

7921A Multi-Conductor - Category 5e DataTuff® Twisted Pair Cable



Description:

24 AWG Bonded-Pairs solid bare copper conductors, polyolefin insulation, overall Beldfoil® (100% coverage) plus tinned copper braid shield (70% coverage), drain wire, industrial grade sunlight- and oil-resistant PVC jacket. Seq. marking at 2 ft. intervals

Usage (Overall)

Suitable Applications:

Industrial Ethernet, Harsh Environments, Category 5e, Gigabit Ethernet, 100BaseTX, 100BaseVG ANYLAN, 155ATM, 622ATM, NTSC/PAL Component or Composite Video, AES/EBU Digital Audio, AES51, RS-422, Noisy Environments, CMX - Outdoor, EtherNet/IP™

Physical Characteristics (Overall)

Conductor

AWG:

# Pairs	AWG	Stranding	Conductor Material
4	24	Solid	BC - Bare Copper

Insulation

Insulation Material:

Insulation Material
PO - Polyolefin

Outer Shield

Outer Shield Material:

Layer #	Outer Shield Trade Name	Type	Outer Shield Material	Coverage (%)
1	Beldfoil®	Tape	Aluminum Foil-Polyester Tape	100.000
2		Braid	TC - Tinned Copper	70.000

Outer Shield Drain Wire AWG:

AWG	Stranding	Drain Wire Conductor Material
24	Solid	TC - Tinned Copper

Outer Jacket

Outer Jacket Material:

Outer Jacket Material
Industrial Grade PVC - Polyvinyl Chloride

Overall Cabling

Overall Nominal Diameter: 0.330 in.

Pair

Pair Color Code Chart:

Number	Color
1	White/Blue Stripe & Blue
2	White/Orange Stripe & Orange
3	White/Green Stripe & Green
4	White/Brown Stripe & Brown

Mechanical Characteristics (Overall)

Installation Temperature Range: -25°C To +75°C

Operating Temperature Range: -40°C To +75°C

7921A Multi-Conductor - Category 5e DataTuff® Twisted Pair Cable

Bulk Cable Weight:	50 lbs/1000 ft.
Max. Recommended Pulling Tension:	75 lbs.
Min. Bend Radius (Install)/Minor Axis:	1.320 in.

Applicable Specifications and Agency Compliance (Overall)

Applicable Standards & Environmental Programs

NEC/(UL) Specification:	CMR, CMX-OUTDOOR, UL444
CEC/C(UL) Specification:	CMR
Other Standards:	IS11801 Category 5
EU Directive 2000/53/EC (ELV):	Yes
EU Directive 2002/95/EC (RoHS):	Yes
EU RoHS Compliance Date (mm/dd/yyyy):	01/01/2004
EU Directive 2002/96/EC (WEEE):	Yes
EU Directive 2003/11/EC (BFR):	Yes
CA Prop 65 (CJ for Wire & Cable):	Yes
MII Order #39 (China RoHS):	Yes
Telecommunications Standards:	568B.2 Category 5e
Other Specification:	NEMA WC-63.1 Category 5e, EtherNet/IP™ Compliant

Flame Test

UL Flame Test:	UL1661 Riser
CSA Flame Test:	FT4

Suitability

Suitability - Outdoor:	Yes
Sunlight Resistance:	Yes
Oil Resistance:	Yes

Plenum/Non-Plenum

Plenum (Y/N):	No
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Electrical Characteristics (Overall)

Nom. Mutual Capacitance:

Capacitance (pF/ft)	15
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Nominal Velocity of Propagation:

VP (%)	70
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Maximum Capacitance Unbalance (pF/100 m): 150

Maximum Delay:

Delay (ns/100 m)	538 @ 100MHz
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Max. Delay Skew:

Delay Skew (ns/100 m)	45
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Maximum Conductor DC Resistance:

DCR @ 20°C (Ohm/100 m)	9.38
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Max. Operating Voltage - UL:

Voltage	
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7921A Multi-Conductor - Category 5e DataTuff® Twisted Pair Cable

300 V RMS

Maximum DCR Unbalanced:

DCR Unbalance @ 20°C (%)
3

Electrical Characteristics-Premise (Overall)

Premise Cable Electrical Table 1:

