Detailed Specifications & Technical Data

ENGLISH MEASUREMENT VERSION

7934A Multi-Conductor - DataTuff® Waterblocked Enhanced Category 5e

Description:

24 AWG Bonded-Pairs solid bare copper conductors, polyolefin insulation, polymer gel waterblocked, sun res LLPE jacket. Sequential marking at two foot intervals.

Usage (Overall)

Suitable Applications:	Industrial Ethernet, Harsh Environments, 200MHz Category 5e, Gigabit Ethernet, 100Base TX, 100BaseVG ANYLAN, 155A TM, 622A TM, NTSC/PAL Component or Composite Video, AES/EBU Digital Audio, AES51, RS-422, RJ-45 Compatible, Burial, Halogen Free

Physical Characteristics (Overall)

Conductor

AWG:

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

Insulation

Insulation Material:

Insulation Material
PO - Polyolefin

Outer Jacket

Outer Jacket Material:

Outer Jacket Material
LLPE - Linear Low Density Polyethylene

Outer Jacket Ripcord:	No

Overall Cabling

Overall Nominal Diameter:	0.230 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)

Storage Temperature Range:	-40°C To +85°C
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:	40 lbs.
Min. Bend Radius (Install)/Minor Axis:	1 in.

7934A Multi-Conductor - DataTuff® Waterblocked Enhanced Category 5e

Applicable Specifications and Agency Compliance (Overall)

Applicable Standards & Environmental Programs

Other Standards:	11801 Category 5
EU CE Mark:	Yes
EU Directive 2000/53/EC (ELV):	Yes
EU Directive 2002/95/EC (RoHS):	Yes
EU RoHS Compliance Date (mm/dd/yyyy):	08/02/2005
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:	568-B.2 Category 5e
Other Specification:	NEMA WC-63.1 Category 5e, UL verified to Category 5e, EtherNet/IP Compliant

Suitability

Suitability - Outdoor:	Yes
Suitability - Burial:	Yes
Sunlight Resistance:	Yes
Oil Resistance:	No
Non-halogenated:	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):	150

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

7934A Multi-Conductor - DataTuff® Waterblocked Enhanced Category 5e

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	2.000	65.3	62.3	63.0	60.0	20.000	23.0
4	4.100	56.3	53.3	51.0	49.0	23.600	23.0
8	5.800	51.8	48.8	46.0	43.0	25.400	24.5
10	6.500	50.3	47.3	43.0	41.0	26.000	25.0
16	8.200	47.3	44.3	39.0	36.0	26.000	25.0
20	9.300	45.8	42.8	36.5	33.5	26.000	25.0
25	10.400	44.3	41.3	33.9	30.9	25.500	24.3
31.25	11.700	42.9	39.9	31.0	28.0	25.000	23.6
62.5	17.000	38.4	35.4	22.0	19.0	23.500	21.5
100	22.000	35.3	32.3	14.0	11.0	22.500	20.1
155	28.100	32.5	29.5	4.4	1.4	15.800	
200	32.000	30.8	27.8	4.0	1.0	15.000	

Premise Cable Electrical Table 2:

Freq. (MHz)	Input (Unfitted) Imp. (Ohms)	Fitted Impedance	Min. ELFEXT (dB)	Min. PSELFEXT (dB)
1	100 ± 15	102.5 ± 7.5	63.8	60.8
4	100 ± 15	102.5 ± 7.5	51.7	48.7
8	100 ± 15	101 ± 6	45.7	42.7
10	100 ± 15	101 ± 6	43.8	40.8
16	100 ± 15	101 ± 6	39.7	36.7
20	100 ± 15	101 ± 6	37.7	34.7
25	100 ± 15	101 ± 6	35.8	32.8
31.25	100 ± 15	101 ± 6	33.9	30.9
62.5	100 ± 15	101 ± 6	27.8	24.8
100	100 ± 15	101 ± 6	23.8	20.8
155	100 ± 25	100 ± 15	19.9	16.9
200	100 ± 25	100 ± 15	17.7	14.7

Notes (Overall)

Notes: U. S. Patents 5606151 and 5734126. EtherNet IP is a trademark of ControlNet International Ltd. under license by DeviceNet Vendor Assoication, Inc. Operating Temperature subject to length de-rating.

Notes (Cont'd.): Cable passes -40C Cold Bend per UL 1581. Waterblocking Material: Polymer Gel.

Put Ups and Colors:

Item #	Putup	Ship Weight	Color	Notes	Item Desc
7934A 0101000	1,000 FT	25.000 LB	BLACK	C	4 PR #24 PP LLDPE

