Belden IndustrialTuff® Cables

Introduction

Tough Cables for Tough Environments

Today, more than ever, manufacturing productivity depends upon seamless data communication and automation systems. And both depend upon high-performance cabling solutions.

Depend on Belden

Belden has developed the world's most comprehensive line of industrial cabling solutions for applications like yours: whether you are networking your factory floor or your process equipment and devices to their controllers...and on to the control room, or relaying data between the control room, the engineering department, and remote manufacturing sites—or, all of the above. From your petrochemical, automotive manufacturing, pharmaceutical, power generation, pulp and paper, metals, food and beverage, or general manufacturing plant to your corporate headquarters—and everywhere in between—Belden has your cabling solution.

Most importantly you can have the peace-of-mind that is inherent with the use of Belden products since all Belden cables are manufactured in ISO 9001:2000 certified facilities to the industry's highest standards of quality, using the most advanced equipment, systems, controls and processes available.

Belden cables give you the performance you need day after dependable day.

Innovative Technology

Bonded-Pair™ Cable

Many DataTuff® Industrial Ethernet cables feature Belden's patented bonded-pair technology. Bonded-pairs provide *Installable Performance*®—superior electrical performance even after the stresses of installation. Bonded-pairs exhibit the most robust and reliable electrical performance in the industry.

Shielding

Effective cable shielding for protection from noise interference remains critical with evolving industrial technology. Belden's shielding designs and testing methods ensure signal integrity and a dependable cable in the presence of electrical noise.

Belden's exclusive patented Beldfoil® design, with its aluminum/polyester foil, was the first shield to offer 100 percent cable protection against radiated emission and ingress at audio and radio frequencies.

Armoring

Belden's innovative armoring technology delivers maximum physical protection in harsh environments. Additional benefits include reduced cost of conduit, easier installation and re-routing, plus additional shielding.

Belden has the capability to protect data, electronic, instrumentation and control cables with interlocking steel or aluminum armor as well as continuous corrugated aluminum armor. Smooth or corrugated protective metal tapes are also available.

Insulation and Jacket

Belden formulates many of its own insulation and jacket compounds. As a result, they provide superior performance under a variety of hostile environmental conditions. See "Technical Information" on pages 125–126 for further details.

Intrinsically Safe Wiring

In accordance with NEC Article 504, intrinsically safe cables are colored blue for easy identification. Belden offers several industrial cables in intrinsically safe blue to meet your requirements for intrinsically safe wiring. Contact the NEC and/or your local inspector for specific guidelines.

Custom Capabilities

Most of our industrial cables are available from stock. Many of these are available off the shelf from distributors. If you have a new or unusual application or you cannot find an Industrial cable in this catalog section that meets your technical requirements, contact Technical Support at 1-800-BELDEN-1.

Overall Jacket

Prefix	Material
1	PVC
3	CPE
4	TPE
5	HDPE
6	Oil Res. II
7	Haloarrest® (LSZH)

Armor

Prefix	Material
2	Aluminum Interlock
3	Steel Interlock
4	Aluminum Belclad®
5	Steel Belclad
6	Copper Belclad
8	Continuous Armor

Example: 343016 is cable part no. 3016 with CPE outer jacket and aluminum Belclad armoring.

