Beta

1498/30A

INSTRUCTIONS FOR USE

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OPERATING MANUAL AND INSTRUCTIONS FOR ELECTRONIC MULTIPURPOSE 6-12-24V BATTERY CHARGER MANUFACTURED BY:

BETA UTENSILI S.P.A.

Original documentation drawn up in ITALIAN.

⚠ CAUTION	
	IMPORTANT! READ THIS MANUAL CAREFULLY BEFORE USING THE BATTERY CHARGER. FAILURE TO COMPLY WITH THE SAFETY STANDARDS AND OPERATING INSTRUCTIONS MAY RESULT IN SERIOUS INJURY.

Store the safety instructions with care and hand them over to the users.

PURPOSE OF USE

The electronic battery charger can be used for the following purposes:

- charging and supplying power to motor vehicles;
- use on 6V-12V-24V, Wet - Agm - lithium (LiFePO4) batteries;
- reprogramming and self-diagnosis.

The electronic battery charger must not be used for the following operations:

- use on batteries other than 6V-12V-24V
- use outside the technical specifications contained in the TECHNICAL DATA table;
- use in humid or wet environments, or in bad weather;
- use for any applications other than stated ones.

WORK AREA SAFETY

⚠ Do not operate the battery charger in environments containing potentially explosive atmospheres or inflammable materials, because sparks may be generated, which can ignite the dust or fumes.

⚠ Keep children and bystanders away from your workplace while operating the battery charger. Distractions from other people can cause you to lose control over the battery charger during use.

⚠ Do not inhale any harmful gases that may be released by the battery of the motor vehicle while working on the engine.

⚠ During connection operations, keep your face away from the motor vehicle battery. The battery contains corrosive liquid; in the event of accidental contact with your skin or eyes, rinse immediately with water and seek medical advice.

⚠ Do not drop any metal tools on the motor vehicle battery: it may short-circuit.

⚠ Use the battery charger in a dry area, avoiding humidity.

BATTERY CHARGER SAFETY

- Before use, check that the battery charger has not been damaged, and that there are no uncovered cables or worn parts.
- Do not use the battery charger when damaged, to avoid the risk of electric shocks; do not try to open or modify it.

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- Connect the power supply cable of the battery charger to the mains socket, making sure that the mains voltage matches the voltage stated on the power supply device. (See TECHNICAL DATA table)
- After use, do not leave the battery charger connected to the mains socket for a long time.
- Do not damage the electronic circuit of the battery charger.

PERSONNEL SAFETY

- Stay alert; watch what you are doing. Do not use the battery charger while tired or under the influence of drugs, alcohol, or medications.

Always use the following personal protective equipment:

- safety shoes;
- eye protection;
- protective gloves against physical agents.

- Use the battery charger in well-aired, dry rooms.
- **Never allow the clips of the clamps (positive-red and negative-black) to touch together.**
- Check that the cables of the battery charger are kept away from fans, moving parts and the fuel pipe.
- Do not wear loose clothing, jewellery or metal objects when working on the motor vehicle.
- Before replacing the battery charger, make sure that it has cooled to room temperature.

BATTERY CHARGER USE AND CARE

- Do not put any objects into any slots or openings on the surface of the battery charger.
- Do not use the battery charger if the case, the clamps, the cables or the power supply cable have been damaged, if it gives off unusual smells or too much heat.
- Do not modify the battery charger. This can reduce the effectiveness of safety measures and increase operator risk.
- Have the battery charger repaired only through a trained repair person and only using original replacement parts.
- Before carrying out any operations, turn off the lights of the motor vehicle and cut out any running accessories.
- **Always check that the voltage of the battery charger matches the voltage of the motor vehicle's system, to prevent explosions, damage to the motor vehicle, the battery charger and people.**
- **Always connect the output lead with red clamp (+) to the positive post of the battery, and the output lead with black clamp (-) to the motor vehicle's chassis.**
- **Never reverse polarity; reversed polarity can cause explosions or damage to the motor vehicle, the battery charger and people.**
- To clean the battery charger, use a dry cloth. Always disconnect the battery charger from the power supply mains. Never use damp or wet cloths.

