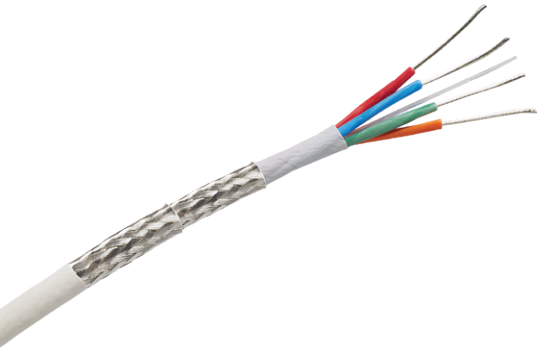
GORE® FireWire® Cables (Quadrax, 110 Ohms)



This version of Gore's quadrax cables is the premier solution for copper-based IEEE 1394b FireWire® data links. They transmit uninterrupted high-fidelity signals with flexure for interconnect solutions up to 30 m (100 ft) at S400 data transfer rates (Table 1).

Built with durable materials that are highly flexible, Gore's cables provide a protective barrier against tough environments for long-term product life (Figure 1).

Also, Gore's quadrax design is approximately 40% smaller than dual twisted pair constructions (Figure 2). These cables are also proven to save as much as 5.2 kg (11.5 lb) per aircraft.

Typical Applications

- Avionics networks
- Flight control
- Networked video systems
- Mission systems

Standards Compliance

- ABD0031 (AITM 2.0005); BSS7230; FAR Part 25, Appendix F, Part : Flammability
- ABD0031 (AITM 3.0005); BSS7239: Toxicity
- ABD0031 (AITM 3.0008B); BSS7238; FAR Part 25, Appendix F, Part V: Smoke Density
- ANSI/NEMA WC 27500: Environmental Testing, Jacket and Marking
- IEEE 1394b; SAE AS5643™: High-Speed Serial Bus Interface Requirements
- SAE AS4373™: Test Methods for Insulated Electric Wire (Contact Gore for available data)
- SAE AS6070™/8: High-speed Data Protocol Cable Requirements

Table 1: Cable Properties

Electrical

Property	Value
Standard Impedance Ohms	110 +6/-4
Typical Operating Voltage V	< 15
Nominal Velocity of Propagation %	80
Nominal Time Delay ns/m (ns/ft)	4.10 (1.25)
Capacitance pF/m (pF/ft) 26 AWG	36.1 (11.0)
Typical Skew Within Pair ps/m (ps/ft)	3.5 (1.1)
Dielectric Withstanding Voltage Vrms	
Conductor-to-Conductor	1500
Conductor-to-Shield	1000

Mechanical / Environmental

Property	Value
Jacket Material	Engineered Fluoropolymer
Jacket Color	White (Laser Markable)
Conductor	Silver-Plated Copper/SPC Alloy
Conductor Color-Coding	Blue/Orange, Green/Red
Dielectric Material	ePTFE/PTFE
Temperature Range °C	-65 to +200

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Figure 1: Highly Flexible Cable Technology

