

BC-SMS-E

HIGH VOLTAGE PROGRAMMABLE CHARGER



POSITIVE PROBLEM SOLVING **+ =**

The BC-SMS-E is a series of programmable battery chargers with nominal voltages up to 1500V possible. Each unit operates in constant voltage and constant current modes.

Each BC-SMS-E system has an RS-232 and isolated analogue interface, which allows the user to select the analogue voltage range to be 0-5Vdc or 0-10Vdc. Additionally, any combination of RS-485, IEEE 488.2 (GPIB), USB and LAN interfaces be optionally specified. While front panel control and display is provided as standard, the BC-SMS-E can also be built with a blank panel for applications that require only remote control. An advanced version is optionally available with constant power mode and master/slave operation.

- + Constant Current and Constant Voltage Modes**
- + Compact Design with up to 10kW in Only 2U**
- + Single Phase Input Option up to 5kW**
- + Worldwide Input Options**
- + Programmable Output**

BC-SMS-E

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SELECTION TABLE

Part Number	Max Power	Output Voltage	Output Current
BC-SMS-E 315	3kW	0 - 15V	0 - 200A
BC-SMS-E 335	3kW	0 - 35V	0 - 90A
BC-SMS-E 345	3kW	0 - 45V	0 - 70A
BC-SMS-E 370	3kW	0 - 70V	0 - 45A
BC-SMS-E 3100	3kW	0 - 100V	0 - 30A
BC-SMS-E 3150	3kW	0 - 150V	0 - 20A
BC-SMS-E 3300	3kW	0 - 300V	0 - 10A
BC-SMS-E 3600	3kW	0 - 600V	0 - 5A
BC-SMS-E 3800	3kW	0 - 800V	0 - 4A
BC-SMS-E 31000	3kW	0 - 1000V	0 - 3A
BC-SMS-E 31200	3kW	0 - 1200V	0 - 2.6A
BC-SMS-E 31500	3kW	0 - 1500V	0 - 2A

BC-SMS-E 420	4kW	0 - 20V	0 - 200A
BC-SMS-E 435	4kW	0 - 35V	0 - 115A
BC-SMS-E 445	4kW	0 - 45V	0 - 90A
BC-SMS-E 470	4kW	0 - 70V	0 - 60A
BC-SMS-E 4100	4kW	0 - 100V	0 - 40A
BC-SMS-E 4150	4kW	0 - 150V	0 - 30A
BC-SMS-E 4300	4kW	0 - 300V	0 - 15A
BC-SMS-E 4600	4kW	0 - 600V	0 - 7A
BC-SMS-E 4800	4kW	0 - 800V	0 - 5A
BC-SMS-E 41000	4kW	0 - 1000V	0 - 4A
BC-SMS-E 41200	4kW	0 - 1200V	0 - 3.4A
BC-SMS-E 41500	4kW	0 - 1500V	0 - 2.7A

BC-SMS-E 525	5kW	0 - 25V	0 - 200A
BC-SMS-E 535	5kW	0 - 35V	0 - 150A
BC-SMS-E 545	5kW	0 - 45V	0 - 120A
BC-SMS-E 570	5kW	0 - 70V	0 - 75A
BC-SMS-E 5100	5kW	0 - 100V	0 - 50A
BC-SMS-E 5150	5kW	0 - 150V	0 - 35A
BC-SMS-E 5300	5kW	0 - 300V	0 - 17A
BC-SMS-E 5600	5kW	0 - 600V	0 - 8.5A
BC-SMS-E 5800	5kW	0 - 800V	0 - 6.25A
BC-SMS-E 51000	5kW	0 - 1000V	0 - 5A
BC-SMS-E 51200	5kW	0 - 1200V	0 - 4.2A
BC-SMS-E 51500	5kW	0 - 1500V	0 - 3.4A

Part Number	Max Power	Output Voltage	Output Current
BC-SMS-E 615	6kW	0 - 15V	0 - 400A
BC-SMS-E 620	6kW	0 - 20V	0 - 300A
BC-SMS-E 635	6kW	0 - 35V	0 - 175A
BC-SMS-E 645	6kW	0 - 45V	0 - 140A
BC-SMS-E 670	6kW	0 - 70V	0 - 90A
BC-SMS-E 6100	6kW	0 - 100V	0 - 60A
BC-SMS-E 6150	6kW	0 - 150V	0 - 40A
BC-SMS-E 6300	6kW	0 - 300V	0 - 20A
BC-SMS-E 6600	6kW	0 - 600V	0 - 10A
BC-SMS-E 6800	6kW	0 - 800V	0 - 7.5A
BC-SMS-E 61000	6kW	0 - 1000V	0 - 6A
BC-SMS-E 61200	6kW	0 - 1200V	0 - 5A
BC-SMS-E 61500	6kW	0 - 1500V	0 - 4A

