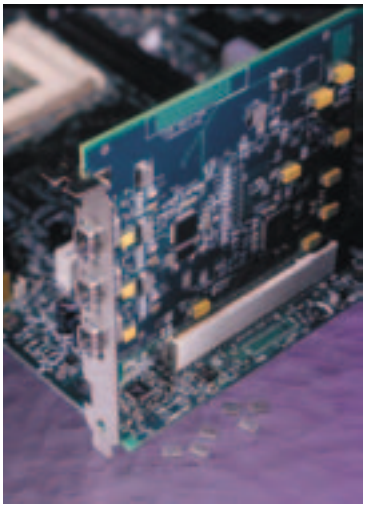
IEEE 1394 FireWire, i.Link Application Note



1394 Technology

The IEEE 1394 multimedia connection commonly known as FireWire and i.Link enables simple, low-cost, high-bandwidth data interfacing between computers, peripherals, and consumer electronics products such as camcorders, VCRs, printers, TVs, and digital cameras. With IEEE 1394 compatible products and systems, users can transfer data without a PC. The end user experience is greatly simplified and enhanced by the fact that the IEEE 1394 standard provides the opportunity to provide power down the cable.

Cable Power

Offering cable power is a major asset to simplifying and enhancing the end user experience. There are many purposes for the use of cable power. Three major uses are: 1) PHY layer keep-alive, 2) peripheral power, and 3) optical transceiver power.

PHY keep-alive is a method to use cable power to keep the physical layer in a device running even though its internal power may be off. As an example, the PC is powered off, but the PHY stays on by utilizing cable power. In this way, it can continue to identify its status on the network and minimize user complaints.

In IEEE 1394 peripheral power can be provided on the cable. This simplifies peripheral design in that a power supply does not need to be built into the device. It simplifies the user experience in that it creates a true plug-and-play environment with no additional cables crowding the work area.

Sample peripherals include:

- Still cameras
- Hard drives
- Camcorder
- Hubs
- Zip drives

The final use of cable power is to power 1394 optical transceiver modules at both ends of a fibre cable. Long optical cables cannot directly connect to IEEE 1394-1995 copper interface. Therefore, a small copper-optical transceiver at each end of the cable is used to make the “connection” between copper and optical cable. The transceiver can be cable-powered (-3W) with power needed at both ends (6-pin connectors).

When providing cable power, PolySwitch device integration offers a way to meet the requirements of the IEEE 1394 specification as well as those of UL and other regulatory agencies.

Figure 1, on the following page, shows a possible IEEE 1394 network as well as recommendations for the use of PolySwitch devices in different IEEE 1394 device configurations.

