



USER MANUAL

Lithium-Ion Intelligent Charger



Welcome to use our charger products. Please read this User Manual carefully to ensure convenient, quick, and safe operation of the charger.

◆ Attention

This manual provides installation instructions, parameter specifications, troubleshooting guidance, and routine maintenance information. Please pay special attention to the following points. In order to ensure the correct installation and operation of this charger, please read the instructions carefully before installation, and keep it properly for future reference by the end user.

◆ Special Notice

- ✧ Unauthorized conversion or reproduction of all or any part of the contents of this manual is prohibited.
- ✧ The contents of this manual are subject to change without notice.
- ✧ If any errors or omissions be found in the instructions, please contact the manufacturer or distributor.
- ✧ No liability shall be borne for direct or indirect losses arising from the use instructions.
- ✧ The charger serial number is the company's production record code. Users must keep it properly to facilitate better after-sales service.

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A. Summary of this series of products:

This series of high frequency chargers have high conversion efficiency, high precision of voltage stabilization and current stabilization, and low ripple of output current. Owing to the high-frequency switching technology, the charger features energy savings, easy control, a wide adjustable range, compact size, and light weight.

B. Overview of working principle:

The charger is mainly composed of rectifier filter circuit, high-frequency switching inverter circuit, PWM control circuit, output rectifier-wave circuit, reverse protection, short circuit protection, hardware protection circuit and auxiliary power source circuit.

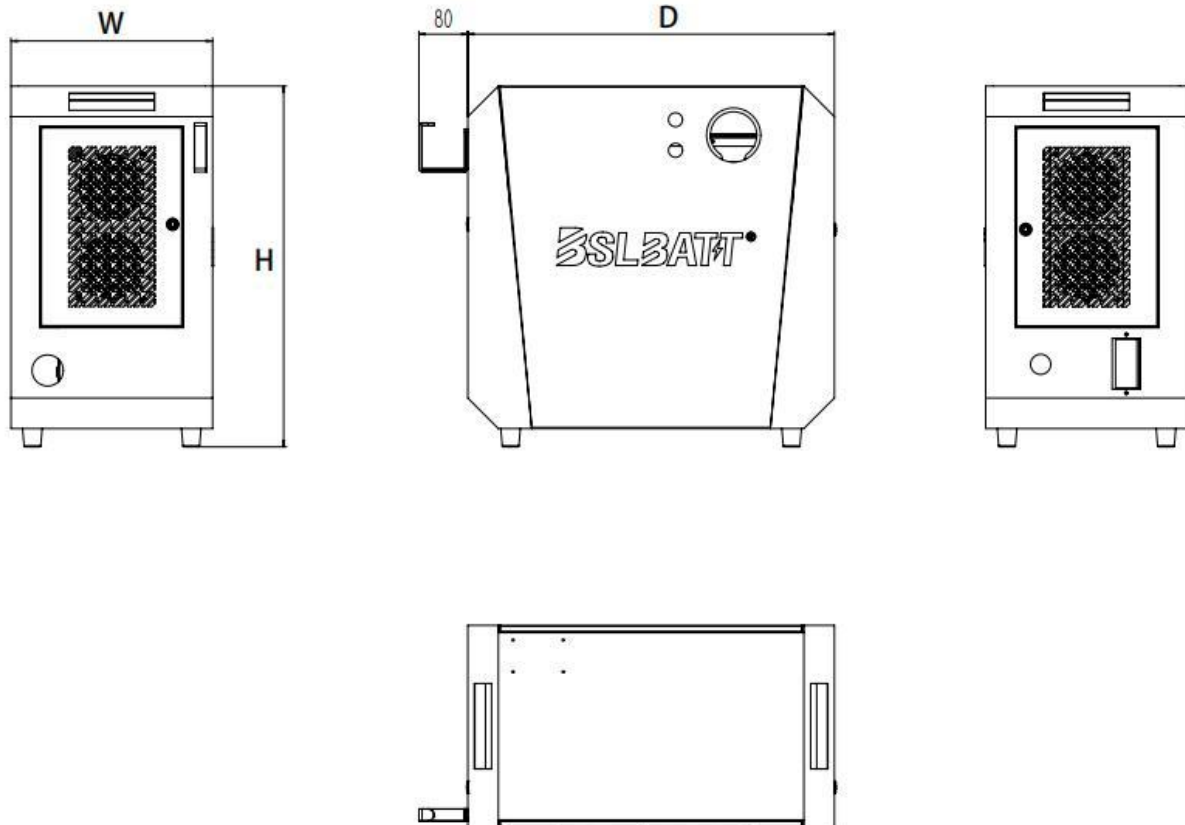
C. Mechanical Properties:

