

"Assortment of industrial chargers"

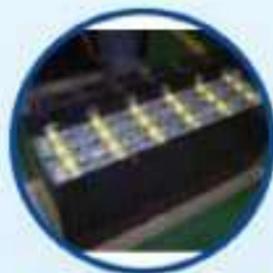
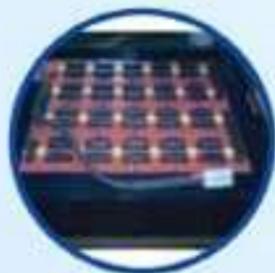
HIGH FREQUENCY BATTERY CHARGER

LITHIUM BATTERY CHARGER

High Frequency Charger 3-Phase
F40LF/F44LF/F22LF/F40LI/F44LI/
F22LI/F40LP/F44LP/F22LP Series

"CHARBES" Released

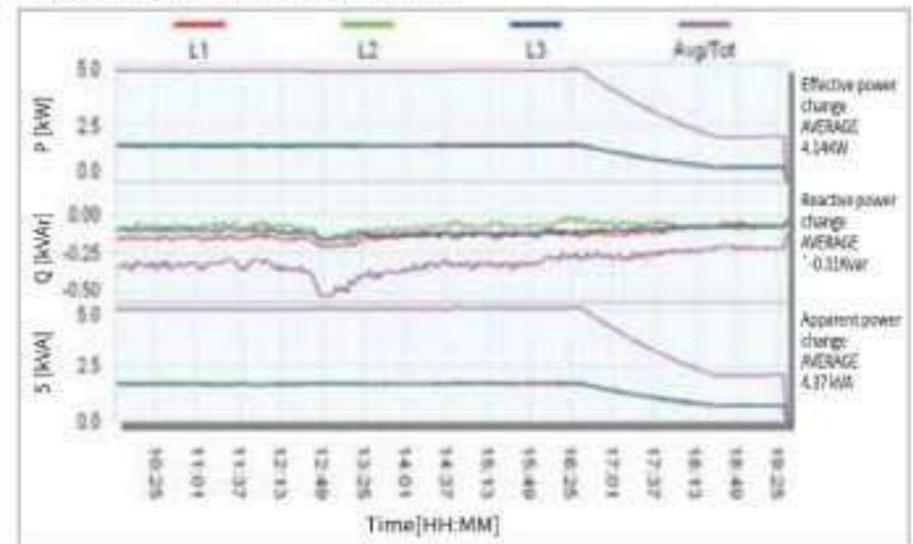
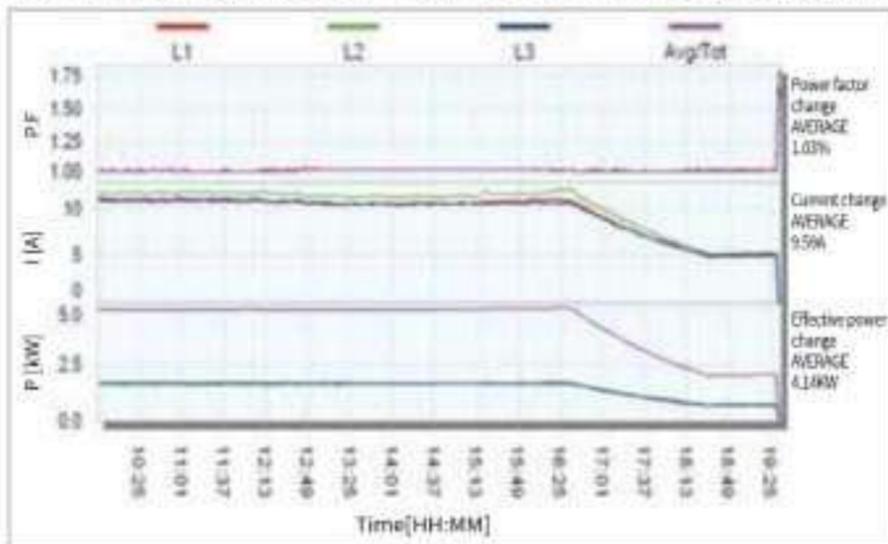
Charbes Released



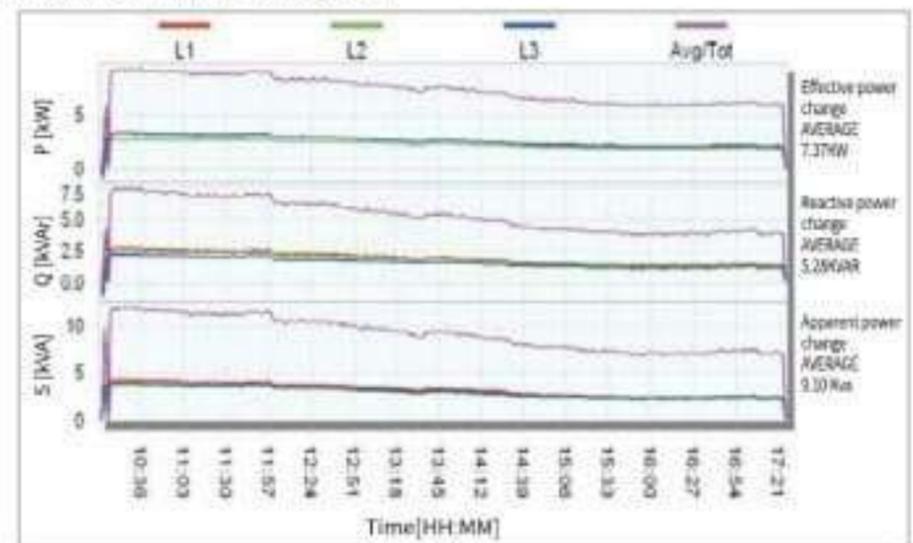
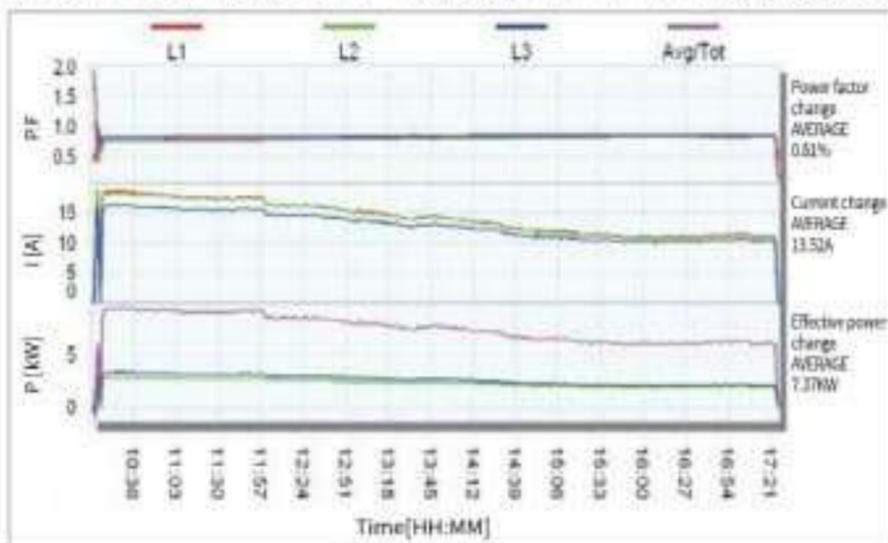
[Patent No. 10-1707477]
[Patent No. 10-2186804]

Performance comparison table between the transformer charging method / high frequency charging method (Charbes charger)

Electric forklift (power waveform when charging with a high frequency charger)



Electric forklift (power waveform when charging with a transformer charger)

