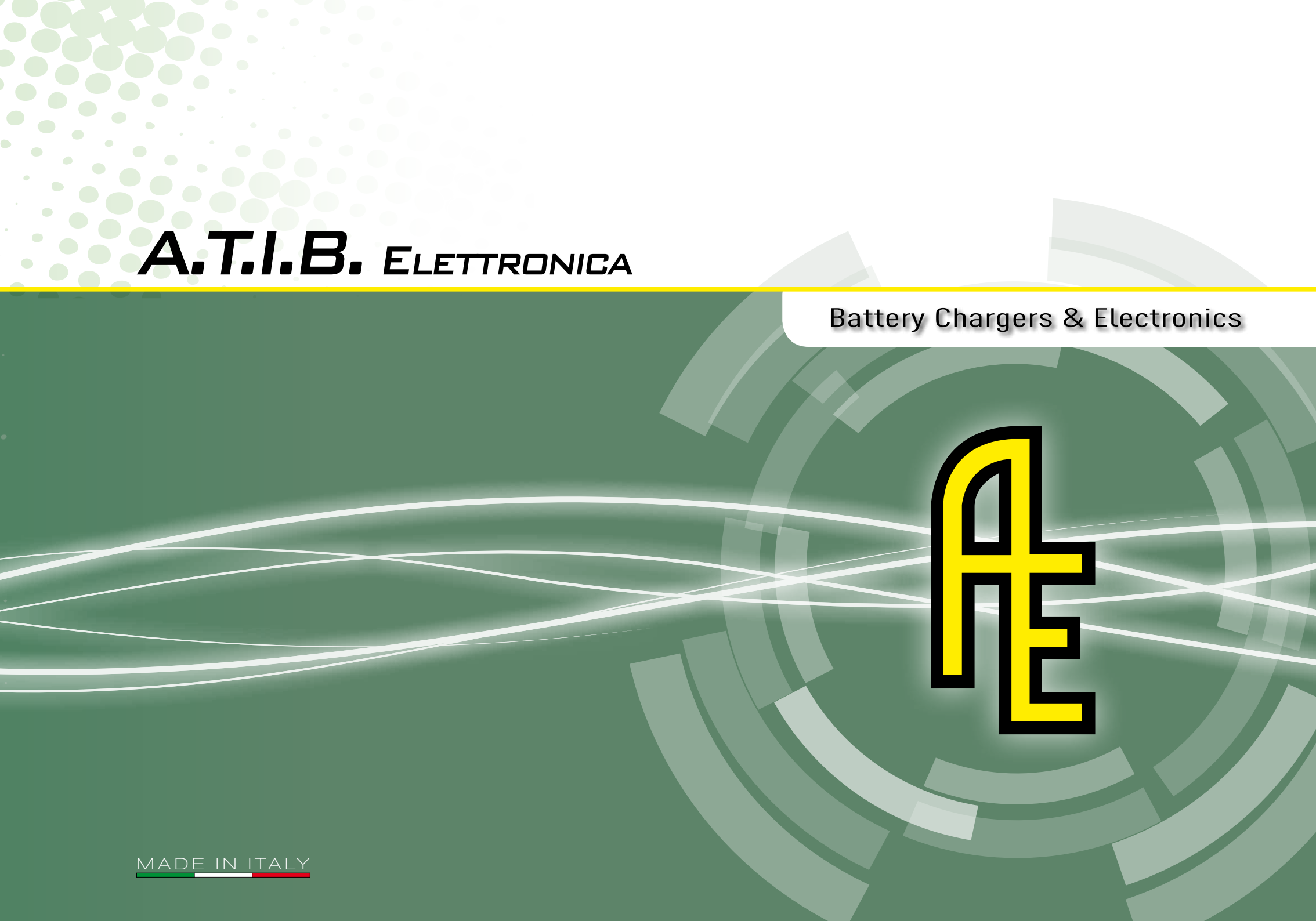




A.T.I.B. ELETTRONICA

Battery Chargers & Electronics



MADE IN ITALY





Your Flexible Solutions Partner

Profilo azienda / *Company profile*



A.T.I.B. Elettronica nasce nel 1989 in seno al Gruppo A.T.I.B. (attrezzature per carrelli elevatori) ad oggi realtà indipendente interamente a capitale proprio.

Produttore di caricabatterie per ogni tipologia di batterie focalizzandosi sulla Trazione.

Rete di distribuzione globale.

Fornitore ufficiale dei grandi produttori di batterie, carrelli elevatori, spazzatrici, piattaforme aeree e veicoli elettrici.

Produzione flessibile per soddisfare qualunque richiesta del mercato.

Utili annui reinvestiti in ricerca e sviluppo.

Independent company established in 1989, as former member of A.T.I.B. Group (forklift attachments).

Manufacturer of chargers for any battery type and technology, focusing on Motive Power.

European & Worldwide partnership network .

Official supplier of OEMs in the fields of battery/forklift/cleaning, scissor lifts and electrical vehicles.

Flexible production capability to satisfy any request of the market.

Annual profits constantly reinvested in Research & Development.



La linea di prodotti:

Caricabatterie tradizionali: resistenti e di tecnologia consolidata: Wa, Wo Pulse, WOWa, Wsa, Wa dV/dt.

Linea HF: versatile e compatta, ideale per tutti i tipi di batterie: W/UIUa, W/IUa, W/IUla, versione IP65

Convertitori Dc/Dc: versioni standard IP65 e versioni personalizzate.

Manutenzione batteria: Multitensione (HF e Tiristori), e Scaricatori.

Applicazioni più comuni: carrelli elevatori, transpallets, piattaforme aeree, spazzatrici, golfcar e veicoli elettrici.

Prodotti interamente sviluppati e testati da ATIB Elettronica.

Apparecchiature Tecniche:

- Camera Climatica
- Piattaforma Vibrante da collaudo
- Collaudo jig per PCB
- Metro LCR
- Banco automatico da collaudo.

La nostra forza

Orientamento al cliente

Consegne rapide

Reattività

Personale giovane

Lavoro di squadra e supporto reciproco



Product line:

Standard 50Hz chargers: robust and experienced technology: Wa, Wo Pulse, WOWa, Wsa, Wa, dV/dt.

High Frequency chargers: versatile and compact, ideal for any battery type: W/UIUa, W/IUa, W/IUla including IP65 versions.

DC/DC converters: standard IP65 and special versions.

Battery Service: Multivoltage chargers (HF & Thyristor) and Discharging Equipment.

Most common application: forklift trucks / warehouse trucks - scissor lifts - cleaning machines - golf cars - electrical vehicles. All products completely developed and tested by ATIB Elettronica.

Technical Equipment :

- Climatic chamber
- Vibrating testing platform
- Test jig for PCB
- LCR meter
- Automatic testing desks

Our strength

Fast deliveries

Prompt reactivity

Young motivated staff

Team-work and mutual support

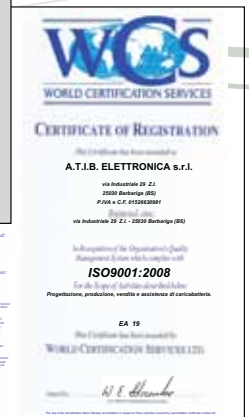
Customer-oriented philosophy

CERTIFICAZIONI:

- **ISO 9001: 2000** con **WCS** dal 1996
- Certificazione **CE** per tutti i prodotti
- Curve di carica standard **DIN**
- Protocolli **EMC**
- Certificazioni **UL/CSA** in corso di sviluppo

CERTIFICATIONS:

- **ISO 9001: 2000** with **WCS** since 1996
- **CE** certification for all products
- **DIN** standards charging curves
- **EMC** Protocols
- **UL/CSA** certification in progress





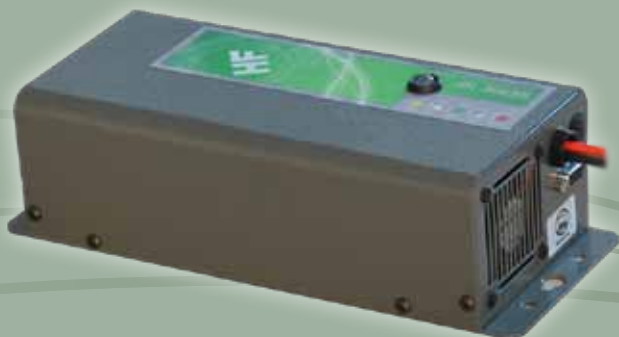
Caricabatteria alta frequenza / *HF chargers*

Versatili e compatti, ideali per ogni tipo di batteria.

