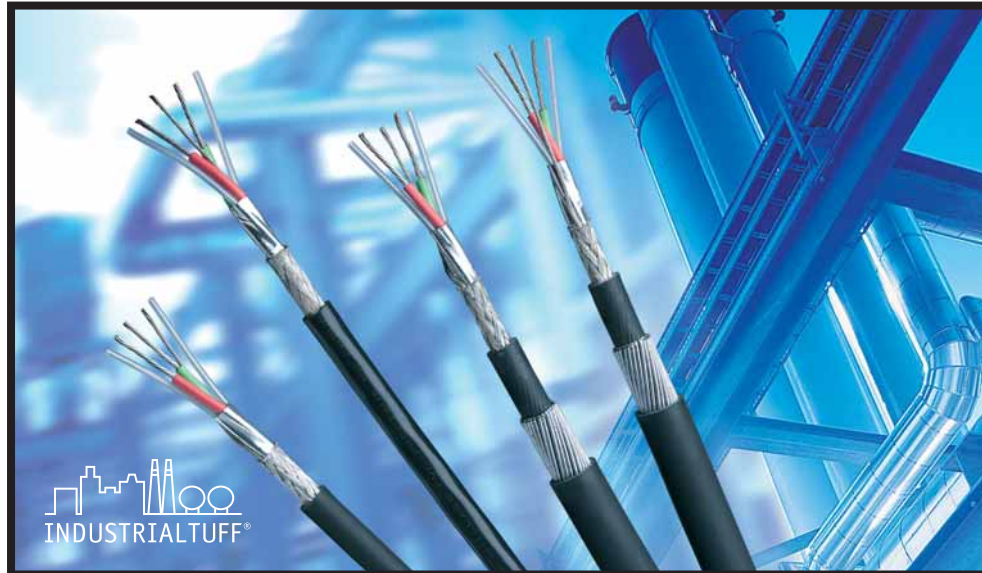


NP 107E

Belden introduces Profibus-PA cables for Industrial IEC 61158-2 Process Automation Networks.



## Belden Industrial Profibus PA Cables for Process Engineering

Profibus PA (Process Automation) consists of decentralized automation systems and field devices utilizing the physical layer as defined in the IEC 61158-2 part 21 standard. The all-digital, two way communications protocol standardizes interconnection of field devices at a communication rate of 31.25 kB/s. Profibus PA technology allows safe transmission of data and power on the line – and enables the user to fully expand the possibilities of a state-of-the-art control system.

Key benefits include:

- Uniform application profiles and interoperability between various Profibus PA devices.
- Power and data over single pair cable.
- Use of Profibus PA in potentially hazardous areas.
- Easy coupling of bus segments with different physical layers via segment couplers.

The same “open” concept can be used when planning a system with both intrinsically safe requirements as well as non hazardous areas. Devices can be connected to create different topologies and may be completely powered over the bus. The system set-up is such that devices can be connected and disconnected during running operation, even within potentially hazardous areas. This makes easy replacement/maintenance possible during operations. Where devices are used with high power requirements these can be fed via local power supplies.

### Introducing the Belden 7000x Series

The new Belden 7000x Series meet all requirements of IEC 61158-2 Fieldbus for use in industrial control systems and are suitable for use in hazardous areas zone 1 and 2, group II, as defined in IEC 60079-14 or class I or class II division 2 as per NEC 501.4 (b) or NEC 502.4 (b).

The number of devices possible on a Profibus PA link will vary depending on factors such as the power consumption of the devices, the use of repeaters, signal attenuation, the type of cable used and distance. The 7000x Series of Belden fulfil all requirements for Type A cabling as per IEC 61158-2.

Number of spurs	Maximum length of one spur cable	
	Intrinsically safe	Non Intrinsically safe
25 to 32	–	–
19 to 24	30 m	30 m
15 to 18	30 m*)	60 m
13 to 14	30 m*)	90 m
1 to 12	30 m*)	120 m

\*) as per FISCO requirements for Profibus usage in intrinsically safe areas.

When the network is enlarged via a repeater, the above limitations are valid for each segment and the only signal delay has to be calculated for the overall network.

## Features and Constructions

### Superior Features

Because of the superior features of Belden 7000x Series distance limitations can be exceeded without system enhancements or sacrifice in system performance.

