

Bosch Leisure Battery

Product Manual



BOSCH

PRODUCT MANUAL

Please read this Product Manual thoroughly before use and keep it for future reference.

Failure to comply with all instructions and warnings may result in electrical shock, battery failure, explosion, fire, serious injury, property damage, or death.

WARNING!

Never attempt to open or disassemble the battery! If accidental contact with inner content of the battery occurs, wash the affected skin area and seek medical attention.

FIRST USE

ALWAYS charge a new battery before using it for the first time! (See the **BATTERY CHARGING** section for additional information.)

FEATURES AND BENEFITS

Built-in Intelligent Battery Management System

For Safety and Long Service life

All Bosch LB-series LiFePO₄ batteries include an intelligent Battery Management System (BMS) that protects the battery from overcharging, over-discharging, over-current – including short circuit – as well as excessive high and low temperatures. The BMS will automatically disable the battery in these circumstances.

Additional feature and benefits:

- Safer Lithium Materials
- Superior Cycle Life
- Long Shelf Life
- State of Charge (SoC) Indicator
- Quick Recharge
- Maintenance Free
- Connect up to four (4) batteries in series
- Connect up to four (4) batteries in parallel
- Lightweight
- High Discharge Capacity
- Does not contain any harmful pollutants, corrosive acids, or toxic heavy metals

Technical Specifications

	LB24DC-79	LB24DC-105	LB24DP-79	LB24DP-105
Battery Type	Deep Cycle		Dual Purpose	
BCI Size	24			
Chemistry	Lithium Iron Phosphate (LiFePO4, LFP)			
Nominal Voltage	12.8 V			
Capacity	79 Ah	105 Ah	79 Ah	105 Ah
Discharge Current Continuous	79 A	105 A	79 A	105 A
Marine Cranking Amperage (32°F)	N/A		1000 A (5 sec)	1000 A (5 sec)
Cold Cranking Amperage (0°F)	N/A		500 A (5 sec)	600 A (5 sec)
Charging Voltage	14.6 V			
Charging Current (32 - 120°F)	40 A	55 A	40 A	55 A
Charging Current at Low Temperatures (0 - 32°F)	16 A	20 A	16 A	20 A
Operating Temperature Range	0°F – 140°F			
Charging Temperature Range	0°F – 120°F			
Weight	10.3 kg (23 lbs.)	12.2 kg (27 lbs.)	10.3 kg (23 lbs.)	12.2 kg (27 lbs.)
Physical Dimensions	260 mm x 173 mm x 225 mm (10.25 in. x 6.8 in. x 8.86 in.)			

Bosch LB-series batteries store large amounts of energy and can provide high-power output. As with any powerful battery, misuse or abuse may result in battery failure and cause hazards to its surroundings – including serious injury and fire. Any misuse and/or abuse will void the warranty of this product.

Always securely tighten the battery cables to the battery terminals with the original bolts and nuts supplied. The battery and/or vehicle may be damaged by sparks or heating caused by loose connections.

 WARNING!

DO NOT connect more than four (4) batteries in parallel.

DO NOT connect more than four (4) batteries in series.

DO NOT connect batteries in series and in parallel at the same time.

DO NOT use the Deep Cycle or the Dual Purpose battery as a starter battery in road vehicles.

DO NOT immerse the battery in water.

DO NOT use or store the battery near sources of fire or heat.

DO NOT put the battery into a fire or apply direct heat to it.

DO NOT reverse the positive (+) or negative (-) terminals.

DO NOT connect the battery directly to AC outlets.

DO NOT short-circuit the battery.

DO NOT pierce the battery case with a nail or other sharp objects, break it open with a hammer, or step on it.

DO NOT strike, throw, or subject the battery to severe physical shock.

DO NOT attempt to disassemble, open, or modify the battery in any way.

DO NOT use the battery in combination with a primary battery (such as dry cell batteries) or batteries of different capacity, type, technology, or brand.

DO NOT use the battery if it gives off an odor, generates heat, becomes discolored or deformed, or appears abnormal in any way. If the battery is in use or is being recharged, remove it from the device or charger immediately and discontinue use.

DO NOT charge the battery when charging voltage exceeds 15 V.

DO NOT use a desulfation-type charger.

DO NOT dispose of the battery before it is completely discharged.

Keep out of reach from children and pets.

