

## 200W, High Reliability, High Temperature, Conduction/Convection Cooled, Industrial Quality DC/DC Converters BHT 65-F3 Series

- Operation up to 85 °C
- No optocouplers, no electrolytics
- Min. 30 years operational life
- Rugged, industrial quality
- Cooling by conduction/convection (no fans or forced air)
- Rugged construction
- Conformal coating
- High input/output isolation
- Full electronic protection
- Customized versions available



This rugged, industrial quality DC/DC converter is designed for a long operating life at high operating temperatures. By eliminating optocouplers and electrolytic capacitors, the MTBF of the unit is greatly improved over conventional designs. The unit operates over a wide temperature range of -40 °C to 85 °C for full specification. In addition, all heat generating components are installed on aluminum heat-sink blocks which are thermally coupled to the heatsink fins and cooled by natural convection. The internal boards are conformal coated for immunity to humidity and contamination. The construction is robust and withstands high levels of shock and vibration. The input and output are filtered for low noise. Full electronic protection eliminates failure due to abnormal operating conditions, including application errors. Large design headroom and the use of components with established reliability also contribute to the long operating life of the unit. It is manufactured at our plant under strict quality control. A railway quality version of this design, the BHT 65R-F3, is also available.

### SPECIFICATIONS

#### Input Voltage

24Vdc (21-34V)  
48Vdc (42-70V)  
110Vdc (90-135V)  
125Vdc (105-150V)  
Other inputs upon request

#### Input Protection

Inrush current limiting  
Varistor  
Reverse polarity protection  
Internal safety fuse  
Lower voltage than the specified minimum input will not damage the unit

#### Isolation

Corresponding to input/output voltage, minimum:  
1000Vdc input to chassis  
3000Vdc input to output  
1000Vdc output to chassis

#### Standards

Designed to meet EN 60950-1 and related standards

#### EMI

Min. EN55022 Class A with margins

#### Switching Frequency

55kHz ±3kHz

#### Output Voltages

24V, 48V, 72V or 125Vdc  
200W continuous  
Output is floating; either terminal can be grounded  
Consult factory for other voltages

#### Redundancy diode

Not installed  
Available as option

#### Line/Load Regulation

±2% combined from 10% load to full load

#### Dynamic Response

Max 5% voltage deviation for 10% to 50% load step, with better than 2msec recovery time

#### Output Ripple / Noise

Better than 1% of output voltage peak to peak or 0.2% Vrms (20MHz BW)

#### Output Overload Protection

Rectangular current limiting with short-circuit protection  
Thermal shutdown in case of insufficient cooling (self -resetting)

#### Output Overvoltage Protection

Double regulator loop.  
Transzorb across the output

#### Efficiency

Typically 85% at full load depending on input/output combination

#### Operating Temperature Range

-40 °C to 85 °C for full specification

#### Temperature Drift

0.03% per °C, over operating temperature range

#### Cooling

Conduction to customer heat-sink or chassis and natural convection

#### Environmental Protection

Ruggedizing  
Conformal coating  
Heavy ruggedizing available on request

#### Shock/Vibration

IEC 61373 Cat 1 A&B

#### Humidity

5 - 95% non-condensing

#### MTBF

250,000 hours at 45 °C  
Expected operating life is min. 30 years

#### Indicators

Green 'Output ON LED' visible through cooling slots

#### Control Input

Optional

#### Alarm Output

Not installed  
Output fail alarm Form C contacts installed on request

#### Package/Dimensions (W x H x L)

F3: 132 x 64 x 300 mm  
5.2" x 2.5" x 11.8" including terminal block and mounting flanges  
Mounting holes are clear

#### Weight

2 kg (4.4 lb)

#### Connections

12-pole barrier type terminal block with 3/8" spacing

#### RoHS Compliance

Compliant

#### Warranty

Two years subject to application within good engineering practice

#### Terminal Block Pin-outs

NOT USED		DC OUTPUT				NOT USED			DC INPUT		
1	2	+	+	-	-	+	+	-	GND	-	+
		3	4	5	6	7	8	9	10	11	12



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