Growatt New Energy

Download Manual

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GR-UM-190-A-00

Installation & Operation Manual

Contents

1 Notes on this manual

1.1 Validity

This manual describes the assembly, installation, commissioning and maintenance of the following Growatt MIN 3000BDC BL

This manual does not cover any details concerning equipment connected to the MIN 3000BDC BL(e.g. lithium battery). Information concerning the connected equipment is available from the manufacturer of the equipment.

1.2 Target Group

This manual is for qualified personnel. Qualified personnel have received training and have demonstrated skills and knowledge in the construction and operation of this device. Qualified Personnel are trained to deal with the dangers and hazards involved in installing electric devices.

1.3 Additional information

Find further information on special topics in the download area at www.ginverter.com
The manual and other documents must be stored in a convenient place and be available at all times. We assume no liability for any damage caused by failure to observe these instructions. For possible changes in this manual, GROWATT NEW ENERGY TECHNOLOGY CO.,LTD accepts no responsibilities to inform the users.

1.4 Symbols in this document

1.4.1 Symbols 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 Growatt equipment and/or other equipment connected to the Growatt equipment or personal injury.

Symbol	description
 DANGER	**DANGER** indicates a hazardous situation which, if not avoided, will result in death or serious injury.
 WARNING	**WARNING** indicates a hazardous situation which, if not avoided, could result in death or serious injury.
 CAUTION	**CAUTION** indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
 NOTICE	**NOTICE** is used to address practices not related to personal injury.
Information	**Information** that you must read and know to ensure optimal operation of the system.

1.4.2 Markings on this product

Symbol	Explanation
	Electrical voltage!
	Risk of fire or explosion !
	Risk of burns
	Operation after 5 minutes
	Point of connection for grounding protection
	Direct Current (DC)
	Read the manual
	CE mark. The inverter complies with the requirements of the applicable CE guidelines.
	The inverter must not be disposed of with the household waste.

1.5 Glossary

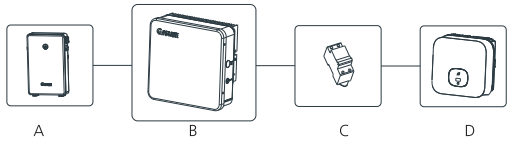
Bidirectional DC/DC Box
Bidirectional DC/DC box refers to the input and output are DC current. Min 3000BDC BL isBidirectional DC/DC box and must work with the inverter specified by Growatt.
BAT
Abbreviation for "Lithium battery"
INV DC
Connect with the dc input/output terminal of the matching inverter
Energy
Energy is measured in Wh (watt hours), kWh (kilowatt hours) or MWh (megawatt hours). The energy is the power calculated over time. If, for example, your inverter operates at a constant power of 3000 W for half an hour and then at a constant power of 2000 W for another half an hour, it has fed 2500Wh of energy into the power distribution grid within that hour.
Power
Power is measured in W (watts), kW (kilowatts) or MW (megawatts). Power is an instantaneous value. It displays the power your inverter is currently feeding into the power distribution grid.
Power rate
Power rate is the radio of current power feeding into the power distribution grid and the maximum power of the inverter that can feed into the power distribution grid.

2 Safety

2.1 Intended Use

Min 3000BDC BL is a bidirectional DC/DC box. It must cooperate with growartt MIN-XH series inverters to form grid-connected photovoltaic energy storage system. The main function of Min 3000BDC BL is to convert the lithium battery voltage (DC42V-59V) to high voltage direct current voltage (DC350-480V) and send energy to the grid by the inverters. At the same time, the output high voltage direct current voltage (DC350V-510V) of the inverters is converted to the voltage needed for lithium battery charging (DC42V-59V).
The inverter type number specified by Growatt and equipped with Min 3000BDC BL is as follows:
MIN 2500 TL-XH
MIN 3000 TL-XH
MIN 3600 TL-XH
MIN 4200 TL-XH
MIN 4600 TL-XH
MIN 5000 TL-XH
MIN 6000 TL-XH

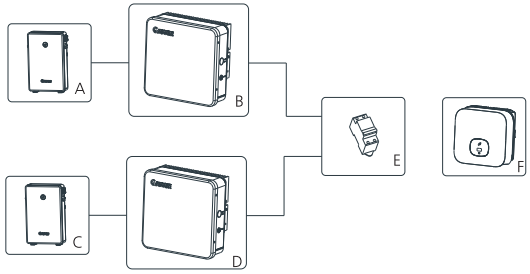
Schematic diagram of Min 3000BDC BL Standard Version



Position	Description
A	Lithium battery
B	MIN 3000BDC BL
C	DC load circuit breaker
D	Inverter

Min 3000BDC BL Power Expansion
In order to meet the requirement of expanding the charging and discharging power of photovoltaic energy storage system, the system can only access two min3000bdc BL at most, so that the charging and discharging power of the system can be extended to 5 kw.

The expanded system wiring diagram is as follows



Position	Description
A	lithium battery(BAT1)
B	Min 3000BDC BL(BDC1)
C	lithium battery(BAT2)
D	Min 3000BDC BL(BDC2)
E	DC load circuit breaker
F	Inverter

MIN 3000BDC BL can only work with Growatt designated inverter .The MIN 3000BDC BL is not intended for mobile use.Any other or additional use is not considered intended use.The manufacturer/supplier is not responsible for damage caused by accidental use.All damage caused by accidental use is at the operator's risk.

Lithium battery charge/discharge current
The maximum normal charge and discharge of a lithium battery given MIN 3000BDC BL is 66A, and the maximum instantaneous current can reach 85A when discharging.The model of the lithium battery is different from that of the manufacturer.Min 3000BDC BL will automatically adjust the maximum current limit of the normal charge and discharge of the lithium battery.

MIN 3000BDC BL can only accept the lithium battery specified by Growatt to work normally. This is because the lithium battery comes with its own communication protocol, and the communication protocol used by each lithium battery manufacturer is different.The customer is solely responsible for any consequences caused by not using Growatt designated lithium batteries.Currently, Growatt specifies lithium batteries: Growatt RES6.5L Li-ion Battery System.

2.2 Qualification of skilled person

The MIN 3000BDC BL can only be properly connected to the equipment specified by Growatt to properly constitute the photovoltaic grid-connected energy storage system.Please contact your local distribution company before this system works.Such connections must be made only by qualified technical personnel and only after appropriate approval as required by the competent local authority.

2.3 Safety instruction

The MIN 3000BDC BL Inverters is designed and tested according to international safety requirements（IEC62109-1,CE）; however, certain safety precautions must be observed when installing and operating this inverter. Read and follow all instructions, cautions and warnings in this installation manual. If questions arise, please contact Growatt's technical services at +86 (0)755 2747 1942.

