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HCM

Hitachi Cable Manchester



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Hitachi Cable Manchester

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UTP Copper

Category 6a



4-pair
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Category 6



4-pair
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GoldLAN
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Category 5E



4-pair
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GoldLAN
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Multi-pair
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Category 3



4-pair
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Multi-pair
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SFTP Copper

Category 7A



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Category 7



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FUTP Copper

Category 6A



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Category 6



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Category 5e



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Special Applications Copper

Cross-Connect



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Patch



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Bonded Jacket



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Outdoor



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Composite

OmniMedia



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Indoor Fiber

Interconnect



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SingleUnit



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MultiUnit



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NanoCore™



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Indoor Fiber

Armored



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Indoor/Outdoor Fiber

Tight Buffered



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Central Tube



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Loose Tube



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Outdoor Fiber

Mojave™



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Loose Tube



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Armored



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HCM has a long history

of designing innovation into our cables. All of our designs are carefully engineered for peak performance, ease of use, and flexibility. No other manufacturer offers these advantages.



Hybrid constructions

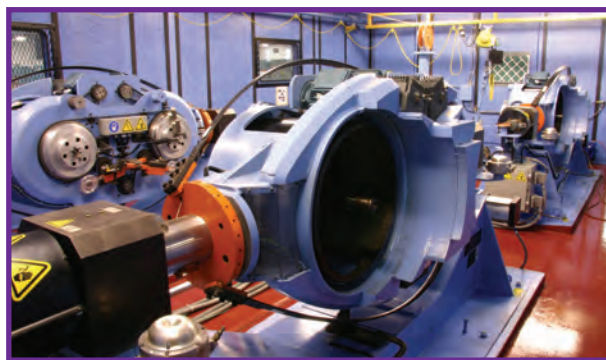
Our GoldLAN™ series of cables have been delivering TIA compliant performance since 1996. HCM proudly introduced the industry's first category 6 compliant hybrid cable in 2002. Nobody can match our hybrid cable manufacturing experience.

Manufacturing Equipment Advantages

Our facility features state-of-the-art pair twist machinery that uses feedback to continuously monitor and maintain line speed and twist.

HCM's technology yields more precisely controlled pair twists and supports total flexibility in pair lay design.

The result: HCM's cables have the best NEXT loss and ELFEXT headroom in the industry.



Earth Friendly

All of our cables are lead free and compliant to EU Directive 2002/95/EC, also known as the Restriction of Hazardous Substances or RoHS. This stringent regulation greatly restricts the use of certain substances known to be hazardous to the environment.

Cleanliness

No other cabling facility pays more attention to product protection. From handling raw material through production to inventory stocking, our cables are always protected from dirt, debris, and damage. You will never find an unprotected reel of fiber optic or copper cable on our production floor.



User-Friendly Reelex™

Our Reelex™ cable box was designed with both the distributor and installer in mind. Our boxes feature bold, easy-to-read graphics and text, two rip-resistant handles and a conduit fill chart printed on the backside of the box. An oversized opening helps ensure tangle-free payout. Also, all Reelex™ cable boxes are made with a minimum of 50% post consumer material.

On-site Copper Extrusion

HCM is one of the few twisted-pair cable manufacturers that draws its own copper conductor core. Only through this process can we ensure that our bare copper is never exposed to air, contaminants, corrosion, or handling damage. Because high frequency signals travel on the “skin” of the copper, optimum performance can only be achieved when copper drawing is part of the in-line cable manufacturing process.



Fiber Optic Packaging

Nobody puts more effort into fiber optic cable protection. Our reinforced reels and reel packing ensures that your cables arrive in perfect condition.

Going Green

Many companies are making claims of being green, but how green are they really? To see how green HCM is, take a tour of our facility and see for yourself. HCM recycles 100% of all office paper waste and cardboard waste. We separate and recycle all manufacturing byproducts including PVC and FEP and capture and recycle the copper dust produced during extrusion of our copper conductors. Even wooden pallets find a second life. Since HCM's facility abuts a wetland, we voluntarily sample water quality to ensure typical parking lot runoff isn't impacting our surroundings. In 2009, HCM received honorable mention for its submission to New Hampshire's Governor's Award for Pollution Prevention. And, we will continue to find ways to make our plant and our products better for the environment.



Bend Insensitive

To ensure the quality and performance of our fiber optic cables exceeds our customer's requirements, HCM uses high performance optical glass from Corning Optical Fiber. In fact, Corning's ClearCurve® bend-insensitive glass is standard for all OM2, OM3 and OM4 cable constructions.



HCM Certified Cabling Systems: Ultimate Flexibility

In compliance with TIA and ISO standards requirements, Hitachi Cable Manchester, Inc.'s cables are engineered to perform flawlessly when mated to component compliant connecting hardware and patch cords. To support the ultimate flexibility in infrastructure design, HCM certified systems feature an open architecture approach to the connecting hardware selection process.

The HCM R&D Laboratory continuously evaluates and monitors connecting hardware quality and performance. Examples of manufacturers of copper and fiber optic connecting hardware recognized and approved for use in an HCM Certified Cabling System include:

ADC Telecommunications, Inc.	Panduit Corp.
Belden	Signamax
Corning	SMP Data Communications
Hellerman Tyton Corporation	Systemax
Hubbell Premise Wiring	The Siemon Company
Leviton Voice & Data	Tyco Electronics Corporation
Ortronics, Inc.	Uniprise
OCC	

HCM Certified Cabling Systems are only offered through HCM Certified Installers

HCM Certification is provided through a BICSI accredited training program or through proof of equivalent training and certification with other recognized organizations. Students/Attendees who successfully demonstrate a working knowledge and understanding of the HCM Certification Program curriculum are awarded HCM Certification. This qualified group of installers and designers plays an integral role in the issuance of an HCM Certified Cabling System warranty.

Who benefits from HCM Certification Training?

- Cabling Designers
- Cabling Installers and Technicians
- Contractors and Consultants
- Purchasers/System Specifiers
- End-Users



HCM Warranted System Performance

HCM Certified Cabling Systems are backed by a lifetime product performance and applications assurance warranty for channels and permanent links featuring cables from Hitachi Cable Manchester and HCM approved connecting hardware. All HCM's Lifetime Warranty elements are coordinated through HCM headquarters to ensure one point of contact for all aspects of warranty execution and disposition. HCM products are used across a multitude of industries and their performance plays a key role in the success of their users. Regardless of whether your infrastructure is used in data storage or in monitoring a wind turbine, you expect the very best performance from the products you've chosen. At HCM, all our products are built to provide the highest, most reliable performance possible. And, as a sign of our confidence in our products, we back them with the best warranty in the industry.



HCM Cabling Systems feature:

- Compliance to TIA and ISO Cabling Standards
- Lifetime Product Performance Warranty
- Lifetime Applications Support Warranty
- Open Architecture Connectivity Specification
- One Point-of-Contact for all Warranty Features



Supra 10GTM

Product Highlights

- RoHS compliant
- Tested from 1 to 500 Mhz
- UL Verified Category 6A
- Performance that exceeds TIA and ISO Category 6A requirements
- Patented non-concentric design increases Alien crosstalk performance
- Unique spline construction is installation and termination friendly

Packaging

- 1,000 foot (305m) reels

Options

- CMP-50 rated cables available
- Available in a 4-pair construction
- Low smoke zero halogen available; Part #30224-8

Applications

- Including:
 - 10GBASE-T 10 Gigabit Ethernet
 - 1000BASE-T Gigabit Ethernet
 - 1000 Mbps ATM
 - 622 Mbps ATM
 - 100BASE-T Ethernet
 - Broadband Video
 - POE
 - POE+

Supra 10GTM (Plenum)

(c(UL)us Listed Type CMP, CSA Type FT6)

HITACHI PART NO.	NO. OF PAIRS	CALCULATED CABLE O.D. in.	mm	CABLE WEIGHT lbs/1000ft	kg/305m
30218-8	4	.34	8.63	53.3	24.18

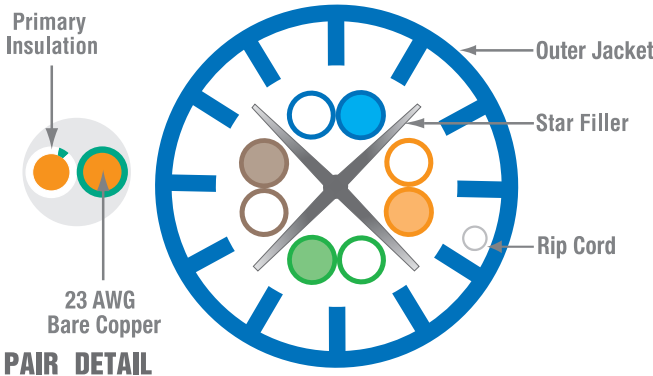
Supra 10GTM (Riser)

(c(UL)us Listed Type CMR, CSA Type FT4)

HITACHI PART NO.	NO. OF PAIRS	CALCULATED CABLE O.D. in.	mm	CABLE WEIGHT lbs/1000ft	kg/305m
30222-8	4	.34	8.63	42.0	19.05

To build a complete HCM part number, visit page 100.

Features



DIELECTRIC MATERIALS	RISER	PLENUM
Primary Insulation	Polyolefin	FEP
Overall Jacket	Flame-retardant thermoplastic	Low-smoke, flame-retardant thermoplastic
Star Filler	Flame-retardant thermoplastic	Plenum-rated polymer

Enhanced UTP Category 6A

Electrical Characteristics

Input Impedance	100 ± 15Ω (.772 to 500 MHz) 100 ± 15Ω (1.0 to 100 MHz) 100 ± 20Ω (100 to 250 MHz) 100 ± 25Ω (251 to 500 MHz)
Maximum conductor resistance	9.38 Ω/100 meters @ 20C
Maximum resistance unbalance	3%
Maximum capacitance unbalance	330 pF/100 meters
Maximum delay skew	45 ns/100 meters
Nominal velocity of propagation (NVP)	riser, 68% plenum, 71%



UTP Copper

Transmission Specifications

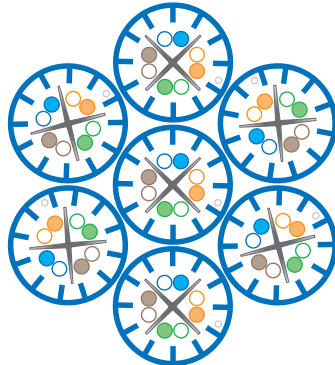
TIA/EIA-568-C.2 Category 6A Verified

ISO/IEC 11801, 2nd ed. Class EA Compliant

	Ins. Loss	NEXT	PS NEXT	ACR	PSACR	ACRF	PS ACRF	Return Loss
Freq. (MHz)	Max	Min	Min	Min	Min	Min	Min	Min
1	2.1	74.3	72.3	72.2	70.2	67.8	64.8	20.0
4	3.8	65.3	63.3	61.5	59.5	55.8	52.8	23.0
8	5.3	60.8	58.8	55.5	53.5	49.7	46.7	24.5
10	5.9	59.3	57.3	53.4	51.4	47.8	44.8	25.0
16	7.5	56.2	54.2	48.7	46.7	43.7	40.7	25.0
20	8.4	54.8	52.8	46.4	44.4	41.8	38.8	25.0
25	9.4	53.3	51.3	43.9	41.9	39.8	36.8	24.3
31.25	10.5	51.9	49.9	41.4	39.4	37.9	34.9	23.6
62.5	15.0	47.4	45.4	32.4	30.4	31.9	28.9	21.5
100	19.1	44.3	42.3	25.2	23.2	27.8	24.8	20.1
200	27.6	39.8	37.8	12.2	10.2	21.8	18.8	18.0
250	30.9	38.1	36.4	7.2	5.5	20.1	17.1	17.3
300	34.3	37.1	35.1	2.8	0.8	18.3	15.3	16.8
400	40.1	35.3	33.3	-4.8	-6.8	15.8	12.8	15.9
500	45.3	33.8	31.8	-11.5	-13.5	13.8	10.8	15.2

*Frequencies beyond the TIA and ISO requirements are for information only. **All values are dB/100 m.

Unique patented non-concentric design produces Alien Crosstalk that far exceeds the proposed standards.



Supra™ 660

Product Highlights

- RoHS compliant
- Tested from 1 to 660 MHz
- UL Verified Category 6

TIA PARAMETER	GUARANTEED HEADROOM
Insertion loss	+3%
NEXT loss	+9 dB
PSNEXT loss	+9 dB
ACRF	+8 dB
PSACRF	+8 dB

Packaging

- 1,000 foot (305m) reels

Options

- CMP-50 rated cables available
- Available in a 4-pair construction

Applications

- Including:
 - 10G BASE-T 10 Gigabit Ethernet (limited distance)
 - 1000 BASE-T Gigabit Ethernet
 - 1000 Mbps ATM
 - 622 Mbps ATM
 - 100 BASE-T Ethernet
 - Broadband Video
 - POE
 - POE+

Supra™ 660 (Plenum)

(cUL)us Listed Type CMP, CSA Type FT6)

HITACHI PART NO.	NO. OF PAIRS	CALCULATED CABLE O.D. in.	mm	CABLE WEIGHT lbs/1000ft	kg/305m
30016-8	4	.22	5.59	27.35	12.4

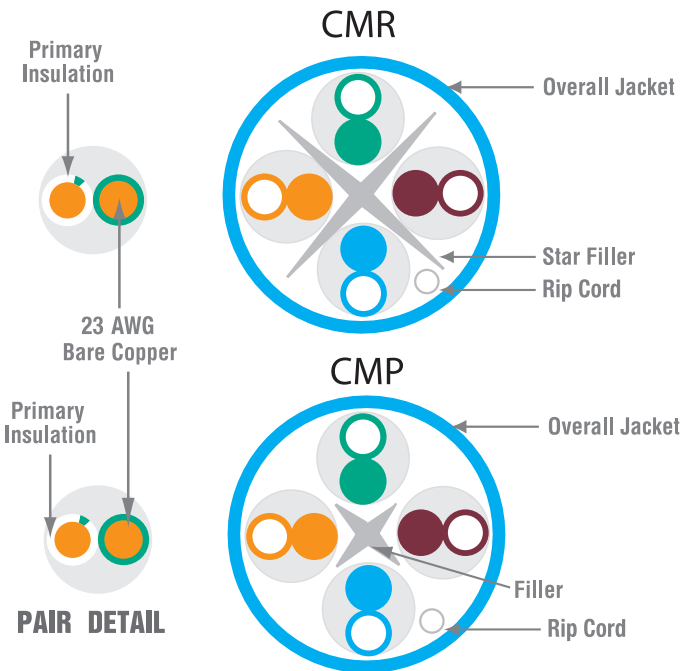
Supra™ 660 (Riser)

(cUL)us Listed Type CMR, CSA Type FT4)

HITACHI PART NO.	NO. OF PAIRS	CALCULATED CABLE O.D. in.	mm	CABLE WEIGHT lbs/1000ft	kg/305m
30022-8	4	.24	6.09	23.0	10.43

To build a complete HCM part number, visit page 100.

Features



DIELECTRIC MATERIALS	RISER	PLENUM
Primary Insulation	Polyolefin	FEP
Overall Jacket	Flame-retardant thermoplastic	Low-smoke, flame-retardant thermoplastic
Star Filler	Flame-retardant thermoplastic	Plenum-rated polymer

HCM reserves the right to revise any specifications.

Enhanced UTP Category 6

UTP Copper

Electrical Characteristics

Input Impedance	100 ± 15Ω (1.0 to 100 MHz) 100 ± 20Ω (100 to 250 MHz)
Maximum conductor resistance	9.38 Ω/100 meters @ 20C
Maximum resistance unbalance	5%
Maximum capacitance unbalance	330 pF/100 meters
Maximum delay skew	25 ns/100 meters
Nominal velocity of propagation (NVP)	riser, 68% plenum, 70%



Transmission Specifications

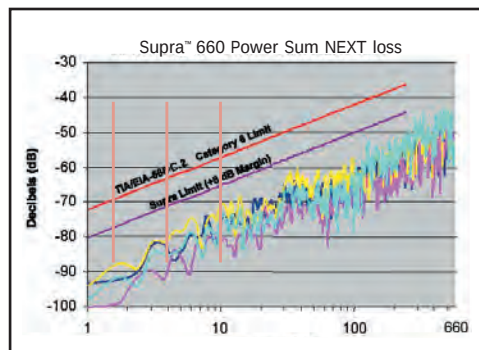
TIA/EIA-568-C.2 Category 6 Verified

ISO/IEC 11801, 2nd ed. Class E Compliant

Freq. (MHz)	Ins Loss		NEXT		PSNEXT		ACR		PSACR		ACRF		PSACRF		Return Loss	
	Std.	Max	Std.	Min	Std.	Min	Cal.	Min	Cal.	Min	Std.	Min	Std.	Min	Std.	Min
1	2.0	2.0	74.3	83.3	72.3	81.3	72.3	81.3	70.3	79.3	67.8	75.8	64.8	72.8	20.0	20.0
4	3.8	3.7	65.3	74.3	63.3	72.3	61.5	70.6	59.5	68.6	55.8	63.8	52.8	60.8	23.0	24.2
8	5.3	5.2	60.8	69.8	58.8	67.8	55.5	64.6	53.5	62.6	49.7	57.7	46.7	54.7	24.5	26.3
10	6.0	5.8	59.3	68.3	57.3	66.3	53.3	62.5	51.3	60.5	47.8	55.8	44.8	52.8	25.0	27.0
16	7.6	7.3	56.2	65.2	54.2	63.2	48.6	57.9	46.6	55.9	43.7	51.7	40.7	48.7	25.0	27.0
31.25	10.7	10.4	51.9	60.9	49.9	58.9	41.2	50.5	39.2	48.5	37.9	45.9	34.9	42.9	23.6	25.9
62.5	15.4	14.9	47.4	56.4	45.4	54.4	32.0	41.5	30.0	39.5	31.9	39.9	28.9	36.9	21.5	24.2
100	19.8	19.2	44.3	53.3	42.3	51.3	24.5	34.1	22.5	32.1	27.8	35.8	24.8	32.8	20.1	23.1
155	25.2	24.4	41.1	50.4	39.4	48.4	15.9	26.0	14.3	24.0	24.0	32.	21.0	29.0	18.8	22.0
200	29.0	28.1	39.8	48.8	37.8	46.8	10.8	20.7	8.8	18.7	21.8	29.8	18.8	26.8	18.0	21.4
250	32.8	31.9	38.3	47.3	36.3	45.3	5.5	15.4	3.5	13.4	19.8	27.8	16.8	24.8	17.3	20.9
300*	-	35.3	-	46.1	-	44.1	-	10.8	-	8.8	-	26.3	-	23.3	-	20.4
350*	-	38.6	-	45.1	-	43.1	-	6.5	-	4.5	-	24.9	-	21.9	-	20.1
400*	-	41.7	-	44.3	-	42.3	-	2.6	-	-	-	23.8	-	20.8	-	19.7
500*	-	47.5	-	42.8	-	40.8	-	-	-	-	-	21.8	-	18.8	-	19.2
555*	-	50.5	-	42.1	-	40.1	-	-	-	-	-	20.9	-	17.9	-	18.9
660*	-	55.9	-	41.0	-	39.0	-	-	-	-	-	19.4	-	16.4	-	18.5

*Frequencies beyond the TIA and ISO requirements are for information only. **All values are dB/100 m.

Hitachi Supra 660 cables offer +9 dB of NEXT loss and PSNEXT loss margin over Category 6 requirements.



Premium

Product Highlights

- RoHS Compliant
- Tested from 1 to 660 MHz
- UL Verified Category 6

TIA PARAMETER	GUARANTEED HEADROOM
NEXT loss	+5 dB
PSNEXT loss	+5 dB
ACRF	+6 dB
PSACRF	+6 dB

Packaging

- 1,000 foot (305m) reels
- 1,000 foot (305m) Reelex (featuring reverse sequential numbering)
- 1,000 foot (305m) Reel-in-a-Box

Options

- CMP-50 rated cables available
- Available in a 4-pair construction

Applications

- Including:
 - 10G BASE-T 10 Gigabit Ethernet (limited distance)
 - 1000 BASE-T Gigabit Ethernet
 - 1000 Mbps ATM
 - 622 Mbps ATM
 - 100 BASE-T Ethernet
 - Broadband Video
 - POE
 - POE+

Premium (Plenum)

(c(UL)us Listed Type CMP, CSA Type FT6)

HITACHI PART NO.	NO. OF PAIRS	CALCULATED CABLE O.D. in.	mm	CABLE WEIGHT lbs/1000ft	kg/305m
30183-8	4	.20	5.1	25.35	11.5

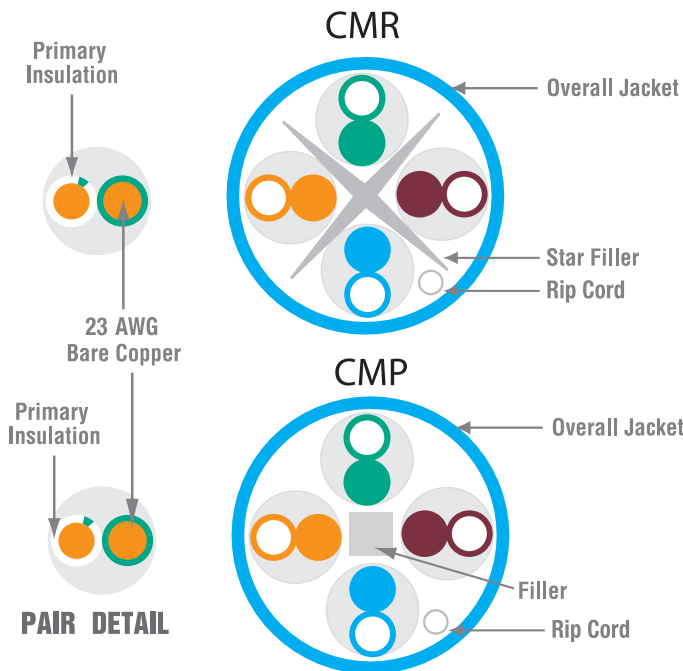
Premium (Riser)

(c(UL)us Listed Type CMR, CSA Type FT4)

HITACHI PART NO.	NO. OF PAIRS	CALCULATED CABLE O.D. in.	mm	CABLE WEIGHT lbs/1000ft	kg/305m
30212-8	4	.24	6.22	27.6	12.5

To build a complete HCM part number, visit page 100.

Features



DIELECTRIC MATERIALS	RISER	PLENUM
Primary Insulation	Polyolefin High Performance	Plenum-rated polymer
Overall Jacket	Flame-retardant thermoplastic	Low-smoke, flame-retardant thermoplastic
Star Filler	Flame-retardant thermoplastic	Plenum-rated polymer

Enhanced UTP Category 6

UTP Copper

Electrical Characteristics

Input Impedance	100 ± 15Ω (1.0 to 100 MHz) 100 ± 15Ω (100 to 250 MHz)
Maximum conductor resistance	9.38 Ω/100 meters @ 20C
Maximum resistance unbalance	5%
Maximum capacitance unbalance	330 pF/100 meters
Maximum delay skew	25 ns/100 meters
Nominal velocity of propagation (NVP)	riser, 68% plenum, 70%



Transmission Specifications

TIA/EIA-568-C.2 Category 6 Verified

ISO/IEC 11801, 2nd ed. Class E Compliant

Freq. (MHz)	Ins Loss		NEXT		PSNEXT		ACR		PSACR		ACRF		PSACRF		Return Loss	
	Std.	Max	Std.	Min	Std.	Min	Cal.	Min	Cal.	Min	Std.	Min	Std.	Min	Std.	Min
1	2.0	2.0	74.3	79.3	72.3	77.3	72.3	77.3	70.3	75.3	67.8	73.8	64.8	70.8	20.0	20.0
4	3.8	3.7	65.3	70.3	63.3	68.7	61.5	66.6	59.5	65.0	55.8	61.8	52.8	58.8	23.0	23.0
8	5.3	5.2	60.8	65.8	58.8	63.8	55.5	60.6	53.5	58.6	49.7	55.7	46.7	52.7	24.5	24.5
10	6.0	5.8	59.3	64.3	57.3	62.3	53.3	58.5	51.3	56.5	47.8	53.8	44.8	50.8	25.0	25.0
16	7.6	7.3	56.2	61.2	54.2	59.2	48.6	53.9	46.6	51.9	43.7	49.7	40.7	46.7	25.0	25.0
31.25	10.7	10.4	51.9	56.9	49.9	54.9	41.2	46.5	39.2	44.5	37.9	43.9	34.9	40.9	23.6	23.6
62.50	15.4	14.9	47.4	52.4	45.4	50.4	32.0	37.5	30.0	35.5	31.9	37.9	28.9	34.9	21.5	21.5
100	19.8	19.2	44.3	49.3	42.3	47.3	24.5	30.1	22.5	28.1	27.8	33.8	24.8	30.8	20.1	20.1
155	25.2	24.4	41.1	46.4	39.4	44.4	15.9	22.0	14.3	20.0	24.0	30.0	21.0	27.0	18.8	18.8
200	29.0	28.1	39.8	44.8	37.8	42.8	10.8	16.7	8.8	14.7	21.8	27.8	18.8	24.8	18.0	18.0
250	32.8	31.9	38.3	43.3	36.3	41.3	5.5	11.4	3.5	9.4	19.8	25.8	16.8	22.8	17.3	17.3
300*	-	35.3	-	42.1	-	40.1	-	6.8	-	4.8	-	24.3	-	21.3	-	16.8
350*	-	38.6	-	41.1	-	39.1	-	2.5	-	-	-	22.9	-	19.9	-	16.3
400*	-	41.7	-	40.3	-	38.3	-	-	-	-	-	21.8	-	18.8	-	15.9
500*	-	47.5	-	38.8	-	36.8	-	-	-	-	-	19.8	-	16.8	-	15.2
555*	-	50.5	-	38.1	-	36.1	-	-	-	-	-	18.9	-	15.9	-	14.9
660*	-	55.9	-	37.0	-	35.0	-	-	-	-	-	17.4	-	14.4	-	14.4

*Frequencies beyond the TIA and ISO requirements are for information only. **All values are dB/100 m.

Product Highlights

- RoHS compliant
- Tested from 1 to 555 MHz
- UL Verified Category 6

TIA PARAMETER	GUARANTEED HEADROOM
NEXT loss	+3 dB
PSNEXT loss	+3 dB
ACRF	+3 dB
PSACRF	+3 dB

Packaging

- 1,000 foot (305m) reels
- 1,000 foot (305m) Reelex (featuring reverse sequential numbering)
- 1,000 foot (305m) Reel-in-a-Box

Options

- CMP-50 rated cables available
- Available in a 4-pair construction

Applications

- Including:
 - 10G BASE-T 10 Gigabit Ethernet (limited distance)
 - 1000 BASE-T Gigabit Ethernet
 - 1000 Mbps ATM
 - 622 Mbps ATM
 - 100 BASE-T Ethernet
 - Broadband Video
 - POE
 - POE+

Plus™ (Plenum)

(c(UL)us Listed Type CMP, CSA Type FT6)

HITACHI PART NO.	NO. OF PAIRS	CALCULATED CABLE O.D. in.	mm	CABLE WEIGHT lbs/1000ft	kg/305m
30025-8	4	.20	5.1	25.35	11.5

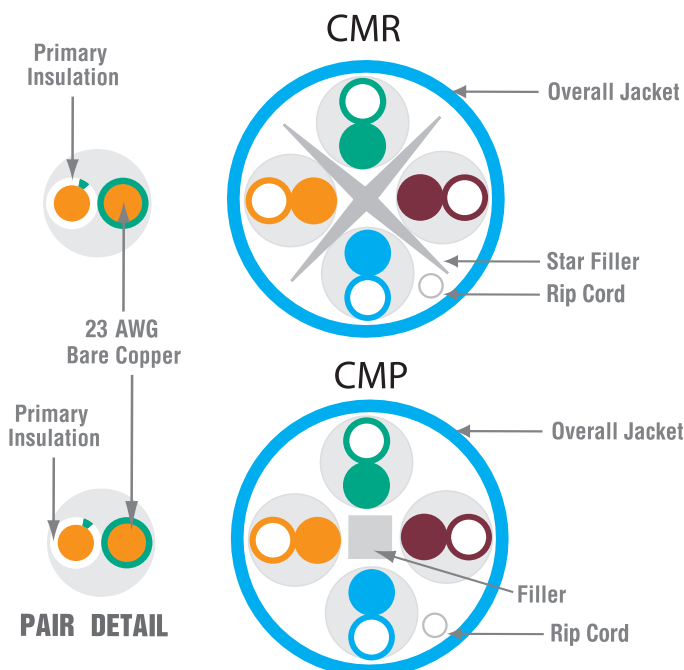
Plus™ (Riser)

(c(UL)us Listed Type CMR, CSA Type FT4)

HITACHI PART NO.	NO. OF PAIRS	CALCULATED CABLE O.D. mm	lbs/1000ft	CABLE WEIGHT kg/305m	
30024-8	4	.23	5.84	23.0	10.5

To build a complete HCM part number, visit page 100.

Features



DIELECTRIC MATERIALS	RISER	PLENUM
Primary Insulation	Polyolefin High Performance	FEP
Overall Jacket	Flame-retardant thermoplastic	Low-smoke, flame-retardant thermoplastic
Star Filler	Flame-retardant thermoplastic	Plenum-rated polymer

Category 6^{UTP}

Electrical Characteristics

Input Impedance	100 ± 15Ω (1.0 to 100 MHz) 100 ± 15Ω (100 to 250 MHz)
Maximum conductor resistance	9.38 Ω/100 meters @ 20C
Maximum resistance unbalance	5%
Maximum capacitance unbalance	330 pF/100 meters
Maximum delay skew	45 ns/100 meters
Nominal velocity of propagation (NVP)	riser, 68% plenum, 70%



UTP Copper

Transmission Specifications

TIA/EIA-568-C.2 Category 6 Verified

ISO/IEC 11801, 2nd ed. Class E Compliant

Freq. (MHz)	Ins Loss		NEXT		PSNEXT		ACR		PSACR		ACRF		PSACRF		Return Loss	
	Std.	Max	Std.	Min	Std.	Min	Cal.	Min	Cal.	Min	Std.	Min	Std.	Min	Std.	Min
1	2.0	2.0	74.3	77.3	72.3	75.3	72.3	75.3	70.3	73.3	67.8	70.8	64.8	67.8	20.0	20.0
4	3.8	3.8	65.3	68.3	63.3	66.3	61.5	64.5	59.5	62.5	55.8	58.8	52.8	55.8	23.0	23.0
8	5.3	5.3	60.8	63.8	58.8	61.8	55.5	58.5	53.5	56.5	49.7	52.7	46.7	49.7	24.5	24.5
10	6.0	6.0	59.3	62.3	57.3	60.3	53.3	56.3	51.3	54.3	47.8	50.8	44.8	47.8	25.0	25.0
16	7.6	7.6	56.2	59.2	54.2	57.2	48.6	51.6	46.6	49.6	43.7	46.7	40.7	43.7	25.0	25.0
31.25	10.7	10.7	51.9	54.9	49.9	52.9	41.2	44.2	39.2	42.2	37.9	40.9	34.9	37.9	23.6	23.6
62.5	15.4	15.4	47.4	50.4	45.4	48.4	32.0	35.0	30.0	33.0	31.9	34.9	28.9	31.9	21.5	21.5
100	19.8	19.8	44.3	47.3	42.3	45.3	24.5	27.5	22.5	25.5	27.8	30.8	24.8	27.8	20.1	20.1
200	29.0	29.0	39.8	42.8	37.8	40.8	10.8	13.8	8.8	11.8	21.8	24.8	18.8	21.8	18.0	18.0
250	32.8	32.8	38.3	41.3	36.3	39.3	5.5	8.5	3.5	6.5	19.8	22.8	16.8	19.8	17.3	17.3
300*	-	36.4	-	40.1	-	38.1	-	3.7	-	-	-	21.3	-	18.3	-	16.8
350*	-	39.8	-	39.1	-	37.1	-	-	-	-	-	19.9	-	16.9	-	16.3
555*	-	52.0	-	36.1	-	34.1	-	-	-	-	-	15.9	-	12.9	-	14.9

*Frequencies beyond the TIA and ISO requirements are for information only. **All values are dB/100 m.

Product Highlights

- RoHS compliant
- Tested from 1 to 555 MHz
- UL Verified Category 6
- No internal pair separator
- Small outside diameter permits more cables per conduit than typical Category 6 cable
- Standard Reelex package made with 100% post consumer materials.

Packaging

- 1,000 foot (305m) reels
- 1,000 foot (305m) Reelex (featuring reverse sequential numbering)
- 1,000 foot (305m) Reel-in-a-Box

Applications

- Including:
 - 10G BASE-T 10 Gigabit Ethernet (limited distance)
 - 1000 BASE-T Gigabit Ethernet
 - 1000 Mbps ATM
 - 622 Mbps ATM
 - 100 BASE-T Ethernet
 - Broadband Video
 - POE
 - POE+



Standard Reelex box shown above.

