prepare equipment and tools for installation
	3. Confirm that the DC breaker is in the OFF state to ensure that it is no live operation
	4. Choose an appropriate place to set a rack
Step 2	
Mechanical installation	1. Determine KADLU MAX placement
	2. Place the rack
	3. Install battery pack by pre-defined order
	4. Install Controller
	5. Fix battery and control box
	6. Mark the System configuration
Step 3	
Connecting battery and controller	1. Connect the ground cable to ground the rack
	2. Connect the communication cable between the battery packs and between the first battery and the control box
	3. Connect the power cable between the first and last battery packs and control box
	4. Connect the power cable between the battery packs
Step 4	
Battery system self-test	1. Switch on the DC breaker of the Controller
	2. Switch on the "POWER" switch
	3. Press the "POWER" button
	4. Check the system output voltage
	5. Shut down the battery system
Step 5	
Connecting inverter	1. Connect output Power Cable to the inverter
	2. Connect the output communication cable to the inverter

Table 6-1 Installation steps

6.1. Battery pack and controller installation

- Install all the KMXH1051C20 packs and HVC1000 controller on the rack from bottom to top, following the 012~001 sequence.

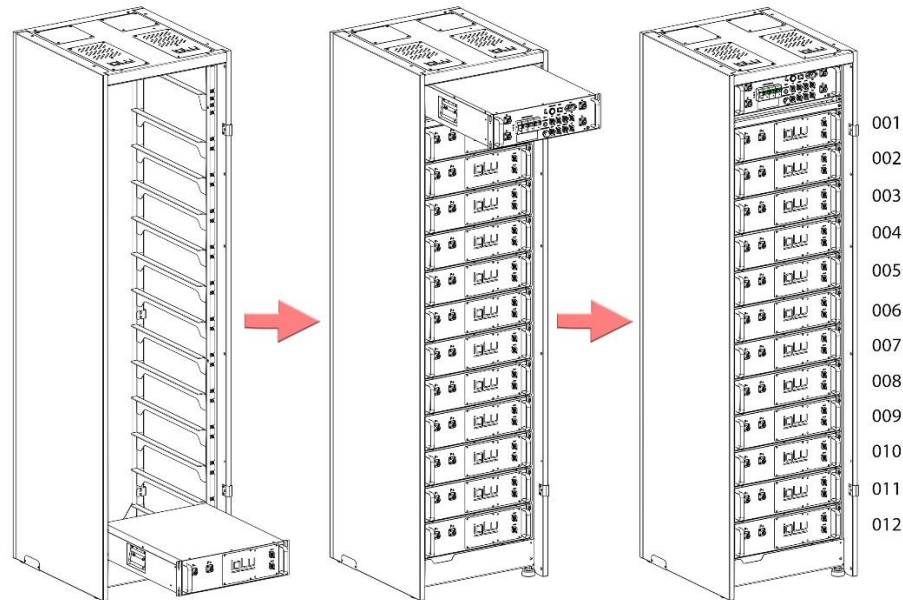


Figure 6-1 Battery system pack mounting order

Warning: Battery pack ΔV of Single rack should be less than 0.15V at first installation.

Warning: Single battery pack is 45kg. It's necessary to arrange more than 1 person to install battery module if without lifting equipment, more than 2 people install a battery pack in higher position.

- Fix the connection between the battery pack and the rack, and between controller and rack. To do this, insert (M4x12) screws through the holes on them, using a screwdriver and tighten them.