2.4 Assembly Warnings

 WARNING	➢ Prior to installation, inspect the unit to ensure absence of any transport or handling damage, which could affect insulation integrity or safety clearances; failure to do so could result in safety hazards. ➢ Assemble the MIN 3000BDC BL per the instructions in this manual. Use care when choosing installation location and adhere to specified cooling requirements. ➢ Unauthorized removal of necessary protections, improper use, incorrect installation and operation may lead to serious safety and shock hazards and/or equipment damage. ➢ To minimize the risk of shock from a dangerous voltage, make sure to turn off all power on the connected device before connecting the MIN 3000bdc bl to any device.
 CAUTION	➢ Connect with MIN-XH: When connecting MIN 3000BDC BL with MIX-XH series inverters, it is necessary to make sure that the connection is correct, positive and negative should not be reversed, otherwise the equipment will be damaged. ➢ Connect with lithium battery: When connecting MIN 3000BDC BL with lithium battery series inverters, it is necessary to make sure that the connection is correct, positive and negative should not be reversed,Otherwise it won't work properly. ➢ Comply with local pv generator grounding requirements.Growatt recommends that MIN 3000BDC BL and other conductive surfaces be connected in such a way as to ensure continuous conduction to the ground to provide the best protection for the system and personnel.

2.5 Electrical Connection Warnings

 DANGER	➢ The equipment connected with MIN 3000BDC BL is live.Contact with live parts can cause serious injury or death • Do not open the inverter except the wire box by qualified persons. • Electrical installation, repairs and conversions may only be carried out by electrically qualified persons. • Do not touch damaged equipment ➢ Danger to life due to high voltages in the MIN 3000BDC BL. • There is residual voltage in the MIN 3000BDC BL,takes 20 minutes to discharge. ➢ Persons with limited physical or mental abilities may only work with the Growatt MIN 3000BDC BL following proper instruction and under constant supervision. Children are forbidden to play with the Growatt MIN 3000BDC BL. Must keep the Growatt MIN 3000BDC BL away from children.

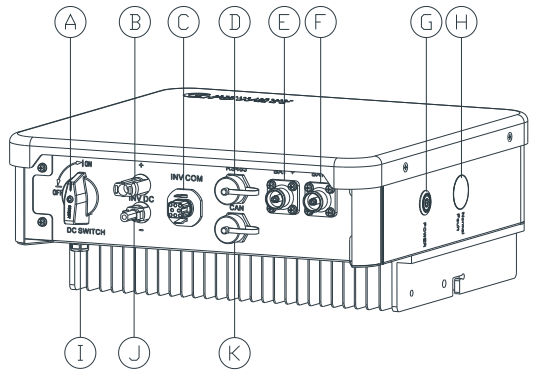
WARNING	➢ Make all electrical connections (e.g. conductor terMINation, fuses, PE connection, etc.) in accordance with prevailing regulations. When working with the equipment powered on, adhere to all prevailing safety regulations to MINimize risk of accidents. ➢ Systems with MIN 3000BDC BL usually require additional control (such as switching, disconnecting) or protection (such as fusing circuit breakers), depending on current safety regulations

2.6 Operation Warnings

WARNING	➢ Ensure all covers and doors are closed and secure during operation. ➢ Although designed to meet all safety requirements, some parts and surfaces of MIN 3000BDC BL are still hot during operation. To reduce the risk of injury, do not touch the heat sink at the back of the MIN 3000BDC BL or nearby surfaces while MIN 3000BDC BL is operating. ➢ If there is a switch or other protective device between MIN 3000BDC BL and MIN-XH series inverter, The ON switch should be avoided while The system is running, but it can be switched off immediately in case of emergency.
CAUTION	➢ All operations regarding transport, installation and start-up, including maintenance must be operated by qualified, trained personnel and in compliance with all prevailing codes and regulations. ➢ When a system consisting of MIN 3000 BDC BL is disconnected from the power grid, special care should be taken, because some components can maintain enough electricity to create an electric shock hazard; in order to MINimize the occurrence of such situations, the device and this manual should be observed. ➢ In special cases, there may still be interference for the specified application area despite maintaining standardized emission limit values (e.g. when sensitive equipment is located at the setup location or when the setup location is near radio or television receivers).In this case, the operator is obliged to take proper action to rectify the situation. ➢ Do not stay closer than 20 cm to the MIN 3000BDC BL for any length of time.

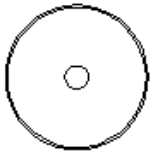
Product description 3

3.1 MIN 3000BDC BL Overview



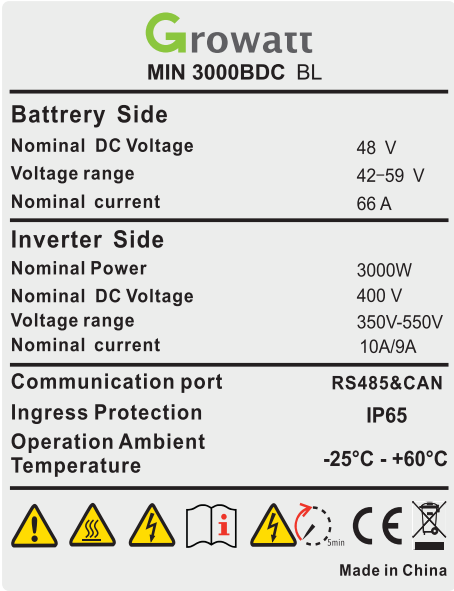
Position	Description
A	DC SWITCH
B	Invert Input+
C	INV COM port
D	RS 485 port
E	CAN port
F	Battery Input+
G	Battery Input-
H	Power button
I	LED indicator light
J	Air vent
K	Invert Input-

Symbol on the MIN 3000BDC BL

Symbol	Description	Explanation
	Boot button symbol	When the energy storage system works in the off-grid mode without PV, this button is needed to start the power supply of the whole system.
	LED indicator light	Represents the running status of the device: Red light is always on:Fault. green light is always on:Nomal. Red light flashes once a second:Warning green light flashes once a second: Standby or DSP Programming. Red Flash Three Times: Turn Off the output power Three flashes of green light: turn on the output power

3.2 Type label

The type labels provide a unique identification of the MIN 3000BDC BL (The type of product, Device-specific characteristics, Certificates and approvals). The type labels are on the left-hand side of the enclosure.