The shape, volume and weight of the product are shown in Table

Model	Weight(kg)	D*W*H(mm)	Cooling Mode	Suitable Applications
BSL-24-100	50	600x250x560	Forced air cooling	Indoor use
BSL-24-150	50	600x250x560	Forced air cooling	Indoor use
BSL-24-200	50	600x250x560	Forced air cooling	Indoor use
BSL-24-250	60	600x330x590	Forced air cooling	Indoor use
BSL-24-300	60	600x330x590	Forced air cooling	Indoor use
BSL-36-100	50	600x250x560	Forced air cooling	Indoor use
BSL-36-150	50	600x250x560	Forced air cooling	Indoor use
BSL-36-200	50	600x250x560	Forced air cooling	Indoor use
BSL-36-250	60	600x330x590	Forced air cooling	Indoor use
BSL-36-300	60	600x330x590	Forced air cooling	Indoor use
BSL-48-100	50	600x250x560	Forced air cooling	Indoor use
BSL-48-150	50	600x250x560	Forced air cooling	Indoor use
BSL-48-200	50	600x250x560	Forced air cooling	Indoor use
BSL-48-250	60	600x330x590	Forced air cooling	Indoor use

BSL-48-300	60	600x330x590	Forced air cooling	Indoor use
BSL-80-100	50	600x250x560	Forced air cooling	Indoor use
BSL-80-150	55	600x250x560	Forced air cooling	Indoor use
BSL-80-200	55	600x250x560	Forced air cooling	Indoor use
BSL-80-250	65	600x330x590	Forced air cooling	Indoor use
BSL-80-300	65	600x330x590	Forced air cooling	Indoor use
BSL-96-100	50	600x250x560	Forced air cooling	Indoor use
BSL-96-150	55	600x250x560	Forced air cooling	Indoor use
BSL-96-200	55	600x250x560	Forced air cooling	Indoor use
BSL-96-250	65	600x330x590	Forced air cooling	Indoor use
BSL-96-300	65	600x330x590	Forced air cooling	Indoor use

Product Dimensions:



E. Electrical Parameters:

Model	BSL-24-100	BSL-24-150	BSL-24-200	BSL-24-250	BSL-24-300
Rated Input Voltage	AC380V±15% Three phase four wire	AC380V±15% Three phase four wire	AC380V±15% Three phase four wire	AC380V±15% Three phase four wire	AC380V±15% Three phase four wire
Rated Frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Power Factor	≥ 0.99	≥ 0.99	≥ 0.99	≥ 0.99	≥ 0.99
Input Power	≤ 3.2kVA	≤ 4.8kVA	≤ 6.4kVA	≤ 8kVA	≤ 9.6kVA
Max. Input Current	6A	8A	10A	13A	16A
Efficiency	≥ 0.92	≥ 0.92	≥ 0.92	≥ 0.92	≥ 0.92
Rated Output Voltage	24V	24V	24V	24V	24V
Rated Output Current	100A	150A	200A	250A	300A
Rated Output Power	2.4kW	3.6kW	4.8kW	6kW	7.2kW
DC Output Voltage Range	20 VDC ~ 32 VDC	20 VDC ~ 32 VDC	20 VDC ~ 32 VDC	20 VDC ~ 32 VDC	20 VDC ~ 32 VDC
Output Connector	Correspond to standard GB/T 20234.3-2015 Rema Plug or Socket optional	Correspond to standard GB/T 20234.3-2015 Rema Plug or Socket optional	Correspond to standard GB/T 20234.3-2015 Rema Plug or Socket optional	Correspond to standard GB/T 20234.3-2015 Rema Plug or Socket optional	Correspond to standard GB/T 20234.3-2015 Rema Plug or Socket optional
Cooling Mode	Forced air Cooling	Forced air Cooling	Forced air Cooling	Forced air Cooling	Forced air Cooling
Operating Temperature	-20°C~65°C	-20°C~65°C	-20°C~65°C	-20°C~65°C	-20°C~65°C
Protection Rating	IP20	IP20	IP20	IP20	IP20
Operating Humidity	0% ~ 95%	0% ~ 95%	0% ~ 95%	0% ~ 95%	0% ~ 95%
Noise	<65dB	<65dB	<65dB	<65dB	<65dB
Altitude	≤2000m	≤2000m	≤2000m	≤2000m	≤2000m

