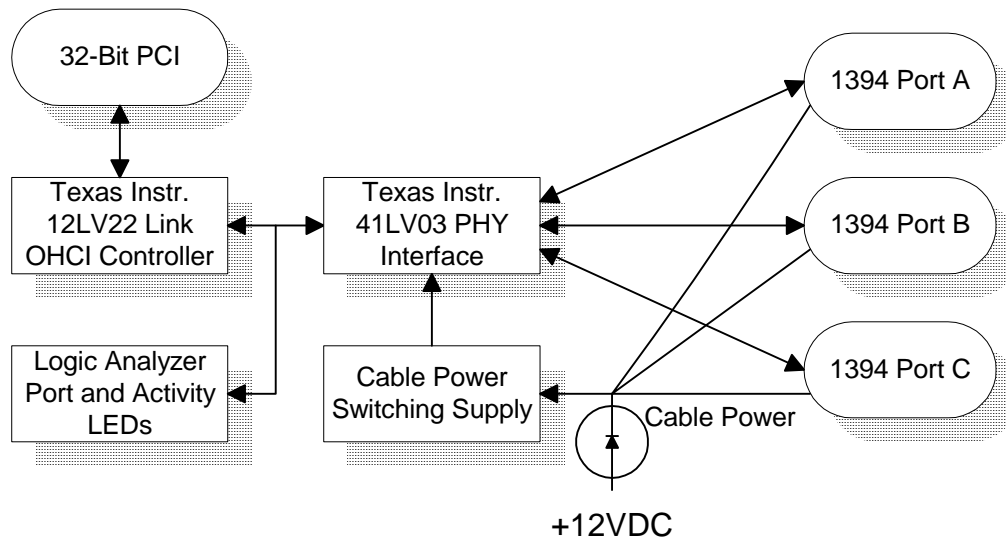# 400 Mb/s OHCI based IEEE P1394 Serial Bus Adapter

The IEEE P1394 PMC from Technobox provides 100 Mb/s, 200 Mb/s and 400 Mb/s 1394 serial bus interface with connectivity for up to three 1394 ports.

1394 is a high-speed digital serial bus with data rates of 100, 200 and 400 Mb/s as currently defined, with work being done to support 1Gb/s connectivity. The standard finds widespread application for connecting digital cameras to computers. Digital images were previously captured using "frame grabber" boards which digitized NTSC (or equivalent) composite analog video.

The 1394 bus provides the distinct advantage over prior methods by permitting multiple devices simultaneously connected to the serial bus, provided there is sufficient total bandwidth to support the devices. Any mix of devices can be attached to 1394, and disk drives, cameras, and printers on the market support 1394 connectivity.

IEEE 1394 is conceptually similar to Universal Serial Bus, in that both transport data over digital serial interface lines. USB, however, is currently limited to low speed peripherals — up to 12 Mb/s can be accommodated on USB, compared to the 20x bandwidth available for 1394. Signal levels are different and not interchangeable. Also, 1394 has a 125 u-sec isochronous cycle time compared to USB's 1 ms isochronous cycle time.