ECO™ (Plenum)

(c(UL)us Listed Type CMP, CSA Type FT6)

HITACHI PART NO.	NO. OF PAIRS	CALCULATED CABLE O.D. in.	mm	CABLE WEIGHT lbs/1000ft	kg/305m
30237-8	4	.19	4.87	26.0	11.8

ECO™ (Riser)

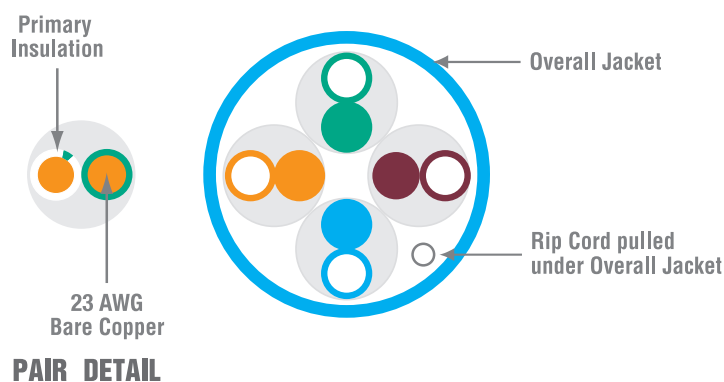
(c(UL)us Listed Type CMR, CSA Type FT4)

HITACHI PART NO.	NO. OF PAIRS	CALCULATED CABLE O.D. in.	mm	CABLE WEIGHT lbs/1000ft	kg/305m
30238-8	4	.21	5.48	23.12	10.5

To build a complete HCM part number, visit page 100.

Note: ECO Riser will be available August, 2011

Features



DIELECTRIC MATERIALS	RISER	PLENUM
Primary Insulation	Polyolefin High Performance	FEP
Overall Jacket	Flame-retardant thermoplastic	Low-smoke, flame-retardant thermoplastic
Star Filler	Flame-retardant thermoplastic	Plenum-rated polymer

HCM reserves the right to revise any specifications.

Category 6^{UTP}

Electrical Characteristics

Input Impedance	100 ± 15Ω (1.0 to 100 MHz) 100 ± 15Ω (100 to 250 MHz)
Maximum resistance unbalance	5%
Maximum capacitance unbalance	330 pF/100 meters
Maximum delay skew	45 ns/100 meters
Nominal velocity of propagation (NVP)	riser, 68% plenum, 70%



UTP Copper

Transmission Specifications

TIA/EIA 568-C.2 Category 6 Verified

ISO/IEC 11801, 2nd ed. Class E Compliant

Freq. (MHz)	Ins Loss		NEXT		PSNEXT		ACR		PSACR		ACRF		PSACRF		Return Loss	
	Std.	Max	Std.	Min	Std.	Min	Std.	Min	Std.	Min	Std.	Min	Std.	Min	Std.	Min
1	2.0	2.0	74.3	74.3	72.3	72.3	72.3	72.3	70.3	70.3	67.8	67.8	64.8	64.8	20.0	20.0
4	3.8	3.8	65.3	65.3	63.3	63.3	61.5	61.5	59.5	59.5	55.8	55.8	52.8	52.8	23.0	23.0
8	5.3	5.3	60.8	60.8	58.8	58.8	55.5	55.5	53.5	53.5	49.7	49.7	46.7	46.7	24.5	24.5
10	6.0	6.0	59.3	59.3	57.3	57.3	53.3	53.3	51.3	51.3	47.8	47.8	44.8	44.8	25.0	25.0
16	7.6	7.6	56.2	56.2	54.2	54.2	48.6	48.6	46.6	46.6	43.7	43.7	40.7	40.7	25.0	25.0
31.25	10.7	10.7	51.9	51.9	49.9	49.9	41.2	41.2	39.2	39.2	37.9	37.9	34.9	34.9	23.6	23.6
62.5	15.4	15.4	47.4	47.4	45.4	45.4	32.0	32.0	30.0	30.0	31.9	31.9	28.9	28.9	21.5	21.5
100	19.8	19.8	44.3	44.3	42.3	42.3	24.5	24.5	22.5	22.5	27.8	27.8	24.8	24.8	20.1	20.1
200	29.0	29.0	39.8	39.8	37.8	37.8	10.8	10.8	8.8	8.8	21.8	21.8	18.8	18.8	18.0	18.0
250	32.8	32.8	38.3	38.3	36.3	36.3	5.5	5.5	3.5	3.5	19.8	19.8	16.8	16.8	17.3	17.3
300*	-	36.4	-	37.1	-	35.1	-	-	-	-	18.3	-	15.3	-	16.8	-
350*	-	39.8	-	36.1	-	34.1	-	-	-	-	16.9	-	13.9	-	16.3	-
400*	-	43.0	-	35.3	-	33.3	-	-	-	-	15.8	-	12.8	-	15.9	-
500*	-	48.9	-	33.8	-	31.8	-	-	-	-	13.8	-	10.8	-	15.2	-
555*	-	52.0	-	33.1	-	31.1	-	-	-	-	12.9	-	9.9	-	14.9	-

*Frequencies beyond the TIA and ISO requirements are for information only. All values are dB/100m

Cat 6 Hybrid

Product Highlights

- RoHS compliant
- Tested from 1 to 250 MHz
- The industry's first Category 6 hybrid cable verified for conformance by an independent test lab.
- Component compliant to TIA and ISO Category 6 hybrid cable requirements
- Power sum compliance ensures minimum signal corruption due to alien cross-talk

Packaging

- 1,000 foot (305m) reels

Options

- Available in 2, 3, 4 and 6 leg constructions
- Custom internal jacket colors available



2 x 4-pair



3 x 4-pair



4 x 4-pair



6 x 4-pair

Diagram scale approx. 2:1

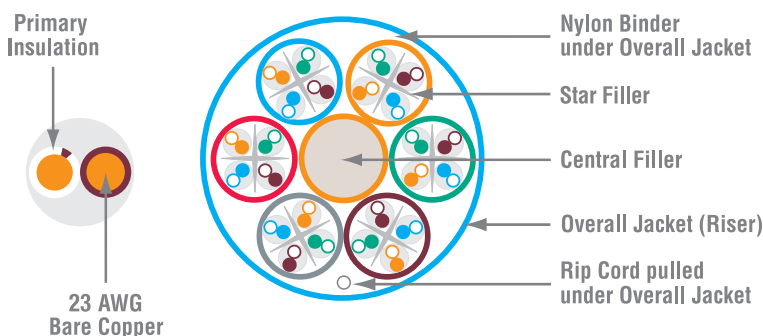
Category 6 GoldLAN™ Hybrid (Riser)

(c(UL)us Listed Type CMR, CSA Type FT4)

HITACHI PART NO.	NO. OF LEGS in.	CALCULATED CABLE O.D. mm	lbs/1000ft	CABLE WEIGHT kg/305m	
30132-16	2 legs x 4-pair	.29 x .54	7.5 x 13.7	72	33
30132-24	3 legs x 4-pair	.58	14.7	104	47
30132-32	4 legs x 4-pair	.64	16.3	132	60
30132-48	6 legs x 4-pair	.79	20.1	204	93

Category 6 plenum hybrid constructions available skip-wrapped only.

Features



PAIR DETAIL

DIELECTRIC MATERIALS	RISER
Primary Insulation	Polyolefin
Star Filler	Flame-retardant thermoplastic
Overall Jacket	Flame-retardant thermoplastic
Central Filler	Flame-retardant thermoplastic

HCM reserves the right to revise any specifications.

GoldLAN™ Hybrid Category 6

UTP
Copper

Electrical Characteristics

Input Impedance	100 ± 15Ω (1.0 to 100 MHz) 100 ± 15Ω (100 to 250 MHz)
Maximum resistance unbalance	5%
Maximum capacitance unbalance	330 pF/100 meters
Maximum delay skew	45 ns/100 meters
Nominal velocity of propagation (NVP)	68%, riser

Transmission Specifications

TIA/EIA-568-C.2 Category 6 Verified

ISO/IEC 11801, 2nd ed. Class E Compliant

Freq. (MHz)	Ins. loss	NEXT Loss	PSNEXT	ACR	PSACR	ACRF	PSACRF	Return loss
1	2.0	74.3	72.3	72.3	70.3	67.8	64.8	20.0
4	3.8	65.3	63.3	61.5	59.5	55.8	52.8	23.0
8	5.3	60.8	58.8	55.5	53.5	49.7	46.7	24.5
10	6.0	59.3	57.3	53.3	51.3	47.8	44.8	25.0
16	7.6	56.2	54.2	48.6	46.6	43.7	40.7	25.0
31.25	10.7	51.9	49.9	41.2	39.2	37.9	34.9	23.6
62.5	15.4	47.4	45.4	32.0	30.0	31.9	28.9	21.5
100	19.8	44.3	42.3	24.5	22.5	27.8	24.8	20.1
200	29.0	39.8	37.8	10.8	8.8	21.8	18.8	18.0
250	32.8	38.3	36.3	5.5	3.5	19.8	16.8	17.3

All values are dB/100m



Product Highlights

- RoHS compliant
- Tested from 1 to 400 MHz
- UL Verified Category 5e

TIA PARAMETER	GUARANTEED HEADROOM
NEXT loss	+6 dB
PSNEXT loss	+6 dB
ELFEXT	+6 dB
PSELFEXT	+6 dB
Return loss	N/A

Packaging

- 1,000 foot (305m) reels
- 1,000 foot (305m) Reelex (featuring reverse sequential numbering)
- 1,000 foot (305m) Reel-in-a-Box

Options

- CMP-50 rated cables available
- Available in a 4-pair construction

Applications

- Including:
 - 1000 BASE-T Gigabit Ethernet
 - 1000 Mbps ATM
 - 622 Mbps ATM
 - 100 BASE-T Ethernet
 - 10 BASE-T
 - Broadband Video
 - POE

350TM (Plenum)

(c(UL)us Listed Type CMP, CSA Type FT6)

HITACHI PART NO.	NO. OF PAIRS	CALCULATED CABLE O.D. in.	mm	CABLE WEIGHT lbs/1000ft	kg/305m
38891-8	4	.18	4.67	21.0	9.5

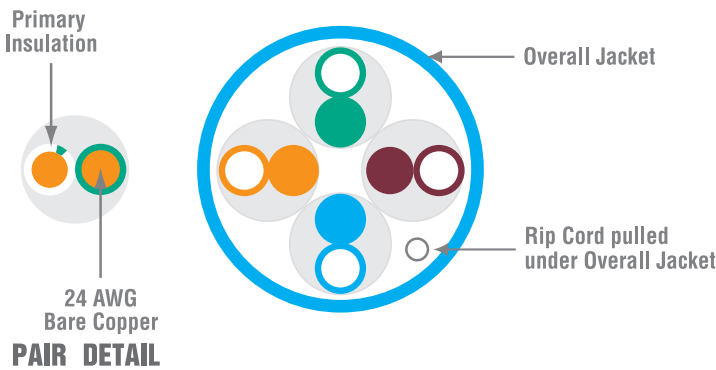
350TM (Riser)

(c(UL)us Listed Type CMR, CSA Type FT4)

HITACHI PART NO.	NO. OF PAIRS in.	CALCULATED CABLE O.D. mm	lbs/1000ft	CABLE WEIGHT kg/305m	
38893-8	4	.19	4.90	22.0	10.0

To build a complete HCM part number, visit page 100.

Features



DIELECTRIC MATERIALS	RISER	PLENUM
Primary Insulation	Polyolefin	FEP
Overall Jacket	Flame-retardant thermoplastic	Low-smoke, flame-retardant thermoplastic

HCM reserves the right to revise any specifications.

Enhanced UTP Category 5e

UTP Copper

Electrical Characteristics

Input Impedance	100 ± 15Ω (0.772 - 100 MHz)
Maximum conductor resistance	9.38 Ω/100 meters @ 20C
Maximum resistance unbalance	5%
Maximum capacitance unbalance	330 pF/100 meters
Nominal velocity of propagation (NVP)	riser, 68% plenum, 70%
Maximum delay skew	25 ns/100 meters

Transmission Specifications

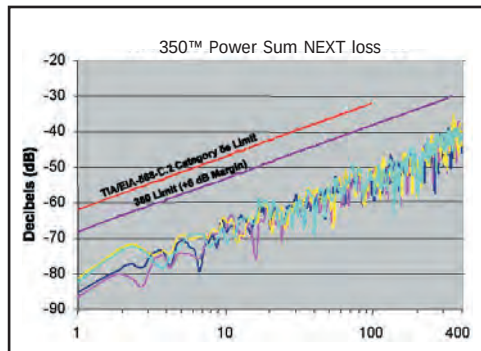
TIA/EIA-568-C.2 Category 5e Verified

ISO/IEC 11801, 2nd ed. Class D Compliant

Freq (MHz)	Ins Loss		NEXT		PSNEXT		ACR		PSACR		ACRF		PSACRF		Return Loss	
	Std.	Max	Std.	Min	Std.	Min	Cal.	Min	Cal.	Min	Std.	Min	Std.	Min	Std.	Min
1	2.0	2.0	65.3	71.3	62.3	68.3	62.9	69.3	59.9	66.3	63.8	69.8	60.8	66.8	20.0	20.0
4	4.1	4.1	56.3	62.3	53.3	59.3	51.4	58.2	48.4	55.2	51.8	57.8	48.8	54.8	23.0	23.0
8	5.8	5.8	51.8	57.8	48.8	54.8	44.9	52.0	41.9	49.0	45.7	51.7	42.7	48.7	24.5	24.5
10	6.5	6.5	50.3	56.3	47.03	53.3	42.5	49.8	39.5	46.8	43.8	49.8	40.8	46.8	25.0	25.0
16	8.2	8.2	47.2	53.2	44.2	50.2	37.3	45.0	34.3	42.0	39.7	45.7	36.7	42.7	25.0	25.0
31.25	11.7	11.7	45.8	48.9	39.9	45.9	28.8	37.2	25.8	34.2	33.9	39.9	30.9	36.9	23.6	23.6
62.5	17.0	17.0	44.3	44.4	35.4	41.4	18.0	27.4	15.0	24.4	27.9	33.9	24.9	30.9	21.5	21.5
100	22.0	22.0	35.3	41.3	32.3	38.3	8.9	19.3	5.9	16.3	23.8	29.8	20.8	26.8	20.1	20.1
155*	-	28.1	-	38.5	-	35.5	-	10.4	-	7.4	-	25.9	-	22.9	-	18.8
200*	-	32.4	-	36.8	-	33.8	-	4.4	-	1.4	-	23.7	-	20.7	-	18.0
250*	-	36.9	-	35.3	-	32.3	-	-	-	-	-	21.8	-	18.8	-	17.3
350*	-	44.9	-	33.1	-	30.1	-	-	-	-	-	18.9	-	15.9	-	16.3
400*	-	48.5	-	32.3	-	29.3	-	-	-	-	-	17.8	-	14.8	-	15.9

*Frequencies beyond the TIA and ISO requirements are for information only. All values are dB/100 m.

Hitachi 350 cables offer +6 dB of NEXT loss and PSNEXT loss margin over Category 5e requirements.



Cat 5e

Product Highlights

- RoHS compliant
- Tested from 1 to 400 MHz
- UL Verified Category 5e

Packaging

- 1,000 foot (305m) reels
- 1,000 foot (305m) Reelex (featuring reverse sequential numbering)
- 1,000 foot (305m) Reel-in-a-Box

Options

- CMP-50 rated cables available
- Available in a 4-pair construction

Applications

- Including:
 - 1000 BASE-T Gigabit Ethernet
 - 1000 Mbps ATM
 - 622 Mbps ATM
 - 100 BASE-T Ethernet
 - 10 BASE-T
 - Broadband Video
 - POE

Category 5e (Plenum)

(c(UL)us Listed Type CMP, CSA Type FT6)

HITACHI PART NO.	NO. OF PAIRS	CALCULATED CABLE O.D. in.	mm	CABLE WEIGHT lbs/1000ft	kg/305m
39419-8	4	.18	4.57	21.0	9.5

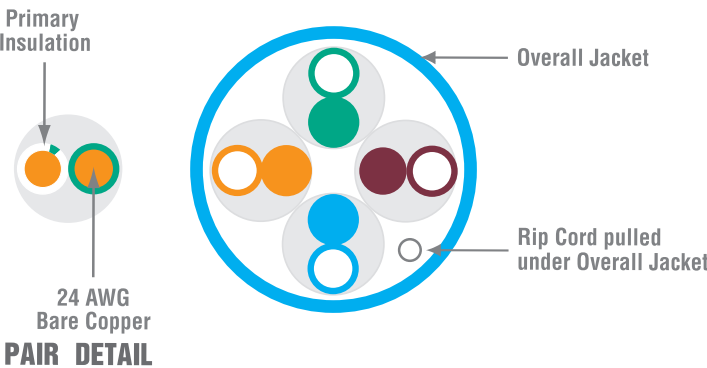
Category 5e (Riser)

(c(UL)us Listed Type CMR, CSA Type FT4)

HITACHI PART NO.	NO. OF PAIRS in.	CALCULATED CABLE O.D. mm	lbs/1000ft	CABLE WEIGHT kg/305m	
38696-8	4	.17	4.55	20.0	9.1

To build a complete HCM part number, visit page 100.

Features



DIELECTRIC MATERIALS	RISER	PLENUM
Primary Insulation	Polyolefin	FEP
Overall Jacket	Flame-retardant thermoplastic	Low-smoke, flame-retardant thermoplastic

HCM reserves the right to revise any specifications.

Category 5e^{UTP}

Electrical Characteristics

Input impedance	100 ± 15Ω (0.772 to 100 MHz)
Maximum resistance unbalance	5%
Maximum capacitance unbalance	330 pF/100 meters
Maximum delay skew	45 ns/100 meters
Nominal velocity of propagation (NVP)	68%, riser 70%, plenum

Transmission Specifications

TIA/EIA-568-C.2 Category 5e Verified

ISO/IEC 11801, 2nd ed. Class D Compliant

Freq. (MHz)	Ins Loss		NEXT		PSNEXT		ACR		PSACR		ACRF		PSACRF		Return Loss	
	Std.	Max	Std.	Min	Std.	Min	Cal.	Min	Cal.	Min	Std.	Min	Std.	Min	Std.	Min
1	2.0	2.0	65.3	65.3	62.3	62.3	62.9	63.3	59.9	60.3	63.8	63.8	60.8	60.8	20.0	20.0
4	4.1	4.1	56.3	56.3	53.3	53.3	51.4	52.2	48.4	49.2	51.8	51.8	48.8	48.8	23.0	23.0
8	5.8	5.8	51.8	51.8	48.8	48.8	44.9	46.0	41.9	43.0	45.7	45.7	42.7	42.7	24.5	24.5
10	6.5	6.5	50.3	50.3	47.03	47.3	42.5	43.8	39.5	40.8	43.8	43.8	40.8	40.8	25.0	25.0
16	8.2	8.2	47.2	47.2	44.2	44.2	37.3	39.0	34.3	36.0	39.7	39.7	36.7	36.7	25.0	25.0
31.25	11.7	11.7	45.8	42.9	39.9	39.9	28.8	31.2	25.8	28.2	33.9	33.9	30.9	30.9	23.6	23.6
62.5	17.0	17.0	44.3	38.4	35.4	35.4	18.0	21.4	15.0	18.4	27.9	27.9	24.9	24.9	21.5	21.5
100	22.0	22.0	35.3	35.3	32.3	32.3	8.9	13.3	5.9	10.3	23.8	23.8	20.8	20.8	20.1	20.1
155*	-	28.1	-	32.4	-	29.4	-	4.3	-	1.3	-	20.0	-	17.0	-	18.8
200*	-	32.4	-	30.8	-	27.8	-	-	-	-	-	17.8	-	14.8	-	18.0
250*	-	36.9	-	29.3	-	26.3	-	-	-	-	-	15.8	-	12.8	-	17.3
400*	-	48.5	-	26.3	-	23.3	-	-	-	-	-	11.8	-	8.8	-	15.9

*Frequencies beyond the TIA and ISO requirements are for information only. All values are dB/100m.

UTP Copper



Cat 5e Hybrid

Product Highlights

- RoHS compliant
- Tested from 1 to 100 MHz
- Component compliant to TIA Category 5e cable requirements
- Power sum compliance ensures minimum signal corruption due to alien cross-talk

Packaging

- 1,000 foot (305m) reels

Options

- Available in 2, 3, 4 and 6 leg constructions
- Custom internal jacket colors available

Category 5e GoldLAN™ Hybrid (Riser)

(c(UL)us Listed Type CMR, CSA Type FT4)

HITACHI PART NO.	NO. OF LEGS in.	CALCULATED CABLE O.D. mm	lbs/1000ft	CABLE WEIGHT kg/305m	
38886-16	2 legs x 4-pair	.21 x .43	5.5 x 10.9	58	26
38886-24	3 legs x 4-pair	.46	11.7	84	38
38886-32	4 legs x 4-pair	.51	13.0	107	49
38886-48	6 legs x 4-pair	.62	15.7	168	76

Category 5e plenum hybrid constructions available skip-wrapped only.

Features

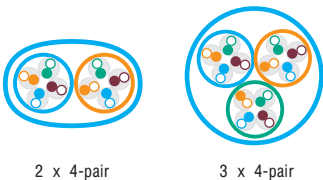
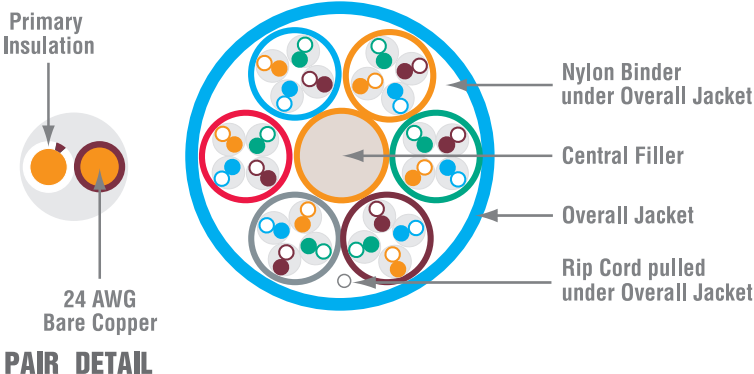


Diagram scale approx. 3:1



DIELECTRIC MATERIALS	RISER
Primary Insulation	Polyolefin
Overall Jacket	Flame-retardant thermoplastic
Central Filler	Flame-retardant thermoplastic

HCM reserves the right to revise any specifications.

GoldLAN™ Hybrid

Category 5e

UTP Copper

Electrical Characteristics

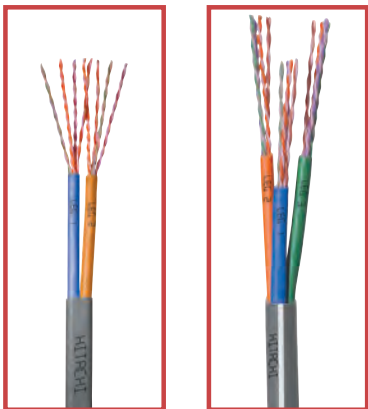
Input impedance	100 ± 15Ω (0.772 to 100 MHz)
Maximum resistance unbalance	5%
Maximum capacitance unbalance	330 pF/100 meters
Maximum delay skew	45 ns/100 meters
Nominal velocity of propagation (NVP)	68%, riser 70%, plenum

Transmission Specifications

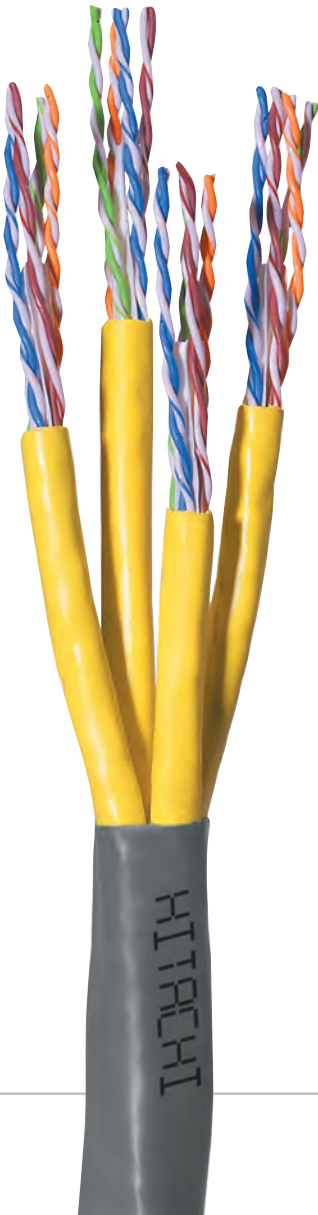
TIA/EIA-568-C.2 Category 5e Verified
ISO/IEC 11801, 2nd ed. Class D Compliant

Freq. (MHz)	Ins. loss	NEXT Loss	PSNEXT Loss	ACR	PSACR	ACRF	PSACRF	Return loss
1	2.0	65.3	62.3	63.3	60.3	63.8	60.8	20.0
4	4.1	56.3	53.3	52.2	49.2	51.8	48.8	23.0
8	5.8	51.8	48.8	46.0	43.0	45.7	42.7	24.5
10	6.5	50.3	47.3	43.8	40.8	43.8	40.8	25.0
16	8.2	47.2	44.2	39.0	36.0	39.7	36.7	25.0
31.25	11.7	42.9	39.9	31.2	28.2	33.9	30.9	23.6
62.5	17.0	38.4	35.4	21.4	18.4	27.9	24.9	21.5
100	22.0	35.3	32.3	13.3	10.3	23.8	20.8	20.1

All values are dB/100m.



Custom configurations available



Cat 5e Multi-Pair

Product Highlights

- RoHS compliant
- Tested from 1 to 100 MHz
- UL Verified Category 5e
- Power sum compliance ensures minimum signal corruption due to alien cross-talk

Packaging

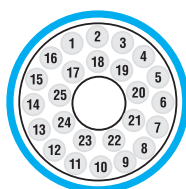
- 1,000 foot (305m) reels

Options

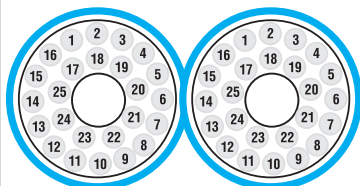
- Consult factory for 50-pair design construction and availability

Applications

- Including:
 - 1000 BASE-T Gigabit Ethernet
 - 1000 Mbps ATM
 - 622 Mbps ATM
 - 100 BASE-T Ethernet
 - 10 BASE-T
 - Broadband Video



25-pair



50-pair

Diagram scale approx. 3:1

Category 5e Power Sum Multi-pair (Plenum)

(c(UL)us Listed Type CMP, CSA Type FT6)

HITACHI PART NO.	NO. OF PAIRS	CALCULATED CABLE O.D. in.	mm	CABLE WEIGHT lbs/1000ft	kg/305m
30203-50	25	.48	12.2	141.0	64.0

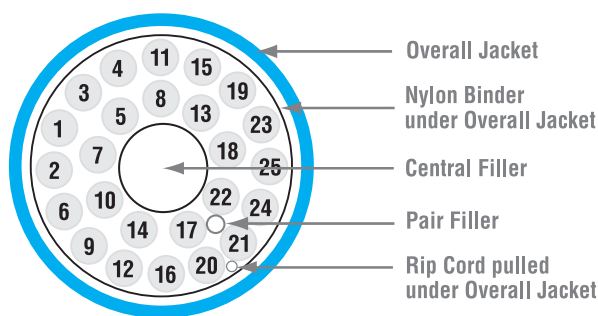
Category 5e Power Sum Multi-pair (Riser)

(c(UL)us Listed Type CMR, CSA Type FT4)

HITACHI PART NO.	NO. OF PAIRS	CALCULATED CABLE O.D. in.	mm	CABLE WEIGHT lbs/1000ft	kg/305m
30093-50	25	.49	12.4	130.0	59.1
30172-100	50	.49 x 1.03	12.4 x 26.1	248.0	112.7

Features

Primary
Insulation



DIELECTRIC
MATERIALS

Primary Insulation

Overall Jacket

Central Filler

Pair Filler

RISER

Polyolefin

Flame-retardant thermoplastic

Flame-retardant thermoplastic

Flame-retardant thermoplastic

PLENUM

FEP

FEP

Plenum-rated polymer

Plenum-rated polymer

HCM reserves the right to revise any specifications.

Power Sum Multi-pair Category 5e

UTP
Copper

Electrical Characteristics

Input impedance	$100 \pm 15\Omega$ (0.772 to 100 MHz)
Maximum resistance unbalance	5%
Maximum capacitance unbalance	330 pF/100 meters
Maximum delay skew	45 ns/100 meters
Nominal velocity of propagation (NVP)	68%, riser 70%, plenum

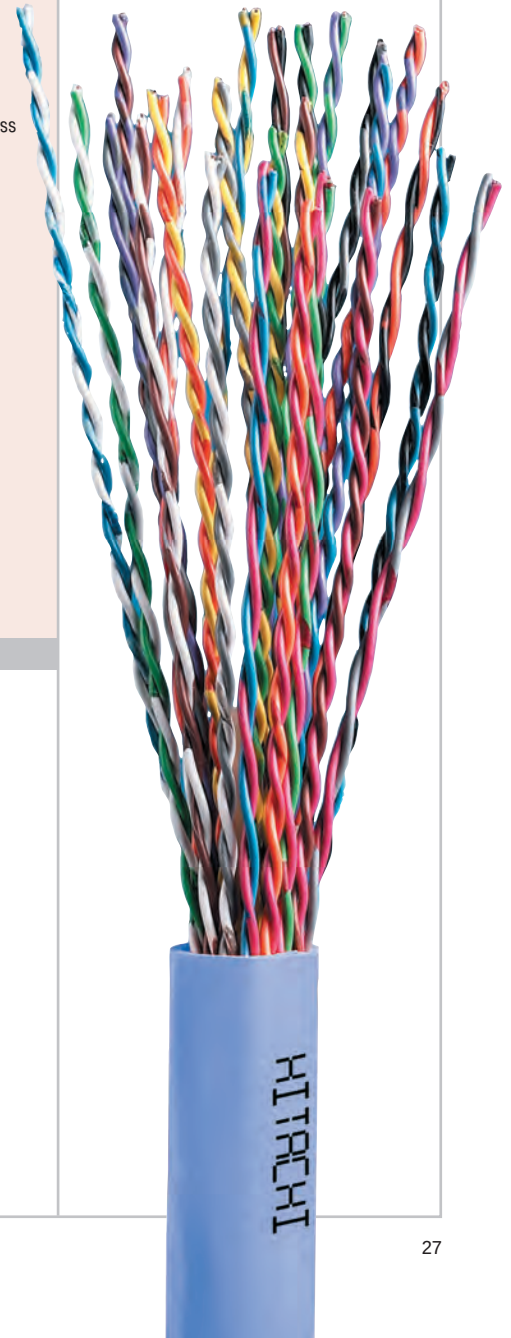
Transmission Specifications

TIA/EIA-568-C.2 Category 5e Verified

ISO/IEC 11801, 2nd ed. Class D Compliant

Freq. (MHz)	Ins. loss (dB/100 m)	NEXT Loss	PSNEXT Loss	ACR	PSACR	ACRF	PSACRF	Return loss
1	2.0	65.3	62.3	63.3	60.3	63.8	60.8	20.0
4	4.1	56.3	53.3	52.2	49.2	51.8	48.8	23.0
8	5.8	51.8	48.8	46.0	43.0	45.7	42.7	24.5
10	6.5	50.3	47.3	43.8	40.8	43.8	40.8	25.0
16	8.2	47.2	44.2	39.0	36.0	39.7	36.7	25.0
31.25	11.7	42.9	39.9	31.2	28.2	33.9	30.9	23.6
62.5	17.0	38.4	35.4	21.4	18.4	27.9	24.9	21.5
100	22.0	35.3	32.3	13.3	10.3	23.8	20.8	20.1

All values are dB/100m.



