Connectivity

Industry's First 1394b-Compliant Devices

TI's FireWire® Devices Advance Home Networking and High-Speed Data Transfer

1394 (FireWire®) Connectivity

The IEEE 1394 (FireWire) high-speed interconnection enables simple, low-cost, high-bandwidth real-time data connectivity between computers, peripherals and consumer electronics. As a multimedia network standard, 1394 is ideally suited for consumer electronics such as camcorders, A/V receivers, SACD and DVD-audio players, DVCRs, digital TVs, computers and peripherals. 1394-compliant products offer consumers a quick way to transfer large amounts of data between components and create robust, high-speed connections between devices throughout the home or office. The original specification, 1394a, called for data transfer rates of 100, 200 and 400 Mbps over a distance of up to 4.5 meters.

1394b: The Next Advance

Available today is 1394b, an extension of earlier 1394 technology that enables higher performance (up to 3.2 Gbps), longer distance (up to 100 meters) and a variety of cable media to fit any application (STP, UTP, POF, GOF). For home networking, 1394b is capable of 100 Mbps over 100 meters of unshielded twisted pair Category 5 cable (called Cat5 or UTP5), offering a perfect compromise of performance, cost, ease of installation and security. As an added feature, TI 1394b is backward-compatible to 1394a, increasing home networking convenience for the end user. The improved performance, greater distance of 1394b technology and complete backward compatibility make it easier than ever for customers to link their DTV, set-top-box, DVD, VCR and other 1394-enabled equipment, using the cables already found in many homes today.

1394b Solutions for Home Networking

The TSB41BA3 and TSB17BA1 chip set was designed to enable connection over the longer cable lengths required for home networking applications. Working together, these devices allow for the transfer of large amounts of audio and video data over lengths of up to 100 meters of Cat5 cable. And their backwards compatibility to 1394a protects the customer's investment in earlier FireWire components within the network.

TSB17BA1:
1394b-2002-Compliant Cat5 Cable Transceiver

The TSB17BA1 single-port transceiver is attached to a 1394-capable port on a 1394b physical layer to enable 100-Mbps signals to be transmitted and received across up to 100 meters of Cat5 cable. An equalizer applies a dynamic equalization to the signal received from the cable to boost signal-to-noise ratio, allowing sensing of the data.

- Supports provisions of IEEE 1394b-2002 at S100b signaling rates
- Provides one transceiver to drive 1394b signaling across Cat5 cable at 100 Mbps up to 100 meters
- Power-down features conserve energy in battery-powered applications
- Low-power modes
- Single 3.3-V supply or optional dual 3.3-V/1.8-V supply operation
- Low-cost, high-performance 24-pin TSSOP

TSB41BA3:
1394b-2002 Three-Port Physical Layer Device

The TSB41BA3 is a three-port bilingual physical layer device capable of speeds up to 400 Mbps. It increases communication distances up to 100 meters of Cat5, glass optical fiber (GOF) or plastic optical fiber (POF) cabling.

- Provides three fully backward-compatible, bilingual 1394b cable ports at up to 400 Mbps
- Provides three 1394a-2000 fully compliant cable ports at 100/200/400 Mbps
- Power-down features conserve energy in battery-powered applications
- Low-power automatic sleep mode as well as 1394b modes
- Interoperable with link layer controllers using 3.3-V supplies and other 1394 PHYs using 1.8-V, 3.3-V, and 5-V supplies
- Low-cost, high-performance 80-pin TQFP (PFP) thermally enhanced package

1394b Solutions for High-Speed Data Transfer

The TSB81BA3 and TSB82AA2 chip set was designed for high-speed data transmission. By enabling speeds up to 800 Mbps, this 1394b-compliant chip set allows the fast download of large amounts of data for applications such as video-on-demand or backing up a RAID array.

1394b-2000 Advantages

- Faster: speeds from 800 Mbps to 3200 Mbps

- Longer distances: 100 meters with GOF and Cat5; 50 m with POF

- TI 1394b is bi-lingual: communicates in 1394a and 1394b modes

- More cabling options: STP, Cat5, POF, GOF

- More efficient: BOSS arbitration

- More user-friendly: Loop-free build allows any topology and redundancy

TSB81BA3:
1394b S800 Three-Port Cable Transceiver/Arbiter
The TSB81BA3 provides the digital and analog transceiver functions needed to implement a three-port node in a cable-based IEEE 1394 network. The TSB81BA3 is backward-compatible with 1394a devices, supporting both the data strobe encoding scheme of IEEE 1394a-2000 and the new 8B/10B encoding scheme for 1394b.

- Compliant with IEEE 1394b-2002, IEEE 1394a-2000 and 1394-1995 standards
- Compliant with Open Host Controller Interface (OHCI) requirements
- Provides three fully backward-compatible, bilingual 1394b cable ports at up to 800 Mbps
- Provides three 1394a-2000 fully compliant cable ports at 100/200/400 Mbps
- Power-down features conserve energy in battery-powered applications
- Low-power suspend mode
- Interoperable with link layer controllers using 3.3-V supplies and other 1394 PHYs using 1.8-V, 3.3-V, and 5-V supplies
- Low-cost, high-performance 80-pin TQFP (PFP) thermally enhanced package

TSB82AA2:
1394b 3.3-V OHCI 1.1+ Compliant Link Layer
The TSB82AA2 OHCI-Lynx provides the throughput and bandwidth to move data efficiently and quickly between the PCI and 1394 buses with 800-Mbps serial bus data rates. The TSB82AA2 device also provides ultra-low power operation and intelligent power management capabilities.

- Compliant with IEEE 1394b
- Serial bus data rates of 100, 200, 400, and 800 Mbps
- Compliant with Open Host Controller Interface (OHCI) 1.1+ requirements
- 33-MHz/64-bit and 33-MHz/32-bit selectable PCI interface
- PCI 2.3-compliant
- 3.3-V and 5-V PCI signaling environments
- Supports 1394b parallel, and 1394a PHY-Link I/F (deleted FOP)
- Single 3.3-V supply (1.8-V internal core voltage with regulator)
- Digital video and audio performance enhancements
- Packaged in 144-terminal LQFP

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