

High Voltage, Higher Standards in Electrosurgical Design

INDUSTRY**Medical****SOLUTION****+24 V DC-DC Converter
with 30 kV input-to-output
Isolation****APPLICATION****Electrosurgery
Instrument****CHALLENGE**

A leading medical technology innovator was developing a next-generation pulsed field ablation system for electrosurgery, aimed at delivering precise, high-voltage pulses to patient connected devices. To ensure safety and performance, the system required 30 kVDC isolation between its pulse-forming network and multiple downstream components, each demanding 24 VDC at 70 W.

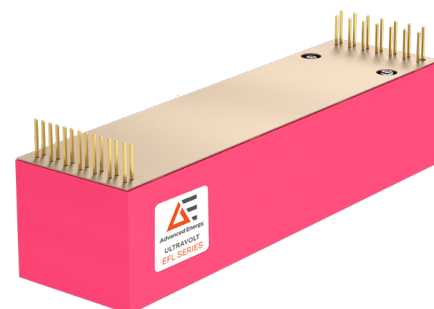
The Advanced Energy (AE) engineering team faced a key challenge: while the customer was open to deploying multiple lower-power converters independently, their vision leaned towards a more streamlined solution. The ideal options included:

- A single 70 W isolated DC-DC converter, or
- A parallel configuration of smaller converters offering simpler wiring and integration.

No communication or I/O is required between the upstream devices and the system, just isolated 24 VDC power. The stakes were high as the solution had to be safe, scalable, and rock-solid under demanding conditions.

SOLUTION

AE proposed a smart, modular approach using three 30EFL24-24W-I/O-RB converters from the EFL series, each delivering 24 W of isolated 24 VDC power. Operating in parallel, the trio provided a total of 72 W, comfortably meeting the system's 70 W requirement. It also maintained a robust 30 kV isolation barrier between DC output, input, and case ground. This product, unique to the high voltage industry, provided the customer with the ability to power devices with 24 VDC while also guaranteeing a safe, reliable 30 kV



isolation barrier between the DC output, DC input and case ground. Importantly, if future demands increased, scalability is as simple as adding more EFL modules.

The customer was confident in their choice for several compelling reasons:

- AE's proactive approach in confirming parallel operability of the EFL series through rigorous testing at AE labs reassured the client. Through extensive trials under full load across three units, the AE team provided a comprehensive test report, giving them confidence and peace of mind about integrating these converters into their system.
- AE's swift testing response was not just appreciated for its technical merit but also demonstrated a sense of partnership and collaboration that clients found important.
- Transparency and active engagement bolstered the customer's decision-making process.
- AE's EFL product addresses the complexities of floating low-voltage DC levels at very high voltage levels.
- The EFL series' proven track record in diverse applications like electron or ion beam systems, x-ray systems, and mass spectrometry added layers of trust in the product and AEI's expertise.

RESULT

The customer was presented with a solution which fully met all of their high voltage DC as well as their floating low voltage DC requirements. As a result, they were impressed not only by AE's technical acumen and long-standing experience in high voltage applications (especially in the high-performance segment for high voltage DC-DC isolation modules), but also highly valued the excellent customer service and rapid and professional product support they received from product conceptualization, prototype stage and through full production of their electrosurgery system. This collaboration showed AE's commitment to excellence in both engineering prowess and client relations.



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