Detailed Specifications & Technical Data

ENGLISH MEASUREMENT VERSION

7919A Multi-Conductor - Category 5e DataTuff® Twisted Pair Cable

Description:

24 AWG solid bare copper conductors, twisted pairs, polyolefin insulation, overall Beldfoil shield (100% coverage), 24 AWG stranded TC drain wire, industrial grade sunlight- and oil-resistant PVC jacket, rip cord. Sequential marking at two foot intervals

Usage (Overall)

Suitable Applications: Industrial Ethernet Cable, Harsh Environments, 100MHz Category 5e, Gigabit Ethernet, 100BaseTX, 100BaseVG ANYLAN, 155ATM, 622ATM, NTSC/PAL Component or Composite Video, AES/EBU Digital Audio, RS-422, CMX - Outdoor, RJ-45 Compatible, Noisy Environments

Physical Characteristics (Overall)

Conductor

AWG:

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

Insulation

Insulation Material:

Insulation Material	Wall Thickness (in.)
PO - Polyolefin	.010

Outer Shield

Outer Shield Material:

Outer Shield Trade Name	Type	Outer Shield Material	Coverage (%)
Beldfoil®	Tape	Aluminum Foil-Polyester Tape	100

Outer Shield Drain Wire AWG:

AWG	Stranding	Drain Wire Conductor Material
24	7x32	TC - Tinned Copper

Outer Jacket

Outer Jacket Material:

Outer Jacket Material
Industrial Grade PVC - Polyvinyl Chloride

Outer Jacket Ripcord: No

Overall Cabling

Overall Nominal Diameter: 0.265 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

Bulk Cable Weight:	30 lbs/1000 ft.
Max. Recommended Pulling Tension:	25 lbs.
Min. Bend Radius (Install)/Minor Axis:	1 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:	11801 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
PMSHA Specification:	P-07-KA060004
Telecommunications Standards:	568-B.2 Category 5e
Other Specification:	NEMA WC-63.1 Category 5e, UL verified to Category 5e

Flame Test

UL Flame Test:	UL1666 Riser
CSA Flame Test:	FT4

Suitability

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

Plenum/Non-Plenum

Plenum (Y/N):	No

Electrical Characteristics (Overall)

Nom. Mutual Capacitance:

Capacitance (pF/ft)
15

Nominal Velocity of Propagation:

VP (%)
70

Maximum Capacitance Unbalance (pF/100 m):	330

Maximum Delay:

Delay (ns/100 m)
538 @ 100MHz

Max. Delay Skew:

Delay Skew (ns/100 m)
45

Maximum Conductor DC Resistance:

DCR @ 20°C (Ohm/100 m)
9.38

Max. Operating Voltage - UL:

Voltage
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	23
4	4.1	56.3	53.3	51.0	49.0	23.0	23.0
8	5.8	51.8	48.8	46.0	43.0	24.5	24.5
10	6.5	50.3	47.3	43.0	41.0	25.0	25.0
16	8.2	47.3	44.3	39.0	36.0	25.0	25.0
20	9.3	45.8	42.8	36.5	33.5	25.0	25.0
25	10.4	44.3	41.3	33.9	30.9	24.3	24.3
31.25	11.7	42.9	39.9	31.0	28.0	23.6	23.6
62.5	17.0	38.4	35.4	22.0	19.0	21.5	21.5
100	22.0	35.3	32.3	14.0	11.0	20.1	20.1

Premise Cable Electrical Table 2:

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

Notes (Overall)

Notes: Operating temperatures are subject to length de-rating. Cable passes -40°C Cold Bend per UL 1581.

