PROJECTA

INTELLI-GRID 12V $LiFePO_4$

400Ah LITHIUM BATTERY

⚠ WARNING

- Do not charge beyond 14.6VDC continuously over 24 hours, or using a charger with automatic desulfation.
- Do not short-circuit or reverse polarity.
- Do not disassemble, deform or modify battery.
- Store in a cool, dry and well-ventillated area.
- Charge battery at least every 6 months or when the voltage drops below 12.8VDC.
- Ensure battery is fully discharged before proper disposal.

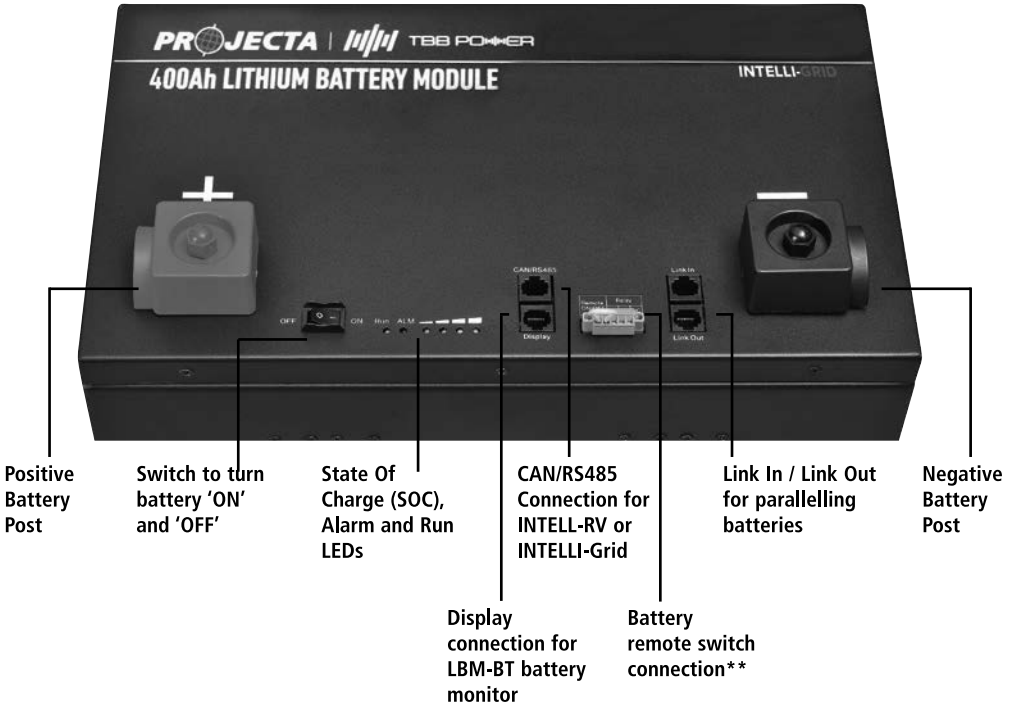
RECYCLE

P/No. LB400-HD

FEATURES

- 300Amp high discharge current, ideal for powering 3000W inverters.
- Built in current shunt to provide accurate State of Charge (SOC), so there is no need to buy an additional current shunt.
- Top-mounted battery indicator.
- Battery switch (remote and local) to isolate the system in storage.
- Communication ports to talk to INTELLI-RV*/INTELLI-GRID systems, displays/monitors or additional batteries.
- Lithium iron phosphate technology gives the advantage of high specific energy, long cycle life, high safety, low self-discharge and low weight (42.5kg).
- Mounting feet for easy installation.
- Built-in safety features including overvoltage, undervoltage, overcurrent, high/low temperature and short circuit protection.