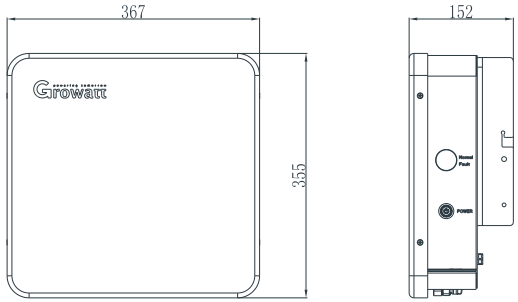


More detail about the type label as the chart below:

Model Name	MIN 3000BDC BL
INV DC side	
voltage range	350V-550V
NoMINal Power(discharging/charging)	3150W/3000W
Max current(discharging/charging)	11A/9A
BAT side	
voltage range	42-59V
NoMINal voltage	48V
Max power(discharging)	4000W/15S
NoMINal charging and discharging current	66A
Max charging and discharging current	66A/85A
Type of battery	Lithium
Effciency	
Max discharging effciency	96%
Max charging effciency	96.5%
General Data	
cooling	Natural
Dimensions(W/H/D)	355mm*367.5mm*151.5mm
Weight	10KG
Relative humidity	100%
Operation Ambient temperature	-25...+60℃ (-13...+ 140°F) with derating above 45°C（113°F）

Interfaces	
Display	LED
Battery communication	RS485/CAN
Unit protection function	
Reverse connection protection(BAT side)	YES
Short circuit protection(BAT side)	YES
Short circuit boot protection(INV DC side)	YES

3.3 Size and weight



Model	Height (H)	Width (W)	Depth (D)	Weight
MIN 3000BDC BL	355mm 14inch	375mm 14.5inch	160mm 6.0inch	10.0kg

3.4 Storage of MIN 3000BDC BL

If you want to storage the MIN 3000BDC BL in your warehouse, you should choose an appropriate location to store the it.

- The unit must be stored in original package and desiccant must be left in the package.
- The storage temperature should be always between -25℃and +60℃. And the storage relative humidity can achieve to 100%.
- If there are a batch of MIN 3000BDC BL need to be stored, the maximum layers for original carton is four.
- After long term storage, local installer or service department of GROWATT should perform a comprehensive test before installation.

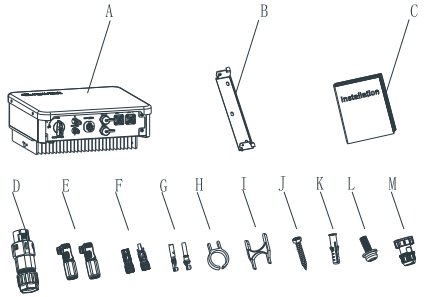
3.5 The advantage of the unit

- Use high frequency isolation to make use safer.
- Up to 2 parallel machines are supported to expand the power of the energy storage system.
- System collocation is flexible, customers can choose system accessories freely.
- Wide input voltage range (BAT side) from 42--59Vdc.
- Reverse connection protection(BAT side).
- Short circuit protection(BAT side).
- Short circuit boot protection(INV DC side).
- Integrated DC switch.
- Easy to install by using fast terminal.
- DSP controller.
- Power button needs long press to start, anti-error trigger.
- Lithium batteries that automatically awaken dormancy.
- LED lamp display, simple appearance.

4 Unpacking and inspection

The MIN 3000BDC BL is thoroughly tested and inspected strictly before delivery.MIN 3000BDC BL leave our factory in proper electrical and mechanical condition. Special packaging ensures safe and careful transportation. However, transport damage may still occur. The shipping company is responsible in such cases. Thoroughly inspect the equipment upon MIN 3000BDC BL. Immediately notify the responsible shipping company if you discover any damage to the packaging which indicates that the MIN 3000BDC BL may have been damaged or if you discover any visible damage to the MIN 3000BDC BL. We will be glad to assist you, if required. When transporting the MIN 3000BDC BL, the original or equivalent packaging should be used, and the maximum layers for original carton is four, as this ensures safe transport.

After opening the package, please check the contents of the box. It should contain the following, Please check all of the accessories carefully in the carton. If anything missing, contact your dealer at once.



Object	Description	Quantity
A	MIN 3000BDC	1
B	Mounting bracket	1
C	Quick Guide	1
D	INV COM Signal connector	1
E	BAT+ terminal	1
	BAT+ terminal	1
F	INV DC+/INV DC- terminal	1/1
G	INV DC+/INV DC- metal terminal	1/1
H	Uninstall INV DC terminal tool	1
I	Self-tapping screws	3
J	Plastic expansion pipe	3
K	Safety-lock screw	1
L	Safety-lock screw	1
M	RS 485 Signal connector& terminal	1
	CAN Signal connector& terminal	1

Installation 5

5.1 Safety instructions

Danger to life due to fire or explosion

- Despite careful construction, electrical devices can cause fires.
- Do not install the MIN 3000BDC BL on easily flammable materials and where flammable materials are stored.

Risk of burns due to hot enclosure parts

- Mount the MIN 3000BDC BL in such a way that it cannot be touched inadvertently.

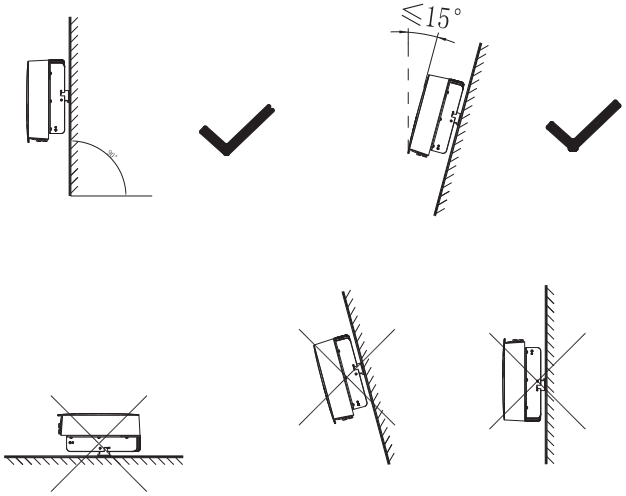
Possible damage to health as a result of the effects of radiation!

- In special cases, there may still be interference for the specified application area despite maintaining standardized emission limit values (e.g. when sensitive equipment is located at the setup location or when the setup location is near radio or television receivers).In this case, the operator is obliged to take proper action to rectify the situation.
- Never install the MIN 3000BDC BL near the sensitive equipment（e.g. Radios, telephone, television, etc）
- Do not stay closer than 20 cm to the MIN 3000BDC BL for any length of time unless it is absolutely necessary.
- Growatt assumes no responsibility for compliance to EMC regulations for the complete system.

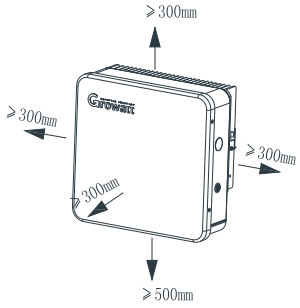
- All electrical installations shall be done in accordance with the local and national electrical codes. Do not remove the casing. MIN 3000BDC BL contains no user serviceable parts. Refer servicing to qualified service personnel. all wiring and electrical installation should be conducted by a qualified service personnel.
- Carefully remove the unit from its packaging and inspect for external damage. If you find any imperfections, please contact your local dealer.
- Be sure that the MIN 3000BDC BL connect to the ground in order to protect property and personal safety.
- DC Low Voltage and DC hight voltage sources are terMINated inside the equipment Please disconnect these circuits before servicing.
- The device can only be used for DC voltage conversion between Growatt lithium battery and Growatt MIN-XH series inverters. Do not connect this unit to the public power grid, AC power supply, generators. Connecting MIN 3000BDC BL to an external device can cause serious damage to the device.
- The energy stored in the DC link capacitor of the equipment is at risk of electric shock. Even after the unit is disconnected from other devices on the system, there may still be high voltage in MIN 3000BDC BL. The housing can be removed after disconnecting all power sources for at least 5 MINutes.
- Although designed to meet all safety requirements, some parts and surfaces of MIN 3000BDC BL are still hot during operation. To reduce the risk of injury, do not touch the heat sink at the back of the MIN 3000BDC BL or nearby surfaces while MIN 3000BDC BL is operating.

