



TNK-10000-LV-A1

User Manual



Index

Statement of Law	3
Safety Precautions	3 - 4
Preface	5
Introduction	6 - 7
- Brief Introduction	6
- Product Properties	6
- Product Identity Definition	7
Product Specification	8 - 12
- Size and Weight / Performance Parameter	8
- Interface Definition	9 - 10
- Battery Management System(BMS)	11 - 12
Voltage Protection / Current Protection	11
Temperature Protection / Other Protections	12
Installation and Configuration	13 - 28
- Preparations for Installation	13 - 16
Environmental Requirements	13
Tools and Data	14
Technical Preparation	14
Unpacking Inspection	15
Engineering Coordination	16
- Equipment Installation	17 - 28
Floor Installation	17 - 18
Wall Mounted Installation	18 - 19
Electrical Installation	20 - 24
Battery Module DIP Switch Definition and Description	25 - 27
Battery Parameter Settings on the Inverter	28
Register on the Website after Installation	28
Use, Maintenance and Troubleshooting	29 - 31
- Battery System Usage and Operation Instructions	29
- Shutdown Procedure	29
- Alarm Description and Processing	30
- Analysis and Treatment of Common Faults	31

Statement of Law

- TNK is an energy storage solution designed in Australia and manufactured by Xiamen Well Energy Technology Co., Ltd. Clenergy Technologies is the majority shareholder in this joint venture – Xiamen Well Energy.
- Xiamen Well Energy Technology Co., Ltd. owns the copyright of the document.
- No part of this document may be excerpted, reproduced, translated, annotated or duplicated in any form or by any means without the prior written permission of Xiamen Well Energy Technology Co., Ltd.
- This product complies with the design requirements of environmental protection and personal safety. The storage, use and disposal of this product should be in accordance with the product manual, relevant contract or relevant laws and regulations.
- Customers can check for product or technology updates on Xiamen Well Energy Technology Co., Ltd.'s website.
- The product may be subject to modification without prior notice to the user.

Safety Precautions

Warning

- To prevent accidental fires or explosions, do not immerse the battery in water or expose it to excessive heat.
- Please connect wires correctly during installation. Do not reverse the polarity.
- Do not connect the positive (+) or negative (-) terminals to any conductive material such as a wire to prevent short circuits.
- Do not subject the battery to any damage, such as piercing it with sharp objects, striking it with heavy objects or trampling it.
- Turn off the power completely when removing any device from the system or rewiring the system to reduce the risk of electric shock.
- In the unlikely event of fire danger on the battery, use a dry powder fire extinguisher. Using a liquid fire extinguisher may lead to an explosion.
- For your safety, please do not arbitrarily dismantle or disassemble any component. The maintenance must be performed by authorised technical personnel or our company's technical support team. Failure to do so will result in malfunction and will void the warranty.
- Do not dispose of the battery in household waste. To reduce environmental impacts, bring your battery to a certified recycling depot at the end of its life.



Caution

- Our product has been inspected before shipment. Please contact us if you find components missing, damaged or abnormal phenomena, such as a bulging outer case.
- For safety reasons, the product should be grounded properly before use.
- To achieve a proper installation and the best outcome for the system, please ensure that the parameters of the connected devices are compatible.
- Do not mix different battery brands, types and models. Never use old and new batteries together.
- Working environment and storage methods could impact the product's lifespan. To ensure proper use of the battery, please comply with the operating environment requirements in the instructions.
- For long-term storage, recharge the battery every six months. The charged state must exceed 80% of the battery capacity.
- Please charge the battery within 48 hours upon full discharge or when the over-discharging protection mode is activated.
- Formula of theoretical standby time: $T=C/I$ (Units must be specified, eg., C is the battery capacity in kWh, I is the total current of the internal loads in A).
- If the data-plate or production information sticker is damaged or invalid please contact you local Well Energy authorised distributor or service center.
- The Inverters BMS internal DIP switches are used to assign BMS address on CAN, before opening unit to set DIP switches please contact Well energy's support centre and provide the product ID to receive authorisation to do so.
No other operations related to opening the unit are allowed except for performing DIP switch settings

Preface

Manual Declaration

TNK-10000-LV-A1 Lithium Iron Phosphate(LiFePO₄) Battery is an external battery product used to store electricity for residential use. TNK battery can be charged through an inverter by either grid power or solar power. The stored energy could then be used to supply electricity to the home to reduce grid usage(maximum self consumption).