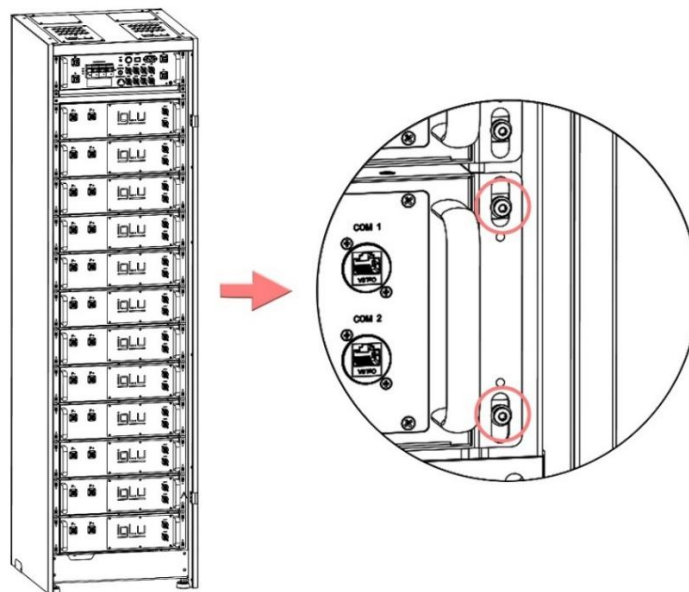


Figure 6-2 Mounting points for battery pack

7. Connecting battery and controller

7.1. Connect the ground cable to the ground contacts on the rack

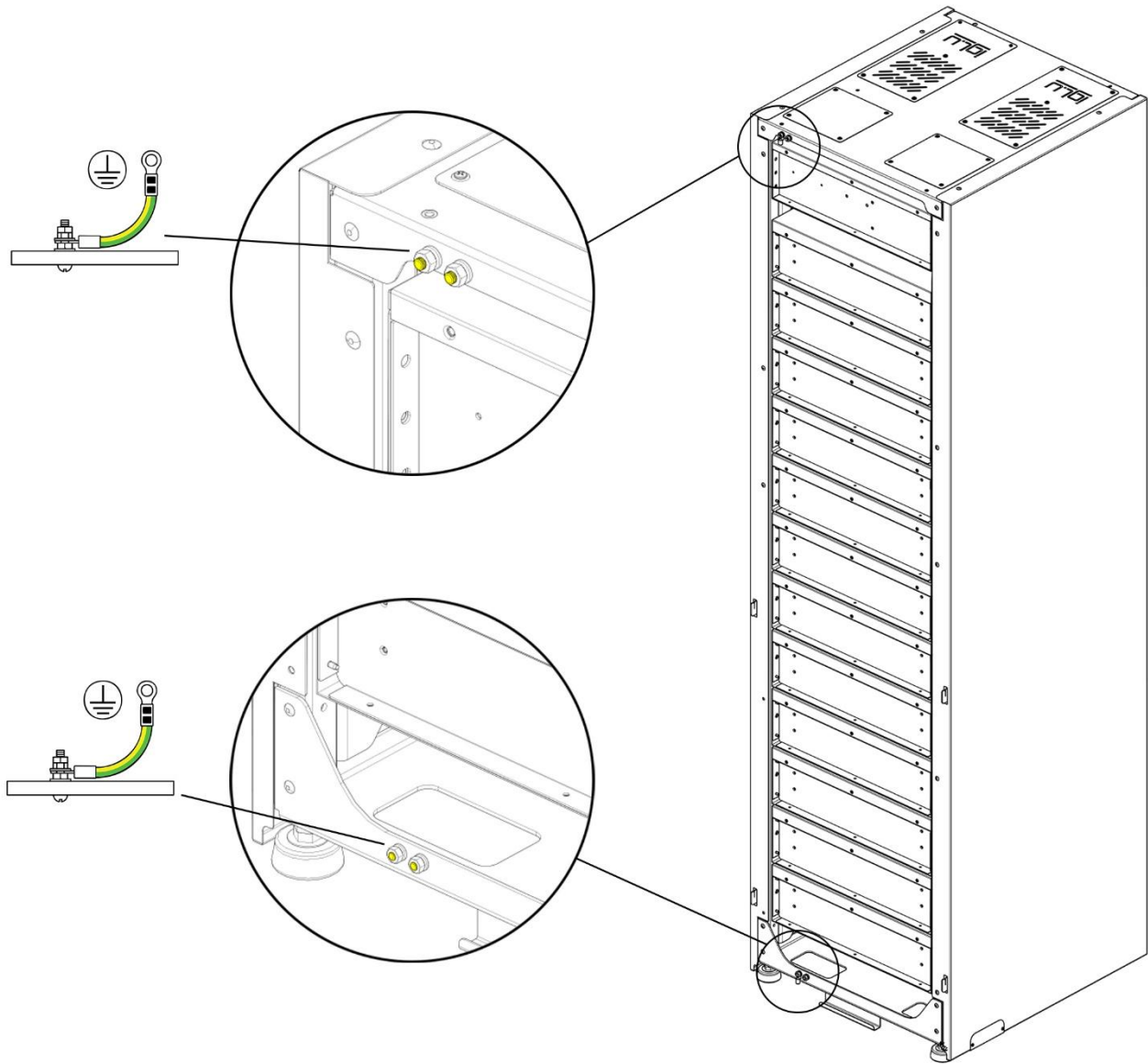


Figure 7-1 Ground cable connection points

7.2. Battery system communication cable connection principle

- Connect the communication ports COM1 and COM2 between the batteries in series with series communication cable in sequence.
- Connect the COM1 port of the first battery (001) to the COM RJ45 port of the controller using the controller to battery communication cable.