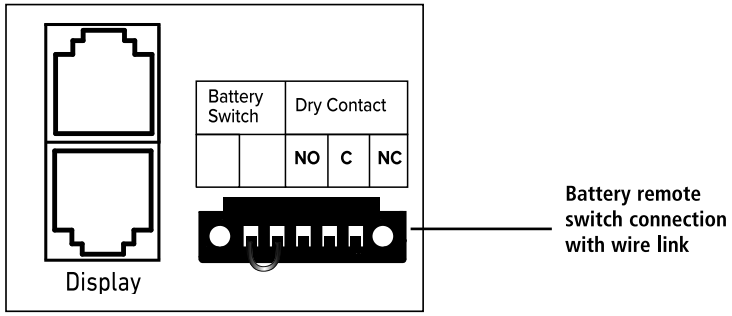
* Generation 2 and above



**Note: If external switch is not fitted, a link must be added

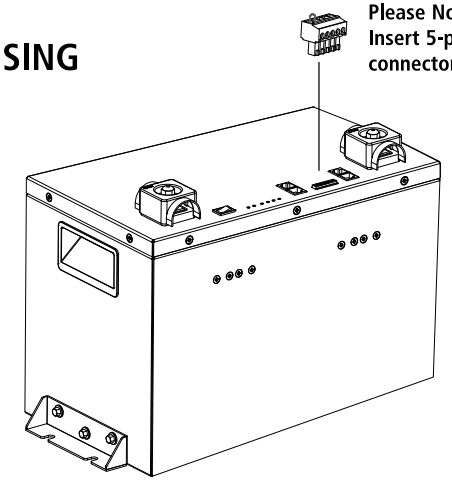
BATTERY QUICK START GUIDE

1. Wire the battery output post as required.
2. Connect a remote switch or add the wire link from the battery in the GREEN connector on top of the battery. See photo below.
   Note: a remote switch and 10m cable can be ordered Part No.: LBSW-10.
3. Connect CAN/RS485 cable to INTELLI-Grid or INTELLI-RV System.
   Leave empty if not required.
4. Connect the Display cable to connector labelled Display if LBM-BT battery monitor is being used. Leave empty if not required.
5. Turn the switch on labelled POWER to 'ON'.
6. The battery will now be 'ON'.
7. For battery to be fully OFF: both the fixed switch and remote switch need to be OFF.
   For battery that can be turned ON (For example via solar awakening, apply external charger, then only one of the switches needs to be ON
   For battery to be ON AT ALL TIMES: Both switches turned ON.



PREPARATION BEFORE USING THE BATTERY

Before using the battery, install the green 5-pin connector included in the packaging.
This connector allows the battery to be switched on and off using the switch on the battery itself.



OPTIONAL REMOTE BATTERY MONITOR (SOLD SEPARATELY, P/No. LBM-BT)

- Unlock your Projecta lithium battery's full potential.
- Monitor state of charge (SOC%) on LCD display.
- Turn battery on/off remotely, handy when the battery is mounted in an obscure place.
- Alarm and fault indication.
- Bluetooth monitoring and control via smart phone.
- Simply connect to the battery, no extra current shunts required.
- Additional functionality and monitoring when used in conjunction with other INTELLI-RV / INTELLI-GRID components.

LBM-BT Lithium Battery Monitor

CONNECTING IN PARALLEL

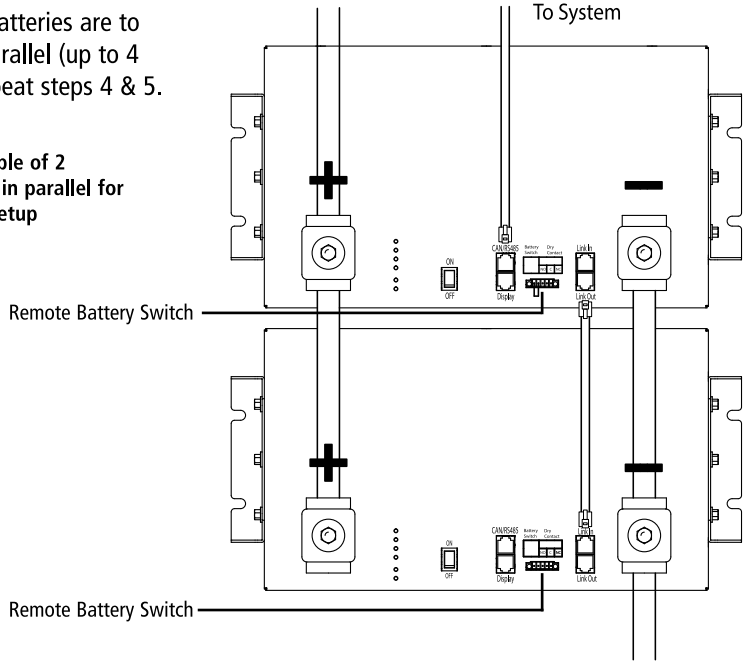
- Ensure all batteries are fully charged before connecting in parallel.
- LB400-HD can be connected in parallel of up to 4 batteries to create a 12V 1600Ah setup.
- When connecting in parallel the discharge current can be added but a discharge ratio of 0.75 needs to be applied to give the true continuous discharge current. For example 2 x LB400-HD in parallel will be 2 x 300Amp x 0.75 = 450Amps continuous discharge current.

