IGBT – HF Hybrid
Universal Battery Chargers

THE MOST ADVANCED TECHNOLOGY MAXIMIZES BATTERY LIFE AND PERFORMANCE, REDUCE ENERGY USE AND CARBON EMISSION

- Technology: *IGBT-HF Hybrid Converter*
- Current ratings: *From 60 to 320 Amps*
- Voltages: *AC input from 200 to 600 VAC*
  DC output from 12 to 120 VDC

Product Description

The IGBT-HF Hybrid is a revolutionary traction battery charger, designed for conventional and opportunity charging applications.

It is based on a new power conversion technology, featuring an unprecedented combination of very high efficiency, unity power factor (PFC), universal capabilities and precise charge control.

The charging curve is programmable for any battery type, including Lithium technologies.
When used with Lead-Acid batteries, the **ultra-filtered output current** and the unique **control algorithm** ensure a perfect mixing of the electrolyte (without using air-pumps), while reducing the water consumption and the temperature rise of the battery, as well as the energy consumption.

The IGBT-HF is controlled by the new **digital board Bassi G-01**, equipped with alphanumeric display & keyboard, Charge History Logger, Programmable Real-Time Clock and Calendar, Audible Alarm and Connectivity package, compatible with wireless Battery Identification Modules, and the WEB based Fleet Management System **DoctorFleet.com**.

With the control board G-01, the programmable features of these chargers are almost infinite.

Typical Applications

- Forklifts and other Vehicles for Material Handling Single or Multiple Operations
- Opportunity charging applications

Main Features

- **The Most Efficient** technology available today
- Very **Reliable** design, easy maintenance
- **True universal charger**: Multi-Voltage, Multi-Capacity, Multi-Chemistry.
- Automatic recognition of different batteries in the fleet (by voltage recognition or wireless ID module)
- Maximizes battery life, reduces water consumption and maintenance
- Can be configured to support applications of any type, from conventional overnight charge to opportunity charging.
- Complete electronic protection system
- Battery voltage/temperature compensation (battery temperature probe required)
- Very quiet operation
- Integrated data-logger with dual serial port (RS-485), compatible with **DoctorFleet.com**
- Anti-Arcing protection (auxiliary wires required)

Options

- Wireless connection to DoctorFleet.com
- CANBUS interface
- Extended data-logger with USB port
- Wireless Battery Identification Modules
- Enclosure type IP54 or NEMA 3R (outdoor rated)

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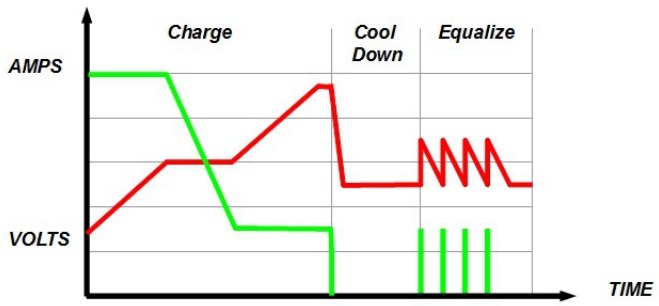
Product Specifications

AC INPUT	
STANDARD VOLTAGES	Single-phase 220-230-240 VAC ± 10% Three-phase 220-240, 400, 440, 480, 600 VAC ± 10% Frequency 50/60 Hz ± 5 Hz
EFFICIENCY	>92% (*)
POWER FACTOR	Single-phase models >90% (*) Three-phase models >97% (*)
DC OUTPUT	
STANDARD VOLTAGES	Nominal battery voltages from 24V to 120 VDC.
CURRENT RATINGS	From 60A to 320A.
	Completely programmable, can support batteries of any type, voltage, capacity Programmable Weekly Equalization/Maintenance Mode Manual Desulphation/Recovery cycle Programmable off-peak energy hours
CHARGING CURVE	