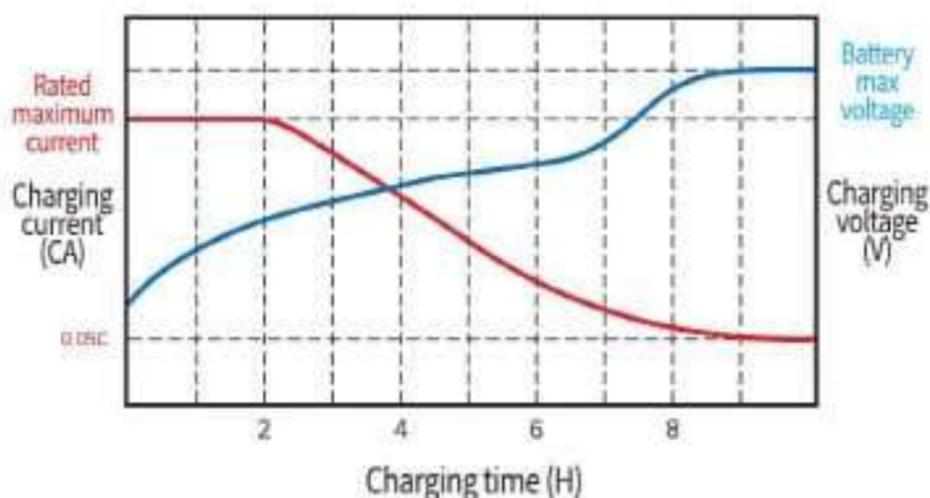


*Rated voltage 48V (Pb), Battery capacity 685 AH/ HR

Category	General transformer charger (currently used charger)	Charbes high frequency charger (developed by Dongseon Charger)	Comparative performance
Energy efficiency	72%	98%	Significantly reduced installation area, volume and weight reduced by more than 1/5
Battery replacement cycle	5 years / once	10 years / once	Facility management cost reduction
Battery replacement cost	6,000,000 won / 5 years	6,000,000 won / 10 years	Reduced maintenance cost (50%)
Charging time (full discharge voltage - full charge voltage)	7 hours 30 minutes	8 hours and 00 minutes	Includes 1 hour warm-up time before charging is complete
Effective consumed power:		4.14 KW	Reduced power consumption by about 3.23 KW
Calculated electricity bill (1KW/h 110 (KRW))	$7.37 * 110 * 7.5 \text{ hours} * 300 \text{ days} = 1,824,075/\text{year}$	$4.14 * 110 * 9 \text{ hours} * 300 \text{ days} = 1,229,580/\text{year}$	₩594,495 / Annual Savings (over 30%)
Battery life	Replace when 1000 cycles have been charged/discharged	Service life extended twice	Refer to the thesis presentation
Charging indicator	Charging 85% Charged	Current battery charge display function (LCD monitoring)	
Design	Crude factory style	Simple two-tone color design (improves work environment)	Symbolizes "people's back," meaning to be together
Manageability	Inconvenient to work, such as utilizing space and working height	Makes convenient for users to control grid-connected power supply control	
Management facility	Left on the floor, hard to manage	Systematic management of the charging station system	Common use of lead & lithium by the charging station
Productivity	inefficient	Increased motivation to work - increased productivity	
Environment	Noise and smell of harmful gas / Battery disposal / 5 years	No noise and no harmful gas smell Battery disposal / 10 years	Eco-friendly
Installation area	600(W) X 600 (D) X 800(H)	310(W) X 140 (D) X 505(H)	Reduced installation area by 1/5
Installation weight	About 60Kg - 150Kg	10 Kg	Significant reduction in weight and volume
Noise generation	125 decibels or more	25 decibels or less	80 decibels or higher are subject to work environment measurement
Change charging method	Transformers and AC/DC conversion	AC/ high frequency KHZ change	Efficiency 98%
Consumption power factor	0.81%	0.98%	
Current consumption	13.52 A	9.59 A	
Effective consumed power	7.37 kw	4.14 KW	
Reactive consumed power	5.28 Kvar	-0.31 Kvar	
Consumed apparent power	9.10 KVA	4.37 KVA	
Charging method	High voltage and current charging	Equipped with self-diagnosis software to prevent undervoltage and overheating	
Battery boiling, noise and heat	Exothermic noise and odor during the reaction between lead and sulfate	Insufficient heat generation at constant current and low current	
High voltage battery charging	Charging current 150-90 A	Charging current 100 A	
Fill distilled water	Replenish due to the heating (replenish from time to time)	Replenishment due to heating (1/2 reduction)	
Automatic charger turn off	Sulfuric acid leakage due to battery overcharging in case of failure	Equipped with redundancy and self-diagnosis function	
	Contamination and critical reduction of service life	Contamination and life extension	
Fully charged	Power off automatically	Message alarm and self-diagnosis triple shutdown function	
Real-time charging display	No real-time charge display function	Realized a display on the screen	

State-of-the-art high-frequency charger

High Frequency Battery Chargers "CHARBES"



Compatible equipment

Electric forklift, electric vehicle, electric tow truck, electric vacuum cleaner, electric boat, electric golf car, electric motorcycle, electric scooter

[MODEL : MLF4860/MLI4860/MLP4860]

"CHARBES" charger	SPECIFICATION		Remarks
AC input	Single phase 220V / 16A	LINE 3P 2M	Voltage/current
DC output	48V / 60A	LINE 2P 2.9M	Voltage/current
Frequency	50Hz ~ 60Hz		
Battery (applied)	DC48V / 600AH		Acid Battery
Charging time (HR)	600AH (5HR ~ 12HR)		Full charge time
Charging LED-lamp	Red light → Charging / Yellow light → 80% charging / Green light → Full charge		  
Size	Width (L) 465mm X Depth (W) 230mm X Height (H) 125mm		
Weight	Weight 9.5 kg		

[MODEL : MLF3660/MLI3660/MLP3660]

"CHARBES" charger	SPECIFICATION		Remarks
AC input	Single phase 220V / 16A	LINE 3P 2M	Voltage/current
DC output	36V / 60A	LINE 2P 2.9M	Voltage/current
Frequency	50Hz ~ 60Hz		
Battery (applied)	DC36V / 600AH		Acid Battery
Charging time (HR)	600AH (5HR ~ 12HR)		Full charge time
Charging LED-lamp	Red light → Charging / Yellow light → 80% charging / Green light → Full charge		  
Size	Width (L) 465mm X Depth (W) 230mm X Height (H) 125mm		
Weight	Weight 9.5 kg		

State-of-the-art high-frequency charger

High Frequency Battery Chargers "CHARBES"

[MODEL : MLF6048/MLI6048/MLP6048]

"CHARBES" charger	SPECIFICATION		Remarks
AC input	Single phase 220V / 16A	LINE 3P 2M	Voltage/current
DC output	60V / 48A	LINE 2P 2.9M	Voltage/current
Frequency	50Hz ~ 60Hz		
Battery (applied)	DC60V / 480AH		Acid Battery
Charging time (HR)	480AH (5HR ~ 12HR)		Full charge time
Charging LED-lamp	Red lightR → Charging / Yellow light → 80% charging / Green light → Full charge		  
Size	Width (L) 465mm X Depth (W) 230mm X Height (H) 125mm		
Weight	Weight 9.5 kg		

[MODEL : MLF7240/MLI7240/MLP7240]

"CHARBES" charger	SPECIFICATION		Remarks
AC input	Single phase 220V / 16A	LINE 3P 2M	Voltage/current
DC output	72V / 40A	LINE 2P 2.9M	Voltage/current
Frequency	50Hz ~ 60Hz		
Battery (applied)	DC72V / 400AH		Acid Battery
Charging time (HR)	400AH (5HR ~ 12HR)		Full charge time
Charging LED-lamp	Red lightR → Charging / Yellow light → 80% charging / Green light → Full charge		  
Size	Width (L) 465mm X Depth (W) 230mm X Height (H) 125mm		
Weight	Weight 9.5 kg		

