Detailed Specifications & Technical Data

ENGLISH MEASUREMENT VERSION

9993 Multi-Conductor - Audio, Control and Instrumentation Cable

Description:

24 AWG stranded (7x32) TC conductors, polyethylene insulation, twisted pairs, individually shielded w/Beldfoil® (100% coverage), 24 AWG stranded TC drain wire, PVC jacket.

Physical Characteristics (Overall)

Conductor

AWG:

# Pairs	AWG	Stranding	Conductor Material
12	24	7x32	TC - Tinned Copper

Insulation

Insulation Material:

Insulation Material
PE - Polyethylene

Inner Shield

Inner Shield Material:

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

Inner Shield Drain Wire AWG:

AWG
24

Inner Shield Drain Wire Stranding:	Stranded
Inner Shield Drain Wire Conductor Material:	TC - Tinned Copper

Outer Jacket

Outer Jacket Material:

Outer Jacket Material
PVC - Polyvinyl Chloride

Overall Cabling

Overall Nominal Diameter:	0.428 in.

Pair

Pair Color Code Chart:

Number	Color
1	Black & Red
2	Black & White
3	Black & Green
4	Black & Blue
5	Black & Yellow
6	Black & Brown
7	Black & Orange
8	Red & White
9	Red & Green
10	Red & Blue
11	Red & Yellow
12	Red & Brown

Pair Lay Length & Direction:

Lay Length (in.)
1.750

Mechanical Characteristics (Overall)

Operating Temperature Range:	-20°C To +80°C
UL Temperature Rating:	80°C (UL AWM Style 2919)
Bulk Cable Weight:	104 lbs/1000 ft.
Min. Bend Radius (Install)/Minor Axis:	4.500 in.

Applicable Specifications and Agency Compliance (Overall)

Applicable Standards & Environmental Programs

NEC/(UL) Specification:	CM
CEC/C(UL) Specification:	CM
AWM Specification:	UL Style 2919 (30 V 80°C)
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):	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

Flame Test

UL Flame Test:	UL1685 UL Loading

Plenum/Non-Plenum

Plenum (Y/N):	No

Electrical Characteristics (Overall)

Nom. Characteristic Impedance:

Impedance (Ohm)
60

Nom. Capacitance Conductor to Conductor:

Capacitance (pF/ft)
25

Nom. Capacitance Cond. to Other Conductor & Shield:

Capacitance (pF/ft)
47

Nominal Velocity of Propagation:

VP (%)
66

Nom. Conductor DC Resistance:

DCR @ 20°C (Ohm/1000 ft)
24

Ind. Pair Nominal Shield DC Resistance @ 20 Deg. C:	18 Ohm/1000 ft

Max. Operating Voltage - UL:

Voltage
30 V RMS (UL AWM Style 2919)
300 V RMS

Max. Recommended Current:

Current
1.1 Amps per conductor @ 25°C (10°C rise in temp)

Put Ups and Colors:

Item #	Putup	Ship Weight	Color	Notes	Item Desc
9993 060100	100 FT	9.800 LB	CHROME	C	12 FS PR #24 PE PVC
9993 0601000	1,000 FT	107.000 LB	CHROME	C	12 FS PR #24 PE PVC

Notes:
C = CRATE REEL PUT-UP.

Introduction

Belden® paired cable products are manufactured in a variety of gage sizes, dimensions, insulation materials, shielding configurations, and jacketing materials including Plenum and High-Temperature versions to meet the technical requirements of many different types of systems.

Paired cables allow balanced signal transmission, which results in lower crosstalk through common mode rejection. Due to the improved noise immunity of twisted pairs, they generally permit higher data speeds than multi-conductor cables.

As an aid to proper cable selection, both the suggested working voltages and the maximum temperature ratings are indicated for each applicable paired cable selection.

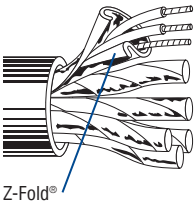
Most of our paired cables are available from stock. Many of these are available off the shelf from distributors. If you have a new or unusual application or you cannot find a paired cable in this catalog section that meets your technical requirements, contact Technical Support at 1-800-BELDEN-1.

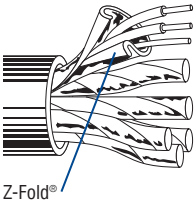
Paired Cables Packaging

Belden's unique UnReel® cable dispenser is available for many of the paired cable products listed in this section. The letter "U" before the specified put-up length denotes UnReel packaging.

