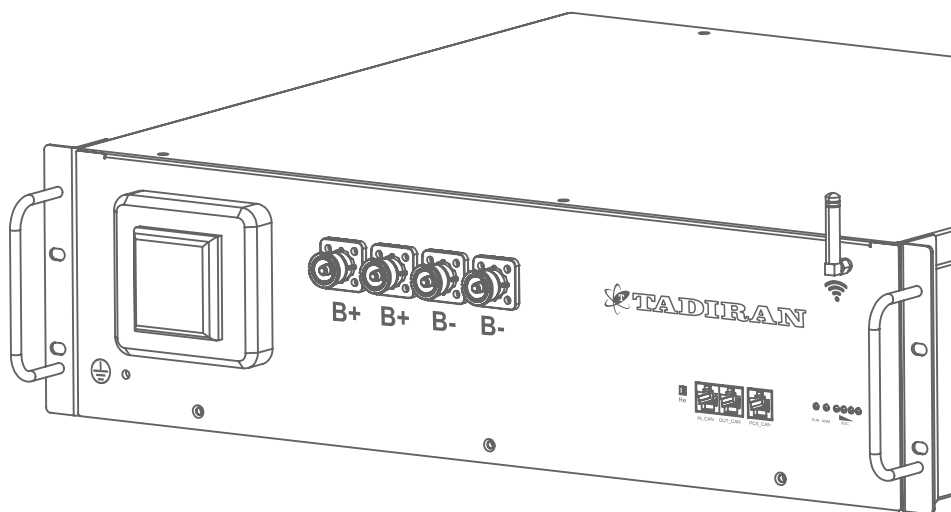


Tadiran TAD-LV5.12 EU

User Manual



Emergency Power Back-up



Flexible Installation



Cost-effective



Scalable



OTA available

Foreword

Thank you for choosing the products of MARS UNION LLC. In order to ensure your legal rights and interests and use this product safely and correctly, please read the user manual carefully before installation and use.

Disclaimer

- This user manual contains a series of contents such as installation, operation methods,common troubleshooting and technical indicators.When installing, using, or maintaining the product, you must read this chapter carefully and follow the safety precautions described in this chapter. The Company has nothing to do with any injury or loss caused by illegal operation;
- Please keep the operation manual properly for future reference;
- The contents of the manual will be continuously updated, corrected and upgraded. If it does not conform to the actual product, please refer to the actual product you purchased, or obtain the latest version of the manual through the sales channel.

Version	Date	Records
V1.0	2024.10.30	Initial Release

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1. Safety








1.1 Introduction Important Safety Instructions

This manual contains important instructions for: Tadiran TAD-LV5.12 EU battery and this manual must be followed when installing and using this product.

The product is designed and tested in accordance with international safety requirements, but as with all electrical and electronic equipment, certain precautions must be observed when installing and or operating the product. To reduce the risk of personal injury and ensure the safe installation and operation of the product, you must carefully read and follow all instructions, cautions and warnings in this manual.

1.2 Warnings in this Document

A warning describes a hazard to equipment or personnel. It calls attention to a procedure or practice, which, if not correctly performed or adhered to, could result in damage to or destruction of part or all of the TADIRAN equipment and or other equipment connected to the TADIRAN equipment or personal injury.

Symbol	Description
	Caution, risk of electric shock
	Heavy enough may cause severe injury
	Keep the battery away from open flame or ignition sources
	Keep the battery away from children
	Do not dispose of the product with household waste
	Recycling
	Read this manual before installation and operation

For safety reasons, installers are responsible for familiarizing themselves with the contents of this manual and all warnings before performing installation.

1.3 Battery handing guide

- Use the battery pack only as directed.
- If the battery defective, appears cracked, broken or otherwise damaged, or fails to operate, contract the TADIRAN hot line +380 63 41 98 567 immediately.
- Do not attempt to open, disassemble, repair, tamper with, or modify the battery. The battery pack is not user serviceable.

