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**CBHF1-SM • CBHF1-V2 • CBHF2**

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**ELECTRONIC BATTERY CHARGER**

**OPERATING MANUAL**



**Attention: read carefully the operating manual before using the battery charger.**

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**S.P.E. ELETTRONICA**  
**INDUSTRIALE**

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**IMPORTANT SAFETY INSTRUCTION. SAVE THESE INSTRUCTIONS. THIS MANUAL CONTAINS IMPORTANT SAFETY AND OPERATING INSTRUCTION**

(a) FAILURE TO INSTALL AND OPERATE THE CHARGER IN ACCORDANCE WITH THESE INSTRUCTIONS MAY RESULT IN DAMAGE TO THE CHARGER OR INJURY TO THE OPERATOR

(b) WORKING IN THE VICINITY OF A LEAD-ACID BATTERY IS DANGEROUS, BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL BATTERY OPERATION. FOR THIS REASON IT IS OF THE UTMOST IMPORTANCE THAT EACH TIME BEFORE USING YOUR CHARGER, YOU READ AND FOLLOW THE INSTRUCTIONS PROVIDED EXACTLY

(c) TO REDUCE RISK OF BATTERY EXPLOSION, FOLLOW THESE INSTRUCTIONS AND THOSE MARKED ON THE BATTERY

(d) EXPLOSIVE GASES MAY RESULT FROM CHARGING. PROVIDE ADEQUATE VENTILATION DURING CHARGING. NEVER SMOKE OR ALLOW AN OPEN SPARK OR FLAME IN THE VICINITY OF THE BATTERY

(e) TO REDUCE THE RISK OF INJURY, CHARGE ONLY LEAD-ACID OR GEL AND AGM TYPE BATTERIES (BE SURE THAT THE SELECTED CHARGING CURVE IS SUITABLE FOR THE TYPE OF BATTERIES THAT HAVE TO BE CHARGED). DO NOT ATTEMPT TO CHARGE ANY OTHER TYPE OF CHARGEABLE OR NON-RECHARGEABLE BATTERY; THESE BATTERIES MAY BURST, CAUSING PERSONAL INJURY AND DAMAGE

(f) THIS CHARGER IS NOT INTENDED FOR USE BY PERSON (INCLUDING CHILDREN) WITH REDUCED PHYSICAL, SENSOR OR MENTAL CAPABILITIES, OR LACK OF EXPERIENCE AND KNOWLEDGE, UNLESS THEY HAVE BEEN GIVEN A SUPERVISION OR INSTRUCTION CONCERNING USE OF THE APPLIANCE BY A PERSON RESPONSIBLE FOR THEIR SAFETY. YOUNG CHILDREN SUPERVISED TO ENSURE THAT THEY DO NOT PLAY WITH THE APPLIANCE.

(g) STUDY ALL BATTERY MANUFACTURER'S SPECIFIC PRECAUTIONS SUCH AS REMOVING OR NOT REMOVING CELL CAPS WHILE CHARGING AND RECOMMENDED RATES OF CHARGE

(h) NEVER PLACE THE CHARGER DIRECTLY ABOVE OR BELOW THE BATTERY BEING CHARGED; GASES OR FLUIDS FROM THE BATTERY WILL CORRODE AND DAMAGE THE CHARGER. LOCATE THE CHARGER AS FAR AWAY FROM THE BATTERY AS DC CABLES PERMIT

(i) DO NOT ATTEMPT TO OPEN THE CHARGER. THERE IS RISK OF ELECTRIC SHOCK EVEN IF THE CHARGER IS UNPLUGGED. NO USER SERVICEABLE COMPONENTS INSIDE

(j) IF SAFE OPERATION OF THE CHARGER CAN NO LONGER BE ENSURED, STOP AND SECURE IT AGAINST OPERATION

(k) IF THE SUPPLY CORD IS DAMAGED, IT MUST BE REPLACED BY A QUALIFIED PERSON IN ORDER TO AVOID HAZARD

(l) IT IS RECOMMENDED TO DISCONNECT THE AC POWER BEFORE CONNECTING OR DISCONNECTING THE CHARGER TO THE BATTERY

(m) THE CHARGER IS NOT INTENDED FOR OUTDOOR USE

(n) CHARGER SURFACE MAY BE HOT WHILE PLUGGED IN AND FOR A PERIOD OF TIME THEREAFTER

(o) FAILURE TO INSTALL AND USE THE CHARGER IN ACCORDANCE WITH THESE INSTRUCTIONS MAY IMPAIR THE PROTECTION PROVIDED BY THE CHARGER AND MAY VOID THE MANUFACTURER'S WARRANTY

