



KADLU LV PACK

KLVBH10051A10 Lithium Battery System
Installation Manual
Ver 1.0

For the latest Kadlu LV installation documents in all supported languages, visit: www.iglutech.eu

Warning

Read this entire document before installing or using Power Lite batteries. 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 the Kadlu LV batteries or attached power conversion systems, potentially rendering them inoperable.

PRODUCT SPECIFICATIONS

All specifications and descriptions contained in this document are verified to be accurate at the time of printing. However, because continuous improvement is a goal at IGLU TECH, we reserve the right to make product modifications at any time.

The images provided in this document are for demonstration purposes only. Depending on the product version and market region, details may appear slightly different.

ERRORS OR OMISSIONS

To communicate any inaccuracies or omissions in this manual, please send an email to: Help@iglutech.eu



ELECTRONIC DEVICE: DO NOT THROW AWAY

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

MADE IN CHINA

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IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE IMPORTANT SAFETY INSTRUCTIONS

This manual contains important instructions for the Kadlu LV batteries that must be followed during installation and maintenance of the system.

Power Lite installation and service require knowledge of high voltage electricity and should only be performed by IGLU TECH Certified Installers. IGLU TECH assumes no liability for injury or property damage due to repairs attempted by unqualified individuals or a failure to properly follow these instructions. These warnings and cautions must be followed when using Kadlu LV.

Symbols Used

These symbols indicate important safety information in this manual 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: indicates an important step or tip that leads to the best results but is not safety-related or damaging.



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



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



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



BIDIRECTIONAL TERMINAL: 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 LV. 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 LV, potentially rendering it inoperable.
- ⚠ WARNING:** A battery can present a risk of electrical shock, fire, or explosion from vented gases. Observe proper precautions.
- ⚠ WARNING:** Kadlu LV installation must be carried out only by IGLU TECH Certified Installers who have been trained properly.
- ⚠ WARNING:** Kadlu LV is heavy. Use of Lift equipment is recommended. **WARNING:** Use Kadlu LV only as directed.
- ⚠ WARNING:** Do not use Kadlu LV 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 the Kadlu LV battery 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 LV. Kadlu LV and its components are not user serviceable. Battery cells in Kadlu LV are replaceable. Contact the IGLU TECH Certified Installer who installed the system for any repairs.
- ⚠ WARNING:** To protect Kadlu LV and its components from damage when transporting, handle with care. Do not impact, pull, drag, or step on Kadlu LV. Do not subject Kadlu LV to any strong force. To help prevent damage, leave the Kadlu LV battery in its shipping packaging until it is ready to be installed.
- ⚠ WARNING:** Do not insert foreign objects into any part of Kadlu LV.
- ⚠ WARNING:** Do not expose Kadlu LV or its components to direct flame. **WARNING:** Do not install Kadlu LV near heating equipment.
- ⚠ WARNING:** Do not immerse Kadlu LV or its components in water or other fluids.
- ⚠ CAUTION:** Do not use solvents to clean Kadlu LV or expose Kadlu LV 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 LV in a storage condition for more than one (1) month, without placing Kadlu LV into a storage condition in accordance with IGLU TECH's storage specifications.
- ⚠ CAUTION:** Do not paint any part of Kadlu LV, including any internal or external components such as the exterior shell or casing.
- ⚠ CAUTION:** Do not connect Kadlu LV directly to photovoltaic (PV) solar wiring.
- ⚠ CAUTION:** When installing Kadlu LV in a garage or near vehicles, keep it out of the driving path. If possible, install Kadlu LV on a side wall and/or above the height of vehicle bumpers.

Environmental Conditions

- ⚠ WARNING:** Install Kadlu LV in a location that prevents damage from flooding.
- ⚠ WARNING:** Operating or storing Kadlu LV in temperatures outside its specified range might cause damage to Kadlu LV.
- ⚠ WARNING:** Do not expose Kadlu LV to an ambient temperature above 40 °C or below -20°C.
- ⚠ CAUTION:** Ensure that no water sources are above or near Kadlu LV, including downspouts, sprinklers, or faucets.
- ⚠ CAUTION:** Ensure that snow does not accumulate around Kadlu LV.

Revision History:

Date	Revision	Description	Owner
2024-12-12	V1.0	Initial Release	Dovydas

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1. Introduction

Thank you for choosing an IGLU TECH energy storage system.

The energy storage module is comprised of lithium-ion rechargeable battery cells with a total of 5.12 kWh capacity, and the controller enables a control of multiple modules.

This manual provides information regarding safety precautions to prevent possible accidents and how to use the product.

Please read this manual carefully before use for safety and keep this manual handy for reference.

1.1 Main Features

Some main features of this product are:

- Long Life Span

The battery can be expected to remain serviceable for more than 10 years, considering that it is charged and discharged once in a day at room temperature (25 °C).

- Long Life Span

Olivine-type lithium iron phosphate batteries with excellent thermal stability and storage characteristics are used in this product. The module also incorporates a self-monitoring function for the detection of any abnormalities in energy storage.

- High Capability

Multiple energy storage modules can be connected in parallel, and the capacity can be customized according to the intended use.