Freq. (MHz)	Max. Attenuation (dB/100 m)	Min. NEXT (dB)	Min. PSNEXT (dB)	Min. ACR (dB)	Min. PSACR (dB)	Min RL (dB)	Min. SRL (dB)
1	2.0	65.3	62.3	63.0	60.0	20.0	20.0
4	4.1	56.3	53.3	51.0	49.0	23.6	23.6
8	5.8	51.8	48.8	46.0	43.0	25.4	25.4
10	6.5	50.3	47.3	43.0	41.0	26.0	26.0
16	8.2	47.3	44.3	39.0	36.0	26.0	26.0
20	9.3	45.8	42.8	36.5	33.5	26.0	26.0
25	10.4	44.3	41.3	33.9	30.9	25.5	25.5
31.25	11.7	42.9	39.9	31.0	28.0	25.0	25.0
62.5	17.0	38.4	35.4	22.0	19.0	23.5	23.5
100	22.0	35.3	32.3	14.0	11.0	22.5	22.5

Premise Cable Electrical Table 2:

Freq. (MHz)	Input (Unfitted) Imp. (Ohms)	Fitted Impedance	Min. ELFEXT (dB)	Min. PSELFEXT (dB)
1	100 ± 15	95-110	63.8	60.8
4	100 ± 15	95-110	51.7	48.7
8	100 ± 15	95-107	45.7	42.7
10	100 ± 15	95-107	43.8	40.8
16	100 ± 15	95-107	39.7	36.7
20	100 ± 15	95-107	37.7	34.7
25	100 ± 15	95-107	35.8	32.8
31.25	100 ± 15	95-107	33.9	30.9
62.5	100 ± 15	95-107	27.8	24.8
100	100 ± 15	95-107	23.8	20.8

Notes (Overall)

Notes: US Patent #'s 5606151; 5734126. EtherNet/IP is a trademark of ControlNet International, Ltd. under license by Open DeviceNet Vendor Association, Inc. Operating temperatures are subject to length de-rating. Cable passes -40C Cold Bend per UL 1581.

Put Ups and Colors:

Item #	Putup	Ship Weight	Color	Notes	Item Desc
7921A 0021000	1,000 FT	55.000 LB	RED	C	4 PR #24 PP SH PVC
7921A 0061000	1,000 FT	55.000 LB	BLUE, LIGHT	C	4 PR #24 PP SH PVC
7921A 0101000	1,000 FT	55.000 LB	BLACK	C	4 PR #24 PP SH PVC
7921A 0102000	2,000 FT	106.000 LB	BLACK	C	4 PR #24 PP SH PVC
7921A 1NH1000	1,000 FT	55.000 LB	TEAL 1NH	C	4 PR #24 PP SH PVC

Notes:

C = CRATE REEL PUT-UP.

Industrial Data Solutions® — Industrial Ethernet

DataTuff® Twisted Pair and TrayOptic® Fiber Optic Cables

Overview

The reliability of your industrial Ethernet network depends on the cable infrastructure. Data transmission errors can lead to interruptions in critical control functions resulting in lost production time and even safety issues. Belden's family of industrial Ethernet cables is designed to withstand the rigors of industrial environments. Whether it's exposure to oil and sunlight, temperature variation, abrasion and crushing, or the presence of electromagnetic interference (EMI) or radio frequency interference (RFI), turn to Belden for the solution.

Belden offers an extensive line of high performance cables in both copper constructions with DataTuff cables as well as fiber optic designs with TrayOptic cables.

Performance Assurance from Blue Hose® to Industrial Ethernet

To assist you in achieving optimum network performance, Belden has built

quality and reliability into each cable it manufactures. Decades of leadership and experience in supplying reliable high-end cable solutions, such as Blue Hose®, to industrial networks and control systems are combined to give you industrial Ethernet cables that perform to maximum network capability.

Our dedication to quality manufacturing practices and processes assures consistent products of uncompromising quality.

Installable Performance® with Patented Bonded-Pair Technology

Belden's Bonded-Pair versions of DataTuff cables are unique in the industry to give you an Installable Performance advantage. This patented design yields superior electrical performance even after the effects and stresses of pulling, twisting and bending during typical installations.

This performance advantage is achieved by bonding the individual insulated conductors along their longitudinal axes, resulting in uniform conductor-to-conductor spacing and the elimination of gaps between conductors that can occur during installation. This is a critical construction feature because non-uniform conductor spacing and gaps change the physical characteristics of the cable such that the electrical performance of the cable suffers. Only Bonded-Pair cables deliver the electrical integrity you demand.

