



The power behind competitiveness

DELTA BX_6.0 Battery Pack

Operation and Installation Manual

Table of Contents

- 1 Safety 05**
 - 1.1 Information of the Battery Pack 05
 - 1.1.1 Disclaimer 05
 - 1.1.2 Target Group 05
 - 1.2 General Safety 06
 - 1.2.1 Condition of Use 06
 - 1.2.2 Symbols 07
 - 1.2.3 Safety Instructions 08
 - 1.2.3.1 Handling of Prohibitions 08
 - 1.2.3.2 Battery Shutdown Processes 08
- 2 Introduction 12**
 - 2.1 Valid Model 12
 - 2.2 Product Overview 13
 - 2.3 LED Indicators 16
- 3 Installation 17**
 - 3.1 Installation Environment 17
 - 3.2 Mechanical Installation 18
 - 3.3 Electrical Installation for DC(BT+/-) 24
 - 3.4 CAN and RS-485 Communication Connection 27
- 4 Commissioning via Standalone Operation 29**
- 5 Battery Pack Expansion 30**
- 6 Trouble Shooting 31**
- 7 Technical Data 32**

Figure

Figure 2-1 : Shipping Components of DELTA BX_6.0 Battery Pack	13
Figure 2-2 : Dimensions of DELTA BX_6.0 Battery Pack	14
Figure 2-3 : Overview of DELTA BX_6.0 Battery Pack showing without Battery Module	14
Figure 2-4 : Rating labels of DELTA BX_6.0 Battery Pack	15
Figure 2-5 : LED indicators of DELTA BX_6.0 Battery Pack	16
Figure 3-1 : Recommended Space for Installation	19
Figure 3-2 : Mounting bracket dimensions (Unit: mm)	19
Figure 3-3 : Required position for at least 6 screws	20
Figure 3-4 : Permitted mounting positions	20
Figure 3-5(a) : The procedure for attaching the battery pack on the wall	21
Figure 3-5(b) : Attaching the battery pack on the floor	22
Figure 3-6 : Install the wiring cover on BX_6.0	23
Figure 3-7 : Assemble the DC Connector	26
Figure 3-8 : Connectors on Cabinet (Zooming from Figure 2-3)	26
Figure 3-9 : Overview of Communication Connectors	27
Figure 3-10 : Suitable cables for RJ45 connector	28
Figure 3-11 : Installing Procedure of Communication Connectors on the Cabinet	28
Figure 5-1 : Expanding the Battery Pack with DC(BT+/-) cables and Ethernet cable (See Section 3.3 and 3.4)	30

Table

Table 2-1 : Packing list of DELTA BX_6.0 Battery Pack	13
Table 2-2 : Rating label explanation of DELTA BX_6.0 Battery Pack	15
Table 2-3 : LED Indicators	16
Table 3-1 : Maximum Current Ratings for Power Cables	26
Table 3-2 : Communication Definition of DELTA BX_6.0 Battery Pack	27
Table 6-1 : Trouble shootings for DELTA BX_6.0	31
Table 8-1 : Specifications for DELTA BX_6.0	32

1 Safety

1.1 Information of the Battery Pack

1.1.1 Disclaimer

Copyright – DELTA ELECTRONICS, INC. - All rights reserved.

This manual accompanies our product for use by the end users. The technical instructions and illustrations contained in this manual are to be treated as confidential and no part may be reproduced without the prior written permission of DELTA ELECTRONICS, INC. Service engineers and end users may not divulge the information contained herein or use this manual for purpose other than those strictly connected with correct use of the product. All information and specifications are subject to change without notice.

DELTA ELECTRONICS, INC. shall have no obligation to both personal injury and property damage hereinafter with respect to any actions -- (a) the product has been installed and repaired improperly; (b) the product has been misuse without following the instructions on this user manual; (c) the product has failed due to incorrect unpacking.

1.1.2 Target Group

This user manual of the battery pack is prepared for a person who is well-trained for installing, commissioning, using, and doing maintenance. The well-trained person must have the following basic and advanced skills:

- The fundamentals of electricity, wiring, electrical components and electrical schematic symbols.
- Knowledge of how a battery pack works and is operated.
- Training in the installation and commissioning of electrical devices and installations.
- Training in how to deal with the dangers and risks associated with installing and using electrical devices and installations.
- Compliance with this manual and all safety information.

Please read the user manual before working on the product.

1.2 General Safety

IMPORTANT SAFETY INSTRUCTIONS : SAVE THESE INSTRUCTIONS !



- Please read these instructions carefully and keep them for later use.

To prevent any personal injury and any property damage, also ensure long-term operation of the battery pack, you must read this section carefully and review all the safety instructions at all times before using this battery pack.

This user manual provides important instructions for DELTA BX_6.0 Battery Pack. The product is designed, tested, verified, and certified according to international safety requirements, regulations, and standards but precautions must be observed when installing and operating the product.

1.2.1 Condition of Use

The DELTA BX_6.0 Battery Pack is a battery pack designed with two battery modules which provides energy storage function compatible with DELTA E Series hybrid solar inverter. In order to prolong Lithium-based batteries' life, 100 % state of charge (SOC) shown on the Delta E Series hybrid solar inverter is actually within the range of 95%~100%.

The battery pack can be charged/discharged from the hybrid inverter, which provides electricity to household loads and electricity supply backup is available. The benefit of DELTA BX_6.0 Battery Pack is the availability of household electricity during night time, while photovoltaic panel provides electricity during day time.

The DELTA BX_6.0 Battery Pack is NOT to be used as a backup for any medical uses or life supporting uses.

Before battery module running one cycle, it may an error at SOC accuracy.

If the battery is the spare one, please connect to E5 and charge to a least 30%SOC. If DELTA BX_6.0 has not used for more than six months, please connect to E5 and check the SOC value on display, if the SOC value below 30%, please select "Charge first mode" on E5 to charge the BX_6.0, it should charge to at least 30% SOC.

1.2.2 Symbols

This section describes the definition of the symbols in this manual. In order to prevent both personal injury and property damage, and to ensure long-term operation of the product, please read this section carefully and follow all the safety instructions while you use the product.

DANGER!



- This warning indicates an immediate hazard which will lead to death or serious injury may occur.

WARNING !



- This warning indicates a possible hazard which may lead to death or serious injury may occur.

CAUTION !



- This warning indicates a possible hazard which may lead to minor injury may happen.

ATTENTION



- This warning indicates a possible damage to property and the environment might happen.

INFORMATION



- Additional information is indicated by an exclamation mark enclosed by double circle. This means the following section contains important information and user should follow the instruction to prevent any hazards.

DANGER : ELECTRICAL HARZARD!!



- This warning indicates an immediate electrical hazard which will lead to death or serious injury may occur.



- Equipment grounding conductor (PE)
- (PE) Équipement conducteur de terre

1.2.3 Safety Instructions

The battery pack should not be installed in direct sunlight or on flammable surfaces. Please be sure to mount the battery pack tightly on a solid / smooth surface. The optimal temperature range for the battery pack to operate is 10 to 30°C . The operating humidity is within the range from 0 to 90%. If the ambient temperature is outside the operating range, the battery pack stops to protect itself from any unexpected damage.

This battery pack should be installed by a trained and experienced installer designated by the retailer. Having the product installed by a non-specialized installer is very dangerous and can cause damage or injury. The battery pack is always installed by 2 or more people.

Please make sure any breaker is turned off before connecting cables. Be careful of the cable length : Must be less than 100 meters.

