HIGH VOLTAGE BATTERY

Installation

and Operation Manual

AX2.88kWhBM

AX2.88kWhBS

INTRODUCTION

The publication and copyright of this documentation remain with the company: AKKU SYS Akkumulator- und Batterietechnik Nord GmbH Gleitnweg 23

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before use!
Read this instruction manual carefully before installation.
It contains important regulations and information for the use of this product and provides technical support for the operator of the device.

Our EU declaration of conformity and warranty conditions can be found at: **www.a-tronix.de**

Table of Contents

1. Introduction

The document describes the installation, commissioning, maintenance and troubleshooting of the high-voltage batteries listed below.

a-TroniX AX2.88kWhBM

a-TroniX AX2.88kWhBS

The battery chemistry of these products is lithium iron phosphate. This manual is intended for qualified personnel only. The tasks described in this document should only be performed by authorized and qualified technicians. After installation, the installer must provide the end user with the
User manual explain.

2. Symbols

SymbolsSymbol Explanation CE mark. The inverter complies with the requirements of the applicable CE guidelines.

This mark indicates that the requirements for product safety certification are composite in the UK.

Be careful, risk of electric shock.

Do not place near flammable or explosive materials.

Install the product out of the reach of children.

Read the instruction manual before starting installation and operation.

Do not dispose of the product with household waste.

Disconnect the device from the power supply before carrying out any maintenance or repair work.

Observe the precautionary measures for handling devices at risk of electrostatic discharge.

Protective conductor connection

Caution, risk of electric shock, energy storage with time-limited discharge.

3. Security

Any work on the batteries should be carried out by authorized technicians. It goes without saying that technicians should familiarize themselves with the contents of this manual before carrying out any maintenance or installation work on the system.

3.1 Handling

- Do not expose the batteries to open flames.
- Do not expose the product to direct sunlight.
- Do not place the device near combustible materials.
  In the event of an accident, a fire or explosion may occur.
- Store the device in a cool and dry place with sufficient ventilation.
- Do not store the device near water sources.
- Store the product on a flat surface.
- Store the device out of the reach of children and animals.
- Do not damage the device by dropping it, deforming it, hitting it, cutting it or penetrating it with a sharp object. This may result in electrolyte leakage or fire.
- Do not touch any liquid that comes out of the device. There is a risk of electric shock or skin injuries.
- Always handle the battery with insulated gloves.
- Do not step on the device or place foreign objects on it.
  This can lead to damage.
- Do not charge or discharge damaged batteries.
- Do not store batteries near water sources.

3.2 Installation

- Do not connect the storage device to the conductors of the inverter or the photovoltaic system. This will cause damage to the battery and may result in an explosion.
- After unpacking, check the product for damage and missing parts.
- Make sure the inverter and battery are completely turned off before beginning installation.
- Do not mix up the positive and negative poles of the battery.

- Make sure there is no short circuit between terminals or with an external device.

- Do not exceed the permissible battery voltage of the inverter.
- Do not connect the battery to an incompatible inverter.
- Do not connect different battery types together.
- Make sure all batteries are properly grounded.
- Do not open the battery to repair or disassemble it. Such repairs may only be carried out by a-TroniX.
- In the event of fire, only use dry powder fire extinguishers. Liquid fire extinguishers must not be used.
- Installing the battery outdoors is strictly prohibited.
- Do not install the battery near water sources or in places where the battery can get wet.
- Do not install the battery near children or pets.
- Do not use the battery in high static environments where the protection device could be damaged.
- Do not install together with other batteries or cells.

4. Responding to emergency situations

The battery storage consists of several batteries connected in series. They are designed to avoid danger or failure. However, a-TroniX cannot guarantee its absolute security.

In case of contact with the internal materials of the battery, the user should follow the following recommendations.

- If inhaled, please leave the contaminated area immediately and search See a doctor.
- In case of eye contact, rinse eyes with running water for 15 minutes and see a doctor immediately.
- If it comes into contact with skin, wash the affected area thoroughly with soap and see a doctor immediately.
- If swallowed, induce vomiting and seek medical attention.

Fire situation

In situations where the battery is on fire, if it is safe to do so, turn off the battery by turning off the circuit breaker to remove power to the system. Use an FM-200 or CO2 fire extinguisher for the battery and an ABC fire extinguisher for the other parts of the system.

In any fire situation, please evacuate people from the building immediately before attempting to extinguish the fire.

water location

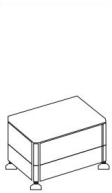
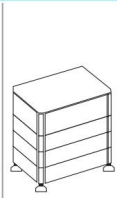
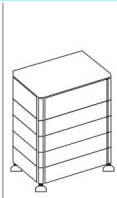
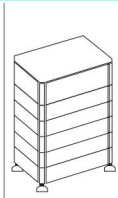
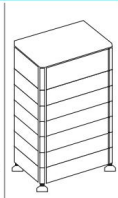
The battery modules are not waterproof. Therefore, be careful not to get them wet. If the battery is fully or partially submerged in water, do not attempt to open it. For further instructions, contact authorized personnel or a-TroniX.

5. Product information

5.1 Specifications BM / BS

Specifications for AX2.88kWh	B.S	BM
Max. charge/discharge current (A)	50	50
Operating temperature (°C)	-10~55	-10~55
Storage temperature (°C)	-20~55	-20~55
Humidity (%)	5~95	5~95
Normal voltage (V)	57.6	57.6
Normal capacity (Ah)	50	50
Normal energy (kWh)	2.88	2.88
Battery voltage range (V)	48.6~65.7	48.6~65.7
Max. Continuous Discharge/Charge Current (A)	50/50	50/50
(CC-CV) Standard charging current (A)	25	25
Constant current and voltage charge shutdown current (A)	2.5	2.5
Discharge peak current (60s) (A)	65	65
Dimensions (L*W*H) (mm)	570*380*155	570*380*170
Weight (kg)	31.8	37.7
Communication interfaces	CAN	CAN

5.2. Battery system a-TroniX 2.88kWhBM + BS

Specifications for AX2.88kWhBM + BS						
Characteristics						
Battery name*	IFpP42/151/ 108/[(18S)2S] E/-10+50/90	IFpP42/151/ 108/[(18S)3S] E/-10+50/90	IFpP42/151/ 108/[(18S)4S] E/-10+50/90	IFpP42/151/ 108/[(18S)5S] E/-10+50/90	IFpP42/151/ 108/[(18S)6S] E/-10+50/90	IFpP42/151/ 108/[(18S)7S] E/-10+50/90
The number of batteries	1BM+1BS	1BM+2BS	1BM+3BS	1BM+4BS	1BM+5BS	1BM+6BS
Normal voltage (V)	115.2	172.8	230.4	288	345.6	403.2
Normal capacity (Ah)	50					
Normal energy (kWh)	5.76	8.64	11.52	14.4	17.28	20.16
Battery voltage range (V)	97.2~131.4	145.8~197.1	194.4~262.8	243~328.5	291.6~394.2	340.2~459.9
Max. charging/ Discharge current (A)	50/50					
(CC-CV) Standard charging current (A)	25					
Constant current and voltage charge Shutdown current (A)	2.5					
Discharge peak current (60s) (A)	65					
Storage temperature (°C)	-20~55					
Operation Temperature range (°C)	Charge: 0 ~55, discharge: -10 ~55					
Discharge capacity (Ah)	35@-20±2°C @1C;50@25±2°C @0.5C;47@55±2°C @0.5C					
Cycle life	ÿ6000 @25°C @ 70%SOH					
Ingress protection	IP65					
Protection class	Class I					
Dimensions (B* H * T) [mm]	570*380*350	570*380*470	570*380*590	570*380*710	570*380*830	570*380*950
Weight (kg)	71.1	102.9	134.7	166.5	198.3	230.1
Communication interfaces	CAN					