Connection in Parallel

How to connect the battery in parallel

1. Select 1 battery to be a master and another to be the slave.
2. Connect the battery monitor or INTELLI-Grid/ INTELLI-RV system to the master.
3. Connect the green connector with link on the battery switch into the Master battery. The green connector is only required on the master battery and not the slave battery.
4. From the master connect an RJ45 cable LINK OUT to the slave battery LINK IN.
5. Connect battery joiner cables between the two batteries of suitable gauge.
6. Connect the positive out cable to the master battery positive terminal and connect the negative out to the slave battery negative terminal. This ensures even loading on the two batteries.
   a. Also ensure the cable gauge and lengths are the same between negative and positive cables.
7. If additional batteries are to be wired in parallel (up to 4 batteries). Repeat steps 4 & 5.

This is an example of 2 batteries wired in parallel for an INTELLI-RV setup



ALARMS

ERROR CODE & MESSAGE	EFFECT	CAUSE	SOLUTION
ERR 400 Cell or module over voltage	1. 6 Alarm LED Flashes and/or 7 Alarm LED Flashes. 2. This prevents further damage to the battery and helps ensure safety. However, its discharge capability will stay normal.	1. Cell Overvoltage Protection 2. Pack Overvoltage Protection 3. Individual cell(s) and/or battery pack total voltage exceeds the protection threshold.	a) Power cycle the battery (switch off and on). b) Shut the input power down and try to discharge the battery to lower the high voltage. c) Carefully check if the positive and negative terminals are not reverse connected or short-circuited. d) Remove the current load and change to another appliance that works to see if the indicator returns to normal. This will rule out malfunction or abnormal loads connected to the battery posts e) If these strategies do not result in normal operation, please contact either the dealer where you purchased the product or PROJECTA.
ERR 401 Cell or module under voltage	1. 4 Alarm LED Flashes and/or 5 Alarm LED Flashes 2. When this occurs, the battery management system will stop discharging the battery any further to prevent it from being damaged. It can now only accept charging.	1. Undervoltage protection has engaged	a) Power cycle the battery (switch off and on). b) Measure the battery voltage and ensure it is within the correct range. If there are several batteries connected, then measure each of the battery voltages to see if any of them are outside the battery specificaitons outlined in the battery manual. c) Charge the battery with a lithium battery charger in case the battery has not been used for a long while and has automatically entered low-voltage protection mode. d) If these strategies do not result in normal operation, please contact either the dealer where you purchased the product or PROJECTA.
ERR **402** Cell over temperature	1. 8 Alarm LED Flashes 2. BMS will shut down the battery discharge function to prevent the battery getting too hot and going into thermal runaway. It can now only accept charging.	1. High temperature protection triggered by an elevated temperature in a specific cell within the battery pack.	a) Check that the ambient temperature of the battery installation location is not too high. Allow the battery to cool down, placing it in a cool and dry environment at normal room temperature. b) Check that the battery wiring is tight enough and reliable without any wear and tear. c) Make sure the wire gauge (diameter of the battery wiring cable) meets specification. d) Check that the discharge current and discharge time of the lithium battery do not exceed the specifications (refer to the manual for details). e) If these strategies do not result in normal operation, please contact either the dealer where you purchased the product or PROJECTA.

