

# PRODUCT CATALOGUE

INDUSTRIAL BATTERY CHARGERS  
WORKSHOP CHARGING DEVICES  
DC-DC CONVERTERS



# *FLEXIBLE* CHARGING SOLUTIONS

---

## CONTENTS

The company – <i>About us</i>	p. 2
High frequency line	p. 5
Standard line	p. 25
North & Latin America range	p. 35
Lithium range	p. 51
Diagnostic and maintenance systems	p. 67
DC/DC converters	p. 76

# THE COMPANY

## *a b o u t u s*

ATIB Elettronica was established in 1989 in the heart of Lombardy. Formerly branch of ATIB Material Handling (manufacturer of forklift attachments since 1972) ATIB Elettronica soon became one of the main international players in the battery charging industry, thanks to the efforts of the founder Mr. Fernando Orlandi and to an inspired team who followed his philosophy through the years.

As an independent manufacturer of chargers for industrial batteries (Lead Acid, GEL, VRLA, AGM and Lithium) ATIB Elettronica focuses its core-business on traction and motive power since the establishment in Barbariga 30 years ago.

The recent moving into a new headquarter (2019), based in Longhena (Brescia) of tot.10.000 sq. meters, has improved the average yearly production capability of 50.000 chargers, with an internal team of 42 employees.

A flexible R&D department enables to develop specific tailor-made products for any application required in Material Handling OEM market (on board chargers and DC-DC converters). A functional internal structure and a large stock facility allow to satisfy all clients requirements with swiftness, efficiency and competence:

The Technical Department, where the products are designed, is always ready to listen to new needs and customize our products accordingly, and the R&D Department works every day to maintain our production range to its highest level.

The Sales Department is totally available to customer inquiries, to counsel and guide through the right product selection, according to customer needs and expectations.

Our After-sale & Warehouse respond with precision and swiftness to customer inquiries and spare parts requirements.

Starting from 2019, the company approached also the world of the electric mobility and vehicles, and it has recently created a dedicated internal division called ATIB E-Mobility, that focus on EV recharging solutions.





## **Distributors**

A worldwide footprinted network of more than 40 countries enables to support the main players of the materials handling and logistic industry, such as OEMs and structured distributors of traction batteries, forklift trucks, electric vehicles, cleaning machines and aerial platforms, including custom applications for automotive, stationary and solar industry in: Europe (UK, Germany, France, Benelux, Spain, Poland, Greece, Italy, Portugal, Scandinavia and Russia), Middle East, South-East Asia & South Korea, North Africa, South Africa, Latin & North America and Australia.

## **Values & Mission**

Providing modern high-quality charging solutions to the international materials handling industry is our mission. Our engagement includes an accurate selection of raw materials and suppliers, the creative product design and the detailed care of the whole manufacturing process.

In sight of customer retention, availability, flexibility and promptness are granted to all our worldwide clients and dealers as a main engagement of our mission.

Evaluating the feasibility of any tailor-made solution is our strength, along with a daily customer support.

The commitment of the whole ATIB Elettronica team is to be your flexible solutions partner.



FLEXIBLE CHARGING SOLUTIONS

HF LINE

FLEXIBLE CHARGING SOLUTIONS

HF LINE



# HIGH FREQUENCY

*line*

Modern, compact and efficient charging technology for any kind of batteries. Small size, on board mounting and a versatile setting enable HF chargers to meet all customer needs.

A higher performance, efficiency and a reduction of power consumption during the charge are combined with a battery longer duration.



# HFY & HFX

SINGLE PHASE 230 Vac



## MAIN APPLICATIONS



## SUITABLE BATTERIES

Wet lead acid - PzS

GEL – AGM – VRLA – PzV

Lithium (on demand)

## MODELS AVAILABLE

	V	A	VAC	CODE	Lead acid (Ah)		Gel (Ah)	Iac
					7-8h	10-11-14h	12-14h	Current draw
HFY	12 - 24	10	1x230	<b>HFYD 12-24/10</b>	61-71	85-94-113	75-94	2,25
	12 - 24	15	1x230	<b>HFYD 12-24/15</b>	92-106	127-141-170	113-141	3,37
	12 - 24	20	1x230	<b>HFYD 12-24/20</b>	122-141	169-188-227	151-188	4,49
HFX	12 - 24	25	1x230	<b>HFXD 12-24/25</b>	153-176	212-235-283	189-235	5,58
	12 - 24	30	1x230	<b>HFXD 12-24/30</b>	183-212	254-282-340	226-282	6,70
	36	20	1x230	<b>HFXD 36/20</b>	122-141	169-188-227	151-188	6,70
	48	15	1x230	<b>HFXD 48/15</b>	92-106	127-141-170	113-141	6,70

## PRODUCT INTRO

**HFY** is the smallest HF charger suitable for on-board applications with LED visual interface.

**HFX** is the small-medium sized HF charger suitable for semi-traction & on-board applications with LED visual interface.

Easy built-in jumpers enable voltage and profile selection (12-24V and two profiles). Also, PC connection allows advanced setting, data-report and diagnostic.

HFX is also available with CAN-bus communication (HXE-C version).



## GENERAL CHARACTERISTICS

	HFX	HFY
<b>Mains</b>	230V (1ph) +/-10% 50-60Hz On/off switch	230V (1ph) +/-10% 50-60Hz
<b>Visual signalling</b>	Single LED (3 colours)	
<b>Charger setting</b>	By switches: voltage (12-24) and 2 charging profiles (Pb/Gel pre-set) By PC: extra editable charging profiles, capacity, output current	
<b>Data memory</b>	Charger gives a report of the last 25 cycles and key technical data by integrated PC port output	
<b>Cool-down system</b>	Fan idle within 40°C internal components temperature	
<b>Efficiency</b>	> 85%	
<b>Operating temperature</b>	0° to +40°C	
<b>Certifications</b>	CE in conformity with LV and EMC protocols	

## SAFETY FEATURES

<b>Input protection</b>	Delay AC fuse
<b>Output protection</b>	By relay (reverse polarity protection)
<b>Thermal Protection</b>	Forced derating on primary side Forced derating or safety cut off on the diodes
<b>Protection during battery disconnection</b>	Safety cut off by undervoltage

## OPTIONALS

<b>On board</b>	Inhibitor cable (Vac presence relay), remote LED, curly AC cable
<b>Stand alone/wall mounted</b>	Cable holder
<b>On board/stand alone/wall</b>	Additional extra coating

## MECHANICAL CHARACTERISTICS

	HFX	HFY
<b>Dimensions (LxWxH)</b>	275 x 112 x 75 mm	230 x 121 x 75 mm
<b>Protection degree</b>	IP 21 (horizontal)	
<b>Weight</b>	3 kg	2 kg
<b>Input cable</b>	2,3 m +/- 10% (length) complete with Schuko plug 16A	
<b>Output cables</b>	2,3 m +/- 10% (length) – DC plug on demand	



# HFZ

## SINGLE PHASE 230 Vac



### MAIN APPLICATIONS



### SUITABLE BATTERIES

Wet lead acid - PzS

GEL – AGM – VRLA – PzV

Lithium (on demand)

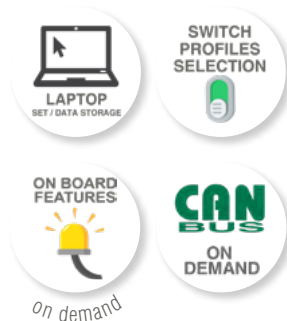
### MODELS AVAILABLE

V	A	VAC	CODE	Lead acid (Ah)		Gel (Ah)	Iac
				7-8h	10-11-14h	12-14h	Current draw
24	40	1x230	<b>HFZD 24/40</b>	244-282	338-376-454	302-376	8,18
24	50	1x230	<b>HFZD 24/50</b>	305-353	423-470-567	377-470	10,23
24	60	1x230	<b>HFZD 24/60</b>	366-423	508-564-680	452-564	12,28
36	30	1x230	<b>HFZD 36/30</b>	183-212	254-282-340	226-282	9,10
36	40	1x230	<b>HFZD 36/40</b>	244-282	338-376-454	302-376	12,13
48	20	1x230	<b>HFZD 48/20</b>	122-141	169-188-227	151-188	8,00
48	30	1x230	<b>HFZD 48/30</b>	183-212	254-282-340	226-282	11,99

## PRODUCT INTRO

HFZ is the medium range HF charger suitable for light traction application with LED visual interface.

An easy built-in jumper enables profile selection (Pb-GEL pre-set) and PC connection allows advanced setting, data-report and diagnostic.



## GENERAL CHARACTERISTICS

<b>Mains</b>	230V (1ph) +/-10% 50-60Hz - On/off switch present on top side
<b>Visual signalling</b>	Single LED (3 colours)
<b>Charger setting</b>	By switches: 2 charging profiles (Pb/Gel pre-set) By PC: extra editable charging profiles, capacity, output current
<b>Data memory</b>	Charger gives a report of the last 25 cycles and key technical data by integrated PC port output
<b>Cool-down system</b>	Fan idle within 40°C internal components temperature.
<b>Efficiency</b>	> 85%
<b>Operating temperature</b>	0° to +40°C
<b>Certifications</b>	CE in conformity with LV and EMC protocols

## SAFETY FEATURES

<b>Input protection</b>	Fast AC fuse
<b>Output protection</b>	By relay (reverse polarity protection)
<b>Thermal Protection</b>	Forced derating or safety cut off on the diodes
<b>Protection during battery disconnection</b>	Safety cut off by undervoltage

## OPTIONALS

<b>On board</b>	Inhibitor cable (Vac presence relay), remote LED
<b>Stand alone/wall mounted</b>	Cable holder
<b>On board/stand alone/wall</b>	Additional extra coating

## MECHANICAL CHARACTERISTICS

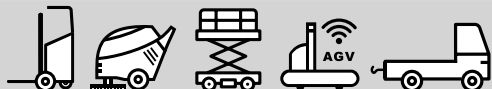
<b>Dimensions (LxWxH)</b>	362 x 191 x 75 mm
<b>Protection degree</b>	IP 21 (vertical)
<b>Weight</b>	6 kg
<b>Input cable</b>	2,3 m +/- 10% (length) complete with Schuko plug 16A
<b>Output cables</b>	2,3 m +/- 10% (length) – DC plug on demand

# H K P

## SINGLE PHASE 230 Vac



### MAIN APPLICATIONS



### SUITABLE BATTERIES

Wet lead acid - PzS

GEL – AGM – VRLA – PzV

Lithium (on demand)

### MODELS AVAILABLE

V	A	VAC	CODE	Lead acid (Ah)		Gel (Ah)	Iac
				7-8h	10-11-14h	12-14h	Current draw
24	70	1x230	<b>HKP 24/70</b>	385-444	533-592-714	475-592	8,4
24	85	1x230	<b>HKP 24/85</b>	468-540	647-720-867	557-720	10,2
36	50	1x230	<b>HKP 36/50</b>	275-317	381-423-510	339-423	8,9
36	60	1x230	<b>HKP 36/60</b>	330-381	457-508-612	407-508	10,7
48	40	1x230	<b>HKP 48/40</b>	220-254	305-338-408	271-338	9,4
48	50	1x230	<b>HKP 48/50</b>	275-317	381-423-510	339-423	11,7
48	60	1x230	<b>HKP 48/60</b>	330-381	457-508-612	407-508	14,1

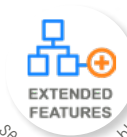
Special versions 12V, 72V, 80V and 96V available on demand

Air mix Ah= +10%

## PRODUCT INTRO

HKP is the HF single phase charger equipped with PFC (Power Factor Control) reaching highest power, aimed for bigger traction applications.

An integrated interface with digital display and LED visual enables a complete overview and setting of charge parameters, including delay start and easy trouble-shooting. USB interface (on request) permits advanced setting and data-report. This range includes also AIR version (with air mix option) and HKP-C, which is the version for Lithium applications featuring CAN-bus protocol and OLED display.



see optional's table

see HKP-C model

## GENERAL CHARACTERISTICS

<b>Mains</b>	230V (1ph) +/-10% 50-60Hz
<b>Visual signalling</b>	4 LEDs, digital display and 4 operational keys on the front side
<b>Charger setting</b>	By display: current, capacity, charging profiles (pre-set multiple selection)
<b>Data memory (optional)</b>	Charger gives a report of the last 25 cycles and key technical data (by PC)
<b>Cool-down system</b>	Temperature-regulated fan speed. Fan idle within 40°C internal components temperature.
<b>Efficiency</b>	> 90%
<b>Operating temperature</b>	0° to +40°C
<b>Certifications</b>	CE in conformity with LV and EMC protocols

## SAFETY FEATURES

<b>Input protection</b>	AC fast fuse
<b>Output protection</b>	By relay (reverse polarity protection)
<b>Thermal Protection</b>	Probes on IGBT and diodes + derating
<b>Protection during battery disconnection</b>	Safety cut off by undervoltage

## OPTIONALS

<b>On board</b>	Inhibitor cable (Vac presence relay), remote LED
<b>Stand alone/wall mounted</b>	Cable holder, charger iron stand
<b>On board/stand alone/wall</b>	Additional extra coating, air mix pump, pilot contact, charger status lamp, thermal probe voltage adjustment, advanced display with USB port

## MECHANICAL CHARACTERISTICS

<b>Dimensions</b> (LxWxH)	<b>HKP:</b> 406 x 224 x 88 mm <b>HKP Air/special features:</b> 416 x 549 x 130 mm
<b>Protection degree</b>	IP 21 (vertical)
<b>Weight</b>	9 kg
<b>Input cable</b>	2,3 m +/- 10% (length) complete with Schuko plug 16A
<b>Output cables</b>	2, 3 m +/- 10% (length) – DC plug on demand

# HFL

## SINGLE PHASE 110-230 Vac



### MAIN APPLICATIONS



### SUITABLE BATTERIES

Wet lead acid - PzS

GEL – AGM – VRLA – PzV

Lithium (on demand)

### MODELS AVAILABLE

V	A	VAC	CODE	Lead acid (Ah)		Gel (Ah)	lac
				7-8h	10-11-14h	12-14h	Current draw (230Vac)
24	30	1x110-230	<b>HFL 24/30</b>	183-212	254-282-340	226-282	3,5
36	20	1x110-230	<b>HFL 36/20</b>	122-141	169-188-227	151-188	3,5
48	15	1x110-230	<b>HFL 48/15</b>	92-106	127-141-170	113-141	3,5

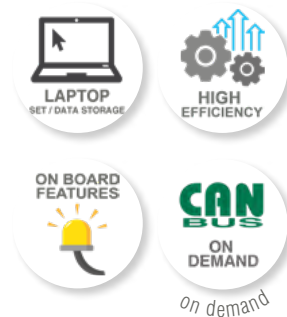
**-K1:** suffix code for on-board package

## PRODUCT INTRO

HFL is our IP 65 high efficiency PFC HF charger.