TNK-10000-LV-A1 User Manual systematically elaborates on device structure, parameters, basic procedure, installation methods, operation and maintenance.

Safety Statement

- Only trained and qualified professionals are allowed to install, operate, and maintain the device.
- Please comply with local safety regulations and operational rules during installation, operation and maintenance to avoid unexpected injury or device damage.
- The safety declaration in the manual is supplementary to your local safety regulations.
- The manufacturer does not undertake any responsibility for device operations violating general safety requirements and safety standards.

Introduction

Brief Introduction

TNK-10000-LV-A1 series is equipped with a LiFePO₄ battery for residential use. This product with cutting-edge battery storage technology is developed based on customer needs and market trends. The purpose is to offer a high-quality product that can supply stable electricity to customers. The product has a long lifespan and can operate in a wide temperature range environment. Its compact size allows space-saving and a seamless installation experience.

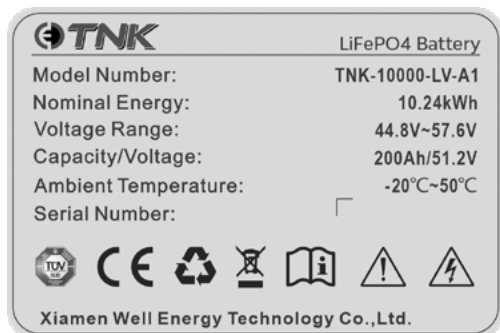
TNK-10000-LV-A1 series carries our core self-developed battery management system. It can store energy when the grid is down or PV system is not producing. Several TNK batteries can work in parallel to form a multi-module system with a larger capacity to meet a longer battery energy supply time.

Product Properties

TNK-10000-LV-A1 energy storage product is formed by LiFePO₄ battery cells that are managed effectively by its internal battery management system (BMS). The system's features are as below:

- Complies with European RoHS, is certified by SGS and employs a non-toxic and environment-friendly battery.
- The Anode material is lithium iron phosphate (LiFePO₄) which has high safety performance with a longer lifespan.
- Equipped with a BMS to achieve the best system performance – which possesses protection functions such as over-discharge, over-charge, over-current and abnormal temperature.
- Self-management on charging and discharging. Integrated single-core balancing capabilities.
- Each modular internal battery is equipped with intelligent diagnosis and design configurations.
- Flexible configurations allow multiple batteries used in a paralleled configuration for longer energy-supplying time.
- Self-ventilation with low system noise.
- Minimum energy consumption on standby.
- No memory effect on battery capacity - it can be charged or discharged shallowly.
- Wide range of operating temperature, 0°C ~ +50 °C. At the maximum threshold of +55 °C
 - The system can maintain circulation and discharge performance.
- Compact size, lightweight and IP65 design for easier installation and maintenance.

Product Identity Definition



Battery Energy Storage System Nameplate



Battery voltage is higher than safe voltage.
Direct contact may cause an electric shock hazard.



Be careful with your actions and be aware of the dangers.



Read the user manual before using.



Do not dispose of this product with general household waste.
Consult your local regulations for proper recycling or disposal instructions.



Do not dispose the battery at will when the battery reaches the end of its lifespan.
It can be used after being recycled by a professional recycling organization.



This battery product meets European directive requirements.



This battery product has passed the TUV certification test.

Product Specification

Size and Weight / Performance Parameters

Product Series	TNK-10000-LV-A1
Nominal Voltage	51.2 V
Nominal Capacity	200Ah
Dimensions	570 x 190 x 972 mm
Weight	109 kg
IP Rating	IP65
Work Voltage Range	44.8 ~ 57.6V
Nominal Energy	10.24 kWh
Nominal Power	5.12 kW
Usable Energy	9.21 kWh
Max Charging Current	105 A
Max Discharge Current	105 A

Interface Definition

This section elaborates on the interface functions of the device's front panel.



1	Positive Connector	The battery Positive DC connector
2	COM IN	<p><u>When the battery is used independently:</u> The CAN/RS485 socket is connected to the inverter CAN/RS485 interface through the communication cable.</p> <p><u>When the battery is used in parallel:</u> This CAN/RS485 communication socket is connected to the COM OUT interface of the next TNK-10000-LV-A1 through communication cable.</p>
3	Negative Connector	The battery Negative DC connector
4	COM OUT	<p><u>When the battery is used independently:</u> This CAN/RS485 socket is not used.</p> <p><u>When the battery is used in parallel:</u> This CAN/RS485 communication socket is connected to the COM IN interface of another TNK-10000-LV-A1 through communication cable. (Factory default CAN communication mode)</p>
5	Power button	Press the button to turn on the battery system. When the battery is in a standby state, such as storage, transportation etc., it has to be turned off by pressing the power button. The battery system will automatically sleep when the device is without external load and power for 72 hours. ALM light instruction details are listed in the table in the table " ALM light instructions " on Page 10 .
6	DC circuit breaker	Circuit Protection
7	SOC	The number of LED lights illuminated shows the batteries state of charge. Details are in the table " LED status indicators " on Page 10 .

