

# Advanced Energy's NGB660 modified for high hold-up time requirement

**INDUSTRY**

Industrial

**SOLUTION**

NGB660

**APPLICATION**

Railway

**CHALLENGE**

The customer was asking for a universal input (90 - 264 VAC), a main output of 12 VDC / 250 W with 120 ms hold-up time, as well as a 5 VDC / 5 W standby voltage. An open frame solution with natural convection was required which also involved custom input and output connectors, high efficiency and power density given the small unit size. Requirements concluded with a production lifetime of 10 to 15 years. Therefore, AE's challenge was to ensure a reliable and efficient power supply that would stand the test of time.

**SOLUTION**

Advanced Energy implemented a series of strategic modifications to their NGB660 model to address customer requested 120 ms hold-up time compared to its current 20 ms which is typical in the industry for low power applications. Instead of full customization, a value-add and modified approach with NGB660 as base model is used, which included the following changes:

- Firmware modifications
- Increased PFC 400 V bulk capacitance value

By adding a capacitor bank to the 400 V PFC output, they effectively increased the hold-up time without using massive capacitors in the output of the power supply. This method leverages the energy storage proportional to the square of the

voltage across the capacitor, ensuring a reliable and efficient solution.

By complying with the high hold-up time requirement, Advanced Energy provided continuous power to the load during brief AC input power loss, they enhanced the system to protect against power outages and voltage fluctuations.



## CONCLUSION / RESULT

Advanced Energy's ability to support a value-add solution and accommodate modifications to the power supply allowed the customer to meet challenging hold-up time requirements. AE's commitment to fast sample delivery and long product lifetimes ensured customer satisfaction.

By utilizing a wide breadth of standard product portfolio as building blocks and extensive design experience, Advanced Energy provided a lower-risk, quick-to-market solution that other suppliers might have approached with full customization. This strategic approach not only reduced the risk to the customer as the based model is already qualified by using proven technology, but also exceeded the customer's expectations, showcasing Advanced Energy's dedication to innovation and excellence.



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