The universal input 110/230Vac makes it suitable for different markets.

This advanced technology charger has a brand new hardware architecture providing an innovative power conversion capable of reducing the losses and optimizing the efficiency of the system.



## GENERAL CHARACTERISTICS

<b>Mains</b>	Vac 110-230V (1ph) +/-10% 50-60Hz
<b>Visual signalling</b>	External single LED (3 colours)
<b>Charger setting</b>	By PC/Programming port: extra editable charging profiles, capacity, output current
<b>Data memory (optional)</b>	Charger gives a report of the last 25 cycles and key technical data (by PC)
<b>Cool-down system</b>	Fan idle within 40°C internal components temperature.
<b>Efficiency</b>	> 90% at 230 Vac
<b>Operating temperature</b>	-10° to +40°C, humidity 95% without condensing
<b>Certifications</b>	CE in conformity with LV and EMC protocols

## SAFETY FEATURES

<b>Input protection</b>	Delay AC fuse
<b>Output protection</b>	By fuse (reverse polarity protection)
<b>Thermal Protection</b>	Forced derating on secondary side
<b>Protection during battery disconnection</b>	Safety cut off by undervoltage

## MECHANICAL CHARACTERISTICS

<b>Dimensions (LxWxH)</b>	320 x 210 x 112 mm
<b>Protection degree</b>	IP65
<b>Weight</b>	5 kg
<b>Input cable</b>	2,3 m +/- 10% (length) complete with Schuko plug 16A
<b>Output cables</b>	2,3 m +/- 10% (length) – DC plug on demand <b>HFL:</b> External LED (5 cm), serial port for programming <b>HFL-K1:</b> Inhibitor cable (2,3 m), external remote LED (2,3 m), serial port for programming



# HFT

## THREE PHASE 400 Vac



### MAIN APPLICATIONS



### SUITABLE BATTERIES

Wet lead acid - PzS

GEL – AGM – VRLA – PzV

Lithium (on demand)

### MODELS AVAILABLE

V	A	VAC	CODE	Lead acid (Ah)		Gel (Ah)	lac
				7-8h	10-11-14h	12-14h	Current draw
24	80	3x400	<b>HFT 24/80</b>	440-508	609-677-816	543-677	4,1
24	100	3x400	<b>HFT 24/100</b>	549-635	762-846-1020	679-846	5,1
24	120	3x400	<b>HFT 24/120</b>	659-762	914-1015-1224	814-1015	6,1
48	80	3x400	<b>HFT 48/80</b>	440-508	609-677-816	543-677	8,0
48	100	3x400	<b>HFT 48/100</b>	549-635	762-846-1020	679-846	10,0
48	120	3x400	<b>HFT 48/120</b>	659-762	914-1015-1224	814-1015	12,0
80	80	3x400	<b>HFT 80/80</b>	440-508	609-677-816	543-677	13,1
80	100	3x400	<b>HFT 80/100</b>	549-635	762-846-1020	679-846	15,5
96	80	3x400	<b>HFT 96/80</b>	440-508	609-677-816	543-677	15,7
120	60	3x400	<b>HFT 120/60</b>	330-381	457-508-612	407-508	15,4

Special versions 36V and 72V available on demand

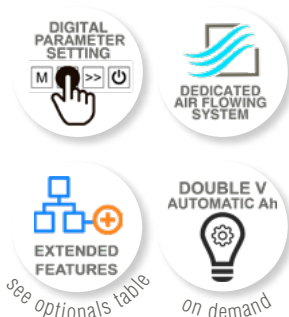
In between output current sizes available

Air mix Ah= +10%

## PRODUCT INTRO

HFT is the three phase HF charger aimed for bigger traction batteries still featuring wall mounting.

An integrated interface with digital display and LEDs visual enables a complete overview and setting of charge parameters, including delay start and easy trouble-shooting. USB interface (on request) permits advanced setting and data-report. This range includes also HFT-AIR (with air mix option) and HFT DOUBLE VOLTAGE (with automatic Ah detection).



## GENERAL CHARACTERISTICS

<b>Mains</b>	400V (3ph) +/-10% 50-60Hz
<b>Visual signalling</b>	4 LEDs, digital Display and 4 control keys on the front side
<b>Charger setting</b>	By display: current, capacity, charging profiles (pre-set multiple selection)
<b>Data memory (optional)</b>	Charger gives a report of the last 25 cycles and key technical data (by PC)
<b>Cool-down system</b>	Temperature-regulated fan speed. Fan idle within 40°C internal components temperature.
<b>Efficiency</b>	> 90%
<b>Operating temperature</b>	0° to +40°C
<b>Certifications</b>	CE in conformity with LV and EMC protocols

## SAFETY FEATURES

<b>Input protection</b>	3 AC fast fuses
<b>Output protection</b>	Ultrafast fuse (reverse polarity protection)
<b>Thermal Protection</b>	Probes on IGBT and diodes + derating
<b>Protection during battery disconnection</b>	Safety cut off by undervoltage

## OPTIONALS

<b>Stand alone</b>	Charger iron stand
<b>Stand alone/wall mounted</b>	Cable holder
<b>On board/stand alone/wall</b>	Additional extra coating, air mix pump, pilot contact, charger status lamp, thermal probe voltage adjustment, advanced display with USB port

## MECHANICAL CHARACTERISTICS

<b>Dimensions (LxWxH)</b>	521 x 397 x 115 mm
<b>Protection degree</b>	IP 21 (vertical)
<b>Weight</b>	17 kg
<b>Input cable</b>	2,5 m +/- 10% (length) – AC plug on demand
<b>Output cables</b>	2,5 m +/- 10% (length) – DC plug on demand

# HFT1 & HTV

THREE PHASE 400 Vac



## MAIN APPLICATIONS



## SUITABLE BATTERIES

Wet lead acid - PzS

GEL – AGM – VRLA – PzV

Lithium (on demand)

## MODELS AVAILABLE

V	A	VAC	CODE	Lead acid (Ah)		Gel (Ah)	Iac
				7-8h	10-11-14h	12-14h	Current draw
24	80	3x400	<b>HFT1 24/80</b>	440-508	609-677-816	543-677	4,1
24	100	3x400	<b>HFT1 24/100</b>	549-635	762-846-1020	679-846	5,1
24	120	3x400	<b>HFT1 24/120</b>	659-762	914-1015-1224	814-1015	6,1
48	80	3x400	<b>HFT1 48/80</b>	440-508	609-677-816	543-677	8,0
48	100	3x400	<b>HFT1 48/100</b>	549-635	762-846-1020	679-846	10,0
48	120	3x400	<b>HFT1 48/120</b>	659-762	914-1015-1224	814-1015	12,0
80	80	3x400	<b>HFT1 80/80</b>	440-508	609-677-816	543-677	13,1
80	100	3x400	<b>HFT1 80/100</b>	549-635	762-846-1020	679-846	15,5
96	80	3x400	<b>HFT1 96/80</b>	440-508	609-677-816	543-677	15,7
120	60	3x400	<b>HFT1 120/60</b>	330-381	457-508-612	407-508	15,4

Special versions 36V and 72V available on demand

In between output current sizes available

Air mix Ah= +10%

## PRODUCT INTRO

HFT1 and HTV digital are the three phase HF chargers equipped with integrated OLED/LCD display and USB interface.

They are the enhanced version of our standard HFT.

This range includes also special versions with air-mix option and with CAN-bus protocol for Lithium applications.



## GENERAL CHARACTERISTICS

<b>Mains</b>	400V (3ph) +/-10% 50-60Hz
<b>Visual signalling</b>	OLED/ LCD display, 4 LEDs and 4 control keys
<b>Charger setting</b>	By OLED/ LCD display: current, voltage, capacity and 7 pre-set charging profiles By laptop/USB port: enhanced programming
<b>Data memory</b>	Charger gives a report of the last 50 cycles and key technical data by integrated USB port
<b>Cool-down system</b>	Temperature-regulated fan speed. Fan idle within 40°C internal components temperature.
<b>Efficiency</b>	> 90% (HFT1) / ≥ 92% (HTV)
<b>Operating temperature</b>	0° to +40°C full power
<b>Certifications</b>	CE in conformity with LV and EMC protocols

## SAFETY FEATURES

<b>Input protection</b>	3 AC fast fuses
<b>Output protection</b>	Ultrafast fuse (reverse polarity protection)
<b>Thermal Protection</b>	Probes on IGBT and diodes + derating
<b>Protection during battery disconnection</b>	Safety cut off by undervoltage

## OPTIONALS

<b>Stand alone</b>	Charger iron stand
<b>Stand alone/wall mounted</b>	Cable holder
<b>On board/stand alone/wall</b>	Additional extra coating, air mix pump, pilot contact, charger status lamp, thermal probe voltage adjustment

## MECHANICAL CHARACTERISTICS

<b>Dimensions (LxWxH)</b>	521 x 397 x 115 mm
<b>Protection degree</b>	IP 21 (vertical)
<b>Weight</b>	18 kg
<b>Input cable</b>	2,5 m +/- 10% (length) – AC plug on demand
<b>Output cables</b>	2,5 m +/- 10% (length) – DC plug on demand

# HFT2

THREE PHASE 400 Vac



## MAIN APPLICATIONS



## SUITABLE BATTERIES

Wet lead acid - PzS

GEL – AGM – VRLA – PzV

Lithium (on demand)

## MODELS AVAILABLE

V	A	VAC	CODE	Lead acid (Ah)		Gel (Ah)	lac
				7-8h	10-11-14h	12-14h	Current draw
48	160	3x400	<b>HFT2 48/160</b>	879-1016	1219-1354-1633	1086-1354	16,0
48	180	3x400	<b>HFT2 48/180</b>	989-1143	1371-1523-1837	1222-1523	18,0
48	200	3x400	<b>HFT2 48/200</b>	1099-1270	1523-1692-2041	1357-1692	20,0
80	140	3x400	<b>HFT2 80/140</b>	769-889	1066-1185-1429	950-1185	22,8
80	160	3x400	<b>HFT2 80/160</b>	879-1016	1219-1354-1633	1086-1354	26,1
96	100	3x400	<b>HFT2 96/100</b>	549-635	762-846-1020	679-846	19,6
96	140	3x400	<b>HFT2 96/140</b>	769-889	1066-1185-1429	950-1185	29,7
120	80	3x400	<b>HFT2 120/80</b>	440-508	609-677-816	543-677	21,2
120	100	3x400	<b>HFT2 120/100</b>	549-635	762-846-1020	679-846	26,5

Special versions 24V, 36V, 72V available on demand

In between output current sizes available

Air mix Ah= +10%

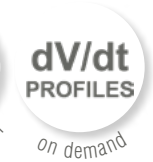
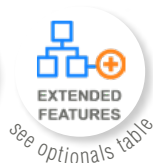
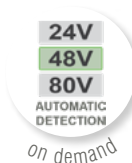
## PRODUCT INTRO

HFT2 is the three phase HF charger equipped with OLED/LCD and USB interface.

It has been designed for the recharge of any battery types.

It is the enhanced version of our standard HFTD.

The charger is available in HFT2 AIR and HTC2 (CAN-bus) versions.



## GENERAL CHARACTERISTICS

<b>Mains</b>	400V (3ph) +/-10% 50-60Hz
<b>Visual signaling</b>	OLED/LCD display, 4 LEDs and 4 control keys
<b>Charger setting</b>	By OLED/LCD display: current, voltage, capacity and 7 pre-set charging profiles By laptop/USB port: enhanced programming
<b>Data memory</b>	Charger gives a report of the last 50 cycles and key technical data by integrated USB port
<b>Cool-down system</b>	Temperature-regulated fan speed. Fan idle within 40°C internal components temperature.
<b>Efficiency</b>	> 90%
<b>Operating temperature</b>	0° to +40°C
<b>Certifications</b>	CE in conformity with LV and EMC protocols

## SAFETY FEATURES

<b>Input protection</b>	3 fast fuses (each main power board)
<b>Output protection</b>	Ultrafast fuse (reverse polarity protection)
<b>Thermal Protection</b>	Probes on IGBT and diodes + derating
<b>Protection during battery disconnection</b>	Safety cut off by undervoltage

## OPTIONALS

<b>Stand alone</b>	Charger iron stand
<b>Stand alone/wall mounted</b>	Cable holder
<b>On board/stand alone/wall</b>	Additional extra coating, air mix pump, pilot contact, charger status lamp, thermal probe voltage adjustment

## MECHANICAL CHARACTERISTICS

<b>Dimensions (LxWxH)</b>	535 x 407 x 259 mm
<b>Protection degree</b>	IP 21 (vertical)
<b>Weight</b>	26 kg
<b>Input cable</b>	2,5 m +/- 10% (length) – AC plug on demand
<b>Output cables</b>	2,5 m +/- 10% (length) – DC plug on demand



# HFT3

## THREE PHASE 400 Vac



### MAIN APPLICATIONS



### SUITABLE BATTERIES

Wet lead acid - PzS

GEL – AGM – VRLA – PzV

Lithium (on demand)

### MODELS AVAILABLE

V	A	VAC	CODE	Lead acid (Ah)		Gel (Ah)	Iac
				7-8h	10-11-14h	12-14h	Current draw
24	260	3x400	<b>HFT3 24/260</b>	1429-1650	1980-2200-2653	1765-2200	13,3
24	300	3x400	<b>HFT3 24/300</b>	1648-1904	2285-2538-3061	2036-2538	15,4
48	260	3x400	<b>HFT3 48/260</b>	1429-1650	1980-2200-2653	1765-2200	26,0
48	300	3x400	<b>HFT3 48/300</b>	1648-1904	2285-2538-3061	2036-2538	30,0
80	200	3x400	<b>HFT3 80/200</b>	1099-1270	1523-1692-2041	1357-1692	32,6
80	240	3x400	<b>HFT3 80/240</b>	1319-1524	1828-2031-2449	1629-2031	39,2
80	260	3x400	<b>HFT3 80/260</b>	1429-1650	1980-2200-2653	1765-2200	42,4
96	160	3x400	<b>HFT3 96/160</b>	879-1016	1219-1354-1633	1086-1354	33,9
96	200	3x400	<b>HFT3 96/200</b>	1099-1270	1523-1692-2041	1357-1692	42,4
120	120	3x400	<b>HFT3 120/120</b>	659-762	914-1015-1224	814-1015	31,8
120	160	3x400	<b>HFT3 120/160</b>	879-1016	1219-1354-1633	1086-1354	42,4

Special versions 36V and 72V available on demand

In between output current sizes available

Air mix Ah= +10%

## PRODUCT INTRO

HFT3 is the three phase HF charger equipped with OLED/LCD display and USB interface and it is the Top of HF Range reaching the highest power sizes. It has been designed for the recharge of any battery types including lithium applications. CAN-bus communication is available to manage the profile through our private protocol (see HTC3 version).