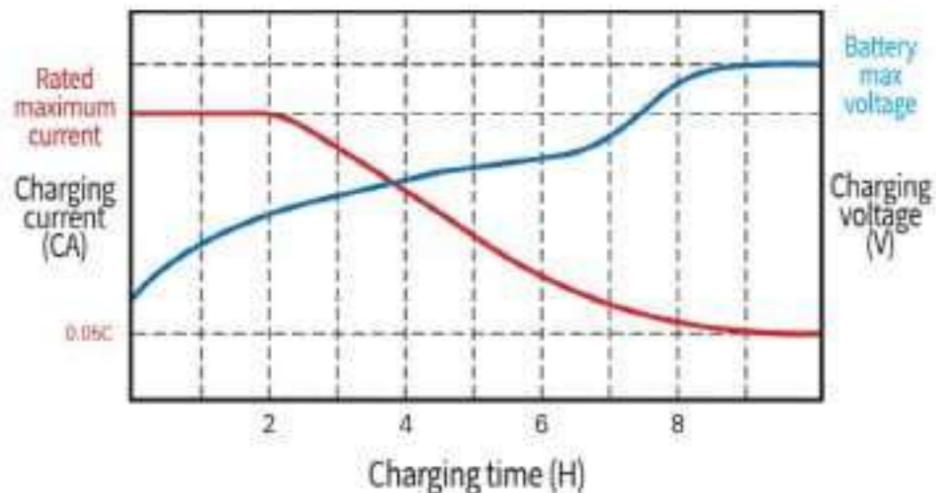
[MODEL : MLF8036/MLI8036/MLP8036]

"CHARBES" charger	SPECIFICATION		Remarks
AC input	Single phase 220V / 16A	LINE 3P 2M	Voltage/current
DC output	80V / 36A	LINE 2P 2.9M	Voltage/current
Frequency	50Hz ~ 60Hz		
Battery (applied)	DC80V / 360AH		Acid Battery
Charging time (HR)	360AH (5HR ~ 12HR)		Full charge time
Charging LED-lamp	Red lightR → Charging / Yellow light → 80% charging / Green light → Full charge		  
Size	Width (L) 465mm X Depth (W) 230mm X Height (H) 125mm		
Weight	Weight 9.5 kg		

- Channels 1 to 5 are variable (all channels above 200A can be used as channel 5).
- Charging time may vary depending on the battery condition.

State-of-the-art high-frequency charger

High Frequency Battery Chargers "CHARBES"



Compatible equipment

Electric forklift, electric vehicle, electric tow truck, electric vacuum cleaner, electric boat, electric golf car, electric motorcycle, electric scooter

[MODEL : MSLF1260/MSLI1260/MSLP1260]

"CHARBES" charger	SPECIFICATION		Remarks
AC input	Single phase 220V / 10A	LINE 3P 2M	Voltage/current
DC output	12V / 60A	LINE 2P 2.9M	Voltage/current
Frequency	50Hz ~ 60Hz		
Battery (applied)	DC12V / 600AH		Acid Battery
Charging time (HR)	600AH (5HR ~ 10HR)		Full charge time
Charging LED-lamp	Red light → Charging / Yellow light → 80% charging / Green light → Full charge		  
Size	Width (L) 395mm X Depth (W) 232mm X Height (H) 105mm		
Weight	Weight 6.8 kg		

[MODEL : MSLF2460/MSLI2460/MSLP2460]

"CHARBES" charger	SPECIFICATION		Remarks
AC input	Single phase 220V / 10A	LINE 3P 2M	Voltage/current
DC output	24V / 60A	LINE 2P 2.9M	Voltage/current
Frequency	50Hz ~ 60Hz		
Battery (applied)	DC24V / 600AH		Acid Battery
Charging time (HR)	600AH (5HR ~ 10HR)		Full charge time
Charging LED-lamp	Red light → Charging / Yellow light → 80% charging / Green light → Full charge		  
Size	Width (L) 395mm X Depth (W) 232mm X Height (H) 105mm		
Weight	Weight 6.8 kg		

State-of-the-art high-frequency charger

High Frequency Battery Chargers "CHARBES"

[MODEL : MSLF3640/MSLI3640/MSLP3640]

"CHARBES" charger	SPECIFICATION		Remarks
AC input	Single phase 220V / 10A	LINE 3P 2M	Voltage/current
DC output	36V / 40A	LINE 2P 2.9M	Voltage/current
Frequency	50Hz ~ 60Hz		
Battery (applied)	DC36V / 400AH		Acid Battery
Charging time (HR)	400AH (5HR ~ 10HR)		Full charge time
Charging LED-lamp	Red light → Charging / Yellow light → 80% charging / Green light → Full charge		  
Size	Width (L) 395mm X Depth (W) 232mm X Height (H) 105mm		
Weight	Weight 6.8 kg		

[MODEL : MSLF4830/MSLI4830/MSLP4830]

"CHARBES" charger	SPECIFICATION		Remarks
AC input	Single phase 220V / 10A	LINE 3P 2M	Voltage/current
DC output	48V / 30A	LINE 2P 2.9M	Voltage/current
Frequency	50Hz ~ 60Hz		
Battery (applied)	DC48V / 300AH		Acid Battery
Charging time (HR)	300AH (5HR ~ 10HR)		Full charge time
Charging LED-lamp	Red light → Charging / Yellow light → 80% charging / Green light → Full charge		  
Size	Width (L) 395mm X Depth (W) 232mm X Height (H) 105mm		
Weight	Weight 6.8 kg		

[MODEL : MSLF6024/MSLI6024/MSLP6024]

"CHARBES" charger	SPECIFICATION		Remarks
AC input	Single phase 220V / 10A	LINE 3P 2M	Voltage/current
DC output	60V / 24A	LINE 2P 2.9M	Voltage/current
Frequency	50Hz ~ 60Hz		
Battery (applied)	DC60V / 240AH		Acid Battery
Charging time (HR)	240AH (5HR ~ 10HR)		Full charge time
Charging LED-lamp	Red light → Charging / Yellow light → 80% charging / Green light → Full charge		  
Size	Width (L) 395mm X Depth (W) 232mm X Height (H) 105mm		
Weight	Weight 6.8 kg		

– Charging time may vary depending on the battery condition.

State-of-the-art high-frequency charger

High Frequency Battery Chargers "CHARBES"

[MODEL : MSLF7220/MSLI7220/MSLP7220]

"CHARBES" charger	SPECIFICATION		Remarks
AC input	Single phase 220V / 10A	LINE 3P 2M	Voltage/current
DC output	72V / 20A	LINE 2P 2.9M	Voltage/current
Frequency	50Hz ~ 60Hz		
Battery (applied)	DC72V / 200AH		Acid Battery
Charging time (HR)	200AH (5HR ~ 10HR)		Full charge time
Charging LED-lamp	Red light → Charging / Yellow light → 80% charging / Green light → Full charge		  
Size	Width (L) 395mm X Depth (W) 232mm X Height (H) 105mm		
Weight	Weight 6.8 kg		

[MODEL : MSLF8018/MSLI8018/MSLP8018]

"CHARBES" charger	SPECIFICATION		Remarks
AC input	Single phase 220V / 10A	LINE 3P 2M	Voltage/current
DC output	80V / 18A	LINE 2P 2.9M	Voltage/current
Frequency	50Hz ~ 60Hz		
Battery (applied)	DC80V / 180AH		Acid Battery
Charging time (HR)	180AH (5HR ~ 10HR)		Full charge time
Charging LED-lamp	Red light → Charging / Yellow light → 80% charging / Green light → Full charge		  
Size	Width (L) 395mm X Depth (W) 232mm X Height (H) 105mm		
Weight	Weight 6.8 kg		

