

CON-HP-E

PROGRAMMABLE HIGH POWER CONVERTER



POSITIVE PROBLEM SOLVING **+ =**

The CON-HP-E provides up to 15kW of power in just a 3U high case. A 10 turn digitally encoded potentiometer allows for straight forward front panel operation.

The front panel display indicates all relevant output quantities simultaneously. Output values can be preset and read prior to releasing the output. ATE options are offered for system integration. Each unit has an RS-232 and isolated analogue interface with user switchable ranges [0 - 5VDC / 0 - 10VDC] as standard. If computer control is required then any combination of integrated RS-485, GPIB, USB & LAN interfaces can be specified. An advanced model with constant power and master/slave operation is available on request.

- + Constant Voltage and Current Modes**
- + Models up to 250kW on Request**
- + Fixed or Programmable Outputs**
- + Optional Computer Interfaces**
- + Simple Front Panel Operation**
- + Custom Input Options**

CON-HP-E

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PRODUCT SELECTION TABLE

Part Number	Max Power	Output Voltage	Output Current	Part Number	Max Power	Output Voltage	Output Current
CON-HP-E 520-XXX	5kW	0 - 20Vdc	0 - 250A	CON-HP-E 3020-XXX	30kW	0 - 20Vdc	0 - 1500A
CON-HP-E 540-XXX	5kW	0 - 40Vdc	0 - 125A	CON-HP-E 3040-XXX	30kW	0 - 40Vdc	0 - 750A
CON-HP-E 580-XXX	5kW	0 - 80Vdc	0 - 65A	CON-HP-E 3080-XXX	30kW	0 - 80Vdc	0 - 375A
CON-HP-E 5100-XXX	5kW	0 - 100Vdc	0 - 50A	CON-HP-E 30100-XXX	30kW	0 - 100Vdc	0 - 300A
CON-HP-E 5150-XXX	5kW	0 - 150Vdc	0 - 35A	CON-HP-E 30150-XXX	30kW	0 - 150Vdc	0 - 200A
CON-HP-E 5300-XXX	5kW	0 - 300Vdc	0 - 17A	CON-HP-E 30300-XXX	30kW	0 - 300Vdc	0 - 100A
CON-HP-E 5600-XXX	5kW	0 - 600Vdc	0 - 8.5A	CON-HP-E 30600-XXX	30kW	0 - 600Vdc	0 - 50A
CON-HP-E 5800-XXX	5kW	0 - 800Vdc	0 - 6.25A	CON-HP-E 30800-XXX	30kW	0 - 800Vdc	0 - 38A
CON-HP-E 51000-XXX	5kW	0 - 1000Vdc	0 - 5A	CON-HP-E 301000-XXX	30kW	0 - 1000Vdc	0 - 30A
CON-HP-E 51200-XXX	5kW	0 - 1200Vdc	0 - 4A	CON-HP-E 301200-XXX	30kW	0 - 1200Vdc	0 - 25A
CON-HP-E 51500-XXX	5kW	0 - 1500Vdc	0 - 3.4A	CON-HP-E 301500-XXX	30kW	0 - 1500Vdc	0 - 20A
CON-HP-E 1020-XXX	10kW	0 - 20Vdc	0 - 500A	CON-HP-E 4520-XXX	45kW	0 - 20Vdc	0 - 2250A
CON-HP-E 1040-XXX	10kW	0 - 40Vdc	0 - 250A	CON-HP-E 4540-XXX	45kW	0 - 40Vdc	0 - 1125A
CON-HP-E 1080-XXX	10kW	0 - 80Vdc	0 - 130A	CON-HP-E 4580-XXX	45kW	0 - 80Vdc	0 - 562A
CON-HP-E 10100-XXX	10kW	0 - 100Vdc	0 - 100A	CON-HP-E 45100-XXX	45kW	0 - 100Vdc	0 - 450A
CON-HP-E 10150-XXX	10kW	0 - 150Vdc	0 - 70A	CON-HP-E 45150-XXX	45kW	0 - 150Vdc	0 - 300A