1.2 Safety Precautions

IGLU TECH products are designed with full consideration of safety. However, all electrical appliances can be dangerous if used inappropriately. This can cause a fire or electric shock that leads to severe injury or death. For your protection, please read these safety precautions thoroughly.

Definitions of Symbols:



WARNING

If you ignore these instructions, it can lead to a fire or electric shock causing serious injury or death.



Caution

If you ignore these instructions, it can lead to electric shock or other accidents causing injury or harm to nearby products.



Warning

If you do not follow the instructions below, it can lead to a fire or electric shock causing serious injury or death.

Instruction

- Use only designated cables. A non-designated cable use can cause electric shock. Be sure to use the cables designated in this manual.
- Connect a power cable and communication cable properly.
 1. If you connect a power cable improperly, contact resistance will increase and it may damage the parts or cause a fire.
 2. Insert the connector of the communication cable all the way in. If it is connected improperly, the system may be deactivated.
- Wear insulating gloves and protective glasses during installation and connection of the set to prevent electric shock or other injuries.
- Install it in a stable place.
 1. If you install the unit in an unstable place, such as an unstable rack, it may fall and cause injury.
 2. Do not install it upside down or sideways. The set may drop and cause injury.
- Use the designated packaging materials for transportation. If you do not use the designated packaging materials, the packaging material may be damaged by vibration during transportation, and it may cause injury.
- Install based on the designated way of installation. If you do not follow the designated way of installation, the set may drop due to an insufficiently stable mounting method and can cause injury.
- If using a rack, fix it to the floor. If a rack falls by the weight of the batteries, it may cause serious injury or death.
- Install other equipment or accessories properly. If you inadequately install other equipment or accessories sold separately, they may fall and cause injury. When you install any of the following accessories, install it properly based on this manual.
- Route cables properly. If your foot is caught by a cable, the unit may fall and cause injury. Connect and install cables carefully.

Power off at a malfunction. If any malfunction happens, please turn off the power switch to shut down the battery and remove the power connectors from their terminals.

Follow related laws or ordinances for disposal. When you dispose of this product, do not dispose it as general or household waste.

Disposal with specified method. Contact technical vendor when you discard. Do not disassemble, destroy, or dispose of it in fire.



Danger

If liquid is leaking from the module, observe the following measures.

not allow the liquid to come in contact with skin or clothing.

1. If liquid comes in contact with skin or clothing, wash thoroughly with plenty of water.
2. If liquid gets into the eyes or mouth, flush immediately with clean water, and immediately seek medical treatment.
3. Contact customer service.

Prohibited

- Do not damage cables. If you damage a cable, it can cause a fire or electric shock.
 1. Do not modify or damage a cable.
 2. Do not place heavy objects on a cable or pull the cable.
 3. Do not place a heater near the cable, which may result in the cable overheating.
 4. Do not tuck down a cable when installing it in a rack.
 5. When you unplug a communication cable, be sure to hold the plug and pull it.
- Do not install it in a tight closed area. If the module is installed in a closed area with no air-conditioning, heat may build up inside the module and cause a fire.
- Do not place in direct sunlight or near a heater. Doing so can cause deformation, a breakdown, or a fire. Pay extra attention when you place the unit near windows.
- Do not install the unit where the air is contaminated with excessive oil smoke, steam, moisture, or dust. If the unit is installed in such a place, it may cause a fire or electric shock.
- Do not cover the vent. If the vent is covered, heat may build up inside the module and cause a fire.
 1. Do not put the unit in a poorly ventilated and narrow space.
 2. Remove any dust buildup in the vent.
 3. Do not place the set upside down or sideways.
 4. Do not place it on a shag carpet or bed.
 5. Do not cover the vent with a cloth, etc.
- Do not put anything on, stand or sit on the unit. If you put anything on the unit, it may fall and cause injury. Also, if it is used as a stool, for example, it may topple or crush and cause injury.

Keep Dry

- 1. Do not allow water and/or foreign objects inside the module
- 2. Water or foreign objects inside the module can cause a fire or electric shock.
- 3. Should this occur, however, turn off the “POWER ON/OFF” switch on the controller to shut down, and remove the power connector from the POWER CONNECTOR terminal of the module.
- Do not touch with wet hands If you touch the unit with wet hands, it may cause electric shock.

Do not disassemble

- Do not open the set unnecessarily. Opening and modifying the unit can cause a fire or electric shock.

1.3 Precautions for Use

In the case of a failure, or any of the abnormalities shown below, turn off the Unit and contact IGLU TECH customer services.

1. Abnormal sound, smell or smoke.
 2. Water or particles inside the product.
 3. The product is dropped, or the cabinet is damaged.
- Charge and discharge the product according to the control signals of the controller.
Replace the module with a new one if discharge time at room temperature is noticeably short, even from fully charged.



