

HFT1

User Manual

- IT **Manuale d'uso e manutenzione**
- EN **Use and maintenance manual**
- FR **Manuel d'utilisation et d'entretien**
- ES **Manual de utilizzo y mantenimiento**
- DE **Gebrauchs- und Wartungsanleitung**

1. WARNINGS – SAFETY

- The charger is designed for charging conventional free acid batteries (PzS) and hermetic batteries (PzV, Gel, AGM).
- **WARNING:** The charger is set for a specific type of battery.
Do not use Chargers set to charge open batteries to power closed batteries or vice versa.
- In order to reduce risks of explosion of the battery, please follow these instructions and those reported on the battery:
- Never charge a frozen battery
- If it is necessary to remove battery from vehicle to charge it, always remove grounded terminal from battery first. Make sure all accessories in the vehicle are off in order to prevent an arc and sparks
- Study all battery manufacturer's specific precautions such as removing or not removing cell caps while charging and recommended rates of charge
- 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
- Connect and disconnect dc output clips only after setting any charger switches to the off position and removing ac cord from the electric outlet. never allow clips to touch each other



- A spark near battery may cause a battery explosion. to reduce risk of a spark near battery check:
 - Polarity of battery posts. a positive (pos, p, +) battery post usually has alarger diameter than a negative (neg, n, -) post.
 - Attach at least a 60 cm 6-gauge (awg) insulated battery cable to a negative(neg, n, -) battery post.
 - Connect the positive (red) charger clip to the positive (pos, p, +) post of battery.
 - Position yourself and the free end of cable as far away from battery as possible, then connect the negative (black) charger clip to free end of cable.
 - Do not face battery when making final connection.
 - Connect charger AC supply cord to electrical outlet; and
 - When disconnecting charger, always do so in reverse sequence of connecting procedure and break first connection while standing as far away from battery aspractical



- Before charging the battery read carefully the instruction
- Keep the documents in a clean and dry place for future consultations.
- For indoor use. provide adequate ventilation. do not expose to rain.
- Place the cabinet on a surface not flammable made of stone concrete or metal
- Install preferably in a vertical position, remembering that the ventilation **depends of the cabinet**
- HFT1 take air from both side and push it outgoing downwards
- The openings must not be blocked. Ensure that there is sufficient free space around the charger to ensure adequate air recirculation. Do not place it near sources of heat
- In case of cable replacement, do it with adequate sections and lengths or do not modify them.
- Perform periodic routine maintenance and repairs.
- In case of failure: identify the reason, act accordingly and use only original spare parts.



- Working in proximity of a lead acid battery is dangerous. batteries generate explosive gases during normal operation. it is therefore of utmost importance that each time, before using the charger, you read and follow the instructions provided.
- Explosive gases! avoid flames and sparks and provide proper ventilation of rooms.
- The battery charger is a device that can cause electric shock. it must be used only by personnel trained on electrical hazards.
- Disconnect the supply before making or breaking the connection to the battery.
- Do not use adapters, reducers or wound cables.
- The Power Socket must have an efficient ground. If it is not available, do not use the appliance until a suitable socket is installed by a qualified electrician.



The content of this manual corresponds to our products at the time of printing.

It can not be excluded that there are involuntary errors or omissions.

We therefore reserve the right to make changes if there is no more correspondence between what is written and our products.

Nobody, even those who have purchased the product, can copy or disseminate this information if not authorized.

We will take into consideration all those who, noticing discrepancy and defects, wanted to let us know.

Any errors or suggestions for improvement of this manual are welcome. We will be grateful



The Battery Charger is part of the "Electrical and Electronic Equipment" category and must be disposed of in compliance with the national laws in force. It should not be disposed of as domestic waste, but collected separately to achieve responsible recovery.

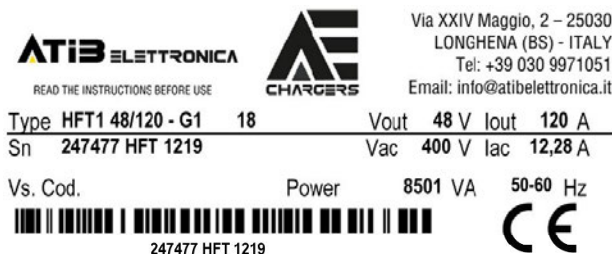
Failure to follow these instructions can have a dangerous effect on the environment and on health

1.1. Safety and Reference Rules

The battery charger complies with the Low Voltage directives (2006/93 / CE) and Electromagnetic Compatibility (2004/108 / CE). For safety, EN60335-1 and in particular 60335-2-29 apply. The Charger is made under ISO9001 conditions.