ALM light instructions	
Blue light on	Normal state
Red light on	Fault - Discontinue use and contact customer support
Red light flashes	Temperature or Voltage out of range - reset device
Red light flashes quickly	Fault - Discontinue use and contact customer support
Blue and red lights flash alternately	The communication between BMS board and light board is lost
Blue and red lights flash alternately and SOC flash	The communication between the light board and the slave BMS is lost. (This situation only applies to parallel battery operation.)

LED status indicators					
State	SOC	LED1	LED2	LED3	LED4
Charging	$0 \leq \text{SOC} < 25$	flash			
	$25 \leq \text{SOC} < 50$	on	flash		
	$50 \leq \text{SOC} < 75$	on	on	flash	
	$75 \leq \text{SOC} \leq 100$	on	on	on	flash
Discharging / Standby	$0 \leq \text{SOC} < 25$	on			
	$25 \leq \text{SOC} < 50$	on	on		
	$50 \leq \text{SOC} < 75$	on	on	on	
	$75 \leq \text{SOC} \leq 100$	on	on	on	on

LED on for 30 seconds

Battery Management System (BMS)

Voltage Protection	
Under Voltage Protection while Discharging	When any battery cell's voltage or the total voltage is lower than the rated protection value during discharging, the over-discharging protection will be activated, and the buzzer will sound. The battery system will stop supplying power to the external device. When the voltage of each cell is back to the rated range, the protection ends.
Over Voltage Protection while Charging	During the charging stage, the system will stop charging when the total voltage of the battery pack is higher than the rated value or the voltage of any single cell reaches the protection value. When the total voltage of all cells returns to the rated range, the protection ends.

Current Protection	
Over Current Protection while Charging	When the charge current of any module is higher than 110A, the over-current protection mode is activated and the current is limited to 1A. The protection will be deactivated after a rated delay of 10s. This process will repeat until the current falls below 110A.
Over Current Protection while Discharging	When the discharge current of any module is higher than 115A, the battery buzzer will sound, and the system will stop discharging after 15s. When the protection ends, the discharging will restore in a 60s delay or immediately when a charging current is present.

! The buzzer sound from the alarm function can be deactivated, from the software, resulting in the system reverting to default factory settings.

Temperature Protection

Under/Over temperature protection while charging	When the battery's temperature exceeds the range of 0°C ~ + 55°C during charging, the temperature protection mode will be activated. The charging of the battery will stop. The protection mode will be deactivated when it returns to the rated range of working temperatures.
Under/Over temperature protection while discharging	When the battery's temperature exceeds the range of -20°C ~ + 55°C during discharging, the temperature protection mode will be activated. The battery will stop supplying power to the external device. The protection mode will be deactivated when it returns to the rated range of working temperatures.

Other Protection

Short Circuit Protection	The DC circuit breaker would be triggered by a short circuit when the battery is on. If the DC circuit breaker does not operate, the short circuit protection function of the BMS will be activated automatically to cut off the device's output.
Self Shutdown	When no external loads are present for over 72 hours, the device will automatically be dormant and go on standby.

! The maximum operating current required for the electrical load should be less than the maximum discharge current capacity of the battery.

Installation and Configuration

Preparations for Installation

Safety Requirements

This system can only be installed by a person who has been trained in the power-supply system and possesses sufficient knowledge of the power system.

During installation, the safety regulations listed below should always be followed:

- All circuits connected to this power system with an external voltage of less than 48V must meet the SELV requirements defined in IEC60950 standard.
- Distribution cable wiring should be reasonable and have the protective measures to avoid touching on these cables while operating power equipment.
- When installing the battery system, the installer must wear the protective items below:



Electrically isolated gloves



Safety goggles



Safety shoes

1 Environmental Requirements

- Working temperature: -20°C ~ +55°C
- Storage temperature: -10°C ~ +55°C
- Relative humidity: 5% ~ 85%RH
- Elevation: no more than 4000m
- Operating environment: Indoor or outdoor installation - the installation point should avoid direct sunlight and wind, conductive dust and corrosive gas.
- The following conditions should be met:
 - Installation locations should be away from corrosive and high humidity environment, such as the sea.
 - The surface for product placement shall be flat and level.
 - There should be no flammable or explosive materials close to the installation site.
 - The optimal ambient temperature is 15°C ~ 30°C.