Cat 3

Product Highlights

- RoHS compliant
- Tested from 1 to 16 MHz
- Component compliant to TIA Category 3 cable requirements

Packaging

- 1,000 foot (305m) reels
- 1,000 foot (305m) Reelex (featuring reverse sequential numbering)
- 1,000 foot (305m) Reel-in-a-Box
- Available in a 4-pair construction

Applications

- Including:
 - 10 BASE-T
 - 4/16 Mbps Token Ring
 - 25.6 Mbps ATM

Category 3 (Plenum)

(c(UL)us Listed Type CMP, CSA Type FT6)

HITACHI PART NO.	NO. OF PAIRS	CALCULATED CABLE O.D.		CABLE WEIGHT	
		in.	mm	lbs/1000ft	kg/305m
38718-8	4	.20	5.1	17.0	7.7

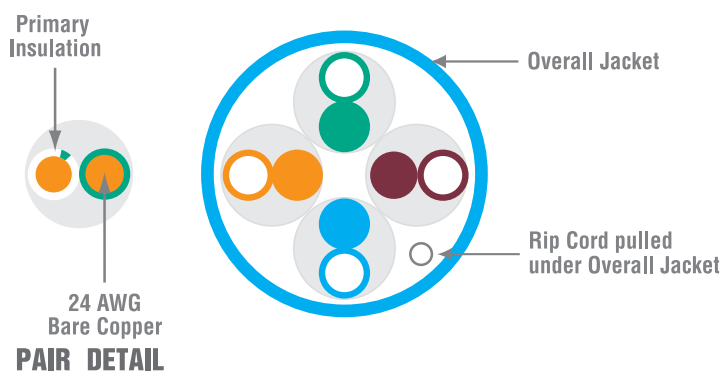
Category 3 (Riser)

(c(UL)us Listed Type CMR, CSA Type FT4)

HITACHI PART NO.	NO. OF PAIRS	CALCULATED CABLE O.D.		CABLE WEIGHT	
		in.	mm	lbs/1000ft	kg/305m
30111-8	4	.18	4.5	17.0	7.7

To build a complete HCM part number, visit page 100.

Features



DIELECTRIC MATERIALS	RISER	PLENUM
Primary Insulation	PVC	Low-smoke, flame-retardant thermoplastic
Overall Jacket	Flame-retardant thermoplastic	Low-smoke, flame-retardant thermoplastic

HCM reserves the right to revise any specifications.

Category 3^{UTP}

UTP Copper

Electrical Characteristics

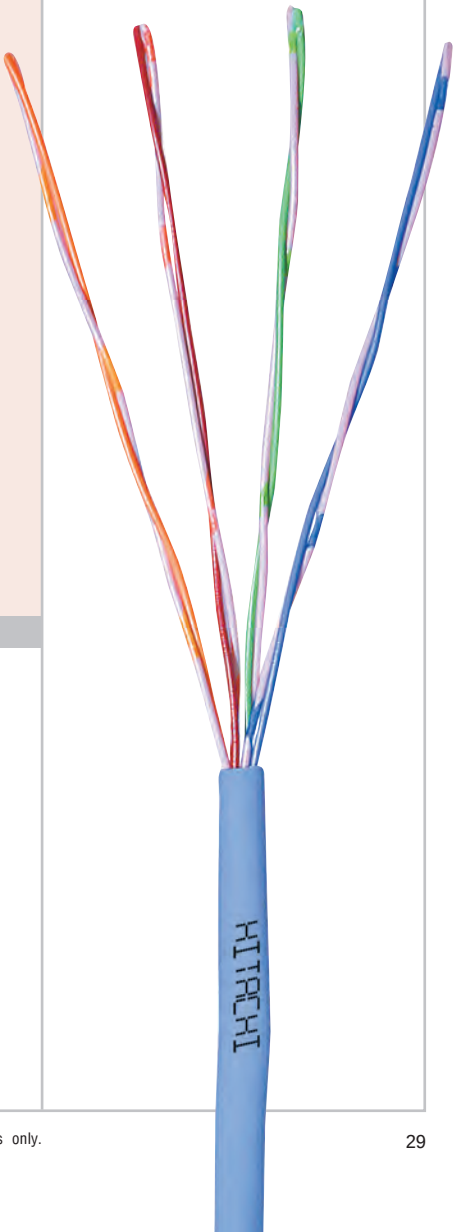
Characteristic impedance	100 ± 15Ω (0.772 to 16 MHz)
Maximum resistance unbalance	5%
Maximum capacitance unbalance	330 pF/100 meters
Maximum delay skew	45 ns/100 meters

Transmission Specifications

TIA/EIA-568-C.2 Category 3 Compliant

FREQ. (MHz)	INS. LOSS	NEXT LOSS	ACR	STRUCTURAL RETURN LOSS
1	2.6	41.3	38.7	12.0
4	5.6	32.3	26.7	12.0
8	8.5	27.8	19.3	12.0
10	9.7	26.3	16.6	12.0
16	13.1	23.2	10.1	10.0

All values are dB/100m.



Cat 3 Multi-Pair

Product Highlights

- RoHS compliant
- Tested from 1 to 16 MHz

Packaging

- 1,000 foot (305m) reels

Options

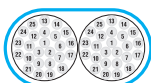
- Available in 25-, 50-, 100-, 200- and 300-pair constructions
- Consult factory for design and availability of 400-pair constructions

Applications

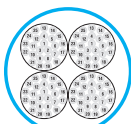
- Including:
 - 10 BASE-T
 - 4/16 Mbps Token Ring
 - 25.6 Mbps ATM



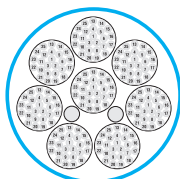
25-pair



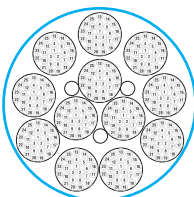
50-pair



100-pair



200-pair



300-pair

Category 3 Power Sum Multi-pair (Plenum)

(c(UL)us Listed Type CMP, CSA Type FT6)

HITACHI PART NO.	NO. OF PAIRS	CALCULATED CABLE O.D.		CABLE WEIGHT	
		in.	mm	lbs/1000ft	kg/305m
30134-50	25	.38	9.7	106.0	48.1
30134-100	50	.20 x .50	5.1 x 12.7	197.0	89.3
30134-200	100	.69	17.5	399.0	180.9
30134-400	200	.97	24.6	807.0	366.0
30134-600	300	1.33	33.7	1196.0	542.4

Category 3 Power Sum Multi-pair (Riser)

(c(UL)us Listed Type CMR, CSA Type FT4)

HITACHI PART NO.	NO. OF PAIRS	CALCULATED CABLE O.D.		CABLE WEIGHT	
		in.	mm	lbs/1000ft	kg/305m
39228-50	25	.38	9.7	100.0	45.4
39228-100	50	.20 x .50	5.1 x 12.7	194.0	88.0
39228-200	100	.69	17.5	380.0	172.3
39228-400	200	.97	24.6	751.0	340.6
39228-600	300	1.26	32.0	1100.0	498.9

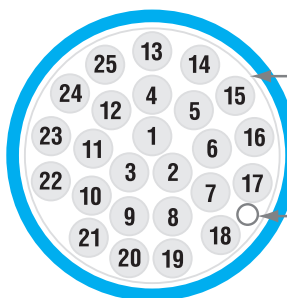
Features

Primary
Insulation



24 AWG
Bare Copper

PAIR DETAIL



Nylon Binder
under Overall Jacket

Overall Jacket

Rip Cord pulled
under Overall Jacket

DIELECTRIC
MATERIALS

Primary Insulation

Overall Jacket
(< 100-pair)

Overall Jacket
(≥ 100-pair)

RISER

PVC

Flame-retardant thermoplastic

Flame-retardant thermoplastic

PLENUM

Low-smoke, flame-retardant thermoplastic

Low-smoke, flame-retardant thermoplastic

PvDF

HCM reserves the right to revise any specifications.

Category 3

Power Sum Multi-pair

UTP Copper

Electrical Characteristics

Characteristic impedance	$100 \pm 15\Omega$ (0.772 to 16 MHz)
Maximum resistance unbalance	5%
Maximum capacitance unbalance	330 pF/100 meters
Maximum delay skew	45 ns/100 meters

Transmission Specifications

TIA/EIA-568-C.2 Category 3 Compliant

FREQ. (MHz)	INS. LOSS	NEXT LOSS	ACR	STRUCTURAL RETURN LOSS
1	2.6	41.3	38.7	12.0
4	5.6	32.3	26.7	12.0
8	8.5	27.8	19.3	12.0
10	9.7	26.3	16.6	12.0
16	13.1	23.2	10.1	10.0

All values are dB/100m.



Cat 7A SFTP

Product Highlights

- RoHS compliant
- Tested to 1 GHz
- Compliant to ISO 11801 Class FA (Category 7A) Requirements.
- Conductor pairs are individually wrapped in foil.
- Overall braid

Packaging

- 1,000 foot (305m) reels

Applications

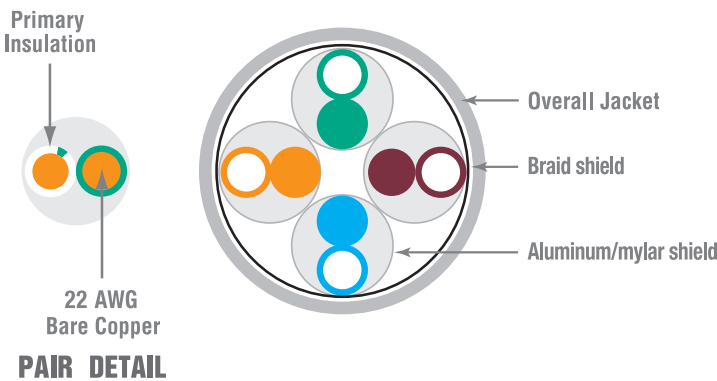
- Including:
 - 10G Base-T 10 Gigabit Ethernet
 - Single cable support of multiple applications such as Ethernet, CATV, Analog voice and VOIP
 - Future applications beyond 10 Gb/s
 - POE
 - POE+

Cat 7 (Plenum)

(c(UL)us Listed Type CMP, CSA Type FT6)

HITACHI PART NO.	NO. OF PAIRS	CALCULATED CABLE O.D. in.	mm	CABLE WEIGHT lbs/1000ft	kg/305m
30250-8	4	.33	8.50	62.27	28.25

Features



DIELECTRIC MATERIALS	PLENUM
Primary Insulation	FEP
Overall Jacket	Low-smoke, flame-retardant thermoplastic

HCM reserves the right to revise any specifications.

SFTP Category 7A

SFTP Copper

Electrical Characteristics

Maximum resistance unbalance	2%
Maximum capacitance unbalance	160 pF/100 meters
Maximum delay skew	45 ns/100 meters
Nominal velocity of propagation (NVP)	60%

Transmission Specifications

ISO/IEC 11801, 2nd ed. Category 7A Compliant

	Ins. Loss	NEXT	PS NEXT	ACR	PSACR	ACRF	PS ACRF	TCL	ELTCTL	Return Loss	CA (Type1)
Freq. (MHz)	Max	Min	Min	Cal. Min	Cal. Min	Min	Min	Min	Min	Min	Min
1.0	2.1	78.0	75.0	75.9	72.9	78.0	75.0	40.0	35.0	20.0	-
4.0	3.7	78.0	75.0	74.3	71.3	78.0	75.0	34.0	23.0	23.0	-
8.0	5.2	78.0	75.0	72.8	69.8	75.9	72.9	31.0	16.9	24.5	-
10.0	5.8	78.0	75.0	72.2	69.2	74.0	71.0	30.0	15.0	25.0	-
16.0	7.3	78.0	75.0	70.7	67.7	69.9	66.9	28.0	10.9	25.0	-
20.0	8.2	78.0	75.0	69.8	66.8	68.0	65.0	27.0	9.0	25.0	-
25.0	9.2	78.0	75.0	68.8	65.8	66.0	63.0	26.0	7.0	24.3	-
30.0	10.1	78.0	75.0	67.9	64.9	64.5	61.5	25.2	5.5	23.8	85.0
31.3	10.3	78.0	75.0	67.7	64.7	64.1	61.1	25.1	-	23.6	85.0
62.5	14.6	78.0	75.0	63.4	60.4	58.1	55.1	22.0	-	21.5	85.0
100.0	18.5	78.0	75.0	59.5	56.5	54.0	51.0	20.0	-	20.1	85.0
200.0	26.5	73.9	70.9	47.4	44.4	48.0	45.0	17.0	-	18.0	79.0
250.0	29.7	72.4	69.4	42.7	39.7	46.0	43.0	16.0	-	17.3	77.0
300.0	32.7	71.2	68.2	38.6	35.6	44.5	41.5	-	-	17.3	75.5
400.0	38.0	69.4	66.4	31.4	28.4	42.0	39.0	-	-	17.3	73.0
500.0	42.8	67.9	64.9	25.2	22.2	40.0	37.0	-	-	17.3	71.0
600.0	47.1	66.7	63.7	19.6	16.6	38.4	35.4	-	-	17.3	69.4
700.0	51.1	65.7	62.7	14.6	11.6	37.1	34.1	-	-	16.6	68.1
800.0	54.9	64.9	61.9	9.9	6.9	35.9	32.9	-	-	16.1	66.9
900.0	58.5	64.1	61.1	5.6	2.6	34.9	31.9	-	-	15.5	65.9
1000.0	61.9	63.4	60.4	1.5	-1.5	34.0	31.0	-	-	15.1	65.0

**All values are dB/100 m.



Cat 7 SFTP

Product Highlights

- RoHS compliant
- Tested to 600 MHz
- Compliant to ISO 11801 Class F (Category 7) Requirements.
- Conductor pairs are individually wrapped in foil.
- Overall braid

Packaging

- 1,000 foot (305m) reels

Applications

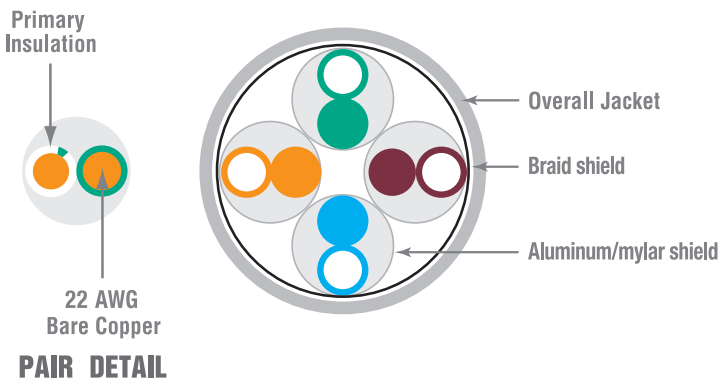
- Including:
 - 10G Base-T 10 Gigabit Ethernet
 - Single cable support of multiple applications such as Ethernet, CATV, Analog voice and VOIP
 - Future applications beyond 10 Gb/s
 - POE
 - POE+

Cat 7 (Plenum)

(c(UL)us Listed Type CMP, CSA Type FT6)

HITACHI PART NO.	NO. OF PAIRS	CALCULATED CABLE O.D. in.	mm	CABLE WEIGHT lbs/1000ft	kg/305m
30245-8	4	.33	8.50	62.27	28.25

Features



DIELECTRIC MATERIALS	PLENUM
Primary Insulation	FEP
Overall Jacket	Low-smoke, flame-retardant thermoplastic

HCM reserves the right to revise any specifications.

Category 7^{SFTP}

SFTP Copper

Electrical Characteristics

Maximum resistance unbalance	2%
Maximum capacitance unbalance	160 pF/100 meters
Maximum delay skew	45 ns/100 meters
Nominal velocity of propagation (NVP)	60%

Transmission Specifications

ISO/IEC 11801, 2nd ed. Category 7A Compliant

	Ins. Loss	NEXT	PS NEXT	ACR	PSACR	ACRF	PS ACRF	TCL	ELTCTL	Return Loss	CA (Type2)
Freq. (MHz)	Max	Min	Min	Cal. Min	Cal. Min	Min	Min	Min	Min	Min	Min
1	2.0	78.0	75.0	76.0	73.0	78.0	75.0	40.0	35.0	20.0	-
4	3.7	78.0	75.0	74.3	71.3	78.0	75.0	34.0	23.0	23.0	-
8	5.2	78.0	75.0	72.8	69.8	77.2	74.2	31.0	16.9	24.5	-
10	5.9	78.0	75.0	72.1	69.1	75.3	72.3	30.0	15.0	25.0	-
16	7.4	78.0	75.0	70.6	67.6	71.2	68.2	28.0	10.9	25.0	-
20	8.3	78.0	75.0	69.7	66.7	69.3	66.3	27.0	9.0	25.0	-
25	9.3	78.0	75.0	68.7	65.7	67.3	64.3	26.0	7.0	24.3	-
30	10.2	78.0	75.0	67.8	64.8	65.8	62.8	25.2	5.5	23.8	55.0
31.25	10.4	78.0	75.0	67.6	64.6	65.4	62.4	25.1	-	23.6	55.0
62.5	14.9	75.5	72.5	60.6	57.6	59.4	56.4	22.0	-	21.5	55.0
100	19.0	72.4	69.4	53.4	50.4	55.3	52.3	20.0	-	20.1	55.0
200	27.5	67.9	64.9	40.4	37.4	49.3	46.3	17.0	-	18.0	49.0
250	31.0	66.4	63.4	35.5	32.5	47.3	44.3	16.0	-	17.3	47.0
300	34.2	65.2	62.2	31.1	28.1	45.8	42.8	-	-	17.3	45.5
400	40.0	63.4	60.4	23.4	20.4	43.3	40.3	-	-	17.3	43.0
500	45.3	61.9	58.9	16.7	13.7	41.3	38.3	-	-	17.3	41.0
600	50.1	60.7	57.7	10.6	7.6	39.7	36.7	-	-	17.3	39.4

**All values are dB/100 m.



Supra 10GTM FUTP

Product Highlights

- RoHS compliant
- Tested from 1 to 500 MHz
- UL Verified Category 6A
- Small O.D. allows more cables per conduit

Packaging

- 1,000 foot (305m) reels

Options

- Available in ISOH
- Available in a 4-pair construction

Applications

- Including:
 - 10G BASE-T 10 Gigabit Ethernet
 - 1000 BASE-T Gigabit Ethernet
 - 1000 Mbps ATM
 - 622 Mbps ATM
 - 100 BASE-T Ethernet
 - Broadband Video
 - POE
 - POE+

Category 6A FUTP (Plenum)

(c(UL)us Listed Type CMP, CSA Type FT6)

HITACHI PART NO.	NO. OF PAIRS	CALCULATED CABLE O.D.		CABLE WEIGHT	
		in.	mm	lbs/1000ft	kg/305m
30233-8	4	.29	7.37	40.0	18.2

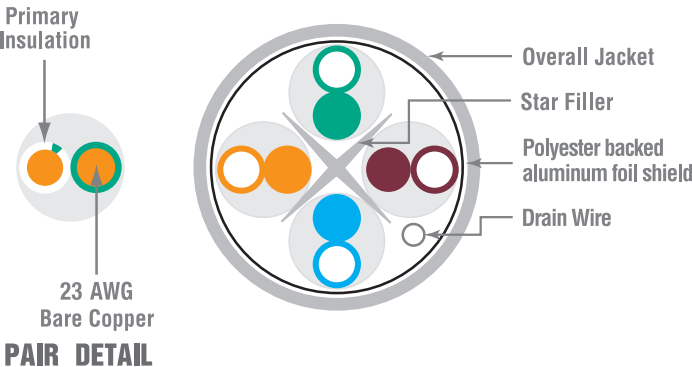
Category 6A FUTP (Riser)

(c(UL)us Listed Type CMR, CSA Type FT4)

HITACHI PART NO.	NO. OF PAIRS	CALCULATED CABLE O.D.		CABLE WEIGHT	
		in.	mm	lbs/1000ft	kg/305m
30234-8	4	.29	7.37	36.0	16.2

To build a complete HCM part number, visit page 100.

Features



DIELECTRIC MATERIALS	RISER	PLENUM
Primary Insulation	Polyolefin	FEP
Overall Jacket	Flame-retardant thermoplastic	Low-smoke, flame-retardant thermoplastic
Star Filler	Flame-retardant thermoplastic	Plenum-rated polymer

HCM reserves the right to revise any specifications.

Enhanced FUTP Category 6A

Electrical Characteristics

Input impedance	100 ± 15Ω (1.0 to 100 MHz) 100 ± 20Ω (100 to 250 MHz) 100 ± 25Ω (251 to 500 MHz)
Maximum resistance unbalance	3%
Maximum capacitance unbalance	330 pF/100 meters
Maximum delay skew	45 ns/100 meters
Nominal velocity of propagation (NVP)	68%, riser 70%, plenum

Transmission Specifications

TIA/EIA-568-C.2 Category 6A Verified

ISO/IEC 11801, 2nd ed. Class E_A Compliant

	Ins. Loss	NEXT	PS NEXT	ACR	PSACR	ACRF	PS ACRF	TCL	ELTCTL	Return Loss	CA (Type2)
Freq. (MHz)	Max	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min
1	2.1	74.3	72.3	72.2	70.2	67.8	64.8	40.0	35.0	20.0	-
4	3.8	65.3	63.3	61.5	59.5	55.8	52.8	40.0	23.0	23.0	-
8	5.3	60.8	58.8	55.4	53.4	49.7	46.7	40.0	16.9	24.5	-
10	5.9	59.3	57.3	53.4	51.4	47.8	44.8	40.0	15.0	25.0	-
16	7.5	56.2	54.2	48.8	46.8	43.7	40.7	38.0	10.9	25.0	-
20	8.4	54.8	52.8	46.4	44.4	41.8	38.8	37.0	9.0	25.0	-
25	9.4	53.3	51.3	44.0	42.0	39.8	36.8	36.0	7.0	24.3	-
30	10.3	52.1	50.1	41.9	39.9	38.3	35.3	35.2	5.5	23.8	55.0
31.25	10.5	51.9	49.9	41.4	39.4	37.9	34.9	35.1	-	23.6	55.0
62.5	15.0	47.4	45.4	32.4	30.4	31.9	28.9	32.0	-	21.5	55.0
100	19.1	44.3	42.3	25.2	23.2	27.8	24.8	30.0	-	20.1	55.0
200	27.6	39.8	37.8	12.2	10.2	21.8	18.8	27.0	-	18.0	49.0
250	31.1	38.3	36.3	7.3	5.3	19.8	16.8	26.0	-	17.3	47.0
300	34.3	37.1	35.1	2.9	0.9	18.3	15.3	-	-	16.8	45.5
400	40.1	35.3	33.3	-4.8	-6.8	15.8	12.8	-	-	15.9	43.0
500	45.3	33.8	31.8	-11.4	-13.4	13.8	10.8	-	-	15.2	41.0

*Frequencies beyond the TIA and ISO requirements are for information only. **All values are dB/100 m.

FUTP Copper



Cat 6 FUTP

Product Highlights

- RoHS compliant
- Tested from 1 to 555 MHz
- UL Verified Category 6

Packaging

- 1,000 foot (305m) reels

Options

- Available in a 4-pair construction

Applications

- Including:
 - 10G BASE-T 10 Gigabit Ethernet (limited distance)
 - 1000 BASE-T Gigabit Ethernet
 - 1000 Mbps ATM
 - 622 Mbps ATM
 - 100 BASE-T Ethernet
 - Broadband Video
 - POE
 - POE+

Category 6 FUTP (Plenum)

(c(UL)us Listed Type CMP, CSA Type FT6)

HITACHI PART NO.	NO. OF PAIRS	CALCULATED CABLE O.D.		CABLE WEIGHT	
		in.	mm	lbs/1000ft	kg/305m
30154-8	4	.29	7.37	40.0	18.2

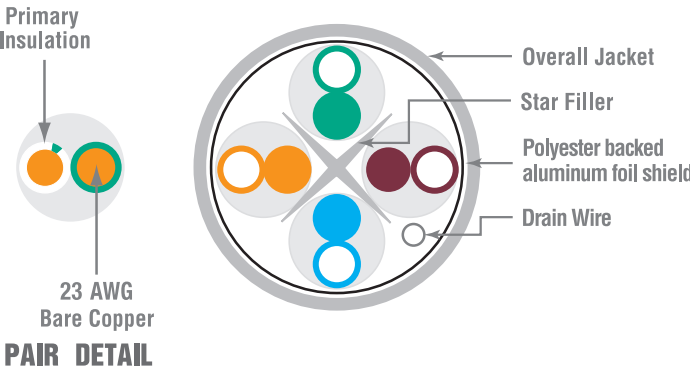
Category 6 FUTP (Riser)

(c(UL)us Listed Type CMR, CSA Type FT4)

HITACHI PART NO.	NO. OF PAIRS	CALCULATED CABLE O.D.		CABLE WEIGHT	
		in.	mm	lbs/1000ft	kg/305m
30129-8	4	.28	7.24	36.0	16.2

To build a complete HCM part number, visit page 100.

Features



DIELECTRIC MATERIALS	RISER	PLENUM
Primary Insulation	Polyolefin	FEP
Overall Jacket	Flame-retardant thermoplastic	Low-smoke, flame-retardant thermoplastic
Star Filler	Flame-retardant thermoplastic	Plenum-rated polymer

HCM reserves the right to revise any specifications.

FUTP Category 6

Electrical Characteristics

Input impedance	100 ± 15Ω (0.772 to 250 MHz)
Maximum resistance unbalance	5%
Maximum capacitance unbalance	330 pF/100 meters
Maximum delay skew	45 ns/100 meters
Nominal velocity of propagation (NVP)	68%, riser 70%, plenum

Transmission Specifications

TIA/EIA-568-C.2 Category 6 Verified

ISO/IEC 11801, 2nd ed. Class E Compliant

	Ins. Loss	NEXT	PS NEXT	ACR	PSACR	ACRF	PS ACRF	Return Loss
Freq. (MHz)	Max	Min	Min	Min	Min	Min	Min	Min
1	2.0	74.3	72.3	72.3	70.3	67.8	64.8	20.0
4	3.8	65.3	63.3	61.5	59.5	55.8	52.8	23.0
8	5.3	60.8	58.8	55.5	53.5	49.7	46.7	24.5
10	6.0	59.3	57.3	53.3	51.3	47.8	44.8	25.0
16	7.6	56.2	54.2	48.6	46.6	43.7	40.7	25.0
31.25	10.7	51.9	49.9	41.2	39.2	37.9	34.9	23.6
62.5	15.4	47.4	45.4	32.0	30.0	21.9	28.9	21.5
100	19.8	44.3	42.3	24.5	22.5	27.8	24.8	20.1
200	29.0	39.8	37.8	10.8	8.8	21.8	18.8	18.0
250	32.8	38.3	36.3	5.5	3.5	19.8	16.8	17.3
350*	39.8	36.1	34.1	-	-	16.9	13.9	16.3
555*	52.0	33.1	31.1	-	-	12.9	9.9	14.9

*Frequencies beyond the TIA and ISO requirements are for information only. All values are dB/100 m.

FUTP Copper



Cat 5e FUTP

Product Highlights

- RoHS compliant
- Tested from 1 to 400 MHz
- UL Verified Category 5e

Packaging

- 1,000 foot (305m) reels

Options

- Available in a 4-pair construction

Applications

- Including:
 - 1000 BASE-T Gigabit Ethernet
 - 1000 Mbps ATM
 - 622 Mbps ATM
 - 100 BASE-T Ethernet
 - 10 BASE-T
 - Broadband Video
 - POE

Category 5e FUTP (Plenum)

(c(UL)us Listed Type CMP, CSA Type FT6)

HITACHI PART NO.	NO. OF PAIRS	CALCULATED CABLE O.D. in.	mm	CABLE WEIGHT lbs/1000ft	kg/305m
38653-8	4	.25	6.48	30.6	13.9

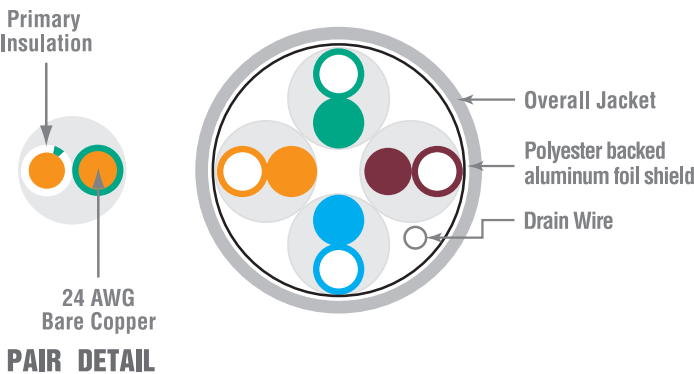
Category 5e FUTP (Riser)

(c(UL)us Listed Type CMR, CSA Type FT4)

HITACHI PART NO.	NO. OF PAIRS	CALCULATED CABLE O.D. in.	mm	CABLE WEIGHT lbs/1000ft	kg/305m
39092-8	4	.25	6.48	25.0	11.4

To build a complete HCM part number, visit page 100.

Features



DIELECTRIC MATERIALS	RISER	PLENUM
Primary Insulation	Polyolefin	FEP
Overall Jacket	Flame-retardant thermoplastic	Low-smoke, flame-retardant thermoplastic

HCM reserves the right to revise any specifications.

FUTP Category 5e

Electrical Characteristics

Input impedance	100 ± 15Ω (0.772 to 100 MHz)
Maximum resistance unbalance	5%
Maximum capacitance unbalance	330 pF/100 meters
Maximum delay skew	45 ns/100 meters
Nominal velocity of propagation (NVP)	68%, riser 70%, plenum

Transmission Specifications

TIA/EIA-568-C.2 Category 5e Verified

ISO/IEC 11801, 2nd ed. Class D Compliant

	Ins. Loss	NEXT	PS NEXT	ACR	PSACR	ACRF	PS ACRF	Return Loss
Freq. (MHz)	Max	Min	Min	Min	Min	Min	Min	Min
1	2.0	65.3	62.3	63.3	60.3	63.8	60.8	20.0
4	4.1	56.3	53.3	52.2	49.2	51.8	48.8	23.0
8	5.8	51.8	48.8	46.0	43.0	45.7	42.7	24.5
10	6.5	50.3	47.3	43.8	40.8	43.8	40.8	25.0
16	8.2	47.2	44.2	39.0	36.0	39.7	36.7	25.0
31.25	11.7	42.9	39.9	31.2	28.2	33.9	30.9	23.6
62.5	17.0	38.4	35.4	21.4	18.4	27.9	24.9	21.5
100	22.0	35.3	32.3	13.3	10.3	23.8	20.8	20.1
155*	28.1	32.4	29.4	4.3	1.3	20.0	17.0	18.8
200*	32.4	30.8	27.8	-	-	17.8	14.8	18.0
250*	36.9	29.3	26.3	-	-	15.8	12.8	17.3
400*	48.5	26.3	23.3	-	-	11.8	8.8	15.9

*Frequencies beyond the TIA and ISO requirements are for information only. All values are dB/100 m.

FUTP Copper



Cross-Connect

Product Highlights

- RoHS compliant
- Pairs consist of a solid color conductor twisted with a white conductor that is marked with a matching color stripe

Packaging

- 1,000 foot (305m) reels



1-pair, red



1-pair, blue



2-pair



3-pair



4-pair

Diagram scale approx. 3:1

Category 6 Cross-Connect

TIA/EIA-568-C.2-1 Category 6 Compliant

ISO/IEC 11801, 2nd ed. Class E Compliant

Tested from 1 to 250 MHz

HITACHI PART NO.	NO. OF PAIRS	PAIR COLOR-CODING
30110-2	1	RED
30110-2	1	BLUE
30110-4	2	BLUE, ORANGE
30110-6	3	BLUE, ORANGE, GREEN
30110-8	4	BLUE, ORANGE, GREEN, BROWN

Category 5e Cross-Connect

TIA/EIA-568-C.2 Category 5e Compliant

ISO/IEC 11801, 2nd ed. Class D Compliant

Tested from 1 to 100 MHz

HITACHI PART NO.	NO. OF PAIRS	PAIR COLOR-CODING
30153-2	1	RED
30153-2	1	BLUE
30153-4	2	BLUE, ORANGE
30153-6	3	BLUE, ORANGE, GREEN
30153-8	4	BLUE, ORANGE, GREEN, BROWN

Category 3 Cross-Connect

TIA/EIA-568-C.2 Category 3 Compliant

Tested from 1 to 16 MHz

HITACHI PART NO.	NO. OF PAIRS	PAIR COLOR-CODING
30124-2	1	RED
30124-2	1	BLUE
30124-4	2	BLUE, ORANGE
30124-6	3	BLUE, ORANGE, GREEN
30124-8	4	BLUE, ORANGE, GREEN, BROWN

HCM reserves the right to revise any specifications.

Cross-Connect

Special Applications

Features

Primary
Insulation



24 AWG
Bare Copper

PAIR DETAIL



All pairs cabled together

DIELECTRIC MATERIALS

Primary Insulation

CATEGORY 3

Polyolefin

CATEGORY 5e AND CATEGORY 6

Polyolefin



Category 3



Category 5e

Category 6

Special
Applications

Patch Cable

Product Highlights

- RoHS compliant
- Soft, flexible jacket for ease of termination

Packaging

- 1,000 foot (305m) reels

Options

- Available in 4-pair constructions
- Custom jacket colors available
- Optional rip cord available



Category 5e 4-pair
Enhanced Category 5e 4-pair
Category 6 4-pair



Enhanced Category 6 4-pair

Diagram scale approx. 3:1

Category 5e Data-Master Patch

Tested from 1 to 100 MHz

HITACHI PART NO.	NO. OF PAIRS	CALCULATED CABLE O.D. in.	mm	CABLE WEIGHT lbs/1000ft	kg/305m
38822-8	4	.18	4.5	19.0	8.6

To build a complete HCM part number, visit page 100.