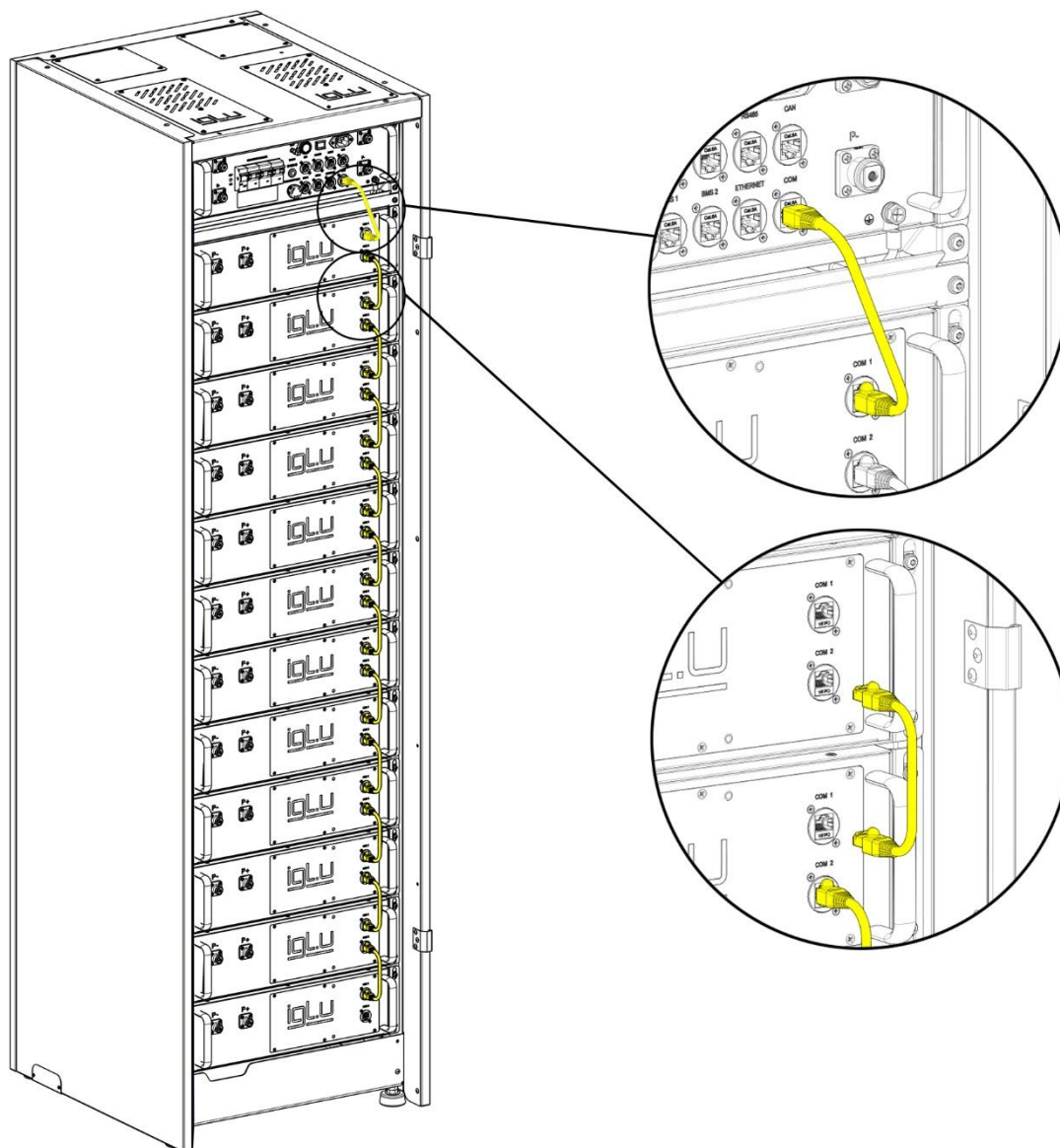


Figure 7-2 Battery system communication connection

7.3. Power cable connection principle

- Connect the controller negative to battery negative power cable.
- Connect one end of the negative power cable to the B- terminal of the controller using the M6 screw and insert the other end to the negative terminal of the first battery. Then put on the negative connector plastic cover.
- Connect the controller positive to battery positive power cable.
- Connect one end of the positive power cable to the B+ terminal of the controller using the M6 screw and insert the other end to the positive terminal of the last battery. Then put on positive connector plastic cover.
- Connect the positive and negative terminals between batteries with a series power cable.

