

MAB102 | MAB105 | MAB110



BATTERY CHARGER AND MAINTAINER



MANUAL

Product Overview

The MATSON MAB Series 1 battery chargers are automatic AC-DC battery chargers designed for charging and maintaining compatible 6 V and 12 V batteries. Each charger performs an automatic battery assessment before charging and selects the appropriate charging process based on the battery chemistry selected by the user. The chargers include memory for the last selected battery chemistry, automatic maintenance charging for supported lead-acid batteries, Low Voltage Recovery for supported lead-acid batteries, Low Voltage BMS Unlock for compatible LiFePO₄ batteries and a DC power supply mode.

Important Safety Instructions



WARNING

To avoid any personal injury, please read the safety instructions below.

This battery charger is not intended for use by children or infirm persons without supervision.

Use only with battery chemistries, voltages and sizes listed in this manual.

Not to be used with dry cell batteries.

- During the charging process, do not use a naked flame near a battery. Batteries generate gasses during the charging process that may explode
- Never smoke or light cigarettes near a battery
- Do not place tools on top of a battery or allow tools to fall on the battery to prevent the chance of a short circuit and sparks
- Always wear eye protection when charging batteries
- Ensure charging and testing is conducted in a well-ventilated area
- Inadequate ventilation may over-heat the charger and cause inefficient operation
- The ACID / FLUID within a battery is highly corrosive and poisonous. It can produce flammable and toxic gases when recharged and will explode if ignited. When working with batteries, always wear eye protection, remove jewellery and ensure the area is well ventilated. If spilt, it will cause severe burning to eyes, skin, clothing, and damage paintwork and corrode many metals. Ensure that power is disconnected from any appliance in the vicinity of the spill and immediately wash any area that has been affected with water. Seek medical attention.

The warnings, cautions and instructions detailed in this instruction manual cannot cover all possible conditions and situations that may occur. Common sense and caution are factors which cannot be built into this product and must be supplied by the operator.

- Read this manual before using the charger.
- Use only with compatible rechargeable batteries.
- Do not charge non-rechargeable batteries.
- Charge in a well-ventilated area away from flames and sparks.
- Disconnect the charger from AC power before cleaning.
- Do not use a damaged charger or damaged leads.
- Do not cover the charger while operating.
- Keep the charger dry and away from water.
- Always confirm the correct battery voltage and chemistry before charging.

Product Features

- **Automatic multi-stage charging:** Automatically manages the charging process through eight charging stages to suit the condition of the battery. This helps provide efficient charging while supporting battery performance during everyday use.
- **Selectable battery chemistry:** Allows you to select the correct charging profile for 12V Lead Acid, AGM (including flat plate and spiral wound AGM), Wet, Gel, Calcium, LiFePO₄ and 6V Lithium LiFePO₄ (only in MAB102) and lead-acid batteries. Using the correct mode helps achieve optimal charging performance.
- **Memory function:** Remembers the last battery chemistry selected, eliminating the need to reselect it each time the charger is powered on. This makes repeated charging quicker and more convenient.
- **Automatic battery assessment:** Performs an automatic battery check before charging begins to verify battery condition and charging suitability. This helps ensure the appropriate charging process is used.
- **Low voltage recovery:** Provides a manual recovery mode for supported low-voltage lead-acid batteries using a pulsed charging profile. This may assist in recovering batteries that are too deeply discharged for normal charging to begin. For 6V batteries, a minimum battery voltage above 2.5V is required for this function.
- **Low voltage BMS unlock:** Helps activate the Battery Management System (BMS) in compatible LiFePO₄ batteries that have entered low-voltage protection. This allows charging to commence once the battery is successfully reactivated.
- **Automatic maintenance charging:** Automatically maintains supported batteries after they are fully charged to help compensate for normal self-discharge during long-term connection.
- **Power supply mode:** Provides a regulated 12V DC output for compatible low-current 12V equipment when battery charging is not required, in MAB105 and MAB110 models.
- **Reverse polarity, short-circuit and over-temperature protection:** Built-in electronic protection helps safeguard the charger against common connection errors and abnormal operating conditions, providing greater confidence during use.
- **V0- class fire retardant housing:** Constructed from V-0 Class flame-retardant material to provide an added level of protection in the event of abnormal operating conditions.