Enhanced Category 5e Data-Master Patch

Tested from 1 to 100 MHz

+6 dB NEXT loss and PSNEXT loss headroom

+6 dB ELFEXT and PSELFEXT headroom

HITACHI PART NO.	NO. OF PAIRS in.	CALCULATED CABLE O.D. mm	lbs/1000ft	CABLE WEIGHT kg/305m	
39063-8	4	.19	4.7	22.0	10.4

To build a complete HCM part number, visit page 100.

Category 6 Data-Master Patch

Tested from 1 to 250 MHz

HITACHI PART NO.	NO. OF PAIRS in.	CALCULATED CABLE O.D. mm	lbs/1000ft	CABLE WEIGHT kg/305m	
30073-8	4	.23	5.8	23.0	10.4

To build a complete HCM part number, visit page 100.

Enhanced Category 6 Data-Master Patch

Tested from 1 to 250 MHz

+8 dB NEXT loss and PSNEXT loss headroom

+8 dB ELFEXT and PSELFEXT headroom

HITACHI PART NO.	NO. OF PAIRS	CALCULATED CABLE O.D. in.	mm	CABLE WEIGHT lbs/1000ft	kg/305m
30074-8	4	.25	6.3	25.0	11.3

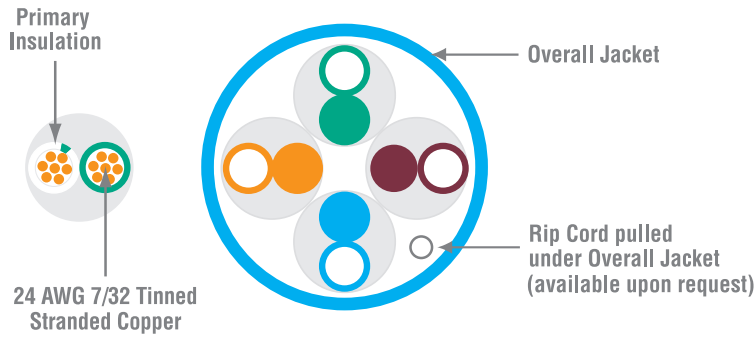
To build a complete HCM part number, visit page 100.

HCM reserves the right to revise any specifications.

Patch Cable

Special Applications

Category 5e/Enhanced Category 5e/ Category 6 Features

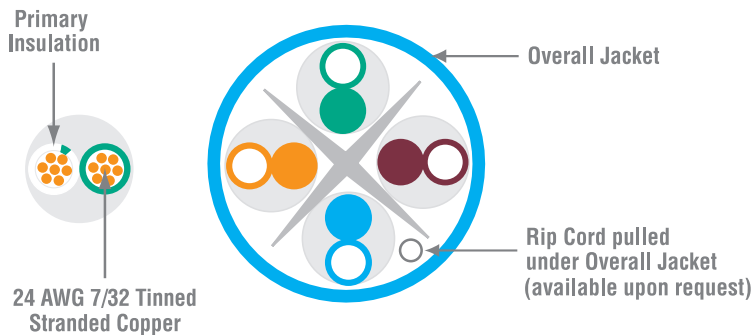


PAIR DETAIL

DIELECTRIC MATERIALS

Primary Insulation	Polyolefin
Overall Jacket	Flame-retardant thermoplastic

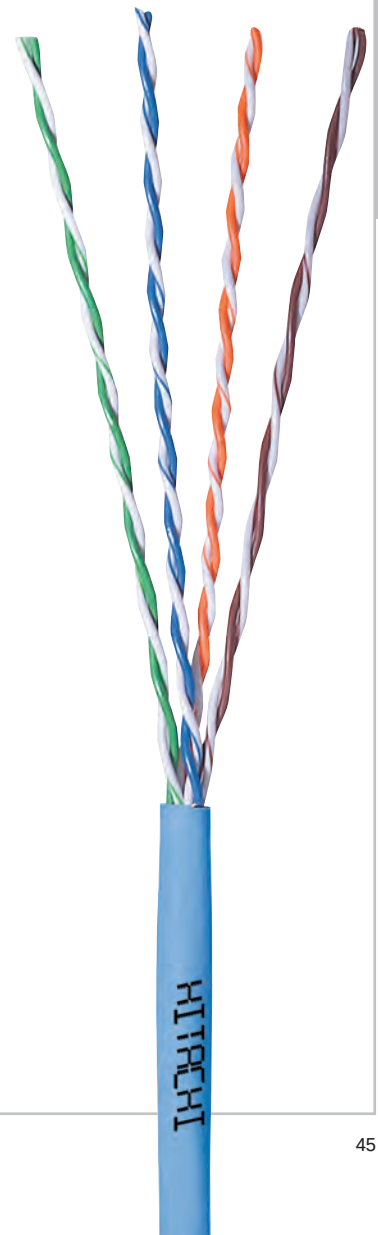
Enhanced Category 6 Features



PAIR DETAIL

DIELECTRIC MATERIALS

Primary Insulation	Polyolefin
Overall Jacket	Flame-retardant thermoplastic



Special Applications

Multi-Net™

Product Highlights

- RoHS compliant
- Bonded leg constructions facilitate easier cable pulls
- Easy-tear web allows quick cable separation in the field

Packaging

- 1,000 foot (305m) reels

Options

- Custom leg configurations available
- 2-pair leg constructions available



2 leg, category 3/5e construction



2 leg, category 6 construction



3 leg, category 3/5e construction

Multi-Net™ Bonded Jacket (Plenum)

(c(UL)us Listed Type CMP, CSA Type FT6)

HITACHI PART NO.	CATEGORY OF EACH 4-PAIR UTP LEG	CALCULATED CABLE O.D. in.	mm	CABLE WEIGHT lbs/1000ft	kg/305m
TWO LEG CONSTRUCTIONS					
30120	6 x 6	.24 x .49	6.1 x 12.4	56.0	25.4
38730	5e x 5e	.17 x .38	4.4 x 9.6	45.0	20.5
38733	3 x 5e	.17 x .38	4.4 x 9.6	42.0	19.1
38732	3 x 3	.17 x .37	4.4 x 9.4	36.0	16.4

THREE LEG CONSTRUCTIONS

38895	5e x 5e x 5e	.17 x .58	4.4 x 14.7	68.0	30.9
38740	5e x 3 x 5e	.17 x .58	4.4 x 14.7	65.0	29.5
39068	3 x 5e x 3	.17 x .58	4.4 x 14.7	63.0	28.6

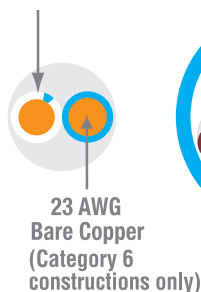
Multi-Net™ Bonded Jacket (Riser)

(c(UL)us Listed Type CMR, CSA Type FT4)

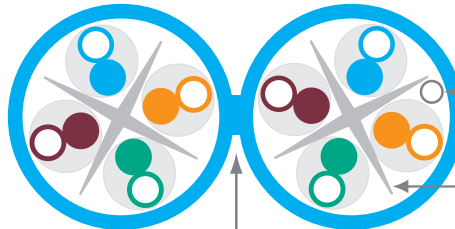
HITACHI PART NO.	CATEGORY OF EACH 4-PAIR UTP LEG	CALCULATED CABLE O.D. in.	mm	CABLE WEIGHT lbs/1000ft	kg/305m
TWO LEG CONSTRUCTIONS					
30086	6 x 6	.25 x .52	6.4 x 13.2	50.0	22.7
38743	5e x 5e	.18 x .38	4.5 x 9.7	39.0	17.7
39069	3 x 5e	.17 x .37	4.4 x 9.4	36.0	16.3
39073	3 x 3	.17 x .37	4.4 x 9.4	34.0	15.4
THREE LEG CONSTRUCTIONS					
39074	5e x 5e x 5e	.18 x .59	4.5 x 14.9	59.0	26.8
38842	5e x 3 x 5e	.17 x .58	4.4 x 14.7	59.0	26.8
39075	3 x 5e x 3	.17 x .57	4.4 x 14.6	60.0	27.3

Features

Primary
Insulation



23 AWG
Bare Copper
(Category 6
constructions only)
PAIR DETAIL



Rip Cord

Star Filler
(Category 6
constructions only)

Legs bonded together
by "tear-away" web

Diagram scale approx. 2:1

HCM reserves the right to revise any specifications.

Transmission Specifications

Category 3 Leg

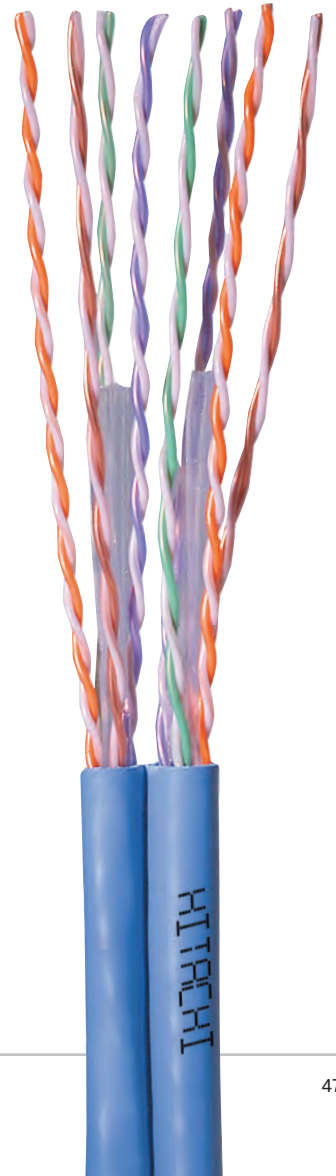
- TIA/EIA-568-C.2 Category 3 Compliant

Category 5e Leg

- TIA/EIA-568-C.2 Category 5e Compliant
- ISO/IEC 11801, 2nd ed. Class D Compliant

Category 6 Leg

- TIA/EIA-568-C.2 Category 6 Compliant
- ISO/IEC 11801, 2nd ed. Class E Compliant



Outdoor Cable

Product Highlights

- RoHS compliant
- Suitable for direct burial, lashed aerial, duct and underground conduit applications
- Cable core is filled with non-conductive, water-blocking gel
- Rugged black polyolefin jacket
- UV resistant jacket

Packaging

- 1,000 foot (305m) reels

Options

- Category 3 outdoor cables available
- Available in a 4-pair construction

Applications

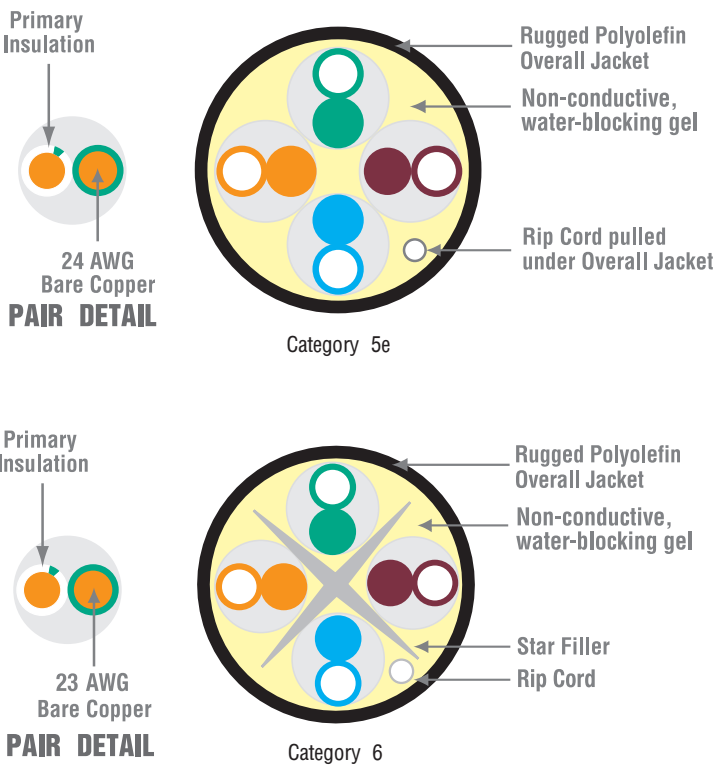
- Including:
 - 10G BASE-T 10 Gigabit Ethernet (limited distance for Cat 6 only)
 - 1000 BASE-T Gigabit Ethernet
 - 1000 Mbps ATM
 - 622 Mbps ATM
 - 100 BASE-T Ethernet
 - Broadband Video

Category 5e and Category 6 Outdoor

HITACHI PART NO.	NO. OF PAIRS	CALCULATED CABLE O.D. in.	CABLE mm	WEIGHT lbs/1000ft	kg/305m
Category 5e 30145-8	4	0.23	5.8	31.0	14.1
Category 6 30180-8	4	0.24	6.2	35.0	15.9

To build a complete HCM part number, visit page 100.

Features



DIELECTRIC MATERIALS	OUTDOOR UTP CABLES
Primary Insulation	Polyolefin
Overall Jacket	Medium density polyolefin

HCM reserves the right to revise any specifications.

Outdoor Cable

Special Applications

Electrical Characteristics

Input impedance	100 ± 15 Ω (1.0 to 100 MHz) 100 ± 15 Ω (100 to 250 MHz)
Maximum resistance unbalance	5%
Maximum capacitance unbalance	330 pF/100 meters
Maximum delay skew	45 ns/100 meters
Nominal velocity of propagation (NVP)	63%

Transmission Specifications

TIA/EIA-568-C.2 Category 5e Compliant

ISO/IEC 11801, 2nd ed. Class D Compliant

Freq. loss (MHz)	Ins. loss (dB/100 m)	NEXT loss (dB)	PSNEXT loss (dB)	ACR (dB)	PSACRF (dB)	ACRF (dB)	PSACRF (dB)	Return (dB)
1	2.0	65.3	62.3	63.3	60.3	63.8	60.8	20.0
4	4.1	56.3	53.3	52.2	49.2	51.8	48.8	23.0
8	5.8	51.8	48.8	46.0	43.0	45.7	42.7	24.5
10	6.5	50.3	47.3	43.8	40.8	43.8	40.8	25.0
16	8.2	47.2	44.2	39.0	36.0	39.7	36.7	25.0
31.25	11.7	42.9	39.9	31.2	28.2	33.9	30.9	23.6
62.5	17.0	38.4	35.4	21.4	18.4	27.9	24.9	21.5
100	22.0	35.3	32.3	13.3	20.8	23.8	20.6	20.1
155*	28.1	32.4	29.4	4.3	1.3	20.0	17.0	18.8
200*	32.4	30.8	27.8	-	-	17.8	14.8	18.0
250*	36.9	29.3	26.3	-	-	15.8	12.8	17.3
400*	48.5	26.3	23.3	-	-	11.8	8.8	15.9

*Frequencies beyond the TIA and ISO requirements are for information only. **All values are dB/100 m

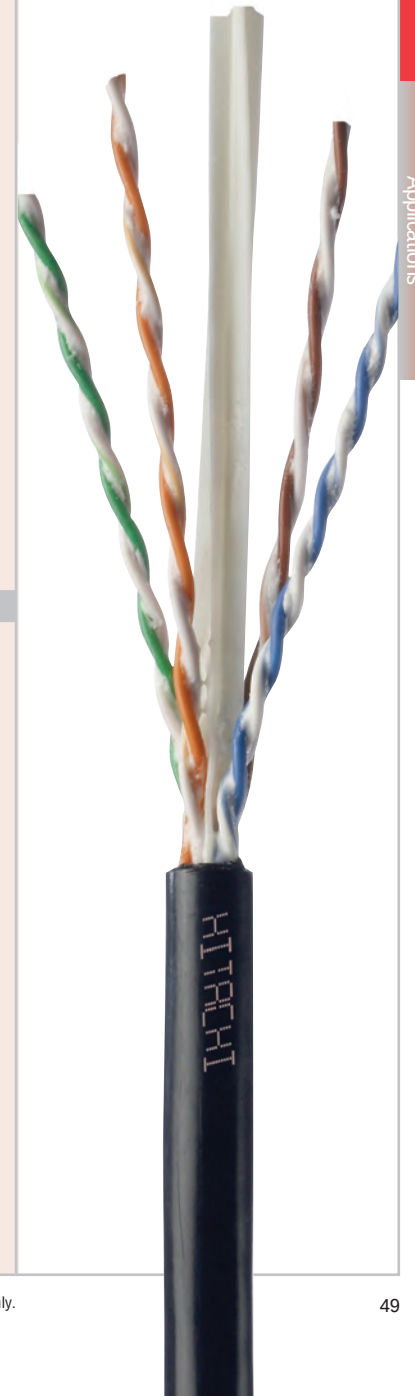
Transmission Specifications

TIA/EIA-568-C.2 Category 6 Compliant

ISO/IEC 11801, 2nd ed. Class E Compliant

Freq. (MHz)	Ins. loss (dB/100 m)	NEXT loss (dB)	PSNEXT loss (dB)	ACR (dB)	PSACRF (dB)	ACRF (dB)	PSACRF (dB)	Return loss (dB)
1	2.0	75.3	73.3	73.3	71.3	70.8	67.8	20.0
4	3.8	66.3	64.3	62.5	60.5	58.8	55.8	23.0
8	5.3	61.8	59.8	56.5	54.5	52.7	49.7	24.5
10	6.0	60.3	58.3	54.3	52.3	50.8	47.8	25.0
16	7.6	57.2	55.2	49.6	47.6	46.7	43.7	25.0
31.25	10.7	52.9	50.9	42.2	40.2	40.9	37.9	23.6
62.5	15.4	48.4	46.4	33.0	31.0	34.9	31.9	21.5
100	19.8	45.3	43.3	25.5	23.5	30.8	27.8	20.1
200	29.0	40.8	38.8	11.8	9.8	24.8	21.8	18.0
250	32.8	39.3	37.3	6.5	4.5	19.8	16.8	17.3
350*	39.8	37.1	35.1	-	-	19.9	16.9	16.3
555*	52.0	34.1	32.1	-	-	15.9	12.9	14.9

*Frequencies beyond the TIA and ISO requirements are for information only. All values are dB/100m.



Special
Applications

Hybrid/Bundled

Product Highlights

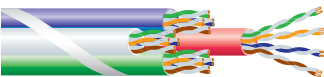
- Perfect for use when mixed fiber optic and/or copper media and coaxial cable is required
- Suitable for use in residential applications
- Supports reduced installation costs and simpler cable management

Packaging

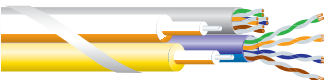
- 1,000 foot (305m) reels
- 500 foot (152m) reels

Options

- Dual- and Tri-shield RG-6 coaxial cables available
- Custom legends and jacket colors, including our innovative integrated jacket stripe, available



Unlimited jacket colors and identification schemes.



Speed pull design allows multiple cables to be pulled simultaneously.



Example of a composite fiber and copper cable that features an overall jacket and integrated stripe.

Diagram scale approx. 3:1

HCM reserves the right to revise any specifications.

Telecommunications standards recognize hybrid and bundled cable for use in a variety of applications. Beginning with premium twisted-pair and fiber optic cables, HCM can manufacture virtually any standard's compliant hybrid or bundled cable assembly. No other cable supplier can match our hybrid and bundled cable manufacturing expertise.

What is the difference between a hybrid and a bundled cable? According to the TIA definitions, the key difference is that an overall flame-retardant thermoplastic jacket covers a hybrid cable, while a skip-wrap or binding secures the cables in a bundled design.

hybrid cable: An assembly of two or more cables, of the same or different types or categories, covered by one overall sheath.

bundled cable: An assembly of two or more cables continuously bound together to form a single unit.

Since hybrid and bundled cables represent a custom construction, HCM's customer service representatives are available to help you design your solution. You should have the following information available before contracting our team of experts:

Construction Type (Hybrid or Bundled): _____

Flame Rating (General, Riser, or Plenum): _____

Use (Indoor, Indoor/Outdoor, OSP): _____

Number of Legs: _____

	Category or Fiber Type	# of Fibers or Pairs	Jacket color and/or custom designation
Leg 1			
Leg 2			
Leg 3			
Leg 4			
Leg 5			
Leg 6			

Examples of our most popular fiber hybrid constructions include:

HITACHI PART NO.		# OF PAIRS OR FIBERS	CABLE TYPE	FIRE RATING/USE
60056-18	Leg 1	12	62.5/125 m Multimode	CMP Indoor
	Leg 2	6	8.3/125 m Singlemode	
60052-24	Leg 1	12	62.5/125 m Multimode	CMR Indoor
	Leg 2	12	8.3/125 m Singlemode	
60116-18	Leg 1	12	62.5/125 m Multimode	CMR Indoor/ Outdoor
	Leg 2	6	8.3/125 m Singlemode	
60150-12	Leg 1	6	62.5/125 m Multimode	Outside Plant
	Leg 2	6	8.3/125 m Singlemode	
60136-36	Leg 1	24	62.5/125 m Multimode	Outside Plant
	Leg 2	12	8.3/125 m Singlemode	
60145-72	Leg 1	48	62.5/125 m Multimode	Outside Plant
	Leg 2	24	8.3/125 m Singlemode	

OMNIMedia

OMNIMedia™ (Riser) (CMR, CSA Type FT4)

OMNIMedia cables are hybrid solutions specifically designed to support mixed media applications, such as residential, requiring quad-shield RG-6 coaxial cables, fiber optic, and/or twisted-pair copper cables under an overall jacket. All OMNIMedia constructions are manufactured with TIA component-compliant cables and are suitable for use in riser-rated applications.

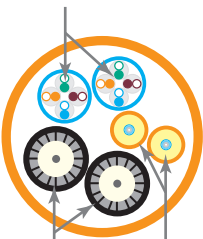
Examples of our most popular OMNIMedia constructions include:

HITACHI PART NO.	# OF PAIRS OR FIBERS		CABLE TYPE	CABLE O.D. in.	mm	CABLE WEIGHT lbs/1000ft	kg/1000m
30125-17	Leg 1	4-Pair	Category 5e, blue jacket	.550	14.0	114.0	51.7
	Leg 2	4-Pair	Category 5e, gray jacket				
	Leg 3	-	RG-6 Quad Shield, black jacket				
30125-18	Leg 1	4-Pair	Category 5e, blue jacket	.650	16.5	154.0	79.8
	Leg 2	4-Pair	Category 5e, gray jacket				
	Leg 3	-	RG-6 Quad Shield, black jacket				
	Leg 4	-	RG-6 Quad Shield, white jacket				
61321-20	Leg 1	4-Pair	Category 5e, blue jacket	.660	16.8	161.0	73.0
	Leg 2	4-Pair	Category 5e, gray jacket				
	Leg 3	-	RG-6 Quad Shield, black jacket				
	Leg 4	-	RG-6 Quad Shield, white jacket				
	Leg 5	2-fiber	62.5/125 m Multimode, orange jacket				
61355-20	Leg 1	4-Pair	Category 5e, blue jacket	.650	16.5	163.0	73.9
	Leg 2	4-Pair	Category 5e, gray jacket				
	Leg 3	-	RG-6 Quad Shield, black jacket				
	Leg 4	-	RG-6 Quad Shield, white jacket				
	Leg 5	1-fiber	62.5/125 m Multimode, orange jacket				
	Leg 6	1-fiber	62.5/125 m Multimode, orange jacket				

Standard OMNIMedia cables without fiber optic legs feature an overall blue jacket. OmniMedia cables containing fiber optic legs feature an overall orange jacket. Contact our customer service team to design your own custom OMNIMedia solution.

Features (sample construction)

(2) Category 5e UTP Cables



(2) RG-6 Quad Shield Coaxial Cables

(2) 1-fiber 62.5/125µm Interconnect Fiber Optic Cables

Transmission Specifications

RG-6 Quad Shield Cable									
	Nominal ODs		Nom.	Nom. Vel.	Nom. Capacitance		Nom. Attenuation		
	in.	mm.		Prop.	pF/ft.	pF/m	MHz	dB/100ft	dB/100m
Cond.	.040	1.02	75	83%	16.3	53.5	5	0.6	2.0
Dielec.	.180	4.57					10	0.8	2.6
Final	.298	7.57					50	1.5	4.9
Construction: RG-6/U Type Quad Shield Broadband Coaxial Cable, 18 AWG Solid Copper Covered Steel Conductor, 36 /kft, 118 /km. Cellular Polyethylene Dielectric. Quad Shielded, Bonded Aluminum Foil, 60% Aluminum Braid, Aluminum Foil, 40% Aluminum Braid. Overall PVC Jacket.							100	2.1	6.9
							200	2.8	9.2
							400	4.2	13.8
							700	5.6	18.4
							900	6.3	20.7
							1000	6.7	22.0



Composite
Cables

Interconnect

1-fiber, 2-fiber and zip

Product Highlights

- RoHS compliant
- 900 μ m buffered design recommended for easy termination
- OM2, OM3 & OM4 cables utilize Corning ClearCurve glass
- Ideal for patch cords, interconnections, and short runs
- Easy to strip and terminate
- Lightweight, flexible aramid yarns enhance strength
- Extremely flexible for easy handling

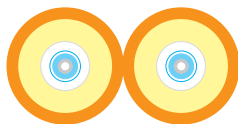
Options

- Cables with 600 micron buffer available
- Low smoke zero halogen available
- Standard colors are yellow for singlemode, orange for multimode and aqua for 10 Gigabit - other colors are available
- OM4 cables with extended 10 gigabit distances are available



1-fiber Interconnect

2-fiber Interconnect



2-fiber Zip Cord

Diagram scale approx. 5:1

Interconnect (Riser)

(UL) OFNR c(UL) FT4

Fiber Count	62.5 μ m OM1	50 μ m OM2	50 μ m OM3	50 μ m OM4	8.3 μ m OS2	8.3 μ m OS2BI
1	60001-1	60004-1	60464-1	61790-1	60040-1	61653-1
1	60037-1	60003-1	60465-1	61791-1	60039-1	61655-1
1	60038-1	60002-1	60466-1	61792-1	60010-1	61657-1
1	60425-1	60462-1	60467-1	61793-1	60489-1	61659-1
2	60514-2	60063-2	60463-2	61838-2	60012-2	61653-2
2	60001-2	60004-2	60464-2	61842-2	60040-2	61661-2
2	61512-2	61510-2	61511-2	61843-2	61515-2	61663-2
zip	60005-2	60007-2	60501-2	61844-2	60011-2	61665-2

Optical Specifications

TIA/EIA-568-C.3 | ISO/IEC 11801, 2nd edition | Telcordia GR-409-CORE

HCM Fiber Performance Parameters	Max Attenuation (dB/Km)		Min Bandwidth OFL MHz-Km		Min Bandwidth* MHz-Km		Gigabit Ethernet Support Distance (meters)		10 Gigabit Ethernet Support Distance (meters)	
	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm
OM1	3.5	1.0	200	500	220	na	300	550	33	na
OM2	3.5	1.0	700	500	850	na	750	550	150	na
OM3	3.25	1.0	1500	500	2000	na	1000	550	300	na
OM4	3.0	1.0	3500	500	4700	na	1100	550	550	na

*EMBc for OM2, OM3 & OM4 fibers. RML for OM1 fibers.

	1310 nm	1550 nm
OS2	0.50	0.50
OS2 BI**	0.50	0.50

**OS2 BI utilizes bend-insensitive optical glass

Interconnect

Multimode and Singlemode

Indoor

Interconnect (Riser)

(UL) OFNR us FT4

FIBER COUNT	CABLE O.D.		MAXIMUM LOAD INSTALL		OPERATION		CABLE WEIGHT	
	in.	mm	lbs-f	N	lbs-f	N	lbs/1000 ft	kg/1000m
1	0.114	2.9	96	427	48	213	4.9	7.2
1	0.094	2.4	96	427	48	213	1.2	4.2
1	0.083	2.1	48	213	24	106	3.2	4.7
1	0.063	1.6	48	213	24	106	1.8	1.8
2	0.190	4.8	128	569	64	284	11.5	17.1
2	0.114	2.9	96	427	48	213	4.9	7.2
2	0.098	2.5	96	427	48	213	4.0	5.9
zip	.113 x .140	2.9 x 6.1	128	569	64	284	11.5	17.1

Mechanical Specifications

- Bend radius, no load
= 10x cable overall diameter
- Bend radius, load
= 15x cable overall diameter

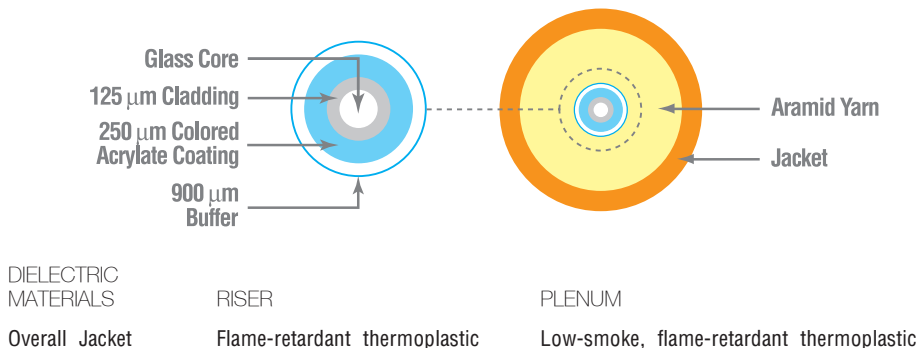


10 Gigabit Applications

IEEE standard	Wavelength	Transmission	Fiber type	Length (m)
10GBASE-SR	850nm	Serialized	OM1	33
			OM2	82
			OM3	300
			OM4	550
10GBASE-LR	1310nm	Serialized	SM	10,000 - 25,000
10GBASE-LRM	1310nm	Serialized	OM1	220
			OM3	260
10GBASE-ER	1550nm	Serialized	SM	40,000
10GBASE-LX4	1300nm	WDM	MM	240-300
			SM	10,000

For complete application list, refer to page 91.

Features



Interconnect

1-fiber, 2-fiber and zip

Product Highlights

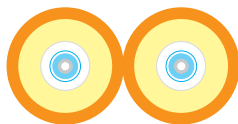
- RoHS compliant
- 900 µm buffered design recommended for easy termination
- OM2, OM3 & OM4 cables utilize Corning ClearCurve glass
- Ideal for patch cords, interconnections, and short runs
- Easy to strip and terminate
- Lightweight, flexible aramid yarns enhance strength
- Extremely flexible for easy handling

Options

- Cables with 600 micron buffer available
- Standard colors are yellow for singlemode, orange for multimode and aqua for 10 Gigabit - other colors are available
- OM4 cables with extended 10 gigabit distances are available



1-fiber Interconnect 2-fiber Interconnect



2-fiber Zip Cord

Diagram scale approx. 5:1

Interconnect (Plenum)

(UL) OFNP c(UL) FT6

Fiber Count	62.5 UM OM1	50 UM OM2	50 UM OM3	50 UM OM4	8.3 UM OS2	8.3 UM OS2BI
1	60042-1	60022-1	60472-1	61851-1	60044-1	61679-1
1	60430-1	60468-1	60473-1	61852-1	60490-1	61681-1
1	60431-1	60469-1	60474-1	61853-1	60491-1	61683-1
1	60432-1	60470-1	60475-1	61854-1	60492-1	61685-1
2	60024-2	60026-1	60471-2	61851-2	60031-2	61679-2
2	60042-2	60022-2	60472-2	61855-2	60044-2	61687-2
2	61461-2	61492-2	61488-2	61856-2	61493-2	61689-2
zip	60023-2	60008-2	60502-2	61857-2	60030-2	61691-2

Optical Specifications

TIA/EIA-568-C.3 | ISO/IEC 11801, 2nd edition | Telcordia GR-409-CORE

HCM Fiber Performance Parameters	Max Attenuation (dB/Km)		Min Bandwidth OFL MHz-Km		Min Bandwidth* MHz-Km		Gigabit Ethernet Support Distance (meters)		10 Gigabit Ethernet Support Distance (meters)	
	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm
OM1	3.5	1.0	200	500	220	na	300	550	33	na
OM2	3.5	1.0	700	500	850	na	750	550	150	na
OM3	3.25	1.0	1500	500	2000	na	1000	550	300	na
OM4	3.0	1.0	3500	500	4700	na	1100	550	550	na

*EMBc for OM2, OM3 & OM4 fibers. RML for OM1 fibers.