BC-SMS-E 820	8kW	0 - 20V	0 - 440A
BC-SMS-E 825	8kW	0 - 25V	0 - 320A
BC-SMS-E 835	8kW	0 - 35V	0 - 230A
BC-SMS-E 845	8kW	0 - 45V	0 - 180A
BC-SMS-E 870	8kW	0 - 70V	0 - 115A
BC-SMS-E 8100	8kW	0 - 100V	0 - 80A
BC-SMS-E 8150	8kW	0 - 150V	0 - 55A
BC-SMS-E 8300	8kW	0 - 300V	0 - 30A
BC-SMS-E 8600	8kW	0 - 600V	0 - 15A
BC-SMS-E 8800	8kW	0 - 800V	0 - 10A
BC-SMS-E 81000	8kW	0 - 1000V	0 - 8A
BC-SMS-E 81200	8kW	0 - 1200V	0 - 6.7A
BC-SMS-E 81500	8kW	0 - 1500V	0 - 5.4A

BC-SMS-E 1020	10kW	0 - 20V	0 - 500A
BC-SMS-E 1035	10kW	0 - 35V	0 - 350A
BC-SMS-E 1045	10kW	0 - 45V	0 - 250A
BC-SMS-E 1070	10kW	0 - 70V	0 - 175A
BC-SMS-E 10100	10kW	0 - 100V	0 - 100A
BC-SMS-E 10150	10kW	0 - 150V	0 - 75A
BC-SMS-E 10300	10kW	0 - 300V	0 - 40A
BC-SMS-E 10600	10kW	0 - 600V	0 - 17A
BC-SMS-E 10800	10kW	0 - 800V	0 - 13A
BC-SMS-E 101000	10kW	0 - 1000V	0 - 10A
BC-SMS-E 101200	10kW	0 - 1200V	0 - 8.4A
BC-SMS-E 101500	10kW	0 - 1500V	0 - 7A

HIGHLIGHTED FEATURE

FREE V/I MODIFICATIONS

The BC-SMS-E is an incredibly flexible product platform. We don't just offer standard models. You can specify your own nominal voltage and current ranges often at no additional cost.

For example you might have an energy storage device that needs exactly 850V at 10kW. We can provide a new unit with exactly those output ranges without increasing the price or lead time.

TECHNICAL DATA

INPUT						
	3kW	4kW	5kW	6kW	8kW	10kW
Connection	3 wire (1P+N+E)		5 wire (3P+N+E)			
Maximum Allowed Non-Symmetry (3P-Systems)	<3%					
Standard Input Voltage	230VAC ± 10%		3 × 400 VAC ± 10%			
Standard Input Frequency	47 - 63Hz					
Standard Input Current ^{1,2}	22A _{eff}	10A _{eff}	11.5A _{eff}	15A _{eff}	20A _{eff}	22.9A _{eff}
Standard Nominal Current Internal Fuse	30A	15A	15A	30A	30A	30A
Rec. Supply Breaker Value and Curve (Op. /3P400)	16A type D/K	16A type D/K	16A type D/K	32A type D/K	32A type D/K	32A type D/K
Input Voltage (Option /1P)	230VAC ± 10%			N/A		
Input Current (Option /1P) ^{1,2}	22A _{eff}	28A _{eff}	33A _{eff}	N/A		
Input Voltage (Option /3P208)	3 × 208 VAC ± 10%					
Input Current (Option /3P208) ^{1,2}	14A _{eff}	19A _{eff}	23A _{eff}	28A _{eff}	37A _{eff}	46A _{eff}
Input Voltage (Option /3P400)	3 × 400 VAC ± 10%					
Input Current (Option /3P400) ^{1,2}	7.5A _{eff}	10A _{eff}	11.5A _{eff}	15A _{eff}	20A _{eff}	22.9A _{eff}
Input Voltage (Option /3P440)	3 × 440 VAC ± 10%					
Input Current (Option /3P440) ^{1,2}	7A _{eff}	9A _{eff}	11A _{eff}	14A _{eff}	18A _{eff}	21A _{eff}
Input Voltage (Option /3P480)	3 × 480 VAC ± 10%					
Input Current (Option /3P480) ^{1,2}	6.5A _{eff}	8A _{eff}	10A _{eff}	12.5A _{eff}	16.5A _{eff}	19.5A _{eff}
Inrush Transient Current ²	<25A	<25A	<25A	<51A	<51A	<51A
Leakage Current	<35mA					
Cos Phi	>0.7					
Harmonic Content ³	50Hz = 72 % 100Hz = 2 % 150Hz = 0.9 % 200Hz = 0.1 % 250Hz = 11 % 350Hz = 0.6 %					
Efficiency	Up to 94%					

