

UNIVERSAL BATTERY CHARGER MHF

Multi-Voltage, Multi-Capacity, Multi-Chemistry.



- ✓ LA THE MOST ADVANCED TECHNOLOGY,
- ✓ MAXIMIZES BATTERY LIFE AND PERFORMANCE,
- ✓ REDUCE ENERGY USE AND CARBON EMISSION.

- ✓ From 60 to 600 Amps
- ✓ AC input from 200 to 600 VAC
- ✓ DC output from 12 to 400 VDC



**Cabinet up to 3kW

The most advanced chargers, based on a IGBT Hybrid technology

Product description

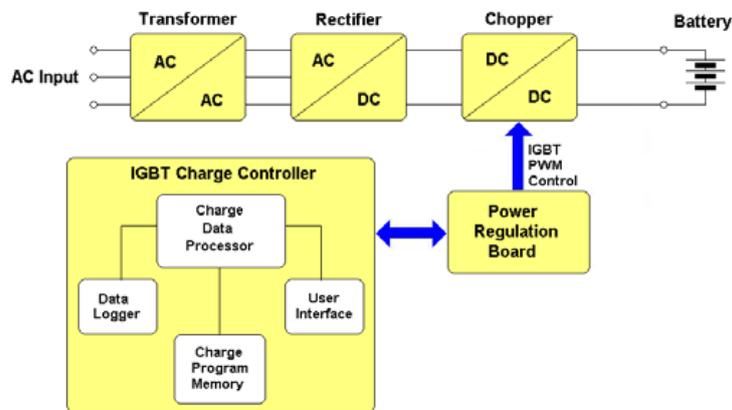
The MHF is a revolutionary traction battery charger, designed for conventional, opportunity and rapid charging applications.

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

The two parts that are combined together to compose this "Hybrid" system are:

- Special isolation transformer, with line frequency multiplication system;
- High frequency switchmode converter, based on IGBT technology.

This system offers very high electrical efficiency, near unity power factor and very low output current ripple, moreover it features a real universal charging capability: multivoltage, multi-current, multi-application.



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 MHF is controlled by the new digital board Amperis, 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/Rapid charging applications
- ✓ Airport Ground Support Equipment

Main features

- ✓ The Most Efficient technology available today
- ✓ Very Reliable design, easy maintenance
- ✓ True universal charger: Multi-Voltage, Multi-Capacity, Multi-Chemistry.

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- ✓ 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/fast 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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Technical specifications

MODELS	Universal charger MHF
AC INPUT	
TYPE	Universal battery charger MHF
STANDARD VOLTAGES	Single-phase 220-230-240 VAC \pm 10% Three-phase 220-240, 400, 440, 480, 600 VAC \pm 10% Frequency 50/60 Hz \pm 5 Hz
EFFICIENCY	>90% (*)
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 600A.
CHARGING CURVE	Completely programmable, can support batteries of any type, voltage, capacity. Programmable Weekly Equalization/Maintenance Mode. Manual Desulphation/Recovery cycle. Programmable off-peak energy hours.
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

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	messages.
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: 500x 900 x 440 (mm) Cabinet B: 62x1050 x 550 (mm)
ENCLOSURE	Stainless Steel front and upper panel Steel enclosure painted in white Red plastics (ABS) on control interface
COOLING	FORCED VENTILATION with active fan control
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	<ul style="list-style-type: none"> • Dual RS-485 port for daisy chain interconnection, compatible with WEB based Fleet Management System (DoctorFleet.com) • Compatible with 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	
MARKING	CE
EMC	IEC EN 61000-6-2, IEC EN 61000-6-4
SECURITY	IEC EN 50178, IEC EN 62040-1
PERFORMANCE TEST	IEC EN 62040-3



INDUSTRIAL CHARGER MHF

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NORTH AMERICAN STANDARDS

UL 1564 "Industrial battery chargers"

cCSAus Listed

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.