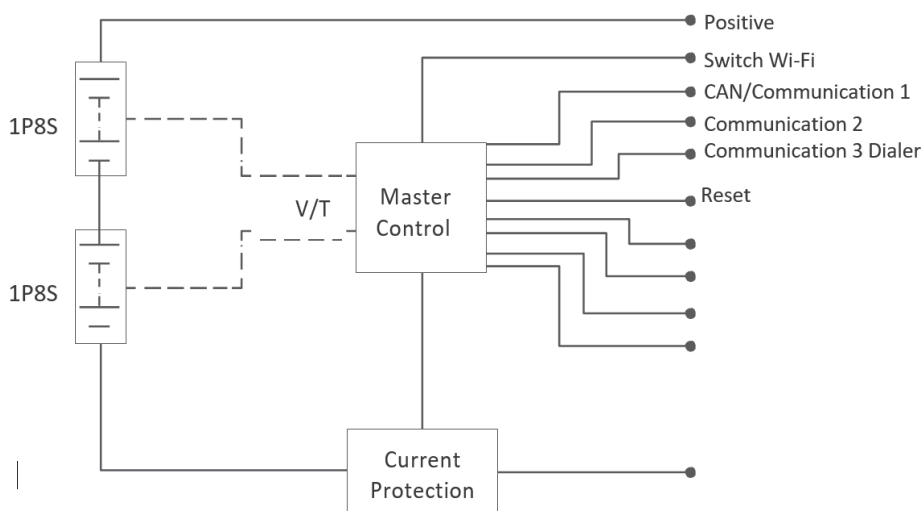
DONOT

- Disassemble.
- Modify the product (modification may destroy the protection functions inside, or cause abnormal charge / discharge, heat generation, gas eruption, or fire).
- Touch the power output terminals except for installation.
- Throw the product into fire or heat, or otherwise expose the unit to heat or open flames.
- Submerge the product in liquid or allow it to become wet.
- Apply strong shock, crush, or drop.
- Use for medical purposes.
- Place any foreign objects inside.
- Connect any devices that exceed the operating voltage or current range.
- Unplug the power connector from terminal while power is on.
- Do not hammer a nail or punch a hole in the product.

2. Specification and Functions

2.1 System Introduction

The Kadlu LV KLVH10051A10 Energy Storage System consists of 2 sets of 1P8S battery modules manufactured by IGLU TECH. In each battery module there are 8 pcs. of 100 Ah LFP (lithium iron phosphate) cells originating from CATL. The system also provides standard communication ports, i.e. CAN and RS485, to monitor the working status and communicate with the upper machine as well as the connected Power Conversion System (PCS). The system schematic drawing is presented in Figure 1.



2.2. Dimensions

KLVH10051A10 dimensions are presented in Figure 2.

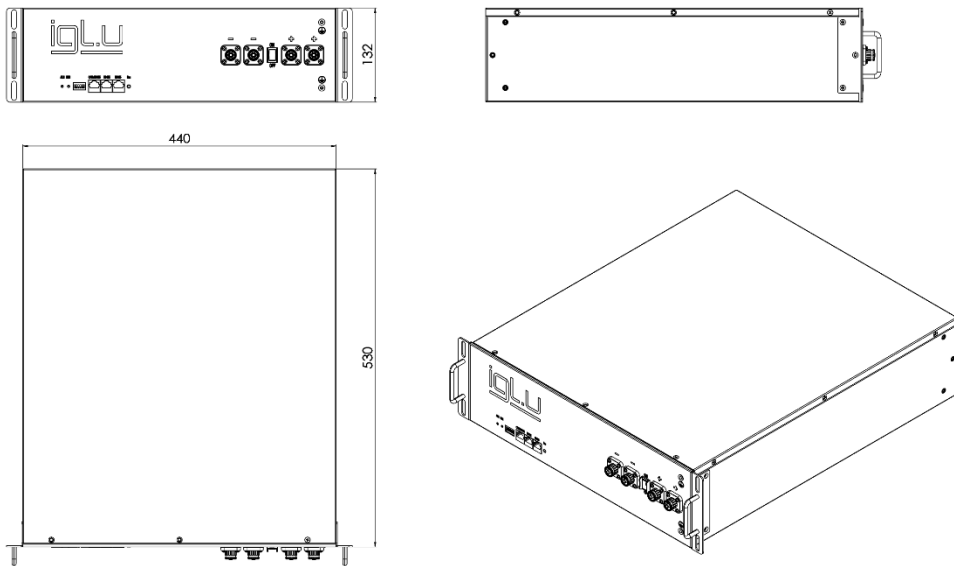


Figure 2 - KLVH10051A10 Dimensions (mm)

2.3 Specifications

KLVH10051A10 dimensions are presented in Figure 2

Specifications of KLVH10051A10	
Cell Type	LiFePO4 (LFP)
Rated Voltage (V)	51.2
Rated Capacity (Ah)	100
Rated Energy (kWh)	5.12
Usable Battery Capacity (Ah)	100
Usable Battery Energy (kWh)	5.12
Max. Battery Depth of Discharge	100%
Battery Max. Charge/Discharge Power (kW)	2.56/5.12
Cell Configuration	1P16S