	1310 nm	1550 nm
OS2	0.50	0.50
OS2 BI**	0.50	0.50

**OS2 BI utilizes bend-insensitive optical glass

Interconnect

Multimode and Singlemode

Indoor

Interconnect (Plenum)

(UL) OFNP c(UL) FT6

FIBER COUNT	CABLE O.D.		MAXIMUM LOAD INSTALL		OPERATION		CABLE WEIGHT	
	in.	mm	lbs-f	N	lbs-f	N	lbs/1000 ft	kg/1000m
1	0.114	2.9	96	427	48	213	5.6	8.3
1	0.094	2.4	96	427	48	213	4.7	6.9
1	0.083	2.1	48	213	24	106	3.6	5.3
1	0.063	1.6	48	213	24	106	2.0	2.9
2	0.190	4.8	128	569	64	284	13.1	19.4
2	0.114	2.9	96	427	48	213	6.4	9.5
2	0.098	2.5	96	427	48	213	4.3	6.3
zip	.113 x .235	2.9 x 6.0	128	569	64	284	13.2	19.6

Mechanical Specifications

- Bend radius, no load
= 10x cable overall diameter
- Bend radius, load
= 15x cable overall diameter

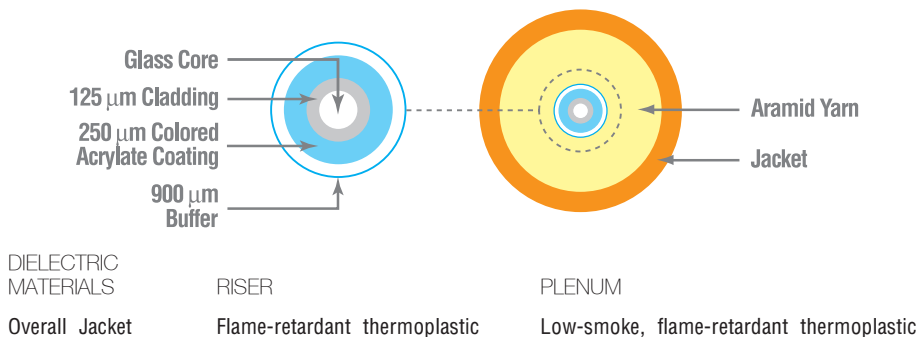


10 Gigabit Applications

IEEE standard	Wavelength	Transmission	Fiber type	Length (m)
10GBASE-SR	850nm	Serialized	OM1	33
			OM2	82
			OM3	300
			OM4	550
10GBASE-LR	1310nm	Serialized	SM	10,000 - 25,000
10GBASE-LRM	1310nm	Serialized	OM1	220
			OM3	260
10GBASE-ER	1550nm	Serialized	SM	40,000
10GBASE-LX4	1300nm	WDM	MM	240-300
			SM	10,000

For complete application list, refer to page 91.

Features



SingleUnit

2 through 24 fibers

Product Highlights

- RoHS compliant
- 900µm buffered design recommended for easy termination.
- OM2, OM3 & OM4 cables utilize Corning ClearCurve glass
- Each fiber is color coded for easy identification
- Ideal intra-building cable solution
- Flexible and easy to handle
- Lightweight, flexible aramid yarns enhance strength

Options

- Cables with 600 micron buffer available.
- Low smoke zero halogen available
- Standard colors are yellow for singlemode, orange for multimode and aqua for 10 Gigabit - other colors are available
- OM4 cables with extended 10 gigabit distances are available



2-fiber



4-fiber



6-fiber



8-fiber



10-fiber



12-fiber

Diagram scale approx. 2:1

SingleUnit (Riser)

(UL) OFNR c(UL) FT4

Fiber Count	62.5 UM OM1	50 UM OM2	50 UM OM3	50 UM OM4	8.3 UM OS2	8.3 UM OS2BI
2	60514-2	60063-2	60463-2	61864-2	60012-2	61661-2
4	60515-4	60516-4	60520-4	61865-4	60014-4	61705-4
6	60515-6	60516-6	60520-6	61865-6	60014-6	61705-6
8	60515-8	60516-8	60520-8	61865-8	60014-8	61705-8
10	60515-10	60516-10	60520-10	61865-10	60014-10	61705-10
12	60515-12	60516-12	60520-12	61865-12	60014-12	61705-12
24	60515-24	60516-24	60520-24	61865-24	60014-24	61705-24

Optical Specifications

TIA/EIA-568-C.3 | ISO/IEC 11801, 2nd edition | Telcordia GR-409-CORE

HCM Fiber Performance Parameters	Max Attenuation (dB/Km)		Min Bandwidth OFL MHz-Km		Min Bandwidth* MHz-Km		Gigabit Ethernet Support Distance (meters)		10 Gigabit Ethernet Support Distance (meters)	
	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm
OM1	3.5	1.0	200	500	220	na	300	550	33	na
OM2	3.5	1.0	700	500	850	na	750	550	150	na
OM3	3.25	1.0	1500	500	2000	na	1000	550	300	na
OM4	3.0	1.0	3500	500	4700	na	1100	550	550	na

*EMBc for OM2, OM3 & OM4 fibers. RML for OM1 fibers.

1310 nm 1550 nm

OS2 0.50 0.50

OS2 BI** 0.50 0.50

**OS2 BI utilizes bend-insensitive optical glass

HCM reserves the right to revise any specifications.

SingleUnit (Riser)

(UL) OFNR c(UL) FT4

FIBER COUNT	CABLE O.D.		MAXIMUM LOAD INSTALL		OPERATION		CABLE WEIGHT	
	in.	mm	lbs-f	N	lbs-f	N	lbs/1000 ft	kg/1000m
2	.190	4.8	128	569	64	284	11.5	17.1
4	.190	4.8	128	569	64	284	13.0	19.4
6	.190	4.8	128	569	64	284	14.5	21.6
8	.230	5.8	160	712	80	356	18.5	27.6
10	.230	5.8	160	712	80	356	20.0	29.8
12	.230	5.8	160	712	80	356	21.5	32.0
24	.350	8.8	288	1282	144	641	52.4	78.1

Mechanical
Specifications

- Bend radius, no load
= 10x cable overall diameter
- Bend radius, load
= 15x cable overall diameter

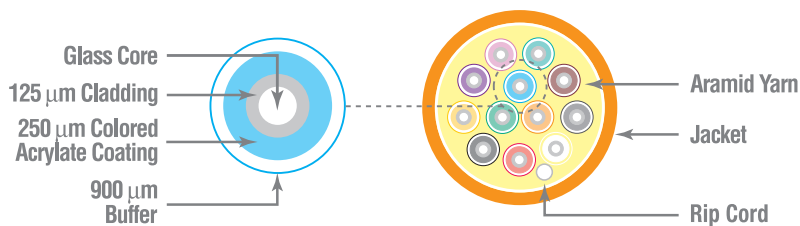


10 Gigabit Applications

IEEE standard	Wavelength	Transmission	Fiber type	Length (m)
10GBASE-SR	850nm	Serialized	OM1	33
			OM2	82
			OM3	300
			OM4	550
10GBASE-LR	1310nm	Serialized	SM	10,000 - 25,000
10GBASE-LRM	1310nm	Serialized	OM1	220
			OM3	260
10GBASE-ER	1550nm	Serialized	SM	40,000
10GBASE-LX4	1300nm	WDM	MM	240-300
			SM	10,000

For complete application list, refer to page 91.

Features

DIELECTRIC
MATERIALS

Overall Jacket

RISER

Flame-retardant thermoplastic

PLENUM

Low-smoke, flame-retardant thermoplastic



SingleUnit

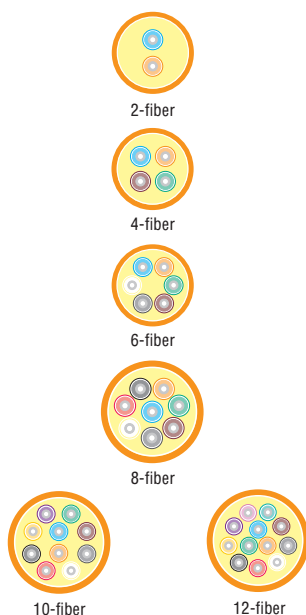
2 through 24 fibers

Product Highlights

- RoHS compliant
- 900µm buffered design recommended for easy termination.
- OM2, OM3, & OM4 cables utilize Corning ClearCurve glass.
- Each fiber is color coded for easy identification
- Ideal intra-building cable solution
- Flexible and easy to handle
- Lightweight, flexible aramid yarns enhance strength

Options

- Cables with 600 micron buffer available.
- Standard colors are yellow for singlemode, orange for multimode and aqua for 10 Gigabit - other colors are available
- OM4 cables with extended 10 gigabit distances are available



SingleUnit (Plenum)

(UL) OFNP c(UL) FT6

Fiber Count	62.5 UM OM1	50 UM OM2	50 UM OM3	50 UM OM4	8.3 UM OS2	8.3 UM OS2BI
2	60024-2	60026-2	60471-2	61867-2	60031-2	61687-2
4	60517-4	60518-4	60522-4	61868-4	60029-4	61707-4
6	60517-6	60518-6	60522-6	61868-6	60029-6	61707-6
8	60517-8	60518-8	60522-8	61868-8	60029-8	61707-8
10	60517-10	60518-10	60522-10	61868-10	60029-10	61707-10
12	60517-12	60518-12	60522-12	61868-12	60029-12	61707-12
24	60517-24	60518-24	60522-24	61868-24	60029-24	61707-24

Optical Specifications

TIA/EIA-568-C.3 | ISO/IEC 11801, 2nd edition | Telcordia GR-409-CORE

HCM Fiber Performance Parameters	Max Attenuation (dB/Km)		Min Bandwidth OFL (MHz-Km)		Min Bandwidth* (MHz-Km)		Gigabit Ethernet Support Distance (meters)		10 Gigabit Ethernet Support Distance (meters)	
	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm
OM1	3.5	1.0	200	500	220	na	300	550	33	na
OM2	3.5	1.0	700	500	850	na	750	550	150	na
OM3	3.25	1.0	1500	500	2000	na	1000	550	300	na
OM4	3.0	1.0	3500	500	4700	na	1100	550	550	na

*EMBc for OM2, OM3 & OM4 fibers. RML for OM1 fibers.

	1310 nm	1550 nm
OS2	0.50	0.50
OS2 BI**	0.50	0.50

**OS2 BI utilizes bend-insensitive optical glass

HCM reserves the right to revise any specifications.

SingleUnit (Plenum)

(UL) OFNP c(UL) FT6

FIBER COUNT	CABLE O.D.		MAXIMUM LOAD INSTALL		OPERATION		CABLE WEIGHT	
	in.	mm	lbs-f	N	lbs-f	N	lbs/1000 ft	kg/1000m
2	.190	4.8	128	569	64	284	13.3	19.8
4	.190	4.8	128	569	64	284	14.5	21.6
6	.190	4.8	128	569	64	284	15.7	23.4
8	.230	5.8	160	712	80	356	20.9	31.1
10	.230	5.8	160	712	80	356	21.7	32.3
12	.230	5.8	160	712	80	356	23.0	34.3
24	.350	8.8	288	1282	144	641	52.4	78.1

Mechanical Specifications

- Bend radius, no load
= 10x cable overall diameter
- Bend radius, load
= 15x cable overall diameter

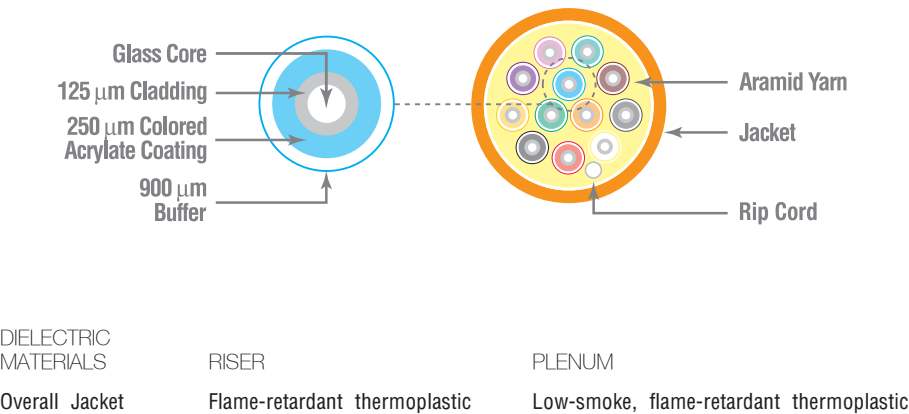


10 Gigabit Applications

IEEE standard	Wavelength	Transmission	Fiber type	Length (m)
10GBASE-SR	850nm	Serialized	OM1	33
			OM2	82
			OM3	300
			OM4	550
10GBASE-LR	1310nm	Serialized	SM	10,000 - 25,000
10GBASE-LRM	1310nm	Serialized	OM1	220
			OM3	260
10GBASE-ER	1550nm	Serialized	SM	40,000
10GBASE-LX4	1300nm	WDM	MM	240-300
			SM	10,000

For complete application list, refer to page 91.

Features



Product Highlights

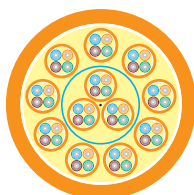
- RoHS compliant
- OM2, OM3, & OM4 cables utilize Corning ClearCurve glass.
- Each fiber is color coded for easy identification
- Compact distribution design
- Ideal intra-building, multi-floor cable solution
- Lightweight, flexible aramid yarns enhance strength

Options

- Cables with a 600 micron buffer available
- Low smoke zero halogen available
- Standard colors are yellow for singlemode, orange for multimode and aqua for 10 Gigabit - other colors are available
- OM4 cables with extended 10 gigabit distances are available
- OS2 Bend insensitive optical glass available

Applications

- See Page 91



48-fibers (12 tubes of 4-fibers)



48-fibers (8 tubes of 6-fibers)



48-fibers (4 tubes of 12-fibers)

Diagram scale approx. 1:1

MultiUnit (Riser)

(UL) OFNR c(UL) FT4

Fiber Count	# Fibers per Tube	62.5 UM OM1	50 UM OM2	50 UM OM3	50 UM OM4	8.3 UM OS2
12	2	60369-12	60594-12	60585-12	61870-12	60621-12
24	2	60369-24	60594-24	60585-24	61870-24	60621-24
24	4	60564-24	60588-24	60591-24	61871-24	60627-24
48	4	60564-48	60588-48	60591-48	61871-48	60627-48
18	6	60567-18	60595-18	60581-18	61872-18	60633-18
24	6	60567-24	60595-24	60581-24	61872-24	60633-4
36	6	60567-36	60595-36	60581-36	61872-36	60633-36
48	6	60567-48	60595-48	60581-48	61872-48	60633-48
72	6	60567-72	60595-72	60581-72	61872-72	60633-72
24	8	60569-24	60600-24	60603-24	61873-24	60638-24
32	8	60569-32	60600-32	60603-32	61873-32	60638-32
48	8	60569-48	60600-48	60603-48	61873-48	60638-48
72	8	60569-72	60600-72	60603-72	61873-72	60638-72
36	12	60006-36	60009-36	60613-36	61874-36	60015-36
48	12	60006-48	60009-48	60613-48	61874-48	60015-48
60	12	60006-60	60009-60	60613-60	61874-60	60015-60
72	12	60006-72	60009-72	60613-72	61874-72	60015-72
96	12	60006-96	60009-96	60613-96	61874-96	60015-96
144	12	60006-144	60009-144	60613-144	61874-144	60015-144

Optical Specifications

TIA/EIA-568-C.3 | ISO/IEC 11801, 2nd edition | Telcordia GR-409-CORE

HCM Fiber Performance Parameters	Max Attenuation (dB/Km)		Min Bandwidth OFL MHz-Km		Min Bandwidth* MHz-Km		Gigabit Ethernet Support Distance (meters)		10 Gigabit Ethernet Support Distance (meters)	
	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm
OM1	3.5	1.0	200	500	220	na	300	550	33	na
OM2	3.5	1.0	700	500	850	na	750	550	150	na
OM3	3.25	1.0	1500	500	2000	na	1000	550	300	na
OM4	3.0	1.0	3500	500	4700	na	1100	550	550	na

*EMBc for OM2, OM3 & OM4 fibers. RML for OM1 fibers.

	1310 nm	1550 nm
OS2	0.50	0.50

HCM reserves the right to revise any specifications.

MultiUnit (Riser)

(UL) OFNR c(UL) FT4

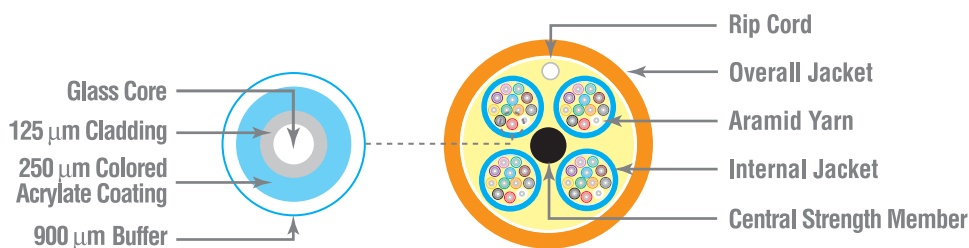
FIBER COUNT	#Fibers per Tube	Tube Layout	CABLE O.D.		MAXIMUM LOAD INSTALL		OPERATION		CABLE WEIGHT	
			in.	mm	lbs-f	N	lbs-f	N	lbs/1000 ft	kg/1000m
12	2	6xCSM	.630	16.0	768	3418	384	1709	131.0	195.2
24	2	9x3xCSM	.903	22.9	1536	6837	768	3418	249.0	371.0
24	4	6xCSM	.630	16.0	768	3418	384	1709	140.0	2086
48	4	9x3xCSM	.903	22.9	1536	6837	768	3418	263.0	391.9
18	6	3xCSM	.479	12.1	384	1709	192	854	77.0	114.7
24	6	4xCSM	.518	13.1	512	2279	256	1139	97.0	144.5
36	6	6xCSM	.630	16.0	768	3418	384	1709	148.0	220.5
48	6	8xCSM	.792	20.1	1024	4557	512	2279	253.0	377.0
72	6	9x3xCSM	.903	22.9	1536	6837	768	3418	280.0	417.2
24	8	3xCSM	.559	14.1	480	2136	240	1068	100.0	149.0
32	8	4xCSM	.614	15.5	640	3848	320	1424	127.0	189.2
48	8	6xCSM	.750	19.0	960	4273	480	2136	199.0	296.5
72	8	9xCSM	1.00	25.4	1440	6409	720	3204	393.0	585.6
36	12	3xCSM	.559	14.1	480	2136	240	1068	109.0	162.4
48	12	4xCSM	.614	15.5	640	2848	320	1424	139.0	207.1
60	12	5xCSM	.681	17.2	800	3561	400	1780	175.0	260.8
72	12	6xCSM	.750	19.0	960	4272	480	2136	216.0	321.8
96	12	8xCSM	.937	23.7	1280	5697	640	2848	360.0	536.4
144	12	9x3xCSM	1.06	26.9	1920	8545	960	4272	404.0	602.0

Mechanical Specifications

- Bend radius, no load
= 10x cable overall diameter
- Bend radius, load
= 15x cable overall diameter



Features



DIELECTRIC MATERIALS

Overall Jacket

RISER

Flame-retardant thermoplastic

PLENUM

Low-smoke, flame-retardant thermoplastic



Product Highlights

- RoHS compliant
- OM2, OM3, & OM4 cables utilize Corning ClearCurve glass.
- Each fiber is color coded for easy identification
- Compact distribution design
- Ideal intra-building, multi-floor cable solution
- Lightweight, flexible aramid yarns enhance strength

Options

- Cables with a 600 micron buffer available
- Standard colors are yellow for singlemode, orange for multimode and aqua for 10 Gigabit - other colors are available
- OM4 cables with extended 10 gigabit distances are available

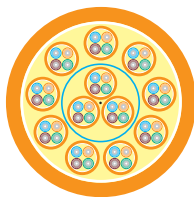
Applications

- See Page 91

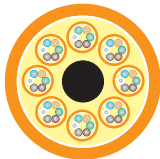
MultiUnit (Plenum)

(UL) OFNP c(UL) FT6

Fiber Count	# Fibers per Tube	62.5 UM OM1	50 UM OM2	50 UM OM3	50 UM OM4	8.3 UM OS2
12	2	60559-12	60582-12	60586-12	61875-12	60622-12
24	2	60559-24	60582-24	60586-24	61875-24	60622-24
24	4	60565-24	60589-24	60592-24	61876-24	60628-24
48	4	60565-48	60589-48	60592-48	61876-48	60628-48
18	6	60258-18	60596-18	60598-18	61877-18	60634-18
24	6	60258-24	60596-24	60598-24	61877-24	60634-24
36	6	60258-36	60596-36	60598-36	61877-36	60634-36
48	6	60258-48	60596-48	60598-48	61877-48	60634-48
72	6	60258-72	60596-72	60598-72	61877-72	60634-72
24	8	60570-24	60601-24	60604-24	61878-24	60639-24
32	8	60570-32	60601-32	60604-32	61878-32	60639-32
48	8	60570-48	60601-48	60604-48	61878-48	60639-48
72	8	60570-72	60601-72	60604-72	61878-72	60639-72
36	12	60027-36	60028-36	60614-36	61879-36	60033-36
48	12	60027-48	60028-48	60614-48	61879-48	60033-48
60	12	60027-60	60028-60	60614-60	61879-60	60033-60
72	12	60027-72	60028-72	60614-72	61879-72	60033-72
96	12	60027-96	60028-96	60614-96	61879-96	60033-96
144	12	60027-144	60028-144	60614-144	61879-144	60033-144



48-fibers (12 tubes of 4-fibers)



48-fibers (8 tubes of 6-fibers)



48-fibers (4 tubes of 12-fibers)

Diagram scale approx. 1:1

Optical Specifications

TIA/EIA-568-C.3 | ISO/IEC 11801, 2nd edition | Telcordia GR-409-CORE

HCM Fiber Performance Parameters	Max Attenuation (dB/Km)		Min Bandwidth OFL MHz-Km		Min Bandwidth* MHz-Km		Gigabit Ethernet Support Distance (meters)		10 Gigabit Ethernet Support Distance (meters)	
	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm
OM1	3.5	1.0	200	500	220	na	300	550	33	na
OM2	3.5	1.0	700	500	850	na	750	550	150	na
OM3	3.25	1.0	1500	500	2000	na	1000	550	300	na
OM4	3.0	1.0	3500	500	4700	na	1100	550	550	na

*EMBc for OM2, OM3 & OM4 fibers. RML for OM1 fibers.

	1310 nm	1550 nm
OS2	0.50	0.50

HCM reserves the right to revise any specifications.

MultiUnit (Plenum)

(UL) OFNP c(UL) FT6

FIBER COUNT	#Fibers per Tube	Tube Layout	CABLE O.D.		MAXIMUM LOAD INSTALL		OPERATION		CABLE WEIGHT	
			in.	mm	lbs-f	N	lbs-f	N	lbs/1000 ft	kg/1000m
12	2	6xCSM	.630	16.0	768	3418	384	1709	131.0	195.2
24	2	9x3xCSM	.903	22.9	1536	6837	768	3418	249.0	371.0
24	4	6xCSM	.630	16.0	768	3418	384	1709	140.0	208.6
48	4	9x3xCSM	.903	22.9	1536	6837	768	3418	263.0	391.9
18	6	3xCSM	.479	12.1	384	1709	192	854	77.0	114.7
24	6	4xCSM	.518	13.1	512	2279	256	1139	97.0	144.5
36	6	6xCSM	.630	16.0	768	3418	384	1709	148.0	220.5
48	6	8xCSM	.792	20.1	1024	4557	512	2279	253.0	377.0
72	6	9x3xCSM	.903	22.9	1536	6837	768	3418	280.0	417.2
24	8	3xCSM	.559	14.1	480	2136	240	1068	100.0	149.0
32	8	4xCSM	.614	15.5	640	3848	320	1424	127.0	189.2
48	8	6xCSM	.750	19.0	960	4273	480	2136	199.0	296.5
72	8	9xCSM	1.00	25.4	1440	6409	720	3204	393.0	585.6
36	12	3xCSM	.559	14.1	480	2136	240	1068	109.0	162.4
48	12	4xCSM	.614	15.5	640	2848	320	1424	139.0	207.1
60	12	5xCSM	.681	17.2	800	3561	400	1780	175.0	260.8
72	12	6xCSM	.750	19.0	960	4272	480	2136	216.0	321.8
96	12	8xCSM	.937	23.7	1280	5697	640	2848	360.0	536.4
144	12	9x3xCSM	1.06	26.9	1920	8545	960	4272	404.0	602.0

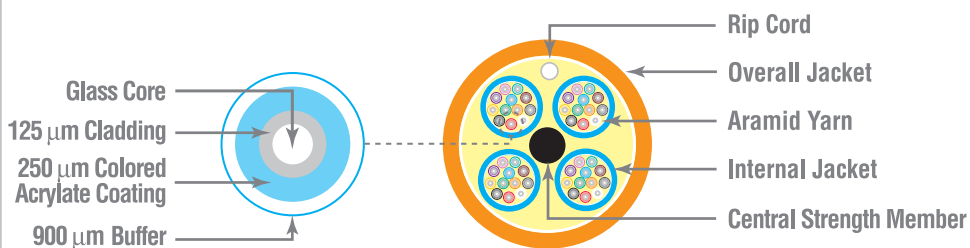
Mechanical Specifications

- Bend radius, no load
= 10x cable overall diameter
- Bend radius, load
= 15x cable overall diameter



Indoor

Features

DIELECTRIC
MATERIALS

Overall Jacket

RISER

Flame-retardant thermoplastic

PLENUM

Low-smoke, flame-retardant thermoplastic

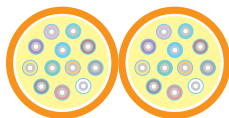


Product Highlights

- RoHS compliant
- OM2, OM3, & OM4 cables utilize Corning ClearCurve glass.
- 250 micron loose tube design allows for higher fiber strand counts in a smaller overall diameter cable
- Ideal for MT and MTP/MPO style connectors
- No gel design makes installation quick, easy and clean
- Each fiber is color coded for easy identification
- Flexible and easy to handle
- Lightweight, flexible Aramid yarns enhance strength

Options

- Standard colors are yellow for singlemode, orange for multimode and aqua for 10 Gigabit -other colors are available
- OM4 cables with extended 10 gigabit distances are available



Zip Cord

Diagram scale approx. 5:1

NanoCore™ Loose Tube No Gel Distribution Zip Cord (Plenum)

(UL) OFNP c(UL) FT6

Fiber Count	50 UM OM2	50 UM OM3	50 UM OM4	8.3 UM OS2	8.3 UM OS2BI
12	61546-12	61539-12	61882-12	61547-12	61713-12
24	61546-24	61539-24	61882-24	61547-24	61713-24

Optical Specifications

TIA/EIA-568-C.3 | ISO/IEC 11801, 2nd edition | Telcordia GR-409-CORE

HCM Fiber Performance Parameters	Max Attenuation (dB/Km)		Min Bandwidth OFL MHz-Km		Min Bandwidth* MHz-Km		Gigabit Ethernet Support Distance (meters)		10 Gigabit Ethernet Support Distance (meters)	
	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm
OM1	3.5	1.0	200	500	220	na	300	550	33	na
OM2	3.5	1.0	700	500	850	na	750	550	150	na
OM3	3.25	1.0	1500	500	2000	na	1000	550	300	na
OM4	3.25	1.0	3500	500	4700	na	1100	550	550	na

*EMBc for OM2, OM3 & OM4 fibers. RML for OM1 fibers.

	1310 nm	1550 nm
OS2	0.50	0.5
OS2 BI**	0.50	0.5

**OS2 BI utilizes bend-insensitive optical glass

HCM reserves the right to revise any specifications.

Loose Tube

NanoCore™ Loose Tube No Gel Distribution Zip Cord (Plenum)

(UL) OFNP c(UL) FT6

FIBER COUNT	CABLE O.D.		MAXIMUM LOAD INSTALL		OPERATION		CABLE WEIGHT	
	in.	mm	lbs-f	N	lbs-f	N	lbs/1000 ft	kg/1000m
12	.118 x .255	3.0 x 6.47	128	569	64	284	11.3	16.8
24	.118 x .255	3.0 x 6.47	128	569	64	284	11.4	17.0

10 Gigabit Applications

IEEE standard	Wavelength	Transmission	Fiber type	Length (m)
10GBASE-SR	850nm	Serialized	OM1	33
			OM2	82
			OM3	300
			OM4	550
10GBASE-LR	1310nm	Serialized	SM	10,000 - 25,000
10GBASE-LRM	1310nm	Serialized	OM1	220
			OM3	260
10GBASE-ER	1550nm	Serialized	SM	40,000
10GBASE-LX4	1300nm	WDM	MM	240-300
			SM	10,000

For complete application list, refer to page 91.

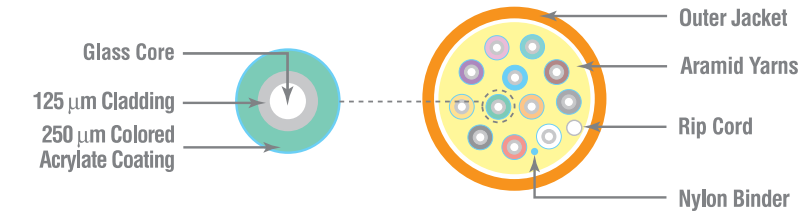
Mechanical Specifications

- Bend radius, no load
= 10x cable overall diameter
- Bend radius, load
= 15x cable overall diameter



Indoor

Features



DIELECTRIC MATERIALS	PLENUM
Overall Jacket	Low-smoke, flame-retardant thermoplastic



Product Highlights

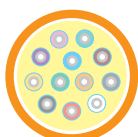
- RoHS Compliant
- OM2, OM3, & OM4 cables utilize Corning ClearCurve glass.
- 250 micron loose tube design allows for higher fiber strand counts in a smaller overall diameter cable
- Ideal for MT and MTP/MPO style connectors
- No gel design makes installation quick, easy and clean
- Each fiber is color coded for easy identification
- Flexible and easy to handle
- Lightweight, flexible Aramid yarns enhance strength

Options

- Riser rated cables available
- OM1 cables available
- Standard colors are yellow for singlemode, orange for multimode and aqua for 10 Gigabit -other colors are available
- OM4 cables with extended 10 gigabit distances are available

Applications

- See Page 91



12 fibers

Diagram scale approx. 3:1

NanoCore™ Loose Tube No Gel Distribution Single-Jacket (Plenum)

(UL) OFNP c(UL) FT6

Fiber Count	# Fibers per Tube	50 UM OM2	50 UM OM3	50 UM OM4	8.3 UM OS2	8.3 UM OS2BI
2	2	61506-2	61507-2	61883-2	61538-2	61715-2
6	6	61506-6	61507-6	61883-6	61538-6	61715-6
8	8	61506-8	61507-8	61883-8	61538-8	61715-8
12	12	61506-12	61507-12	61883-12	61538-12	61715-12
24	24	61506-24	61507-24	61883-24	61538-24	61715-24
6	2	61732-6	61736-6	61889-6	61724-6	61778-6
18	6	61733-18	61737-18	61890-18	61725-18	61779-18
36	12	61734-35	61738-36	61890-36	61726-36	61780-36
72	24	61735-72	61739-72	61890-72	61727-72	61781-72
8	2	61732-8	61736-8	61889-8	61724-8	61778-8
24	6	61733-24	61737-24	61890-24	61725-24	61779-24
48	12	61734-48	61738-48	61890-48	61726-48	61780-48
96	24	61735-96	61739-96	61890-96	61727-96	61781-96
12	2	61732-12	61736-12	61889-12	61724-12	61778-12
36	6	61733-36	61737-36	61890-36	61725-36	61779-36
72	12	61734-72	61738-72	61890-72	61726-72	61780-72
144	24	61735-144	61739-144	61890-144	61727-144	61781-144

Optical Specifications

TIA/EIA-568-C.3 | ISO/IEC 11801, 2nd edition | Telcordia GR-409-CORE

HCM FIBER	Max Attenuation (dB/Km)		Min Bandwidth OFL MHz-Km		Min Bandwidth* MHz-Km		Gigabit Ethernet Support Distance (meters)		10 Gigabit Ethernet Support Distance (meters)	
	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm
OM1	3.25**	1.0	200	500	220	na	300	550	33	na
OM2	3.25**	1.0	700	500	850	na	750	550	150	na
OM3	3.0**	1.0	1500	500	2000	na	1000	550	300	na
OM4	3.0	1.0	3500	500	4700	na	1100	550	550	na

*EMBc for OM2, OM3 & OM4 fibers. RML for OM1 fibers.

	1310 nm	1550 nm
OS1	0.50	0.50
OS2	0.35	0.25
OS2 BI***	0.35	0.25

**OM1 & OM2 cables w/24 fibers/tube have max attenuation of 3.5dB/Km at 850 nm.

**OM3 cables w/24 fibers/tube have max attenuation of 3.25dB/Km at 850 nm.

***OS2 BI utilizes bend-insensitive optical glass

HCM reserves the right to revise any specifications.