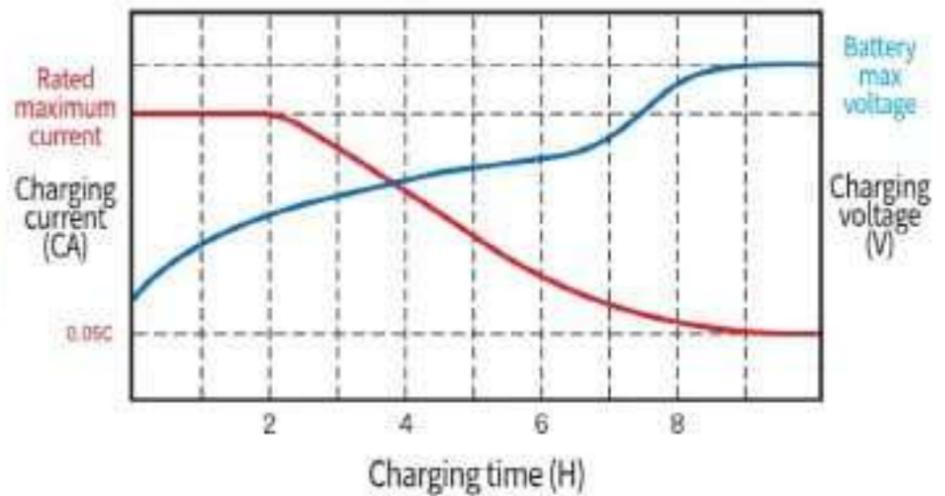
[MODEL : MSLF9615/MSLI9615/MSLP9615]

"CHARBES" charger	SPECIFICATION		Remarks
AC input	Single phase 220V / 10A	LINE 3P 2M	Voltage/current
DC output	96V / 15A	LINE 2P 2.9M	Voltage/current
Frequency	50Hz ~ 60Hz		
Battery (applied)	DC96V / 150AH		Acid Battery
Charging time (HR)	150AH (5HR ~ 10HR)		Full charge time
Charging LED-lamp	Red light → Charging / Yellow light → 80% charging / Green light → Full charge		  
Size	Width (L) 395mm X Depth (W) 232mm X Height (H) 105mm		
Weight	Weight 6.8 kg		

– Charging time may vary depending on the battery condition.

State-of-the-art high-frequency charger

High Frequency Battery Chargers "CHARBES"



Compatible equipment

Electric forklift, electric vehicle, electric tow truck, electric vacuum cleaner, electric boat, electric golf car, electric motorcycle, electric scooter

[MODEL : SDGLF1215/SDGLI1215/SDGLP1215]

"CHARBES" charger	SPECIFICATION		Remarks
AC input	Single phase 220V / 2A	LINE 3P 1.9M	Voltage/current
DC output	12V / 15A	LINE 2P 2M	Voltage/current
Frequency	50Hz ~ 60Hz		
Battery (applied)	DC12V / 150AH		Acid Battery
Charging time (HR)	150AH (3HR ~ 12HR)		Full charge time
Charging LED-lamp	Red lightR → Charging / Yellow light → 80% charging / Green light → Full charge		  
Size	Width (L) 285mm X Depth (W) 130mm X Height (H) 110mm		
Weight	Weight 2 kg		

[MODEL : SDGLF1230/SDGLI1230/SDGLP1230]

"CHARBES" charger	SPECIFICATION		Remarks
AC input	Single phase 220V / 3A	LINE 3P 1.9M	Voltage/current
DC output	12V / 30A	LINE 2P 2M	Voltage/current
Frequency	50Hz ~ 60Hz		
Battery (applied)	DC12V / 300AH		Acid Battery
Charging time (HR)	300AH (3HR ~ 12HR)		Full charge time
Charging LED-lamp	Red lightR → Charging / Yellow light → 80% charging / Green light → Full charge		  
Size	Width (L) 285mm X Depth (W) 130mm X Height (H) 110mm		
Weight	Weight 2 kg		

State-of-the-art high-frequency charger

High Frequency Battery Chargers "CHARBES"

[MODEL : SDGLF2415/SDGLI2415/SDGLP2415]

"CHARBES" charger	SPECIFICATION		Remarks
AC input	Single phase 220V / 3A	LINE 3P 1.9M	Voltage/current
DC output	24V / 15A	LINE 2P 2M	Voltage/current
Frequency	50Hz ~ 60Hz		
Battery (applied)	DC24V / 150AH		Acid Battery
Charging time (HR)	150AH (3HR ~ 12HR)		Full charge time
Charging LED-lamp	Red lightR → Charging / Yellow light → 80% charging / Green light → Full charge		  
Size	Width (L) 285mm X Depth (W) 130mm X Height (H) 110mm		
Weight	Weight 2 kg		

[MODEL : SDGLF2430/SDGLI2430/SDGLP2430]

"CHARBES" charger	SPECIFICATION		Remarks
AC input	Single phase 220V / 6A	LINE 3P 1.9M	Voltage/current
DC output	24V / 30A	LINE 2P 2M	Voltage/current
Frequency	50Hz ~ 60Hz		
Battery (applied)	DC24V / 300AH		Acid Battery
Charging time (HR)	300AH (3HR ~ 12HR)		Full charge time
Charging LED-lamp	Red lightR → Charging / Yellow light → 80% charging / Green light → Full charge		  
Size	Width (L) 285mm X Depth (W) 130mm X Height (H) 110mm		
Weight	Weight 2 kg		

[MODEL : SDGLF4815/SDGLI4815/SDGLP4815]

"CHARBES" charger	SPECIFICATION		Remarks
AC input	Single phase 220V / 6A	LINE 3P 1.9M	Voltage/current
DC output	48V / 15A	LINE 2P 2M	Voltage/current
Frequency	50Hz ~ 60Hz		
Battery (applied)	DC48V / 150AH		Acid Battery
Charging time (HR)	150AH (3HR ~ 12HR)		Full charge time
Charging LED-lamp	Red lightR → Charging / Yellow light → 80% charging / Green light → Full charge		  
Size	Width (L) 285mm X Depth (W) 130mm X Height (H) 110mm		
Weight	Weight 2 kg		

– Charging time may vary depending on the battery condition.

State-of-the-art high-frequency charger

High Frequency Battery Chargers "CHARBES"

[MODEL : SDGLF3620/SDGLI3620/SDGLP3620]

"CHARBES" charger	SPECIFICATION		Remarks
AC input	Single phase 220V / 6A	LINE 3P 1.9M	Voltage/current
DC output	36V / 20A	LINE 2P 2M	Voltage/current
Frequency	50Hz ~ 60Hz		
Battery (applied)	DC36V / 200AH		Acid Battery
Charging time (HR)	200AH (3HR ~ 12HR)		Full charge time
Charging LED-lamp	Red light → Charging / Yellow light → 80% charging / Green light → Full charge		  
Size	Width (L) 285mm X Depth (W) 130mm X Height (H) 110mm		
Weight	Weight 2 kg		

