



**S.P.E.** *ELETTRONICA*  
*INDUSTRIALE*

**PRODUCTS CATALOGUE**





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*NOTES: IN CASE OF DIFFERENCES BETWEEN THE INFORMATION CONTAINED IN THIS CATALOG AND THOSE LISTED ON THE WEB SITE, MUST BE CONSIDERED VALID THE ONES IN THE WEB SITE*

# NEW PRODUCT



## 1 kW Wireless Charging System

- Highly efficient contactless charging for industrial applications including electric vehicles
- No part wear
- Fully automated charging
- Low weight on vehicle

### Versatile Charging

Charge any battery type  
Each Primary Unit charges 24 V and 48 V  
CAN bus control or profile charging  
Reliable and silent operation

### Easy Integration

Compact onboard charging unit  
Intelligent communications  
Power transfer over a 20 mm gap

### Contactless Power Transfer

Efficiency meets traditional wired chargers  
Safe & unmanned 24/7 operation  
No connector wear  
No maintenance downtime

### System Overview





# 1 kW Wireless Charging System M $\infty$ V<sup>air</sup>

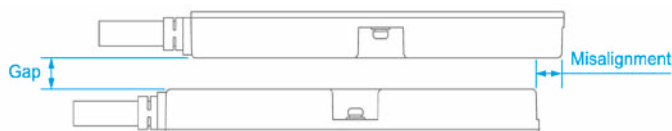
## Specification

AC Input			
AC Input Rated Voltage		100 to 240 VAC 1PH	
AC Input Voltage Range		85 to 265 VAC	
AC Input Frequency		50 / 60 Hz (47 to 63 Hz)	
Maximum AC Input Current		12 A	
Power Factor (100% Load)		> 0.95	
Peak Efficiency (100% Load)		92% (24 V version), 93% (48 V version)	
DC Output			
DC Output Nominal Voltage		24 VDC48 VDC	
DC Output Voltage Range		12 to 30 V <sub>DC</sub> 24 to 60 V <sub>DC</sub>	
Maximum Charge Current		41.7 A20.8 A	
Maximum Output Power		1000 W	
Battery Type		Lithium Ion, Lead Acid (AGM / GEL)	
Output Protection		Over voltage, over current, short circuit, reverse connection	
Parallel Operation		Up to 4 chargers for a maximum of 4 kW	
Environmental Conditions			
Operating Temperature		-20 °C to +50 °C (-4 °F to + 122 °F)	
Storage Temperature		-40 °C to +85 °C (-40 °F to + 185 °F)	
Relative Humidity		0% to 95%, non-condensing	
Maximum Operating Altitude		3000 m (9842 ft)	
Shock / Vibration		25 g / 5 g	
Ingress Protection <sup>1</sup>	Primary Box	IP65	
	Pads	IP65	
	Onboard Charging Unit	IP40	
Mechanical Design			
Pad Air Gap Range		0 mm to 20 mm (0.8 in)	
Maximum Misalignment		20 mm (0.8 in)	
Dimensions (H x W x D)	Primary Box	192 x 280 x 60 mm (7.6 x 11.0 x 2.4 in)	
	Primary Pad and Onboard Pad	Ø 160 x 19 mm (6.3 x 0.7 in)	
	Onboard Charging Unit	168 x 82 x 28 mm (6.6 x 3.2 x 1.1 in)	
Cable Length (Primary Box)	AC Input	960 mm (37.8 in)	
	Primary Pad	1120 mm (44.1 in) typical	
Cable Length (Onboard Electronics)	DC Output	500 mm (19.7 in)	
	Signals	100 mm (1.97 in)	
	Onboard Pad	380 mm (15 in)	
Weight	Primary Box and Pad	5.4 kg (11.9 lb)	
	Onboard Charging Unit and Pad	1.5 kg (3.3 lb)	
Cooling	Primary Box	Natural convection	
	Onboard Charging Unit	Contact	
Status LEDs		Primary box	
Approvals and Compliance		USA / Canada	Europe
Safety marks		cMET <sub>US</sub>	CE
Safety		UL 60950-1 / UL 62368-1 CAN/CSA C22.2 no. 60950-1 / no. 62368-1	EN 60950-1, EN 62368-1
EMC		FCC 15B, 18B, ICES-003, RSS-216, Class A <sup>1</sup>	ETSI EN 301 489-1, ETSI EN 301 489-17, EN 55011, EN 61000-6-4, EN 61000-6-2, Class A <sup>1</sup>
RF		FCC Part 15.247, FCC Part 15.209, RSS-247	ETSI EN 300 328
EMF		EN 62311, IEEE C95.3	

Notes: SPE reserves the right to modify without prior notice. 1) Class B available on request

## Physical Positioning

Misalignment is the distance the pads are offset laterally and air gap is the distance between the pad faces as shown below.



At the charger system's nominal output voltage, the full 1,000 W can be delivered in all combinations of gap and misalignment up to 20 mm. However, when the output voltage is above nominal value the gap and misalignment does have an impact on the amount of power that can be delivered, with the worst case being at the charger system's maximum working voltage, and is shown in the following table:

Air-gap	Max. misalignment for 1000 W
0 - 6 mm	20 mm
8 mm	18 mm
10 mm	17 mm
12 mm	16 mm
14 mm	15 mm
16 mm	10 mm
18 - 20 mm	5 mm

NEW RELEASE



Battery Voltage	IUIa Wet 8h Range (C5)	IUIa Wet 12h Range (C5)	IUIa Gel PzV 10-14h Range (C5)	Charging Current	Model
24V	280÷340 Ah	450÷550 Ah	350÷420 Ah	50A	24-50
	340÷410 Ah	540÷660 Ah	420÷510 Ah	60A	24-60
36V	230÷280 Ah	360÷440 Ah	275÷340 Ah	40A	36-40
48V	170÷210 Ah	270÷330 Ah	210÷255 Ah	30A	48-30



CHARGING PHASE



CHARGING COMPLETED



ANOMALY



#### Main features:

Power up to 1.8 kW

24V up to 48V

30A up to 60A

Flexible compact charger with premium features

Available on-board (-E)

off-board (-W)

DIMENSIONS (LxWxH): 377 x 188 x 79 mm

14.8 x 7.40 x 3.11 in

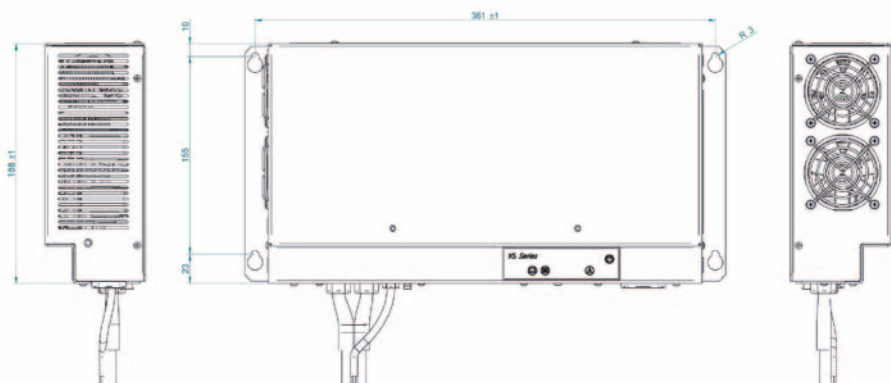
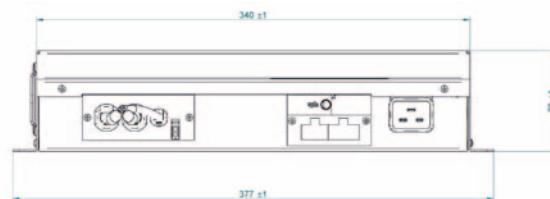
WEIGHT: 5,5 Kg – 12,13 lbs

PROTECTION GRADE IP20

INPUT VOLTAGE: 200-240 Vac

#### Main features:

- SLIM FORM FACTOR FOR ON BOARD and OFF BOARD INSTALLATION
- ACTIVE PFC
- INPUT VOLTAGE : 200-240 Vac 50-60 Hz
- RESONANT TECHNOLOGY
- HIGH EFFICIENCY: > 90%
- SUITABLE FOR LEAD (WET/GEL/AGM) and LITHIUM BATTERIES
- BATTERY THERMAL PROBE I/O (OPT.)
- REMOTE LED (OPT.)
- INTERLOCK (NO/NC)
- AUXILIARY OUTPUT RELAY
- CANBUS – RS485
- REAL TIME CALENDAR (OPT)
- WALL MOUNTING HOLES for easy wall mount





# GREEN SERIES SINGLE-PHASE BATTERY CHARGERS



Single-phase battery chargers

High frequency switching technology

Active PFC (Power Factor Corrector)

High efficiency technology and new technical design for optimal battery thermal performances

Programmable via front panel or USB type A/B port

Suitable for Lead-Acid, Sealed and Gel Traction batteries

CAN/CAN-open BUS communication for Lithium batteries

High efficiency over 90%

Various configurations available

Multi current configuration

Customizable charging curves through software

Integrated data logger

HFView software included



CURRENT		
24 V	50 A	80 A
	60 A	90 A
	70 A	100 A
		120 A
36 V	40 A	50 A
	45 A	60 A
		70 A
		80 A
48 V	30 A	50 A
	40 A	60 A
		75 A
72 V	25 A	30 A
		40 A
		50 A
80 V	20 A	30 A
		40 A
96 V	17 A	25 A
		30 A
		35 A

Green2

Green4



# GREEN2



## Main features:

Power up to 2.5 kW, from 24V up to 96V,  
from 17A up to 70A

Programmable via USB type A/B port or via display  
Graphical display

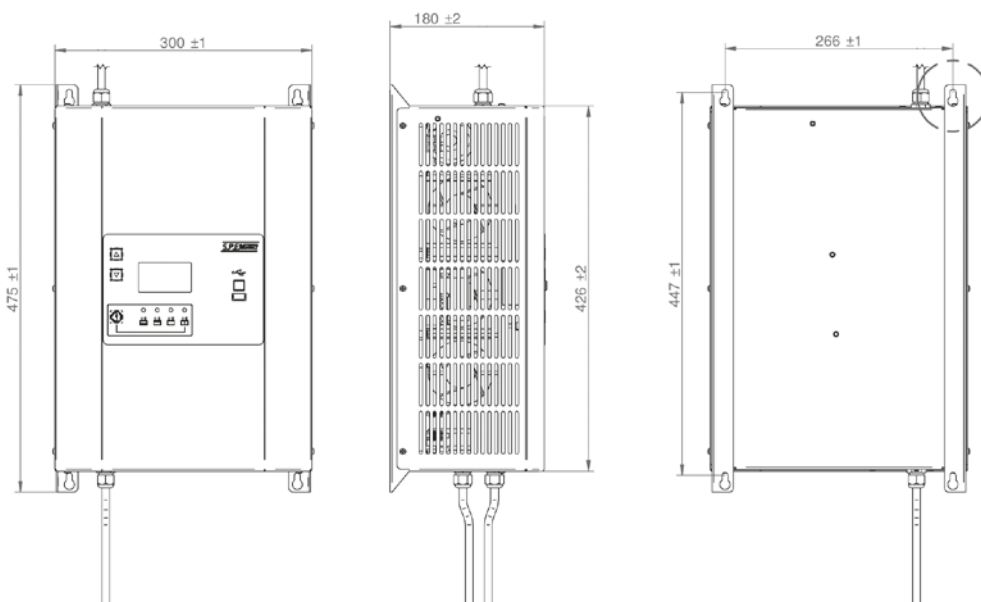
**DIMENSIONS (LxWxH):** 300x475x180 mm  
11.81x18.70x7.09 in.

**WEIGHT:** 11 Kg – 24.25 lbs

**PROTECTION GRADE** IP20

**INPUT VOLTAGE:** 120/200-240 Vac

Battery Voltage	IUIa Wet 8h Range (C5)	IUIa Wet 12h Range (C5)	IUIa Gel PzV 10-14h Range (C5)	Charging Current	Model
24V	280 ÷ 340 Ah	450 ÷ 550 Ah	350 ÷ 420 Ah	50A	24-50
	340 ÷ 410 Ah	540 ÷ 660 Ah	420 ÷ 510 Ah	60A	24-60
	390 ÷ 480 Ah	630 ÷ 770 Ah	480 ÷ 590 Ah	70A	24-70
36V	230 ÷ 280 Ah	360 ÷ 440 Ah	275 ÷ 340 Ah	40A	36-40
	250 ÷ 310 Ah	410 ÷ 500 Ah	310 ÷ 380 Ah	45A	36-45
48V	170 ÷ 210 Ah	270 ÷ 330 Ah	210 ÷ 255 Ah	30A	48-30
	230 ÷ 280 Ah	360 ÷ 440 Ah	275 ÷ 340 Ah	40A	48-40
72V	140 ÷ 170 Ah	230 ÷ 280 Ah	175 ÷ 210 Ah	25A	72-25
80V	110 ÷ 140 Ah	180 ÷ 220 Ah	140 ÷ 170 Ah	20A	80-20
96V	100 ÷ 120 Ah	155 ÷ 190 Ah	115 ÷ 145 Ah	17A	96-17





# GREEN4



## Main features:

Power up to 4.5 kW, from 24V up to 96V,  
from 25A up to 120A

Programmable via USB type A/B port or via display  
Graphical display

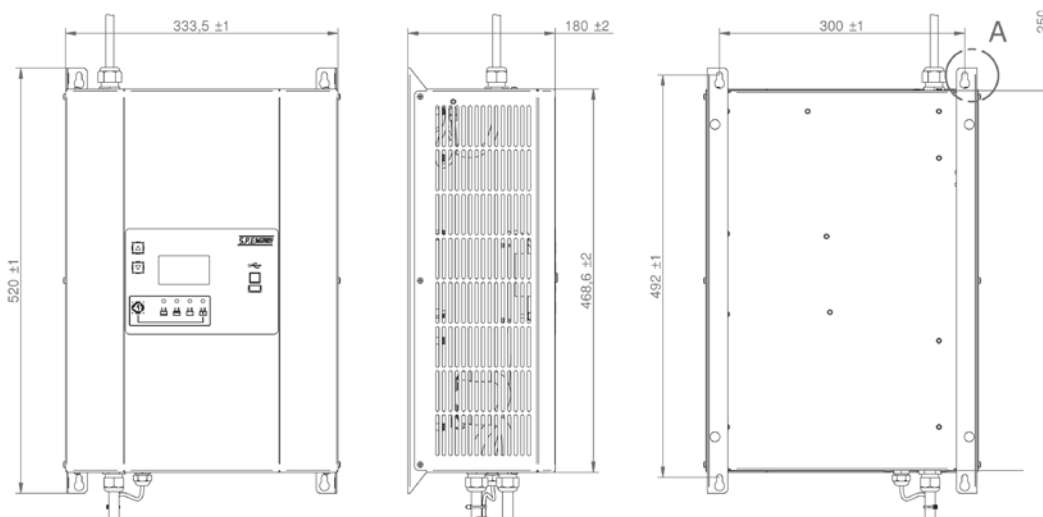
**DIMENSIONS (LxWxH):** 333.50x520x180 mm  
13.13x20.47x7.09 in.