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BATTERY CHARGER SAFETY

- Periodically check the battery charger, the power supply cable and the clamps.
- Do not use the battery charger when damaged, to avoid the risk of electric shocks; do not try to open or modify it.
- Connect the battery charger to the mains socket, making sure that the mains voltage matches that stated on the power supply device. (See TECHNICAL DATA table)
- Do not cover the battery charger when using it. Allow adequate space for ventilation.
- Do not use the battery charger in humid or wet environments; do not expose it to rain. Wet and contaminated environments increase the risk of electric shocks.

PERSONAL PROTECTIVE EQUIPMENT TO WEAR WHILE OPERATING BATTERY CHARGER

⚠ **Failure to observe the following warnings may result in physical injury and/or disease.**

	ALWAYS WEAR SAFETY SHOES
	ALWAYS WEAR EYE PROTECTION
	ALWAYS WEAR PROTECTIVE GLOVES AGAINST PHYSICAL AGENTS WHILE OPERATING BATTERY CHARGER

⚠ **Additional personal protective equipment to wear according to the values found in the environmental hygiene/risk analysis survey if the values exceed the limits under current regulations.**

TECHNICAL DATA

FOR USE WITH BATTERIES	6V-12V-24V Wet - Agm - Lithium LiFePO4
RATED VOLTAGE	220V ÷ 240V 50/60Hz
CHARGING VOLTAGE	6V - 12V - 24V
ABSORBED POWER	450 W
BATTERY CHARGING CAPACITY	5 ÷ 300 Ah
BATTERY HOLDING CAPACITY	5 ÷ 600 Ah
CLAMP CABLE LENGTH	2.5 m
CLIP CABLE SECTION	10 mm2
POWER SUPPLY CABLE LENGTH	1.3 m
DEGREE OF PROTECTION	IP20
DIMENSIONS	270x330x130 mm
WEIGHT	4.2 kg

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SIGNALLING LEDS
The front panel of the battery charger accommodates 15 LEDs, including 4 battery status LEDs, indicating the following:
- "Full": battery is charged, and is in charge maintenance status
- "Charging": battery is charging
- "Fault": battery is damaged
- "Reverse": polarity reversal
- 1 battery charge status LED, "led ON" (blue colour)
- 1 operating status LED, "Start/Stop" (yellow colour); indicates whether output is in accordance with selected mode
- 2 charge voltage LEDs, "Voltage", described below (yellow LED)
- 4 charge function LEDs, "Function", described below (yellow LED)
- 3 battery type LEDs, "Batt" , described below (yellow LED).

The front panel of the battery charger accommodates 5 buttons:
- "Start/Stop": starts or stops supply in selected mode
- "Voltage": selects operating mode
- "Function": selects operating mode, Charge or Flash
- "Batt": selects type of battery to charge
- "A/V" (display): selects information to display; voltage or current

BATTERY CHARGER FEATURES AND OPERATING MODES

Charge (12V batteries)
Battery charging mode. There are 7 charging steps, as described below:
- STEP 1: Test 1. If battery output is above 7.5V, the unit proceeds with the next step. Outputs below 7.5V will cause the device to revert to stand-by.
- STEP 2: Pre-charge. Charge starts at a constant current, until battery voltage reaches 13V.
- STEP 3: Test 2 (the message "tESt" is shown on the display). Checks whether the battery has short-circuited elements. The battery charger stops supplying current for 5 minutes. If during this time battery voltage falls below 11.7V, the device reverts to stand-by. If voltage remains above 11.7V, the battery charger moves on to STEP 4. If any element short-circuits or the battery becomes sulphated (as confirmed by message ERR02 on the display during STEP 3), the battery should be charged in the RECOVERY mode.
- STEP 4: Deep cycle charging. The battery charges until the set limit is reached.
- STEP 5: Constant voltage. Keeps the battery at charge end voltage.
- STEP 6: Buffer. Voltage falls to the maintenance level and the charging cycle is completed. The green FULL LED turns on.
- STEP 7: Pulsed current cycle. Pulsed battery maintenance cycle (over long periods).

