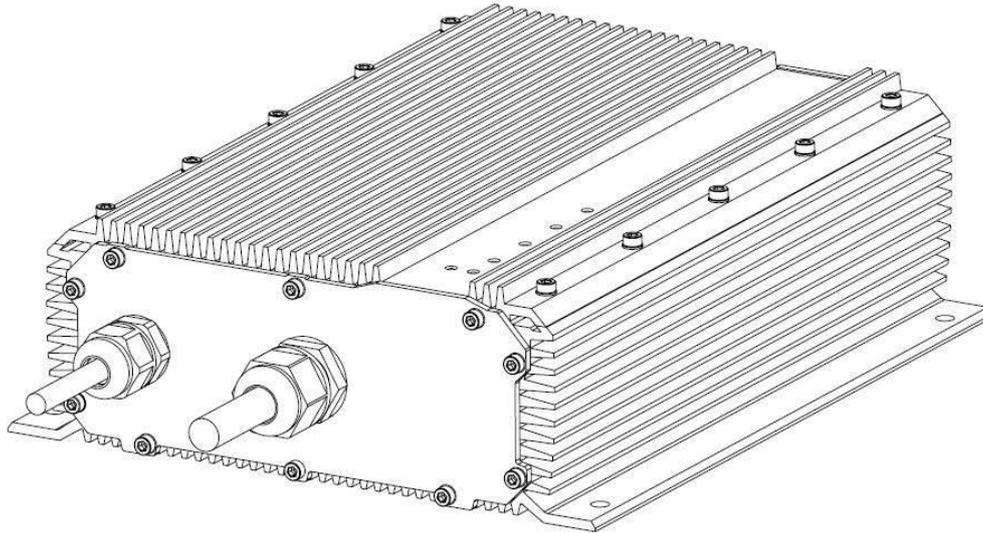


-- Instruction manual --

# Nova-300I Battery Charger

## IP 65 Lithium-based battery charger



Version / MEC Art-No.

Lilon

- 4S 16.8V / 18A → **175-04183-470IS**
- 7S 29.4V / 10A → **175-07103-470IS**
- 14S 58.8V / 5A → **175-14502-470IS**

LiFePo4

- 4S 14.4V / 20A → **176-04203-470IS**
- 8S 28.8V / 10A → **176-08103-470IS**
- 16S 57.6V / 5A → **176-16502-470IS**

Dear Customer!

Thank you very much for your trust in us and our product.  
Please read these operating instructions carefully **before** start of operation.

MEC-Energetechnik GmbH

### 1. Safety Rules and General Warnings

- Persons, which are not able to use the device in a safe way, because of their physical, sensory or mental competence, or because of their inexperience, should not use the charger without control or instruction of a skilled person.
- 100- 240 Volts alternating current, device is not suitable for children – Danger of life!!!
- Ensure for enough air ventilation while charging!
- The charger is exclusively designed for rechargeable Lithium-based batteries and must not be used for other purposes.
- Please consider the charging instructions from the battery manufacturer before charging!
- Do not open! Repair work must only be accomplished by authorized companies or specialized technical staff.
- If the mains connection of the device is damaged, it must be replaced with an original wire which is available at the manufacturer or costumer service.
- Never place the device on top of the battery while charging!
- Protect against direct solar radiation and temperatures over 40°C.
- In case of obvious damage or malfunction disconnect the device from mains supply and protect against unintended reconnection.
- The DC cable must not be cut or shortened.
- The charger is not designed for higher environments as IP 65

## 2. General Information

This microprocessor based IP-65 Lithium Battery Charger was especially developed for the outdoor use and for situations where water may be present. It can be used to charge any Lithium- based battery.  
With the 4-step charging program the battery will be charged safely in a fully automatic mode. The output of the charger is electronically protected against short circuit. The charger is able to recover deep-discharged batteries.  
Coloured LED's on the top case are used to indicate charging status and errors.