- To protect the battery and its components from damage when transporting, handle with care.
- Do not subject it to any strong force.
- Do not insert foreign objects into any part of the battery pack.
- Do not use cleaning solvents to clean the battery.
- The battery shall not be connected directly to Safety Extra-Low Voltage.

1.4 Response to emergency situations

The Tadiran TAD-LV5.12 EU battery is designed with multiple safety strategies to prevent hazards resulting from failures. However, TADIRAN cannot guarantee their absolute safety for uncertain situations.

1.4.1 Leaking batteries

If the battery pack leaks electrolyte, avoid contact with the leaking liquid or gas. Electrolyte is corrosive and contact may cause skin irritation and chemical burns. If one is exposed to the leaked substance, do these actions:

Inhalation: Evacuate the contaminated area, and seek medical attention immediately.

Eyes contact: Rinse eyes with flowing water for 15 minutes, and seek medical attention immediately.

Skin contact: Wash the affected area thoroughly with soap and water, and seek medical attention immediately.

Ingestion: Induce vomiting as soon as possible, and seek medical attention immediately.



1.4.2 Fire

In case of a fire, make sure that an ABC or carbon dioxide extinguisher is nearby and does not use water to extinguish the fire.

WARNING

The battery pack may catch fire when heated above **130°C**.

If a fire breaks out where the battery is installed, do these actions:

1. Extinguish the fire before the battery catches fire.
2. If the battery has caught fire, do not try to extinguish the fire. Evacuate people immediately.

WARNING

If the battery catches fire, it will produce poisonous gases. Do not approach.

1.4.3 Wet battery

If the battery is wet or submerged in water, do not try to access it. Contact TADIRAN hot line +380 63 41 98 567 or your distributor for technical assistance.

1.4.4 Damaged battery

If the battery damaged, please contact TADIRAN hot line +380 63 41 98 567 or your distributor for help as soon as possible, because damaged battery is dangerous and must be handled with extreme caution. Damaged battery is not suit for use and may pose a danger to people or property. If the battery seems to be damaged, return it to TADIRAN or your distributor.

CAUTION

Damaged battery might export electrolyte or flammable gas, so contact TADIRAN for advice and information immediately we will deal with it within 48h.

1.5 Installers

TADIRAN battery is suggested installing by skilled worker or electrician. A skilled worker is defined as a people who had been trained and qualified electrician or had all of the following skills and experience:

- Knowledge of the functional principles and operation of on-grid Energy Storage systems.
- Knowledge of the dangers and risks associated with installing and using electrical devices.
- Knowledge of the installation of electrical devices
- Knowledge of and adherence to this manual and all safety precautions and best practices.

1.6 Scrap battery

For scrap battery(-ies), please treat with local laws or regulations to recycle or scrap.

1.7 Contact information

Use the contacts below for technical assistance. This phone numbers is available only during business hours on weekdays.