## GENERAL CHARACTERISTICS

<b>Mains</b>	400V (3ph) +/-10% 50-60Hz
<b>Visual signalling</b>	OLED/LCD display, 4 LEDs and 4 control keys
<b>Charger setting</b>	By OLED/LCD display: current, voltage, capacity and 7 pre-set charging profiles By laptop/USB port: enhanced programming
<b>Data memory</b>	Charger gives a report of the last 50 cycles and key technical data by integrated USB port
<b>Cool-down system</b>	Temperature-regulated fan speed. Fan idle within 40°C internal components temperature.
<b>Efficiency</b>	> 90%
<b>Operating temperature</b>	0° to +40°C
<b>Certifications</b>	CE in conformity with LV and EMC protocols

## SAFETY FEATURES

<b>Input protection</b>	3 AC fast fuses (each main power board)
<b>Output protection</b>	Ultrafast fuse (reverse polarity protection)
<b>Thermal Protection</b>	Probes on IGBT and diodes + derating
<b>Protection during battery disconnection</b>	Safety cut off by undervoltage

## OPTIONALS

<b>On board/stand alone/wall</b>	Additional extra coating, air mix pump, pilot contact, charger status lamp, thermal probe voltage adjustment
----------------------------------	--

## MECHANICAL CHARACTERISTICS

<b>Dimensions (LxWxH)</b>	602 x 426 x 802 mm
<b>Protection degree</b>	IP 21 (stand alone) - filter protection system ready (for higher IP: contact our technical department for more details)
<b>Weight</b>	69 kg
<b>Input cable</b>	2,5 m +/- 10% (length) – AC plug on demand
<b>Output cables</b>	2,5 m +/- 10% (length) – DC plug on demand

# HTUC

THREE PHASE 400 Vac



## MAIN APPLICATIONS



## SUITABLE BATTERIES

Wet lead acid - PzS

GEL – AGM – VRLA – PzV

Lithium (on demand)

## MODELS AVAILABLE

V	A	VAC	CODE	Lead acid (Ah)		GeI (Ah)	Iac
				7-8h	10-11-14h	12-14h	Current draw
24	140	3x400	<b>HTUC 24/140</b>	769-889	1066-1185-1429	950-1185	5,7
24	160	3x400	<b>HTUC 24/160</b>	879-1016	1219-1354-1633	1086-1354	6,5
24	180	3x400	<b>HTUC 24/180</b>	989-1143	1371-1523-1837	1222-1523	7,3
24	200	3x400	<b>HTUC 24/200</b>	1099-1270	1523-1692-2041	1357-1692	8,1
48	140	3x400	<b>HTUC 48/140</b>	769-889	1066-1185-1429	950-1185	11,2
48	160	3x400	<b>HTUC 48/160</b>	879-1016	1219-1354-1633	1086-1354	12,8
48	180	3x400	<b>HTUC 48/180</b>	989-1143	1371-1523-1837	1222-1523	14,4
48	200	3x400	<b>HTUC 48/200</b>	1099-1270	1523-1692-2041	1357-1692	16,0
80	120	3x400	<b>HTUC 80/120</b>	659-762	914-1015-1224	814-1015	15,9
96	100	3x400	<b>HTUC 96/100</b>	549-635	762-846-1020	679-846	15,9
120	80	3x400	<b>HTUC 120/80</b>	440-508	609-677-816	543-677	15,9

Special versions 36V and 72V available on demand

In between output current sizes available

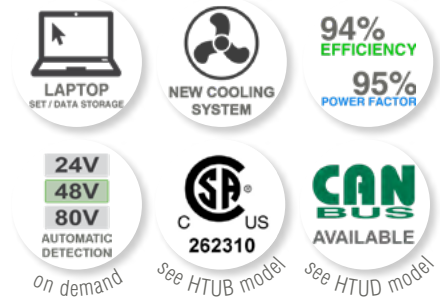
Air mix Ah= +10%

Parallel version available

## PRODUCT INTRO

HTUC is the top level HF charger aimed to reach the highest performances. This range gathers all top features of HF ranges in terms of efficiency, power factor, ventilation, internal structure and general flexibility. An integrated digital interface with OLED/LCD display and integrated USB enables the best and easiest overview/setting of charge parameters, diagnostic and data reports.

Lithium version is available with private or custom protocol (HTUD model).



## GENERAL CHARACTERISTICS

<b>Mains</b>	400V (3ph) +/-10% 50-60Hz
<b>Visual signalling</b>	OLED/LCD display, 4 LEDs and 4 control keys
<b>Charger setting</b>	By OLED/LCD display: current, voltage, capacity and 7 pre-set charging profiles By laptop/USB port: enhanced programming
<b>Data memory</b>	Charger gives a report of the last 50 cycles and key technical data by integrated USB port
<b>Cool-down system</b>	Dedicated air cooling direct to heatsink only. Temperature-regulated fan speed. Fan idle within 40°C internal components temperature
<b>Efficiency</b>	94%
<b>Operating temperature</b>	0° to +40°C
<b>Certifications</b>	CE in conformity with LV and EMC protocols

## SAFETY FEATURES

<b>Input protection</b>	3 fast fuses
<b>Output protection</b>	By fuse (reverse polarity protection)
<b>Thermal Protection</b>	Probes on IGBT, diodes and power transformer + derating
<b>Protection during battery disconnection</b>	Safety cut off by undervoltage

## OPTIONALS

<b>Stand alone</b>	Charger iron stand
<b>Stand alone/wall mounted</b>	Cable holder
<b>On board/stand alone/wall</b>	Additional extra coating, air mix pump, pilot contact, charger status lamp, thermal probe voltage adjustment, dV/dt profiles

## MECHANICAL CHARACTERISTICS

<b>Dimensions (LxWxH)</b>	570 x 456 x 195 mm
<b>Protection degree</b>	IP 21 (vertical) - Additional filter protection on demand
<b>Weight</b>	28 kg
<b>Input cable</b>	2,5 m +/- 10% (length) – AC plug on demand
<b>Output cables</b>	2,5 m +/- 10% (length) – DC plug on demand



A vertical strip on the left side of the page shows a close-up of industrial machinery, likely a forklift, with a red vertical beam and various metal components.

# STANDARD

*line*

Experienced and long dated technology with higher robustness against intensive usage and/or ambient factors (humidity and dust); an easy “on-site” repairing and spare parts replacement make this charging solution the best choice for the excellent balance price/performance.



# SERIE 2

## Basic Wa



### SUITABLE BATTERIES

PzS wet lead acid

### MAIN APPLICATIONS



### STANDARD AVAILABLE SIZES

Output Voltage	Output Current
from 12V up to 80V	from 10A up to 200A
//	Amps depending on V ratio and max power in kVA

See technical chart for AC current draw, plugs & recommended mains fuses by size.

### AH RECHARGE TABLE

Output current A	>>>	15 A	20 A	25 A	30 A	40 A	50 A	60 A
Ah (C5)	9h	77	103	128	154	206	257	308
	12h	99	132	165	198	265	331	397
	13-14h	110	147	184	220	294	367	441
Output current A	>>>	80 A	100A	120A	140A	160A	180A	200A
Ah (C5)	9h	411	514	617	719	822	925	1028
	12h	529	661	794	926	1058	1190	1323
	13-14h	588	735	882	1029	1176	1322	1469

## PRODUCT INTRO

Serie 2 is the basic conventional Wa DIN 41774 range that grants our best balance between price and performance, aimed for markets demanding flexible products.

As entry level Serie 2 features universal 4-LED board, fix 3h temporal charge and compact casings\*.

(\*up to specific V/A sizes).



## GENERAL CHARACTERISTICS

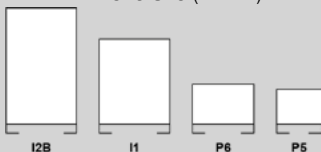
<b>Mains</b>	1phase 230Vac $\pm$ 5% – 3phase 400Vac $\pm$ 5% / 50Hz
<b>Visual signalling</b>	Basic 4 LEDs visualization with EAV (easy alarm visualization)
<b>Main features</b>	<ul style="list-style-type: none"> <li>• Automatic start, charging process and shutoff</li> <li>• Universal Electronic Board with equalisation setting (dipswitch on PCB)</li> <li>• Final charging stage: temporal (3h pre-set time)</li> <li>• Leakage power transformer</li> <li>• Wa charging profile (DIN 41774)</li> </ul>
<b>Efficiency</b>	82/88% depending on power involved
<b>Operating temperature</b>	0° to +40°C
<b>Certifications</b>	CE in conformity with LV and EMC protocols

## SAFETY FEATURES

<b>Output protection</b>	Reverse polarity protection: fuse
<b>Thermal protection</b>	Leakage power transformer (class F) provided with thermal probes
<b>General protection</b>	Double security timer: gassing point / max charging duration Battery detection with safety powering

## MECHANICAL CHARACTERISTICS

<b>Protection degree</b>	IP 21
<b>Weight</b>	Depending on model size
<b>Input cable</b>	2,3 m (length) +/- 10% – AC plug on demand. Schuko plug included on models up to 16A current draw
<b>Output cables</b>	2,3 m (length) +/- 10% – DC plug on demand
<b>Dimensions (LxWxH)</b>	I2B: 550 x 450 x 900 mm
	I1: 550x 390 x 660 mm
	P6: 480 x 280 x 310 mm
	P5: 350 x 220 x 270 mm



# SERIE 3

Advanced line - Wa



## SUITABLE BATTERIES

PzS wet lead acid

## MAIN APPLICATIONS



## STANDARD AVAILABLE SIZES

Output Voltage	Output Current
from 12V up to 120V	from 10A up to 300A
any other V: on demand	Amps depending on V ratio and max power in kVA (SERIE 3-IP: max power in kVA = 12,8*)

\*higher on demand

See technical chart for absorption, plugs & recommended mains fuses by size.

## AH RECHARGE TABLE

A	>>>	15A	20A	25A	30A	40A	50A	60A	70A	80A	90A	100A	110A	120A	130A
Ah (C5)	9h	77	103	128	154	206	257	308	360	411	462	514	565	617	668
	12h	99	132	165	198	265	331	397	463	529	595	661	727	794	860
	13-14h	110	147	184	220	294	367	441	514	588	661	735	808	882	955
A	>>>	140A	150A	160A	170A	180A	190A	200A	210A	220A	230A	240A	250A	260A	280A
Ah (C5)	9h	719	771	822	873	925	976	1028	1079	1130	1182	1233	1284	1336	1439
	12h	926	992	1058	1124	1190	1256	1323	1389	1455	1521	1587	1653	1719	1852
	13-14h	1029	1102	1176	1249	1322	1396	1469	1543	1616	1690	1763	1836	1910	2057

## PRODUCT INTRO

Series 3 represents the upgrade into “Advanced” conventional Wa ranges respectively, aimed for specific markets demanding structured or dedicated characteristics.

The Series feature programmable board with internal memory, enhanced algorithms and USB (setting/troubleshooting/data-report).

Security features involves both mechanical and software solutions.



## GENERAL CHARACTERISTICS

<b>Mains</b>	1phase 230Vac ± 5% – 3phase 400Vac ± 5% / 50Hz (any other on demand)
<b>Visual signalling</b>	5 LED advanced visualization with EAV (easy alarm visualization) and data memory system
<b>Main features</b>	<ul style="list-style-type: none"> <li>• Automatic start, charging process and shutoff</li> <li>• Universal Electronic Board with advanced digital setting (by display or keypad): profile thresholds / termination mode / equilization mode / delay start / cable compensation</li> <li>• Final charging stage (adjustable in respect of battery usage): temporal, capacitive (CF% and AH accumulated), derivative dv/dt</li> <li>• Leakage power transformer</li> <li>• Wa charging profile (DIN 41774)</li> </ul>
<b>Operating temperature</b>	0° to +40°C (heavy climate version available)
<b>Efficiency</b>	82/88% depending on power involved
<b>Certifications</b>	CE in conformity with LV and EMC protocols

## SAFETY FEATURES

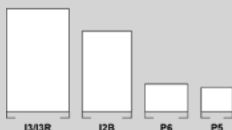
<b>Output protection</b>	Reverse polarity protection: fuse
<b>Thermal protection</b>	Leakage power transformer (class F) provided with thermal probes
<b>General protection</b>	Double security timer: gassing point / max charging duration Additional thermal protection based on algorithm managed by electronic board Battery detection with safety powering

## OPTIONALS

<b>SERIE 3-EC</b>	Keypad, Cable holder, USB port, Protection cage, IP54 cabinet
<b>SERIE 3</b>	Keypad, Delta/Star switch, Cable holder, USB port, Protection cage, IP54 cabinet, Air system, Water fill contacts, External lamp, Pilot contact

## MECHANICAL CHARACTERISTICS

<b>Protection degree</b>	IP 21
<b>Weight</b>	Depending on model size
<b>Input cable</b>	2,3 m (length) +/- 10% – AC plug on demand Schuko plug included on models up to 16A current draw
<b>Output cables</b>	2,3 m (length) +/- 10% – DC plug on demand
<b>Dimensions (LxWxH)</b>	I3: 700 x 550 x 1150 mm
	I3R: 600 x 550 x 1050 mm
	I2B: 550 x 450 x 900 mm
	P6: 480 x 280 x 310 mm
	P5: 350 x 220 x 270 mm



# SERIE 3-IP



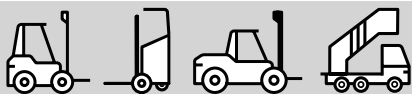
Advanced line - Wa



## SUITABLE BATTERIES

PzS wet lead acid

## MAIN APPLICATIONS



## STANDARD AVAILABLE SIZES

Output Voltage	Output Current
from 12V up to 120V	from 10A up to 300A
any other V: on demand	Amps depending on V ratio Max power in kVA = 12,8* *(higher on demand)

See technical chart for absorption, plugs & recommended mains fuses by size.