6. Product features

6.1 Battery system features

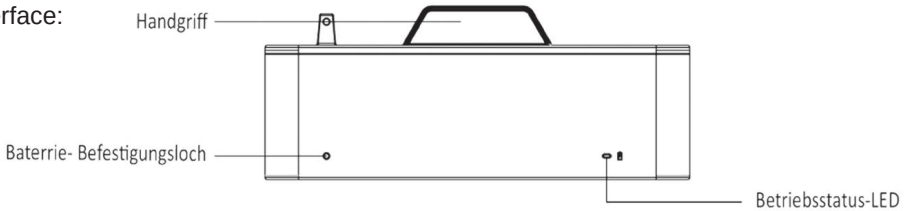
The batteries are equipped with multiple protection systems to ensure the safe operation of the system. Some of the protection systems include:

- Inverter interface protection: over-voltage, over-current, external short-circuit, reverse polarity, ground fault, over-temperature, over-current
- Battery protection: Internal short circuit, over voltage, over current, over temperature, under voltage

The battery system has the following interfaces so that it can be connected and operated efficiently.

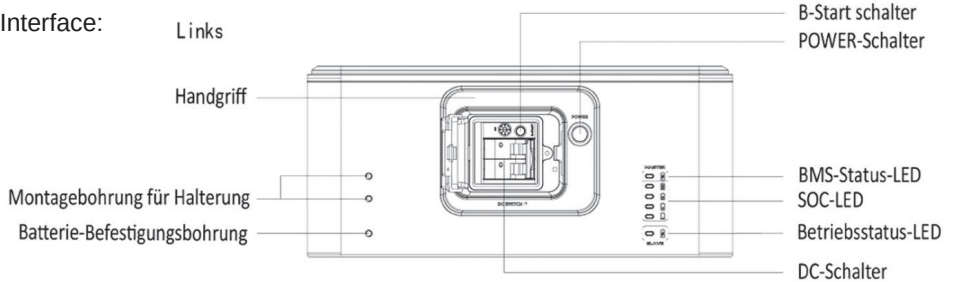
BS features:

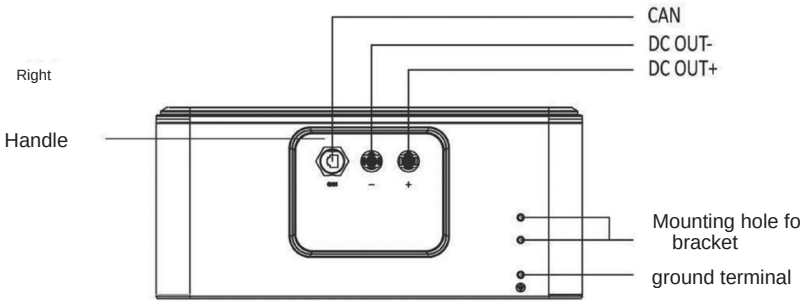
• Interface:



BM features:

• Interface:





DC switch

Power switch, battery charge and discharge switch.

DC OUTPUT +

Bat + connection of the inverter.

DC OUTPUT -

Connection Bat - of the inverter.

POWER switch

Switch to turn on the system, press this switch to start the system.

B start switch

After switching on, press this button for 5 seconds.

BMS status LED and SOC LED

The LEDs show specific alarm information and the performance of the battery system
at.

Operating status LED

This LED is used to indicate whether the battery is working effectively. A green light on this LED means the battery is on and functioning normally. If the battery is not functioning properly, a red glow on this LED means the battery is not functioning properly.

7. Installation

7.1 Contents of the package

Please check whether the following parts are included in the packaging:

For BS

A

b

Number	Article
A	Fastening screw set
b	Quick installation guide and user manual

For BM

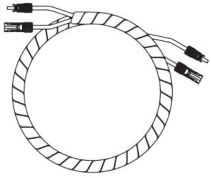
C

D

E

F

G



H

I

J

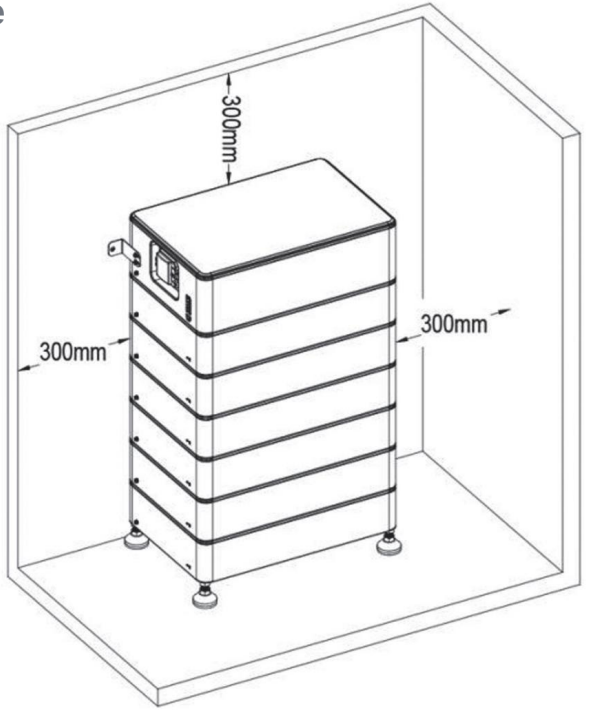
K

L

Number	Article
C	Fastening screw set
D	mounting bracket
E	Footrests
F	Communication cable (BMS inverter)
G	ground cable
H	DC output cable

Number	Article
I	Quick installation guide and user manual
J	Wall mounting screw set
K	Waterproof cover
L	RJ45 connector

7.2 Free space



Make sure there is at least 300mm of clearance. A distance of at least 300mm must be maintained around the battery pack to ensure cooling.

NOTE

Make sure that the battery pack is always exposed to the ambient air. The battery pack is cooled by natural convection.
If the battery pack is fully or partially covered or shielded, this may cause the battery pack to stop functioning.

7.3 Tools

The following tools are required for installation.

screwdriver

Crimping
Modular

Safety shoes

multimeter

Safety gloves

safety goggles

Tongs

Ribbon

Electrical
drilling machine

Rail level level

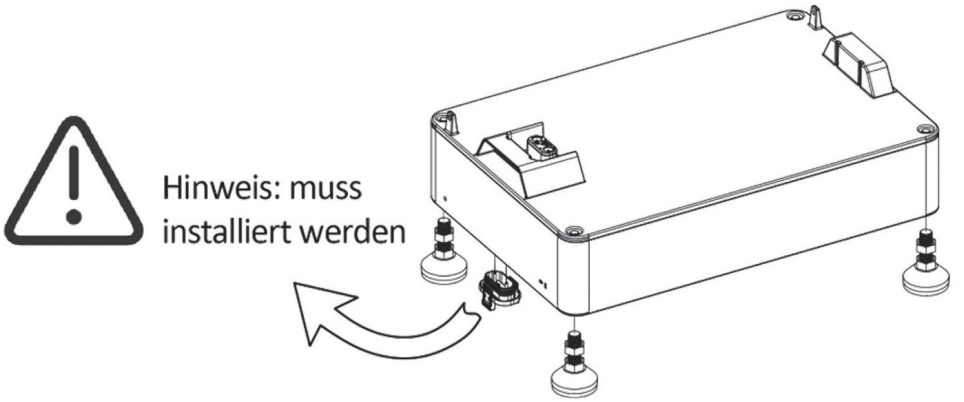
duct tape

marker

7.4 Installation steps

Step 1:

Install a BS with four footrests (Item E), place it on the floor and adjust the height. After installing the foot stand, use a spirit level to check the leveling. Insert the waterproof cover (Item K) into the bottom of the batteries and lock it with the clip.