Versatile and compact, ideal for any battery type.



HFY - HFX



Selettore tensione e curve
Voltage and curve selector



Porta per accesso programmazione PC
Laptop programming port



Optionals



Monofase 230Vac $\pm$ 10% / 50-60Hz / doppia tensione 12V-24V
 Programmazione diretta tramite PC (da presa seriale a presa USB)
 Montaggio a parete / applicazioni a bordo macchina (da valutare)
 Curve di carica I/U per qualsiasi tipologia di batteria (PzS, PzV, AGM, etc.)
 Optionals: Relè presenza rete / led remoto / cavo spiralato / maniglia / storico ultime cariche effettuate.

1phase 230Vac $\pm$ 10% / 50-60Hz / double voltage 12V-24V
 Full programming through PC (from serial to USB connection)
 Wall mounting / On Board application (to be approved)
 I/U charging curves suitable for any battery type (PzS, PzV, AGM, etc.)
 Optional: AC-Mains Voltage Presence Relay / Remote LED / Curly Cable / Handle for stand alone placing / history of last charges accomplished.

V	A	Vac Input (*)	Code	Ah (C5)		Cabinet Code
				Lead Acid (Wet, PzS)		
				7 - 8,5 h	11 - 13,5 h	
12 / 24 double voltage	5	1 x 230	HFY 12_24 / 5	23 - 35	48 - 56	1
	10	1 x 230	HFY 12_24 / 10	46 - 68	92 - 111	1
	15	1 x 230	HFY 12_24 / 15	71 - 105	143 - 171	1
	20	1 x 230	HFY 12_24 / 20	91 - 136	185 - 222	1
	25	1 x 230	HFX 12_24 / 25	116 - 173	235 - 282	2
	30	1 x 230	HFX 12_24 / 30	137 - 203	277 - 332	2

(*) input tolerance +/- 10%

Cabinet dimensions & weight				
Code	L x D x H (mm)			Weight (kg)
1	232	120	81	2,0
2	280	113	75	2,5

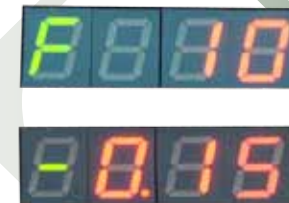


HFK - HFT



Display:
facile riconoscimento stato cb: NAVIGATOR
completo accesso alla programmazione
timer: conto alla rovescia

Easy status detection: NAVIGATOR
Full programming access
timer: countdown



Cabinet antigoccia
Speciale filtro flusso aria

Antidrop cabinet
Special air flux filter



Optionals



Monofase 230Vac $\pm$ 10% (HFK), 50-60Hz / Trifase 400Vac $\pm$ 10% (HFT), 50-60Hz

Programmazione diretta tramite display integrato.

Montaggio a parete / applicazioni a bordo macchina (da valutare)

Curve di carica W/U per qualsiasi tipologia di batteria (PzS, PzV, AGM, etc.). Profili di carica I/U a richiesta.

Optionals: Sonda termica / relè presenza rete / led remoto / lampada visualizzazione semaforica.

1phase 230Vac $\pm$ 10% (HFK), 50-60Hz / 3phase 400Vac $\pm$ 10% (HFT), 50-60Hz

Full programming through integrated Display.

Wall mounting / On Board application (to be approved)

W/U charging curves suitable for any battery type (PzS, PzV, AGM, etc.). I/U profiles on demand.

Optional: Thermal Probe / AC-Mains Voltage Presence Relay / Remote LED / Lamp.

V	A	Vac Input (*)	Code	Ah (C5)		Cabinet Code
				Lead Acid (Wet, PzS)		
				7 - 8,5 h	11 - 13,5 h	
24	40	1 x 230	HFK 24 / 40**	183 - 271	370 - 443	3 & 4
	50	1 x 230	HFK 24 / 50**	233 - 345	471 - 564	3 & 4
	60	1 x 230	HFK 24 / 60**	278 - 413	563 - 675	3 & 4
	85	1 x 230	HFK 24 / 85	353 - 524	715 - 856	4
	100	3 x 400	HFT 24 / 100	415 - 616	841 - 1007	5
	120	3 x 400	HFT 24 / 120	498 - 739	1009 - 1209	5
36	70	1 x 230	HFK 36 / 70	291 - 431	589 - 705	4
	80	3 x 400	HFT 36 / 80	332 - 493	673 - 806	5
	100	3 x 400	HFT 36 / 100	415 - 616	841 - 1007	5
	120	3 x 400	HFT 36 / 120	498 - 739	1009 - 1209	5
48	30	1 x 230	HFK 48 / 30	125 - 185	252 - 302	4
	40	1 x 230	HFK 48 / 40	166 - 246	336 - 403	4
	50	1 x 230	HFK 48 / 50	208 - 308	420 - 504	4
	60	1 x 230	HFK 48 / 60	249 - 370	504 - 604	4
	80	3 x 400	HFT 48 / 80	332 - 493	673 - 806	5
	100	3 x 400	HFT 48 / 100	415 - 616	841 - 1007	5
	120	3 x 400	HFT 48 / 120	498 - 739	1009 - 1209	5
72	35	1 x 230	*	137 - 203	277 - 332	4
	65	3 x 400	HFT 72 / 65	278 - 413	563 - 675	5
	80	3 x 400	HFT 72 / 80	332 - 493	673 - 806	5
	100	3 x 400	HFT 72 / 100	415 - 616	841 - 1007	5
80	30	1 x 230	*	125 - 185	252 - 302	4
	65	3 x 400	HFT 80 / 65	278 - 413	563 - 675	5
	80	3 x 400	HFT 80 / 80	332 - 493	673 - 806	5
	100	3 x 400	HFT 80 / 100	415 - 616	841 - 1007	5
96	25	1 x 230	*	104 - 154	210 - 252	4
	65	3 x 400	HFT 96 / 65	278 - 413	563 - 675	5

(*) input tolerance +/- 10%

** available in smaller cabinet (type 3)

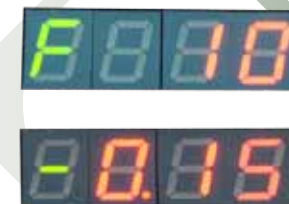
Cabinet dimensions & weight				
Code	L x D x H (mm)			Weight (kg)
3	363	190	75	5,0
4	410	224	88	9,0
5	480	280	150	12,0

* on demand

HFTD



Display:
facile riconoscimento stato cb: NAVIGATOR
completo accesso alla programmazione
timer: conto alla rovescia
Easy status detection: NAVIGATOR
Full programming access
timer: countdown



Cabinet antigoccia
Speciale filtro flusso aria
Antidrop cabinet
Special air flux filter



Optionals



Trifase 400Vac $\pm$ 10%, 50-60Hz

Programmazione diretta tramite display integrato.

Montaggio a parete.

Curve di carica W/U per qualsiasi tipologia di batteria (PzS, PzV, AGM, etc.). Profili di carica I/U a richiesta.

Optionals: Sonda termica / relè presenza rete / led remoto / lampada visualizzazione semaforica.

3phase 400Vac $\pm$ 10%, 50-60Hz

Full programming through integrated Display.

Wall mounting.

W/U charging curves suitable for any battery type (PzS, PzV, AGM, etc.). I/U profiles on demand.

Optional: Thermal Probe / AC-Mains Voltage Presence Relay / Remote LED / Lamp.