Model	BSL-36-100	BSL-36-150	BSL-36-200	BSL-36-250	BSL-36-300
Rated Input Voltage	AC380V±15% Three phase four wire	AC380V±15% Three phase four wire	AC380V±15% Three phase four wire	AC380V±15% Three phase four wire	AC380V±15% Three phase four wire
Rated Frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Power Factor	≥ 0.99	≥ 0.99	≥ 0.99	≥ 0.99	≥ 0.99
Input Power	≤ 4.5kVA	≤ 6.75kVA	≤ 9kVA	≤ 11.25kVA	≤ 13.5kVA
Max. Input Current	7A	11A	15A	19A	23A
Efficiency	≥ 0.92	≥ 0.92	≥ 0.92	≥ 0.92	≥ 0.92
Rated Output Voltage	36V	36V	36V	36V	36V
Rated Output Current	100A	150A	200A	250A	300A
Rated Output Power	3.6kW	5.4kW	7.2kW	9kW	10.8kW
DC Output Voltage Range	20 VDC ~ 45 VDC	20 VDC ~ 45 VDC	20 VDC ~ 45 VDC	20 VDC ~ 45 VDC	20 VDC ~ 45 VDC
Output Connector	Correspond to standard GB/T 20234.3-2015 Rema Plug or Socket optional	Correspond to standard GB/T 20234.3-2015 Rema Plug or Socket optional	Correspond to standard GB/T 20234.3-2015 Rema Plug or Socket optional	Correspond to standard GB/T 20234.3-2015 Rema Plug or Socket optional	Correspond to standard GB/T 20234.3-2015 Rema Plug or Socket optional
Cooling Mode	Forced air Cooling	Forced air Cooling	Forced air Cooling	Forced air Cooling	Forced air Cooling
Operating Temperature	-20°C~65°C	-20°C~65°C	-20°C~65°C	-20°C~65°C	-20°C~65°C
Protection Rating	IP20	IP20	IP20	IP20	IP20
Operating Humidity	0% ~ 95%	0% ~ 95%	0% ~ 95%	0% ~ 95%	0% ~ 95%
Noise	<65dB	<65dB	<65dB	<65dB	<65dB
Altitude	≤2000m	≤2000m	≤2000m	≤2000m	≤2000m