1.2. Electrical information

i Consult the electrical data on the product identification plate and make sure that they comply with your electrical system and the battery to be charged. Below you see the typical plate of a battery charger. Absorptions and power refer to maximum values. Values can also be much lower during operation



Model : HFT1 xxxOleddisplay version 48V with I_{max} 120A. **Charging Profile**: 018 indicates a charge profile for Lead Acid Batteries (Pb or PzS). Other Charge Profiles can be chosen. **DC output** :Nominal voltage of the battery (V_{out} 36V) and the current supplied at the nominal voltage (I_{out} 120A_{max})
AC input :It shows the Nominal Voltage of the Main (V_{ac} 400V), the maximum Current absorbed (12,28A max), the Power (8501VA_{max}) and the operating frequency (50-60Hz)

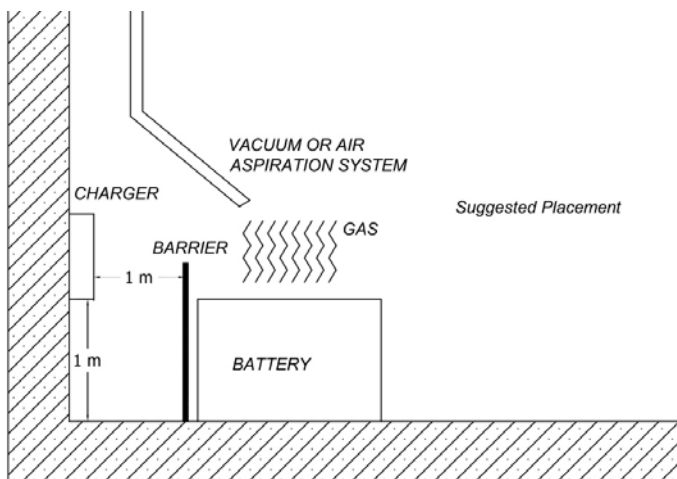
WARNING: If the nameplate data does not agree with your system and your battery, DO NOT power the battery charger!

In case of failure or malfunction switch off the appliance and do not attempt to repair it, but contact our technical office or the nearest service center. Be precise in describing the problem encountered and provide us with the serial number. Repairs or replacements are not permitted unless authorized in writing by our technical office.

2. INSTALLATION AND COMMISSIONING

i Read carefully and apply the entire "Warnings and Safety" chapter.

2.1. Choice of location and mechanical positioning



Place the cabinet in a suitable place to allow adequate air recirculation away from heat sources.

For positioning, refer to the figure on the side and the drawings at the end of this manual.

Place the wall unit with an underlying non-combustible surface such as stone, cement or metal.

Battery chargers are electrical devices and must be fixed to prevent accidental falls.

Make sure that the switch off (OFF) of the battery charger is clearly visible and easily reachable.

2.2. Control of the AC Main

- Make sure that the system has been built according to the regulations in force in the country.
- The electrical connection must be carried out by specialized personnel. We recommend that you hire personnel who can issue a "declaration of conformity" for the work performed. The declaration must include the efficiency of the connection to the ground installation, the verification of the electrical capacity of the plug and the system to which it is connected.
- Electrical safety is guaranteed only when the power plug is correctly connected to an efficient ground system.
- Check that the system can sustain the power of the battery charger (VA) and that the voltage and the mains frequency agree (Volt and Hz) to the rating plate of the battery charger.
- Make sure that the charger is protected with appropriate fuses. In the case consult our tables.

2.3. Control of the Battery and the Charger

- Check that the mains and battery cables are integer and perfectly insulated and do the same with the plugs of both mains and battery. **ATTENTION:** Assembly or replacement of the plug-socket of the battery charger must be carried out by specialized personnel.
- Ensure good insulation of the battery and power cables to the ground.
- Make sure the "polarity" of the battery cables agree with the charger.
- Check that the battery is suitable for the charger as both voltage (V) and capacity (Ah)
- The battery must be ready to be charged, cleaned and with a correct electrolyte level (PzS).

3. MAINTENANCE

The frequency of checks depends on the use and conditions of use and should not exceed three months.

Operations must be performed by qualified personnel observing the safety regulations. At our offices there are special "Forms" for ordinary and extraordinary maintenance". First of all carry out the operations described in the paragraph "Put the Charger out of Service".

3.1. Put the Charger out of Service

When routine maintenance is required or if you do not want to use the charger for a long period of time, the machine must be taken out of service.

