

STELVIO1800

USER MANUAL MANUALE D'ISTRUZIONI



Before connecting the battery charger to the mains and to the battery, **READ THE FOLLOWING INSTRUCTIONS CAREFULLY.**



Prima di connettere il caricabatterie alla rete ed alla batteria, **VI PREGHIAMO DI LEGGERE ATTENTAMENTE LE SEGUENTI ISTRUZIONI.**

Important safety instructions. Keep these instructions. This manual contains important instructions for the safety of the user and operation of the device.

GENERAL WARNINGS

- 1) Before each use of the battery charger the instructions set out below must be carefully read and abided by.
- 2) The failure to follow these instructions and /or errors in installing or using the battery charger could lead to endangering the operator and /or damaging the device, voiding the manufacturer's guarantee.
- 3) The battery charger cannot be used as a component in systems which provide life support and/or medical devices, without explicit written authorization from S.P.E. ELETTRONICA INDUSTRIALE.
- 4) The rating label must be visible after installation.

CHILDREN

- 5) This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children should be supervised to ensure that they do not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

WHERE TO INSTALL

- 6) Never place the battery charger in the immediate vicinity of the battery in order to prevent gases produced and/or emitted by the actual battery during charging corroding and/or damaging the battery charger. Place the battery charger as far away from the battery as the length of cables permits.
- 7) Do not install the battery charger in a closed space or in such a way as to somehow prevent ventilation. For units equipped with fans, at least 30 mm clearance must be left around the vents. In order to facilitate the heat exchange of the battery charger it must be positioned vertically, exploiting the fixture holes (where provided).
- 8) Do not use the battery charger outdoors.
- 9) Do not expose the battery charger to rain, water splashes or steam.
- 10) Do not install the battery charger in caravans and / or similar vehicles.
- 11) Do not install the battery charger near any heat sources or in areas with high concentrations of dust.
- 12) Do not install the battery charger near any potential sources of flammable material, for example methane gas pipes or fuel depots (petrol, kerosene, ...).
- 13) Do not place and/or fit the battery charger onto surfaces manufactured out of combustible materials, like wooden shelves or walls.

BATTERIES

- 14) Follow the specific safety instructions provided by the battery manufacturer carefully, for example, whether or not to remove cell caps during charging and the recommended charge rates.
- 15) Working in the vicinity of a lead-acid battery is dangerous, as batteries generate explosives gases during charging. Therefore smoking and/or generating open flames and/or sparks must be avoided.
- 16) Never charge a frozen battery.
- 17) Batteries must be charged in specific, well-ventilated areas.
- 18) In order to reduce risk of injury only charge Lead-Acid, GEL or AGM type, Lithium Polymer or Lithium Ion batteries. Do not charge other types of rechargeable or non-rechargeable batteries as they could explode causing damage and/or injury.

FURTHER SPECIFICATIONS FOR LITHIUM BATTERIES

- 19) In order to charge Lithium Polymer and Lithium Ion batteries, a BMS (Battery Management System) must always be used, comprising an active and passive safety system, in compliance with safety regulations in force.
- 20) The possibility of the BMS acting directly on the battery charger operation during cell balancing phases rules out, for any reason whatsoever, that the battery charger is held directly responsible should damage caused to the battery, or even a fire or an explosion, be due to an error in the BMS software.
- 21) The faculty offered by the materials produced by S.P.E. ELETTRONICA INDUSTRIALE to select different levels of voltage for charging, is entrusted to the control and supervision of the end user and S.P.E. ELETTRONICA INDUSTRIALE is not liable for any consequences resulting from the selection of the incorrect level of voltage. If in doubt, the user should ask a qualified professional for clarification.
- 22) The battery charger tolerance thresholds, as far as levels of over-voltage and overcharging are concerned, are used only for the safeguarding of the systems of the same and have no safety functions for the battery itself, the safety of which depends solely on the BMS, even when the battery charger is connected to the battery, whether the latter is being charged or not.

23) Should the client want to use the battery charger on a specific on-board system and in general in any cases of special usage, it is the client's responsibility to inform S.P.E. ELETTRONICA INDUSTRIALE, so that the latter can draw up any necessary recommendations. In this case, the client must provide S.P.E. ELETTRONICA INDUSTRIALE with all designs, diagrams and descriptive material necessary. S.P.E. ELETTRONICA INDUSTRIALE cannot be held responsible for any damage resulting from the use of the battery charger after opening it and/or modifying it and/or inserting it into other systems.

24) Under no circumstances can S.P.E. ELETTRONICA INDUSTRIALE be held responsible for the malfunctioning of the batteries or the incineration/explosion of these, in so much as the safety of the battery is the task of the BMS and not of the battery charger.

CHECKING CABLES, GRID, EARTHING

25) Do not transport the battery charger by pulling on the cables as they could be damaged.

Use the handles on the battery charger, if provided.

26) Before using the battery charger, check that the sleeving on the mains cable and battery cables is in good condition. Should one of the cables be damaged, have it replaced by a S.P.E. ELETTRONICA INDUSTRIALE qualified technician.