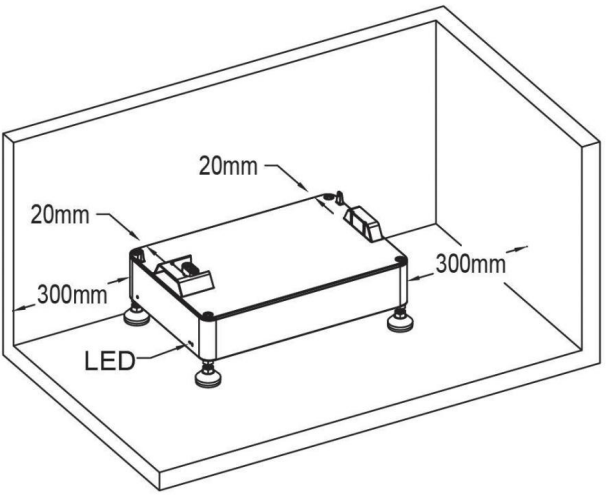


Step 2:

Place the battery 20mm against the wall.

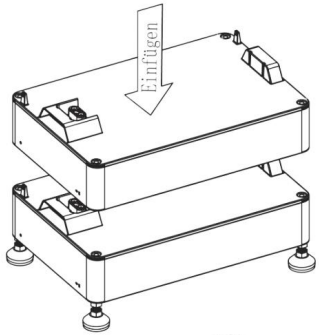
A NOTICE

Make sure the power status LED is on the left when looking at the battery model.



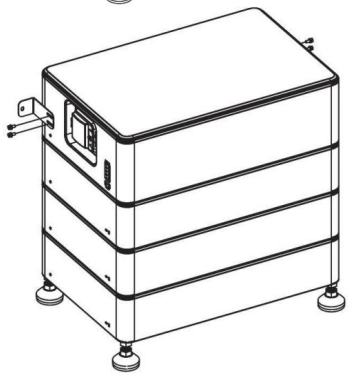
Step 3:

Stack the batteries one by one.



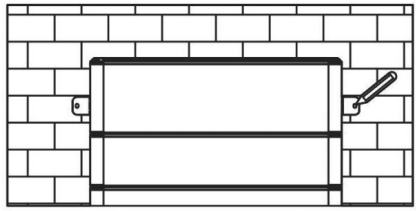
Step 4:

Attach the two mounting brackets (pos. D)
near the wall and mount it on both sides of the battery.



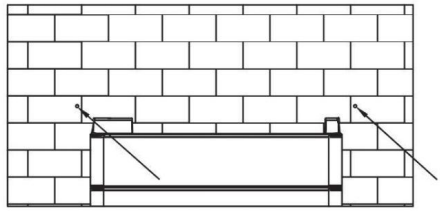
Step 5:

Mark the wall through the hole in the bracket.



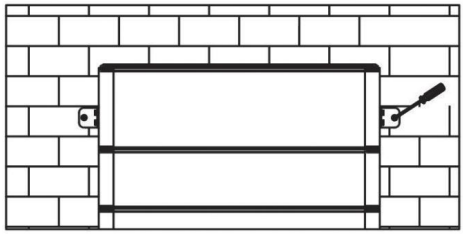
Step 6:

Drill the holes with an electric drill, make sure the holes are at least 50mm deep, and then tighten the expansion tubes (Item J).



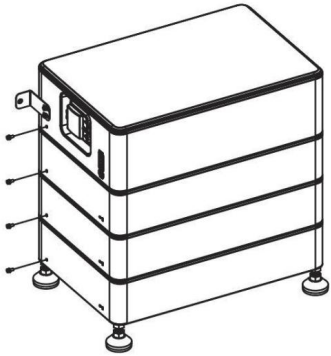
Step 7:

Attach the battery to the wall.



Step 8:

Attach the screw packs (Item C) on both sides of the battery and the installation is complete.



NOTE

Please make sure each system contains 1 BM and 1 BS. BS max. 6 pieces.

7.5 Wiring steps

A:

Connect the inverter to ensure the wiring is correct as shown in the figure below.

A NOTICE

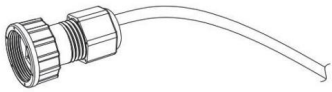
For the wiring of the inverter, please refer to the inverter user manual.

For outdoor use, please use item L and follow the steps below

Steps to connect:

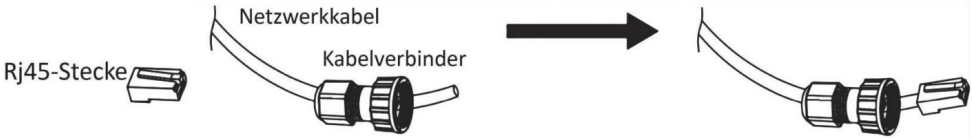
Step 1:

Prepare a standard network cable and cable connector and feed the network cable through the cable connector.



Step 2:

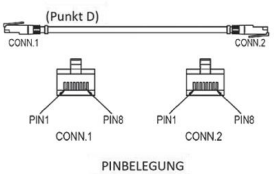
Crimp the cable with an Rj45 connector located inside the cable connector.



If used indoors, please use point F

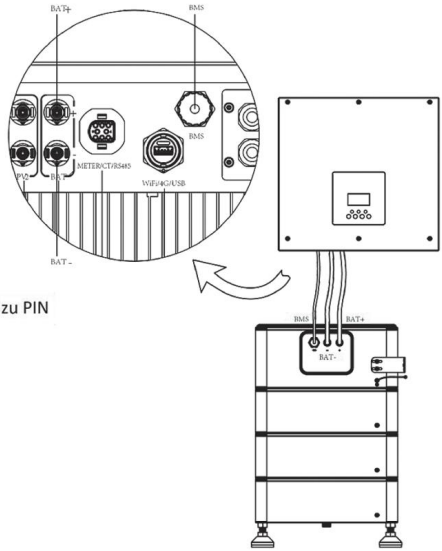
Step 3:

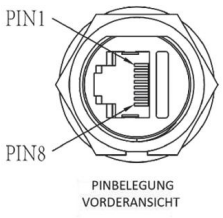
Insert the cable connector into the BMS port on the bottom of the inverter and screw it tight.



