Detailed Specifications & Technical Data

ENGLISH MEASUREMENT VERSION

83321E Multi-Conductor - MIL-W-16878/4 (Type E), 2 Conductors Cabled

Description:

18 AWG stranded (19x30) silver-plated copper conductors, cabled and color-coded, extruded TFE Teflon® insulation, silver-plated copper braid shield (85% coverage), TFE teflon tape-wrapped jacket.

Physical Characteristics (Overall)

Conductor

AWG:

# Conductors	AWG	Stranding	Conductor Material
2	18	19x30	SPC - Silver Plated Copper

Insulation

Insulation Material:

Insulation Trade Name	Insulation Material	Wall Thickness (in.)
Teflon®	TFE - Tetrafluoroethylene	.011

Insulation Resistance: 100, 000 Megaohms/1000 ft. @ 500 V DC

Outer Shield

Outer Shield Material:

Type	Outer Shield Material	Coverage (%)
Braid	SPC - Silver Plated Copper	85

Outer Jacket

Outer Jacket Material:

Outer Jacket Trade Name	Outer Jacket Material	Nom. Wall Thickness (in.)
Teflon®	TFE - Tetrafluoroethylene	.011

Overall Cabling

Overall Cabling Lay Length & Direction:

Length (in.)	Twists (ft.)
1.5	8

Overall Cabling Color Code Chart:

Number	Color
1	White
2	Black

Overall Nominal Diameter: 0.179 in.

Mechanical Characteristics (Overall)

Operating Temperature Range:	-65°C To +200°C
Bulk Cable Weight:	28.800 lbs/1000 ft.
Max. Recommended Pulling Tension:	79.200 lbs.
Min. Bend Radius (Install)/Minor Axis:	1.750 in.

Applicable Specifications and Agency Compliance (Overall)

Applicable Standards & Environmental Programs

EU CE Mark:	Yes
EU Directive 2000/53/EC (ELV):	Yes

83321E Multi-Conductor - MIL-W-16878/4 (Type E), 2 Conductors Cabled

EU Directive 2002/95/EC (RoHS):	Yes
EU RoHS Compliance Date (mm/dd/yyyy):	01/01/2005
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
Military Specification:	MIL-W-16878/4 (Type E except stranding) (insulated conductors)

Flame Test

UL Flame Test:	UL1685 UL Loading, VW-1

Plenum/Non-Plenum

Plenum (Y/N):	No

Electrical Characteristics (Overall)

Nom. Characteristic Impedance:

Impedance (Ohm)
40

Nom. Inductance:

Inductance (µH/ft)
.103

Nom. Capacitance Conductor to Conductor:

Capacitance (pF/ft)
31

Nom. Capacitance Cond. to Other Conductor & Shield:

Capacitance (pF/ft)
52.8

Nom. Conductor DC Resistance:

DCR @ 20°C (Ohm/1000 ft)
5.52

Nominal Outer Shield DC Resistance:

DCR @ 20°C (Ohm/1000 ft)
5.3

Max. Operating Voltage - UL:

Voltage
600 V RMS

Max. Recommended Current:

Current
8.1 Amps per conductor @ 25°C

Notes (Overall)

Notes: Teflon® is a registered trademark of E. I. duPont de Nemours and Co. used under license by Belden, Inc.

Put Ups and Colors:

Item #	Putup	Ship Weight	Color	Notes	Item Desc
83321E 009100	100 FT	3.700 LB	WHITE	E	2 #18 TFE BRD TFE TAPE
83321E 0091000	1,000 FT	29.000 LB	WHITE	E	2 #18 TFE BRD TFE TAPE
83321E 009500	500 FT	15.000 LB	WHITE	E	2 #18 TFE BRD TFE TAPE

Notes:
E = MAY CONTAIN MORE THAN 1 PIECE. MINIMUM LENGTH OF ANY ONE PIECE IS 25'

Introduction

Belden® multi-conductor cables are manufactured in a wide variety of gage sizes, dimensions, insulation materials, shielding configurations, and jacketing materials including Plenum and High-Temperature versions. These cables meet the technical requirements of many different types of systems. In fact, Belden offers one of the broadest lines of UL Listed, NEC and CEC multi-conductor cables available from any single source.

