

VERSAPHY™ OVERVIEW

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What is VersaPHY

VersaPHY is a 100% backward compatible extension to IEEE-1394, which is designed to allow simple applications to connect simply (no device software required) to an IEEE-1394 bus. Specifically, VersaPHY capitalizes on the IEEE-1394b-2002 (beta) PHYsical layer which allows long haul (100m), high speed (4Gb/s), and low latency coupled with the flexible topology configurations of daisy-chain, tree, star and redundant loops, thus making it ideal for home networking, industrial, aerospace, military and commercial applications.

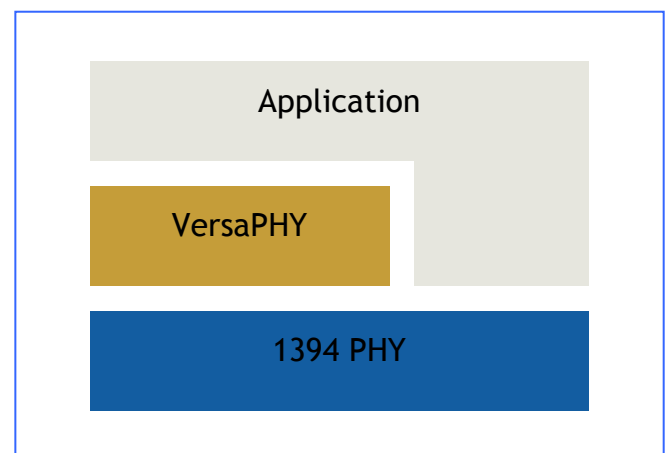
“VersaPHY devices can be implemented using existing PHY silicon (NO NEW SILICON IS REQUIRED)”

VersaPHY enables applications to connect as directly as possible to the 1394 PHY layer, thus creating a **Versatile PHY** layer while maintaining plug-n-play attributes through VersaPHY defined registers. In addition, VersaPHY adds permanent or semi-permanent addressable labels (VP-Labels) that may be used to address a device or individual functions within a single device. Multicast is also supported for whole devices or individual functions within multiple devices. While the controller may poll VersaPHY devices, VersaPHY capitalizes on 1394's inherent peer-to-peer architecture by allowing VersaPHY devices to send unsolicited responses. In effect, this allows the VersaPHY device to send a packet any time an event occurs and allows other devices to collect the information, thus reducing system overhead.

VERSAPHY FEATURES

- 100% backward compatible
- No new silicon is required
- Allows simple apps to connect simply to 1394
- Allows easy bridging of protocols onto 1394
- Easy development of native VersaPHY applications
- Reduced complexity and increased reliability
- Peer-to-peer support reduces controller overhead
- Supports isochronous streaming applications
- Supports asynchronous streaming

VersaPHY defines a set of new packets (VP-Packets) that are ignored by non-VersaPHY capable devices allowing full backward compatibility. VersaPHY devices can be implemented using existing PHY silicon (NO NEW SILICON IS REQUIRED) while VersaPHY controllers can be implemented with most standard 1394 Open Host Controller (OHCI) implementations. Max OS X Leopard has native VersaPHY support while Window XP support is provided by Quantum Parametrics.



Functional Block Diagram.

VersaPHY Applications

VersaPHY's target market is simple applications that benefit from connecting to a high speed, low latency network. For example, the High-Definition Audio-Video Network Alliance (HANA) chose IEEE-1394 as the basis for the home network. The primary reasons for choosing 1394 were isochronous streaming (guaranteed bandwidth), support for short haul and long haul cabling, high quality of service (QOS), and Internet Protocol (IP) support. While HANA's target market is consumer AV, the resulting 1394 home wiring backbone may be used for so much more. Simple applications such as security cameras, temperature sensors, door bells, lighting control, etc. can easily be connected to 1394 using VersaPHY, thus reducing wiring costs and providing valuable information and control to the HANA network. This helps meet the HANA goal of one remote control capable of controlling everything!

"The resulting infrastructure leads to a localized and distributed wire harness strategy that reduces cost and weight."

For many of the same reasons as HANA, automotive makers have decided to use 1394 for infotainment systems. The resulting infrastructure leads to a localized and distributed wire harness strategy that reduces cost and weight. The strategy is realized by connecting low bandwidth devices such as seat and door sensors and controls, legacy CAN and I²C devices through VersaPHY in every place high bandwidth 1394 devices are present, such as seat back and dashboard displays, mirror and trunk mounted cameras, DVD, AVHDD, and GPS.

The 1394 beta PHY is ideal for many industrial, aerospace and military applications. The PHY supports transformer and capacitive isolation for robustness and optical (POF and GOF) for noise tolerance and long distances. For these reasons, 1394 beta can be found on many high-resolution inspection cameras that utilize 1394's isochronous streaming. Once again VersaPHY allows many other devices that might reside on other dedicated buses to share in the 1394 bandwidth. VersaPHY is more than capable of performing motor control, position sensing, and GPIO functions as well as bridging to devices on legacy buses such as CAN, I²C, RS-232, and MIL-STD-1553.

For more information about VersaPHY

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One VersaPHY/1394 connection for Display and Multiple PC/CAN devices.