Moving in the Right Direction: Connecting SmartMotors to Ethernet Networks

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– Hack Summer, Director of Applications Technology, Animatics

There is a growing demand for simplified remote communications to enable the monitoring of equipment and devices. With the multitude of communication buses currently available, Ethernet is quickly moving to the front of the line as the clear choice for connectivity. The challenge is finding a way to quickly and easily establish an Ethernet connection. Once this is accomplished, Ethernet provides increased range (actual distance between host controller and Ethernet device) and increased bandwidth.

Industrial Automation

CHALLENGE Animatics needed a fast, easy-to-use and cost-effective method to connect industrial equipment motors over Ethernet.

SOLUTION Lantronix XPort offered a compact, easy-to-integrate, complete network connection that accelerated time-to-market.

BENEFIT Increased bandwidth, and making SmartMotors IP addressable, resulted in higher-node connectivity, quick integration, improved time-to-market and increased sales, while reducing cabling and installation costs.

THE CHALLENGE: Finding a Seamless Connection to Ethernet Networks

Animatics Corporation is the pioneer and world-leading supplier of fully-integrated servo motors, which compress an entire control system – the controller, drive amplifier, encoder and brushless servo motor into a single package. The result is an unprecedented level of integration.

When Animatics was called upon to connect their SmartMotors to Ethernet networks, the hardware/software solutions generally available proved too bulky, complicated and too expensive. The company had been utilizing RS-232 as the standard for communications between the system-level controllers and each SmartMotor. Although commonly used in most computers and many PLCs, RS-232 presented limitations concerning range, bandwidth and connectivity with multiple motors, making it a poor fit for this application. Ethernet cards that plug into a PC appeared to offer a simple solution since most of their functionality is relegated to the PC itself. However, for a smaller embedded system like the SmartMotor, typical Ethernet solutions were not practical. Animatics needed a budget-friendly and compact turnkey Ethernet solution.

ANIMATICS®

THE SOLUTION: EASY-TO-USE, COMPACT AND COST-EFFECTIVE MODULE

The optimal solution for Animatics was Lantronix XPort®, a serial-to-Ethernet embedded device server. It provided all of the networking hardware and software required to connect SmartMotors to an Ethernet network or the Internet – all in a compact, integrated solution. This Ethernet module not only solved the space and cost constraints, but as a bonus, it put SmartMotor into the Ethernet market with virtually no development time. This saved in development costs and rescued dollars the company would have forfeited in lost sales opportunities.

Adapting the XPort to the SmartMotor involved the simple task of attaching the module to the back of the motor and connecting it to the logic power and transmit and receive pins of the SmartMotor's CPU. Animatics also incorporated software drivers provided by Lantronix into its PC resident terminal software. Though initially Animatics did not require its SmartMotor to be web-enabled, the XPort's built-in web server allowed customers to utilize their own web browser to communication directly with the SmartMotor, which they found to be a valuable feature.

Ethernet connectivity is used in SmartMotor applications in two ways. The first is to simply network several motors together to coordinate functions. This allows Ethernet messages to directly command motion or I/O changes, or simply activate pre-programmed subroutines within the SmartMotors. The second way is to report data to an upstream monitoring station. In this case, the SmartMotors are often networked to each other by another means, while only one motor is equipped with the XPort module to communicate to the factory main network.

THE RESULT: ENHANCED DATA TRANSPORT, SEAMLESS INTEGRATION, IMPROVED TIME-TO-MARKET AND INCREASED SALES

Integrating the Lantronix XPort has resulted in increased bandwidth for Animatics, enabling enhanced transport of data between the SmartMotor and Ethernet network, and positively effecting overall system performance. Its motors are no longer limited by the number of ASCII addresses as it was with RS-232. The result is easier and higher-node connectivity, combined with a reduction in cabling and installation costs. In addition, XPort provided Animatics with the fastest time-to-market of any solution the company evaluated.

Animatics' sales have increased due to adding Ethernet connectivity to their products. The company is pleased with its decision to incorporate XPort with its SmartMotor application and with the ease-of-integration Lantronix offered.

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The most unexpected benefit revealed itself with the availability of a variety of different pin-compatible models of the XPort family. Lantronix continuing to focus on expanding its networking technology has allowed Animatics to stay focused on maintaining its leadership position in the integrated servo motor market, rather than having its resources diverted to concentrate on solving its network connectivity issues.

The XPort Advantage

- **COMPACT SIZE –** a compact RJ45 form factor allowed XPort to be seamlessly integrated into a "small footprint" product.
- **MINIMAL DEVELOPMENT TIME –** with XPort's hardware, only receive, transmit and power is required, and no proprietary protocol needed.
- **ACCELERATED TIME-TO-MARKET –** as a complete network-enabling solution, XPort reduced an expected development cycle of several months to several weeks, allowing faster product introduction.
- **EXPANDED BUSINESS OPPORTUNITY –** by providing faster network throughput at a lower cost, XPort expanded the available market by allowing more aggressive pricing and penetration into new market segments.

LANTRONIX®