Flash
Power Supplier mode assisting in motor vehicle programming. No charge phase occurs in it. It is just a power supplier stabilized at rated battery voltage. It is designed to deliver current supporting the battery, to prevent it from going flat during operations which require power for short or long periods of time.

Minimum battery voltage
For the two modes, "Charge & Flash", use the RECOVERY feature if battery voltage is below the following values:
- 6V battery – measured voltage: 4V
- 12V battery – measured voltage: 7.5V
- 24V battery – measured voltage: 15V

Recovery (12V batteries)
Recovery mode for sulphated batteries accessible by a prolonged press of the "Batt" key. The screen

displays the message “rEC” and shows the instantaneous voltage or current reading; during this step, the “Charge” LED flashes.
The battery charger performs a special charging cycle, in which higher than average voltages are forced, to attempt recovery of the battery. In this mode, no error messages are generated during the charging cycle; when the cycle is completed, a message is displayed to indicate whether or not the battery has been recovered on the basis of voltage or current absorption. This mode has 6 charging steps, as described below:
• STEP 1: Test 1. If battery output is above 2.5V, the unit proceeds with the next step. Outputs below 2.5V will cause the device to revert to stand-by.
• STEP 2: Pre-charge. Charge starts at a constant current, until battery voltage reaches 13V.
• STEP 3: Deep cycle charging. The battery charges until the set limit value is reached.
• STEP 4: Constant voltage. Keeps the battery at charge end voltage.
• STEP 5: Buffer. Voltage falls to the maintenance level and the charging cycle is completed. The green FULL LED will turn on.
• STEP 6: Pulsed current cycle. Pulsed battery maintenance cycle (over long periods).

ATTENTION: Because of the high voltage reached during this charging cycle, the battery recovery process must be performed with the battery disconnected from the motor vehicle. Recovery with the battery connected to the motor vehicle may result in damage to the motor vehicle’s electronics.

Minimum battery voltage
For the “**Recovery**” mode, if the initial voltage of the battery is lower than the values below, the battery cannot be recovered:
• 6V battery: measured voltage: 1.5V
• 12V battery: measured voltage: 2.5V
• 24V battery: measured voltage: 5.5V

SELECTION KEYS
A) “Voltage” – selects charging voltage
6V: charging voltage for 6V batteries. Keep the key pressed for 3’ to activate the feature (the display will show the message 6U).
12V: charging voltage for 12V batteries.
24V: charging voltage for 24V batteries.

B) “Function” – preset charging bands and Flash mode (output current adjusted automatically)
Charge 5Ah – 30Ah: Supports batteries from 5Ah to 30Ah
Charge 30Ah – 100Ah: Supports batteries from 30Ah to 100Ah
Charge > 100Ah: Supports batteries up to 100Ah
Flash: Supplies maximum current available at rated voltage as selected by means of the “ Voltage” key.

C) “Batt” – preset battery types
Agm: optimized cycle for flat plate Agm batteries or Optima type spiral batteries. Charge end at 14.7V
LiFePO4: optimized cycle for LiFePO4 batteries
Wet: optimized cycle for acid electrolyte batteries. Charge end at 14.4V. Keep the key pressed for 3’ to activate the feature (the display will show the message rEC).

Saving settings
The battery charger saves the settings on the front control panel. In the event of an accidental power loss or voluntary power off, when the charger is restarted, it will restart with the latest saved settings.

Battery testing
The tests within the operating modes may terminate with the signalling of some errors.
• Damaged Battery: the “Fault” LED switches on and the “Start / Stop” LED switches off, and the charger

enters Stand-by mode. The display shows the message “Errx”, where ‘x’ is the number corresponding to the cause of the error (see Table 1). Single two second audible warning.
• Polarity reversal: the “Reverse” LED switches on, and the display shows the message “Err7” with a two second audible warning.

ERROR CODES
The errors that may be reported are described in Table 1.