## 3. Special Features

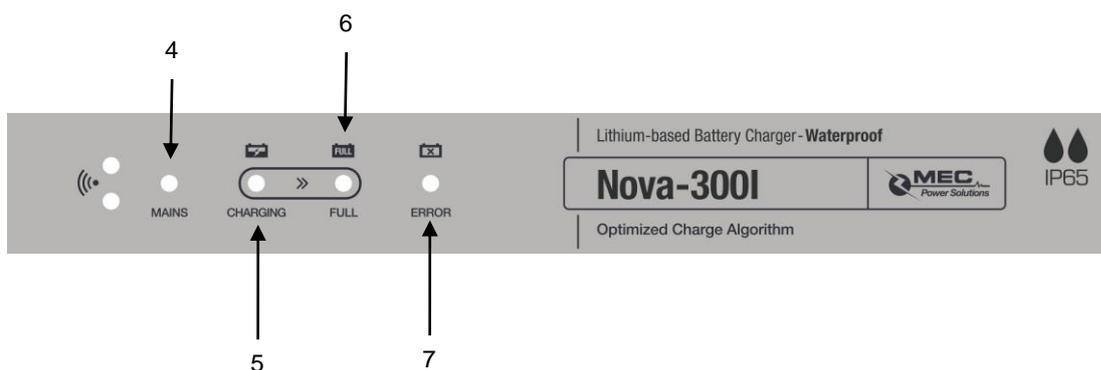
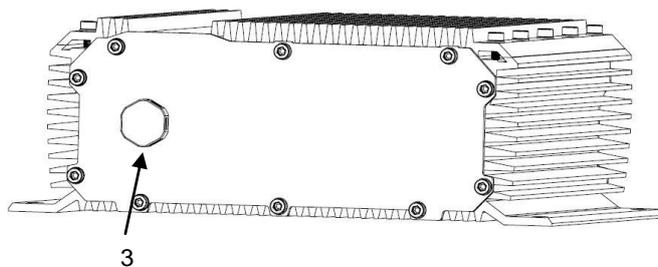
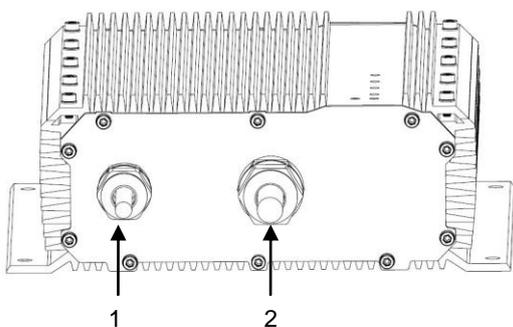
- Passive cooled IP65 aluminium housing
- Short circuit protection
- LED's to indicate operation and charging status
- 4-Step charging technology with automatically restart charging
- Automatic shut-off at too high temperature
- Indicating a non-chargeable ('dead battery') condition

## 4. Product Figure

- 1 AC- cable
- 2 DC- cable
- 3 Protection-vent

- 4 Green Mains-LED
- 5 Yellow Charge-LED
- 6 Green Full-LED

- 7 Red Error-LED



## 5. Operation

### ATTENTION:

- Before operating please make sure that the power cable and the charger including the charging cable show no damages and make sure that the mains supply complies with the specification.
- Please consider the charging instructions from the battery manufacturer before charging.

### **If you want to connect the charger to the battery, please have a look to the following points:**

- Make sure that the charger is disconnected from the battery.
- Make sure that the device is switched off and disconnected from the mains.
- Connect the terminals to the battery.
- Connect the power cable to the mains supply and switch ON the device.

## 6. Charging the battery

The charging process starts automatically and runs through the following four charging phases:

### 1. charging phase: precharge

This charging step is indicated by **blinking alternately of the Charge-LED (5) and Full-LED (6)**.

**Explanation:** The precharge phase starts automatically at deeply discharged batteries (where the BMS is off). During the precharge phase, the charger use controlled current pulses. That tries to reactivate the BMS and bring the battery in a voltage where it is possible to start the charging process.

### 2. charging phase: soft start

This charging step is indicated by **constant lighting of the Charge-LED (5)**.