Phone number: +380 63 41 98 567

Address: building 47, office 33 Kashtanova str., Dnipro 49081, Ukraine

Web: <https://tadiranair.com.ua>

2. Product Introduction

2.1 Technical data

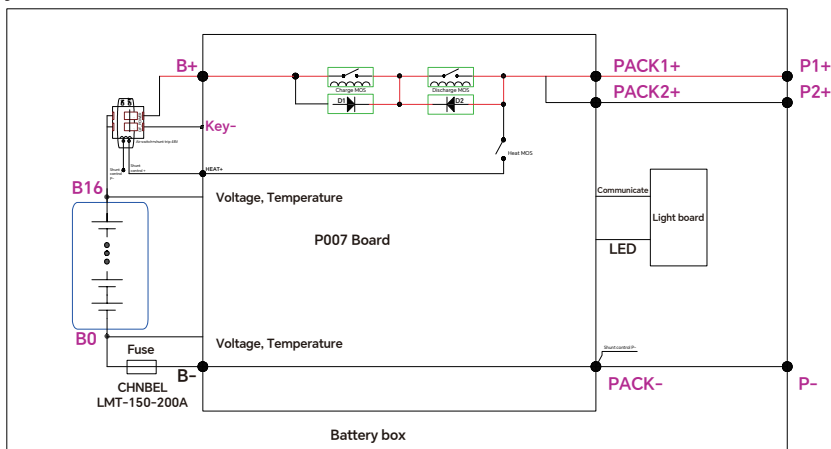
Model		Tadiran TAD-LV5.12 EU
Total energy (kWh)		5.12kWh
Usable energy (kWh)		4.6kWh
Max. charge/discharge current		50A/100A
Nominal current		50A
Dimensions (W*H*D)		609*155*500mm
Weight		45.5(±0.5)kg
Max. charge voltage		58V
Max. recommended DOD		90%
Voltage range		44.8-58vd.c
Nominal voltage		51.2vd.c
Operating condition		Indoor
Operating temperature	Charge	0°C~50°C
	Discharge	-10°C~55°C
WIFI frequency range		2400MHz~2483MHz
Humidity		20~60% (No condensed water)
Cooling type		Natural cooling
Installation		Support
IP rating		IP20
Operating Altitude		≤ 2000m
Number of parallel connection		1~16(51.2V 5.12kWh~81.92kWh)
Cycle Life (25°C, 0.2C, 90%DOD)		>6000 cycles
Communication		CAN/RS485
Certificates		EN61000, IEC62619, IEC62477, UN38.3, UL1973, UL9540A

Testing conditions based on temperature 25°C at the beginning of life.

*Total Energy/Usable Energy measured under specific conditions from 0.2C CC-CV

- After being fully charged, it needs to be left for 30 minutes before discharging can begin
- After a complete cycle of charging and discharging is completed, it needs to be left for 4 hours before starting the second cycle

System Introduction



2.2 Exploded views of battery

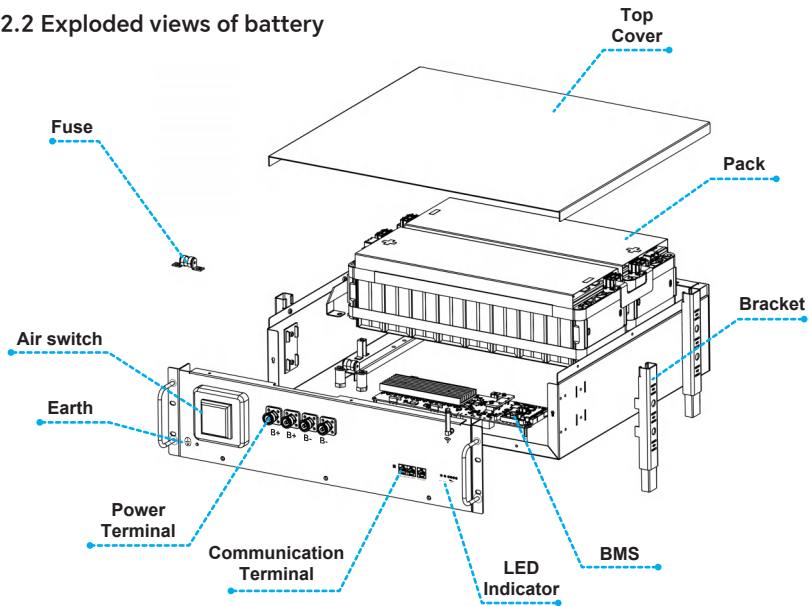


Figure 1

2.3 Indicator and ports

There are 3 types of LED indicators on the front of the battery to show its operating status.

