

# Product datasheet



Wireless communication

Heating pads

KT-LFP1250MG

## LiFePO<sub>4</sub> battery

lithium-iron-phosphate

Equipped with heating pads and wireless communication.

12.8 V | 50 Ah

TECHNICAL PARAMETERS

PARAMETERS

|                   |                       |
|-------------------|-----------------------|
| Rated voltage     | 13.2 V ± 0.1 V (C/20) |
| Nominal voltage   | 12.8 V                |
| Nominal capacity  | 50 Ah                 |
| Nominal energy    | 640 Wh                |
| 100% DoD lifespan | 6000 cycles           |
| 80% DoD lifespan  | 9000 cycles           |
| Efficiency        | 97%                   |

CHARGE AND DISCHARGE

|                                      |                           |
|--------------------------------------|---------------------------|
| Recommended charging voltage rate    | 14.2 ~ 14.4 V             |
| Maximum charge current               | 50 A                      |
| Recommended charge current           | 30 A                      |
| BMS charge cut-off voltage           | 14.7 V                    |
| Balancing voltage                    | 14 V (3.5 V per cell)     |
| Charge method                        | CC/CV                     |
| Charge time                          | 10 A – 5 h / 20 A – 2.5 h |
| Maximum continuous discharge current | 50 A                      |
| Maximum temporary discharge current  | 150 A (3 s)               |
| Recommended low voltage cut-off      | 11 V                      |
| Minimum BMS cut-off voltage          | 10.8 V                    |
| Reconnect voltage                    | 11 V                      |
| Selfdischarge                        | < 4% monthly              |

OPERATING CONDITIONS

|                         |                     |
|-------------------------|---------------------|
| Heating pads            | Yes                 |
| Operating temperature   | From -20°C to ~45°C |
| Charging temperature    | From -20°C to ~45°C |
| Storage temperature     | From -20°C to 60°C  |
| BMS cut-off temperature | 65°C                |
| Reconnect temperature   | 50°C                |

OTHER

|                                 |                    |
|---------------------------------|--------------------|
| Weight                          | 6.95 kg            |
| Dimmensions (without terminals) | 197 × 166 × 174 mm |
| Terminals height                | ~25 mm             |
| Terminal type                   | M8                 |
| Terminal torque tightening      | 8-10 Nm            |

COMMUNICATION

|                        |              |
|------------------------|--------------|
| Wireless communication | Yes          |
| Range                  | 10 m         |
| Operating system       | Android, iOS |

COMPATIBILITY

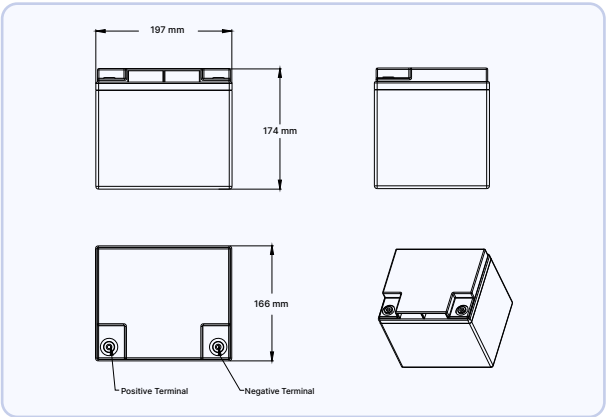
|              |                    |
|--------------|--------------------|
| Certificates | CE, UN38.3, UN3480 |
|--------------|--------------------|

Battery is equipped with built-in Battery Management System (BMS).

PROTECTION

Overcharge, overdischarge, short-circuit, high temperatures, passive cell balancing.

DIMMENSIONS



## FEATURES



### Heating pads

Kon-TEC batteries can be charged at low temperatures (below 0°C).



### Wireless communication

Communication integrated with BMS. It allows to communicate between battery and mobile device and enables real-time battery parameters monitoring.



### Light weight

Kon-TEC batteries are 50% lighter (or more) than conventional lead-acid batteries, GEL or AGM. Kon-TEC batteries ensure more power transfer.



### Fast charging, lower energy losses

High energy efficiency (~97%)



### Unique power

100% of current regardless of the depth of discharge.



### Very long lifespan

6000 cycles at 100% DoD (full charge and discharge), up to 12000 or more cycles at 60% DoD. For example lead-acid battery lifespan is usually only 200-300 cycles.



### Efficiency gain

Compared to GEL batteries, LiFePO<sub>4</sub> battery has 2x lower cost of delivered energy.