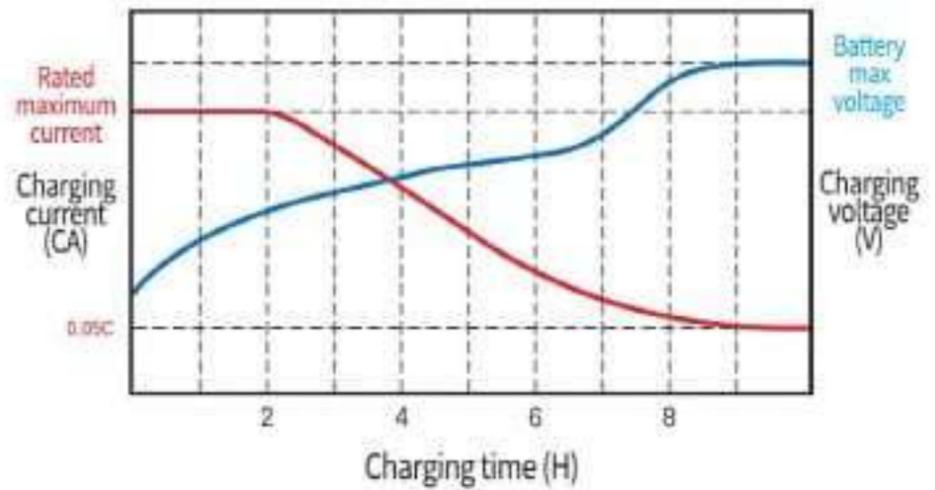
[MODEL : SDGLF7210/SDGLI7210/SDGLP7210]

"CHARBES" charger	SPECIFICATION		Remarks
AC input	Single phase 220V / 6A	LINE 3P 1.9M	Voltage/current
DC output	72V / 10A	LINE 2P 2M	Voltage/current
Frequency	50Hz ~ 60Hz		
Battery (applied)	DC72V / 100AH		Acid Battery
Charging time (HR)	100AH (3HR ~ 12HR)		Full charge time
Charging LED-lamp	Red light → Charging / Yellow light → 80% charging / Green light → Full charge		  
Size	Width (L) 285mm X Depth (W) 130mm X Height (H) 110mm		
Weight	Weight 2 kg		

– Charging time may vary depending on the battery condition.

State-of-the-art high-frequency charger

High Frequency Battery Chargers "CHARBES"



Compatible equipment

Electric forklift, electric vehicle, electric tow truck, electric vacuum cleaner, electric boat, electric golf car, electric motorcycle, electric scooter

[MODEL : SSDGLF1215/SSDGLI1215/SSDGLP1215]

"CHARBES" charger	SPECIFICATION		Remarks
AC input	Single phase 220V / 3A	LINE 3P 1.8M	Voltage/current
DC output	12V / 15A	LINE 2P 1.5M	Voltage/current
Frequency	50Hz ~ 60Hz		
Battery (applied)	DC12V / 150AH		Acid Battery
Charging time (HR)	150AH (3HR ~ 12HR)		Full charge time
Charging LED-lamp	Red lightR → Charging / Yellow light → 80% charging / Green light → Full charge		  
Size	Width (L) 220mm X Depth (W) 110mm X Height (H) 65mm		
Weight	Weight 1.2 kg		

[MODEL : SSDGLF2415/SSDGLI2415/SSDGLP2415]

"CHARBES" charger	SPECIFICATION		Remarks
AC input	Single phase 220V / 3A	LINE 3P 1.8M	Voltage/current
DC output	24V / 15A	LINE 2P 1.5M	Voltage/current
Frequency	50Hz ~ 60Hz		
Battery (applied)	DC24V / 150AH		Acid Battery
Charging time (HR)	150AH (3HR ~ 12HR)		Full charge time
Charging LED-lamp	Red lightR → Charging / Yellow light → 80% charging / Green light → Full charge		  
Size	Width (L) 220mm X Depth (W) 110mm X Height (H) 65mm		
Weight	Weight 1.2 kg		

State-of-the-art high-frequency charger

High Frequency Battery Chargers "CHARBES"

[MODEL : SSDGLF3610/SSDGLI3610/SSDGLP3610]

"CHARBES" charger	SPECIFICATION		Remarks
AC input	Single phase 220V / 3A	LINE 3P 1.8M	Voltage/current
DC output	36V / 10A	LINE 2P 1.5M	Voltage/current
Frequency	50Hz ~ 60Hz		
Battery (applied)	DC36V / 100AH		Acid Battery
Charging time (HR)	100AH (3HR ~ 12HR)		Full charge time
Charging LED-lamp	Red light → Charging / Yellow light → 80% charging / Green light → Full charge		  
Size	Width (L) 220mm X Depth (W) 110mm X Height (H) 65mm		
Weight	Weight 1.2 kg		

[MODEL : SSDGLF4808/SSDGLI4808/SSDGLP4808]

"CHARBES" charger	SPECIFICATION		Remarks
AC input	Single phase 220V / 3A	LINE 3P 1.8M	Voltage/current
DC output	48V / 8A	LINE 2P 1.5M	Voltage/current
Frequency	50Hz ~ 60Hz		
Battery (applied)	DC48V / 80AH		Acid Battery
Charging time (HR)	80AH (3HR ~ 12HR)		Full charge time
Charging LED-lamp	Red light → Charging / Yellow light → 80% charging / Green light → Full charge		  
Size	Width (L) 220mm X Depth (W) 110mm X Height (H) 65mm		
Weight	Weight 1.2 kg		

[MODEL : SSDGLF6006/SSDGLI6006/SSDGLP6006]

"CHARBES" charger	SPECIFICATION		Remarks
AC input	Single phase 220V / 3A	LINE 3P 1.8M	Voltage/current
DC output	60V / 6A	LINE 2P 1.5M	Voltage/current
Frequency	50Hz ~ 60Hz		
Battery (applied)	DC60V / 60AH		Acid Battery
Charging time (HR)	60AH (3HR ~ 12HR)		Full charge time
Charging LED-lamp	Red light → Charging / Yellow light → 80% charging / Green light → Full charge		  
Size	Width (L) 220mm X Depth (W) 110mm X Height (H) 65mm		
Weight	Weight 1.2 kg		

– Charging time may vary depending on the battery condition.

State-of-the-art high-frequency charger

High Frequency Battery Chargers "CHARBES"

[MODEL : SSDGLF7205/SSDGLI7205/SSDGLP7205]

"CHARBES" charger	SPECIFICATION		Remarks
AC input	Single phase 220V / 3A	LINE 3P 1.8M	Voltage/current
DC output	72V / 5A	LINE 2P 1.5M	Voltage/current
Frequency	50Hz ~ 60Hz		
Battery (applied)	DC72V / 50AH		Acid Battery
Charging time (HR)	50AH (3HR ~ 12HR)		Full charge time
Charging LED-lamp	Red light → Charging / Yellow light → 80% charging / Green light → Full charge		  
Size	Width (L) 220mm X Depth (W) 110mm X Height (H) 65mm		
Weight	Weight 1.2 kg		

[MODEL : SSDGLF8004/SSDGLI8004/SSDGLP8004]

"CHARBES" charger	SPECIFICATION		Remarks
AC input	Single phase 220V / 3A	LINE 3P 1.8M	Voltage/current
DC output	80V / 4A	LINE 2P 1.5M	Voltage/current
Frequency	50Hz ~ 60Hz		
Battery (applied)	DC80V / 40AH		Acid Battery
Charging time (HR)	40AH (3HR ~ 12HR)		Full charge time
Charging LED-lamp	Red light → Charging / Yellow light → 80% charging / Green light → Full charge		  
Size	Width (L) 220mm X Depth (W) 110mm X Height (H) 65mm		
Weight	Weight 1.2 kg		

– Charging time may vary depending on the battery condition.

