Robust 800-W Power Supplies For Industrial And Medical Applications

COSEL's AEA800F series 800-W free-air convection-cooled power supplies deliver 300% peak power for a period of up to 3,000 milliseconds. Designed for applications requiring a high level of safety, the AEA800F power supplies are certified to the EN62477-1 (OVC III) standard for industrial applications and are approved in accordance with ANSI/AAMI ES60601-1, and EN60601-1 3rd edition for medical applications (see the figure).

The AEA800F is suitable for body floating (BF) applications and complies with the 2MOPP (IN/OUT) and 1MOPP (OUT/FG) safety requirements. The AEA800F layout is optimized for free-air convection making it well suited for use in equipment being operated in low-noise environments.

The AEA800F series of 800-W supplies builds on the existing AEA series, which includes the 600-W models of the AEA600F series and the 1000-W models of the AEA1000F series, all offering peak power for demanding applications. The AEA series is suitable for a large range of applications such as robots and robotics, infusion-pumps, ventilators, actuators, process control, radio and transmission equipment, and emergency signaling. Key specifications for the three members of this series are shown in the table.

With the ever-increasing levels of automation in industrial and medical applications, power supplies must be able to deliver extra power during peak operating times as required by dynamic loads (for example, motor startup). To satisfy and sustain such conditions the power supply must be designed with a high dynamic control level and a power stage able to sustain repetitive peak loads. The AEA800F's ability to deliver 300% of its free-air, convection-cooled, nominal power rating during a period of up to 3,000 ms is outstanding and responds to the latest market requirements from industrial and medical equipment, says the vendor.

In addition, industrial applications are now requiring efficient power supplies that are able to work in various environments with a high level of safety. The AEA800F is certified to the EN62477-1 Over Voltage Category Three (OVC III), meaning that end equipment powered by the products can be directly connected to the main distribution panel without adding an extra level of isolation. This simplifies the system designer's task, reduces costs and guarantees the highest level of efficiency.

For medical applications, the AEA800F input-to-output isolation complies with 2MOPP, its input to ground with 1MOPP, and output to ground with 1MOPP, making the product suitable for body floating (BF) applications. The units are approved in accordance with ANSI/AAMI ES60601-1 and EN60601-1 3rd Edition. Additionally, the AEA800F has an input-to-output isolation of 4,000 Vac, input to ground (FG) of 2,000 Vac and output to ground (FG) of 1,500 Vac.

The AEA800F has an input voltage range of 85 to 264 Vac. Three output voltages are available: 24 V, 36 V and 48 V with respective current ratings of 34 A (72.5 A peak), 22.7 A (48.4 A peak) and 17 A (36.3 A peak). Output voltage can be adjusted using a built-in potentiometer.

For low harmonic current distortion, the AEA800F uses active power factor correction (PFC), and the switching stage uses an LLC resonant topology deploying the latest generation of power semiconductors, conferring a typical efficiency of up to 95%. For additional power the AEA800F power supplies can be connected in parallel, up to six units. When in parallel, by adjusting the output voltage on the master unit, slave units neatly automatically adjust their output voltage to be of equal value.

Optimized for convection cooling, the AEA800F can be operated within an ambient temperature range of -20°C to +70°C. Depending on the assembly method and ventilation used in the end equipment, a derating may apply as specified in the technical documentation. The AEA800F includes built-in inrush current, overcurrent, and overvoltage protection circuits as well as thermal protection.

In its open-frame format, the AEA800F measures 50 x 127 x 203.2 mm (1.97 x 5 x 8 in.) and weighs 1.4 kg max with cover. The AEA800F complies with multiple safety requirements including UL (USA), C-UL (Canada), DEMKO (Denmark), and TUV (Germany). The product is UL62368-1, EN62368-1, EN62477-1 (OVC III) certified.

To accommodate application-specific requirements, a number of options are available including coating (C), additional cover (N), vertical positioned screw on a terminal block (T), and terminal block changed to a connector (J). There are also extended features such as auxiliary outputs (AUX1 12 V, 1 A), (AUX2 5 V, 1 A),

remote on/off and alarm (R3), UL508 certification (T5), and overcurrent protection mode changed from hiccup mode to shutdown (P5).

The AEA800F series has a full five-year warranty and conforms to the European RoHS, REACH and Low Voltage Directives. For more information, see the AEA series page.

Figure. Designed for industrial and medical applications, the AEA800F delivers 300% peak power for up to 3,000 ms.

Table. Key specs for members of the AEA800F series.

Product Name	Output Wattage	Output Voltage·Current
AEA800F-24	564W (Peak: 1740W) ACIN 230V Convection Cooling 816W (Peak: 1740W) ACIN 230V Forced Air Cooling	24V 23.5A (Peak: 72.5A) ACIN 230V Convection Cooling 24V 34.0A (Peak: 72.5A) ACIN 230V Forced Air Cooling
AEA800F-36	565.2W (Peak: 1742W) ACIN 230V Convection Cooling 817W (Peak: 1742W) ACIN 230V Forced Air Cooling	36V 15.7A (Peak: 48.4A) ACIN 230V Convection Cooling 36V 22.7A (Peak: 48.4A) ACIN 230V Forced Air Cooling
AEA800F-48	566.4W (Peak: 1742W) ACIN 230V Convection Cooling 816W (Peak: 1742W) ACIN 230V Forced Air Cooling	48V 11.8A (Peak: 36.3A) ACIN 230V Convection Cooling 48V 17.0A (Peak: 36.3A) ACIN 230V Forced Air Cooling