PROTECTION	
WRONG BATTERY AND REVERSE POLARITY	If the battery voltage is outside the acceptable limits, or the polarity is reversed, the charger remains in stand-by mode and gives error/warning message.
ELECTRONIC OVERLOAD PROTECTION	Complete protection in case of output short circuit or overload.
ANTI-ARCING	**WITHOUT AUXILIARY WIRES**: When the battery is connected, no arcing is generated at the connectors. If the battery is disconnected while it's being charged, arcing is possible, so it's necessary to turn off the charger before to disconnect the battery. **WITH AUXILIARY WIRES (RECOMMENDED)**: Full Anti-arcing protection in case of battery disconnection, even while the charge is in progress.
POWER-ON SELF-TEST	Every time the unit is powered, an automatic self-test of the power electronics and the control boards is executed in less than 10 seconds. In case of fault, the unit remains in safe stand-by mode and gives fault messages.

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BLACK-OUT OF THE AC INPUT	The charger features an intelligent management of the AC input black-outs. When a black-out of the AC input occurs, all the data related to the charge cycle that was in progress are saved in the Charge History Logger, and remains available for future review. When the AC input is restored, the charger restarts from the exact point of interruption, and it completes the charge cycle normally. The charger adds a random delay on start (from 3 to 20 seconds). When many chargers are connected to the same AC source, this feature prevents all the chargers from turning on simultaneously and causing a high AC input current spike.
AUTOMATIC SHUTDOWN ON BATTERY DISCONNECTION	If the battery is disconnected while the charge is in progress, the charger turns-off automatically within 3 seconds and a specific message is saved in the Charge History Log.
SAFETY TIMER	An independent safety timer turns the charger off in case of malfunction of the main control unit.
MECHANICAL AND ENVIRONMENTAL	
DIMENSIONS (W x H x D mm)	CABINET A: 530 x 920 x 450 (mm) CABINET B: 650x 1090 x 520 (mm)
ENCLOSURE TYPE	Stainless Steel front and upper panel Steel enclosure painted in white Red plastics (ABS) on control interface
COOLING	FORCED VENTILATION with active fan control
AUDIBLE NOISE	<65 dBA at 1 meter
ENVIRONMENTAL PROTECTION	IP21 (Standard) IP54 (Optional)
AMBIENT TEMPERATURE	OPERATION: -10 / +50 °C STORAGE: -20 / +70 °C
ALTITUDE	<2000m, Derating according to EN62040-3
USER INTERFACE AND CONNECTIVITY	
USER INTERFACE	Alphanumeric LCD Display + LEDs, membrane keyboard and Audible Alarm
CONNECTIVITY	• Dual RS-485 port for daisy chain interconnection, compatible with WEB based Fleet Management System (DoctorFleet.com) • Compatible with Bassi wireless Battery Identification Modules (BMOD) • Integrated Data-logger (200 cycles) • Extended Data-logger (600 cycles) with USB port (Optional) • CANBUS interface to Battery BMS (Optional) • Wireless card (Optional)
STANDARDS	
QUALITY	ISO 9001:2008
MARKING	CE
EMC	IEC EN 61000-6-2, IEC EN 61000-6-4
SAFETY	IEC EN 50178, IEC EN 62040-1
TEST AND PERFORMANCE	IEC EN 62040-3
NORTH AMERICAN STANDARDS	UL 1564 "Industrial Battery Chargers" CSA 22.2 107.2-01 "Battery Chargers"

NOTES
(*) = Reported Efficiency and Power Factor values are AVERAGE values, measured over the entire charging cycle. Peak Efficiency and Power Factor are higher.

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STANDARD MODELS									
TYPE	IGBT 3	IGBT 4	IGBT 5	IGBT 6	IGBT 7	IGBT 11	IGBT 9	IGBT 10	IGBT 13
OUTPUT VOLTAGE RANGE	12-24V	12-24A	12-36V	12-36V	12-48V	12-48V	12-80V	12-80V	12-80V
OUTPUT CURRENT	120A	200A	120A	200A	120A	200A	120A	160A	200A
ENCLOSURE TYPE	A	A	A	A	A	A	A	A	A
STANDARD AC INPUT VOLTAGES	1x230 VAC (+/- 10%), 50/60 Hz 3x400 VAC (+/-10%), 50/60 Hz 3x480/600 VAC (+/-10%), 50/60Hz								

The information contained in this publication is subject to variations without notice.

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