



# BELDEN Cable™

Belden's low smoke, zero halogen

Shipboard cables deliver high-end

audio and video quality on private

yachts and commercial ships to

enhance consumer enjoyment,

shipboard communications and safety.



## Belden Shipboard Audio/Video Cables Approved by ABS for Marine Installations

Private yacht building is on the rise and vacation cruises continue to enjoy a healthy year-round market.

With so much consumer focus today on high-quality audio and video, yacht builders and commercial cruise lines recognize that offering customers the same A/V quality at sea as they experience on land can be a distinct competitive advantage. In addition, a reliable, high-performance A/V cabling system provides enhanced communication capabilities and shipboard safety.

Belden CDT Electronics Division is currently the only cable manufacturer to offer a complete series of audio, video and multimedia cables that are approved by the American Bureau of Shipping (ABS) for use in demanding marine applications -- Belden Shipboard A/V Cables.

### Setting the Global Standard of Excellence

For decades, the Belden Brilliance® brand has set the global standard for innovation in the development and manufacture of professional quality broadcast, audio, video, multimedia and control cables.

The new series of Belden Shipboard Cables continues that proud tradition. Some of the advantages of installing these cables include:

- > *Independent, third-party approval by the ABS.* The American Bureau of Shipping is the leading international classification society devoted to promoting the security of life, property and the marine environment through the development and verification of standards for the design, construction and operational maintenance of marine-related facilities. With ABS approval, no additional special approvals or insurance company exceptions are required for Belden A/V cable system installations. For details of the ABS approvals, see [www.typeapproval.org](http://www.typeapproval.org)



NEW PRODUCT  
**BULLETIN**  
NP 222



- > *Full compliance with industry and global environmental standards.* Belden's new line of Shipboard Cables comply with industry standards IEEE 45, and applicable sections of IEC 60092-376 for low smoke and zero halogen. In addition, because of the global nature of the marine industry, the cables are designed and manufactured in compliance with the European Union RoHS Directive (2002/95/EC, 27-Jan-2003) governing the Reduction of Hazardous Substances in electrical and electronic equipment.
- > *Delivery of highest quality A/V experience* to buyers of private yachts and passengers and crew on commercial ships.
- > *Fast, easy installation* using standard connectors and with no special installation techniques or equipment required
- > *Exclusive and unmatched Belden 10-Year Warranty.*

#### Product Construction and Availability

The new Shipboard Cable line is comprised of Belden Brilliance®, DataTwist® and Classic Design cables designed to implement a wide range of shipboard audio, video, security, networking and control applications. The Belden Shipboard series also includes a selection of all-dielectric fiber optic cables.

#### Copper Cables

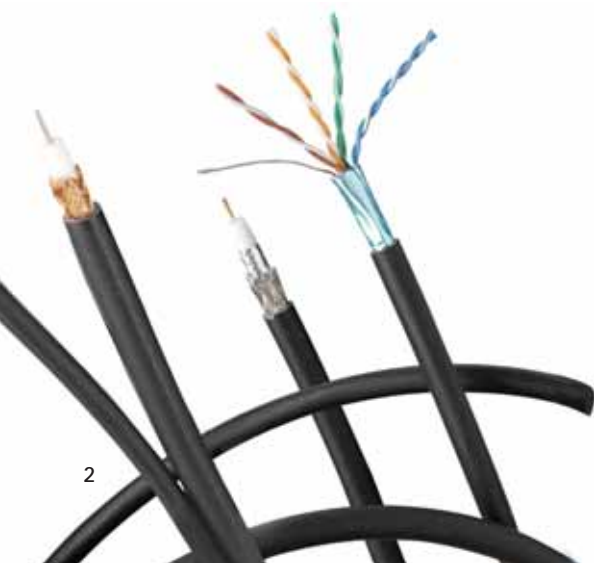
- > 9451SB Audio, Control and Instrumentation Cable. Construction: 22 AWG stranded tinned copper twisted pair with overall 100% Beldfoil® shield. Black LSZH jacket. Rated NEC/CEC CMG-LS.
- > 8723SB Audio, Control and Instrumentation Cable. Construction: (2) 22 AWG stranded tinned copper twisted pairs, individually shielded with 100% Beldfoil shield. Black LSZH jacket. Rated NEC/CEC CMG-LS.