Working Voltage Range(V)	44.8~57.6
Standard Charge Current(A)	50
Max. Continuous Charge Current (A)	50
Standard Discharge Current (A)	50
Max Continuous Discharge Current (A)	100 for boost version at >60% SoC 50 (0.5C) for normal version
Peak Current (A)	100
Rated DC Power (kW)	2.56
Short-circuit current(A)	210
Standard Charging Method	0.5C CC to 57.6V; CV at 57.6V until current is 0.05C
Working Temperature(°C)	Charging: 0~55; Discharging: -20~55
Working Relative Humidity	20%~80%
Storage Temperature(°C)	-20~50
Self-Discharge Rate	≤5% (25 °C, 50% SoC) per Month
SoC at end of product line	50%
Insulation Resistance(MQ)	>100
Voltage Difference between Cells (mV)	≤20
Inner Resistance of single Cell (mQ)	0.34±0.05 (new cell, 30~40% SoC)
IP-Rating	IP20
Recommended Usage	Indoor
Net Weight (kg)	Approx. 45
Dimension (mm/inch)	440x530x132 /17.3"x20.9"x5.2" (not including connector, handles and other parts)

2.4 Installing Instructions

Instructions for installing the battery must be followed (if in doubt refer to your retailer or IGLU TECH support).

2.4.1 Definition of Internal Sampling Connector CON1

PIN	Wire No.	Signal	Wiresize(mm2)	Remarks
CON1-1	T1+	Signal	0.3	Temp. #1+
CON1-2	T1-	Signal	0.3	Temp. #1-
CON1-3	B0	Signal	0.3	Cell #1-
CON1-4	B1+	Signal	0.3	Cell #1+
CON1-5	B2+	Signal	0.3	Cell #2+
CON1-6	B3+	Signal	0.3	Cell #3+
CON1-7	B4+	Signal	0.3	Cell #4+

2.4.2 Definition of Internal Sampling Connector CON2

PIN	Wire No.	Signal	Wiresize(mm2)	Remarks
CON2-1	T2+	Signal	0.3	Temp. #2+
CON2-2	T2-	Signal	0.3	Temp. #2-
CON2-3	B5+	Signal	0.3	Cell #5+
CON2-4	B6+	Signal	0.3	Cell #6+
CON2-5	B7+	Signal	0.3	Cell #7+
CON2-6	B8+	Signal	0.3	Cell #8+

2.4.3 Definition of Internal Sampling Connector CON3

PIN	Wire No.	Signal	Wiresize(mm2)	Remarks
CON3-1	T3-	Signal	0.3	Temp. #3-
CON3-2	T3+	Signal	0.3	Temp. #3+
CON3-3	NC	NC	NC	NC
CON3-4	B9+	Signal	0.3	Cell #9+
CON3-5	B10+	Signal	0.3	Cell #10+
CON3-6	B11+	Signal	0.3	Cell #11+
CON3-7	B12+	Signal	0.3	Cell #12+

2.4.4 Definition of Internal Sampling Connector CON4

PIN	Wire No.	Signal	Wiresize(mm2)	Remarks
CON4-1	T4-	Signal	0.3	Temp. #4-
CON4-2	T4+	Signal	0.3	Temp. #4+
CON4-3	B13+	Signal	0.3	Cell #13+
CON4-4	B14+	Signal	0.3	Cell #14+
CON4-5	B15+	Signal	0.3	Cell #15+
CON4-6	B16+	Signal	0.3	Cell #16+

2.4.5 Front View

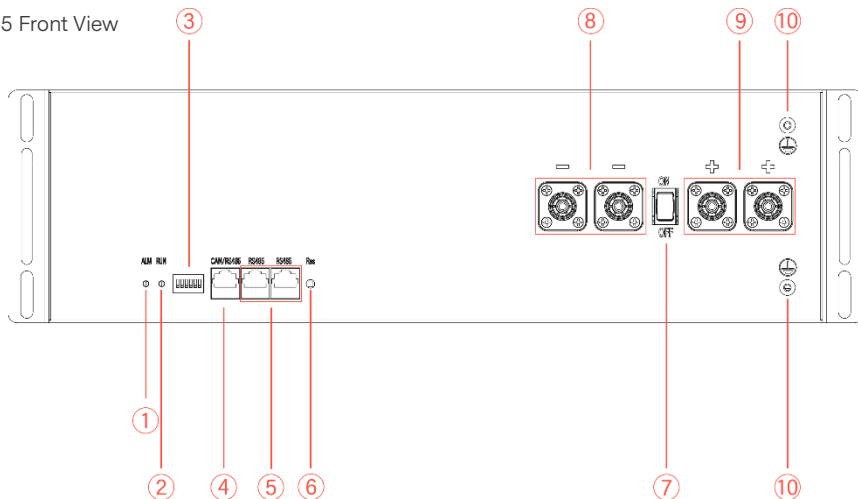
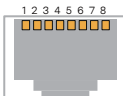
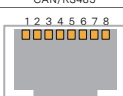


Figure 3 – Front View of KLVH10051A10

Item	Name	Model	Remarks
1	Alarm LED		
2	RUN LED		
3	Dialer		
4	Communication port	RJ45	CAN to PCS, RS485 Internal Connection
5	Communication port *2	RJ45	RS485 InternalConnection
6	Reset		Wake up the system from malfunction status
7	Power On/Off Switch		
8	Port Negative x2	PSR6XAB	Black 5.7, 25 mm2
9	Port Positive x2	PSR6XBB	Orange 5.7, 25mm2
10	GND	M6	Yellow-Green, 10 AWG

