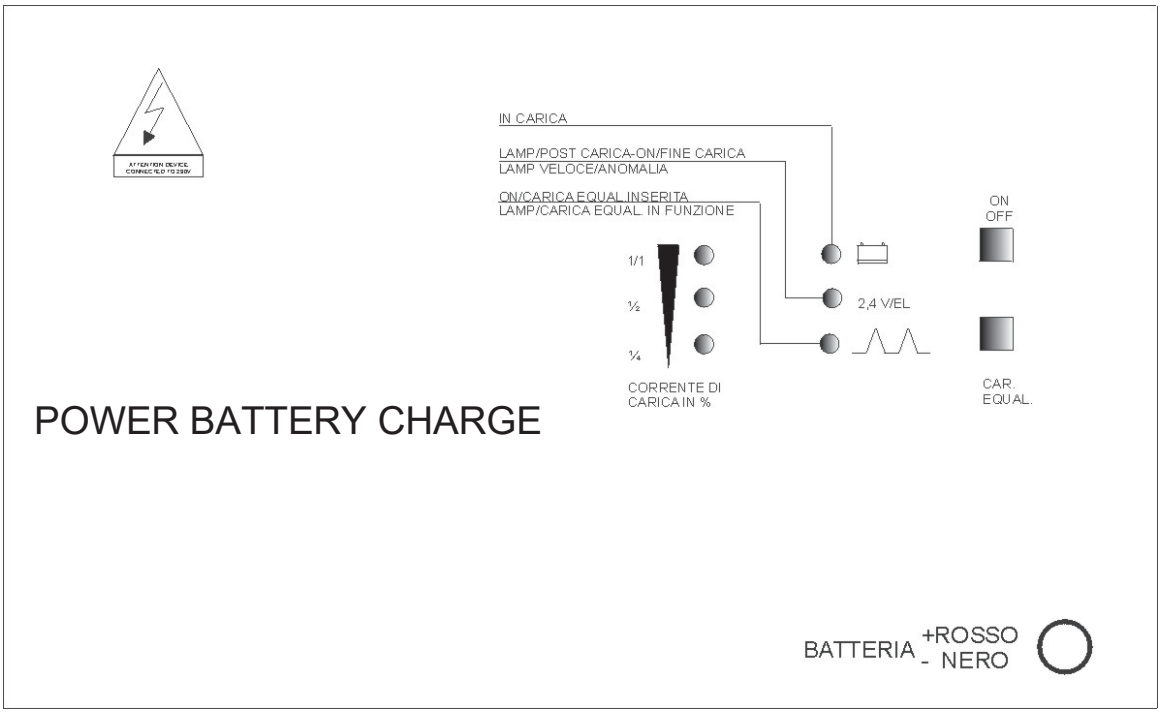
USER MANUAL MONOPHASE BATTERY CHARGER

POWER BATTERY CHARGE

GENERAL INFORMATION

This device is a traditional monophase 230 Vac battery charger. The charger is equipped with a WA charging system, which decreases the current and increases the voltage. The battery charger is produced in a series of models to be used with batteries with nominal voltage ranging from 12V to 36V. In order to make the charging process automatic, the charger is equipped with an electronic card that supervises and monitors the whole cycle, through leds that light during the various phases of the cycle or in case of malfunctioning.



PRESCRIPTION FOR THE USER

- The charger is meant to be used closed and mustn't be opened for any reason.
- Do not introduce any kind of object inside the charger.
- The charger cannot withstand continuous charging cycles with a constant current output equal to its maximum value.
- Should the supply cable be damaged, do not self repair it, do not use the charger and do not leave it connected to the net. The cable must be replaced and this operation can be done exclusively by the producer or by the authorised technical assistance.

INSTALLATION

- Set the charger correctly balanced on the four feet on a horizontal plain surface, strong enough to sustain its weight (see table 1, page 3 for weight reference).
- The charger must always have 20 cm of space on each side and 1 meter above the case.
- The external temperature mustn't exceed 40°C.
- Do not expose the charger to acid steams.
- The charger is meant for inside working in ventilated spaces.
- The charger has an IP20 protection and cannot be wet with water or other kind of liquids.