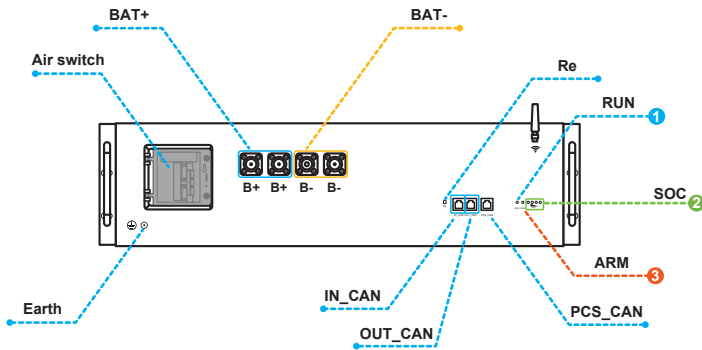


Figure 2

Item	Designation	Definition
1	Running	Battery normally working without fault
2	SOC	Battery capacity status
3	ARM	Battery is in a warning state

2.4 How it works

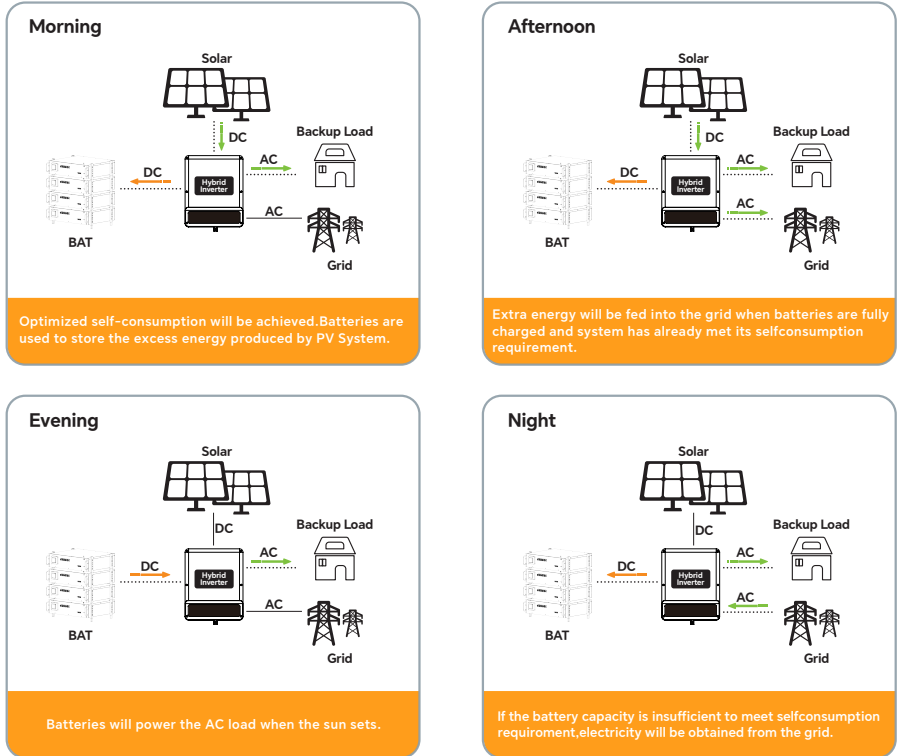


Figure 3

2.5 Feature

The TADIRAN Tadiran TAD-LV5.12 EU battery has following features:

- **Energy storage unit:** This battery is suitable for photovoltaic system compatibility.
- **Expandability:** The battery capacity can be increased by adding another battery.

3. Guidance for disconnection of batteries during shipment

- Cartons that have been crushed, punctured, or torn in such a way that contents are revealed shall be set aside in an isolated area and inspected by a skilled person. If the package is deemed to be not shippable, the contents shall be promptly collected, segregated.
- The DC circuit of TADIRAN Tadiran TAD-LV5.12 EU battery has been disconnected before shipment.
- A precautionary label had been affixed to the shipping carton to alert individuals as to the battery within the package have been disconnected; otherwise, the battery should not be transported.

- We have conducted comprehensive tests to ensure the equipment they distribute around the world is safe for shipping transport. These products shall be handled with care and immediately inspected if visibly damaged. If the cartoon visibly damaged, please contract with TADIRAN hot line +380 63 41 98 567 to confirm whether the battery could be used safely or not.