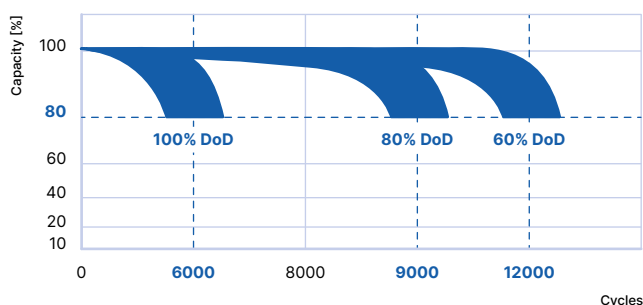
## APPLIANCE

LiFePO<sub>4</sub> batteries have a wide range of applications. As reliable energy storage devices, they can be used for power supply of electrical devices, vehicles, or systems from almost any industry.

They can be used in the following cases:

- > **Replacement for SLA batteries (lead-acid and gel).**
- > **Caravans and motorhomes.**
- > **Specialised electric vehicles.**
- > **Electric motors.**
- > **Yachts, catamarans, houseboats.**
- > **Wheelchairs and vehicles for the disabled.**
- > **Hybrid photovoltaic systems.**
- > **Wind turbines.**
- > **Emergency lighting.**
- > **12 V devices and toys.**
- > **Power source for 12 V~ / 230 V~ inverters.**

## BATTERY LIFESPAN DURING CYCLE OPERATING



## OPERATING CHARTS

Fig. 1. Battery voltage drop, 1C discharge

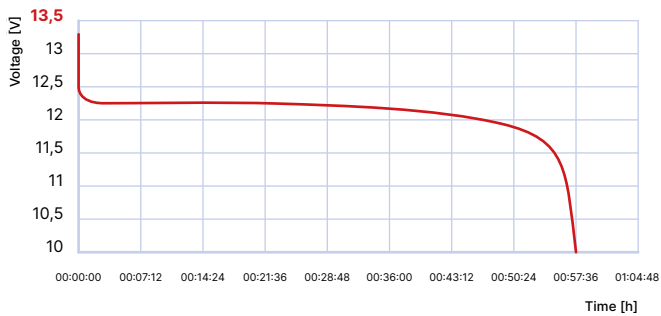


Fig. 2. Lifespan at different temperatures, 1C

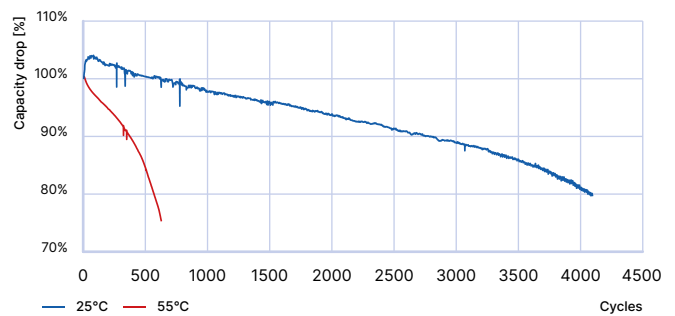


Fig. 3. Battery life at various discharge levels (DoD). Discharge with 1C current

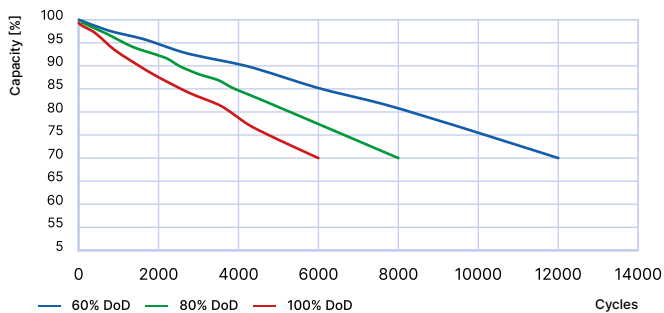


Fig. 4. Battery voltage when discharged in various temperature conditions. Discharge with 1C current