2.4.6 Port CAN/RS485 and RS485

View	Item	Description	1	2	3	4	5	6	7	8
 CAN/RS485	4	INVERTER	-	RS485-A	RS485-B	CAN-H	CAN-L	-	-	GND
 RS485	5	LINK IN	-	BMS- RS485-A	BMS- RS485-B	-	-	-	-	GND

3. Installation

3.1 DC Cable Requirements

Some main features of this product are:

Size	Outer Diameter	Max. Voltage	Max. Current
21-33 mm ²	10-12 mm	1000 V	120 A



Caution

DC cable must be a multicore wire.

3.2 DC Cable



Danger

- Turn off system before doing electrical connection
- Ensure all the cables are in electrical safe condition

3.2.1 Single Unit

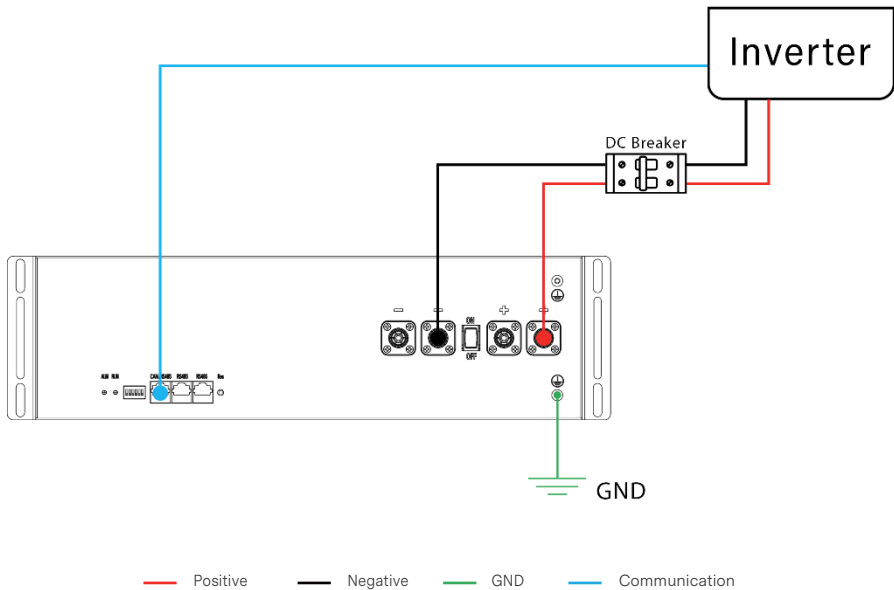


Figure 5 - Single Unit Connection

(If connected with a DC breaker (recommended), follow the Technical Parameters: 125A/2P/DC125V)

3.2.2 Multi-Units in Parallel (4 units as an example)

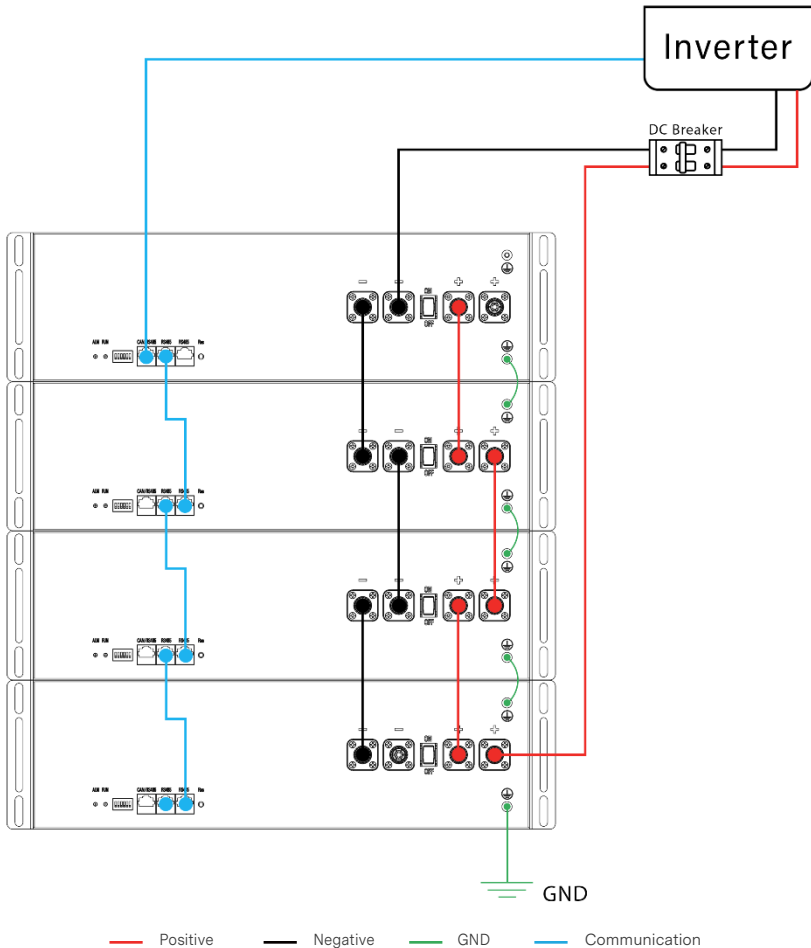


Figure 6 - Multi-Units Connection-1 (Inverter with max. 100A)

