SENSORAY COLLABORATES WITH SPEEDLINE ON ELECTROVERT WAVE SOLDERING SYSTEM

DESIGN, FIT AND FUNCTION

Sensoray collaborated closely with Speedline Technologies Inc. on the design, fit and function of an industrial Ethernet-based I/O system for a new wave soldering machine being developed by Speedline's Electrovert business unit. The successful collaboration yielded the Model 2600 Series Industrial I/O via Ethernet. The new I/O protects Electrovert from platform obsolescence, simplifies training for assembly and service technicians, simplifies cabling, and improves overall serviceability. The Ethernet-based I/O system has now been incorporated into all of Electrovert's reflow soldering and precision cleaning equipment product lines.

THE CHALLENGE

Speedline builds equipment for electronics manufacturing. Their Electrovert wave soldering machine operates in demanding production environments in a very competitive market. The machines run constantly, so Speedline needed a durable new design, which could run constantly with minimal downtime.

Wave soldering machine operation must be tightly controlled, with exacting precision, quality, and repeatability. Internal data transfer can reach thousands of commands per second, and the design of input/output circuits, data conversion, and cabling is critical for proper equipment performance. Sensoray's challenge was to develop an I/O system that could operate well in this environment.

THE DESIGN HIGHLIGHTS

Speedline requested an Ethernet-based I/O system that would protect them from bus generation obsolescence. They wanted analog, digital, and counter modules for multiple I/O connections. In addition, they wanted a system on which technicians could be easily trained.

A specific wish list of features included quadrature output capable of sensing direction, as well as higher analog inputs for more precise temperature control. To improve serviceability and cut costs, Speedline was looking to simplify cabling so it could benefit from a shorter distance from electrical interface to the module.

Sensoray and Speedline collaborated on the design, fit, and function of the I/O system, the **Model 2600 Series** Industrial I/O via Ethernet. At the heart of every 2600 system is a **Model 2601 communication module**, which distributes power, interlock signals, and communications to as many as sixteen plug and play I/O modules. Also included are four ports for communicating with serial devices, including barcode scanners.

The electrical interface is outside the computer, so the Ethernet-based solution is free of the computer bus evolutionary

process – and protected from platform obsolescence. The DIN rail mountable open-frame modules quickly snap onto standard 35-mm DIN rails, simplifying installation.

Since the feed lines are protected inside a NEMA enclosure, designers opted not to put the DIN rail mountable modules in their own enclosures, considerably saving on costs.

The I/O is a single board solution; field wiring can be used to connect the modules directly to I/O boards, removing the need for external termination boards and reducing material and assembly costs.

Electronics are mounted outside of the machine, greatly simplifying cabling, reducing manufacturing costs, and improving the equipment's serviceability. Locating the electrical interface near the module means the wires are shorter, less electrical noise is picked up, and measurements are more accurate.

RESULTS

The field-proven, commercial off-the-shelf nature of the I/O bus has greatly improved Speedline's cost, lead time, and support capability. In addition, with commonality of I/O interfaces gives Speedline a competitive advantage.

THE SOLUTION

- Ethernet based
- Plug and play
- Interface in machine
- Module close to motors and heater
- Interface boards connect with cables
- Eliminated external termination board
- Open frame module
- DIN rail mounting
- Includes seven modules types