Model	BSL-48-100	BSL-48-150	BSL-48-200	BSL-48-250	BSL-48-300
Rated Input Voltage	AC380V±15% Three phase four wire	AC380V±15% Three phase four wire	AC380V±15% Three phase four wire	AC380V±15% Three phase four wire	AC380V±15% Three phase four wire
Rated Frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Power Factor	≥ 0.99	≥ 0.99	≥ 0.99	≥ 0.99	≥ 0.99
Input Power	≤ 6kVA	≤ 9kVA	≤ 12kVA	≤ 15kVA	≤ 18kVA
Max. Input Current	10A	15A	20A	25A	30A
Efficiency	≥ 0.92	≥ 0.92	≥ 0.92	≥ 0.92	≥ 0.92
Rated Output Voltage	48V	48V	48V	48V	48V
Rated Output Current	100A	150A	200A	250A	300A
Rated Output Power	4.8kW	7.2kW	9.6kW	12kW	14.4kW
DC Output Voltage Range	20 VDC ~ 60 VDC	20 VDC ~ 60 VDC	20 VDC ~ 60 VDC	20 VDC ~ 60 VDC	20 VDC ~ 60 VDC
Output Connector	Correspond to standard GB/T 20234.3-2015 Rema Plug or Socket optional	Correspond to standard GB/T 20234.3-2015 Rema Plug or Socket optional	Correspond to standard GB/T 20234.3-2015 Rema Plug or Socket optional	Correspond to standard GB/T 20234.3-2015 Rema Plug or Socket optional	Correspond to standard GB/T 20234.3-2015 Rema Plug or Socket optional
Cooling Mode	Forced air Cooling	Forced air Cooling	Forced air Cooling	Forced air Cooling	Forced air Cooling
Operating Temperature	-20°C~65°C	-20°C~65°C	-20°C~65°C	-20°C~65°C	-20°C~65°C
Protection Rating	IP20	IP20	IP20	IP20	IP20
Operating Humidity	0% ~ 95%	0% ~ 95%	0% ~ 95%	0% ~ 95%	0% ~ 95%
Noise	<65dB	<65dB	<65dB	<65dB	<65dB
Altitude	≤2000m	≤2000m	≤2000m	≤2000m	≤2000m

Model	BSL-80-100	BSL-80-150	BSL-80-200	BSL-80-250	BSL-80-300
Rated Input Voltage	AC380V±15% Three phase four wire	AC380V±15% Three phase four wire	AC380V±15% Three phase four wire	AC380V±15% Three phase four wire	AC380V±15% Three phase four wire
Rated Frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Power Factor	≥ 0.99	≥ 0.99	≥ 0.99	≥ 0.99	≥ 0.99
Input Power	≤ 10kVA	≤ 15kVA	≤ 20kVA	≤ 25kVA	≤ 30kVA
Max. Input Current	16A	25A	32A	40A	50A
Efficiency	≥ 0.92	≥ 0.92	≥ 0.92	≥ 0.92	≥ 0.92
Rated Output Voltage	80V	80V	80V	80V	80V
Rated Output Current	100A	150A	200A	250A	300A
Rated Output Power	8kW	12kW	16kW	20kW	24kW
DC Output Voltage Range	30 VDC ~ 100 VDC	30 VDC ~ 100 VDC	30 VDC ~ 100 VDC	30 VDC ~ 100 VDC	30 VDC ~ 100 VDC
Output Connector	Correspond to standard GB/T 20234.3-2015 Rema Plug or Socket optional	Correspond to standard GB/T 20234.3-2015 Rema Plug or Socket optional	Correspond to standard GB/T 20234.3-2015 Rema Plug or Socket optional	Correspond to standard GB/T 20234.3-2015 Rema Plug or Socket optional	Correspond to standard GB/T 20234.3-2015 Rema Plug or Socket optional
Cooling Mode	Forced air Cooling	Forced air Cooling	Forced air Cooling	Forced air Cooling	Forced air Cooling
Operating Temperature	-20°C~65°C	-20°C~65°C	-20°C~65°C	-20°C~65°C	-20°C~65°C
Protection Rating	IP20	IP20	IP20	IP20	IP20
Operating Humidity	0% ~ 95%	0% ~ 95%	0% ~ 95%	0% ~ 95%	0% ~ 95%
Noise	<65dB	<65dB	<65dB	<65dB	<65dB
Altitude	≤2000m	≤2000m	≤2000m	≤2000m	≤2000m

