

## 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.

#### Overall Jacket

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

### 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.

#### 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.

## Protocol Cable Cross Reference Guide

System Name	Belden Part Number	Description
<b>ControlNet™</b>	3092A	RG-6 PVC Quad Shield
	3092F	RG-6 PVC Quad Shield, Flex Version, Aluminum Braid
	YR28890	RG-6 PVC Quad Shield, Flex Version, Copper Braid
	3093A	RG-6 FEP Quad Shield, Plenum
	123092A	Aluminum Armor (3092A)
	133092A	Steel Armor (3092A)
	183092A	Continuous Armor (3092A)
<b>DataHighway (DH) &amp; DataHighway Plus (DH+) Remote I/O</b>	9463	20 AWG Twinax, Blue Hose
	3072F	600V, TC Blue Hose
	9463DB	Direct Burial Blue Hose
	9463F	High-Flex, Blue Hose
	89463	High-Temp, Plenum Blue Hose
	129463	Aluminum Armor (9463)
	139463	Steel Armor (9463)
	189463	Continuous Armor (9463)
<b>DeviceNet™</b>	3082A	PVC (Thick)
	3082F	High-Flex (Thick)
	3082K	CL2 (Flat)
	3082KP	Auxiliary Power (Flat)
	3083A	CPE (Thick)
	3084A	PVC (Thin)
	3084F	High-Flex (Thin)
	3085A	CPE (Thin)
	7895A	CL2 PVC (Cable III Mid)
	7896A	CL1 PVC (Type V Trunk Cable)
	7897A	CL1 PVC (Thick)
<b>FOUNDATION Fieldbus (Type SP50 ISA/IEC)</b>	3076F	Type A, H1 1900m (31.25K)
	3077F	Type B, H1 1200m (31.25K)
	1335A	Type A Compliant (16 AWG)
	1336A	Type A Compliant (14 AWG)
	HSE	Copper & Fiber See Industrial Ethernet
<b>Industrial Ethernet</b>	7958A	Cat 5e, 4-Pair, Bonded, Shielded, AWM
	7957A	Cat 5e, 4 Pair, Bonded, Shielded (Foil + Braid), AWM
	7953A	Cat 6, 4-Pair, Shielded, FRPO Inner Jacket
	7936A	Cat 5e, 4-Pair, Bonded, Shielded, LSZH
	7937A	Cat 5e, 4-Pair, Bonded, Shielded, Halogen Free, Direct Burial
	7939A	Cat 5e, 4-Pair, Bonded, Shielded, Stranded
	7938A	Cat 5e, 4-pair, Bonded, Shielded, High Flex
	7940A	Cat 6, 4-Pair, Bonded
	7953A	Cat 6, 4-Pair, Shielded, FRPO Inner Jacket

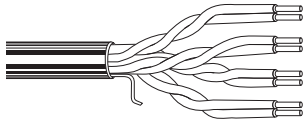
System Name	Belden Part Number	Description	
<b>Industrial Ethernet (continued)</b>	11700A	Cat 5e, 4-Pair, Bonded, Upjacketed	
	11700A2	Cat 5e, 4-Pair, Bonded, Upjacketed, Oil Res II	
	121700A	Cat 5e, 4-Pair, Bonded, Armored	
	7919A	Cat 5e, 4-Pair, Shielded	
	7921A	Cat 5e, 4-Pair, Bonded, Shielded (Foil + Braid)	
	7927A	Cat 6, 4-Pair, Bonded	
	7931A	Cat 6, 4-Pair, Bonded, Gas Res, High + Low Temperature	
	11872A	Cat 6, 4-Pair, Bonded, Upjacketed	
	121872A	Cat 6, 4-Pair, Bonded, Armored	
	<b>INTERBUS®-S</b>	3119A	18 AWG/3c, 24 AWG/3-Pair, Composite
		3120A	24 AWG/3-Pair
	<b>IronWorks®</b>	8471	16 AWG, 1-Pair, UL AWM 2598
8917		16 AWG, 1-Cond, UL AWM 1015	
85102		16 AWG, 2-Cond, VW1, Plenum	
<b>Modbus</b>	8777	22 AWG, 3-Pair, Modem Drop Cable	
	128777	Aluminum Armor (8777)	
	138777	Steel Armor (8777)	
	88777	FEP 200°C, Plenum (8777)	
	3079A	22 AWG 300V Twinax	
<b>PROFIBUS DP &amp; FMS (Purple)</b>	3079E	22 AWG 300V Twinax, Flex Version	
	183079A	22 AWG, 30V, Twinax, Armored	
<b>PROFIBUS PA (Blue)</b>	3076F	18 AWG, 2-Conductors, Type A	
	183076F	18 AWG, 2-Conductors, Type A, Armored	
<b>RS-485/HART/CANopen</b>	9841	1-Pair	
	82841	1-Pair, Plenum	
	89841	1-Pair, Plenum, High-Temperature	
	9842	2-Pair	
	82842	2-Pair, Plenum	
	9843	3-Pair	
	9844	4-Pair	
	7200A	1-Pair, RS-485, Hi-Flex	
	7201A	2-Pair, RS-485, Hi-Flex	
	7202A	3-Pair, RS-485, Hi-Flex	
	7203A	4-Pair, RS-485, Hi-Flex	
	7206A	1-Pair, RS-485, Hi-Flex	
	3105A	1-Pair, RS-485 (PLTC)	
	3106A	1.5-Pair, RS-485 (PLTC)	
	3107A	2-Pair, RS-485 (PLTC)	
	3108A	3 Pair, RS-485 (PLTC)	
3109A	4 Pair, RS-485 (PLTC)		
<b>Seriplex®</b>	3124A	1-Pair 18 AWG, 1-Pair 22 AWG	
	3125A	1-Pair 16 AWG, 1-Pair 22 AWG	
	3126A	1-Pair 16 AWG, 1-Pair 22 AWG, 1-Pair 12 AWG	
	123124A	Aluminum Armor (3124A)	
	123125A	Aluminum Armor (3125A)	
	123126A	Aluminum Armor (3126A)	
	<b>Smart Distributed System (SDS)</b>	3086A	1-Pair 16 AWG, 1-Pair 20 AWG
		3087A	2-Pair 22 AWG
		1346F	1-Pair 22 AWG, 1 Pair 24 AWG
		1348F	3 20 AWG
1349F		3 20 AWG, 2 18 AWG	