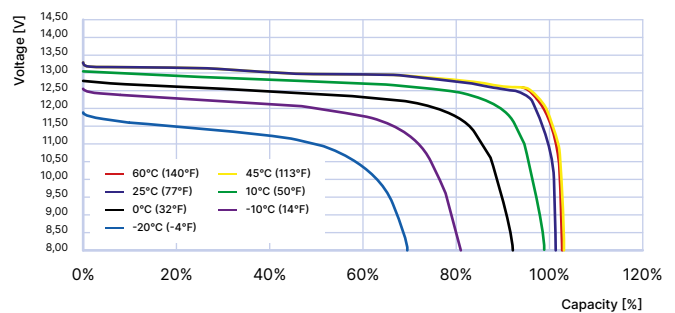
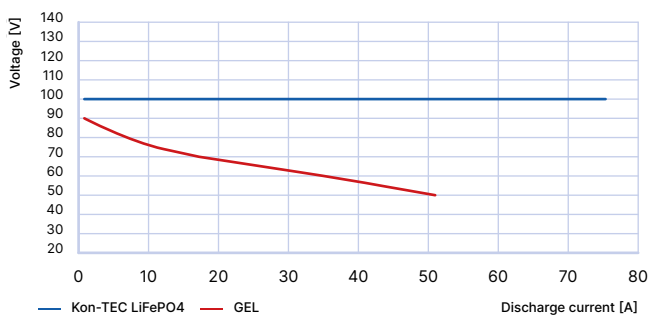
Fig. 5. Comparison of the capacity of Kon-TEC LiFePO<sub>4</sub> batteries and lead-acid batteries, at different discharge currents

Fig. 6. Battery voltage when charging at different temperatures. Charging with a current of 0.2C

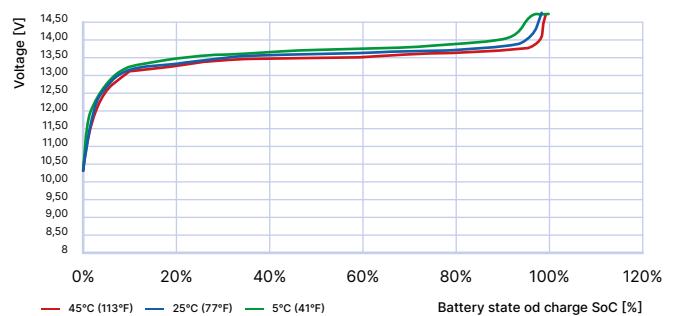


Fig. 7. Battery voltage during discharging in various conditions SoC charge levels. Discharge current 0.1C

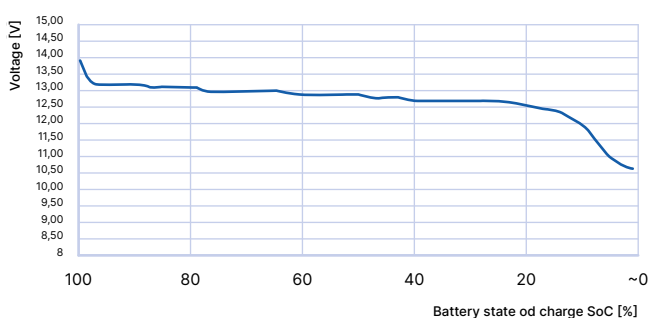
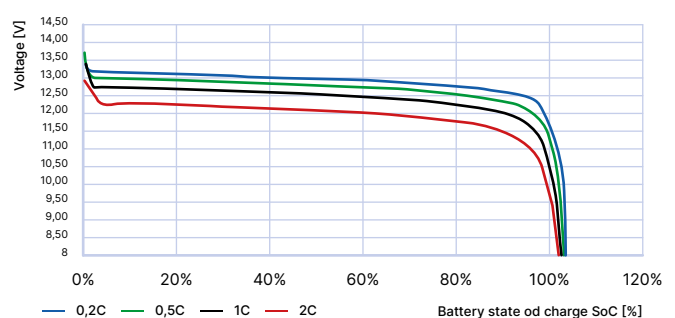


Fig. 8. Battery voltage during discharging with different currents



**GENERAL PRECAUTIONS**

- Do not expose the battery to UV radiation
- Do not immerse the battery in water.
- Do not leave the battery nearby heat sources.
- Charge the battery only under supervision.
- Do not short-circuit the + and – poles with any conductive elements
- Do not connect the battery directly to electrical sockets.
- Do not throw the battery into fire.
- Do not transport the battery together with other metal objects.
- Do not hit, throw or trample on the battery.
- Do not puncture the battery with any objects.
- Do not disassemble/open the battery.
- Do not store an unused battery for a long time.
- Do not leave the battery outdoors at high temperature.
- Do not use the battery in a strong electrostatic area or magnetic field.
- Read the manual of the charger carefully.
- Store the battery with protected terminals.
- Keep the battery away from children and animals.
- Do not wear metal objects during handling and use of the battery.
- Charging time should not be longer than in the charger manual.
- Do not solder anything to the battery.
- Do not expose the battery to microwaves and high air pressure.
- Do not apply any form of pressure to the battery.
- If the battery emits a strange smell, it is noticeably hot, changes color and deforms, differs or deviates in any other way from the norm when using, disconnect immediately remove the load and move it to a safe place, then contact with the supplier/manufacturer.
- If the battery terminals are dirty, clean them with a dry cloth, otherwise the connection to the battery may be defective.