27) Check that the input voltage of the battery charger given on the data plate is in line with the voltage available.

28) Check the compatibility of the mains plug supplied with the battery charger: the use of adaptors is not recommended. This charger is provided with cord set for connection to outlets operating at nominal 230 Volts (or 240 Volts as appropriate). If the input plug does not fit the power outlet, contact SPE ELETTRONICA INDUSTRIALE for the proper cord set terminating in an attachment plug of the proper configuration for the power outlet.

29) The battery charger must be plugged into a socket fitted with an earth wire. Should the socket not be equipped with an earth connection, do not use the device before having a suitable socket installed by a qualified technician.

30) The power socket to which the battery charger is to be connected must be protected by an electrical device by law (fuse and/or automatic cut-out), capable of absorbing an electrical current equalling the absorption of current stated on the matriculation number of the battery charger, increased by 10%.

31) Do not open the battery charger as there are no parts which can be serviced and/or replaced by the user. Only specialized personnel, authorized by S.P.E. ELETTRONICA INDUSTRIALE may carry out servicing which involves opening the actual device. Electrical/electronic components inside may cause electric shocks even if the device is not plugged in.

CHECKING BATTERY CHARGER OPERATION AND CURVE

32) Before charging, make sure that the battery charger is in line with 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 for airtight GEL or AGM type batteries, Lithium Polymer or Lithium Ion batteries) is correct for the type of battery to be charged.

33) We recommend fitting a fuse between battery charger and battery. The fuse must be installed along the connection to the positive terminal of the battery. The rating of the fuse must be proportionate to the nominal output current of the battery charger, the diameter of cable used and the environment in which it is to be installed.

34) We recommend unplugging it from the mains supply before connecting and disconnecting batteries.

35) During normal operation of the battery charger, the external surface may become hot and may remain so for a certain period of time after it has been switched off.

36) The battery charger needs no special maintenance, only regular cleaning procedures, to be carried out according to the type of working environment. Cleaning procedures should only be carried out on the external surface of the battery charger. Before starting any cleaning procedures, the mains supply cable and battery cables must be unplugged. Do NOT use water and/or detergents in general and/or pressure washers of any kind when carrying out cleaning.

37) If safe operation of the battery charger can no longer be ensured, stop the device and ensure that it cannot be put back into operation.

38) The specifications set out in this manual are subject to change without any notice. This publication replaces any previously supplied information.

39) The battery terminal not connected to the chassis has to be connected first. The other connection is to be made to the chassis, remote from the battery and fuel line. The battery charger is then to be connected to the supply mains; After charging, disconnect the battery charger from the supply mains. Then remove the chassis connection and then the battery connection.

Battery type = xxxxAh C5 (xxxxAh C20) LEAD-ACID, GEL, AGM, LITHIUM

Number of cells = 12 (for 24V battery)

Number of batteries = up to 4

Warning: Electric shock hazard, where the appliance is used without the earth connection.

CAUTION: RISK OF FIRE.

Use only on circuits provided with 20 amperes branch circuit protection in accordance with the National Electrical Code, NFPA 70.

CAUTION:

Charge only lead - acid or GEL and AGM type batteries. Other types of battery may burst causing personal injury and damage or

CAUTION: Risk of Fire. Use only battery packs that include the battery management system and all necessary protection for the battery pack integral to the pack.

CAUTION: RISK OF ELECTRIC SHOCK.

No serviceable parts inside.

ELECTRONIC BATTERY CHARGER - OPERATING MANUAL

TECHNICAL FEATURES OF THE STELVIO1800 SERIES

The innovative characteristics of the STELVIO1800 range of battery chargers are the following:

1. Slim form factor for on board and off board installation.
2. Protection grade IP20.
3. Advanced technology **High frequency** system.
4. Active PFC.
5. Resonant technology
6. Charging process fully controlled by microprocessor.
7. Input voltage: 200-240 Vac 50-60Hz.
8. Charging process start in the "soft start" mode.
9. Protection against polarity inversions, short-circuits, over-voltages or anomalies by means of a fuse.
10. Signaling of possible anomalies by red LED flashing and LED bar.
11. Insensitive charge parameters in case of $\pm 10\%$ network voltage oscillations.
12. Efficiency > 90%.
13. Control card powered directly from battery (except for lithium battery, in this case an internal power supply is fit).

OPERATING PRINCIPLE OF THE STELVIO1800

Stelvio control board is powered directly from battery so for power on it as well as connect the mains is necessary connect the battery. After the battery connection the control card perform its self-check and if all ok starts to charge blinking the yellow led/bar, otherwise if has been recognized errors the red led/bar blink.

The blinks number of yellow led/bar are the number of curve phase.

The blinks number of red led/bar are the error code.

If the user disconnects the battery from the battery charger during the charging process, the battery charger stops immediately the charge and power off itself (control board no longer powered).

The progress of the charging process is shown by two LED's and a multicolor led bar: yellow and green, as in the whole range of the battery chargers.

