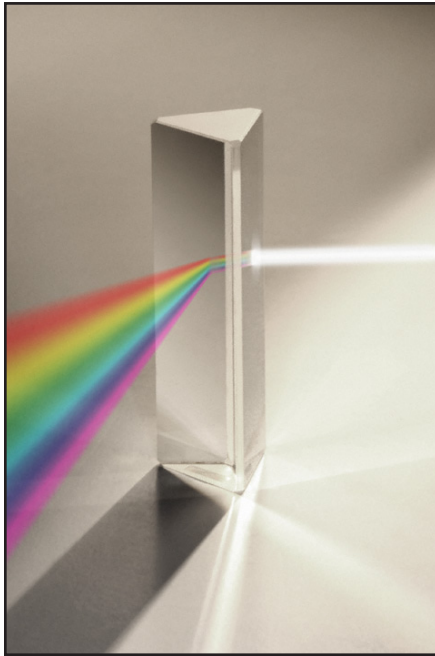


Precision Instrumentation Subsystem Design Note #35 Ion Implantation Equipment



Orchid's Ion Implantation Control subsystem precisely guides particles moving at the speed of light to their destination.

Precision Instrumentation Subsystem

Varian Corporation hired Orchid Technologies to perform the cost reduction redesign of their precision Ion Implantation control system. With as many as thirty subsystems contained within a single Ion Implanter, the potential savings were tremendous.

A Hostile Environment

The inside of Ion Implantation equipment reaches voltage levels in excess of 700,000 Volts above ground. Large ESD events are common in this environment. The new instrumentation subsystem had to achieve ESD immunity, while providing precision 20 bit analog input and output controls. Glitch-free operation in the presence of multiple ESD events was an absolute necessity.

Optical Communications Makes the Difference

High voltage immunity is achieved through dual, redundant optical communications links. Instrumentation and control information is relayed between the precision subsystem and the central control computing equipment over dual redundant optical links.

Attention to Detail Achieves Success

Careful circuit board layout techniques in which chassis ground planes, power ground planes, digital ground planes, and analog ground planes are split and routed with care is essential. Carefully crafted component placement, which takes into account energy discharge paths, means success.

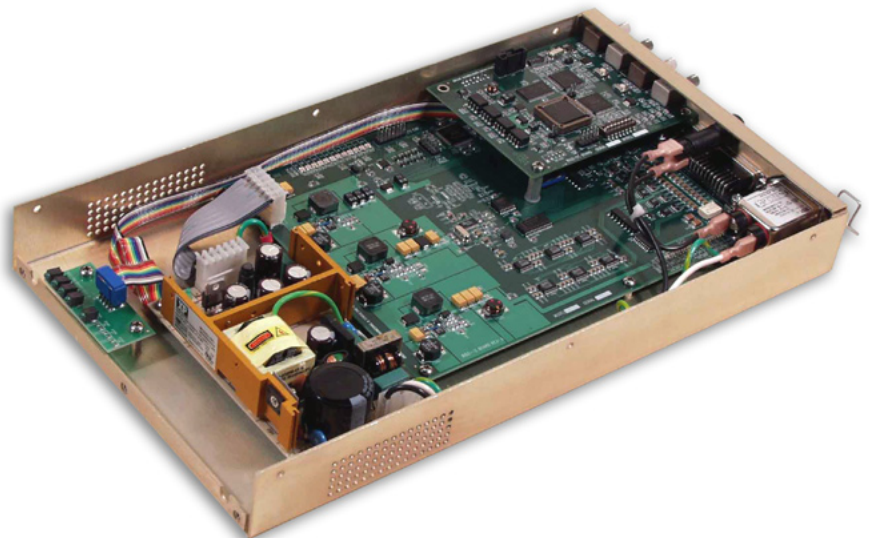
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The development of custom Electronics Technology solutions for our OEM clients is Orchid's entire business. Industrial Controller Design with rapid design cycles, demanding technical requirements, and unforgiving schedules set us apart. Call Orchid Technologies today, we'll design custom industrial control electronics for you too!



"The rapid cost reduction of our control subsystem was critical to the bottom line. Orchid achieved greater cost reduction than we ever expected!"

Varian Corporation
VP Engineering



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