



GORE® Space Cables and Assemblies

Datalines

Improve Signal Integrity for Critical Data Transmission

Data transmission between various systems on a spacecraft is crucial to the success and safety of the mission. The cables used to transmit data have a direct impact on the quality of the signal and the time required for transmission. GORE® Datalines combine excellent electrical performance with mechanical robustness to provide outstanding signal transmission in the most difficult situations.

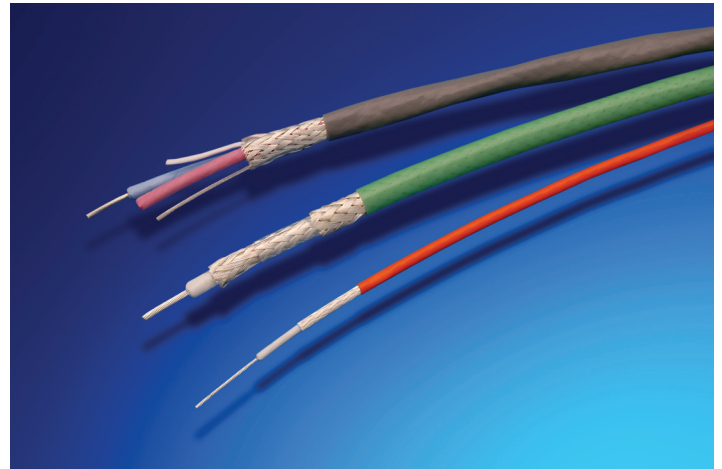
The small size and minimum bending radius of GORE® Datalines make them easy to install in tight places. Because they are very lightweight, these datalines minimize the problems associated with balancing difficult mass budgets. Manufactured as coaxial, triaxial, and balanced lines, GORE® Datalines offer low capacitance and low signal attenuation. These datalines provide constant characteristic impedance along the entire cable with minimal reflections.

GORE® Datalines have been proven to provide the lightest, most reliable rate of data transmission available in today's market. Designed with wires of identical electrical length, GORE® Datalines have a conductor time delay that differs by less than 0.1 nsec/m.

THE SCIENCE BEHIND THE CABLES

The key to the outstanding performance of GORE® Datalines is the proprietary material used in the cable insulation — expanded polytetrafluoroethylene (ePTFE). At high frequencies, the electrical properties of the insulation become extremely important, particularly the dielectric constant (ϵ_r). The ϵ_r for air is 1.0, and the ideal value for cable insulation material should be as close to 1.0 as possible. Expanded PTFE has an ϵ_r of 1.3, which means that ePTFE facilitates low capacitance and minimal attenuation along with high signal speed in GORE® Datalines. Because ePTFE is chemically inert, GORE® Datalines can even be used at cryogenic temperatures or as high as 260°C for short periods of time.

*International Space Station
Image: ESA*



Realize the Benefits of GORE® Datalines

KEY FEATURES

- Lowest weight and smallest diameter
- Excellent electrical performance
- Superior EMC performance
- Fault-tolerant and standardized LVDS technology
- High flexibility and low bend radius
- Minimal conductor time delay

KEY BENEFITS

- Outstanding signal transmission because of electrical performance and fault tolerance
- Long-lasting life resulting from robust insulation
- Easy installation with cable flexibility and low bend radius
- Valued reliability delivered from an ESA-qualified and a DIN EN ISO 9001:2000-certified manufacturing facility
- Superior sales and technical support from Gore's worldwide engineering team



GORE® Space Cables and Assemblies

TYPICAL USES

- Digital signal processors
- High-resolution cameras, sensors, and detectors
- High-speed subsystem interconnects

SAMPLE APPLICATIONS

- European Remote Sensing Satellite (ERS1/ERS2)
- ENVISAT
- XMM
- International Space Station (ISS)
- James Webb Space Telescope (JWST)
- NASA Lunar Reconnaissance Orbiter

TECHNICAL SPECIFICATIONS

All GORE® Datalines meet the following technical specifications **according to ESCC 3902/002** and are **listed on the ESA QPL**. See the ordering information for the technical data specific to each cable.

Property	Value
Operating temperature range	-200°C to +180°C
Maximum temperature for short periods	260°C
Dielectric material	Expanded PTFE or wrapped PTFE
Outer jacket	PFA
Conductor construction	Silver-plated, high-strength copper and copper alloy
Operating voltage	100 V RMS
Bending radius	10 x outer diameter (repeated) or 6 x outer diameter (once)
Transmission rate	Up to 1 GHz

Part Number	Impedance (ohm)	Gauge Size (AWG)	Construction
GBL-075-24	75	24	Balanced
GBL-100-22	100 (with drain wire)	22	Balanced
GBL-120-30	120	30	Balanced
GBL-120-28	120	28	Balanced
GBL-120-26	120	26	Balanced
GBL-120-24	120	24	Balanced
GCX-050-28	50	28	Coaxial
GCX-050-26	50	26	Coaxial
GCX-050-20	50	20	Coaxial
GCX-075-26	75	26	Coaxial
GTX-050-26	50	26	Triaxial
GTX-050-20	50	20	Triaxial
GTX-075-20	75	20	Triaxial
GSC-05-82561-00		22	LVDS
GSC-05-82559-00		24	LVDS
GSC-05-81973-00		26	LVDS
GSC-05-82560-00		28	LVDS
GSC-05-82292-00		30	LVDS

GORE EXPERIENCE AND EXPERTISE

With approximately \$2.5 billion in annual sales and more than 8,000 employees around the world, W. L. Gore & Associates provides diverse, high-performance solutions in consumer, industrial, electronic, medical, and surgical markets. As well-known for its unique corporate culture as for its products, Gore's 50-year success story rests equally on product and organizational innovation. With a reputation for providing the highest-quality products, Gore is ready to assist in developing cost-effective solutions for your electronics applications.

*Custom designs available on request

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