DISPLAY				
Resolution Voltage Display	10V – 69.99V	70V – 99.9V	100V – 999V	1000V – 1500V
Voltage Setting Resolution	00.00	00.0	000	0000
Resolution Current Display	2A – 69.99A	70A – 99.9A	100A – 999A	1000A – 2000A
Current Setting Resolution	00,00	00,0	000	0000

EMC AND SAFETY STANDARDS	
Safety	EN60950
Emissions	EN61000-6-4:2007
Immunity	EN61000-6-2:2005
Measurement, Control and Laboratory Equipment	EN61000-1:2010

AMBIENT CONDITIONS	
Cooling	Forced air, front to back
Operating Temperature	0 to 50°C
Storage Temperature	-20°C to 70°C
Humidity	<80%
Operating Altitude	<2000m
Weight	18kg (3kW / 4kW / 5kW), 25kg (6kW / 8kW / 10kW)
Dimensions	19" × 2U × 440mm (3kW / 4kW / 5kW), 19" × 2U × 600mm (6kW / 8kW / 10kW)
Fan Noise	42 – 43 dB

¹ For nominal current and nominal voltage

² For nominal input voltage

³ Total harmonic distortion input current ([%]/lin)

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BC-SMS-E

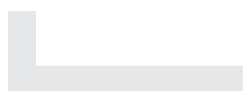
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TECHNICAL DATA

OUTPUT																	
	15V	20V	25V	35V	40V	45V	70V	80V	100V	150V	300V	600V	800V	1000V	1200V	1500V	
Static Regulation	± 0.1 % of F.S.																
Line Regulation Voltage	± 0.02 % F.S.																
Line Regulation Current	± 0.02 % F.S.																
Load Regulation	± 0.05 % F.S. ± 2mV																
Load Regulation Current	± 0.05 % F.S. ± 20mA																
Dynamic Response (10%-90%)	Typically <3ms assuming an ohmic load																
Typical Voltage Ripple (p-p) 20MHz	40mV	80mV	80mV	80mV	140mV	140mV	140mV	140mV	140mV	900mV	900mV	900mV	1000mV	1200mV	2500mV	2500mV	
Typical Voltage Ripple (p-p) 300kHz	15mV	35mV	35mV	35mV	60mV	60mV	60mV	60mV	60mV	400mV	400mV	400mV	700mV	800mV	1500mV	1500mV	
Typical Voltage Ripple (rms) 20MHz	15mV	35mV	35mV	35mV	60mV	60mV	60mV	60mV	60mV	400mV	400mV	400mV	400mV	400mV	400mV	500mV	
Typical Voltage Ripple (rms) 300kHz	25mV	25mV	25mV	25mV	40mV	40mV	40mV	40mV	40mV	300mV	300mV	300mV	300mV	300mV	300mV	400mV	
Current Ripple (p-p)	<0.5 % of F.S.																
Current Ripple (rms)	<0.4 % of F.S.																
Isolation	3000VAC (Between Primary and Secondary)																
Isolation	500VDC (Between DC-Output and Earth)										2000VDC (Between DC-Output and Earth)						
Isolation	2150VDC (Between Primary and Earth)																
Rise Time (Full Load)	6ms	6ms	6ms	6ms	12ms	12ms	12ms	20ms	20ms	20ms	20ms	20ms	20ms	40ms	40ms	40ms	6ms
Rise Time (No Load)	5ms	5ms	5ms	5ms	10ms	10ms	10ms	10ms	10ms	10ms	10ms	10ms	10ms	10ms	20ms	20ms	5ms
Fall Time (Full Load)	15ms	15ms	15ms	15ms	20ms	20ms	20ms	20ms	20ms	40ms	40ms	50ms	60ms	80ms	100ms	25ms	
Fall Time (No Load)	5s ≤50V																
Relative Voltage Accuracy	± 0.25% V _{MAX}																
Relative Current Accuracy	± 0.4% I _{MAX}																
Maximum Sense Voltage	5% of F.S. (0 to V _{MAX})											No sense function provided					
Maximum Sense Voltage	± 1% of F.S. (Operating Over V _{MAX})											No sense function provided					
Relative Voltage Sense Accuracy	± 0.5% V _{MAX} (relative accuracy for worst case sense operation)																
Over Voltage Protection	Adjustable between 0 % and 120 % of full voltage range																
Over Current Protection	Limited by the current setpoint																
Over Temperature Protection	If the internal heat sink temperature rises above 90°C the device will automatically shut down																
VI Mode	Voltage and current operation mode: voltage and current limit are programmable																