Table 1: Numbering of errors

DISPLAY INDICATION	CAUSE	SOLUTION
Er01	Leads disconnected, leads short-circuited.	Position the clamps correctly and start charging the battery again (see section “Operating Battery Charger”).
	Battery completely short-circuited.	Contact your nearest battery service centre.
Er02	Battery faulty or unrecoverable. No current accepted after 20 hours of recovery	The battery could be defective.
Er03	Internal overheating of battery charger. Battery charger overload.	Remove any objects that could be covering the ventilation area of the battery charger or move it to a cooler area. Wait for the battery charger to start again automatically.
Er04	Voltage error. Battery voltage too low.	Set the voltage corresponding to that of the battery again. Start charging the battery again (see section “Operating Battery Charger”).
	One or more elements of the battery has/have short-circuited.	The battery could be defective.
Er05	Battery voltage too high compared to that set.	Set the voltage corresponding to that of the battery again. Start charging the battery again (see section “Operating Battery Charger”).
Er06	Battery capacity excessive. Unable to reach end condition.	Use a battery charger with greater capacity. The battery could be defective.
Er07 and led reverse	The clamps of the output leads are not connected correctly to the battery.	Position the clamps correctly and start charging the battery again (see section “Operating Battery Charger”).
Er08	Excessively high output current. Current exceeds maximum limit.	Reduce battery absorption.

BATTERY CHARGING
Charging batteries connected to motor vehicle
1. Before starting to charge the battery, make sure that the power supply lead is not plugged into the mains supply.
2. Locate the motor vehicle’s earthing point, which is normally connected to the negative battery terminal.
3. Charge a battery with negative earth, grounded to the motor vehicle’s chassis, as follows:
• Connect the output lead with the red clamp to the positive terminal (+) of the battery.
• Connect the output lead with the black clamp to the motor vehicle’s earthing point, keeping it away from the battery and fuel pipe.
4. Charge a battery with positive earth, grounded to the motor vehicle’s chassis, as follows:

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- Connect the output lead with the black clamp to the negative terminal (-) of the battery.
- Connect the output lead with the red clamp to the motor vehicle's earthing point, keeping it away from the battery and fuel pipe.

Connecting batteries that are not connected to a motor vehicle

1. Before starting to charge the battery, make sure the power supply lead is not plugged into the mains supply.
2. Connect the output lead with the red clamp to the positive terminal (+) of the battery.
3. Connect the output lead with the black clamp to the negative terminal (-) of the battery.

ATTENTION: Make sure that both clamps of the output leads generate a suitable contact with their corresponding terminals.

OPERATING BATTERY CHARGER

1. Once the output leads have been connected to the battery, plug the power supply lead of the battery charger into the mains socket, making sure that the voltage matches the rated voltage of the battery charger (230V-50Hz); having done this, the battery charger will emit an acoustic signal for 0.5 seconds, and all the LED indicators on the control panel will switch on for 2 seconds; at this stage, the display shows "- - - -".
2. The battery charger is configured in "stand-by" mode; for example: ON LED on, WET LED on, CHARGE 5-30Ah LED on. The LEDs light up differently based on the last programme saved.
3. At this stage, with the battery charger in "stand-by" mode, set the charging parameters suitable for the type of battery to be charged, using the keys on the control panel. The charging parameters selected are displayed by the corresponding LED, which switches on.

Settable charging parameters:

"Voltage" – selects charging voltage

6V: charging voltage for 6V batteries. Keep the key pressed for 3' to activate the feature (the display will show the message 6U).
12V: charging voltage for 12V batteries
24V: charging voltage for 24V batteries

"Function" – preset charging bands and Flash mode (output current adjusted automatically)

Charge 5Ah – 30Ah: Supports batteries from 5Ah to 30Ah
Charge 30Ah – 100Ah: Supports batteries from 30Ah to 100Ah
Charge >100Ah: Supports batteries over 100Ah
Flash: Supplies maximum current available at rated voltage as selected by means of "Voltage" key.

