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POWERBOX
SMM3000A80024-C



High peak load applications

Laser equipment is widely used in medical applications and from cosmetic through to general surgery they all require power supplies to be able to deliver very high peak energy levels to the laser or discharge tubes. However, high peak energy and the repetition thereof generates electromagnetic radiation and line disturbance. This is a challenge for power designers who need power solutions that are able to deliver the required amount of power without generating line disturbances, whilst also guaranteeing patient and operator safety when high voltages and energy levels are involved during the process.

CO₂ (carbon dioxide) laser or Erbium YAG are commonly used in medical applications, though the energy released during the pulse related to the specific task varies by a large amount. There are different types of pulsing for CO₂



lasers. In the cosmetic word, there is a newer technology called UltraPulse (which consists of a very short pulse duration with high pulse power and very high influence), that is even faster than SuperPulse (medium pulse duration with medium power). A good device has less than a millisecond pulse width, meaning that it is incredibly fast-firing, requiring the power supply to be able to deliver high energy levels during the pulse, but also able to restore energy for the next pulse. A tough ask. Designed to meet such requirements, the Powerbox SMM3000A80024-C is a 2.25kW AC/DC capacitor charger certified to comply with the medical safety standard IEC60601-1 3rd. The power supply provides a level of protection, primary to secondary main output of 2xMOOP, and 2xMOPP to auxiliary output. To accommodate different capacitor banks and applications, the output voltage can be adjusted from zero to 800VDC (600VDC nominal) with an output current of 5.5A at nominal.

An automatic current controller guarantees that the power envelope is always within safe limits, reducing capacitor aging and overstressing of components, thus contributing to a longer lifetime. The SMM3000A80024-C has a built-in microprocessor constantly monitoring the charging status, reporting end of charge and discharge level, as well as all protection warnings due to abnormal operation such as over-temperature, over-voltage and current.

To reduce line disturbances the SMM3000A80024-C includes a very high efficiency power factor corrector (PFC), soft-start circuitry, filtering and is housed in a six-sided shielded case. To limit audible noise to a minimum, the SMM3000A80024-C's fans are thermo-controlled, regulating their speed to the minimum required for normal, safe operation.

The SMM3000A80024-C also delivers an auxiliary output voltage of 24VDC, reducing the need for an additional power supply to power laser controller and interfaces.

Features

- Microprocessor controlled charging
- Soft start function
- Signalling and control via D-sub (set, monitor and fault reporting)
- Temperature controlled fans
- 5V stand-by

Input

- Wide input range, 93-264 VAC, 50/60Hz 1ph
- PFC stage and soft start circuitry

Output

- 0-800 VDC, 5.5 A, 2.25 kW max

Environmental

- Operating temperature +10°C to +50°C
- Altitude 2000 m

Isolation

- Primary to secondary O/P1: 2 MOOP, O/P2: 2 MOPP
- Primary to ground 1 MOOP
- Secondary to ground O/P1: 1 MOOP, O/P2: 1 MOPP

General

- Dimension 383 x 88.5 x 218.5 mm

About Powerbox

Founded in 1974, with headquarters in Sweden and operations in 15 countries across four continents, Powerbox serves customers all around the globe. The company focuses on four major markets - industrial, medical, transportation/railway and defense - for which it designs and markets premium quality power conversion systems for demanding applications. Powerbox's mission is to use its expertise to increase customers' competitiveness by meeting all of their power needs. Every aspect of the company's business is focused on that goal, from the design of advanced components that go into products, through to high levels of customer service. Powerbox is recognized for technical innovations that reduce energy consumption and its ability to manage full product lifecycles while minimizing environmental impact. Powerbox is a Cosel Group Company.

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