ALARMS

ERROR CODE & MESSAGE	EFFECT	CAUSE	SOLUTION
ERR **403** Cell under temperature	1. 9 Alarm LED Flashes 2. The battery will lose discharging and charging capability.	1. Low temperature protection triggered by a temperature below the threshold in a specific cell within the battery pack.	a) Check that the ambient temperature of the battery installation location is not too low. The battery will not charge or discharge until the sensed temperature is within acceptable range (refer to the manual for more details). If the ambient temperature is too low, please connect the charger and increase the temperature of the lithium battery by heating the internal heating film of the lithium battery. Alternatively, move your battery to a warmer place at normal room temperature. b) If these strategies do not result in normal operation, please contact either the dealer where you purchased the product or PROJECTA.
ERR **404** Discharge over current	1. 1 Alarm LED Flash and/or 2 Alarm LED Flashes 2. The battery will stop discharging but will retain charging capability	1. Short Circuit Protection for Output. 2. Over-Discharge Current Protection.	a) Carefully check to ensure that the positive and negative polarities are correctly connected or run an electrical short-circuit. b) Measure the output current from the battery end with a clamp meter to see if the value is greater than the rated value. Refer to the product manual to learn the rated discharge current. c) Reduce the connected load by switching off some equipment. d) Remove the current load and change to another appliance that works to see if the indicator returns to normal. This will rule out malfunction or abnormal loads connected to the output end (sometimes a short circuit occurs in the load interior). e) Check that the positive wire of battery does not touche the RV metal shell where the negative and ground wires normally connect. f) If this happens after connecting to an inverter, try a fast second try to connect may help. e) If these strategies do not result in normal operation, please contact either the dealer where you purchased the product or PROJECTA.
ERR **405** Charge over current	1. 3 Alarm [ALM] LED Flashes 2. The Over Current Protection [OCP] will shut down the charge capability but retain the discharge function if it exceeds the programmed limit. This helps protect the battery and its surrounding components from damage.	1. Overcurrent Protection during Charging.	a) Measure the input current from the battery end with a clamp meter to see if the value is greater than rated value. Refer to the product manual to learn the rated charge current. b) Check that the charger is suitable and properly connected to the battery as described in the manual. c) Batteries with larger capacity are recommended. d) If these strategies do not result in normal operation, please contact either the dealer where you purchased the product or PROJECTA.

ALARMS

ERROR CODE & MESSAGE	EFFECT	CAUSE	SOLUTION
ERR **406** System error	1. 15 Alarm [ALM] LED Flashes. 2. BMS will shut down the battery for both charge and discharge function.	1. Internal Fault in the BMS. 2. Malfunction of Internal Peripheral Components.	a) Power cycle the battery (switch off and on). b) Consider hardware issues. If this strategy does not result in normal operation, please contact either the dealer where you purchased the product or PROJECTA.
ERR **420** Load pre-charge time-out	1. In this instance, the alarm indicator will not be activated 2. BMS will shut down discharge function but retain charge capability.	1. Excessive Load at Battery Power-Up. 2. Abnormal Load on the Battery Output. 3. For external loads, continuous power is a constant load that stays powered. Any voltage presence results in current flow, and anomalies in the external circuit, load short circuits, or excessive bus capacitance can trigger this error.	a) Reduce the connected load by switching off some appliances. b) Turn off high consumption appliances before turning the battery on. c) Remove the current load and change to another well-functioning appliance to see if the indicator returns to normal. This will rule out malfunction or abnormal loads connected to the output end (sometimes a short circuit occurs in the load interior). d) If these strategies do not result in normal operation, please contact either the dealer where you purchased the product or PROJECTA.
ERR **407** Outside over voltage	1. 14 Alarm [ALM] LED Flashes 2. BMS will shut down the battery charge function and retain discharge capability.	1. External Overvoltage Protection at Battery Terminal	a) Check that the charging voltage of the charger matches the lithium battery. Ensure that the battery voltage is within the specified range. b) Check that the charger is functioning correctly. c) Check that batteries and wiring are connected corrected and securely without any wear and tear. d) If these strategies do not result in normal operation, please contact either the dealer where you purchased the product or PROJECTA.
ERR **408** BMS over temperature	1. 12 Alarm [ALM] LED Flashes. 2. BMS will shut down both charge and discharge function to prevent the battery getting too hot and going into thermal runaway.	1. BMS Circuit High-Temperature Protection.	a) Check that the ambient temperature of the battery installation location is not too high. Allow battery to cool down and place battery in a cool and dry environment at normal room temperature. b) Check that the battery wiring is tight enough and reliable without any wear and tear. c) Check that the discharge current and discharge time of the lithium battery does not exceed specification (refer to the manual for details). d) If these strategies do not result in normal operation, please contact either the dealer where you purchased the product or PROJECTA.

