



**POWER MATE
TECHNOLOGY CO.,LTD.**

HEC100 SERIES Single/Dual output



UL E193009
TUV R50020744
CB JPTUV-5363
CE MARK

UL E193009
TUV R50011065
CB JPTUV-003967
CE MARK

- SINGLE OUTPUT UP TO 25A
DUAL OUTPUTS TOTAL POWER UP TO 100W
- INDUSTRY STANDARD FOOTPRINT
- ADJUSTABLE OUTPUT VOLTAGE
- NO MINIMUM LOAD
- UNDER-VOLTAGE LOCKOUT
- HIGH EFFICIENCY UP TO 90%
- COMPACT 2.40 X 2.28 X 0.50 INCH PACKAGE
- FIXED SWITCHING FREQUENCY
- HALT TESTED

HEC100-SERIES DC/DC converters provide up to 100 watts of output power in an industry standard half-brick package and footprint. These units are specifically designed to meet the power needs of low-voltage silicon. All models feature a wide input range, trimmable output voltage and a 25A current rating. Remote sense and remote on/off facilities are included as standard, and the converters are comprehensively protected against over-current, over-voltage and over-temperature conditions. The HEC100 converters are especially suited to telecom, networking and industrial application.

TECHNICAL SPECIFICATION All specifications are typical at nominal input, full load and 25°C otherwise noted

OUTPUT SPECIFICATIONS		
Output power	Total output power	100 Watts max
Voltage accuracy	Full load and nominal Vin	Single ± 1.5% Dual ± 1.0%
Voltage adjustability	Single (Note 1) Dual for Each outputs	+ 10%, -20% ± 10%
Minimum load		0%
Line regulation	LL to HL at FL	See table
Load regulation	Single(0% to 100% FL) Dual(0% to 100% FL) Dual for each outputs	See table
Remote sense (Note 1)	Single	10% of Vout
Ripple and noise 20MHz bandwidth (Note 2)		100mVp-p
Temperature coefficient		±0.02% / °C, max
Transient response recovery time 25% load step change		200uS
Over voltage protection threshold	Single (Hiccup) Dual 2.5V 3.3V 5V	115% ~ 130% of Vout 3.0V 3.9V 6.2V
Over Current Protection threshold	Single	110% ~ 140% of Iout Rated
Short circuit protection		Hiccup, automatics recovery
INPUT SPECIFICATIONS		
Input voltage range		36 – 75VDC
UVLO start-up voltage	Single Dual	34V typ. 35V typ.
UVLO shutdown voltage	Single Dual	32V typ. 33V typ.
Input filter (Note 3)		L-C type
Input voltage variation	dv/dt	5V/ms,max (Complies with ETS300 132 part 4.4)
Input surge voltage 100mS max (Single)		100VDC
Start up time	Nominal Vin and constant resistive load	Single 25mS typ.
Input reflected-ripple current (5Hz to 20MHz, 12uH source impedance)	Single	20mA _{p-p}
Remote ON/OFF(Note4)		
Single--(Positive logic)	ON=Open or 3.5V < Vr < 15V, I _{IN} =50µA max.	
(Negative logic)	OFF=Short or 0V < Vr < 1.2V, I _{IN} =1mA max.	
	ON=Short or 0V < Vr < 1.2V, I _{IN} =1mA max.	
Dual--(Positive logic)	OFF=Open or 3.5V < Vr < 15V, I _{IN} =50µA max.	
(Negative logic)	ON=Open or 3.5V < Vr < +Vin OFF=Short or Vr < 1.2V ON=Open or 3.5V < Vr < +Vin OFF=Short or Vr < 1.2V	