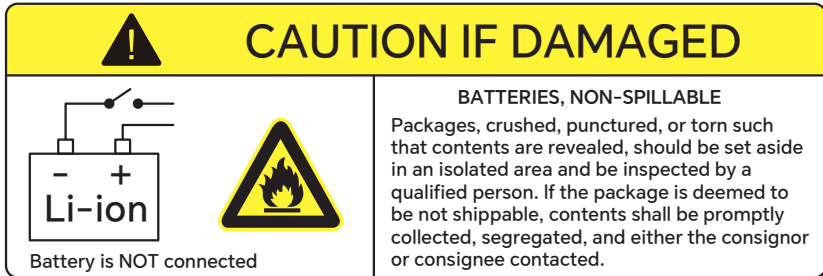


Figure 4

4. Installation Prerequisites

4.1 Installation location

Make sure that the installation location meets the following conditions:

- The building is designed to withstand earthquakes.
- Far away from the sea to avoid salt water and humidity.
- At least 2.5m far away from material.
- The installed location should not be access by pet and children.
- **The floor is flat and level.**
- No flammable or explosive materials nearby.
- Optimal ambient temperature is between 15°C and 30°C.
- Temperature and humidity stays at a constant level.
- **Minimal dust and dirt in the area.**
- No corrosive gases present, including ammonia and acid vapor.

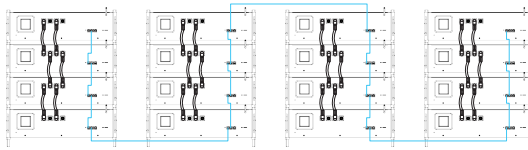
The TADIRAN Tadiran TAD-LV5.12 EU battery is rated at IP20, so the battery should be installed indoor.

If the ambient temperature is outside the operating range, battery will protect itself by shutting down. The battery optimal operate temperature is 15°C to 30°C. Frequent exposure to severe operating condition would exacerbate the performance and lifetime of the battery.

4.2 Installation requirements

For safety used of battery, please notice following notes when install:

- The installation shall be in a restricted access location/ room or in a cabinet where provides a barriers for the battery terminal.
- If more than 2 batteries are installed, up to 4 units are stacked per cluster. Max. 16 units can be expanded.



- DVC class specification: DVC-C for battery terminal, DVC-A2 for all communication terminals.
- The insulation design for the battery is basic on voltage 450d.c. of OVC II and 230Va.c. of OVC III. Any connection to those greater than the design is not permitted.

4.3 Installation process

The battery should be installed according to the following flow chart. The detail installation process described in below process.

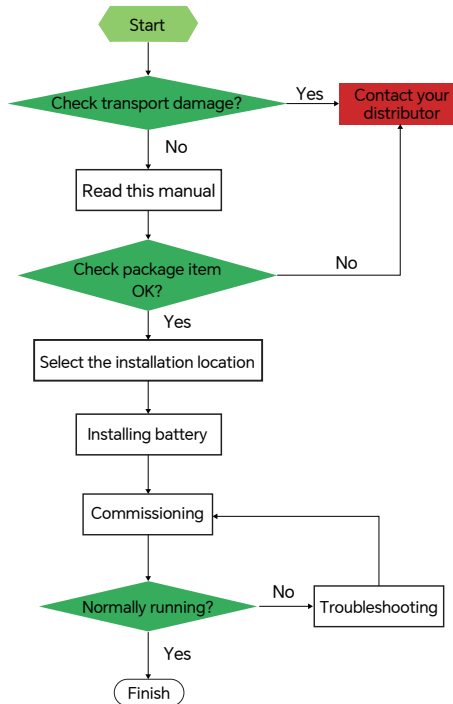


Figure 5

4.4 Installation materials

Following installation materials should be prepared by installers.

- Power cable
- Data cable
- Earth cable
- Ground wire

NOTICE

Make sure that the cross-sectional area of charging cables is 25mm².

NOTICE

A breaker between Tadiran TAD-LV5.12 EU battery and inverter was recommended to install, and the breaker's min. current should be over 150A or following with local regulations.