V	A	Vac Input (*)	Code	Ah (C5)		Cabinet Code
				Lead Acid (Wet, PzS)		
				7 - 8,5 h	11 - 13,5 h	
24	up to 200	3 x 400	*	831 - 1232	1682 - 2015	6
36	up to 200	3 x 400	*	831 - 1232	1682 - 2015	6
48	140	3 x 400	HFTD 48 / 140	582 - 863	1177 - 1410	6
	160	3 x 400	HFTD 48 / 160	665 - 986	1345 - 1612	6
	180	3 x 400	HFTD 48 / 180	748 - 1109	1513 - 1813	6
	200	3 x 400	HFTD 48 / 200	831 - 1232	1682 - 2015	6
80	120	3 x 400	HFTD 80 / 120	498 - 739	1009 - 1209	6
	140	3 x 400	HFTD 80 / 140	582 - 863	1177 - 1410	6
	160	3 x 400	HFTD 80 / 160	665 - 986	1345 - 1612	6

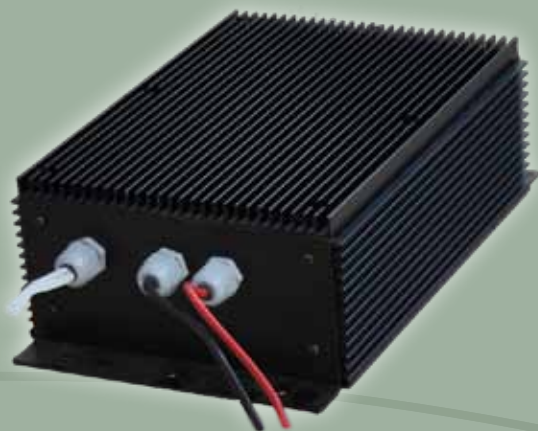
(*) input tolerance +/- 10%

Cabinet dimensions & weight				
Code	L x D x H (mm)			Weight (kg)
6	535	406	258	27,0

* on demand



Versioni Speciali / *Special Versions: IP65*



V	A	Vac Input (*)	Code	Ah (C5)		Cabinet Code
				Lead Acid (Wet, PzS)		
				7 - 8,5 h	11 - 13,5 h	
IP 65 range						
24	30	1 x 230	HE 24 / 30	137 - 203	277 - 332	2IP

(*) input tolerance +/- 10%

Cabinet dimensions & weight				
Code	L x D x H (mm)			Weight (kg)
2IP	345	212	105	6,6

Inclusi
Included



Monofase 230Vac $\pm$ 10%, 50-60Hz

Protezione IP65

Applicazioni a bordo macchina.

Curve di carica I/U per qualsiasi tipologia di batteria (PzS, PzV, AGM, etc.)

Inclusi: Relè presenza rete / led remoto.

1phase 230Vac $\pm$ 10%, 50-60Hz

IP65 protection

On Board application.

I/U charging curves suitable for any battery type (PzS, PzV, AGM, etc.)

Included: AC-Mains Voltage Presence Relay / Remote LED.

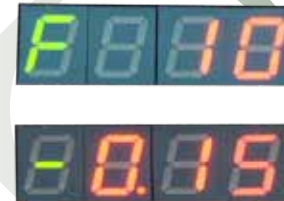
Versioni Speciali / *Special Versions: AIR SYSTEM*



AIR SYSTEM: Pompa integrata per ricircolo dell'elettrolita

AIR SYSTEM: Air pump for battery AIR MIX

Display:
facile riconoscimento stato cb: NAVIGATOR
completo accesso alla programmazione
timer: conto alla rovescia
Easy status detection: NAVIGATOR
Full programming access
timer: countdown



Cabinet antigoggia
Speciale filtro flusso aria
Antidrop cabinet
Special air flux filter



Optionals



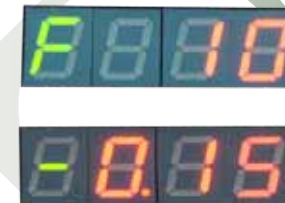
V	A	Vac Input (*)	Code	Ah (C5)	Cabinet Code
				Lead Acid (Wet, PzS)	
AIR SYSTEM					
any V / A available		1 x 230	HFK AIR	consider +10% on Ah values by size	7
any V / A available		3 x 400	HFT AIR	consider +10% on Ah values by size	7
any V / A available		3 x 400	HFTD AIR	consider +10% on Ah values by size	6

(*) input tolerance +/- 10%

Cabinet dimensions & weight				
Code	L x D x H (mm)			Weight (kg)
7	520	377	115	15,0
6	535	406	258	27,0

Versioni Speciali / *Special Versions: PWM/CAN BUS & PFC*

Display:
facile riconoscimento stato cb: NAVIGATOR
completo accesso alla programmazione
timer: conto alla rovescia
Easy status detection: NAVIGATOR
Full programming access
timer: countdown



Cabinet antigoccia
Speciale filtro flusso aria
Antidrop cabinet
Special air flux filter



Optionals



Comunicazione CAN BUS / Segnale PWM per batterie LiPo, LiFe, Lilon
Versione con PFC (HFK)

CAN BUS communication / PWM signal suitable for LiPo, LiFe, Lilon, etc. batteries
PFC version (HFK)

V	A	Vac Input (*)	Code	Ah (C5)	Cabinet Code
				Lead Acid (Wet, PzS)	
PFC VERSIONS					
any V / A available		1 x 230	HFK EVO	see Ah values by size	7
PWM / CAN BUS					
any V / A available		1 x 230	HFK LI	see Ah values by size	7
any V / A available		3 x 400	HFT LI	see Ah values by size	7
any V / A available		3 x 400	HFTD LI	see Ah values by size	6

(*) input tolerance +/- 10%

Cabinet dimensions & weight				
Code	L x D x H (mm)			Weight (kg)
7	520	377	115	15,0
6	535	406	258	27

Caricabatterie 50Hz Convenzionali / *50Hz Conventional Chargers*

Robusti e di tecnologia consolidata

Robust and most consolidated technology



Wa BASIC

Serie 2

Scheda di controllo universale
Universal board



Intuitivo riconoscimento stato del cb
Easy status detection



Monofase 230Vac $\pm$ 5% - Trifase 400Vac $\pm$ 5% / 50Hz / grado protezione IP20
Curva di carica Wa (9-12h, DIN 41774) per batterie PzS/Pb-acido libero
Carica finale: Temporale
Visualizzazione base tramite 4 leds / settaggio fase di equalizzazione
Optionals: tensioni speciali Vac, modelli 60Hz / sorreggicavo.

1phase 230Vac $\pm$ 5% - 3phase 400Vac $\pm$ 5% / 50Hz / IP20 protection
Wa charging curve (9-12h, DIN 41774) suitable for PzS batteries
Final charge: Temporal
Basic - 4 Leds visualization / Equalization setting
Optionals: special AC-Mains input Vac, 60Hz models / cables holder.

Wa ADVANCED

Serie 3



Monofase 230Vac $\pm$ 5% - Trifase selezionabile 400-230Vac $\pm$ 5% / 50Hz / grado protezione IP20
Curva di carica Wa (9-12h, DIN 41774) per batterie PzS/Pb-acido libero
Carica finale: Temporale, Capacitiva, Derivativa dV/dt
Visualizzazione avanzata tramite 5 leds / settaggio fase di equalizzazione / memoria salvataggio dati
Optionals: tastierino esterno per identificazione anomalie, lettura dati e programmazione / protezione IP55 / tensioni speciali Vac, modelli 60Hz / ruote e sorreggicavo.

1phase 230Vac $\pm$ 5% - 3phase 400-230Vac switchable $\pm$ 5% / 50Hz / IP20 protection
Wa charging curve (9-12h, DIN 41774) suitable for PzS batteries
Final charge: Temporal, Capacitive, Derivative dV/dt
Advanced - 5 Leds visualization / Equalization setting / Data storage memory
Optionals: external Keypad for the diagnostics, data reading and programming/ IP55 protection / special AC-Mains input Vac, 60Hz models / wheels and cables holder.