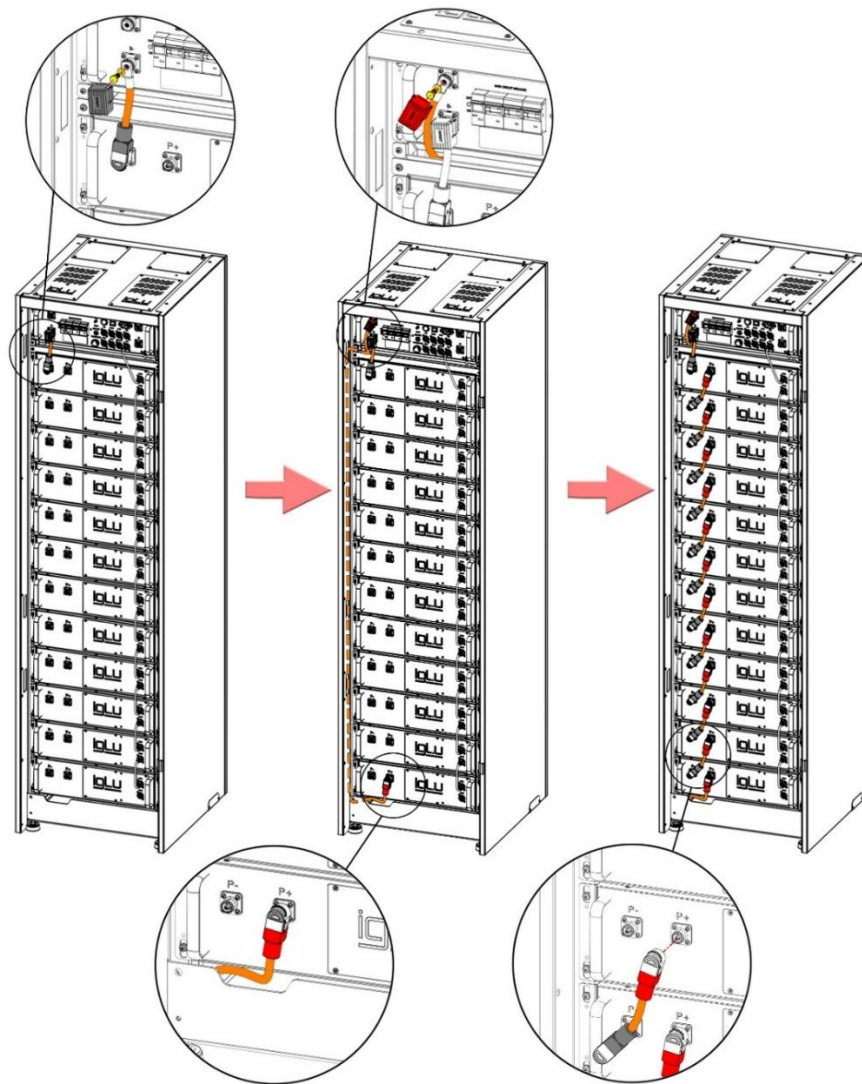
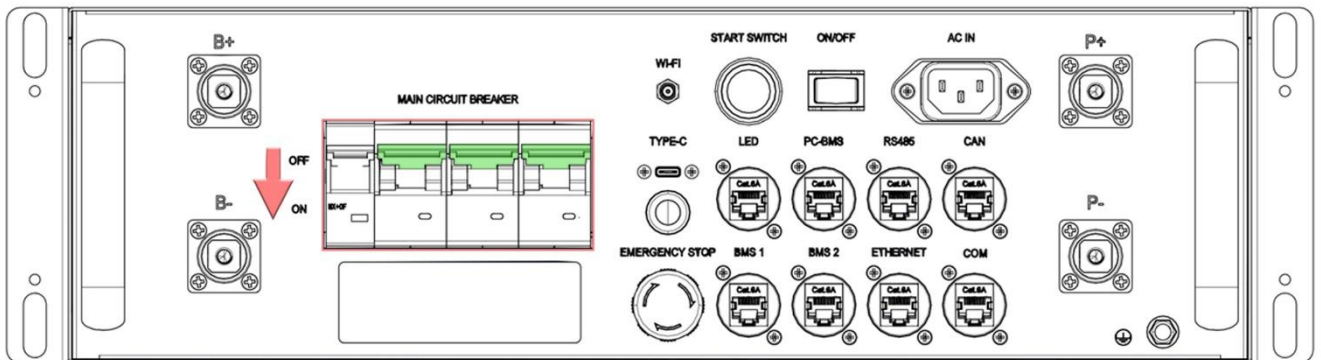


