



- SINGLE OUTPUT UP TO 20A  
DUAL OUTPUTS TOTAL CURRENT UP TO 15A  
UP TO 100% LOAD IMBALANCE
- INDUSTRY STANDARD FOOTPRINT
- ADJUSTABLE OUTPUT VOLTAGE,  
INDEPENDENTLY REGULATED OUTPUTS
- NO MINIMUM LOAD
- HIGH EFFICIENCY UP TO 90%
- COMPACT 2.40 X 2.28 X 0.50 INCH PACKAGE
- HALT TESTED

HEC75-SERIES DC/DC converters provide up to 75 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 20A current rating (15A for dual output). 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 HEC75 converters are especially suited to telecom, networking and industrial application.

UL E193009  
TUV R50020744  
CB JPTUV-5363  
CE MARK

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

| OUTPUT SPECIFICATIONS  |  |  |
|--|--|--|
| Output power   |  | 75 Watts max                                     |
| Voltage accuracy   | Full load and nominal Vin  | ± 1.5%   |
| Voltage adjustability  | Single (Note 1)  | + 10% , -20%                                     |
|  | Dual   | + 10% , -10%                                     |
| Minimum load   |  | 0%   |
| Line regulation  | LL to HL at FL   | See table  |
| Load regulation  | 0% to 100% FL  | See table  |
| Remote sense   | Single (Note 1)  | 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                |  | 200µs  |
| Over voltage protection threshold (Non-latching Hiccup)              |  | 115% ~ 130% of Vout                              |
| Maximum total output current I <sub>1</sub> + I <sub>2</sub> Dual    |  | 15A  |
| Over current protection threshold                                    |  | 110% ~ 140% of Iout Rated                        |
| Short circuit protection   |  | Hiccup, automatic recovery                       |
| INPUT SPECIFICATIONS   |  |  |
| Input voltage range  |  | 36 – 75VDC                                       |
| UVLO start-up voltage  |  | 34V typ.   |
| UVLO shutdown voltage  |  | 32V typ.   |
| Input filter (Note 3)  |  | L-C type   |
| Input voltage variation dv/dt  |  | 5V/ms,max<br>(Complies with ETS300 132 part 4.4) |
| Input surge voltage 100mS max  |  | 100VDC   |
| Start up time Nominal Vin and constant resistive load                |  | 25mS typ.  |
| Input reflected-ripple current (5Hz to 20MHz, 12µH source impedance) |  | 20mA <sub>p-p</sub>                              |
| Remote ON/OFF(Note4)<br>(Positive logic)                             | ON=Open or 3.5V < Vr < 15V, I <sub>IN</sub> =50µA max.<br>OFF=Short or 0V < Vr < 1.2V, I <sub>IN</sub> =1mA max. |  |
| (Negative logic)   | ON=Short or 0V < Vr < 1.2V, I <sub>IN</sub> =1mA max.<br>OFF=Open or 3.5V < Vr < 15V, I <sub>IN</sub> =50µA max. |  |

| GENERAL SPECIFICATIONS                          |                  |   |
|---|------------------|---|
| Efficiency                                      |                  | See table   |
| Isolation voltage                               | Input to Output  | 1600 VDC, min.  |
|   | Input to Case    | 1000 VDC, min.  |
|   | Output to Case   | 1000 VDC, min.  |
| Isolation resistance                            |                  | 10 <sup>7</sup> ohms, min                               |
| Isolation capacitance                           |                  | 2500 pF, max  |
| Switching frequency                             |                  | 300 KHz, typ  |
| Approvals and standard (Note 5)                 |                  | IEC60950, UL60950, EN60950                              |
| Case material                                   |                  | Open with Aluminum base-plate                           |
| Weight  | Single           | 53g (1.87oz)  |
|   | Dual             | 57g (2.01oz)  |
| MTBF (Note 6)                                   | Single           | 2 x 10 <sup>6</sup> hrs                                 |
|   | Dual             | 1.3 x 10 <sup>6</sup> hrs                               |
| ENVIRONMENTAL SPECIFICATIONS                    |                  |   |
| Operating base-plate temperature range (Note 7) |                  | -40°C to +100°C   |
| Over temperature protection                     |                  | 110°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 8) | Level A   |
|   | EN55022 (Note 8) | Level B   |
| Radiated emissions                              | EN55022          | Level A   |
| ESD   | 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 <sup>(9)</sup> | Eff <sup>(10)</sup> (%) |
|--------------|-------------|----------------|----------------|-----------------|-----------------|------------------------------|-------------------------|
| HEC75-48S1P8 | 36 – 75 VDC | 1.8 VDC        | 20 A           | 4 mV            | 6 mV            | 0.915 A                      | 86                      |
| HEC75-48S2P5 | 36 – 75 VDC | 2.5 VDC        | 20 A           | 5 mV            | 8 mV            | 1.255 A                      | 88                      |
| HEC75-48S3P3 | 36 – 75 VDC | 3.3 VDC        | 20 A           | 7 mV            | 10 mV           | 1.618 A                      | 90                      |
| HEC75-48S05  | 36 – 75 VDC | 5.0 VDC        | 15 A           | 10 mV           | 15 mV           | 1.838 A                      | 90                      |
| HEC75-48S15  | 36 – 75 VDC | 15 VDC         | 5 A            | 30 mV           | 45 mV           | 1.860 A                      | 90                      |