NET CONNECTION

- The charger must only be connected with plugs with ground tap.
- The charger is meant to work with monophase 230Vac supply.
- Before connecting it, check the correct voltage on the net supply. In case the measured value is different from the nominal value, please contact your technical service.
- Check that the feeding line is correctly protected and compliance to the laws in force in order to grant protection against overfeeding and short circuits (see table 1, page 3 for input current values).

CONNECTION TO THE BATTERY

- Connect the charger to the battery, paying attention to the correct wires polarisation:
  battery positive = red (+)
  battery negative = black (-)
- Use the charger only with lead batteries with a number of elements and a nominal capacity compliance to TABLE 1 page 3.
- Avoid charging not rechargeable batteries.
- During the charging cycle, the battery must be set in a well ventilated place.

TABLE1
CURRENT ABSORPTION

MODEL	POWER [VA]	CURRENT (A) 230Vac	BATTERY ELEMENT S NUMBER	BATTERY CAPACITY	DIMENSIONS LxPxH(mm)	WEIGHT (Kg)
12V 30A 2F	**480**	**2.1**	**6**	**150-180Ah**	**340x260X260**	**10**
12V 40A 2F	**640**	**2.8**	**6**	**195-250Ah**	**340x260X260**	**11**
12V 50A 2F	**810**	**3.5**	**6**	**255-315Ah**	**340x260X260**	**13**
12V 60A 2F	**1010**	**4.4**	**6**	**320-365Ah**	**340x260X260**	**15**
24V 30A 2F	**970**	**4.2**	**12**	**150-180Ah**	**340x260X260**	**9**
24V 40A 2F	**1290**	**5.6**	**12**	**195-250Ah**	**340x260X260**	**11**
24V 50A 2F	**1560**	**6.8**	**12**	**255-315Ah**	**340x260X260**	**15**
24V 60A 2F	**1890**	**8.2**	**12**	**320-365Ah**	**340x260X260**	**16**
36V 30A 2F	**1450**	**6.3**	**18**	**150-180Ah**	**340x260X260**	**15**
36V 40A 2F	**1890**	**8.2**	**18**	**195-250Ah**	**340x260X260**	**16**
36V 50A 2F	**2420**	**10.5**	**18**	**255-315Ah**	**340x260X260**	**17**
36V 60A 2F	**3570**	**15.5**	**18**	**320-365Ah**	**340x260X260**	**18**

PROTECTIONS

The battery charger is equipped with the following protections:

- A protection that interrupts the charging cycle if the cycle takes longer than 12 consecutive hours; this is operated by the electronic card.
- A fuse mounted serially at the out point. It engages in case of accidental reversal of the outgoing polarity or in case of prolonged overload of the current.

FUNCTION BUTTONS

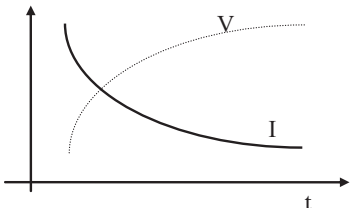
The ON/OFF function button starts the charging cycle. The start of the cycle is shown by the green led at the top (charging) that turns on.

CHARGE LEVEL INDICATOR

By the three green vertical leds on top (left), it is possible to receive indications concerning the charging current, and therefore concerning the operation of the battery charger.

TYPE OF WA CHARGE

The charging current decreases automatically thanks to the particular structure of the transformer (with flux leakage), while the consequently tension increases.



WA CHARACTERISTIC

BATTERY CHARGER OPERATION

The POWER BATTERY CHARGER is equipped with a microchip electronic card with double timing and equalising charge.

The three leds on the right side show the charging phases.