CONN.1 PIN	CONN.2 PIN
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8

Hinweis: Standardkabelbaum PIN zu PIN

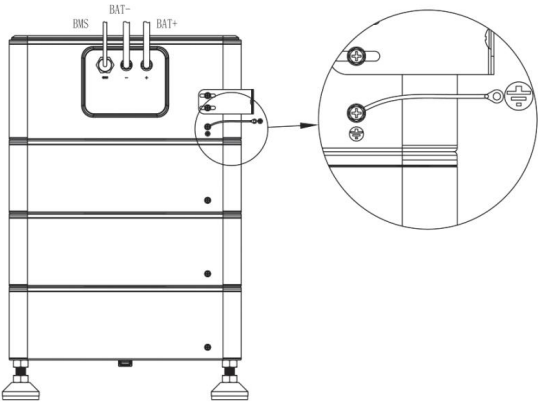




PIN	Funktion Definitionen
1	A-START
2	GND
3	RS485-B
4	BMS-CANL
5	BMS-CANH
6	BMS-CANH
7	BMS-CANL
8	RS485-A

B:

Connect the ground wire to ensure all batteries are grounded. The wiring must be connected in the order shown below.



7.6 System startup

- When the grid-connected system is put into operation, the inverter should be turned on first to avoid the current pulse of the inverter increasing to the battery pack.

- All installations and operation must comply with local electrical standards are equivalent to.
- Check all power cables and communication cables carefully.

1. Turn on the POWER switch.

- Turn on the DC switch and press the POWER switch, first the mater LED lights up once, then the BMS status LED lights up for 0.5s, the operating status LED lights up for 1s at the same time, that means the system is working normally.

8. Commissioning

The operating status light on the left side of the battery pack indicates the operating status.

For BS

Green LED	Red LED	Battery status
On for 0.5s, off for 0.5s	On for 0.5s, off for 0.5s	Runs in the boat
On for 0.1s, off for 0.1s	On for 0.1s, off for 0.1s	To update
On for 1s, off for 1s	Out of	Normal business. Business as usual
Out of	On for 1s, off for 1s	alarm

For BM

SOC	status	Green LED	Red LED	LED4-1			
=100%	standby	■		•	•	•	•
100% > SOC >= 75%		■		•	•	•	•
75% > SOC >= 50%		■			•	•	•
50% > SOC >= 25%		■				•	•
25% > SOC >= 0%		■		/ / /	/ /	/	•
=100%	Unloading	•		•	•	•	•
100% > SOC >= 75%		•		•	•	•	•
75% > SOC >= 50%		•			•	•	•
50% > SOC >= 25%		•				•	•
25% > SOC >= 0%		•		/ / /	/ /	/	•
=100%	Charge	•	/ / / / / / / / / /	■	■	■	■
100% > SOC >= 75%		•	/	■	■	■	■
75% > SOC >= 50%		•		/	■	■	■
50% > SOC >= 25%		•			/	■	■
25% > SOC >= 0%		•	/ / /	/ /	/	/	■

Remark:

■ LED flash display (on: 0.5s, off: 0.5s)

• LED display

Mistake	Green LED	Red LED	LED4-1			
Undervoltage fault Overvoltage		■			/	•
fault Overtemperature fault		■			•	/
		■		/ / /	•	•
Undertemperature error		■		•		/
Overcurrent when discharging		■		•	/ /	•
Charge via electricity		■		•	•	/
Discharge over performance		■	/ / / / / / /	•	•	•
Charge over performance		■	•			/
Subpoena failed		■	•		/ /	•
Short circuit protection	/ / / / / / / / / /	■	•	/ / /	•	/
AFE communication failed	/	■	•	/	•	•
Module addressing failed	/	■	•	•	/	/
IVU communication failed	/	■	•	•	/	•
BMU communication failed	/	■	•	•	•	/
PCS communication failed	/	■	•	•	•	•
HVB FUSE error		•			/	•
Module FUSE error		•			•	/
Performance failed	/ / /	•	/ / /	/ / /	•	•
Internal Total voltage sampling failed	/	•	/	•	/	/
Temperature sampling failed	/	•	/	•	/	•
Relay sticks		•		•	•	/
Relay not closed		•	/ /	•	•	•
Relay drive failed		•	•			/
Single cell “0V” error	/ / / /	•	•	/ /	/ /	•
Temperature high permanently failed	/	•	•	/	•	/
The individual high voltage has failed permanently	/	•	•	/	•	•
SOH protection low		•	•	•		/
AFE failed (UV/OV/UT/OT)		•	•	•	/ /	•
Shutdown failed		•	•	•	•	/
Other error	/ / / /	•	•	•	•	•

9. Exclusion

The warranty does not cover defects caused by normal wear and tear, inadequate maintenance, handling, storage, incorrect repairs, changes to the battery or battery pack by third parties not carried out by a-TroniX or a company commissioned by a-TroniX failure to comply with product specifications contained herein or improper use or installation, including but not limited to the following:

- Damage during transport or storage.
- Improper installation of batteries in the pack or maintenance.
- Using the battery pack in an unsuitable environment.
- Improper, insufficient or incorrect charging, discharging or production circuit not described in this manual.
- Improper or inappropriate use.
- Inadequate ventilation.
- Failure to follow applicable safety warnings and instructions.
- Interference or attempted repairs by unauthorized personnel.
- In the event of force majeure (e.g. lightning, storm, flood, fire, earthquake, etc.).

- There are no warranties, implied or express, other than those set forth herein. a-TroniX is not liable for consequential or indirect damages arising from or in connection with the product specification, the battery or the battery pack.

10. Troubleshooting and Maintenance

10.1 Maintenance

A. Regularly check whether the operating environment of the battery meets the requirements, and the installation position should be far away from a heat source.

b.

The battery module should be stored in an environment with a temperature range between -20°C ~ +55°C and regularly cleaned according to the table below with no more than 0.5C (A C-rate is a measure of the rate at which which discharges a battery relative to its maximum capacity.) to be charged to the SOC of 50% after a long period of storage.

temperature of the Warehouse environment	Relatives humidity of the Warehouse environment	storage time	SOC
Below -20°C	/	Not permitted	/
-20~35°C	5%~70%	ÿ 6 months	20%ÿSOCÿ60%
35~55°C	5%~70%	ÿ 3 months	20%ÿSOCÿ60%
Above 55°C	/	Not permitted	/

A NOTICE

Damage to the system due to undervoltage

- Recharge the over-discharged system within seven days if the temperature is above 25°C.
- Recharge the over-discharged system within seven days if the temperature is below 25°C.

C. Check regularly whether the battery and its connection terminals, connecting cables and indicator lights are in order.

10.2 Troubleshooting

If the red/green LED on the control panel flashes or lights up normally, it does not mean that the OS has a malfunction, it may just be an alarm or a protection function. Please check the “LED Status Indicators” in Chapter 7 for a detailed error definition before starting troubleshooting. In general, the alarm display is normal without manual intervention.
When the alarm-triggering condition is cleared, the OS automatically returns to normal operation.

The problem determination is based on the following points:

1) Whether the green light on the power switch is on;

2) Whether the buzzer in the BM is on;

3) Whether the battery system can communicate with the inverter;

4) Whether the battery can provide output voltage or not.

Preliminary determination steps

If the battery system does not work, the LED does not light up or flashes when turning on the DC and power, please contact the local dealer.

1) The LED display of the BM and BS is normal, but it cannot charge and discharge. Watch the inverter display and there is no SOC. Check whether the CAN communication between BM and inverter is well connected. If the connection is good, please replace a CAN communication cable.