TrayOptic Cables

Belden® TrayOptic cables are a line of indoor/outdoor fiber optic cables designed to meet the demanding requirements of industrial applications. When the installation demands the combination of sophisticated fiber optic technology and rugged durability, turn to Belden.

DataTuff® Industrial Ethernet Cable Selection Guide

Part No.	No. of Pairs	Shielding		Conductor		Installation		Environmental Issues					Industrial Grade Jacket			
		Unshielded	Shielded *	Solid	Stranded **	Installation Stress Resistance†	Pull Tension	Oil Resistance	UV Sunlight Resistance	CMX/Outdoor	Underground (burial)	Gasoline Resistance	Hi/Lo Temp	Heavy	Upjacket	Armored
Category 5e Cable																
new 7932A <i>EtherNet/IP</i>	2	●		●		●	20	●	●							●
new 7933A <i>EtherNet/IP</i>	2		●	●		●	20	●	●							●
7923A <i>EtherNet/IP</i>	4	●		●		●	40	●	●	●						●
7918A	4	●		●			35	●	●	●						●
7924A	4	●			●	●	40	●	●	●						●
new 7930A	4	●			●		25	●	●	●						●
new 7922A PLTC	4	●		●		●	40	●	●	●						●
new 7934A <i>EtherNet/IP</i>	4	●		●		●	40		●		●					●
7928A <i>EtherNet/IP</i>	4	●		●		●	40	●	●			●	●			●
11700A <i>EtherNet/IP</i>	4	●		●		●	40	●	●	●						●
new 11700A2 Oil Res I&II	4	●		●		●	40	●	●							●
121700A	4	●		●		●	40	●	●							●
new 121700R	4	●		●		●	40	●	●							●
7929A	4		●	●		●	35	●	●	●						●
7919A	4		●	●		●	25	●	●	●						●
7921A <i>EtherNet/IP</i>	4		●	●		●	75	●	●	●						●
Category 6 Cable																
7927A	4	●		●		●	45	●	●							●
7931A	4	●		●		●	40	●	●			●	●			●
11872A	4	●		●		●	45									●
121872A	4	●		●		●	45	●	●							●

*Shielded products are recommended for high-noise environments. **Stranded products are recommended where more flexibility is needed.

†Products with Bonded-Pair technology provide Installable Performance® advantages — refer to Belden's Bonded-Pair Cable Bulletin #BP02

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

Industrial Data Solutions® — Industrial Ethernet

Category 5e DataTuff® Twisted Pair Cables, 2-Pair and 4-Pair Heavy-Duty Sunlight and Oil-Resistant Jackets

Description	Part No.	UL NEC/ C(UL) CEC Type	No. of Pairs	Standard Lengths		Standard Unit Wt.		Nominal OD		Freq. (MHz)	Max. Atten. (dB/100m)	Min. PSUM NEXT (dB)	Min. PSUM ACR (dB/100m)	Min. PSUM ELFEXT (dB/100m)	Input Imped. (Ω)	Min. RL (dB)
				Ft.	m	Lbs.	kg	Inch	mm							

Enhanced Cat 5e • 22 AWG Bonded-Pairs Solid Bare Copper Conductors • Rip Cord • See Color Code Chart (below)

Polyolefin Insulation • .030" Industrial Grade Sunlight- and Oil-resistant Black PVC Jacket

PLTC	7922A <i>new</i>	NEC: PLTC, CMR, CMX- Outdoor CEC: CMR FT4	4	Standard Lengths		Standard Unit Wt.		Nominal OD		Freq. (MHz)	Max. Atten. (dB/100m)	Min. PSUM NEXT (dB)	Min. PSUM ACR (dB/100m)	Min. PSUM ELFEXT (dB/100m)	Input Imped. (Ω)	Min. RL (dB)
				Ft.	m	Lbs.	kg	Inch	mm							
				1000	304.8	46.3	21.0	.301	7.65	1	2.0	65.3	63.3	60.8	100±12	20.0
				2000	609.6	92.5	42.0			4	4.0	56.3	52.3	48.7	100±12	23.0
										8	5.7	51.8	46.1	42.7	100±12	24.5
										10	6.4	50.3	43.9	40.8	100±12	25.0
										16	8.1	47.3	39.1	36.7	100±12	25.0
										25	10.3	44.3	34.1	32.8	100±15	24.3
										31.25	11.6	42.9	31.3	30.9	100±15	23.6
										62.5	16.8	38.4	21.6	24.8	100±15	21.5
										100	21.7	35.3	17.1	20.8	100±15	20.1
										155	27.7	32.5	4.7	16.9	100±18	19.0
										200	32.0	30.8	3.0	14.7	100±20	19.0
										250	36.4	29.3	—	12.8	100±20	18.0
										350	44.3	27.2	—	9.9	100±22	17.0