KC certification and CE certification applied model

M4860, MS1260, SDG2430, SSDG1215, MLF4860, MLI4860, MLP4860, SDGLF2430, SDGLI2430, SDGLP2430, SDG5C24, SSDGLF1215, SSDGLI1215, SSDGLP1215,	M3660, MS2460, SDG3620, SSDG2415, MLF3660, MLI3660, MLP3660, SDGLF2415, SDGLI2415, SDGLP2415, SDG5C12, SSDGLF2415, SSDGLI2415, SSDGLP2415,	M6048, MS3640, SDG4815, SSDG3610, MLF6048, MLI6048, MLP6048, SDGLF1215, SDGLI1215, SDGLP1215, SDG5C36, SSDGLF3610, SSDGLI3610, SSDGLP3610,	M7240, MS4830, SDG7210, SSDG4808, MLF7240, MLI7240, MLP7240, SDGLF1230, SDGLI1230, SDGLP1230, SDG5C48, SSDGLF4808, SSDGLI4808, SSDGLP4808,	M8036, MS6024, SDG2415, SSDG6006, MLF8036, MLI8036, MLP8036, SDGLF4815, SDGLI4815, SDGLP4815, SDG5C72, SSDGLF6006, SSDGLI6006, SSDGLP6006,	MS7220, SDG1230, SSDG7205, SDGLF3620, SDGLI3620, SDGLP3620,	MS8018, SDG1215, SSDG8004, SDGLF7210, SDGLI7210, SDGLP7210, SSDGLF8004, SSDGLI8004, SSDGLP8004,	MS9615
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"Assortment of industrial chargers"

HIGH FREQUENCY BATTERY CHARGER **LITHIUM BATTERY** **CHARGER**

High Frequency Charger 3-Phase
F40LF/F44LF/F22LF/F40LI/F44LI/
F22LI/F40LP/F44LP/F22LP Series

"CHARBES" Released

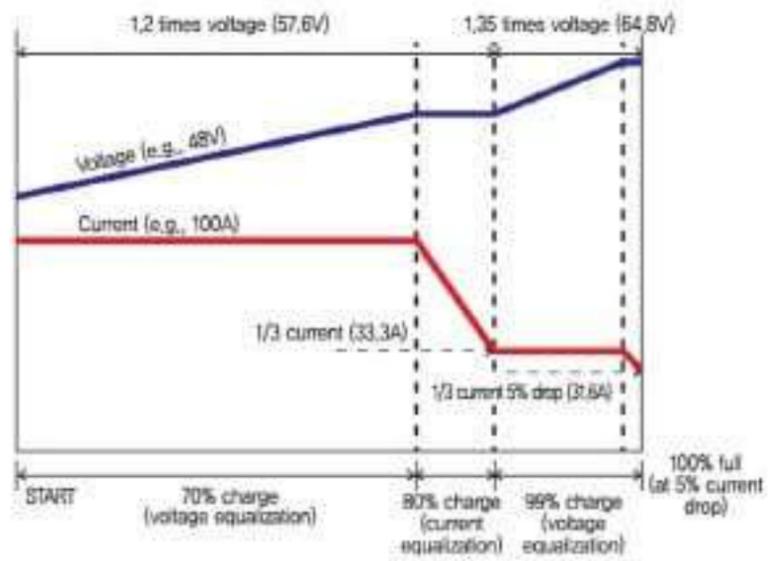
Charbes Released



[Patent No. 10-1707477]
[Patent No. 10-2186804]

State-of-the-art high-frequency charger

High Frequency Battery Chargers "CHARBES"



Compatible equipment

Electric forklift, electric vehicle, electric tow truck, electric vacuum cleaner, electric boat, electric golf car, electric motorcycle, electric scooter

[MODEL : F40LF48100/F40LI48100/F40LP48100]

"CHARBES" charger	SPECIFICATION	Remarks
AC input	400V3~, 50/60Hz, 4.8kW	Three-phase 380V, 400V, 440V (common)
DC output	48V.d.c / 100A	
Battery (applied)	DC48V / Display (Battery capacity setting)	Lead Acid Battery
Charging time (HR)	Automatic time set by capacity	Manual adjustment possible
Size / Weight	Width (L) 505mm X Length (W) 310mm X Height (H) 140mm / 11kg	
Input/output line	AC 2.9 m / DC 2.9 m	

[MODEL : F40LF12100/F40LI12100/F40LP12100]

"CHARBES" charger	SPECIFICATION	Remarks
AC input	400V3~, 50/60Hz, 4.8kW	Three-phase 380V, 400V, 440V (common)
DC output	12V.d.c / 100A	
Battery (applied)	DC12V / Display (Battery capacity setting)	Lead Acid Battery
Charging time (HR)	Automatic time set by capacity	Manual adjustment possible
Size / Weight	Width (L) 505mm X Length (W) 310mm X Height (H) 140mm / 11kg	
Input/output line	AC 2.9 m / DC 2.9 m	

State-of-the-art high-frequency charger

High Frequency Battery Chargers "CHARBES"

[MODEL : F40LF24100/F40LI24100/F40LP24100]

"CHARBES" charger	SPECIFICATION	Remarks
AC input	400V3~, 50/60Hz, 4.8kW	Three-phase 380V, 400V, 440V (common)
DC output	24V.d.c / 100A	
Battery (applied)	DC24V / Display (Battery capacity setting)	Lead Acid Battery
Charging time (HR)	Automatic time set by capacity	Manual adjustment possible
Size / Weight	Width (L) 505mm X Length (W) 310mm X Height (H) 140mm / 11kg	
Input/output line	AC 2.9 m / DC 2.9 m	

[MODEL : F40LF36100/F40LI36100/F40LP36100]

"CHARBES" charger	SPECIFICATION	Remarks
AC input	400V3~, 50/60Hz, 4.8kW	Three-phase 380V, 400V, 440V (common)
DC output	36V.d.c / 100A	
Battery (applied)	DC36V / Display (Battery capacity setting)	Lead Acid Battery
Charging time (HR)	Automatic time set by capacity	Manual adjustment possible
Size / Weight	Width (L) 505mm X Length (W) 310mm X Height (H) 140mm / 11kg	
Input/output line	AC 2.9 m / DC 2.9 m	

[MODEL : F40LF6080/F40LI6080/F40LP6080]

"CHARBES" charger	SPECIFICATION	Remarks
AC input	400V3~, 50/60Hz, 4.8kW	Three-phase 380V, 400V, 440V (common)
DC output	60V.d.c / 80A	
Battery (applied)	DC60V / Display (Battery capacity setting)	Lead Acid Battery
Charging time (HR)	Automatic time set by capacity	Manual adjustment possible
Size / Weight	Width (L) 505mm X Length (W) 310mm X Height (H) 140mm / 11kg	
Input/output line	AC 2.9 m / DC 2.9 m	

[MODEL : F40LF7266/F40LI7266/F40LP7266]

"CHARBES" charger	SPECIFICATION	Remarks
AC input	400V3~, 50/60Hz, 4.8kW	Three-phase 380V, 400V, 440V (common)
DC output	72V.d.c / 66A	
Battery (applied)	DC72V / Display (Battery capacity setting)	Lead Acid Battery
Charging time (HR)	Automatic time set by capacity	Manual adjustment possible
Size / Weight	Width (L) 505mm X Length (W) 310mm X Height (H) 140mm / 11kg	
Input/output line	AC 2.9 m / DC 2.9 m	

State-of-the-art high-frequency charger

High Frequency Battery Chargers "CHARBES"

[MODEL : F40LF8060/F40LI8060/F40LP8060]

"CHARBES" charger	SPECIFICATION	Remarks
AC input	400V3~, 50/60Hz, 4.8kW	Three-phase 380V, 400V, 440V (common)
DC output	80V.d.c / 60A	
Battery (applied)	DC80V / Display (Battery capacity setting)	Lead Acid Battery
Charging time (HR)	Automatic time set by capacity	Manual adjustment possible
Size / Weight	Width (L) 505mm X Length (W) 310mm X Height (H) 140mm / 11kg	
Input/output line	AC 2.9 m / DC 2.9 m	

[MODEL : F40LF8457/F40LI8457/F40LP8457]