Model	BSL-96-100	BSL-96-150	BSL-96-200	BSL-96-250	BSL-96-300
Rated Input Voltage	AC380V±15% Three phase four wire	AC380V±15% Three phase four wire	AC380V±15% Three phase four wire	AC380V±15% Three phase four wire	AC380V±15% Three phase four wire
Rated Frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Power Factor	≥ 0.99	≥ 0.99	≥ 0.99	≥ 0.99	≥ 0.99
Input Power	≤ 12kVA	≤ 18kVA	≤ 24kVA	≤ 30kVA	≤ 36kVA
Max. Input Current	20A	30A	40A	50A	60A
Efficiency	≥ 0.92	≥ 0.92	≥ 0.92	≥ 0.92	≥ 0.92
Rated Output Voltage	96V	96V	96V	96V	96V
Rated Output Current	100A	150A	200A	250A	300A
Rated Output Power	9.6kW	14.4kW	19.2kW	24kW	28.8kW
DC Output Voltage Range	40 VDC ~ 120 VDC	40 VDC ~ 120 VDC	40 VDC ~ 120 VDC	40 VDC ~ 120 VDC	40 VDC ~ 120 VDC
Output Connector	Correspond to standard GB/T 20234.3-2015 Rema Plug or Socket optional	Correspond to standard GB/T 20234.3-2015 Rema Plug or Socket optional	Correspond to standard GB/T 20234.3-2015 Rema Plug or Socket optional	Correspond to standard GB/T 20234.3-2015 Rema Plug or Socket optional	Correspond to standard GB/T 20234.3-2015 Rema Plug or Socket optional
Cooling Mode	Forced air Cooling	Forced air Cooling	Forced air Cooling	Forced air Cooling	Forced air Cooling
Operating Temperature	-20°C~65°C	-20°C~65°C	-20°C~65°C	-20°C~65°C	-20°C~65°C
Protection Rating	IP20	IP20	IP20	IP20	IP20
Operating Humidity	0% ~ 95%	0% ~ 95%	0% ~ 95%	0% ~ 95%	0% ~ 95%
Noise	<65dB	<65dB	<65dB	<65dB	<65dB
Altitude	≤2000m	≤2000m	≤2000m	≤2000m	≤2000m

(For use in special areas, please specify local environmental conditions when ordering.)

F. Charging operation instructions:

1 Charging preparation

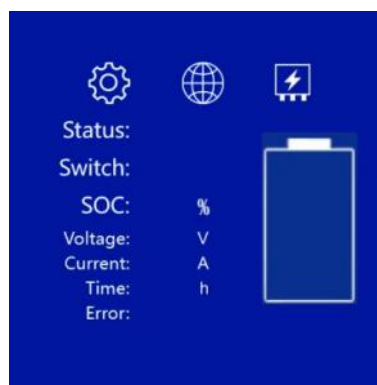
- 1) Inspect the equipment. Check whether the cable and housing are damaged, and whether the circuit breaker switch is in the pop-up (tripped) position. If the fault indicator is on, resolve the fault condition until the light turns off.
- 2) If a fault occurs during charging, it needs to stop immediately. Press the button of the stop switch on the charger.

2 Charging gun operation

When charging an electric forklift, open the charging gun cover. Before unplugging the gun, ensure your hands and the plug are dry to avoid electric leakage and personal injury. Hold the gun handle naturally, press the black button when plugging or unplugging, and insert or remove it smoothly.

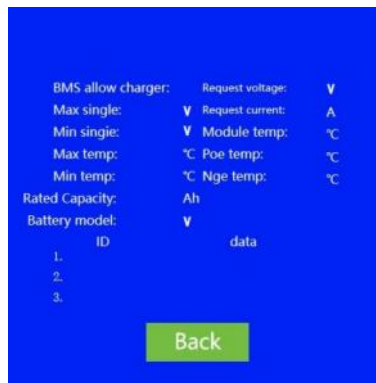
3 LCD Charging Operation Guide

1) Main LCD Interface



2) Secondary LCD Interface

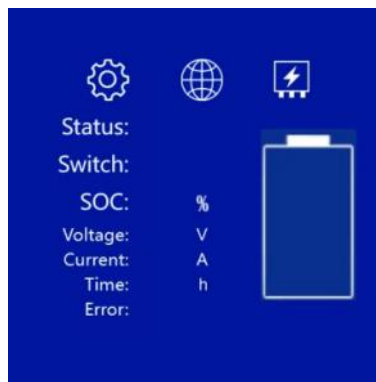
Tap the battery icon () on the LCD to enter the next screen. Touch the 'back' icon and return to the previous interface.