Follow this routine:

- 1) Set the Charger switch to the OFF position (only in some models).
- 2) Turn the main power switch and unplug the AC power plug.
- 3) Disconnect the battery plug.

If you decide not to use the battery charger for a long time, do not expose it unnecessarily to atmospheric agents or thermal stress, but place it in a sheltered place. Both the AC and the battery plugs must be secured above the Charger in a place raised from the floor.

3.2. Ordinary and Extraordinary Maintenance

Ordinary maintenance should take place every 3 months. Extraordinary Maintenance every time a fault occurs or every year. Here's what we recommend:

- 1) Carefully clean the power cables and battery cables. Make sure that they do not show signs or damage. In this case, replacethemimmediately.
- 2) Check the condition of the power plug-socket and the battery plug. If they show signs of burning, crushing or damage, replace them immediately.
- 3) Every electrical device is afraid of dust and humidity. Clean your battery charger. If it is excessively dirty or wet, find a better place.

3.3. What to do when the Charger signals an ERROR

When the RED LED lights up, the Charger has intercepted an Error. Here is the list of things to do:

- 1) Read the code on the DISPLAY(on connecting a PC) which helps to understand the error.
- 2) Look for the codes that identify the ERROR in the "Error List" list and read the description that often helps to solve the problem

4. BASIC SIGNALLING –DISPLAY BOARD – AE03

4.1. Informazioni from the DISPLAY

The HFT1 models provide synthetic information via LED and with a graphic OLED DISPLAY.

These are the "main" methods through which you can get information and set up the charger.

However all the Chargers have a USB port that can be connected to a PC and are provided with an acoustic signal to obtain further information.

Using the LED board it is possible to:

Understanding the status of the charger. If it is in Charge, in Alarm or the Charge is Completed

Using the DISPLAY board you can:

Know the settings of the charger. Which Load Profile is selected, which Current and Battery capacity

Change the most important parameters. Change a Charge Profile, the maximum current and the Ah of the battery

The Dispaly AE03 card consists of the following elements:

Graphic Display - high brightness OLED type

Four LED lights Green (L1) Yellow (L2) Red (L3) Blue (L4)

An acoustic signal and four keys M (P1) << (P2) >> (P3) Stop (P4)



ATTENTION: The functions of the LEDs and the keys are explained in a following paragraph

NOTE: Refer to the initial image on the cover

4.2. LED indications



NOTA 1 : General meaning Yellow = on Charge Green = Battery Charged Red = Error Blue = transition phase
 NOTA 2 :empty = LED off 1 = LED on F = LED Flashing
 NOTA 3 :The notation (L1 L2 L3 L4) shows the LEDs seen by an observer. ex: (1 _ _ _) means only first green LED on

	Green (L1)	Yellow (L2)	Red (L3)	Blue (L4)
No AC Mains				
Battery disconnected				F
Stage 0 or pre-charge (@)		1		F
Bulk Charge (<2,4V _{el})		1		
Absorption charge (= 2,4V _{el})		1		
Final Charge (>2,4V _{el})		F		
Battery Charged (#)	1			
Floating Charge (*)	1	F		
Charge stopped manually (#)	F			
Blocking Error			1	
Error with Restart			F	

(@)For about 5 sec. the Charger perform a ramp of current or Phase 00.

(#) Possible to disconnect the battery safely

(*)During Floating Stage (Step 4) the Charger may give current. Press Stop before disconnecting the battery safely

4.2.1. BUZZER indications

The Buzzer draws attention to some particular situations

Sound	When ...
Short Bip(0,2 sec)	Every time a key is pressed. It means that the card has received the command
Long Bip(2 sec)	Signals that the system is "Ready" for a New Charge.Or together with the lighting up of all the LEDs, it means that AC POWER has been supplied to the Charger
Double fast bit (BipBip0.2 sec)	When any ERROR occurs
Double continuous bit (for 30 sec)	Overvoltage or >V _{max} (E12). Indicates a Dangerous situation for the Charger. Disconnect the battery immediately

5. HFT1 IMAGES – DISPLAY BOARD - AE03

All images are coded

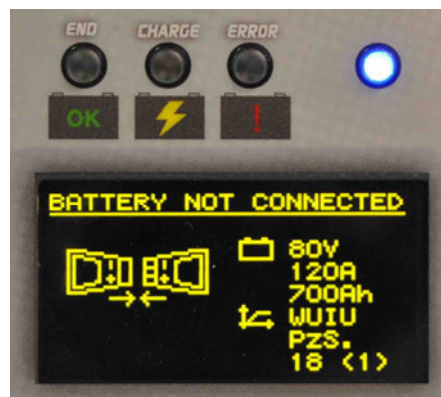
- Code 0 Initial and generic images displayed without the need to press any key
- Code 1, 2, 3 and 4 Images that appear by pressing the reference key, P1 - P2 - P3 and P4
- Code 5 images that appear when an internal event occurs, at the end of the charge and in the event of an error

