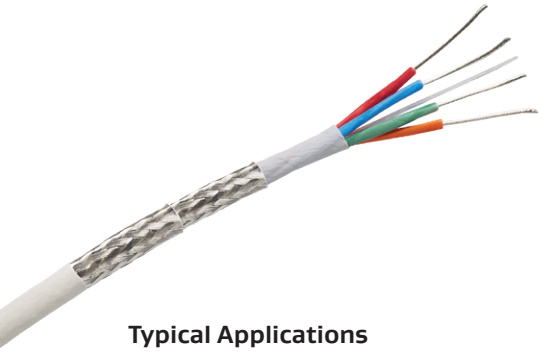
# GORE® FireWire® Cables (110 Ohms)



### Typical Applications

- Avionics digital networks
- Flight control
- HD camera/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
- SAE AS4373™: Test Methods for Insulated Electric Wire (Contact Gore for available data)
- SAE AS5643™: IEEE-1394b Interface Requirements for Military and Aerospace Vehicle Applications
- SAE AS5643™/2: S200 Copper Media Interface Characteristics Over Extended Distances
- SAE AS5643™/3: IEEE-1394 Beta PHY Enhancements
- SAE AS5657A™: Test Plan/ Procedure for AS5643 IEEE-1394b Interface Requirements for Military and Aerospace Vehicle Applications (Contact Gore for available data)

For defense and commercial aircraft, this version of Gore's quadrax cables is the premier solution for copper-based SAE 1394 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).

Our cables are built with durable, highly flexible materials, including a double-braided shield for long-term product life (Figure 1). They provide a protective barrier against tough aircraft environments, and each braided shield offers 92% coverage for excellent shielding effectiveness.

Also, Gore's quadrax design is approximately 40% smaller than dual twisted pair constructions (Figure 2). These cables are also up to 30% lighter weight and proven to save as much as 5.2 kg (11.5 lb) per aircraft.

**Table 1: Cable Properties**

## Electrical

| Property | Value |
|---|---|
| Signal Transmission Speed Mb/s | Up to 400 |
| 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) | 36.1 (11.0) |
| Typical Skew Within Pair ps/m (ps/ft) | 3.5 (1.1) |
| Dielectric Withstanding Voltage Vrms<br>Conductor-to-Conductor<br>Conductor-to-Shield | <br>1500<br>1000 |

## Mechanical / Environmental

| Property | Value |
|---|---|
| Jacket Material | Engineered Fluoropolymer |
| Jacket Color | White (Laser Markable) |
| Conductor | Silver-Plated Copper or SPC Alloy |
| Conductor Color-Coding | Blue/Orange, Green/Red |
| Dielectric Material | Expanded PTFE/PTFE |
| Temperature Range °C | -55 to +200 |

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**Figure 1: Highly Flexible Cable Technology**