The green LED shows the end of the charging or the last phase in case of deep charging process.

VISUAL SIGNALS

Please find in the following table a list of the visual signals of the STELVIO1800 series.

SIGNAL (LED)	MEANING
X Yellow LED/BAR blinks	X = number of blinks are the number of curve phase
Green LED/BAR on	End of charge or maintenance phase
Blue led on	Mains connected
ANOMALIES	
X Red LED/BAR blinks	X = number of blinks are error code 5 = phase timeout 12 = charging process timeout 3 = power supply fault 4 = internal bus voltage fault 1 = calibration error 10 = over temperature

BATTERY CAPACITY TABLE

Battery Voltage	IUIa Wet 8h Range (C5)	IUIa Wet 12h Range (C5)	IUIa Gel PzV 10-14h Range (C5)	Charging Current	Model
24V	280 - 340 Ah	450 - 550 Ah	350 - 420 Ah	50A	24 - 50
	340 - 410 Ah	540 - 660 Ah	420 - 510 Ah	60A	24 - 60
36V	230 - 280 Ah	360 - 440 Ah	275 - 340 Ah	40A	36 - 40
48V	170 - 210 Ah	270 - 330 Ah	210 - 255 Ah	30A	48 - 30

CARICA BATTERIA ELETTRONICO - MANUALE OPERATIVO

CARATTERISTICHE TECNICHE DELLA SERIE STELVIO1800

Elenchiamo le caratteristiche principali comuni alle serie STELVIO1800:

1. Forma sottile adatta per l'installazione sulla macchina ed a muro.
2. Grado di protezione IP20.
3. Sistema ad **alta frequenza** in tecnologia avanzata.
4. PFC attivo.
5. Tecnologia risonante.
6. Processo di carica interamente controllato da microprocessore.
7. Tensione d'ingresso: 200-240 Vac 50-60Hz.
8. Inizio del processo di carica in modalità "soft start".
9. Protezione contro l'inversione di polarità, corto circuiti, sovra tensioni o anomalie, tramite fusibile.
10. Segnalazione visiva di eventuali anomalie mediante LED ROSSO LAMPEGGIANTE e BARRA a LED.
11. Parametri di carica insensibili alle variazioni della tensione di rete $\pm 10\%$
12. Rendimento $> 90\%$.
13. Scheda di controllo alimentata direttamente da batteria (ad eccezione delle batterie al litio, in questo caso è previsto un alimentatore interno).

PRINCIPIO DI FUNZIONAMENTO DEL STELVIO1800

La scheda di controllo del caricabatteria serie STELVIO è alimentata direttamente dalla batteria quindi per far sì che si accenda è necessario, oltre a collegare la rete, anche collegare, appunto, la batteria.

Dopo il collegamento della batteria la scheda di controllo esegue l'auto-test sul caricabatteria che se ha esito positivo farà sì che il caricabatteria inizi la fase di carica segnalata dal led/barra gialla lampeggiante, se vengono riscontrate anomalie si avrà il lampeggio del led/barra rossa.

Il numero di lampeggi del led/barra gialla rappresenta la fase della curva.

Il numero di lampeggi del led/barra rossa rappresenta il codice di errore.

L'andamento del processo di carica è segnalato da due led e da una barra multicolore: gialla e verde, come in tutta la gamma dei caricabatteria della serie STELVIO.

Il led verde indica la fine della carica o la fase di mantenimento se presente.

SEGNALAZIONI VISIVE

Elenchiamo le segnalazioni visive del carica batterie serie STELVIO1800:

SEGNALAZIONE	SIGNIFICATO
X lampeggi LED/BARRA gialla	X = il numero di lampeggi corrispondono al numero di fase della curva
LED/BARRA verde fisso	Fine carica o fase di mantenimento se presente
LED blu fisso	Alimentazione presente nel caricabatterie
ANOMALIE	
X lampeggi LED/BARRA rossa	X = il numero di lampeggi corrispondono al codice di errore 5 = timeout di fase 12 = timeout del processo di carica 3 = problemi sulla sezione di alimentazione 4 = problem sul livello di tensione del bus interno 1 = caricabatteria non calibrato 10 = protezione termica

TABELLA DELLE CAPACITA' DI BATTERIA

Tensione Batteria	IUIa Wet 8h Range (C5)	IUIa Wet 12h Range (C5)	IUIa Gel PzV 10-14h Range (C5)	Corrente di Carica	Modello
24V	280 - 340 Ah	450 - 550 Ah	350 - 420 Ah	50A	24 - 50
	340 - 410 Ah	540 - 660 Ah	420 - 510 Ah	60A	24 - 60
36V	230 - 280 Ah	360 - 440 Ah	275 - 340 Ah	40A	36 - 40
48V	170 - 210 Ah	270 - 330 Ah	210 - 255 Ah	30A	48 - 30



Document N°: D02575
Revision: 01
Date Issued: 09/08/2022
Date Last Revision: 25/10/2023