## AH RECHARGE TABLE

A	>>>	15A	20A	25A	30A	40A	50A	60A	70A	80A	90A	100A	110A	120A	130A
Ah (C5)	9h	77	103	128	154	206	257	308	360	411	462	514	565	617	668
	12h	99	132	165	198	265	331	397	463	529	595	661	727	794	860
	13-14h	110	147	184	220	294	367	441	514	588	661	735	808	882	955
A	>>>	140A	150A	160A	170A	180A	190A	200A	210A	220A	230A	240A	250A	260A	280A
Ah (C5)	9h	719	771	822	873	925	976	1028	1079	1130	1182	1233	1284	1336	1439
	12h	926	992	1058	1124	1190	1256	1323	1389	1455	1521	1587	1653	1719	1852
	13-14h	1029	1102	1176	1249	1322	1396	1469	1543	1616	1690	1763	1836	1910	2057

## PRODUCT INTRO

Serie 3-IP represents the upgrade into “Advanced” conventional Wa ranges. The IP54 line grants highest protection from dust and water sprays.

This special cabinet is ideal for outdoor application or airport charging stations. This series features programmable board with internal memory, enhanced algorithms and USB (setting/troubleshooting/data-report). Security features involves both mechanical and software solutions.



## GENERAL CHARACTERISTICS

<b>Mains</b>	1phase 230Vac ± 5% – 3phase 400Vac ± 5% / 50Hz (any other on demand)
<b>Visual signalling</b>	5 LED advanced visualization with EAV (easy alarm visualization) and data memory system. See more details on below standard features/optional table.
<b>Main features</b>	<ul style="list-style-type: none"> <li>• Automatic start, charging process and shutoff</li> <li>• Universal Electronic Board with advanced digital setting (by display or keypad): profile thresholds / termination mode / equalization mode / delay start / cable compensation</li> <li>• Final charging stage (adjustable in respect of battery usage): temporal, capacitive (CF% and AH accumulated), derivative dv/dt</li> <li>• Leakage power transformer</li> <li>• Wa charging profile (DIN 41774)</li> </ul>
<b>Operating temperature</b>	0° to +40°C (heavy climate version available)
<b>Efficiency</b>	82/88% depending on power involved
<b>Certifications</b>	CE in conformity with LV and EMC protocols

## SAFETY FEATURES

<b>Output protection</b>	Reverse polarity protection: fuse
<b>Thermal protection</b>	Leakage power transformer (class F) provided with thermal probes
<b>General protection</b>	Double security timer: gassing point / max charging duration Additional thermal protection based on algorithm managed by electronic board Battery detection with safety powering

## MECHANICAL CHARACTERISTICS

<b>Protection degree</b>	IP54
<b>Weight</b>	Depending on model size
<b>Input cable</b>	2,3 m (length) +/- 10% AC plug on demand
<b>Output cables</b>	2,3 m (length) +/- 10% DC plug on demand
<b>Dimensions (LxWxH)</b>	<p>M 12-8-4: 800 x 400 x 1200 mm</p> <p>M 10-6-4: 600 x 400 x 1000 mm</p>



M 12-8-4



M 10-6-4

## STD FEATURES/OPTIONALS

ADVANCED LINE	SERIE 3-IP
<b>IP54 cabinet</b>	✓
<b>External roof</b>	✓
<b>Extra coating on PCB</b>	⊕
<b>Tropical/Special t° features</b>	⊕
<b>Internal heating system</b>	⊕
<b>Keypad</b>	⊕
<b>Delta/Star switch</b>	⊕
<b>WOWA/Pulse</b>	⊕
<b>Air system (EUW)</b>	⊕
<b>Water fill contacts</b>	⊕
<b>External lamp</b>	⊕
<b>Pilot contact</b>	⊕

X= not available ✓= standard feature ⊕= on demand



# SERIE 5

Advanced line - Wa - WOWa - WO pulse



## SUITABLE BATTERIES

PzS wet lead acid

## STANDARD AVAILABLE SIZES

### Output Voltage

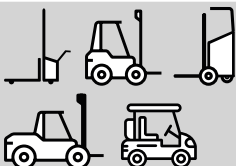
from 12V up to 120V  
any other V: on demand

### Output Current

from 10A up to 300A  
Amps depending on V ratio and max  
power in kVA

See technical chart for absorption, plugs and recommended mains fuses by size.

## MAIN APPLICATIONS



## AH RECHARGE TABLE

A	Ah (C5)						
	WA			WOWA FAST		WO PULSE	
	9h	12h	13-14h	7h	8h	6.5-8h	8-11h
30	154	198	220	148	159	129-162	162-229
40	206	265	294	197	211	173-215	215-305
50	257	331	367	246	264	216-269	269-381
60	308	397	441	296	317	259-323	323-458
70	360	463	514	345	370	302-377	377-535
80	411	529	588	394	423	345-431	431-611
90	462	595	661	444	476	388-485	485-688
100	514	661	735	493	529	431-539	539-764
110	565	727	808	542	582	475-593	593-841
120	617	794	882	591	634	518-646	646-917
130	668	860	955	641	687	561-700	700-993
140	719	926	1029	690	740	604-754	754-1069
150	771	992	1102	739	793	647-808	808-1146
160	822	1058	1176	788	846	690-862	862-1222
170	873	1124	1249	838	899	734-916	916-1299
180	925	1190	1322	887	952	777-970	970-1375
200	1028	1323	1469	986	1057	863-1077	1077-1528
220	1130	1455	1616	1084	1163	949-1185	1185-1681
240	1233	1587	1763	1183	1269	1035-1293	1293-1833

## PRODUCT INTRO

**Series 5** represent the upgrade into “Advanced” conventional Wa ranges respectively.

The range features programmable 5-LED board with internal memory, enhanced charging algorithms and USB (setting/troubleshooting/data-report via PC). The integrated digital display permits the complete controlling, programming and troubleshooting in real time.

**Series 5 Fast** offers our top level conventional charger specifically aimed for quick charge necessities (multiple shift operations) declined into “W0-Pulse” or “W0Wa” DIN 41774 charging characteristics.



## GENERAL CHARACTERISTICS

<b>Mains</b>	1phase 230Vac ± 5% – 3phase 400Vac ± 5% / 50Hz
<b>Visual signalling</b>	5 LED advanced visualization and integrated display for programming, diagnostic and consulting data storage
<b>Main features</b>	<ul style="list-style-type: none"> <li>• Automatic start, charging process and shutoff</li> <li>• Universal Electronic Board with advanced digital setting (by display or keypad): profile thresholds / termination mode / equalization mode / delay start / cable compensation</li> <li>• Final charging stage (adjustable in respect of battery usage): temporal, capacitive (CF% and AH accumulated), derivative dv/dt</li> <li>• Leakage power transformer</li> <li>• Wa (DIN 41774), W0Wa (DIN 41774) or W0 pulse charging profile</li> </ul>
<b>Operating temperature</b>	0° to +40°C (heavy climate version available)
<b>Efficiency</b>	82/88% depending on power involved
<b>Certifications</b>	CE in conformity with LV and EMC protocols

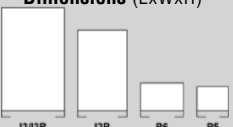
## SAFETY FEATURES

<b>Output protection</b>	Reverse polarity protection: fuse
<b>Thermal protection</b>	Leakage power transformer (class F) provided with thermal probes
<b>General protection</b>	Double security timer: gassing point / max charging duration Additional thermal protection based on algorithm managed by electronic board Delayed start to avoid sparks

## OPTIONALS

Protection cage, air system, water fill contacts, external lamp, pilot contact

## MECHANICAL CHARACTERISTICS

<b>Protection degree</b>	IP 21
<b>Weight</b>	Depending on model size
<b>Input cable</b>	2,3 m (length) +/- 10% – AC plug on demand Schuko plug included on models up to 16A current draw
<b>Output cables</b>	2,3 m (length) +/- 10% – DC plug on demand
<b>Dimensions (LxWxH)</b> 	I3: 700 x 550 x 1150 mm
	I3R: 600 x 550 x 1050 mm
	I2B: 550 x 450 x 900 mm
	P6: 480 x 280 x 310 mm
	P5: 350 x 220 x 270 mm







# **NORTH & LATIN AMERICA**

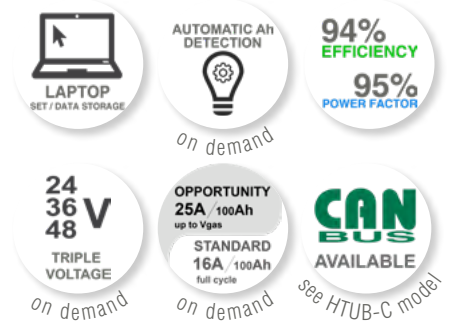
*line*

The complete range of forklift battery chargers for the American markets, certified for charging traditional lead acid batteries as well as modern gel and lithium batteries.



## PRODUCT INTRO

HTUB is the top level HF charger aimed to reach the highest performances. This range gathers all top features of HF ranges in terms of efficiency, power factor, ventilation, internal structure (dedicated 3 compartments) and general flexibility. An integrated digital interface with OLED/LCD display and integrated USB enables the best and easiest overview/setting of charge parameters, diagnostic and data reports.



## GENERAL CHARACTERISTICS

<b>Mains</b>	480 Vac (3ph) 50-60Hz / 600 Vac (3ph) 50-60Hz
<b>Visual signalling</b>	OLED/LCD display, 4 LEDs and 4 control keys
<b>Charger setting</b>	By OLED/LCD display: current, voltage, capacity and 7 pre-set charging profiles By laptop/USB port: enhanced programming
<b>Data memory</b>	Charger gives a report of the last 50 cycles and key technical data by integrated USB door
<b>Cool-down system</b>	Dedicated air cooling direct to heatsink only. Temperature-regulated fan speed. Fan idle within +104° F (+40° C) internal components temperature
<b>Efficiency</b>	94%
<b>Operating temperature</b>	+32° to +104° F (0° to +40° C)
<b>Certifications</b>	CSA

## SAFETY FEATURES

<b>Input protection</b>	3 fast fuses
<b>Output protection</b>	By fuse (reverse polarity protection)
<b>Thermal Protection</b>	Probes on IGBT, diodes and power transformer + derating
<b>Protection during battery disconnection</b>	Safety cut off by undervoltage

## OPTIONALS

<b>Stand alone</b>	Charger iron stand
<b>Stand alone/wall mounted</b>	Cable holder
<b>On board/stand alone/wall</b>	Additional extra coating, dV/dt profiles

## MECHANICAL CHARACTERISTICS

<b>Dimensions (LxWxH)</b>	22.44 x 17.95 x 7.68 inches (570 x 456 x 195 mm)
<b>Protection degree</b>	IP 21 (vertical) - (dedicated air cooling direct to heatsink) - Additional filter protection on demand
<b>Weight</b>	61.73 lb (28 kg)
<b>Input cable</b>	Not supplied
<b>Output cables</b>	2.7 yd (2,5 m) +/- 10% (length) – DC plug on demand



# HTUB-LC



## THREE PHASE 480 & 600 Vac



### MAIN APPLICATIONS



### SUITABLE BATTERIES

Lithium

### MODELS AVAILABLE

V	A	VAC	CODE	VAC	CODE	Iac		Lithium
						Current draw		Recharging time
						480Vac	600Vac	
24	140	3x480	HTUB 24/140-LC	3x600	HTUB 24/140-VC	4,7	3,8	See battery manufacturer data requirements
24	160	3x480	HTUB 24/160-LC	3x600	HTUB 24/160-VC	5,4	4,3	
24	180	3x480	HTUB 24/180-LC	3x600	HTUB 24/180-VC	6,1	4,9	
24	200	3x480	HTUB 24/200-LC	3x600	HTUB 24/200-VC	6,7	5,4	
36	140	3x480	HTUB 36/140-LC	3x600	HTUB 36/140-VC	7,0	5,6	
36	160	3x480	HTUB 36/160-LC	3x600	HTUB 36/160-VC	8,0	6,4	
36	180	3x480	HTUB 36/180-LC	3x600	HTUB 36/180-VC	9,0	7,2	
36	200	3x480	HTUB 36/200-LC	3x600	HTUB 36/200-VC	10,0	8,0	
48	140	3x480	HTUB 48/140-LC	3x600	HTUB 48/140-VC	9,3	7,5	
48	160	3x480	HTUB 48/160-LC	3x600	HTUB 48/160-VC	10,7	8,5	
48	180	3x480	HTUB 48/180-LC	3x600	HTUB 48/180-VC	12,0	9,6	
48	200	3x480	HTUB 48/200-LC	3x600	HTUB 48/200-VC	13,3	10,7	
80	100	3x480	HTUB 80/100-LC	3x600	HTUB 80/100-VC	11,0	8,8	
80	120	3x480	HTUB 80/120-LC	3x600	HTUB 80/120-VC	13,2	10,6	



## PRODUCT INTRO

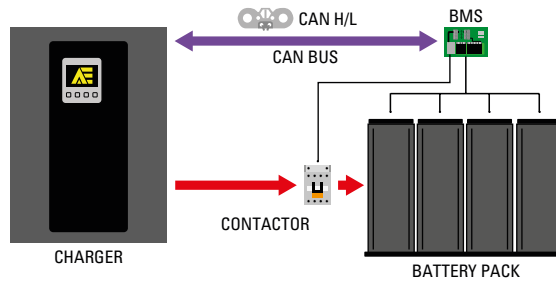
HTUB-C are the top level HF chargers aimed to reach the highest performances. This range gathers all top features of HF ranges in terms of efficiency, power factor, ventilation, internal structure and general flexibility. An integrated digital interface with OLED/LCD display and integrated USB enables the best and easiest overview of the charging operation.

This versions are specifically dedicated to lithium version with our private CAN or custom protocol (CAN open on demand).