5.2 Selecting the installation location

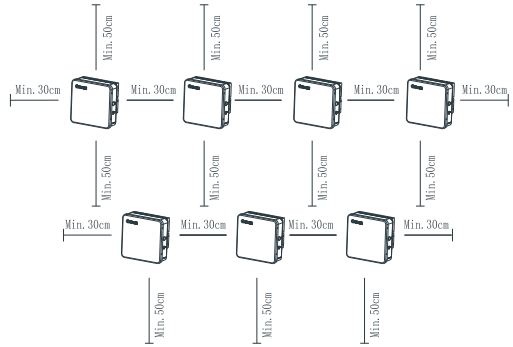
- This is guidance for installer to choose a suitable installation location, to avoid potential damages to device and operators.
- The installation location must be suitable for the equipment's weight and dimensions for a long period time.
- Select the installation location to easily view the status indicator.
- Do not install the MIN 3000BDC BL on structures constructed of flammable or thermolabile materials.
- Do not install MIN 3000BDC BL in an environment with little or no air flow, nor in a dust environment.This may reduce the cooling rate of the equipment.
- The Ingress Protection rate is IP65 which means the MIN 3000BDC BL can be installed outdoors and indoors.
- The humidity of the installation location should be 0~100% without condensation.
- The installation location must be freely and safely to get at all times.
- Vertically installation and make sure the connection of MIN 3000BDC BL must be downwards. Never install horizontal and avoids forward and sideways tilt.



- Be sure that the MIN 3000BDC BL is out of the children's reach.
- Don't put any things on the MIN 3000BDC BL. Do not cover the MIN 3000BDC BL.
- Do not install the MIN 3000BDC BL near television antenna or any other antennas and antenna cables.
- MIN 3000BDC BL requires adequate cooling space. Providing better ventilation for the MIN 3000BDC BL to ensure the heat escape adequately. The ambient temperature should be below 40°C to ensure optimum operation.
- Do not expose the MIN 3000BDC BL to direct sunlight, as this can cause excessive heating and thus power reduction.
- Observe the MIN. clearances to walls, other MIN 3000BDC BL, or objects as shown below:



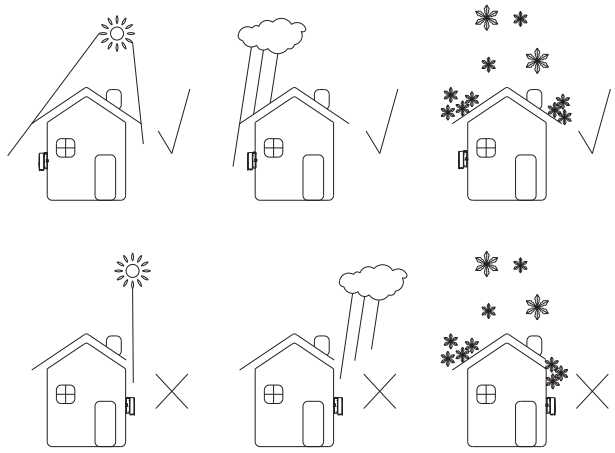
Ambient dimensions of one MIN 3000BDC BL



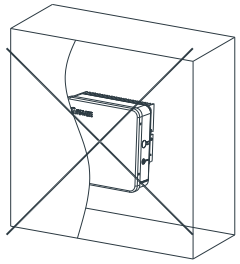
Ambient dimensions of series MIN 3000BDC BL

- There must be sufficient clearance between the individual equipment to ensure that the cooling air of the adjacent equipment is not taken in.
- If necessary, increase the clearance spaces and make sure there is enough fresh air supply to ensure sufficient cooling of the equipment.

The MIN 3000BDC BL can't install to solarization,drench,firn location. We suggest that the inverters should be installed at the location with some cover or protection.



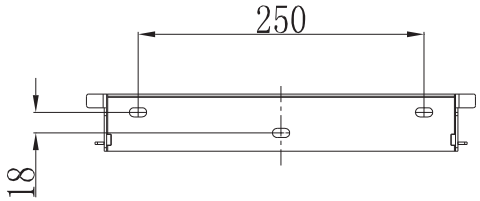
➢ Please make sure the equipment is installed at the right place.The equipment can't install close to trunk.



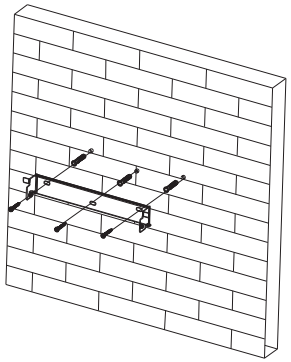
5.3 Mounting the MIN 3000BDC BL

5.3.1 Mounting the MIN 3000BDC BL with bracket

DANGER	In order to avoid electrical shock or other injury, inspect existing electronic or plumbing installations before drilling holes.



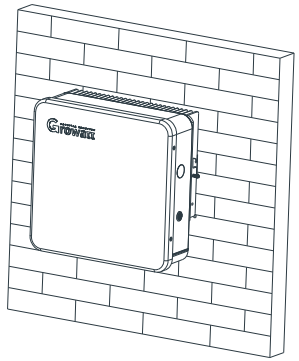
- Fix the mounting bracket as the figure shows. Do not make the screws to be flush to the wall. Instead, leave 2 to 4mm exposed.



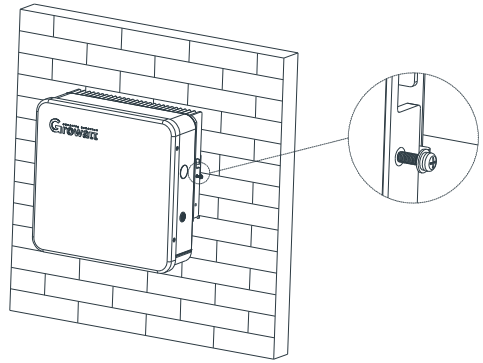
5.3.2 Fixed the MIN 3000BDC BL on the wall

WARNING	Falling equipment can cause serious or even fatal injury, never mount the inverter on the bracket unless you are sure that the mounting frame is really firmly mounted on the wall after carefully checking.

➢ Rise up the MIN 3000BDC BL a little higher than the bracket. Considered the weight of them.During the process please maintain the balance of the inverter.