Applications for multi-conductor cables include computers, communications, instrumentation, sound, control, audio, and data transmission. Each of these cables is designed to protect signal integrity under critical conditions by reducing hum, noise, and crosstalk.

To assist you in selecting the proper cable for your application, both the suggested working voltages and the maximum temperature ratings are indicated for each applicable product in this section.

Most of our multi-conductor 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 multi-conductor cable in this catalog section that meets your technical requirements, contact Technical Support at 1-800-BELDEN-1.

Multi-Conductor Cables Packaging

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

Selection Guide

Shielded Multi-Conductor Computer Cables for RS-232 Applications

Specifications			Cable Series* 9925	9608	9533	9939
Conductor Size: (AWG)		28				
		24	✓	✓	✓	
		22				✓
		20				
		18				
		Page No.	4.18	4.17	4.11	4.19
Insulation:	S-R PVC			✓	✓	✓
	Polyethylene					
	Polypropylene					
	Datalene®†		✓			
Shield:	Overall Foil				✓	
	Drain Wire		✓		✓	
	Overall Foil/Braid		✓	✓		✓
	Braid Coverage		65%	65%		65%
Drain Wire Overall:			Yes	No	Yes	No
No. of Cond. Available:		1				
		2				
		3	✓	✓	✓	✓
		4	✓	✓	✓	✓
		5	✓	✓	✓	✓
		6	✓	✓	✓	✓
		7	✓	✓	✓	✓
		8	✓	✓	✓	✓
		9	✓	✓	✓	✓
		10	✓	✓	✓	✓
		11				
		12				
		13				
		15	✓	✓	✓	✓
		17				
		18				
		19				
		20			✓	
		25	✓	✓	✓	✓
		27				
		30			✓	
		31				
		37	✓	✓		✓
		40			✓	
		50		✓	✓	✓
Capacitance ** (pF/ft.)			12.0	30.0	30.0	35.0

*All cables are UL-listed.
**Capacitance may vary on some cables.
†Foam high density polyethylene.

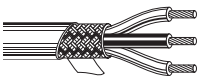
High-Temperature

Overall Braid Shield — Control and Instrumentation Cables
MIL-W-16878/4 (Type E) — Individual Conductors

20 AWG Stranded (19x32) Silver-plated Copper Conductors • Cabled and Color-coded • Silver-plated Copper Braid Shield (85% Coverage)

Extruded TFE Teflon® Insulation • White TFE Teflon Tape-wrapped Jacket

600V RMS
-65°C to 200°C
VW-1



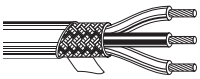
Part No.	UL NEC/ C(UL) CEC Type	No. of Cond.	Color Code	Standard Lengths Ft.	Standard Lengths m	Standard Unit Weight Lbs.	Standard Unit Weight kg	Insulation Thickness Inch	Insulation Thickness mm	Jacket Thickness Inch	Jacket Thickness mm	Nominal OD Inch	Nominal OD mm	Nominal Capacitance * pF/ Ft.	Nominal Capacitance * pF/ m	Nominal Capacitance ** pF/ Ft.	Nominal Capacitance ** pF/ m
83306E	—	1	White	100†	30.5	1.4	0.6	.010	.25	.010	.25	.099	2.52	—	—	69	226
				1000▲	304.8	14.0	6.4										
83320E	—	2	White, Black	100†	30.5	2.6	1.2	.010	.25	.011	.28	.159	4.04	31.7	104	51	167
				500††	152.4	12.0	5.4										
				1000▲	304.8	23.0	10.4										
83335E	—	3	White, Black, Red	100†	30.5	3.3	1.5	.010	.25	.011	.28	.168	4.27	31.7	104	51	167
				500††	152.4	15.5	7.0										
				1000▲	304.8	30.0	13.6										
83350E	—	4	White, Black, Red, Green	100†	30.5	4.0	1.8	.010	.25	.011	.28	.183	4.65	31.7	104	51	167
				500††	152.4	19.0	8.6										
				1000▲	304.8	37.0	16.8										

Complies with MIL-W-16878/4 (Type E) except stranding.