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INTERFACE INFORMATION

ANALOGUE INTERFACE (STANDARD)

Digital Outputs (CV, Standby, Error)	Output type: Open collector with pull-up resistor 10k Ω after +5 V I_{SINKMAX} : 50 mA
Digital Inputs (Ext. Control, Standby)	Input resistance: 47k Ω Maximum input voltage: 50V High level: $V_{\text{IN}} > 2V$ Low level: $V_{\text{IN}} < 0.8V$
Analog Outputs (Xmon)	Output resistance: 100 Ω Minimum permissible load resistance: 2k Ω Minimum load resistance for 0.1 % accuracy: 100k Ω
Analog Inputs (Xset)	Input resistance: 1M Ω Maximum permissible input voltage: 25V
Reference Voltage	Reference voltage V_{REF} : 10V \pm 10 mV Output resistance: <10 Ω Maximum output current: 10 mA (not short-circuit-proof)
5 V – Supply Voltage	Output voltage: 5V \pm 300mV Maximum output current: 50 mA (not short-circuit-proof)
Programming Response Time	<10ms

RS-232 INTERFACE (STANDARD)

Signal Inputs (RxD, CTS)	Maximum input voltage: \pm 25V Input resistance: 5 k Ω [Type] Switching thresholds: $V_{\text{H}} < -3V$, $V_{\text{L}} > +3V$
Signal outputs (TxD, RTS)	Output voltage (at $R_{\text{L}} > 3k\Omega$): min \pm 5V, Type \pm 9V, max \pm 10V Output resistance: <300 Ω ; Short circuit current: Type \pm 10mA

RS-485 INTERFACE (OPTIONAL)

Maximum Input Voltage	\pm 5V
Input Resistance	>12k Ω
Output Current	\pm 60mA Max
High Level	$V_{\text{d}} > 0.2V$
Low Level	$V_{\text{d}} < -0.2V$

OPTIONS

CODE	DESCRIPTION
/A	Advanced model with constant power mode and master/slave operation.
/3P208	3 Phase Input of 3 \times 208 (187 - 229Vac), 50/60Hz
/3P400	3 Phase Input of 3 \times 400 (360 - 440Vac), 50/60Hz
/3P440	3 Phase Input of 3 \times 440 (396 - 484Vac), 50/60Hz
/3P480	3 Phase Input of 3 \times 480 (432 - 528Vac), 50/60Hz
/400HZ	400Hz input frequency
/IP	Input voltage is 230VAC \pm 10% (for models with outputs of 4kW or 5kW only)
/DC	Any nominal in the input range 250 - 750VDC \pm 10% (eg. 500VDC \pm 10% = 450 - 550VDC input)
/ATE	No front panel control or display, analogue interface provided as standard
/USB	USB interface
/LT	IEEE 488.2 (GPIB) interface
/LTRS485	RS-485 interface
/LAN	Ethernet interface
/KFZ12	Output follows a 12Vdc automotive cranking curve
/KFZ24	Output follows a 24Vdc automotive cranking curve
/KFZXX	Output follows a user specific curve
/SCS	Metal cover set with cable glands for input and output terminals

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ETPS engineer electronic power supply and testing systems. Our problem solving skills provide the spark of innovation to some of the world's leading technology brands.



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