

Cut, Spooled and Shipped to Order

Rugged Aluminum Interlock
Armored Construction

10G/25G Application Assurance for
Standards-Supported Lengths

RoHS Compliant, Flame-Retardant
Cable, Manufactured Locally

FEATURES

- E-Z strip buffer with new dash style color stripes for contractor-friendly termination
- Multi-purpose outdoor duct to building riser or horizontal infrastructure, all with a single cable
- Premium bend-insensitive fiber for enhanced durability and maximum testing headroom
- Fibers supported: OM1, OM3, OM4, OS2
- Sold in feet, available in Riser (OFNR), and Plenum (OFNP) for all supported fibers
- Common cables available from stock; on-site armoring for fast delivery

SPECIFICATIONS

- Fiber count: 6, 12, 24 and 48 strand
- Subunits: 12 fibers/unit (48 strand only)
- Fiber coating: 900µm PVC tight buffer
- Armor: aluminum interlocking spiral wrap
- Temperature range:
 - Storage: -40° F to +185° F (-40° C to +85° C)
 - Installation: 32° F to +132° F (0° C to +56° C)
 - Operation: -4° F to +185° F (-20° C to +85° C)
- Multimode attenuation: 3.5/1.5dB/km at 850/1300nm (cabled)
- Singlemode attenuation: 0.5/0.4dB/km at 1310/1550nm (cabled)
- Optical: see fiber specifications on page 4

STANDARDS

- Telcordia GR-409 and GR-20
- ANSI/ICEA S-83-596
- TIA-492 Series optical fiber specifications
- TIA-568.3 Optical fiber cabling standards
- Riser cables: UL 1666/CSA FT-4
- Plenum cables: NFPA-262/UL910/CSA FT-6

HUBBELL HFCD19 Series Indoor/Outdoor OptiChannel Armored Tight Buffer Fiber Cable



Hubbell OptiChannel HFCD19 Series Armored Indoor/Outdoor Tight Buffer Cables offer a rugged, universal solution for campus networks, eliminating transition points in the building entrance. Plenum and riser ratings allow full deployment into the building backbone and horizontal spaces. Featuring aluminum interlock armor construction, with ease of termination similar to distribution cable, HFCD19 series armored cables are supported by the Hubbell Mission Critical® 25-year link warranty. Premium bend-insensitive fibers are used in Hubbell OM3, OM4, and OS2 fiber cables for optimum cable bend loss performance. Low bend loss cables enhance installed performance, adding headroom to link certification test results. Armoring adds resistance to crushing, abrasion, impact and rodents.

CABLE JACKET AND BUFFER COLOR CODES

- OM1 Multimode: Orange jacket
- OM3 and OM4 Multimode: Aqua jacket
- OS2 Singlemode: Yellow jacket
- Buffer color codes and pairing sequence:
 - 1-Blue, 2-Orange, 3-Green, 4-Brown, 5-Slate, 6-White
 - 7-Red, 8-Black, 9-Yellow, 10-Violet, 11-Rose, 12-Aqua
 - 13-Blue/Black, 14-Orange/Black, 15-Green/Black, 16-Brown/Black
 - 17-Slate/Black, 18-White/Black, 19-Red/Black, 20-Black/White
 - 21-Yellow/Black, 22-Violet/Black, 23-Rose/Black, 24-Aqua/Black
- 48-strand subunit colors: Blue, Orange, Green, Brown
- Repeat buffer colors 1 through 12 for subunits in 48-strand cable

APPLICATIONS

- Inter-building duct, backbone and horizontal fiber cabling
- Campus to data center and storage area network
- High bandwidth cross-campus data and video transmission
- Commercial, medical, government and education facilities
- Unprotected cable pathways and rodent prone areas
- Not recommended for direct burial or weather exposure





INDOOR/OUTDOOR ARMORED TIGHT BUFFER FIBER CABLE

Configuration	Catalog Number
xxx = Fiber count (006, 012, 024 or 048 strand)	HFCD19xxxrnBK
r = 'R' for Riser, 'P' for Plenum	
n = '6' for 62.5 µm OM1 Multimode '3' for 50 µm OM3 Multimode '4' for 50 µm OM4 Multimode 'S' for 9 µm OS2 Singlemode	
BK = Black jacket	