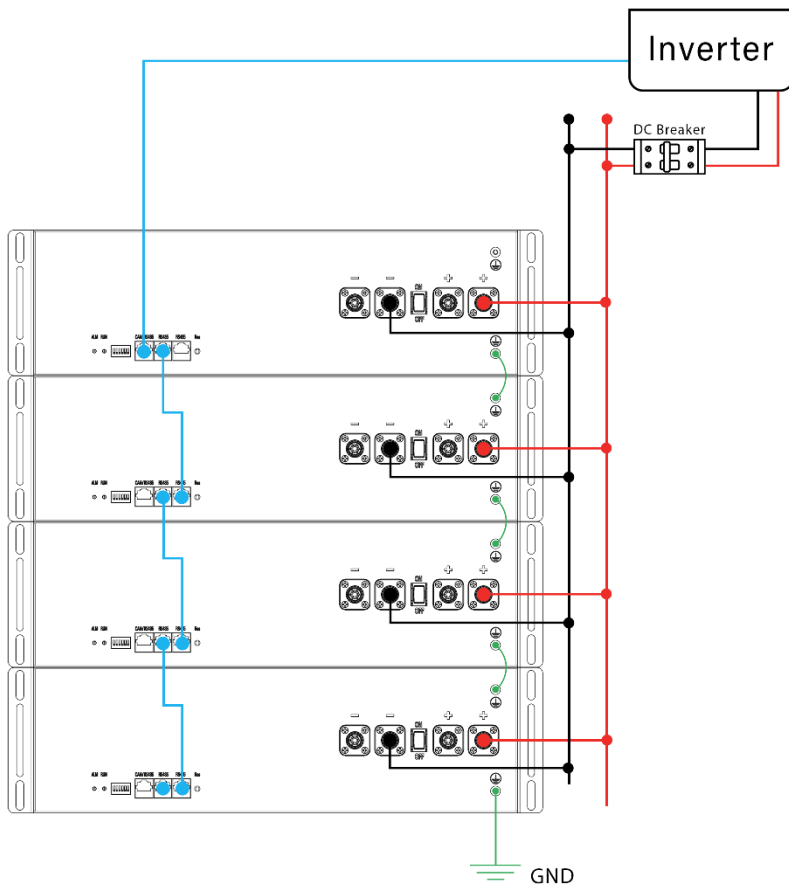
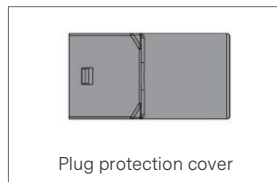
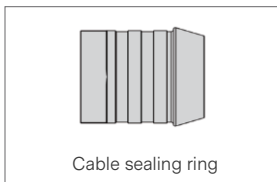
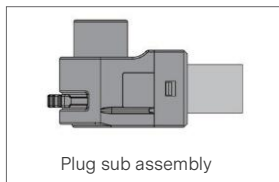


Figure 7 - Multi-Units Connection-2 (Inverter >100A)

The L051100-A1 can be used as a single unit as well as multi-units (in parallel). The DIP switches must be set as below for single- or multi-unit operation.

3.2.3 Material List



3.2.4 Steps

Procedure	Schematic picture
1. Put wire through isolation cap and tail-hood.	
2. Remove outer isolation layer of DC cable as shown.	
3. The red is used for the positive, and the black is for negative. The end of the cable is crimped to the terminal using a suitable crimping clamp.	
4. Tighten the isolation cap and plug contact.	
5. Put the positive and negative plug on to the system.	
6. Use isolation cover for unused DC sockets.	

3.2.5 Setup Master Pack and Slave Pack

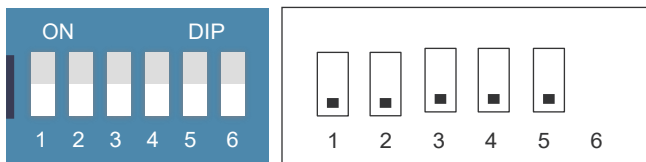
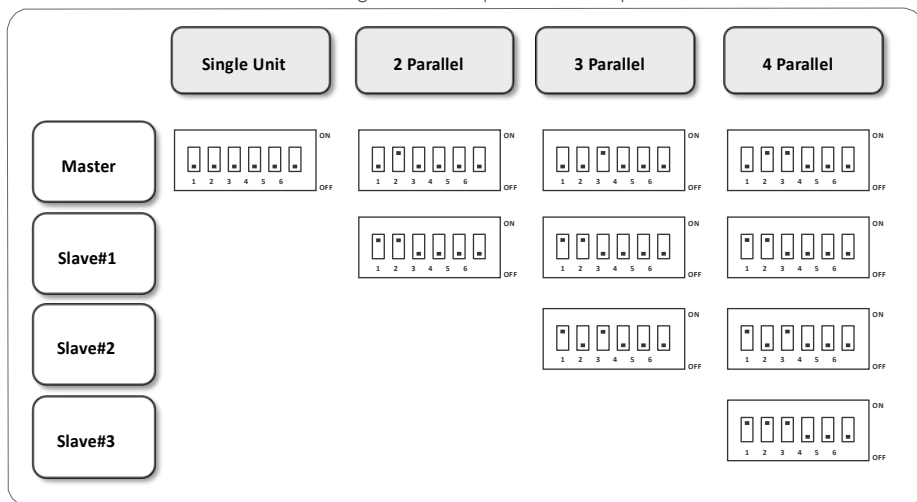