4.5 Tools

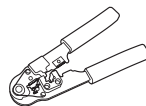
To install the battery pack, those following tools are probably required:



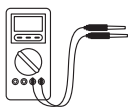
Phillips screwdriver



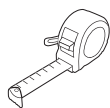
Flat-head screwdriver



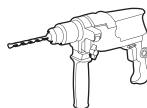
Cable crimper



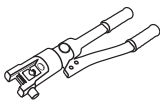
Voltmeter



Tape measure



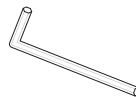
Drill



Wire clamp



Torque wrench



Inside hexagon screwdriver

In order to protect operator and installer's safety, please select and use suitable tools and measuring instruments that are certified for precision and accuracy.

4.6 Safety instruments

When dealing with the battery, following safety gears should be equipped. Installers must meet the relevant requirements of IEC 60364 or the domestic legislation and other relevant international standards.



Insulated glove



Safety goggles



Safety shoes

4.7 Network cable

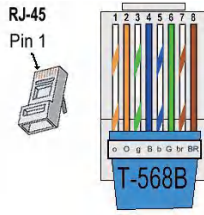


Figure 6

If needed, the network cable should be made like that diagram. But the network cable between battery and Inverter should be made following the definition of Inverter. If available, use a LAN cable tester to check whether the cable is faulty.

4.8 Storage

If the battery is not to be installed immediately, or removed from operation and needs to be stored for a long period, please choose an appropriate location to store it.

Instructions for storage are:

- Do not stack more than 7 battery boxes.
- The temperature of battery stored recommended in the range of 0°C to 25°C.
- Do not expose to water

The battery box should be upright as shown in the following figure and not stacked upside down when storing the battery box.

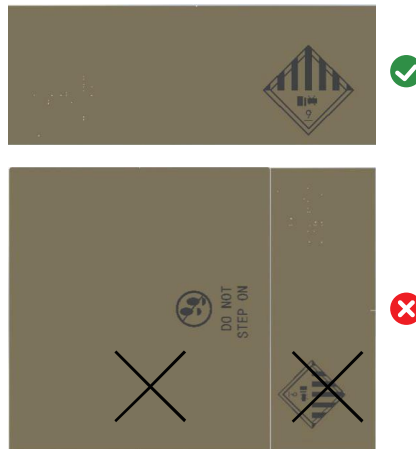


Figure 7

If the battery needs to be stored over 3 months, the DC circuit of battery suggests to be disconnecting. Otherwise, the battery would discharge at a minimum rate and capacity degrades depended on storage time, the battery self-consumption less than 5w. And, if the battery stored over 6 months, it is suggested to connect the battery with inverter and commission the system.

5. Battery Installation

5.1 Package items

These items are included in the package.

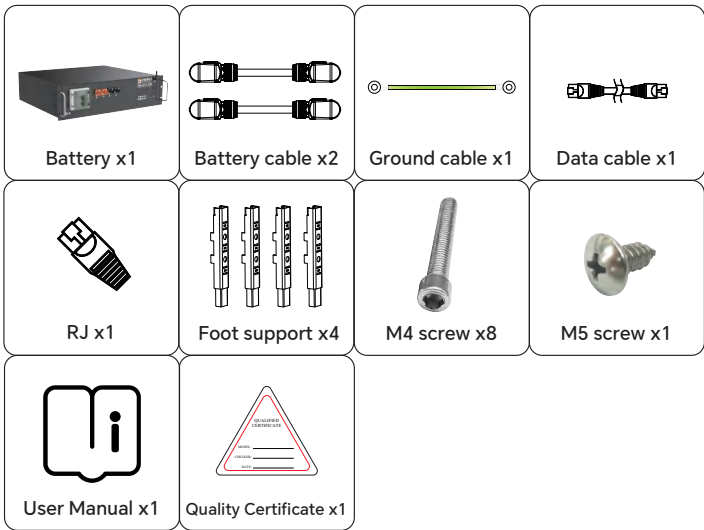


Figure 8

5.2 Checks before installation

There are a few things to check before installing the battery to ensure that it has no defects.