**WEIGHT:** 13 Kg – 28.66 lbs

**PROTECTION GRADE** IP20

**INPUT VOLTAGE:** 200-240Vac

Battery Voltage	IUIa Wet 8h Range (C5)	IUIa Wet 12h Range (C5)	IUIa Gel PzV 10-14h Range (C5)	Charging Current	Model
24V	450 ÷ 550 Ah	720 ÷ 880 Ah	550 ÷ 680 Ah	80A	24-80
	510 ÷ 620 Ah	810 ÷ 990 Ah	620 ÷ 760 Ah	90A	24-90
	560 ÷ 690 Ah	900 ÷ 1100 Ah	690 ÷ 850 Ah	100A	24-100
	680 ÷ 830 Ah	1080 ÷ 1320 Ah	830 ÷ 1020 Ah	120A	24-120
36V	280 ÷ 340 Ah	450 ÷ 550 Ah	350 ÷ 420 Ah	50A	36-50
	340 ÷ 410 Ah	540 ÷ 660 Ah	420 ÷ 510 Ah	60A	36-60
	390 ÷ 480 Ah	630 ÷ 770 Ah	480 ÷ 590 Ah	70A	36-70
	450 ÷ 550 Ah	720 ÷ 880 Ah	550 ÷ 680 Ah	80A	36-80
48V	510 ÷ 620 Ah	810 ÷ 990 Ah	620 ÷ 760 Ah	90A	36-90
	280 ÷ 340 Ah	450 ÷ 550 Ah	350 ÷ 420 Ah	50A	48-50
	340 ÷ 410 Ah	540 ÷ 660 Ah	420 ÷ 510 Ah	60A	48-60
	420 ÷ 520 Ah	680 ÷ 830 Ah	520 ÷ 630 Ah	75A	48-75
72V	170 ÷ 210 Ah	270 ÷ 330 Ah	210 ÷ 255 Ah	30A	72-30
	230 ÷ 280 Ah	360 ÷ 440 Ah	275 ÷ 340 Ah	40A	72-40
	280 ÷ 340 Ah	450 ÷ 550 Ah	350 ÷ 420 Ah	50A	72-50
	170 ÷ 210 Ah	270 ÷ 330 Ah	210 ÷ 255 Ah	30A	80-30
80V	230 ÷ 280 Ah	360 ÷ 440 Ah	275 ÷ 340 Ah	40A	80-40
	140 ÷ 170 Ah	230 ÷ 280 Ah	175 ÷ 210 Ah	25A	96-25
	170 ÷ 210 Ah	270 ÷ 330 Ah	210 ÷ 255 Ah	30A	96-30
	200 ÷ 240 Ah	315 ÷ 380 Ah	240 ÷ 300 Ah	35A	96-35







# GREEN SERIES MODULAR THREE-PHASE BATTERY CHARGERS



Modular three-phase battery chargers up to 6 modules

High frequency switching technology

Scalable & flexible

High efficiency technology for optimal battery thermal performances

Programmable via front panel or USB type A/B port

Suitable for Lead-Acid, Sealed and Gel Traction batteries

CAN/CAN-open BUS communication for Lithium batteries

High efficiency over 90%

Various configurations available

Multi voltage/ multi current configurable modules

Easy to service and repair

Modular fail-proof design - module failure does not interrupt charging process

Customizable charging curves through software

Integrated data logger

HF View software included



Available charger modules:

- A: OUTPUT: 24V-36V-48V selectable; max 50A  
INPUT: 200/208-240/400/440/480/600 Vac - 50-60 Hz
- B: OUTPUT: 72V- 80V selectable; max 33A  
INPUT: 200/208-240/400/440/480 Vac - 50-60 Hz
- C: OUTPUT: 96V; max 25A  
INPUT: 400/440/480 Vac - 50-60 Hz

		NUMBER OF MODULES (max programmable current)					
		1	2	3	4	5	6
24 V	A	50 A	100 A	150 A	200 A	250 A	300 A
36 V		50 A	100 A	150 A	200 A	250 A	300 A
48 V		50 A	100 A	150 A	200 A	250 A	300 A
72 V	B	33 A	66 A	100 A	130 A	160 A	200 A
80 V		33 A	66 A	100 A	130 A	160 A	200 A
96 V	C	25 A	50 A	75 A	100 A	125 A	150 A

NOTE: maximum current per number of modules. Lower current configuration available

Green6

Green8

GreenX



# GREEN6



## Main features:

Modular system (3 configurable modules)

Power up to 8 kW, up to 150A @ 48V,

up to 100A @ 80V, up to 75A @ 96V

Programmable via USB type A/B port or via display

Graphical display

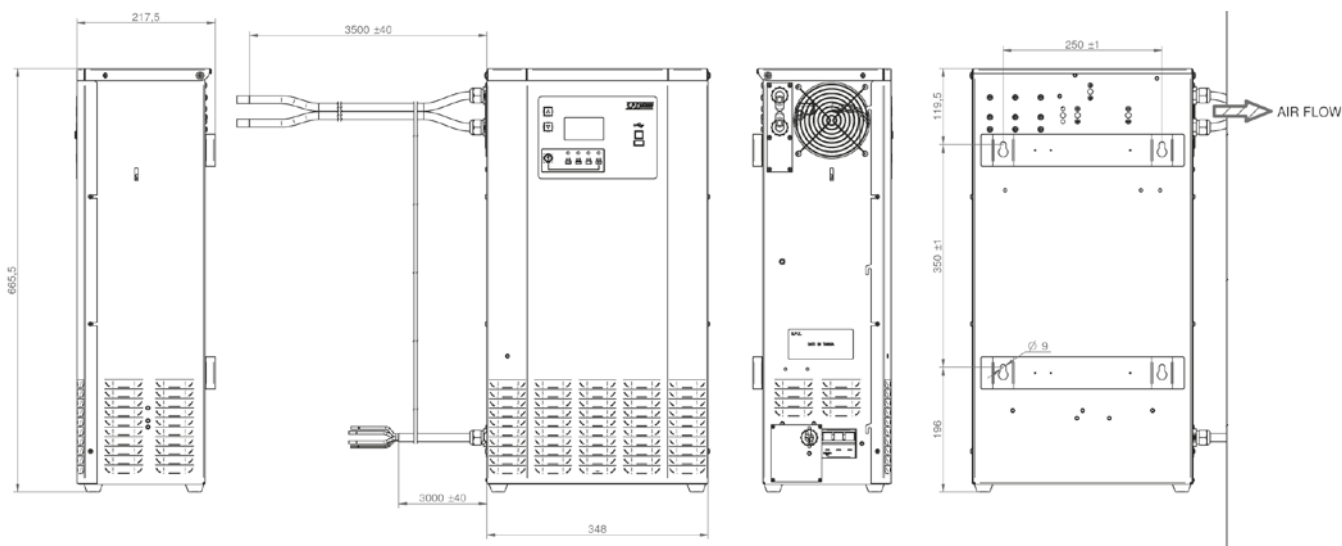
**DIMENSIONS (LxWxH):** 348x665,50x217,5 mm

13.70x26.20x8.56 in.

**WEIGHT:** 35 Kg - 77.16 lbs

**PROTECTION GRADE** IP20

**INPUT VOLTAGE:** 200/208-240/400/480/600 Vac – 50-60 Hz



Battery Voltage	IUIa Wet 8h Range (C5)	IUIa Wet 12h Range (C5)	IUIa Gel PzV 10-14h Range (C5)	Charging Current	Model
24V	280 ÷ 340 Ah	450 ÷ 550 Ah	350 ÷ 420 Ah	50A	24-50
	340 ÷ 410 Ah	540 ÷ 660 Ah	420 ÷ 510 Ah	60A	24-60
	390 ÷ 480 Ah	630 ÷ 770 Ah	480 ÷ 590 Ah	70A	24-70
	450 ÷ 550 Ah	720 ÷ 880 Ah	550 ÷ 680 Ah	80A	24-80
	560 ÷ 690 Ah	900 ÷ 1100 Ah	690 ÷ 850 Ah	100A	24-100
	680 ÷ 830 Ah	1080 ÷ 1320 Ah	830 ÷ 1020 Ah	120A	24-120
	840 ÷ 1030 Ah	1350 ÷ 1650 Ah	1040 ÷ 1270 Ah	150A	24-150
36V	280 ÷ 340 Ah	450 ÷ 550 Ah	350 ÷ 420 Ah	50A	36-50
	340 ÷ 410 Ah	540 ÷ 660 Ah	420 ÷ 510 Ah	60A	36-60
	390 ÷ 480 Ah	630 ÷ 770 Ah	480 ÷ 590 Ah	70A	36-70
	450 ÷ 550 Ah	720 ÷ 880 Ah	550 ÷ 680 Ah	80A	36-80
	560 ÷ 690 Ah	900 ÷ 1100 Ah	690 ÷ 850 Ah	100A	36-100
	680 ÷ 830 Ah	1080 ÷ 1320 Ah	830 ÷ 1020 Ah	120A	36-120
	840 ÷ 1030 Ah	1350 ÷ 1650 Ah	1040 ÷ 1270 Ah	150A	36-150
48V	280 ÷ 340 Ah	450 ÷ 550 Ah	350 ÷ 420 Ah	50A	48-50
	340 ÷ 410 Ah	540 ÷ 660 Ah	420 ÷ 510 Ah	60A	48-60
	390 ÷ 480 Ah	630 ÷ 770 Ah	480 ÷ 590 Ah	70A	48-70
	450 ÷ 550 Ah	720 ÷ 880 Ah	550 ÷ 680 Ah	80A	48-80
	560 ÷ 690 Ah	900 ÷ 1100 Ah	690 ÷ 850 Ah	100A	48-100
	680 ÷ 830 Ah	1080 ÷ 1320 Ah	830 ÷ 1020 Ah	120A	48-120
	730 ÷ 890 Ah	1170 ÷ 1430 Ah	900 ÷ 1100 Ah	130A	48-130
72V	840 ÷ 1030 Ah	1350 ÷ 1650 Ah	1040 ÷ 1270 Ah	150A	48-150
	170 ÷ 210 Ah	270 ÷ 330 Ah	210 ÷ 255 Ah	30A	72-30
	230 ÷ 280 Ah	360 ÷ 440 Ah	275 ÷ 340 Ah	40A	72-40
	280 ÷ 340 Ah	450 ÷ 550 Ah	350 ÷ 420 Ah	50A	72-50
	340 ÷ 410 Ah	540 ÷ 660 Ah	420 ÷ 510 Ah	60A	72-60
	450 ÷ 550 Ah	720 ÷ 880 Ah	550 ÷ 680 Ah	80A	72-80
	560 ÷ 690 Ah	900 ÷ 1100 Ah	690 ÷ 850 Ah	100A	72-100
80V	170 ÷ 210 Ah	270 ÷ 330 Ah	210 ÷ 255 Ah	30A	80-30
	230 ÷ 280 Ah	360 ÷ 440 Ah	275 ÷ 340 Ah	40A	80-40
	280 ÷ 340 Ah	450 ÷ 550 Ah	350 ÷ 420 Ah	50A	80-50
	340 ÷ 410 Ah	540 ÷ 660 Ah	420 ÷ 510 Ah	60A	80-60
	450 ÷ 550 Ah	720 ÷ 880 Ah	550 ÷ 680 Ah	80A	80-80
	560 ÷ 690 Ah	900 ÷ 1100 Ah	690 ÷ 850 Ah	100A	80-100
96V	110 ÷ 140 Ah	180 ÷ 220 Ah	140 ÷ 170 Ah	20A	96-20
	140 ÷ 170 Ah	230 ÷ 280 Ah	170 ÷ 210 Ah	25A	96-25
	170 ÷ 210 Ah	270 ÷ 330 Ah	210 ÷ 250 Ah	30A	96-30
	230 ÷ 280 Ah	360 ÷ 440 Ah	280 ÷ 340 Ah	40A	96-40
	280 ÷ 340 Ah	450 ÷ 550 Ah	350 ÷ 420 Ah	50A	96-50
	340 ÷ 410 Ah	540 ÷ 660 Ah	420 ÷ 510 Ah	60A	96-60
	390 ÷ 480 Ah	630 ÷ 770 Ah	480 ÷ 590 Ah	70A	96-70
	420 ÷ 520 Ah	680 ÷ 830 Ah	520 ÷ 630 Ah	75A	96-75



# GREEN8



## Main features:

Modular system (4 configurable modules)

Power up to 10.5 kW, up to 200A @ 48V,

up to 130A @ 80V, up to 100A @ 96V

Programmable via USB type A/B port or via display

Graphical display

DIMENSIONS (LxWxH): 448x665,50x217,50 mm

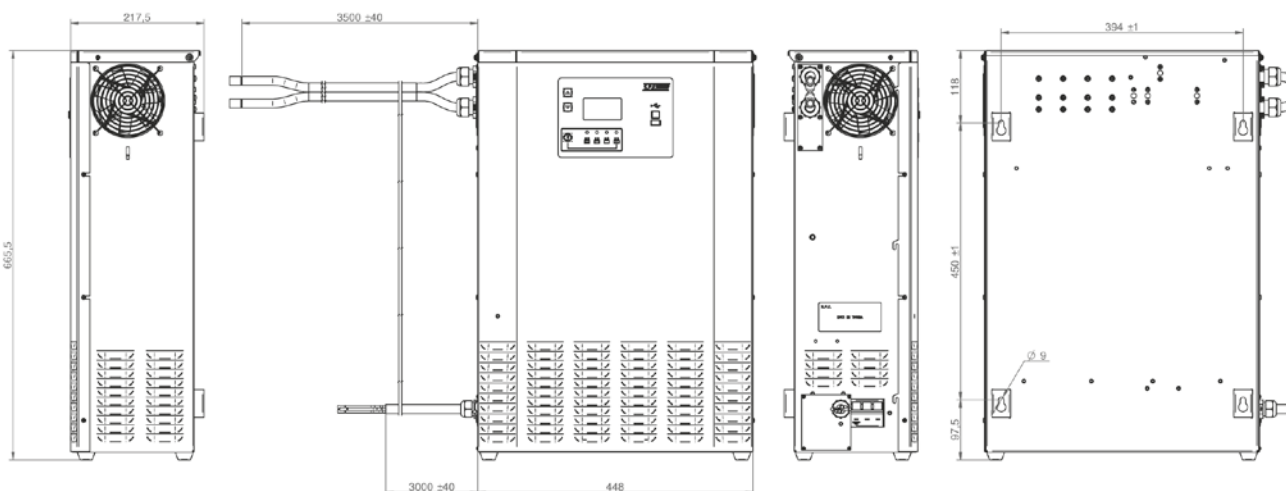
19.45x26.20x8.5 in.

WEIGHT: 43,35 Kg - 95.5 lbs

PROTECTION GRADE IP20

INPUT VOLTAGE: 200/208-240/400/480/600 Vac – 50-60 Hz

Battery Voltage	IUIa Wet 8h Range (C5)	IUIa Wet 12h Range (C5)	IUIa Gel PzV 10-14h Range (C5)	Charging Current	Model
24V	900÷1100 Ah	1440÷1760 Ah	1110÷1350 Ah	160A	24-160
	1010÷1240 Ah	1620÷1980 Ah	1250÷1520 Ah	180A	24-180
	1130÷1380 Ah	1800÷2200 Ah	1380÷1690 Ah	200A	24-200
36V	900÷1100 Ah	1440÷1760 Ah	1110÷1350 Ah	160A	36-160
	1010÷1240 Ah	1620÷1980 Ah	1250÷1520 Ah	180A	36-180
	1130÷1380 Ah	1800÷2200 Ah	1380÷1690 Ah	200A	36-200
48V	900÷1100 Ah	1440÷1760 Ah	1110÷1350 Ah	160A	48-160
	1010÷1240 Ah	1620÷1980 Ah	1250÷1520 Ah	180A	48-180
	1130÷1380 Ah	1800÷2200 Ah	1380÷1690 Ah	200A	48-200
72V	620÷760 Ah	990÷1210 Ah	760÷930 Ah	110A	72-110
	680÷830 Ah	1080÷1320 Ah	830÷1020 Ah	120A	72-120
	730÷890 Ah	1170÷1430 Ah	900÷1100 Ah	130A	72-130
80V	620÷760 Ah	990÷1210 Ah	760÷930 Ah	110A	80-110
	680÷830 Ah	1080÷1320 Ah	830÷1020 Ah	120A	80-120
	730÷890 Ah	1170÷1430 Ah	900÷1100 Ah	130A	80-130
96V	450÷550 Ah	720÷880 Ah	550÷680 Ah	80A	96-80
	560÷690 Ah	900÷1100 Ah	690÷850 Ah	100A	96-100





# GREENX



## Main features:

Modular system (5-6 configurable modules)