INPUT SPECIFICATIONS		
OVLO start-up voltage	Dual	76.5V typ
OVLO shutdown voltage	Dual	78.5V typ
GENERAL SPECIFICATIONS		
Efficiency		See table
Isolation voltage	Input to Output Input to Case Output to Case	1600 VDC, min. 1000 VDC, min. 1000 VDC, min.
Isolation resistance	Single Dual	10 ⁷ ohms, min 10 ⁹ ohms, min
Isolation capacitance	Single Dual	2500 pF, max 1500 pF, max
Switching frequency		300 KHz, typ
Approvals and standard		IEC60950, UL60950, EN60950
Case material	Dual	Non-conductive black plastic
Base material		Aluminum base-plate
Potting material	Dual	Silicon (UL94-V0)
Weight	Single Dual	55g (1.94oz) 105g (3.70oz)
MTBF (Note 5)	Single Dual	2 x 10 ⁶ hrs 1.004 x 10 ⁶ hrs
ENVIRONMENTAL SPECIFICATIONS		
Operating base-plate temperature range (Note 6)		-40°C to +100°C
Over temperature protection	Single Dual for base plate	110°C 105°C
Humidity max, Non-condensing		95%
Storage temperature range		-55°C to +125°C
Thermal shock		MIL-STD-810D
Vibration		10~55Hz, 2G, 3minutes period, 30minutes along X,Y and Z
EMC CHARACTERISTICS		
Conducted emissions	EN55022 (Note 7) EN55022 (Note 7)	Level A Level B
Radiated emissions	EN55022	Level A
ESD (single)	EN61000-4-2	Perf. Criteria2
Radiated immunity	EN61000-4-3	Perf. Criteria2
Fast transient	EN61000-4-4	Perf. Criteria2
Surge	EN61000-4-5	Perf. Criteria2
Conducted immunity	EN61000-4-6	Perf. Criteria2



Single output :

Model Number	Input Range	Output Voltage	Output Current	Line Regulation	Load Regulation	Input Current ⁽⁸⁾	Eff ⁽⁹⁾ (%)
HEC100-48S1P8	36 – 75 VDC	1.8 VDC	25 A	4 mV	6 mV	1.157 A	86
HEC100-48S2P5	36 – 75 VDC	2.5 VDC	25 A	5 mV	8 mV	1.608 A	87
HEC100-48S3P3	36 – 75 VDC	3.3 VDC	25 A	7 mV	10 mV	2.022 A	90
HEC100-48S05	36 – 75 VDC	5.0 VDC	20 A	10 mV	15 mV	2.480 A	90
HEC100-48S15	36 – 75 VDC	15 VDC	6.66 A	30 mV	45 mV	2.507 A	90

Dual output :

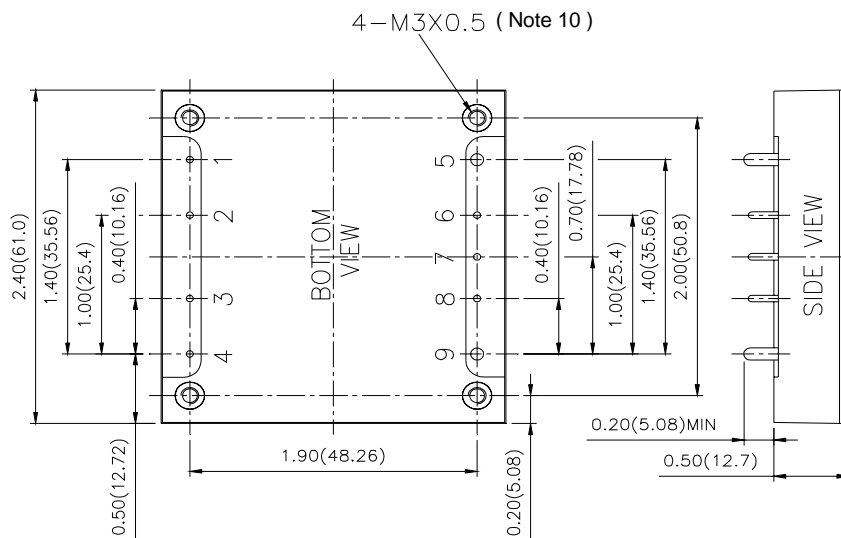
Model Number	Input Range	Output Voltage		Output Current		Line Regulation		Load Regulation		Input Current ⁽⁸⁾	Eff ⁽⁹⁾ (%)
		V1	V2	I 1	I 2	V1	V2	V1	V2		
HEC100-48D3305	36 – 75 VDC	5 VDC	3.3 VDC	20 A	25 A	25mV	16.5mV	25mV	16.5mV	2.39A	87
HEC100-48D2505	36 – 75 VDC	5 VDC	2.5 VDC	20 A	25 A	25mV	12.5mV	25mV	12.5mV	2.45A	85
HEC100-48D2533	36 – 75 VDC	3.3 VDC	2.5 VDC	25 A	25 A	16.5mV	12.5mV	16.5mV	12.5mV	2.44A	85

