

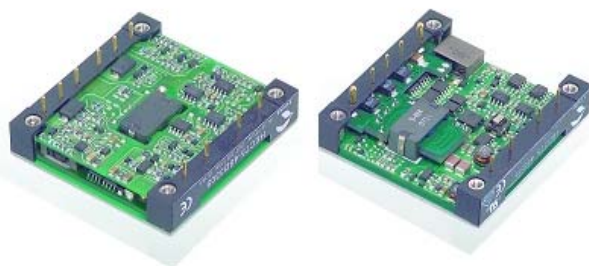


**POWER MATE
TECHNOLOGY CO.,LTD.**

HEC75-SERIES

Single/Dual output

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APPLICATIONS

Wireless Network
Telecom/Datacom
Industry Control System
Distributed Power Architectures
Semiconductor Equipment

FEATURES

- 75 WATTS MAXIMUM OUTPUT POWER
- SINGLE : OUTPUT CURRENT UP TO 20A
DUAL : TOTAL OUTPUT CURRENT UP TO 15A;
UP TO 100% LOAD IMBALANCE
- COMPACT 2.40 X 2.28 X 0.50 INCH PACKAGE
- HIGH EFFICIENCY UP TO 90%
- INPUT RANGE FROM 36VDC TO 75VDC
- FIXED SWITCHING FREQUENCY (300KHz)
- HALT TESTED
- INDUSTRY STANDARD FOOTPRINT
- ADJUSTABLE OUTPUT VOLTAGE,
INDEPENDENTLY REGULATED OUTPUTS
- INPUT TO OUTPUT ISOLATION (BASIC INSULATION)
- CE MARK MEETS 2006/95/EC, 93/68/EEC AND 2004/108/EC
- SINGLE: UL60950-1, EN60950-1 AND IEC60950-1 LICENSED
- DUAL: DESIGN MEET UL60950-1, EN60950-1 AND IEC60950-1 LICENSED
- ISO9001 CERTIFIED MANUFACTURING FACILITIES
- COMPLIANT TO RoHS EU DIRECTIVE 2002/95/EC

OPTIONS

Remote on/off, Pin length

DESCRIPTION

HEC75-SERIES DC/DC converters provide up to 75 watts of output power in an industry standard half-brick package and footprint. All models feature a wide input range, trimmable output voltage and a 20A current rating (15A for dual output).

TECHNICAL SPECIFICATION A

OUTPUT SPECIFICATIONS		
Output power		75 Watts max.
Voltage accuracy	Full load and nominal Vin	± 1.5%
Minimum load		0%
Voltage adjustability	Single (Note 5) Dual	+ 10% , -20% + 10% , -10%
Line regulation	LL to HL at FL	See table
Load regulation	No Load to Full Load	See table
Remote sense	Single (Note 5)	10% of Vout
Ripple and noise 20MHz bandwidth (Note 6)		100mVp-p
Temperature coefficient		±0.02% / °C, max.
Transient response recovery time 25% load step change		200µS
Over voltage protection threshold (Non-latching Hiccup)		115% ~ 130% of Vout
Maximum total output current I ₁ + I ₂ Dual		15A
Over current protection threshold		110% ~ 140% of Iout Rated
Short circuit protection		Hiccup, automatics recovery
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		10 ⁷ ohms, min.
Isolation capacitance		2500 pF, max.
Switching frequency		300 KHz, typ.
Approvals and standard (Note 7)		IEC60950-1, UL60950-1, EN60950-1
Case material		Open with Aluminum base-plate
Weight	Single Dual	63g (2.22oz) 70g (2.47oz)
MTBF (Note 1)	BELLCORE TR-NWT-000332	Single 2.000 x 10 ⁶ hrs Dual 1.300 x 10 ⁵ hrs
	MIL-HDBK-217F	Single 2.170 x 10 ⁵ hrs Dual 1.080 x 10 ⁵ hrs