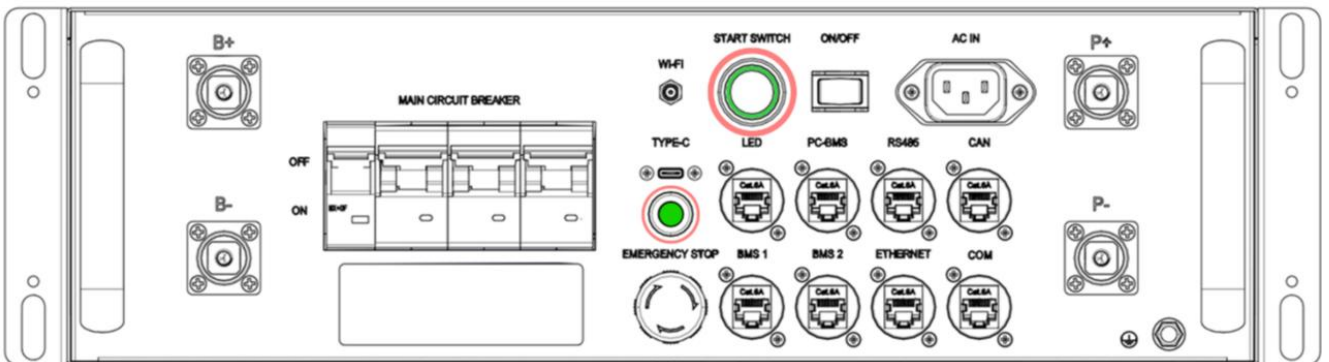
Figure 7-3 Power cable connection principle.