1. CHARGE INDICATOR AND SLEEP FUNCTION

Bosch LB-series batteries provide a charge indicator and a sleep function. Both functions are accessed using the battery's State of Charge (SoC) button.

To check the State of Charge, press the SoC button briefly. The LED

indicator displays an approximate State of Charge level:

- 3 LEDs indicate >60% State of Charge
- 2 LEDs indicate 20% - 60% State of Charge
- 1 LED indicates <20% State of Charge

No LEDs illuminating indicates the battery is in Sleep Mode or is fully discharged.

The sleep function disables the battery's discharge current, turning off any connected load. It also prevents any parasitic draining of the battery and enables maximum storage duration.

To enable the sleep function, push the SoC button for three (3) seconds. This will turn off the battery discharging, shown via an illuminated power-down animation on the SoC indicator.

To wake up the battery, push the SoC button for three (3) seconds. This will re-enable the discharging current, shown via an illuminated power-up animation on the SoC indicator.

NOTE:

While the Bosch LB24DP Dual Purpose Battery series will still accept charging current in Sleep Mode, this is not the case for the Bosch LB24DC Deep Cycle Battery series.

2. BATTERY INSTALLATION

Wear proper eye protection and clothing when working around any battery. Remove all jewelry and other metallic objects that may come into contact with the battery terminals or exposed wiring before proceeding with the battery removal/installation.

In some circumstances putting the battery in Sleep Mode allows for the safest installation. This reduces the potential for short circuits. Just be sure to wake up the battery after the installation is complete.

1. Before installation, check the battery State of Charge using the SoC indicator and charge, if necessary (see the **CHARGE INDICATOR AND SLEEP FUNCTION** section for details).
2. Put the battery into Sleep Mode.
3. Remove the negative (-) cable, then the positive (+) cable from your old battery, then remove the battery.
4. Position the new Bosch LB-series battery and make sure the battery is properly secured.
5. Install the positive (+) cable, then the negative (-) cable. Do not over-torque the terminal bolts.
6. Wake up battery from Sleep Mode.

WARNING!

Be sure to follow any wiring guidelines and applicable regulations based on your application, including wire gauge and fuses, etc.

It is highly recommended to test for parasitic voltage drains after installation. Parasitic voltage drains occur in many vehicles and can be caused by various factors (e.g., alarm system, vehicle electronic control module, etc.).

3. PARALLEL CONNECTION

Bosch LB-series batteries allow connections of up to four (4) batteries in parallel to increase the battery pack's total capacity. Only use batteries of the same type, capacity and age for parallel connections. Connection of different battery types may lead to decreased system performance as well as battery failure, explosion, fire, or serious injury.

WARNING!

ALWAYS make sure to fully charge each battery prior to parallel connection. Connection of batteries with different States of Charge may lead to high currents between the batteries and critical heating of connectors and cables, which may result in fire.

In any parallel wiring of batteries, we strongly recommend installing fuses between each positive battery terminal and the common positive connection.

To proceed with the parallel connection:

- Install a fuse (e.g., a fuse block) at each positive (+) battery terminal.
- Connect all the fused positive (+) terminals together.
- Connect all the negative (-) terminals together.

To ensure equal load of all batteries, connect positive (+) and negative (-) leads at opposing ends of the assembled battery pack. See **Figure 1** below for details.

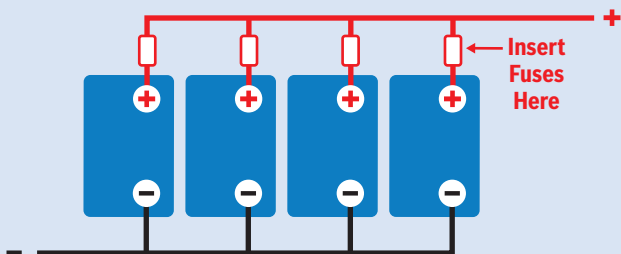


Figure 1

WARNING!

Do not enable the Sleep Mode on any battery connected in parallel. Enabling the Sleep Mode of batteries connected in parallel may lead to significantly imbalanced batteries and potentially dangerously high currents.

4. SERIES CONNECTION

Bosch LB-series batteries allow connections of up to four (4) batteries in series to increase the battery pack's total voltage:

- Connection of two (2) batteries in series will result in 24 V battery pack voltage.
- Connection of three (3) batteries in series will result in 36 V battery pack voltage.
- Connection of four (4) batteries in series will result in 48 V battery pack voltage.

