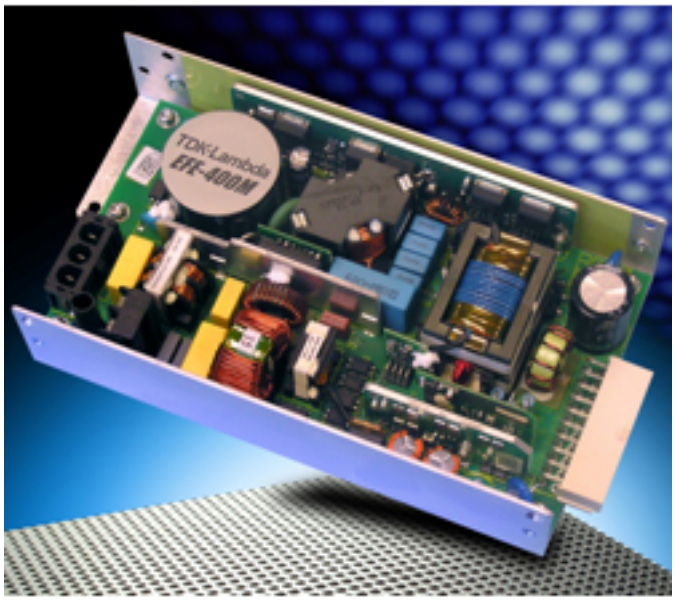
400-Watt Power Supplies Meet Medical and ITE Safety Specs



TDK-Lambda Americas has extended the power range of their digitally-controlled EFE-M series of medical/ITE power supplies from 300W to now 400W. The EFE400M series was designed with Medical and ITE applications in mind. With a 4kVAC reinforced input to output isolation and an output-to-ground isolation of 1500VAC, the EFE400M meets the rigorous international safety standards of IEC/UL 60601-1 for medical equipment, making it suitable for use in B (body) and BF (body floating) type medical and dental applications. Regulated DC outputs of 12V, 24V, or 48VDC are standard, plus other voltages can be provided.

With a 3.5 x 6.5 inch footprint and less than a 1U profile (1.34” to1.60”) the EFE400M can be incorporated easily into designs where space is limited so the end product can be smaller and cooler. Other features such as a redundant operation capability, a standby voltage output and ITE safety certifications per IEC/UL 60950-1, make the EFE400M equally suitable for high-integrity applications (in addition to medical) including broadcast, instrumentation, routers, servers, security networks, ATE and factory automation.

The EFE400M series includes an integrated magnetics transformer (transformer and inductor windings on the same core) to boost efficiency to typically 90% and employs an 8-bit microcontroller for full digital control of the output and to handle housekeeping routines. This resulted in a 25% parts count reduction to achieve a 45% smaller and up to 56% lighter design when compared to similar competitive products. Power densities of up to 15.6W/in3 are achieved under peak load conditions and 13.1W/in3 under continuous loading.

TDK-Lambda's control of the EFE400M allows the power supply's performance, such as current limit and start-up characteristics, to be optimized digitally – this feature eliminates the hardware changes usually required in analog designs. A reduced cost primary side control topology is employed, supervised by the microcontroller. This results in fewer parts and higher efficiency without sacrificing load regulation performance. Furthermore, the need for an opto-isolator is eliminated – a device which is undesirable for long life power supply designs.

Additional features of the EFE400M include remote on/off and power-good signals; it also comes with a 5V/2A isolated standby output, which is not affected by the remote on/off. The inclusion of an ORing FET allows redundant operation of EFE400M supplies with no external diodes required.

The EFE400M delivers 400W continuous power and up to 475W peak for 10 seconds. And, non-standard output voltages can be accommodated easily by precise factory programming. An additional 12V/1A fan output is included and all models operate from a universal 90 to 264VAC input with dual-input fusing as standard. Earth leakage current is less than 300µA at up to 264VAC, fully complying with international medical safety requirements. Active power factor correction (PFC) ensures EN61000-3-2 compliance. Other EMC improving design features include the use of SiC (silicon carbide) diodes that ensure Curve B EMC conformance.

TDK-Lambda's EFE400M units are approved to IEC/EN/UL/CSA 60601-1 for medical and dental applications, IEC/EN 61010-1 for laboratory and process control applications and IEC/EN/UL/CSA 60950-1 for ITE/general purpose applications. In addition, the unit carries the CE mark according to the LV Directive and comes with a three-year warranty. The EFE400M is available in two con-figurations including: open-frame or U chassis with an optional cover and temperature-controlled fan.

The EFE400M series are available now with prices starting at $224.00 each in 250 piece quanti-ties. For more information, please call TDK-Lambda Americas directly at 1-800-LAMBDA-4 or visit the website at: http://www.us.tdk-lambda.com/lp/products/efe-series.htm [1]

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[1] http://www.us.tdk-lambda.com/lp/products/efe-series.htm