## GENERAL CHARACTERISTICS

<b>Mains</b>	480 Vac (3ph) 50-60Hz / 600 Vac (3ph) 50-60Hz
<b>Visual signalling</b>	OLED/LCD display, 4 LEDs and 4 control keys
<b>Charger setting</b>	By laptop/USB port: software upload
<b>Cool-down system</b>	Dedicated air cooling direct to heatsink only. Temperature-regulated fan speed. Fan idle within +104° F (+40° C) internal components temperature.
<b>Efficiency</b>	94%
<b>Operating temperature</b>	+32° to +104° F (0° to +40° C)
<b>Certifications</b>	CSA



## SAFETY FEATURES

<b>Input protection</b>	3 fast fuses
<b>Output protection</b>	By fuse (reverse polarity protection)
<b>Thermal Protection</b>	Probes on IGBT, diodes and power transformer + derating
<b>Protection during battery disconnection</b>	Safety cut off by undervoltage

## OPTIONALS

<b>Stand alone</b>	Charger iron stand
<b>Stand alone/wall mounted</b>	Cable holder

## MECHANICAL CHARACTERISTICS

<b>Dimensions (LxWxH)</b>	22.44 x 17.95 x 7.68 inches (570 x 456 x 195 mm)
<b>Protection degree</b>	IP 21 (vertical)
<b>Weight</b>	61.73 lb (28 kg)
<b>Input cable</b>	Not supplied
<b>Output cables</b>	2.7 yd (2,5 m) +/- 10% (length) – DC plug on demand



# HTUB MULTI & HRC3

Multivoltage



## SUITABLE BATTERIES

All types

## MAIN APPLICATIONS



V	A
2	30
6	30
8	30
10	30
12	120
24	120
36	120
48	120
60	120
72	120
80	120

## HTUB MULTI

VAC	CODE	DESCRIPTION
3x480	<b>HTUB 80/120-M</b>	Multivoltage 2-80 V
3x600	<b>HTUB 80/120-MV</b>	up to 120A

## HRC3

VAC	CODE	DESCRIPTION
3x480	<b>HRC3 80/120-M</b>	Multivoltage 2-80 V
3x600	<b>HRC3 80/120-MV</b>	up to 120A

Voltage selection made in single step (x2V each)

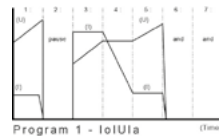


Standard charging mode

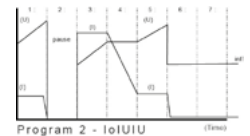


Desulphation mode

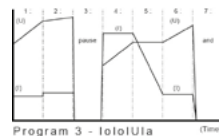
HRC3 Battery refresh programs



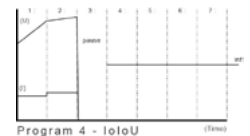
Program 1 - Light



Program 2 - Soft



Program 3 - Medium



Program 4 - Deep

## PRODUCT INTRO

**HTUB MULTI** is aimed for workshop operations requiring charge and desulphation of batteries from 2 to 80V; this item is ideal in fact for the recharge and refresh of any battery type without the stress of looking for the dedicated charge.

The device enables an intuitive parameters setting by an integrated OLED display. Supplied with iron stand and cables holder on request.

**HRC3** version, by the means of 4 dedicated programs (programmable by PC), is ideal for the recharge and refresh of all your battery portfolio.



## GENERAL CHARACTERISTICS

	HTUB MULTI	HRC3
<b>Mains</b>	480Vac (3ph) 50-60Hz / 600Vac (3ph) 50-60Hz	
<b>Visual signalling</b>	OLED display, 4 LEDs and 4 control keys	
<b>Charger setting</b>	By OLED display: current, voltage, capacity and 7 pre-set charging <b>profiles</b> + desulphation mode	By OLED display: nom. Voltage, capacity and 4 pre-set battery refresh <b>programs</b> By laptop/USB port: complete adjustment of each phase details of each program
<b>Data memory</b>	Charger gives a report of the last 50 cycles and key technical data by integrated USB port	
<b>Cool-down system</b>	Dedicated air cooling direct to heatsink only. Temperature-regulated fan speed. Fan idle within +104° F (+40° C) internal components temperature	
<b>Efficiency</b>	94%	
<b>Operating temperature</b>	+32° to +104° F (0° to +40° C)	
<b>Certifications</b>	CSA	

## SAFETY FEATURES

<b>Input protection</b>	3 fast fuses
<b>Output protection</b>	By fuse (reverse polarity protection)
<b>Thermal Protection</b>	Probes on IGBT, diodes and power transformer + derating
<b>Protection during battery disconnection</b>	Safety cut off by undervoltage

## OPTIONALS

<b>Stand alone</b>	Charger iron stand
<b>Stand alone/wall mounted</b>	Cable holder

## MECHANICAL CHARACTERISTICS

<b>Dimensions (LxWxH)</b>	22.44 x 17.95 x 7.68 inches (570 x 456 x 195 mm)
<b>Protection degree</b>	IP 21 (vertical) – Dedicated air cooling direct to heatsink
<b>Weight</b>	61.73 lb (28 kg)
<b>Input cable</b>	Not supplied
<b>Output cables</b>	2.7 yd (2,5m) +/- 10% (length) – DC plug on demand



# SERIE 5 NA

Advanced line - Wa



## MAIN APPLICATIONS



## SUITABLE BATTERIES

PzS wet lead acid

## STANDARD AVAILABLE SIZES

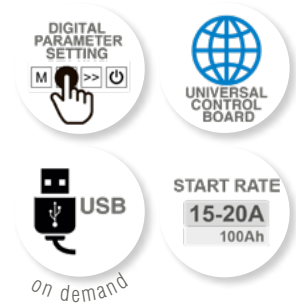
Ph	Vac	Output Voltage					A
		24	36	48	72	80	
1Ph	120	from 40 to 60 A	from 25 to 40 A	from 20 to 30 A	//	//	
	208-240	from 80 to 160 A	from 50 to 140 A	from 50 to 120 A	//	//	
3Ph	208-240-440-480	from 80 to 200 A	from 80 to 200 A	from 80 to 160 A	from 80 to 140 A	from 80 to 120 A	
	600	from 80 to 200 A	from 80 to 200 A	from 80 to 160 A	from 80 to 140 A	from 80 to 120 A	

## AH RECHARGE TABLE

A	>>>	20A	25A	30A	40A	50A	60A	80A
Ah (C6)	8h	103	128	154	206	257	308	411
	12-14h	132-147	165-184	198-220	265-294	331-367	397-441	529-588
A	>>>	100A	120A	140A	160A	180A	200A	
Ah (C6)	8h	514	617	719	822	925	1028	
	12-14h	661-735	794-882	926-1029	1058-1176	1190-1322	1323-1469	

## PRODUCT INTRO

Serie 5 represents the “Advanced” conventional Wa ranges, aimed for specific markets demanding structured or dedicated characteristics. This series features programmable board with internal memory, enhanced algorithms and USB (setting/troubleshooting/data-report). The integrated digital display permits the complete controlling, programming and diagnostic in real time. Security features involves both mechanical and software solutions.



## GENERAL CHARACTERISTICS

<b>Mains</b>	1phase 120Vac ± 5%; 208-240Vac ± 5% 60Hz 3phase 208-240-440-480Vac ± 5% 60Hz
<b>Visual signalling</b>	5 LED advanced visualization + integrated DISPLAY for programming, diagnostic, and consulting data storage
<b>Main features</b>	<ul style="list-style-type: none"> <li>• Automatic start, charging process and shutoff</li> <li>• Universal Electronic Board with advanced digital setting by display: profile thresholds / termination mode / equalization mode / delay start / cable compensation</li> <li>• Final charging stage (adjustable in respect of battery usage): temporal, capacitive (CF% and AH accumulated), derivative dv/dt</li> <li>• Leakage power transformer: taper charger</li> <li>• Wa charging profile (DIN 41774)</li> </ul>
<b>Operating temperature</b>	+32° to +104° F (0° to +40° C) no derating (heavy climate version available)
<b>Efficiency</b>	82/88% depending on power involved
<b>Certifications</b>	CSA

## SAFETY FEATURES

<b>Output protection</b>	Reverse polarity protection: fuse
<b>Thermal protection</b>	Leakage power transformer (class F) provided with thermal probes
<b>General protection</b>	Double security timer: gassing point / max charging duration Additional thermal protection based on algorithm managed by electronic board Battery detection with safety powering

## MECHANICAL CHARACTERISTICS

<b>Protection degree</b>	IP 21
<b>Weight</b>	Depending on model size
<b>Input cable</b>	Not supplied
<b>Output cables</b>	2.5 yd (2,3m) +/- 10% (length) DC plug on demand
<b>Dimensions (LxWxH)</b>	I2C: 21.85 x 17.91 x 35.43 inches (555 x 455 x 900 mm)
	P6C: 19.29 x 11.02 x 2.20 inches (490 x 280 x 310 mm)



## STD FEATURES/OPTIONALS

ADVANCED LINE	SERIE 5
<b>Integrated display</b>	✓
<b>Multiple input selection</b>	✓
<b>Cable holder</b>	✓
<b>USB port</b>	⊕
<b>Protection cage</b>	⊕

X= not available

✓ = standard feature

⊕ = on demand



# SERIE 5 NP

WO Pulse



## MAIN APPLICATIONS



## SUITABLE BATTERIES

PzS wet lead acid

## STANDARD AVAILABLE SIZES

Ph	Vac	Output Voltage				
		24	36	48	72	80
1Ph	120	from 40 to 60 A	from 25 to 40 A	from 20 to 30 A	//	//
	208-240	from 80 to 160 A	from 50 to 140 A	from 50 to 120 A	//	//
3Ph	208-240-440-480	from 80 to 200 A	from 80 to 200 A	from 80 to 160 A	from 80 to 140 A	from 80 to 120 A
	600	from 80 to 200 A	from 80 to 200 A	from 80 to 160 A	from 80 to 140 A	from 80 to 120 A

A

## AH RECHARGE TABLE

A	>>>	60A	80A	100A	120A	140A	160A	180A	200A
Ah (C6)	6,5-8h	259-323	345-431	431-539	518-646	604-754	690-862	777-970	863-1.077
	8-11h	323-458	431-611	539-764	646-917	754-1069	862-1222	970-1375	1.077-1528

## PRODUCT INTRO

Series 5 NP offers our top level conventional charger specifically aimed for quick charge necessities (multiple shift operations) declined into “W0-Pulse”.

The range features programmable 5-LED board with internal memory, enhanced charging algorithms and USB (setting/troubleshooting/data-report via PC). The integrated digital display permits the complete controlling, programming and troubleshooting in real time.



## GENERAL CHARACTERISTICS

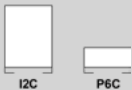
<b>Mains</b>	1phase 120Vac ± 5%; 208-240Vac ± 5% 60Hz 3phase 208-240-440-480Vac ± 5% 60Hz
<b>Visual signalling</b>	5 LED advanced visualization + integrated display for programming, diagnostic and consulting data storage
<b>Main features</b>	<ul style="list-style-type: none"> <li>• Automatic start, charging process and shutoff</li> <li>• Universal Electronic Board with advanced digital setting by display: profile thresholds / termination mode / equalization mode / delay start / cable compensation</li> <li>• Final charging stage (adjustable in respect of battery usage): temporal, capacitive (CF% and AH accumulated), derivative dv/dt</li> <li>• Leakage power transformer: taper charger</li> <li>• W0 pulse charging profile</li> </ul>
<b>Operating temperature</b>	+32° to + 104° F (0° to 40°C) no derating (heavy climate version available)
<b>Efficiency</b>	82/88% depending on power involved
<b>Certifications</b>	CSA

## SAFETY FEATURES

<b>Output protection</b>	Reverse polarity protection: fuse
<b>Thermal protection</b>	Leakage power transformer (class F) provided with thermal probes
<b>General protection</b>	Double security timer: gassing point / max charging duration Additional thermal protection based on algorithm managed by electronic board Battery detection with safety powering

## MECHANICAL CHARACTERISTICS

<b>Protection degree</b>	IP 21
<b>Weight</b>	Depending on model size
<b>Input cable</b>	Not supplied
<b>Output cables</b>	2.5 yd (2,3m) +/- 10% (length) DC plug on demand
<b>Dimensions (LxWxH)</b>	I2C: 21.85 x 17.91 x 35.43 inches (555 x 455 x 900 mm)
	P6C: 19.29 x 11.02 x 2.20 inches (490 x 280 x 310 mm)



## STD FEATURES/OPTIONALS

ADVANCED LINE	SERIE 5
<b>Integrated display</b>	✓
<b>Multiple input selection</b>	✓
<b>Cable holder</b>	✓
<b>USB port</b>	⊕
<b>Protection cage</b>	⊕

X= not available

✓= standard feature

⊕= on demand



# HFT1-230V

THREE PHASE 230 Vac



## MAIN APPLICATIONS



## SUITABLE BATTERIES

Wet lead acid - PzS

GEL – AGM – VRLA – PzV

Lithium (on demand)

## MODELS AVAILABLE

V	A	VAC	CODE	Lead acid (Ah)		Gel (Ah)
				7-8h	10-11-14h	12-14h
24	80	3x230	<b>HFT1 24/80-230V</b>	440-508	609-677-816	543-677
24	100	3x230	<b>HFT1 24/100-230V</b>	549-635	762-846-1020	679-846
24	120	3x230	<b>HFT1 24/120-230V</b>	659-762	914-1015-1224	814-1015
36	80	3x230	<b>HFT1 36/80-230V</b>	440-508	609-677-816	543-677
36	100	3x230	<b>HFT1 36/100-230V</b>	549-635	762-846-1020	679-846
36	120	3x230	<b>HFT1 36/120-230V</b>	659-762	914-1015-1224	814-1015
48	80	3x230	<b>HFT1 48/80-230V</b>	440-508	609-677-816	543-677
48	100	3x230	<b>HFT1 48/100-230V</b>	549-635	762-846-1020	679-846
48	120	3x230	<b>HFT1 48/120-230V</b>	659-762	914-1015-1224	814-1015
80	60	3x230	<b>HFT1 80/60-230V</b>	330-381	457-508-612	407-508
80	80	3x230	<b>HFT1 80/80-230V</b>	440-508	609-677-816	543-677
80	100	3x230	<b>HFT1 80/100-230V</b>	549-635	762-846-1020	679-846

Special versions 72V, 96V and 120V available on demand

In between output current sizes available

Air-mix Ah= +10%

## PRODUCT INTRO

HFT1-230V is the three phase HF charger designed for markets having special input Vac 230 three phase.

An integrated interface with OLED/LCD display enables a complete overview and setting of charge parameters, including delay start and easy trouble-shooting. USB interface (on request) permits advanced setting and data-report.



