Litium-Iron-Phosphate Batteries (LFP)

NERBO Lithium

Warranty Terms & Conditions and Operating Rules

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WARRANTY TERMS AND CONDITIONS

1. For products offered by „Wamtechnik" [limited liability company] placed in Piaseczno, Techniczna 2, 05-500 Piaseczno (hereinafter referred to as the „Guarantor" or „Wamtechnik") warranty of quality is granted.
2. The exact conditions of granting the warranty are regulated by the following warranty points and rules related to the proper operation of the Product.
3. The warranty shall be granted to the Buyer, i.e. the first (direct) buyer of Wamtechnik Products. The Buyer can not transfer rights and obligations under the Warranty to the third parties without written consent of Wamtechnik.
4. The condition necessary to start the complaint procedure is to fill in the complaint form available on https://wamtechnik.pl/en/complaint/.
5. Claims are analyzed at the expense of the Producer only for Products which warranty period has not expired.
6. In case of delivery of claimed Product to Wamtechnik without a prior complaint or when data contained in complaint (such as possibility to identify the Buyer by the invoice number, reasons for the Products complaint) objectively preclude Wamtechnik from resolving the complaint despite the attempts made by Wamtechnik to determine them, Wamtechnik shall be entitled to reject the complaint within 14 days from the date of delivery of claimed Product to Wamtechnik.
7. The standard warranty period for Lithium-Iron-Phosphate (LFP) batteries is 24 months.
8. The warranty period is counted from the date of issuing an invoice for the given Product.
9. The warranty is valid in the territory of the Republic of Poland. Polish law is the applicable law of the interpretation of this warranty and possible disputes that results from.
10. The warranty applies only to batteries stored, installed, charged, discharged, operated and maintained in accordance with the provisions of the Data Sheet and Operating Rules.
11. Warranty shall be covered only for material and workmanship defects disclosed in the period of warranty, of which the cause is in the sold item.
12. The battery will not be considered as defective, if in standard warranty period its capacity does not decrease below the 80% of its nominal capacity due to manufacturing defect. Simultaneously it must be remembered that gradual capacity loss of the battery is completely natural phenomenon associated with its operation and can not be subject to complaint.
13. Any noticed defects must be immediately reported to the Guarantor. It is unacceptable to use the product from the moment the defect was noticed.
14. The warranty does not cover:
    a. Mechanical and thermal damage resulting from the Buyer's fault
    b. Damage caused by lightning or other external causes (e.g. faulty electrical installation of the Buyer),
    c. Damages caused by operation inconsistent with the principles of operation available at www.wamtechnik.pl,
    d. Batteries with unreadable serial number,

e. Batteries installed in an battery string (connecting batteries into bigger power system) without the knowledge and consent of the guarantor,

f. Interference in the product, e.g. arbitrary repair, reworking, wrong connections, etc.

15. The condition for exercising the warranty rights is to provide the guarantor with written information explaining the operating conditions (voltage, current and duration for charging and discharging, number of cycles, temperature range) and the reason for the complaint.

16. The person, who is authorized under the warranty, delivers claimed battery to the address of the Guarantor indicated in point. 1, by his own efforts and at his own expense. In case the complaint is considered as justified, the guarantor returns the cost of transport to the entitled person.

17. Claimed Product sent to Wamtechnik should be properly protected to prevent short-circuits and damages during transport. Wamtechnik is not responsible for damage caused by inappropriate packaging and protection.

18. The decision as to whether or not to consider a complaint as a reasonable, the guarantor shall make without undue delay, however, reserving himself adequate time to carry out tests or measurements.

19. The guarantor does not provide a replacement of the batteries or cover the cost of replacing them at the place of installation for the duration of the complaint.

20. For the time of considering the complaint, the guarantor does not provide replacement batteries, nor cover the costs of their replacement at the place of installation.