Power up to 16 kW, 300A @ 48 V,

up to 200A @ 80 V, up to 150A @ 96V

Programmable via USB type A/B port or via display

Graphical display

**DIMENSIONS (LxWxH):** 348x665,50x400,10 mm  
13.70x26.20x15.75 in.

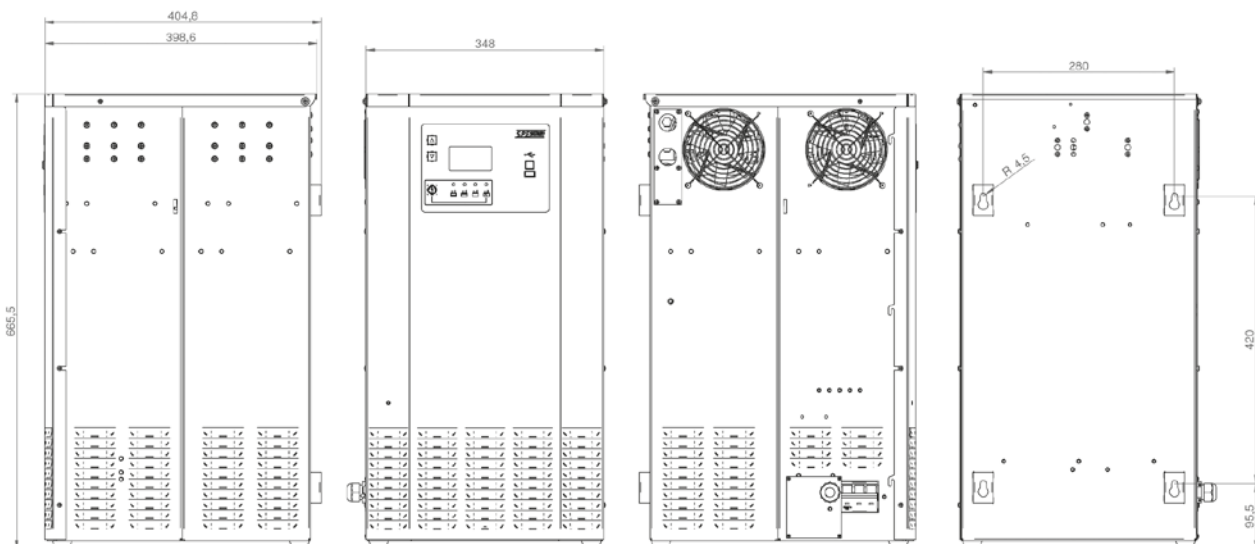
**WEIGHT:** 61 Kg – 134.48 lbs

**PROTECTION GRADE** IP20

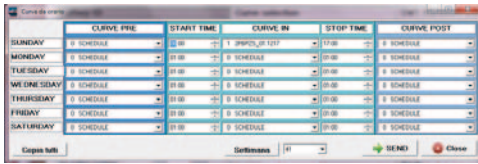
**ONLY INPUT VOLTAGE:** 400/480/600 Vac – 50-60 Hz



Battery Voltage	IULa Wet 8h Range (C5)	IULa Wet 12h Range (C5)	IULa Gel PzV 10-14h Range (C5)	Charging Current	Model
24V	1240 ÷ 1510 Ah	1980 ÷ 2420 Ah	1520 ÷ 1860 Ah	220A	24-220
	1410 ÷ 1720 Ah	2250 ÷ 2750 Ah	1730 ÷ 2120 Ah	250A	24-250
	1580 ÷ 1930 Ah	2520 ÷ 3080 Ah	1940 ÷ 2370 Ah	280A	24-280
	1690 ÷ 2060 Ah	2700 ÷ 3300 Ah	2080 ÷ 2540 Ah	300A	24-300
36V	1240 ÷ 1510 Ah	1980 ÷ 2420 Ah	1520 ÷ 1860 Ah	220A	36-220
	1410 ÷ 1720 Ah	2250 ÷ 2750 Ah	1730 ÷ 2120 Ah	250A	36-250
	1580 ÷ 1930 Ah	2520 ÷ 3080 Ah	1940 ÷ 2370 Ah	280A	36-280
	1690 ÷ 2060 Ah	2700 ÷ 3300 Ah	2080 ÷ 2540 Ah	300A	36-300
48V	1240 ÷ 1510 Ah	1980 ÷ 2420 Ah	1520 ÷ 1860 Ah	220A	48-220
	1410 ÷ 1720 Ah	2250 ÷ 2750 Ah	1730 ÷ 2120 Ah	250A	48-250
	1580 ÷ 1930 Ah	2520 ÷ 3080 Ah	1940 ÷ 2370 Ah	280A	48-280
	1690 ÷ 2060 Ah	2700 ÷ 3300 Ah	2080 ÷ 2540 Ah	300A	48-300
72V	840 ÷ 1030 Ah	1350 ÷ 1650 Ah	1040 ÷ 1270 Ah	150A	72-150
	900 ÷ 1100 Ah	1440 ÷ 1760 Ah	1110 ÷ 1350 Ah	160A	72-160
	1010 ÷ 1240 Ah	1620 ÷ 1980 Ah	1250 ÷ 1520 Ah	180A	72-180
	1130 ÷ 1380 Ah	1800 ÷ 2200 Ah	1380 ÷ 1690 Ah	200A	72-200
80V	840 ÷ 1030 Ah	1350 ÷ 1650 Ah	1040 ÷ 1270 Ah	150A	80-150
	900 ÷ 1100 Ah	1440 ÷ 1760 Ah	1110 ÷ 1350 Ah	160A	80-160
	1010 ÷ 1240 Ah	1620 ÷ 1980 Ah	1250 ÷ 1520 Ah	180A	80-180
	1130 ÷ 1380 Ah	1800 ÷ 2200 Ah	1380 ÷ 1690 Ah	200A	80-200
96V	700 ÷ 860 Ah	1130 ÷ 1380 Ah	870 ÷ 1060 Ah	125A	96-125
	840 ÷ 1030 Ah	1350 ÷ 1650 Ah	1040 ÷ 1270 Ah	150A	96-150



# GREEN series Softw



## REAL TIME CALENDAR

Configures charging profile depending on time/date.

S.P.E. RTC is the perfect feature for opportunity charge, that allows users to set charging curves during the day, the week and the year. Switch off the charger does not affect hour setting thanks to the primary lithium battery integrated in the RTC module.



## AIR PUMP

Rechargers batteries with air circulation option.

Available for all three-phase GREEN chargers, this feature, integrated as a base of the charger, mixes the electrolyte of the Lead Acid battery, allowing a faster charging operation and reduced maintenance thanks to the lower consumption of water.



## FLOOR BATTERY CHARGER STAND

Galvanized sheet stand, ideal for every GREEN series charger, can be used in absence of walls, allowing suitable installation at the right height. The product is supplied unassembled, for easy transportation of multiple stands on a single skid. (P/N 770-000)



## LED BAND

The Green series could mount a Led Band. The request must be done at the moment of the order of the charger. To retrofit an existing charger some modifications are required.



## ANTISPARK

Automatic power interruption for safe plugs disconnection (extra plug wiring requested).

This option allows to cut off the power of the charger avoiding electric sparks. Charger can be disconnected at maximum power safely. Applicable on DIN plugs only.



## NTC TEMPERATURE SENSOR

Temperature monitor for optimal charging process.

Monitor the battery temperature during fast charge avoiding overheating and battery damages.



# are & Accessories

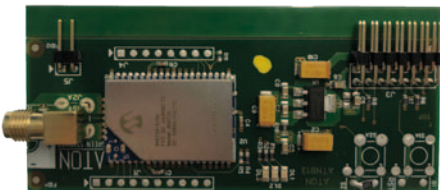


## ETHERNET INTERFACE

Remote charger monitor via web server.

Collect and aggregate charging information via cabled network.

Remote management option of the charger.



## WiFi INTERFACE

Wireless remote charger monitor via web server

Collect and aggregate charging information via wireless network.

Remote management option of the charger.



## 2G/3G DATA CARD

2G/3G data card for remote charger monitor via web server

Collect and aggregate charging information via cellular network

independently from IT infrastructure. Remote management option of the charger.



## DIGITAL I/O

Digital input/output signals for charger interface to complex systems.

Multi input/output option to interface the charger to customers' applications. Suitable for driving external power relays i.e. sirens alarms or PLC. Input pins available for remote start signal.



## HFView SOFTWARE

Through HFView software, connecting PC and charger with USB cable, allows access to several options:

- Monitor and download charging cycles
- Modify charger configuration of voltage, current profile
- Enable charger options
- Design/modify charging profiles



## 790-002 USB Pen Drive OSLO 8GB

USB pen drive allow to program the charger in an easy way.





# GREEN XL HYBRID CHARGER



New Power conversion Technology

High Frequency Technology

IGBT Architecture

CAN Bus communication for Lithium Batteries

Efficiency > 90%

Various configurations available

CHARGING CURRENT	
24V	350A
	400A
	440A
	500A
	600A
36V	350A
	400A
	440A
	500A
	600A
48V	350A
	400A
	440A
	500A
	600A
72V	250A
	300A
	350A
	400A
	500A
80V	250A
	300A
	350A
	400A
	500A
96V	200A
	250A
	300A
	320A
	350A
120V	200A
	250A

 GREEN XL



# GREEN XL



## Main features:

Power Up to 32 kW

up to 500A, up to @48V

up to 400A, up to @80V

USB Interface

**DIMENSIONS:** 650 x 1400 x 550 (mm)

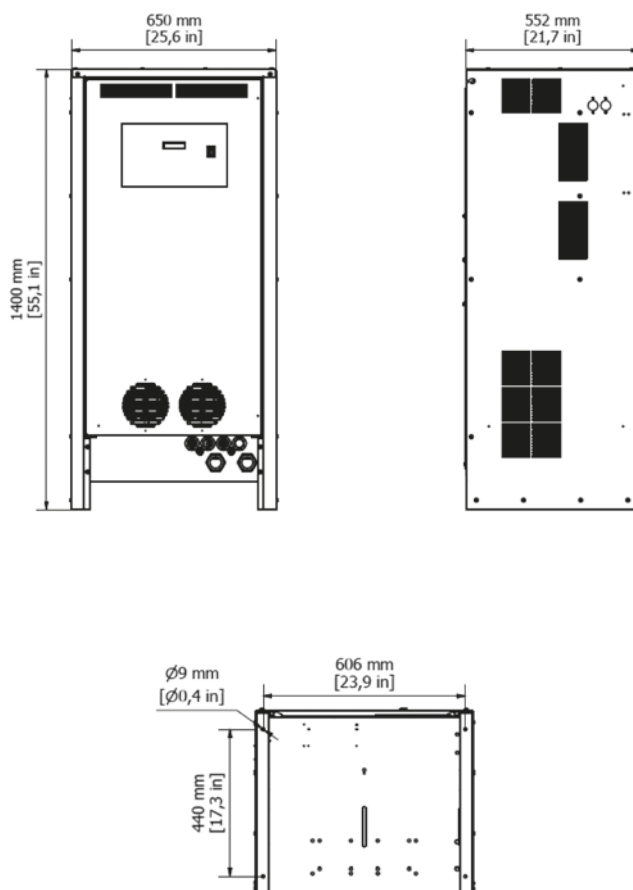
25.60 x 55.1 x 21.7 (in)

**WEIGHT:** 325 Kg - 716,5 lbs

**PROTECTION GRADE:** IP 21

**INPUT VOLTAGE:** 220-240 /400/440/480/600 VAC - 50/60 Hz

Battery Voltage	Charging Current	Description
24V	350	24-350
	400	24-400
	440	24-440
	500	24-500
	600	24-600
36V	350	36-350
	400	36-400
	440	36-440
	500	36-500
	600	36-600
48V	350	48-350
	400	48-400
	440	48-440
	500	48-500
	600	48-600
72V	250	72-250
	300	72-300
	350	72-350
	400	72-400
	500	72-500
80V	250	80-250
	300	80-300
	350	80-350
	400	80-400
	500	80-500
96V	200	96-200
	250	96-250
	300	96-300
	320	96-320
	350	96-350
120V	200	120-200
	250	120-250



*Note*



# CBHF SERIES



Single-phase battery chargers

High frequency system with advanced technology

Charging process controlled by microprocessor

Thermal protection

High brightness digital display

Voltage: 12V, 24V, 36V, 48V

Programmable for charging curve, charging current and battery voltage via dip switch

Suitable for Lead-Acid, Sealed, Gel Traction and Lithium batteries

Remote LED option

CURRENT				
12 V	4 A 8 A 10 A 12 A	14 A	15 A 20 A 25 A 30 A	35 A 40 A
24 V	4 A 8 A 10 A 12 A	14 A	15 A 20 A 25 A 30 A	35 A 40 A
36 V			15 A 20 A 25 A	30 A
48 V			15 A 20 A	22 A

CBHF1-SM

CBHF1-V2

CBHF2  
CBHF2-WIFI  
CBHF2-M  
CBHF2-HK

CBHF2 (XP)  
CBHF2-HK (XP)



# CBHF1-SM

## Main features:

Compact & lightweight

Power from 48W up to 290W

Current from 4A to 12A



DIMENSIONS (LxWxH): 134,5x241x80 mm

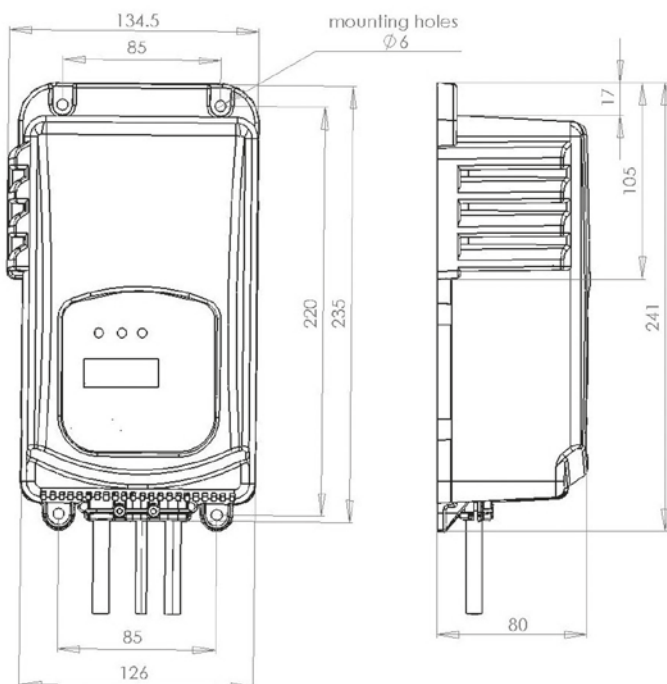
5.30x9.49x3.15 in

WEIGHT: 1,80 Kg – 3.97 lbs

PROTECTION GRADE IP30

INPUT VOLTAGE: 208 ÷ 240 Vac – 50-60 Hz

Battery Voltage	Battery Range		Charging Current	Model
	5h	20h		
12V	20 ÷ 40 Ah	30 ÷ 50 Ah	4A	12-4
	40 ÷ 80 Ah	60 ÷ 105 Ah	8A	12-8
	60 ÷ 100 Ah	70 ÷ 130 Ah	10A	12-10
	90 ÷ 120 Ah	120 ÷ 160 Ah	12A	12-12
24V	20 ÷ 40 Ah	30 ÷ 50 Ah	4A	24-4
	40 ÷ 80 Ah	60 ÷ 105 Ah	8A	24-8
	60 ÷ 100 Ah	70 ÷ 130 Ah	10A	24-10
	90 ÷ 120 Ah	120 ÷ 160 Ah	12A	24-12





# CBHF1-V2



## Main features:

Compact & lightweight

Power from 96W up to 340W

Current from 8A to 14A

DIMENSIONS (LxWxH): 154x268x100 mm

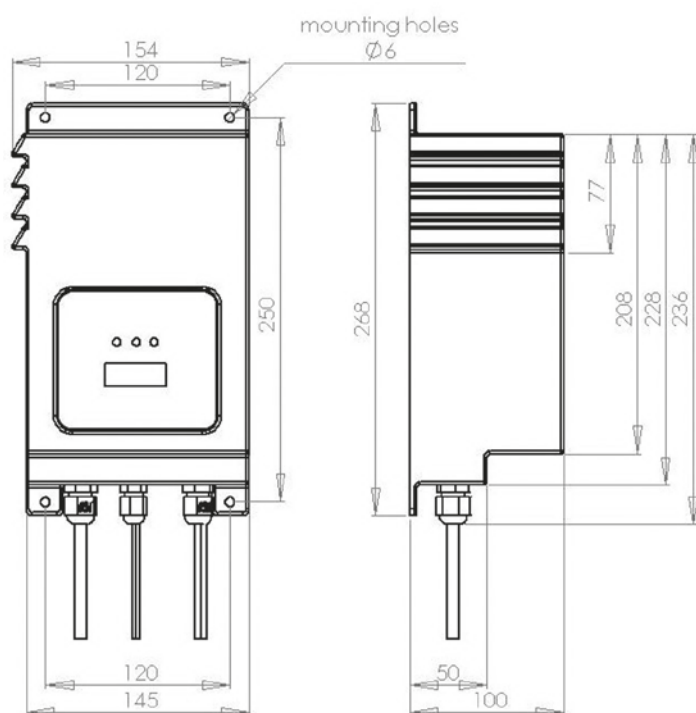
6.06x10.60x3.94 in

WEIGHT: 2,00 Kg - 4.41 lbs

PROTECTION GRADE IP30

INPUT VOLTAGE: 208 ÷ 240 Vac – 50-60 Hz

Battery Voltage	Battery Range		Charging Current	Model
	5h	20h		
12V	40 ÷ 80 Ah	60 ÷ 105 Ah	8A	12-8
	60 ÷ 100 Ah	70 ÷ 130 Ah	10A	12-10
	90 ÷ 120 Ah	120 ÷ 160 Ah	12A	12-12
	90 ÷ 130 Ah	120 ÷ 170 Ah	14A	12-14
24V	40 ÷ 80 Ah	60 ÷ 105 Ah	8A	24-8
	60 ÷ 100 Ah	70 ÷ 130 Ah	10A	24-10
	90 ÷ 120 Ah	120 ÷ 160 Ah	12A	24-12
	90 ÷ 130 Ah	120 ÷ 170 Ah	14A	24-14