- Phase 1: charge up to 2.4V/el. In this phase, the battery charger is charging the battery until the charging level reaches 2.4V/el. The first led on the top (green light) shows that charging is under way. The green led is turned on when the ON/OFF button is activated, in order to start the charging process. This led stays on until the end of the charging process.
- Phase 2: once reached 2.4V/el, the yellow led is turned on and starts to blink. At that moment the timing card starts counting the last three hours of the charging process
- Phase 3: after three hours the green charging led is turned off and the yellow post-charging led becomes fixed. This means that the charging process is finished and the equalising phase starts. This activity is signalled by the blinking of the green led. The equalising charge is a 5-minute charging cycle with a 55-minute pause. The cycle stops automatically after 12 hours from the start. The equalising charge ensures that the trolley battery is kept ready for immediate use.

It is possible to determine when the rectifier has concluded the charging cycle; this can be done by checking if the yellow equalising charge led is blinking.
The yellow led (post-charge) starts to blink quickly only in case of malfunction, at that moment the 12 hour safety timer engages: a longer charging time may have a damaging effect on the battery. If after a charging cycle the yellow led blinks quickly, the battery charger or the batteries should be checked by an expert technician.

COMPLIANT STATEMENT

The device here descripted compliant to the following rules and europen normative.

EUROPEAN RULES:

Low voltage:
European: 2006/95/CEE

ELECTROMAGNETIC COMPATIBILITY
European: 2004/108/CEE

REFERENCE EUROPEAN NORMATIVE:

LOW VOLTAGE:

EN50178
EN60204
EN60335-1
EN60335-2-29

ELECTROMAGNETIC COMPATIBILITY:

EN55011
EN61000-4-2
EN61000-4-3
EN61000-4-4
EN61000-4-5
EN61000-4-6
EN61000-4-11

It is hereby stated that this product is eligible for CE marking.

General Administrator

WARRANTY

Grants the product a warranty of 12 months after the shipping date. The warranty is only valid if all the rules described in this manual have been respected.
The warranty is limited to the duty of repairing or replacing (without costs) all the faulty parts found during the validity of the warranty period. All costs linked to travelling expenses to the customers are excluded.
Reparation/replacement of the faulty parts will be done in the shortest possible time in compliance with the engagements of the building firm and without any obligation to any kind of indemnity and/or compensation for direct or indirect damages.
Warranty will not be recognised on products showing any kind of tempering or external applications.
The beginning of the warranty period will start from the date of the shipping documents.

ATTENTION!!

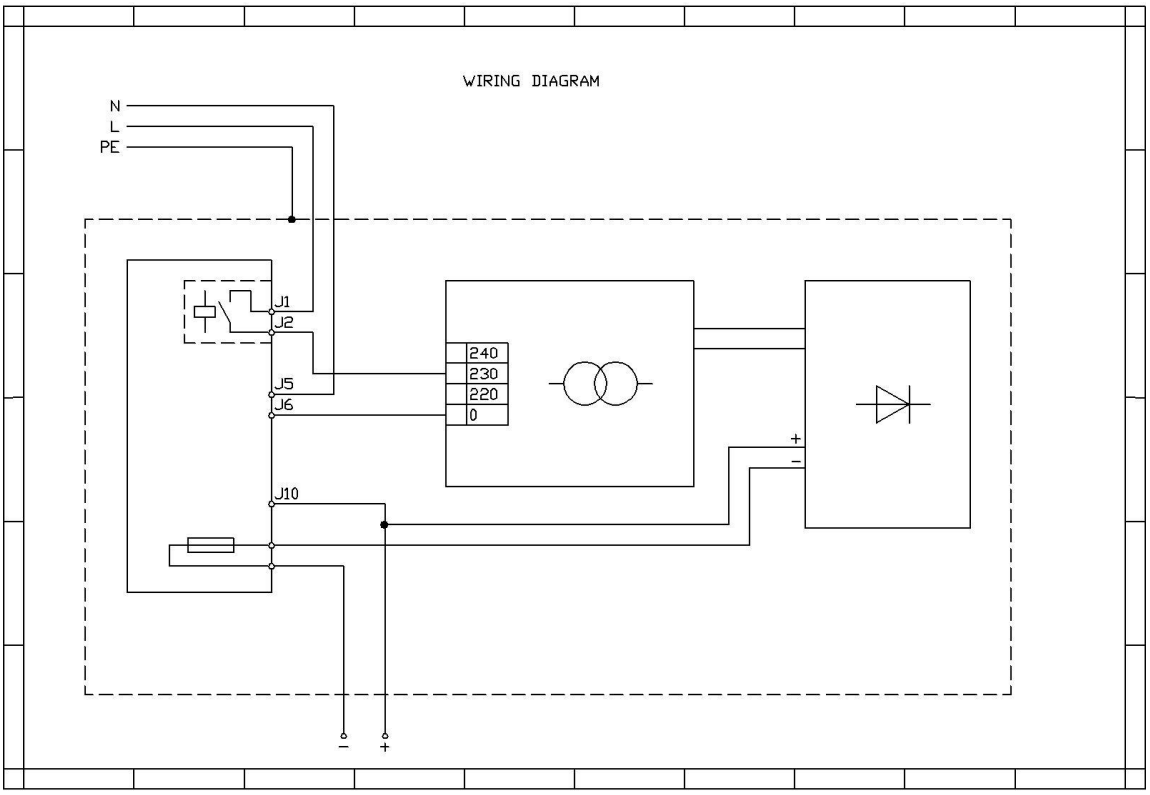
THE FOLLOWING PART OF THE MANUAL IS RESERVED TO QUALIFIED PERSONNEL ONLY.