"Batt" – preset battery types

Agm: optimized cycle for flat plate Agm batteries or Optima type spiral batteries. Charge end at 14.7V
LiFePO4: optimized cycle for LiFePO4 batteries
Wet: optimized cycle for acid electrolyte batteries. Charge end at 14.4V. Keep the key pressed for 3' to activate the feature (the display will show the message rEC).

4. Once the charging parameters have been set, press the START/STOP key to start charging the battery. When the START/STOP and CHARGING LEDs light up, the battery is charging; the display will show the charging current and the voltage of the battery.
5. The CHARGING LED remains lit in phases "I" and "U0" whilst the battery is charging.
6. When the FULL LED switches on, it means that the battery is fully charged (100%), and the charger will switch to the maintenance phase, keeping the state of efficiency of the battery constantly monitored, so that it is always at an optimal level of charge. In this charging phase, the appliance can be left connected to the battery for several months.
7. If you wish to end or interrupt the charging cycle, follow the charge end/interruption instructions.

INTENTIONAL INTERRUPTION OF CHARGING CYCLE

If you want to interrupt the battery charging cycle, simply press the START/STOP key; the corresponding LED will switch off to show that the work cycle has ended. Disconnect the output lead of the appliance from the mains socket and the output leads from the battery terminals.

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INTERRUPTION OF CHARGING CYCLE IN CASE OF A POWER SUPPLY CUT
In the case of a 230V mains power supply cut, the battery charger saves the work cycle it was performing in order to restore it automatically as soon as the 230V power supply is restored. This feature is fundamental if the battery charger is used to charge batteries without the operator supervising the cycle; for example, during very long charging cycles.

END OF CHARGING

1. Once the battery is charged, press the START/STOP key of the battery charger. The LED will turn off to show that the battery charger has completed the work cycle.
2. Disconnect the power supply lead of the appliance from the mains socket.
3. Disconnect the output lead with the black clamp from the motor vehicle's earthing point or from the negative terminal (-) of the battery.
4. Disconnect the output lead with the red clamp from the positive terminal (+) of the battery.

After use, replace the battery charger in a dry place free from humidity. To clean the outer casing, use a dry cloth.

MAINTENANCE
Maintenance and repair jobs must be carried out by trained personnel. For such jobs, you can contact Beta Untensili S.P.A.'s repair centre.

DISPOSAL
The crossed-out wheelie bin symbol on the equipment or packaging means that the product should be collected separately from other types of urban waste at the end of its useful life.
Any user who is going to dispose of this tool can:
- deliver it to an appropriate collection facility for electronic or electrotechnical equipment;
- return it to the dealer upon purchase of a new, equivalent item of equipment;
- in case of a product for professional use only, contact the manufacturer which will arrange for the product to be properly disposed of.

Proper disposal of this product allows the raw materials contained in it to be reused and prevents damage to the environment or human health.
Illegal disposal of this product is a violation of the provision concerning the disposal of hazardous waste and will give way to the application of such fines as provided for under current regulations.

WARRANTY
This tool is manufactured and tested in accordance with current EU regulations. It is covered by a 12-month warranty for professional use or a 24-month warranty for nonprofessional use.
We will repair any breakdowns caused by material or manufacturing defects by fixing the defective pieces or replacing them at our discretion.
Should assistance be required once or several times during the warranty period, the expiry date of this warranty will remain unchanged.
This warranty will not cover defects due to wear, misuse or breakdowns caused by blows and/or falls.
In addition, this warranty will no longer be valid if any changes are made, or if the tool is damaged or sent to the customer service in pieces.
This warranty explicitly excludes any damage to people and/or things, whether direct or consequential.

EU DECLARATION OF CONFORMITY

We hereby declare, assuming full responsibility, that the described product complies with all the relevant provisions of the following Directives:

- Electromagnetic Compatibility Directive (EMC) 2014/30/EU;
- Low Voltage Directive (LVD) 2014/35/EU;
- Directive concerning the restriction of the use of certain hazardous substances in electric and electronic equipment (RoHS) 2011/65/EU.