CASE STUDY

High Voltage Power Supply Enables Flow Cytometry in COVID-19 Research

INDUSTRY	SOLUTION	APPLICATION
Biological Research	UltraVolt A Series Artesyn iMP Series	Analytical Instrumentation

CHALLENGE

In the relentless pursuit of advancing COVID-19 vaccine research, a new challenge emerged for genetic mapping flow cytometry systems. The system required a high-voltage power supply (HVPS) to deliver +250 V with up to up to 4 W output power to drive lasers within these precision life science systems. This HVPS was housed within the laser module, pivotal in generating power for the bias on photodiodes. While PMT (Photomultiplier Tubes) detectors operated off a 12 V regulation from a 15 V source, requiring an efficient PMT/HVPS assembly, the challenge extended beyond mere voltage requirements.

The situation also demanded a sophisticated AC-DC source with multiple DC outputs to efficiently power the HVPS, thermoelectric modules, logic controllers, motors, and pumps — all requiring outputs of 5.5 V, 6 V, 15 V, and 24 V. The critical demand did not stop at power supply as the laser module required exceptional reliability to function seamlessly, and the thermoelectric modules were crucial for maintaining precise temperatures of the fluids under analysis.

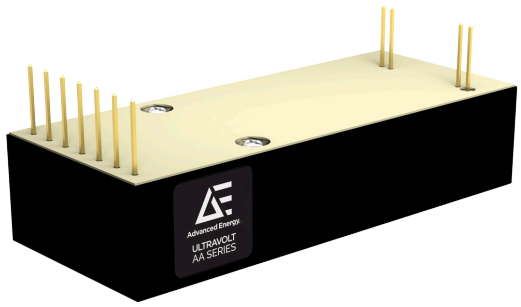
Given their prior experience with Ultravolt high voltage power supplies in similar systems, the customer sought to replicate their results without taking unnecessary risks. Their new systems aimed to push the boundaries of flow cytometry, offering groundbreaking capabilities that could handle multiple tests with a single-reaction volume.

SOLUTION

To meet these demanding requirements, the team selected the UltraVolt A series (Model 1/4A12-P-F-M). The A series was chosen for its field proven reliability, a quality that the customer had previously praised. The customers' experience of easy access to engineering resources, quick delivery times, and consistent customer service created a formidable trust in Advanced Energy’s ability to deliver.

In order to fulfill the low voltage power supply (LVPS) requirements the Artesyn iMP4-2Q0-1G0-1H0-NNN0-01-B-851 was also chosen.

These choices were clear—the proven performance of UltraVolt and Artesyn ensured the sensitive laser component in the customer's system functioned reliably. They could seamlessly integrate these power supplies, confident in their choice due to previous successful partnerships.



UltraVolt® AA Series

iMP Series

RESULT

The decision to partner with Advanced Energy was again successful for this customer. Some of the reasons for the success included:

- **Confidence & Continuity:** UltraVolt's exemplary reputation and the customer's past satisfaction allowed direct engagement without searching for alternative vendors, saving both time and financial resources.
- **Accelerated Development:** AE ability to provide product on short lead times facilitated rapid prototyping and deployment of beta systems, significantly accelerating research in vaccine development.
- **Engaged Support:** UltraVolt's commitment to providing rapid engineering support ensured a smooth and efficient development process, reinforcing their reputation for reliability.
- **Innovation at the Forefront:** By achieving high reliability and seamless integration, the systems offered innovative capabilities that were vital in advancing the understanding and ongoing development of COVID-19 vaccines.

By choosing UltraVolt A series and Artesyn iMP series, the research team not only met their technical requirements but also gained a strategic advantage in the development of next-generation COVID-19 vaccine technologies. The power supplies played a pivotal role in enabling high-precision and multi-test capabilities—pushing the boundaries of biological research.

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