DISCONNECT TENSION BEFORE OPENING THE CHARGER.
DO NOT WORK ON THE OPENED CHARGER WITH TENSION STILL PRESENT.

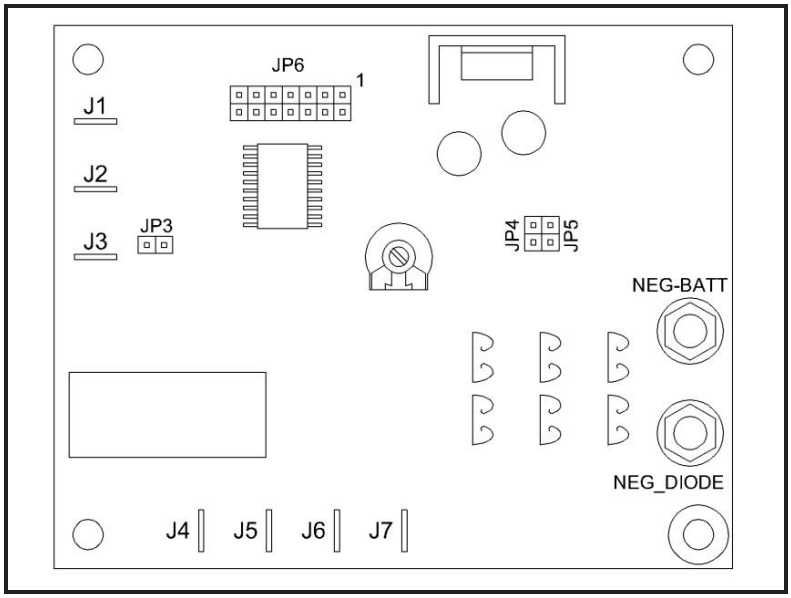
INSTRUCTIONS FOR SUPPLY VOLTAGE CHANGE

Before connecting the charger, make sure that the net supply voltage is correct. If the measured net value is different from the nominal one, it's possible to adapt the transformer supply to the measured tension. This is possible by connecting the supply conductors on the transformer terminal block.
Use the outlet corresponding to the measured line voltage; for example, if the net supplies 240V, connect the transformer feeding between 0 and 240.

GENERAL WIRING DIAGRAM



BOARD LAYOUT



DESCRIPTION OF THE CONNECTIONS

CONNECTIONS	DESCRIPTION
J1	Positive battery input
J2 e J3	ThermaL switch protection
J4 e J5	Normally open power relay contact
J6 e J7	Bridged contacts
NEG_DIODE	Negative output, to the output rectifier
NEG_BAT	Negative output, to the negative of the battery

AUTOMATIC START SELECTION