

# Solution Material Handling Battery

Operating Instructions



# Solition MHB

## Operating Instructions

### Warning and general information



- Observe these instructions and keep them located near the battery for future reference.
- Work on the battery should only be carried out by qualified personnel.



- Explosion and fire hazard. Avoid short circuits.
- Avoid electrostatic charges and discharges/sparks.



- Warning: Part of the battery may carry dangerous voltages. Do not short the battery.



- Lithium-ion batteries are heavy. Make sure they are installed securely.
- Keep the battery dry and avoid external heat sources.
- Handle with care, the batteries are sensitive to mechanical shock.
- Do not lift or pull up on the poles or communication cables.
- Do not wear any metallic items such as watches, bracelets, etc.
- Do not open the battery. The electrolyte is very corrosive. During normal operation, contact with the electrolyte cannot happen.
- If the battery housing is damaged, any direct contact with the exposed electrolyte or powder might result in injury, as the material is corrosive.
- Charging the lithium-ion battery after it has been discharged below the cut-off voltage or if the lithium-ion battery is damaged or taking it over the nominal charge then the lithium-ion battery can release a harmful mixture of gasses.
- Use approved insulated safety tools for installation. Any work procedures and tools used should be in compliance to EN 60900 or similar standard.
- To be prepared for an emergency case the instruction for safe handling of lithium-ion batteries shall be read and understood.



- Battery may require recycling in accordance with local laws.
- Contact Exide Technologies or regulatory authorities for further informations.



- **Do not** dispose of the battery in normal waste.
- **Do not** include battery with lead-acid battery recycling.



- Keep the battery dry.



- Keep children away from batteries.



- Pressure washing not allowed.



- Tray lifting at this area.

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### General information

Thank you for choosing a Solition Material Handling Battery. This battery system is completely self-contained and can be used as a direct replacement for the most current in-use lead-acid and lithium-ion systems.

### Scope of supply

The following parts are included with the Exide battery system:

- Solition Material Handling Battery and documentation (Operating Instructions)
- External display (optional)
- Exide approved charger

The described product is a lithium-ion rechargeable battery system for use in Material Handling applications.

After unpacking the parts, please examine them for possible damage. If any damage is found, please do not use the product; if in doubt, please contact the manufacturer.

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Type:	Rechargeable Li-Ion LFP battery	Model:	L4BK24200DA004
Nominal voltage:	25,6V	Production date:	31.07.2024
Capacity C <sub>1</sub> :	200 Ah 2 x 100 Ah	Battery designation:	IFpP28/174/207/[(8S)2P] M/-20+55/95
Energy:	5,12 kWh 25,6V * 200 Ah	Serial number:	GE 01229813
Weight:	174 kg	Ordner no.:	AQ22125-461910
Dimensions:	624 x 209 x 627 mm	Part no.:	LINBK20313B0001

Charging instruction: Use only specified and Exide approved Li-Ion battery chargers

 **Warning**  
Dangerous voltages. Parts of the battery may carry dangerous voltages. Do not short the battery.

 Do not open the battery. Keep the battery dry. Avoid external heat sources.

 Read the user instruction and operation manual. Service should be only carried out by Exide authorized personal.



Made in China  
by  a division of Exide Technologies S.A.  
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GE 01229813

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### Safety

#### General Safety Instructions

Information and instructions attached directly on the Solition Material Handling Battery system must always be followed. These instructions contain basic information and guidance to be noted and followed during operation and maintenance and must be read by all personnel.

The Exide Technologies lithium-ion battery system may not be operated without precise knowledge of these Operating Instructions or without strict adherence to all safety instructions. Knowledge of the contents of the Operating Instructions is a fundamental requirement to protect people from danger, to avoid errors and to operate the system safely and fault-free.

The Operating Instructions must be available to operating and maintenance personnel at all times. Each person given the task of operating or maintaining the system must have read and understood the instructions.

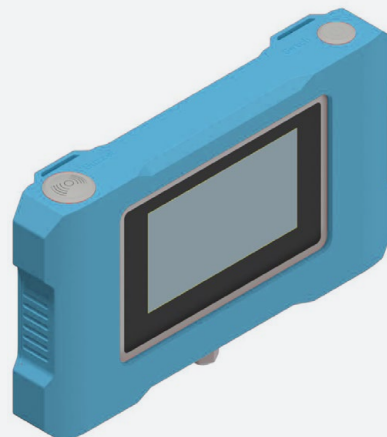
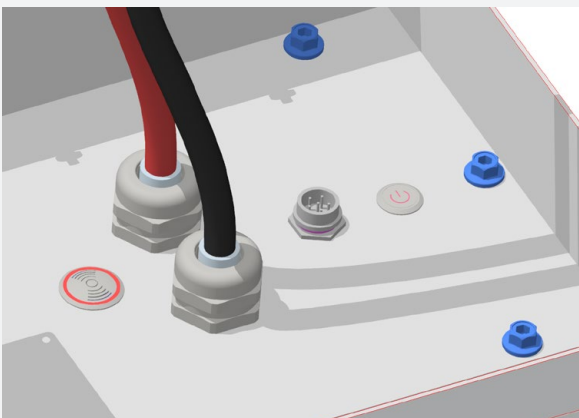
The health and safety information refers to the current directives of the European Union. In other countries the relevant laws and regulations must be noted and followed.