CON-HP-E 10300-XXX	10kW	0 - 300Vdc	0 - 34A	CON-HP-E 45300-XXX	45kW	0 - 300Vdc	0 - 150A
CON-HP-E 10600-XXX	10kW	0 - 600Vdc	0 - 17A	CON-HP-E 45600-XXX	45kW	0 - 600Vdc	0 - 75A
CON-HP-E 10800-XXX	10kW	0 - 800Vdc	0 - 13A	CON-HP-E 45800-XXX	45kW	0 - 800Vdc	0 - 57A
CON-HP-E 101000-XXX	10kW	0 - 1000Vdc	0 - 10A	CON-HP-E 451000-XXX	45kW	0 - 1000Vdc	0 - 45A
CON-HP-E 101200-XXX	10kW	0 - 1200Vdc	0 - 8A	CON-HP-E 451200-XXX	45kW	0 - 1200Vdc	0 - 37A
CON-HP-E 101500-XXX	10kW	0 - 1500Vdc	0 - 7A	CON-HP-E 451500-XXX	45kW	0 - 1500Vdc	0 - 30A
CON-HP-E 1520-XXX	15kW	0 - 20Vdc	0 - 750A	CON-HP-E 6020-XXX	60kW	0 - 20Vdc	0 - 3000A
CON-HP-E 1540-XXX	15kW	0 - 40Vdc	0 - 375A	CON-HP-E 6040-XXX	60kW	0 - 40Vdc	0 - 1500A
CON-HP-E 1580-XXX	15kW	0 - 80Vdc	0 - 195A	CON-HP-E 6080-XXX	60kW	0 - 80Vdc	0 - 750A
CON-HP-E 15100-XXX	15kW	0 - 100Vdc	0 - 150A	CON-HP-E 60100-XXX	60kW	0 - 100Vdc	0 - 600A
CON-HP-E 15150-XXX	15kW	0 - 150Vdc	0 - 100A	CON-HP-E 60150-XXX	60kW	0 - 150Vdc	0 - 400A
CON-HP-E 15300-XXX	15kW	0 - 300Vdc	0 - 50A	CON-HP-E 60300-XXX	60kW	0 - 300Vdc	0 - 200A
CON-HP-E 15600-XXX	15kW	0 - 600Vdc	0 - 25A	CON-HP-E 60600-XXX	60kW	0 - 600Vdc	0 - 100A
CON-HP-E 15800-XXX	15kW	0 - 800Vdc	0 - 19A	CON-HP-E 60800-XXX	60kW	0 - 800Vdc	0 - 76A
CON-HP-E 151000-XXX	15kW	0 - 1000Vdc	0 - 15A	CON-HP-E 601000-XXX	60kW	0 - 1000Vdc	0 - 60A
CON-HP-E 151200-XXX	15kW	0 - 1200Vdc	0 - 12A	CON-HP-E 601200-XXX	60kW	0 - 1200Vdc	0 - 50A
CON-HP-E 151500-XXX	15kW	0 - 1500Vdc	0 - 10A	CON-HP-E 601500-XXX	60kW	0 - 1500Vdc	0 - 40A
CON-HP-E 2020-XXX	20kW	0 - 20Vdc	0 - 1000A	CON-HP-E 9020-XXX	90kW	0 - 20Vdc	0 - 4500A
CON-HP-E 2040-XXX	20kW	0 - 40Vdc	0 - 500A	CON-HP-E 9040-XXX	90kW	0 - 40Vdc	0 - 2550A
CON-HP-E 2080-XXX	20kW	0 - 80Vdc	0 - 250A	CON-HP-E 9080-XXX	90kW	0 - 80Vdc	0 - 1125A
CON-HP-E 20100-XXX	20kW	0 - 100Vdc	0 - 200A	CON-HP-E 90100-XXX	90kW	0 - 100Vdc	0 - 900A
CON-HP-E 20150-XXX	20kW	0 - 150Vdc	0 - 133A	CON-HP-E 90150-XXX	90kW	0 - 150Vdc	0 - 600A
CON-HP-E 20300-XXX	20kW	0 - 300Vdc	0 - 66A	CON-HP-E 90300-XXX	90kW	0 - 300Vdc	0 - 300A
CON-HP-E 20600-XXX	20kW	0 - 600Vdc	0 - 33A	CON-HP-E 90600-XXX	90kW	0 - 600Vdc	0 - 150A
CON-HP-E 20800-XXX	20kW	0 - 800Vdc	0 - 26A	CON-HP-E 90800-XXX	90kW	0 - 800Vdc	0 - 112.5A
CON-HP-E 201000-XXX	20kW	0 - 1000Vdc	0 - 20A	CON-HP-E 901000-XXX	90kW	0 - 1000Vdc	0 - 90A
CON-HP-E 201200-XXX	20kW	0 - 1200Vdc	0 - 16A	CON-HP-E 901200-XXX	90kW	0 - 1200Vdc	0 - 75A
CON-HP-E 201500-XXX	20kW	0 - 1500Vdc	0 - 14A	CON-HP-E 901500-XXX	90kW	0 - 1500Vdc	0 - 60A