"CHARBES" charger	SPECIFICATION	Remarks
AC input	400V3~, 50/60Hz, 4.8kW	Three-phase 380V, 400V, 440V (common)
DC output	84V.d.c / 57A	
Battery (applied)	DC84V / Display (Battery capacity setting)	Lead Acid Battery
Charging time (HR)	Automatic time set by capacity	Manual adjustment possible
Size / Weight	Width (L) 505mm X Length (W) 310mm X Height (H) 140mm / 11kg	
Input/output line	AC 2.9 m / DC 2.9 m	

[MODEL : F40LF9053/F40LI9053/F40LP9053]

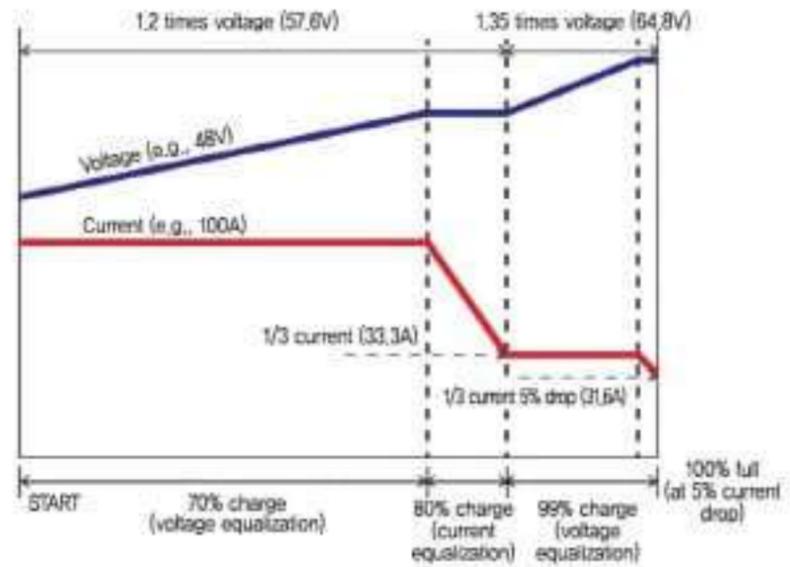
"CHARBES" charger	SPECIFICATION	Remarks
AC input	400V3~, 50/60Hz, 4.8kW	Three-phase 380V, 400V, 440V (common)
DC output	90V.d.c / 53A	
Battery (applied)	DC90V / Display (Battery capacity setting)	Lead Acid Battery
Charging time (HR)	Automatic time set by capacity	Manual adjustment possible
Size / Weight	Width (L) 505mm X Length (W) 310mm X Height (H) 140mm / 11kg	
Input/output line	AC 2.9 m / DC 2.9 m	

[MODEL : F40LF9650/F40LI9650/F40LP9650]

"CHARBES" charger	SPECIFICATION	Remarks
AC input	400V3~, 50/60Hz, 4.8kW	Three-phase 380V, 400V, 440V (common)
DC output	96V.d.c / 50A	
Battery (applied)	DC96V / Display (Battery capacity setting)	Lead Acid Battery
Charging time (HR)	Automatic time set by capacity	Manual adjustment possible
Size / Weight	Width (L) 505mm X Length (W) 310mm X Height (H) 140mm / 11kg	
Input/output line	AC 2.9 m / DC 2.9 m	

State-of-the-art high-frequency charger

High Frequency Battery Chargers "CHARBES"



Compatible equipment

Electric forklift, electric vehicle, electric tow truck, electric vacuum cleaner, electric boat, electric golf car, electric motorcycle, electric scooter

[MODEL : F22LF48100/F22LI48100/F22LP48100]

"CHARBES" charger	SPECIFICATION	Remarks
AC input	200V3~, 50/60Hz, 4.8kW	Three-phase 220V
DC output	48V.d.c / 100A	
Battery (applied)	DC48V / Display (Battery capacity setting)	Lead Acid Battery
Charging time (HR)	Automatic time set by capacity	Manual adjustment possible
Size / Weight	Width (L) 505mm X Length (W) 310mm X Height (H) 140mm / 11kg	
Input/output line	AC 2.9 m / DC 2.9 m	

[MODEL : F22LF12100/F22LI12100/F22LP12100]

"CHARBES" charger	SPECIFICATION	Remarks
AC input	200V3~, 50/60Hz, 4.8kW	Three-phase 220V
DC output	12V.d.c / 100A	
Battery (applied)	DC12V / Display (Battery capacity setting)	Lead Acid Battery
Charging time (HR)	Automatic time set by capacity	Manual adjustment possible
Size / Weight	Width (L) 505mm X Length (W) 310mm X Height (H) 140mm / 11kg	
Input/output line	AC 2.9 m / DC 2.9 m	

State-of-the-art high-frequency charger

High Frequency Battery Chargers "CHARBES"

[MODEL : F22LF24100/F22LI24100/F22LP24100]

"CHARBES" charger	SPECIFICATION	Remarks
AC input	200V3~, 50/60Hz, 4.8kW	Three-phase 220V
DC output	24V.d.c / 100A	
Battery (applied)	DC24V / Display (Battery capacity setting)	Lead Acid Battery
Charging time (HR)	Automatic time set by capacity	Manual adjustment possible
Size / Weight	Width (L) 505mm X Length (W) 310mm X Height (H) 140mm / 11kg	
Input/output line	AC 2.9 m / DC 2.9 m	

[MODEL : F22LF36100/F22LI36100/F22LP36100]

"CHARBES" charger	SPECIFICATION	Remarks
AC input	200V3~, 50/60Hz, 4.8kW	Three-phase 220V
DC output	36V.d.c / 100A	
Battery (applied)	DC36V / Display (Battery capacity setting)	Lead Acid Battery
Charging time (HR)	Automatic time set by capacity	Manual adjustment possible
Size / Weight	Width (L) 505mm X Length (W) 310mm X Height (H) 140mm / 11kg	
Input/output line	AC 2.9 m / DC 2.9 m	

[MODEL : F22LF6080/F22LI6080/F22LP6080]

"CHARBES" charger	SPECIFICATION	Remarks
AC input	200V3~, 50/60Hz, 4.8kW	Three-phase 220V
DC output	60V.d.c / 80A	
Battery (applied)	DC60V / Display (Battery capacity setting)	Lead Acid Battery
Charging time (HR)	Automatic time set by capacity	Manual adjustment possible
Size / Weight	Width (L) 505mm X Length (W) 310mm X Height (H) 140mm / 11kg	
Input/output line	AC 2.9 m / DC 2.9 m	

[MODEL : F22LF7266/F22LI7266/F22LP7266]

"CHARBES" charger	SPECIFICATION	Remarks
AC input	200V3~, 50/60Hz, 4.8kW	Three-phase 220V
DC output	72V.d.c / 66A	
Battery (applied)	DC72V / Display (Battery capacity setting)	Lead Acid Battery
Charging time (HR)	Automatic time set by capacity	Manual adjustment possible
Size / Weight	Width (L) 505mm X Length (W) 310mm X Height (H) 140mm / 11kg	
Input/output line	AC 2.9 m / DC 2.9 m	

State-of-the-art high-frequency charger

High Frequency Battery Chargers "CHARBES"

[MODEL : F22LF8060/F22LI8060/F22LP8060]

"CHARBES" charger	SPECIFICATION	Remarks
AC input	200V3~, 50/60Hz, 4.8kW	Three-phase 220V
DC output	80V.d.c / 60A	
Battery (applied)	DC80V / Display (Battery capacity setting)	Lead Acid Battery
Charging time (HR)	Automatic time set by capacity	Manual adjustment possible
Size / Weight	Width (L) 505mm X Length (W) 310mm X Height (H) 140mm / 11kg	
Input/output line	AC 2.9 m / DC 2.9 m	

[MODEL : F22LF8457/F22LI8457/F22LP8457]