➢ After confirming the MIN 3000BDC BL is fixed reliably, fasten one M6 safety-lock sockets head cap screws on the right or left side firmly to prevent the equipment from being lifted off the bracket.



6 Electrical connection

Decisive Voltage Class (DVC) indicated for ports

Port Name	Class
BAT input	C
INV DC output	C
INV COM port	A
RS485&CAN port	A

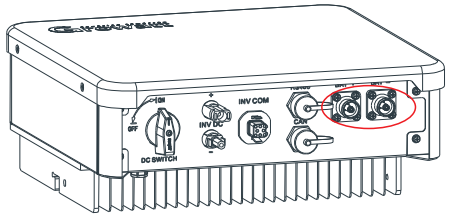
6.1 Safety

	Danger to life due to lethal voltages! High voltages which may cause electric shocks are present in the conductive parts of the MIN 3000BDC BL. Prior to perforMINg any work on the equipment, disconnect the MIN 3000BDC BL on the INV COm and BAT sides.
WARNING	Danger of damage to electronic components due to electrostatic discharge. Take appropriate ESD precautions when replacing and installing the equipment.

6.2 Wiring Battery Line

6.2.1 Wiring Battery Line

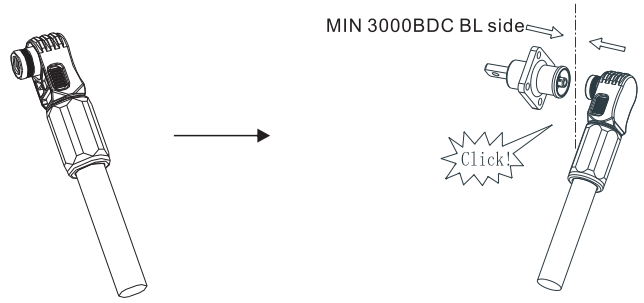
The MIN 3000BDC BL has one independent BAT input : BAT+/BAT- connecting to the output of Battery.
Note: the connecting wire between MIN 3000bdc BL and battery is a pair of finished wires with quick connect terMINals, with a total length of 1.5m. Installers can simply insert these fast connection terMINals into the terMINal of the device.



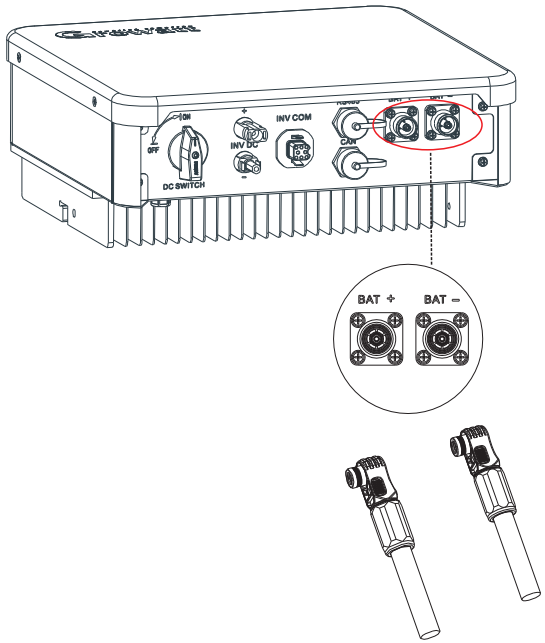
6.2.1 Connecting the Battery

WARNING	Danger to life due to lethal voltages! • Before connecting the lithium battery cable, make sure the MIN 3000BDC BL is not connected to any power supply.Ensure that the output of lithium battery is in the OFF state and all switches connected to MIN 3000BDC BL are in the OFF position. MIN 3000BDC BL does not contain residual electricity.Otherwise, high voltage may lead to electric shock.. • Although the battery input of MIN 3000BDC BL has anti-reverse connection protection function, it is still prohibited to reverse the positive and negative electrodes of the battery and the MINimum 3000BDC BL. • When the fast terMINal on the battery line is inserted into the BAT+/BAT-terMINal on MIN 3000BDC BL, the sound must be heard to indicate that the battery line is in good contact with the equipment. • NEVER connect or disconnect the BAT connectors and battery cables when the MIN 3000BDC BL is running.Battery short circuits may cause personal injury. The high transient current generated by a short circuit will release a surge of energy and may even cause fire.
DANGER	Improper operation during the wiring process can cause fatal injury to operator or unrecoverable damage to the MIN 3000BDC BL. Only qualified personnel can perform the wiring work.

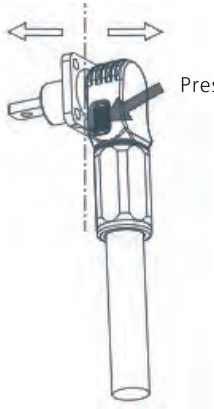
Connection of BAT input terminal



Battery wire with
conneaction terminals



Removal of BAT input terminal

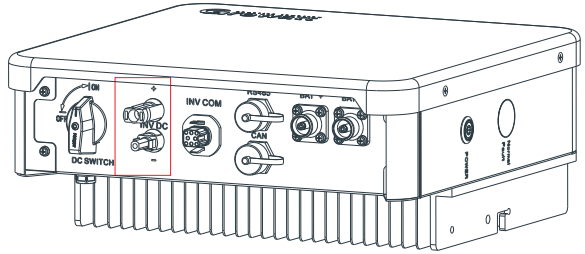


Press the Button

6.3 Connecting the MIN 3000BDC BL

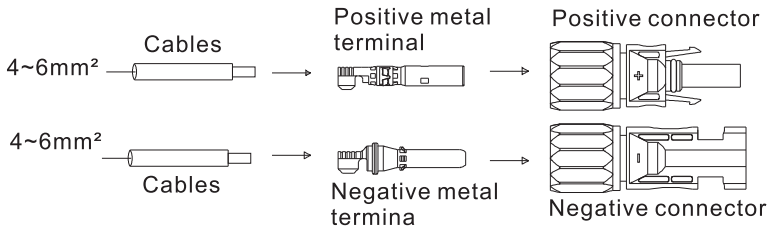
6.3.1 Connecting the MIN 3000BDC BL

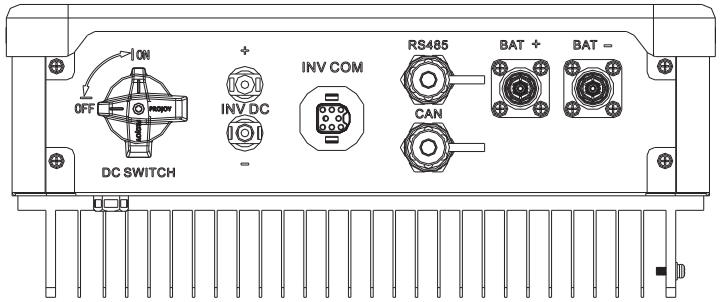
MIN 3000BDC BL has an independent INV DC output terMINal: INV DC + and INV DC - are connected to the input terMINals BAT + and BAT - of MIN TL-XH single-phase inverters, respectively.
Notice that the connectors are in paired (male and female connectors). The connectors for MIN 3000BDC BL and inverters are VP-D4/MC4 connectors.