Cable passes -25°C Cold Bend per UL1581 • Installation Temperature: -10°C to +75°C • Operating Temperature: -25°C to +75°C**
Jacket sequentially marked at 2 ft. intervals • Third party verified to TIA/EIA-568-B.2, Category 5e • U.S. Patents 5,606,151 and 5,734,126

Enhanced Cat 5e • 24 AWG Bonded-Pairs Stranded (7x32) TC Conductors • See Color Code Chart (below)

Polyolefin Insulation • .030" Industrial Grade Sunlight- and Oil-resistant PVC Jacket (Black, Red or Teal)

Stranded Flexible	7924A	NEC: CMR, CMX- Outdoor CEC: CMR FT4	4	Standard Lengths		Standard Unit Wt.		Nominal OD		Freq. (MHz)	Max. Atten. (dB/100m)	Min. PSUM NEXT (dB)	Min. PSUM ACR (dB/100m)	Min. PSUM ELFEXT (dB/100m)	Input Imped. (Ω)	Min. RL (dB)
				Ft.	m	Lbs.	kg	Inch	mm							
				1000	304.8	30.0	13.6	.242	6.15	1	2.4	65.3	62.9	60.8	100±12	20.0
				2000 †	609.6	58.0	26.3			4	4.8	56.3	51.5	48.7	100±12	23.6
										8	6.8	51.8	45.0	42.7	100±12	25.4
										10	7.7	50.3	42.6	40.8	100±12	26.0
										16	9.7	47.3	37.5	36.7	100±12	26.0
										25	12.4	44.3	31.9	32.8	100±15	25.5
										31.25	13.9	42.9	29.0	30.9	100±15	25.0
										62.5	20.2	38.4	18.3	24.8	100±15	23.5
										100	26.0	35.3	9.2	20.8	100±18	22.5
										155	33.2	32.5	—	16.9	100±18	19.0
										200	38.4	30.8	—	14.7	100±20	19.0
										250	43.7	29.3	—	12.8	100±20	18.0
										350	53.2	27.2	—	9.9	100±22	17.0

†2000 ft. put-up available in Black only. • RJ-45 Compatible • Jacket sequentially marked at 2 ft. intervals
Cable passes -40°C Cold Bend per UL1581 • Installation Temperature: -25°C to +75°C • Operating Temperature: -40°C to +75°C**
Third party verified to TIA/EIA-568-B.2, Category 5e • U.S. Patents 5,606,151; 5,734,126 and 5,763,823

Enhanced Cat 5e • 24 AWG Bonded-Pairs Solid BC Conductors • Overall Beldfoil® Shield (100%) • Drain Wire • See Color Codes (below)

Polyolefin Insulation • .030" Industrial Grade Sunlight- and Oil-resistant PVC Jacket (Black, Red or Teal)

EtherNet/IP Compliant Shielded	7933A <i>new</i>	NEC: CMR CEC: CMR FT4	2	Standard Lengths		Standard Unit Wt.		Nominal OD		Freq. (MHz)	Max. Atten. (dB/100m)	Min. PSUM NEXT (dB)	Min. PSUM ACR (dB/100m)	Min. PSUM ELFEXT (dB/100m)	Input Imped. (Ω)	Min. RL (dB)
				Ft.	m	Lbs.	kg	Inch	mm							
				1000	304.8	32.0	14.5	.227	5.77	1	2.0	62.3	60.3	60.8	100±15	20.0
				2000 ▲	609.6	64.8	29.4			4	4.1	53.3	49.2	48.7	100±15	23.6
										10	6.5	47.3	40.8	40.8	100±15	26.0
										16	8.2	44.3	36.1	36.7	100±15	26.0
										31.25	11.7	39.9	28.2	30.9	100±15	25.0
										62.5	17.0	35.4	18.4	24.8	100±15	23.5
										100	22.0	32.3	10.3	20.8	100±15	22.5
										200	32.4	27.8	1.0	14.7	100±25	15.0

*2000 ft. put-up available in Black only. • M-12 or RJ-45 Compatible • Shield is bonded to jacket inner wall for electrical stability.
Cable passes -40°C Cold Bend per UL1581 • Installation Temperature: -25°C to +75°C • Operating Temperature: -40°C to +75°C**
Jacket sequentially marked at 2 ft. intervals • Third party verified to TIA/EIA-568-B.2, Category 5e • U.S. Patents 5,606,151 and 5,734,126