Multimode and Singlemode

Loose Tube

NanoCore™ Loose Tube

No Gel Distribution Single-Jacket (Plenum)

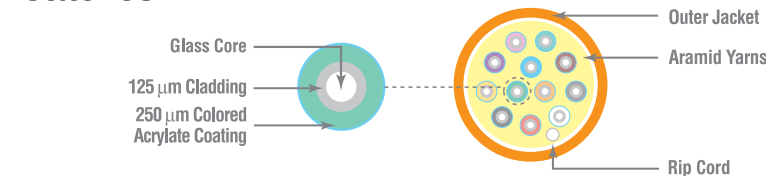
(UL) OFNP c(UL) FT6

FIBER COUNT	# Fibers perTube	Tube Layout	Tube O.D.		CABLE O.D.		MAXIMUM LOAD INSTALL		OPERATION		CABLE WEIGHT	
			in.	mm	in.	mm	lbs-f	N	lbs-f	N	lbs/1000 ft	kg/1000m
2	2	-	0.118	3.0	0.118	3.0	64	284	32	142	5.5	8.2
6	6	-	0.118	3.0	0.118	3.0	64	284	32	142	5.6	8.3
8	8	-	0.118	3.0	0.118	3.0	64	284	32	142	5.7	8.5
12	12	-	0.118	3.0	0.118	3.0	64	284	32	142	5.9	8.8
24	24	-	0.177	4.5	0.177	4.5	100	445	50	223	13.1	19.5
6	2	3xCSM	0.144	3.66	0.372	9.45	192	855	96	427	53.1	79
18	6	3xCSM	0.144	3.66	0.372	9.45	192	855	96	427	53.7	79.9
36	12	3xCSM	0.144	3.66	0.372	9.45	192	855	96	427	54.5	81.1
72	24	3xCSM	0.177	4.5	0.443	11.25	300	1335	150	668	69.6	103.6
8	2	4xCSM	0.144	3.66	0.428	10.87	256	1140	128	570	81.2	120.8
24	6	4xCSM	0.144	3.66	0.428	10.87	256	1140	128	570	81.9	121.8
48	12	4xCSM	0.144	3.66	0.428	10.87	256	1140	128	570	82.9	123.4
96	24	4xCSM	0.177	4.5	0.507	12.88	400	1780	200	890	105.4	156.9
12	2	6xCSM	0.144	3.66	0.512	13.00	384	1709	192	855	120.4	179.2
36	6	6xCSM	0.144	3.66	0.512	13.00	384	1709	192	855	121.5	180.8
72	12	6xCSM	0.144	3.66	0.512	13.00	384	1709	192	855	123.0	183
144	24	6xCSM	0.177	4.5	0.612	15.54	600	2670	300	1335	161.7	240.6

10 Gigabit Applications

IEEE standard	Wavelength	Transmission	Fiber type	Length (m)
10GBASE-SR	850nm	Serialized	OM1	33
			OM2	82
			OM3	300
			OM4	550
10GBASE-LR	1310nm	Serialized	SM	10,000 - 25,000
10GBASE-LRM	1310nm	Serialized	OM1	220
			OM3	260
10GBASE-ER	1550nm	Serialized	SM	40,000
10GBASE-LX4	1300nm	WDM	MM	240-300
			SM	10,000

Features



DIELECTRIC MATERIALS

Overall Jacket

PLENUM

Low-smoke, flame-retardant thermoplastic

Mechanical Specifications

- Bend radius, no load = 10x cable overall diameter
- Bend radius, load = 15x cable overall diameter



Indoor

Product Highlights

- RoHS Compliant
- OM2, OM3, & OM4 cables utilize Corning ClearCurve glass.
- 250 micron loose tube design allows for higher fiber strand counts in a smaller overall diameter cable
- Ideal for MT and MTP/MPO style connectors
- No gel design makes installation quick, easy and clean
- Each fiber is color coded for easy identification
- Color-coded binders separate fiber strands into bundles of 12
- Rugged dual-jacket design
- Flexible and easy to handle
- Lightweight, flexible Aramid yarns enhance strength

Options

- Cables with improved attenuation available
- Standard colors are yellow for singlemode, orange for multimode and aqua for 10 Gigabit -other colors are available
- OM4 cables with extended 10 gigabit distances are available



12-fibers

Diagram scale approx. 3:1

NanoCore™ Loose Tube No Gel Distribution Dual-Jacket (Plenum)

(UL) OFNP c(UL) FT6

Fiber Count	50 UM OM2	50 UM OM3	50 UM OM4	8.3 UM OS2	8.3 UM OS2BI
12	61549-12	61509-12	61884-12	61550-12	61717-12
24	61549-24	61509-24	61884-24	61550-24	61717-24
36	61549-36	61509-36	61884-36	61550-36	61717-36
48	61549-48	61509-48	61884-48	61550-48	61717-48
72	61549-72	61509-72	61884-72	61550-72	61717-72
96	61549-96	61509-96	61884-96	61550-96	61717-96

Optical Specifications

TIA/EIA-568-C.3 | ISO/IEC 11801, 2nd edition | Telcordia GR-409-CORE

HCM FIBER	Max Attenuation (dB/Km)		Min Bandwidth OFL MHz-Km		Min Bandwidth* MHz-Km		Gigabit Ethernet Support Distance (meters)		10 Gigabit Ethernet Support Distance (meters)	
	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm
OM1	3.5	1.0	200	500	220	na	300	550	33	na
OM2	3.5	1.0	700	500	850	na	750	550	150	na
OM3	3.25	1.0	1500	500	2000	na	1000	550	300	na
OM4	3.0	1.0	3500	500	4700	na	1100	550	550	na

*EMBc for OM2, OM3 & OM4 fibers. RML for OM1 fibers.

	1310 nm	1550 nm
OS2	0.5	0.5
OS2 BI**	0.5	0.5

**OS2 BI utilizes bend-insensitive optical glass

HCM reserves the right to revise any specifications.

Multimode and Singlemode

Loose Tube

NanoCore™ Loose Tube

No Gel Distribution Dual-Jacket (Plenum)

(UL) OFNP c(UL) FT6

FIBER COUNT	12-Fiber Bundles	CABLE O.D.		MAXIMUM LOAD INSTALL		OPERATION		CABLE WEIGHT	
		in.	mm	lbs-f	N	lbs-f	N	lbs/1000 ft	kg/1000m
12	1	.335	8.5	384	1709	195	855	47.0	70.0
24	2	.335	8.5	384	1709	195	855	47.2	70.3
36	3	.335	8.5	384	1709	195	855	47.4	70.6
48	4	.335	8.5	384	1709	195	855	47.6	70.9
72	6	.335	8.5	384	1709	195	855	47.8	71.2
96	8	.335	8.5	384	1709	195	855	60.3	79.7

- Mechanical Specifications
- Bend radius, no load
= 10x cable overall diameter
- Bend radius, load
= 15x cable overall diameter

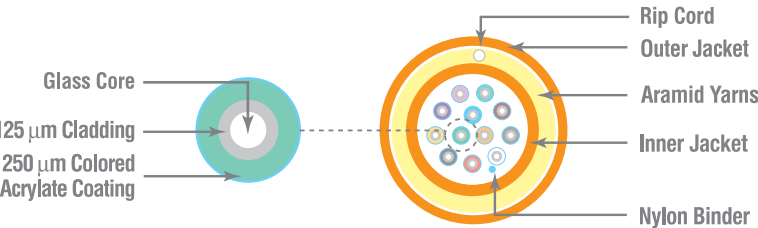


10 Gigabit Applications

IEEE standard	Wavelength	Transmission	Fiber type	Length (m)
			OM1	33
10GBASE-SR	850nm	Serialized	OM2	82
			OM3	300
			OM4	550
10GBASE-LR	1310nm	Serialized	SM	10,000 - 25,000
10GBASE-LRM	1310nm	Serialized	OM1	220
			OM3	260
10GBASE-ER	1550nm	Serialized	SM	40,000
10GBASE-LX4	1300nm	WDM	MM	240-300
			SM	10,000

For complete application list, refer to page 91.

Features



DIELECTRIC MATERIALS	PLENUM
Overall Jacket	Low-smoke, flame-retardant thermoplastic



Indoor

Armored

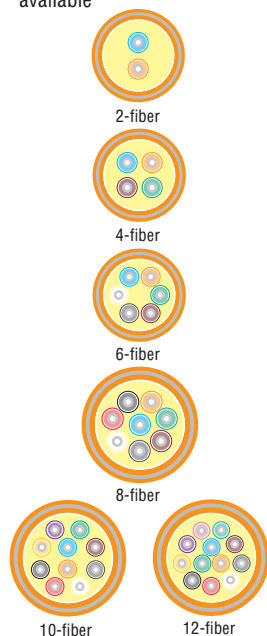
2 through 24 fibers

Product Highlights

- RoHS compliant
- OM2, OM3, & OM4 cables utilize Corning ClearCurve glass.
- 900 um buffered design recommended for easy termination.
- Eliminates need for inner duct or conduit
- Aluminum interlock armor
- Each fiber is color coded for easy identification
- Ideal intra-building cable solution
- Flexible and easy to handle
- Lightweight, flexible aramid yarns enhance strength

Options

- Cables with up to 144 fibers available
- Steel interlock available
- Low smoke zero halogen available
- Standard colors are yellow for singlemode, orange for multimode and aqua for 10 Gigabit -other colors are available
- OM4 cables with extended 10 gigabit distances are available



Armored Tight Buffered (Riser)

(UL) OFCR c(UL) FT4

Fiber Count	62.5 UM OM1	50 UM OM2	50 UM OM3	50 UM OM4	8.3 UM OS2
2	60524-2	61542-2	61421-2	61896-2	61540-2
4	60524-4	61542-4	61421-4	61896-4	61540-4
6	60524-6	61542-6	61421-6	61896-6	61540-6
8	60524-8	61542-8	61421-8	61896-8	61540-8
10	60524-10	61542-10	61421-10	61896-10	61540-10
12	60524-12	61542-12	61421-12	61896-12	61540-12
24	60524-24	61542-24	61421-24	61896-24	61540-24

Optical Specifications

TIA/EIA-568-C.3 | ISO/IEC 11801, 2nd edition | Telcordia GR-409-CORE

HCM Fiber Performance Parameters	Max Attenuation (dB/Km)		Min Bandwidth OFL MHz-Km		Min Bandwidth* MHz-Km		Gigabit Ethernet Support Distance (meters)		10 Gigabit Ethernet Support Distance (meters)	
	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm
OM1	3.5	1.0	200	500	220	na	300	550	33	na
OM2	3.5	1.0	700	500	850	na	750	550	150	na
OM3	3.25	1.0	1500	500	2000	na	1000	550	300	na
OM4	3.0	1.0	3500	500	4700	na	1100	550	550	na

*EMBc for OM2, OM3 & OM4 fibers. RML for OM1 fibers.

	1310 nm	1550 nm
OS2	0.50	0.50

HCM reserves the right to revise any specifications.

Armored Tight Buffered (Riser)

(UL) OFCR c(UL) FT4

FIBER COUNT	CABLE O.D.		MAXIMUM LOAD INSTALL		OPERATION		CABLE WEIGHT	
	in.	mm	lbs-f	N	lbs-f	N	lbs/1000 ft	kg/1000m
2	.48	12.192	128	570	64	285	93.4	139.2
4	.48	12.192	128	570	64	285	94.9	141.4
6	.48	12.192	128	570	64	285	96.4	143.6
8	.52	13.208	160	712	80	356	109.9	163.8
10	.52	13.208	160	712	80	356	111.4	166.0
12	.52	13.208	160	712	80	356	112.9	168.2
24	.64	16.256	288	1282	144	641	164.1	244.5

Mechanical
Specifications

- Bend radius, no load
= 15x cable overall diameter
- Bend radius, load
= 20x cable overall diameter

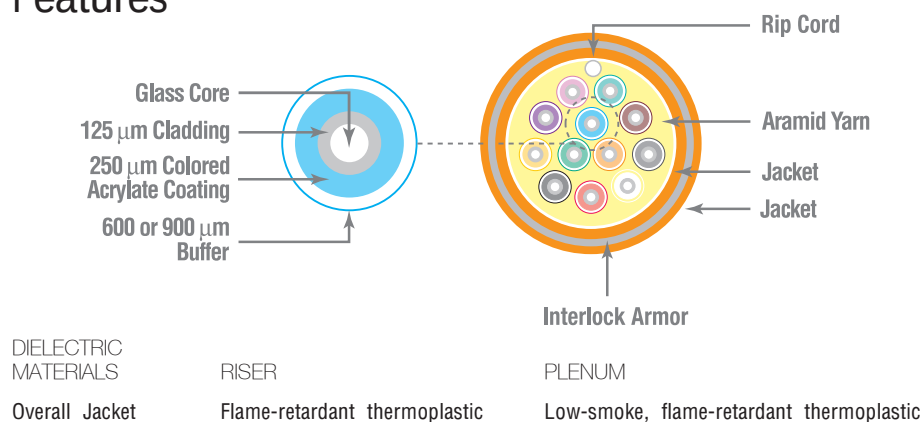
plus
CORNING[®]
ClearCurve[®] Optical Fiber

10 Gigabit Applications

IEEE standard	Wavelength	Transmission	Fiber type	Length (m)
10GBASE-SR	850nm	Serialized	OM1	33
			OM2	82
			OM3	300
			OM4	550
10GBASE-LR	1310nm	Serialized	SM	10,000 - 25,000
10GBASE-LRM	1310nm	Serialized	OM1	220
			OM3	260
10GBASE-ER	1550nm	Serialized	SM	40,000
10GBASE-LX4	1300nm	WDM	MM	240-300
			SM	10,000

For complete application list, refer to page 91.

Features



Armored

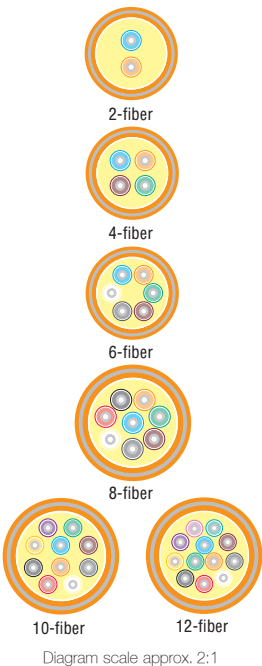
2 through 24 fibers

Product Highlights

- RoHS compliant
- OM2, OM3, & OM4 cables utilize Corning ClearCurve glass.
- 900um buffered design recommended for easy termination.
- Eliminates need for inner duct or conduit
- Aluminum interlock armor
- Each fiber is color coded for easy identification
- Ideal intra-building cable solution
- Flexible and easy to handle
- Lightweight, flexible aramid yarns enhance strength

Options

- Standard colors are yellow for singlemode, orange for multimode and aqua for 10 Gigabit -other colors are available
- OM4 cables with extended 10 gigabit distances are available



Armored Tight Buffered (Plenum)

(UL) OFCP c(UL) FT6

Fiber Count	62.5 UM OM1	50 UM OM2	50 UM OM3	50 UM OM4	8.3 UM OS2
2	60405-2	61319-2	61337-2	61897-2	61433-2
4	60405-4	61319-4	61337-4	61897-4	61433-4
6	60405-6	61319-6	61337-6	61897-6	61433-6
8	60405-8	61319-8	61337-8	61897-8	61433-8
10	60405-10	61319-10	61337-10	61897-10	61433-10
12	60405-12	61319-12	61337-12	61897-12	61433-12
24	60405-24	61319-24	61337-24	61897-24	61433-24

Optical Specifications

TIA/EIA-568-C.3 | ISO/IEC 11801, 2nd edition | Telcordia GR-409-CORE

HCM Fiber Performance Parameters	Max Attenuation (dB/Km)		Min Bandwidth OFL MHz-Km		Min Bandwidth* MHz-Km		Gigabit Ethernet Support Distance (meters)		10 Gigabit Ethernet Support Distance (meters)	
	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm
OM1	3.5	1.0	200	500	220	na	300	550	33	na
OM2	3.5	1.0	700	500	850	na	750	550	150	na
OM3	3.25	1.0	1500	500	2000	na	1000	550	300	na
OM4	3.0	1.0	3500	500	4700	na	1100	550	550	na

*EMBc for OM2, OM3 & OM4 fibers. RML for OM1 fibers.

	1310 nm	1550 nm
OS2	0.50	0.50

HCM reserves the right to revise any specifications.

Armored Tight Buffered (Plenum)

(UL) OFCP c(UL) FT6

FIBER COUNT	CABLE O.D.		MAXIMUM LOAD INSTALL		OPERATION		CABLE WEIGHT	
	in.	mm	lbs-f	N	lbs-f	N	lbs/1000 ft	kg/1000m
2	.48	12.192	128	570	64	285	99.2	147.8
4	.48	12.192	128	570	64	285	100.4	149.6
6	.48	12.192	128	570	64	285	101.6	151.4
8	.52	13.208	160	712	80	356	116.7	173.9
10	.52	13.208	160	712	80	356	117.5	175.1
12	.52	13.208	160	712	80	356	118.8	177.0
24	.64	16.256	288	1282	144	641	164.1	244.5

Mechanical Specifications

- Bend radius, no load
= 15x cable overall diameter
- Bend radius, load
= 20x cable overall diameter

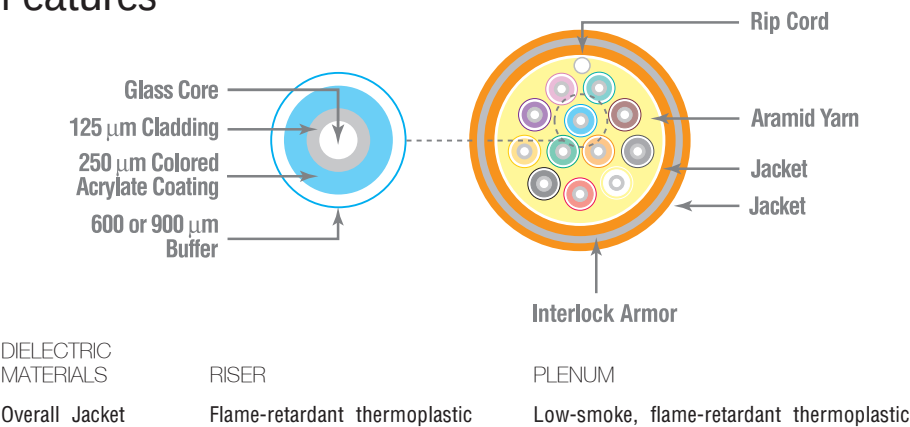


10 Gigabit Applications

IEEE standard	Wavelength	Transmission	Fiber type	Length (m)
10GBASE-SR	850nm	Serialized	OM1	33
			OM2	82
			OM3	300
			OM4	550
10GBASE-LR	1310nm	Serialized	SM	10,000 - 25,000
10GBASE-LRM	1310nm	Serialized	OM1	220
			OM3	260
10GBASE-ER	1550nm	Serialized	SM	40,000
10GBASE-LX4	1300nm	WDM	MM	240-300
			SM	10,000

For complete application list, refer to page 91.

Features



Tight Buffered

Product Highlights

- RoHS compliant
- OM2, OM3, & OM4 cables utilize Corning ClearCurve glass.
- UV resistant jacket
- Tight buffered construction
- Each fiber is color coded for easy identification
- Dry, super absorbent polymers (SAPs) eliminate water migration in cable interstices
- Suitable for lashed aerial, duct, underground conduit and indoor riser applications
- 900um buffered design recommended for easy termination

Options

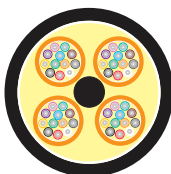
- Low smoke zero halogen available
- OM4 cables with extended 10 gigabit distances are available



6-fiber



12-fiber



48-fibers (4 tubes of 12-fibers)

Diagram scale approx. 2:1

I/O Tight Buffered (Riser)

(UL) OFNR c(UL) FT4

Fiber Count	#Fibers per Tube	62.5 UM OM1		50 UM OM2		50 UM OM3		50 UM OM4		8.3 UM OS2		8.3 UM OS2BI	
2	2	61345-2	61347-2	61348-2	61893-2	61349-2	61719-2						
4	4	61345-4	61347-4	61348-4	61893-4	61349-4	61719-4						
6	6	61345-6	61347-6	61348-6	61893-6	61349-6	61719-6						
8	8	61345-8	61347-8	61348-8	61893-8	61349-8	61719-8						
10	10	61345-10	61347-10	61348-10	61893-10	61349-10	61719-10						
12	12	61345-12	61347-12	61348-12	61893-12	61349-12	61719-12						
24	24	61345-24	61347-24	61348-24	61893-24	61349-24	61719-24						
36	6	61380-36	61376-36	61523-36	61898-36	61415-36	na						
48	12	61495-48	61522-48	61524-48	61899-48	61363-48	na						
72	12	61495-72	61522-72	61524-72	61899-72	61363-72	na						

Optical Specifications

TIA/EIA-568-C.3

HCM Fiber Performance Parameters	Max Attenuation (dB/Km)		Min Bandwidth OFL MHz-Km		Min Bandwidth* MHz-Km		Gigabit Ethernet Support Distance (meters)		10 Gigabit Ethernet Support Distance (meters)	
	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm
OM1	3.5	1.0	200	500	220	na	300	550	33	na
OM2	3.5	1.0	700	500	850	na	750	550	150	na
OM3	3.25	1.0	1500	500	2000	na	1000	550	300	na
OM4	3.0	1.0	3500	500	4700	na	1100	550	550	na

*EMBc for OM2, OM3 & OM4 fibers. RML for OM1 fibers.

1310 nm 1550 nm

OS2 0.50 0.50

OS2 BI** 0.50 0.50

**OS2 BI utilizes bend-insensitive optical glass

HCM reserves the right to revise any specifications.

Tight Buffered

Multimode and Singlemode

I/O Tight Buffered (Riser)

(UL) OFNR c(UL) FT4

FIBER COUNT	#Fibers per Tube	Tube Layout	CABLE O.D.		MAXIMUM LOAD INSTALL		OPERATION		CABLE WEIGHT	
			in.	mm	lbs-f	N	lbs-f	N	lbs/1000 ft	kg/1000m
2	2	x	.190	4.8	128	570	64	285	12.6	18.8
4	4	x	.190	4.8	128	570	64	285	13.9	20.7
6	6	x	.190	4.8	128	570	64	285	15.1	22.5
8	8	x	.230	5.8	160	712	80	356	20.0	29.8
10	10	x	.230	5.8	160	712	80	356	21.3	31.7
12	12	x	.230	5.8	160	712	80	356	22.5	33.5
24	24	x	.350	8.8	288	1282	144	641	52.4	78.1
36	6	6xCSS	.657	16.7	600	2671	200	890	135.0	201.2
48	12	4xCSS	.64	16.4	600	2671	200	890	145.0	216.1
72	12	6xCSS	.816	20.7	600	2671	200	890	156.7	233.5

Mechanical Specifications

- Bend radius, no load
= 10x cable overall diameter
- Bend radius, load
= 20x cable overall diameter

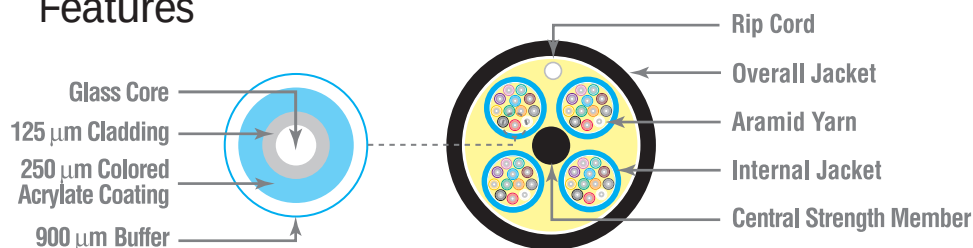


10 Gigabit Applications

IEEE standard	Wavelength	Transmission	Fiber type	Length (m)
10GBASE-SR	850nm	Serialized	OM1	33
			OM2	82
			OM3	300
			OM4	550
10GBASE-LR	1310nm	Serialized	SM	10,000 - 25,000
10GBASE-LRM	1310nm	Serialized	OM1	220
			OM3	260
10GBASE-ER	1550nm	Serialized	SM	40,000
10GBASE-LX4	1300nm	WDM	MM	240-300
			SM	10,000

For complete application list, refer to page 91.

Features



DIELECTRIC MATERIALS

Overall Jacket

RISER

Flame-retardant thermoplastic

PLENUM

Low-smoke, flame-retardant thermoplastic

Indoor/Outdoor
Tight Buffered



Tight Buffered

Product Highlights

- RoHS compliant
- OM2, OM3, & OM4 cables utilize Corning ClearCurve glass.
- UV resistant jacket
- Tight buffered construction
- Easy to strip and terminate
- Each fiber is color coded for easy identification
- Dry, super absorbent polymers (SAPs) eliminate water migration in cable interstices
- Suitable for lashed aerial, duct, underground conduit and indoor plenum applications
- 900um buffered design recommended for easy termination

Options

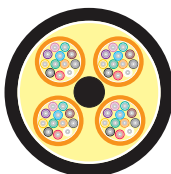
- OM4 cables with extended 10 gigabit distances are available



6-fiber



12-fiber



48-fibers (4 tubes of 12-fibers)

Diagram scale approx. 3:1

I/O Tight Buffered (Plenum)

(UL) OFNP c(UL) FT6

Fiber Count	Fibers per tube	62.5 UM OM1	50 UM OM2	50 UM OM3	50 UM OM4	8.3 UM OS2	8.3 UM OS2BI
2	2	61460-2	61464-2	61468-2	61894-2	61459-2	61721-2
4	4	61460-4	61464-4	61468-4	61894-4	61459-4	61721-4
6	6	61460-6	61464-6	61468-6	61894-6	61459-6	61721-6
8	8	61460-8	61464-8	61468-8	61894-8	61459-8	61721-8
10	10	61460-10	61464-10	61468-10	61894-10	61459-10	61721-10
12	12	61460-12	61464-12	61468-12	61894-12	61459-12	61721-12
24	24	61460-24	61464-24	61468-24	61894-24	61459-24	61721-24
48	12	61979-48	61956-48	61959-48	61980-48	61480-48	61981-48
72	12	61979-72	61956-72	61959-72	61980-72	61480-72	61981-72
144	12	61979-144	61956-144	61959-144	61980-144	61480-144	61981-144

Optical Specifications

TIA/EIA-568-C.3

HCM Fiber Performance Parameters	Max Attenuation (dB/Km)		Min Bandwidth OFL MHz-Km		Min Bandwidth* MHz-Km		Gigabit Ethernet Support Distance (meters)		10 Gigabit Ethernet Support Distance (meters)	
	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm
OM1	3.5	1.0	200	500	220	na	300	550	33	na
OM2	3.5	1.0	700	500	850	na	750	550	150	na
OM3	3.25	1.0	1500	500	2000	na	1000	550	300	na
OM4	3.0	1.0	3500	500	4700	na	1100	550	550	na

*EMBc for OM2, OM3 & OM4 fibers. RML for OM1 fibers.

	1310 nm	1550 nm
OS2	0.50	0.50
OS2 BI**	0.50	0.50

**OS2 BI utilizes bend-insensitive optical glass

HCM reserves the right to revise any specifications.

Tight Buffered

Multimode and Singlemode

I/O Tight Buffered (Plenum)

(UL) OFNP c(UL) FT6

FIBER COUNT	# Fibers per Tube	Tube Layout	CABLE O.D.		MAXIMUM LOAD INSTALL		OPERATION		CABLE WEIGHT	
			in.	mm	lbs-f	N	lbs-f	N	lbs/1000 ft	kg/1000m
2	2	x	.190	4.8	128	570	64	285	12.6	18.8
4	4	x	.190	4.8	128	570	64	285	13.9	20.7
6	6	x	.190	4.8	128	570	64	285	15.1	22.5
8	8	x	.230	5.8	160	712	80	356	20.0	29.8
10	10	x	.230	5.8	160	712	80	356	21.3	31.7
12	12	x	.230	5.8	160	712	80	356	22.5	33.5
24	24	x	.350	8.8	288	1282	144	641	52.4	78.1
48	12	4xCSM	0.627	15.9	640	2849	320	1424	135.1	201.1
72	12	6xCSM	0.756	19.2	960	4273	480	2136	226.6	337.2
144	12	9x3xCSM	1.072	27.2	1920	8546	960	4273	396.8	590.5

Mechanical Specifications

- Bend radius, no load
= 10x cable overall diameter
- Bend radius, load
= 20x cable overall diameter

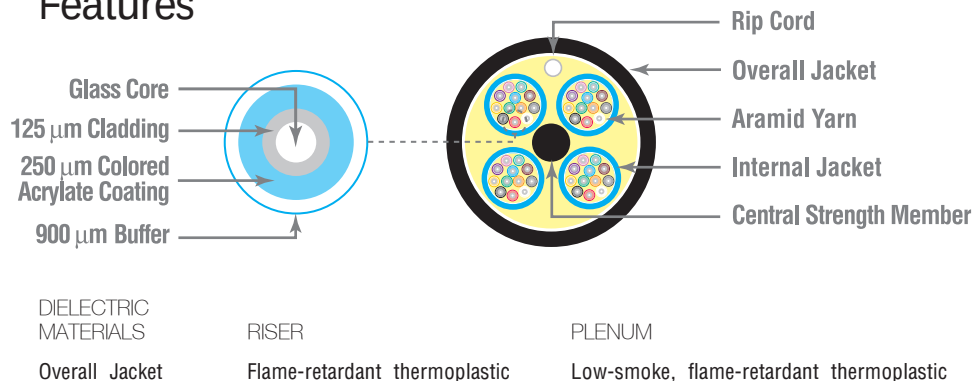


10 Gigabit Applications

IEEE standard	Wavelength	Transmission	Fiber type	Length (m)
10GBASE-SR	850nm	Serialized	OM1	33
			OM2	82
			OM3	300
			OM4	550
10GBASE-LR	1310nm	Serialized	SM	10,000 - 25,000
10GBASE-LRM	1310nm	Serialized	OM1	220
			OM3	260
10GBASE-ER	1550nm	Serialized	SM	40,000
10GBASE-LX4	1300nm	WDM	MM	240-300
			SM	10,000

For complete application list, refer to page 91.

Features



Indoor/Outdoor
Tight Buffered



Central Tube

2 through 12 fibers

Product Highlights

- RoHS compliant
- OM2, OM3, & OM4 cables utilize Corning ClearCurve glass.
- UV resistant jacket
- Gel filled central tube provides protection against water penetration
- Dry, super absorbent polymers (SAPs) eliminate water migration in cable interstices
- Suitable for lashed aerial, duct, underground conduit and indoor riser applications

Options

- Low smoke zero halogen available
- OM4 cables with extended 10 gigabit distances are available



2-fibers



4-fibers



6-fibers



8-fibers



10-fibers



12-fibers

Diagram scale approx. 3:1

Indoor/Outdoor Central Tube (Riser)

(UL) OFNR c(UL) FT4

Fiber Count	62.5 UM OM1	50 UM OM2	50 UM OM3	50 UM OM4	8.3 UM OS2	8.3 UM OS2BI
2	60103-2	60104-2	60337-2	61837-2	60105-2	61723-2
4	60103-4	60104-4	60337-4	61837-4	60105-4	61723-4
6	60103-6	60104-6	60337-6	61837-6	60105-6	61723-6
8	60103-8	60104-8	60337-8	61837-8	60105-8	61723-8
10	60103-10	60104-10	60337-10	61837-10	60105-10	61723-10
12	60103-12	60104-12	60337-12	61837-12	60105-12	61723-12

Optical Specifications

TIA/EIA-568-C.3-1

HCM Fiber Performance Parameters	Max Attenuation (dB/Km)		Min Bandwidth OFL MHz-Km		Min Bandwidth* MHz-Km		Gigabit Ethernet Support Distance (meters)		10 Gigabit Ethernet Support Distance (meters)	
	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm
OM1	3.25	1.0	200	500	220	na	300	550	33	na
OM2	3.25	1.0	700	500	850	na	750	550	150	na
OM3	3.0	1.0	1500	500	2000	na	1000	550	300	na
OM4	3.0	1.0	3500	500	4700	na	1100	550	550	na

*EMBc for OM2, OM3 & OM4 fibers. RML for OM1 fibers.

	1310 nm	1550 nm
OS2	0.35	0.25
OS2 BI**	0.35	0.25

**OS2 BI utilizes bend-insensitive optical glass

HCM reserves the right to revise any specifications.