2

Tools and Data

Tools and meters that may be used are shown in the list below.

■ Screwdriver (Slotted, Phillips)	■ Stripping pliers	■ Temperature meter
■ Torque wrench	■ Electric drill	■ Anti-static bracelet
■ Side cutters	■ Multimeter	■ Cable ties
■ Pointed nose pliers	■ Clamp current meter	■ Tape measure
■ Linesman pliers	■ Insulation tape	■ 'Clenergise' APP

The TNK LV10 battery can be monitored via the app. Please download the 'Clenergise' app from either the Google Play Store or the iOS App Store.

3








Technical Preparation

Electrical interface check	<p>For devices that can be connected directly to the battery.</p> <ul style="list-style-type: none">- Ensure that the user equipment, PV equipment or other power supply equipment has the correct DC interface.- Ensure that the output/input voltage of the interface meets the requirements of the battery voltage range on Page 8.- Ensure that the maximum discharge current of the battery is higher than the maximum input current of the load. Otherwise, the battery's over-current protection mode will be triggered at full-load operation.- Ensure that the maximum battery charging current is higher than the maximum output current from the battery charging device. If not, the current limiting module in the battery will be triggered to limit the battery charging current.
Security check	<ul style="list-style-type: none">- Firefighting equipment, such as portable dry powder fire extinguishers, should be placed close to the battery.- An automatic fire fighting system should be provided in necessary cases.- Flammables, explosives and other dangerous materials should be kept away from the battery.

4 What's in the Box

- When the equipment arrives at the installation site, loading and unloading should be carried out according to the rules and regulations to prevent the battery from being exposed to sun and rain.
- Before unpacking, check the total number of packages against the shipping list attached to each package.
- During unpacking, handle the battery with extra care to protect it from falling, impact, and scratching.
- After opening the package, the authorised installer should read the technical documents, check the products against the packing list, and ensure that all devices are complete and intact. If the internal packaging is damaged, please contact your local supplier or support centre.

The packing list is given as below:

 <p>Battery x 1</p>	 <p>Battery bottom bracket x 1 Top mounting bracket x 1</p>	 <p>RJ45 Waterproof connector x 2</p>
 <p>120Ω CAN resistor x 1</p>	 <p>Power cable x 1 pair connect battery with inverter</p>	 <p>Standard communication cable x 1</p>
 <p>User manual x 1</p>	 <p>Expansion screw x 9</p>	 <p>Positioning cardboard x 2</p>

5 Engineering Coordination

Pay attention to the following items before installation:

■ Power cable specification

The power cable specification should meet the requirements of maximum charge/discharge current for each product.

■ Mounting space and bearing capacity

Ensure sufficient space to install the battery and that the battery rack and bracket meet the load capacity.

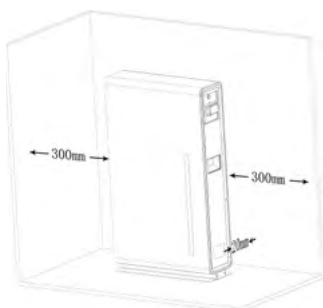
■ Wiring

Ensure that the power and ground cables are properly wired. All connections should be free of short-circuits, water and corrosion.

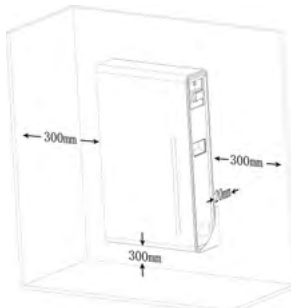
Equipment Installation

The surface for battery installation must be able to bear the total weight of the battery. Appropriate fixings must be used for installation.

Mounting space requirements: in diagram below. Please refer to relevant regulations for further installation requirements.



Floor installation



Wall mounted installation

Step 1

System in off mode

Ensure that the battery is in off state



Step 2

Mechanical installation

1. Hanger mounting
2. Equipment installation



Step 3

Electrical installation

1. Ground cable connection
2. Electrical installations
3. Inverter connection
4. Communication interface connection

1 Floor Installation

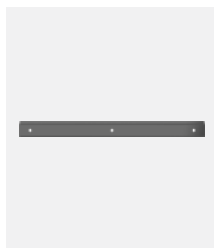
When the battery system is placed directly on the ground, a fixed support must be used to fix the top of the battery box on the wall.