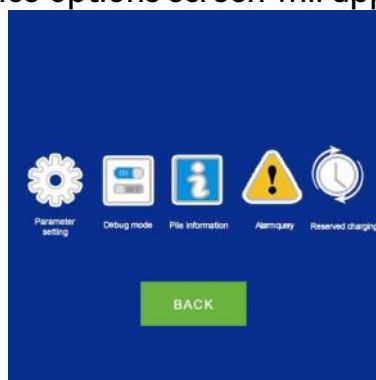
This interface displays the battery's real-time charging demand, individual cell voltages, and temperatures.

3) Charging Reservation

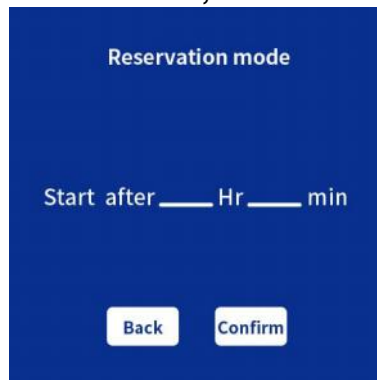
Touch the icon () on the LCD screen, then enter the next interface. Touch the 'back' icon and return to the previous interface.



The following maintenance options screen will appear:



Tap "Reserve Charging" on the screen, and the following dialog will appear.

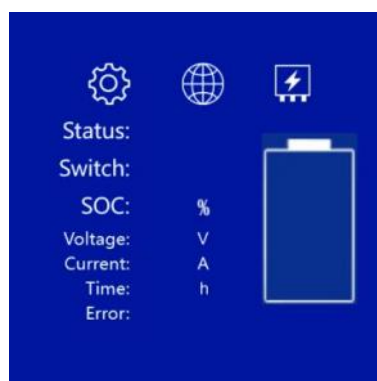


Click on Reserve Charging Time to reserve Charging Time in the following interface.

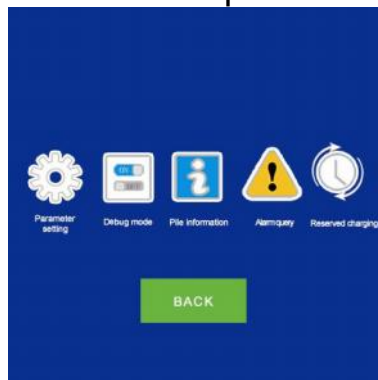


4) Alarm Query

Touch the icon () on the LCD screen, then enter the next interface. Touch the 'back' icon and return to the previous interface.



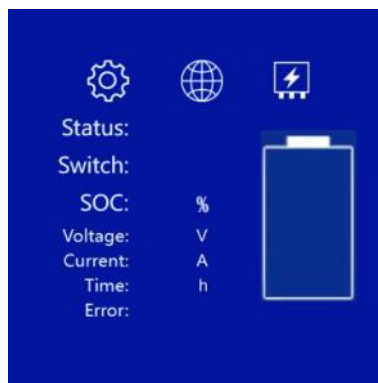
Pop up the following maintenance options interface;



Tap "Alarm Query" to view the fault history log.

5) The status of DC module

Touch the icon () on the LCD screen, then enter the next interface. Touch the 'back' icon and return to the previous interface.

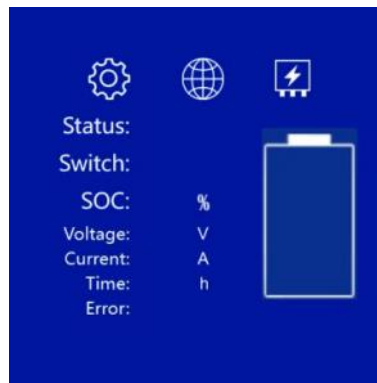


Pop up the following DC MODULE STATUS interface;

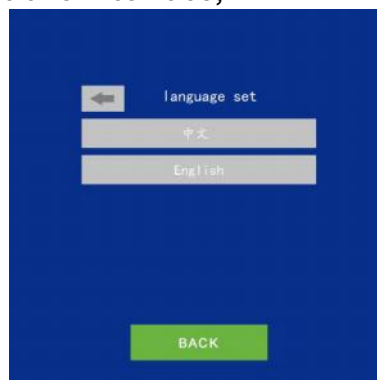


6) Switching between Chinese and English

Touch the icon () on the LCD screen, then enter the next interface. Touch the 'back' icon and return to the previous interface.