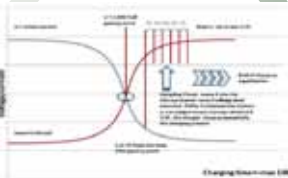
Programmazione/diagnostica
tramite tastierino esterno.

Programming/diagnostic
by external keypad.



Fine carica con controllo
dV/dt disponibile.

dV/dt termination available



Mobile IP55 disponibile
IP55 cabinet available



Wa TOP

Serie 5



Monofase 230Vac $\pm 5\%$ - Trifase selezionabile 400-230Vac $\pm 5\%$ / 50Hz / grado
protezione IP20

Tipo di carica finale (9-12h, DIN 41774) per batterie PzS/Pb-acido libero

Carica finale: Temporale, Capacitiva, Derivativa dV/dt

Visualizzazione top tramite 5 leds + Display integrato/
settaggio fase di equalizzazione / memoria salvataggio dati / timer.

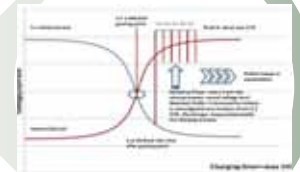
Optionals: protezione IP55/ tensioni speciali Vac,
modelli 60Hz / ruote e sorreggicavo.

Display:
per diagnostica e programmazione.
For diagnostic and programming



Fine carica con controllo
dV/dt disponibile.

dV/dt termination available



Timer digitale: conto alla rovescia
Digital timer: countdown



Mobile IP55 disponibile
IP55 cabinet available



1phase 230Vac $\pm 5\%$ - 3phase 400-230Vac switchable $\pm 5\%$ / 50Hz / IP20 protection

Wa charging curve (9-12h, DIN 41774) suitable for PzS batteries

Final charge: Temporal, Capacitive, Derivative dV/dt

Top - 5 Leds visualization + integrated Display / Equalization setting / Data storage memory / Timer

Optionals: IP55 protection / special AC-Mains input Vac, 60Hz models / wheels and cables holder.

V	A	Vac Input	Code			Ah (C5)			Cabinet Code
						Wa -- Lead Acid PzS			
			BASIC	ADVANCED	TOP	9h	12h	13h	
12	10	1 x 230	2SPM 12/ 10	3STM 12/ 10	5STM 12/ 10	50	67	72	P5
	15	1 x 230	2SPM 12/ 15	3STM 12/ 15	5STM 12/ 15	74	100	107	P5
	20	1 x 230	2SPM 12/ 20	3STM 12/ 20	5STM 12/ 20	99	133	143	P5
	25	1 x 230	2SPM 12/ 25	3STM 12/ 25	5STM 12/ 25	124	167	179	P5
	30	1 x 230	2SPM 12/ 30	3STM 12/ 30	5STM 12/ 30	149	200	215	P5
	40	1 x 230	2SPM 12/ 40	3STM 12/ 40	5STM 12/ 40	198	267	286	P5
	50	1 x 230	2SPM 12/ 50	3STM 12/ 50	5STM 12/ 50	248	333	358	P6
	60	1 x 230	2SPM 12/ 60	3STM 12/ 60	5STM 12/ 60	297	400	430	P6
	80	1 x 230	2SPM 12/ 80	3STM 12/ 80	5STM 12/ 80	396	533	573	P6
	100	1 x 230	2SPM 12/ 100	3STM 12/ 100	5STM 12/ 100	495	667	716	P6
	120	1 x 230	2SPM 12/ 120	3STM 12/ 120	5STM 12/ 120	594	800	859	I2B
24	10	1 x 230	2SPM 24/ 10	3STM 24/ 10	5STM 24/ 10	50	67	72	P5
	15	1 x 230	2SPM 24/ 15	3STM 24/ 15	5STM 24/ 15	74	100	107	P5
	20	1 x 230	2SPM 24/ 20	3STM 24/ 20	5STM 24/ 20	99	133	143	P5
	25	1 x 230	2SPM 24/ 25	3STM 24/ 25	5STM 24/ 25	124	167	179	P5
	30	1 x 230	2SPM 24/ 30	3STM 24/ 30	5STM 24/ 30	149	200	215	P5
	40	1 x 230	2SPM 24/ 40	3STM 24/ 40	5STM 24/ 40	198	267	286	P5
	50	1 x 230	2SPM 24/ 50	3STM 24/ 50	5STM 24/ 50	248	333	358	P6
	60	1 x 230	2SPM 24/ 60	3STM 24/ 60	5STM 24/ 60	597	400	430	P6
		3 x 400	2SPT 24/ 60	3STT 24/ 60	5STT 24/ 60				I1 / I2B
	80	1 x 230	2SPM 24/ 80	3STM 24/ 80	5STM 24/ 80	396	533	573	P6
		3 x 400	2SPT 24/ 80	3STT 24/ 80	5STT 24/ 80				I1 / I2B
	100	1 x 230	2SPM 24/ 100	3STM 24/ 100	5STM 24/ 100	495	667	716	I2B
		3 x 400	2SPT 24/ 100	3STT 24/ 100	5STT 24/ 100				I1 / I2B
	120	1 x 230	2SPM 24/ 120	3STM 24/ 120	5STM 24/ 120	594	800	859	I2B
		3 x 400	2SPT 24/ 120	3STT 24/ 120	5STT 24/ 120				I1 / I2B
	140	1 x 230	*	*	*	693	933	1.003	I1 / I2B
		3 x 400	2SPT 24/ 140	3STT 24/ 140	5STT 24/ 140				
	160	1 x 230	*	*	*	792	1.067	1.146	I1 / I2B
3 x 400		2SPT 24/ 160	3STT 24/ 160	5STT 24/ 160					
180	1 x 230	*	*	*	891	1.200	1.289	I2B	
	3 x 400	2SPT 24/ 180	3STT 24/ 180	5STT 24/ 180					
36	20	1 x 230	2SPM 36/ 20	3STM 36/ 20	5STM 36/ 20	99	133	143	P5
	25	1 x 230	2SPM 36/ 25	3STM 36/ 25	5STM 36/ 25	124	167	179	P5
	30	1 x 230	2SPM 36/ 30	3STM 36/ 30	5STM 36/ 30	149	200	215	P6
	40	1 x 230	2SPM 36/ 40	3STM 36/ 40	5STM 36/ 40	198	267	286	P6
	50	1 x 230	2SPM 36/ 50	3STM 36/ 50	5STM 36/ 50	248	333	358	P6
	60	1 x 230	2SPM 36/ 60	3STM 36/ 60	5STM 36/ 60	597	400	430	P6
		3 x 400	2SPT 36/ 60	3STT 36/ 60	5STT 36/ 60				I1 / I2B
	80	1 x 230	2SPM 36/ 80	3STM 36/ 80	5STM 36/ 80	396	533	573	P6
		3 x 400	2SPT 36/ 80	3STT 36/ 80	5STT 36/ 80				I1 / I2B
	100	1 x 230	2SPM 36/ 100	3STM 36/ 100	5STM 36/ 100	495	667	716	I2B
		3 x 400	2SPT 36/ 100	3STT 36/ 100	5STT 36/ 100				I1 / I2B
	120	1 x 230	2SPM 36/ 120	3STM 36/ 120	5STM 36/ 120	594	800	859	I2B
		3 x 400	2SPT 36/ 120	3STT 36/ 120	5STT 36/ 120				I1 / I2B
	140	1 x 230	*	*	*	693	933	1.003	I2B
		3 x 400	2SPT 36/ 140	3STT 36/ 140	5STT 36/ 140				
	160	1 x 230	*	*	*	792	1.067	1.146	I2B
		3 x 400	2SPT 36/ 160	3STT 36/ 160	5STT 36/ 160				
	180	1 x 230	*	*	*	891	1.200	1.289	I2B
3 x 400		2SPT 36/ 180	3STT 36/ 180	5STT 36/ 180					