   If the SOC is still not shown on the inverter display, please contact the local dealer.

2) After turning on the battery system, if you can see the alarm information on the LED and inverter display at the same time, please contact the local dealer.

www.a-tronix.de

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V1.0.1

10-203-00353-00

BATTERY SYSTEM

User Manual

AX2.88kWhBM
AX2.88kWhBS

INTRODUCTION

The publication and copyright of this documentation remain with the company: AKKU SYS Akkumulator- und Batterietechnik Nord GmbHConnectionweg 23

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• Fax +49 4101 85475-66 • www.akkusys.de • akkusys. shop **Read carefully before use!**

Read this manual carefully before installation. It contains important regulations and instructions for the use of this product and provides technical support for the operator of the unit.

Our EU declaration of conformity and warranty conditions can be found on: **www.a-tronix.de**

Table of Contents

1.Introduction

The document describes the installation, commissioning, maintenance and troubleshooting of the following high voltage battery listed below.

a-TroniX AX2.88kWhBM

a-TroniX AX2.88kWhBS

The battery chemistry of these products is Lithium Iron Phosphate. This manual is designed for qualified personnel only. The tasks described in this document should be performed by authorized and qualified technicians only.
After Installing the Installer must explain the user manual to the end user.

2. Symbols

Symbol Explanation CE mark. The inverter complies with the requirements of the applicable CE guidelines.

This mark indicates compound UK product safety certification requirements.

Caution, risk of electric shock.

Do not place nor install near flammable or explosive materials.

Install the product out of reach of children.

Read the instruction manual before starting installation and operation.

Do not dispose of the product with household waste.

Disconnect the equipment before carrying out maintenance or repair.

Observe precautions for handling electrostatic discharge sensitive devices.

PE conductor terminal

Caution, risk of electric shock, energy storage timed discharge.

3.Safety

Any work on the Batteries should be handled by authorized technicians and hence it is understood that the technicians should familiarize themselves with the contents of this manual before any maintenance or installation is carried out on the system.

3.1 Handling

- Do not expose battery to open flame.
- Do not place the product under direct sunlight.
- Do not place the product near flammable materials. It may lead to fire or explosion in case of accident.
- Store in a cool and dry place with ample ventilation.
- Do not store the product near water sources.
- Store the product on a flat surface.
- Store the product out of reach of children and animals.
- Do not damage the unit by dropping, deforming, impacting, cutting or penetrating with a sharp object. It may cause leakage of electrolyte or fire.
- Do not touch any liquid spilled from the product. There is a risk of electric shock or damage to skin.
- Always handle the battery wearing the insulated gloves.
- Do not step on the product or place any foreign objects on it. This can result in damage.
- Do not charge or discharge damaged battery.

3.2 Installation

- Do not connect the ECS to inverter conductors or Photo-Voltaic conductors. This will damage the battery and may result in explosion.
- After unpacking, please check the product for damages and missing parts.
- Make sure that the inverter and battery is completely turned off before commencing installation.
- Do not interchange the positive and negative terminals of the battery.
- Ensure that there is no short circuit of the terminals or with any external device.
- Do not exceed the battery voltage rating of the inverter.
- Do not connect the battery to any incompatible inverter.

- Do not connect different battery types together.
- Please ensure that all the batteries are grounded properly.
- Do not open the battery to repair or disassemble. Only a-TroniX is allowed to carry out any such repairs.
- In case of fire, use only dry powder fire extinguisher. Liquid extinguishers should not used.
- Installing the battery anywhere outside is strictly forbidden.
- Do not install the battery near water sources or places where the battery can get wet.

- Install the battery away from children or pets.
- Do not use battery in high static environment where the protection device might be damaged.
- Do not install with other batteries or cells.
- Please ensure on installation site that the deviation of voltages between new batteries and every single present battery is less than 0.5V.
- Please ensure the new batteries mounted on-site comply to the warranty scope or have ever been re-charged within 5 months; on top of that, please make sure the SOC of present battery system onsite is 50%±5%.

4. Response to Emergency Situations

The batteries consist of multiple batteries connected in series. It is designed to prevent hazards or failures. However, a-TroniX cannot guarantee their absolute safety.

Under exposure to the internal materials of the battery the following recommendations should be carried out by the user.

- If there has been inhalation, please leave the contaminated area immediately and seek medical attention.
- If there has been contact with eyes, rinse the eyes with running water for 15 minutes and seek medical attention immediately.
- If there has been contact with the skin, wash the contacted area with soap thoroughly and seek medical attention immediately.
- If there has been ingestion, induce vomiting and seek medical attention.

Fire situation

In situations where the battery is on fire, if it is safe to do so, disconnect the battery pack by turning off the circuit breaker to shut off the power to the system.
Use FM-200 or CO2 fire extinguisher for the battery and an ABC fire extinguisher for the other parts of the system.
Under any fire situation, please evacuate the people from the building immediately before trying to extinguish it.

Water situation

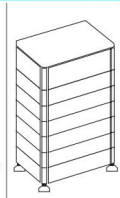
The battery modules are not water resistant. Hence care should be taken not to get it wet. If you find the battery completely or partially submerged in water do not try to open. Contact an authorized personnel or a-TroniX for further instructions.

5. Product information

5.1 Specifications BM/BS

Specifications for AX2.88kWh	B.S	BM
Max. charge/discharge current (A)	50	50
Operating temperature (°C)	-10~55	-10~55
Storage temperature (°C)	-20~55	-20~55
Humidity (%)	5~95	5~95
Normal voltage (V)	57.6	57.6
Normal capacity (Ah)	50	50
Normal energy (kWh)	2.88	2.88
Battery voltage range (V)	48.6 ~ 65.7	48.6 ~ 65.7
Max. Continuous discharge/charge current (A)	50/50	50/50
(CC-CV) Standard charging current (A)	25	25
Constant current and voltage charging cut-off current (A)	2.5	2.5
Peak discharge current (60s) (A)	65	65
Dimensions (L*W*H) (mm)	570*380*155	570*380*170
Weight (kg)	31.8	37.7
Communication interfaces	CAN	CAN

5.2. Battery System Specifications

Specifications for AX2.88kWhBM + BS						
Technical Properties						
Battery designation*	IFpP42/151/108/[(18S)2S]E/-10+50/90	IFpP42/151/108/[(18S)3S]E/-10+50/90	IFpP42/151/108/[(18S)4S]E/-10+50/90	IFpP42/151/108/[(18S)5S]E/-10+50/90	IFpP42/151/108/[(18S)6S]E/-10+50/90	IFpP42/151/108/[(18S)7S]E/-10+50/90
The number of batteries	1BM+1BS	1BM+2BS	1BM+3BS	1BM+4BS	1BM+5BS	1BM+6BS
Normal voltage (V)	115.2	172.8	230.4	288	345.6	403.2
Normal capacity (Ah)	50					
Normal energy (kWh)	5.76	8.64	11.52	14.4	17.28	20.16
Battery voltage range(V)	97.2~131.4	145.8~197.1	194.4~262.8	243~328.5	291.6~394.2	340.2~459.9
Max. charge/discharge current (A)	50/50					
(CC-CV) standard charging current (A)	25					
Constant current and constant voltage charging cut-off current (A)	2.5					
Peak discharge Current (60s) (A)	65					
Storage temperature (°C)	-20~55					
Operating temperature range (°C)	Charge: 0~55, Discharge: -10~55					
Discharge capacity (Ah)	35@-20±2°C @1C;50@25±2°C @0.5C;47@55±2°C @0.5C					
Cycle life	ÿ6000 @25°C @ 70%SOH					
Ingress protection	IP65					
Protective class	Class I					
Dimensions (L*W*H) (mm)	570*380*350	570*380*470	570*380*590	570*380*710	570*380*830	570*380*950
Weight (kg)	71.1	102.9	134.7	166.5	198.3	230.1
Communication interfaces	CAN					