ALARMS

ERROR CODE & MESSAGE	EFFECT	CAUSE	SOLUTION
ALM **409** Cell or module high voltage	1. Does not affect normal battery function and will not activate the alarm indicator, however, you need to take further action to avoid entering **overvoltage protection**.	1. Cell Overvoltage Warning 2. Pack Overvoltage Warning	a) Power cycle the battery (switch off and on). b) Shut the input power down and try to discharge the battery to lower the voltage. c) Carefully check to ensure that the positive and negative polarities are correctly connected or run an electrical short-circuit. d) Remove the current load and change to another appliance to see if the indicator returns to normal. This will rule out malfunction or abnormal loads connected to the output end. e) If these strategies do not result in normal operation, please contact either the dealer where you purchased the product or PROJECTA.
ALM **410** Cell or module Low voltage	1. Does not affect normal battery function and will not activate the alarm indicator, however, you need to take further action to avoid entering **undervoltage protection**.	1. Pack Undervoltage Warning. 2. Cell Undervoltage Warning. 3. Battery communication connected to an unparallel-connected and low-voltage warned or protected battery, with no warning light on the battery.	a) Power cycle the battery (switch off and on). b) If this happens after you connect the communication cable to an idle battery, simply pull the communication cable out and power cycle the battery. c) Measure the battery voltage to ensure it is within the specified range. If there are several batteries connected, then measure each of them. To learn the exact relevant specifications, please refer to the product manual. d) Charge the battery with a lithium battery charger in case the battery has not been used for a long while and has automatically entered low-voltage protection mode. e) If these strategies do not result in normal operation, please contact either the dealer where you purchased the product or PROJECTA.
ALM **411** Cell high temperature	1. Normal battery functions are not affected and the alarm indicator will not be activated, however, you will need to take further action to avoid entering **discharge over temperature protection**.	1. Cell High Temperature Warning.	a) Check that the ambient temperature of the battery installation location is not too high. Allow the battery to cool down and place it in a cool and dry environment at normal room temperature. b) Check that the battery wiring is tight enough and reliable without any wear and tear. c) Make sure the wire gauge (diameter of the battery wiring cable) meets specifications. d) Check that the discharge current and discharge time of the lithium battery does not exceed the specifications (refer to the manual for details). e) If these strategies do not result in normal operation, please contact either the dealer where you purchased the product or PROJECTA.
ALM **412** Cell low temperature	1. Normal battery functions are not affected and the alarm indicator will not be activated, however, you will need to take further actions to avoid entering **discharge low temperature protection**.	1. Cell Low Temperature Warning.	a) Check that the ambient temperature of the battery installation location is not too low. If the ambient temperature is too low, please connect a charger and increase the temperature of the lithium battery by heating the internal heating film of the lithium battery. Alternatively, move your battery to a warmer place at normal room temperature. b) If these strategies do not result in normal operation, please contact either the dealer where you purchased the product or PROJECTA.