* on demand

V	A	Vac Input	Code			Ah (C5)			Cabinet Code
			Wa -- Lead Acid PzS						
			BASIC	ADVANCED	TOP	9h	12h	13h	
48	30	1 x 230	2SPM 48/ 30	3STM 48/ 30	5STM 48/ 30	149	200	215	P6
	40	1 x 230	2SPM 48/ 40	3STM 48/ 40	5STM 48/ 40	198	267	286	P6
	50	1 x 230	2SPM 48/ 50	3STM 48/ 50	5STM 48/ 50	248	333	358	P6
	60	1 x 230	2SPM 48/ 60	3STM 48/ 60	5STM 48/ 60	597	400	430	P6
		3 x 400	2SPT 48/ 60	3STT 48/ 60	5STT 48/ 60				I1 / I2B
	80	1 x 230	2SPM 48/ 80	3STM 48/ 80	5STM 48/ 80	396	533	573	I1 / I2B
		3 x 400	2SPT 48/ 80	3STT 48/ 80	5STT 48/ 80				I2B
	100	1 x 230	2SPM 48/ 100	3STM 48/ 100	5STM 48/ 100	495	667	716	I1 / I2B
		3 x 400	2SPT 48/ 100	3STT 48/ 100	5STT 48/ 100				I2B
	120	1 x 230	2SPM 48/ 120	3STM 48/ 120	5STM 48/ 120	594	800	859	I2B
		3 x 400	2SPT 48/ 120	3STT 48/ 120	5STT 48/ 120				I1 / I2B
	140	1 x 230	*	*	*	693	933	1.003	I2B
		3 x 400	2SPT 48/ 140	3STT 48/ 140	5STT 48/ 140				I2B
160	1 x 230	*	*	*	792	1.067	1.146	I2B	
	3 x 400	2SPT 48/ 160	3STT 48/ 160	5STT 48/ 160				I2B	
180	1 x 230	*	*	*	891	1.200	1.289	I2B	
	3 x 400	2SPT 48/ 180	3STT 48/ 180	5STT 48/ 180				I2B	
72	60	1 x 230	2SPM 72/ 60	3STM 72/ 60	5STM 72/ 60	597	400	430	I2B
		3 x 400	2SPT 72/ 60	3STT 72/ 60	5STT 72/ 60				I1 / I2B
	80	1 x 230	2SPM 72/ 80	3STM 72/ 80	5STM 72/ 80	396	533	573	I2B
		3 x 400	2SPT 72/ 80	3STT 72/ 80	5STT 72/ 80				I1 / I2B
	100	1 x 230	2SPM 72/ 100	3STM 72/ 100	5STM 72/ 100	495	667	716	I2B
		3 x 400	2SPT 72/ 100	3STT 72/ 100	5STT 72/ 100				I1 / I2B
	120	1 x 230	2SPM 72/ 120	3STM 72/ 120	5STM 72/ 120	594	800	859	I2B
		3 x 400	2SPT 72/ 120	3STT 72/ 120	5STT 72/ 120				I2B
	140	1 x 230	*	*	*	693	933	1.003	I2B
		3 x 400	2SPT 72/ 140	3STT 72/ 140	5STT 72/ 140				I2B
	160	1 x 230	*	*	*	792	1.067	1.146	I2B
		3 x 400	2SPT 72/ 160	3STT 72/ 160	5STT 72/ 160				I2B
	180	1 x 230	*	*	*	891	1.200	1.289	I3
3 x 400		2SPT 72/ 180	3STT 72/ 180	5STT 72/ 180	I3				
80	60	1 x 230	2SPM 80/ 60	3STM 80/ 60	5STM 80/ 60	597	400	430	I2B
		3 x 400	2SPT 80/ 60	3STT 80/ 60	5STT 80/ 60				I1 / I2B
	80	1 x 230	2SPM 80/ 80	3STM 80/ 80	5STM 80/ 80	396	533	573	I2B
		3 x 400	2SPT 80/ 80	3STT 80/ 80	5STT 80/ 80				I1 / I2B
	100	1 x 230	2SPM 80/ 100	3STM 80/ 100	5STM 80/ 100	495	667	716	I2B
		3 x 400	2SPT 80/ 100	3STT 80/ 100	5STT 80/ 100				I1 / I2B
	120	1 x 230	2SPM 80/ 120	3STM 80/ 120	5STM 80/ 120	594	800	859	I2B
		3 x 400	2SPT 80/ 120	3STT 80/ 120	5STT 80/ 120				I2B
	140	1 x 230	*	*	*	693	933	1.003	I3
		3 x 400	2SPT 80/ 140	3STT 80/ 140	5STT 80/ 140				I3
	160	1 x 230	*	*	*	792	1.067	1.146	I3
		3 x 400	2SPT 80/ 160	3STT 80/ 160	5STT 80/ 160				I3
	180	1 x 230	*	*	*	891	1.200	1.289	I3
3 x 400		2SPT 80/ 180	3STT 80/ 180	5STT 80/ 180	I3				
96	60	1 x 230	*	*	*	597	400	430	I1 / I2B
		3 x 400	2SPT 96/ 60	3STT 96/ 60	5STT 96/ 60				I1 / I2B
	80	1 x 230	*	*	*	396	533	573	I1 / I2B
		3 x 400	2SPT 96/ 80	3STT 96/ 80	5STT 96/ 80				I1 / I2B
	100	1 x 230	*	*	*	495	667	716	I1 / I2B
		3 x 400	2SPT 96/ 100	3STT 96/ 100	5STT 96/ 100				I1 / I2B
	120	1 x 230	*	*	*	594	800	859	I2B
		3 x 400	2SPT 96/ 120	3STT 96/ 120	5STT 96/ 120				I2B
	140	1 x 230	*	*	*	693	933	1.003	I3
		3 x 400	2SPT 96/ 140	3STT 96/ 140	5STT 96/ 140				I3
160	1 x 230	*	*	*	792	1.067	1.146	I3	
	3 x 400	2SPT 96/ 160	3STT 96/ 160	5STT 96/ 160				I3	

Cabinet Type & Dimensions in mm	
P5	L350 X D220 X H270
P6	L480 X D280 X H310
I1	L550 X D390 X H660
I2B	L550 X D450 X H900
I3	L700 X D550 X H1150

* on demand
single-phase 220(230)240 Vac
Three-phase 380(400)420 Vac (three-phase 220(230)240) Fino a / Up to 48/160, 72/100, 80/100, 96/80

WOWa FAST TOP

Serie 5



Monofase 230Vac $\pm$ 5% - Trifase selezionabile 400-230Vac $\pm$ 5% / 50Hz / grado protezione IP20

Curva di carica WoWa (7-8h, DIN 41774) per batterie PzS/Pb-acido libero

Carica finale: Temporale, Capacitiva, Derivativa dV/dt

Visualizzazione top tramite 5 leds + Display integrato/ settaggio fase di equalizzazione / memoria salvataggio dati / timer

Optionals: protezione IP55/ tensioni speciali Vac, modelli 60Hz / ruote e sorreggicavo.

1phase 230Vac $\pm$ 5% - 3phase 400-230Vac switchable $\pm$ 5% / 50Hz / IP20 protection

WoWa charging curve (7-8h, DIN 41774) suitable for PzS batteries

Final charge: Temporal, Capacitive, Derivative dV/dt

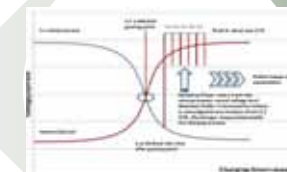
Top - 5 Leds visualization + integrated Display / Equalization setting / Data storage memory / Timer

Optionals: IP55 protection / special AC-Mains input Vac, 60Hz models / wheels and cables holder.

Display:
per diagnostica e programmazione.
For diagnostic and programming.



Fine carica con controllo
dV/dt disponibile.
dV/dt termination available



Timer digitale: conto alla rovescia
Digital timer: countdown



Mobile IP55 disponibile
IP55 cabinet available



Wo PULSE TOP

Serie 5



Monofase 230Vac $\pm$ 5% - Trifase 400-230Vac selezionabile $\pm$ 5% / 50Hz / grado protezione IP20

Curva di carica Wo PULSE (6,5-14h) per batterie PzS/Pb-acido libero

Carica finale: Pulse

Visualizzazione top tramite 5 leds + Display integrato/ settaggio fase di equalizzazione / memoria salvataggio dati / timer

Optionals: protezione IP55/ tensioni speciali Vac, modelli 60Hz / ruote e sorreggicavo.