WARNING	Danger to life due to lethal voltages! • Before connecting the input of MIN TL-XH single-phase inverters, ensure that the inverters are disconnected from any power supply. Make sure that the DC switch of MIN 3000 BDCBL and all switches connected to MIN 3000BDC BL are in the open position. MIN 3000 BDCBL does not contain residual power. Otherwise, high voltage may lead to electric shock. • Forbidden to reverse the positive and negative poles of the MIN 3000BDC BL the inverter. • When MIN 3000BDC BL is running, do not connect the cable between INV DC output and TL-XH. If the INV DC output terMINal of MIN 3000BDC BL is inversely connected with the BAT terMINal of TL-XH, the connecting cable will damage MIN 3000BDC BL and the inverter when the system is running. Fires may occur in severe cases
DANGER	Improper operation during the wiring process can cause fatal injury to operator or unrecoverable damage to the MIN 3000BDC BL. Only qualified personnel can perform the wiring work.

Connection of BAT input terminal



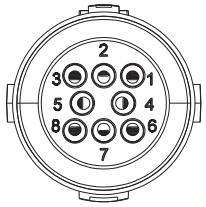


6.4 Connecting the PV Array (DC input)

He device has three signal connectors, one is INV COM port connector, one is RS485 port connector, and the other is CAN port connector.

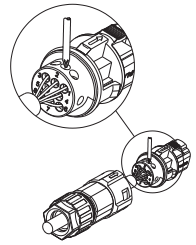
6.4.1 INV Come signal cable

6.4.1.1 INV COM PORT connector,Signal Cable Ports as follows

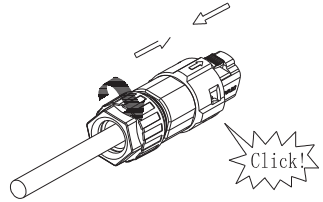


Procedure

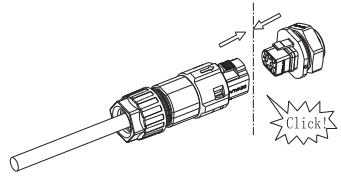
Step 1 Insert the stripped and bared cable through pressure screw, seal ring, threaded sleeve in sequence, insert cables into connection terMINal according to number indicates on it and tighten the screws firmly. Please try to pull out the wire to make sure the it's well connected.



Step 2 Push the threaded sleeve into the socket, Tighten up the cap on the terminal.

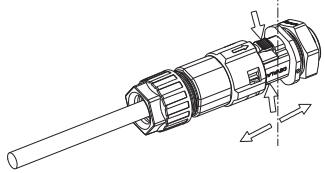


Step 3 Push the threaded sleeve to connection terMINal until both are locked tightly on the MIN 3000BDC BL.

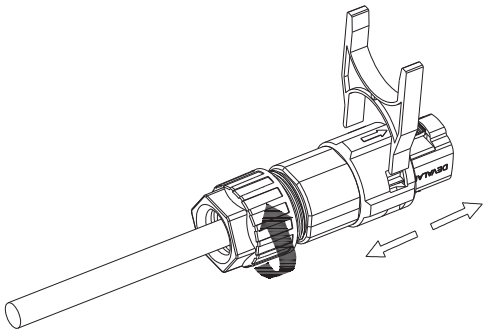


Uninstall signal connector

Step 1 Press the fasteners and pull it out from the MIN 3000BDC BL.



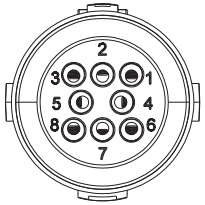
Step 2 Insert the H type tool and pull it out from the socket.



6.4.1.2 INV COM Communication Port Function Introduction

Function 1: The communication between MIN 3000BDC BL and MIN TL-XH is the only communication port in the grid-connected photovoltaic energy storage system.
8Pin socket pin assignment.

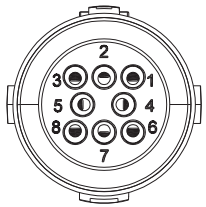
INV COM Port Pin of MIN 3000BDC BL	Pin function	Connection pins of communication port SYS COM corresponding to MIN TL-XH series inverters
Pin1	Enable+	Pin2
Pin2	Enable-	Pin1
Pin3	RS485A	Pin8
Pin4	RS485B	Pin7



Function 2: When the system needs to expand power to 5KW, two MIN 3000 BDC BLs need to be connected in parallel. At this time, changing the connection of INV COM communication interface can also be used as a parallel enabling switch between two MIN 3000 BDC BL.

When two MIN 3000bdc BLs are parallel connected, the function allocation of INV COM prot communication pins with pins is as follows:

Product Model	When two MIN 3000BDC BL are connected in parallel, pin allocation between two INV COM PROT communication ports and TL-XH unified SYS COM PROT communication ports					
MIN 3000 BDC BL(1)	Pin1	Pin2	Pin3	Pin4	Pin5	Pin6
MIN 3000 BDC BL(2)	Pin1	Pin2	Pin3	Pin4	Pin6	/
TL-XH	Pin2	Pin1	Pin8	Pin7	/	/



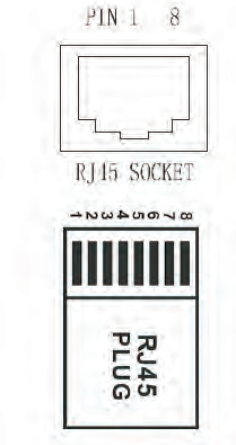
6.4.1.3 MIN 3000BDC INV COM Communication Port Wiring Notes

CAUTION	Damage to the MIN 3000BDC BL due to moisture and dust penetration. ➢ Make sure the cable gland has been tightened firmly. ➢ If the cable gland are not mounted properly, the equipment can be destroyed due to moisture and dust penetration. All the warranty claim will be invalid.
WARNING	The influence of inv com wiring error on the operation of MIN 3000bdc-bl component system. ➢ Error wiring or disconnection of electrical connection between INV COM and SYS COM of inverters will result in MIN 3000BDC BL not working properly, but the equipment will not be damaged. ➢ If there are two MIN 3000BDC BLs in the system at the same time, the connection error between two INV COMs will cause two MIN 3000BDC BLs to not work properly. It may damage the equipment.