Polyolefin Insulation • .030" Industrial Grade Sunlight- and Oil-resistant PVC Jacket (Black or Blue)

Shielded	7929A	NEC: CMR, CMX- Outdoor CEC: CMR FT4	4	Standard Lengths		Standard Unit Wt.		Nominal OD		Freq. (MHz)	Max. Atten. (dB/100m)	Min. PSUM NEXT (dB)	Min. PSUM ACR (dB/100m)	Min. PSUM ELFEXT (dB/100m)	Input Imped. (Ω)	Min. RL (dB)
				Ft.	m	Lbs.	kg	Inch	mm							
				1000	304.8	37.0	16.8	.265	6.73	1	2.0	62.3	60.3	60.8	100±15	20.0
				2000 ▲	609.6	72.0	32.7			4	4.1	53.3	49.2	48.7	100±15	23.0
										10	6.5	47.3	40.8	40.8	100±15	25.0
										16	8.2	44.3	36.1	36.7	100±15	25.0
										31.25	11.7	39.9	28.2	30.9	100±15	23.6
										62.5	17.0	35.4	18.4	24.8	100±15	21.5
										100	22.0	32.3	10.3	20.8	100±15	20.1
										200	32.4	27.8	1.0	14.7	100±25	15.0

*2000 ft. put-up available in Black only. • RJ-45 Compatible • Shield is bonded to jacket inner wall for electrical stability.
Cable passes -40°C Cold Bend per UL1581 • Installation Temperature: -25°C to +75°C • Operating Temperature: -40°C to +75°C**
Jacket sequentially marked at 2 ft. intervals • Third party verified to TIA/EIA-568-B.2, Category 5e • U.S. Patents 5,606,151 and 5,734,126 • P-07-KA060003-MSHA*

Enhanced Cat 5e • 24 AWG Bonded-Pairs Solid BC Conductors • Overall Beldfoil (100%) + TC Braid Shield (70% Coverage) • Drain Wire*

Polyolefin Insulation • .030" Industrial Grade Sunlight- and Oil-resistant PVC Jacket (Black, Red, Blue or Teal)

EtherNet/IP Compliant Heavy-shielded	7921A	NEC: CMR, CMX- Outdoor CEC: CMR FT4	4	Standard Lengths		Standard Unit Wt.		Nominal OD		Freq. (MHz)	Max. Atten. (dB/100m)	Min. PSUM NEXT (dB)	Min. PSUM ACR (dB/100m)	Min. PSUM ELFEXT (dB/100m)	Input Imped. (Ω)	Min. RL (dB)
				Ft.	m	Lbs.	kg	Inch	mm							
				1000	304.8	55.0	24.9	.330	8.38	1	2.0	62.3	60.3	60.8	100±15	20.0
				2000 ▲	609.6	106.0	48.1			4	4.1	53.3	49.2	48.7	100±15	23.6
										10	6.5	47.3	40.8	40.8	100±15	26.0
										16	8.2	44.3	36.1	36.7	100±15	26.0
										31.25	11.7	39.9	28.2	30.9	100±15	25.0
										62.5	17.0	35.4	18.4	24.8	100±15	23.5
										100	22.0	32.3	10.3	20.8	100±15	22.5

*2000 ft. put-up available in Black only. *24 AWG solid spiral drain wire.
Cable passes -40°C Cold Bend per UL1581 • Installation Temperature: -25°C to +75°C • Operating Temperature: -40°C to +75°C**
Jacket sequentially marked at 2 ft. intervals • Third party verified to TIA/EIA-568-B.2, Category 5e • NEMA WC-63.1 Category 5e • U.S. Patents 5,606,151 and 5,734,126

ACR = Attenuation Crosstalk Ratio • AL = Aluminum • BC = Bare Copper • ELFEXT = Equal Level Far-end Crosstalk • NEXT = Near-end Crosstalk • PSUM = Power Sum • RL = Return Loss • TC = Tinned Copper
EtherNet/IP is a trademark of ControlNet International, Ltd. under license by Open DeviceNet Vendor Association, Inc.

*Pennsylvania Department of Environmental Resources and United States Mine Safety and Health Administration Certification.
**Subject to length de-rating.

DataTuff 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
For two pair products: use color codes for Pairs 2 & 3