7.4. Battery system startup

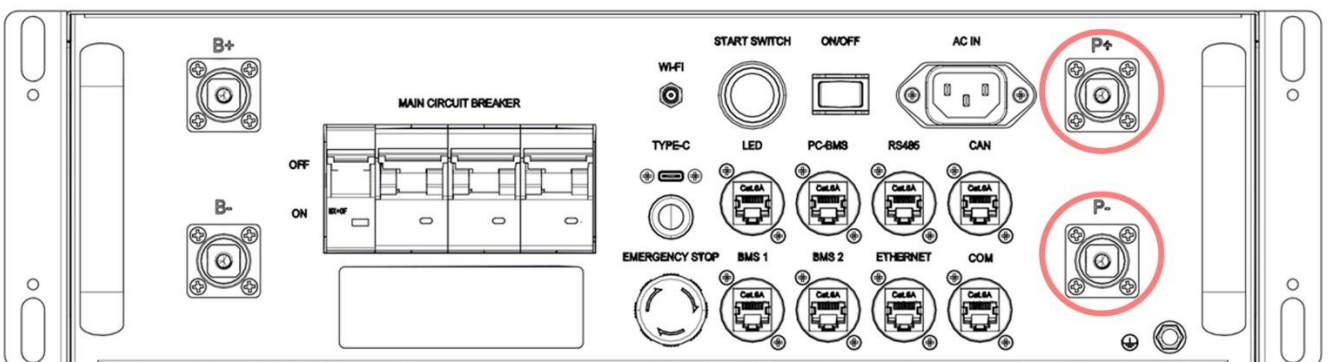
7.4.1. Turn on the main breaker.



7.4.2. Push on the start switch, it should be light green color. If everything is okay, the status indicator will be light green too.



7.4.3. Check the output voltage on P+ and P- contacts, using multimeter.



Note: The output voltage should conform to the voltage range parameter of KADLU MAX in Section 3-1 "Battery system specifications.". Otherwise, the system will not be working properly.

8. Connecting inverter

8.1. Inverter connection with battery system

Danger:

Please confirm that the battery system is in the off state before connecting. It could cause electric shock to personnel and damage to the inverter, if connect the battery directly without power off.

Connect from inverter positive and negative power cables to DC circuit breakers.

DC breaker 750VDC $A > n \text{ kWh} \times 1A$ (n is battery system capacity) (Circuit breaker model and specification, please check with experienced personnel)

Connect power cables from circuit breaker to P+ terminal on battery system control box. Negative power cable to P- terminal on battery system control box. Using non isolated cable terminal SC 25-6M. Then put on the protective cover. Be careful not to reverse connect.

Connect communication cables between inverter and battery system.

- CAN communication cable for BMS control. Please refer to (Table 5-2 CAN port connection)
- RS485/Modbus communication cable. Please refer to (Table 5-3 RS485/MODBUS connection)

