

# Instruction Manual

## Battery Chargers

### UK MCC-40 Series:

IP20 Convection-cooled with built-in temperature sensor. WET, GEL, AGM, Lithium (LiFePO4) and Universal Charging Profiles. Fully automatic quick charger for motorized equipment with integrated winter storage function.



## 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 specific lead-based or LiFePO4 rechargeable batteries. It must not be used for other purposes.
- NEVER recharge a frozen starter battery.
- WARNING: Battery acid is corrosive and may cause property damage and personal injury. In the event of direct contact with skin or eyes, immediately rinse with plenty of clean water and contact a doctor.
- Please always wear appropriate work clothes, protective gloves and safety glasses when working with 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 or the pole terminal adapter 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 Convection-cooled; high-impact plastics housing
- Microprocessor-based 4-Step charging technology with soft start and automatic re-start of the charge cycle
- 5 Charging profiles: WET, GEL, AGM, Lithium (LiFePO4) and the Universal Mode (which fits all conventional lead-based or LiFePO4 starter batteries)
- Optimal and gentle charging for the greatest possibility of charge cycles guaranteed with high frequent combinatorial circuit technology
- Smart LCD display with indicators showing corresponding charge status and errors
- Protection against short circuit, reverse polarity, over temperature or overload; spark proof – with no power nor voltage at output if no battery is connected

## Smart LCD Display and Battery Type Selection

### Smart LCD Display

- |                   |                      |                  |
|-------------------|----------------------|------------------|
| 1. Green Full LED | 2. Yellow Charge LED | 3. Red Error LED |
|-------------------|----------------------|------------------|

### Battery Type Selection



Home Display

=> Press for 4 Seconds



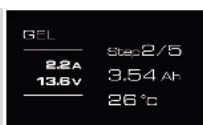
Standard Charging Display



Press for less than 3 Seconds

Press for more than 3 Seconds

- Charging current, voltage, phase, temp. etc. are shown
- Press to go back to Standard Charging Display



Detailed Display



Selection Display

- Press to select Battery Type
- Press for >3 seconds to save and go back to Standard Charging Display



## Preparation – Before Charging

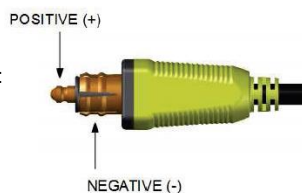
### General Checking

- Check thoroughly the charger itself including all the cables show no damages
- Take into consideration the charging instruction issued by the battery and the application manufacturer to confirm the polarity, ground connection or maintenance etc.

### Charging Cable – Polarity Checking

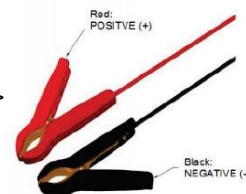
WARNING: Check the polarity before mounting onto a plug:

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



<= Charging Plug on the charger

Pole Terminal Adapter=>



### DC Mains Supply Checking

- Make sure the DC cable must not be cut, shortened or extended under any circumstances
- Make sure the mains supply (of max.16A is allowed) 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
- Then connect the terminals of the charger to the battery; if the charging socket polarity does not match the charging plug polarity on the charger; make use of the pole terminal adapter (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

Select the most appropriate charging program (WET, GEL, AGM, or LiFePO4). Universal Mode can charge all conventional lead-based or LiFePO4 starter batteries, and thus useful when the battery type cannot be clearly identified. The charging process starts automatically and runs through the following stages:

### Phase 1: Soft Start

Yellow Charge LED keeps on lighting. The charger regulates the initial charging current to better prolong the battery life.

### Phase 2: Constant Current Charging

Yellow Charge LED blinks slowly. The battery is being charged to 80% of its capacity at this stage.

### Phase 3: Constant Voltage Charging

Yellow Charge LED blinks quickly. The battery is being charged to its maximum capacity. When the Green Full LED 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 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.

### Disconnect the Charger from the Battery:

1. First, disconnect the charger from the mains supply
2. Then, disconnect the charger from the battery

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.


