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, utilizing the most advanced equipment, systems, controls and processes available.

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

Innovative Technology

Bonded-Pairs

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

The evolution of technology maintains steady demand for sophisticated cable shielding. Belden meets that demand with innovative shielding and shield effectiveness testing methods to supply you with high quality, dependable cable.

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 insulations and jacket compounds. As a result, they provide superior performance under a variety of hostile environmental conditions. See "Technical Information" at the back of this section 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.

To Specify Part Number:

1	2	3456
Overall Jacket Type	Armor Type	Core Trade Number

Overall Jacket Type

Code	Material
1	PVC
3	CPE
4	TPE
5	HDPE
6	Oil Res II
7	Haloarrest®

Armor Type

Code	Material
2	Aluminum Interlock
3	Steel Interlock
8	Continuous Corrugated Aluminum

PLC/DCS Cable Cross Reference Guide

PLC/DCS Manufacturer	System Name	Belden Part Number	
ABB/Bailey Controls	FOUNDATION Fieldbus	See Protocol listings on page 8.6	
	Industrial IT 800 X A	9880	Network Trunk Cable
	Infinet	9880	Network Trunk Cable
		9463	Blue Hose® (Standard)
	Masterpiece 200	9880	Network Trunk Cable
		9907	Thin Network Trunk Cable
	MICRO-DCI	3105A	1-Pair, RS-485
	MICROLINK	9860	Twinax, 16 AWG, 124 Ohm
	Modcell	3105A	1-Pair, RS-485
	Profibus DP & PA	See Protocol listings on page 8.6	
Allen-Bradley/ Rockwell Automation	ControlNet™	See Protocol listings on page 8.6	
	DeviceNet™	See Protocol listings on page 8.6	
	DH, DH+, Remote I/O	9463	Blue Hose (Standard)
		9463F	Flexible Version (9463)
		129463	Aluminum Armor (9463)
		139463	Steel Armor (9463)
		189463	Continuous Armor (9463)
		YR28826	Dual Version (9463)
		YC39151	Dual Armored (9463)
		9463DB	Direct Burial (9463)
		YR29565	Various Color Jackets (9463)
		3072F	600V TC Rated (9463)
		YR41104	Low Smoke, Halogen Free
		YR28764	Super Thick (PLTC)
		89463	FEP 200°C, Plenum
	DH-485	3074F	600V Tray Cable
		3106A	1.5-Pair, RS-485 (PLTC)
		9842	2-Pair, RS-485
		YM39500	Flexible Version (3106A)
	Industrial Ethernet	See Protocol listings on page 8.6	
	Longline Communications	8723	Interface Cable
		88723	Plenum Version
Cutler-Hammer/ Westinghouse	IMPACC System	YR29090	Proprietary Trunk Cable
	I/Q System	9463	Blue Hose (Standard)
Emerson Process Management (Fisher/ Rosemont Systems) — Delta V	DeviceNet	See Protocol listings on page 8.6	
	FOUNDATION Fieldbus (Type SP50 ISA/IEC)	See Protocol listings on page 8.6	
	HART	See Protocol listings on page 8.6	
	Industrial Ethernet	See Protocol listings on page 8.6	
	Modbus	See Protocol listings on page 8.6	
	Profibus DP	See Protocol listings on page 8.6	
	Provox Plus	3091A	RG-11 Quad Shield PVC
		3131A	RG-6 Quad Shield PVC
	RS-485	See Protocol listings on page 8.6	
GE Fanuc — I/O Bus	DeviceNet	See Protocol listings on page 8.6	
	Genius 9030, 9070 PAC System	YR29841	PLTC Version
		9182	Communications Bus
		89182	Plenum Version
	Interbus®-S	See Protocol listings on page 8.6	
	Modbus®	See Protocol listings on page 8.6	
	Profibus	See Protocol listings on page 8.6	