This design uses the popular 41LV03 Physical Interface ("PHY") and 12LV22 ("OHCILynx") controller chips produced by Texas Instruments. TI was the first company to successfully produce 1394 chipsets, and their many years of focused technical attention to their 1394 product line has produced an outstandingly mature and reliable serial bus solution, with excellent software support for Intel-based platforms running Microsoft Windows.
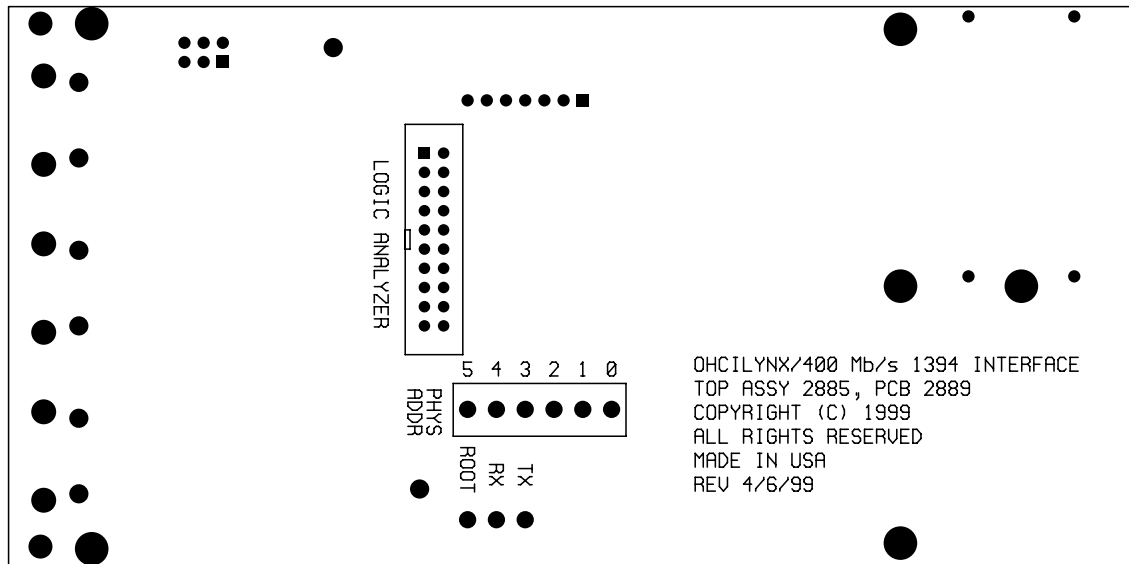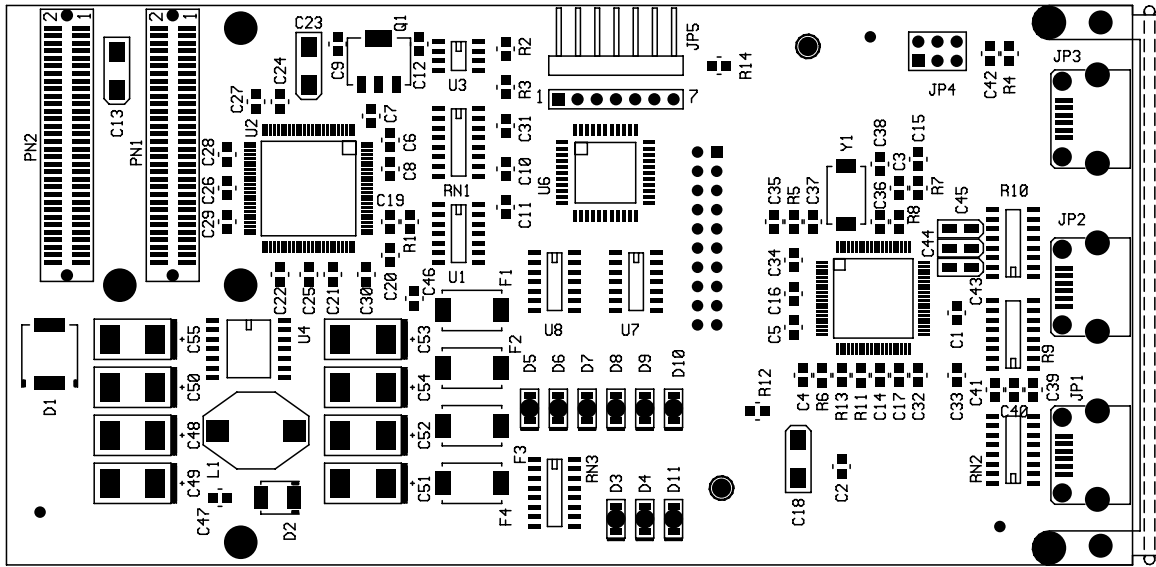
This design is essentially the same as the "OHCILynx Starter Kit" available from Texas Instruments, with minor changes to the PHY switching supply to use more readily available commercial components. The OHCILynx Starter Kit from TI implements a 1394 interface on a standard PCI board, whereas the Technobox IEEE 1394 PMC implements the same design on a PCI Mezzanine Card ("PMC") form factor.

The PMC board provides +12VDC from the PCI bus to the 1394 "Cable Power" via a diode, as is the convention with 1394 interfaces. As long as one bus member which supplies cable power is powered up on the 1394 interface, the Cable Power Switching Supply will be active on the PMC, and the 41LV03 PHY will pass 1394 packets from one 1394 port to the others.

Unique to this design is a PHY-LINK interface monitor. LEDs are provided to visibly indicate activity and node configuration. Also, a connector which supports Hewlett Packard Logic analyzers may be installed, enabling the user to observe data and control information transport over the 1394 interface.

Software available for the Texas Instruments OHCILynx Starter Kit can be directly applied to the Technobox IEEE 1394 PMC. The product works with built-in Windows 98 and Windows NT 4.0 drivers. VxWorks drivers are also available from 3rd party suppliers. Please contact Technobox to discuss your software requirements.

OHCILYNX/400 Mb/s 1394 INTERFACE
TOP ASSY 2885, PCB 2889
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MADE IN USA
REV 4/6/99

Product Summary

Technobox Part Number:	2885
Typical Power Dissipation:	TBD watts
Power Supplies Required:	+5, +12
PCI Signaling Environment:	5, 3.3 Volt

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