1.2.3.1 Handling of Prohibitions

The battery module contains flammable materials such as organic solvents. Mishandling the battery module may cause fire, smoke, or an explosion and the battery module's functionality will be seriously damaged. Protection circuits are designed into the battery pack via BMSS (PCB part inside the battery cabinet) to protect the battery modules.

Please read and check the following prohibited actions.

1.2.3.2 Battery Shutdown Processes

When battery needs to replace or remove, please follow below process to shut down the battery pack.

Turn off AC / DC isolator of the storage system to make sure there is no power.

Remove LAN cable from RJ-45 connector on the battery pack.

Check all LEDs on front panel are off.

Remove DC cables from DC connector and ground cable of the battery pack.

DANGER!

- This warning indicates an immediate hazard which will lead to death or serious injury may occur.

(1) Electrical Shock

Do not touch the terminals of the battery module without protectors.

Be grounded with the specified conditions.

High voltage may occur between the positive and the negative terminals.

Electric shock impairs health or may cause threat to life.

More than 2,000 meters higher, risks of an electric shock will be increased.

(2) Immersion

Do not immerse the battery module in liquid such as water, beverages, or other fluids.

Do not expose to corrosive substances such as sea breeze, steam or chemicals.

Do not install in the humid places or places to condensation.

Exposure to liquid may damage the battery module or the circuit board.

This may cause a battery module's damage to leak electrolyte, generate heat, smoke, catch fire, or explode.

(3) High Temperature

Do not use or place the battery module near an open flame, heater or high temperature. Subjecting the battery module to high temperature may damage the separator and cause internal short circuit.

This may cause the battery module's damage to leak electrolyte, generate heat, smoke, catch fire, or explode.

(4) Charge Conditions

Only charge the battery module within the specified conditions.

(e.g., temperature range, voltage, current and etc.)

Charging with unspecified conditions (e.g., over charge or abnormal current) may cause the battery module's damage to leak electrolyte, generate heat, smoke, catch fire, or explode.

(5) Reverse Polarity

Check the positive (+) and the negative (-) terminals.

If the battery module is connected with a reversed polarity, unexpected reactions may occur.

This may cause the battery module's damage to leak electrolyte, generate heat, smoke, catch fire, or explode.

(6) Direct Connection

Do not connect the battery module to AC power or unspecified DC power. This may cause the battery module's damage to leak electrolyte, generate heat, smoke, catch fire, or explode.

(7) Use in Other Equipment

Do not use the battery module for any other purposes or connecting unspecified equipment.

If the battery module is used with unapproved applications or systems, the battery module may be damaged, leak electrolyte, generate heat, smoke, catch fire, or explode.

(8) Incineration and Heat

Keep the battery module away from heat and fire.

Heating the battery module and may cause it to be damaged, leak electrolyte, generate heat, smoke, catch fire, or explode.

(9) Short-Circuit

Do not connect between the positive (+) and the negative (-) terminals with a conductive material (e.g., wire, a cable, etc.).

Do not carry or store the battery module with metal objects.

If the battery module is shorted, the battery module may be overheated.

This may cause the battery module's damage to leak electrolyte, generate heat, smoke, catch fire, or explode.

(10) Disassembly

Do not disassemble or modify the battery module.

Disassembly or modification of the battery module may damage the protection circuit.

This may cause the battery module's damage to leak electrolyte, generate heat, smoke, catch fire, or explode.

(11) Charge in High Temperatures

Do not charge the battery module in high temperature environment.

If the battery module is charged with exposing high temperature, the battery module's protection circuit may be activated and stop or fail the charging.

This may cause the battery module's damage to leak electrolyte, generate heat, smoke, catch fire, or explode.

WARNING !

- This warning indicates a possible hazard which may lead to death or serious injury may occur.

(1) Magnetism

Do not place the battery module near strong magnetism. (e.g., electromagnetic cooker, etc.)

This may cause the battery module's damage to leak electrolyte, generate heat, smoke, catch fire, or explode.

(2) Mixed Use

Do not mix with other batteries.

The battery module should not be used with other batteries having a different capacity, chemistry, manufacturing date or manufacturer.

This could cause the battery module's damage to leak electrolyte, generate heat, smoke, catch fire, or explode.

CAUTION !

- This warning indicates a possible hazard which may lead to minor injury may happen.

(1) Exposure to Direct Sunlight

Do not use or leave the battery module in a location exposed to excessive heat, such as in direct sunlight or in a car. It could cause the battery module's damage to leak electrolyte, generate heat, smoke, catch fire, or explode. It may also cause the battery's performance and life to deteriorate.

(2) Charging Temperature Range

Only charge the battery module within operating temperature range.

Charging outside of this temperature range could cause the battery module's damage to leak electrolyte, generate heat.

It may also cause the battery module's performance and life to deteriorate.

(3) Manual

Please read the system manual or the specification before use.

Keep the system manual together with this specification for future reference.

(4) Recycling

When disposing of the battery module, recycle it according to local rules and regulations.

2 Introduction

The DELTA BX_6.0 Battery Pack is designed to enable the highest levels of efficiency and provide longest operating life of the battery by state-of-the-art technology. It is suitable for outdoor use.

2.1 Valid Model

The user manual is valid for the following device types :

- DELTA BX_6.0 Battery Pack

This user manual must be followed during installation, operation, and maintenance.

The DELTA BX_6.0 Series have 1 model as shown in **Figure 2-2**. Delta reserves the right to make modifications to the content and technical data in this user manual without prior notice.

2.2 Product Overview

The shipping components of DELTA BX_6.0 Battery Pack are shown as **Figure 2-1**. **Figure 2-2** shows the dimensions of DELTA BX_6.0. **Figure 2-3** shows the details of each portion without battery modules.