PLC/DCS Manufacturer	System Name	Belden Part Number	
GE Fanuc — Sensor Device Networks	DeviceNet	See Protocol listings on page 8.6	
	SDS	See Protocol listings on page 8.6	
Honeywell	Access 4000 System	9248	RG-6 PVC
	FOUNDATION Fieldbus (Type SP50 ISA/IEC)	See Protocol listings on page 8.6	
	IPC 620 System I/O	9271	Twinax, 25 AWG, 124 Ohm
	IPC 620 System	9729	Up to 4,000 ft.
	Serial Interface	9182	Up to 10,000 ft.
		89182	Plenum
	Series C	RS-485	Foundation Fieldbus Industrial Ethernet
	3000 UCN & LCN	3131A	RG-6 Quad Shield PVC
		3094A	RG-11 Quad Shield PVC
Honeywell Microswitch Division	Smart Distributed System	3086A	Mini
		3087A	Micro
Invensys/ Foxboro	FOUNDATION Fieldbus (Type SP50 ISA/IEC)	See Protocol listings on page 8.6	
	I/A Series Carrier Band	8233	Small Trunk
		3095A	Plenum
		9290	Drop Cable
	I/A Series Fieldbus	9207	Twinax
		89207	200°C, Plenum
		3073F	600V Tray Cable
	I/A Series Node Bus	9880	Trunk Cable
		89880	Plenum Version
	Industrial Ethernet	See Protocol listings on page 8.6	
Limitorque	DCC100	3105A	Actuator Bus Cable, 1-Pair, RS-485
Matsushita	FP Series C-NET	9207	Twinax, 20 AWG, Stranded, 100 Ohm
		9860	Twinax, 16 AWG, Solid, 124 Ohm
	FP Series MEWNET-F	9207	Twinax, 20 AWG, Stranded, 100 Ohm
		9860	Twinax, 16 AWG, Solid, 124 Ohm
	FP Series MEWNET-H	9248	RG-6, 75 Ohm, 18 AWG
	FP Series MEWNET-TR	9207	Twinax, 20 AWG, Stranded, 100 Ohm
		9860	Twinax, 16 AWG, Solid, 124 Ohm
	FP Series MEWNET-W	9207	Twinax, 20 AWG, Stranded, 100 Ohm
		9806	4-Pair, RS-232, RS-422
	FP Series MEWNET-W2	9207	Twinax, 20 AWG, Stranded, 100 Ohm
		9860	Twinax, 16 AWG, Solid, 124 Ohm
	FP Series TRNET	9207	Twinax, 20 AWG, Stranded, 100 Ohm
		9860	Twinax, 16 AWG, Solid, 124 Ohm

FEP = Fluorinated Ethylene-propylene

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

PLC/DCS Manufacturer	System Name	Belden Part Number	
Mitsubishi Electric Automation	**CC-Link**	See Protocol listings on page 8.6	
	DeviceNet	See Protocol listings on page 8.6	
	Melsecnet II (10/10H)	**1505A**	Precision RG-59/U Coax
		1505F	High-Flex 1505A
		1506A	Plenum Precision RG-59/U, Outdoor, Direct Burial
		8241	Standard RG-59/U Coax
		8241F	High-Flex 8241F
	Modbus	See Protocol listings on page 8.6	
	Profibus DP	See Protocol listings on page 8.6	
	Serial Communications	**8777**	Control and Instrumentation Interconnect Cable
Modicon/ Schneider AEG	**Industrial Ethernet**	See Protocol listings on page 8.6	
	Modbus	**8777**	Modem Drop Cable, 22 AWG, 3-Pair
		128777	Aluminum Armor (8777)
		138777	Steel Armor (8777)
		88777	FEP 200°C, Plenum
	Modbus II	**3092A**	RG-6 Quad Shield PVC
		3132A	RG-6 Quad Shield, 150°C, Plenum
		3092F	RG-6 Quad Shield PVC, Flexible Version
		123092A	Aluminum Armor (3092A)
		133092A	Steel Armor (3092A)
	Modbus Plus	**YM29560**	24 AWG, 1-Pair, RS-485
		YC39000	Aluminum Armor (YM29560)
		YC39222	Steel Armor (YM29560)
		YQ29258	24 AWG, 1-Pair, 150°C, Plenum
	Remote I/O	**3092A**	RG-6 Quad Shield PVC
		3092F	RG-6 Quad Shield PVC, Flexible Version
		123092A	Aluminum Armor (3092A)
		133092A	Steel Armor (3092A)
		123092F	Aluminum Armor, RG-6 Quad Shield PVC
		3132A	RG-6 Quad Shield, 150°C, Plenum
		3094A	RG-11 Quad Shield PVC
		123094A	Aluminum Armor (3094A)
		133094A	Steel Armor (3094A)
		3095A	RG-11 Quad Shield, 150°C, Plenum
Omron	**ComboBus/D (DeviceNet™)**	See DeviceNet Protocol listings on page 8.6	
	ComboBus/S	**9409**	18 AWG, 1-Pair, 300V PLTC Control
		9318	18 AWG, 1-Pair, 300V PLTC Control, Shielded
		3073	600V Tray Cable, Twinax
		89740	18 AWG, 1-Pair, 300V, Control