- > 8777SB Audio, Control and Instrumentation Cable. Construction: (3) 22 AWG stranded tinned copper twisted pairs, individually shielded with 100% Beldfoil shield. Black LSZH jacket. Rated NEC/CEC CMG-LS.
- > 1300SB DataTwist® 5e ScTP multi-media cable. TIA/EIA-568-B.2, Category 5e cables. Construction: 24 AWG solid bare copper twisted pairs with overall 100% Beldfoil shield. RJ-45 compatible. Black LSZH jacket. Rated NEC/CEC CMG-LS.
- > 9116SB Series 6 Broadband Coax Cable. Construction: 18 AWG solid bare copper-covered steel, gas-injected foam polyethylene insulation, with Duobond® II + 60% aluminum braid shield. Black LSZH jacket. Rated NEC/CEC CMG-LS.
- > 1694SB Precision Video Cable for Analog and Digital Video. RG-6U Type. Construction: 18 AWG solid bare copper, gas-injected foam HDPE insulation. Duofoil® plus 95% tinned copper braid shield. Black LSZH jacket. Rated NEC/CEC CMG-LS.
- > 1306SB Security Composite Cable. RG-6 Type Coax plus 18 AWG twisted pair for CCTV plus audio or PTZ (Pan/Tilt/Zoom) CCTV control applications. Siamese construction. Black LSZH jacket. Rated NEC/CEC CMG-LS.

#### Fiber Optic Cables

The Belden Shipboard series also offers a full line of all-dielectric, loose tube Fiber Optic cables. They feature flame retardant, thermoplastic buffers, aramid yarn strength members, a rip cord, overall waterblocking tape and LSZH jackets. Available in bulk, cut to length (minimums apply). Listed as UL Type OFNR - cUL OFN FT-4.

Fiber Optic Cables type approved ABS are available in constructions ranging from 1 to 144 fibers and in all glass types — loose tube indoor/outdoor LSZH, UL Type OFNR RiserLite™. For tables showing certain constructions, see page 6.



# Audio, Control and Instrumentation Cable

## Low Smoke Zero Halogen CMG-LS

Description	Part No.	UL NEC/ C(UL) CEC Type	No. of Pairs	Color Code	Standard Lengths		Standard Unit Weight		Insulation Thickness		Jacket Thickness		Nominal OD		Nominal Capacitance			
					Ft.	m	Lbs.	kg	Inch	mm	Inch	mm	Inch	mm	* pF/ Ft.	* pF/ m	** pF/ Ft.	** pF/ m

**22 AWG** Stranded (7x30) • Tinned Copper • Twisted Pair • Overall 100% Beldfoil Shield • 22 AWG Stranded TC Drain Wire

**Polypropylene Insulation • Black LSZH Jacket**

300V RMS 105°C		<b>9451SB</b>	NEC/CEC CMG-LS	1	Black, Red	1000	304.8	20.0	9.1	.008	.20	.033	.84	.160	4.06	35	115	67	220
-------------------	-----------------------------------------------------------------------------------	---------------	-------------------	---	---------------	------	-------	------	-----	------	-----	------	-----	------	------	----	-----	----	-----

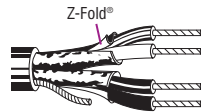


The jacket and shield are bonded so both can be removed on automatic stripping equipment. Drain wire is inside foil shield.

**22 AWG** Stranded (7x30) • Tinned Copper • Twisted Pairs • Individually Shielded with 100% Beldfoil • 24 AWG Stranded TC Drain Wire


**Polypropylene Insulation • Black LSZH Jacket (Pairs Cabled on Common Axis to Reduce Diameter)**

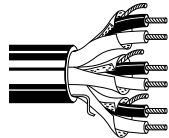
300V RMS 105°C		<b>8723SB</b>	NEC/CEC CMG-LS	1	Black & Red Green & White	1000	304.8	26.0	11.8	.008	.20	.034	.86	.196	4.98	35	115	67	220
-------------------	-----------------------------------------------------------------------------------	---------------	-------------------	---	------------------------------	------	-------	------	------	------	-----	------	-----	------	------	----	-----	----	-----