## GENERAL CHARACTERISTICS

<b>Mains</b>	230V (3ph) +/-10% 50-60Hz
<b>Visual signalling</b>	OLED/LCD display, 4 LEDs and 4 control keys
<b>Charger setting</b>	By OLED/LCD display: current, voltage, capacity and 7 pre-set charging profiles By laptop/USB port: enhanced programming
<b>Data memory (optional)</b>	Charger gives a Report of the last 50 charges and key technical data (by PC)
<b>Cool-down system</b>	Temperature-regulated fan speed. Fan idle within 40°C internal components temperature.
<b>Efficiency</b>	>90%
<b>Operating temperature</b>	0° to +40°C
<b>Certifications</b>	CE in conformity with LV and EMC protocols

## SAFETY FEATURES

<b>Input protection</b>	3 fast fuses
<b>Output protection</b>	Ultrafast fuse (reverse polarity protection)
<b>Thermal Protection</b>	Probes on IGBT and diodes + derating
<b>Protection during battery disconnection</b>	Safety cut off by undervoltage

## OPTIONALS

<b>Stand alone/wall mounted</b>	Cable holder + Iron stand
<b>On board/stand alone/wall</b>	Additional extra coating, air mix pump, pilot contact, charger status lamp, thermal probe voltage adjustment

## MECHANICAL CHARACTERISTICS

<b>Dimensions (LxWxH)</b>	535 x 407 x 259 mm
<b>Protection degree</b>	IP 21 (vertical)
<b>Weight</b>	26 kg
<b>Input cable</b>	2,5 m +/- 10% (length) – AC plug on demand
<b>Output cables</b>	2,5 m +/- 10% (length) – DC plug on demand

# HWR

THREE PHASE 208/220/240 Vac



## MAIN APPLICATIONS



## SUITABLE BATTERIES

Wet lead acid - PzS

GEL – AGM – VRLA – PzV

Lithium (on demand)

## MODELS AVAILABLE

V	A	VAC	CODE	Lead acid (Ah)		Gel (Ah)
				7-8h	10-11-14h	12-14h
24	140	3x208/220/240	<b>HWR 24/140-H</b>	769-889	1066-1185-1429	950-1185
24	160	3x208/220/240	<b>HWR 24/160-H</b>	879-1016	1219-1354-1633	1086-1354
24	200	3x208/220/240	<b>HWR 24/200-H</b>	1099-1270	1523-1692-2041	1357-1692
36	140	3x208/220/240	<b>HWR 36/140-H</b>	769-889	1066-1185-1429	950-1185
36	160	3x208/220/240	<b>HWR 36/160-H</b>	879-1016	1219-1354-1633	1086-1354
36	200	3x208/220/240	<b>HWR 36/200-H</b>	1099-1270	1523-1692-2041	1357-1692
48	140	3x208/220/240	<b>HWR 48/140-H</b>	769-889	1066-1185-1429	950-1185
48	160	3x208/220/240	<b>HWR 48/160-H</b>	879-1016	1219-1354-1633	1086-1354
48	200	3x208/220/240	<b>HWR 48/200-H</b>	1099-1270	1523-1692-2041	1357-1692
80	120	3x208/220/240	<b>HWR 80/120-H</b>	659-762	914-1015-1224	814-1015

Special version 72V available on demand

In between output current sizes available

## PRODUCT INTRO

HWR is the top level HF charger aimed to reach the highest performances. This range gathers all top features of HF ranges in terms of efficiency, power factor, internal structure and general flexibility.

An integrated digital interface with OLED/LCD display and integrated USB enables the best and easiest overview/setting of charge parameters, diagnostic and data reports.

Lithium version is available with private or custom protocol.



## GENERAL CHARACTERISTICS

<b>Mains</b>	3ph 208/220/240V 60Hz (any other configuration on demand)
<b>Visual signalling</b>	OLED/LCD display, 4 LEDs and 4 control keys
<b>Charger setting</b>	By OLED/LCD display: current, voltage, capacity and 7 pre-set charging profiles By laptop/USB port: enhanced programming
<b>Data memory</b>	Charger gives a report of the last 50 cycles and key technical data by integrated USB port
<b>Cool-down system</b>	Dedicated air cooling direct to heatsink only. Temperature-regulated fan speed. Fan idle within 40°C internal components temperature
<b>Efficiency</b>	90%
<b>Operating temperature</b>	0° to +40°C
<b>Certifications</b>	CE in conformity with LV and EMC protocols

## SAFETY FEATURES

<b>Input protection</b>	3 fast fuses
<b>Output protection</b>	By fuse (reverse polarity protection)
<b>Thermal Protection</b>	Probes on IGBT, diodes and power transformer + derating
<b>Protection during battery disconnection</b>	Safety cut off by undervoltage

## OPTIONALS

<b>Stand alone</b>	Additional extra coating, air mix pump, pilot contact, charger status lamp, thermal probe voltage adjustment, dV/dt profiles
--------------------	--

## MECHANICAL CHARACTERISTICS

<b>Dimensions (LxWxH)</b>	422 x 470 x 1257 mm
<b>Protection degree</b>	IP 21 (vertical) - Additional filter protection on demand
<b>Weight</b>	68 kg
<b>Input cable</b>	2,5 m +/- 10% (length) – AC plug on demand
<b>Output cables</b>	2,5 m +/- 10% (length) – DC plug on demand



**3**



**lithium**

**6.941**



# LITHIUM

## *line*

A line of products for latest generation lithium batteries: from single phase medium-sized versions to three phase versions of considerable power to provide fast charging solutions.

# HXE - C



SINGLE PHASE 230 Vac



## MAIN APPLICATIONS



## SUITABLE BATTERIES

Lithium

## MODELS AVAILABLE

V	A	VAC	CODE	iac	Lithium
				Current draw	Recharging time
24	5	1x230	<b>HXE-C 24/5</b>	1,12	See battery manufacturer data requirements
24	10	1x230	<b>HXE-C 24/10</b>	2,25	
24	15	1x230	<b>HXE-C 24/15</b>	3,37	
24	20	1x230	<b>HXE-C 24/20</b>	4,49	
24	25	1x230	<b>HXE-C 24/25</b>	5,58	
24	30	1x230	<b>HXE-C 24/30</b>	6,70	

Special versions 12V/30A, 36V/20A and 48V/15A available on demand



## PRODUCT INTRO

HXE-C is the small sized HF charger suitable for semi-traction & on-board lithium batteries applications.

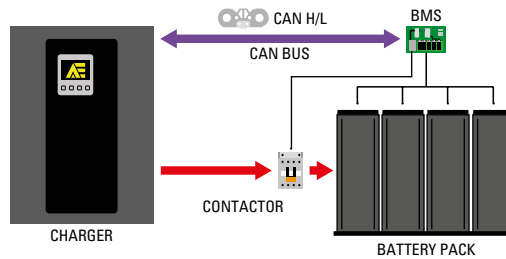
CAN-bus communication is a standard feature to manage the profile through our private CAN protocol or adjusting it following your specific needs (CAN open on demand).

These devices are compact and ideal for on-board mounting.



## GENERAL CHARACTERISTICS

<b>Mains</b>	230V (1ph) +/-10% 50-60Hz – On/off switch
<b>Visual signalling</b>	Single LED (3 colours)
<b>Charger setting</b>	By laptop/USB port: software upload
<b>Cool-down system</b>	Fan idle within 40°C internal components temperature
<b>Efficiency</b>	> 85%
<b>Operating temperature</b>	0° to +40°C
<b>Certifications</b>	CE in conformity with LV and EMC protocols



## SAFETY FEATURES

<b>Input protection</b>	Delay AC fuse
<b>Output protection</b>	By relay (reverse polarity protection)
<b>Thermal Protection</b>	Forced derating on primary side Forced derating or safety cut off on the diodes
<b>Protection during battery disconnection</b>	Safety cut off by undervoltage

## OPTIONALS

<b>On board</b>	Inhibitor cable (Vac presence relay), remote LED, curly AC cable
<b>Stand alone/wall mounted</b>	Cable holder
<b>On board/stand alone/wall</b>	Additional extra coating

## MECHANICAL CHARACTERISTICS

<b>Dimensions</b> (LxWxH)	275 x 112 x 75 mm
<b>Protection degree</b>	IP 21 (horizontal)
<b>Weight</b>	3 kg
<b>Input cable</b>	2,3 m +/- 10% (length) complete with Schuko plug 16A
<b>Output cables</b>	2,3 m +/- 10% (length) – DC plug on demand

# HKP - C



SINGLE PHASE 230 Vac



## MAIN APPLICATIONS



## SUITABLE BATTERIES

Lithium

## MODELS AVAILABLE

V	A	VAC	CODE	lac	Lithium
				Current draw	Recharging time
24	70	1x230	<b>HKP-C 24/70</b>	8,4	See battery manufacturer data requirements
24	85	1x230	<b>HKP-C 24/85</b>	10,2	
36	50	1x230	<b>HKP-C 36/50</b>	8,9	
36	60	1x230	<b>HKP-C 36/60</b>	10,7	
48	50	1x230	<b>HKP-C 48/50</b>	11,7	
48	60	1x230	<b>HKP-C 48/60</b>	14,1	

Special versions 12V, 36V, 72V, 80V, 96V available on demand

## PRODUCT INTRO

**HKP-C** is the single phase HF charger equipped with PFC (Power Factor Control) and an OLED/LCD + USB interface, designed for the recharge of Lithium applications.

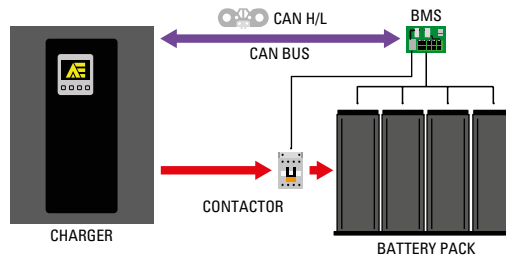
CAN-bus communication is a standard feature to manage the profile through our private CAN protocol or adjusting it following your specific needs (CAN open on demand).

This compact device is ideal for wall mounting.



## GENERAL CHARACTERISTICS

<b>Mains</b>	230V (1ph) +/- 10% 50-60Hz
<b>Visual signalling</b>	OLED display, 4 LEDs and 4 control keys
<b>Charger setting</b>	By laptop/USB port: software upload
<b>Cool-down system</b>	Temperature-regulated fan speed. Fan idle within 40°C internal components temperature.
<b>Efficiency</b>	> 88%
<b>Operating temperature</b>	0° to +40°C
<b>Certifications</b>	CE in conformity with LV and EMC protocols



## SAFETY FEATURES

<b>Input protection</b>	AC fast fuse
<b>Output protection</b>	By relay (reverse polarity protection)
<b>Thermal Protection</b>	Probes on IGBT and diodes + derating
<b>Protection during battery disconnection</b>	Safety cut off by undervoltage

## OPTIONALS

<b>Stand alone</b>	Charger stand, cable holder
--------------------	-----------------------------

## MECHANICAL CHARACTERISTICS

<b>Dimensions (LxWxH)</b>	<b>Standard version:</b> 521 x 397 x 115 mm <b>Compact version:</b> 406 x 224 x 98 mm
<b>Protection degree</b>	IP 21 (vertical)
<b>Weight</b>	18 kg
<b>Input cable</b>	2,5 m +/- 10% (length) – complete with Schuko plug 16A
<b>Output cables</b>	2,5 m +/- 10% (length) – DC plug on demand

# HVE - C



THREE PHASE 400 Vac



## MAIN APPLICATIONS



## SUITABLE BATTERIES

Lithium

## MODELS AVAILABLE

V	A	VAC	CODE	lac	Lithium
				Current draw	Recharging time
24	80	3x400	<b>HVE-C 24/80</b>	4,1	See battery manufacturer data requirements
24	100	3x400	<b>HVE-C 24/100</b>	5,1	
24	120	3x400	<b>HVE-C 24/120</b>	6,1	
48	80	3x400	<b>HVE-C 48/80</b>	8,0	
48	100	3x400	<b>HVE-C 48/100</b>	10,0	
48	120	3x400	<b>HVE-C 48/120</b>	12,0	
80	60	3x400	<b>HVE-C 80/60</b>	9,8	
80	80	3x400	<b>HVE-C 80/80</b>	13,1	
80	100	3x400	<b>HVE-C 80/100</b>	15,5	
96	80	3x400	<b>HVE-C 96/80</b>	15,7	
120	60	3x400	<b>HVE-C 120/60</b>	15,4	

Special versions 36V and 72V available on demand

## PRODUCT INTRO

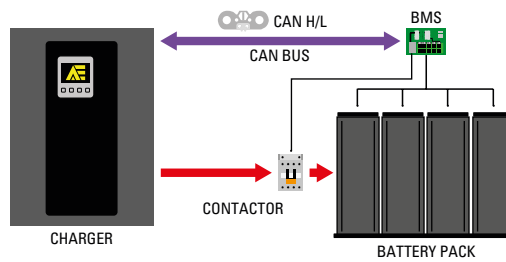
**HVE-C** is the three phase version of the charger having same features and interfaces, designed for the recharge of Lithium applications.

CAN-bus communication is a standard feature to manage the profile through our private CAN protocol or adjusting it following your specific needs (CAN open on demand).



## GENERAL CHARACTERISTICS

<b>Mains</b>	400V (3ph) +/-10% 50-60Hz
<b>Visual signalling</b>	OLED display, 4 LEDs and 4 control keys
<b>Charger setting</b>	By laptop/USB port: software upload
<b>Cool-down system</b>	Temperature-regulated fan speed. Fan idle within 40°C internal components temperature.
<b>Efficiency</b>	> 90%
<b>Operating temperature</b>	0° to +40°C
<b>Certifications</b>	CE in conformity with LV and EMC protocols



## SAFETY FEATURES

<b>Input protection</b>	3 AC fast fuses
<b>Output protection</b>	By fuse (reverse polarity protection)
<b>Thermal Protection</b>	Probes on IGBT and diodes + derating
<b>Protection during battery disconnection</b>	Safety cut off by undervoltage

## OPTIONALS

<b>Stand alone</b>	Charger stand, cable holder
--------------------	-----------------------------

## MECHANICAL CHARACTERISTICS

<b>Dimensions (LxWxH)</b>	521 x 397 x 115 mm
<b>Protection degree</b>	IP 21 (vertical)
<b>Weight</b>	18 kg
<b>Input cable</b>	2,5 m +/- 10% (length) – AC plug on demand
<b>Output cables</b>	2,5 m +/- 10% (length) – DC plug on demand

# HTUD



THREE PHASE 400 Vac



## MAIN APPLICATIONS



## SUITABLE BATTERIES

Lithium

## MODELS AVAILABLE

V	A	VAC	CODE	iac Current draw	Lithium Recharging time
24	140	3x400	<b>HTUD 24/140</b>	5,7	See battery manufacturer data requirements
24	160	3x400	<b>HTUD 24/160</b>	6,5	
24	180	3x400	<b>HTUD 24/180</b>	7,3	
24	200	3x400	<b>HTUD 24/200</b>	8,1	
48	140	3x400	<b>HTUD 48/140</b>	11,2	
48	160	3x400	<b>HTUD 48/160</b>	12,8	
48	180	3x400	<b>HTUD 48/180</b>	14,4	
48	200	3x400	<b>HTUD 48/200</b>	16,0	
80	120	3x400	<b>HTUD 80/120</b>	15,9	
96	100	3x400	<b>HTUD 96/100</b>	15,9	
120	80	3x400	<b>HTUD 120/80</b>	15,9	

Special versions 36V available on demand

## PRODUCT INTRO

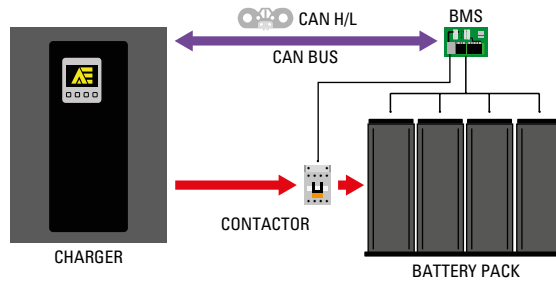
HTUD is the top level HF charger aimed to reach the highest performances. This range gathers all top features of HF ranges in terms of efficiency, power factor, ventilation, internal structure and general flexibility. An integrated digital interface with OLED/LCD display and integrated USB enables the best and easiest overview of the charging operation.