### Installation/Operation

Please find the minimum and maximum operating temperatures on the last page.

#### Quick start guide

- Check the battery housing, the cables, and connectors for damage.
- Switch the battery on by pressing the ON/OFF button.
- The battery must be fully charged to 100 % SOC prior to first use.
- The Solition Material Handling Battery can communicate with the vehicle via the vehicle CANbus, or battery information can be displayed on an external Exide display.



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### Over discharge protection

If a Solition display is fitted to the vehicle at 15 % SOC, the display will show Low SOC. Operators should consider charging the battery. At 10 % SOC the integrated alarm buzzer sounds. It will sound for 1 second and stop for 10 seconds repeatedly. The battery must be charged immediately. At 5 % SOC the buzzer will sound for 1 second and stop for 2 seconds repeatedly. Before the battery switches off at 0 % SOC the buzzer will sound continuously.



**Warning:** The battery should not be over discharged. This may void warranty.



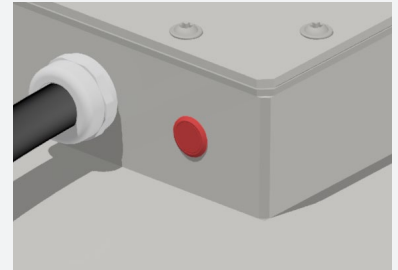
**Attention:** If the battery has shut off due to a low discharge level, it must be charged immediately. Batteries must not be set aside or stored in a discharged state (see section "Battery storage" on page 6 and Endurance button below). Non-observance can lead to battery damage and may void warranty. Batteries should always be charged between 15 and 10 % SOC.

### Endurance button

Most batteries are fitted with an Endurance button. If the battery is discharged to 0 % SOC and it automatically shuts down to protect itself, pressing the endurance button allows for the vehicle to be driven to the charger to charge the battery. The battery will only work for a limited time to drive to the charger and the endurance button should only be used in emergency situations.



**Attention:** Repeated use of the endurance button is not recommended. It may impact on battery lifetime and affect warranty. For operations in large distribution centres, it is unlikely that there will be time to drive to the charger. Batteries should always be charged between 15 and 10 % SOC.



### Charging

The Solition Material Handling Battery may only be charged with an Exide approved battery charger. Please also refer to the Operating Instructions for the Exide approved battery charger. To extend battery life we recommend charging at each opportunity which means each break e.g. lunch, coffee etc. This will increase the battery lifetime and your productivity. The Solition Material Handling Battery system is charged as follows:

- Bring the vehicle to the Exide approved battery charger.
- Check that all cables and plug-in connections are in working condition.
- For charging, the charging plug must be fully inserted into the battery output socket or easy charge socket. Charging will start when the plug is fully inserted. During charging the vehicle is electrically disconnected from the Exide battery system.
- Before disconnecting the charger always press the stop button first.
- Exide approved chargers are equipped to control and terminate the charge cycle automatically. After charging, the vehicle can be putback into service immediately. A rest phase or cooling is not required for the battery.
- The battery cannot be charged below 0 °C.



**Attention:** The battery must be fully charged on a weekly basis. The full charge must be as long as possible within the operating requirement to fully balance all the cells in order to optimise autonomy and performance. Failure to carry out this procedure may result in loss of battery run time.

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### Acoustic signals

An alarm buzzer will be active under following conditions:

- Under voltage
- Over voltage
- Cell voltage delta
- Cell temperature delta
- Over current
- Under temperature
- Over temperature
- Communication error
- Isolation failure
- BMS power supply issue
- Low SOC

If the above-mentioned warnings continue, the Battery Management System will shut down the battery. If this occurs, please cycle the on/off button to drive to the charger. If driving is no longer possible, stop working and contact Exide Technologies service.

### Sleep mode

Solition batteries are fitted with a sleep mode function. The default setting is 12 hours. After 12 hours of inactivity (no charging or discharging) the battery will shut down and enter "sleep mode". Battery operation can be restored by switching the battery off and on.

### Battery storage

If a battery or vehicle is to be stored, the battery SOC should be in the range of 40-60 % SOC and the battery should be unplugged and switched off. The storage environment must be ventilated, dry, free from direct sunlight, rain and heat sources. The battery should be inspected and charged if required every 6 months. After storage the battery should be fully charged and recommissioned.

### Temperature characteristics

- Working environment temperature: -20 °C to 55 °C
- Storage temperature: 0 °C to 45 °C
- Charging temperature: 0 °C to 55 °C (at 45 °C charge derating will occur)

### General

- All batteries under 6.2 kWh are UN38.3 tested
- All batteries are CE approved