5.1. ... Battery not connected

5.1.1. Switching on Phase



OA
It only appears when the machine is turned on
After 5 seconds, the OB screen appears



OB
Main Image
Battery not connected.
Shows the Standard Charger settings.
In this case the Charger is set up for:
a 80V 700Ah battery
The charge profile is WUIU for Pb (or PzS) batteries
The International Code is WUIU
The Atib elettronica code is 18 and is the first (1) of
the 7 available



OC
By pressing any key the menu appears at the bottom of the Display
After 10 sec. it disappears and returns to OB

- Key 1 - Battery - you can set Current, Capacity or Charge Profile (password)
- Key 2 - info - you get information on the charger set and the history of the charges
- Key 3 - tool- useful information on some internal parameters (service)
- Key 4 - OFF - Turn off the charger if it is charging.



NOTE :
If any key is pressed, but no selection is made for 15 seconds, the display automatically returns to the OC screen.
After another 10 seconds, return to mask OB

5.1.2. Charger setting (Key 1 - Battery)



1A
Pressing Key 1 from the OC an image appears where you can enter the Password.
Password is a code of 4 numbers (from 1 to 4)
Each key represents a value. P1 = 1, P2 = 2, P3 = 3 and P4 = 4

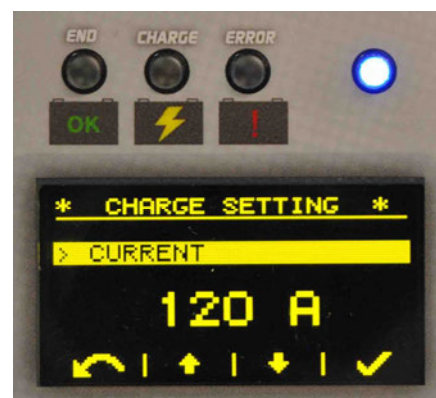
If the code is correct it shows the Mask 1B other items the Buzzer emits a double beep and returns to the mask OC

1B



If the password is correct, the parameters that can be set appear

- Key 1 - back
- Key 2 - up
- Key 3 - down
- Key 4 - Confirmation



By pressing the key 4 it is possible to set the initial charging current. Change with Up and Down and confirm. (step 5A)

Press Back (key 1) to return to 1B

1C



Battery Capacity Setting. Change with Up and Down and confirm (step 20Ah)

Pressing the Back button (1) returns to 1B



Charging Profile Setting. Change with Up and Down and confirm (7 choices)

Pressing the Back button (1) returns to 1B

1E

5.1.3. Information (key 2 - info)



Pressing Key 2 from the 0C screen shows the possible choices



The Display shows information on the Charger. The serial number, some technical codes and the plate data. Communicate this data in case of failure or request for technical assistance

Pressing the Back button (1) returns to 2A

2B



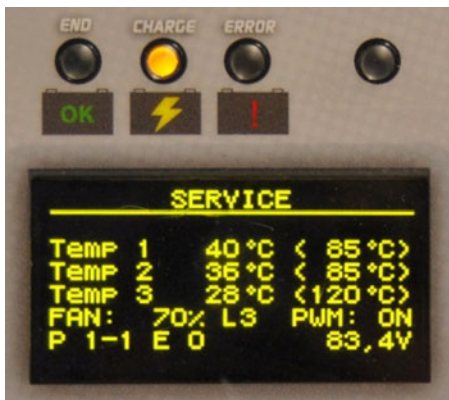
Choosing the "statistics" item in 2A the Display shows Global Statistics on a single screen Cycles : means closed normally <3 means closed within 3h, 3-6h between 3 and 6h and so on



Choosing the item "Cycle Report " in 2A the information of the last 50 cycles are visible. Start and Stopof charge. Ah accumulated and kWh The number at the top right indicates the number of charge. The highest value is the last charge.