**STORAGE AND LIFESPAN**

Batteries should be stored under the following conditions:

- Avoiding direct exposure to sunlight in ventilated rooms
- For long-term storage this should be done in rooms with low humidity and temperature ranging from -10°C to +45°C.
- Store the battery fully charged.
- When storing the battery for 6 months or LONGER, at least one full cycle is required battery discharge and charge to avoid destruction of cells through self-discharge.

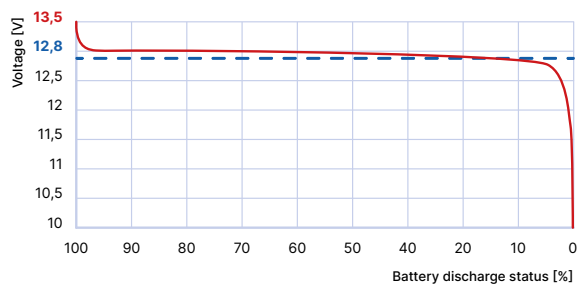
Number of cycles (lifespan) after which the battery retains its at least 80% of the nominal capacity, depends on depth of discharge. Cycle number is no less than 6000 when discharged in 100% DoD cycles (full charge and discharge).

After exceeding 6000 cycles, the battery is still functional, and its capacity is at least 80% of the nominal capacity and begins to decrease with time and/or continued use. The shallower the discharge cycles, the longer the life. Accordingly, for 80% DoD cycles (discharging to 20% of the total capacity), the service life is 9000 cycles and for 60% DoD cycles (discharging to 40% of total capacity), service life is 12000 cycles.

The estimated life of the battery electrolyte is taken as approximately 12 years of use.

**! ATTENTION**

Due to the non-linear nature of LiFePO<sub>4</sub> battery discharge, its voltage ranges remain almost constant value, in a wide range of its capacity (Fig. 9). Nominal voltage of 12.8 V (for our batteries), may mean either a charged battery at approximately 90% of the rated capacity, BUT also discharged to close to 0% of the rated capacity. As you can see on the characteristics, the battery whose resting voltage (open circuit, no load) is 12.8 V (or less), can be fully discharged. Therefore, in the case of LiFePO<sub>4</sub> batteries, this is not allowed to suggest by their voltage in order to determine their actual value discharge / charge level.

**Fig. 9. Battery voltage drop, 1C discharge**

**You should never allow a situation in which the resting voltage on the LiFePO<sub>4</sub> battery terminals is less than 12.8 V.**

**! ATTENTION**

**The operating algorithm of the heating pads system is as follows:**  $T \leq 0^{\circ}\text{C}$  - switching on the heating pads system and cell heating, until positive temperature is reached on the cells. Then charging the battery starts. Cell heating time to positive temperature depends on the negative initial temperature of the cells and may extend depending on temperature conditions.

**! ATTENTION**

For battery models 2025 MG: Required current from the power supply/charger for starting the heating pads is about: 3A for 50 Ah MG Blue, 5 A for 100 Ah MG, 10 A for 200 Ah MG. In case of connecting the batteries parallel the minimum current is  $n \cdot$  minimum heating pads battery current, where  $n$  means amount of batteries connected. Older models, before 2025 year, need at least 7 A per battery.

**WARUNKI GWARANCJI**

The above product, which is a 12.8 V LFP battery, is covered by: guarantee to the customer that this product will be free from defects materials and production for a period of 5 years from the production date, or 3 years from the date of purchase (no more than 5 years from the date of production) in Poland. If symptoms occur during the warranty period that may indicate a product defect, please contact our technical support who will advise you on how to proceed warranty procedure. Defective product covered under this warranty will be restored to operational condition or replaced if a fault makes it impossible to repair. Consideration warranty will take place within no longer than 30 business days from the date of receipt of the complaint. Device replacement includes the delivery of a new, defect-free product the same or - in the event that it is withdrawn from production with similar parameters, excluding dimensions that may change. There may appear repair traces on the outer packaging of the battery after service activities.

**This warranty does not apply:**

- > in case of incorrect connection or use or charging the device,
- > if the product has been modified, opened, altered or damaged as a result of inappropriate use,
- > if you do not follow the instructions for use of the device,
- > if the product is sold at a public auction,
- > if the device is damaged in an accident or natural disaster,
- > in case of destruction of terminals/terminals connection lines,
- > if the device is destroyed by fire, freezing or high temperature,
- > in case of flooding/crushing due to pressure,
- > in case of user interference with the device,
- > in case of damage to the battery case.

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