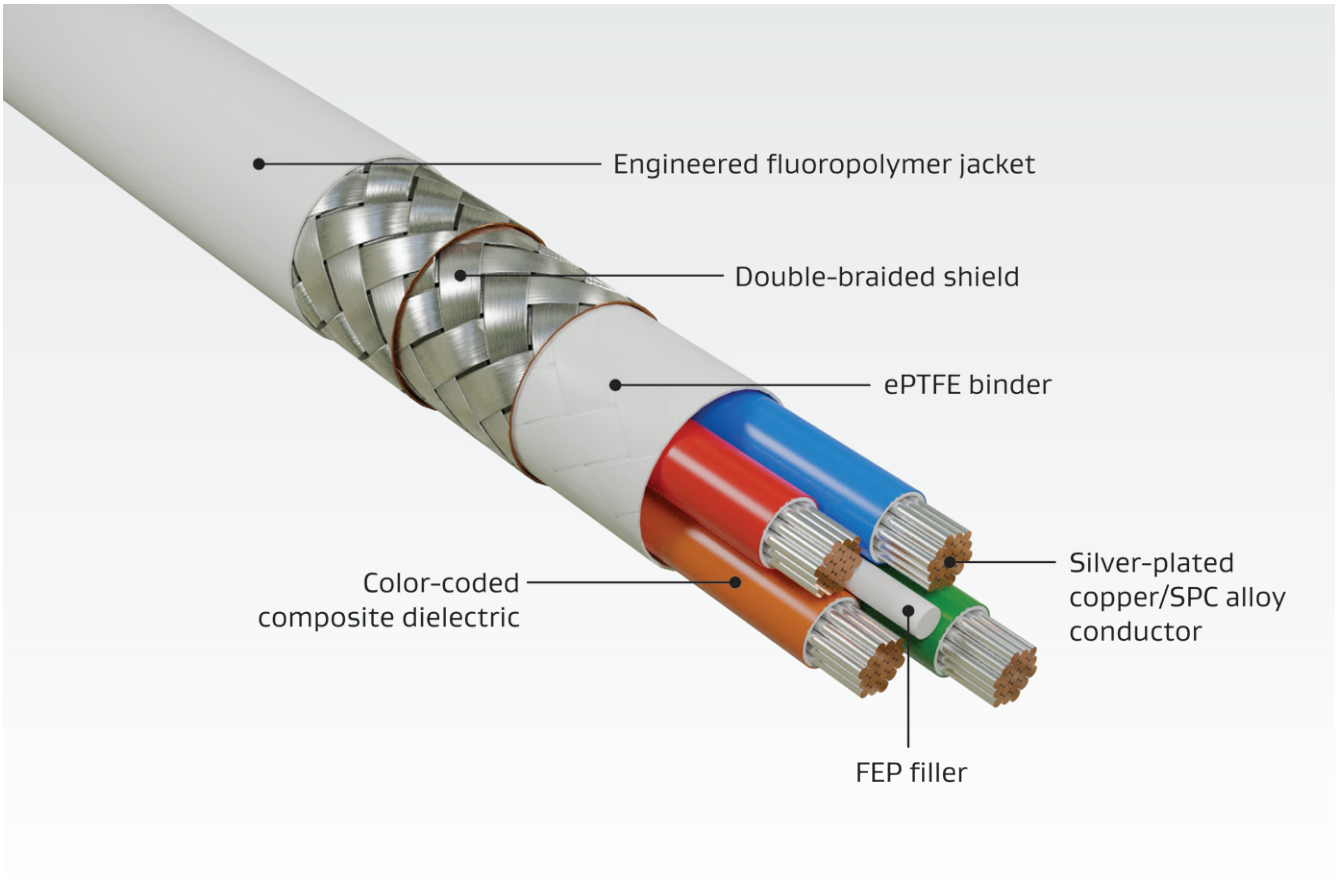
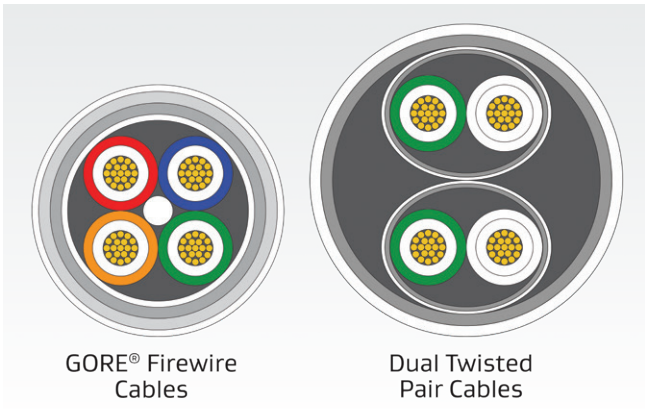


Figure 2: Smaller-Scale Dimensions



Signal Integrity with Flexure

To ensure signal integrity with flexure of GORE® FireWire® Cables, the eye pattern of a 15-m (50-ft) cable transmitting 500 Mb of data was evaluated before and during flexure. The diamond-shaped eye mask indicates the minimum receiver sensitivity as specified by IEEE 1394b (Figure 3).

Results indicated that Gore's cable passed the eye mask test with margin, indicating greater transmission length is possible. The eye pattern test was repeated with the cable wrapped 20 times around a 12.7-mm (0.5-in) radius mandrel. No substantial degradation in signal quality was observed with flexure (Figure 4).

