

CON-SMS-E

HIGH VOLTAGE DC-DC CONVERTER



POSITIVE PROBLEM SOLVING **+ =**

The CON-SMS-E is a series of programmable DC-DC converters with a variety of interface options. Each unit operates in constant voltage and constant current modes.

Each CON-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 CON-SMS-E can also be built with a blank panel for applications that require only remote control. An advanced model is available with constant power mode and master/slave operation.

- + Constant Current and Constant Voltage Modes**
- + Compact Design - 10kW in Only 2U**
- + Fixed or Programmable Outputs**
- + Simple Front Panel Operation**
- + Custom Input Options**

CON-SMS-E

HIGH VOLTAGE DC-DC CONVERTER

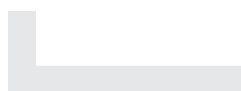


SELECTION TABLE

Part Number	Max Power	Output Voltage	Output Current	Part Number	Max Power	Output Voltage	Output Current
CON-SMS-E 315-XXX	3kW	0 - 15Vdc	0 - 200A	CON-SMS-E 615-XXX	6kW	0 - 15Vdc	0 - 400A
CON-SMS-E 335-XXX	3kW	0 - 35Vdc	0 - 90A	CON-SMS-E 620-XXX	6kW	0 - 20Vdc	0 - 300A
CON-SMS-E 345-XXX	3kW	0 - 45Vdc	0 - 70A	CON-SMS-E 635-XXX	6kW	0 - 35Vdc	0 - 175A
CON-SMS-E 370-XXX	3kW	0 - 70Vdc	0 - 45A	CON-SMS-E 645-XXX	6kW	0 - 45Vdc	0 - 140A
CON-SMS-E 3100-XXX	3kW	0 - 100Vdc	0 - 30A	CON-SMS-E 670-XXX	6kW	0 - 70Vdc	0 - 90A
CON-SMS-E 3150-XXX	3kW	0 - 150Vdc	0 - 20A	CON-SMS-E 6100-XXX	6kW	0 - 100Vdc	0 - 60A
CON-SMS-E 3300-XXX	3kW	0 - 300Vdc	0 - 10A	CON-SMS-E 6150-XXX	6kW	0 - 150Vdc	0 - 40A
CON-SMS-E 3600-XXX	3kW	0 - 600Vdc	0 - 5A	CON-SMS-E 6300-XXX	6kW	0 - 300Vdc	0 - 20A
CON-SMS-E 3800-XXX	3kW	0 - 800Vdc	0 - 4A	CON-SMS-E 6600-XXX	6kW	0 - 600Vdc	0 - 10A
CON-SMS-E 31000-XXX	3kW	0 - 1000Vdc	0 - 3A	CON-SMS-E 6800-XXX	6kW	0 - 800Vdc	0 - 7.5A
CON-SMS-E 31200-XXX	3kW	0 - 1200Vdc	0 - 2.6A	CON-SMS-E 61000-XXX	6kW	0 - 1000Vdc	0 - 6A
CON-SMS-E 31500-XXX	3kW	0 - 1500Vdc	0 - 2A	CON-SMS-E 61200-XXX	6kW	0 - 1200Vdc	0 - 5A
				CON-SMS-E 61500-XXX	6kW	0 - 1500 Vdc	0 - 4A
CON-SMS-E 420-XXX	4kW	0 - 20Vdc	0 - 200A	CON-SMS-E 820-XXX	8kW	0 - 20Vdc	0 - 440A
CON-SMS-E 435-XXX	4kW	0 - 35Vdc	0 - 115A	CON-SMS-E 825-XXX	8kW	0 - 25Vdc	0 - 320A
CON-SMS-E 445-XXX	4kW	0 - 45Vdc	0 - 90A	CON-SMS-E 835-XXX	8kW	0 - 35Vdc	0 - 230A