Note

- Maximum output deviation is 10% inclusive of remote sense. If remote sense is not being used, the +Vsense should be connected to its corresponding +OUTPUT and likewise the - sense should be connected to its corresponding -OUTPUT.
- Single : Measured with a 1uF M/C and a 10uF T/C.
Dual : For each outputs.
- An external filter capacitor is required for normal operation. The capacitor should be capable of handling 1A ripple current for 48V models. Power mate suggest: Nippon chemi-con KMF series, 220µF/100V, ESR 90mΩ.
- Single : The negative / positive logic and length are optional (see table). The pin voltage is referenced to negative input.
Dual : The ON/OFF control function. There are positive logic (standard) and negative logic (option) . The pin voltage is referenced to negative input. To order negative logic ON/OFF control add the suffix-N. (Ex : HEC100-48D3305-N)
- BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C. (Ground fixed and controlled environment)
- Heat sink is optional and P/N: 7G-0021, 7G-0022, 7G-0023, 7G-0024.
- The HEC100 meets level A and level B conducted emissions only with external components connected before the input pin to the converter.
- Maximum value at nominal input voltage and full load.
- Typical value at nominal input voltage and full load.
The dual efficiency test condition: HEC100-48D3305 @ 5V/12A and 3.3V/12A
HEC100-48D2505 @ 5V/12A and 2.5V/16A
HEC100-48D2533 @ 3.3V/18A and 2.5V/16A
- BASEPLATE GROUNDING : Base-plate should be grounded at one of four screw bolts prior to operation.
- The converter is provided by basic insulation.

Mechanical drawing

Single Output :



PIN1,2,3,4,6,7,8. DIM. 0.04(1.016mm)
 PIN5,9. DIM. 0.08(2.032mm)
 Tolerance : x.xx±0.02(x.xx±0.5)
 x.xxx±0.01(x.xx±0.25)
 Dimensions : inches(mm)
 Pin pitch tolerance ± 0.014(0.35)



EXTERNAL OUTPUT TRIMMING

Output can be externally trimmed by using the method shown below.