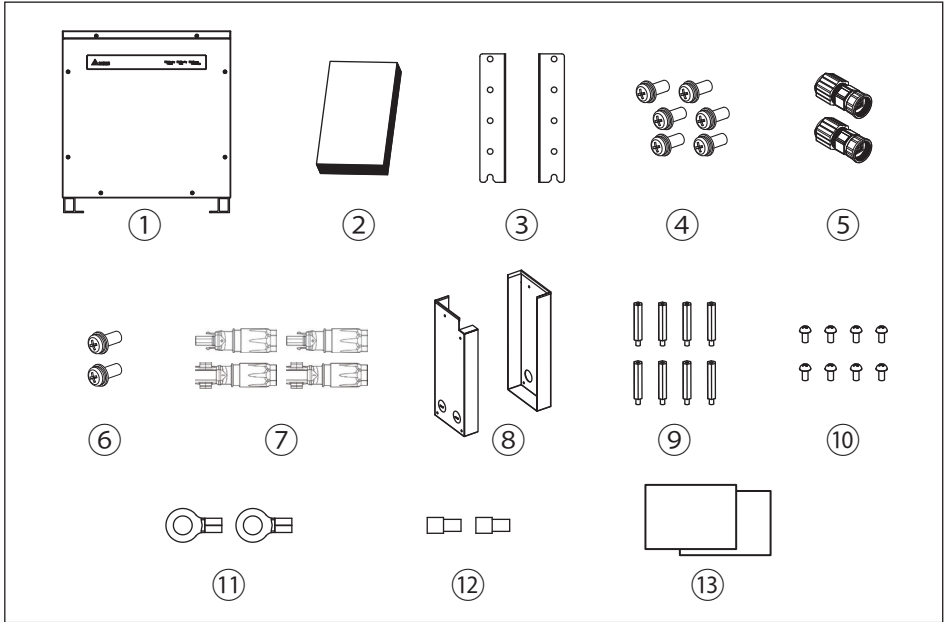


Figure 2-1 : Shipping Components of DELTA BX_6.0 Battery Pack

	Object	Qty	Description
1	Delta BX_6.0	1 pc	Battery Pack
2	User Manual (English)	1 pc	Important instructions for Battery Pack Safety instructions should be followed during installation and maintenance
3	Mounting Bracket	1 set	Wall mounting bracket
4	Mounting Bracket Screw	6 pcs	To fix mounting bracket on the BX_6.0
5	RJ45 Connector	2 pcs	RJ45 water resistant connector
6	Grounding Screw	2 pcs	Screw for grounding wiring
7	BT Connector	2 sets	DC connector for power cable
8	Wiring Cover	1 set	Protective cover to prevent users from touching the power cable
9	Wiring Cover Standoff	8 pcs	To fix wiring cover on the BX 6.0
10	Wiring Cover Screw	8 pcs	To fix wiring cover on the BX 6.0
11	Crimp Terminal	2 pcs	Crimp terminal for grounding wiring
12	Insulation Cap	2 pcs	Insulation cap for grounding wiring
13	Japanese Manual	2 pcs	User manual and Quick install guide in Japanese

Table 2-1 : Packing list of DELTA BX_6.0 Battery Pack

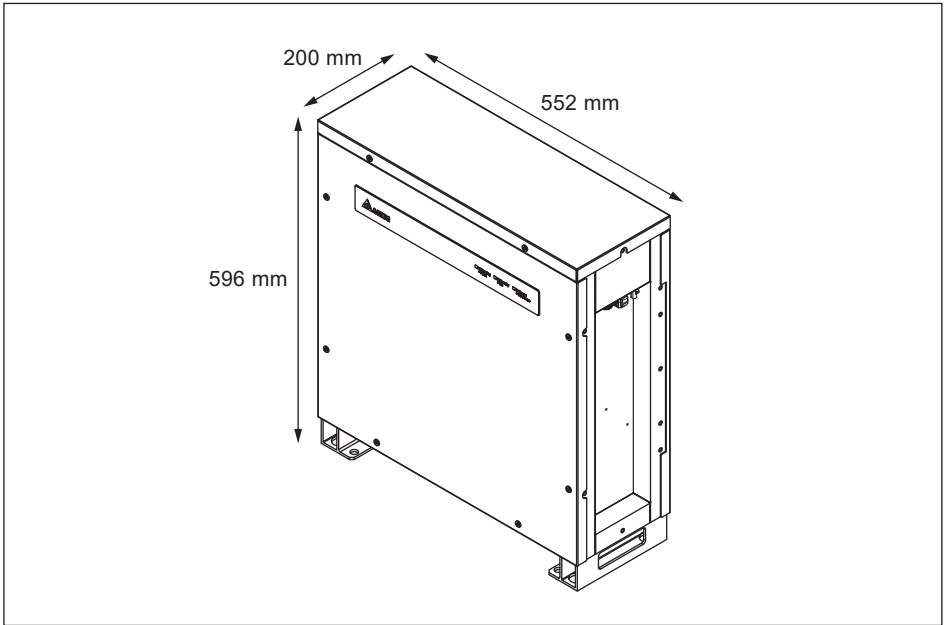


Figure 2-2 : Dimensions of DELTA BX_6.0 Battery Pack

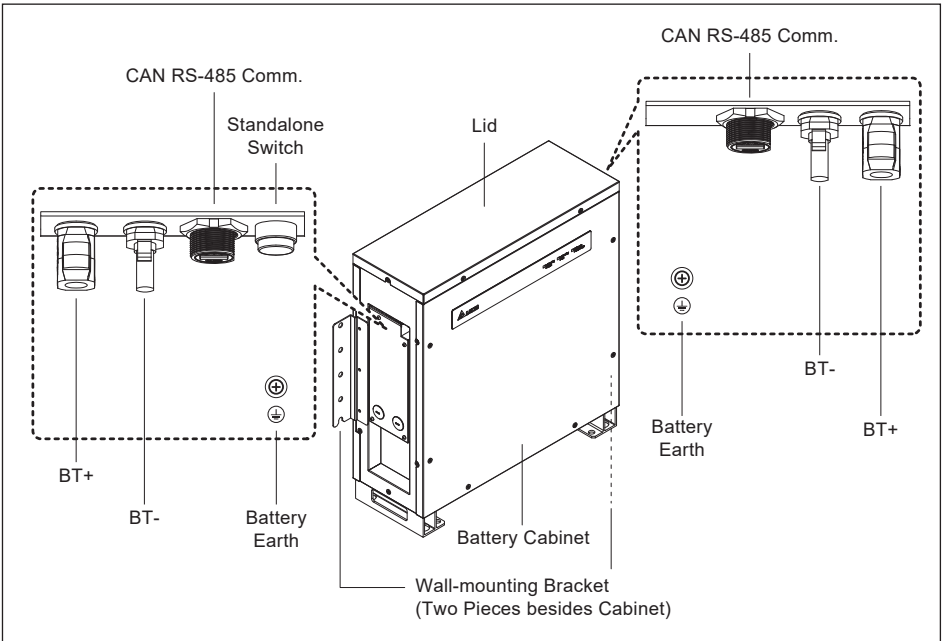


Figure 2-3 : Overview of DELTA BX_6.0 Battery Pack showing without Battery Module

The following **Figure 2-4** shows the rating labels of DELTA BX_6.0 Battery Pack and the table (**Table 2-2**) along with these labels explains the definition of the specific mark.

Battery / 蓄電池	
Model / 型式	BX_6.0
Part Number / 部品番号	RPB602201120
Operating / 運転電圧範囲	85-104Vdc
Nominal Capacity / 定格容量 : JIS C8715-1	5.6kWh (60.21Ah)
Typical Capacity / 公称容量	6kWh (63.45Ah)
Battery Technology / 電池種類	Li-ion (リチウムイオン)
Battery Pack / バッテリモジュール	2 pcs
Nominal Voltage / 定格電圧	93.6Vdc
Certificates / 認証	UN 38.3
IP Code / 防水・防塵等級	IP55
Safety Class / 安全クラス	I
Ambient Temperature Range / 使用温度	0 ~ 45°C (ただし氷結なきこと)
INR/19/66/[(13S27P)2S]E/-10NA/85	
<div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <p>⚠ DANGER</p> <p>Before connecting and operating this product, please read the instruction manual and construction manual carefully. To reduce the risk of excessive heat, fire, rupture, performance degradation, failure or injury, carefully follow these instructions.</p> <ul style="list-style-type: none"> -Use specified equipment only. -Do not incinerate or heat the battery pack. The batteries may explode. -Do not store in area of high temperatures. -Do not deform or short circuit the battery pack. -Do not disassemble or reconstruct the battery pack. Released electrolyte is harmful to the skin and eyes. It may be toxic. -Dispose of used batteries according to local regulations. </div> <div style="width: 48%;"> <p>⚠ 危険</p> <p>■取扱説明書をよくお読みのうえ正しく安全にお使いください。 ■火中投入、加熱、高温での充電・使用・放置をしない。 ■変形やショートさせたり、分解・改造をしない。 ■専用充電器を使うこと。</p> <p> Please refer to user manual or follow local regulations for disposal.</p> <p>  Authorized representative Delta Electronics (Netherlands) B.V. Zandvoort 15, 2132 MZ Hoofddorp, The Netherlands</p> <p>デルタ電子株式会社 MADE IN CHINA</p> </div> </div>	

Figure 2-4 : Rating labels of DELTA BX_6.0 Battery Pack




Symbol	Definition
	Before working with the Battery Pack, you must read the supplied manual and follow the instructions contained therein.
	The housing of the Battery Pack must be grounded if this is required by local regulations.
	WEEE marking The Battery Pack must not be disposed of as standard household waste, but in accordance with the applicable electronic waste disposal regulations of your country or region.