21. In case the complaint is considered justified, the defective battery will be regenerated or replaced with a new one. Product will be delivered to the address of the Buyer indicated in the complaint form at the expense of the Guarantor. Replacement of the product with a defect-free product shall be understood as an exchange for a fully functional product with a battery capacity of not less than 80% or a new product, the choice being up to the Manufacturer. For the avoidance of doubt, the Manufacturer is not obliged to exchange the product for a new one.

22. After receiving the product, the packaging must be inspected. In the case of damage, a damage report should be drawn up with the courier delivering the package. The guarantor does not cover losses resulting from the transport of the product to the Buyer, which were not documented in the damage protocol.

23. The guarantor is not responsible for actual damage or lost profits resulting from product damage.

24. The Manufacturer's liability under the warranty is excluded under Art. 558 § 1 of the Act of 23 April 1964 - Civil Code ("CC"). However, if the Buyer is a consumer within the meaning of Art. 221 of the Civil Code, the Buyer's use of the guarantee does not exclude, limit or suspend the rights resulting from the provisions on the warranty for defects in the sold item. In the situation referred to in the previous sentence, the exercise of the rights resulting from the guarantee does not release the Guarantor from liability under the warranty.

25. If the Terms and Conditions contain, contrary to the intentions of Wamtechnik, provisions less favorable than the provisions of the Act on Consumer Rights of May 30, 2014 (Journal of Laws 2020.287, as amended), such provisions will be invalid, and in their place the relevant legal provisions will apply.

Operating Rules

NERBO Lithium Lithium Iron Phosphate (LFP) batteries are high energy products. Incorrect handling may lead to the release of stored energy in a short time through EXPLOSION or IGNITION of the battery.
These Operating Principles must be strictly followed. The instruction manual for the batteries should be placed in a visible place near the batteries. Only authorized persons may service the battery.

1. HEALTH AND SAFETY RECOMMENDATIONS

TRANSPORT, SHORTING OF TERMINALS

The batteries are delivered partially charged. Short-circuit of the battery poles/terminals is forbidden due to high short-circuit currents, risk of electric shock and damage to the equipment.

TOOLS

Use only insulated tools intended for electrical work. Do not drop or touch the poles of the battery with metal objects. Before starting work, remove metal elements of clothing and other items such as: watches, rings, chains, etc.

2. INSTALLATION AND USAGE OF THE BATTERY

Install the battery in a clean and dry room. Under normal conditions of use, the battery does not release any gases or liquids, it can work in rooms with other electrical devices, set in any position.

- The batteries must not be overloaded (too high discharge current) or overcharged (too high charge current/voltage). Risk of ignition or explosion!
- It is forbidden to charge the battery without precise control of the charging conditions: voltage, current and battery temperature.
- The batteries must not be charged in temperatures below zero or above the permissible maximum temperature (most often + 45 ° C). It may cause the cells to explode or catch fire.
- Under no circumstances should you use the batteries in reverse polarity.
- The cells must not be disassembled from the battery.
- Batteries must not be thrown into or disposed of in fire or water.
- Do not subject batteries to severe shocks, drops, vibrations, or mechanical stress.
- Damaged and deeply discharged batteries must not be used.
- Batteries should always be kept out of the reach of unauthorized persons, especially children.
- It is forbidden to tamper with the product, e.g. unauthorized repair, modification, improper connection of the battery to the electrical system, soldering the wires to the poles of the batteries. Serious risk of ignition or explosion!

PARALLEL OR SERIAL BATTERIES INSTALLATION

- Nerbo Lithium 12V batteries (N-LFP 12V series):
  - Possibility to connect in parallel up to 4 pieces.
  - Serial connection - possible only for models equipped with an electronic controller suited for connection in series (N-LFP S series).
- Nerbo Power Wall batteries N-LFP 100-48PW:
  - Possibility to connect in parallel up to 16 pieces.

INSTALLATION

Before starting operating the batteries must be checked for mechanical damage, correct polarity and correct connection. The bolts of electrical connections to the battery terminals should be tightened with a torque wrench to the torque specified in the data sheet for a given battery model.