# CBHF2



## Main features:

Power from 180W up to 1050W

Current from 15A to 40A

Active PFC

Charging cycles information through USB (optional)

Extra power version available (CBHF2-XP)

**DIMENSIONS (LxWxH):** 180x310x100 mm – 7.09x12.20x3.94 in

**WEIGHT:** 3,50 Kg - 7.72 lbs

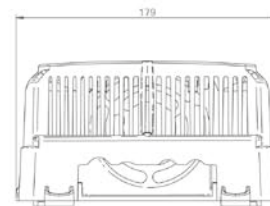
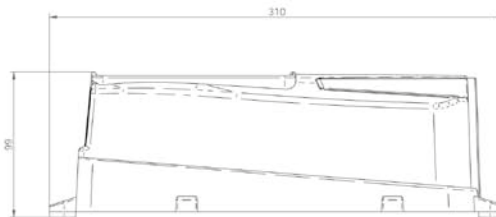
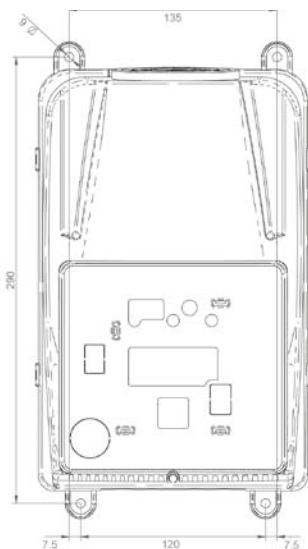
**PROTECTION GRADE** IP30

## INPUT VOLTAGE:

Universal 100 ÷ 240 Vac – 50-60 Hz - 240 Vac only available

\* CBHF2-XP 36V/48V: 208 ÷ 240 Vac – 50-60 Hz

Battery Voltage	Battery Range (5h)		Battery Range (20h) 10-12 hours charging time	Charging Current	Model
	8-9 hours charging time	10-12 hours charging time			
12V	80 ÷ 110 Ah	100 ÷ 150 Ah	130 ÷ 185 Ah	15A	12-15
	95 ÷ 120 Ah	120 ÷ 195 Ah	150 ÷ 240 Ah	20A	12-20
	120 ÷ 160 Ah	180 ÷ 260 Ah	220 ÷ 315 Ah	25A	12-25
	145 ÷ 180 Ah	200 ÷ 280 Ah	245 ÷ 350 Ah	30A	12-30
	180 ÷ 220 Ah	250 ÷ 320 Ah	305 ÷ 390 Ah	35A	12-35 (XP)
	220 ÷ 260 Ah	295 ÷ 360 Ah	360 ÷ 440 Ah	40A	12-40 (XP)
24V	80 ÷ 110 Ah	100 ÷ 150 Ah	130 ÷ 185 Ah	15A	24-15
	95 ÷ 120 Ah	120 ÷ 195 Ah	150 ÷ 240 Ah	20A	24-20
	120 ÷ 160 Ah	180 ÷ 260 Ah	220 ÷ 315 Ah	25A	24-25
	145 ÷ 180 Ah	200 ÷ 280 Ah	245 ÷ 350 Ah	30A	24-30
	180 ÷ 220 Ah	250 ÷ 320 Ah	305 ÷ 390 Ah	35A	24-35 (XP)
	220 ÷ 260 Ah	295 ÷ 360 Ah	360 ÷ 440 Ah	40A	24-40 (XP)
36V	80 ÷ 110 Ah	100 ÷ 150 Ah	130 ÷ 185 Ah	15A	36-15
	95 ÷ 120 Ah	120 ÷ 195 Ah	150 ÷ 240 Ah	20A	36-20
	120 ÷ 160 Ah	180 ÷ 260 Ah	220 ÷ 315 Ah	25A	36-25
	145 ÷ 180 Ah	200 ÷ 280 Ah	245 ÷ 350 Ah	30A	36-30 (XP)
48V	80 ÷ 110 Ah	100 ÷ 150 Ah	130 ÷ 185 Ah	15A	48-15
	95 ÷ 120 Ah	120 ÷ 195 Ah	150 ÷ 240 Ah	20A	48-20
	105 ÷ 140 Ah	150 ÷ 220 Ah	165 ÷ 265 Ah	22A	48-22 (XP)







# CBHF2-WIFI



## Main features:

WiFi programmable through S.P.E. 2.0 APP

(WiFi dongle required)

Charging cycles information available through APP functions (iOS / Android)

Active PFC



Available on  
App Store  
Google Play

**DIMENSIONS (LxWxH):** 180x310x100 mm

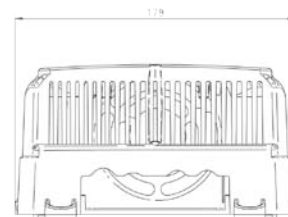
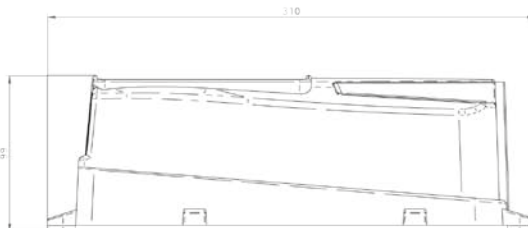
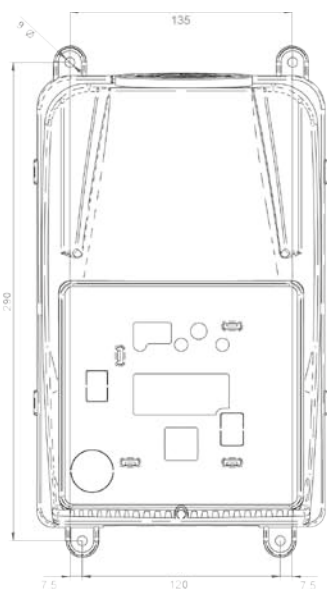
7.09x12.20x3.94 in

**WEIGHT:** 3,50 Kg - 7.72 lbs

**PROTECTION GRADE** IP30

**INPUT VOLTAGE:** Universal 100 ÷ 240 Vac – 50-60 Hz

Battery Voltage	Battery Range (5h)		Battery Range (20h) 10-12 hours charging time	Charging Current	Model
	8-9 hours charging time	10-12 hours charging time			
12V	80 ÷ 110 Ah	100 ÷ 150 Ah	130 ÷ 185 Ah	15A	12-15
	95 ÷ 120 Ah	120 ÷ 195 Ah	150 ÷ 240 Ah	20A	12-20
	120 ÷ 160 Ah	180 ÷ 260 Ah	220 ÷ 315 Ah	25A	12-25
	145 ÷ 180 Ah	200 ÷ 280 Ah	245 ÷ 350 Ah	30A	12-30
24V	80 ÷ 110 Ah	100 ÷ 150 Ah	130 ÷ 185 Ah	15A	24-15
	95 ÷ 120 Ah	120 ÷ 195 Ah	150 ÷ 240 Ah	20A	24-20
	120 ÷ 160 Ah	180 ÷ 260 Ah	220 ÷ 315 Ah	25A	24-25
	145 ÷ 180 Ah	200 ÷ 280 Ah	245 ÷ 350 Ah	30A	24-30
36V	80 ÷ 110 Ah	100 ÷ 150 Ah	130 ÷ 185 Ah	15A	36-15
	95 ÷ 120 Ah	120 ÷ 195 Ah	150 ÷ 240 Ah	20A	36-20
	120 ÷ 160 Ah	180 ÷ 260 Ah	220 ÷ 315 Ah	25A	36-25
48V	80 ÷ 110 Ah	100 ÷ 150 Ah	130 ÷ 185 Ah	15A	48-15
	95 ÷ 120 Ah	120 ÷ 195 Ah	150 ÷ 240 Ah	20A	48-20





# CBHF2-M



Main features:  
Active PFC  
Metal case with handle  
Portable design  
STAND-ALONE application

DIMENSIONS (LxWxH): 280x200x137 mm

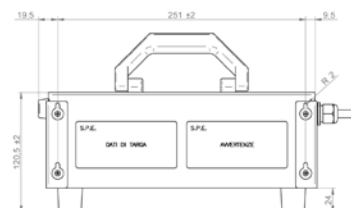
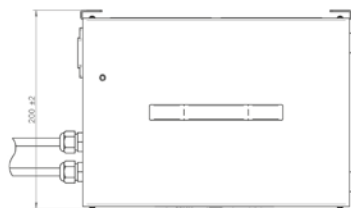
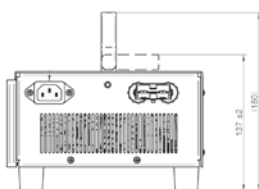
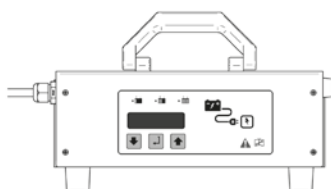
11.02x7.87x5.39 in

WEIGHT: 5 Kg - 11.02 lbs

PROTECTION GRADE IP30

INPUT VOLTAGE: Universal 100 ÷ 240 Vac – 50-60 Hz

Battery Voltage	Battery Range (5h)		Battery Range (20h) 10-12 hours charging time	Charging Current	Model
	8-9 hours charging time	10-12 hours charging time			
12V	80 ÷ 110 Ah	100 ÷ 150 Ah	130 ÷ 185 Ah	15A	12-15
	95 ÷ 120 Ah	120 ÷ 195 Ah	150 ÷ 240 Ah	20A	12-20
	120 ÷ 160 Ah	180 ÷ 260 Ah	220 ÷ 315 Ah	25A	12-25
	145 ÷ 180 Ah	200 ÷ 280 Ah	245 ÷ 350 Ah	30A	12-30
24V	80 ÷ 110 Ah	100 ÷ 150 Ah	130 ÷ 185 Ah	15A	24-15
	95 ÷ 120 Ah	120 ÷ 195 Ah	150 ÷ 240 Ah	20A	24-20
	120 ÷ 160 Ah	180 ÷ 260 Ah	220 ÷ 315 Ah	25A	24-25
	145 ÷ 180 Ah	200 ÷ 280 Ah	245 ÷ 350 Ah	30A	24-30
36V	80 ÷ 110 Ah	100 ÷ 150 Ah	130 ÷ 185 Ah	15A	36-15
	95 ÷ 120 Ah	120 ÷ 195 Ah	150 ÷ 240 Ah	20A	36-20
	120 ÷ 160 Ah	180 ÷ 260 Ah	220 ÷ 315 Ah	25A	36-25
48V	80 ÷ 110 Ah	100 ÷ 150 Ah	130 ÷ 185 Ah	15A	48-15
	95 ÷ 120 Ah	120 ÷ 195 Ah	150 ÷ 240 Ah	20A	48-20





# CBHF2-HK



Main features:  
STOP button on front panel  
Hard metal case  
ON-BOARD application  
Extra Power version available (XP model)

DIMENSIONS (LxWxH): 270x225x97 mm  
10.63x8.86x3.82 in

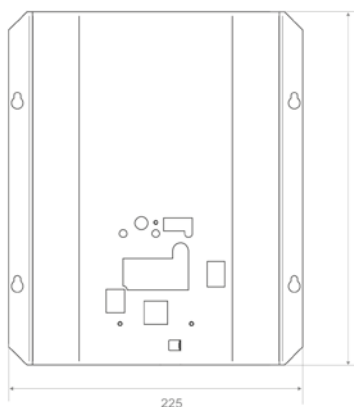
WEIGHT: 4 Kg - 8.82 lbs

PROTECTION GRADE IP30

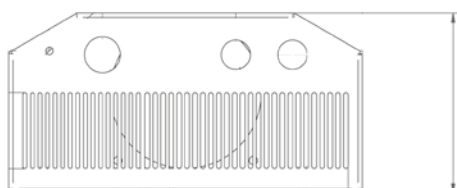
INPUT VOLTAGE: 100 ÷ 240 Vac – 50-60 Hz

\* XP model 36V/48V: 208 ÷ 240 Vac – 50-60 Hz

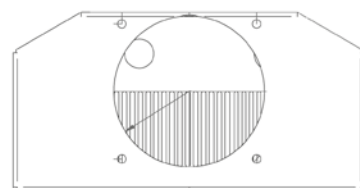
Battery Voltage	Battery Range (5h)		Battery Range (20h) 10-12 hours charging time	Charging Current	Model
	8-9 hours charging time	10-12 hours charging time			
12V	80 ÷ 110 Ah	100 ÷ 150 Ah	130 ÷ 185 Ah	15A	12-15
	95 ÷ 120 Ah	120 ÷ 195 Ah	150 ÷ 240 Ah	20A	12-20
	120 ÷ 160 Ah	180 ÷ 260 Ah	220 ÷ 315 Ah	25A	12-25
	145 ÷ 180 Ah	200 ÷ 280 Ah	245 ÷ 350 Ah	30A	12-30
	180 ÷ 220 Ah	250 ÷ 320 Ah	305 ÷ 390 Ah	35A	12-35 (XP)
	220 ÷ 260 Ah	295 ÷ 360 Ah	360 ÷ 440 Ah	40A	12-40 (XP)
24V	80 ÷ 110 Ah	100 ÷ 150 Ah	130 ÷ 185 Ah	15A	24-15
	95 ÷ 120 Ah	120 ÷ 195 Ah	150 ÷ 240 Ah	20A	24-20
	120 ÷ 160 Ah	180 ÷ 260 Ah	220 ÷ 315 Ah	25A	24-25
	145 ÷ 180 Ah	200 ÷ 280 Ah	245 ÷ 350 Ah	30A	24-30
	180 ÷ 220 Ah	250 ÷ 320 Ah	305 ÷ 390 Ah	35A	24-35 (XP)
	220 ÷ 260 Ah	295 ÷ 360 Ah	360 ÷ 440 Ah	40A	24-40 (XP)
36V	80 ÷ 110 Ah	100 ÷ 150 Ah	130 ÷ 185 Ah	15A	36-15
	95 ÷ 120 Ah	120 ÷ 195 Ah	150 ÷ 240 Ah	20A	36-20
	120 ÷ 160 Ah	180 ÷ 260 Ah	220 ÷ 315 Ah	25A	36-25
	145 ÷ 180 Ah	200 ÷ 280 Ah	245 ÷ 350 Ah	30A	36-30 (XP)
	80 ÷ 110 Ah	100 ÷ 150 Ah	130 ÷ 185 Ah	15A	48-15
48V	95 ÷ 120 Ah	120 ÷ 195 Ah	150 ÷ 240 Ah	20A	48-20
	105 ÷ 140 Ah	150 ÷ 220 Ah	165 ÷ 265 Ah	22A	48-22 (XP)



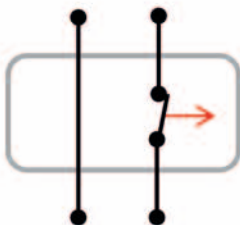
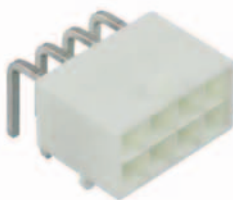
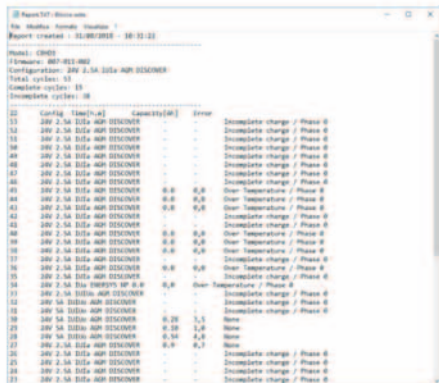
270



97



225



## DATA LOGGING OPTION

Capability to log up to 100 charging cycles in order to analyze battery performances and usage by the customer. All data are available through SPE Reader software on dedicated chargers (included). TTL JACK/USB serial cable is required for download (P/N 589-001).

## SPE READER SOFTWARE

Through SPE Reader software, connecting PC and charger using TTL-232R-5V-AJ JACK/USB cable, allows to download on a simple .txt file charging data including Ah, time of charge, incomplete cycles and charger configuration. The software is STAND-ALONE and does not require any installation. Works with any Windows® installation.

## TTL JACK/USB SERIAL CABLE

USB to JACK 3.5mm data cable which connects PC to charger. To be ordered separately (P/N 589-001).

## CAN BUS OPTION

CAN BUS option to remotely read/write data from/to the charger. This includes configuration change and parameters' reading (voltage, current, charging profile and charging phase). CAN Open sub-dictionary available.

Option available on selected models.