CON-SMS-E 470-XXX	4kW	0 - 70Vdc	0 - 60A	CON-SMS-E 845-XXX	8kW	0 - 45Vdc	0 - 180A
CON-SMS-E 4100-XXX	4kW	0 - 100Vdc	0 - 40A	CON-SMS-E 870-XXX	8kW	0 - 70Vdc	0 - 115A
CON-SMS-E 4150-XXX	4kW	0 - 150Vdc	0 - 30A	CON-SMS-E 8100-XXX	8kW	0 - 100Vdc	0 - 80A
CON-SMS-E 4300-XXX	4kW	0 - 300Vdc	0 - 15A	CON-SMS-E 8150-XXX	8kW	0 - 150Vdc	0 - 55A
CON-SMS-E 4600-XXX	4kW	0 - 600Vdc	0 - 7A	CON-SMS-E 8300-XXX	8kW	0 - 300Vdc	0 - 30A
CON-SMS-E 4800-XXX	4kW	0 - 800Vdc	0 - 5A	CON-SMS-E 8600-XXX	8kW	0 - 600Vdc	0 - 15A
CON-SMS-E 41000-XXX	4kW	0 - 1000Vdc	0 - 4A	CON-SMS-E 8800-XXX	8kW	0 - 800Vdc	0 - 10A
CON-SMS-E 41200-XXX	4kW	0 - 1200Vdc	0 - 3.4A	CON-SMS-E 81000-XXX	8kW	0 - 1000Vdc	0 - 8A
CON-SMS-E 41500-XXX	4kW	0 - 1500Vdc	0 - 2.7A	CON-SMS-E 81200-XXX	8kW	0 - 1200Vdc	0 - 6.7A
				CON-SMS-E 81500-XXX	8kW	0 - 1500Vdc	0 - 5.4A
CON-SMS-E 525-XXX	5kW	0 - 25Vdc	0 - 200A	CON-SMS-E 1020-XXX	10kW	0 - 20Vdc	0 - 500A
CON-SMS-E 535-XXX	5kW	0 - 35Vdc	0 - 150A	CON-SMS-E 1035-XXX	10kW	0 - 35Vdc	0 - 350A
CON-SMS-E 545-XXX	5kW	0 - 45Vdc	0 - 120A	CON-SMS-E 1045-XXX	10kW	0 - 45Vdc	0 - 250A
CON-SMS-E 570-XXX	5kW	0 - 70Vdc	0 - 75A	CON-SMS-E 1070-XXX	10kW	0 - 70Vdc	0 - 175A
CON-SMS-E 5100-XXX	5kW	0 - 100Vdc	0 - 50A	CON-SMS-E 10100-XXX	10kW	0 - 100Vdc	0 - 100A
CON-SMS-E 5150-XXX	5kW	0 - 150Vdc	0 - 35A	CON-SMS-E 10150-XXX	10kW	0 - 150Vdc	0 - 75A
CON-SMS-E 5300-XXX	5kW	0 - 300Vdc	0 - 17A	CON-SMS-E 10300-XXX	10kW	0 - 300Vdc	0 - 40A
CON-SMS-E 5600-XXX	5kW	0 - 600Vdc	0 - 8.5A	CON-SMS-E 10600-XXX	10kW	0 - 600Vdc	0 - 17A
CON-SMS-E 5800-XXX	5kW	0 - 800Vdc	0 - 6.25A	CON-SMS-E 10800-XXX	10kW	0 - 800Vdc	0 - 13A
CON-SMS-E 51000-XXX	5kW	0 - 1000Vdc	0 - 5A	CON-SMS-E 101000-XXX	10kW	0 - 1000Vdc	0 - 10A
CON-SMS-E 51200-XXX	5kW	0 - 1200Vdc	0 - 4.2A	CON-SMS-E 101200-XXX	10kW	0 - 1200Vdc	0 - 8.4A
CON-SMS-E 51500-XXX	5kW	0 - 1500Vdc	0 - 3.4A	CON-SMS-E 101500-XXX	10kW	0 - 1500Vdc	0 - 7A

FREE OUTPUT MODIFICATIONS

You can also specify your own nominal output voltage and current ranges, often at no additional cost. So if you needed to power a device which needs exactly 850Vdc at 10kW, we can provide a new unit with exactly those output ranges without increasing the price or lead time.



