

**Model:** BAP 2K4R-36/48-3U4-T9825  
**COSD:** XXXX  
**Summary description:** 2400W, Railway Quality DC/DC Converter  
 36V to 48V/50A  
**Customer Name:** Thiele KG/Germany  
**Customer Part No:** Same as above



**Product description:**

This rugged, railway quality power converter utilizes field proven technology to generate the required output power. It is a mature design with a track record in numerous applications. The unit is built with four BAP65F internal modules, which are connected parallel via redundancy diodes. This modular construction also provides inherent redundancy; the failure of one internal module only causes a drop in output power while the unit remains operational. The input and output are filtered for low noise. High quality built-in fans provide sufficient airflow for operation within the specified temperature range without de-rating. The fans draw air into the unit, and exhaust at the terminal side of the unit. All heat generating components are installed on aluminum heatsink blocks which are thermally connected to the base plate. This also ensures exceptional mechanical ruggedness. Conformal coating provides protection against humidity and airborne contaminants. Full electronic protection, low component count, large design headrooms, and the exclusive use of components with established reliability contribute to a high MTBF. The unit meets the requirements of EN50155 for electronic equipment used on railway rolling stock. It is manufactured at our plant under strict quality control.

**Special Features:** 28-40Vdc input range. Railway, Ruggedizing, Conformal coating,

**SPECIFICATIONS**

**Input Voltage**

36Vdc nominal  
 28-40Vdc operating range (requested)  
 Input Current: 102A max.

**Input Protection**

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

**Isolation**

1500Vdc input to chassis  
 2250Vdc input to output  
 1500Vdc output to chassis

**Standards**

Designed to meet EN60950-1, EN50155, EN45545

**Immunity**

Meets criteria as requested in EN50155 and EN50121-3-2 according to the following standards:  
 EN61000-4-2 (ESD)  
 EN61000-4-3 (RF Immunity)  
 EN61000-4-4 (Fast Transients)  
 EN 50155 (Surge)  
 EN 61000-4-6 (Conduction Immunity)  
 EN50155 (Voltage Variations)

**EMI**

EN50121-3-2

**Switching Frequency**

55kHz ±3kHz

**Output Voltage/Current**

48Vdc ± 0.3V/50A  
 Output is floating either terminal can be grounded

**Output Separation Diode**

Installed internally

**Line/Load Regulation**

±1% combined from zero load to full load including output separation diode

**Dynamic Response**

Max 5% voltage deviation for 10% to 50% load step, with better than 1msec recovery time

**Output Ripple / Noise**

Better than 80mVrms and 400mVpp (20MHz BW)

**Output Overload Protection**

Rectangular current limiting with short-circuit protection  
 Thermal shutdown with automatic reset in case of insufficient cooling (self-resetting)  
 Current Limit set to: 55A ± 4A

**Output Overvoltage Protection**

Second regulator loop. Second loop completely stable and independent of main regulator loop  
 OVP setting: 54V ± 3V

**Efficiency**

86% at full load

**Operating Temperature Range**

-25 °C to +55 °C for full specification

**Temperature Drift**

0.03% per °C over operating temperature range

**Cooling**

By built-in high quality fans

**Environmental Protection**

Ruggedizing  
 Conformal coating

**Shock/Vibration**

IEC 61373 Cat 1 A&B

**Humidity**

5-95% non-condensing

**MTBF**

Min. 110,000 hours @ 45 °C (Fans excluded)  
 Demonstrated MTBF is significantly higher

**Indicators**

Green Output ON LED on each internal module visible through the cooling slots

**Control Input**

None

**Alarm Output**

Not installed

**Package /Dimensions (WxHxL)**

3U4: 244 x 132 x 407mm  
 (9.6" x 5.2" x 16")  
 Mounting holes are clear

**Weight**

8.1kg (18 lbs.)

**Connections**


Input: Terminal block Phoenix 125A type  
 Output: Terminal block Phoenix 125A type

**RoHS Compliance**

Compliant

**Warranty**

Two years subject to application within good engineering practice  
 Contamination related failures and shipping cost excluded

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