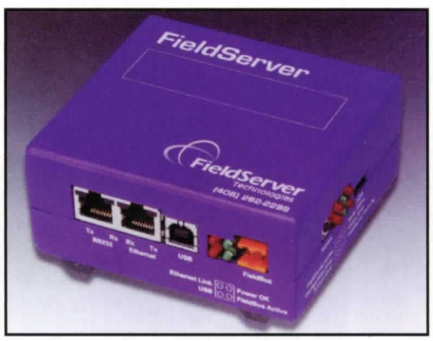
Protocol Conversion Made Easy

Control system components in process plants usually feature a mix of incompatible protocols. Legacy equipment must communicate with new components to create an integrated system. FieldServer Technologies, a new division of Sierra Monitor Corp., has introduced a line of products to bridge the communications gap among different types of control system components such as distributed control systems (DCSs), human machine interfaces (HMIs), programmable logic controllers (PLCs), and smart field devices. FieldServer Bridge products provide a low-cost and simple method for performing this communications integration.



The three product groups introduced by FieldServer for process control applications are the Ten Port Bridge (FS-X40 series), the Single Port Bridge (FS-X20 series), and the Remote Serial Port (FS-R20). The Ten Port Bridge has two Ethernet ports, 10 serial ports, and one ISA card slot for installation of a communications card. The Single Port Bridge has one Ethernet port, one RS-232/RS-485 serial port, and one optional communications port. The Remote Serial Port has one Ethernet port and one RS-232/RS-485 serial port.

The Ten Port Bridge and the Single Port Bridge support multiple protocols through each of their communications ports. "Ethernet port communications use TCP/IP as the transport mechanism," says Edward Hague, chief technology officer for FieldServer. "Support is provided for TCP/IP application level protocols including Allen-Bradley EtherNet/IP, Modbus TCP, OLE for Process Control [OPC], and Simple Network Management Protocol [SNMP]."

The Ten Port Bridge supports control bus and fieldbus communications through its ISA card slot. The optional communications port on the Single Port Bridge can be specified with any of the supported control bus or fieldbus communication protocols. Supported protocols include Allen-Bradley DH+, ControlNet, DeviceNet, GE Genius, Modbus Plus, and Profibus.

Each serial port on the Ten Port Bridge and the Single Port Bridge can communicate via supplied serial driver protocols including Modbus RTU, Weightronics, and Allen-Bradley DF1. "Custom drivers can be written and downloaded to the Ten Port Bridge and the Single Port Bridge for communication to serial devices not supplied with industry standard communication protocols," says Hague. "These drivers can be developed by FieldServer or by the user."

The Remote Serial Port offers a cost-effective method for two-way communication via Ethernet between a host and a single serial device with an RS-232 port, or multiple serial devices each supplied with an RS-485 communication port. The host must support Ethernet TCP/IP, and a communications port redirect driver supplied by FieldServer must be installed. This redirect driver enables the host to identify and transparently access the Remote Serial Port's RS-232/RS-485 port via Ethernet as if it were a physical COM port.

A comprehensive system configuration with a Ten Port Bridge might have a DCS connected to one Ethernet port, an HMI connected to the other Ethernet port, a PLC connected to the ISA card slot port via a Data Highway Plus (DH+) driver, and 10 different serial devices connected to the serial ports. Each serial device could have its own unique communication protocol.

Data from each control system component and from each serial device could be processed into the desired communication format. In this example, the PLC has a DH+ communication port, the DCS supports Modbus TCP communications through an Ethernet port, and the HMI supports EtherNet/IP communications through an Ethernet port.

The data from each of the 10 serial devices could be configured to a DH+ protocol format. Data from the DCS and from the HMI could also be processed into a DH+ format. This would allow the PLC to perform two-way communications with the DCS, the HMI, and each of the serial devices via the DH+ communications protocol.

Control system components are designed to perform specific functions and are not optimized as communication devices. "The FieldServer bridges act as communications processors to off-load protocol translation tasks from connected components," says Hague. "This increases the efficiency of system communications and allows each component to concentrate its processing power on its specific task."

FieldServer products allow a DCS to perform high-level control algorithms instead of attempting to act as a communications bridge to the plant floor. An HMI can concentrate on data display and analysis while the bridge assembles all data for easy access. A PLC can perform real-time control and not waste processor time on communication tasks.

Future product enhancements include support for various Internet application-level protocols via Ethernet TCP/IP. This will allow the bridges to act as web and mail servers with two-way communications to any of the connected components or devices via a web browser.

For more information call 408/262-2299, or browse www.fieldserver.com