**22 AWG** Stranded (7x30) • Tinned Copper • Twisted Pairs • Individually Shielded with 100% Beldfoil • 22 AWG Stranded TC Drain Wires

**Polypropylene Insulation • Black LSZH Jacket**

UL AWM Style 2919 (30V) 105°C		<b>8777SB</b>	NEC/CEC CMG-LS	3	Black & Red Black & White Black & Green	1000	304.8	47.0	21.3	.010	.25	.034	.86	.273	6.93	30	55	98	180
-------------------------------------	-------------------------------------------------------------------------------------	---------------	-------------------	---	-----------------------------------------------	------	-------	------	------	------	-----	------	-----	------	------	----	----	----	-----




\*Conductor to conductor.  
\*\* Conductor to other conductor & shield.



## Broadband Coaxial Cable


CATV Cables, Series 6, Low Smoke Zero Halogen CMG-LS

Description	Part No.	UL NEC/ C(UL) CEC Type	Standard Lengths		Standard Unit Weight		Conductor (stranding) Diameter Nom. DCR	Nominal Core OD		Shielding Materials Nom. DCR	Nominal OD		Nom. Imp. (Ω)	Nom. Vel. of Prop.	Nominal Capacitance		Nominal Attenuation			
			Ft.	m	Lbs.	kg		Inch	mm		Inch	mm			pF/Ft.	pF/m	MHz	dB/ 100 Ft.	dB/ 100m	
<b>Series 6 • 18 AWG</b> Solid .040" Bare Copper-covered Steel Conductor • Duobond® II + Aluminum Braid Shield (60% Coverage)																				
<b>Gas-injected Foam Polyethylene Insulation • Black LSZH Jacket</b>																				
75°C		<b>9116SB</b>	NEC/CEC CMG-LS	1000	304.8	31.0	14.1	18 AWG (solid) .040" BCCS 28.0Ω/M' 91.9Ω/km	.180	4.57	Duobond II* + 60% Aluminum Braid 9.0Ω/M' 29.5Ω/km	.274	6.96	75	83%	16.2	53.1	5	.54	1.77
																	55	1.45	4.76	
																	211	2.64	8.66	
																	216	2.67	8.76	
																	240	2.80	9.19	
																	270	2.97	9.74	
																	300	3.13	10.27	
																	325	3.26	10.70	
																	350	3.39	11.12	
																	375	3.52	11.55	
																	400	3.65	11.97	
																	450	3.88	12.73	
																	500	4.09	13.42	
																	550	4.30	14.11	
																	600	4.51	14.80	
																	650	4.72	15.49	
																	700	4.92	16.14	
																	750	5.11	16.76	
																	800	5.27	17.29	
																	862	5.47	17.95	
																	870	5.49	18.01	
																	900	5.60	18.37	
																	950	5.79	19.00	
																	1000	5.99	19.65	



## Precision Video Cable for Analog and Digital

Low Loss Serial Digital Coax, RG-6U Type, Low Smoke Zero Halogen CMG-LS

Description	Part No.	UL NEC/ C(UL) CEC Type	Standard Lengths		Standard Unit Weight		Conductor (stranding) Diameter Nom. DCR	Nominal Core OD		Shielding Materials Nom. DCR	Nominal OD		Nom. Imp. (Ω)	Nom. Vel. of Prop.	Nominal Capacitance		Nominal Attenuation			
			Ft.	m	Lbs.	kg		Inch	mm		Inch	mm			pF/Ft.	pF/m	MHz	dB/ 100 Ft.	dB/ 100m	
<b>RG-6/U Type • 18 AWG</b> Solid .040" Bare Copper Conductor • Duofoil® + Tinned Copper Braid Shield (95% Coverage)																				
<b>Gas-injected Foam HDPE Insulation • Black LSZH Jacket</b>																				
SDI/HDTV Digital Video 75°C		<b>1694SB</b>	NEC/CEC CMG-LS	1000	304.8	46.0	20.9	18 AWG (solid) .040" BC 6.4Ω/M' 21.0Ω/km	.180	4.57	Duofoil + 95% TC Braid 2.8Ω/M' 9.2Ω/km	.274	6.96	75	82%	16.2	53.1	1	.2	.8
																	3.6	.5	1.5	
																	10	.7	2.4	
																	71.5	1.6	5.2	
																	135	2.1	6.9	
																	270	3.0	9.7	
																	360	3.4	11.3	
																	540	4.3	13.9	
																	720	4.9	16.2	
																	750	5.0	16.4	
																	1000	5.9	19.3	
																	1500	7.3	24.0	
																	2250	9.1	30.0	
																	3000	10.7	35.0	
																	4500	13.3	43.6	