Put Ups and Colors:

Item #	Putup	Ship Weight	Color	Notes	Item Desc
7919A 0061000	1,000 FT	35.000 LB	BLUE, LIGHT	C	4 PR #24 PP FS PVC
7919A 0101000	1,000 FT	35.000 LB	BLACK	C	4 PR #24 PP FS PVC
7919A 0102000	2,000 FT	68.000 LB	BLACK	C	4 PR #24 PP FS 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	Under-ground (burial)	Gasoline Resistance	Hi/Lo Temp	Heavy	Upjacket	Armored
	Category 5e Cable																
new	**7932A** EtherNet/IP	2	●		●		●	20	●	●					●		
new	**7933A** EtherNet/IP	2		●	●		●	20	●	●					●		
	7923A EtherNet/IP	4	●		●		●	40	●	●	●				●		
	7918A	4	●		●			35	●	●	●				●		
	7924A	4	●			●	●	40	●	●	●				●		
new	**7930A**	4	●			●		25	●	●	●				●		
new	**7922A** PLTC	4	●		●		●	40	●	●	●				●		
new	**7934A** EtherNet/IP	4	●		●		●	40		●		●			●		
	7928A EtherNet/IP	4	●		●		●	40	●	●			●	●	●		
	11700A EtherNet/IP	4	●		●		●	40	●	●	●					●	
new	**11700A2** Oil Res I&II	4	●		●		●	40	●	●						●	
	121700A	4	●		●		●	40	●	●							●
new	**121700R**	4	●		●		●	40	●	●							●
	7929A	4		●	●		●	35	●	●	●				●		
	7919A	4		●	●			25	●	●	●				●		
	7921A EtherNet/IP	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

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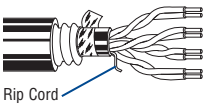
Industrial Data Solutions® — Industrial Ethernet

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

Enhanced Cat 5e • 24 AWG Bonded-Pairs Solid BC Conductors • Polyester Wrap • Rip Cord • See Color Code Chart (below)

AL Interlocked Armor • Polyolefin Insulation • PVC Inner Jacket • .045″ Industrial Grade PVC Outer Jacket (Black or Gray)

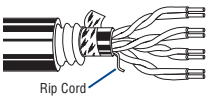
Description	Part No.	UL NEC/ C(UL) CEC Type	No. of Pairs	Standard Lengths Ft.	Standard Lengths m	Standard Unit Wt. Lbs.	Standard Unit Wt. kg	Nominal OD Inch	Nominal OD mm	Freq. (MHz)	Max. Atten. (dB/ 100m)	Min. PSUM NEXT (dB)	Min. PSUM ACR (dB/ 100m)	Min. PSUM ELFEXT (dB/ 100m)	Input Imped. (Ω)	Min. RL (dB)
Interlocked AL Armor	**121700A**	NEC:	4	1000	304.8	159.0	72.0	.530	13.46	1	2.0	65.3	63.3	60.8	100±12	20.0
		CM		3000 †	914.4	459.0	210.6			4	4.0	56.3	52.3	48.7	100±12	23.0
		CEC:						Nominal		8	5.7	51.8	46.1	42.7	100±12	24.5
		HL						Core OD:		10	6.4	50.3	43.9	40.8	100±12	25.0
		CMG FT4						.200	5.08	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



†3000 ft. put-up available in Black only. • RJ-45 Compatible • Outer jacket is sunlight- and oil-resistant.
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 1 meter intervals • Third party verified to TIA/EIA-568-B.2, Category 5e • U.S. Patents 5,606,151 and 5,734,126

AL Interlocked Armor • Polyolefin Insulation • PVC Inner Jacket • .045″ Industrial Grade PVC Outer Jacket (Black or Blue)

Interlocked AL Armor -40°C Cold Impact	**121700R** new	NEC:	4	1000	304.8	159.0	72.0	.530	13.46	(Same as above)	
		CM		3000	914.4	459.0	210.6				
		CEC:		5000 †	1524.0	690.0	313.0	Nominal			
		HL						Core OD:			
		CMG FT4						.200	5.08		

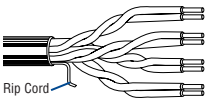


†5000 ft. put-up available in Blue only. • RJ-45 Compatible • Installation Temperature: -25°C to +75°C • Operating Temperature: -40°C to +75°C**
Outer jacket is sunlight- and oil-resistant. • Jacket sequentially marked at 1 meter intervals • Third party verified to TIA/EIA-568-B.2, Category 5e • U.S. Patents 5,606,151 and 5,734,126