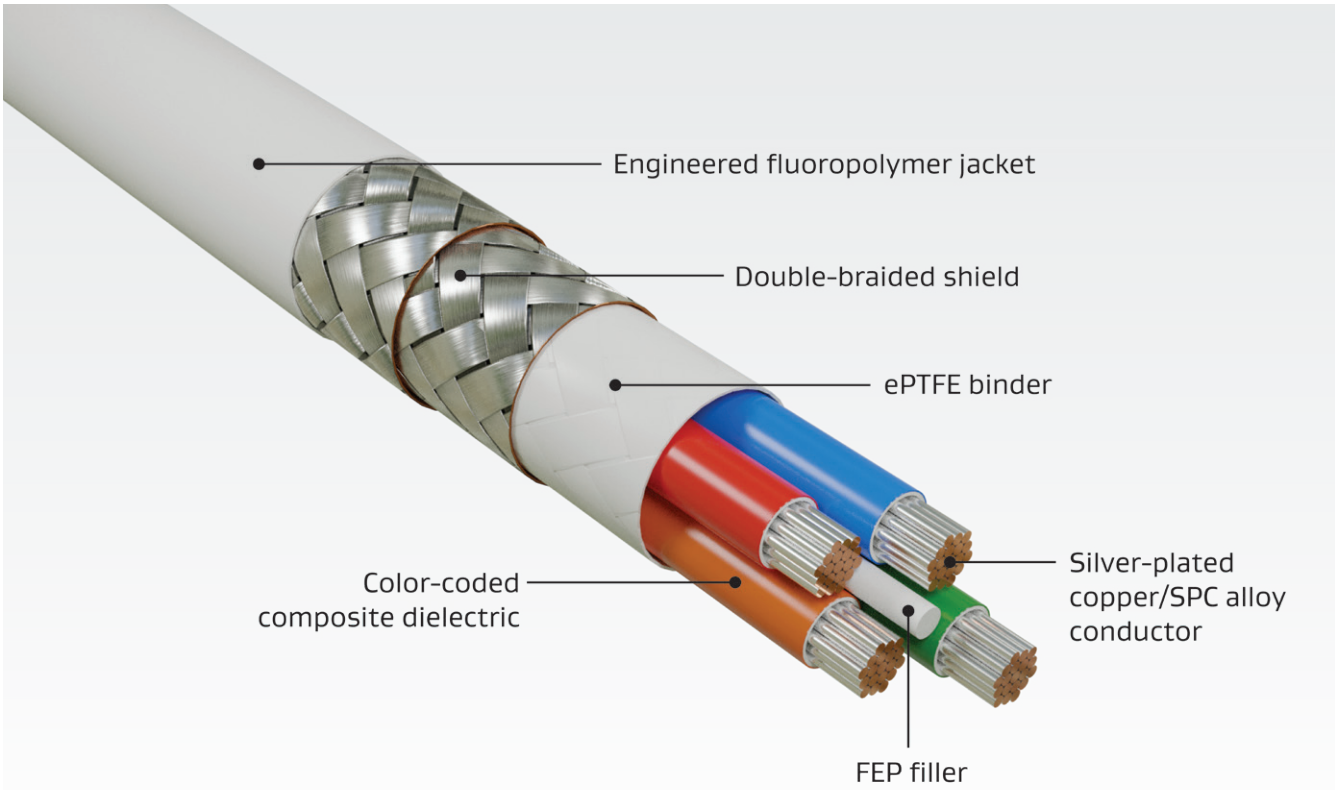
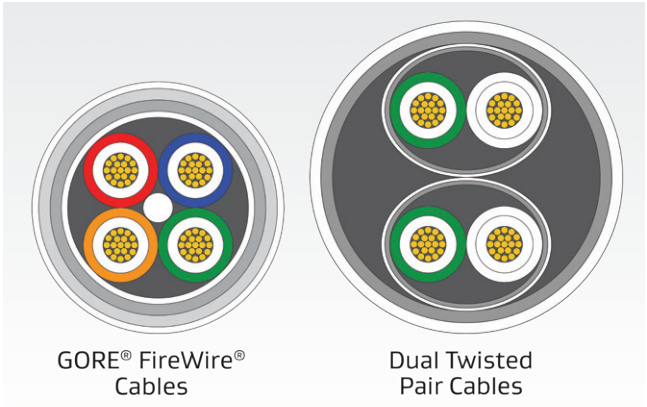


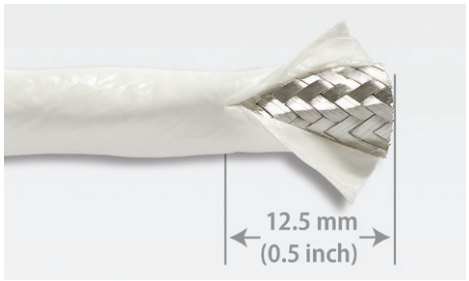

**Figure 2: Smaller-Scale Dimensions**




## 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 3). For more information regarding cable preparation, contact a Gore representative.

**Figure 3: Peel-Back Method**



## 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 4).

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 5).