PLC/DCS Cable Cross Reference Guide *(continued)*

PLC/DCS Manufacturer	System Name	Belden Part Number	
Smar	FOUNDATION Fieldbus (Type SP50 ISA/IEC)	See Protocol listings on page 12	
	Industrial Ethernet	See Protocol listings on page 12	
	PROFIBUS DP FMS & PA	See Protocol listings on page 12	
	RS-485	See Protocol listings on page 12	
Square D/ Schneider AEG	FIP/Fieldbus	3079A	22 AWG, 1-Pair, Shielded
		123079A	Aluminum Armor (3079A)
	Industrial Ethernet	See Protocol listings on page 12	
	Model 50, RS-422 Cable	8760	18 AWG, 1-Pair, Shielded
		128760	Aluminum Armor (8760)
	Passport I/O – I/O Net	3105A	22 AWG, 1-Pair, RS-485
		123105A	Aluminum Armor (3105A)
		3106A	22 AWG, 1.5-Pair, RS-485
		123106A	Aluminum Armor (3106A)
	Power Logic	9841	24 AWG, 1-Pair, RS-485
		9842	24 AWG, 2-Pair, RS-485
Square D/ Schneider AEG	Seriplex®	3124A	CBL-1822-P20
		3125A	CBL-1622-P16
		3126A	CBL-162212-P16
		123124A	Aluminum Armor (3124A)
		123125A	Aluminum Armor (3125A)
		123126A	Aluminum Armor (3126A)
		9463	Blue Hose® (Standard)
		9463F	Flexible Version (9463)
		129463	Aluminum Armor (9463)
		139463	Steel Armor (9463)
		189463	Continuous Armor (9463)
		YR28826	Dual Version (9463)
		9463DB	Direct Burial (9463)
		YR29565	Various Color Jackets 9463)
	SY/Net Network Trunk Cable	3072F	600V TC Rated (9463)
		89463	FEP 200°C, Plenum
	SY/Net TNIM Cable	9272	20 AWG, 1-Pair, Shielded
		89272	FEP 200°C, Plenum

PLC/DCS Manufacturer	System Name	Belden Part Number	
Yokogawa — CENTUM	DeviceNet™	See Protocol listings on page 12	
	FOUNDATION Fieldbus (Type SP50 ISA/IEC)	See Protocol listings on page 12	
	HART	See Protocol listings on page 12	
	Industrial Ethernet	See Protocol listings on page 12	
	PROFIBUS	See Protocol listings on page 12	
	RS-485	See Protocol listings on page 12	
Yokogawa — FA-M3	DeviceNet	See Protocol listings on page 12	
	Industrial Ethernet	See Protocol listings on page 12	
	Modbus	See Protocol listings on page 12	
	PROFIBUS	See Protocol listings on page 12	
	RS-485	See Protocol listings on page 12	
Yokogawa — STARDOM	DeviceNet	See Protocol listings on page 12	
	FOUNDATION Fieldbus (Type SP50 ISA/IEC)	See Protocol listings on page 12	
	HART	See Protocol listings on page 12	
	Industrial Ethernet	See Protocol listings on page 12	
	PROFIBUS	See Protocol listings on page 12	
	RS-485	See Protocol listings on page 12	
Westinghouse	WDPF	9292	RG-11 PVC

FEP = Fluorinated Ethylene-Propylene.

ControlNet is a ControlNet International, Ltd. trademark.

DeviceNet is an Open DeviceNet Vendor Association, Inc. trademark.

EtherNet/IP is a ControlNet International, Ltd. trademark, under license by Open DeviceNet Vendor Association, Inc.

HART is a HART Communication Foundation trademark.

INTERBUS is a Phoenix Contact trademark.

Modbus is a Schneider Electric trademark.

PROFIBUS is a PROFIBUS International trademark.

PROFINET is a PROFIBUS International trademark.

SDS is a Honeywell International, Inc. trademark.

Seriplex is a Square D/Schneider AEG trademark.

Industrial Data Solutions® — Interconnect Cable

Shielded Twisted-Pair Cables

Interconnect Paired Cable

Part No.	Pairs	OD (Nom)		Operating Temperature (°C)	Additional Features/Ratings
		Inch	mm		
24 AWG (7 x 32) Stranded TC Conductors • Datalene® Insulation • TC Drain Wire • Individually Beldfoil® Shielded Pairs • Chrome PVC Jacket					
9729	2	.266	6.76	-20 to +80	NEC: CM • CEC: CM UL AWM 2493 (300V, 60°C)
22 AWG (7 x 30) Stranded TC Conductors • Polyolefin Insulation • TC Drain Wire • Individually Beldfoil Shielded Pairs • Chrome PVC Jacket					
8777	3	.273	6.93	-20 to +80	NEC: CM • CEC: CM UL AWM 2919 (30V, 80°C)
22 AWG (7 x 30) Stranded TC Conductors • Polyolefin Insulation • TC Drain Wire • Individually Beldfoil Shielded Pairs • Chrome PVC Jacket					
8723	2	.168	4.27	-20 to +75	NEC: CM • CEC: CM • 300V, 60°C Pairs Cabled On Common Axis to Reduce Diameter
22 AWG (7 x 30) Stranded TC Conductors • Red FEP Insulation • TC Drain Wire • Individually Beldfoil Shielded • Red FEP and Jacket					
88723	2	.148	3.76	-70 to +200	Plenum • Nonconduit NEC: CMP • CEC CMP FT6 300V Pairs Cabled On Common Axis to Reduce Diameter
18 AWG (16 x 30) Stranded TC conductors • Polyolefin Insulation • TC Drain Wire • Overall Beldfoil Shielding • Chrome PVC Jacket					
8760	1	.222	5.64	-20 to +60	NEC: CM • CEC: CM UL AWM 2092 (300V, 60°C)