These features include:

- Excellent electrical characteristics
- Low Capacitance (for long runs)
- 18 AWG stranded tinned copper conductors
- Datalene® insulation
- 100% Beldfoil® and >85% tinned copper braided shield

### Special Cable Constructions

As with all Belden industrial cables, special constructions are available:

- PUR or Teflon jacket
- Other jacket colours
- Multi Pair versions in AWG 18 or 16
- Long distance in AWG 16 or 14

## Industrial Data Solutions® — Industrial Data

### Databus® Cables IEC 61158-2 (ISA SP-50)

De- scription	Part No.	UL NEC/ C(UL)CEC Type IEC	Standard Lengths		Standard Unit Weight		Conductor (Stranding) Diameter Nom. DCR	Nominal Insulation OD		Shielding Material Nom. DCR	Nominal OD		Nom. Imp. (Ω)	Nom. Vel. of Prop.	Nominal Capacitance		Nominal Attenuation		
			ft.	m	lbs.	kg		inch	mm		inch	mm			pF/ft.	pF/m	MHz	dB/ 100 ft.	dB/ 100 m

18 AWG • Stranded (7x26) 1.2 mm Tinned Copper • Twisted Pair • Beldfoil® & Tinned Copper Braid • 20 AWG Stranded TC Drain Wire

Datalene® Insulation • PVC Jacket (Black or Blue)																			
300V 75°C (31.25 KBits/Sec)	<b>70001E</b>	IEC 332-1	394 1640	120 500	25.4 111.3	11.5 50.5	1.22 mm 18 AWG (7x26) TC	0.098	2.5	Beldfoil® 85% TC Braid + Drain Wire (20 AWG TC)	0.315	8.0	100 @ 31.25 KHz	77%	24.4	80.0	0.039	0.1	0.3



Shorting Fold

Profibus PA

Color Code: Green, Red  
Profibus PA: Black or Intrinsically Safe Blue jacket

18 AWG • Stranded (7x26) 1.2 mm Tinned Copper • Twisted Pair • Bedding • Beldfoil® & TC Braid • 20 AWG Stranded TC Drain Wire

Datalene® Insulation • PVC Jacket (Black or Blue) • Fastconnect Design																			
300V 75°C (31.25 KBits/Sec)	<b>70002E</b>	IEC 332-1	394 1640	120 500	25.4 111.3	11.5 50.5	1.22 mm 18 AWG (7x26) TC	0.098	2.5	Beldfoil® 85% TC Braid + Drain Wire (20 AWG TC)	0.315	8.0	100 @ 31.25 KHz	77%	24.4	80.0	0.039	0.1	0.3



Shorting Fold

Profibus PA - Fastconnect

Color Code: Green, Red  
Profibus PA: Black or Intrinsically Safe Blue jacket

18 AWG • Stranded (7x26) 1.2 mm Tinned Copper • Twisted Pair • Beldfoil® & Tinned Copper Braid • 20 AWG Stranded TC Drain Wire

Datalene® Insulation • LSNH Jacket (Black or Blue)																			
300V 80°C	<b>70001NH</b>	IEC 332-3C BS 7655	394 1640	120 500	25.1 110.9	11.4 50.3	1.22 mm 18 AWG (7x26) TC	0.098	2.5	Beldfoil® 85% TC Braid + Drain Wire (20 AWG TC)	0.315	8.0	100 @ 31.25 KHz	77%	24.4	80.0	0.039	0.1	0.3



Shorting Fold

Profibus PA

Color Code: Green, Red  
Profibus PA: Black or Intrinsically Safe Blue jacket

18 AWG • Stranded (7x26) 1.2 mm Tinned Copper • Twisted Pair • Beldfoil® & Tinned Copper Braid • 20 AWG Stranded TC Drain Wire

Datalene® Insulation • FRNC Inner Jacket (Black or Blue) • Steel Wire Armour • FRNC/LSNH Outer Jacket (Black or Blue)																			
300V 80°C	<b>70001LS</b>	IEC 332-3C BS 7655	394 1640	120 500	87.5 348.3	39.7 158.0	1.22 mm 18 AWG (7x26) TC	0.098	2.5	Beldfoil® 85% TC Braid + Drain Wire (20 AWG TC)	0.315 0.512	8.0 13.0	100 @ 31.25 KHz	77%	24.4	80.0	0.039	0.1	0.3



Shorting Fold

Profibus PA

Color Code: Green, Red  
Profibus PA: Black or Intrinsically Safe Blue jacket

DCR = DC resistance • TC = Tinned Copper