(p) DO NOT INSTALL THE CHARGER IN A CLOSED-IN AREA OR RESTRICT VENTILATION IN ANY WAY. UNITS WITH FANS MUST HAVE AT LEAST 30 mm OF CLEARANCE ON THE VENTED ENDS OF THE CHARGER

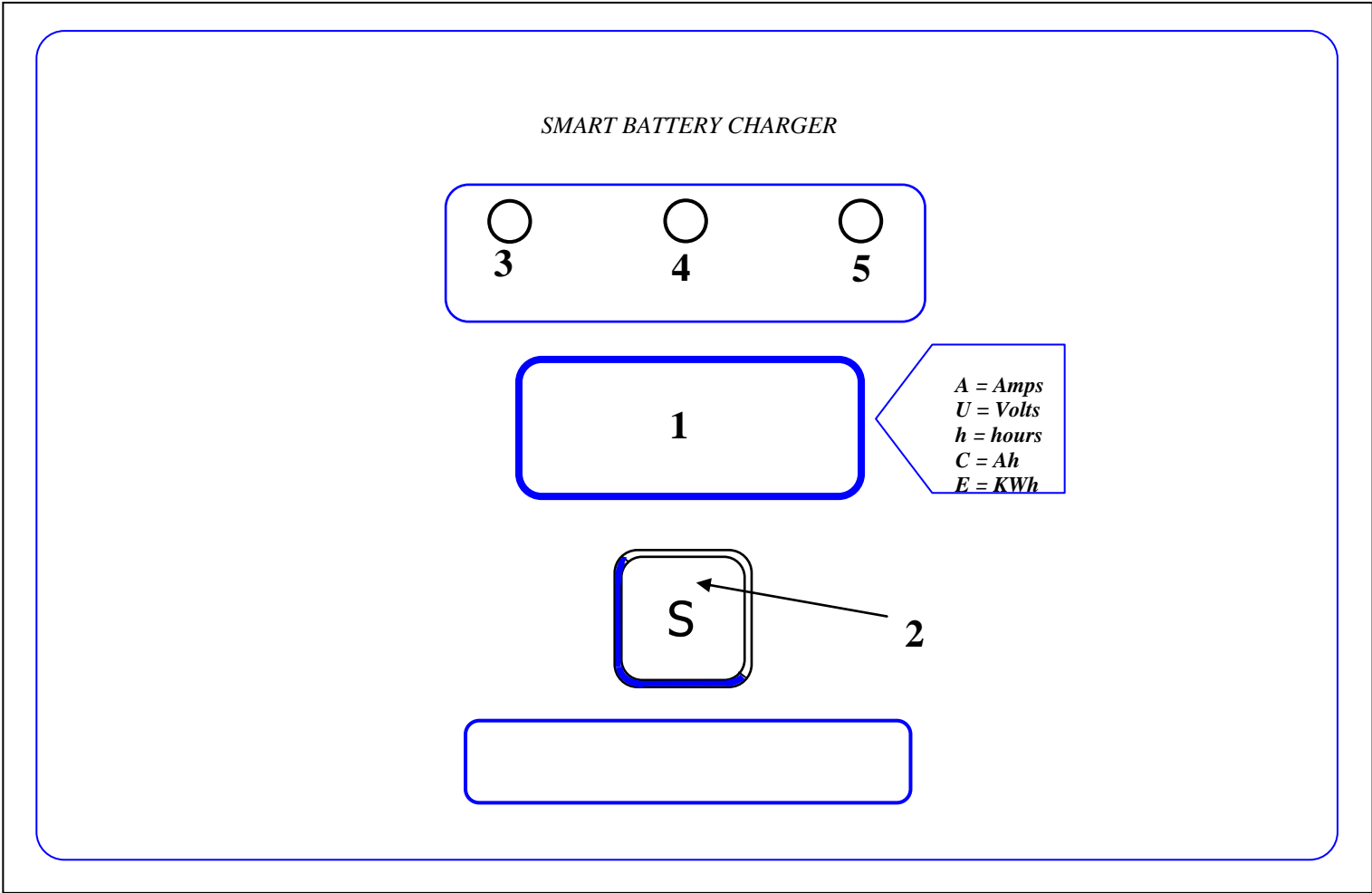
(q) USE OF AN ADAPTER IS NOT ALLOWED IN CANADA. IF A GROUNDING TYPE RECEPTACLE IS NOT AVAILABLE, DO NOT USE THIS APPLIANCE UNTIL THE PROPER OUTLET IS INSTALLED BY A QUALIFIED ELECTRICIAN