ALARMS

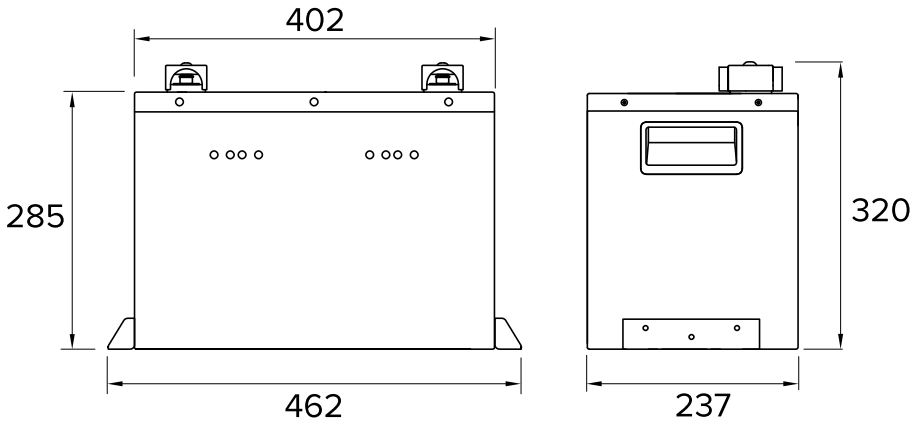
ERROR CODE & MESSAGE	EFFECT	CAUSE	SOLUTION
ALM **413** Discharge high current	1.In this instance, normal battery function is not affected and the alarm indicator will not be activated, however, you will need to take further action to avoid entering **overcurrent discharging protection.**	1. Discharge overcurrent alarm.	a) Measure the discharge current with a clamp meter and ensure it is within the specified range. b) Check that the batteries and the wiring are connected corrected and securely without any wear and tear. c) Fit shorter and/or thicker battery cables. d) Install batteries with a larger capacity. e) If these strategies do not result in normal operation, please contact either the dealer where you purchased the product or PROJECTA.
ALM **414** Charge high current	1. Normal battery function is not affected and the alarm indicator will not be activated, however, you will need to take further actions to avoid entering overcurrent charging protection.	1. Overcurrent charging alarm.	a) Measure the input current from the battery end with a clamp meter to see if the value is greater than rated value. Refer to the product manual to learn the rated charge current. b) Check that the charger is suitable and connected properly to the battery as described in the manual. c) If these strategies do not result in normal operation, please contact either the dealer where you purchased the product or PROJECTA.
ALM **421** Heater error	1. 11 Alarm LED Flashes. 2. Normal battery charge and discharge functions are not affected. However, in a relatively cold place, you will be unable to heat the battery sufficiently to continue charging.	1. Interior heater failure.	a) Power cycle the battery (switch off and on). b) Consider hardware issues. If this strategy does not result in normal operation, please contact either the dealer where you purchased the product or PROJECTA.
ALM **415** Slave pack communication off-line	1. The Alarm [ALM] indicator will continuously flash. 2.Normal battery functions are not affected.	1. Loss of communication with a slave battery while in an active or reboot state. 2. Internal hardware issues. 3. Inspect the communication harness of the battery, especially in situations involving multiple cells. 4. In a parallel configuration, reprogramming a specific slave unit using an upper computer.	a) Check whether the batteries in parallel are all 'ON' without any faults indicated and with normal capacity. b) Stop any load and power cycle the battery (switch off and on). c) Check that the parallel communication cable is correctly connected according to the manual. d) Check whether the communication network cable is loose or damaged. You can try to reconnect the network cable or replace it with a new communication cable. e) Consider the interior hardware issues. If this strategy does not result in normal operation, please contact either the dealer where you purchased the product or PROJECTA.