Conductor Color Coding: 9279: Red/Black, White/Black
8777: Red/Black, White/Black, Green/Black
8723, 88723: Red/Black, Green/White
8760: Black/Clear

TC = Tinned Copper • FEP = Fluorinated Ethylene Propylene • PVC = Polyvinyl Chloride

Audio, Control and Instrumentation Cables

Overall Beldfoil® Shield

Part No.	Pairs	Color Code	OD (Nom)		Insulation Thickness		Jacket Thickness		Capacitance				Additional Features/Ratings
									Cond. - Cond.		Cond. - Shield		
			Inch	mm	Inch	mm	Inch	mm	pF/Ft	pF/m	pF/Ft	pF/m	
20 AWG • PVC/PVC													
Stranded (7 x 28) TC Conductors • PVC Insulation • Overall Beldfoil Shielding • 22 AWG Stranded TC Drain Wire • Beige PVC Jacket													
9154	1	Black, Red	.198	5.03	.014	.36	.031	.79					NEC: CMG • CEC: CMG FT4 UL AWM Style 2464 (300V, 80°C)
20 AWG • Polyethylene/PVC													
Stranded (7 x 28) TC Conductors • Polyethylene Insulation • Overall Beldfoil Shielding • 20 AWG Stranded TC Drain Wire • Chrome PVC Jacket													
8762	1	Black-Clear	.204	5.18	.016	.41	.028	.71					NEC: CM • CEC: CM UL AWM Style 2092 (300V, 60°C)
18 AWG • Polyethylene/PVC													
Stranded (19 x 30) TC Conductors • Polyethylene Insulation • Overall Beldfoil Shielding • 20 AWG TC Drain Wire Chrome PVC Jacket													
8760	1	Black-Clear	.222	5.64	.019	.48	.028	.71	24	79	44	144	NEC: CM • CEC: CM UL AWM Style 2092 (300V, 60°C)
18 AWG • Polyethylene/PVC													
Stranded (19 x 30) TC Conductors • Polyethylene Insulation • Overall Beldfoil Shielding • 20 AWG TC Drain Wire • Chrome PVC Jacket. Jacket and Shield Are Bonded So Both Can Be Removed on Automatic Stripping Equipment. Drain Wire Is Inside Foil Shield.													
9460	1	Black-Clear	.230	5.84	.019	.48	.030	.76	24	79	44	144	NEC: CM • CEC: CM UL AWM Style 2092 (300V, 60°C)
18 AWG • FEP/FEP													
Stranded (19 x 30) TC Conductors • FEP Insulation • Overall Beldfoil Shielding • 20 AWG TC Drain Wire • Red FEP Jacket													
88760	1	Black-Red	.150	3.81	.007	.18	.014	.36	51	167	97	318	NEC: CMP • CEC: CMP FT6 300V
18 AWG • FEP/ Fluorocopolymer													
Stranded (19 x 30) TC Conductors • FEP Insulation • Overall Beldfoil Shielding • 20 AWG TC Drain Wire • Red Fluorocopolymer Jacket													
87760	1	Black-Red	.150	3.81	.007	.18	.014	.36	51	167	97	318	NEC: CMP • CEC: CMP FT6 300V
18 AWG • FEP/ Flamarrest®													
Stranded (19 x 30) TC Conductors • FEP Insulation • Overall Beldfoil Shielding • 20 AWG TC Drain Wire • Natural Flamarrest Jacket													
82760	1	Black-Red	.150	3.81	.007	.18	.014	.36	51	167	97	318	NEC: CMP • CEC: CMP FT6 300V

TC = Tinned Copper• FEP = Fluorinated Ethylene Propylene • PVC = Polyvinyl Chloride