"CHARBES" charger	SPECIFICATION	Remarks
AC input	200V3~, 50/60Hz, 4.8kW	Three-phase 220V
DC output	84V.d.c / 57A	
Battery (applied)	DC84V / Display (Battery capacity setting)	Lithium Battery
Charging time (HR)	Automatic time set by capacity	Manual adjustment possible
Size / Weight	Width (L) 505mm X Length (W) 310mm X Height (H) 140mm / 11kg	
Input/output line	AC 2.9 m / DC 2.9 m	

[MODEL : F22LF9053/F22LI9053/F22LP9053]

"CHARBES" charger	SPECIFICATION	Remarks
AC input	200V3~, 50/60Hz, 4.8kW	Three-phase 220V
DC output	90V.d.c / 53A	
Battery (applied)	DC90V / Display (Battery capacity setting)	Lead Acid Battery
Charging time (HR)	Automatic time set by capacity	Manual adjustment possible
Size / Weight	Width (L) 505mm X Length (W) 310mm X Height (H) 140mm / 11kg	
Input/output line	AC 2.9 m / DC 2.9 m	

[MODEL : F22LF9650/F22LI9650/F22LP9650]

"CHARBES" charger	SPECIFICATION	Remarks
AC input	200V3~, 50/60Hz, 4.8kW	Three-phase 220V
DC output	96V.d.c / 50A	
Battery (applied)	DC96V / Display (Battery capacity setting)	Lead Acid Battery
Charging time (HR)	Automatic time set by capacity	Manual adjustment possible
Size / Weight	Width (L) 505mm X Length (W) 310mm X Height (H) 140mm / 11kg	
Input/output line	AC 2.9 m / DC 2.9 m	

Patent certificate (three-phase LED)



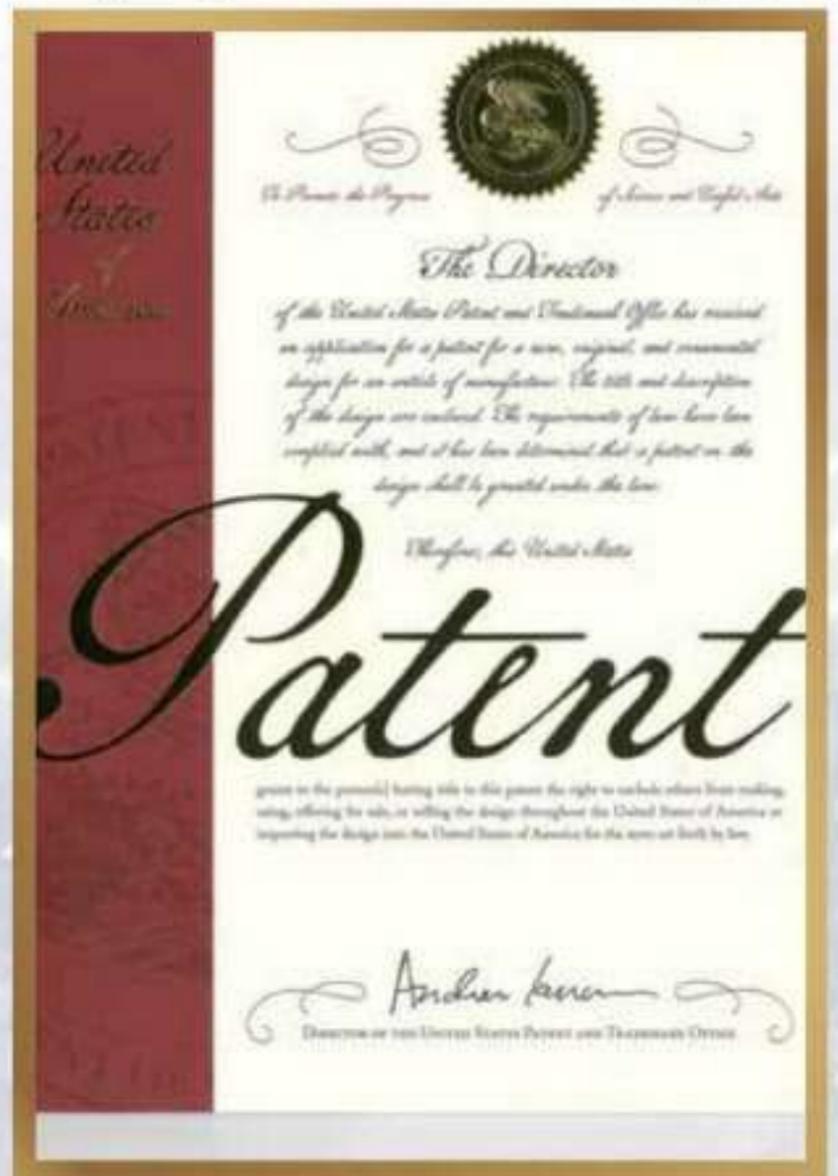
Patent certificate (single-phase LED)



Patent certificate (Electronic Load)



Design registration certificate (English)



Battery Restoration (Regeneration) High-Frequency Charger released

Energy is a resource as well as a capital.



- ▶ Model: FV9620D
- ▶ 465(L)*230(W)*125(H)
- ▶ Weight: 9.5kg



- ▶ Model: FV4810D
- ▶ 305(L)*145(W)*122(H)
- ▶ Weight: 3.7kg

- For AC 220V single phase -

- ⊙ Battery regenerative charger for low voltage, low current free voltage
- ⊙ All batteries from 2V to 96V (restorable, regenerable)
- ⊙ Possible to decide whether to reuse batteries, select usable cells, or dispose of them after restoring and regenerating the batteries and checking the discharge efficiency
- ⊙ Customizable monitoring of voltage, current and time
- ⊙ Lithium (iron phosphate, ion, all-solid) batteries can be restored and regenerated by battery and charger experts.

Electronic Load for 15KVA available on the market.



This is discharger,
guaranteed for lifetime.

- ▶ Model name : DE-PLT-15K
- ▶ Size : 485(L) × 710(W) × 890(H)
- ▶ Weight : 125kg

Features

- ⊙ Discharge function :
maximum output 80V-200A
- ⊙ Electronic load : 0V-150V / 0A to 200A 15kW



Use

- ⊙ Diagnose and check the efficiency of new and used batteries
- ⊙ Check the remaining energy of batteries (lead, lithium, all-solid) of all equipment in use
- ⊙ LCD display real-time monitoring and USB memory storage and transmission features available
- ⊙ Built-in power supply (power supply device) test loader

“Advantages of high-frequency chargers”

What is different and what is good?

If you know, it's science, if you don't know, it's a mystery.

- ★ Small, light, fast, and silent. (prevention for musculoskeletal diseases and easy handling of women and the elderly)
- ★ Electricity saving effect resulted from high energy efficiency and accurate charging method
- ★ If used for more than a year, charger exchange costs will be covered by electricity costs reduction and improvement of battery efficiency.
- ★ Excellent effect on extending battery life thanks to the control function of MCU BOARD (preventing shortening of battery life due to accumulation of sulfate) --> See published research materials
- ★ Charging is possible in an open way regardless of battery capacity
- ★ Battery condition can be diagnosed with LED and LCD windows
- ★ Implementing of low voltage self-diagnosis and prevention of overheating of batteries
- ★ It can be easily charged with using a generator even in the event of a power outage
- ★ It is safer than anything else because it has a protection circuit to prevent electromagnetic waves.
- ★ Improve work motivation through convenience and visual fulfillment
- ★ High-frequency precision medical devices are also used in many medical fields such as thermostats, thermo-cancer treatments, physical therapy devices, and massage devices.

We are supplying all battery chargers for secondary batteries.
Lead acid battery, lithium series batteries (Lithium ion, lithium phosphate iron, lithium polymer, etc.)

Now don't hesitate to be sure of the effectiveness of the high-frequency charger. I want you to be the pioneer of change.



Let's exchange
it right now.



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