Individually Shielded

Audio, Control and Instrumentation Cables

Description	Part No.	UL NEC/ C(UL) CEC Type	No. of Pairs	Color Code	Standard Lengths Ft.	Standard Lengths m	Standard Unit Weight Lbs.	Standard Unit Weight kg	Nom. DCR Cond.	Nom. DCR Shield	Nominal OD Inch	Nominal OD mm	Nom. Imp. (Ω)	Nom. Vel. of Prop.	Nom. Capacitance * pF/ Ft.	Nom. Capacitance * pF/ m	Nom. Capacitance ** pF/ Ft.	Nom. Capacitance ** pF/ m
24 AWG Stranded (7x32) TC Conductors • Twisted Pairs • Individually Shielded w/Beldfoil® (100% Coverage) • 24 AWG Stranded TC Drain Wire																		
Polyethylene Insulation • Chrome PVC Jacket																		
UL AWM Style 2919 (30V 80°C)  Z-Fold®	**9990**	NEC: CM CEC: CM	3	See Chart 3 (Tech Info Section)	500 1000	152.4 304.8	16.0 36.0	7.3 16.4	24.0Ω/M′ 78.7Ω/km	18.0Ω/M′ 59.1Ω/km	.255	6.48	60	66%	25	82	47	154
	9991	NEC: CM CEC: CM	6	See Chart 3 (Tech Info Section)	100 500 1000	30.5 152.4 304.8	6.7 32.5 62.0	3.1 14.7 28.3	24.0Ω/M′ 78.7Ω/km	18.0Ω/M′ 59.1Ω/km	.330	8.38	60	66%	25	82	47	154
	9992	NEC: CM CEC: CM	9	See Chart 3 (Tech Info Section)	100 500 1000	30.5 152.4 304.8	8.8 42.5 86.0	4.0 19.3 39.1	24.0Ω/M′ 78.7Ω/km	18.0Ω/M′ 59.1Ω/km	.383	9.73	60	66%	25	82	47	154
	9993	NEC: CM CEC: CM	12	See Chart 3 (Tech Info Section)	100 1000	30.5 304.8	9.8 107.0	4.5 48.6	24.0Ω/M′ 78.7Ω/km	18.0Ω/M′ 59.1Ω/km	.428	10.87	60	66%	25	82	47	154
	9995	NEC: CM CEC: CM	25	See Chart 3 (Tech Info Section)	100 500 1000	30.5 152.4 304.8	21.2 116.0 228.0	9.7 52.7 103.6	24.0Ω/M′ 78.7Ω/km	18.0Ω/M′ 59.1Ω/km	.636	16.15	60	66%	25	82	47	154

Description	Part No.	UL NEC/ C(UL) CEC Type	No. of Pairs	Color Code	Standard Lengths Ft.	Standard Lengths m	Standard Unit Weight Lbs.	Standard Unit Weight kg	Insulation Thickness Inch	Insulation Thickness mm	Jacket Thickness Inch	Jacket Thickness mm	Nominal OD Inch	Nominal OD mm	Nominal Capacitance * pF/ Ft.	Nominal Capacitance * pF/ m	Nominal Capacitance ** pF/ Ft.	Nominal Capacitance ** pF/ m
22 AWG Solid Conductors • TC • Twisted Pairs • Individually Shielded w/ Beldfoil (100% Coverage) • 22 AWG Solid TC Drain Wire																		
PVC Insulation • Overall Chrome PVC Jacket																		
UL AWM Style 2464 (300V 80°C)  Z-Fold®	**8767**	NEC: MPG, CMG CEC: MPG, CMG FT4	3	See Chart 3 (Tech Info Section)	U-500 500 1000	U-152.4 152.4 304.8	22.5 23.0 46.0	10.3 10.5 21.0	.013	.33	.037	.94	.279	7.10	40	131	77	253
	8768	NEC: MPG, CMG CEC: MPG, CMG FT4	6	See Chart 3 (Tech Info Section)	500 1000	152.4 304.8	46.5 92.0	21.1 41.8	.013	.33	.037	.94	.379	9.60	40	131	77	253
	8764	NEC MPG, CMG CEC: MPG, CMG FT4	9	See Chart 3 (Tech Info Section)	1000	304.8	122.0	55.5	.013	.33	.040	1.02	.425	10.80	40	131	77	253
	8765	NEC MPG, CMG CEC: MPG, CMG FT4	11	See Chart 3 (Tech Info Section)	500 1000	152.4 304.8	76.5 149.0	34.8 67.7	.013	.33	.040	1.02	.470	11.90	40	131	77	253
	8766	NEC: MPG, CMG CEC: MPG, CMG FT4	15	See Chart 3 (Tech Info Section)	500 1000	152.4 304.8	101.5 196.0	46.1 89.1	.013	.33	.045	1.14	.525	13.30	40	131	77	253

DCR = DC Resistance • TC = Tinned Copper

*Capacitance between conductors.
**Capacitance between one conductor and other conductors connected to shield.