

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.

Protocol Cable Cross Reference Guide

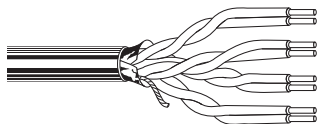
System Name	Belden Part Number
ControlNet™	3092A RG-6 PVC Quad Shield
	3092F RG-6 PVC Quad Shield, Flex Version, Aluminum Braid
	YR28890 RG-6 PVC Quad Shield, Flex Version, Copper Braid
	3093A RG-6 FEP Quad Shield, Plenum
	123092A Aluminum Armor (3092A)
	133092A Steel Armor (3092A)
	183092A Continuous Armor (3092A)
DataHighway (DH) & DataHighway Plus (DH+) Remote I/O	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)
DeviceNet™	189463 Continuous Armor (9463)
	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)
FOUNDATION Fieldbus (Type SP50 ISA/IEC)	7897A CL1 PVC (Thick)
	7900A CL1 Unshielded (Drop Cable IV)
	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)
Industrial Ethernet	HSE Copper & Fiber See Industrial Ethernet
	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
Industrial Ethernet (continued)	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
	INTERBUS®-S 3119A 18 AWG/3c, 24 AWG/3-Pair, Composite
IronWorks®	3120A 24 AWG/3-Pair
	8471 16 AWG, 1-Pair, UL AWM 2598
	8917 16 AWG, 1-Cond, UL AWM 1015
Modbus	85102 16 AWG, 2-Cond, VW1, Plenum
	8777 22 AWG, 3-Pair, Modem Drop Cable
	128777 Aluminum Armor (8777)
	138777 Steel Armor (8777)
PROFIBUS DP & FMS (Purple)	88777 FEP 200°C, Plenum (8777)
	3079A 22 AWG 300V Twinax
	3079E 22 AWG 300V Twinax, Flex Version
	183079A 22 AWG, 30V, Twinax, Armored
PROFIBUS PA (Blue)	3076F 18 AWG, 2-Conductors, Type A
	183076F 18 AWG, 2-Conductors, Type A, Armored
RS-485/HART/CANopen	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)
Seriplex®	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)
	3086A 1-Pair 16 AWG, 1-Pair 20 AWG
Smart Distributed System (SDS)	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 • Shielded • 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		
Solid BC Conductors • Polyolefin Insulation • Overall Beldfoil® Shielding • PVC Jacket							
7929A	24	.265	6.73	.030	.76	-40 to +75	NEC: CMR, CMX-Outdoor • CEC: CMR FT4 MSHA Approved* Sunlight and Oil Resistant Bonded Pairs
7958A	24	.265	6.73	.030	.76	-40 to +75	600V UL AWM EtherNet/IP Compliant NEC: CMR, CMX-Outdoor • CEC: CMR FT4 Sunlight and Oil Resistant Bonded Pairs
7919A	24	.265	6.73	.030	.76	-40 to +75	NEC: CMR, CMX-Outdoor • CEC: CMR FT4 MSHA Approved* Sunlight and Oil Resistant CMX-Outdoor
Stranded (7 x 32) BC Conductors • Polyolefin Insulation • Overall Beldfoil Shielding • PVC Jacket							
7939A	24	.315	8.60	.030	.76	-40 to +75	Flexible NEC: CMR, CMX-Outdoor • CEC: CMR FT4 Sunlight and Oil Resistant Bonded Pairs
Solid BC Conductors • Polyolefin Insulation • Overall Beldfoil + 70% TC Braid Shielding • PVC Jacket							
7921A	24	.330	8.38	.030	.76	-40 to +75	Heavy Shielded EtherNet/IP Compliant NEC: CMR, CMX-Outdoor • CEC: CMR FT4 Sunlight and Oil Resistant Bonded Pairs
7957A	24	.330	8.38	.030	.76	-40 to +75	600V UL AWM Heavy Shielded EtherNet/IP Compliant NEC: CMR, CMX-Outdoor • CEC: CMR FT4 Sunlight and Oil Resistant Bonded Pairs

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)
BC = Bare Copper • TC = Tinned Copper • PVC = Polyvinyl Chloride