18 AWG Stranded (19x30) Silver-plated Copper Conductors • Cabled and Color-coded • Silver-plated Copper Braid Shield (85% Coverage)

Extruded TFE Teflon Insulation • White TFE Teflon Tape-wrapped Jacket

600V RMS
-65°C to 200°C
VW-1



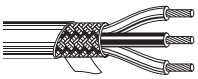
Part No.	UL NEC/ C(UL) CEC Type	No. of Cond.	Color Code	Standard Lengths Ft.	Standard Lengths m	Standard Unit Weight Lbs.	Standard Unit Weight kg	Insulation Thickness Inch	Insulation Thickness mm	Jacket Thickness Inch	Jacket Thickness mm	Nominal OD Inch	Nominal OD mm	Nominal Capacitance * pF/ Ft.	Nominal Capacitance * pF/ m	Nominal Capacitance ** pF/ Ft.	Nominal Capacitance ** pF/ m
83307E	—	1	White	1000▲	304.8	17.0	7.7	.011	.28	.010	.25	.109	2.77	—	—	71.5	235
83321E	—	2	White, Black	100†	30.5	3.2	1.5	.011	.28	.011	.28	.179	4.55	31	102	52.8	173
				500††	152.4	15.0	6.8										
				1000▲	304.8	29.0	13.2										
83336E	—	3	White, Black, Red	100†	30.5	4.2	1.9	.011	.28	.011	.28	.189	4.80	31	102	52.8	173
				500††	152.4	20.0	9.1										
				1000▲	304.8	39.0	17.7										
83351E	—	4	White, Black, Red, Green	100†	30.5	5.2	2.4	.011	.28	.011	.28	.207	5.26	31	102	52.8	173
				500††	152.4	25.0	11.3										
				1000▲	304.8	51.0	23.1										

Complies with MIL-W-16878/4 (Type E) except stranding.

16 AWG Stranded (19x29) Silver-plated Copper Conductors • Cabled and Color-coded • Silver-plated Copper Braid Shield (85% Coverage)

Extruded TFE Teflon Insulation • White TFE Teflon Tape-wrapped Jacket

600V RMS
-65°C to 200°C
VW-1



Part No.	UL NEC/ C(UL) CEC Type	No. of Cond.	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
83308E	—	1	White	500††	152.4	9.5	4.3	.012	.31	.011	.28	.120	3.05	—	—	72.5	238
				1000▲	304.8	20.0	9.1										
83322E	—	2	White, Black	100†	30.5	3.8	1.7	.012	.31	.011	.28	.197	5.00	36	118	60	197
				500††	152.4	18.0	8.2										
				1000▲	304.8	35.0	15.9										
83337E	—	3	White, Black, Red	100†	30.5	5.0	2.3	.012	.31	.011	.28	.209	5.31	30.7	101	53	174
				500††	152.4	24.5	11.1										
				1000▲	304.8	49.0	22.2										
83352E	—	4	White, Black, Red, Green	100†	30.5	6.2	2.8	.012	.31	.011	.28	.229	5.82	30.2	99	50.8	167
				500††	152.4	30.5	13.8										
				1000▲	304.8	61.0	27.7										

Complies with MIL-W-16878/4 (Type E) except stranding.

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

†100 ft. put-up one piece, exact length.
††500 ft. put-up exact, but may contain up to 2 pieces. Minimum length of any one piece is 25 ft.
▲1000 ft. put-up exact, but may contain up to 6 pieces. Minimum length of any one piece is 25 ft.

Teflon is a DuPont trademark.