TRIM UP

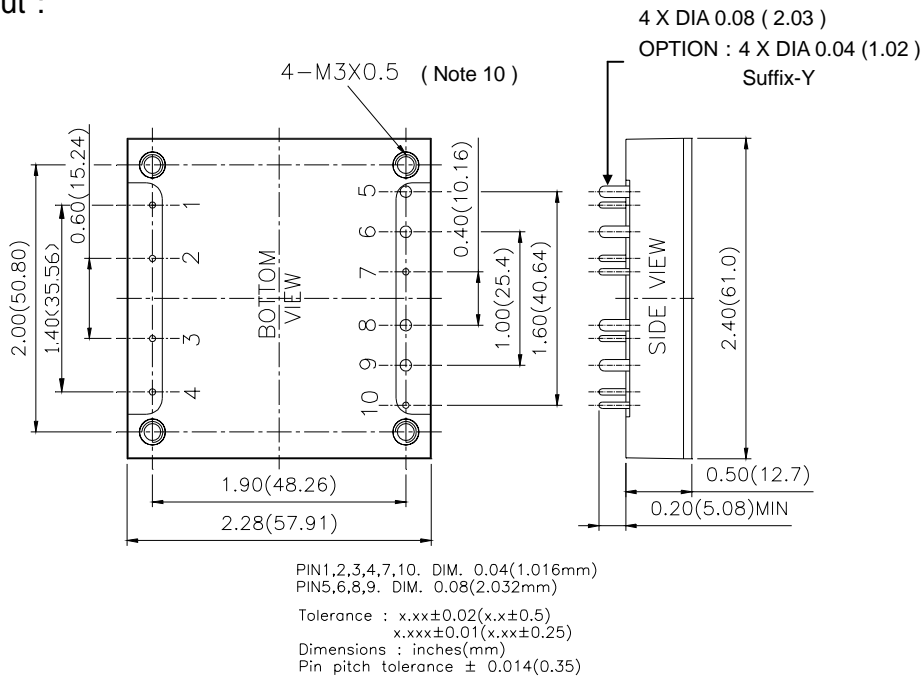
TRIM DOWN

PIN CONNECTION		
PIN	Define	Diameter
1	- INPUT	0.04 Inches
2	CASE	0.04 Inches
3	CTRL	0.04 Inches
4	+ INPUT	0.04 Inches
5	- OUTPUT	0.08 Inches
6	- SENSE	0.04 Inches
7	TRIM	0.04 Inches
8	+ SENSE	0.04 Inches
9	+ OUTPUT	0.08 Inches

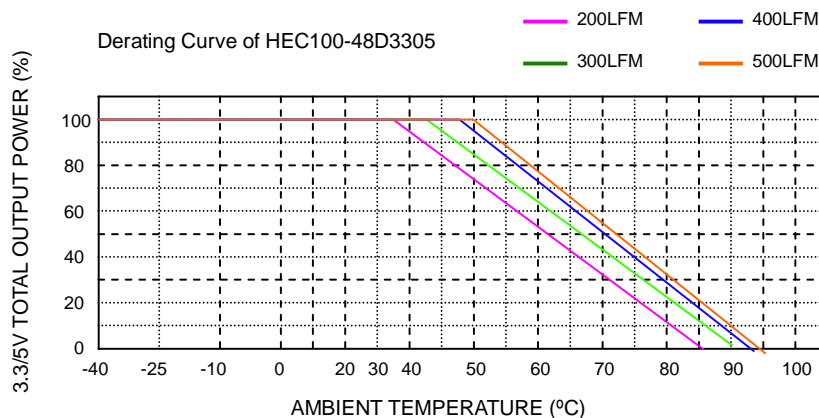
PRODUCT OPTIONS TABLE	
Option	Suffix
Negative remote ON/OFF logic, 0.20" pin length (standard)	-
Negative remote ON/OFF logic, 0.145" pin length	-L
Negative remote ON/OFF logic, 0.11" pin length	-K
Positive remote ON/OFF logic, 0.20" pin length	-P
Positive remote ON/OFF logic, 0.145" pin length	-S
Positive remote ON/OFF logic, 0.11" pin length	-M

Example : HEC100-48S3P3-P

Dual Output :



PIN CONNECTION		
PIN	Define	Diameter
1	- INPUT	0.04 Inches
2	CASE	0.04 Inches
3	CTRL	0.04 Inches
4	+ INPUT	0.04 Inches
5	+ V 2	0.08 Inches
6	- V 2 (COM)	0.08 Inches
7	V2 TRIM	0.04 Inches
8	+ V 1	0.08 Inches
9	- V 1 (COM)	0.08 Inches
10	V1 TRIM	0.04 Inches



EXTERNAL OUTPUT TRIMMING

Output can be externally trimmed by using the method shown below.
() for V2 output trim

TRIM UP

TRIM DOWN