2D

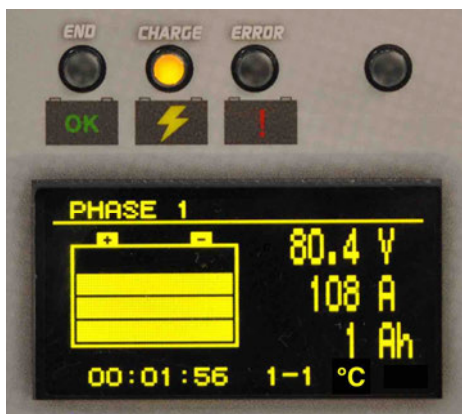
5.1.4. Service (key 3 - Tool)



3A
 Pressing Key 3 from the OC mask the display shows some information related to the operation of the charger
 The internal temperatures and their limits (brackets)
 how the fans are set (70% L3 or level 3) and if the charger is on (PWM)
 in which phase the charge is (P1-1 phase 1) and the Error Code (E 0 is No Error)
 The last number is the battery voltage or what the chargers reads
 They are useful information to understand the condition of the Charger.
 Communicate this data in case of failure or request for technical assistance

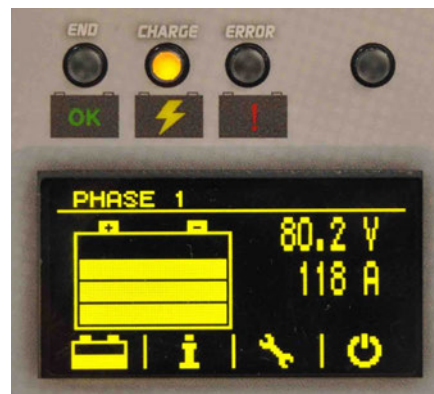
5.2. Charger on Charge

5.2.1. Connecting the Battery



0L
 By connecting a battery the Charger starts charging, showing the symbol of a battery that fills up.
 The internal battery strips light up consecutively to indicate that the Charger is charging.
 The Yellow LED is lit with FIXED light in Step 1 and 2.
 Flashing light in phase 3
 00:01:56 indicates hh: mm: ss of charge
 1-1 shows the charge phase
 ° C - means that the charger is not cooled down properly.
 Check the Air Filters or the position of the cabinet

0M
 By pressing any key the menu appears at the bottom of the Display
 After 10 sec. it disappears and returns to 0L



5.2.2. Setting (key 1 - Battery)



1L
 If I press Button 1 while charging, the Display shows the Charger settings for 5 seconds
 You can not change these settings when the Charger is charging

5.2.3. Information (key 2 - info)

The same information explained in the previous paragraph appears
See images 2A, 2B, 2C and 2D

5.2.4. Service (key 3 - tool)

The same information explained in the previous paragraph appears
See images 3A

5.2.5. STOP (key 4 - OFF)



4L
To Stop the Charger press a first time to make the keys appear
Pressing a second time and "keeping" Pressing the Stop Button the display shows a bar that fills within 3 seconds.
When the bar is full the Charger will turn off and show the 4M mask



4 M
This is the image that appears when the charger stops after pressing the STOP button

5.2.6. Stop for End of Charge or for Error



5A
This is the mask that appears when the Charger ends up charging autonomously

Fase 4-0 means floating charge is taking place
Error 0 means NO Error

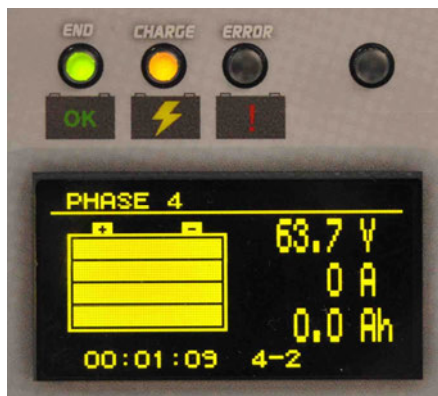


5B
This is the mask that appears when the charger stops due to an error

00:00:34 is a countdown before restart
Phase 1-1 means Error occurs in Phase 1
E16 is the Error Code (see Error table)



If the symbol ° C (see 5B) appears in the upper right-hand corner of the display, this means that the charger during charging has reduced the current (derating) due to lack of adequate cooling. Check the Air Filters or the position of the cabinet

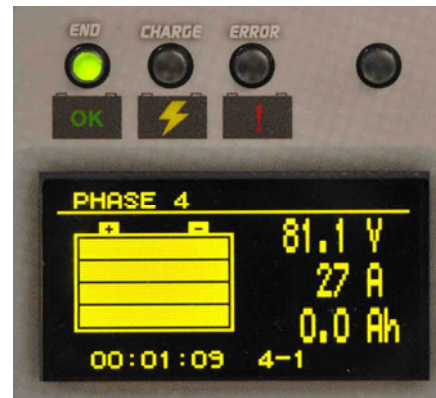


5C - 5D
This TWO IMAGES are visible when the Charge is completed, but the Charger has set up a Floating charge (Step 4).