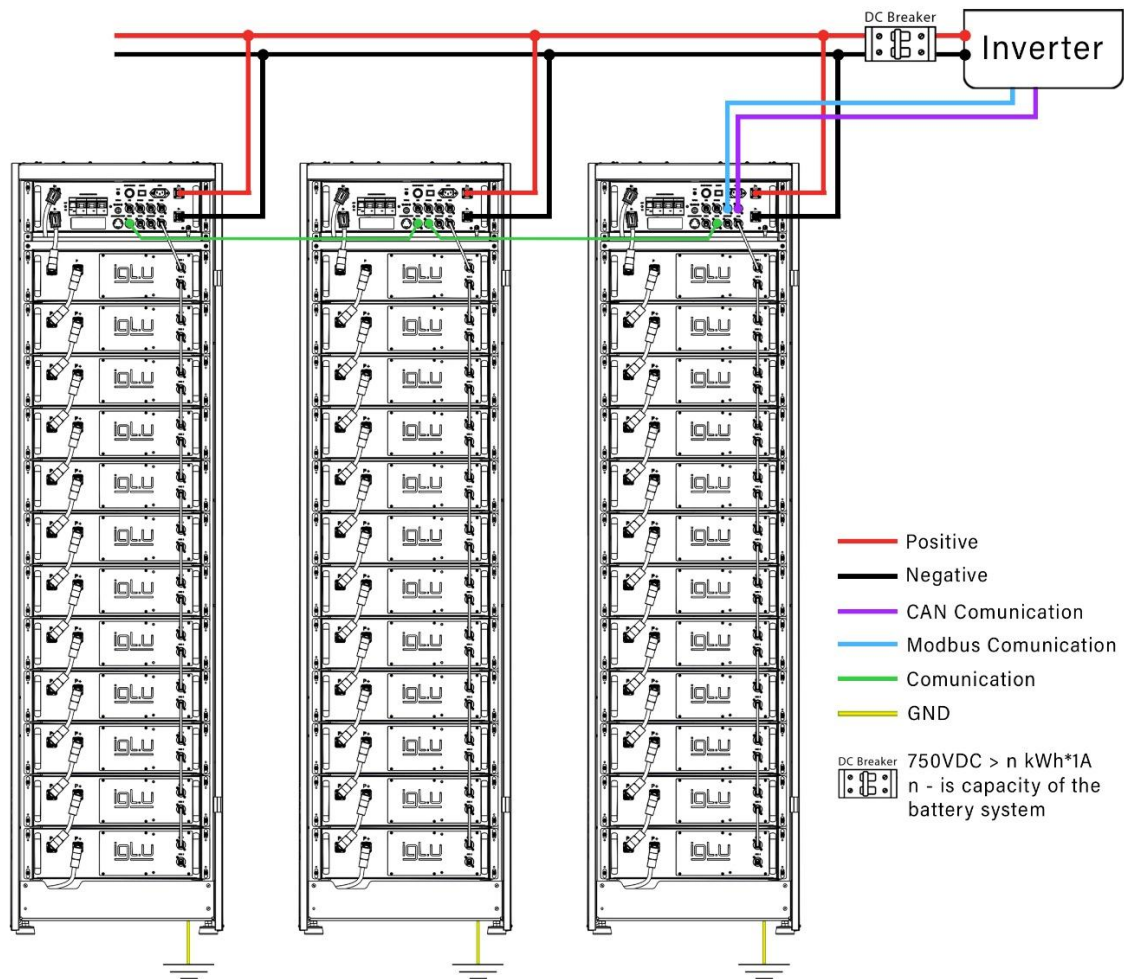


Figure 8-1 Inverter parallel connection diagram

9. Technical support

9.1. Trouble shooting

Danger: The KADLU MAX battery system is a high voltage DC system, operated by professional and authorized people only.

Danger: Before checking the failure, you must check all the cables connection. Switches are right or not, and if the battery system can be woken up normally.

9.2. Maintenance

KADLU MAX does not require pre-scheduled preventative maintenance. The only maintenance required by an owner is to keep the unit free and clear of debris, especially around the air intake and exhaust.

To clean KADLU MAX, use soft, lint-free cloth. If needed, the cloth can be dampened with mild soap and water only. Do not use cleaning solvents to clean KADLU MAX or expose units to flammable or harsh chemicals or vapors.

9.3. Replacement of main component

Danger: The KADLU MAX battery system is a high voltage DC system, only can be operated by professional and authorized person.

