1394b Dongles for Long-Distance Over Coaxial Cable

Extend 1394b Links up to 60m with Power Over Cable

Summary

Microchip's EQCO-FW7501 and EQCO-FW5001 are two extender solutions for the FireWire® serial bus, operating over 75Ω and 50Ω coaxial cables respectively.

Each unit contains a 1394b transceiver (EQCO875SC-HS or EQCO850SC-HS) that support full-duplex FireWire 800 (S800) data transfer rates (1.0 Gbit/s) over a single coax cable. The transceiver includes an adaptive equalizer that supports a cable length of up to 60m.
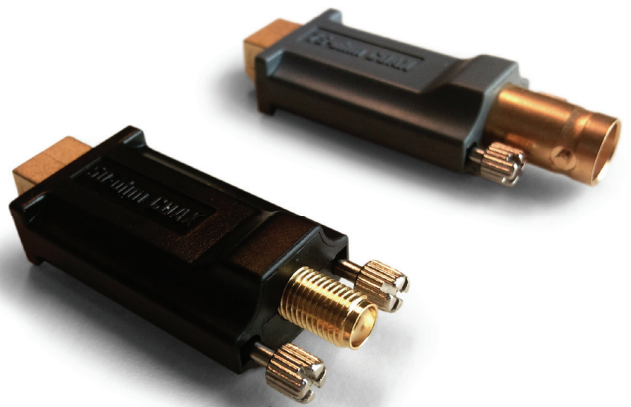
In addition to this long-distance, full-duplex data transmission, these devices allow power to be transmitted simultaneously from the host side to a target—such as camera or hard drive—over the coax cable.

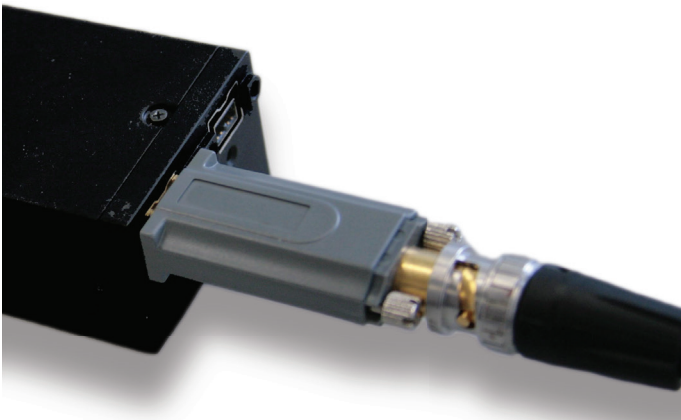The Microchip coaxial extenders fully support IEEE 1394b standards.

Implementation

Our 1394b Over Coax dongles make it easy to implement long-distance FireWire-based applications. By taking advantage of coaxial cable's secure shielding, our 1394b dongles can even be used in electrically noisy enviornments such as factories.

The EQCO-FW7501 supports up to 60 meters of 75Ω coaxial cable; the EQCO-FW5001 supports up to 30m of 50Ω coaxial cable. In both cases, they operate at a data-rate of up to 1.0 Gbit/s (S800).

The dongles give users the flexibility to determine the best cable lengths for their applications. The transceiver contains an equalizer that is fully adaptive that adjusts to a variety of cable lengths as well as age and environmental conditions like temperature, without any need for programming. The dongles have a standard 1394b 9-pin connector on one end and a 75Ω BNC or 50Ω SMA connector on the opposite end.

These dongles are ideal for laboratory and industrial applications, such as machine vision and factory automation, where robust cabling is required. They can also be used with high-flex, small-diameter coaxial cable with rotating joints, if necessary, for applications where multiple rotations are required.

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Technical Specifications

IEEE 1394b Interface	
Connector	9-Pin 1394b
Coax Interface/Cable	
EQCO-FW5001: 50Ω EQCO-FW7501: 75Ω	50Ω rated SMA 75Ω rated BNC
Power Over Cable	
Max. Voltage	32V (1394b Bus voltage)
Max. Current	1.0A (limited by coax dongle linear power supply)
Max. Transmitted Power	32W (before cable losses)
Power Supply to Remote Device	
Voltage Available	V_{IN} (bus voltage) −1V-Coax DC drop (varies with cable type/length)
Environmental	
Operating Temperature	0°C to +50°C
Relative Humidity	Up to 85% non-condensing
Storage Temperature	−20°C to +70°C

Performance Specifications

Performance by Product and Cable Type

(All cable information at S800/1.0 Gbit/s data-rate)		EQCO-FW7501 (75Ω)	EQCO-FW5001 (50Ω)
RG174	50Ω/2.8 mm dia	–	15 meters/49 feet
RTK	50Ω/2.8 mm dia	–	25 meters/81 feet
RG58	50Ω/5 mm dia	–	30 meters/67.5 feet
RG179	75Ω	20 meters/65 feet	–
RG59	75Ω	40 meters/130 feet	–
RG6	75Ω/5 mm	60 meters/195 feet	–

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