Check item 1: Check the battery voltage.

WARNING

If this checking process is executed for any reason after the battery is fully installed, make sure that the inverter is turned off or break the connection between battery and inverter while checking the battery.

Turn on the air switch, after the six LED lights on, measure the voltage at the terminal interface with a voltmeter. If the voltage is lower than 48 V, do not use the battery and contact.

- TADIRAN hot line +380 63 41 98 567 or your distributor.

5.3 Installation the battery

NOTICE

The symbol located on the front of battery, and the earth wire of batteries and inverter is compulsive for Connection.

5.3.1 Connect with 48Vdc Inverter

NOTICE

If the battery is installed on the floor or on a platform, make sure that the floor or platform is capable of supporting the battery's weight.

Note: If more than 4 batteries are installed, up to 4 units are stacked per cluster.

The installed location shall be restricted access or installed in a cabinet which provides a guard from pet and children.

5.3.2 Ground installation

Note: Prohibit long-term suspension!

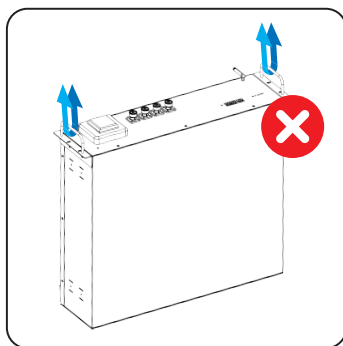


Figure 9

1. Fix the braced feet to battery's mounting holes one by one.

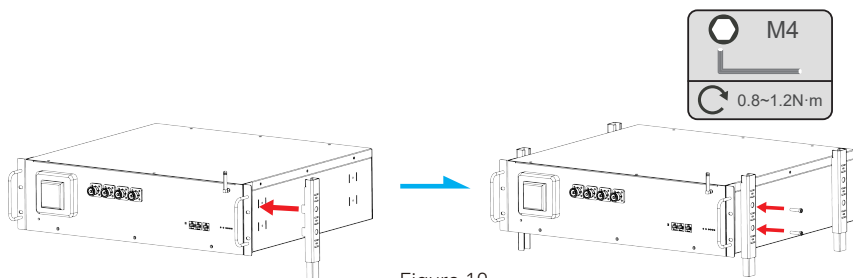


Figure 10

2. If more power and energy needed, two or more (≤ 4) batteries could be installed in one stack.
3. connect ground wire.

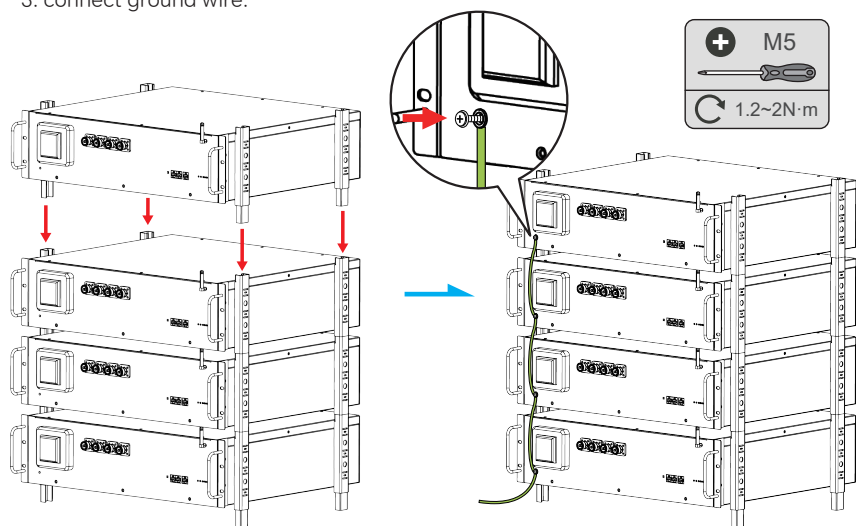


Figure 11

5.4 Cable connections

WARNING

Before connecting battery with inverter, please make sure that no inverter connected or the inverter turned off.