## INHIBIT RELAY (IMMOBILIZER)

ON-BOARD charger option to disable usage of the machine during the charging phase (NC contact).

NA contact available on request.

## ELECTRONIC REMOTE MICRO-INDICATOR

External LED charging/discharging indicators which provide charge/discharge status remotely.

Available in different sized and cable lengths.



### LBF318EZ

18 mm round LED indicator.

Replacement P/N 714-000



### LBF3QEZ

22x30 mm LED indicator.

Replacement P/N 724-000



### SKLED

52x16 mm built-in LED indicator

Replacement P/N 726-000



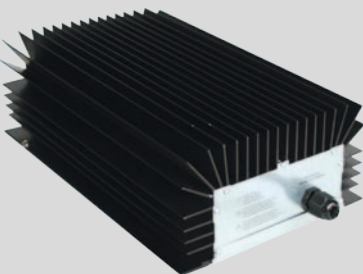
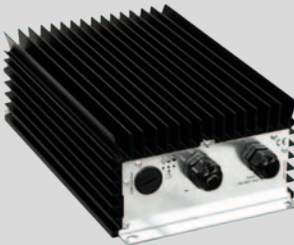
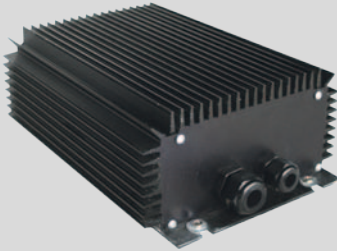
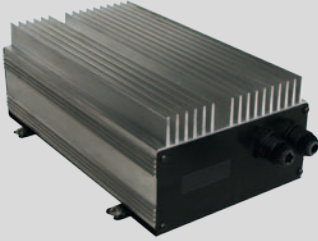
### CBNLED

83x11.50 mm built-in LED indicator.

Replacement P/N 725-100



# SEALED SERIES



Single-phase battery chargers

High frequency system with advanced technology

IP rated (International Protection)

Thermal protection against over-heating

Charging process fully controlled by microprocessor

Suitable for Lead-Acid, Sealed, Gel Traction and Lithium batteries

Active PFC

CURRENT						
12 V	10 A 13 A	25 A		27 A	30 A	50 A
24 V	10 A	25 A	15 A 20 A 25 A 30 A	27 A	30 A	50 A
36 V		15 A 20 A		18 A	20 A	30 A
48 V		12 A 15 A 17 A	7.5 A 10 A 12.5 A 15 A	13.5 A	15 A	25 A

HF1-IP

HF2-UI-PFC

TORO 720

TORO 800

TORO 1000

TORO 1200





# HF-IP

## Main features:

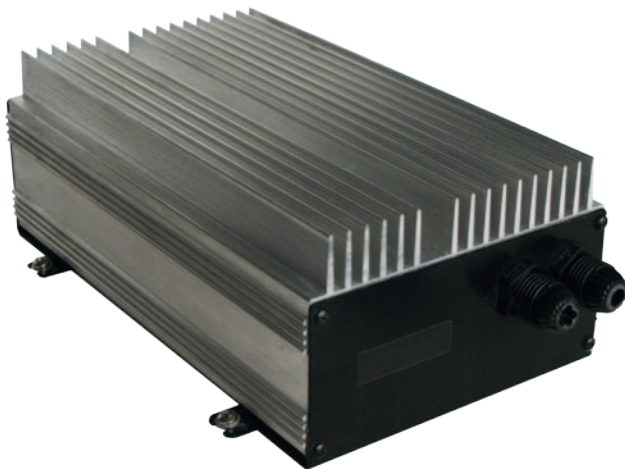
Integrated battery discharge indicator

Fan less design

IP 55 (optional IP65)

Power from 155W up to 240W

Current from 10A to 13A



**DIMENSIONS (LxWxH):** 152x225x84 mm – 5.98x8.86x3.31 in

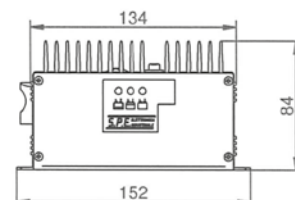
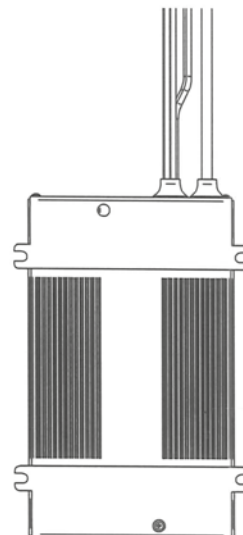
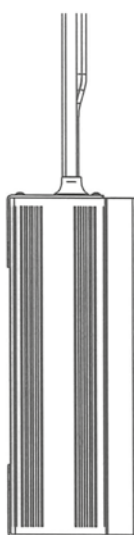
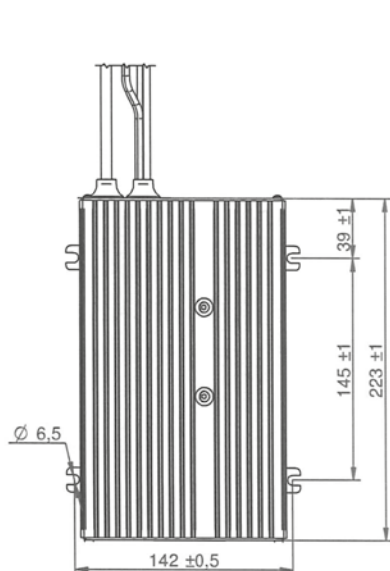
**WEIGHT:** 3,00 Kg - 6.61 lbs

**PROTECTION GRADE** IP55

**INPUT VOLTAGE:** Universal 100 ÷ 240 Vac – 50-60 Hz



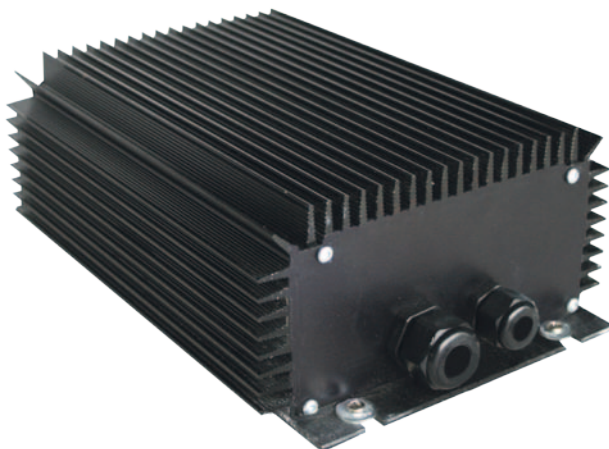
Battery Voltage	Battery Range		Charging Current	Model
	5h	20h		
12V	60 ÷ 100 Ah	70 ÷ 130 Ah	10A	12-10
	80 ÷ 130 Ah	90 ÷ 150 Ah	13A	12-13
24V	60 ÷ 100 Ah	70 ÷ 130 Ah	10A	24-10







# HF2-UI-PFC



## Main features:

Fan less design

IP66

External charging indicator

Power from 360W up to 720W

Current from 15A to 25A

Available in 24V, 36V or 48V

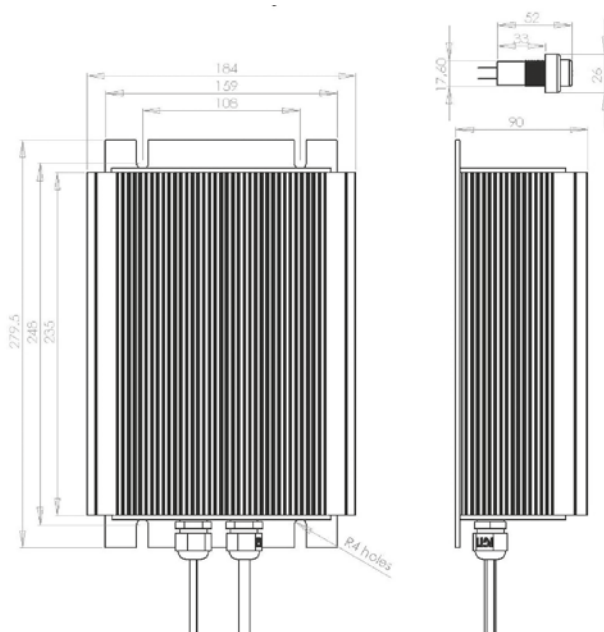
DIMENSIONS (LxWxH): 279,50x184x90 mm – 11x7.24x3.54 in

WEIGHT: 4,50 Kg - 9.92 lbs

PROTECTION GRADE IP66

INPUT VOLTAGE: 220 ÷ 240 Vac – 50-60Hz

Battery Voltage	Battery Range		Charging Current	Model
	5h	20h		
24	175 ÷ 270 Ah	210 ÷ 315 Ah	25A	24-25
	100 ÷ 150 Ah	130 ÷ 180 Ah	15A	36-15
36	120 ÷ 195 Ah	150 ÷ 235 Ah	20A	36-20
	85 ÷ 135 Ah	105 ÷ 165 Ah	12A	48-12
48	100 ÷ 150 Ah	130 ÷ 180 Ah	15A	48-15
	110 ÷ 180 Ah	140 ÷ 220 Ah	17A	48-17





# TORO 720



## Main features:

Reduced weight and dimensions

Power from 360W up to 720W

Current from 15A to 30A

IP66

**DIMENSIONS (LxWxH):** 267 x 189 x 81mm - 10.51 x 7.44 x 3.18 in

**WEIGHT:** 4.1 Kg - 9,039 lbs

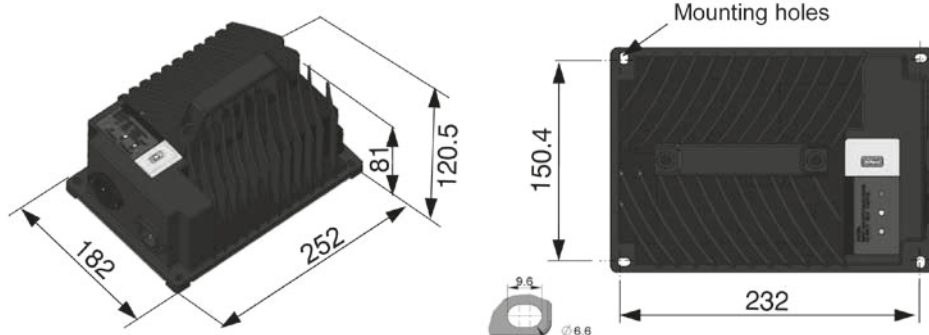
**PROTECTION GRADE:** IP66 (enclosure)

**INPUT VOLTAGE:** Universal 100 ÷ 240 Vac – 50-60 Hz

Battery Voltage	Battery Range (5h)		Battery Range (20h) 10-12 hours charging time	Charging Current	Model
	8-9 hours charging time	10-12 hours charging time			
24V	80 ÷ 110 Ah	100 ÷ 150 Ah	130 ÷ 185 Ah	15A	24-15
	95 ÷ 120 Ah	120 ÷ 195 Ah	150 ÷ 240 Ah	20A	24-20
	120 ÷ 160 Ah	180 ÷ 260 Ah	220 ÷ 315 Ah	25A	24-25
	145 ÷ 180 Ah	200 ÷ 280 Ah	245 ÷ 350 Ah	30A	24-30
48V	40 ÷ 55 Ah	50 ÷ 75 Ah	65 ÷ 93 Ah	7.5A	48-7.5
	48 ÷ 60 Ah	60 ÷ 98 Ah	75 ÷ 140 Ah	10A	48-10
	60 ÷ 80 Ah	90 ÷ 130 Ah	110 ÷ 158 Ah	12.5A	48-12.5
	73 ÷ 90 Ah	100 ÷ 140 Ah	123 ÷ 175 Ah	15A	48-15

Electrical	
Input	100 ~ 240Vac, 50/60Hz
Output	24Vdc/30A; 48Vdc/15A
Efficiency	Up to 92%
Communication	CAN 2.0 BLE(*)
Operation Interface	3 LED
Mechanical	
Dimension	267 x 189 x 81(H)mm - 10.51 x 7.44 x 3.18 in
Weight (Kg)	4.1 Kg - 9,039 lbs
AC input connector	AC Male C16
DC output connector	JONHON ICA-BY20F0200J, 2pins
Communication connector	Amphenol CD-10PMMS-QC8001, 10pins
Mounting holes	M6 diameter slots
Environmental	
IP Level	IP66 (enclosure)
Shock & Vibration	ISO 16750-3
Operation Temp.	-40 ~ 65°C
Storage Temp.	-40 ~ 85°C
Regulatory	
Safety	Can Comply with UL 1564/ IEC 60335-2-29 / CSA C22.2 • Reverse polarity protection, OTP, OCP, OVP, Charge timeout protection • * BLE for charging monitor and data log • Battery temperature sensor • Remote LED (otp.) • Interlock (1A)
Design Features	

\*BLE for charging monitor, data log, profiles setting.





# TORO 800



## Main features:

Fan less design

IP66

Integrated or external charging indicator

Power from 325W up to 650W

Current from 13,5A to 27A

Available in 12V, 24V, 36V or 48V

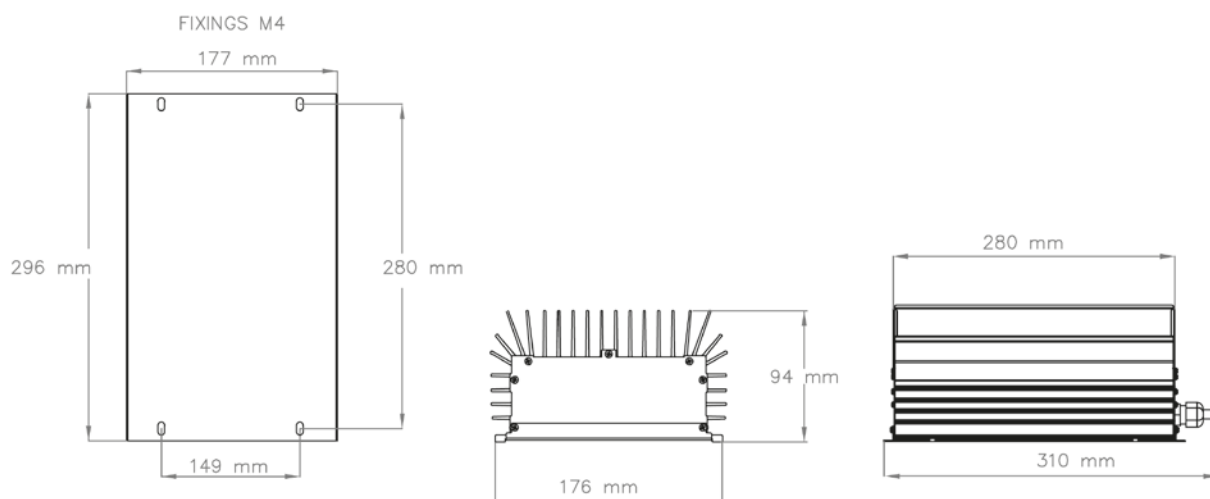
**DIMENSIONS (LxWxH):** 296x94x149mm – 11.65x3.70x5.86 in

**WEIGHT:** 3,60 Kg - 79.37 lbs

**PROTECTION GRADE** IP66

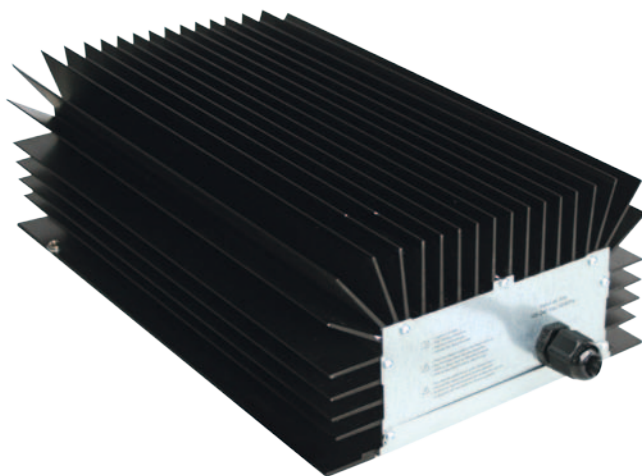
**INPUT VOLTAGE:** Universal 100 ÷ 240 Vac – 50-60 Hz

Battery Voltage	Battery Range		Charging Current	Model
	5h	20h		
12	190 ÷ 230 Ah	238 ÷ 288 Ah	27A	12-27
24	190 ÷ 230 Ah	238 ÷ 288 Ah	27A	24-27
36	125 ÷ 155 Ah	157 ÷ 194 Ah	18A	36-18
48	95 ÷ 115 Ah	118 ÷ 144 Ah	13,5A	48-13,5