The green LED (END) is on, but CHARGE continues to light up to signal a possible current flow.

The battery has the fixed and full stripes to signal that the charge is complete.

WARNING: It is necessary to press STOP key to stop the Charger before disconnecting the battery



CAUTION: If you disconnect the battery, the system will wait approximately 10 seconds and then return to the 0B screen. You will hear an extended sound of the buzzer signaling that the system is ready for a new charge.

6. CHARGER OPERATION

6.1. Switching on the Charger

The Chargers turn on by supplying the AC Mains.

By inserting only the battery the charger does not turn on and display is off..

6.2. Start, Stop of a Charge and disconnection of a Battery

The Charger starts "automatically" a charge:

- If Charger is supplied by AC MAINS and a battery is connected with a voltage within the limit values set by the Charger (min and max).
- If the internal temperatures are within set limit values

The charger stops:

- If the charge is completed (GREEN LED lit with FIXED light)
- If you press the STOP button (P4) twice (the first time OFF appears, press again to confirm the stop and STOP appears)
(you can not stop the Charger in Ramp or Phase 0)



WARNING: To stop the charge we suggest to press the STOP button (twice), then remove the Mains, or use the wall switch, and finally the battery.

By doing the opposite, unwanted electric arcs are possible.

The Charger waits a few seconds before it switches off completely

The right Routine for "starting" a charge is

Connect the Battery to the Charger.

Close the AC mains Switch

The Board initializes in 9 sec.

All LEDs light up (1 1 1 1), the Buzzer emits a sound and fans starts for 1 sec. (Global Test)

Blue LED (L4) flashes for 5 sec. and the buzzer give a sound (Charger ready)

The control charge (Phase 0) begins.

The YELLOW LED (L1) turn on and the Blue LED go on flashing (ramp 5 sec).

The Bulk Charge (Phase 1) begins.

The Yellow LED (L1) remains on and the blue one turn off

The right routine to "stop" a charge or before "unplugging" the battery is

Press the Stop button (P4).

The menu appears

Press and hold the Stop button (P4) until the shutdown screen is completed.

An image appears showing STOP

The Green LED (L1) flashes

Open the Mains switch

All the LEDs of the board turn off.

Disconnect the Battery plug socket from the Charger



WARNING : The battery disconnection during charging is not allowed as it produces an electric arc.

In any case, if this happens, the charger stops within few milliseconds (E16 "battery disconnection").

After another 10 sec. signals the Battery has been disconnected (Long beep - 2sec.) the system considers this charge aborted. Blue LED (L4) flashing

ATTENTION: When the battery is fully charged, the GREEN LED (L1) with fixed light lights up. However, if the yellow LED (L2) is also on, this means that the floating charge is in progress. Even if the current is presumably low, electric arcs could still occur.

In this case, press the Stop button (twice - shutdown) before disconnecting the battery



NOTE: When you unplug the battery to insert another one it is "necessary" that you hear a long beep (2sec) and the blue LED is flashing.

This is the signal that the charger has recognized the disconnection of the battery



NOTE : when the charger gives an error, this does not mean that there is an internal error. Often the problem is external.