INPUT SPECIFICATIONS			
Input voltage range			36 – 75VDC
Input filter			L-C type
Input surge voltage 100ms max.			100VDC
Start up time	Nominal Vin and constant resistive load	Power up Remote ON/OFF	25mS typ. 25mS typ.
Input reflected-ripple current			20mA p-p
Start-up voltage			34VDC
Shutdown voltage			32VDC
Remote ON/OFF (Note 8)			
(Negative logic)	ON=Short or 0V < Vr < 1.2V, OFF=Open or 3V < Vr < 15V,	I _{IN} =1mA max. I _{IN} =50µA max.	
(Positive logic)	ON=Open or 3V < Vr < 15V, OFF=Short or 0V < Vr < 1.2V,	I _{IN} =50µA max. I _{IN} =1mA max.	
Input current of remote control pin	Nominal Vin		-0.5mA ~ 0.5mA
Remote off state input current	Nominal Vin		20mA
ENVIRONMENTAL SPECIFICATIONS			
Operating base-plate temperature range (Note 9)			-40°C to 100°C (with derating)
Over temperature protection			110°C
Humidity max, Non-condensing			95%
Storage temperature range			-55°C to 125°C
Thermal shock			MIL-STD-810F
Vibration			MIL-STD-810F
EMC CHARACTERISTICS			
EMI (Note 10)	EN55022		Class A
Radiated immunity	EN61000-4-3	10 V/m	Perf. Criteria A
Fast transient (Note 11)	EN61000-4-4	± 2KV	Perf. Criteria B
Surge (Note 11)	EN61000-4-5	± 1KV	Perf. Criteria B
Conducted immunity	EN61000-4-6	10 Vr.m.s	Perf. Criteria A



Model Number	Input Range	Output Voltage	Output Current		Line Regulation	Load Regulation	Input Current		Eff ⁽⁴⁾ (%)
			Min. load	Full load			No load ⁽³⁾	Full load ⁽²⁾	
HEC75-48S1P8	36 – 75 VDC	1.8 VDC	0mA	20 A	4 mV	6 mV	120mA	0.926 A	85
HEC75-48S2P5	36 – 75 VDC	2.5 VDC	0mA	20 A	5 mV	8 mV	90mA	1.255 A	87
HEC75-48S3P3	36 – 75 VDC	3.3 VDC	0mA	20 A	7 mV	10 mV	120mA	1.618 A	90
HEC75-48S05	36 – 75 VDC	5.0 VDC	0mA	15 A	10 mV	15 mV	130mA	1.838 A	90
HEC75-48S15	36 – 75 VDC	15 VDC	0mA	5 A	30 mV	45 mV	160mA	1.860 A	90

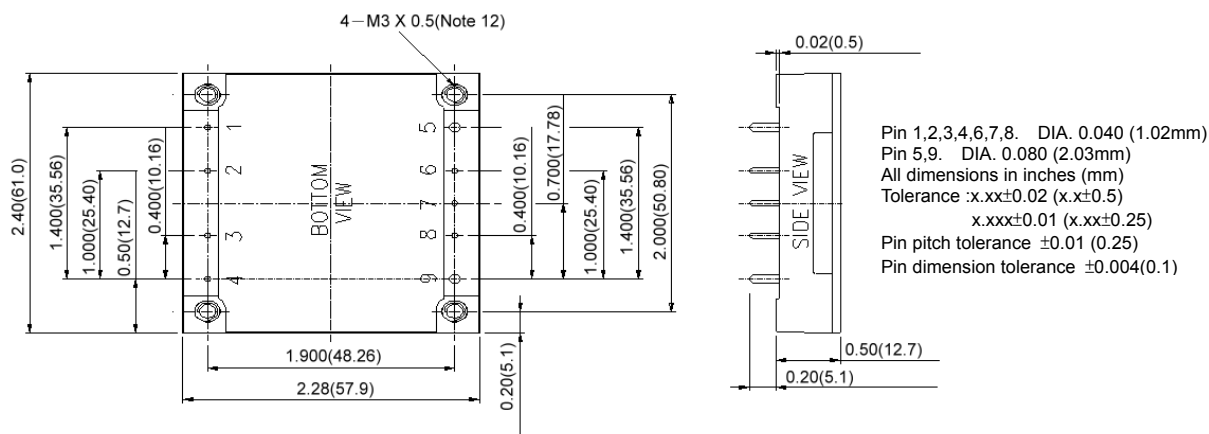
Model Number	Input Range	Output Voltage		Output Current		Line Regulation	Load Regulation	Eff ⁽⁴⁾ (%)
		V1	V2	I 1	I 2			
HEC75-48D3305	36 – 75 VDC	5 VDC	3.3 VDC	15 A	15 A	10/7 mV	15/10 mV	88
HEC75-48D3325	36 – 75 VDC	3.3 VDC	2.5 VDC	15 A	15 A	7/5 mV	10/8 mV	81
HEC75-48D0518	36 – 75 VDC	5 VDC	1.8 VDC	15 A	15 A	10/4 mV	15/6 mV	85
HEC75-48D3318	36 – 75 VDC	3.3 VDC	1.8 VDC	15 A	15 A	7/4 mV	10/6 mV	81

