

Belden Products Meet the PROFIBUS Requirements



PROFIBUS is the world's most popular fieldbus system. As with most fieldbus systems, PROFIBUS can reduce operating costs, increase productivity, decrease time to market for new products and improve product quality. And, unlike standard 4-20mA controls, PROFIBUS can support up to 32 devices per segment - up to a total of 126 devices, depending on total system current.



Using shielded twisted pair cable, the PROFIBUS topologies utilized in the industrial environment include the following configurations: line, tree and star (and combinations of these topologies). The network can support up to 126 nodes by using repeaters, but the number of repeaters is limited to nine. Standard connections are made through use of a 9-pin D-Subminiature connector. Transmission speeds are selectable from 9.6kbps to 12Mbps.

PROFIBUS has been developed in conjunction with the International Standards Organization OSI (Open Systems Interconnect) seven-layer model. Access to the bus is defined in the second layer of the OSI model, allowing PROFIBUS the option of multiple masters on a single twisted pair cable.

The PROFIBUS protocol applies to all applications, but it may be combined with industry-specific application profiles and relevant transmission technology to meet differing factory floor requirements. Application-specific profiles include:

- PROFIBUS DP -- optimized for factory automation
- PROFIBUS PA - optimized for process automation
- PROFIsafe - PROFIBUS for safety-related systems
- PROFIdrive - PROFIBUS for motion control

For High-speed Ethernet Control PROFIBUS specifies Ethernet cables for their PROFInet system. To help you with your selection of Category 5e and Category 6 cables, see [Industrial Ethernet Cable/Connectivity](#).

DataBus Cables for PROFIBUS - Features and Benefits

To meet the specifications of PROFIBUS DP, Belden has developed three 150-Ohm twinax (twisted pair) cables. Product No. 3079A matches the impedance of the factory automation systems, allowing for maximum signal transmission, while its overall Beldfoil® shield plus a 65% tinned copper braid are incorporated for maximum shielding effectiveness. For maximum installation versatility, it also carries a UL NEC Type PLTC listing. Product No. 3079E is a stranded cable that provides additional flexibility during installation and in use; Product No. 183079A is a continuously corrugated aluminum armored product designed to withstand very harsh environments.

For PROFIBUS PA, Belden offers Product No. 3076F, a cable with an 18 AWG stranded, foil shielded, twisted pair cable with an intrinsically safe (IS) blue PVC jacket.

DataBus PROFIBUS DP Cable

[3079A](#) 22 AWG Solid Bare Copper Conductors, Beldfoil (100% Coverage) + TC Braid Shield (65% Coverage), Foamed High-density Polyethylene Insulation, PVC Jacket, 300V 75°C

[3079E](#) High-flex, 22 AWG Stranded (7x30) Bare Copper Conductors, Beldfoil (100% Coverage) + TC Braid Shield (65% Coverage), Flame Retardant Foam Polyethylene Insulation, PVC Jacket, 300V 75°C

[183079A](#) Continuous Armor, 22 AWG Solid Bare Copper Conductors, Beldfoil (100% Coverage) + TC Braid Shield (65% Coverage), Continuously Corrugated AL Armor, Flame Retardant Foam Polyethylene Insulation, PVC Jacket, 300V 60°C

DataBus PROFIBUS PA Cable

[3076F](#) Type A, 18 AWG Stranded (7x26) Tinned Copper Conductors, Beldfoil (100% Shield Coverage), Tinned Copper Drain Wire, Polyolefin Insulation, IS Blue PVC Jacket, 300V 105°C

Custom cables are available upon request which can utilize any number of construction features such as:

- Armoring: Aluminum Interlock, Steel Interlock, and Continuous Corrugated Aluminum
- Armor Tapes: Corrugated Copper, Aluminum, and Steel
- Jackets: PVC, CPE, LDPE, TPE, HDPE, Fluorocopolymer, Oil Res II, Low Smoke Zero Halogen (LSZH), Haloarrest®, and Polyurethane
- Shielding: Overall Beldfoil®, Duofoil®, TC Braid, TC Double Braid, Individual Beldfoil Copper Tape Shields, and “French Braid”
- Insulations: Datalene®, XLPE, FEP, Polypropylene, Foam FEP, HDPE, PVC, TPE, and PVC-Nylon
- Conductors: Solid BC, Stranded BC, Solid Bare Copper-covered Steel, and Stranded TC

Hirschmann Active Devices

Representing experience and expertise in automation technology, Hirschmann products have been designed to ensure hassle-free data communication under even the toughest conditions.

For PROFIBUS, Hirschmann offers a wide range of industrial-grade fiber optic repeaters with ring redundancy and predictive maintenance, including the OZD Profi series.

See also [Hirschmann](#).

Lumberg Automation Connectivity

Lumberg, a leading name in industrial connectivity, offers the following connectivity products for PROFIBUS application:

- Centralized I/O distribution systems
 - e2c 20, IP20 rated
 - e2c 67, IP67 rated
- Decentralized I/O distribution systems
 - LioN-Link, IP67 rated
- Fieldbus I/O modules
 - LioN-S
- Field-attachable connectors (Micro M12, M23)
- Overmolded cordsets

See also [Lumberg Automation](#).

For information on other protocols see our [Industrial PLC/DCS Cable Cross-reference](#).