Instruction Manual

Battery Chargers

NOVA-150F Series: IP20 Load-dependent fan-cooled. With one (1) or multiple, selectable charge profiles, customized parameters. Ignition-Lock (optional).

Fan-cooled

Safety Rules and General Warnings

- Persons, who are not able to use the charger in a safe way, because of their physical, sensory or mental incompetence, or because of their lack of experience, should not use without the control or instruction from a skilled or qualified person.
- The charger runs with 100-240 Volts alternating current, which is not suitable for children – Danger of Life. And beware of risk of electric shock at all times.
- Ensure sufficient air ventilation; do not cover the vent outlet while charging in progress.
- Avoid flammable gases, solvents or vapours all the time. Prevent open flame or sparks while charging in progress. Explosion RISK!
- The charger is exclusively designed for charging rechargeable batteries and must not be used for other purposes. Corresponding model should be selected for particular lithium-based or lead-based batteries.
- You should take into consideration of the charging instructions issued by the battery manufacturer before charging. Check also if the charge profile fits your battery and application.
- DO NOT OPEN or DISMANTLE the charger. Repair work must only be processed by authorized technical staff.
- If the mains connection of the charger is damaged, it must be replaced with an original wire which is available at MEC or authorized dealers.
- NEVER place the charger on top of the battery while charging in progress.
- The charger should be protected against direct solar radiation or temperatures over 40°C.
- In case of obvious damage or malfunctioning, disconnect the charger from the mains supply and protect against unintended reconnection.
- The DC cable must not be cut, shortened or extended under any circumstances.
- Keep the charger in dry room (rel. humidity <80%). Clean with dry cloth only. Avoid fluid of any kind to get into the charger.

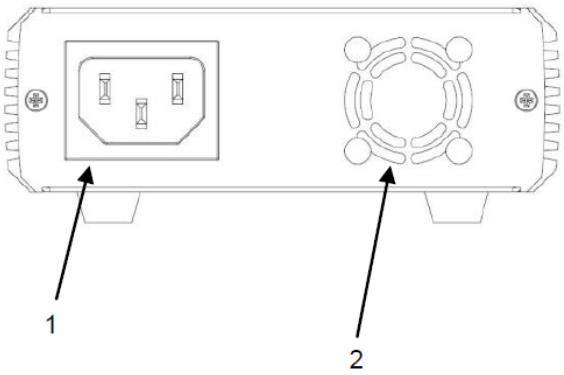
Special Features

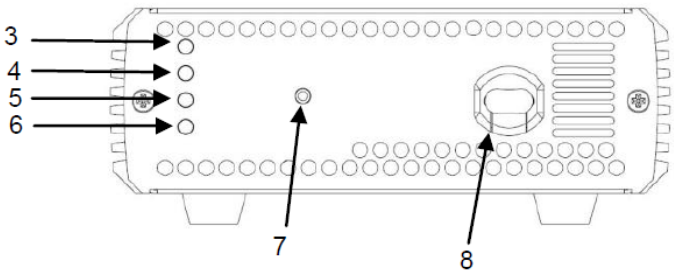
- IP20 Load-dependent fan cooling; spray-painted metal housing
- Microprocessor-based 4-Step charging technology with soft start and automatic re-start of the charge cycle
- Battery "wake-up" function by sending out programmed "wake-up" pulses
- Optimal and gentle charging for the greatest possiblity of charge cycles guaranteed with high frequent combinatorial circuit technology
- 5 Selectable battery types (GEL, AGM, WET, Calcium, +PS-Mode) and built-in battery temperature sensor for models targeting lead-based batteries
- LED indicators showing corresponding charge status and errors
- Protection against short circuit, reverse polarity, over temperature or overload

Product Configuration

Models Targeting Lithium-based Batteries

1. Mains Socket	**2. Cooling Fan**	**3. Red Mains LED**
4. Green Full LED	**5. Yellow Charge LED**	**6. Red Error LED**
7. Wake-up Button	**8. DC Cable**	



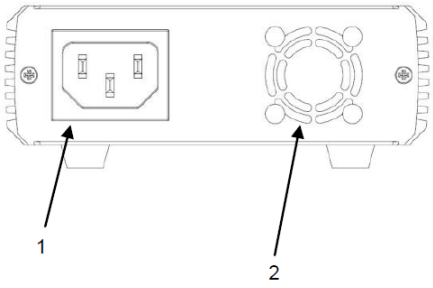


Pb-free RoHS conform

Mainland Energy Conversion Ltd.
Tel: +852 2366 9610
E-mail: mec@mec-mainland.com
www.mec-powersolutions.com