PLC/DCS Manufacturer	System Name	Belden Part Number	
Omron *(continued)*	**Controller Link**	**9207**	Twinax
		89207	Twinax, 200°C, Plenum
		9815	Twinax, 100 Ohm, Direct Burial
		3073F	600V Tray Cable, Twinax
	SYSBUS-2	**3073F**	600V Tray Cable, Twinax
	SYSMAC BUS	**9841**	22 AWG, 1-Pair, RS-485
		3105A	22 AWG, 1-Pair, RS-485
	SYSMAC LINK	**9231**	RG-59U Coax
Phoenix Contact	**DeviceNet**	See Protocol listings on page 8.6	
	Industrial Ethernet	See Protocol listings on page 8.6	
	Interbus®-S	See Protocol listings on page 8.6	
	Profibus DP FMS & PA	See Protocol listings on page 8.6	
Reliance/A-B	**Auto Max Distributed Power**	**M9B021**	2-Fiber Breakout
		I100255	2-Fiber Loose Tube PVC
		I100266	2-Fiber Loose Tube CPE
	R-Net	**9259**	RG-59 PVC
		89259	RG-59, 200°C, Plenum
Rotork	**Pakscan II E RS-485**	**3105A**	22 AWG, 1-Pair, RS-485
Siemens/ Moore	**FMC** (Field Mountable Controller)	**3105A**	1-Pair, RS-485
		3106A	1.5-Pair, RS-485
		3107A	2-Pair, RS-485
		3108A	3-Pair, RS-485
		3109A	4-Pair, RS-485
	FOUNDATION Fieldbus (Type SP50 ISA/IEC)	See Protocol listings on page 8.6	
	Hiway	**9860**	Network Trunk Cable
	Industrial Ethernet	See Protocol listings on page 8.6	
	MODULNET	**3094A**	RG-11 Quad Shield PVC
		3131A	RG-6 Quad Shield PVC
	Profibus DP & FMS (Purple)	See Protocol listings on page 8.6	
	Profibus PA (Blue)	See Protocol listings on page 8.6	
	SINEC Series H1	**9907**	Thin Network Trunk Cable
		9880	Network Trunk Cable
	SINEC Series H2B	**3131A**	RG-6 Quad Shield
		3094A	RG-11 Quad Shield
	SINEC Series L1	**3107A**	2-Pair, RS-485
	SINEC Series L2	**3079A**	300V Twinax
	Thicknet Ethernet Trunk	**9880**	Network Trunk Cable
		129880	Aluminum Interlocked Armor Trunk
		139880	Steel Interlocked Armor Trunk
	Thinnet Ethernet Trunk	**9907**	Thin Network Trunk Cable

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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 8.6
	Industrial Ethernet	See Protocol listings on page 8.6
	Profibus DP FMS & PA	See Protocol listings on page 8.6
	RS-485	See Protocol listings on page 8.6
Square D/ Schneider AEG	FIP/Fieldbus	3079A 22 AWG, 1-Pair, Shielded
		123079A Aluminum Armor (3079A)
	Industrial Ethernet	See Protocol listings on page 8.6
	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)
		YR41194 Low-Smoke, Halogen-Free
		YR28764 Super Thick (PLTC)
		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 8.6
	FOUNDATION Fieldbus (Type SP50 ISA/IEC)	See Protocol listings on page 8.6
	HART	See Protocol listings on page 8.6
	Industrial Ethernet	See Protocol listings on page 8.6
	Profibus	See Protocol listings on page 8.6
	RS-485	See Protocol listings on page 8.6
Yokogawa — FA-M3	DeviceNet	See Protocol listings on page 8.6
	Industrial Ethernet	See Protocol listings on page 8.6
	Modbus	See Protocol listings on page 8.6
	Profibus	See Protocol listings on page 8.6
	RS-485	See Protocol listings on page 8.6
Yokogawa — STARDOM	DeviceNet	See Protocol listings on page 8.6
	FOUNDATION Fieldbus (Type SP50 ISA/IEC)	See Protocol listings on page 8.6
	HART	See Protocol listings on page 8.6
	Industrial Ethernet	See Protocol listings on page 8.6
	Profibus	See Protocol listings on page 8.6
	RS-485	See Protocol listings on page 8.6
Westinghouse	WDPF	9292 RG-11 PVC

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