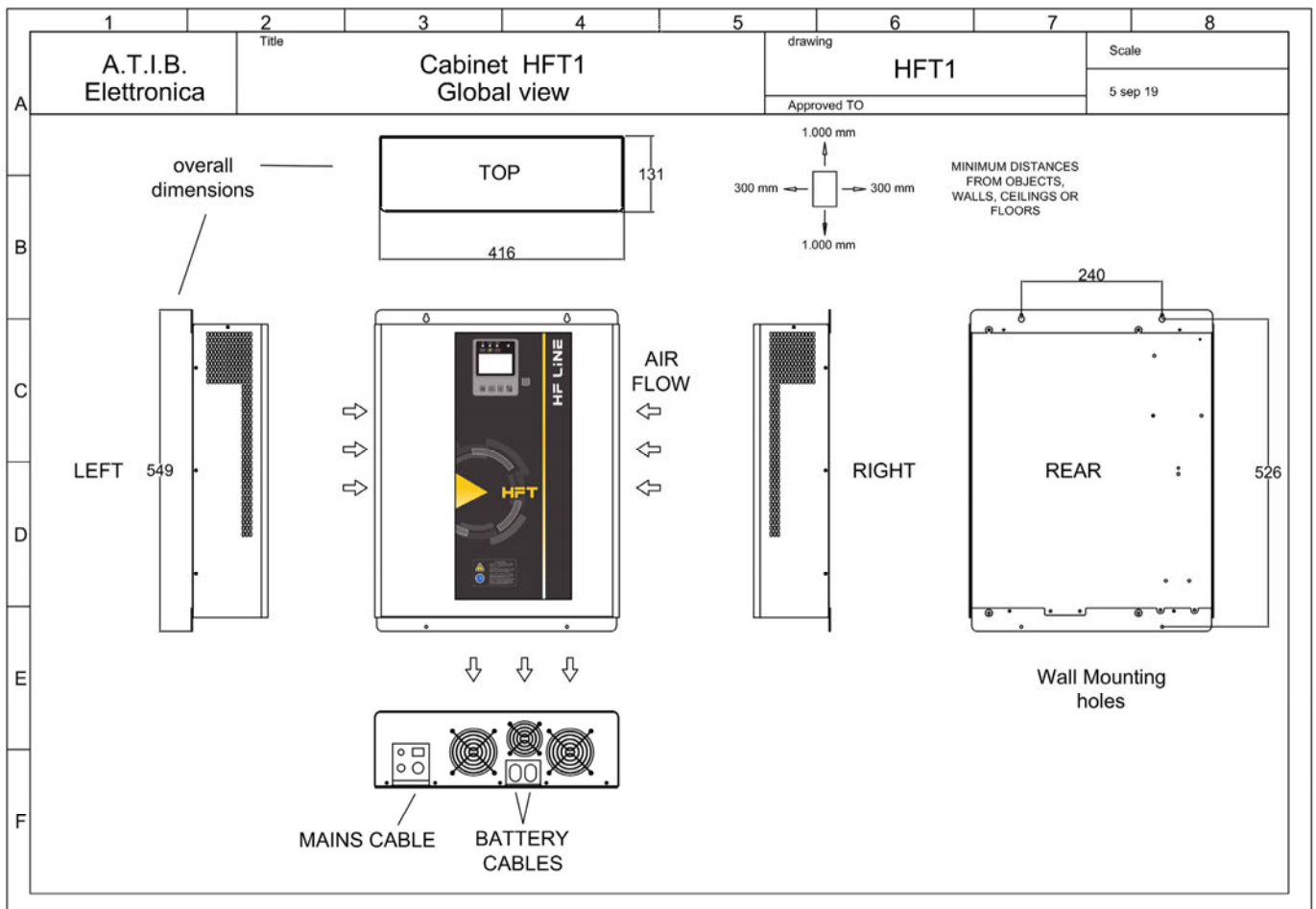
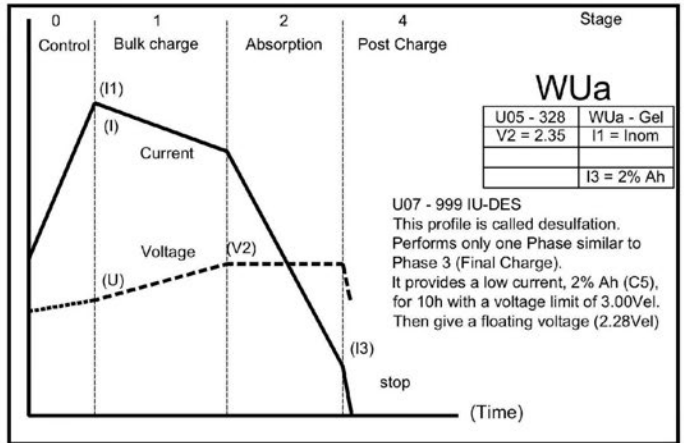
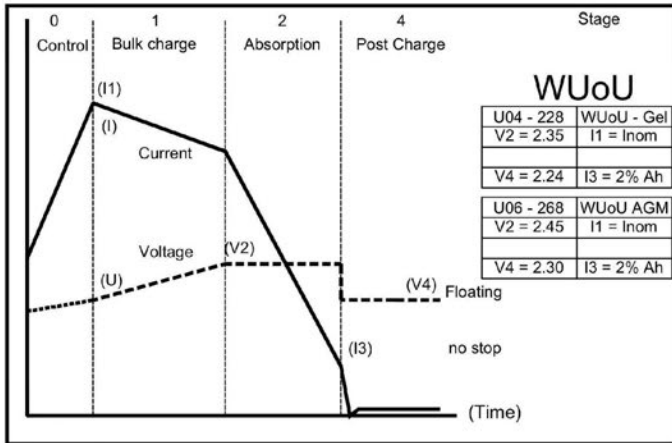
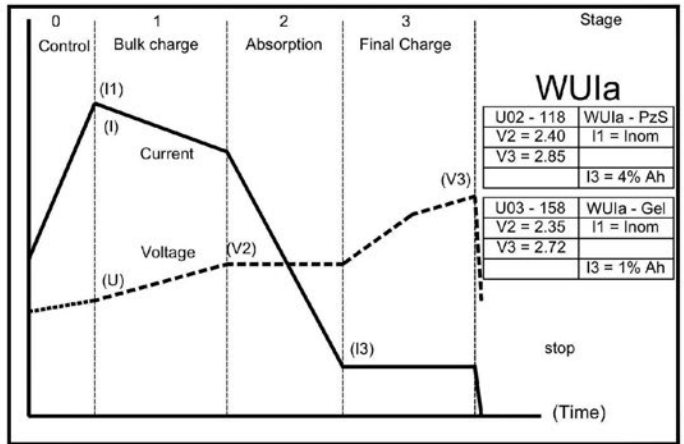
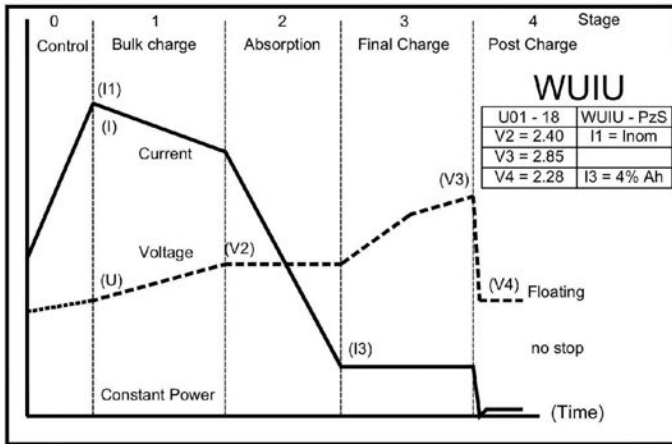
7.3.1. Error List