Note

1. BELLCORE TR-NWT-000332. Case 1: 50% Stress, Temperature at Tc=40°C.
MIL-HDBK-217F Notice2 @Ta=25 °C, Full load(Ground, Benign, controlled environment).
2. Maximum value at nominal input voltage and full load.
3. Typical value at nominal input voltage and no load.
4. Single : Typical value at nominal input voltage and full load.
Dual : Typical value at nominal input voltage and both outputs current are 7.5A.
5. Maximum output deviation is 10% inclusive of remote sense. If remote sense is not being used, the + sense should be connected to its corresponding +OUTPUT and likewise the -sense should be connected to its corresponding -OUTPUT.
6. Measured with a 1μF M/C and a 10μF M/C(for dual outputs) or 1μF M/C and a 10μF T/C(for single outputs)
7. Dual output safety approvals pending.
8. The negative / positive logic and pin length are optional. The pin voltage is referenced to -Vin.
Single : Please see single output product options table.
Dual : Please see dual output product options table.
9. Heat sink is optional and P/N: 7G-0021A-F, 7G-0022A-F, 7G-0023A-F, 7G-0024A-F.
10. The HEC75 meets EN55022 class A and class B only with external components connected with the input pins of the converter.
11. An external input filter capacitor is required if the module has to meet EN61000-4-4, EN61000-4-5.
The filter capacitor Power Mate suggest: Nippon chemi-con KY series, 220μF/100V, ESR 48mΩ.
12. BASEPLATE GROUNDING : Base-plate should be grounded at one of the four screw bolts prior to operation.
13. The converter is provided by basic insulation.



Single Output :



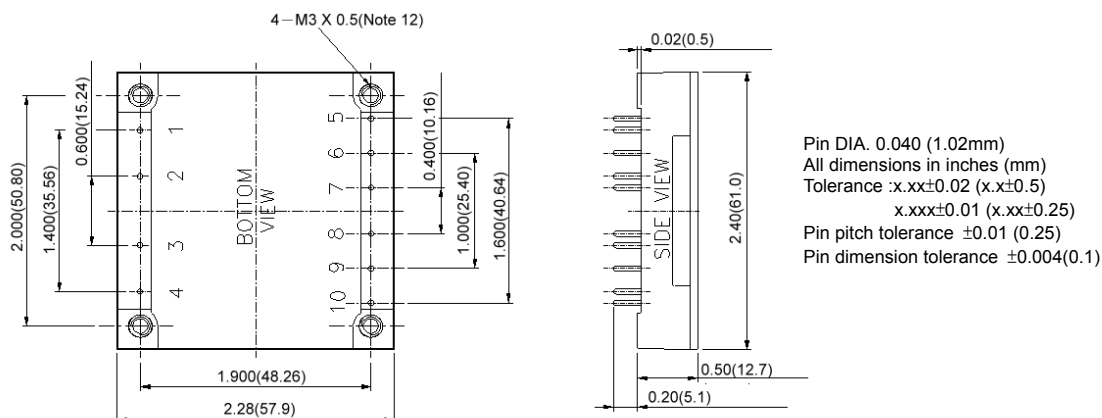
EXTERNAL OUTPUT TRIMMING	
Output can be externally trimmed by using the method shown below.	
TRIM UP 7	TRIM DOWN 6
8	7
R_U	
R_D	

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 : HEC75-48S3P3-P

Dual Output :