Example: **HFCD19012PSBK**
 System Description: **CBL, FIBER, SM, 12F, I/O, P, ARM, TB, BK**
 Jacket print: **OFCP RoHS Plenum 12 Fiber Indoor/Outdoor Cable xxxFT (Date) E# (UL) C(UL) Plus Corning SMF28e+ Optical Fiber 9/125 AIA**

DELIVERY

HFCD19 Series fiber cables are priced and delivered in feet. Spool size and weight varies by cable and length ordered. Specify cable put-up lengths on purchase order. MOQ for non-stocked cables is 1,640 feet. Contact Hubbell Premise Wiring for availability. Length ordered may be subject to a +10% production tolerance. Cut charges may apply to multi-reel orders. Refer to next page for reel capacities, dimensions and estimated shipping weights.

Note: See Hubbell HFCD14 Series for non-armored indoor/outdoor tight buffered cables.

CABLE DESIGN INFORMATION

HFCD19 Series: Indoor/Outdoor Armored Tight Buffer Riser OFNR FT-4, and Plenum OFNP

Fiber Count	Cable Diameter in (mm)	Cable Weight lb/kft	Minimum Bend Radius (Installation) in (cm)	Minimum Bend Radius (In-Service) in (cm)	Maximum Installation Pulling Load lb	Maximum Operating Tensile Load lb
6	0.63 (16)	165	9.5 (24)	9.5 (24)	150	45
12	0.63 (16)	170	9.5 (24)	9.5 (24)	150	45
24	0.69 (17.4)	188	10.3 (26)	10.3 (26)	300	90
48	0.93 (23.5)	365	18.5 (47)	18.5 (47)	475	145

*Note: 1 Pulling and tensile loads shall be applied only to the internal strength member.
 2 Armor does not add to pull strength, and should not be used as a strength member.*

CABLE APPLICATION GUIDELINES: DISTANCE AND CHANNEL ATTENUATION LIMITS

IEEE 802.3 Fiber Ethernet Application	Transmitter Wavelength (nm)	Maximum Supportable Distance (m)					Maximum Channel Attenuation (dB)				
		Multimode				Single-mode OS2	Multimode				Single-mode OS2
		62.5/125 OM1	50/125 OM2	50/125 OM3	50/125 OM4		62.5/125 OM1	50/125 OM2	50/125 OM3	50/125 OM4	
10GBASE-S	850	33	82	300	550	N/A	2.4	2.3	2.6	2.9	N/A
10GBASE-L	1310	N/A	N/A	N/A	N/A	10 km	N/A	N/A	N/A	N/A	6.2
10GBASE-E	1550	N/A	N/A	N/A	N/A	40 km	N/A	N/A	N/A	N/A	11.0
25GBASE-SR	850	N/A	N/A	70	100	N/A	N/A	N/A	1.8	1.9	N/A
40GBASE-SR4	850	N/A	N/A	100	150	N/A	N/A	N/A	1.9	1.5	N/A
100GBASE-SR10	850	N/A	N/A	100	150	N/A	N/A	N/A	1.9	1.5	N/A
100GBASE-SR4	850	N/A	N/A	70	100	N/A	N/A	N/A	1.8	1.9	N/A
40GBASE-LR4	1310	N/A	N/A	N/A	N/A	10 km	N/A	N/A	N/A	N/A	6.7
40GBASE-ER4	1550	N/A	N/A	N/A	N/A	40 km	N/A	N/A	N/A	N/A	19
100GBASE-LR4	1310	N/A	N/A	N/A	N/A	10 km	N/A	N/A	N/A	N/A	6.3

*Note: S = Short wavelength, L = Long wavelength, E = Extended wavelength
 SR4 = Short Range, 4 lanes in parallel (8 fibers), SR10 = Short Range, 10 lanes in parallel (20 fibers)
 LR4/ER4 = 4 WDM wavelenths over 1 lane (2 fibers)*