This version is specifically dedicated to lithium version with our private CAN or custom protocol (CAN open on demand).



## GENERAL CHARACTERISTICS

<b>Mains</b>	400V (3ph) +/-10% 50-60Hz
<b>Visual signalling</b>	OLED display, 4 LEDs and 4 control keys
<b>Charger setting</b>	By laptop/USB port: software upload
<b>Cool-down system</b>	Dedicated air cooling direct to heatsink only. Temperature-regulated fan speed. Fan idle within 40°C internal components temperature.
<b>Efficiency</b>	94%
<b>Operating temperature</b>	0° to +40°C
<b>Certifications</b>	CE in conformity with LV and EMC protocols



## SAFETY FEATURES

<b>Input protection</b>	3 fast fuses
<b>Output protection</b>	By fuse (reverse polarity protection)
<b>Thermal Protection</b>	Probes on IGBT, diodes and power transformer + derating
<b>Protection during battery disconnection</b>	Safety cut off by undervoltage

## OPTIONALS

<b>Stand alone</b>	Charger iron stand
<b>Stand alone/wall mounted</b>	Cable holder

## MECHANICAL CHARACTERISTICS

<b>Dimensions (LxWxH)</b>	570 x 456 x 195 mm
<b>Protection degree</b>	IP 21 (vertical)
<b>Weight</b>	28 kg
<b>Input cable</b>	2,5 m +/- 10% (length) – AC plug on demand
<b>Output cables</b>	2,5 m +/- 10% (length) – DC plug on demand



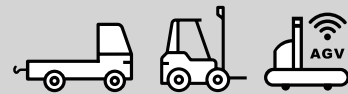
# HWP - C



THREE PHASE 400 Vac



## MAIN APPLICATIONS



## SUITABLE BATTERIES

Lithium

## MODELS AVAILABLE

V	A	VAC	CODE	lac	Lithium
				Current draw	Recharging time
24	320	3x400	<b>HWP-C 24/320-8</b>	13,0	See battery manufacturer data requirements
24	400	3x400	<b>HWP-C 24/400-8</b>	16,2	
36	320	3x400	<b>HWP-C 36/320-8</b>	19,2	
36	400	3x400	<b>HWP-C 36/400-8</b>	24,0	
48	320	3x400	<b>HWP-C 48/320-8</b>	25,6	
48	400	3x400	<b>HWP-C 48/400-8</b>	32,0	
80	180	3x400	<b>HWP-C 80/180-8</b>	23,8	
80	240	3x400	<b>HWP-C 80/240-8</b>	31,8	
96	200	3x400	<b>HWP-C 96/200-8</b>	31,8	
120	160	3x400	<b>HWP-C 120/160-8</b>	31,8	

## PRODUCT INTRO

HWP-C is the HF charger aimed to reach the highest performances, it twice the power of the HTUD model.

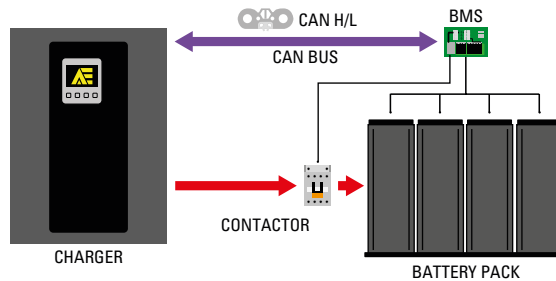
This range gathers all top features in terms of efficiency, power factor, internal structure and general flexibility. An integrated digital interface with OLED/LCD display and integrated USB enables the best and easiest overview of the charging operation.

This version is specifically dedicated to lithium with our private CAN or custom protocol (CAN open on demand).



## GENERAL CHARACTERISTICS

<b>Mains</b>	400V (3ph) +/-10% 50-60Hz
<b>Visual signalling</b>	OLED display, 4 LEDs and 4 control keys
<b>Charger setting</b>	By laptop/USB port: software upload
<b>Cool-down system</b>	Dedicated air cooling direct to heatsink only. Temperature-regulated fan speed. Fan idle within 40°C internal components temperature.
<b>Efficiency</b>	94%
<b>Operating temperature</b>	0° to +40°C
<b>Certifications</b>	CE in conformity with LV and EMC protocols



## SAFETY FEATURES

<b>Input protection</b>	3 fast fuses
<b>Output protection</b>	By fuse (reverse polarity protection)
<b>Thermal Protection</b>	Probes on IGBT, diodes and power transformer + derating
<b>Protection during battery disconnection</b>	Safety cut off by undervoltage

## OPTIONALS

<b>Stand alone</b>	Cable holder
--------------------	--------------

## MECHANICAL CHARACTERISTICS

<b>Dimensions (LxWxH)</b>	422 x 470 x 1257 mm
<b>Protection degree</b>	IP 21 (vertical)
<b>Weight</b>	60 kg (cables excluded)
<b>Input cable</b>	2,5 m +/- 10% (length) – AC plug on demand
<b>Output cables</b>	2,5 m +/- 10% (length) – DC plug on demand

# HTC2



THREE PHASE 400 Vac



## MAIN APPLICATIONS



## SUITABLE BATTERIES

Lithium

## MODELS AVAILABLE

V	A	VAC	CODE	lac	Lithium
				Current draw	Recharging time
24	180	3x400	<b>HTC2 24/180</b>	7,3	See battery manufacturer data requirements
24	200	3x400	<b>HTC2 24/200</b>	8,1	
48	160	3x400	<b>HTC2 48/160</b>	16,0	
48	180	3x400	<b>HTC2 48/180</b>	18,0	
48	200	3x400	<b>HTC2 48/200</b>	20,0	
80	140	3x400	<b>HTC2 80/140</b>	22,8	
80	160	3x400	<b>HTC2 80/160</b>	26,1	
96	140	3x400	<b>HTC2 96/140</b>	29,7	
120	100	3x400	<b>HTC2 120/100</b>	26,5	

Special versions 36V and 72V available on demand

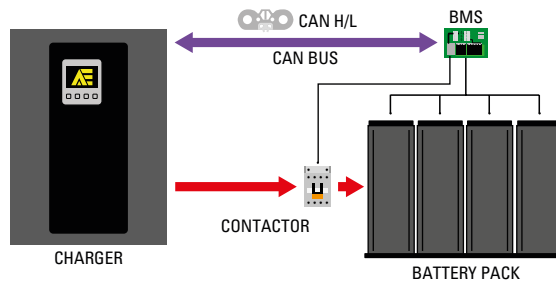
## PRODUCT INTRO

HTC2 is the three phase HF charger equipped with OLED/LCD and USB interface. It has been designed for the recharge of any Lithium applications. CAN-bus communication is a standard feature to manage the profile through our private CAN protocol or adjusting it following your specific needs (CAN open on demand).



## GENERAL CHARACTERISTICS

<b>Mains</b>	Vac 400V (3ph) +/- 10% 50-60Hz
<b>Visual signalling</b>	OLED display, 4 LEDs and 4 operational keys
<b>Charger setting</b>	By laptop/USB port: software upload
<b>Cool-down system</b>	Temperature-regulated fan speed. Fan idle within 40°C internal components temperature.
<b>Efficiency</b>	> 90%
<b>Operating temperature</b>	0° to +40°C full power
<b>Certifications</b>	CE in conformity with LV and EMC protocols



## SAFETY FEATURES

<b>Input protection</b>	3 fast fuses (each main power board)
<b>Output protection</b>	Ultrafast fuse (reverse polarity protection)
<b>Thermal Protection</b>	Probes on IGBT and diodes + derating
<b>Protection during battery disconnection</b>	Safety cut off by undervoltage

## OPTIONALS

<b>Stand alone</b>	Charger stand, cable holder
--------------------	-----------------------------

## MECHANICAL CHARACTERISTICS

<b>Dimensions (LxWxH)</b>	535 x 407 x 259 mm
<b>Protection degree</b>	IP 21 (vertical)
<b>Weight</b>	26 kg
<b>Input cable</b>	2,5 m +/- 10% (length) - AC plug on demand
<b>Output cables</b>	2,5 m +/- 10% (length) - DC plug on demand

# HTC3

THREE PHASE 400 Vac



## MAIN APPLICATIONS



## SUITABLE BATTERIES

Lithium

## MODELS AVAILABLE

V	A	VAC	CODE	lac	Lithium
				Current draw	Recharging time
24	220	3x400	<b>HTC3 24/220</b>	11,3	See battery manufacturer data requirements
24	260	3x400	<b>HTC3 24/260</b>	13,3	
24	300	3x400	<b>HTC3 24/300</b>	15,4	
48	220	3x400	<b>HTC3 48/220</b>	22,0	
48	260	3x400	<b>HTC3 48/260</b>	26,0	
48	300	3x400	<b>HTC3 48/300</b>	30,0	
80	200	3x400	<b>HTC3 80/200</b>	32,6	
80	240	3x400	<b>HTC3 80/240</b>	39,2	
80	260	3x400	<b>HTC3 80/260</b>	42,4	
96	200	3x400	<b>HTC3 96/200</b>	42,4	
120	160	3x400	<b>HTC3 120/160</b>	42,4	

Special versions 36V and 72V available on demand

## PRODUCT INTRO

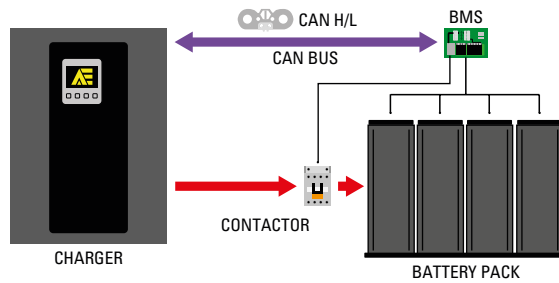
HTC3 is the three phase HF charger equipped with OLED/LCD display and USB interface and it is the top of HF Range reaching the highest power. This version is designed for the recharge of any lithium applications.

CAN-bus communication is a standard feature to manage the profile through our private CAN protocol or adjusting it following your specific needs (CAN open on demand).



## GENERAL CHARACTERISTICS

<b>Mains</b>	Vac 400V (3ph) +/- 10% 50-60Hz
<b>Visual signalling</b>	OLED display, 4 LEDs and 4 control keys
<b>Charger setting</b>	By laptop/USB port: software upload
<b>Cool-down system</b>	Temperature-regulated fan speed. Fan idle within 40°C internal components temperature.
<b>Efficiency</b>	> 90%
<b>Operating temperature</b>	0° to +40°C full power
<b>Certifications</b>	CE in conformity with LV and EMC protocols



## SAFETY FEATURES

<b>Input protection</b>	3 AC fast fuses (each main power board)
<b>Output protection</b>	By fuse (reverse polarity protection)
<b>Thermal Protection</b>	Probes on IGBT and diodes + derating
<b>Protection during battery disconnection</b>	Safety cut off by undervoltage

## OPTIONALS

<b>Stand alone</b>	Higher IP filter protection
--------------------	-----------------------------

## MECHANICAL CHARACTERISTICS

<b>Dimensions (LxWxH)</b>	602 x 426 x 802 mm
<b>Protection degree</b>	IP 21 (stand alone) filter protection system ready (for higher IP: contact our technical department for more details)
<b>Weight</b>	69 kg
<b>Input cable</b>	2,5 m +/- 10% (length) – AC plug on demand
<b>Output cables</b>	2,5 m +/- 10% (length) – DC plug on demand







# DIAGNOSTIC & MAINTENANCE

## *systems*

A line of diagnostic systems for industrial batteries:  
multi-voltage chargers, discharging devices and  
regenerating units.

Innovative equipment to test battery functioning and  
improve battery performances.





## PRODUCT INTRO

DDL discharger is aimed for workshop operations requiring discharge of batteries from 2V to 80-96-150V (depending on model).

The device works up to 150A discharging current and is capable of parallel setting (n.2 units, up to max. 300A or n.3 units up to max. 450A)

Integrated digital LCD display enables a complete overview and setting of main parameters.

USB port enables data-report available in .PDF and .XLS format.

## TECHNOLOGY

AC mains: 1 phase 230Vac  $\pm$  10% / 50-60Hz

Battery voltage: from 2V to 80-96-150V (depending on model)

Discharging current: up to 150A (depending on model)

## STANDARD EQUIPMENTS / INTERFACES

Integrated USB door for data storage/downloading and dedicated software

Visualization and setting through integrated LCD display

Wheels for easy transport

## SAFETY FEATURES

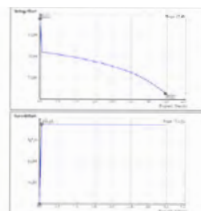
Operative temperature:  $-10$  to  $+40^{\circ}\text{C}$

## OPTIONALS

Parallel connection up to 3 modules: up to 450A discharging current - 120 Vac input version on demand

## MECHANICAL CHARACTERISTICS

<b>Dimensions</b> (LxWxH)	470 x 310 x 700 mm
<b>Weight</b>	32 kg



2x = 300A  
3x = 450A

# HKP MULTI

Multivoltage



V	A
6	15
12	50
24	50
36	50
48	50
72	35
80	30
96	25

2V steps    1A steps

## MAIN APPLICATIONS



## SUITABLE BATTERIES

All types

## MODELS AVAILABLE

VAC	CODE	DESCRIPTION
1x230	<b>HKP-M 96</b>	Multivoltage 6-96V up to 50A

## PRODUCT INTRO

HKP MULTI is the single phase multivoltage charger, from 6 to 96V, equipped with PFC (Power Factor Control) and aimed for workshop operations requiring charge/desulphation.

The device enables a quick setting procedure of main charging parameters by an integrated interface with OLED display and LEDs.

Supplied with iron stand and cables holder on request.