ALARMS

ERROR CODE & MESSAGE	EFFECT	CAUSE	SOLUTION
ALM **417** Battery low voltage Wait Charge	1. This alarm reminds you to charge the battery in time to prevent it being damaged. The alarm will automatically clear when you charge the battery within 10 minutes. Failure to commence charging will result in the BMS turning the battery 'OFF' every 10 minutes to protect it from permanent damage.	1. Occurs after the battery/ cell enters undervoltage protection mode; after the 10 minute charge reminder period elapses, automatic shutdown will occur. 2. Pack undervoltage protection (11.2V – 11.6V). 3. Cell undervoltage protection (2.8V – 2.9V).	1. Charge the battery immediately.
ALM **418** Cell temperature is too high to charge	1. 10 Alarm LED Flashes. 2. The battery will stop charging but retain discharging capability.	1. Unable to charge due to high-temperature protection (60°C).	a) Check that the ambient temperature of the battery installation location is not too high. Allow the battery to cool down, placing it in a cool and dry environment at normal room temperature. b) Check that the battery wiring is tight enough and reliable without any wear and tear. c) Make sure the wire gauge (diameter of the battery wiring cable) meets specification. d) Check that the charge current and charge time of the lithium battery do not exceed specifications (refer to the manual for details). e) If these strategies do not result in normal operation, please contact either the dealer where you purchased the product or PROJECTA.
ALM **419** Cell temperature is too low to charge	1. In this instance, the alarm indicator will not be activated . 2. The battery will shut down the charge function	1. Unable to charge due to low-temperature protection (2°C).	a) Check that the ambient temperature of the battery installation location is not relatively low and that there is no power supply functioning in the battery. If the problem is caused by low ambient temperature, you can either ignore it or you can connect the charger and increase the temperature of the lithium battery by heating the internal heating film of the battery. b) If these strategies do not result in normal operation, please contact either the dealer where you purchased the product or PROJECTA.
ALM **416** BMS high temperature	1. In this instance, normal battery functions are not affected and the alarm indicator will not be activated, however, you will need to take further action to avoid entering BMS circuit high temperature protection.	1. BMS internal (including power circuit) high-temperature alarm (90°C).	a) Check that the ambient temperature of the battery installation location is not too high. Allow the battery to cool down and place it in a cool and dry environment at normal room temperature. b) Check that the battery wiring is tight enough and reliable without any wear and tear. c) Check that the discharge current and discharge time of the lithium battery do not exceed specifications (refer to the manual for details). d) If these strategies do not result in normal operation, please contact either the dealer where you purchased the product or PROJECTA.

SPECIFICATIONS

PART NO.	LB400-HD
NOMINAL VOLTAGE	12.8V
NOMINAL CAPACITY	400Ah
NOMINAL ENERGY	5120Wh
CHARGE VOLTAGE	14.2V
DISCHARGE CUT-OFF VOLTAGE	11.2V
STANDARD CHARGE CURRENT	90 Amps
MAXIMUM CHARGE CURRENT	200 Amps
MAXIMUM DISCHARGE CURRENT	300 Amps
PEAK DISCHARGE CURRENT	300 Amps (10Mins)
OPERATING TEMPERATURE	-20°C ~ 60°C
MAXIMUM NUMBER OF BATTERIES IN PARALLEL	4
NUMBER OF DISCHARGE CYCLES	3000
WEIGHT	42.5KG
IP RATING	IP20



STORAGE & MAINTENANCE

- To ensure a longer battery lifespan, recharge fully every 3-6 months.
- Ensure battery terminals and screw holes are clean and securely connected.
- If the load connected to battery won't be used for extended periods, disconnect the battery from the load to prevent battery discharge and over-discharge or turn the battery off.
- Insulation and shockproof materials should be used to avoid sudden collisions or crushing during transportation.

FAQ:

Q. **My battery is not turning on at all**

A. Check that the main switch is ON

Check that the green connector with link is connected. Refer to page 3 for **Battery Quick Start Guide**

WARRANTY STATEMENT

Brown & Watson International Pty Ltd ("BWI") of 1500 Ferntree Gully Road, Knoxfield, Vic., telephone (03) 9730 6000, fax (03) 9730 6050, warrants that all products described in its current catalogue will under normal use and service be free of failures in material and workmanship for a period of five (5) years from the date of the original purchase by the customer as marked on the invoice. This warranty does not cover ordinary wear and tear, abuse, alteration of products or damage caused by the purchaser.

To make a warranty claim the consumer must deliver the product at their cost to the original place of purchase or to any other place which may be nominated by either BWI or the retailer from where the product was bought in order that the warranty assessment may be performed. The consumer must also deliver the original invoice evidencing the date and place of purchase together with an explanation in writing as to the nature of the claim.

In the event that the claim is determined to be for a minor failure of the product then BWI reserves the right to repair or replace it at its discretion. In the event that a major failure is determined the consumer will be entitled to a replacement or a refund as well as compensation for any other reasonably foreseeable loss or damage.

This warranty is in addition to any other rights or remedies that the consumer may have under State or Federal legislation.

IMPORTANT NOTE

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

Distributed by

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