

Ericsson full-brick DC/DC converter offers new levels of efficiency and is 'drop-in' replacement for new and old designs

Ericsson Power Modules' latest DC/DC converter platform, the PKY4716PI, utilizes the industry standard full-brick format and footprint, making it an excellent drop-in replacement for enhanced performance. The device, aimed at the telecoms market and customers developing base transceiver stations in cellular radio networks where high efficiency and reliability are required, is also ideal for many industrial applications.

Offering state-of-the-art performance, the PKY4716PI delivers 700W output power and typically exceeds 94 percent efficiency. The device's efficiency curve is virtually flat from 30 percent to 100 percent load. This excellent level of performance is achieved by using a specially optimized topology and advanced rectification techniques (patent pending).

The device will handle both 48V and 60V system voltages and has an input voltage range of 36-75V. For safety and availability, it can withstand up to 100V input continuously. The device features an ultra-wide output voltage trimming range that can be adjusted down to 10V, making the PKY4716PI extremely flexible and useful for different RF power amplifier technologies and applications, as well as other applications with varying supply voltage requirements.

The PKY4716PI has a typical 20mV load and line regulation with ± 1 percent set voltage over a base-plate temperature range of -40 to 100 degrees C. The device delivers full power at 100 degrees C base plate temperature, and uses only high-reliability ceramic capacitors. Fully current-limit-protected, the device has over-voltage protection on input and output connections. The PKY4716PI fully meets ROHS requirements and, with its low component count, offers high reliability.

Ericsson Power Modules' PKY4716PI has greater efficiency than other similar products on the market, and can handle dual system voltages. The very high control-loop bandwidth in the converter means that a minimum of external filter components are needed, resulting in greater economy and real estate savings for new RF power amplifier designs. In use, normally an input filter is not necessary if the input feeding impedance is low enough to the PKY4716PI.

Ericsson's and Ericsson Power Modules' lengthy experience and extensive know-how of DC/DC converter design and system knowledge are fully utilized in the PKY4716PI to optimize all aspects of performance and meet market needs in terms of cost and performance. The unique use of magnetic,

planar technology, switching technology and new advanced synchronous rectification make it very different to competitors' products. The device's mechanical design has been refined to be cost-effective and offer very efficient thermal management to handle the extreme power levels of high-performance DC/DC converters. The latest mechanical platform combines robust and flexible design and good thermal management together with manufacturing design that results in a very cost-efficient unit ensuring low life-cycle costs for the end user.

Factors driving demand for this type of device include applications where higher output power is required, such as in WCDMA base transceiver stations. Higher output power means increased demands on efficiency to reduce power losses and energy usage. It is estimated that 1 watt of power loss at board level is worth about USD 10 (USD 6-15 depending on the cooling principle and system architecture) over a five-year period.

In addition, investments in central power equipment, standby batteries, cooling, floor space, and other areas are directly proportional to the power and energy consumption. Comparing the PKY4716PI with its 94 percent efficiency with a converter with 91 percent efficiency (the normal figure on the market today), the energy cost savings alone would account for about USD 150 over a five-year period, assuming 70 percent average output power and USD 0.1/kWh. This is for one single converter. A base transceiver station, or radio base station, contains several RF power amplifiers and DC/DC converters, so nationwide deployment would result in huge annual savings. So investing in PKY4716PI and higher efficiency is a good investment, both for the environment and the bottom line.

Ericsson Power Modules' PKY4716PI will guarantee that less energy is wasted, improving economies at all levels of industry and in society. The device also meets and exceeds the technical performance level required for its use in telecoms and industrial applications.

Ericsson is shaping the future of Mobile and Broadband Internet communications through its continuous technology leadership. Providing innovative solutions in more than 140 countries, Ericsson is helping to create the most powerful communication companies in the world.

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About Ericsson Power Modules

Ericsson Power Modules is a supplier of world-class DC/DC power modules for distributed power architectures. With its global design, development, manufacturing, and sales network, Ericsson Power Modules is a leading supplier of power solutions to meet customer demands for high performance.