1. Use the positioning cardboard (provided in the accessory pack) and ensure the cardboard template is positioned level.
2. Mark out the 3 upper fixing location holes for the upper wall bracket placement.



3. Drill out the three marked holes with a drill bit. The depth of the hole must be at least 70mm for use with the supplied M6 fixing expansion bolts.



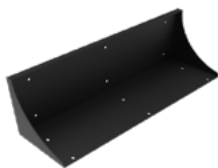
4. Mount the upper wall bracket to the mounting surface with appropriate fixings.
5. Apply the M6 expansion bolt to fix the support bracket to the wall by using the torque of 6NM.



6. Place TNK battery on the bracket you just installed, fixing the support bracket and the upper part of the battery box with M5 bolts.

2 Wall Mounted Installation

The following accessories are required when installing the TNC-10000-LV-A1 on the wall.



Battery bottom bracket x 1



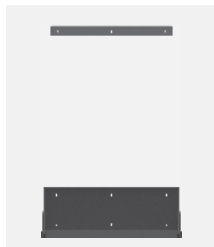
Expansion screw x 6
(if mounting in masonry)



1. Use the positioning cardboard (provided in the accessory package) and mark the screw hole positions required on the wall.
2. The cardboard must be level while drawing the holes.



3. Based on the position of the marks, drill out the nine marked holes with a 10mm drill bit. The depth of the hole must be at least 70mm for use with the supplied M6 fixing expansion bolts.



4. Fix the expansion bolt M6 into the bottom of the hole in the wall and fix the support bracket and battery bottom bracket on the wall with M6 expansion bolts, using a torque of 6NM.



5. Carry or hoist the battery box to the installed battery bottom bracket. Fix the support bracket and the upper part of the battery box with M5 bolts, max torque of 6NM.
Next, fix the battery bottom bracket and the bottom part of the battery box with M5 bolts, max torque of 6NM.

3 Electrical Installation

Before connecting the power cables, use a multimeter to measure the cable continuity, short-circuit condition, and positive and negative ports. Mark them clearly on the cable labels.

Measuring method:

■ Power cable check

Perform visual inspection of cable connections and insulation for any damage. Perform insulation resistance and continuity test.

■ Unit visual inspection

Inspect battery unit to confirm it is free from damage, confirm all electrical connections are free from damage, debris and moisture.

- After visual inspection of the power cable, the positive and negative terminals of the battery should be connected to the respective positive and negative terminals of the inverter/charger.

1) Connect the battery box to the ground cable

Installers need to prepare M6 OT terminals and ground cables. Ground the battery shell as shown below. The cross-section of the grounding cable should be at least 6mm², and the bolt-max torque is 6NM.



! If there is any question during installation, please contact your dealer to avoid damage to the equipment.

2) Inverter connection

■ Multi-Unit Installation:

Module CAN address must be set internally via DIP switch. Before opening the cover to operate, you must contact Technical Support and provide the product ID. The battery unit ID will be recorded and authorization to complete the CAN address change may be given. No other operations can be done except changing the DIP switch mode.

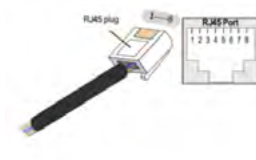
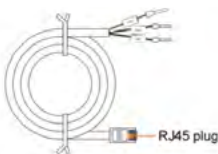
■ The battery is connected to the inverter and is required to use the designated power cable and communication cable within the package. Details are as follow:

- Keep the battery system in standby state and DC circuit breaker off, connect the power cable to the interface on the input side of the inverter, and connect the power cable to the interface on the battery side.
- The battery output interface is a quick connector, and the power cable (positive, negative) plug can be inserted directly into the battery socket. The power cable cross-section is 25 mm².