## Networking Cable

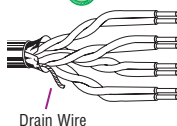
DataTwist 5e ScTP, Low Smoke Zero Halogen CMG-LS

Description	Part No.	UL NEC/C(UL) CEC Type	No. of Pairs	Standard Lengths		Standard Unit Wt.		Insulation Thickness		Nominal OD		Max. DCR (Ω/100m)	Max. DCR Unbal. (%)	Max. Cap. Unbal. (pF/100m)	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	Inch	mm										

**24 AWG** Solid Bare Copper • Twisted Pairs • Overall Beldfoil Shield • 24 AWG Drain Wire • RJ-45 Compatible • See Color Code Chart (below)

### Polyolefin Insulation • Black LSZH Jacket

105°C	1300SB	NEC/CEC CMG-LS	4	1000	304.8	35.0	15.9	.010	.25	.260	6.60	9.38	5.0	330	2.0	62.3	60	60.8	100±15	20.0	
															4	4.1	53.3	49	48.7	100±15	23.0
															8	5.8	48.8	43	42.7	100±15	24.5
															10	6.5	47.3	41	40.8	100±15	25.0
															16	8.2	44.3	36	36.7	100±15	25.0
															20	9.3	42.8	34	34.7	100±15	25.0
															25	10.4	41.3	31	32.8	100±15	24.3
															31.25	11.7	39.9	28	30.9	100±15	23.6
															62.5	17.0	35.4	18	24.8	100±15	21.5
															100	22.0	32.3	10	20.8	100±15	20.1



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

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

## Security Composite Cable

CCTV plus Audio or Pan/Tilt/Zoom CCTV Control Applications

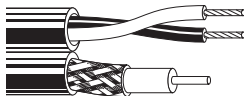
Low Smoke Zero Halogen CMG-LS

Description	Part No.	UL NEC/C(UL) CEC Type	AWG	Stranding and Conductor	Shield/Braid Coverage	Insulation Nomial OD		Nominal OD		Nom. Imp. (Ω)	Standard Lengths		Standard Unit Weight	
						Inch	mm	Inch	mm		Ft.	m	Lbs.	kg

**Composite: RG6 Coax plus Twisted Pair** Siamese Construction NEC or CEC CMG-LS

### Coax Insulation: FPE • Pair Insulation: Polyolefin • Black LSZH Jacket

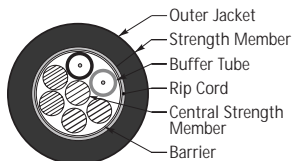
75°C	1306SB	CMG-LS	18(cx)	solid BC	95% BC	.180	4.57	.275	6.99	75	500	152.4	37.0	16.8
			18 (pr)	7/w BC	unshielded	.066	1.68	x	x	(coax)	1000	304.8	76.0	34.5
								.514	13.06					



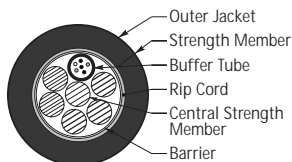
BC = Bare Copper  
CX = Coax  
PR = Pair

## RiserLite® Loose Tube Indoor/Outdoor Fiber Optic Cable\*

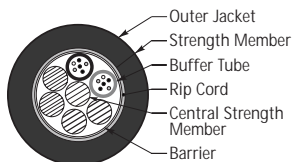
Single Mode and Multimode–Riser-rated,  
Low Smoke Zero Halogen



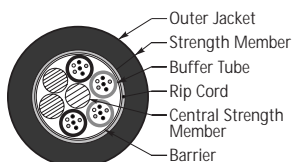
**2 Fibers**  
**1 Per tube**  
**4 Fillers**  
**.380" Diameter**