(r) DO NOT INSTALL ON OR OVER COMBUSTIBLE SURFACES

(s) THE CHARGER IS NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT EXPRESS WRITTEN APPROVAL OF SPE

(t) SPECIFICATIONS MENTIONED IN THIS PUBLICATION ARE SUBJECT TO CHANGE WITHOUT ANY NOTICE. THIS PUBLICATION SUPERSEDES AND REPLACES ALL INFORMATION PREVIOUSLY SUPPLIED

**FRONT PANEL OF BATTERY CHARGER**



# OPERATING MANUAL

## GENERAL INFORMATION AND WARNINGS

- Electronic automatic battery charger with microprocessor suitable for any battery type.
- Fully automatic charging cycle with electronic setting; protected against overload, short-circuit at clamps and reversed polarity.
- Never disconnect the battery while charging: this could cause sparks.
- Never use the equipment in the rain, in areas used for washing or in damp areas.
- Before starting to charge, make sure the voltage of the equipment suits the voltage of the battery, that the charging current suits the capacity of the battery and that the selected charging curve (for lead-acid batteries or airtight gel batteries) is correct for the type of battery to be charged. In addition, make sure the rated input voltage of the charger suits the available supply voltage and the system is equipped with grounding.
- If necessary, replace the fuse with another of the same type and value as indicated on the rating plate.
- Use battery chargers only in well ventilated areas.
- Pay attention to any remarks of the battery manufacturer.

### For lead-acid batteries with liquid electrolyte:

- Control the water level after each charging process.
- Refill with distilled water only.
- Caution! The gases generated during charging are explosive. Do not smoke in the vicinity of the batteries. When working with cables and electrical equipment, avoid open flames and sparks.
- Attention: Use protective glasses and gloves during battery maintenance. Battery acid causes injuries. In case of contact with battery acid, wash the affected parts with a lot of fresh water and consult a doctor if necessary.

## CONTROLS (see figure behind the cover)

1. Three-digit display + symbol (1), to view A = the charging current, U = the battery voltage, h = the charging time, C = the charging ampere-hours [Ah], E = the energy used [KWh].
2. Button for the Selection of the display mode (2): A, U, h, C, E. After about 10 seconds the display returns to the visualization of the charging current.
3. Red control indicator (3): when it is on, the charging cycle has started.
4. Yellow control indicator (4): when it is on, the final phase of the charging cycle has started.
5. Green control indicator (5): when it is on, the charging cycle has finished.

## OPERATION

- Plug the cord into a socket.
- Connect the battery, checking the polarity.
- Now, the battery charger's display will show a sequence of details on the charger's internal programming: after the name "SPE", it will show the software release installed in the equipment, then, in sequence, the following parameters: battery voltage, charging current, charging curve number and, finally, the words "GEL" or "Acd" depending on the set up charging curve being suitable for airtight gel batteries or lead-acid batteries. **Make sure the type of batteries to be charged (gel or lead-acid batteries) matches the displayed details ("GEL" or "Acd", respectively). If it doesn't, contact our dealer.** Now, a test is run on the battery voltage to decide if the charging process should be started or not. If the battery is not connected to the battery charger, the display will show the word "bat". The word will stay on, even if the test is failed (for instance, reversed polarities or incorrect battery connection). If the test is passed, the display will show the battery voltage for approximately 5 seconds and the battery will begin to be charged. The charging cycle progress will be shown by red (3), yellow (4) and green (5) LED indicators. At the end of the charge, when the green indicator (5) is on, unplug the cord from the socket and operate the machine.

PROBLEMS	SOLUTIONS AND CHECKS
The battery charger does not switch on	Check that the plug is connected to the supply mains and that the fuse is efficient.
The charging cycle does not start and the message 'bat' is displayed	Check the connection to the battery and the polarity.
The yellow indicator (4) will not light up even 15 hours from the starting of the charging cycle, and the display shows E03.	Check the battery for possible faulty components.
The message E01 is displayed	This means that the maximum voltage admissible by the battery has been exceeded. The charging is interrupted.
If the battery charger is provided with a safety thermostat and the message E02 is displayed.	This means that the maximum temperature has been exceeded. The charging is interrupted.
The message E03 is displayed	This means that the maximum time for the charging phase has been exceeded. The charging is interrupted.
The message SCt is displayed	This means that the total safety timer has interrupted the charging.
The message Srt is displayed	This signals a possible internal short circuit.

The Charger Must be used to charge the following Battery Capacities :

**Battery Type:** Flooded Acid – Gel – AGM

**Number of Cells:** 12

**Capacity (C5) :** 200 Ah – 280 Ah