**Figure 4: Eye Pattern before Flexure**

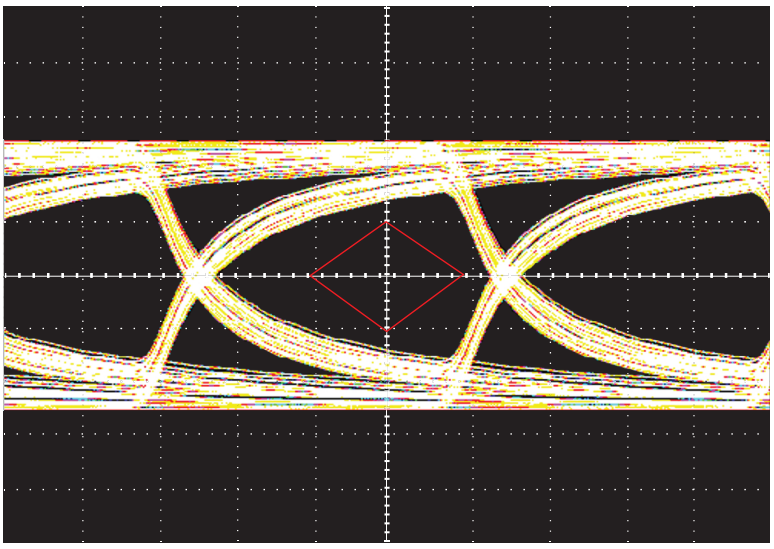



**Figure 5: Eye Pattern with Flexure**

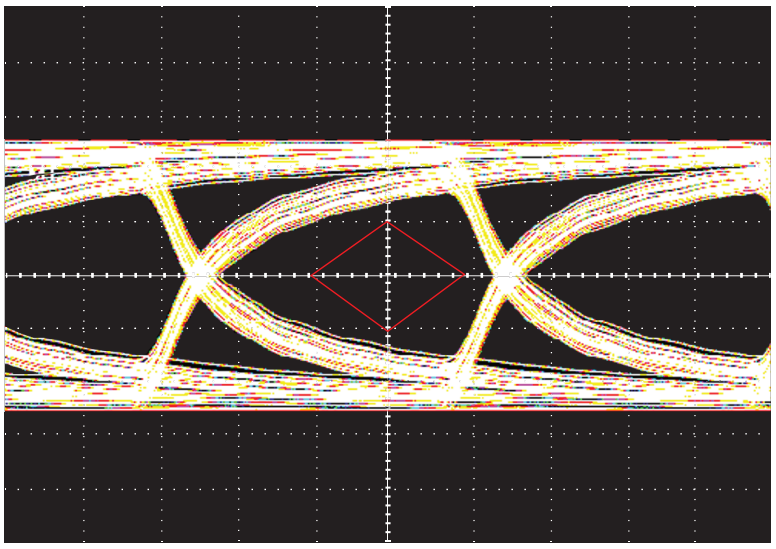


**Table 2: Cable Characteristics**

| 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 | 250 MHz | 500 MHz | 1 GHz |
| RCN8645 | 22 (19/34) | 5.3 (0.21) | 26.5 (1.5) | 61.0 (41.0) | 5.5 | 8.8 | 12.8 | 18.2 |
| RCN9206[a] | 22 (19/34) | 5.3 (0.21) | 26.5 (1.5) | 61.0 (41.0) | 5.5 | 8.8 | 12.8 | 18.2 |
| RCN8647 | 24 (19/36) | 4.8 (0.19) | 24.0 (0.95) | 46.1 (31.0) | 6.8 | 10.9 | 15.5 | 22.5 |
| RCN9205[a] | 24 (19/36) | 4.8 (0.19) | 24.0 (0.95) | 46.1 (31.0) | 6.8 | 10.9 | 15.5 | 22.5 |
| RCN8652 | 26 (19/38) | 3.8 (0.15) | 19.0 (0.75) | 33.0 (22.2) | 9.0 | 14.2 | 20.2 | 29.5 |
| RCN9204[a] | 26 (19/38) | 3.8 (0.15) | 19.0 (0.75) | 33.0 (22.2) | 9.0 | 14.2 | 20.2 | 29.5 |

a. Fully compliant to JSFY18 requirements.

## Connector Systems & Backshells

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. Contact the specific manufacturer such as Amphenol® and Glenair® for exact part numbers, tooling information, and termination instructions.

## Samples & Ordering Information

GORE® FireWire® Cables are available in standard sizes (Table 2). To place an order, contact an authorized distributor for in-stock availability at **gore.com/cable-distributors.** To view our full inventory and order complimentary samples of selected products for prototyping and evaluation in your application, visit **gore.com/hsdc-sample-inventory-air-defense.**

For more information or to discuss specific characteristic limits and application needs, contact a Gore representative for aerospace and defense today.



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ACS1017-R2-DSH-US-NOV25