	Type	When	Description
--	Charger OFF		Mains is OFF. Check the Power plug connection, the main system switch and the AC Input Fuses
E1	No Battery	BeforeCharging	Battery voltage (def. <10V) is missing. Battery not connected, Voltage too low or Internal DC fuse blown. The battery plug is broken or the output cables are damaged.
E2	BatteryUndervoltage	After batteryplugging	Battery Connected, but below the minimum threshold. (Def. <0.8Vel). Low battery voltage or incorrect battery.
E3	BatteryProblem	DuringCharging	Battery under the Nominal voltage during charging. Battery too flat or too big for the charger or current draw during charging
E4	Overtemperature1 (IGBT)	DuringCharging (#)	Thermal probe intervention (def. 85 ° C – 105°) for overheating Fans dirty, hardened, blocked or not working or High ambient temperature or incorrect charger placement
E5	Overtemperature 2 (Diodes)		
E6	Overtemperature 3 (Transfo.)		
E7	Max Time Stage 1	After many hours	Exceeding Maximum time Stage 1 or global time Battery too big for the charger or the Mains is too low. Wrong setting of the charger
E8	Global charging Time		
E9	Max Current	DuringCharging	Internal Problem. Charger failure
E10	Min Current	During Charging	The current has dropped to too low values. Battery sulfated or with problems or simply fully charged. False contact in the battery plug
E11	Power Fail	DuringCharging	A phase is missing in a three-phase system. Blown fuse, AC cable disconnected or faulty in the wall switch
E12	BatteryOvervoltage	Connecting the Battery	Battery voltage above the maximum threshold. (Def.>3,0vel). Wrong or sulfated battery
E13	Primaryovercurrent	DuringCharging	Loss of control of the primary current due to imbalances or disturbances of the mains or charger failure
E14	Faultythermal probe	DuringCharging	One of the internal thermal probes is faulty
E16	Batterydisconnection	DuringCharging	The battery has been disconnected without stopping the charger



When the system enters in an Error, it performs some restart cycles to solve the problem.

(#) fans is working





A.T.I.B. ELETTRONICA SRL
Via XXIV Maggio, 2
Longhena 25030 (BS) Italy

Tel. + 39 030 9971051

info@atibeletronica.it

www.atibeletronica.it