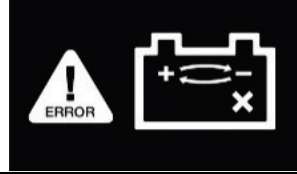


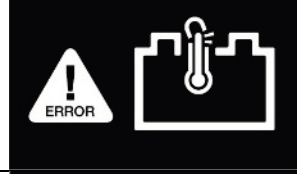

### Battery Care:

- 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	<ul style="list-style-type: none"> <li>• Check if the charger is connected to mains supply properly</li> <li>• Check if there are any problems with the mains supply</li> </ul>
Red Error-LED is on	<ul style="list-style-type: none"> <li>• Please refer to the table below for LED Signals</li> </ul>

### Error Display and Description

	<ul style="list-style-type: none"> <li>- A defective battery or a battery with excessively low rated voltage was connected to the charger.</li> <li>- Immediately remove the battery from the charger.</li> <li>- Check the rated voltage on the starter battery.</li> <li>- Dispose of the defective battery in line with the applicable legislation.</li> </ul>
	<ul style="list-style-type: none"> <li>- Battery polarity reversal.</li> <li>- Disconnect the charger from the battery.</li> <li>- Check / correct the polarity on the pole terminals and the charging plug.</li> </ul>
	<ul style="list-style-type: none"> <li>- Temperature of the charger or the ambient temperature is too high.</li> <li>- Cool the vehicle / starter battery down if the ambient temperature is too high.</li> <li>- Disconnect the charger from the battery if the ambient temperature meets the specifications. Contact your dealer.</li> </ul>
	<ul style="list-style-type: none"> <li>- Overload on the charging plug (the charger is for 12V batteries only).</li> <li>- Immediately disconnect the charger from the battery.</li> <li>- Contact your dealer if the battery type complies with the specification.</li> </ul>
	<ul style="list-style-type: none"> <li>- Temperature on the charging plug is too high.</li> <li>- Cool the vehicle / battery down if the ambient temperature is too high.</li> <li>- Disconnect the charger from the battery if the ambient temperature meets the specifications. Contact your dealer.</li> </ul>
	<ul style="list-style-type: none"> <li>- The connection to the battery was interrupted during charging, due to defective power cable or poor contact to the battery.</li> <li>- Check the contacts and restore the connection.</li> <li>- Disconnect the charger from the battery if the power cable is defective.</li> <li>- Contact your dealer.</li> </ul>

## 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 administrative 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.

## Technical Specifications

DC Ausgang   DC Output		
	LiFePO4 Batteries 3.2V/cell (nom.)	Lead-based Batteries
Ladespannung max. Charge Voltage max. (+/-1%)	4S 12.8V	12V
Ladestrom max. Charge Current max. (+/-1%)	2.2A	2.2A
Wirkungsgrad max.   Efficiency max.	>89% @ 230V	
Ausgangsleistung, nom.   Output Power, nom.	max. 32W	
Restwelligkeit   Ripple	<1%	
Rückstrom   Back Current	<1mA	
Ladekabel Charge Cable	1.2m mit Krokodilklemmen 1.2m with alligator clamps	
AC Eingang   AC Input		
Eingangsspannung   Input Voltage	100...240VAC / 50...60Hz	
Netzkabel & Stecker Power Cord & Plug	Länderspezifisch Country Specific	
Gehäuse   Enclosure		
Werkstoff Material	Kunststoffgehäuse Plastics Housing	
Abmessungen / Gewicht Dimension / Weight	180 x 100 x 53 mm / ca. 700g	
LED-Anzeigen   LED-Indicators	Netz-, Error-, Laden-, Batt.-Voll Anzeige Mains-, Error-, Charging-, Batt.-Full Indicator	
Schutzklasse / Protection Class	2	
IP Klasse   IP Code	IP20	
Einsatztemperaturbereich   Operating Temp.	-10°C to +40°C	
Kühlung   Cooling	Konvektionskühlung   Convection Cooling	
Besonderheiten   Special Features		
4-Stufen Ladecharakteristik** 4-Step Charge Characteristics**	Abschaltung bei "Batterie-Voll" (Ladestromerkennung) Charge Cut-off at "Battery-Full" (Current Detection)	
Ladefreigabe (opt.)*** Charge Enable (opt.)***	Kabel f. Ladefreigabe / Ladesperre Cable f. Charge Enable / Charge Disable	
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.**