

TET4000-48-069RA

4000 W AC-DC Front-End Power Supply

Bel Power Solutions **TET4000-48-069RA** is a 4000 Watt ACDC power-factor-corrected (PFC) and DC-DC power supply that converts standard AC mains power or high voltage DC bus voltages into a main output of 48 VDC (42 – 58 VDC) for supplying 48 VDC power distribution in high performance and reliability data center equipment, servers, routers, and network switches.

The TET4000-48-069RA meets international safety standards and displays the CE-Mark for the European Low Voltage Directive (LVD).

Key Features & Benefits

- Best-in-class efficiency of up to 98%
- Wide input voltage range: Full power available at 200-277 VAC or 240-380 VDC, reduced output power at 100-200 VAC
- AC input with power factor correction, usable also with high voltage DC
- 4000 W main output with programmable voltage set-point of 42-58 VDC
- Optional Standby output 12 VDC / 60 W
- One single rear side connector for input and output power and signaling
- Parallel operation with active digital current sharing through CAN bus
- Hot-plug capable
- High density design: 44 W/in³
- Small form factor: 69 x 40.6 x 528 mm
- Full digital controls for improved performance
- CAN communication interface for monitoring, control, and firmware update via bootloader, optional I²C communication instead of CAN bus foreseen
- Overtemperature, output overvoltage and overcurrent protection
- 2 Status LEDs: AC OK and DC OK with fault signaling
- Safety-approved to IEC/EN 60950-1 and UL/CSA 60950-1 2nd ed.
- RoHS Compliant
- US Patent Pending



Applications

- Data Center
- High Performance Servers
- Routers
- Switches



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1. ORDERING INFORMATION

TET	4000	-	48	-	069	R	A	Option Code
Product Family	Power Level	Dash	V1 Output	Dash	Width	Airflow	Input	Blank
TET Front-Ends	4000 W		48 V		69 mm	R: Reversed ¹	A: AC	Standard model

2. OVERVIEW

The TET4000-48-069RA is a fully DSP controlled, highly efficient front-end power supply. It incorporates resonant-soft-switching technology and highly integrated conversion stages to reduce component stresses, providing increased system reliability, very high efficiency and high power density. With a wide input operating voltage range and minimal linear derating of output power with respect to ambient temperature, the TET4000-48-069RA maximizes power availability in demanding server, switch, and router applications. The power supply is fan cooled and ideally suited for server integration with a matching airflow path.

The PFC stage is digitally controlled using a state-of-the-art digital signal processing algorithm to guarantee best efficiency and unity power factor over a wide operating range when using AC input voltage. When operated with high voltage DC the PFC circuit is still in operation, but input current is controlled to be DC.

The DC-DC stage uses soft switching resonant techniques in conjunction with synchronous rectification. An active OR-ing device on the output ensures no reverse load current and renders the supply ideally suited for operation in redundant power systems.

The optional always-on +12V standby output provides power to external power distribution and management controllers. Its protection with an active OR-ing device provides for maximum reliability.

Status information is provided with front-panel LEDs. In addition, the power supply can be monitored and controlled (i.e. fan speed setpoint) via CAN communication interface. It allows full monitoring of the supply, including input and output voltage, current, power, and inside temperatures. The same CAN bus supports the bootloader to allow field update of the firmware in the DSP controllers.

Cooling is managed by a fan, controlled by the DSP controller. The fan speed is adjusted automatically depending on the actual power demand and supply temperature and can be overridden through the CAN bus. Availability of an optional I2C bus instead of CAN bus is foreseen.

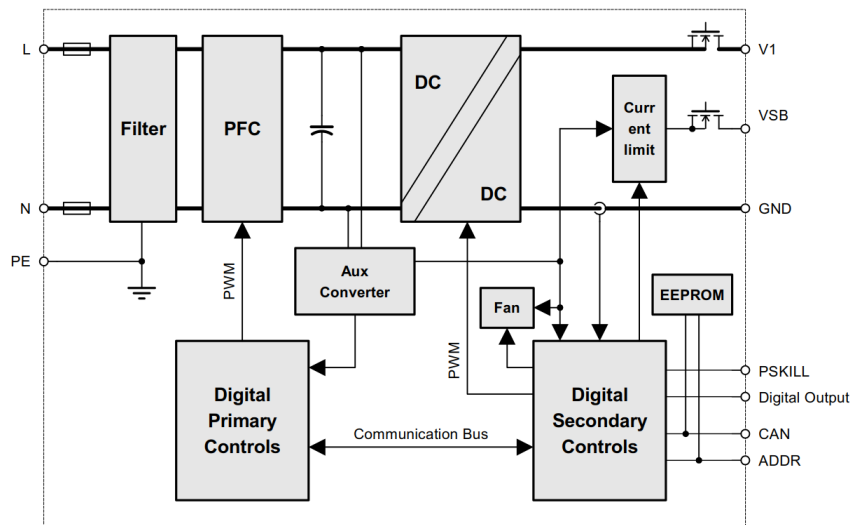


Figure 1. TET4000-48-069RA Block Diagram

¹ Front to Rear