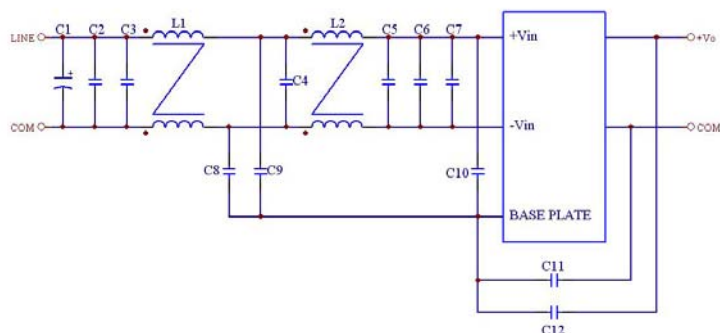
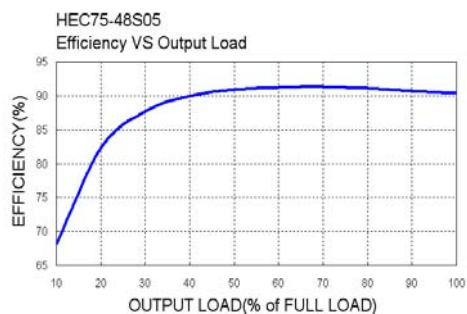
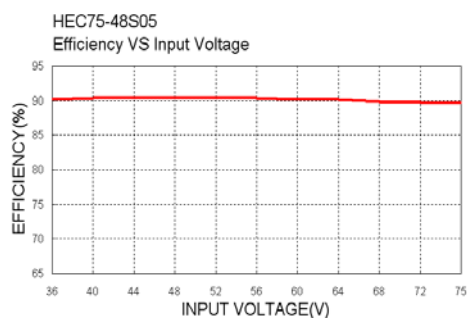
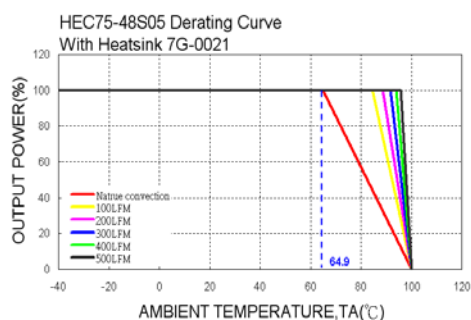
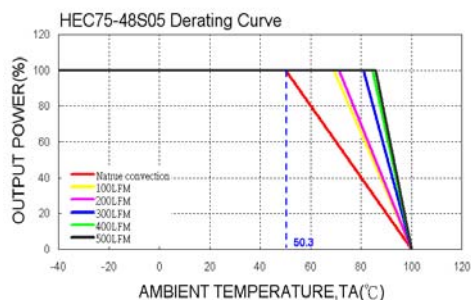


EXTERNAL OUTPUT TRIMMING	
Output can be externally trimmed by using the method shown below. () for V2 output trim	
TRIM DOWN 9(6)	TRIM UP 10(7)
10(7)	8(5)
R_D	
R_U	

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	+ V2	0.04 Inches
6	-V2 (COM)	0.04 Inches
7	V2 TRIM	0.04 Inches
8	+V1	0.04 Inches
9	-V1 (COM)	0.04 Inches
10	V1 TRIM	0.04 Inches

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

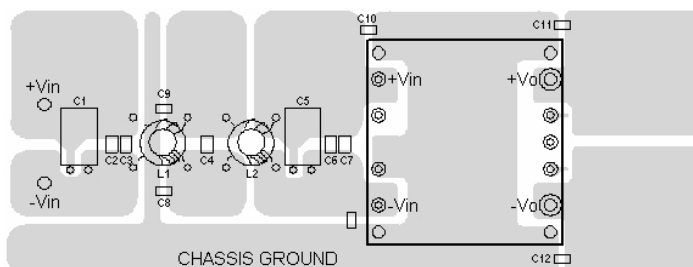
Example : HEC75-48D3305-N



Recommended Filter for EN55022 Class B Compliance

The components used in the above figure, together with the manufacturers' part numbers for these components, are as follows:

	C1	C2	C3	C4	C5
HEC75-xxx	220μF/100V	2.2μF /100V	2.2μF /100V	2.2μF /100V	100μF/100V
	C6	C7	C8	C9	C10
	2.2μF /100V	2.2μF /100V	1.5nF /3KV	1.5nF /3KV	1.5nF /3KV
	C11	C12	L1	L2	
	1.5nF /3KV	1.5nF /3KV	1400.4μH	304.98μH	



Recommended EN55022 Class B Filter Circuit Layout