ATTENTION ! Do not allow sparking at the electrodes. Each connection must be properly tightened. Sparks can short circuit and damage the battery. Installation and maintenance should be performed by a person with appropriate training and experience.

Make sure that the connections are not loose, are shielded and protected against corrosion, they do not move so that the insulation may be mechanically damaged or the connection may loosen. Connection impedance should not be higher than <0.1mΩ

Store the batteries 50% ~ 60% charged, at temp.15 ~ 35^{O}C and 50% ~ 70% humidity, and recharge them every 3 months to avoid full discharge

TEMPERATURE

Permissible operating temperature range for a given battery model is shown in the Data Sheet of the products. The best durability and performance is ensured for temperatures ranging from +15^{O}C to +35^{O}C.

Avoid setting up and using the battery in places where there is high or extremely low temperature and direct sunlight.

Operation at elevated temperatures (above +40^{O}C) significantly shortens the life of the batteries, **exceeding temperature level of +60^{O}C is forbidden, may result in overheating of the battery and danger**.

VENTILATION

Under normal conditions LFP batteries do not emit any gas, there is no need to ventilate the rooms.

CHARGING

Charge the batteries each time they are discharged. Charging parameters are specified in the Data Sheet of each cell: charging voltage and current, and the permissible range of charging temperatures. These parameters must be respected, exceeding them may cause EXPLOSION or IGNITION of the cells.

Electrical parameters:

- Make sure that the charging systems used charge the battery with appropriate voltage and current values, and have PROTECTIONS against exceeding these parameters..

Temperature of charging process:

- Charging the batteries should be carried out in the temperature range from 0°C to +45°C, failure to do so may cause the cells to leak, explode or ignite.
- The best battery life is ensured for temperatures ranging from +15°C to +35°C
- The temperature of the batteries should be monitored, regardless of the ambient temperature. If they are clearly hot to the touch (above + 45°C), the charging must be RELIABLY STOPPED and attention must be paid that the battery does not heat up on its own. It may cause a fire or explosion.
- Deeply discharged batteries must not be recharged. Reusing them is dangerous. Batteries that are deeply discharged must be properly disposed of.

Charging system:

- Use only a charger dedicated to LFP batteries
- Use only a charger that ensures adequate control of the charging parameters (current, voltage, temperature) and quick automatic disconnection of charging if any of the parameters are exceeded.
- Do not use untested or damaged chargers. Risk of ignition or explosion!
- Do not leave chargers unattended. Risk of ignition or explosion!

DISCHARGING

The range of parameters specified by the Manufacturer for discharging batteries should be followed. Exceeding the maximum operating parameters may result in overheating, leakage, explosion or ignition of the cells.

- Do not exceed the permissible discharge (operating) current and end-of-discharge voltage ranges given in the battery Data Sheet or Specification..
- Do not exceed the permissible discharge temperature ranges, in particular the upper permissible operating temperature limit of +60°C.
- Observe the operating time of the battery. The battery life varies depending on the product configuration and the way it is used, and is most often specified in the user manual of the end device.

If you notice any of the following situations, consider replacing the battery with a new one: [A] the battery operating time has significantly decreased; [B] the battery charging time has been significantly lengthened; [C] the battery becomes excessively hot (> + 45 ° C, burns in hands) during operation.

3. BATTERY LIFETIME

The batteries are subject to the aging process and they naturally lose their parameters during use.

Typical estimated service life of a NERBO Lithium lithium iron phosphate battery is up to 2000 full operating cycles (with DOD 80%). The designed calendar life is up to 15 years. The cycle life can be increased by regularly using the batteries in non-full cycles, accepting a slightly shorter operating time in each cycle. This means charging to an incomplete level (the end of charging at e.g. 80% and not 100%) and preventing the discharge to 0%. For such optimized work cycles, the service life reaches up to 3500 cycles with a DOD depth of 80%.

A noticeable reduction in operating time, an extension of the charging time or the heating up of the batteries are evidence of wear. Such batteries should be replaced with new ones.