**Explanation:** During the soft start phase the charger reduces charging current, in order to extend battery lifetime.

### 3. charging phase: constant current

This charging step is indicated by **blinking slowly of the Charge-LED (5)**.

**Explanation:** During the constant current phase, the battery is being charged to 80% of its capacity.

### 4. charging phase: constant voltage

This charging step is indicated by **blinking quickly of the Charge-LED (5)**.

**Explanation:** During the constant voltage phase the battery is being charged to its maximum capacity.

If the **Full-LED (6) is constant lighting**, the battery has reached the full capacity. Should the battery stays on charger the automatic restart, starts after 7 days or the battery voltage is under 4V/cell (Lilon-Battery) or 3.4V/cell (LiFePo4-Battery).

### **Disconnect the charger from the battery:**

- a) Disconnect the charger from the mains supply;
- b) Disconnect the charger from the battery;

### Charging advice:

- If the charger will be disconnected from the battery during the charging process, the charge current will be interrupted immediately. In that case please disconnect the charger from the mains supply. For starting a new charging process please comply with the relevant points (see pt.5)
- For increasing the lifetimes of the battery please do not stop a charging process before the battery is fully charged. The charger will automatically stop the charging process

## 7. Errors and Troubleshooting

Table 1: General errors:

Error description	Solution
No LED lighting or blinking after connecting mains	<input type="checkbox"/> Check if charger is connected to mains supply <input type="checkbox"/> Check function of mains supply
Red Mains- LED is on, charger is connected to battery and the charging process don't start	<input type="checkbox"/> Check connection to battery <input type="checkbox"/> Check if battery is damaged or deeply discharged
Error-LED blinking (N x blinking / 2 sec pause)	<input type="checkbox"/> Please see the table below for error description

Table 2: Error-LED blinking signals:

Blinking signal	Error description
1 x	Battery damaged
2 x	Battery voltage is too high or wrong battery connected
5 x	Charger temperature is too high as charging

## 8. Technical Specifications

Version	Lilon			LiFePo4		
	4S / 18A	7S / 10A	14S / 5A	4S / 20A	8S / 10A	16S / 5A
MEC Art.-no.:	175-04183-470IS	175-07103-470IS	175-14502-470IS	176-04203-470IS	176-08103-470IS	176-16502-470IS
Charge characteristic	4-Step charge profile					
Input	100...240V AC / 50-60Hz					
AC cable	1.7m ±0.1m CEE 7/7					
Charging current max.	18A	10A	5A	20A	10A	5A
Minimal battery voltage	8V	14V	28V	8V	16V	32V
Charging voltage nom.	4.2V/cell			3.6V/cell		
Restart charging voltage	3.8V/cell			3.4V/cell		
Output power max.	310W					
Back current	<1mA					
Efficiency	>86%					
DC-Cable	Length: 1.2m ±0.1m / open wire ends					
Indicators	4 LED's					
Cooling	Passive cooled					
Operating temperature range	-10°C...40°C					
Device protection	Over temperature, Short circuit, Over load					
Temperature sensor	Internal					
Certification	CE					
Enclosure	Anodized aluminium housing					
Protection class	1					
IP-code	IP65					
Dimension device / Dimension plate / Weight	150 x 170 x 70 mm / 195 x 221 mm / ~ 3150g					

## 9. Advice for Disposal



It is prohibited to dispose the charger into the house- and residual waste removal (WEEE-Richtlinie 2002/96/EG und EAG-VO), it must be disposed at the according collection points. For the protection of our environment please inform yourself at your communal administrative agency about your nearest disposal point.

The charger equates to the RoHS-directive 2002/95/EG, for the restriction of the use of certain hazardous substances in electrical and electronic equipment.



## 10. Disclaimer of Warranty

- The warranty period (see our GTC) starts with device being dispatched by the manufacturer. The MEC-Energietechnik GmbH is accepting liability by guaranteeing to working hours and spare parts only.
- For damages caused by non-observance of the operating instructions, inappropriate start up or handling as well as reconstructions and modifications of the device, the warranty claim expires and MEC-Energietechnik GmbH assumes no liability for consequential damage to property or persons!

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