Table 2-2 : Rating label explanation of DELTA BX_6.0 Battery Pack

2.3 LED Indicators

The DELTA BX_6.0 Battery Pack has three different LED notification colors on the front cover of the battery pack that signal various system statuses:

LED Status	Definition
Flashes red steadily	Warning occurred
Stays red	Fault occurred
Flashes green steadily	Standby mode
Stays green	Normal operation mode
Flashes yellow steadily	Charging
Stays yellow	Discharging
Three LED flash steadily	Upgrading firmware
Three LED keep lighting	Communication fail

Table 2-3 : LED Indicators

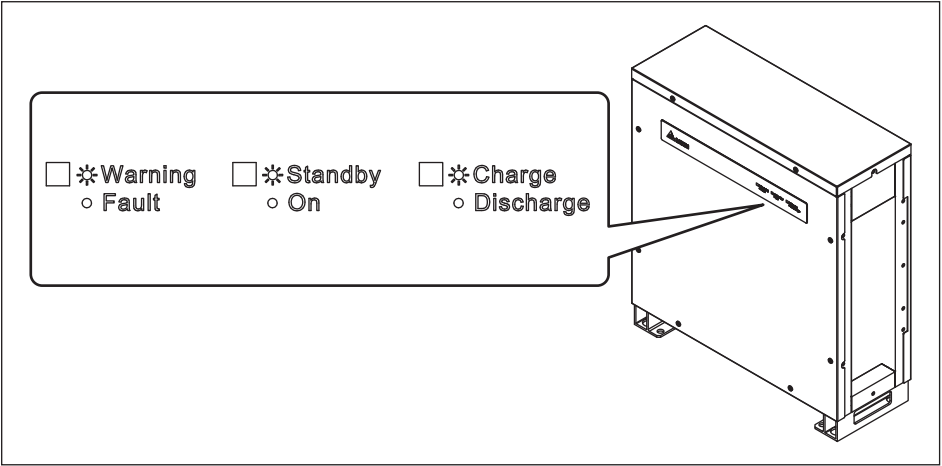


Figure 2-5 : LED indicators of DELTA BX_6.0 Battery Pack

3 Installation

WARNING !



- Do not install the battery pack near or on flammable surfaces.
- Please mount the battery pack tightly on a solid / smooth surface.
- Installation and maintenance work shall be performed by qualified electrician and shall comply with local Regulations.

The chapter contains instructions for (1) Installation environment
(2) Mechanical installation; (3) Electrical Installation; (4) Communication setup.

3.1 Installation Environment

CAUTION !



- The optimal temperature range for the battery pack to operate is 10 to 30°C.
- If the ambient temperature is outside the optimal operating range, the battery pack will be derating.
- The operating humidity is within the range from 0 to 90%.
- If the ambient temperature is outside the operating range, the battery pack stops to protect itself from any unexpected damage.

The battery pack is designed to be waterproof and can be installed both indoors and outdoors. However, please avoid exposure to direct sunlight, high temperature and high humidity if installed outdoors.

Please avoid using in the following condition; otherwise the device may malfunction.

- Locations where IP55 isn't satisfied.
- Locations where temperature changes severely.
- Locations where the device is directly exposed to saltwater, sea breezes and high humidity.
- Locations that are or might be affected by explosive, combustible, corrosive and other poisonous gases.
- Location exposed dust and dirt.
- Location with poor ventilation.
- Locations with other special conditions.
- At altitude above 2000m.

3.2 Mechanical Installation

WARNING !



- This battery pack should be installed by a trained and experienced installer designated by the retailer.
- Having the product installed by a non-specialized installer is very dangerous and can cause damage or injury.

CAUTION !



- Please fix at least 6 M8~10 Phillips head screws for the wall mounting bracket.
- The bracket shipped with the battery pack is specially designed and should be the only mounting device for the mechanical installation.
- The wall used for mounting should be $90^{\circ} \pm 2^{\circ}$ to or the horizontal reference.
- Make sure there is enough room for the battery pack, especially in front of it.
- Always install the battery pack with 2 or more people.

ATTENTION



- Please make sure that the battery pack stands on the floor when mounting it to the floor or to a wall.
- Please check the space for installation which meets the recommended location.
- Remember that we will in no way be responsible for damage resulting from the battery pack falling due to insufficient mounting strength.

This battery pack is designed to be wall-mounted or to stand on the floor fixed. Please ensure that the installation is perpendicular to the floor. Please follow the instructions as shown from **Figure 3-1** through **3-5**. Please make sure there is enough room for the battery pack, especially in front of the battery pack (LED indicators).