6. Product Features

6.1 Battery System Features

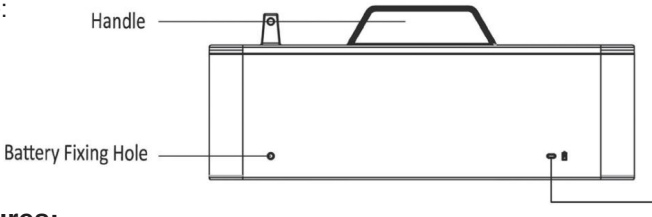
The batteries have been fitted with multiple protection systems to ensure the safe operation of the system. Some of the protection system includes:

- Inverter interface protection: Over voltage, Over current, External Short Circuit, Reverse Polarity, Ground Fault, Over Temp, In rush current
- Battery Protection: Internal Short Circuit, Over voltage, over current, over temp, Undervoltage

The battery system contains the following interface to allow it to connect and operate efficiently.

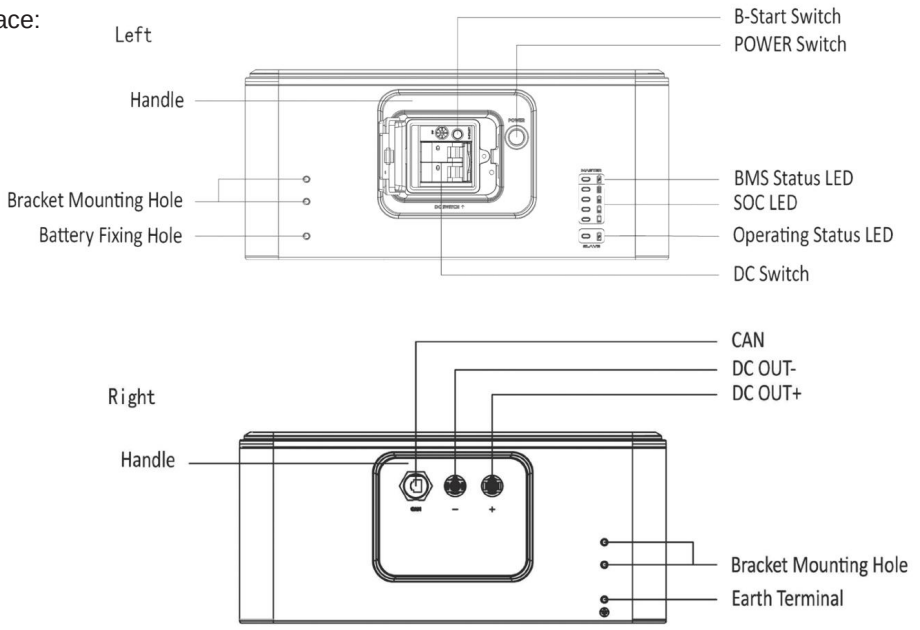
BS Features:

- Interface:



BM features:

- Interface:



DC switch

Power switch, battery charge and discharge circuit switch.

DC OUT

+ Connect bat + of inverter.

DC OUT

- Connect bat - of inverter.

POWER switches

System power on switch, press this switch, the system starts to work.

B-Start switches

After power on, press this button for 5s.

BMS Status LED and SOC

LED LED display specific alarm information and battery system power.

Operating status LED

This LED is used to indicate if the battery is operating effectively.
A green light on this LED means the battery is ON and operating normally.
If the battery is operating failure, a red light on this LED means the battery is operating abnormally.

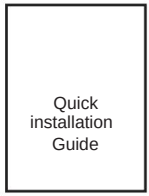
7. Installation

7.1 Items in the package

Please check if following items are included with the package:

For BS

A



b

No.	items
A	Mounting screw pack
b	Installation guide

For BM

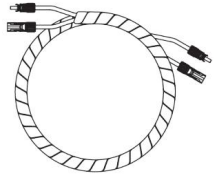
C

D

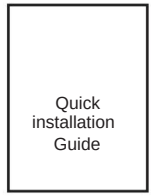
E

F

G



H



I

J

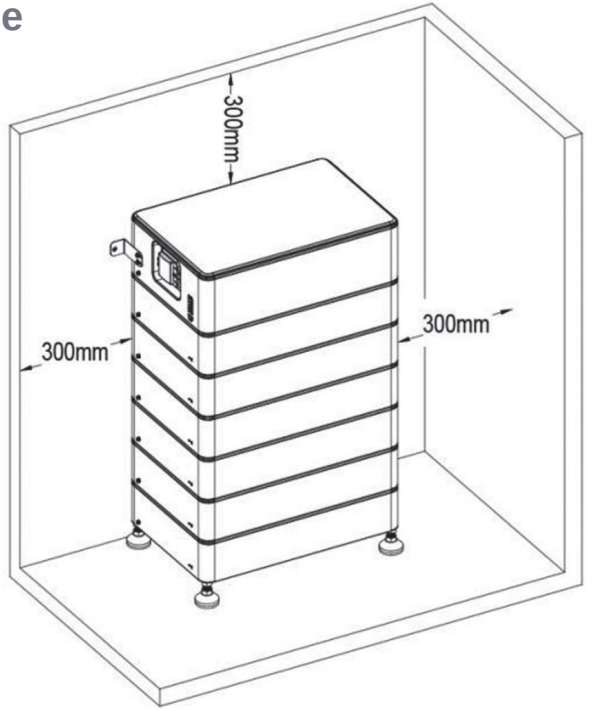
K

L

No.	items
C	Mounting screw pack
D	Fixing bracket
E	Footstand
F	Communication cable (BMS inverter)
G	Grounding cable
H	DC output cable

No.	items
I	Installation guide
J	Expansion tube*2 & Expansion screw*2
K	Waterproof cover
L	RJ45

7.2 Clearance



Make sure to leave a space of at least 300mm. A clearance of at least 300mm must be left around the battery pack for proper cooling.

NOTE Make sure that the battery pack is always exposed to the ambient air. The battery pack is cooled by natural convection. If the battery pack is entirely or partially covered or shielded, it may cause the battery pack to stop operating.

7.3 Tools

The following tools will be required to install.