## GENERAL CHARACTERISTICS

<b>Mains</b>	Vac 230V (1ph) +/-10% 50-60Hz
<b>Visual signalling</b>	OLED display, 4 LEDs and 4 control keys
<b>Charger setting</b>	By OLED display: current, voltage, capacity and 7 pre-set charging profiles + <b>desulphation</b> mode
<b>Data memory (optional)</b>	Charger gives a report of the last 50 cycles and key technical data by integrated USB port
<b>Cool-down system</b>	Temperature-regulated fan speed. Fan idle within 40°C internal components temperature.
<b>Efficiency</b>	> 88%
<b>Operating temperature</b>	0° to +40°C
<b>Certifications</b>	CE in conformity with LV and EMC protocols

## SAFETY FEATURES

<b>Input protection</b>	AC fast fuse
<b>Output protection</b>	By relay (reverse polarity protection)
<b>Thermal Protection</b>	Probes on IGBT and diodes + derating
<b>Protection during battery disconnection</b>	Safety cut off by undervoltage

## OPTIONALS

<b>Stand alone/wall mounted</b>	Cable holder, charger iron stand
<b>On board/stand alone/wall</b>	Additional extra coating, pilot contact, charger status lamp

## MECHANICAL CHARACTERISTICS

<b>Dimensions (LxWxH)</b>	406 x 224 x 98 mm
<b>Protection degree</b>	IP 21 (vertical)
<b>Weight</b>	9 kg
<b>Input cable</b>	2, 5 m +/- 10% (length) complete with Schuko plug 16A
<b>Output cables</b>	2, 5 m +/- 10% (length) – DC plug on demand



Standard charging mode



Desulphation mode

# HTV MULTI

## Multivoltage



V	A
2	30
6	30
8	30
10	30
12	95
24	95
36	95
48	95
95	95
72	95
80	95

2V steps

1A steps

### MAIN APPLICATIONS



### SUITABLE BATTERIES

All types

### MODELS AVAILABLE

VAC	CODE	DESCRIPTION
3x400	HTV-M 80/100	Multivoltage 2-80V up to 95A

## PRODUCT INTRO

HTV MULTI is the three phase multivoltage charger, from 2 to 80V, aimed for workshop operations requiring charge/desulphation.

The device enables a quick setting procedure of main charging parameters by an integrated interface with OLED display and LEDs.

Supplied with iron stand and cables holder on request.



## GENERAL CHARACTERISTICS

<b>Mains</b>	Vac 400V (3ph) +/-10% 50-60Hz
<b>Visual signalling</b>	OLED display, 4 LEDs and 4 control keys
<b>Charger setting</b>	By OLED display: current, voltage, capacity and 7 pre-set charging profiles + <b>desulphation</b> mode
<b>Data memory (optional)</b>	Charger gives a report of the last 50 cycles and key technical data by integrated USB port
<b>Cool-down system</b>	Temperature-regulated fan speed. Fan idle within 40°C internal components temperature.
<b>Efficiency</b>	≥ 92%
<b>Operating temperature</b>	0° to +40°C
<b>Certifications</b>	CE in conformity with LV and EMC protocols

## SAFETY FEATURES

<b>Input protection</b>	3 AC fast fuses
<b>Output protection</b>	Ultrafast fuse (reverse polarity protection)
<b>Thermal Protection</b>	Probes on IGBT and diodes + derating
<b>Protection during battery disconnection</b>	Safety cut off by undervoltage

## OPTIONALS

<b>Stand alone/wall mounted</b>	Cable holder, charger iron stand
<b>On board/stand alone/wall</b>	Additional extra coating, charger status lamp

## MECHANICAL CHARACTERISTICS

<b>Dimensions (LxWxH)</b>	521 x 397 x 115 mm
<b>Protection degree</b>	IP 21 (vertical)
<b>Weight</b>	18 kg
<b>Input cable</b>	2, 5 m +/- 10% (length) – AC plug on demand
<b>Output cables</b>	2, 5 m +/- 10% (length) – DC plug on demand



Standard charging mode



Desulphation mode

# HTU MULTI & HRC3

## Multivoltage



### SUITABLE BATTERIES

All types

### MAIN APPLICATIONS



V	A
2	30
6	30
8	30
10	30
12	120
24	120
36	120
48	120
60	120
72	120
80	120

### HTU MULTI

VAC	CODE	DESCRIPTION
3x400	HTUM 80/120-8	Multivoltage 2-80 V up to 120A

### HRC3

VAC	CODE	DESCRIPTION
3x400	HRC3 80/120-8	Multivoltage 2-80 V up to 120A

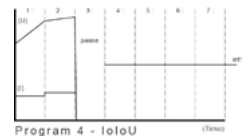
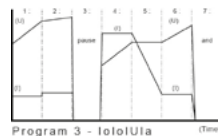
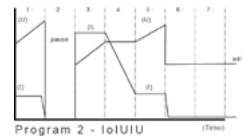
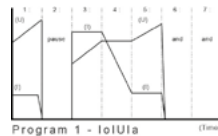


Standard charging mode



Desulphation mode

### HRC3 Battery refresh programs



## PRODUCT INTRO

**HTU MULTI** is aimed for workshop operations requiring charge and desulphation of batteries from 2 to 80V; this item is ideal in fact for the recharge and refresh of any battery type without the stress of looking for the dedicated charge.

The device enables an intuitive parameters setting by an integrated OLED display. Supplied with iron stand and cables holder on request.

**HRC3** version, by the means of 4 dedicated programs (programmable by PC), is ideal for recharging and refreshing your entire battery portfolio.



## GENERAL CHARACTERISTICS

	HTU MULTI	HRC3
<b>Mains</b>	400Vac (3ph) 50-60Hz	
<b>Visual signalling</b>	OLED display, 4 LEDs and 4 control keys	
<b>Charger setting</b>	By OLED display: current, voltage, capacity and 7 pre-set charging <b>profiles</b> + desulphation mode	By OLED display: nom. Voltage, capacity and 4 pre-set battery refresh <b>programs</b> By laptop/USB port: complete adjustment of each phase details of each program
<b>Data memory</b>	Charger gives a report of the last 50 cycles and key technical data by integrated USB port	
<b>Cool-down system</b>	Dedicated air cooling direct to heatsink only. Temperature-regulated fan speed. Fan idle within 40°C internal components temperature	
<b>Efficiency</b>	94%	
<b>Operating temperature</b>	0° to +40°C	
<b>Certifications</b>	CE in conformity with LV and EMC protocols	

## SAFETY FEATURES

<b>Input protection</b>	3 fast fuses
<b>Output protection</b>	By fuse (reverse polarity protection)
<b>Thermal Protection</b>	Probes on IGBT, diodes and power transformer + derating
<b>Protection during battery disconnection</b>	Safety cut off by undervoltage

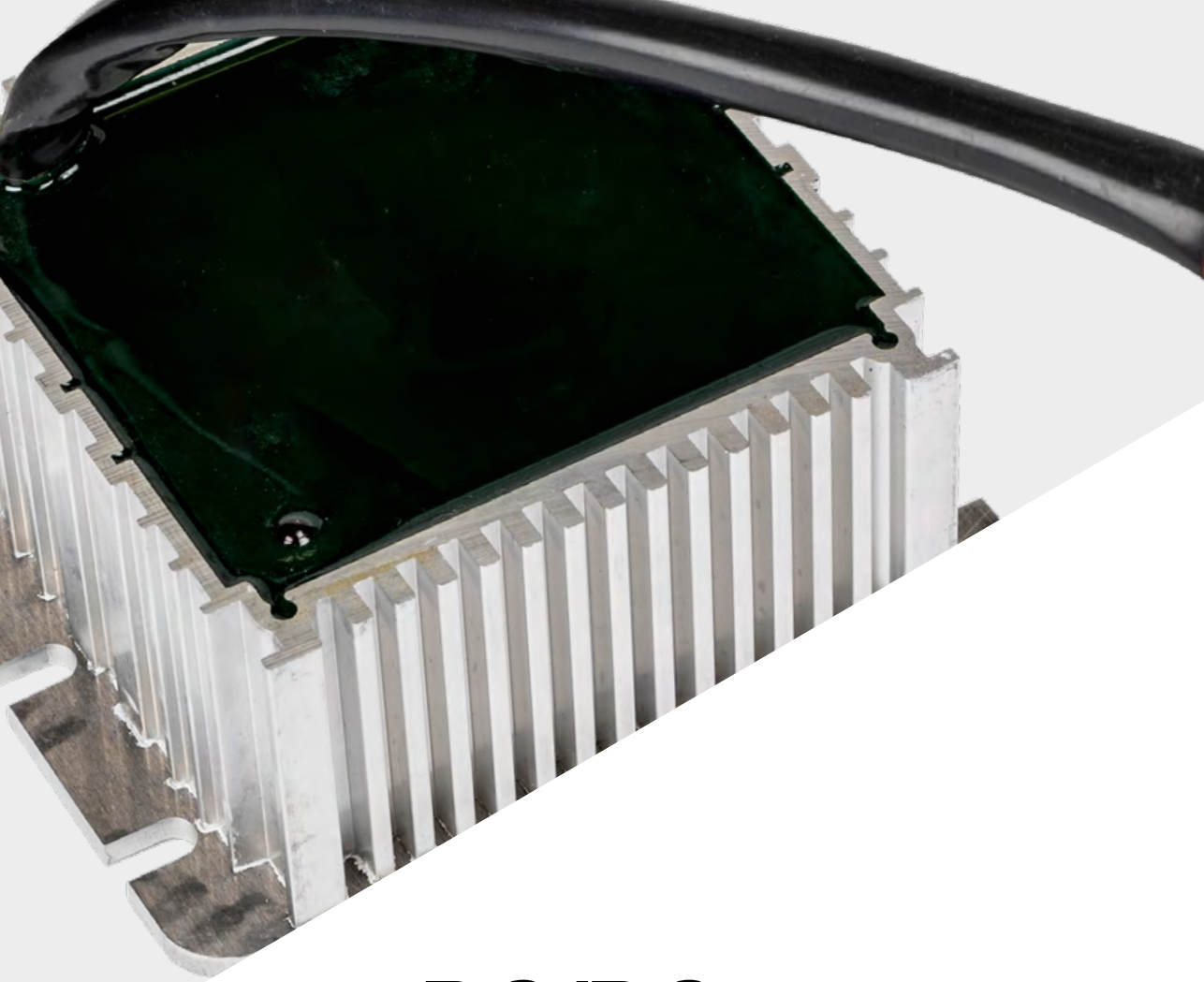
## OPTIONALS

<b>Stand alone</b>	Charger iron stand
<b>Stand alone/wall mounted</b>	Cable holder

## MECHANICAL CHARACTERISTICS

<b>Dimensions (LxWxH)</b>	570 x 456 x 195 mm
<b>Protection degree</b>	IP 21 (vertical) – dedicated air cooling direct to heatsink
<b>Weight</b>	28 kg
<b>Input cable</b>	2,5 m +/- 10% (length) – AC plug on demand
<b>Output cables</b>	2,5 m +/- 10% (length) – DC plug on demand



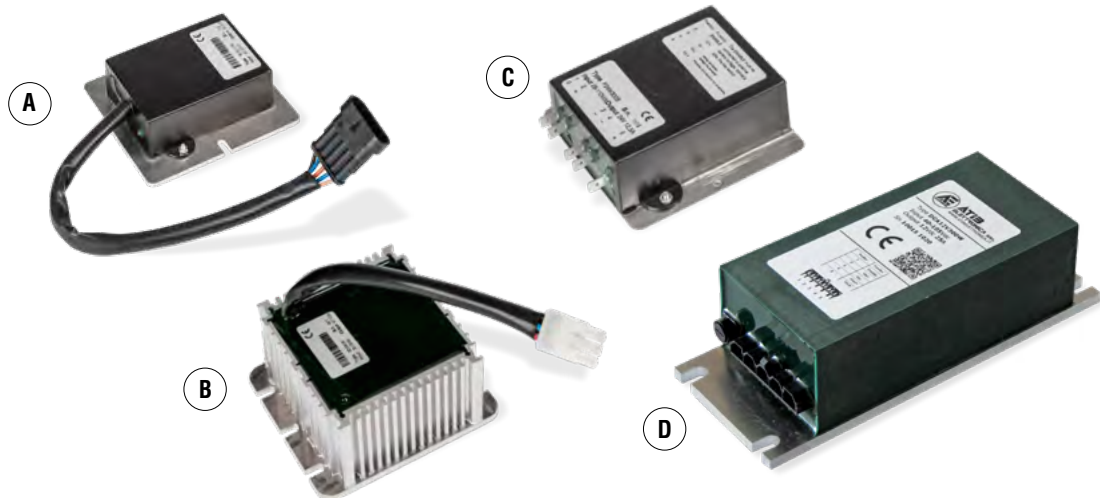


# DC/DC

## *converters*

Step-down voltage adapters for electric industrial vehicles, DC-DC converters reduce battery voltage to the value of your auxiliary systems. In this way they limit the inconveniences due to the intermediate socket, offering batteries a longer life expectancy.

# DC/DC CONVERTERS



## MODELS AVAILABLE

V	Power (W)	A	Input Voltage range	Case	CODE	Parallel connection	Galvanic isolation	Certifications
12	100	8,3	30-150	A	<b>12V100W</b>	✓	X	CE in conformity with LV and EMC protocols
12	150	12,5	30-130	B	<b>12V150W</b>	✓	X	
12	180	15,5	15-110	C	<b>P12W180</b>	X	X	
12	300	25,0	40-105	D	<b>DCA12V300W</b>	X	✓	
24	100	4,2	30-150	A	<b>24V100W</b>	✓	X	
24	300	12,5	30-130	B	<b>24V300W</b>	✓	X	
24	300	13,0	28-110	C	<b>P24W300B</b>	X	X	
24	300	12,5	40-105	D	<b>DCA24V300W</b>	X	✓	

## SAFETY FEATURES

	A	B	C	D
<b>Output crowbar protection</b>	✓	✓	✓	internal limitation
<b>Output short circuit protection</b>	✓	✓	✓	✓

## MECHANICAL CHARACTERISTICS

	A	B	C	D
<b>Weight</b>	0,5 kg	1,3 kg	0,5 kg	1,2 kg
<b>Dimensions (LxWxH)</b>	90 x 91 x 37 mm	115 x 130 x 55 mm	90 x 91 x 37 mm	190 x 76 x 50 mm
<b>Technical specification</b>	See technical drawings			
<b>Protection degree</b>	IP65			



A.T.I.B. Elettronica s.r.l.  
Via XXIV Maggio, 2  
Longhena 25030 (BS), Italia

Tel. +39 030.9971051

[www.atibeletronica.it](http://www.atibeletronica.it) follow us:  

A.T.I.B. Elettronica Srl reserves the right to modify data/contents of the present document at any time without prior notice. (Rev. 02/2024)