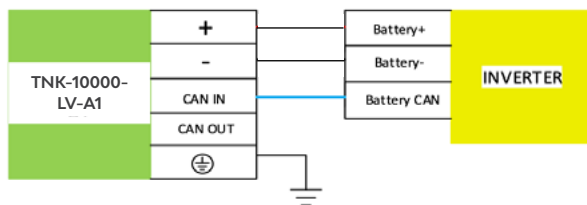
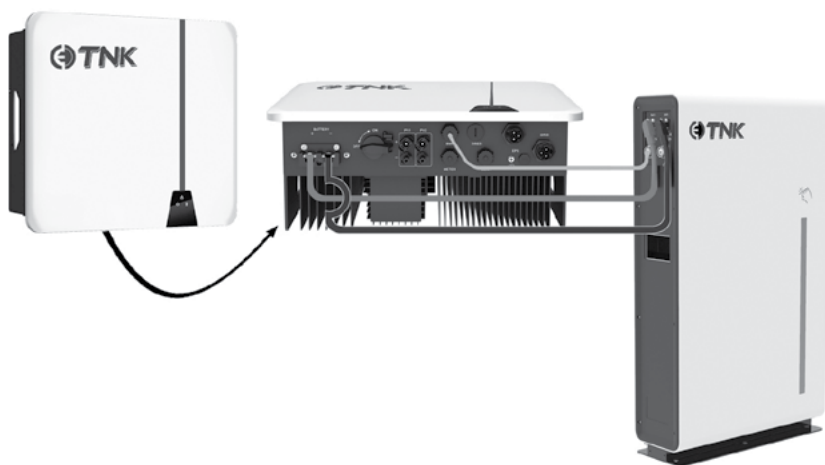


Use the supplied communication cable to link the battery chargers communication port to the battery units 'COM IN' port.

- Connection of communication interface: Connect the CAN IN port of the battery to the CAN or RS485 communication interface of the inverter using the RJ45 cable.

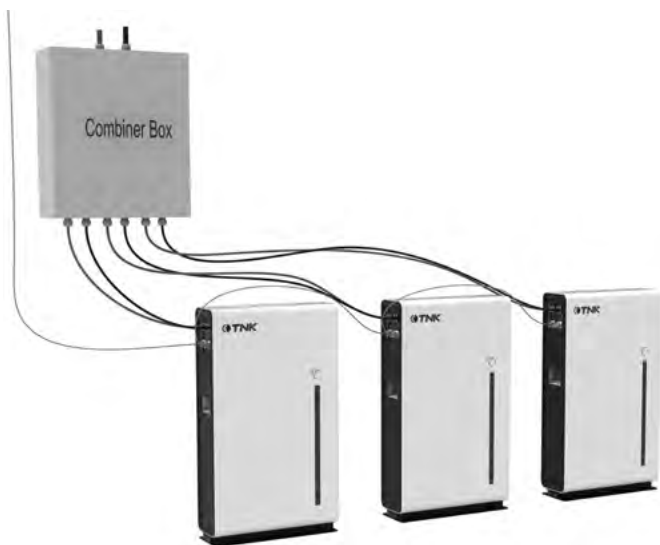


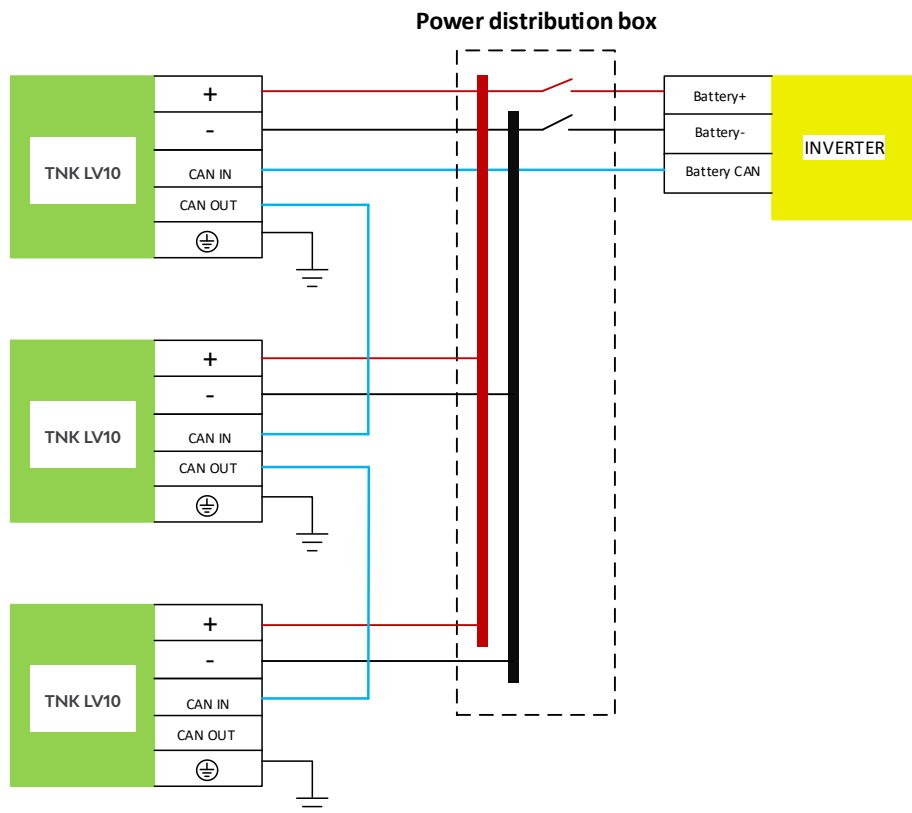
Pin Definition		
Foot position	Color	Definition
PIN1	Orange / white	485B
PIN2	Orange	485A
PIN3	Green / white	Reserved
PIN4	Blue	EXT CANH
PIN5	Blue / white	EXT CANL
PIN6	Green	Reserved
PIN7	Brown / white	INT CANH
PIN8	Brown	INT CANL



