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Power Controller Increases Stability Of Semiconductor And Industrial Processes

[Advanced Energy Industries'](#) Thyro-XD is a silicon-controlled rectifier (SCR) power controller for precision control of lamp-based heating applications. Delivering unprecedented speed and accuracy, according to the vendor, the Thyro-XD supports next-generation semiconductor manufacturing and industrial processes that demand precision temperature control, especially during extreme and dynamic ramps (Fig. 1).

"Demand for smaller, faster, and more efficient computer chips is driving the need for innovative controls in wafer processing equipment for semiconductor production," said Dhaval Dhayatkar, Advanced Energy's vice president, Critical Sensing and Control Products, System Power. "The new Thyro-XD offers unmatched speed and precision for temperature control, significantly enhancing stability and repeatability, particularly for lamp-based heating applications, in the smallest form factor available."

The Thyro-XD provides highly accurate, rapid load resistance measurement, enabling faster detection of temperature changes and tighter process control. It has a high-power density of 188 W/in³, is optimized for semiconductor tools, and doubles the control capacity versus other available products. With convection cooling, it eliminates the need for fans, improving simplicity and reliability.

With real-time resistance measurement, the Thyro-XD SCR can prevent potential damage to resistors, reducing expensive maintenance and replacement. In addition, a five-fold increase in load voltage, load current and output power accuracy enables fastest compensation for input fluctuations while increasing efficiency.

The Thyro-XD provides optional EtherCat connectivity through an optional Advanced Bus Module (ABM) and interface cards and can integrate temperature feedback from multiple Advanced Energy Impac measurement pyrometers for real-time temperature control (Fig. 2).

For more information on Advanced Energy's Thyro-XD SCR power controller click [here](#) and for more on the ABM click [here](#).



Fig. 1. Measuring 46 mm (w) x 150 mm (h) x 154 mm and weighing 0.9 kg, the Thyro-XD digital thyristor SCR power controller is compact, lightweight and easy to connect to process and automation technology. With a high accuracy of <0.5% it is well suited for highly dynamic applications. The power controller targets SEMI lamp driver processes such as epitaxial growth and rapid thermal annealing applications.

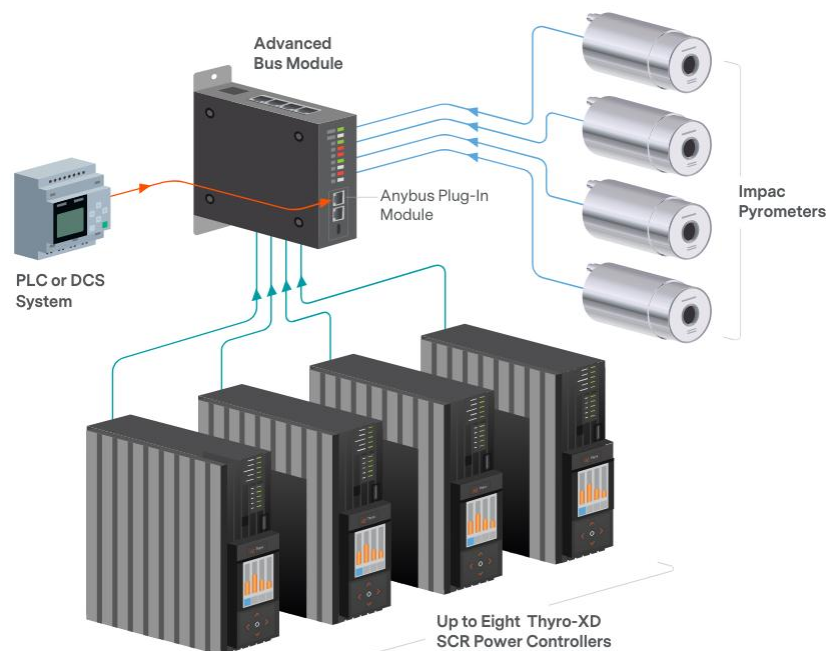


Fig. 2. EtherCAT and USB-C interfaces enable seamless integration into host systems and easy fieldbus integration by means of the Advanced Bus Module.