Models Targeting Lead-based Batteries

1. Mains Socket	**2. Cooling Fan**	**3. Red Mains LED**
4. Green Full LED	**5. Yellow Charge LED**	**6. Red Error LED**
7. Slide Switch with Program LEDs		



Preparation – Before Charging

General Checking
- Check thoroughly the charger itself including all the cables show no damages
- Take into consideration the charging instruction issued by the battery manufacturer

Charging Cable – Polarity Checking
WARNING: Check the polarity before mounting onto a plug:

- Red cable = Plus (+)
- Black cable = Minus (-)

DC Mains Supply Checking
- Make sure the DC cable must not be cut, shortened or extended under any circumstances
- Make sure the mains supply complies with the technical specification requirements of the charger

Before Connecting the Charger to the Battery

- Make sure the charger is switched off and disconnected from the mains supply
- <For models targeting lead-acid batteries> Select the charge profile with the slide switch; NEVER slide the switch while charging in progress
- Then connect the terminals of the charger to the battery (Red cable to the positive (+) terminal of the battery; then Black cable to the negative (-) terminal)
- If the battery is built-in within a vehicle, the Black cable can be connected to the negative (-) terminal of the battery or the body of the vehicle; make sure the connection is done with a safe distance from the fuel line and take into consideration of the battery and vehicle manufacturer
- Finally connect the power cable of the charger to the mains supply, and switch on the charger

Charging the Battery

The charging process starts automatically and runs through the following stages:

Getting Ready: Auto Wake-up
Press the **Wake-up Button** and the charger will send out series of controlled current pulses to reactivate the BMS (if any) and bring in a voltage to the battery for getting ready for the charging process. If no battery or defected battery pack is connected, the Red Error LED blinks. In this case, switch off the charger and check the battery pack.

Phase 1: Soft Start
Yellow Charge LED (5) keeps on lighting. The charger regulates the initial charging current to better prolong the battery life.

Phase 2: Constant Current Charging
Yellow Charge LED (5) blinks slowly. The battery is being charged to 80% of its capacity at this stage.

Phase 3: Constant Voltage Charging
Yellow Charge LED (5) blinks quickly. The battery is being charged to its maximum capacity. When the Green Full LED (4) turns on, the charger can now be disconnected from the battery.

Phase 4: Float Charging (for lead-based batteries only) or Auto Restart
Green Full LED (4) keeps on lighting indicate the battery has reached its full capacity. If the battery keeps connecting to the charger, auto restart of the charging cycle will take place after 7 days or when the battery voltage has dropped to under 3.6V/cell (Li-ion Battery) or 3.2V/cell (LiFePO4 Battery).

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Disconnect the Charger from the Battery:

1. First, disconnect the charger from the mains supply
2. Then, disconnect the charger from the battery (release the Black (-) terminal then the Red (+))

After disconnecting the charger from the mains, please wait at least 5 seconds to reactivate the charger if in need – otherwise damages may be resulted.

Charging Advice and Battery Care

Charging Advice:

- If the charger must be disconnected from the battery during the charging process, please FIRST disconnect the charger from the mains supply. The continuation of the charging process is equal to a new charging cycle; all relevant points of the Operating Instructions have to be considered.
- To lengthen the lifetime of the battery, please do not stop the charging process before the battery is fully charged. The charger will automatically stop when the charging process is completed.

Battery Care:

- Never expose the battery to high temperatures, as this causes permanent battery capacity loss.
- Never deep-discharge or overcharge the battery, cells can be damaged irreversibly.
- If possible, always disconnect the battery from the load when being stored over long period of time.
- Store battery in a dry and cool place at about 40-60% of its rated capacity.

Errors and Troubleshooting

General Errors Description	Solutions
No LED lighting or blinking after connecting to the mains	• Check if the charger is connected to mains supply properly • Check if there are any problems with the mains supply
Red Mains-LED is on, charger is connected to the battery, but the charging process seems not working	• Check the connection to battery • Check if the battery is damaged or has been deeply discharged
Error-LED blinking (N x blinking / 2 secs pause)	• Please refer to the table below for LED Blinking Signals

LED Blinking Signals

Blinking Signal (continuous looping)	Error Description
1 x	Battery damaged
2 x	Battery voltage is too high or wrong battery connection
5 x	Charger temperature is too high during the charging process

Advice for Disposal

It is prohibited to dispose the charger with household or residual waste removal (WEEE-Richtlinie 2012/19/EU und EAG-VO). The charger must be disposed at designated disposal points. For the protection of our environment, please check at your communal adminstrative agency of your nearest disposal point.