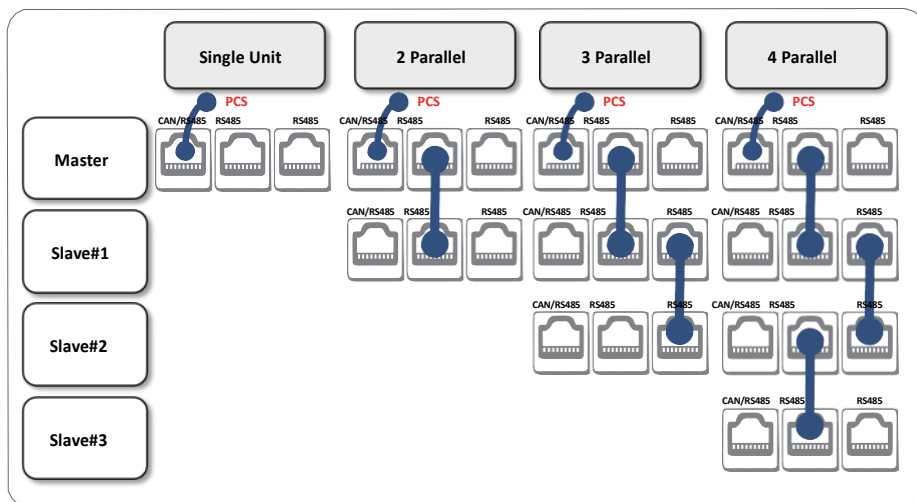
Figure 8 – DIP Switch for Addressing (Dialer)

Master/Slave address DIP switch configuration for up to 4 units in parallel:



Master/Slave address DIP switch configuration for up to 16 units in parallel:

Number of Batteries	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Master	000000	010000	001000	011000	000100	010100	001100	011100	000010	010010	001010	011010	000110	010110	001110	011110
Slave 1		110000	110000	110000	110000	110000	110000	110000	110000	110000	110000	110000	110000	110000	110000	110000
Slave 2			101000	101000	101000	101000	101000	101000	101000	101000	101000	101000	101000	101000	101000	101000
Slave 3				111000	111000	111000	111000	111000	111000	111000	111000	111000	111000	111000	111000	111000
Slave 4					100100	100100	100100	100100	100100	100100	100100	100100	100100	100100	100100	100100
Slave 5						110100	110100	110100	110100	110100	110100	110100	110100	110100	110100	110100
Slave 6							101100	101100	101100	101100	101100	101100	101100	101100	101100	101100
Slave 7								111100	111100	111100	111100	111100	111100	111100	111100	111100
Slave 8									100010	100010	100010	100010	100010	100010	100010	100010
Slave 9										110010	110010	110010	110010	110010	110010	110010
Slave 10											101010	101010	101010	101010	101010	101010
Slave 11												111010	111010	111010	111010	111010
Slave 12													100110	100110	100110	100110
Slave 13														110110	110110	110110
Slave 14															101110	101110
Slave 15																111110



Please note the following precautions to ensure the best long-term operation of Kadlu LV battery systems with multiple batteries in parallel. This document will refer to such a group of many parallel batteries as a battery bank.

Note: Make sure these requirements are met before powering on the batteries in parallel.

Maximum Voltage Difference between Batteries

Kadlu LV batteries are quite unique in that they have a dedicated integrated charge circuit so that after initial parallel connection, batteries with a lower voltage can be safely charged automatically from those with a higher voltage. However, we strongly recommend that all batteries in the battery bank are within 3.0 V of each other regardless to cover all corner cases. This means that the voltage of the battery with the highest voltage in the battery bank is no more than 3.0 V higher than the battery with the lowest voltage in the battery bank before initial connection. An example for a battery bank of 4 batteries:

Battery number	1	2	3	4
Voltage before first connection	51.2 V	52.6 V	50.8 V	50.1 V

In this example the highest voltage is from battery 2, with 52.6 V. The lowest voltage is from battery 4 with 50.1 V. The difference between the highest and lowest is $52.6 \text{ V} - 50.1 \text{ V} = 2.5 \text{ V}$. As 2.5 V is less than the recommended maximum difference of 3 V, these batteries may be connected in parallel to each other. If 3 V difference are exceeded, please charge the batteries with the lowest voltages, or discharge the batteries with the highest voltages until the difference between the highest and lowest voltage battery in the battery bank no longer exceeds 3 V.

