High Reliability Redundant Computing Design Note #100
STMicro SPEAr1310 Dual-Core Cortex A9 Processor

Running 24/7 custom high reliability computing equipment from Orchid Technologies makes exploration safe and efficient.

High Reliability Redundant Computing

High reliability redundant computing is required for mission critical applications such as chemical processing, oil refining, and nuclear power controls. Multiprocessor, mirrored control systems employ redundant power, self-checking circuitry, error correcting memory systems, and error monitoring software. Operating without restart for years at a time, high reliability redundant computing systems are designed with temperature de-rated components. Rigorous environmental testing, stress testing, HALT testing, susceptibility testing, and fault injection testing is employed to prove design effectiveness. Attention to detail is the hallmark of success.

STMicro SPEAr1310 Processor

Dual ARM9 processor cores from STMicro provide an ideal computing platform on which to build out system requirements. Large ECC-protected memory structures, secure network communications, time stamped processes, robust power system design round out the hardware architecture.

Flexible FPGA-based Peripheral Implementation

FPGA-based peripherals offer end-product configurability. PCI Express communications provides high bandwidth data pipes to general purpose FPGA based peripherals. Run-time configurability permits application-specific updates to the control structure.

PCI Express Data Communications

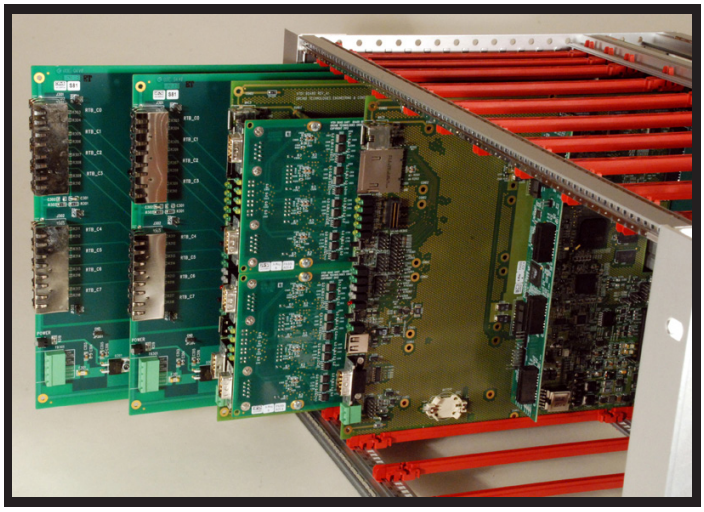
Multi-lane PCI Express data communications provides wide high bandwidth data pipes to configurable peripherals. Multi UART with RS232, RS485, RS422 interfaces, HDLC Communications, high-speed synchronous serial communications, analog data input channels make this configurable controller unique in its class.

Orchid Technologies: Hi Reliability Computing

The development of custom electronic products for our OEM clients is Orchid's entire business. The design of custom hi reliability industrial computers with rapid design cycles, demanding technical requirements, and unforgiving schedules sets us apart. Call Orchid Technologies today!

"Time was at a premium. Our new controller was due out in a year. Orchid's high-reliability design was up and running right on time. We saved months off scheduled design re-spins."

- VP Engineering



Custom Engineering From Concept to Production

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