Pop up the following options interface;



4 To start charging immediately, tap the "Start" button; the charger will begin charging the electric forklift.

5 Tap "Stop" to terminate charging. The screen will display as shown below.

G. Installation and Start-up:

1 Installation and operation instructions (external wiring list)

Model	Conductor Cross-Sectional Area (mm ²)		Circuit Breaker
	Input Wiring	Output Wiring	
BSL-24-100	4x4mm ²	25mm ²	16A-3P
BSL-24-150	4x4mm ²	50mm ²	16A-3P
BSL-24-200	4x4mm ²	70mm ²	32A-3P
BSL-24-250	4x4mm ²	95mm ²	32A-3P
BSL-24-300	4x4mm ²	95mm ²	32A-3P
BSL-36-100	4x4mm ²	25mm ²	16A-3P
BSL-36-150	4x4mm ²	50mm ²	32A-3P
BSL-36-200	4x4mm ²	70mm ²	32A-3P
BSL-36-250	4x4mm ²	95mm ²	32A-3P
BSL-36-300	4x6mm ²	95mm ²	32A-3P
BSL-48-100	4x4mm ²	25mm ²	32A-3P
BSL-48-150	4x4mm ²	50mm ²	32A-3P
BSL-48-200	4x4mm ²	70mm ²	32A-3P
BSL-48-250	4x6mm ²	95mm ²	40A-3P
BSL-48-300	4x6mm ²	95mm ²	40A-3P
BSL-80-100	4x4mm ²	25mm ²	32A-3P
BSL-80-150	4x6mm ²	50mm ²	40A-3P
BSL-80-200	4x6mm ²	70mm ²	63A-3P
BSL-80-250	4x10mm ²	95mm ²	63A-3P
BSL-80-300	4x10mm ²	95mm ²	80A-3P
BSL-96-100	4x4mm ²	25mm ²	32A-3P
BSL-96-150	4x6mm ²	50mm ²	63A-3P
BSL-96-200	4x10mm ²	70mm ²	63A-3P
BSL-96-250	4x10mm ²	95mm ²	80A-3P
BSL-96-300	4x16mm ²	95mm ²	80A-3P

2 Installation Environment Requirements

Project	Standard
Location	If installed outdoors, the unit must be protected against wind, rain, and direct sunlight.
Ambient Temperature	(-20°C~65°C)
Relative Humidity	(10% – 90%, non-condensing)
	Free from direct sunlight, dust, corrosive gases, flammable gases,

Environment	oily mildew, steam, dripping water, etc. Condensation does not occur as a result of drastic temperature changes.
Spacing	Leave at least 200 mm of clearance around the unit.

3 Installation Notes

- 1) The charger must be installed horizontally on a structure with adequate heat dissipation and high-temperature tolerance. Do not flip or tilt the unit.
- 2) The charger generates heat during operation. Ensure unobstructed airflow and verify that the ambient temperature does not exceed the specified limit.
- 3) Do not allow fibers, paper, wood chips, metal fragments, or other debris to enter the charger; otherwise, fire may result.
- 4) Keep the charging gun cap on when not in use.

4 Other Matters Needing Attention

- 1) Ensure good electrical conductivity at the output connection (smooth, burr-free contact surfaces). Fasten with copper or stainless steel screws.
- 2) The grounding terminal must be properly grounded to prevent electric shock or fire.
- 3) The positive and negative poles of the output plug and the load should be connected according to the process requirements.
- 4) The fan must blow outward.

5 Start-up Inspection

- 1) Before charging, check the panel switches and verify that all knobs are in the correct positions.
- 2) Check battery connection.
- 3) Check the correct connection between communication line and 12V power line.
- 4) The emergency stop switch is in the pop-up position.

6 Charger protection function

- 1) Input protection: overvoltage, undervoltage, overcurrent, and phase-loss protection.