10. Controller replacement

- Turn off the inverter. Turn off the DC circuit breaker. Turn off the start switch. Turn off the main breaker. Disconnect Power cables between the battery packs/module. Ensure that the Negative terminal and Positive terminal have no power.
- Disconnect power cables from the controller. Disconnect all communication cables.
- Remove the four screws and connect cables to the Controller, then remove the Controller from the system.
- Change with new Controller. Then fix four screws.
- Make sure that all power cables are disconnected from the inverter and battery packs. First connect B+ and B- connectors to the controller negative and positive terminals. Connect P+ and P- connectors to the negative and positive terminals.
- Connect all communication cables. Between the inverter and battery controller. Between the battery packs and battery controller.
- Connect power cables between the battery packs.

Note: in case of the controller replacement, BMS system will be needed to be configured from the beginning by IGLU representative.

11. Battery Maintenance

Danger: The maintenance of battery only can be operated by professional and authorized person.

Danger: you need to turn off the battery system first when you do some maintenance items.

11.1. Voltage Inspection

[Periodical Maintenance] Check the voltage of battery system through the monitor software. Check whether the system voltage is normal or not. For example: Check Single cell's voltage is out of a rated range or not.

11.2.SOC Inspection

[Periodical Maintenance] Check the SOC of battery system through the monitor software. Check if the SOC of battery string is normal or not.

11.3.Cables Inspection

[Periodical Maintenance] Visual inspect all the cables of battery system. Check if the cables have broken, aging, getting loose or not.

11.4. Balancing

[Periodical Maintenance] The battery system will become unbalanced if have not been charged fully for a long time. Solution: Perform the balancing maintenance (fully charged) every 3 months. Generally, this maintenance progress needs to be completed when external devices such as monitor software and battery, and inverter are in good communication.

11.5. Output Relay Inspection:

[Periodical Maintenance] Under low load condition (low current), control the output relay OFF and ON to hear the relay has click voice, that's mean this relay can off and on normally.

12. Storage Recommendations

It is recommended that batteries not be stored for a long period. They should be used soon after being deployed onsite. The batteries should be handled according to the following requirements. The battery system must be recharged if the storage time is ≥ 6 months.

Battery system charging step :

- (1) Standing for 1 minute.
- (2) Constant current and voltage charging cut off voltage: 54.4V, current: 0.5C (50A), cutoff current: 0.05C.
- (3) End

If over-discharged, the battery will behave as follows:

- The battery may not start-up when turning the power switch to the ON position
- The battery output voltage may be less than 40V when turned on
- All LED indicators are off, and the battery cannot communicate to the upper computer via RS485/USB converter.
- Please contact the technical contact where you purchased the battery immediately once the above abnormal issues occur.
- Dispose of deformed, damaged, or leaking batteries directly irrespective of how long they have been stored.
- The storage duration starts from the latest charge time labeled on the battery package. If a battery is qualified after recharge, update the latest charge time and the next recharge time (next recharge time = latest charge time + recharge interval) on the label.
- The maximum power storage period of a lithium battery is three years.
- If a lithium battery is stored for a long time, capacity loss may occur. After a lithium battery is stored for 12 months in the recommended storage temperature, the irreversible capacity loss rate is 3%-10%. If customers perform the discharge test according to the specifications, they may fail to pass the test if the storage capacity of the battery is not 100% of the rated capacity.

13. Shipment

Battery pack will pre-charge 50%-60% SOC or according to customer requirement before shipment. The remaining capacity of battery cells is determined by the storage time and condition after shipment.

- The battery modules meet the UN38.3 certificate standard.
- Special rules for the carriage of goods on the road and the current dangerous goods law, specifically ADR (European Convention on the International Carriage of Dangerous Goods by Road), as amended, must be observed.

14. Disclaimer

- Please note that IGLU is not responsible for any additions or modifications made to this user manual without prior notice to customers.
- IGLU also assumes no liability for the safety or longevity of the KADLU MAX Home Battery when connected to third-party platforms.
- In case of long power outage do not let KADLU MAX battery drain completely. Disconnect the battery with at least 5% of charge.
- Please note that IGLU is not responsible for any miscommunication between KADLU MAX battery and inverter if you decide to update inverter software. Do not manually update inverters software.



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