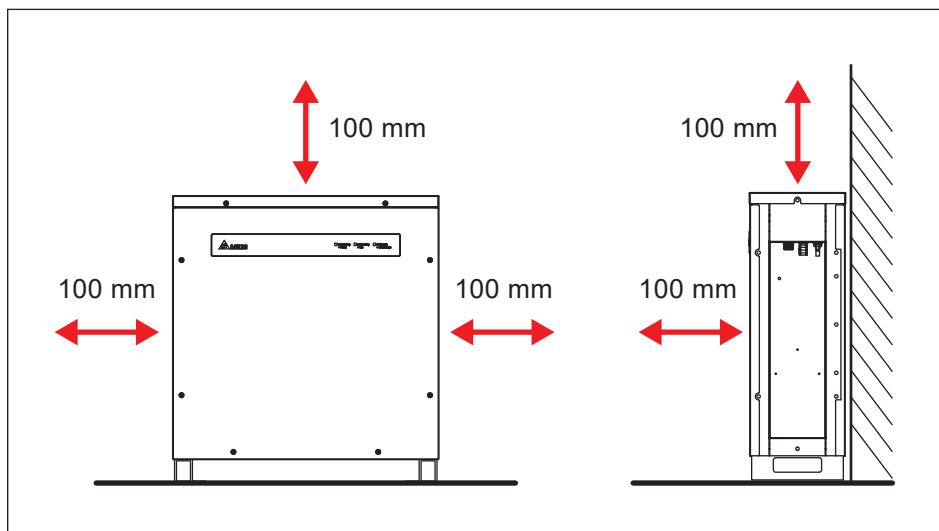


Figure 3-1 : Recommended Space for Installation

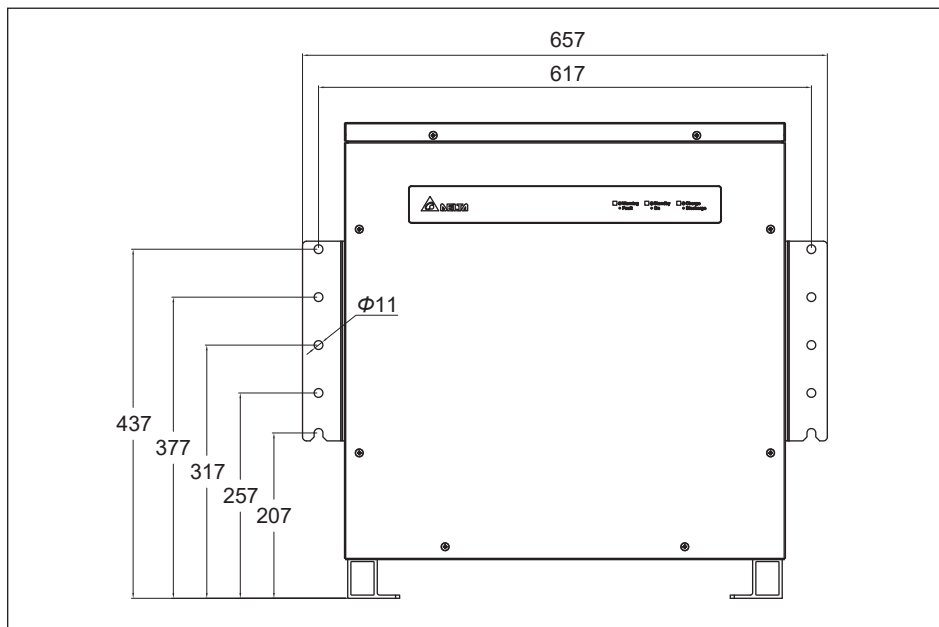


Figure 3-2 : Mounting bracket dimensions (Unit: mm)

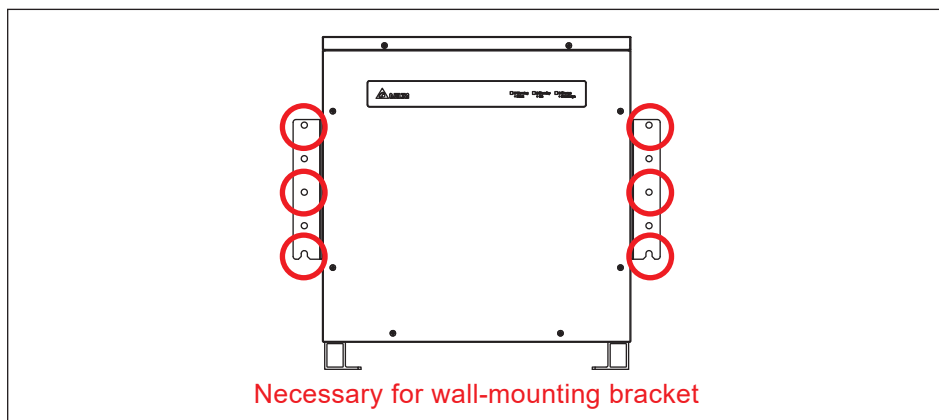


Figure 3-3 : Required position for at least 6 screws

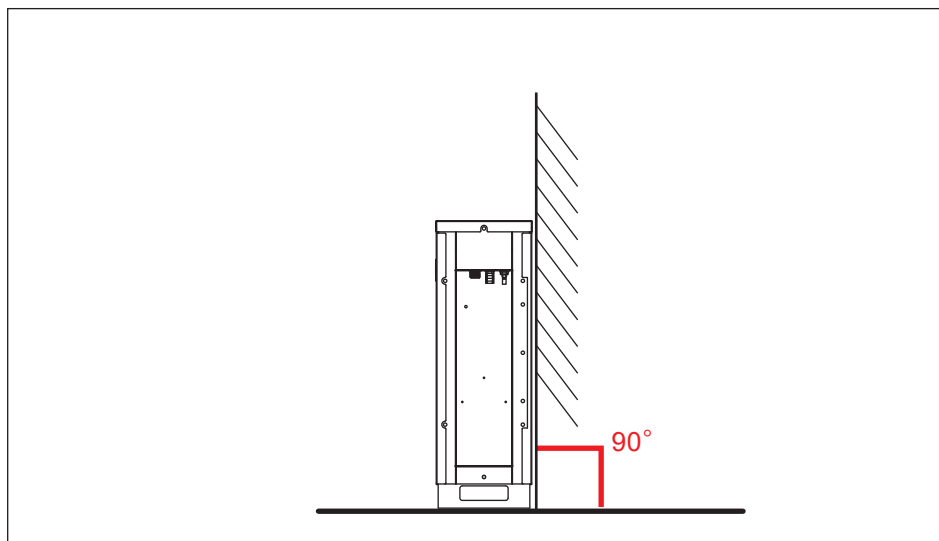


Figure 3-4 : Permitted mounting positions

CAUTION !



- Please follow the instructions above such as required position for 6 screws and permitted positions for the correct installation.

To mount the battery pack on the wall, please follow the procedure below :

Mount the bracket and the battery pack at the same time.

1. Use 6 M5 mounting bracket screws to fix the brackets on the BX_6.0's left side and right side. Each side has 3 screws. (Screw torque: 35Kgf-cm)
2. Use 2 M8~10 Phillips head screws to fix the bottom part of the mounting bracket. Drill holes at the locations marked first. Please refer to **Figure 3-2** for the wall mounting bracket dimensions.
3. Hang the battery pack on the wall.
4. Use screws in order to fix rest of the holes as shown in **Figure 3-5(a)**.
Screw the wall mounting bracket on the wall with at least 6 M8 Phillips head screws are allowable as shown in **Figure 3-3**.

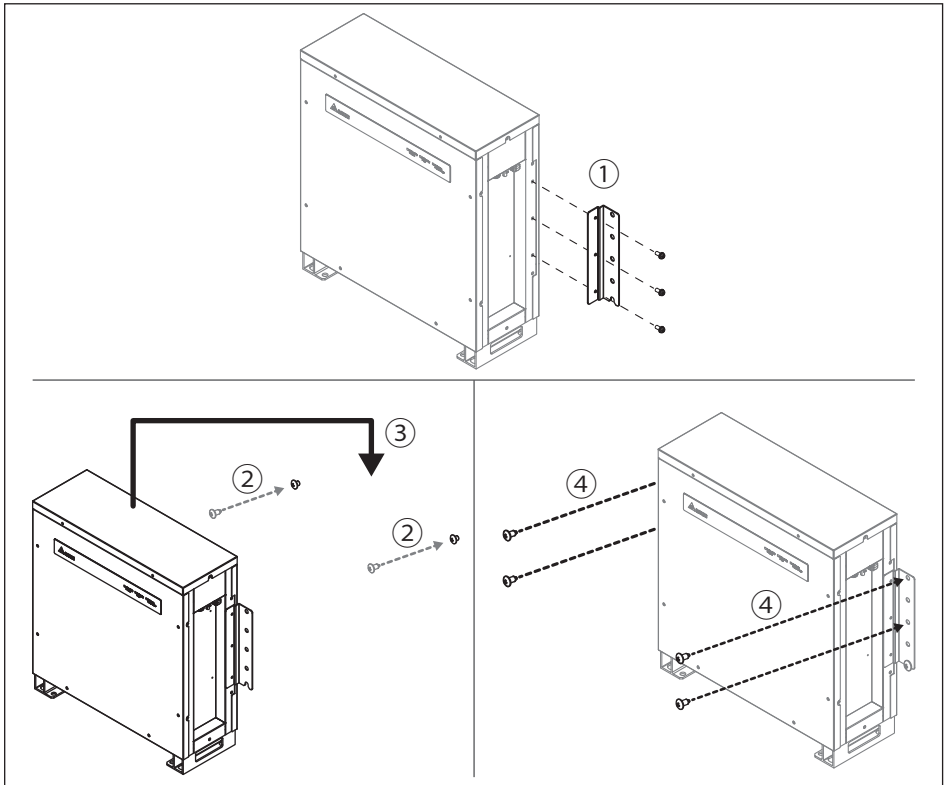


Figure 3-5(a) : The procedure for attaching the battery pack on the wall

CAUTION !



