

New VersaPHY Enhancement Expands 1394 Market to Very Low Cost Devices, Takes Advantage of FireWire's Superior Distance, Speed, Streaming, and Protocol Features

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Simple, Lightweight Devices Cut Cost by Taking Direction from a Full-Featured Controller Node

The 1394 Trade Association said today it will develop a new, streamlined enhancement to the IEEE 1394 standard called VersaPHY, using an expanded physical layer (PHY) designed to enable low-cost, simplified implementations for aerospace, automotive, pro-audio, industrial, home networks, and other applications.

VersaPHY significantly expands the applications in which 1394 can deliver its superior speeds, distance, media and protocol capabilities because VersaPHY enables endpoint devices to operate at lower costs by receiving their configuration and operational direction from one or more full-service controller nodes. VersaPHY retains full compatibility with all existing 1394 products.

The VersaPHY's expanded PHY layer will support low-bandwidth asynchronous peer-to-peer communication between nodes, along with high-bandwidth, guaranteed real-time streaming, with no need for link, transaction, or management layers within the VersaPHY device. The development work will be directed by the Trade Association's Industrial and Instrumentation Working Group under the leadership of Richard Mourn of Quantum Parametrics LLC, who has worked closely with the 1394 Trade Association since it was founded in 1994. A draft specification is available to 1394 Trade Association members today.

"Adding this backward-compatible versatility to the 1394 PHY will let designers take advantage of 1394's superior peer-to-peer, distance, and speed capabilities with the benefits of lower cost and reduced complexity," said Mourn. "The VersaPHY is another tool in the 1394 arsenal, which enables the simplicity of USB with connections to a 1394 network that fully supports all existing 1394 applications such as mass storage, internet protocol (IP) and real time streaming. VersaPHY provides 100 percent of the original 1394 with very low cost basic functionality."

VersaPHY's Simplified Architecture Eliminates Link Layer, Transaction Software

The VersaPHY architecture model includes one or more controllers plus one or more VersaPHY devices, which incorporate a register set and simplified management logic. (In contrast, USB is not equipped to divide the master control function among multiple nodes when needed for

reliability, scalability, or any other purpose.) The architecture connects the 1394 PHY directly to a specific application, removing the asynchronous transaction requirements from simple asynchronous and streaming devices and replacing them with a much simpler set of VersaPHY requirements. This architectural change allows devices such as sensors, actuators, cameras, speakers, microphones, and similar products to be created without a link controller, 1394 transaction software or a microprocessor. VersaPHY reduces or even eliminates the 'device discovery' process, and its corresponding software, thereby simplifying control and data delivery functions.

VersaPHY will include new facilities such as static node labels, which will be used as permanent or semi-permanent addressable names for devices, and in complex implementations, as names for profiles within a device. Another key enhancement will be the creation of writeable PHY registers, enabling PHY-only devices to initiate transaction-like communication. The enhancement will simplify the use of 1394 and eliminate the cost of implementing transaction-capable nodes in mass-market, cost-sensitive applications.

Automotive companies are using IEEE-1394 for entertainment and navigation systems. This places 1394 cabling next to other automotive components that need to be controlled but currently use a separate control bus, which increases cable and connector weight and costs. VersaPHY's simplicity allows these applications to take advantage of the 1394 cabling to control, monitor, and power the modules using 1394.

For example in an automobile seat, basic functions such as seat positioning, cooling/heating, seat belt sensors and lumbar support can be directly mapped into the VersaPHY registers, without an intervening software or protocol layer. The VersaPHY device can monitor the sensors and notify a controller when conditions change, or these registers could be written by a controller to drive the actuators. This capability enables a significant cost reduction because a simple low-cost 1394 connection for items like seats can be located on the same 1394 network used for entertainment and navigation.

Other applications for VersaPHY include professional audio distribution and control for large networks between and within facilities. In aircraft, 1394 is being used widely as an-flight control bus, and the VersaPHY will be able to sharply reduce the complexity of single function modules such as actuators and sensors. In aircraft entertainment networks with VersaPHY, 1394 can be expanded to passenger user interface modules, allowing dramatic reduction in weight and wire harness complexities.

Ideal Design Choice for Low Bandwidth Applications -- Speakers, Microphones, Camera Control

The VersaPHY also will be ideal for designs that require low bandwidth asynchronous control with streaming real time data, such as automotive cameras, industrial inspection cameras, and pro audio applications such as digital speakers and microphones. It also will be useful for remote sensors and actuators used in industrial products, and a variety of home networking applications including control of lighting, temperature, and motion sensors.

The same 1394 network that connects these low-speed devices can also carry many simultaneous streams of full-quality HD video and high-speed Internet, enabling consumers to get far more service out of a single 1394 home network than with any other technology.

The 1394 Trade Association is a global organization dedicated to the advancement and proliferation of the IEEE 1394 standard in the consumer electronics, computer, peripherals, automotive, industrial, and other markets. For more information, please visit www.1394ta.org

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