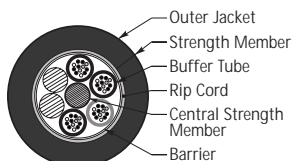
**6 Fibers**  
**6 Per tube**  
**5 Fillers**  
**.380" Diameter**



**12 Fibers**  
**6 Per tube**  
**4 Fillers**  
**.380" Diameter**



**24 Fibers**  
**6 Per tube**  
**2 Fillers**  
**.380" Diameter**



**48 Fibers**  
**12 Per tube**  
**2 Fillers**  
**.480" Diameter**

### Single Mode Loose Tube

No. of Fibers	Part Number	Fibers per Tube	Fiber Tubes	Fillers	Overall Diameter		Weight	
					in	mm	lbs/Mft	kg/km
6	M9W830	6	1	5	0.38	9.65	71.0	105.9
12	M9W831	6	2	4	0.38	9.65	71.0	105.9
24	M9W832	6	4	2	0.38	9.65	71.0	105.9
48	M9W834	12	4	2	0.48	12.18	101.0	150.6

### Multimode Grade 4 50/125 Loose Tube

No. of Fibers	Part Number	Fibers per Tube	Fiber Tubes	Fillers	Overall Diameter		Weight	
					in	mm	lbs/Mft	kg/km
2	M97537	1	2	4	0.38	9.65	71.0	105.9
6	M9A830	6	1	5	0.38	9.65	71.0	105.9
12	M9A831	6	2	4	0.38	9.65	71.0	105.9
24	M9A832	6	4	2	0.38	9.65	71.0	105.9
48	M9A834	12	4	2	0.48	12.18	101.0	150.6

### Multimode Grade 5 50/125 Loose Tube

No. of Fibers	Part Number	Fibers per Tube	Fiber Tubes	Fillers	Overall Diameter		Weight	
					in	mm	lbs/Mft	kg/km
6	M9C830	6	1	5	0.38	9.65	71.0	105.9
12	M9C831	6	2	4	0.38	9.65	71.0	105.9
24	M9C832	6	4	2	0.38	9.65	71.0	105.9
48	M9C834	12	4	2	0.48	12.18	101.0	150.6

Glass Types and Specifications	UOM	Single Mode Fiber**	Multimode Grade 4	Multimode Grade 5
Operating Wavelength (Short) - nm	nm	1310	850	850
Operating Wavelength (Long) - nm	nm	1550	1300	1300
Min OFL Bandwidth (@ Short Wavelength)	MHz-km	—	500	1500
Min OFL Bandwidth (@ Long Wavelength)	MHz-km	—	500	500
Min Laser Bandwidth (@ Short Wavelength)	MHz-km	—	510	2000
Min Laser Bandwidth (@ Long Wavelength)	MHz-km	—	500	500
Max Attenuation (@ Short Wavelength)	db/km	0.40	3.0	3.0
Max Attenuation (@ Long Wavelength)	db/km	0.30	1.0	1.0
100 Mbps Fast Ethernet Link Length @ WL = 850nm	m	—	300	300
100 Mbps Fast Ethernet Link Length @ WL = 1310nm	m	5000	2000	2000
1 Gbps Ethernet Link Length @ WL = 850nm	m	—	600	1000***
1 Gbps Ethernet Link Length @ WL = 1310nm	m	5000	600	600
10 Gbps Ethernet Link Length @ WL = 850nm	m	—	82	300
10 Gbps Ethernet Link Length @ WL = 1310nm	m	10000	300	300

\*Available in fiber counts 1 through 144, and in all glass types

\*\*low water peak Single Mode suitable for CWDM use complies with ITU G.652.c/d

\*\*\*>2000m for engineered links

OFL: Overfilled Launch

Laser Bandwidth: effective modal bandwidth, determined by RML or DMD performance specifications

Other constructions and fiber glass types available, up to 144 Fibers.

Minimum order for each construction is 1,000 meters. Bulk long reels, manufactured per order

Operating Temperature: -40°C to +70°C

For complete technical specifications, installation criteria and environmental limitations, call 1-800-BELDEN-1