- Please fix at least 6 M8~10 Phillips head screws for the wall mounting bracket.
- The bracket shipped with the battery pack is specially designed and should be the only mounting device for the mechanical installation.

Another way to fix the battery pack is attaching on the floor, please refer to the following instruction:

Be sure to select the flat floor surface for installation.

Drill 4 holes with 13 mm diameter for each individual hole in order to fix the battery pack firmly as shown in **Figure 3-5(b)**.

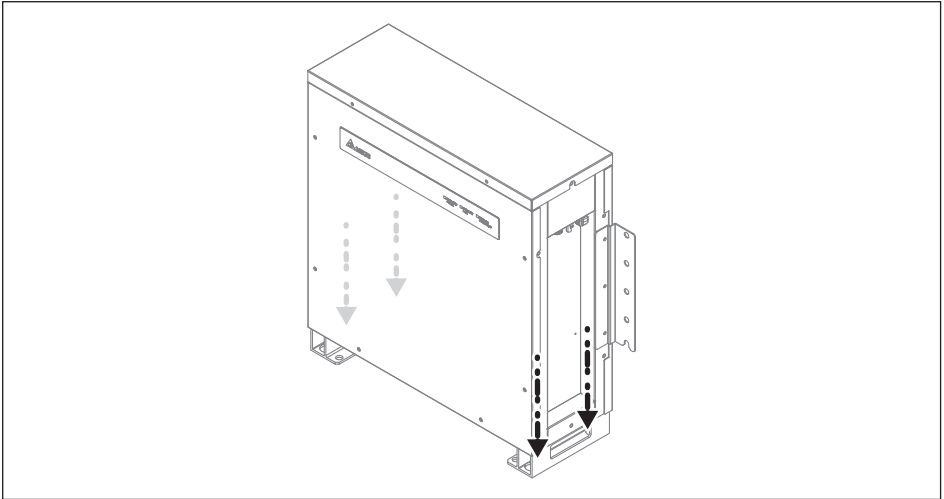


Figure 3-5(b) : Attaching the battery pack on the floor

CAUTION !



- Please do not install the battery pack on uneven floor surfaces.
- Holes size is 13 mm diameter for attaching the battery pack.

To install the wiring cover on BX_6.0, please follow the procedure below:

1. Install total 8 wiring cover standoffs on the left side and right side of BX_6.0. Each side has 4 standoffs.
2. After DC and COMM wiring, pass the cable through a waterproof PF pipe and attach the pipe to the wiring cover.
3. Use total 8 wiring cover screws to fix wiring cover on the BX_6.0's left side and right side. Each side has 4 screws. The cover with a notch on the upper right corner must be install on BX_6.0's left side. The notch is for user to push the standalone button.

It is recommended to install the wiring cover as it is used to prevent users from touching the electric cable.

Conduit hole(mm)	PF pipe(mm)
27	Φ22

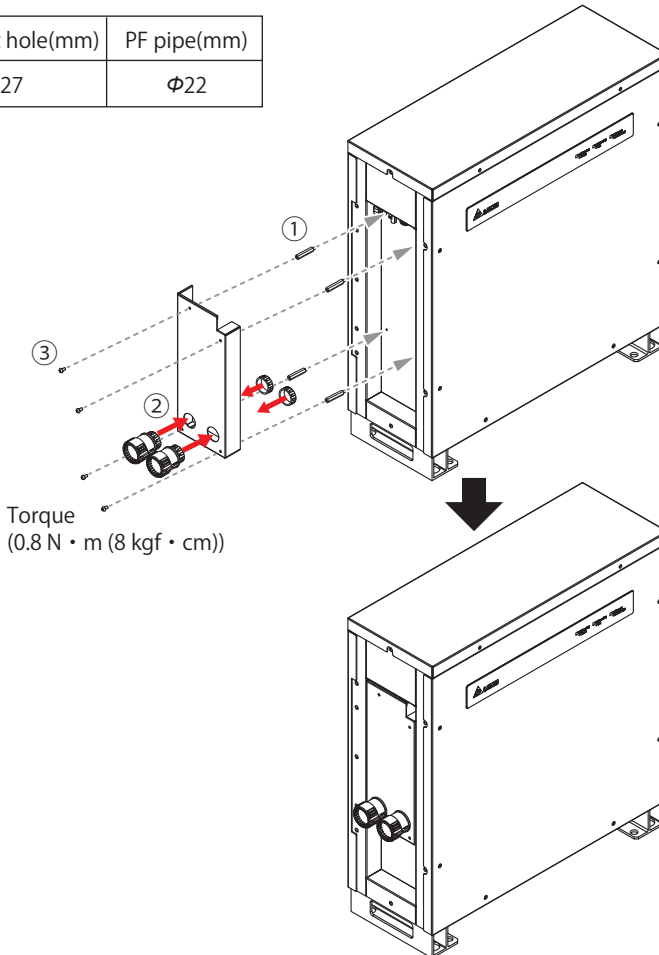


Figure 3-6 : Install the wiring cover on BX_6.0

3.3 Electrical Installation for DC(BT+/-)

DANGER : ELECTRICAL HARZARD!!



- Any electric power connected to the battery pack during cabling is prohibited.
- Please make sure any breaker is turned off before connecting cables.

CAUTION : BATTERY DAMAGE MAY OCCUR !



- Please make sure to choose the proper size DC cable.
- Please confirm wire stripping of copper is enough for this DC connector which seizes the cable firmly.
- Failed to follow the instructions may damage DC cable.
- Please be careful of the cable length: Must be less than 100 meters.

ATTENTION



- If local regulations require, please choose a proper bi-polar isolator for DC (BT+/-) side during the installation.

ATTENTION



- This battery pack may be damaged due to moisture or dust intrusion. Please do not open the lid of the battery pack.

ATTENTION : UV RESISTANT CABLES ARE RECOMMENDED



- UV resistant cables for DC cables and Ethernet cables (for RJ-45 connector) are highly recommended.

Please read the following instructions for attaching DC terminals :

- It is important to choose the proper size for DC cable.
- DC cable adapter must be assembled as depicted in **Figure 3-7**.
- DC connectors are applied to DC Terminals connection as seen in **Figure 3-8**.
- It is important to choose the correct DC connectors for positive terminal and negative terminal. Please refer to **Figure 3-7** and **Figure 3-8**.
- Please follow the instructions below to assemble the DC connector.

Please confirm wire stripping of copper is enough for this DC connector which seizes the cable firmly.

There are two parts of the DC cable adapter.

1. Put the stripped wire into the DC cable adapter
2. Lock it.
3. Attach the bottom part of the DC cable adapter to the upper part of the DC cable adapter.
4. Rotate and tighten them.

Figure 3-7 depicts the procedure listed above.

ATTENTION



- Please make sure to choose the correct cable for positive terminal and negative terminal.
- Please note that male connectors are for positive terminals on both sides of the cable.