Maximum Battery Bank Discharge Current

In any system with many batteries in parallel, charging and discharging them with the same current in all conditions becomes a challenge. Charging tends to be easier, because charge current can be controlled via communication and the hybrid inverter/charger. Discharging is determined by the inverter and its load and in case there is no alternative energy source such as the public grid, the load can only be either on or off and not adjusted to fit any discharge limits set by the battery. For this reason, we strongly recommend operating inverters with a total output power no larger than shown in the following table:

Battery quantity in parallel	16	18	20 ~ 32
Rated power output	40 kW	40 kW	40 kW
Maximum power output	40 kW	45 kW	50 kW

This ensures that even in corner cases where only a small number of batteries enable discharging, that there is no damage done to the BMS. This also avoids discharge being disabled entirely by the BMSs, essentially turning off the load completely, even though there is still enough energy remaining in the battery bank.

4 Power ON and OFF

4.1 Instruction

Please double check the Precautions for use in section 1.3 Precautions for Use.

4.1.1 System Power ON

- Installation (including DC cable, communication wire connection and dialer switch) is properly installed and set.
- Press Power Switch to the ON (1) position, the green LED should then be flashing and then switch to normal function mode (system status can be read from LED signal, as shown below).

4.1.2 System Power OFF

Attention: It must be confirmed that the system is off before taking off DC cables. Press Power Switch button to the OFF (0) position.

The green LED should be flashing and then the battery will go into stop mode.

4.1.3 Sleep and Wake-up Function

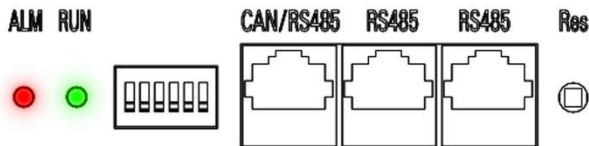
Number	Sleep Condition	Wake-up Condition	Remarks
1	Forced sleep by upper computer	Reset button	Only the power On/Off
2	Forced sleep by Power On/Off Switch	Power On/Off Switch	switch can wake up the battery.
3	Total Voltage is lower than 48V or cell voltage is lower than 2.8V, and continuous no charge and/or discharge current for 4 hours and no communication	Reset button, power On/Off switch, charging	When the battery is charged, it automatically wakes up. Toggling the power On/Off switch can wake up the battery.

4.1.4 Buzzer Function

- 0.25s sound per 1s in case of fault
- 0.25s sound per 2s during protection

4.1.5 System Status LEDs

There are 2 LED indicators, 1 red Alarm LED and 1 green Running Status LED (indicating charging, discharging etc.).



Status	Normal/Warning/Protection	RUN	ALM	Remarks
				
Power Off	Sleep / Hibernate	Off	Off	
Stand-by	Normal	Flashing 1	Off	
	Warning	Flashing 1	Off	Temp. Warning ALM Flashing 3
Charging	Normal	Flashing 2	Off	
	Warning	Flashing 2	Off	Temp. Warning ALM Flashing 3
	Overcharging	Flashing 1	Off	
	Overheat, Low Temp., Over-current	Flashing 1	Flashing 2	
Discharging	Normal	Continuous	Off	
	Warning	Continuous	Flashing 3	Overcharging, ALM off
	Over-discharging	Flashing 1	Off	
	Overheat, Low Temp., Over-current, Short-circuit	Flashing 1	Flashing 2	
Malfunction	Warning	Off	Continuous	BMS damage, MOS damage, temp. sampling malfunction

4.1.6 LED Flashing Status

Status	On	Off
Flashing 1	0.25s	3.75s
Flashing 2	0.5s	0.5s
Flashing 3	0.5s	1.5s

5. Transportation and Storage

5.1 Transportation

It is forbidden to expose the battery to serious vibration and shock during transportation.

5.2 Storage

If the system is not used, the system must be correctly stored. Otherwise, if there are any issues, IGLU TECH shall not be liable. Storage conditions are as follows:

Temperature at $20^{\circ}\text{C} \pm 10^{\circ}\text{C}$

- Relative air humidity 20 ~ 80%
- Protected from direct sunlight
- State of charge (SoC) around $60\% \pm 5\%$ (alternatively 52.4 Vdc)
- It should be stored in place where it can be monitored by professionals

NOTE:

A proper inspection shall be conducted every 4 months, to ensure no over-discharge of the battery (if the SoC is less than 0% for a long time) occurs. Recharge the battery to 60% or 52.4V if it is below these values. If over-discharged, the battery will behave as follows:

- 1.The battery may not start-up when turning the power switch to the ON position
2. The battery output voltage may be less than 40V when turned on
- 3.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. Additional actions are required before the field installation in terms of re- charging the battery to a SoC over 50%.

6. Disclaimer

It should be noted that IGLU TECH shall not be liable if any further points are added to this user's manual without informing customers.



UAB IGLU TECH
Ukmergės g. 364-6, LT-14188 Vilnius

Tel: +370 655 53277
E-mail: info@iglutech.eu

<https://iglutech.eu/en/>