3) When the system is used in parallel:

When the batteries are used in parallel, the BMS can support up to four units working together. The number of accessories is determined by the number of parallel batteries. Take three units of TNK-10000-LV-A1 in parallel as an example, the system needs to use: Power cable $\times 3$ pairs, Battery-Inverter communication cable $\times 1$ PCS, Battery-Battery communication cable $\times 2$ PCS, Combiner box $\times 1$ PCS. The current carrying capacity of the Combiner box must exceed the maximum current value of the system.





4 Battery Module DIP Switch Definition and Description

DIP switch position (master communication protocol and baud rate selection)

#1	#2	#3	#4
Define different protocols: Distinguish between master and slave			Baud rate selection
			OFF: CAN: 500K,485: 9600
			ON: CAN: 250K,485: 115200

DIP switch description:

When the batteries are connected in parallel, the master communicates with the slaves through the CAN interface. The master summarises the information of the entire battery system and communicates with the inverter through CAN or 485.



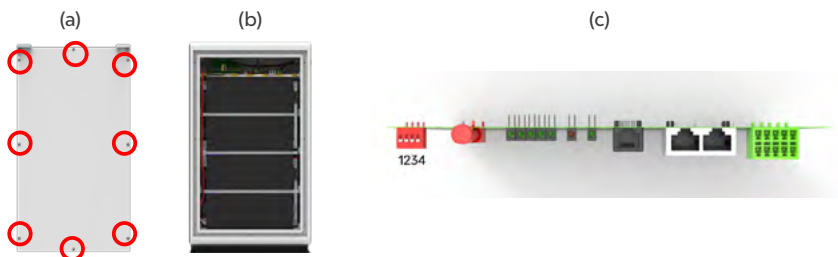
The initial factory settings of the DIP switches of the internal modules of TNK-10000-LV-A1 are illustrated below.



! The factory default for CAN address is Master, when used in a Multi-Unit installation it may be required to be changed

Procedures are given as follows:

- Remove the screws on the rear inspection panel on the TNK-10000-LV-A1 and open the back panel.
- Find the red DIP switch on the BMS.
- Set the DIP switch to the correct state.
- Re-install the rear panel with the screws removed in Step a.



! Caution:

- Before connection, the positive and negative connectors of the inverter input interface and the battery output interface should be checked and confirmed.
The red power line is connected to the positive connector and the black power line is connected to the negative connector.
- Before connection, it is necessary to confirm the charge and discharge parameters of the inverter interface.
Voltage and current should meet the requirements on **Page 8**.
- When using the battery in a Multi-Unit installation the CAN address procedure must be used and authorization from technical support is required.
- The following operations can only be performed with Clenergy's authorisation:
Use the following method to verify if the communication between the product is working:
 1. If there is communication between the inverter and battery system, it can be verified by the maximum charge and discharge current value on the inverter sent by the battery.

$$\frac{\text{(The maximum charge and discharge current value displayed on the inverter)}}{\text{(The maximum charge and discharge current value of one battery module)}} = \text{number of modules}$$

If the equation holds after calculation, communication within the TNK-10000-LV-A1 is working.

2. If the TNK-10000-LV-A1 shows that blue and red lights flash alternately, and SOC is flashing, there is a fault in communication between units.