- 2) Output protection: short circuit, overcurrent, overvoltage, reverse connection, current backfilling protection
- 3) Others: overheating
- 4) Protection action:
 - A: 1.General protection: automatic recovery, such as overvoltage, undervoltage, phase absence, overheating, output overcurrent.
 - B: Built-in protection: current reversal.
 - C: Non-Self-Recovery Protection: Input overcurrent, output short circuit, output overvoltage.
- 5) If protection cannot be reset, all input and output switches will trip. For other protection events, only the output control circuit will be disabled.

H. Maintenance:

To ensure long-term reliable operation, perform both routine and periodic inspections. Pay attention to the following items.

1 Routine inspection

Do not remove the outer cover while power is on. Visually inspect the exterior for any abnormal conditions during operation. Usually check the following points:

- 1) Operating performance meets standard specifications.
- 2) The surrounding environment conforms to the standards and specifications (see the use environment).
- 3) Panel indicators and all functional switches are normal.
- 4) No unusual noise, vibration, or odor.
- 5) Whether the fan is in normal operation or not.
- 6) Check for overheating or discoloration.
- 7) Whether the input voltage is in the normal working range.
- 8) Check that all connectors are properly fastened.

2 Regular maintenance

Every 15 days (or as required by environmental conditions), clean the air inlet to remove accumulated dust and debris. Ensure the inlet is unobstructed to maintain airflow and proper heat dissipation.

Trouble Shooting:

NO.	Category	Project	Describe	Corrective Action
1	Software Protection	Input Overvoltage Protection	The input voltage is higher than the allowable value of overvoltage protection	Stop charging and verify that the input power supply is within 380V $\pm$ 15%.
2		Input undervoltage protection	Input voltage below allowable value	Stop charging and verify that the input power supply is within 380V $\pm$ 15%.
3		Output Overvoltage Protection	Output voltage between positive and negative poles is higher than allowable value	Stop charging and check if the output voltage exceeds the allowable limit.
4		Output undervoltage protection	Output voltage between positive and negative poles is below allowable value	Stop charging and check if the output voltage is below the allowable limit.
5		Output overcurrent protection	Output current greater than allowable value	Stop charging and check: output current settings, whether the charging gun is damaged, and whether the gun connection is normal.
6		Communication Break Protection	Communication interruption between the main controller and the DC module	Stop charging and check whether the CAN communication line has poor contact or is disconnected.
7		Charging Overtime Protection	Charger continuous charging Time over permissible value	Stop charging, power off and restart charger.
8		Overtemperature protection	Charger temperature higher than allowable value	Stop charging and check whether the temperature sensor is damaged or the ambient temperature is too high.
9		Battery disconnection protection	Charger Output Line Not Connected to Battery	Stop charging and check whether the charging gun has poor contact or the CAN communication line is faulty.
10		Communication Break Protection (Charger-BMS)	Interruption of communication between charger and BMS	Stop charging and check whether the CAN communication line has poor contact or is disconnected.
11	Hardware Protection	Output Overvoltage Protection	Output voltage between positive and negative poles is higher than allowable value	Stop charging and check if the output voltage of the charger is greater than allowable value
12		Output Overcurrent Protection	Output current exceeding allowable value	Stop charging, check whether the charger output gun connection is normal or damaged
13		Output Short Circuit Protection	Short circuit between output positive and negative poles	Stop charging and check whether there is short circuit to ground or positive and negative poles in the output charging gun.
14		Battery Reverse Connection Protection	Reciprocating of positive and negative poles at battery input	Stop charging and verify the polarity of the connection between the charging gun and the battery.

Common Faults & Solutions:

Fault phenomenon	Cause Analysis and Elimination Method
No response to gun insertion	The charging gun was not fully inserted.
Input overvoltage/ undervoltage	Mains voltage is abnormal. Check whether the AC input voltage is too high or too low.
Output overcurrent	Output current is abnormal or parameter settings are incorrect. Verify that the output current is within the set range; if not, check for excessive load.
There is voltage on the display screen while no current	Check whether the fuse is blown.
BMS communication timeout	Check whether the CAN communication line is open-circuited or has poor contact.
Module communication loss	DC power module may be loose.

Note: If the problem persists after the above steps, please contact our after-sales service team.