Models with different nominal output powers to those listed are available in 5kW graduations up to 100kW. High power converters up to 250kW are also possible on request. Please contact ETPS to discuss your requirements.

HIGHLIGHTED FEATURES

USER CHOSEN INPUT VOLTAGE

Each CON-HP-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-HP-E 520-560, 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)

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 15kW, we can provide a new unit with exactly those output ranges without increasing the price or lead time.

FLIGHTCASE INTEGRATIONS

Units can be optionally treated to a laboratory rack or flight case integration. Having a power system mounted into a flight case on castors is often advantageous, especially when the equipment is needed at multiple sites.

Multiple power systems can be fitted into the same flight case. Door hangers are fitted for convenience. Existing ETPS systems can also be retrospectively integrated into new flight cases where requested.



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

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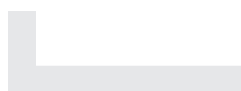


TECHNICAL DATA

OUTPUT											
	20V	40V	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	80mV	140mV	140mV	140mV	900mV	900mV	900mV	1000mV	1200mV	2500mV	2500mV
Typical Voltage Ripple (p-p) 300kHz	35mV	60mV	60mV	60mV	400mV	400mV	400mV	700mV	800mV	1500mV	1500mV
Typical Voltage Ripple (rms) 20MHz	35mV	60mV	60mV	60mV	400mV	400mV	400mV	400mV	400mV	400mV	500mV
Typical Voltage Ripple (rms) 300kHz	25mV	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 [Between Primary and Secondary]	3000VAC										
Isolation [Between DC-Output and Earth]	500VDC						2000VDC				
Isolation [Between Primary and Earth]	2150VDC										
Rise Time [Full Load]	6ms	12ms	20ms	20ms	20ms	20ms	20ms	40ms	40ms	40ms	6ms
Rise Time [No Load]	5ms	10ms	10ms	10ms	10ms	10ms	10ms	10ms	20ms	20ms	5ms
Fall Time [Full Load]	15ms	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 [0 to V _{MAX}]	5% of F.S.							No sense function provided			
Maximum Sense Voltage [Operating Over V _{MAX}]	± 1% of F.S.							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										

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	19kg [5kW], 26kg [10kW], 33kg [15kW], 52kg [20kW], 66kg [30kW], 99kg [45kW], 132 kgs [60kW], 198kg [90kW]
Dimensions	19" × 3U × 620mm [5kW / 10kW / 15kW], 19" × 6U × 620mm [20kW / 30kW] 19" × 9U × 620mm [45kW], 19" × 12U × 620mm [60kW], 19" × 18U × 620mm [90kW]
Fan Noise	42 – 43 dB



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: $V_{IN} > 2V$ Low level: $V_{IN} < 0.8V$
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: $V_H < -3V$, $V_L > +3V$
Signal outputs (TxD, RTS)	Output voltage (at $R_L > 3k\Omega$): 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	$V_d > 0.2V$
Low Level	$V_d < -0.2V$

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

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.



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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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