Supported Batteries

Battery Voltage	Supported Chemistry
6 V	Lead Acid / AGM (LiFePO ₄ in MAB102)
12 V	Lead Acid / AGM / Wet, Gel, Calcium, LiFePO ₄

The recommended battery capacities depend on the charger model. Larger batteries may be charged, however charging time may increase significantly and the charger may not fully charge very large batteries in one charging cycle. Refer to table on page 10

Selecting the Battery Chemistry

Connect the charger to AC power. Press the MODE button to cycle through the available battery chemistries. Stop when the required battery chemistry indicator is illuminated. The charger stores the last selected chemistry and automatically recalls it the next time power is applied.

Note: Ensure selection of correct battery chemistry for best charging performance.

Charging a Battery

- Step 1:** Connect the charger to an AC power outlet.
- Step 2:** Select the correct battery chemistry using the MODE button.
- Step 3:** Connect the RED clamp to the positive (+) battery terminal.
- Step 4:** Connect the BLACK clamp to the negative (-) battery terminal.
- Step 5:** The charger automatically performs a battery assessment.
- Step 6:** If the battery is suitable, charging begins automatically.
- Step 7:** When charging is complete, supported lead-acid batteries enter Maintenance mode automatically.
- Step 8:** Disconnect the battery before switching to another battery chemistry.

Battery Assessment

Immediately after connection the charger checks battery voltage, polarity and battery condition. During this process charging does not begin. If the battery passes the assessment the charger automatically starts charging. If the battery cannot be charged, the warning indicator and replace battery indicator may illuminate.

Low Voltage Recovery

If a supported lead-acid battery is detected at a voltage below the normal charging threshold, the warning red triangle flashes. After confirming the battery is suitable for charging, press and hold the MODE button for approximately five seconds. The battery capacity LEDs and the selected battery chemistry LED begin flashing while Low Voltage Recovery operates. When the battery reaches an acceptable voltage the charger automatically changes to the normal charging process. If recovery is unsuccessful the battery should be inspected or replaced.

Low Voltage BMS Unlock (LiFePO₄)

Some LiFePO₄ batteries disconnect internally when deeply discharged. Select LiFePO₄ mode before connecting the battery. If the warning triangle flashes, press and hold the MODE button for approximately five seconds until the LiFePO₄ indicator and power indicator flash. Disconnect the negative clamp briefly and reconnect it. The charger will attempt to activate the battery management system and commence charging. Once charging is complete and the charger is disconnected it returns to the previously selected normal charging mode.

Power Supply Mode

Power Supply mode is available on MAB105 and MAB110 charger models. In this mode the charger supplies a regulated DC output suitable for compatible low current 12 V equipment within the model's rated current.

To activate Power Supply Mode, select '12V Supply' mode, then press and hold the MODE button for 3 seconds. When the '12V Supply' indicator begins flashing, the DC power output is activated.

Important: Ensure the connected equipment is suitable for the charger's 12V Supply output and does not exceed the rated output current of the charger model.

Charging Stages

The MAB Series 1 charger automatically controls the charging process based on the selected battery chemistry and the battery's condition. Once charging has started, the charger progresses through the appropriate charging stages without any user intervention.

Lead Acid, AGM, Wet, Gel and Calcium Batteries

Stage	Description
Battery Assessment	Before charging begins, the charger checks the battery connection, polarity and voltage to determine whether normal charging can commence.
Bulk Charge	The charger supplies a controlled charging current to restore the majority of the battery's capacity as quickly and safely as possible.
Absorption Charge	As the battery approaches full charge, the charger gradually reduces the charging current while maintaining the correct charging voltage to complete the charging process.
Maintenance Charge	Once the battery is fully charged, the charger automatically switches to Maintenance mode to compensate for normal self-discharge and help keep the battery ready for use during long-term connection.
Restart	If the battery voltage drops below the restart threshold while connected, the charger automatically resumes charging to maintain the battery at an appropriate charge level.

Lithium LiFePO₄ Batteries

Stage	Description
Battery Assessment	The charger checks the battery connection, polarity and voltage before charging begins. If the battery has entered low-voltage protection, the Low Voltage BMS Unlock function may be required.
Bulk Charge	The charger delivers a controlled charging current until the battery reaches its specified charging voltage.
Restart	After charging is complete, the charger monitors the battery voltage. If the voltage falls below the restart threshold, charging automatically resumes to restore the battery. LiFePO ₄ batteries do not use a maintenance (float) charging stage.