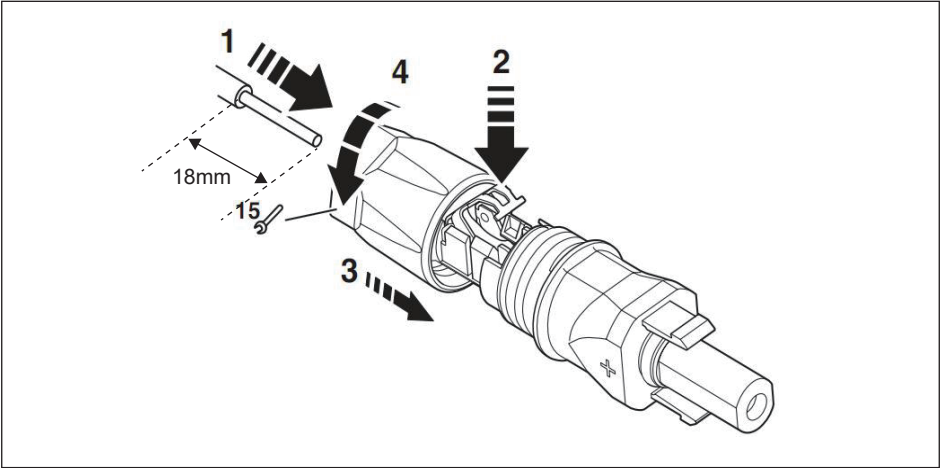


Figure 3-7 : Assemble the DC Connector

BT Status	Current Rating	Wire Size
Charge	DC 30A	6 - 16 mm ² (10 - 6 AWG)
Discharge	DC 35A	

Table 3-1 : Maximum Current Ratings for Power Cables

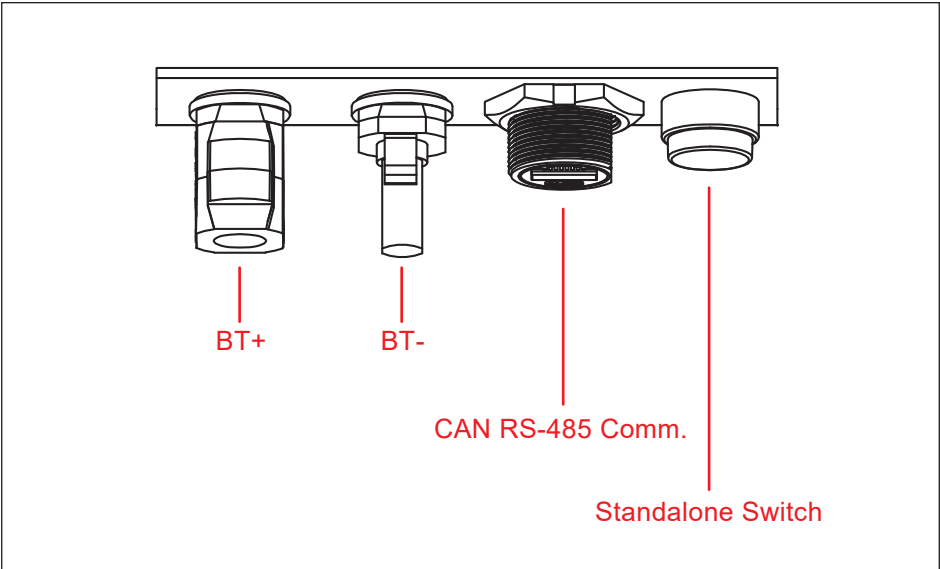


Figure 3-8 : Connectors on Cabinet (Zooming from Figure 2-3)

3.4 CAN and RS-485 Communication Connection

The following figure shows communication location of DELTA BX_6.0 Battery Pack on one side of the battery cabinet. The table describes the CAN and RS-485 communication definition of the port. Please note that DC connector at both sides of the battery cabinet have the same function. User can either plug-in DC cables from left side or right side of the cabinet. Please refer to **Figure 3-8**.

PIN	Definition
1	VCC
2	GND
3	GND
4	CAN-High
5	CAN-Low
6	N/A
7	485A
8	485B

Table 3-2 : Communication Definition of DELTA BX_6.0 Battery Pack

The following figure describes the assembly instructions for installing the RJ-45 connector on the cabinet. **Figure 3-9** shows each parts in detail.

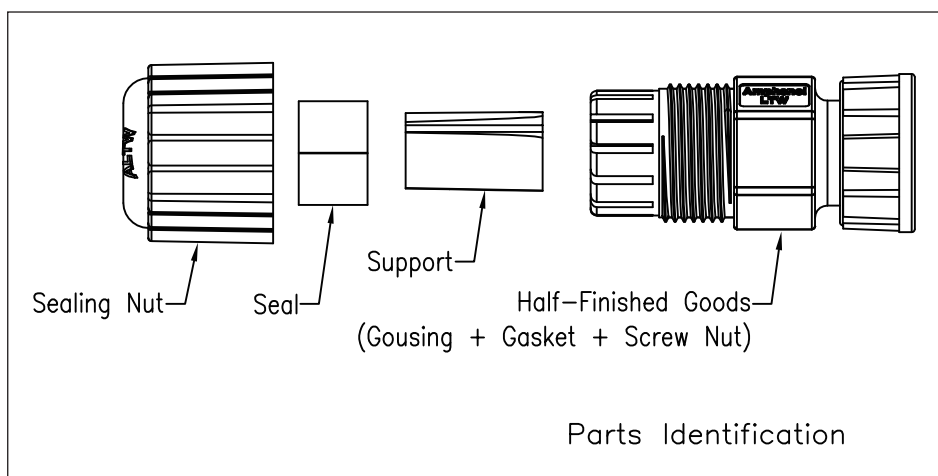


Figure 3-9 : Overview of Communication Connectors

The following instructions demonstrates the assembly procedure:
RJ-45 cable without cable connector boots plug cover (soft plastic) is recommended
as indicated in **Figure 3-10**.

1. Insert the sealing nut, seals, and support into the cable assembly.
(Cable OD range: 5.0 ~ 6.5 mm.)
2. Connect the sealing nut on the half-finished goods and screw tightly.
(Sealing nut torsion value range: 5~15 kgf-cm)

Please refer to **Figure 3-11** for details.