# TORO 1000



#### Main features:

Fan less design

IP65

Integrated or external charging indicator

Power from 360W up to 720W

Current from 15A to 30A

Available in 12V, 24V, 36V or 48V

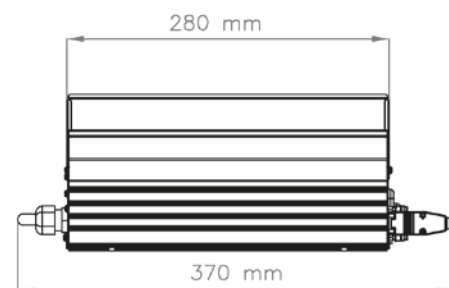
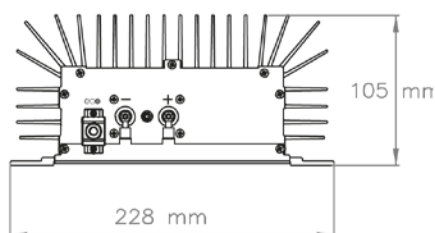
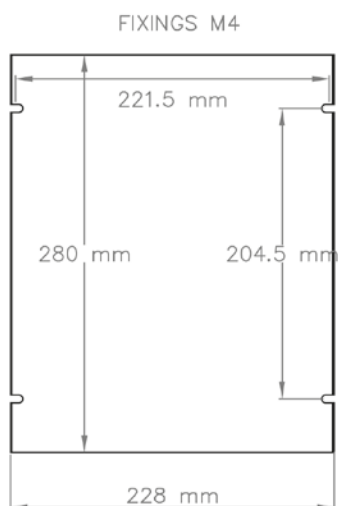
DIMENSIONS (LxWxH): 280x105x228mm – 11.02x4.13x8.98 in

WEIGHT: 4,80 Kg - 10.58 lbs

PROTECTION GRADE IP65

INPUT VOLTAGE: Universal 100 ÷ 240 Vac – 50-60 Hz

Battery Voltage	Battery Range		Charging Current	Model
	5h	20h		
12	200÷280 Ah	245÷350 Ah	30A	12-30
24	200÷280 Ah	245÷350 Ah	30A	24-30
36	120÷195 Ah	150÷240 Ah	20A	36-20
48	100÷150 Ah	130÷185 Ah	15A	48-15





# TORO I200



## Main features:

IP65 external ventilator  
Integrated or external charging indicator  
Power from 720W up to 1200W  
Current from 30A to 50A  
Available in 12V, 24V, 36V or 48V

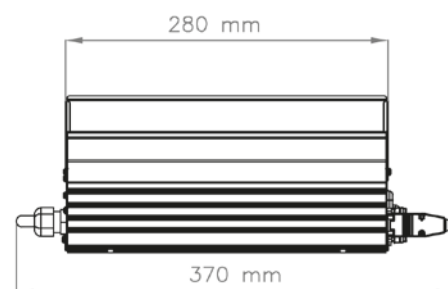
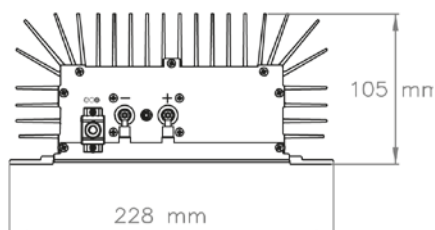
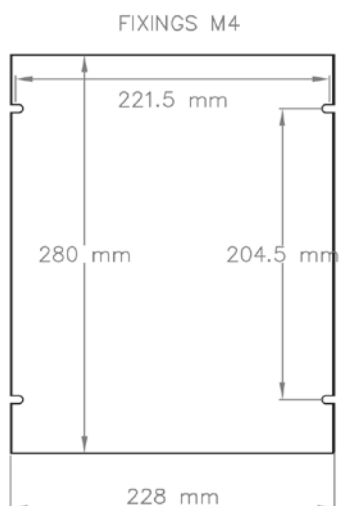
**DIMENSIONS (LxWxH):** 280x105x228mm – 11.02x4.13x8.98 in

**WEIGHT:** 5,50 Kg - 12.13 lbs

**PROTECTION GRADE** IP65

**INPUT VOLTAGE:** Universal 100 ÷ 240 Vac – 50-60 Hz

Battery Voltage	Battery Range		Charging Current	Model
	5h	20h		
12	350 ÷ 420 Ah	420 ÷ 540 Ah	50A	12-50
24	350 ÷ 420 Ah	420 ÷ 540 Ah	50A	24-50
36	255 ÷ 320 Ah	310 ÷ 390 Ah	30A	36-30
48	175 ÷ 210 Ah	210 ÷ 270 Ah	25A	48-25





# CBHD SERIES



Single-phase battery chargers

High frequency system with advanced technology

Lightweight & compact

Essential design

Universal input voltage 100 Vac ÷ 240 Vac,  
50 Hz ÷ 60 Hz

Voltage 12V or 24V

On-board or stand-alone use

High efficiency

Charging process fully controlled by  
microprocessor

Suitable for Lead-Acid, Sealed and Gel  
Traction batteries

Customizable charging curves

Remote LED option

Data recording option

CURRENT					
12 V	2,5 A 5 A	8 A 10 A	13 A	15 A 20 A	25 A
24 V	2,5 A 5 A	8 A 10 A	13 A	15 A 20 A	25 A

CBHD1 COMPACT

CBHD1 SMALL

CBHD1-XR-P  
CBHD1-XR-M

CBHD2

CBHD3



# CBHD1 COMPACT



## Main features:

Reduced weight and dimensions

Power from 30W up to 120W

Current from 2,5A to 5A

Available with Led on side or Led on top

DIMENSIONS (LxWxH): 134x125x60 mm - 5.28x4.92x2.36 in

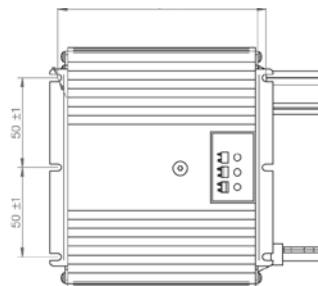
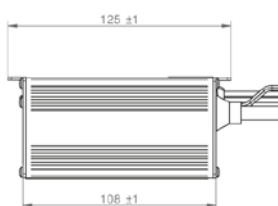
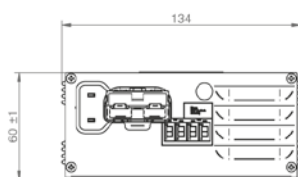
WEIGHT: 1,20 Kg - 2.65 lbs

PROTECTION GRADE IP30

INPUT VOLTAGE: Universal 100 ÷ 240 Vac – 50-60 Hz



Battery Voltage	Battery Range		Charging Current	Model
	5h	20h		
12V	10 ÷ 25 Ah	15 ÷ 30 Ah	2,5A	12-2,5
	20 ÷ 50 Ah	30 ÷ 60 Ah	5A	12-5
24V	10 ÷ 25 Ah	15 ÷ 30 Ah	2,5A	24-2,5
	20 ÷ 50 Ah	30 ÷ 60 Ah	5A	24-5







# CBHD1 SMALL

## Main features:

Reduced weight and dimensions

Power from 30W up to 120W

Current from 8A to 10A

Available with Led on side or Led on top



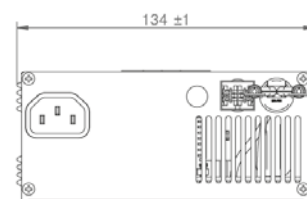
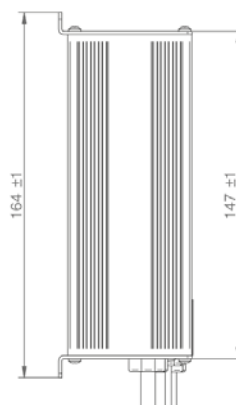
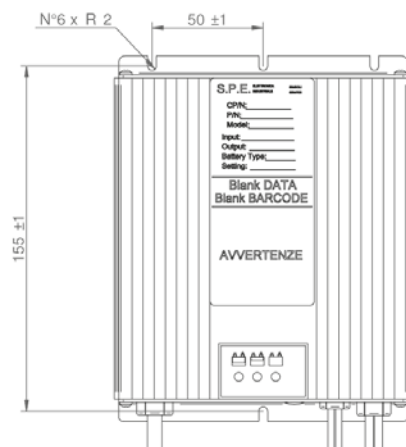
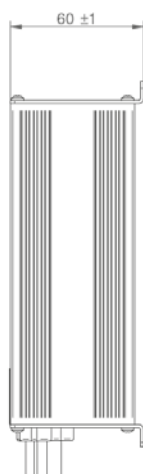
DIMENSIONS (LxWxH): 134x164x60 mm – 5.28x6.46x2.36 in

WEIGHT: 1,80 Kg - 3.97 lbs

PROTECTION GRADE IP30

INPUT VOLTAGE: Universal 100 ÷ 240 Vac – 50-60 Hz

Battery Voltage	Battery Range		Charging Current	Model
	5h	20h		
12V	40 ÷ 80 Ah	60 ÷ 105 Ah	8A	12-8
	60 ÷ 100 Ah	70 ÷ 130 Ah	10A	12-10
24V	40 ÷ 80 Ah	60 ÷ 105 Ah	8A	24-8
	60 ÷ 100 Ah	70 ÷ 130 Ah	10A	24-10





# CBHD1-XR-P



## Main features:

Advanced and innovative resonant technology

Power from 95W up to 360W

Current from 8A to 13A

Active PFC

Available in plastic and aluminum case

**DIMENSIONS (LxWxH):** 142x202x62 mm

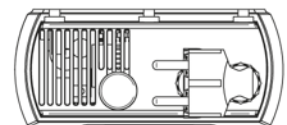
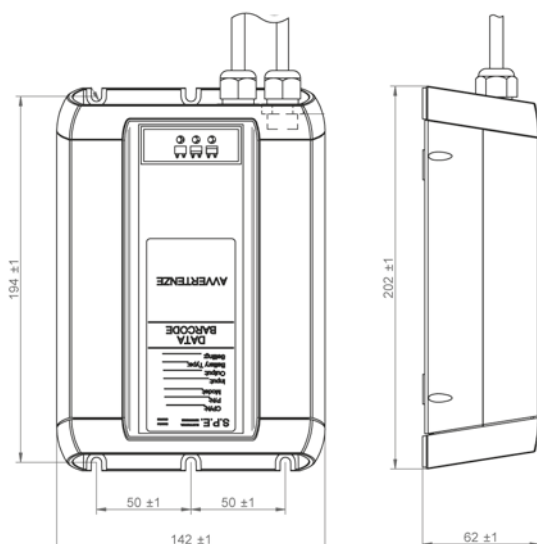
5.59x7.95x2.44 in

**WEIGHT:** 1,80 Kg – 3.97 LBS

**PROTECTION GRADE** IP30

**INPUT VOLTAGE:** Universal 100 ÷ 240 Vac – 50-60 Hz

Battery Voltage	Battery Range		Charging Current	Model
	5h	20h		
12V	40 ÷ 80 Ah	60 ÷ 105 Ah	8A	12-8
	80 ÷ 130 Ah	90 ÷ 150 Ah	13A	12-13
24V	40 ÷ 80 Ah	60 ÷ 105 Ah	8A	24-8
	80 ÷ 130 Ah	90 ÷ 150 Ah	13A	24-13





# CBHD1-XR-M



## Main features:

Reduced weight and dimensions

Power from 30W up to 120W

Current from 8A to 10A

Available with Led on side or Led on top

DIMENSIONS (LxWxH): 134x164x60 mm

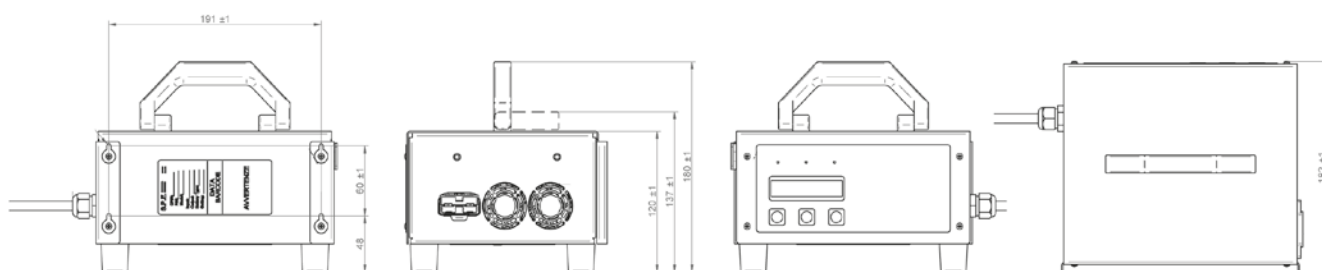
5.28x6.46x2.36 in

WEIGHT: 1,80 Kg - 3.97 lbs

PROTECTION GRADE IP30

INPUT VOLTAGE: Universal 100 ÷ 240 Vac – 50-60 Hz

Battery Voltage	Battery Range		Charging Current	Model
	5h	20h		
12V	40 ÷ 80 Ah	60 ÷ 105 Ah	8A	12-8
	60 ÷ 100 Ah	70 ÷ 130 Ah	10A	12-10
	80 ÷ 130 Ah	90 ÷ 150 Ah	13A	12-13
24V	40 ÷ 80 Ah	60 ÷ 105 Ah	8A	24-8
	60 ÷ 100 Ah	70 ÷ 130 Ah	10A	24-10
	80 ÷ 130 Ah	90 ÷ 150 Ah	13A	24-13





# CBHD2



## Main features:

Reduced weight and dimensions

Power from 180W up to 480W

Current from 15A to 20A

Available with Led on side or Led on top

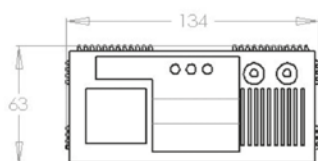
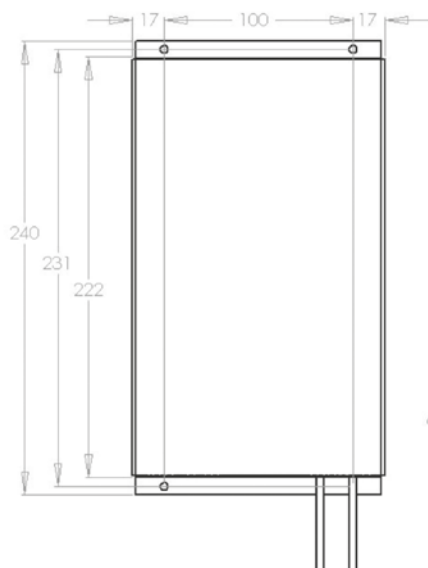
**DIMENSIONS (LxWxH):** 134x240x63 mm – 5.28x9.45x2.48 in

**WEIGHT:** 2,20 Kg - 4.85 lbs

**PROTECTION GRADE** IP30

**INPUT VOLTAGE:** Universal 100 ÷ 240 Vac – 50-60 Hz

Battery Voltage	Battery Range		Charging Current	Model
	5h	20h		
12V	100 ÷ 150 Ah	130 ÷ 180 Ah	15A	12-15
	120 ÷ 195 Ah	150 ÷ 235 Ah	20A	12-20
24V	100 ÷ 150 Ah	130 ÷ 180 Ah	15A	24-15
	120 ÷ 195 Ah	150 ÷ 235 Ah	20A	24-20





# CBHD3

## Main features:

Reduced weight and dimensions

Power from 180W up to 600W

Current from 15A to 25A

Available in plastic and metal case

(ON-BOARD use only)