HIGHLIGHTED FEATURE

USER CHOSEN INPUT VOLTAGE

Each CON-SMS-E is built with any user chosen nominal input voltage from the selection table below. The XXX at the end of each part number is replaced with the three digit nominal input voltage you require. If none of the standard voltages are suitable, then you can specify any nominal input voltage in the range of 250Vdc - 750Vdc $\pm 10\%$. For example, if you chose a CON-SMS-E 525-560, then the DC-DC converter would be built with a 560Vdc nominal, with input range of 504Vdc – 616Vdc.

INPUT SELECTION TABLE

CODE	DESCRIPTION
/DC250	DC input of 250Vdc $\pm 10\%$ (225Vdc - 275Vdc)
/DC300	DC input of 300Vdc $\pm 10\%$ (270Vdc - 330Vdc)
/DC350	DC input of 350Vdc $\pm 10\%$ (315Vdc - 385Vdc)
/DC400	DC input of 400Vdc $\pm 10\%$ (360Vdc - 440Vdc)
/DC450	DC input of 450Vdc $\pm 10\%$ (405Vdc - 495Vdc)
/DC500	DC input of 500Vdc $\pm 10\%$ (450Vdc - 550Vdc)
/DC550	DC input of 550Vdc $\pm 10\%$ (495Vdc - 605Vdc)
/DC600	DC input of 600Vdc $\pm 10\%$ (540Vdc - 660Vdc)
/DC650	DC input of 650Vdc $\pm 10\%$ (585Vdc - 715Vdc)
/DC700	DC input of 700Vdc $\pm 10\%$ (630Vdc - 770Vdc)
/DC750	DC input of 750Vdc $\pm 10\%$ (675Vdc - 825Vdc)
/DCXXX	Any nominal in the input range 250Vdc - 750Vdc $\pm 10\%$ (eg. 520Vdc $\pm 10\%$ = 468 - 572Vdc input)

OPTIONS

CODE	DESCRIPTION
/F	Built with a user specified fixed DC output between 20Vdc - 1500Vdc
/A	Advanced model with constant power mode and master/slave operation
/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

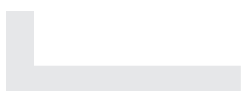
CON-SMS-E

HIGH VOLTAGE DC-DC CONVERTER



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																



TECHNICAL DATA

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

INTERFACE INFORMATION

ANALOGUE INTERFACE (STANDARD)

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

RS-232 INTERFACE (STANDARD)

Signal Inputs (Rx, D, CTS)	Maximum input voltage: ± 25V Input resistance: 5 kΩ (Type) Switching thresholds: $V_H < -3V$, $V_L > +3V$
Signal outputs (Tx, D, RTS)	Output voltage (at $R_L > 3kΩ$): min ± 5V, Type ± 9V, max ± 10V Output resistance: <300Ω; Short circuit current: Type ± 10mA

RS-485 INTERFACE (OPTIONAL)

Maximum Input Voltage	± 5V
Input Resistance	>12kΩ
Output Current	± 60mA Max
High Level	$V_d > 0.2V$
Low Level	$V_d < -0.2V$

Every effort is made to ensure that the information provided within this technical summary is accurate. However, ETPS Ltd must reserve the right to make changes to the published specifications without prior notice. Where certain operating parameters are critical for your application we advise that they be confirmed at the time of order. ETPS Ltd specialises in modifying its proven platforms to suit your needs. Please contact our office if your requirement is non-standard. Please note that your actual unit may differ from those shown.



“
WE ARE
POSITIVE
PEOPLE
”

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.



Tel: +44 (0) 1246 452909
Sales: 0800 612 95 75
sales@etps.co.uk
www.etps.co.uk

ETPS Ltd
Unit 14, The Bridge
Beresford Way, Chesterfield
S41 9FG



POSITIVE PROBLEM SOLVING