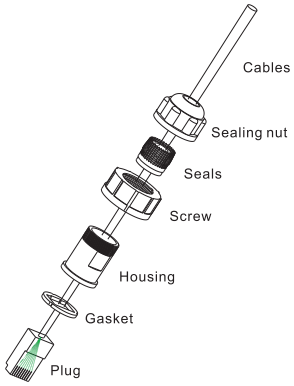
6.4.2. RJ45 signal cable

6.4.2.1 RJ45 signal cable

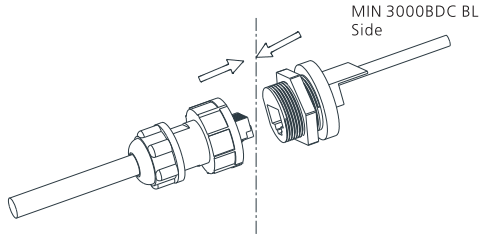
MIN 3000BDC BL has two RJ45 connectors, one is RS485 port connector, the other is CAN port connector. The signal cable ports are as follows:



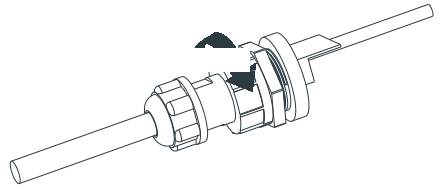
Step 1 The stripped and exposed wires are passed through sealing nut, seals, screw, Housing and Gasket in turn, and the cable is placed on the connecting crystal head according to the corresponding color on the wires, and pressed with the wire-pressing tool. Please try to pull out the wire to make sure it is well connected.



Step 2 Push the threaded sleeve into the socket, Tighten up the cap on the terminal.



Step 3 Plug is inserted into the RJ45 socket, and then the threaded sleeve is pushed onto the connecting terminal until both are firmly locked on the minimum 3000BDC BL.



6.4.2.2 Application of RJ45 Communication Port

MIN 3000BDC BL has two RJ45 connectors, one is RS485 port connector, the other is CAN port connector. Both connectors are used for communication between MIN 3000BDC BL and lithium batteries.

Note:

RJ45 communication option, if the lithium battery is RS485 communication port, then the communication line is inserted into the RS485 communication port of MIN 3000BDC BL. If the lithium battery is the CAN communication port, then the communication line is inserted into the CAN communication port of MIN 3000BDC BL.

NO.	MIN 3000 BDC BL	Battery	NO.	MIN 3000 BDC BL	Battery
Pin1	White orange	White orange	Pin5	White blue	White blue
Pin2	Orange	Orange	Pin6	Green	Green
Pin3	White green	White green	Pin7	White brown	White brown
Pin4	Blue	Blue	Pin8	Brown	Brown

6.4.2.4 CAN communication port pin function

The corresponding relationship between the CAN communication port of MIN 3000 BDC BL and the CAN communication port pin of lithium battery is shown in the following table.

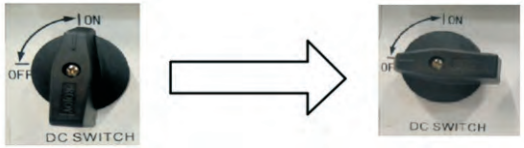
NO.	MIN 3000 BDC BL	Battery	NO.	MIN 3000 BDC BL	Battery
Pin1	White orange	White orange	Pin5	White blue	White blue
Pin2	Orange	Orange	Pin6	Green	Green
Pin3	White green	White green	Pin7	White brown	White brown
Pin4	Blue	Blue	Pin8	Brown	Brown

6.4.2.5 MIN 3000BDC BL RJ45 port wiring instructions

CAUTION	Damage to the MIN 3000BDC BL due to moisture and dust penetration ➢ Make sure the cable gland has been tightened firmly. ➢ If the cable gland are not mounted properly, the equipment can be destroyed due to moisture and dust penetration. All the warranty claim will be invalid.
WARNING	The influence of RS485and CAN wiring error on the operation of MIN 3000BDC BL component system. ➢ The communication interface RS485 on MIN 3000BDC BL or the communication interface between CAN and lithium battery is wrong or the electrical disconnection will cause the equipment to not work properly. Damage to equipment in severe cases

6.5. Troubleshooting of MIN 3000BDC BL

The operation steps in case of emergency operation or maintenance of the system are as follows:
Step 1: First disconnect the DC switch between MIN 3000 BDC BL and TL-XH, or place the DC switch on MIN 3000 BDC BL in the disconnection position.



Step 2: Disconnect the DC switch between MIN 3000 BDC BL and lithium battery, or press the button on lithium battery to shut down.

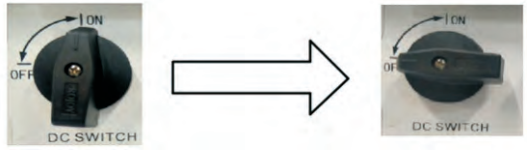
DANGER	Do not close any switches connected to MIN 3000BDC BL in TL-XH operation.
WARNING	Improper operation during the wiring process can cause fatal injury to operator or unrecoverable damage to the equipment. Only qualified personnel can perform the wiring work.
CAUTION	Damage to the equipment due to moisture and dust penetration ➢ Make sure the cable gland has been tightened firmly. ➢ If the cable gland are not mounted properly, the equipment can be destroyed due to moisture and dust penetration. All the warranty claim will be invalid.

Requirements :

- ✓ The Correct connection of battery cable.
- ✓ Correct cable connection between MIN 3000BDC BL and TL-XH.

7.1 Start the MIN 3000BDC BL

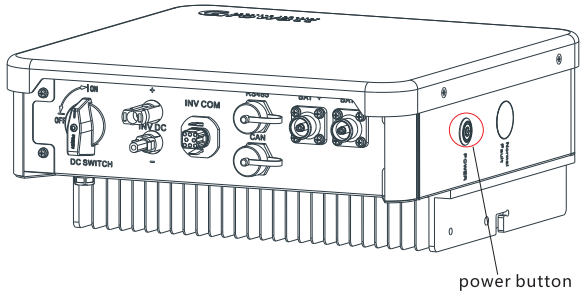
After the installation of MIN 3000BDC BL is completed, please follow the following steps:
Step 1: Firstly, the MINimum 3000BDC BL DC switch is placed in ON position. At the same time, the external switch between MI300 BDC BL and TL XH is also placed in ON position, and then the DC switch between lithium battery and MIN 30000 BDC BL is placed in ON position.



Step2: Put the switch of PV power supply and AC power supply connected with TL-XH series inverters to ON position
Step3: If there is photovoltaic or AC power in the system, TL-XH will automatically turn on MIN 3000BDC BL and lithium battery.

7.2 Backup mode setting

If there is neither AC nor PV in the system, the customer needs the system to enter the offline mode of work, then turn on MIN 3000BDC BL to power the system offline according to the following steps:
Step 1: Turn on the power switch for lithium battery.
Step2: MIN 3000BDC BL green light enters the state of flashing once a second, press Power key for 3 seconds, then release, then open successfully.



