



# HF5

## 12V / 24V VERSIONS

**Models: 12V/2A, 12V/4A, 12V/5A, 12V/6A, 12V/8A & 12V/10A.  
24V/2A, 24V/4A, 24V/5A, 24V/8A & 24V/10A**



**Supplied by:**  
**Curtis Instruments (UK) Ltd**  
**5, Upper Priory Street**  
**NORTHAMPTON**  
**NN1 2PT**  
[www.custisinst.co.uk](http://www.custisinst.co.uk)

**ATTENTION:**  
READ CAREFULLY THE OPERATING MANUAL BEFORE USING THE BATTERY CHARGER.

## INSTALLATION AND SAFETY INSTRUCTIONS

**PLEASE READ THE INSTRUCTIONS CAREFULLY** before connecting charger to mains and battery.

- Failure to install and operate the charger in accordance with these instructions may result in damage to the charger or injury to the operator
- **Skilled and authorised personnel only shall be allowed to open the charger.**
- If safe operation of the charger can no longer be ensured, stop and secure it against operation
- Before setting the charger at work, the insulation of mains connection cable and battery connection connectors has to be checked.
- Disconnect from mains before connecting or disconnecting battery.
- 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
- **BE CAREFUL!!** Batteries produce explosive gases while being charged, therefore avoid flames and sparks and smoking near the charger while it is in operation.
- 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
- **BE CAREFUL!!** The charger contains electrical/electronic components which may produce voltaic arcs and sparks, therefore if it is used in a closed environment it has to be installed in a proper site, is to be used in closed and ventilated environments only and not exposed to rain nor splashed with water. It has to be positioned onto solid and flat floors, far away from dust, water, heating, and moisture. The charger has not to be positioned onto supports and/or shelves made of wood or other inflammable materials. Do not stock materials near the charger and do not place any objects and fluid containers on the charger top.
- Particularly to guarantee 30cm ( 12" ) of spaces in correspondence of aeration fans.
- Ensure that an **adequate earth connection** is made to prevent risks of electrocution. The charger has to be connected to a mains supply of standards corresponding to the power of the charger and has to be protected through an adequate electrical device (fuse or automatic cut-out) complying with European Standards. The protection needs at least a 10% higher setting than the power input of the device; furthermore the device has to be protected from a too high contact voltage, according to the provisions made by Local Authorities.
- P.B.M. battery chargers do not need any special maintenance, apart from the usual cleaning which has to be performed regularly depending on the installation site. Before cleaning the charger, disconnect it from mains and battery.
- Charger surface may be hot while plugged in and for a period of time thereafter
- The use of charger is not authorized as critical components in life support devices or other systems without express written approval of PBM
- Specifications mentioned in this publication are subject to change without any notice. This publication supersedes and replaces all information previously supplied

# Electronic Battery Charger

## USER MANUAL

### TECHNICAL FEATURES OF THE HF5 SERIES

The innovative characteristics of the HF5 range of battery chargers are the following:

- Advanced technology High frequency system.
- Charging process fully controlled by microprocessor.
- Universal input voltage: 100-240 Vac
- Charging process start in the “soft start” mode.
- Automatic reset upon connection of a new battery and automatic start of a new charging cycle.
- Protection against polarity inversions, short-circuits, over-voltages or anomalies by means of an output relay.
- Battery to battery charger connection without sparks on the output terminals with obvious advantages for the active safety, thanks to the recognition of the battery voltage downstream the normally open output relay.
- Signalling of possible anomalies by red LED flashing.
- Insensitive charge parameters in case of ±10% network voltage oscillations.
- Efficiency > 85%.
- Output ripple at maximum charge lower than 100mV.
- Start of the charge cycle even with 2V batteries.

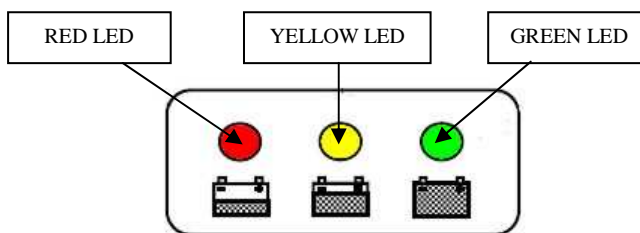
### OPERATING PRINCIPLE OF THE HF5

On switching on a new battery charger of the HF5 series, the charger will check the battery voltage and decide whether to start the charging process. If the battery is not connected to the battery charger, the red LED will flash. If the result of the test is positive after 1 second the charging of the battery can start, with the red LED on. The output relay closes and the current of the first phase rises slowly till the nominal value programmed is reached. If the user disconnects the battery from the battery charger during the charging process, after a few seconds the battery charger will re-initialize and prepare to start a new charging process. The progress of the charging process is shown by three LED's: red, 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; in the former case, the relay is opened to disconnect galvanically the battery from the battery charger.

### VISUAL SIGNALS

Please find in the following table a list of the visual signals of the HF5 series.

SIGNAL (LED)	MEANING
Red LED on	First phase of charge in progress
Yellow LED on	Second phase of charge in progress
Green LED on	End of charge or maintenance phase
<b>ANOMALIES</b>	
Red LED flashing	UNSUITABLE BATTERY OR BATTERY NOT CONNECTED SAFETY TIMER EXCEEDED INTERNAL SHORT CIRCUIT
<b>INITIAL TEST</b>	
Green LED with 2 flashings	Battery charger configured for recharging Gel or AGM batteries
Red LED with 2 flashings	Battery charger configured for recharging Lead-acid (Wet) traction batteries



## DECLARATIONS OF CONFORMITY

file: ce declaration-hf5-rev0-070801



## DECLARATION OF CONFORMITY

We

**PBM S.r.l.**  
**Via Barella – Zona Industriale**  
**41058 Vignola (MO), Italy**  
**Tel.: + 39 059 7705311**  
**Fax: + 39 059 7705300**

declare under our sole responsibility that the following product

**Product type: BATTERY CHARGER**  
**Name: HF5**  
**Models:**

12V/2A, 12V/4A, 12V/5A, 12V/6A, 12V/8A, 12V/10A  
 24V/2A, 24V/4A, 24V/5A, 24V/8A, 24V/10A

**Options: ALL**

to which this declaration relates complies with the requirements of the following Directives of the European Union:

**73/23/EEC (LVD)**, amended by **Directive 93/68/EEC** and following modifications  
 and

**89/336/EEC (EMC)**, amended by **Directive 91/263/EEC, 92/31/EEC, 93/68/EEC**  
 and following modifications

Standards to which conformity is declared:

**Safety:** EN60335-2-29 + A11  
**EMC:** EN55014-1+A1+A2 (Emission)  
 EN55014-2+A1 (Immunity – Category II)  
 including amendments

Date of issue:

01/08/2007

Place of issue:

VIGNOLA

**P.B.M. S.r.l.**  
**Lino Pelloni**  
 President