1phase 230Vac $\pm$ 5% - 3phase 400-230Vac switchable $\pm$ 5% / 50Hz / IP20 protection

Wo PULSE charging curve (6,5-14h) suitable for PzS batteries

Final charge: Pulse

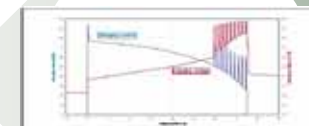
Top - 5 Leds visualization + integrated Display / Equalization setting / Data storage memory / Timer

Optionals: IP55 protection / special AC-Mains input Vac, 60Hz models / wheels and cables holder.

Display:
per diagnostica e programmazione.
For diagnostic and programming.



Seconda fase ad impulsi.
Pulsing second phase.



Timer digitale: conto alla rovescia
Digital timer: countdown



Mobile IP55 disponibile
IP55 cabinet available



V	A	Vac Input	Code	Ah (C5)		Cabinet Code	Code	Ah (C5)			Cabinet Code
				WOWa - Lead Acid PzS				W0 Pulse - Lead Acid PzS			
			TOP-FAST	7h	8h		TOP-PULSE	6,5-7,5h	8,5-12h	14h	
24	30	1 x 230	5FCM 24/ 30	115	146	P5	5FBE 24/ 30	130-150	180-250	310	P5
	40	1 x 230	5FCM 24/ 40	154	195	P6	5FBE 24/ 40	170-200	230-340	410	P6
	50	1 x 230	5FCM 24/ 50	192	244	P6	5FBE 24/ 50	215-255	295-425	515	P6
	60	1 x 230	5FCM 24/ 60	231	293	P6	5FBE 24/ 60	260-310	360-510	620	P6
		3 x 400	5FCT 24/ 60			I2B	5FBD 24/ 60				I2B
	80	1 x 230	5FCM 24/ 80	308	390	P6	5FBE 24/ 80	350-410	500-720	820	P6
		3 x 400	5FCT 24/ 80			I2B	5FBD 24/ 80				I2B
	100	1 x 230	5FCM 24/ 100	385	488	I2B	5FBE 24/ 100	430-520	590-850	1040	I2B
		3 x 400	5FCT 24/ 100			I2B	5FBD 24/ 100				I2B
	120	1 x 230	*	462	585	I2B	*	520-620	710-1020	1250	I2B
		3 x 400	5FCT 24/ 120			I2B	5FBD 24/ 120				I2B
	140	1 x 230	*	538	683	I2B	*	610-730	830-1190	1460	I2B
		3 x 400	5FCT 24/ 140			I2B	5FBD 24/ 140				I2B
36	30	1 x 230	*	115	146	*	*	130-150	180-250	310	*
	40	1 x 230	*	154	195	*	*	170-200	230-340	410	*
	50	1 x 230	*	192	244	*	*	215-255	295-425	515	*
	60	1 x 230	5FCM 36/ 60	231	293	I2B	5FBE 36/ 60	260-310	360-510	620	I2B
		3 x 400	5FCT 36/ 60			I2B	5FBD 36/ 60				I2B
	80	1 x 230	5FCM 36/ 80	308	390	I2B	5FBE 36/ 80	350-410	500-720	820	I2B
		3 x 400	5FCT 36/ 80			I2B	5FBD 36/ 80				I2B
	100	1 x 230	5FCM 36/ 100	385	488	I2B	5FBE 36/ 100	430-520	590-850	1040	I2B
		3 x 400	5FCT 36/ 100			I2B	5FBD 36/ 100				I2B
	120	1 x 230	*	462	585	I2B	*	520-620	710-1020	1250	I2B
		3 x 400	5FCT 36/ 120			I2B	5FBD 36/ 120				I2B
	140	1 x 230	*	538	683	I2B	*	610-730	830-1190	1460	I2B
		3 x 400	5FCT 36/ 140			I2B	5FBD 36/ 140				I2B
	160	1 x 230	*	615	780	I2B	*	700-830	950-1350	1650	I2B
		3 x 400	5FCT 36/ 160			I2B	5FBD 36/ 160				I2B
	180	1 x 230	*	692	878	I2B	*	770-930	1050-1530	1850	I2B
		3 x 400	5FCT 36/ 180			I2B	5FBD 36/ 180				I2B
	200	1 x 230	*	769	976	I2B	*	*			*
		3 x 400	5FCT 36/ 200			I2B					
48	30	1 x 230	*	115	146	*	*	130-150	180-250	310	*
	40	1 x 230	*	154	195	*	*	170-200	230-340	410	*
	50	1 x 230	*	192	244	*	*	215-255	295-425	515	*
	60	1 x 230	5FCM 48/ 60	231	293	I2B	5FBE 48/ 60	260-310	360-510	620	I2B
		3 x 400	5FCT 48/ 60			I2B	5FBD 48/ 60				I2B
	80	1 x 230	5FCM 48/ 80	308	390	I2B	5FBE 48/ 80	350-410	500-720	820	I2B
		3 x 400	5FCT 48/ 80			I2B	5FBD 48/ 80				I2B
	100	1 x 230	5FCM 48/ 100	385	488	I2B	5FBE 48/ 100	430-520	590-850	1040	I2B
		3 x 400	5FCT 48/ 100			I2B	5FBD 48/ 100				I2B
	120	1 x 230	*	462	585	I2B	*	520-620	710-1020	1250	I2B
		3 x 400	5FCT 48/ 120			I2B	5FBD 48/ 120				I2B
	140	1 x 230	*	538	683	I2B	*	610-730	830-1190	1460	I2B
		3 x 400	5FCT 48/ 140			I2B	5FBD 48/ 140				I2B
	160	1 x 230	*	615	780	I2B	*	700-830	950-1350	1650	I2B
		3 x 400	5FCT 48/ 160			I2B	5FBD 48/ 160				I2B
	180	1 x 230	*	692	878	I2B	*	770-930	1050-1530	1850	I2B
		3 x 400	5FCT 48/ 180			I2B	5FBD 48/ 180				I2B
	200	1 x 230	*	769	976	I2B	*	*			*
		3 x 400	5FCT 48/ 200			I2B					

V	A	Vac Input	Code	Ah (C5)		Cabinet Code
				WOWa - Lead Acid PzS		
			TOP-FAST	7h	8h	
72	60	1 x 230	*	231	293	*
		3 x 400	*			*
	80	1 x 230	*	308	390	I2B
		3 x 400	5FCT 72/ 80			
	100	1 x 230	*	385	488	I2B
		3 x 400	5FCT 72/ 100			
	120	1 x 230	*	462	585	I2B
		3 x 400	5FCT 72/ 120			
	140	1 x 230	*	538	683	I2B
		3 x 400	5FCT 72/ 140			
	160	1 x 230	*	615	780	I2B
		3 x 400	5FCT 72/ 160			
180	1 x 230	*	692	878	I3	
	3 x 400	5FCT 72/ 180				
200	1 x 230	*	769	976	I3	
	3 x 400	5FCT 72/ 200				
80	60	1 x 230	*	231	293	*
		3 x 400	*			*
	80	1 x 230	*	308	390	I2B
		3 x 400	5FCT 80/ 80			
	100	1 x 230	*	385	488	I2B
		3 x 400	5FCT 80/ 100			
	120	1 x 230	*	462	585	I2B
		3 x 400	5FCT 80/ 120			
	140	1 x 230	*	538	683	I3
		3 x 400	5FCT 80/ 140			
	160	1 x 230	*	615	780	I3
		3 x 400	5FCT 80/ 160			
180	1 x 230	*	692	878	I3	
	3 x 400	5FCT 80/ 180				
200	1 x 230	*	769	976	I3	
	3 x 400	5FCT 80/ 200				
96	60	1 x 230	*	231	293	*
		3 x 400	*			
	80	1 x 230	*	308	390	I2B
		3 x 400	5FCT 96/ 80			
	100	1 x 230	*	385	488	I2B
		3 x 400	5FCT 96/ 100			
	120	1 x 230	*	462	585	I2B
		3 x 400	5FCT 96/ 120			
	140	1 x 230	*	538	683	I3
		3 x 400	5FCT 96/ 140			
	160	1 x 230	*	615	780	I3
		3 x 400	5FCT 96/ 160			
180	1 x 230	*	692	878	I3	
	3 x 400	5FCT 96/ 180				