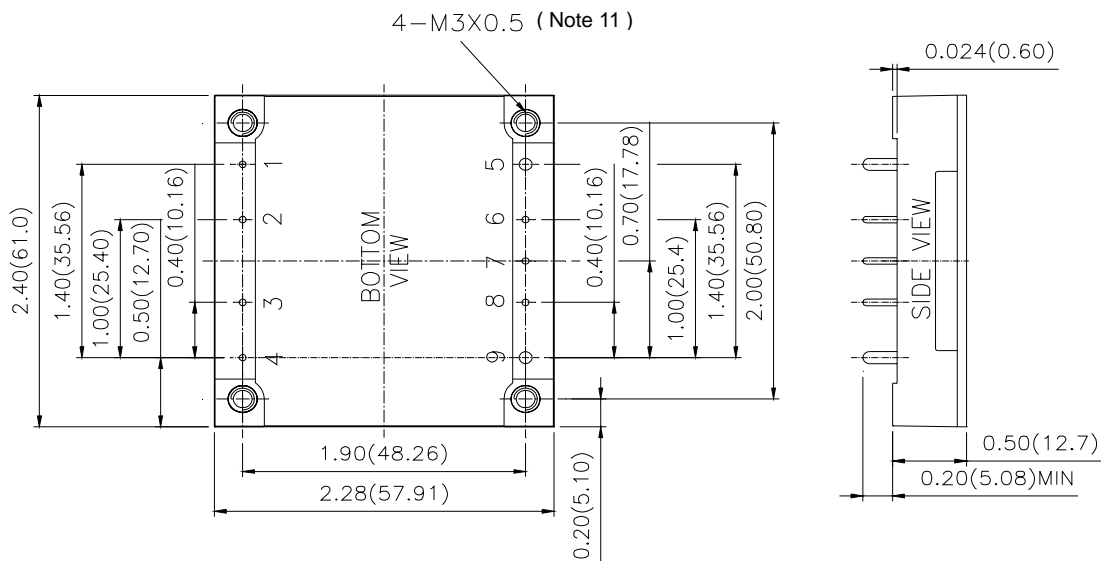
**Dual Output :**

| Model Number  | Input Range | Output Voltage |         | Output Current |      | Line Regulation | Load Regulation | Eff <sup>(10)</sup> (%) |
|---------------|-------------|----------------|---------|----------------|------|-----------------|-----------------|-------------------------|
|               |             | V1             | V2      | I 1            | I 2  |                 |                 |                         |
| HEC75-48D3305 | 36 – 75 VDC | 5 VDC          | 3.3 VDC | 15 A           | 15 A | 7/10 mV         | 10/15 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
- Maximum output deviation is 10% inclusive of remote sense. If remote sense is not being used, the +V sense should be connected to its corresponding +OUTPUT and likewise the- sense should be connected to its corresponding -OUTPUT.
  - Measured with a 1uF M/C and a 10uF M/C(for dual outputs) or 1uF M/C and a 10uF T/C(for single 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.
  - The negative / positive logic and length are optional ( see table ). The pin voltage is referenced to negative input.
  - Dual output safety approvals pending.
  - BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at Tc=40°C. (Ground fixed and controlled environment)
  - Heat sink is optional and P/N: 7G-0021, 7G-0022, 7G-0023, 7G-0024.
  - The HEC75 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.
  - Single : Typical value at nominal input voltage and full load.  
Dual : The efficiency test condition: Nominal input voltage and both outputs current are 7.5A.
  - BASEPLATE GROUNDING : Base-plate should be grounded at one of the 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.x±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.

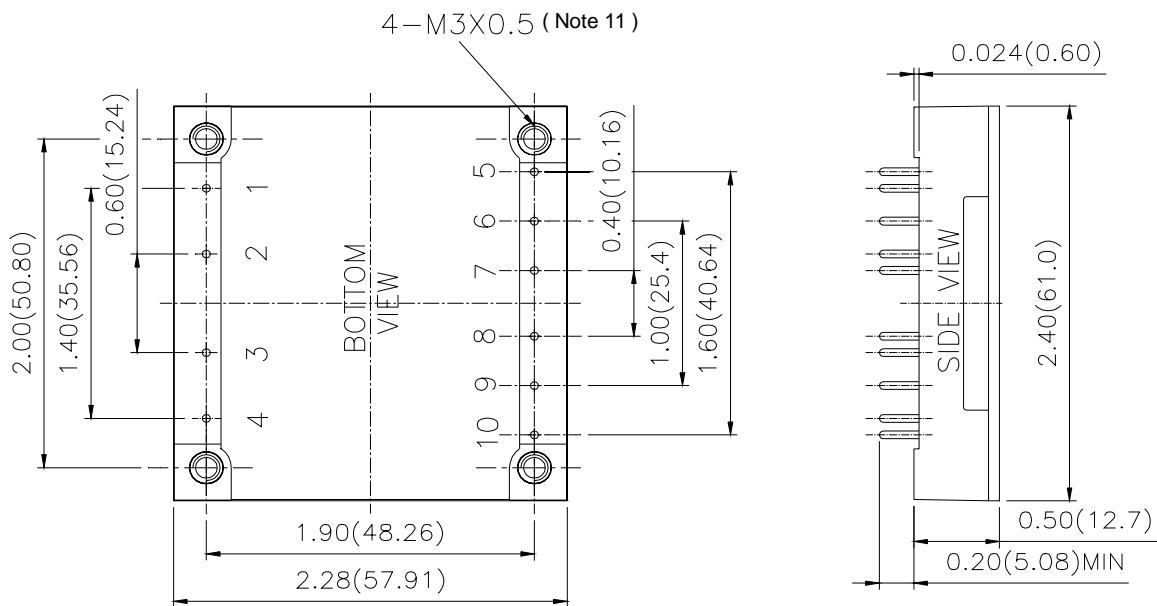
TRIM UP      TRIM DOWN

| 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     |

Dual Output :

Example : HEC75-48S3P3-P



PIN DIM. 0.04(1.016mm)  
 Tolerance : x.xx±0.02(x.x±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.  
 ( ) for V2 output trim

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              | + 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