FEP = Fluorinated Ethylene-propylene • FRPO = Flame Retardant Polyolefin

# Industrial Data Solutions® – Industrial Ethernet

## Category 5e DataTuff® Cables

### Category 5e • Unshielded • 4 Pair



- Compatible with Belden Metal Body RJ45 Plugs R301601 and R301602

Part No.	AWG	Nominal OD		Jacket Thickness		Operating Temperature (°C)	Additional Features/Ratings
		Inch	mm	Inch	mm		
<b>Solid BC Conductors • Polyolefin Insulation • PVC Jacket</b>							
7923A	24	.230	5.84	.030	.76	-40 to +75	EtherNet/IP Compliant MSHA Approved* NEC: CMR, CMX-Outdoor • CEC: CMR FT4 Sunlight and Oil Resistant Bonded Pairs
7922A	22	.301	7.65	.030	.76	-25 to +75	UL PLTC NEC: CMR, CMX-Outdoor • CEC: CMR FT4 Sunlight and Oil Resistant Bonded Pairs
7918A	24	.230	5.84	.030	.76	-40 to +75	MSHA Approved* NEC: CMR, CMX-Outdoor • CEC: CMR FT4 Sunlight and Oil Resistant
<b>Solid BC Conductors • Polyolefin Insulation • PVC Inner and Outer Jackets</b>							
11700A	24	.285	7.24	.035	.89	-40 to +75	Upjacketed EtherNet/IP Compliant MSHA Approved* NEC: CMR, CMX-Outdoor • CEC: CMR FT4 Sunlight and Oil Resistant Bonded Pairs
11700A2	24	.285	7.24	.035	.89	-10 to +75	Upjacketed Oil Res I/II NEC: CMR • CEC: CMR FT4 Sunlight and Oil Resistant Bonded Pairs
<b>Solid BC Conductors • Polyolefin Insulation • PVC Inner Jacket • Interlocked Aluminum Armor • PVC Outer Jacket</b>							
121700A	24	.530	13.46	.045	1.14	-40 to +75	Armored NEC: CM • CEC: HL, CMG FT4 Sunlight and Oil Resistant Bonded Pairs
121700R	24	.530	13.46	.045	1.14	-40 to +75	Armored -40°C Cold Impact NEC: CM • CEC: HL, CMG FT4 Sunlight and Oil Resistant Bonded Pairs
<b>Stranded (7 x 32) TC Conductors • Polyolefin Insulation • PVC Jacket</b>							
7924A	24	.242	5.84	.030	.76	-40 to +75	Flexible NEC: CMR, CMX-Outdoor • CEC: CMR FT4 Sunlight and Oil Resistant Bonded Pairs
<b>Stranded (7 x 32) BC Conductors • Polyolefin Insulation • PVC Jacket</b>							
7930A	24	.240	5.84	.030	.76	-25 to +75	Flexible NEC: CMR, CMX-Outdoor • CEC: CMR FT4 Sunlight and Oil Resistant

**Conductor Color Codes:** Pair 1: White/Blue Stripe & Blue • Pair 2: White/Orange Stripe & Orange • Pair 3: White/Green Stripe & Green • Pair 4: White/Brown Stripe & Brown

\*Pennsylvania Department of Environmental Resources and United States Mine Safety and Health Administration Certification

All reels of Bonded Pair cable come with bonded pair separator tool (part no. 1797B)  
EtherNet/IP is a trademark of ODVA. To learn more visit <http://www.belden.com/products/industrialcable/ethernet-ip.cfm>  
BC = Bare Copper • TC = Tinned Copper • PVC = Polyvinyl Chloride



For more information, contact Belden Technical Support: 1-800-BELDEN-1 • [www.belden.com](http://www.belden.com)