Screwdriver

Crimping modular

Safety shoes

multimeter

Safety gloves

Safety goggles

Pliers

Ribbon

Electric drill

Track level bar

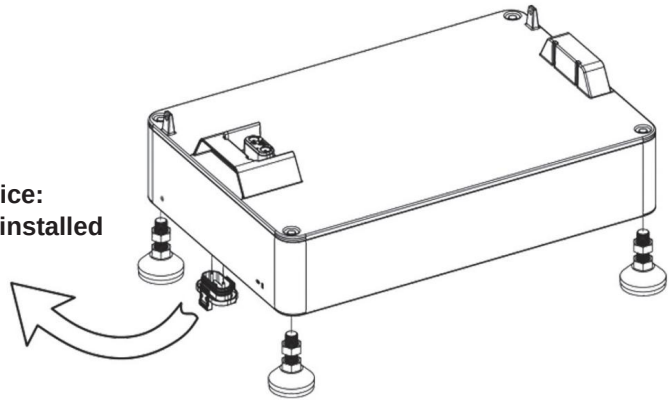
Tape

marker

7.4 Installation Steps

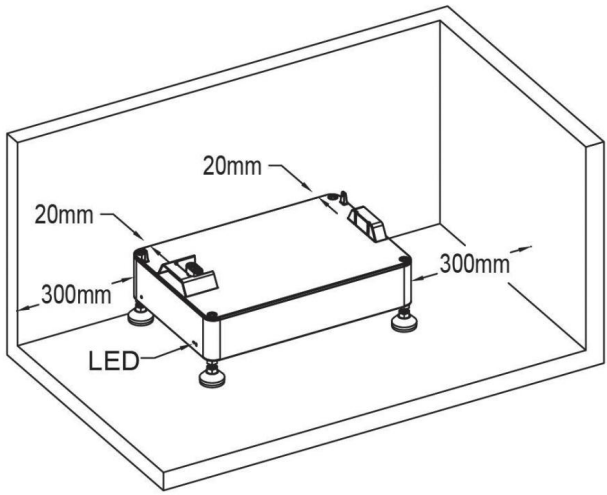
Step
1: Install a BS with four footstand (Item E) and place it on the ground and adjust it to the level. After installing the footstand, use a track level bar to confirm the level. Insert the waterproof cover(Item K) into the bottom of the battery and lock it in place with the clip.

Notice:
must be installed

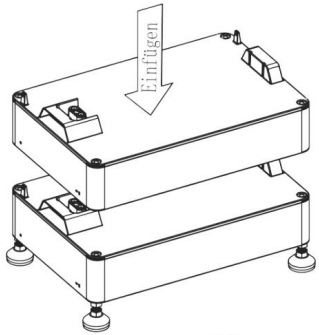


Step
2: Place the battery 20mm against the wall.

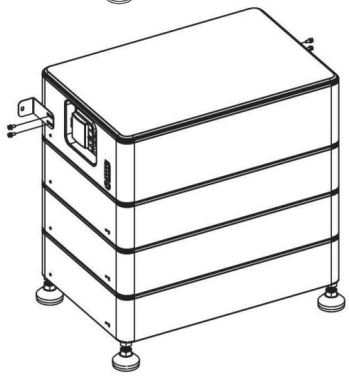
GRADE
Please make sure the Operating Status LED is on your left handside when you face the battery model.



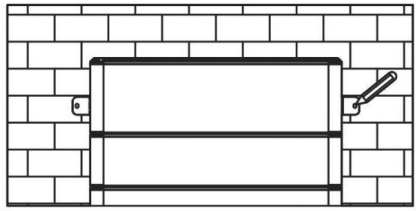
Step
3: Stack the batteries one by one.



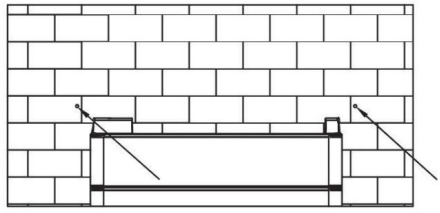
Step 4:
Place the two fixing brackets (Item D)
close to the wall and install them on both sides of the battery.



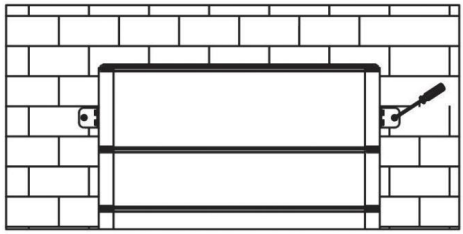
Step
5: Mark the wall through the bracket hole.



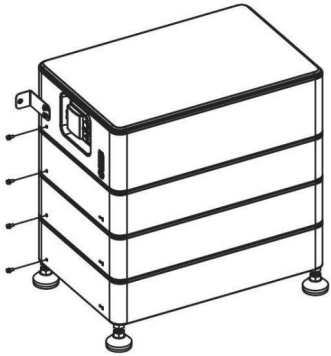
Step
6: Drill holes with electric drill, make sure the holes are at least 50mm deep, and then tighten the expansion tubes (Item J).



Step
7: Fix the battery on the wall.



Step
8: Fix the mounting screw packs (Item C) on both sides of the battery,
the installation is over.



GRADE
Please make sure each system including 1 BM and 1 BS. BS max 6 pieces.

7.5 Wiring Steps

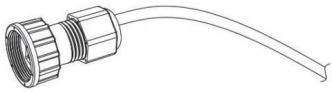
A: Connect the inverter to make sure the wiring position is correct, as shown in the figure below.

GRADE
Inverter wiring refer to the inverter user manual.

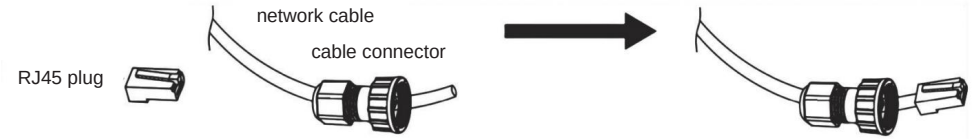
For outdoor use, please use item L and proceed as follows

Connection steps:

Step
1: Prepare a standard network cable and cable connector, then insert the network cable through the cable connector.

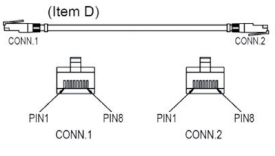


Step
2: Crimp the cable with a Rj45 plug which is inside of the cable connector.

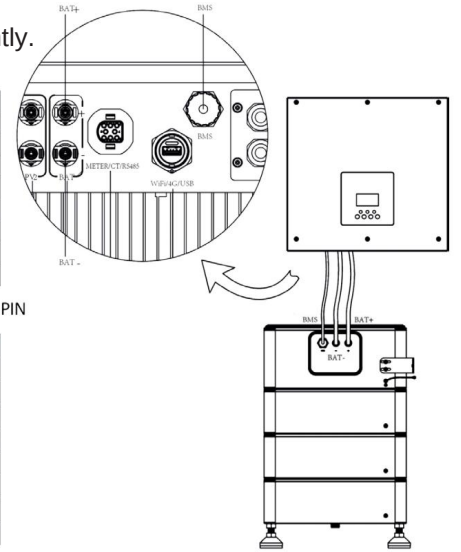


If the usage is indoor, please use item F

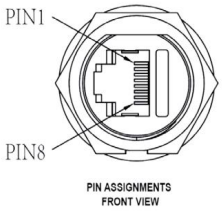
Step
3: Insert the cable connector into BMS port at the bottom of inverter and screw it tightly.