The charger conforms to the RoHS-directive EU 2015/863, for the restriction of the use of certain hazardous substances in electrical and electronic equipment.

Disclaimer of Warranty

The warranty period (see our General Terms and Conditions) starts with the charger being dispatched by the manufacturer. MEC-Energietechnik GmbH accepts 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 dismantling, reconstructions or modifications of the charger, the warranty claim expires and MEC-Energietechnik GmbH assumes no liability for consequential damages to any properties or persons in connection with or arising from the purchase and use of the charger.

We reserves the rights to configure the charger as per actual needs and the manual may not reflect the most updated conditions of the product at all times. Please contact us should you need any technological support.

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Technical Specifications

DC Ausgang | DC Output								
	LiFePO4 Batteries 3.2V/cell (nom.)		**Li-ion Batteries 3.6V/cell (nom.)**		**Lead-based Batteries**			
Ladespannung max. Charge Voltage max. (+/-1%)	**4S** 12.8V	**8S** 25.6V	**4S** 14.4V	**7S** 25.2V	12V	24V	36V	48V
Ladestrom max. Charge Current max. (+/-1%)	10A	7A	9A	5A	13A	8A	5A	4A
Wirkungsgrad max. | Efficiency max.	>87% @ 230V							
Ausgangsleistung, nom. Output Power, nom.	150W							
Restwelligkeit | Ripple	<1%							
Rückstrom | Back Current	<1mA							
Ladekabel Charge Cable	1.2m offene Kabelenden 1.2m open cable ends							
AC Eingang | AC Input								
Eingangsspannung | Input Voltage	100...240VAC / 50...60Hz							
Netzkabel & Stecker | Power Cord & Plug	1.2m Länderspezifisch | Country Specific							
Gehäuse | Enclosure								
Werkstoff | Material	Metallgehäuse, lackiert | Metal housing, painted							
Abmessungen / Gewicht Dimension / Weight	180 x 110 x 36 mm / ca. 800g							
LED-Anzeigen LED-Indicators	Netz-, Error-, Laden-, Batt.-Voll Anzeige Mains-, Error-, Charging-, Batt.-Full Indicator							
Schutzklasse / Protection Class	1							
IP Klasse | IP Code	IP20							
Einsatztemperaturbereich Operating Temp.	0°C to +40°C							
Kühlung | Cooling	Leistungsabhängiger Lüfter | Fan Cooling							
Besonderheiten | Special Features								
4-Stufen Ladecharakteristik** 4-Step Charge Characteristics**	Abschaltung bei "Batterie-Voll" (Ladestromerkennung) Charge Cut-off at "Batterry-Full" (Current Detection)							
Ladefreigabe (opt.)*** Charge Enable (opt.)***	Kabel f. Ladefreigabe / Ladesperre Cable f. Charge Enable / Charge Disable							
Wegfahrsperre | Ignition-Lock Function***	2-Adriges Kabel -> (Relaiskontakt) | 2-Core Cable -> (Dry-contact)							
Ladeparameter | Charge Parameter	Ladeprofilanpassung über IR-Schnittstelle | Charge Profile Configurable via IR-Port							
Automat. Batterie Weckfunktion Automat. Battery Wake-up	Nach dem Einschalten weckt der Lader das BMS durch definierte Spannungspulse The charger, after "Power-on", activates the BMS with pre-defined voltage pulses							
Geräteschutz Device Protection	Übertemperatur-, Kurzschluss-, Verpolung-, Überlastschutz Over temperature-, Short Circuit-, Reverse Polarity-, Overload Protection							
Zertifizierungen | Certification	CE							

Spezifikationen der Akkuhersteller sind vorrangig zu beachten! | Specifications of the battery manufacturer take priority!
** Abweichende Ladeprofile auf Anfrage | Different charge profiles available on request.
*** Optionale Varianten auf Anfrage | Optional features available on request.

Subject to technical modifications. We assume no liability for misprints.

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