Figure 1. Example of a IEEE 1394 Network

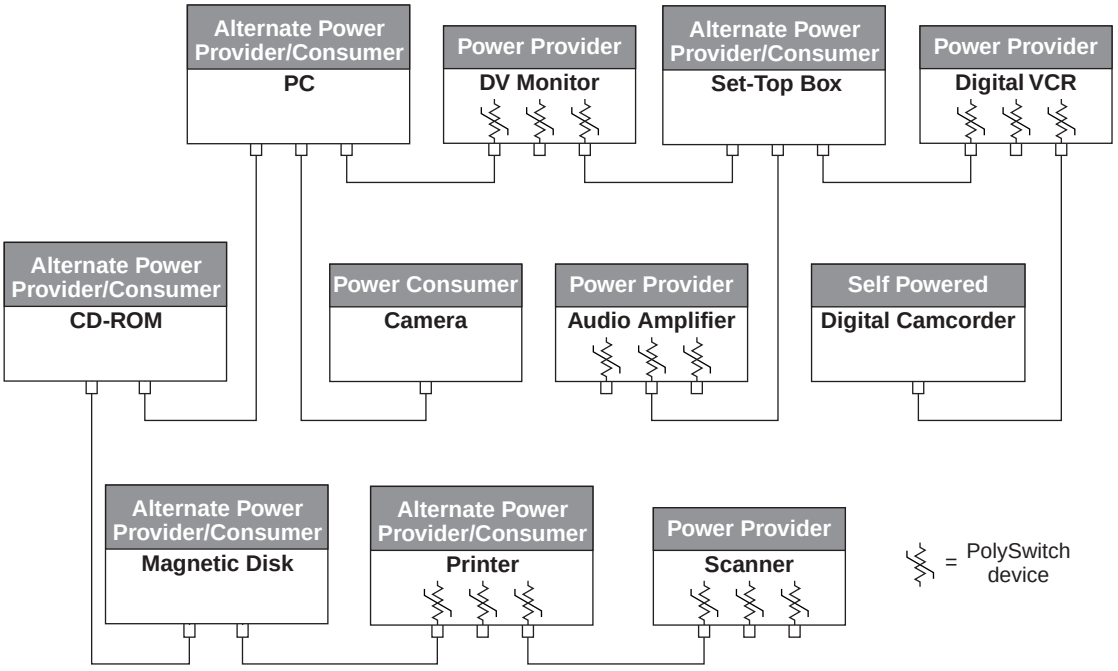


Figure 2. Power Provider

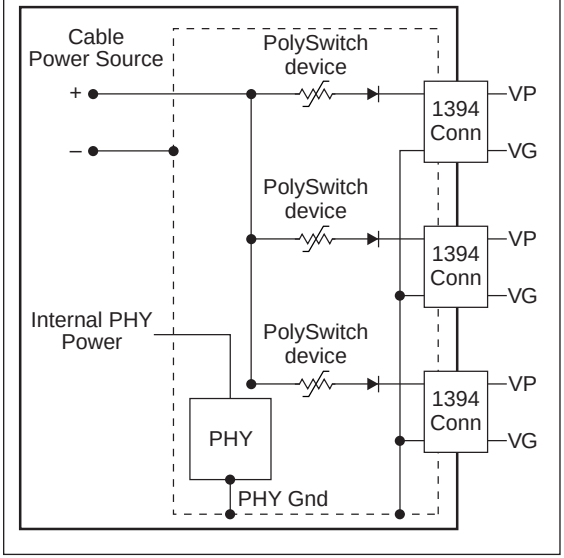


Figure 3. Alternate Power Provider (self-powered PHY)

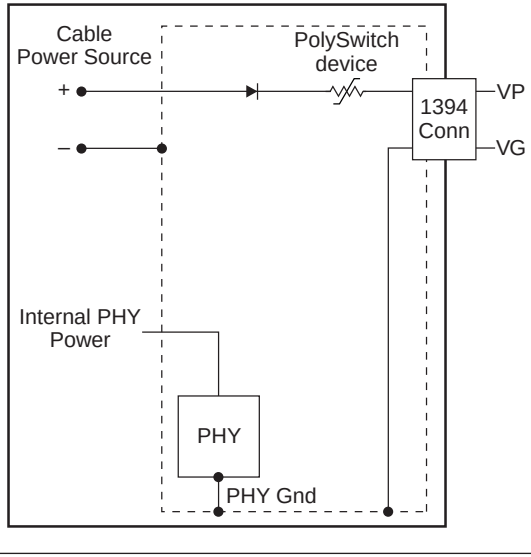


Figure 4. Alternate Power Provider (cable-powered PHY)

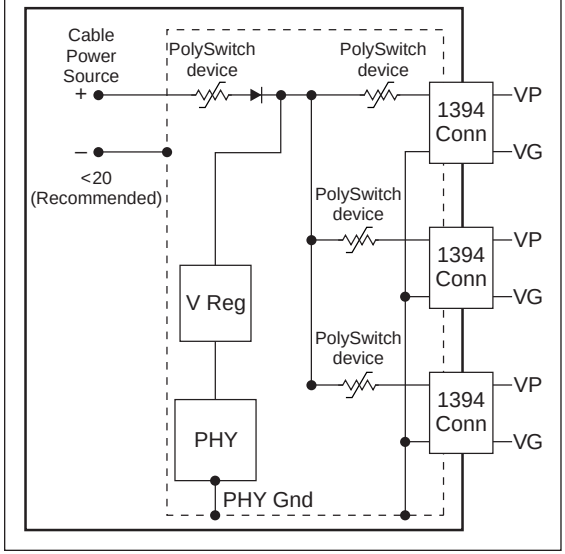
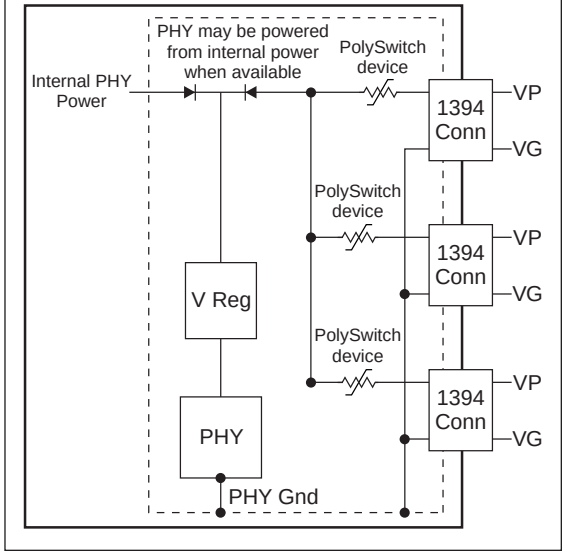


Figure 5. Self-Powered Hub (SelfID)



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PolySwitch Device Selection

Devices suitable for the IEEE 1394 applications must support 33V (the maximum allowable continuous bus voltage) and up to 1.5A of continuous current. PolySwitch PPTC devices typically used in IEEE 1394 applications include the SMD, RTE, and RXE series, specifically those rated for 33V and above.