Central Tube

Indoor/Outdoor Central Tube (Riser)

(UL) OFNR c(UL) FT4

FIBER COUNT	CABLE O.D.		MAXIMUM LOAD INSTALL		OPERATION		CABLE WEIGHT	
	in.	mm	lbs-f	N	lbs-f	N	lbs/1000 ft	kg/1000m
2	.287	7.2	300	1335	150	667	39.4	58.7
4	.287	7.2	300	1335	150	667	39.4	58.7
6	.287	7.2	300	1335	150	667	39.4	58.7
8	.287	7.2	300	1335	150	667	39.5	58.8
10	.287	7.2	300	1335	150	667	39.5	58.8
12	.287	7.2	300	1335	150	667	39.6	58.8

Mechanical Specifications

Bend radius

- No load = 10x cable overall diameter
- Load = 20x cable overall diameter

Central Tube Diameter

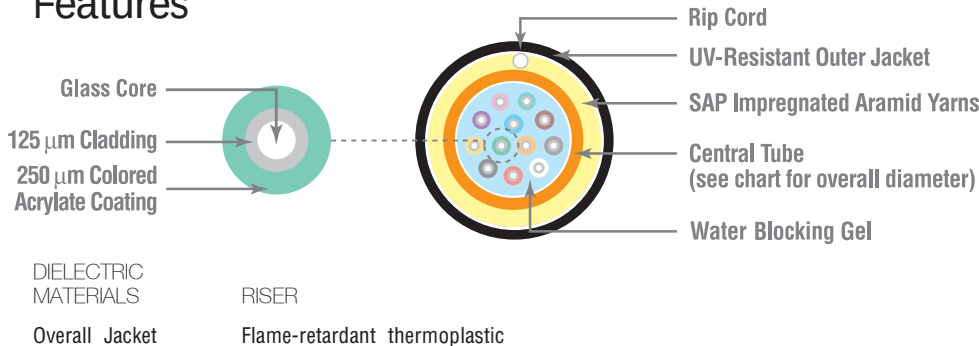
	in.	mm
2-12 fibers per tube	.160	4.1

10 Gigabit Applications

IEEE standard	Wavelength	Transmission	Fiber type	Length (m)
10GBASE-SR	850nm	Serialized	OM1	33
			OM2	82
			OM3	300
			OM4	550
10GBASE-LR	1310nm	Serialized	SM	10,000 - 25,000
10GBASE-LRM	1310nm	Serialized	OM1	220
			OM3	260
10GBASE-ER	1550nm	Serialized	SM	40,000
10GBASE-LX4	1300nm	WDM	MM	240-300
			SM	10,000

For complete application list, refer to page 91.

Features



plus
CORNING®
ClearCurve® Optical Fiber



Indoor/Outdoor

Loose Tube

12 through 144 fibers

Product Highlights

- RoHS compliant
- OM2, OM3, & OM4 cables utilize Corning ClearCurve glass.
- UV resistant jacket
- Gel filled loose tubes provide protection against water penetration
- Dry, super absorbent polymers (SAPs) eliminate water migration in cable interstices
- Suitable for lashed aerial, duct, underground conduit and indoor riser applications

Options

- Other configurations and fiber counts available
- Low smoke zero halogen available
- OM4 cables with extended 10 gigabit distances are available

Applications

- See Page 91



48-fibers (12 tubes of 4-fibers)



48-fibers (8 tubes of 6-fibers)



48-fibers (6 tubes of 8-fibers)



48-fibers (4 tubes of 12-fibers)

Diagram scale approx. 1:1

Indoor/Outdoor Loose Tube (Riser)

(UL) OFNR c(UL) FT4

Fiber Count	# Fibers per Tube	62.5 UM OM1	50 UM OM2	50 UM OM3	50 UM OM4	8.3 UM OS2
12	2	60701-12	60710-12	60714-12	61900-12	60720-12
24	2	60701-24	60710-24	60714-24	61900-24	60720-24
24	4	60344-24	60711-24	60715-24	61901-24	60721-24
48	4	60344-48	60711-48	60715-48	61901-48	60721-48
18	6	60106-18	60108-18	60716-18	61902-18	60110-18
24	6	60106-24	60108-24	60716-24	61902-24	60110-24
36	6	60106-36	60108-36	60716-36	61902-36	60110-36
48	6	60106-48	60108-48	60716-48	61902-48	60110-48
72	6	60106-72	60108-72	60716-72	61902-72	60110-72
24	8	60702-24	60712-24	60717-24	61903-24	60722-24
32	8	60702-32	60712-32	60717-32	61903-32	60722-32
48	8	60702-48	60712-48	60717-48	61903-48	60722-48
72	8	60702-72	60712-72	60717-72	61903-72	60722-72
36	12	60107-36	60109-36	60719-36	61904-36	60111-36
48	12	60107-48	60109-48	60719-48	61904-48	60111-48
60	12	60107-60	60109-60	60719-60	61904-60	60111-60
72	12	60107-72	60109-72	60719-72	61904-72	60111-72

Optical Specifications

TIA/EIA-568-C.3

HCM Fiber Performance Parameters	Max Attenuation (dB/Km)		Min Bandwidth OFL MHz-Km		Min Bandwidth* MHz-Km		Gigabit Ethernet Support Distance (meters)		10 Gigabit Ethernet Support Distance (meters)	
	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm
OM1	3.25	1.0	200	500	220	na	300	550	33	na
OM2	3.25	1.0	700	500	850	na	750	550	150	na
OM3	3.0	1.0	1500	500	2000	na	1000	550	300	na
OM4	3.0	1.0	3500	500	4700	na	1100	550	550	na

*EMBc for OM2, OM3 & OM4 fibers. RML for OM1 fibers.

	1310 nm	1550 nm
OS2	0.35	0.25

HCM reserves the right to revise any specifications.

Loose Tube

Indoor/Outdoor Loose Tube (Riser)

(UL) OFNR c(UL) FT4

FIBER COUNT	#Fibers per Tube	Tube Layout	CABLE O.D.		MAXIMUM LOAD INSTALL		OPERATION		CABLE WEIGHT	
			in.	mm	lbs-f	N	lbs-f	N	lbs/1000 ft	kg/1000m
12	2	6xC5M	.422	10.7	600	2670	200	890	77.0	114.7
24	2	12xC5M	.595	15.1	600	2670	200	890	155	231.0
24	4	6xC5M	.422	10.7	600	2670	200	890	78.0	116.2
48	4	12xC5M	.595	15.1	600	2670	200	890	155	231.0
18	6	6xC5M	.422	10.7	600	2670	200	890	64	95.4
24	6	6xC5M	.422	10.7	600	2670	200	890	69.0	102.8
36	6	6xC5M	.422	10.7	600	2670	200	890	78.0	116.2
48	6	8XC5M	.482	12.2	600	2670	200	890	100	149.0
72	6	12XC5M	.595	15.1	600	2670	200	890	156	232.4
24	8	6xC5M	.422	10.7	600	2670	200	890	64	95.4
32	8	6xC5M	.422	10.7	600	2670	200	890	69.0	102.8
48	8	6xC5M	.422	10.7	600	2670	200	890	78.0	117.7
72	8	9XC5M	.509	12.9	600	2670	200	890	113	168.4
36	12	6xC5M	.466	11.8	600	2670	200	890	73.0	108.8
48	12	6xC5M	.422	11.8	600	2670	200	890	79.0	117.7
60	12	6xC5M	.466	11.8	600	2670	200	890	85.0	126.7
72	12	6xC5M	.466	11.8	600	2670	200	890	91.0	135.6

Mechanical Specifications

Bend radius

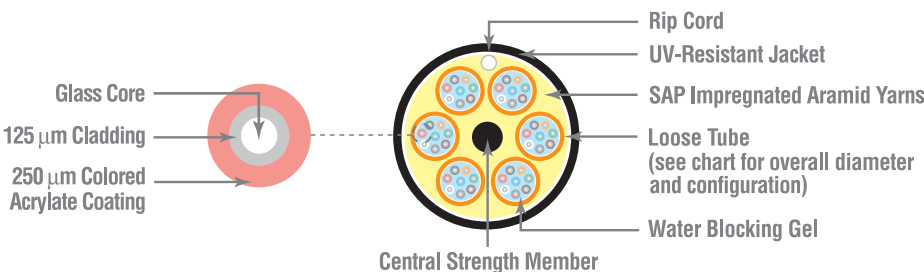
- No load = 10x cable overall diameter
- Load = 20x cable overall diameter

Loose Tube Diameter

	in.	mm
2-8 fibers per tube	.095	2.4
12-fibers per tube	.110	2.8



Features



DIELECTRIC MATERIALS
Overall Jacket
RISER
Flame-retardant thermoplastic

Indoor/Outdoor



Product Highlights

- RoHS compliant
- UV resistant jacket
- Dry, super absorbent polymers (SAPs) eliminate water migration in cable interstices and loose tubes
- Suitable for lashed aerial, duct, and underground conduit applications
- Dual jacket constructions available

Options

- Other configurations and fiber counts available
- Corrugated steel armor available
- Dual jacket constructions available
- Low smoke zero halogen available
- Up to 432 fibers available
- OM4 cables with extended 10 gigabit distances are available

Applications

- See Page 91



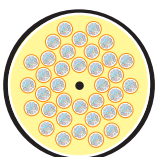
48-fibers (12 tubes of 4-fibers)



48-fibers (8 tubes of 6-fibers)



48-fibers (4 tubes of 12-fibers)



432-fibers (36 tubes of 12-fibers)

Diagram scale approx. 1:1

Mojave™ Dry-Block Outdoor (Outside Plant) Loose Tube

Fiber Count	# Fibers per Tube	62.5 UM OM1	50 UM OM2	50 UM OM3	50 UM OM4	8.3 UM OS2
12	2	61963-12	61967-12	61971-12	61975-12	61952-12
24	2	61963-24	61967-24	61971-24	61975-24	61952-24
24	4	61964-24	61968-24	61972-24	61976-24	61953-24
48	4	61964-48	61968-48	61972-48	61976-48	61953-48
18	6	61965-18	61969-18	61973-18	61977-18	61954-18
24	6	61965-24	61969-24	61973-24	61977-24	61954-24
36	6	61965-36	61969-36	61973-36	61977-36	61954-36
48	6	61965-48	61969-48	61973-48	61977-48	61954-48
12	12	61966-12	61970-12	61974-12	61978-12	61955-12
24	12	61966-24	61970-24	61974-24	61978-24	61955-24
36	12	61966-36	61970-36	61974-36	61978-36	61955-36
48	12	61966-48	61970-48	61974-48	61978-48	61955-48
60	12	61966-60	61970-60	61974-60	61978-60	61955-60
72	12	61966-72	61970-72	61974-72	61978-72	61955-72
84	12	61966-84	61970-84	61974-84	61978-84	61955-84
96	12	61966-96	61970-96	61974-96	61978-96	61955-96
108	12	61966-108	61970-108	61974-108	61978-108	61955-108
120	12	61966-120	61970-120	61974-120	61978-120	61955-120
132	12	61966-132	61970-132	61974-132	61978-132	61955-132
144	12	61966-144	61970-144	61974-144	61978-144	61955-144
168	12	61966-168	61970-168	61974-168	61978-168	61955-168
192	12	61966-192	61970-192	61974-192	61978-192	61955-192
216	12	61966-216	61970-216	61974-216	61978-216	61955-216
240	12	61966-240	61970-240	61974-240	61978-240	61955-240
264	12	61966-264	61970-264	61974-264	61978-264	61955-264

Optical Specifications

TIA/EIA-568-C.3

HCM Fiber Performance Parameters	Max Attenuation (dB/Km)		Min Bandwidth OFL MHz-Km		Min Bandwidth* MHz-Km		Gigabit Ethernet Support Distance (meters)		10 Gigabit Ethernet Support Distance (meters)	
	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm
OM1	3.25	1.0	200	500	220	na	300	550	33	na
OM2	3.25	1.0	700	500	850	na	750	550	150	na
OM3	3.0	1.0	1500	500	2000	na	1000	550	300	na
OM4	3.0	1.0	3500	500	4700	na	1100	550	550	na
*EMBc for OM2, OM3 & OM4 fibers. RML for OM1 fibers.										
	1310 nm 1550 nm									
OS2	0.35	0.25								

HCM reserves the right to revise any specifications.

Loose Tube

Mojave™ Dry-Block Outdoor (Outside Plant) Loose Tube

FIBER COUNT	# Fibers per Tube	Tube Layout	CABLE O.D.		MAXIMUM LOAD INSTALL		OPERATION		CABLE WEIGHT lbs/1000 ft
			in.	mm	lbs-f	N	lbs-f	N	
12	2	6xCSCM	.493	12.5	600	2670	200	890	63.8
24	2	12XCSCM	.695	17.7	600	2670	200	890	139.6
24	4	6xCSCM	.493	12.5	600	2670	200	890	64.8
48	4	12XCSCM	.695	17.7	600	2670	200	890	139.6
18	6	5XCSCM	.463	11.7	600	2670	200	890	50.9
24	6	5XCSCM	.463	11.7	600	2670	200	890	53.2
36	6	6xCSCM	.493	12.5	600	2670	200	890	64.8
48	6	8XCSCM	.561	14.2	600	2670	200	890	83.4
12	12	5XCSCM	.463	11.7	600	2670	200	890	46.3
24	12	5XCSCM	.463	11.7	600	2670	200	890	48.6
36	12	5XCSCM	.463	11.7	600	2670	200	890	50.9
48	12	5XCSCM	.463	11.7	600	2670	200	890	53.2
60	12	5XCSCM	.463	11.7	600	2670	200	890	55.5
72	12	6xCSCM	.493	12.5	600	2670	200	890	65.8
84	12	7XCSCM	.552	14.0	600	2670	200	890	81.1
96	12	8XCSCM	.581	14.8	600	2670	200	890	92.4
108	12	9XCSCM	.611	15.5	600	2670	200	890	104.7
120	12	10XCSCM	.649	16.5	600	2670	200	890	120
132	12	11XCSCM	.683	17.3	600	2670	200	890	134.3
144	12	12XCSCM	.715	18.2	600	2670	200	890	150.6
168	12	12X6XCSCM	.737	18.7	600	2670	200	890	1406.2
192	12	12X6XCSCM	.737	18.7	600	2670	200	890	123.8
216	12	12X6XCSCM	.737	18.7	600	2670	200	890	128.4
240	12	13X7XCSCM	.770	19.6	600	2670	200	890	141
264	12	14X8XCSCM	.805	20.4	600	2670	200	890	158.6

Mechanical Specifications

Bend radius

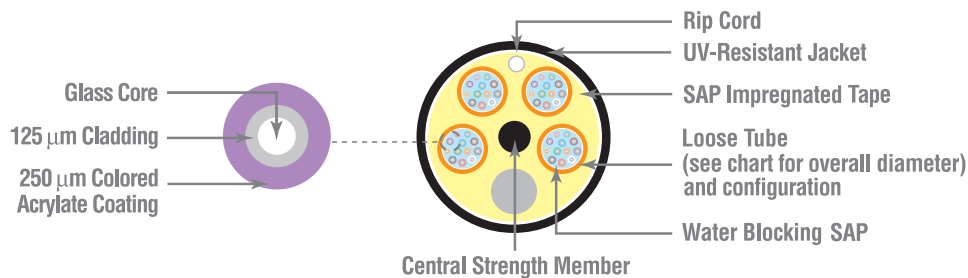
- No load = 10x cable overall diameter
- Load = 20x cable overall diameter

Loose Tube Diameter

	in.	mm
2-12 fibers per tube	.110	2.8



Features



DIELECTRIC MATERIALS

Overall Jacket

Medium density polyolefin



Outdoor

Loose Tube

12 through 432 fibers

Product Highlights

- RoHS compliant
- UV resistant jacket
- Gel filled loose tubes provide protection against water penetration
- Dry, super absorbent polymers (SAPs) eliminate water migration in cable interstices
- Suitable for lashed aerial, duct, and underground conduit applications
- SM Fiber is RDUP approved

Options

- Other configurations and fiber counts available
- Dual jacket constructions available
- Low smoke zero halogen available
- Up to 432 fibers available
- OM4 cables with extended 10 gigabit distances are available

Applications

- See Page 91



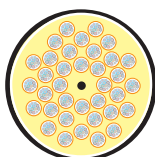
48-fibers (12 tubes of 4-fibers)



48-fibers (8 tubes of 6-fibers)



48-fibers (4 tubes of 12-fibers)



432-fibers (36 tubes of 12-fibers)

Diagram scale approx. 1:1

Outdoor (Outside Plant) Loose Tube

Fiber Count	# Fibers per Tube	62.5 UM OM1	50 UM OM2	50 UM OM3	50 UM OM4	8.3 UM OS2
12	2	60351-12	60282-12	60938-12	61905-12	60950-12
24	2	60351-24	60282-24	60938-24	61905-24	60950-24
24	4	60235-24	60408-24	60939-24	61906-24	60951-24
48	4	60235-48	60408-48	60939-48	61906-48	60951-48
18	6	60085-18	60087-18	60940-18	61907-18	60089-18
24	6	60085-24	60087-24	60940-24	61907-24	60089-24
36	6	60085-36	60087-36	60940-36	61907-36	60089-36
48	6	60085-48	60087-48	60940-48	61907-48	60089-48
12	12	60086-12	60088-12	60943-12	61908-12	60090-12
24	12	60086-24	60088-24	60943-24	61908-24	60090-24
36	12	60086-36	60088-36	60943-36	61908-36	60090-36
48	12	60086-48	60088-48	60943-48	61908-48	60090-48
60	12	60086-60	60088-60	60943-60	61908-60	60090-60
72	12	60086-72	60088-72	60943-72	61908-72	60090-72
84	12	60086-84	60088-84	60943-84	61908-84	60090-84
96	12	60086-96	60088-96	60943-96	61908-96	60090-96
108	12	60086-108	60088-108	60943-108	61908-108	60090-108
120	12	60086-120	60088-120	60943-120	61908-120	60090-120
132	12	60086-132	60088-132	60943-132	61908-132	60090-132
144	12	60086-144	60088-144	60943-144	61908-144	60090-144
168	12	60086-168	60088-168	60943-168	61908-168	60090-168
192	12	60086-192	60088-192	60943-192	61908-192	60090-192
216	12	60086-216	60088-216	60943-216	61908-216	60090-216
240	12	60086-240	60088-240	60943-240	61908-240	60090-240
264	12	60086-264	60088-264	60943-264	61908-264	60090-264

Optical Specifications

TIA/EIA-568-C.3 | RDUP 7CFR.1755

HCM Fiber Performance Parameters	Max Attenuation (dB/Km)		Min Bandwidth MHz-Km		OFL	Min Bandwidth* MHz-Km		Gigabit Ethernet Support Distance (meters)		10 Gigabit Ethernet Support Distance (meters)	
	850 nm	1300 nm	850 nm	1300 nm		850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm
OM1	3.25	1.0	200	500		220	na	300	550	33	na
OM2	3.25	1.0	700	500		850	na	750	550	150	na
OM3	3.0	1.0	1500	500		2000	na	1000	550	300	na
OM4	3.0	1.0	3500	500		4700	na	1100	550	550	na

*EMBc for OM2, OM3 & OM4 fibers. RML for OM1 fibers.

	1310 nm	1550 nm
OS2	0.35	0.25

HCM reserves the right to revise any specifications.

Loose Tube

Outdoor (Outside Plant) Loose Tube

FIBER COUNT	# Fibers per Tube	Tube Layout	CABLE O.D.		MAXIMUM LOAD INSTALL		OPERATION		CABLE WEIGHT	
			in.	mm	lbs-f	N	lbs-f	N	lbs/1000 ft	kg/1000m
12	2	6xCSCM	.493	12.5	600	2670	200	890	74.0	110.3
24	2	12XCSCM	.700	17.8	600	2670	200	890	160.0	238.4
24	4	6xCSCM	.493	12.5	600	2670	200	890	75.0	111.8
48	4	12XCSCM	.700	17.8	600	2670	200	890	160.0	238.4
18	6	5XCSCM	.463	11.7	600	2670	200	890	56.0	83.4
24	6	5XCSCM	.463	11.7	600	2670	200	890	60.0	89.4
36	6	6xCSCM	.493	12.5	600	2670	200	890	75.0	111.8
48	6	8XCSCM	.561	14.2	600	2670	200	890	97.0	144.5
12	12	5XCSCM	.463	11.7	600	2670	200	890	48.0	71.5
24	12	5XCSCM	.463	11.7	600	2670	200	890	52.0	77.5
36	12	5XCSCM	.463	11.7	600	2670	200	890	56.0	83.4
48	12	5XCSCM	.463	11.7	600	2670	200	890	60.0	89.4
60	12	5XCSCM	.463	11.7	600	2670	200	890	64.0	95.4
72	12	6xCSCM	.493	12.5	600	2670	200	890	76.0	113.2
84	12	7XCSCM	.552	14.0	600	2670	200	890	93.0	138.6
96	12	8XCSCM	.581	14.8	600	2670	200	890	106.0	157.9
108	12	9XCSCM	.620	15.7	600	2670	200	890	120.0	178.8
120	12	10XCSCM	.649	16.5	600	2670	200	890	137.0	204.1
132	12	11XCSCM	.683	17.3	600	2670	200	890	153.0	228.0
144	12	12XCSCM	.720	18.3	600	2670	200	890	171.0	255.0
168	12	12X6XCSCM	.737	18.7	600	2670	200	890	1430	213.1
192	12	12X6XCSCM	.737	18.7	600	2670	200	890	151.0	225.0
216	12	12X6XCSCM	.737	18.7	600	2670	200	890	159.0	236.9
240	12	13X7XCSCM	.770	19.6	600	2670	200	890	175.0	260.8
264	12	14X8XCSCM	.805	20.4	600	2670	200	890	196.0	292.0

Mechanical Specifications

Bend radius

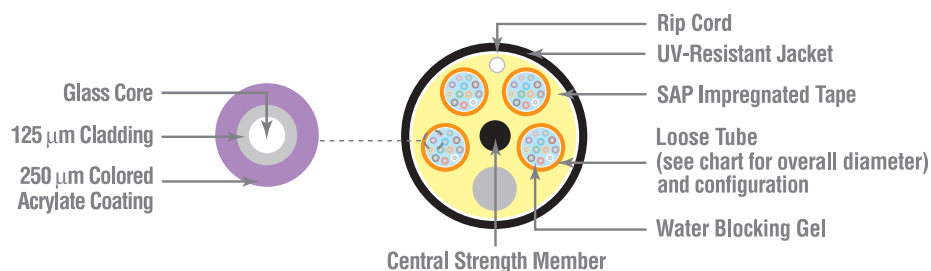
- No load = 10x cable overall diameter
- Load = 20x cable overall diameter

Loose Tube Diameter

	in.	mm
2-12 fibers per tube	.110	2.8



Features



DIELECTRIC MATERIALS

Overall Jacket

Medium density polyolefin



Outdoor

Loose Tube

12 through 144 fibers

Product Highlights

- RoHS compliant
- Rugged corrugated steel armor provides extra crush-resistance and rodent protection
- UV resistant jacket
- Gel filled loose tube provides protection against water penetration
- Dry, super absorbent polymers (SAPs) eliminate water migration in cable interstices
- Suitable for lashed aerial, duct, and underground conduit applications

Options

- Other configurations and fiber counts available
- Dual jacket constructions available
- Low smoke zero halogen available
- OM4 cables with extended 10 gigabit distances are available



48-fibers (12 tubes of 4-fibers)



48-fibers (8 tubes of 6-fibers)



48-fibers (4 tubes of 12-fibers)

Diagram scale approx. 1:1

Outdoor (Outside Plant) Armored

Fiber Count	# Fibers per Tube	62.5 UM OM1	50 UM OM2	50 UM OM3	50 UM OM4	8.3 UM OS2
24	2	60346-24	60932-24	60944-24	61909-24	60954-24
48	4	60345-48	60933-48	60945-48	61910-48	60356-48
48	6	60097-48	60934-48	60946-48	61911-48	60101-48
12	12	60098-12	60937-12	60949-12	61912-12	60102-12
24	12	60098-24	60937-24	60949-24	61912-24	60102-24
48	12	60098-48	60937-48	60949-48	61912-48	60102-48
144	12	60098-144	60937-144	60949-144	61912-144	60102-144

Optical Specifications

TIA/EIA-568-C.3

HCM Fiber Performance Parameters	Max Attenuation (dB/Km)		Min Bandwidth OFL MHz-Km		Min Bandwidth* MHz-Km		Gigabit Ethernet Support Distance (meters)		10 Gigabit Ethernet Support Distance (meters)	
	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm	850 nm	1300 nm
OM1	3.25	1.0	200	500	220	na	300	550	33	na
OM2	3.25	1.0	700	500	850	na	750	550	150	na
OM3	3.0	1.0	1500	500	2000	na	1000	550	300	na
OM4	3.0	1.0	3500	500	4700	na	1100	550	550	na

*EMBc for OM2, OM3 & OM4 fibers. RML for OM1 fibers.

	1310 nm	1550 nm
OS2	0.35	0.25

HCM reserves the right to revise any specifications.

Loose Tube

Outdoor (Outside Plant) Armored

FIBER COUNT	#Fibers per Tube	Tube Layout	CABLE O.D.		MAXIMUM LOAD INSTALL		OPERATION		CABLE WEIGHT	
			in.	mm	lbs-f	N	lbs-f	N	lbs/1000 ft	kg/1000m
24	2	12xCSM	0.748	19.0	600	2700	200	890	228.0	339.7
48	4	12xCSM	0.748	19.0	600	2700	200	890	229.0	341.2
48	6	8XCSM	0.613	15.6	600	2700	200	890	147.0	219.0
12	12	5XCSM	0.508	13.1	600	2700	200	890	97.0	144.5
24	12	5XCSM	0.508	13.1	600	2700	200	890	101.0	150.0
48	12	5XCSM	0.508	13.1	600	2700	200	890	110.0	163.9
144	12	12xCSM	0.768	19.5	600	2700	200	890	241.0	359.1

Mechanical Specifications

Bend radius

- No load = 10x cable overall diameter
- Load = 20x cable overall diameter

Loose Tube Diameter

	in.	mm
2-12 fibers per tube	.110	2.8

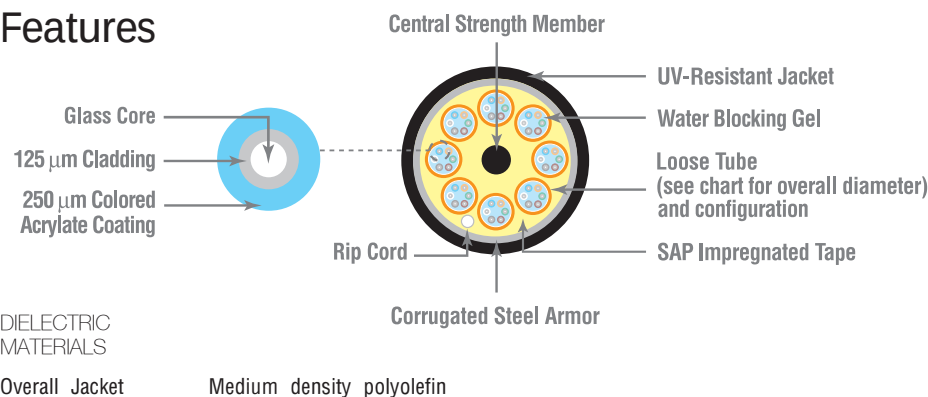


10 Gigabit Applications

IEEE standard	Wavelength	Transmission	Fiber type	Length (m)
10GBASE-SR	850nm	Serialized	OM1	33
			OM2	82
			OM3	300
			OM4	550
10GBASE-LR	1310nm	Serialized	SM	10,000 - 25,000
10GBASE-LRM	1310nm	Serialized	OM1	220
			OM3	260
10GBASE-ER	1550nm	Serialized	SM	40,000
10GBASE-LX4	1300nm	WDM	MM	240-300
			SM	10,000

For complete application list, refer to page 91.

Features



Color Code

Chart

High Pair Count Cables

When cables contain more than one pair group, different color binder tapes are used to differentiate the 25 pair groups.

Primary Insulation (FEP) Color Coding

HCM uses a co-extruded FEP color stripe to mark FEP insulated conductors. This process provides several benefits:

- Marking durability is insured for the life of the cable
- Electrical characteristics of the marking stripe match the FEP insulation
- Avoids highly toxic ink systems that are required to bond to FEP

Pair #	Copper Conductor Color Combinations
1	White/Blue - Blue/White
2	White/Orange - Orange/White
3	White/Green - Green/White
4	White/Brown - Brown/White
5	White/Gray - Gray/White
6	Red/Blue - Blue/Red
7	Red/Orange - Orange/Red
8	Red/Green - Green/Red
9	Red/Brown - Brown/Red
10	Red/Gray - Gray/Red
11	Black/Blue - Blue/Black
12	Black/Orange - Orange/Black
13	Black/Green - Green/Black
14	Black/Brown - Brown/Black
15	Black/Gray - Gray/Black
16	Yellow/Blue - Blue/Yellow
17	Yellow/Orange - Orange/Yellow
18	Yellow/Green - Green/Yellow
19	Yellow/Brown - Brown/Yellow
20	Yellow/Gray - Gray/Yellow
21	Violet/Blue - Blue/Violet
22	Violet/Orange - Orange/Violet
23	Violet/Green - Green/Violet
24	Violet/Brown - Brown/Violet
25	Violet/Gray - Gray/Violet

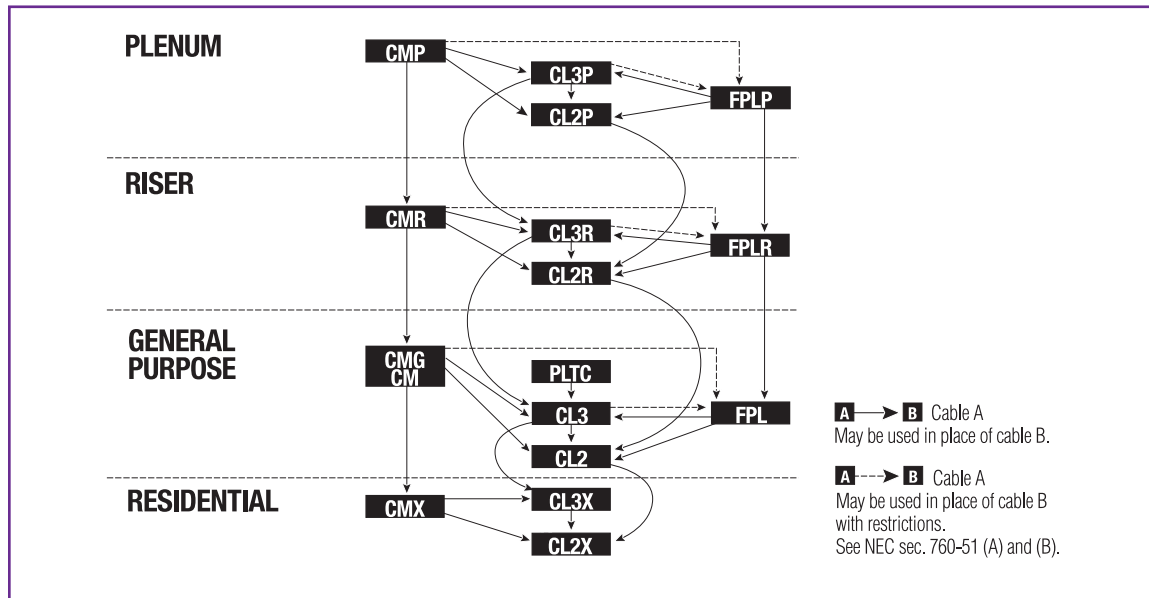
Fiber #	Fiber Buffer Color
1	Blue
2	Orange
3	Green
4	Brown
5	Gray
6	White
7	Red
8	Black
9	Yellow
10	Violet
11	Pink
12	Aqua

Note:

To differentiate bundles in cables with greater than 12 strands, polyester binders or buffer tubes (depending on the construction) are used. Those binders or buffer tubes will incorporate the same color code found in the chart above. The color code is part of the TIA-598 standard. For indoor, multiunit fiber optic cables, subunits will be numbered for identification.