Cat 5e • 24 AWG Solid Bare Copper Conductors • Twisted Pairs • Rip Cord • See Color Code Chart (below)

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

	7918A	NEC:	4	1000	304.8	28.0	12.7	.230	5.84	1	2.0	62.3	60.3	60.8	100±15	20.0
		CMR,		2000 ††	609.6	52.0	23.6			4	4.1	53.3	49.2	48.7	100±15	23.0
		CMX-Outdoor								10	6.5	47.3	40.8	40.8	100±15	25.0
		CEC:								16	8.2	44.3	36.1	36.7	100±15	25.0
		CMR FT4								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

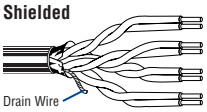


††2000 ft. put-up available in Black only. • RJ-45 Compatible • Jacket sequentially marked at 2 ft. intervals
Cable passes -40°C Cold Bend per UL1581 • Installation Temperature: -25°C to +75°C • Operating Temperature: -40°C to +75°C** • Third party verified to TIA/EIA-568-B.2, Category 5e

Cat 5e • 24 AWG Solid BC • Twisted Pairs • Overall Beldfoil® Shield (100% Coverage) • 24 AWG Stranded TC Drain Wire • See Color Code Chart

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

Shielded	**7919A**	NEC:	4	1000	304.8	35.0	15.9	.265	6.73	1	2.0	62.3	60.3	60.8	100±15	20.0
		CMR,		2000 †	609.6	68.0	30.9			4	4.1	53.3	49.2	48.7	100±15	23.0
		CMX-Outdoor								10	6.5	47.3	40.8	40.8	100±15	25.0
		CEC:								16	8.2	44.3	36.1	36.7	100±15	25.0
		CMR FT4								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

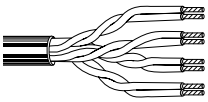


†2000 ft. put-up available in Black only. • RJ-45 Compatible • Installation Temperature: -25°C to +75°C • Operating Temperature: -40°C to +75°C** • Cable passes -40°C Cold Bend per UL1581
Shield is bonded to jacket inner wall for electrical stability. • Jacket sequentially marked at 2 ft. intervals • Third party verified to TIA/EIA-568-B.2, Category 5e • P-07-KA060004-MSHA*

Cat 5e • 24 AWG Stranded (7x32) Bare Copper Conductors • Twisted Pairs • See Color Code Chart (below)

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

Stranded/Flexible	**7930A** new	NEC:	4	1000	304.8	29.0	13.2	.240	6.09	1	2.5	62.3	59.8	60.8	100±15	20.0
		CMR,		2000	609.6	56.0	25.4			4	4.9	53.3	48.4	48.7	100±15	23.0
		CMX-Outdoor								10	7.8	47.3	39.5	40.8	100±15	25.0
		CEC:								16	9.9	44.3	34.4	36.7	100±15	25.0
		CMR FT4								31.25	14.1	39.9	25.8	30.9	100±15	23.6
										62.5	20.4	35.4	15.0	24.8	100±15	21.5
										100	26.4	32.3	5.9	20.8	100±15	20.1
										200	38.9	27.8	—	14.7	100±25	15.0



Installation Temperature: 0°C to +75°C • Operating Temperature: -25°C to +75°C** • Cable passes -25°C Cold Bend per UL1581
RJ-45 Compatible • Jacket sequentially marked at 2 ft. intervals • Third party verified to TIA/EIA-568-B.2, Category 5e • P-07-KA060003-MSHA*

ACR = Attenuation Crosstalk Ratio • BC = Bare Copper • ELFEXT = Equal Level Far-end Crosstalk • FEP = Fluorinated Ethylene-propylene •
NEXT = Near-end Crosstalk • PSUM = Power Sum • RL = Return Loss • TC = Tinned Copper

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

Color Codes: DataTuff

Pair No.	Color Combination
1	White/Blue Stripe & Blue
2	White/Orange Stripe & Orange
3	White/Green Stripe & Green
4	White/Brown Stripe & Brown

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

BELDEN