Battery and inverter power matching

Equipment Use	Charging	<p>a) The battery's long-term continuous charging current should be 100A.</p> <p>b) If the battery's remaining capacity is empty, please charge it within 48 hours after complete discharge.</p>
	Discharging	<p>c) The long-term continuous discharge current of the battery should be 100A.</p> <p>d) The recommend maximum depth of discharge (DOD) of Battery PACK is no more than 85%.</p>

5 Recommended Battery Parameter Settings on the Inverter

Max Charging(Bulk) Voltage: 57.6V

Float Voltage: 56V

Shut Down(cut off) Voltage: 48V

Shut Down(cut off) SOC: 20%

Max Charge Current:100A

Max Discharge Current: 100A

6 Register on the Website after Installation

After the battery system installation is completed and the system operates normally, you need to register the product installation and use the information for product warranty.

Please go to www.clenergyess.com to complete your registration

Power of Hybrid Inverter/ Off-grid Inverter	TNK-10000-LV-A1	
	Type	System Energy(kWh)
5KW	1*TNK-10000-LV-A1	10.24
10KW	2*TNK-10000-LV-A1	20.48
15KW	3*TNK-10000-LV-A1	30.72

Use, Maintenance and Troubleshooting

Battery System Usage and Operation Instructions

After completing the electrical installation, follow the instructions below to start the battery system.

1. Ensure that the circuit breaker on the TNK battery is in an OFF state.
2. Press the battery's power button. The power button's LED light will be on. The SOC LED indicator lights will also be on, displaying blue colour after self-check.

Caution:

- After pressing the power button, if the battery's status indicator lights show an abnormal state, please refer to "**Alarm description and processing**" as below.
If the malfunction persists, please contact the manufacturer's technical support.
- After pressing the power button, if the battery's status indicator remains red, please refer to the "**Alarm description and processing**" as below.
If the malfunction persists, please contact the manufacturer's technical support.

3. Turn on the circuit breaker on the battery.
4. Use a voltmeter to measure and ensure that the voltage across the BAT + / BAT- terminals of the inverter is higher than 44.8V. Check and ensure that the voltage polarity is consistent with the input polarity of the inverter. If the voltage across the BAT + / BAT- terminals of the inverter is higher than 44.8V, the battery begins to work normally.
5. After confirming that the battery output voltage and polarity are correct, turn on the inverter, followed by the circuit breaker between the inverter and the battery.
6. Check and ensure that the indicator light for the inverter and the battery connection (the communication indicator and the battery access status indicator) is in normal condition.
If yes, the connection between the battery and the inverter is completed. If the indicator light shows an abnormal state, please check the inverter's manual or contact the manufacturer's technical support.

Shutdown Procedure

1. Turn off the inverter AC isolator or inverter supply main switch located in the switchboard.
2. Isolate the PV Array by turning off the DC isolators.
3. Turn off the battery DC isolator.

Alarm Description

When the protection mode is activated or a system failure occurs, the LED indicator on the power button will turn red and start flashing.

In cases where abnormalities affect the output, such as a battery cell in the battery module triggering over-current protection during charge/discharge, under-voltage protection, and temperature protection in the system, please resolve the issue according to **"Main Alarm and Protection"**.

Main Alarm and Protection			
State	Alarm category	Alarm indication	Action
Charge state	Over-current when charging	RED light flashing Buzzer start	Reduce the charging current below the rated value.
	Over-temp protection	RED light on	Stop charging and find out the cause of the issue. Ensure adequate clearance around the battery.
Discharge state	Over-current protection when discharge	RED light on Buzzer start	Stop discharging and reduce discharge current below rated value.
	Over-temp protection when discharge	RED light on	Stop discharging and find out the cause of the issue. Ensure adequate clearance around the battery.
	Over-discharged protection	RED light on Buzzer start	Start charging.

Analysis and Handling of Common Faults

Item	Fault sign	Reason analysis	Solution
1	The battery doesn't respond after pressing the power button	Battery may not turn on successfully	Press and hold the power button (Reset switch) for 3s.
2	No DC output after power on the system	Check if the DC breaker is switched on	Check the status of the DC circuit breaker on the side of cabinet.
3	No DC output and red light is ON, buzzer beeping	Battery voltage is too low	Charge the battery system.
4	The battery cannot be fully charged	Issue with charging system	Please contact technical support.
5	The power cable sparks once power on and the red ALM light comes on	Power connections short-circuit	Turn off the battery, check the cause of the short circuit.
6	The TNK-10000-LV-A1 ALM light is flashing yellow light	Communication fault between product and product, or between internal modules in TNK-10000-LV-A1	Verify the external communication cable is plugged in correctly. Verify cable using ethernet tester. If fault continues contact Technical Support.

If you need any technical help or have any questions, please contact the manufacturer's technical support.

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