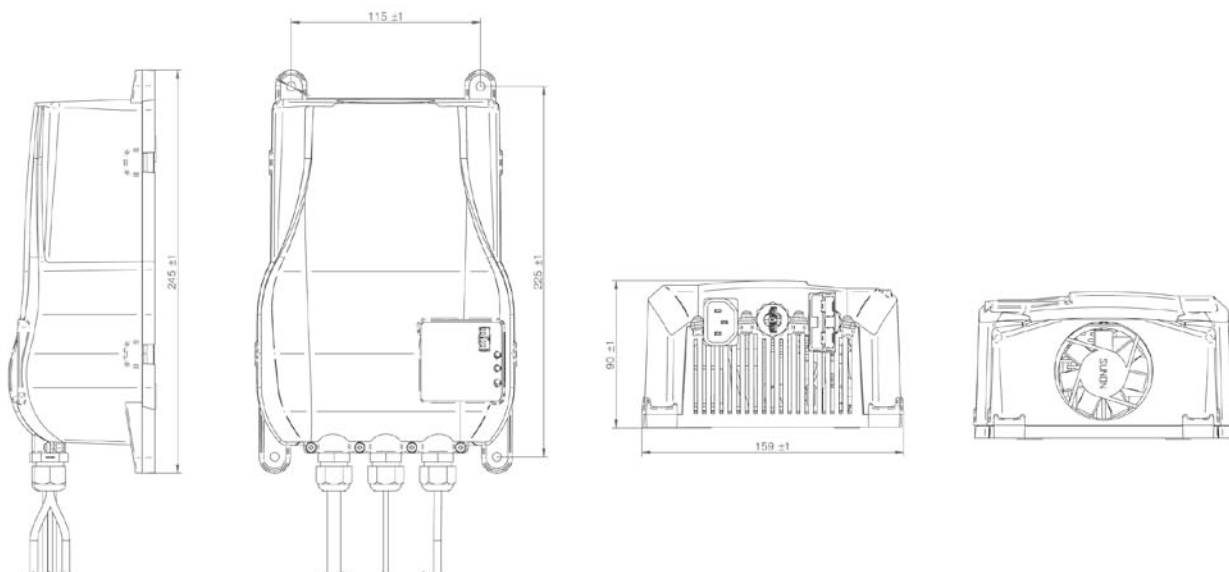
**DIMENSIONS (LxWxH):** 160x245x90 mm – 6.30x9.65x3.54 in

**WEIGHT:** 1,90 Kg - 4.19 lbs

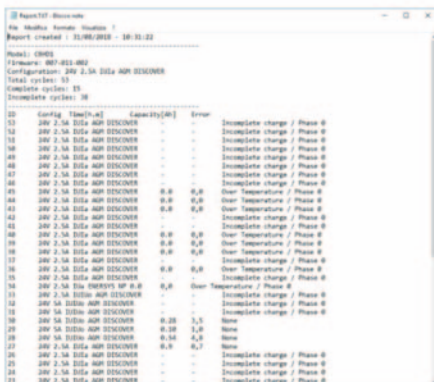
**PROTECTION GRADE** IP30

**INPUT VOLTAGE:** Universal 100 ÷ 240 Vac – 50-60 Hz

Battery Voltage	Battery Range		Charging Current	Model
	5h	20h		
12V	100 ÷ 150 Ah	130 ÷ 180 Ah	15A	12-15
	120 ÷ 195 Ah	150 ÷ 240 Ah	20A	12-20
	180 ÷ 260 Ah	220 ÷ 315 Ah	25A	12-25
24V	100 ÷ 150 Ah	130 ÷ 180 Ah	15A	24-15
	120 ÷ 195 Ah	150 ÷ 240 Ah	20A	24-20
	180 ÷ 260 Ah	220 ÷ 315 Ah	25A	24-25



# CBHD series Software



## DATA LOGGING OPTION

Capability to log up to 100 charging cycles in order to analyze battery performances and usage by the customer. All data are available through SPE Reader software on dedicated chargers (included). TTL JACK/USB serial cable is required for download (P/N 589-001).

## SPE READER SOFTWARE

Through SPE Reader software, connecting PC and charger using TTL-232R-5V-AJ JACK/USB cable, allows to download on a simple .txt file charging data including Ah, time of charge, incomplete cycles and charger configuration. The software is STAND-ALONE and does not require any installation. Works with any Windows® installation.



## TTL JACK/USB SERIAL CABLE

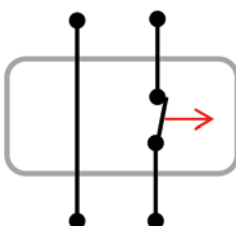
USB to JACK 3.5mm data cable which connects PC to charger. To be ordered separately (P/N 589-001).



## CAN BUS OPTION

CAN BUS option to remotely read/write data from/to the charger. This includes configuration change and parameters' reading (voltage, current, charging profile and charging phase). CAN Open sub-dictionary available.

Option available on selected models.



## INHIBIT RELAY (IMMOBILIZER)

ON-BOARD charger option to disable usage of the machine during the charging phase (NC contact).

NA contact available on request.



## LBF CHARGE/DISCHARGE OPTION

ON-BOARD option that shows both charging status (during charging phase) and battery level (during discharging phase). It can be ordered with internal LEDs or external remote LEDs.

## ELECTRONIC REMOTE MICRO-INDICATOR

External LED charging/discharging indicators which provide charge/discharge status remotely.

Available in different sized and cable lengths.



### LBF318EZ

18 mm round LED indicator.

Replacement P/N 714-000



### LBF30EZ

22x30 mm LED indicator.

Replacement P/N 724-000



### SKLED

52x16 mm built-in LED indicator

Replacement P/N 726-000



### CBNLED

83x11.50 mm built-in LED indicator.

Replacement P/N 725-100





# CBSW SERIES



Single-phase battery chargers

High frequency advanced Mosfet technology

Input insulation transformer

High brightness digital display

Efficiency over 85%



Programmable for charging curve, charging current and battery voltage via dip switch

STAND-ALONE application

Suitable for Lead-Acid, Sealed and Gel Traction



CURRENT			
12 V	4 A 8 A 10 A 12 A	15 A 20 A 25 A 30 A	40 A 50 A 60 A
24 V	4 A 8 A 10 A 12 A	15 A 20 A 25 A 30 A	40 A 50 A 60 A
36 V		20 A 25 A	30 A 40 A 50 A 60 A
48 V		20 A	25 A

 CBSW1-S

 CBSW2-S

 CBSW4-S



# CBSW1-S



## Main features:

Power from 48W up to 290W  
Voltage 12V and 24V selectable  
Current from 4A to 12A  
Fan less design

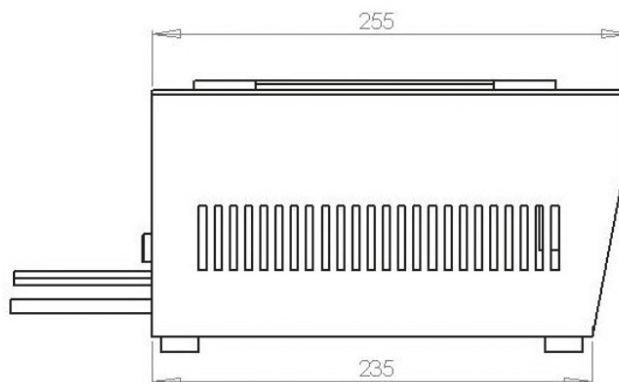
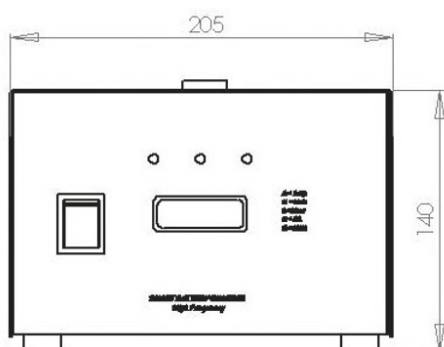
**DIMENSIONS (LxWxH):** 205x255x140 mm  
8.07x10.04x5.51 in

**WEIGHT:** 5,90-9,60 Kg – 13.01-21.16 lbs

**PROTECTION GRADE** IP20

**INPUT VOLTAGE:** 115/240 Vac – 50-60 Hz

Battery Voltage	Battery Range		Charging Current	Model
	5h	20h		
12V	20 ÷ 40 Ah	30 ÷ 50 Ah	4A	12-4
	40 ÷ 80 Ah	60 ÷ 105 Ah	8A	12-8
	60 ÷ 100 Ah	70 ÷ 130 Ah	10A	12-10
	90 ÷ 120 Ah	120 ÷ 160 Ah	12A	12-12
24V	20 ÷ 40 Ah	30 ÷ 50 Ah	4A	24-4
	40 ÷ 80 Ah	60 ÷ 105 Ah	8A	24-8
	60 ÷ 100 Ah	70 ÷ 130 Ah	10A	24-10
	90 ÷ 120 Ah	120 ÷ 160 Ah	12A	24-12





# CBSW2-S



## Main features:

Power from 180W up to 1050W

Voltage 12V, 24V, 36V and 48V selectable

Current from 15A to 40A

**DIMENSIONS (LxWxH):** 404x355x195 mm

15.91x13.98x7.68 in

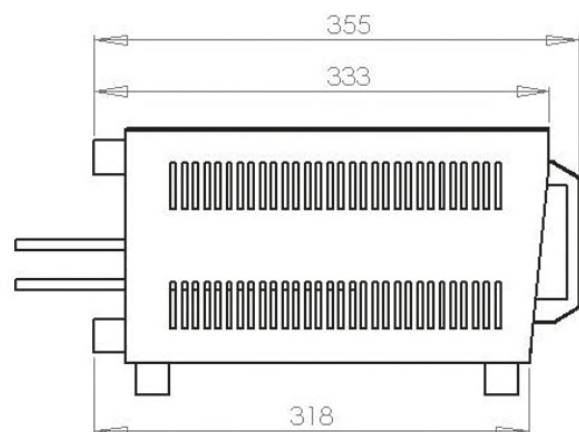
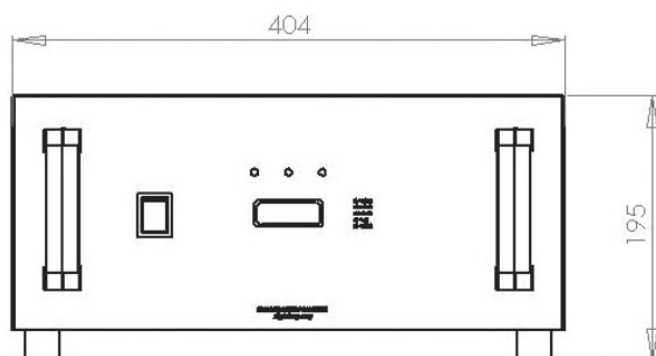
**WEIGHT:** 15,80-22,80 Kg – 34.83-50.27 lbs

**PROTECTION GRADE** IP20

**INPUT VOLTAGE:** 115/240 Vac – 50-60 Hz



Battery Voltage	Battery Range		Charging Current	Model
	5h	20h		
12V	100 ÷ 150 Ah	130 ÷ 180 Ah	15A	12-15
	120 ÷ 195 Ah	150 ÷ 235 Ah	20A	12-20
	180 ÷ 240 Ah	240 ÷ 320 Ah	25A	12-25
	260 ÷ 320 Ah	340 ÷ 425 Ah	30A	12-30
	100 ÷ 150 Ah	130 ÷ 180 Ah	15A	24-15
24V	120 ÷ 195 Ah	150 ÷ 235 Ah	20A	24-20
	180 ÷ 240 Ah	240 ÷ 320 Ah	25A	24-25
	260 ÷ 320 Ah	340 ÷ 425 Ah	30A	24-30
	120 ÷ 180 Ah	155 ÷ 210 Ah	20A	36-20
36V	180 ÷ 240 Ah	240 ÷ 320 Ah	25A	36-25
48V	120 ÷ 195 Ah	150 ÷ 235 Ah	20A	48-20





# CBSW4-S



## Main features:

Voltage, current and charging profile  
configurable with smart cards (provided separately)  
Power from 480W up to 2160W  
Voltage 12V, 24V, 36V and 48V  
Current from 40A to 60A

DIMENSIONS (LxWxH): 485x505x245 mm

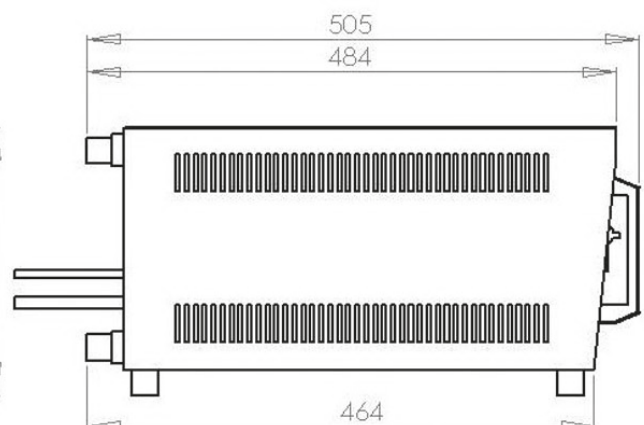
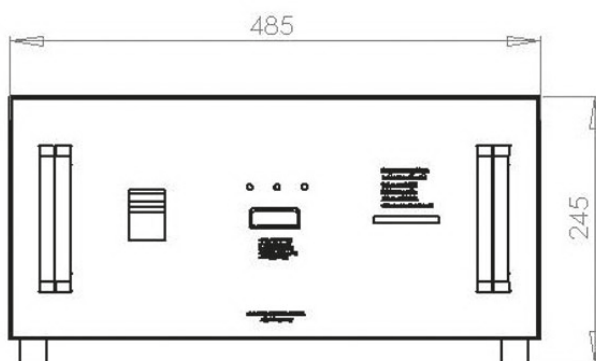
19.09x19.88x9.65 in

WEIGHT: 36,40-49 Kg – 80.25-108 lbs

PROTECTION GRADE IP20

INPUT VOLTAGE: 240 Vac – 50-60 Hz

Battery Voltage	Battery Range		Charging Current	Model
	5h	20h		
12V	300 + 360 Ah	370 + 450 Ah	40A	12-40
	360 + 440 Ah	420 + 540 Ah	50A	12-50
	450 + 550 Ah	560 + 650 Ah	60A	12-60
24V	300 + 360 Ah	370 + 450 Ah	40A	24-40
	360 + 440 Ah	420 + 540 Ah	50A	24-50
	450 + 550 Ah	560 + 650 Ah	60A	24-60
36V	260 + 320 Ah	340 + 425 Ah	30A	36-30
	300 + 360 Ah	370 + 450 Ah	40A	36-40
	360 + 440 Ah	420 + 540 Ah	50A	36-50
	450 + 550 Ah	505 + 675 Ah	60A	36-60
48V	285 + 360 Ah	335 + 450 Ah	40A	48-40







# CBN SERIES



Single-phase battery chargers

Thyristor control and excellent reliability  
(Silicon Controlled Rectifier)

Wa & IU charging profiles available

Constant voltage during U charging phases

Suitable for Lead Acid batteries

Analog current meter



CURRENT			
12 V	4 A	15 A	40 A
	8 A	20 A	50 A
	10 A	25 A	60 A
	12 A	30 A	
24 V	4 A	15 A	40 A
	8 A	20 A	50 A
	10 A	25 A	60 A
	12 A	30 A	
36 V		20 A	25 A
			30 A
			40 A

■ CBN1

■ CBN2

■ CBN4



# CBN1



## Main features:

Power from 48W up to 290W

Voltage 12V and 24V

Current from 4A to 12A

Handle on top for easy carry

**DIMENSIONS (LxWxH):** 205x255x140 mm

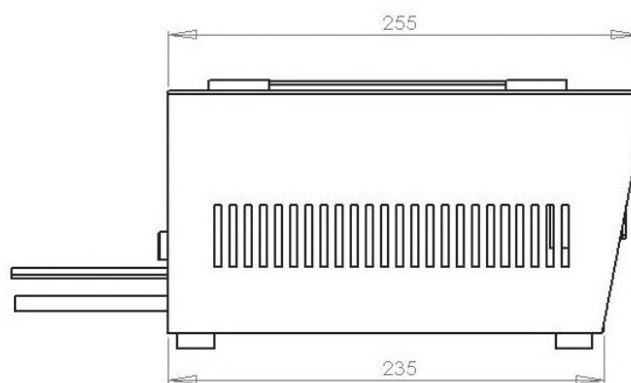
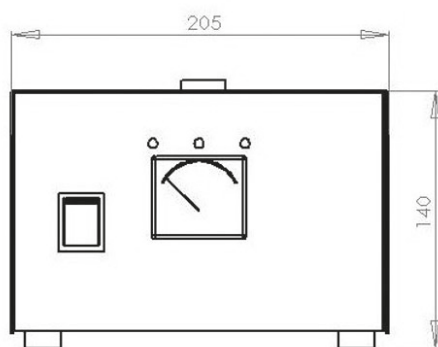
8.07x10.04x5.51 in

**WEIGHT:** 5.9 Kg – 11.02-19.84 lbs

**PROTECTION GRADE** IP20

**INPUT VOLTAGE:** 240 Vac – 50-60 Hz

Battery Voltage	Battery Range		Charging Current	Model
	5h	20h		
12V	20 ÷ 40 Ah	30 ÷ 50 Ah	4A	12-4
	40 ÷ 60 Ah	50 ÷ 70 Ah	8A	12-8
	60 ÷ 90 Ah	70 ÷ 120 Ah	10A	12-10
	80 ÷ 105 Ah	95 ÷ 140 Ah	12A	12-12
24V	20 ÷ 40 Ah	30 ÷ 50 Ah	4A	24-4
	40 ÷ 60 Ah	50 ÷ 70 Ah	8A	24-8
	60 ÷ 90 Ah	70 ÷ 120 Ah	10A	24-10
	80 ÷ 105 Ah	95 ÷ 140 Ah	12A	24-12