Always use batteries of the same type, capacity and age for series connections.

WARNING!

ALWAYS make sure to fully charge each battery prior to series connection. Connection of batteries with different capacities or States of Charge will lead to reduced usable capacity and degraded performance of the battery pack – including regular triggering of overcharging or over-discharging protections.

To proceed with the series connection:

- Connect the positive (+) terminal of the first battery to the negative (-) terminal of the second battery.
- Connect the positive (+) terminal of the second battery to the negative (-) terminal of the third battery.
- Connect the positive (+) terminal of the third battery to the negative (-) terminal of the fourth battery.

In any series wiring of batteries, we strongly recommend installing a fuse at the common positive (+) connection. See **Figure 2** below for details.

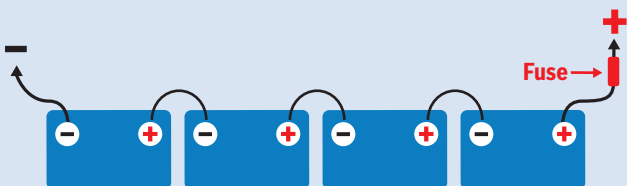


Figure 2

5. BATTERY CHARGING

All Bosch LB-series batteries employ LiFePO₄ battery cells. Ideally, these batteries are charged using a dedicated LiFePO₄ charging device with a charging voltage of 14.4 V.

A battery charging system with a charging voltage between 13.8 V and 14.8 V will be suitable for charging Bosch LB-series batteries. If the charging voltage is below 13.8 V, the lithium battery will not be fully charged. If the charging voltage exceeds 15 V, the Battery Management System's overcharge protection will be activated and prevent further charging to protect the battery cells.

Charging currents at or below the values that appear in the **Technical Specifications** table (previously referenced) are suitable for Bosch LB-series batteries. Generally, limiting the charging current to the **Charging at Low Temperatures** value will lead to optimal battery cycle lifetime.

WARNING!

Battery chargers designed for lead-acid batteries can provide adequate charging as long as their charging voltage is between 13.8 - 14.8 V. We strongly recommend to not use any lead acid-specific charging regimen such as trickle charging, desulfation, etc., as this can lead to overcharging the LiFePO₄ batteries.

6. BATTERY MAINTENANCE

- This battery is factory sealed and requires no fluid to be added.
- Always keep the terminals clean and securely fastened.
- Inspect the battery regularly for loose cables, signs of damage, or corrosion.
- Disconnect the battery cable if the vehicle is in storage or used infrequently.
- If the battery is not used for a long period of time, check the State of Charge prior to usage. If less than two (2) LEDs illuminate indicating less than 20% State of Charge, recharge the battery per the **BATTERY CHARGING** section requirements.

7. BATTERY STORAGE

- Always store the battery in a clean, dry and ventilated environment. For ideal lifetime, store the battery at a temperature 40 – 85°F.

Please keep the battery out of contact with any corrosive substances and away from water, rain, or other heat sources.

- For optimal battery lifetime, the battery should be charged to approximately half of its capacity.

For example, to charge 40 Ah into a Bosch LB24DC-79 Battery using a 10 A charger, the battery should be charged for four (4) hours from its empty state. Alternatively, starting with a fully charged Bosch LB24DC-79 Battery, discharge the battery using a 10 A or 120 W load for four (4) hours.

Alternatively, check the State of Charge to assure that two (2) LEDs illuminate.

- If your vehicle will not be used for a long period of time, the battery might get discharged completely due to active loads. In this case, to prevent a complete discharge you can choose from one of the following two options:
 - Activate the sleep function for a single battery installation
 - Disconnect the negative (-) cable of the battery assembly for series-, parallel-, or single-battery installations

Keep in mind that this will un-power all loads connected to the battery system.

- If the battery is stored at a very low State of Charge/totally discharged for an extended period of time, cell damage will occur. To prevent over-discharge during prolonged storage, it is best to charge the battery regularly (e.g., every six (6) months) while in storage. Note that damage due to storage in a discharged state will not be covered by the warranty.