7.3 MIN 3000BDC BL shutdown procedure

When the power supply of MIN 3000BDC BL needs to be shut down during off-line operation or system overhaul, the following steps should be taken:
Step1: Press the power button for 5 seconds and release it. Then the red LED flickers three times and then switches to green LED to flicker once a second. The output of MIN 3000BDC BL is turned off at high voltage and goes into standby state.
Step2: The power switch of lithium battery was disconnected, the LED lamp of MIN 3000BDC BL was extinguished, and the system was shut down successfully.

Maintenance and Cleaning 8

8.1 Checking Heat Dissipation

If the MIN 3000BDC BL regularly reduces its output power due to high temperature, please improve the heat dissipation condition. Maybe you need to clean the heat sink.

8.2 Cleaning the MIN 3000BDC BL

If the MIN 30000BDC BL is dirty, please turn off the DC switch between the device and the inverter and the output power of the lithium battery, wait for the device to close, and then clean the cover and the LED with a wet cloth. Do not use any detergent (such as solvent or abrasive).

8.3 Checking the DC Disconnect

Check for externally visible damage and discoloration of the DC Disconnect and the cables at regular intervals.If there is any visible damage to the DC Disconnect, or visible discoloration or damage to the cables, contact the installer.

- Once a year, turn the rotary switch of the DC Disconnect from the On position to the Off position 5 times in succession. This cleans the contacts of the rotary switch and prolongs the electrical endurance of the DC Disconnect.

9 Trouble shooting

Our quality control program assures that every MIN 3000BDC BL is manufactured to accurate specifications and is thoroughly tested before leaving our factory. If you have difficulty in the operation of your MIN 3000BDC BL, please read through the following information to correct the problem.

9.1 Error Messages displayed on LED

Red LEDs will always light up when a malfunction occurs.
You may be advised to contact Growatt in some situation, please provide the following information.
Information concerning the MIN 3000BDC BL:

- Serial number
- Model number
- Short description of the problem
- Voltage and Voltage of Lithium Batteries
- DC input voltage
- Can you reproduce the failure? If yes, how?
- Has this problem occurred in the past?
- What was the ambient condition when the problem occurred?

9.2 MIN 3000BDC BL fault

When MIN 3000BDC BL's red LED lights are always on or TL-XH displays the "217" fault code, please follow the following recommendations.
Step 1: Turn off all power supplies
Step 2: Check the correct cable connection between MIN 3000BDC BL and TL-XH
Step 3: Check whether the signal lines between MIN 3000BDC BL and TL-XH are correctly connected and in good contact.
Step 4: Check the correct cable connection between lithium battery and MIN 3000BDC BL
Step 5: Check whether the connection between lithium battery and MIN 3000BDC BL communication line is normal
Step 6: Return on the power supply
If the above suggestions do not solve the problem, please contact the manufacturer.

10 Manufacturer Warranty

Please refer to the warranty card.

Decommissioning 11

11.1 Dismantling the MIN 3000BDC BL

1>Disconnect the MIN 3000BDC BL as described in section.
2>Remove all connection cables from the MIN 3000BDC BL.
3>Screw off all projecting cable glands.
4>Lift the MIN 3000BDC BL off the bracket and unscrew the bracket screws.

CAUTION

Danger of burn injuries due to hot enclosure parts!
Wait 20 MINutes before disassembling until the housing has cooled down.

11.2 Packing the MIN 3000BDC BL

If possible, always pack the MIN 3000BDC BL in its original carton and secure it with tension belts. If it is no longer available, you can also use an equivalent carton. The box must be capable of being closed completely and made to support both the weight and the size of the MIN 3000BDC BL.

11.3 Storing the MIN 3000BDC BL

Store the MIN 3000BDC BL in a dry place where ambient temperatures are always between -25°C and +60°C.

11.4 Disposing of the MIN 3000BDC BL

Do not dispose of faulty MIN 3000BDC BL or accessories together with household waste. Please accordance with the disposal regulations for electronic waste which apply at the installation site at that time. Ensure that the old unit and, where applicable, any accessories are disposed of in a proper manner.

12 Technical Data

12.1 Specification

Model Name	MIN 3000BDC BL
INV DC side	
Input voltage range	350V-550V
Nominal Power(discharging/charging)	3150W/3000W
Max current(discharging/charging)	11A/9A
Load-down voltage	
480V >INV DC>450V(discharging/charging)	2000W/3000W
520V >INV DC>450V(discharging/charging)	0W/2000W
INV DC>520V	Standby
BAT side	
voltage range	42-59V
Nominal voltage	48V
Max power(discharging)	4000W/15S
Nominal charging and discharging current	66A
Max charging and discharging current	66A/85A
Type of battery	Lithium
Effciency	
Max discharging effciency	96%
Max charging effciency	96.5%
General Data	
cooling	Natural
Dimensions(W/H/D)	355mm*367.5mm*151.5mm
Weight	10KG
Relative humidity	100%
Operation Ambient temperature	-25...+60℃ (-13...+ 140°F) with derating above 45°C (113°F)
Interfaces	
Display	LED
Battery communication	RS485/CAN
Unit protection function	
Reverse connection protection(BAT side)	YES
Short circuit protection(BAT side)	YES
Short circuit boot protection(INV DC side)	YES
Isolation with High Frequency Transformer	YES
Is there overtemperature protection	YES
overload protection	YES
Warranty:5/10 years	Yes/ Optional

12.2 INV DC&BAT connectors info

INV DC connectors	VP-D4/MC4(opt)
BAT connectors	NF12001NNX*C0900-1 NM12001NNX*C0900-2

12.3 Torque

Enclosure lid screws	7kg.cm
Signal terMINal	0.4N.m
M6 soket head cap screws for securing the enclosure at the bracket	20kg.cm
Additional ground screws	20kg.cm

12.4 Accessories

In the following table you will find the optional accessories for your product. If required, you can order these from GROWATT NEW ENERGY TECHNOLOGY CO.,LTD or your dealer.

Name	Brief description
INV DC connectors	VP-D4/MC4(opt)
Wiring Battery Line	Finished wires with paired terMINals at both ends(Section area of wire rod
Rj45 signal cable	Finished Wire with Customer Waterproof TerMINals at Both Ends(Wire length 1.5m)

Shipped to a Growatt service centre for repair, or repaired on-site, or exchanged for a replacement device of equivalent value according to model and age.
The warranty shall not cover transportation costs in connection with the return of defective modules . The cost of the installation or reinstallation of the modules shall also be expressly exclude as are all other related logistical and process costs incurred by all parties in relation to this warranty claim.

Certificates
With the appropriate settings, the unit will comply with the requirements specified in the following standards and directives (dated: August./2019):

Model	Certificates
MIN 3000BDC BL	IEC62109,IEC61000

14 Contact

If you have technical problems about our products, contact the GROWATT Serviceline. We need the following information in order to provide you with the necessary assistance

- Equipment type
- Serial number of the equipment
- Event number or display message of the equipment
- Connected Lithium Battery Manufacturers and Models

GROWATT NEW ENERGY TECHNOLOGY Co.,LTD

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