INSTALLATION REQUIREMENTS

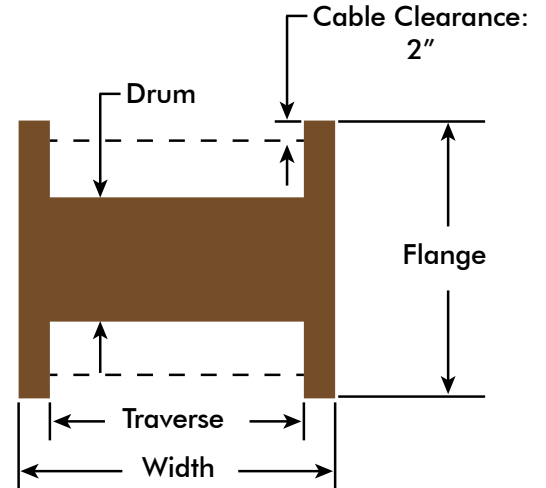
- Verify channel distance and attenuation budget with network application. (See chart above.)
- During installation or operation, comply with maximum loading, minimum bend radius and temperature limits.
- Always pull cables by the internal strength member or fiber damage may result.
- Use proper tools for stripping and dressing out cable to avoid fiber damage.
- Adhere to best installation practices, avoiding kinks, crushing and abrasion. Always use proper cable supports.
- Use recognized field termination methods. Fiber terminations shall be strain relieved from any cable weight.



Reel Selection and Capacities for Hubbell HFCD Series Cable

HUBBELL FIBER CABLE DELIVERY POLICY

- HFCD Series fiber cables are priced and delivered in feet
- Cable orders, when permissible, are shipped on a single reel unless otherwise specified
- Multi reel put-up lengths required by the customer must be specified at the time of ordering
- Cable lengths that exceed single reel capacity must have the split approved by the customer
- MOQ for non-stocked cable is 1,640 feet
- Cables made to order are subject to a +10% production tolerance
- Customer order must match total length shipped
- Reel capacity values on this specification allow for a 2-inch cable-to-flange clearance as illustrated
- Refer to reel dimensions on selection and capacity charts
- Cut charges may apply to multi-reel orders



WEIGHTS, DIMENSIONS AND CAPACITIES

- Cable weight = [length ordered] X [weight per foot]
- Estimated shipping weight = [cable weight] + [reel weight] + [skid weight]
- Reel capacities on this specification allow for a 2-inch cable-to-flange clearance
- Refer to specific dimensions on the reel selection chart
- Shipping dimensions = [flange] x [flange] x [width]
- Estimated shipping width = [traverse length] + [2 inches]

STANDARD REEL SELECTIONS

Reel	Flange Diameter in	Traverse Length in	Drum Diameter in	Reel Weight lb	Skid Weight lb
A	24	15	16.5	*	n/a
B	30	24	18	30	30
C	45	24	18	115	40
D	48	24	24	120	40

*A-size reels are plastic and boxed. See charts for cable weight.

HUBBELL HFCD SERIES FIBER CABLE: MAX REEL CAPACITY CHART, PLENUM OR RISER

Cable Family	Fiber Count	Overall Jacket Diameter in (mm)	Reel A 24" Flange ft	Reel B 30" Flange ft	Reel C 45" Flange ft	Reel D 48" Flange ft	Cable Weight per Foot lb
HFCD1 Series: Indoor Distribution HFCD14 Series: Indoor/Outdoor	2 strand	0.174 (4.4)	5400	17500	n/a	n/a	0.012
	6 Strand	0.210 (5.3)	4000	12000	n/a	n/a	0.020
	12 Strand	0.250 (6.3)	2900	9000	n/a	n/a	0.035
	24 Strand	0.320 (8.1)	1600	5000	n/a	n/a	0.043
HFCD1M Series: Indoor Multi-Unit, Plenum	48 strand	0.610 (15.4)	n/a	1400	4800	n/a	0.146
	72 strand	0.790 (20)	n/a	1000	2800	n/a	0.233
HFCD14 Series: Indoor/Outdoor Multi-Unit	48 strand	0.610 (15.4)	n/a	1400	4800	n/a	0.146
	72 strand	0.790 (20)	n/a	1000	2800	n/a	0.233
HFCD15 Series: Armored Indoor HFCD19 Series: Armored Indoor/Outdoor	6 Strand	0.625 (15.9)	n/a	n/a	n/a	5000	0.165
	12 Strand	0.625 (15.9)	n/a	n/a	n/a	5000	0.170
	24 Strand	0.684 (17.4)	n/a	n/a	n/a	4000	0.188
	48 Strand	0.930 (23.5)	n/a	n/a	n/a	2100	0.365

Note: Reel capacities are approximate based on safe clearance below flange diameter. Reel size is determined by cable diameter and quantity ordered.