Cabinet Type & Dimensions in mm	
P5	L350 X D220 X H270
P6	L480 X D280 X H310
I2B	L550 X D450 X H900
I3	L700 X D550 X H1150

Code	Ah (C5) W0 Pulse - Lead Acid PzS			Cabinet Code
	TOP-PULSE	6,5-7,5h	8,5-12h	
*	260-310	360-510	620	*
*				*
*	350-410	500-720	820	I2B
5FBD 72/ 80				
*	430-520	590-850	1040	I2B
5FBD 72/ 100				
*	520-620	710-1020	1250	I2B
5FBD 72/ 120				
*	610-730	830-1190	1460	I2B
5FBD 72/ 140				
*	700-830	950-1350	1650	I2B
5FBD 72/ 160				
*	770-930	1050-1530	1850	I3
5FBD 72/ 180				
*	*			*
*	260-310	360-510	620	*
*				*
*	350-410	500-720	820	I2B
5FBD 80/ 80				
*	430-520	590-850	1040	I2B
5FBD 80/ 100				
*	520-620	710-1020	1250	I2B
5FBD 80/ 120				
*	610-730	830-1190	1460	I3
5FBD 80/ 140				
*	700-830	950-1350	1650	I3
5FBD 80/ 160				
*	770-930	1050-1530	1850	I3
5FBD 80/ 180				
*	*			*
*	260-310	360-510	620	*
*				
*	350-410	500-720	820	I2B
5FBD 96/ 80				
*	430-520	590-850	1040	I2B
5FBD 96/ 100				
*	520-620	710-1020	1250	I2B
5FBD 96/ 120				
*	610-730	830-1190	1460	I3
5FBD 96/ 140				
*	700-830	950-1350	1650	I3
5FBD 96/ 160				
*	770-930	1050-1530	1850	I3
5FBD 96/ 180				
* on demand				
single-phase 220(230)240 Vac				
Three-phase 380(400)420 Vac (three-phase 220(230)240) Fino a / Up to 48/160, 72/100, 80/100, 96/80				

Cabinet Type & Dimensions in mm

P5	L350 X D220 X H270
P6	L480 X D280 X H310
I2B	L550 X D450 X H900
I3	L700 X D550 X H1150

* on demand

single-phase 220(230)240 Vac
Three-phase 380(400)420 Vac (three-phase 220(230)240) Fino a / Up to 48/160, 72/100, 80/100, 96/80

Convertitori DC/DC / *DC/DC Converters*



OUTPUT VOLTAGE (Vdc)	12					24			
AVAILABLE POWER (W)	50	75	100	150	180	100	200	300	300
OUTPUT CURRENT (A constant)	4,16	6,25	8.3	12.5	15.5	4,2	8.3	12.5	13
DIMENSIONS	A	A	A	B	C	A	B	B	C
PARALLEL CONNECTION	Y	Y	Y	Y	N	Y	Y	Y	N
INPUT VOLTAGE RANGE (Vdc)	30-150	30-150	30-150	30-130	15-110	30-150	30-130	30-130	28-110
PROTECTION DEGREE	IP65								

Model	A	B	C
Weight (kg)	0,5	1,2	0,5
Dimensions L x D x H (mm)	110 x 100 x 35	115 x 130 x 55	90 x 91 x 37
Technical specifications	see technical drawings		

Ampio range di tensioni d'ingresso / Tensioni di uscita 12V, 24V (tensioni speciali a richiesta).
Modelli IP65
Possibilità di connessione in parallelo (in base al modello).

Wide Input Multi Voltage / Output Voltage 12V, 24V (special V on demand)
IP65 models
Parallel connection available depending on model.

Dispositivi manutenzione batterie / *Battery servicing items*

Multitensione (HF e tiristori) e scaricatori.

Multivoltage chargers (HF & Thyristor) and Discharging Equipment.



Facile impostazione parametri tramite display LCD.
Friendly LCD display setting.

Scaricatore DDL 150 USB / *Discharger*



PARAMETRI / PARAMETER SPECIFICATION	
Tensione / Voltage	da / from 2V a / to 80V
A scarica / Discharge current	da / from 2A a / to 150A
Ac Mains	230 Vac $\pm$ 10%
T° / Operative temperature	-10 +40°C
Peso / Weight	32 Kg
Dimensions (h x l x p)	700 mm x 310mm x 450 mm

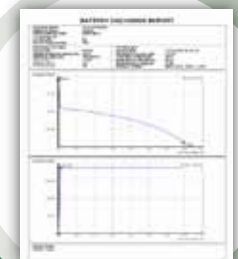
V BATT	MAX A	NOTE / NOTES
1 - 5V	30A	V BATT $\geq$ 2V
6V	100A	
>6 - <12V	120A	V BATT $\geq$ 8V
>12 - 96 V	150A	



Porta USB per scarico dati.
USB port for direct data download.



Report completo di grafici.
Full report complete with diagrams.



Monofase 230Vac $\pm$ 10% / 50-60Hz

Tensione batteria da 2V a 80V / Correnti di scarica fino a 150A

Visualizzazione e settaggio tramite display LCD integrato / ruote integrate per una facile movimentazione.

Porta USB integrata per salvataggio e scarico dati e software dedicato.

Optionals: connessione in parallelo fino a 3 moduli: corrente di scarica fino a 450A

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

Battery Voltage from 2V to 80V / Discharging Current up to 150A

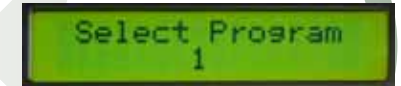
Visualization and Setting through integrated LCD Display / integrated wheels for easy transport.

Integrated USB door for data storage/downloading and dedicated software.

Optional: parallel connection up to 3 modules : up to 450A discharging current.

4 programmi in memoria per desolfatazione leggera o profonda.
4 pre-set programs for desulphation (from light to deep).

Stazione rigenerativa HRC-3 / *Regenerating Station*



Mobile robusto e facile da spostare.
Robust cabinet easy to handle.



	HRC-3 (400Vac)
2V	30A
6V	15A
8V	15A
10V	65A
12V	65A
24V	65A
36V	65A
48V	50A
60V	65A
72V	65A
80V	40A
96V	//

400Vac $\pm$ 10% / 50-60Hz

Programmazione diretta tramite display integrato / ruote integrate.

Disponibili 4 programmi di desolfatazione di default (Lieve-Debole-Media-Forte)

Possibilità di creare a piacere curve di carica e cicli di desolfatazione personalizzati per qualsiasi tipologia di batteria (PzS, PzV, AGM, etc.)

3phase 400Vac $\pm$ 10% / 50-60Hz

Full programming through integrated Display / integrated wheels

4 default desulphating programs available (Light – Soft – Medium - Deep)

Possibility to create your own charging profiles and your own desulphating cycles for any battery type (PzS, PzV, AGM, etc.)

Multitensione MTD / *Multivoltage*



Trifase 400Vac $\pm$ 5% / 50-60Hz

Tensioni batteria da 2V a 96V / Correnti fino a 120A (correnti più elevate a richiesta)

Programmazione diretta tramite 2 potenziometri + timer / Display integrato

Ciclo di desolfatazione a corrente costante / Curve di carica per batterie PzS, PzV, AGM

Potenziometri e display digitale.
Funzione manuale/automatico.
Potentiometers and digital display.
Automatic/manual mode.



Timer.