8. TRANSPORTATION

- The battery should be packed with insulation and shockproof material to prevent damage.
- Please handle with care when loading and unloading the battery during transport.
- **DO NOT** strike, throw, or subject the battery to severe physical shock.
- **DO NOT** transport the batteries together with flammable or explosive objects, or sharp metal goods.
- This battery is classified as a Hazardous Good and should be packed with a UN carton and shipped according to the requirements under UN3480.

9. TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Battery has No Output	<i>The battery is in Sleep Mode.</i>	Check if the battery is in Sleep Mode by pressing the test button. The charge indicator should light up after a short press of the button. Otherwise, press the test button for at least three (3) seconds to wake up the battery. If the battery does not wake up by pressing down on the test button for several seconds, it might have entered Over-Discharge Protection Mode.
	<i>The cables may not be connected correctly.</i>	Make sure the cables are firmly and correctly attached to the terminals (see your vehicle manual for details).
	<i>Battery has entered Over-Discharge Protection Mode.</i>	Charge battery as described in the BATTERY CHARGING section. To prevent over-discharge during prolonged storage, it is best to charge the battery regularly (e.g., every six (6) months) while in storage.
	<i>The charger may be damaged, and as a result the battery is not charging.</i>	Ensure charger is in good working condition.
	<i>The external temperature is too high, and the battery enters High Temperature Protection Mode.</i>	Please use the battery within the specified temperature range.
Sudden Power Failure During Normal Use	<i>Battery has no output.</i>	Connect the battery firmly; connect the battery in the correct way.
	<i>The external electrical demands are too high, and the battery enters Temperature Protection Mode.</i>	Disable or disconnect large external loads. Let the battery cool down for at least one (1) hour. The battery will recover automatically when cooled down. Choose the right Bosch LB-series battery based on your electrical needs. Consider a parallel connection of multiple Bosch LB-series batteries to increase capacity and power delivery.

PROBLEM	POSSIBLE CAUSE	SOLUTION
	<i>The external electrical demand suddenly increases, and the battery enters Over Current Protection Mode.</i>	Disable or disconnect large external loads. The battery will recover automatically after approximately one (1) minute. Choose the right battery based on your electrical needs. Consider a parallel connection of multiple Bosch LB-series batteries to increase capacity and power delivery.
	<i>The battery State of Charge is close to 0%, and the battery enters Over Discharge Protection Mode.</i>	Use a suitable charger and charge the battery (see the BATTERY CHARGING section for details).
Engine Cannot be Cranked – for Dual Purpose Battery Only	<i>The battery cranking performance can deteriorate when the battery temperature is too low.</i>	Please use the battery within the specified temperature range. In emergency cases, if cranking fails due to low battery temperature, repeating cranking attempts at 30-second intervals may help warm up the battery and increase the cranking amperage.
	<i>The battery does not match the vehicle or engine.</i>	The Bosch LB24DP Battery series offers great cranking performance even at low temperatures. If your specific engine requires exceptionally high cranking currents, consider a parallel connection of multiple Bosch LB-series batteries to increase capacity and power delivery.
	<i>The vehicle or engine may have other issues that prevent the battery from cranking.</i>	Check the vehicle and engine condition for any problems.

10. WARRANTY

Bosch Lithium Deep Cycle and Dual Purpose Batteries have a 5-year replacement warranty from the manufacturer date. The warranty applies only to the original purchaser of the battery and the warranty is not transferable. Contact the place of purchase for warranty claims. For complete warranty information, visit: www.boschautoparts.com.

Warranty does not cover:

- Physical damage due to abuse, improper maintenance and/or installation
- Batteries that have been modified or disassembled
- Use of an improper charger, as noted in the **BATTERY CHARGING** section of this manual
- Any damage deemed to be caused by a faulty vehicle charging system
- Batteries subjected to voltage over 14.9 V
- Batteries stored below 12.8 V
- Misuse or abuse of the battery

11. BATTERY DISPOSAL

WARNING!

1. **DO NOT** dispose of battery in the trash.
2. **DO NOT** include lithium battery with lead-acid battery recycling.
3. Recycle or dispose of battery in accordance with local regulations or bring to the nearest available recycling facility.

For further replacement and recycling needs, contact the distributor or dealer from original purchase.

12. OTHER

Bosch is not liable for any damage or injury resulting from failure to follow the instructions provided in this manual.

WARNING!

This product can expose you to chemicals including lead and lead compounds, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.