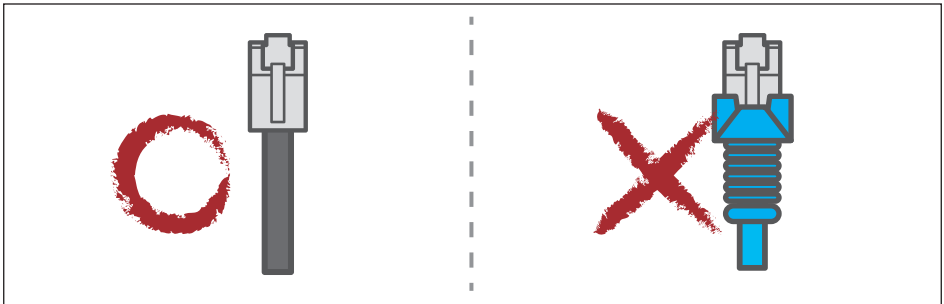


Figure 3-10: Suitable cables for RJ45 connector

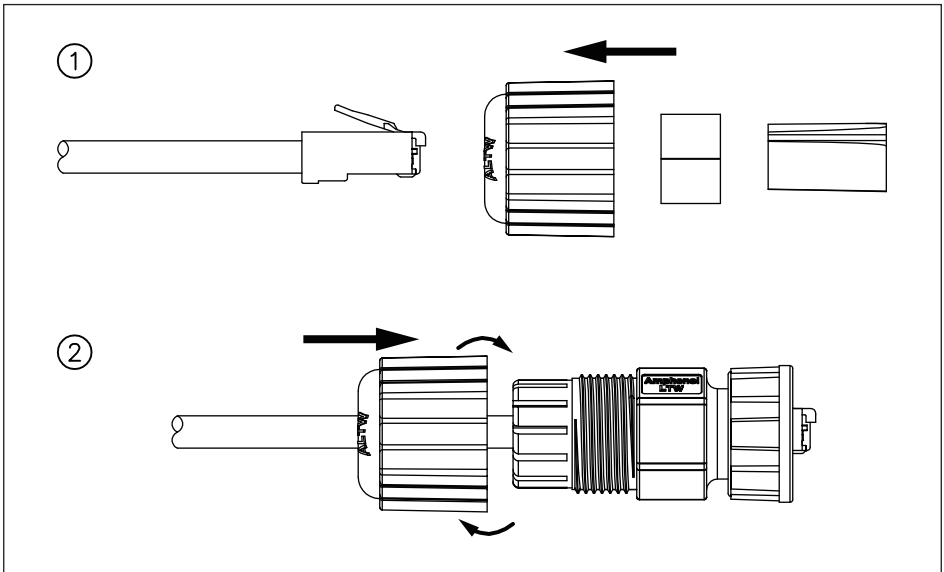


Figure 3-11 : Installing Procedure of Communication Connectors on the Cabinet

4 Commissioning via Standalone Operation

The standalone switch on the right side of the **Figure 3-8** .
It can wake up the battery modules when there is no utility grid.

This battery pack may be useful due to backup electricity supply.
It charges power electricity generated from solar panel and discharges electricity during power outages in the evening.

The battery pack offers standalone operation for inverter and safer emergency backup.

Please note that, you should hold the button for 5 seconds to activate the standalone function.

5 Battery Pack Expansion

WARNING !



- Before expanding the extra battery pack, please switch the battery pack power off to avoid risk of electrical shock.
- Please check the battery pack regularly. If there are any impaired or loose parts, please contact your installer. Ensure that there are no fallen objects.

DELTA BX_6.0 Battery Pack can be added at most one extra battery pack to become 12kWh.

The battery expansion can be achieved by

1. Connect BX_6.0(1)'s positive cable to BX_6.0(2)'s positive terminal,
2. Connect BX_6.0(1)'s negative cable to BX_6.0(2)'s negative terminal,
3. Connect BX_6.0(1)'s communication cable to BX_6.0(2)'s communication terminal and
4. Connect BX_6.0(1)'s grounding cable to BX_6.0(2)'s grounding conductor.

The battery pack expansion is shown in **Figure 5-1**.

Please make sure the polarity is connected correctly.

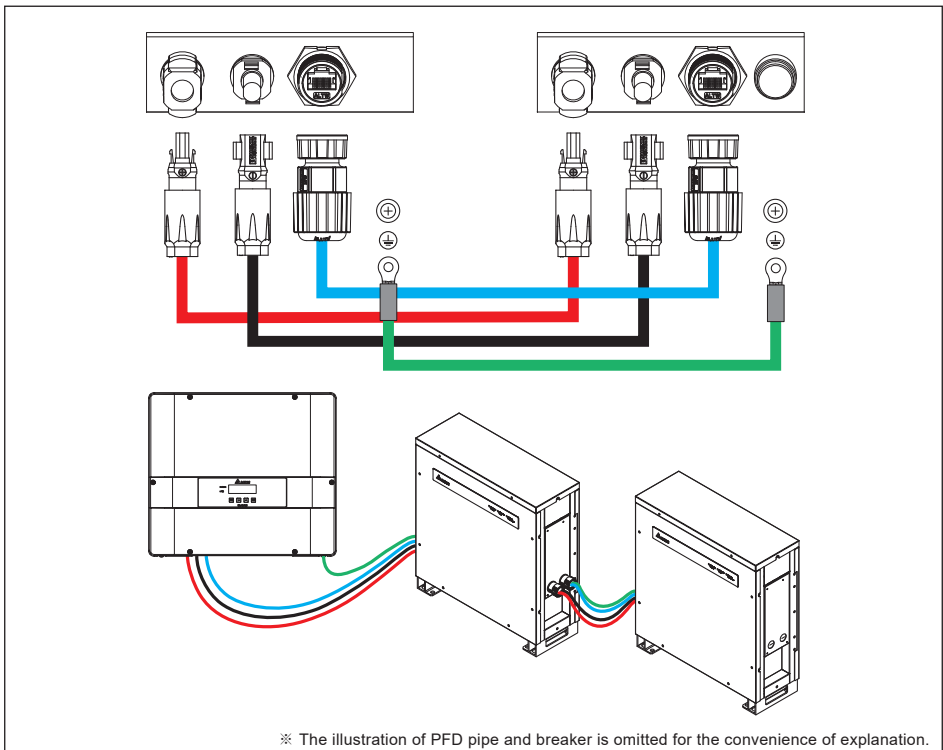


Figure 5-1 : Expanding the Battery Pack with DC(BT+/-) cables and Ethernet cable (See Section 3.3 and 3.4)

6 Trouble Shooting

Check LED notification on the front cover of the battery pack which indicates various system statuses.

The following table describes the possible causes of LED indicators and the ways to repair the battery pack.

Check hybrid inverter's error code can help to get more detail information about battery pack's statuses.

DELTA BX_6.0 Battery Pack LED Indicators		
LED Status	Possible Cause	Repair Methods
Flashes red steadily (Warning)	SOH < 50%	Contact your distributor / our customer service for technical support Battery pack replacement is recommended.
Stays Red (Fault)	Over Voltage Protection Under Voltage Protection Over Temperature Protection Under Temperature Protection Over Charge Current Protection Over Discharge Current Protection	1. Check voltage on inverter side 2. Check if ambient temperature is out of operating range 3. Check current on inverter side 4. Contact your distributor / our customer service for technical support
Three LED keep lighting	Communication fail	1. Check the CAN communication 2. Contact your distributor / our customer service for technical support

Table 6-1 : Trouble shootings for DELTA BX_6.0

7 Technical Data

Model		BX_6.0	
General			
Protection degree		IP55	
Dimension (W x H x D, mm)		552 x 596 x 200	
Weight (kg)		75	
Pollution degree		III	
Operating altitude		0 to 2000m (0 to 6666 ft.)	
Electrical Rating			
Typical Capacity (provided by battery manufacturer)		6 kWh (63.45 Ah)	
Nominal Capacity (tested under Japan JEM standard)		5.6 kWh (60.21 Ah)	
Usable capacity		4.8kWh	
Nominal Voltage		93.6 V	
Maximum Charge Current		30.0 A	
Nominal Charge Voltage		104.0 V	
Maximum Discharge Current		35.0 A	
Available Operating Temperature		-10~45 °C	
Optimal Operating Temperature		10 ~30 °C	
Ambient Storage Conditions		-20 ~50 °C	
Humidity		0 ~ 90 %	
Depth Of Discharge		80 %	
End of Life		SOH 50 %	
Short Circuit Current		54 A	
Interface			
Cable		6 - 16mm² (10 - 6AWG)	
External Communication		CAN and RS-485 (8 Pins)	
Cooling		Natural Convection	
Regulations & Certifications			
CE Conformity	Safety	IEC 62040 - 1	IEC 62109 - 1/ - 2
	EMC	IEC 61000 - 6 -3	IEC 61000 - 3 -11
		IEC 61000 - 3 -12	IEC 61000 - 4 -2
		IEC 61000 - 4 -3	IEC 61000 - 4 -4
		IEC 61000 - 4 -5	IEC 61000 - 4 -6
		IEC 61000 - 4 -8	IEC 61000 - 4 -11
UN transportation testing requirements		UN 3480 Section 38.3 (module)	

Table 7-1 : Specifications for DELTA BX_6.0