Optical Fiber Specifications for Hubbell HFCD Tight Buffered Series Cables

FEATURES

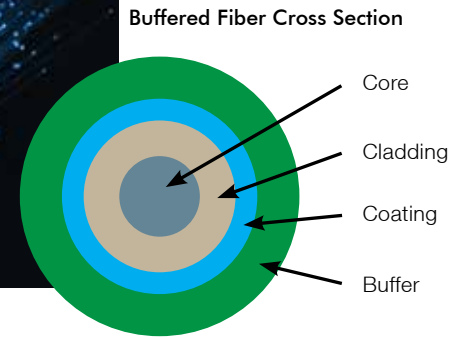
- High purity glass fiber, made with advanced vapor deposition and precision draw process
- Enhanced bandwidth and distance performance
- Low bend-induced attenuation for enhanced cable operating performance
- Low dispersion, laser optimized OM3 and OM4
- Low water peak G625D singlemode, enhanced for 1310 to 1550nm operating wavelengths

SPECIFICATIONS

- OM1 and OM2: graded index core
- OM3 and OM4: graded index core; laser optimized
- OS2: low water peak, step index core
- Tensile proof strength: > 100kpsi
- Fiber coating: 250µm clear acrylate
- Buffer layer: 900µm color coded PVC
- Temperature test range: -60° C to +85° C

STANDARDS

- TIA-492AAAA-A: OM1 Optical Fiber Standard
- TIA-492AAAB-A: OM2 Optical Fiber Standard
- TIA-492AAAC-B: OM3 Optical Fiber Standard
- TIA-492AAAD: OM4 Optical Fiber Standard
- TIA-492CAAB: OS2 Optical Fiber Standard
- ITU-T-G652D: OS2 Optical Fiber Standard



OPTICAL FIBER DIMENSIONAL SPECIFICATIONS

Fiber Type	Core Diameter (microns)	Cladding Diameter (microns)	Core-Clad Concentricity (microns)	Cladding Non-Circularity	Core Non-Circularity	Coating Diameter (microns)	Coating-Cladding Concentricity (microns)
OM1	62.5 ± 2.5 µm	125 ± 2.0 µm	≤ 1.5 µm	≤ 1.0%	≤ 5.0%	242 ± 5 µm	< 12 µm
OM2	50.0 ± 2.5 µm	125 ± 1.0 µm	≤ 1.5 µm	≤ 1.0%	≤ 5.0%	242 ± 5 µm	< 12 µm
OM3	50.0 ± 2.5 µm	125 ± 1.0 µm	≤ 1.5 µm	≤ 1.0%	≤ 5.0%	242 ± 5 µm	< 12 µm
OM4	50.0 ± 2.5 µm	125 ± 1.0 µm	≤ 1.5 µm	≤ 1.0%	≤ 5.0%	242 ± 5 µm	< 12 µm
OS2	9.2 µm**	125 ± 0.7 µm	≤ 0.5 µm	≤ 0.7%	n/a	242 ± 5 µm	< 12 µm

**OS2 mode field diameter at 1310nm: 9.2 ± 0.4µm; OS2 mode field diameter at 1550nm: 10.4 ± 0.4µm.

OPTICAL FIBER PERFORMANCE SPECIFICATIONS

Fiber Type	Max Attenuation (dB/km)		Laser-Based EMB (MHz-Km)		1 Gb/s Link Distance (meters)		10 Gb/s Link Distance (meters)		40/100 Gb/s Link Distance (meters)	
	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm
OM1	≤ 2.9	≤ 0.6	220	n/a	300	550	26	n/a	n/a	n/a
OM2	≤ 2.3	≤ 0.6	950	n/a	750	550	150	n/a	n/a	n/a
OM3	≤ 2.3	≤ 0.6	2000	n/a	1,000	550	300	n/a	150	n/a
OM4	≤ 2.3	≤ 0.6	4700	n/a	1,100	550	550	n/a	150	n/a
	1310 nm	1550 nm	1310 nm	1550 nm	1310 nm	1550 nm	1310 nm	1550 nm	1310 nm	1550 nm
OS2	≤ 0.35	≤ 0.20	n/a	n/a	n/a	n/a	10,000	40,000	10,000	40,000

Note: Fiber attenuation is un-cabled. All link distance limits are based on 1.0 dB max connector loss. OM3, OM4, and OS2 are bend-insensitive fibers for optimum cable bend loss performance.