# CBN2



## Main features:

Power from 180W up to 720W

Voltage 12V, 24V and 36V

Current from 15A to 30A

Front handles for easy carry

**DIMENSIONS (LxWxH):** 404x355x195 mm

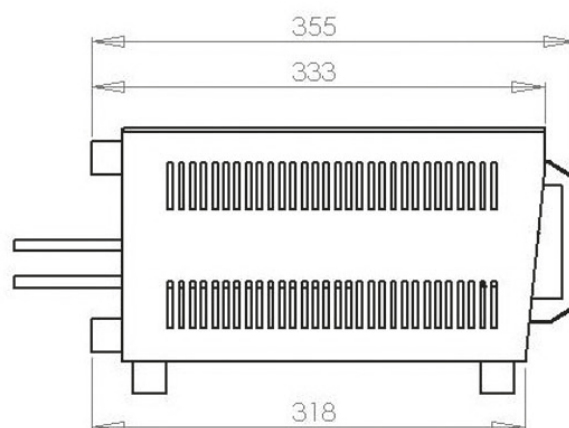
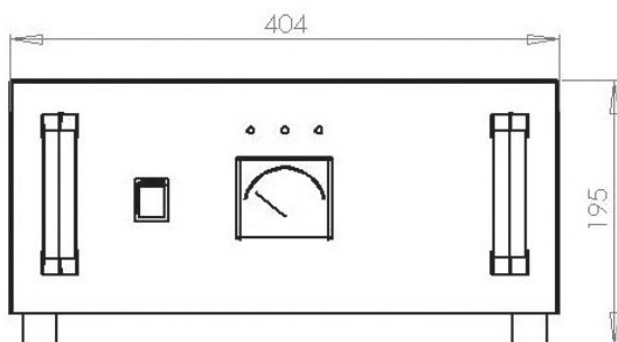
15.91x13.98x7.68 in

**WEIGHT:** 14,60-22,80 Kg –32.19-50.27 lbs

**PROTECTION GRADE** IP20

**INPUT VOLTAGE:** 240 Vac – 50-60 Hz

Battery Voltage	Battery Range		Charging Current	Model
	5h	20h		
12V	100 ÷ 120 Ah	105 ÷ 160 Ah	15A	12-15
	120 ÷ 180 Ah	155 ÷ 210 Ah	20A	12-20
	160 ÷ 200 Ah	200 ÷ 290 Ah	25A	12-25
	200 ÷ 260 Ah	250 ÷ 330 Ah	30A	12-30
24V	100 ÷ 120 Ah	105 ÷ 160 Ah	15A	24-15
	120 ÷ 180 Ah	155 ÷ 210 Ah	20A	24-20
	160 ÷ 200 Ah	200 ÷ 290 Ah	25A	24-25
	200 ÷ 260 Ah	250 ÷ 330 Ah	30A	24-30
36V	120 ÷ 180 Ah	155 ÷ 210 Ah	20A	36-20





# CBN4



## Main features:

Power from 480W up to 1800W

Voltage 12V, 24V and 36V

Current from 40A to 60A

Front handles for easy carry

**DIMENSIONS (LxWxH):** 485x505x245 mm

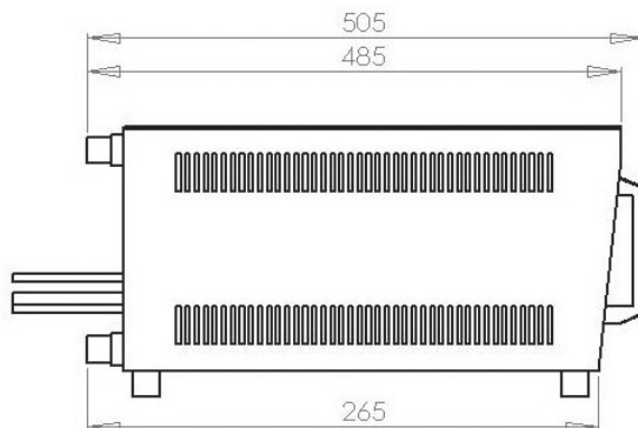
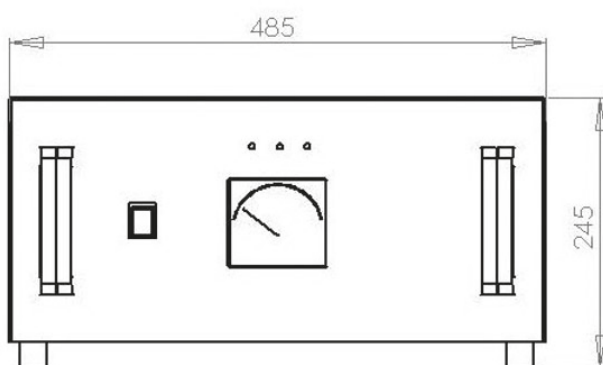
19.09x19.88x10 in

**WEIGHT:** 29,50-44,20 Kg – 65.04-97.44 lbs

**PROTECTION GRADE** IP20

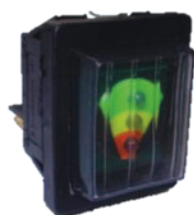
**INPUT VOLTAGE:** 240 Vac – 50-60 Hz

Battery Voltage	Battery Range		Charging Current	Model
	5h	20h		
12V	300 + 360 Ah	370 + 450 Ah	40A	12-40
	350 + 420 Ah	420 + 540 Ah	50A	12-50
	450 + 520 Ah	560 + 650 Ah	60A	12-60
24V	300 + 360 Ah	370 + 450 Ah	40A	24-40
	350 + 420 Ah	420 + 540 Ah	50A	24-50
	450 + 520 Ah	560 + 650 Ah	60A	24-60
36V	160 + 200 Ah	200 + 290 Ah	25A	36-25
	200 + 260 Ah	250 + 330 Ah	30A	36-30
	300 + 360 Ah	370 + 450 Ah	40A	36-40



*Note*

# Accessories



## BATTERY LEVEL INDICATOR LBF

3 LEDs battery level indicator, provides real-time information on autonomy and charger reserves and allows to interrupt discharging phase. Available for different battery types and voltages.

- 711-001 Battery Level Indicator LBF318 12V, Wet
- 711-004 Battery Level Indicator LBF318 12V, Gel
- 711-011 Battery Level Indicator LBF318 24V, Wet
- 711-014 Battery Level Indicator LBF318 24V, Gel
- 712-021 Battery Level Indicator LBF318 36V, Wet
- 712-024 Battery Level Indicator LBF318 36V, Gel
- 712-031 Battery Level Indicator LBF318 48V, Wet
- 712-034 Battery Level Indicator LBF318 48V, Gel
- 721-001 Battery Level Indicator LBF3Q 12V, Wet
- 721-004 Battery Level Indicator LBF3Q 12V, Gel
- 721-011 Battery Level Indicator LBF3Q 24V, Wet
- 721-014 Battery Level Indicator LBF3Q 24V, Gel
- 722-021 Battery Level Indicator LBF3Q 36V, Wet
- 722-031 Battery Level Indicator LBF3Q 48V, Wet



## BATTERY LEVEL INDICATOR uLBF

High precision display for battery charge level. Available in standard version, with locking relay and/or hour meter.

- 700-001 Battery Level Indicator uLBF52 12-48V, Wet (1.68VPC)
- 700-004 Battery Level Indicator uLBF52 12-48V, Gel (1.82VPC)
- 701-001 Battery Level Indicator uLBF52R 12-48V, Wet (1.68VPC)
- 701-002 Battery Level Indicator uLBF52R 12-48V, Wet (1.73VPC)
- 701-004 Battery Level Indicator uLBF52R 12-48V, Gel (1.82VPC)
- 702-001 Battery Level Indicator uLBF52C 12-48V, Wet (1.68VPC)
- 702-004 Battery Level Indicator uLBF52C 12-48V, Gel (1.82VPC)
- 703-001 Battery Level Indicator uLBF52RC 12-48V, Wet (1.68VPC)
- 703-003 Battery Level Indicator uLBF52RC 12-48V, Gel (1.78VPC)
- 703-004 Battery Level Indicator uLBF52RC 12-48V, Gel (1.82VPC)
- 703-042 Battery Level Indicator uLBF52RC 12-48V, Wet (1.73VPC)

Available cut off (on request):

Position	0	1	2	3	4	5	6	7
VPC	1.63	1.68	1.73	1.76	1.82	1.84	1.86	1.89



## BATTERY MAIN SWITCH

Single-pole battery main switch with extractable lever, with 24V max nominal voltage and 100A max direct current.

Available in different models.



## KEY SWITCH

Universal key switch with commutable current 5A at 24V DC.

Available in different key extraction (0 and 1 position) and with or without cap .

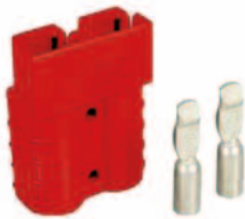
- 780-000 Key Switch KS0-VC (Various combinations)
- 780-005 Key Switch KS0-SC (Single combination)
- 780-007 Key Switch KS0-SC w/cap
- 780-015 Key Switch KS01-SC



## AC/DC HOUR METER

Hour meter for both AC and DC input voltages, from 5V to 80V, non-sensitive to polarity input, with modern LCD display, completely potted and sealed.

# Accessories



## BATTERY CONNECTOR

Connectors for battery cables, in different dimension and colors.

- 359-011 Connector SB350 Red w/ contacts AWG1/0 ~ 50mm<sup>2</sup>
- 359-016 Connector SB350 Grey w/ contacts AWG1/0 ~ 50mm<sup>2</sup>
- 359-017 Connector SB350 Grey w/ contacts AWG2/0 ~ 70mm<sup>2</sup>
- 359-021 Connector SB350 Blue w/ contacts AWG1/0 ~ 50mm<sup>2</sup>
- 359-035 Contact SB350 AWG1/0 ~ 50mm<sup>2</sup>
- 359-036 Contact SB350 AWG2/0 ~ 50mm<sup>2</sup>
- 359-057 Connector SBE160 Red w/contacts AWG2 ~ 35mm<sup>2</sup>
- 359-058 Connector SBE160 Red w/ contacts AWG1/0 ~ 50mm<sup>2</sup>
- 359-060 Connector SBE160 Grey w/contacts AWG2 ~ 35mm<sup>2</sup>
- 359-061 Connector SBE160 Grey w/contacts AWG1/0 ~ 50mm<sup>2</sup>
- 359-066 Connector SBE160 Green w/contacts AWG2 ~ 35mm<sup>2</sup>
- 359-071 Contact SBE160 AWG2 ~ 35mm<sup>2</sup>
- 359-072 Contact SBE160 AWG1/0 ~ 50mm<sup>2</sup>
- 359-078 "A" Handle SBE160/SB175 Grey w/screws
- 359-079 "A" Handle SBE160/SB175 Red w/screws
- 359-113 Connector SB175 Red w/contacts AWG6 ~ 16mm<sup>2</sup>
- 359-114 Connector SB175 Red w/ contacts AWG4 ~ 25mm<sup>2</sup>
- 359-115 Connector SB175 Red w/ contacts AWG2 ~ 35mm<sup>2</sup>
- 359-117 Connector SB175 Red w/ contacts AWG1/0 ~ 50mm<sup>2</sup>
- 359-119 Connector SB175 Grey w/ contacts AWG6 ~ 16mm<sup>2</sup>
- 359-120 Connector SB175 Grey w/ contacts AWG4 ~ 25mm<sup>2</sup>
- 359-121 Connector SB175 Grey w/ contacts AWG2 ~ 35mm<sup>2</sup>
- 359-123 Connector SB175 Grey w/ contacts AWG1/0 ~ 50mm<sup>2</sup>
- 359-125 Connector SB175 Blue w/ contacts AWG6 ~ 16mm<sup>2</sup>
- 359-126 Connector SB175 Blue w/ contacts AWG4 ~ 25mm<sup>2</sup>
- 359-129 Connector SB175 Blue w/ contacts AWG1/0 ~ 50mm<sup>2</sup>
- 359-142 Contact SB175 AWG6 ~ 16mm<sup>2</sup>
- 359-143 Contact SB175 AWG4 ~ 25mm<sup>2</sup>
- 359-144 Contact SB175 AWG2 ~ 35mm<sup>2</sup>
- 359-146 Contact SB175 AWG1/0 ~ 50mm<sup>2</sup>
- 359-162 Connector SB50 Red
- 359-163 Connector SB50 Red w/ contacts AWG12-10 ~ 6mm<sup>2</sup>
- 359-165 Connector SB50 Red w/ contacts AWG8 ~ 8mm<sup>2</sup>
- 359-166 Connector SB50 Red w/ contacts AWG6 ~ 16mm<sup>2</sup>
- 359-168 Connector SB50 Grey
- 359-169 Connector SB50 Grey w/contacts AWG12-10 ~ 6mm<sup>2</sup>
- 359-171 Connector SB50 Grey w/contacts AWG8 ~ 8mm<sup>2</sup>
- 359-172 Connector SB50 Grey w/contacts AWG6 ~ 16mm<sup>2</sup>
- 359-190 Connector SB50 Black w/contacts AWG6 ~ 16mm<sup>2</sup>
- 359-195 Contact SB50 AWG6 ~ 16mm<sup>2</sup>
- 359-201 "T" Handle SB50 Red w/screws
- 359-251 Connector SB120 red w/contacts AWG6 ~ 16mm<sup>2</sup>
- 359-253 Connector SB120 red w/contacts AWG2 ~ 35mm<sup>2</sup>
- 359-255 Connector SB120 Grey
- 359-256 Connector SB120 Grey w/contacts AWG6 ~ 16mm<sup>2</sup>
- 359-257 Connector SB120 Grey w/contacts AWG4 ~ 25mm<sup>2</sup>
- 359-258 Connector SB120 Grey w/contacts AWG2 ~ 35mm<sup>2</sup>
- 359-265 Contact SB120 AWG6 ~ 16mm<sup>2</sup>
- 359-266 Contact SB120 AWG4 ~ 25mm<sup>2</sup>
- 359-267 Contact SB120 AWG2 ~ 35mm<sup>2</sup>
- 359-271 "T" Handle SB120 Red w/screws
- 359-511 Connector SBE320 Red w/ contacts AWG2 ~ 35mm<sup>2</sup>
- 359-517 Connector SBE320 Grey w/ contacts AWG2/0 ~ 70mm<sup>2</sup>
- 359-522 Connector SBE320 Blue w/ contacts AWG2/0 ~ 70mm<sup>2</sup>
- 359-551 "A" Handle SBE320 Red w/screws
- 359-561 Plug FT80 w/contacts 16mm<sup>2</sup>
- 359-563 Plug FT80 w/contacts 25mm<sup>2</sup>
- 359-580 "T" Handle FT80 Red w/screws
- 359-605 Plug DIN 80A w/contacts 25mm<sup>2</sup>
- 359-638 "A" Handle DIN 80A Grey
- 359-645 Plug DIN 160A w/contacts 25mm<sup>2</sup>
- 359-649 Plug DIN 160A w/contacts 35mm<sup>2</sup>
- 359-688 "A" Handle DIN 160A Grey
- 359-691 Plug DIN 320A w/contacts 50mm<sup>2</sup>
- 359-728 "A" Handle DIN 320A Grey



## SMART UP / SMART UP PLUS

IP54 Battery control device, it allows to check the optimal level of discharge and the complete charge cycle.

All data can be recorded and downloaded through SmartView software (provided).

SMART UP USB cable provided.

Suitable for voltage battery 24V to 96V (12V optional).

Temperature sensor and Electrolyte level sensor option (on request only for SMART UP PLUS).

Available in different models:

### SMART UP / SMART UP PLUS T200

Battery capacity 100 ÷ 340 Ah

### SMART UP / SMART UP PLUS T400

Battery capacity 350 ÷ 740 Ah

### SMART UP / SMART UP PLUS T800

Battery capacity 750 ÷ 1500 Ah



BLT 3K – BLT160

## ELECTRONIC DISCHARGER & BATTERY TESTER

Automatic charging and discharging cycles management, with battery and charger double connection. Programmable in local mode through integrated keyboard and multifunction display.

Storage of main charge and discharge cycles through PC.

Suitable for Lead Acid, AGM and Gel battery.

Available in different models:

### BLT 3K

Battery voltage range 6V to 96V, max 160A (max 3kW)

### BLT160

Battery voltage range 6V to 96V, 160A.

### BLT300

Battery voltage range 6V to 96V, max 300A



BLT300

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