4. STORAGE

Storing rechargeable batteries causes them to lose their charge on their own (natural self-discharge phenomenon). Batteries should be stored in a dry, cool and clean place, not exposed to sunlight.
Batteries must not be connected to any electrical circuit.
The permissible storage temperature range for a given battery model is given in the Data Sheet, and the recommended temperature range is from +15^{O}C to +35^{O}C.
For the longest possible service life, the batteries should be stored in a state of charge of about 50% -60%.

Due to transport safety regulations, the batteries are delivered from factories partially discharged.

A. Brand new battery, equipped with an electronic safety supervision system, can be stored for a maximum period of 1 year without loss of parameters, in the recommended optimal temperature and humidity conditions. After one year, maintenance is necessary in the form of checking the state of the battery charge and recharging it to the level of about 50% -60% of its capacity.

B. Brand new battery equipped with an electronic safety supervision system and a 2.4GHz wireless communication system, which consumes more energy, can be stored for a maximum period of 6 months without loss of parameters. After this period, it is necessary to check the condition of the charge and recharge it to the level of about 50% -60% of its capacity.

Storage for a longer period is possible under the condition of regular checks of cell parameters and possible maintenance activities, in particular charging to the state of charge of about 50% -60% of capacity and further checking the condition of the batteries at intervals of maximum 6 months.

Recommended storage conditions:

Storage temperature:	+15°C - +35°C (recommended)
Permissible temperature range:	-20°C - +35°C
Relative Humidity:	< 70%, no condensation on cells and / or packaging
State of Charge (SOC):	< 50% of capacity
General conditons:	Dry, cool and clean room, especially free from corrosive atmosphere. The cells should be stored in the manufacturer's original packaging (or similar), ensuring good insulation.

At temperatures higher than +20°C, the chemical self-discharge and aging processes are faster. Storage at higher temperatures should be avoided.

Do not store or use deeply discharged batteries. Re-use is dangerous.

5. RECYCLING OF BATTERIES

Lithium-Iron-Phosphate (LFP) batteries are subject to disposal and recycling regulations that vary from country to country, and region to region. Batteries and accumulators are considered hazardous waste after use.

Before disposing of any accumulator or battery, check the applicable local regulations and comply with them. To dispose of the battery, contact your local battery recycling organization.

Disposal of used electronic equipment, including accumulators and batteries, in standard waste containers (municipal landfill) is strictly prohibited.

Discharged batteries and accumulators may only be placed in collection containers for accumulators and batteries. To prevent short circuits, secure the leads / contacts / connection points of the power cables, e.g. with electrical insulation tape or other approved protective material

6. TRANSPORT OF BATTERIES

Transport of accumulators and batteries is regulated by strict safety rules.

All cells in lithium based technologies (eg. Lithium-ion, lithium-iron-phosphate, lithium-polymer, lithium non-rechargeable cells) are DANGEROUS GOODS in transport and are subject to special regulations according to ADR / IATA / IMO shipping contracts (transport of dangerous goods by road / air / sea).

Before transporting lithium-based battery, check the local, national, and international regulations in force. The easiest way is to order transport from a professional transport company with documented authorization for dangerous goods transport. The transport of a used battery product (withdrawn from usage), defective or withdrawn from the market, may in some circumstances be clearly restricted or prohibited.

LEGAL NOTICE

Wamtechnik Spółka z ograniczoną odpowiedzialnością (hereinafter: the "Company") shall not be liable for damages that may result from the use of the batteries offered by the Company contrary to their intended use and these Operating Rules for the use of Lithium-Iron-Phosphate (LFP) batteries (hereinafter: the "Manual").

By purchasing the Lithium-Iron-Phosphate batteries offered by the Company, you must read and take note of these Instructions. The Company's contractor, by purchasing the batteries in question from the Company, declares that he has read this Manual and is aware of the risks and dangers that may result from using, storing and transporting the batteries in a manner inconsistent with this Manual.