5.4.1 Cable connection for Parallel connection

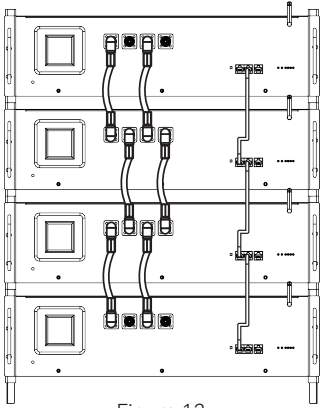
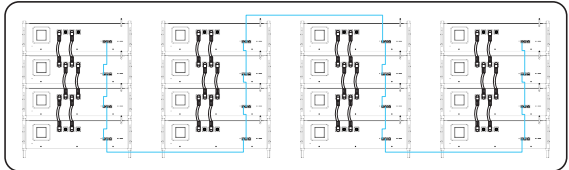
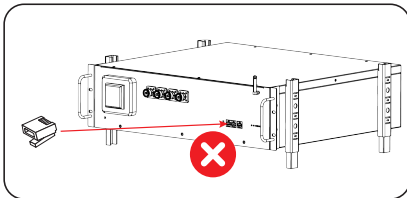


Figure 12

- Communication



Note: Up to 4 batteries can be stacked within the nominal voltage value. Up to 4 clusters can be expanded. If you expand to 2 clusters or more, you need to buy a parallel box separately.



- If you have only one battery, you don't need to insert the terminal resistor RJ45 into the port.

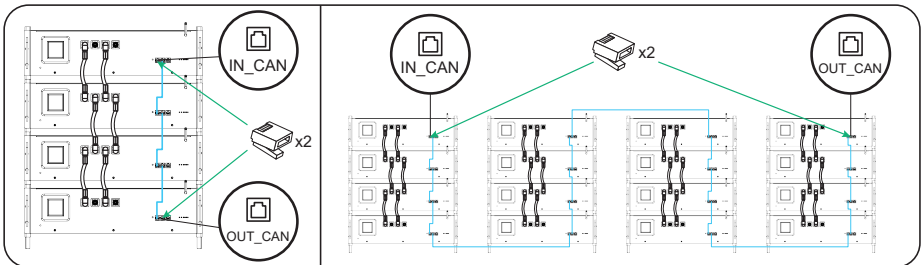


Figure 13

- If you connect more than two batteries, connect the terminal resistors RJ45 to the ports of the first and last batteries after the connection is complete.

**NOTICE**

Before two or more batteries installed in parallel, please check the voltage of each battery and make sure the voltage different less than 2.0V.

NOTICE

The battery default protocol is CAN bus, if an inverter communication mode is RS485 or other protocol, please contact TADIRAN hot line +380 63 41 98 567 before installed the battery.

6. Commissioning

6.1 Commissioning battery

If there is only one battery installed, use the following steps to put it in operation:

1. Turn on the air switch.
2. Make sure that the Run light is on. If it stays off, do not use the battery and contact TADIRAN +380 63 41 98 567 or your distributor.
3. Turn the inverter on, and wait for the start-up sequence to complete fully.

When there are two or more batteries connected with parallel mode, after the charging cable and the data cable has been connected correctly, follow these steps to put them in operation:

1. Check battery voltage level is above 48V
 - a) If battery voltage is under 45V contact your distributor or TADIRAN after service hot line for help.
2. Turn on the air switch, then the indicator lights will turn on.
3.
 - a) For all batteries, make sure that the Run light is on.
 - b) Make sure the maximum voltage different between batteries less than 2.0V.
 - c) If not, the installer should balance the battery voltage and then parallel connect batteries together.
4. Turn the inverter on, and wait for the start-up sequence to complete fully.

6.2 Shutting down battery

1. Turn off the air switch.
2. Make sure that every light on the battery is off.



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