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

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 • 24 AWG Bonded-Pairs Solid BC Conductors • Rip Cord • See Color Codes below																
Polyolefin Insulation • .030″ Industrial Grade Sunlight- and Oil-resistant PVC Jacket (Black, Red or Teal)																
EtherNet/IP Compliant	7932A (new)	NEC: CMR CEC: CMR FT4	2	1000	304.8	19.0	8.61	.207	5.26	1	2.0	65.3	63.3	60.8	100±12	20.0
				2000 ▲	609.6	38.0	17.24			4	4.0	56.3	52.3	48.7	100±12	23.6
										8	5.7	51.8	46.1	42.7	100±12	25.4
										10	6.4	50.3	43.9	40.8	100±12	26.0
										16	8.1	47.3	39.1	36.7	100±12	26.0
										25	10.3	44.3	34.1	32.8	100±15	25.5
										31.25	11.6	42.9	31.3	30.9	100±15	25.0
										62.5	16.8	38.4	21.6	24.8	100±15	23.5
										100	21.7	35.3	17.1	20.8	100±15	22.5
										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
Rip Cord																
▲2000 ft. put-up available in Black only. • M-12 or 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 and 5,734,126																
EtherNet/IP Compliant	7923A	NEC: CMR, CMX-Outdoor CEC: CMR FT4	4	1000	304.8	28.0	12.7	.230	5.84	1	2.0	65.3	63.3	60.8	100±12	20.0
				2000 ▲	609.6	54.0	24.5			4	4.0	56.3	52.3	48.7	100±12	23.6
										8	5.7	51.8	46.1	42.7	100±12	25.4
										10	6.4	50.3	43.9	40.8	100±12	26.0
										16	8.1	47.3	39.1	36.7	100±12	26.0
										25	10.3	44.3	34.1	32.8	100±15	25.5
										31.25	11.6	42.9	31.3	30.9	100±15	25.0
										62.5	16.8	38.4	21.6	24.8	100±15	23.5
										100	21.7	35.3	17.1	20.8	100±15	22.5
										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
Rip Cord																
▲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 and 5,734,126 • P-07-KA060003-MSHA*																
Polyolefin Insulation • Waterblocked Sunlight- and Oil-resistant Black Polyethylene Jacket																
EtherNet/IP Compliant **Halogen-Free** **Burial**	7934A (new)	—	4	1000	304.8	25.0	11.34	.230	5.84	1	2.0	62.3	60.0	60.8	100±15	20.0
										4	4.1	53.3	49.0	48.7	100±15	23.6
										8	5.8	48.8	43.0	42.7	100±15	25.4
										10	6.5	47.3	41.0	40.8	100±15	26.0
										16	8.2	44.3	36.0	36.7	100±15	26.0
										20	9.3	42.8	33.5	34.7	100±15	26.0
										25	10.4	41.3	30.9	32.8	100±15	25.5
										31.25	11.7	39.9	28.0	30.9	100±15	25.0
										62.5	17.0	35.4	19.0	24.8	100±15	23.5
										100	22.0	32.3	11.0	20.8	100±15	22.5
										155	28.1	29.5	1.4	16.9	100±25	15.8
										200	32.0	27.8	1.0	14.7	100±25	15.0
RJ-45 Compatible • Jacket sequentially marked at 3 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 and 5,734,126 • Waterblocked per Telcordia, IEC and ICEA																
Plenum • FEP Insulation • Sunlight-, Oil- and Gas-resistant Black FEP Jacket																
EtherNet/IP Compliant **High & Low Temp** **Oil Res I & II** **Gas Res**	7928A	NEC: Limited Combustible FHC 25/50 CMP CEC: CMP FT6	4	1000	304.8	24.0	10.9	.187	4.75	1	2.0	65.3	63.3	60.8	100±12	20.0
										4	4.0	56.3	52.3	48.7	100±12	23.6
										8	5.7	51.8	46.1	42.7	100±12	25.4
										10	6.4	50.3	43.9	40.8	100±12	26.0
										16	8.1	47.3	39.1	36.7	100±12	26.0
										25	10.3	44.3	34.1	32.8	100±15	25.5
										31.25	11.6	42.9	31.3	30.9	100±15	25.0
										62.5	16.8	38.4	21.6	24.8	100±15	23.5
										100	21.7	35.3	17.1	20.8	100±15	22.5
										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
RJ-45 Compatible Cable passes -70°C Cold Bend per UL1581 • Installation Temperature: -55°C to +150°C • Operating Temperature: -70°C to +150°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 • PVC Inner Jacket • .035″ Industrial Grade PVC Outer Jacket (Black, Gray, Red, Teal or Blue)																
EtherNet/IP Compliant **Upjacketed**	11700A	NEC: CMR, CMX-Outdoor CEC: CMR FT4	4	1000	304.8	39.0	17.7	.285	7.24	1	2.0	65.3	63.3	60.8	100±12	20.0
				3000 †	914.4	117.0	53.2			4	4.0	56.3	52.3	48.7	100±12	23.6
								Nominal		8	5.7	51.8	46.1	42.7	100±12	25.4
								Core OD:		10	6.4	50.3	43.9	40.8	100±12	26.0
								.200	5.08	16	8.1	47.3	39.1	36.7	100±12	26.0
										25	10.3	44.3	34.1	32.8	100±15	25.5
										31.25	11.6	42.9	31.3	30.9	100±15	25.0
										62.5	16.8	38.4	21.6	24.8	100±15	23.5
										100	21.7	35.3	17.1	20.8	100±15	22.5
										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
Rip Cords																
†3000 ft. put-up available in Black only. • Outer jacket is sunlight- and oil-resistant. • 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** RJ-45 Compatible • Third party verified to TIA/EIA-568-B.2, Category 5e • U.S. Patents 5,606,151 and 5,734,126 • P-07-KA060005-MSHA*																
Oil Res I & II **Upjacketed**	11700A2 (new)	NEC: CMR CEC: CMR FT4	4	1000 ††	304.8	42.0	19.1	.285	7.24	1	2.0	65.3	63.3	60.8	100±12	20.0
				2000 ††	609.6	86.0	39.1			4	4.0	56.3	52.3	48.7	100±12	23.0
								Nominal		8	5.7	51.8	46.1	42.7	100±12	24.5
								Core OD:		10	6.4	50.3	43.9	40.8	100±12	25.0
								.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
Rip Cord																
††1000 ft. put-up available in Black or Blue only, 2000 ft. put-up in Black only. • RJ-45 Compatible • Outer jacket is sunlight resistant. Cable passes -10°C Cold Bend per UL1581 • Installation Temperature: +5°C to +75°C • Operating Temperature: -10°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																

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

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

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

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

BELDEN