CONN.1 PIN	CONN.2 PIN
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8

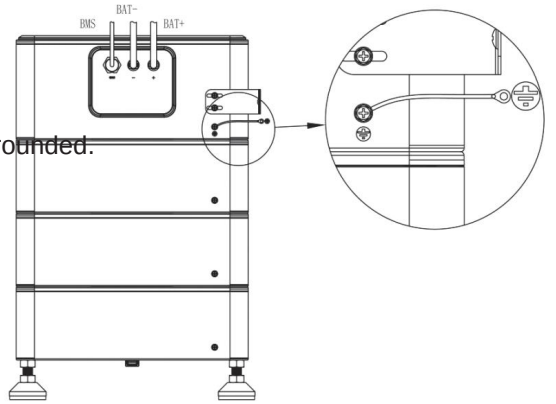


Note: Default wire harness PIN to PIN



PIN	Function Definitions
1	A-START
2	GND
3	RS485-B
4	BMS-CANL
5	BMS-CANH
6	BMS-CANH
7	BMS-CANL
8	RS485-A

B: Connect the grounding cable to ensure that all batteries are grounded. Wiring shall be connected in the sequence as shown below.



7.6 System startup

- When the grid connected system is started, the inverter should be turned on first to avoid the current pulse of the inverter increasing to the battery pack.
- All installation and operation must comply with local electrical standards.
- Check all power cables and communication cables carefully.

1. Turn on the POWER switch

- Turn on DC switch and press the POWER switch, firstly Mater LED will light up once, and then the BMS Status LED will light up for 0.5s, Operating Status LED will light up for 1s at the same time, it means that the system works normally.

8. Commissioning

The operating status light on the left side of the battery pack shows its working status.

For BS

Green LED	Red LED	Battery status
On for 0.5s, Off for 0.5s	On for 0.5s, Off for 0.5s	Running in boat
On for 0.1s, Off for 0.1s	On for 0.1s, Off for 0.1s	Upgrading
On for 1s, Off for 1s	Off	Normal working
Off	On for 1s, Off for 1s	alarm

For BM

SOC	status	Green LED	Red LED	LED4-1			
=100%	Standby	■		•	•	•	•
100% > SOC >= 75%		■		•	•	•	•
75% > SOC >= 50%		■			•	•	•
50% > SOC >= 25%		■				•	•
25% > SOC >= 0%		■		/ / /	/ /	/	•
=100%	Discharge	•		•	•	•	•
100% > SOC >= 75%		•		•	•	•	•
75% > SOC >= 50%		•			•	•	•
50% > SOC >= 25%		•				•	•
25% > SOC >= 0%		•		/ / /	/ /	/	•
=100%	Batch	•	/ / / / / / / / / /	■	■	■	■
100% > SOC >= 75%		•	/	■	■	■	■
75% > SOC >= 50%		•		/	■	■	■
50% > SOC >= 25%		•			/	■	■
25% > SOC >= 0%		•	/ / /	/ /	/	/	■

Note:

■ LED flash display (on: 0.5s, off: 0.5s)

• LED on display

Fault	Green LED	Red LED	LED4-1			
Undervoltage fault	/	■	/	/	/	•
Over-voltage fault	/	■	/	/	•	/
Over-temperature fault	/	■	/	/	•	•
Under temperature fault	/	■	/	•	/	/
Discharge over current	/	■	/	•	/	•
Charge over current	/	■	/	•	•	/
Discharge over power	/	■	/	•	•	•
Charge over power	/	■	•	/	/	/
Pre-charge failed	/	■	•	/	/	•
Short circuit protection	/	■	•	/	•	/
AFE communication failed	/	■	•	/	•	•
Module addressing failed	/	■	•	•	/	/
IVU Communication failed	/	■	•	•	/	•
BMU communication failed	/	■	•	•	•	/
PCS Communication failed	/	■	•	•	•	•
HVB FUSE fault	/	•	/	/	/	•
Module FUSE fault		•			•	/
Power failed	/ /	•	/ /	/ /	•	•
Internal total voltage sampling failed	/	•	/	•	/	/
Temperature sampling failed	/	•	/	•	/	•
Relay adhesion	/	•	/	•	•	/
Relay Not Close	/	•	/	•	•	•
Relay drive failed	/	•	•	/	/	/
Single cell “0V” faulty	/	•	•	/	/	•
Temperature high permanently failed	/	•	•	/	•	/
The Single voltage high permanently failed	/	•	•	/	•	•
SOH low protection	/	•	•	•	/	/
AFE failed (UV/OV/UT/OT)	/	•	•	•	/	•
Shutdown failed	/	•	•	•	•	/
Other fault	/	•	•	•	•	•

9. Exclusion

The warranty shall not cover the defects caused by normal wear and tear, inadequate maintenance, handling, storage faulty repair, modifications to the battery or pack by a third party other than a-TroniX or a-TroniX agent, failure to observe the product specification provided here in or improper use or installation, including but not limited to the following.

- Damage during transport or storage.
- Incorrect installation of battery into pack or maintenance.
- Use of battery pr pack in inappropriate environment.
- Improper, inadequate, or incorrect charge, discharge or production circuit other than stipulated here in.
- Incorrect use or inappropriate use.
- Insufficient ventilation.
- Ignoring applicable safety warnings and instructions.
- Altering or attempted repairs and unauthorized personnel.
- In case of force majeure (ex: lightning, storm, flood, fire, earthquake, etc.).
- There are no warranties-implied or express-other than those stipulated here in. a-TroniX shall not be liable for any consequential or indirect damages arising or in connection with the product specification, battery or pack.

10. Troubleshooting and Maintenance

10.1 Maintenance

A

Regularly check whether the service environment of the battery meets the requirements, and the installation position should be far away from the heat source.

b.

The battery module should be stored in an environment with a temperature range between -20°C ~ +55°C, and charged regularly according to the table below with no more than 0.5 C (AC-rate is a measure of the rate at which a battery is discharged relative to its maximum capacity.) to the SOC of 50% after a long time of storage.

Storage environment temperature	Relative humidity of the storage environment	Storage time	SOC
Below -20°C	/	Not allowed	/
-20~35°C	5%~70%	ÿ 6 months	20%ÿSOCÿ60%
35~55°C	5%~70%	ÿ 3 months	20%ÿSOCÿ60%
Above 55°C	/	Not allowed	/

GRADE

Damage to the system due to under voltages

- Charge the over-discharged system within seven days when the temperature is above 25°C.
- Charge the over-discharged system within seven days when the temperature is below 25°C.

C

Regularly check whether the battery and its supporting terminals, connecting cables and indicator lights are normal.

10.2 Troubleshooting

When the red / green LED on the panel is flashing or normally on, it does not mean that the BS is abnormal, it may just be an alarm or protection. Please check the 'LED status indicators' in chapter 7 for the detailed faulty definition before any trouble-shooting steps. In general, the alarm indication is normal without manual intervention. When the alarm triggering state is removed, BS will automatically return to normal use.

Problem determination based on the following points

1) Whether the green light on the power switch is on;

2) Whether the buzzer in BM on;

3) Whether the battery system can be communicated with inverter;

4) Whether the battery can be output voltage or not.

Preliminary determination steps

Battery system cannot work, when DC switch on and POWER on, the LED doesn't light up or flash, please consider contact the local distributor.

1) The LED display of BM and BS is normal, but it cannot charge and discharge. Observe the display screen of inverter and there is no SOC. Please check whether the CAN communication between BM and inverter is well connected.

   If the connection is good, please replace a CAN communication cable. If the SOC is still not visible on the inverter display screen, please contact the local distributor.

2) After the battery system is powered on, if you can see the alarm information on the LED and inverter display screen at the same time, please contact the local distributor.

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If you have any questions, please contact us!

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