Charging Stages

Chemistry	Bulk	Absorption	Float	Restart
12V Lead Acid / AGM / Wet	14.7V	14.8V	13.2V	12.7V
12V Gel	14.2V	14.3V	13.2V	12.7V
12V Calcium	14.7V	15.5V	13.2V	12.7V
12V LiFePO ₄	14.6V	-	-	13.1V
6V LiFePO ₄	7.3V	-	-	6.5V
6V AGM / Wet / Lead Acid	7.3V	7.4V	6.8V	6.5V

Charging tolerance:

- 12V charging cycle: $\pm 0.2V$
- 6V charging cycle $\pm 0.4V$

Specification

Parameter	MAB102	MAB105	MAB110
Output @ DC 6V / 12V	2A	2A / 5A	2A / 10A
Battery Capacity	60Ah	120Ah	200Ah
Input Voltage	AC 100–240V 50/60Hz		
Max Power	30W	75W	160W
Housing Ingress Protection	IP65		
Housing Fire Retardant Rating	V-0 Class		
Working Temperature	-20°C to 45°C		
Dimensions, mm	107 x 69.5 x 49	140.5 x 89 x 61	200.5 x 119.5 x 78
Safety Features	Over-current, Over-Charge, Reverse Polarity, Short-Circuit, Wrong mode selection		

MAB102



Included

Aligator clips
in all models



Ring terminal
Included with MAB102
and MAB105 only.



MAB105 and MAB110



Reference table for charging time:

Given below are the estimated charging time based on battery capacity. The actual charging time may vary based on various factors such as state of charge of the battery, state of health of the battery, loads connected and ambient temperature.

12V Battery Capacity in Ah	Estimated time in hours		
	MAB102	MAB105	MAB110
2 to 10	1 to 6	0.5 to 3	0.5 to 1.5
10 to 20	4 to 11	2 to 6	1 to 3
20 to 40	9 to 22	4 to 10	2 to 6
40 to 60	18 to 33	8 to 15	4 to 9
60 to 80	Not Recommended	12 to 20	6 to 12
80 to 120	Not Recommended	16 to 29	8 to 17
120 to 150	Not Recommended	Not Recommended	12 to 21
150 to 200	Not Recommended	Not Recommended	15 to 28

The battery charge status indicators provide an approximate indication of the battery's state of charge (SOC) and should not be considered an exact measurement. When charging is complete, all charge status indicators will remain continuously illuminated.

Troubleshooting

Condition	Recommended Action
No LEDs illuminate	Check AC power supply.
Reverse polarity warning	Check clamp connections.
Warning triangle flashing	Follow the Low Voltage Recovery or LiFePO ₄ BMS Unlock procedure if appropriate.
Replace battery indicator illuminated	Battery may be damaged.
Charger becomes warm	This is normal. Ensure adequate ventilation.

Care and Storage

Store the charger in a clean, dry location. Inspect the cables before each use. Do not immerse the charger in water. Clean with a dry cloth only.

WARRANTY POLICY

Congratulations on the purchase of your Matson product!

Matson has been producing quality battery accessories since 1947, and we are proud of that long history. For extra peace of mind, we invite you to register your purchase with us and take advantage of our extended warranty against any manufacturing faults. This warranty entitles you to a replacement product (or equivalent) in the event there is a manufacturing fault with the product you purchased.

To claim this warranty

1. Register your product: Scan the QR code or visit tridon.com.au/products/Matson and follow the prompts (you will need your proof of purchase)
2. Call us: If you have an issue with your product, give us a call on 1300 362 263, we will troubleshoot the issue and try to resolve it for you
3. Return the product: If inspection is required, return the product to us for assessment
4. Assessment: We will assess the product and either replace or return it depending on whether a fault is found.

This warranty applies for the time period stated on the packaging of your product from the date you purchased it. A list of warranty durations is available at tridon.com.au/products/Matson

Under this warranty, you are responsible for freight costs associated with returning the item to us. We will cover the cost of returning the item to you. This warranty only applies to the product you purchased, not any other associated products or items.

This warranty is offered by Tridon Australia in addition to other rights and remedies available to you under Australian Consumer Law.

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law.

You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage.

You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.



Scan here to
register your product

TRIDON ▶

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