3phase 400Vac $\pm$ 5% / 50-60Hz

Battery Voltage from 2V to 96V / Current up to 120A (higher currents on demand)

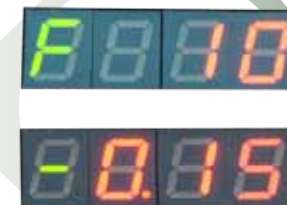
Full programming through 2 potentiometers + timer / Integrated Display

Desulphating cycle with constant current / Charging cycle suitable for PzS, PzV, AGM batteries.

HFK - T Multi



Display:
facile riconoscimento stato cb: NAVIGATOR
completo accesso alla programmazione
timer: conto alla rovescia.
Easy status detection: NAVIGATOR
Full programming access
timer: countdown.



Cabinet antigoccia
Speciale filtro flusso aria.
Antidrop cabinet
Special air flux filter.



	HFK MULTI (230 Vac)	HFT MULTI (400Vac)
2V	//	30A
6V	10A	15A
8V	10A	15A
10V	10A	65A
12V	10A	65A
24V	50A	65A
36V	50A	65A
48V	50A	50A
60V	15A	65A
72V	15A	65A
80V	25A	40A
96V	25A	//

Optionals.



Monofase 230Vac $\pm$ 10% (HFK), 50-60Hz / Trifase 400Vac $\pm$ 10% (HFT), 50-60Hz

Programmazione diretta tramite display integrato

Disponibili 2 programmi di desolfatazione a corrente costante (dSa: riconoscimento automatico della V + timer;

dSM: settaggio manuale della V + timer) + 1 profilo di carica per qualsiasi tipologia di batteria (PzS, PzV, AGM, etc.)

Optionals: Supporto per posizionamento a terra.

1phase 230Vac $\pm$ 10% (HFK), 50-60Hz / 3phase 400Vac $\pm$ 10% (HFT), 50-60Hz

Full programming through integrated Display

2 desulphating programs with constant current available (dSa: automatic V detection + timer;

dSM: manual V setting + timer) + 1 charging profile program suitable for any battery type (PzS, PzV, AGM, etc.)

Optional: Stand-alone holder.

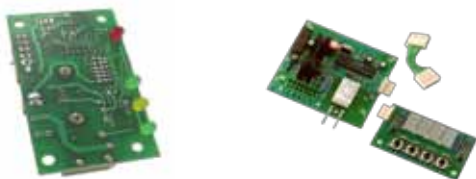
KIT di adattamento universali / *Universal adapating kits*

Modello - Mod.	Descrizione e componenti - Description and components
KT-22A	Kit di adattamento per 50Hz tradizionali Wa - Wa universal adapting kit for 50Hz chargers.
	(AT22 electronic board + alluminium plate + cables)
KT-12 FAST	Kit di adattamento per 50Hz "fast" W0Wa - W0Wa universal adapting kit for 50Hz "fast" chargers.
	(AT12 electronic board + AT13 display board with buttons + alluminium plate + cables + auxiliary transformer + amperometrical transformer + relay)



Parti di ricambio / *Spare parts*

Schede elettroniche di controllo - Control electronic boards (PCB)



Ponti a diodi - Diode Bridges



Trasformatori amperometrici e ausiliari - Current and auxiliary transformers



Fusibili - Fuses



Spine di rete - AC mains input plugs



Mobili - Cabinets



Trasformatori di potenza - Power transformers



Contattori - Contactors



Interruttori - Switches



Spine e connettori batteria - battery plugs and connectors



Consigli e suggerimenti / *Advice and suggestions*

Consigli Utili per scegliere il vostro carica batterie:

Scegliete con cura il vostro caricabatterie. Prima di sceglierlo chiedetevi:
 La batteria viene normalmente scaricata parzialmente o totalmente prima di essere rimessa in carica?
 Quanto tempo ho a disposizione per ricaricarla?
 Ho la necessità di caricare batterie con tensioni e capacità diverse?
 La tensione nominale del carica batterie deve essere uguale alla tensione nominale della batteria (Esempio: $V_{\text{nominale Batteria}} = 24 \text{ celle} \times 2,0V/\text{cella} = 48V$)
 La corrente nominale del caricabatterie deve essere scelta in base ai dati presenti sulle tabelle prodotto.
 Contattateci per qualsiasi chiarimento necessario.

Useful Suggestions to choose your charger:

Please, be careful choosing your charger and ask yourself:
 Is the battery partially or totally discharged before putting it in charge?
 How much time do I need for a complete charge?
 Do I need to charge battery with different capacity and voltage?
 Rated Voltage of the charger must be the same of the rated battery voltage
 (Example: Battery rated voltage = 24 cells $\times$ 2,0V/cell = 48V)
 Rated current of the charger must be chosen in accordance with the Ah table
 Contact us for any clarification you might need.

PROCEDURE E CONSIGLI PER UNA CORRETTA MANUTENZIONE DELLE BATTERIE

Consigli pratici per una scarica corretta (DDL150)	Consigli pratici per una carica corretta con ns modelli MTD o HFK-T MULTI:
• Non scaricate mai la vs batteria oltre 1,7V/el. • Per ottenere i report più corretti possibili, settate la corrente in base alla corrente nominale di targa della vs batteria: esempio batteria 500Ah in C5 settaggio corretto 100A ($500Ah/5h=100A$) Questa non è una regola fissa, ma è sicuramente la migliore simulazione dell'energia effettivamente data dalla vs batteria. • Durante la scarica (o la carica) controllate lo stato di ciascun elemento mediante un voltmetro per essere certi che tutti gli elementi siano correttamente bilanciati. • Aviate un ciclo di scarica con batteria completamente carica: V/el deve essere circa 2,2V/el con batteria non connessa al carico.	• Se la batteria ha perso di capacità (vd test con scaricatore DDL 150) avviate un ciclo di desolfatazione. • Settate la corrente a circa il 1-2% della capacità della vs batteria. • Impostate il timer per un certo arco di tempo (necessarie minimo 24h) • Controllate il voltaggio di ciascun elemento durante la carica (attenzione: la tensione non è sottoposta a nessun limite di controllo). • La corretta densità di una batteria carica dovrebbe essere: 1,28 - 1,30 Caricare e scaricare completamente la batteria in cicli consecutivi porta sempre benefici. 3/4 cicli sono solitamente necessari per ottenere buoni risultati. Controllate sempre il voltaggio degli elementi e la densità, è molto importante. Inoltre per equalizzare la tensione V di ogni elemento è necessario far erogare al caricabatteria una corrente costante molto bassa durante la carica.

PROCEDURES AND ADVICES TO BATTERY SERVICING

Simple advises for discharge (DDL 150)	Simple advises for charging with MTD or HFK T MULTI:
• Never discharge below 1,7V/el • To have the best report always set current in respect of Nominal data of your battery: with a 500Ah in C5 for example you have to set 100A ($500Ah/5h=100A$). This is not a rule but is the best simulation of energy your battery is supposed to give. • During discharge (or the charge) check the status of each element using a voltmeter to be sure all are well balanced. • Start a discharge when battery has been fully charged: V/el should be close to 2,2V/el with battery disconnected from load.	• In case battery has lost some capacity (DDL 150 test) arrange a desulphating cycle. • Set current usually at 1 - 2% of capacity • Set timer for a spam of time (usually 24h is min required) • Check voltage of each element during charge (v is not under any limit control) • Correct density of a charged battery should be: 1,28 - 1,30 Fully Charging and fully discharging a battery in sequence gives always benefits to the battery. 3/4 cycles are usually required to see good results. Check always the voltage of each elements and density. This is very important. Moreover to equalize the V of each elements you should give very low current.

SEDE e STABILIMENTO
HEADQUARTERS & MANUFACTURING PLANT

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An abstract graphic design featuring a series of horizontal lines and overlapping, flowing, light green and blue wavy shapes, creating a sense of movement and depth. The composition is minimalist, with the wavy lines intersecting and creating a layered effect against a plain white background. The lines are thin and dark, while the wavy shapes are semi-transparent, allowing the lines to be seen through them. The overall effect is one of fluidity and dynamic movement.

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