Figure 3: Eye Pattern before Flexure

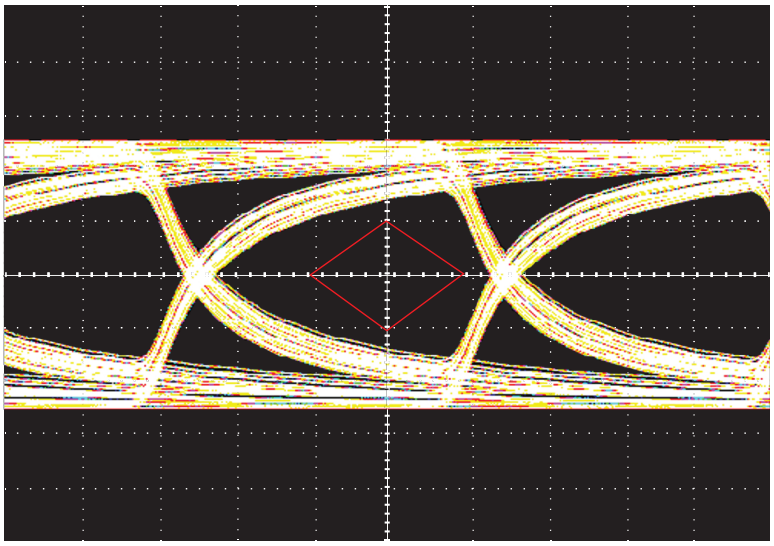


Figure 4: Eye Pattern with Flexure

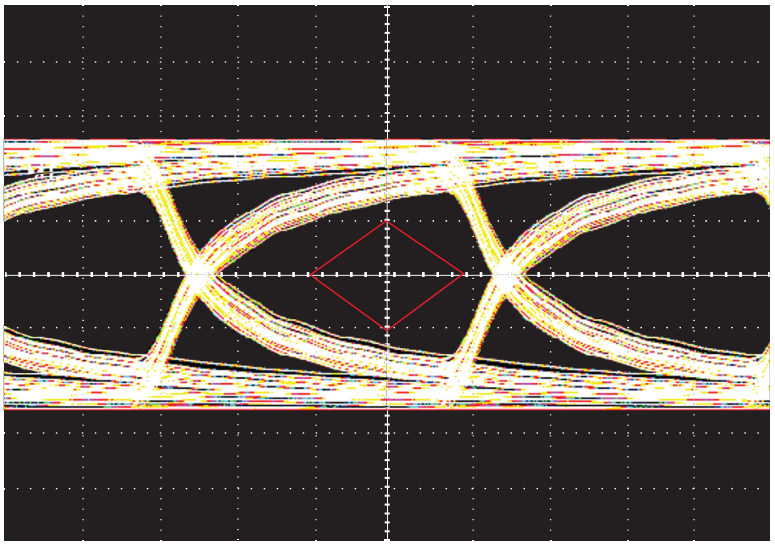


Table 2: Cable Characteristics

Gore Part Number	AWG Size (Stranding)	Nominal Outer Diameter mm (in)	Minimum Bend Radius mm (in)	Nominal Weight kg/km (lb/1000 ft)	Typical Insertion Loss dB/30 m (100 ft)			
					100 MHz	200 MHz	500 MHz	1 GHz
RCN8645	22 (19/34)	5.1 (0.20)	24.8 (0.98)	61.0 (41.0)	4.8	7.9	11.6	17.3
RCN8647	24 (19/36)	4.6 (0.18)	22.4 (0.88)	46.1 (31.0)	6.1	10.0	14.6	21.4
RCN8652	26 (19/38)	3.6 (0.14)	17.6 (0.69)	33.0 (22.2)	7.5	12.2	17.9	26.2

Cable Preparation

Laser stripping is the ideal method to prep GORE® FireWire® Cables. Alternatively, Gore recommends using thermal or sharp mechanical strippers. Also, a unique method is to make a short, horizontal slit in the jacket material, peel it back to allow for contact termination and return the jacket to its original position for a neat closure (Figure 5). For more information regarding cable preparation, please contact a Gore representative.

Figure 5: Peel-Back Method

Contact-Connector Options

GORE® FireWire® Cables are designed to fit a variety of high-speed aerospace and defense connector systems and backshells such as ARINC and MIL-STD-38999 with size 8 and 22D contacts. Please contact the specific manufacturer such as Amphenol® and Glenair® for exact part numbers, tooling information, and termination instructions.

Ordering Information

GORE® FireWire® Cables are available in standard sizes (Table 2). Visit **gore.com/cable-distributors** for the list of distributors. In addition, visit **gore.com/hdrsampleflyer** regarding Gore's full inventory of sample products and lead times.

For more information or to discuss specific characteristic limits and application needs, please contact a Gore representative.

W. L. Gore & Associates
gore.com/highdatarateaircraftcables

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