National Electric Code Cable Substitution

Hierarchy



NEC and CSA Fire Resistance

Levels

Fire Resistance Level	Test Requirement	NEC 725	NEC 760	NEC 800
(Highest) Plenum Cables	UL-910 (Steiner Tunnel) CSA-FT6 (Steiner Tunnel)	CL3P CL2P	FPLP	CMP
Riser Cables Multiple Floors	UL-1666 (Vertical Shaft) CSA-FT4, CMG (Vertical Tray)	CL3R CL2R	FPLR	CMR
General Purpose Cables	UL-1581 (Vertical Tray) CSA-FT4, CMG (Vertical Tray)	CL3 CL2	FPL	CM
(Lowest) Residential Cables Restricted Use	UL-1581 VW-1 CSA-FT1	CL3X CL2X		CMX

Notes

- 1 Cables with a higher fire resistance level may be substituted for those with a lower fire resistance level, except that FT6 must also be marked FT4 for FT4 applications.
- 2 Cables rated CM may be used in runs penetrating one floor. (NEC 800-53)

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Applications

Copper

Applications Support Matrix

	Category 3	Category 5e	Category 6	Category 6A	Category 7 ¹
Voice	■	■	■	■	■
T1 Fractional	■	■	■	■	■
IBM Type 3 - 1 Mbps	■	■	■	■	■
4/16 Mbps Token Ring	■	■	■	■	■
10BASE-T Ethernet	■	■	■	■	■
100BASE-T4 Fast Ethernet	■	■	■	■	■
25.6 Mbps ATM	■	■	■	■	■
100 VG - Any LAN	■	■	■	■	■
All other applications developed to operate over Category 3 or class C cabling	■	■	■	■	■
100 Mbps TP-PMD		■	■	■	■
155 Mbps ATM		■	■	■	■
270 Mbps digital video		■	■	■	■
Broadband video		■	■	■	■
100BASE-TX Fast Ethernet		■	■	■	■
1000BASE-T Gigabit Ethernet		■	■	■	■
All other applications developed to operate over Category 5e or class D cabling		■	■	■	■
1000 Mbps ATM (CBIG)			■	■	■
All other applications developed to operate over Category 6 or class E cabling			■	■	■
10GBASE-T			■ ²	■	■
All other applications developed to operate Category 6A or class E _A cabling				■	■
All other applications developed to operate over Category 7 or class F cabling					■

Guaranteed Category 5e support of IEEE 1000BASE-T (Gigabit Ethernet) application:

Hitachi Cable Manchester, Inc.'s Category 5e cables exceed all of the requirements specified by IEEE 8023.ab for support of Gigabit Ethernet (1000BASE-T) operation over twisted-pair cabling. Furthermore, HCM guarantees that all of our Category 5e and higher rated cables will support the 1000BASE-T application.

To demonstrate our compliance, HCM's products have been extensively tested for 1000BASE-T throughput at the University of New Hampshire's Interoperability Lab and found to fully support the IEEE 100BASE-T Gigabit Ethernet application.

¹ Cat 7 Cable standard has not yet been ratified.

² Per TSB-155, Category 6 UTP may accommodate 10GBASE-T to 55m (channel length) and Category 6 FUTP may accommodate 10GBASE-T to 100m (channel length). Mitigation may be required to achieve optimum channel lengths.

Applications Support

Fiber

Applications Support Matrix

Application	Standard	Wavelength	Transmission	Fiber type	Length (m)
	1000BASE-LX	1300nm	Serialized	OM1	550
				OM2	550
				SM	>2,000
	1000BASE-SX	850nm	Serialized	OM1	220
				OM2	550
				OM3	>550
	10GBASE-SR	850nm	Serialized	OM1	33
				OM2	82
				OM3	300
				OM4	550
	10GBASE-LR	1310nm	Serialized	SM	10,000 - 25,000
	10GBASE-LRM	1310nm	Serialized	OM1	220
				OM3	260
	10GBASE-ER	1550nm	Serialized	SM	40,000
	10GBASE-LX4	1300nm	WDM	MM	240-300
				SM	10,000
	40GBASE-SR4	850nm	Parallel Optics	OM3	100
				OM4	125
	40GBASE-LR4	1310nm	WDM	SM	10,000
	100GBASE-SR10	850nm	Parallel Optics	OM3	100
				OM4	125
	100GBASE-LR4	1310nm	WDM	SM	10,000
	100GBASE-ER4	1310nm	WDM	SM	40,000
	Infiniband SDR	850nm	Parallel Optics	OM1	75
				OM2	125
				OM3	200
	Infiniband DDR	850nm	Parallel Optics	OM1	50
				OM2	75
				OM3	150
	Infiniband 4x-LX	call	call	OS2	10,000
	ITU-T G.957 STM-1, -4 & -16	1550nm	WDM	OS2	2,000
	ITU-T G.957 STM-1 & -4				15,000
	ITU-T G.957 STM-1		Serialized		40,000
	Fibre Channel, 2 Gig	850nm	Serialized	OM2	300
				OM3	500
	Fibre Channel, 4 Gig	850nm	Serialized	OM2	150
				OM3	270
	Fibre Channel 1, 2 & 4 Gig	1300nm	Serialized	OS2	10,000

All of HCM's cables are fully compliant to the requirements of applicable national and international structured cabling standards.

TIA-568-C.0 "Generic Telecommunications Cabling Standard (2009)" This standard, in part, supersedes TIA/EIA-568-B.1 and its addenda. This standard incorporates the following standards: TIA/EIA-568-B.1-1, TIA/EIA-568-B.1-2, TIA/EIA-568-B.1-3, TIA/EIA-568-B.1-7, TIA/EIA TSB125, TIA TSB140, TIA TSB153. This document specifies copper and fiber optic cabling requirements and test methods that will support a multi-product, multi-vendor environment.

TIA-568-C.1 "Commercial Building Telecommunications Cabling Standard (2009)" This standard, in part, supersedes TIA/EIA-568-B.1 and its addenda. This standard incorporates content from ANSI/TIA-568-B.1-4, Addendum 4, as well as ANSI/TIA-568-B.1-5, Addendum 5.

TIA-568-C.2 "Balanced Twisted Pair Telecommunications Cabling Components Standard (2009)" This standard supersedes ANSI/TIA/EIA-568B.2. This document specifies the performance of copper cables, patch cords, and connectors, in addition to the transmission, system models, and the measurement procedures needed for verification of balanced twisted pair cabling performance. This standard incorporates content from the following ANSI/TIA/EIA standards: 568-B.2, 568-B.2-1, 568-B.2-2, 568-B.2-3, 568-B.2-4, 568-B.2-5, 568-B.2-6 and ANSI/TIA standards 568-B.2-7, 568-B.2-9, 568-B.2-10 and 568-B.2-11.

TIA-568-C.3 "Optical Fiber Cabling Components Standard (2008)" This document specifies the performance of the cables, patch cords, and connector used in fiber optic cable systems. This standard replaces ANSI/TIA/EIA-568-B.3 and ANSI/TIA/EIA-568-B.3-1.

TIA/EIA-568-B.1 "Commercial Building Telecommunications Cabling Standard Part 1:General Requirements (2001)" This document specifies copper and fiber optic cabling requirements and test methods that will support a multi-product, multi-vendor environment.

TIA/EIA-568-B.1-1 "Commercial Building Telecommunications Cabling Standard Part 1: General Requirements addendum 1 Minimum 4-pair UTP and 4-Pair ScTP Patch Cable Bend Radius (2001)" This addendum specifies minimum bend radius requirements for 4-pair unshielded twisted-pair (UTP) and 4-pair screened twisted-pair (ScTP) patch cable.

TIA/EIA-568-B.2 "Commercial Building Telecommunications Cabling Standard Part 2: Balanced Twisted Pair Cabling Components (2001)" This document specifies the performance

of copper cables, patch cords, and connectors, in addition to the transmission, system models, and the measurement procedures needed for verification of balanced twisted pair cabling performance.

TIA/EIA-568-B.2-1 "Commercial Building Telecommunications Cabling Standard Part 2: Balanced Twisted Pair Components Addendum 1 Transmission Performance Specifications for 4-Pair 100 Ohm Category 6 Cabling (2002)" This document specifies requirements for category 6 cabling, cables, and connecting hardware.

TIA/EIA-568-B.2-10 "Commercial Building Telecommunications Cabling Standard Part 2: Balanced Twisted Pair Cabling Components Addendum 10 Transmission Performance Specifications for 4-Pair 100 Ohm Augmented Category 6 Cabling (2007)" This document specifies the requirements for Category 6A cabling, cables and connecting hardware.

TIA/EIA 568-B-3.1 "Optical Fiber Cabling Components Standard addendum 1 Additional Transmission Performance Specifications for 50/125 um Optical Fiber Cables (2002)" This addendum specifies additional component and transmission requirements for 50/125 um optical fiber cables capable of supporting 10 Gb/s serial transmission up to 300 m (984 ft) using 850 nm nominal wavelength lasers.

TIA/EIA-569-B "Commercial Building Standard for Telecommunications Pathways and Spaces (2003)" This document describes recognized cabling locations both within and between buildings. Included are the pathways in which telecommunications media are placed and the rooms and areas associated with the building used to terminate media and install telecommunications equipment.

TIA/EIA-570-A "Residential Telecommunications Cabling Standard (2001)" The purpose of this document is to standardize requirements for residential telecommunications cabling. The requirements are intended to be implemented for new construction, additions and remodeled single and multi-tenant residential buildings.

TIA/EIA-606-A "Administration Standard for Commercial Telecommunications Infrastructure (2003)" This standard provides guidelines and choices of classes of administration for maintaining telecommunications infrastructure.

Test Configurations

Standards (continued)

TIA/EIA-607-A "Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications (2001)"

This purpose of this standard is to enable the planning, design, and installation of telecommunications grounding and bonding systems within a building with or without prior knowledge of the telecommunications systems that will subsequently be installed.

TIA/EIA-758-A "Customer-Owned Outside Plant Telecommunications Infrastructure (2003)" This standard provides requirements used in the design of the cabling, pathways and spaces used between buildings or points in a customer-owned campus environment.

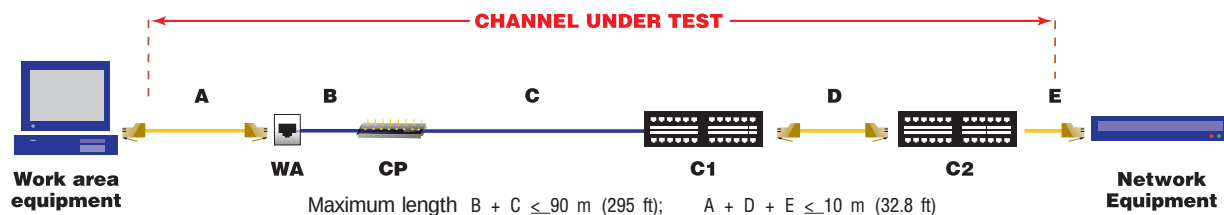
TIA/EIA-862 "Building Automation Systems cabling Standard for Commercial Buildings (2002)" This standard specifies a generic cabling system for building automation systems (BAS) used in commercial systems.

ISO/IEC 11801, 2nd edition "Generic cabling for Customer Premises (2002)" This standard is the international counterpart to the TIA/EIA-568-B family of standards. It contains requirements for balanced twisted-pair and fiber optic components and cabling systems.

TSB 155 "Guidelines for the Assessment of Mitigation of Installed Category 6 Cabling to Support 10GBASE-T" This document specifies the requirements for Category 6 UTP and SFTP (FTP) in regards to accommodating 10GBASE-T Ethernet.

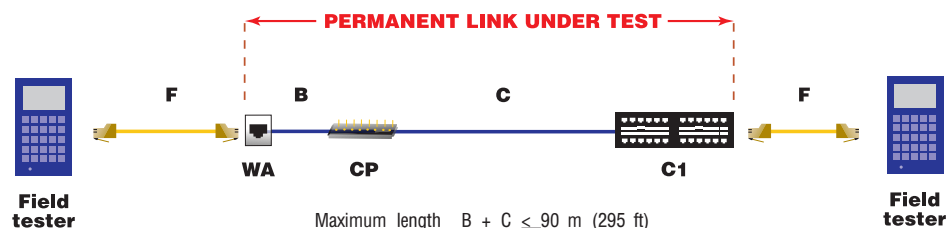
Channel Configuration

The channel test configuration is to be used by system designers and users of data communications systems to verify the performance of the overall channel. The channel includes up to 90 m (295 ft) of horizontal cable, a work area equipment cord, a telecommunications outlet/connector, an optional transition/consolidation connector, and two connections in the telecommunications room. The total length of equipment cords, patch cords or jumpers and work area cords shall not exceed 10 m (33 ft). Note that the connections to the equipment at each end of the channel are not included in the channel definition.



Permanent Link

The permanent link test configuration is to be used by installers and users of data telecommunications systems to verify the performance of permanently installed cabling. The permanent link consists of up to 90 m (295 ft) of horizontal cabling and one connection at each end and may also include an optional transition/consolidation point connection. Note that the permanent link excludes both the cable portion of the field test instrument cord and the connection to the field test instrument.



Cables and cords

- A = Work area cord
- B = Optional transition cabling
- C = Horizontal cabling
- D = Patch cord or jumper cable
- E = Telecommunications room equipment cord
- F = Test equipment cord

Connecting Hardware

- WA = Telecommunications outlet/connector
- CP = Optional transition/consolidation point connector
- C1, C2 = Horizontal cross-connect or interconnect

Glossary

Acronyms & Abbreviations

ACR: Attenuation-to-crosstalk ratio
ACRF: Attenuation-to-crosstalk ratio far-end
ANSI: American National Standards Institute
ASTM: American Society for Testing and Materials
ATM: asynchronous transfer mode
AWG: American Wire Gauge
BELLCORE: Bell Communications Research
BICSI: Building Industry Consulting Services International
CATV: community antenna television
EIA: Electronic Industries Alliance
ELFEXT: equal level far-end crosstalk
EMC: electromagnetic compatibility
EMI: electromagnetic interference
FCC: Federal Communications Commission
FDDI: fiber distributed data interface
FEXT: far-end crosstalk
FOCIS: Fiber Optic Connector Intermateability Standard
F/UTP: foil over unshielded twisted pairs
IEC: International Electrotechnical Commission
IEEE: The Institute of Electrical and Electronics Engineers
ILD: Insertion loss deviation
LCL: Longitudinal conversion loss
LCTL: Longitudinal conversion transfer loss
ISDN: integrated services digital network
ISO: International Organization for Standardization
LAN: local area network
LED: light emitting diode
Mb/s: megabits per second
MUTOA: multi-user telecommunications outlet assembly
NEC®: National Electrical Code®
NEMA: National Electrical Manufacturers Association
NESC®: National Electrical Safety Code®
NEXT: near-end crosstalk
NFPA: National Fire Protection Association
NVP: nominal velocity of propagation
PSACR: power sum attenuation-to-crosstalk ratio
PSACRF: power sum attenuation-to-crosstalk ratio far-end
PSELFEXT: power sum equal level far-end crosstalk
PSFEXT: power sum far-end crosstalk
PSNEXT: power sum near-end crosstalk
SFTP: braided shield over pairs in foil
STP: shielded twisted-pair
TIA: Telecommunications Industry Association
TSB: Telecommunications System Bulletin
UL: Underwriters Laboratories
UTP: unshielded twisted-pair

adapter (copper): A device that enables any or all of the following: (1) different sizes or types of plugs to mate with one another or to fit into a telecommunications outlet, (2) the rearrangement of leads, (3) large cables with numerous wires to fan out into smaller groups of wires, and (4) interconnection between cables.

adapter (fiber optic): optical fiber duplex: A mechanical device designed to align and join two duplex optical fiber connectors (plugs) to form an optical duplex connection.

administration: The method for labeling, identification, documentation and usage needed to implement moves, additions and changes of the telecommunications infrastructure.

attenuation:
(see insertion loss)

attenuation-to-crosstalk ratio: A ratio, expressed in dB, determined by subtracting the insertion loss from the near-end crosstalk loss.

attenuation-to-crosstalk ratio far-end: replaces ELFEXT. A measure of the unwanted signal coupling from a transmitter at the near-end into another pair measured at the far-end, and relative to the received signal level.

backbone cable: A cable that runs between telecommunications rooms, or floor distribution terminals, the entrance facilities, and the equipment rooms within or between buildings.

balance: Balance is the ratio of the differential signal output at either end of any

pair to a common mode signal input, at either end of the same or a different pair, and vice versa, under specified termination conditions.

bonding: The permanent joining of metallic parts to form an electrically conductive path that will assure electrical continuity and the capacity to conduct safely any current likely to be imposed on it.

bundled cable: An assembly of two or more cables continuously bound together to form a single unit.

cable: An assembly of one or more insulated conductors or optical fibers, within an enveloping sheath.

cable run: A length of installed media, which may include other components along its path.

cable sheath: A covering over the optical fiber or conductor assembly that may include one or more metallic members, strength members, or jackets.

cabling: A combination of all cables, jumpers, cords, and connecting hardware.

campus: The buildings and grounds having legal contiguous interconnection.

centralized cabling: A cabling configuration from the work area to a centralized cross-connect using pull through cables, an interconnect, or splice in the telecommunications room.

channel: The end-to-end transmission path between two points at which application-specific equipment is connected.

Glossary

connecting hardware: A device providing mechanical cable terminations.

connector, small form factor: An optical fiber duplex connector with a size approximating that of an 8-position modular outlet/connector typically used for terminating 4-pair copper cable.

cord (telecommunications): A cable using stranded conductors for flexibility, as in distribution cords or line cords.

cross-connect: A facility enabling the termination of cable elements and their interconnection or cross-connection.

cross-connection: A connection scheme between cabling runs, subsystems, and equipment using patch cords or jumpers that attach to connecting hardware on each end.

decibels (dB): A logarithmic unit that is used to describe a wide range of differences in signal voltage or power levels.

delay skew: The difference in propagation delay between any two pairs within the same cable sheath.

demarcation point: A point where the operational control or ownership changes.

drain wire: A non-insulated conductor placed in electrical contact with a shield.

electromagnetic interference: Radiated or conducted electromagnetic energy that has an undesirable effect on electronic equipment or signal transmissions.

entrance facility (telecommunications): An entrance to a building for both public and private network service cables (including wireless) including the entrance point of the building and continuing to the entrance room or space.

entrance point (telecommunications): The point of emergence for telecommunications cabling through an exterior wall, a floor, or from a conduit.

entrance room or space (telecommunications): A space in which the joining of inter or intra building telecommunications backbone facilities takes place.

equal level far-end crosstalk: (obsolete) A measure of the unwanted signal coupling from a transmitter at the near-end into another pair measured at the far-end, and relative to the received signal level.

equipment cable, cord: A cable or cable assembly used to connect telecommunications equipment to horizontal or backbone cabling.

equipment room (telecommunications): An environmentally controlled centralized space for telecommunications equipment that usually houses a main or intermediate cross-connect.

far-end crosstalk loss: A measure of the unwanted signal coupling from a transmitter at the near end into another pair measured at the far end.

fiber optic: See optical fiber.

ground: A conducting connection, whether intentional or accidental, between

an electrical circuit (e.g., telecommunications) or equipment and the earth, or to some conducting body that serves in place of earth.

high-order mode transient losses: Losses in power caused by the attenuation in the cladding of multimode optical fiber.

horizontal cabling: (1) The cabling between and including the telecommunications outlet/connector and the horizontal cross-connect.
(2) The cabling between and including the building automation system outlet or the first mechanical termination of the horizontal connection point and the horizontal cross-connect.

horizontal cross-connect: A cross-connect of horizontal cabling to other cabling, e.g., horizontal, backbone, and equipment.

hybrid cable: An assembly of two or more cables, of the same or different types or categories, covered by one overall sheath.

hybrid optical fiber cable: An optical fiber cable containing two or more fiber types (e.g., multimode and singlemode).



Glossary

infrastructure

(telecommunications): A collection of those telecommunications components, excluding equipment, that together provide the basic support for the distribution of all information within a building or campus.

insertion loss: The signal loss resulting from the insertion of a component, or link, or channel, between a transmitter and receiver.

insertion loss deviation:

The difference between the actual insertion loss as measured on a permanent link or channel and the insertion loss as determined by adding the component losses.

interconnection:

A connection scheme that employs connecting hardware for the direct connection of a cable to another cable without a patch cord or jumper.

intermediate

cross-connect: A cross-connect between first level and second level backbone cabling.

intra-building telecommunications backbone:

A pathway or cable facility for interconnecting telecommunications service entrance rooms, equipment rooms, or telecommunications rooms within a building.

jumper: An assembly of twisted-pairs without connectors, used to join telecommunications circuits/links at the cross-connect.

keying: The mechanical feature of a connector system that guarantees correct orientation of a connection, or prevents the connection to a jack, or to an optical fiber adapter of the same type intended for another purpose.

link: A transmission path between two points, not including terminal equipment, work area cables, and equipment cables.

longitudinal conversion

loss: A ratio, expressed in dB, of measured differential voltage relative to the common mode voltage on a conductor pair applied at the same end.

longitudinal conversion

transfer loss: A ratio, expressed in dB, of measured differential voltage at one end of a conductor pair relative to the common mode voltage applied on any pair at the opposite end or on any other pair on the same end.

main cross-connect:

A cross-connect for first level backbone cables, entrance cables, and equipment cables.

main terminal space:

The location of the cross-connect point of incoming cables from the telecommunications external network and the premises cable system.

megabits per second

(Mbps): An application dependent specification describing the number of discrete bits of information (i.e. a "1" or a "0") transmitted per second.

megahertz (MHz):

Transmitted signal frequency described as the number of millions of sinusoidal signal cycles per second.

mode: A path of light in an optical fiber.

modular jack:

A female telecommunications connector that may be keyed or unkeyed and may have 6 or 8 contact positions, but not all the positions need be equipped with jack contacts.

modular plug cord:

A length of cable with a modular plug on both ends.

multimode optical fiber:

An optical fiber that carries many paths of light.

multipair cable:

A cable having more than four pairs.

multi-user

telecommunications outlet

assembly: A grouping in one location of several telecommunications outlet/connectors.

open office: A floor space division provided by furniture, moveable partitions, or other means instead of by building walls.

optical fiber: Any filament made of dielectric materials that guides light.

optical fiber cable:

An assembly consisting of one or more optical fibers.

optical fiber duplex

connection: A mated assembly of two duplex connectors and a duplex adapter.



Glossary

outlet/connector (telecommunications):

A connecting device in the work area on which horizontal cable or outlet cable terminates.

patch cord: A length of cable with a plug on one or both ends.

patch panel: A connecting hardware system that facilitates cable termination and cabling administration using patch cords.

pathway: A facility for the placement of telecommunications cable.

permanent link: A test configuration for a link excluding test cords and patch cords.

plenum: A compartment or chamber to which one or more air ducts are connected and that forms part of the air distribution system.

power sum attenuation-to-crosstalk ratio: A ratio, expressed in dB, determined by subtracting the insertion loss from the power sum near-end crosstalk loss.

power sum attenuation-to-crosstalk ratio far-end: replaces PSELFEXT. A computation of the unwanted signal coupling from multiple transmitters at the near-end into a pair measured at the far-end, and normalized to the received signal level.

power sum equal level far-end crosstalk:(obsolete)
A computation of the unwanted signal coupling from multiple transmitters at the near-end into a pair measured at the far-end, and normalized to the received signal level.

power sum near-

end crosstalk loss: A computation of the unwanted signal coupling from multiple transmitters at the far-end into a pair measured at the near-end

propagation delay: The time required for a signal to travel from one end of the transmission path to the other end.

return loss: A ratio expressed in dB of the power of the outgoing signal to the power of the reflected signal.

room (telecommunications): An enclosed space for housing telecommunications equipment, cable terminations, and cross-connect cabling, that is the recognized location of the horizontal cross-connect.

screen: An element of a cable formed by a shield.

screened twisted-pair (ScTP): A balanced cable with an overall screen.

shield: A metallic layer placed around a conductor or group of conductors.

singlemode optical fiber:
An optical fiber that carries only one path of light.

splice: A joining of conductors in a splice closure, meant to be permanent.

splice closure: A device used to protect a splice.

star topology: A topology in which telecommunications cables are distributed from a central point.

telecommunications:
Any transmission, emission, and reception of signs,

signals, writings, images, and sounds, that is information of any nature by cable, radio, optical, or other electromagnetic systems.

topology: The physical or logical arrangement of a telecommunications system.

transfer impedance:
A measure of shielding performance determined by the ratio of the voltage on the conductors enclosed by a shield to the surface currents on the outside of the shield.

transition point:
A location in the horizontal cabling where flat undercarpet cable connects to round cable.

work area (work station):
A building space where the occupants interact with telecommunications terminal equipment.

work area cable (cord):
A cable connecting the telecommunications outlet/connector to the terminal equipment

Units of Measure

°C	degrees Celsius
°F	degrees Fahrenheit
dB	decibel
ft	foot
GHz	gigahertz
in	inch
km	kilometer
lbf	pound force
m	meter
MHz	megahertz
mm	millimeter
N	newton
nm	nanometer
ns	nanosecond
V _{rms}	volts root mean square
µm	micron or micrometer

Conversion Table

English to Metric

	Multiply by:
from inches to centimeters	2.54
from feet to meters	0.3048
from yards to meters	0.9144
from ounces to grams	28.3495
from pounds to kilograms	0.453592
from Fahrenheit (F) to Celsius (C)	C=(F-32) x 0.555

Part Number

Fiber

Part #	Page #	Part #	Page #	Part #	Page #	Part #	Page #	Part #	Page #	Part #	Page #
60001	52	60052	50	60344	80	60492	54	60604	62	60722	80
60002	52	60056	50	60345	86	60494	54	60613	60	60932	86
60003	52	60063	52	60346	86	60501	52	60614	62	60933	86
60004	52	60085	84	60351	84	60502	54	60621	60	60934	86
60005	52	60086	84	60356	86	60514	52	60621	60	60937	86
60006	52	60087	84	60356	86	60515	56	60622	62	60938	84
60007	52	60088	84	60369	60	60517	58	60622	62	60939	84
60008	54	60089	84	60405	72	60518	58	60627	60	60940	84
60009	60	60090	84	60408	84	60520	56	60627	60	60943	84
60010	52	60097	86	60423	54	60522	58	60628	62	60944	86
60011	52	60098	86	60424	54	60524	70	60628	62	60945	86
60012	52	60101	86	60425	52	60559	62	60633	60	60946	86
60014	56	60101	86	60430	54	60564	60	60633	60	60949	86
60015	60	60102	86	60431	54	60565	62	60634	62	60950	84
60015	60	60102	86	60432	54	60567	60	60634	62	60951	84
60022	54	60103	78	60462	52	60569	60	60638	60	60954	86
60023	54	60104	78	60463	52	60570	62	60638	60	60954	86
60024	54	60105	78	60464	52	60581	60	60639	62	61319	72
60026	54	60106	80	60465	52	60582	62	60639	62	61321	51
60027	62	60107	80	60466	52	60585	60	60639	62	61337	72
60028	62	60108	80	60467	52	60586	60	60701	80	61345	74
60029	58	60109	80	60468	54	60588	60	60702	80	61347	74
60030	54	60110	80	60469	51	60589	62	60710	80	61348	74
60031	54	60111	80	60470	54	60591	60	60711	80	61349	74
60033	62	60116	50	60471	54	60592	62	60712	80	61355	51
60033	62	60136	50	60472	54	60594	60	60714	80	61363	74
60037	52	60145	50	60473	54	60595	60	60715	80	61376	74
60038	52	60150	50	60474	54	60596	62	60716	80	61380	74
60039	52	60235	84	60475	54	60598	62	60717	80		
60040	52	60258	62	60489	52	60600	60	60719	80		
60042	54	60282	84	60490	54	60601	62	60720	80		
60044	54	60337	78	60491	54	60603	60	60721	80		

Part Number Reference

Fiber

Part #	Page #	Part #	Page #	Part #	Page #	Part #	Page #	Part #	Page #	Part #	Page #
61415	74	61653	52	61727	66	61865	56	61907	84	61971	82
61421	70	61653	52	61732	66	61867	58	61908	84	61971	82
61433	72	61655	52	61733	66	61868	58	61909	86	61972	82
61459	76	61657	52	61734	66	61870	60	61910	86	61972	82
61460	76	61659	52	61735	66	61871	60	61911	86	61973	82
61461	54	61661	52	61736	66	61872	60	61912	86	61973	82
61464	76	61661	56	61737	66	61873	60	61952	82	61974	82
61468	76	61663	52	61738	66	61874	60	61952	82	61974	82
61480	76	61665	52	61739	66	61875	62	61953	82	61975	82
61488	54	61679	54	61778	66	61876	62	61953	82	61975	82
61492	54	61679	54	61779	66	61877	62	61954	82	61976	82
61493	54	61681	54	61780	66	61878	62	61954	82	61976	82
61495	74	61683	54	61781	66	61882	64	61955	82	61977	82
61506	66	61685	54	61790	52	61883	66	61955	82	61977	82
61507	66	61687	54	61791	52	61884	68	61956	76	61978	82
61509	68	61687	58	61792	52	61889	66	61959	76	61978	82
61510	52	61689	54	61793	52	61890	66	61963	82	61979	76
61511	52	61691	54	61825	66	61891	66	61963	82	61980	76
61512	52	61705	56	61837	78	61892	66	61964	82	61981	76
61515	52	61707	58	61838	52	61893	74	61964	82		
61522	74	61713	64	61842	52	61894	76	61965	82		
61523	74	61715	66	61843	52	61896	70	61965	82		
61524	74	61717	68	61844	52	61897	72	61966	82		
61538	66	61719	74	61851	54	61898	74	61966	82		
61538	66	61721	76	61851	54	61899	74	61967	82		
61539	64	61723	78	61852	54	61900	80	61967	82		
61540	72	61724	66	61853	54	61901	80	61968	82		
61542	70	61724	66	61854	54	61902	80	61968	82		
61546	64	61725	66	61855	54	61903	80	61969	82		
61547	64	61725	66	61856	54	61904	80	61969	82		
61549	68	61726	66	61857	54	61905	84	61970	82		
61550	68	61726	66	61864	56	61906	84	61970	82		

Since 1986, Hitachi Cable Manchester has been developing technologically advanced copper and fiber optic communication cables. Our dedication to engineering perfection is evident in the consistent quality and performance of all the cable products we manufacture. Through the development of unique cable products such as the world's only UL verified 25-pair Category 5e CMP cable and the world's first UL verified 10 Gigabit UTP cable, HCM has established itself as a leader in the industry. These products and the others found in this catalog are the result of HCM's relentless desire to manufacture the finest communication cables in the industry. After using our products, we're sure you'll agree.



All of our cables are manufactured in our state-of-the-art facility located in Manchester, NH. Contact our knowledgeable customer service representatives at 1.800.772.0116 for assistance.

InstallationReference

Conduit Fill Chart										
Conduit Size	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	3-1/2"	4"
40% Int. Area	0.121"	0.213"	.345"	.598"	.814"	1.342"	2.343"	3.538"	4.618"	5.901"
Cable Diameter	0.19"	4	7	12	21	28	47	82	124	163
	0.2"	4	6	11	19	26	42	74	112	147
	0.21"	3	6	10	17	23	38	67	102	133
	0.22"	3	5	9	15	21	35	61	93	121
	0.23"	3	5	8	14	19	32	56	85	111
	0.24"	2	4	7	13	18	29	51	78	102
	0.25"	2	4	7	12	16	27	47	72	94
	0.26"	1	4	6	11	15	25	44	66	87
	0.27"	1	3	6	10	14	23	41	61	80
	0.28"	1	3	5	9	13	21	38	57	75
	0.29"	1	3	5	9	12	20	35	53	70
	0.3"	1	3	5	8	11	19	33	50	65
	0.31"	1	3	4	8	10	17	31	47	61
	0.32"	1	2	4	7	10	16	29	44	57
	0.33"	1	2	4	7	9	15	27	41	54
	0.34"	1	2	4	6	9	14	26	39	51
	0.35"	1	1	3	6	8	14	24	36	48

The above conduit fill chart is for reference only. The conduit capacity is based on the National Electrical Code requirement of 40% maximum fill. To determine the maximum conduit fill for cable O.D.s other than those referenced above, use the following steps: 1. Square the O.D. of the cable. 2. Multiple the result by .7854. This is the total area of the cable. 3. Multiple the total area of the cable by the number of cables you wish to place in the conduit. This is the total area of the cable bundle. Determine the appropriate conduit size by referencing the 40% Interior Area row.

Storage, Installation & Operation Temperatures

	Indoor Copper Cables	Indoor Fiber Optic Cables
Storage Temperature	-40C to +60C (-40F to +140F)	-40C to + 80C (-40F to +176F)
Installation Temperature	0C to +60C (+32F to +140F)	0C to + 50C (+32F to +122F)
Operation Temperature	-20C to +50C (-4F to +122F)	-20C to + 80C (-4F to +176F)
	Outdoor Copper Cables	Outdoor Fiber Optic Cables
Storage Temperature	-40C to +70C (-40F to +158F)	-40C to + 70C (-40F to +158F)
Installation Temperature	-20C to +70C (-4F to +158F)	-20C to + 70C (-4F to +158F)
Operation Temperature	-40C to +70C (-40F to +158F)	-40C to + 70C (-40F to +158F)

Product Performance Guarantee

All goods sold are warranted to be free from defects in material and workmanship on the date of delivery of the materials to the F.O.B. point stated. Seller makes no representation or warranty of any kind, expressed or implied with respect to the goods sold hereunder, whether as to merchantability, fitness for particular purpose, or any other matter. Seller's only obligation is to replace goods that are proved defective within one (1) year after the date of delivery, but always provided the product receives normal and proper use, and due care in handling is exercised. If the goods purchased show defects in material or workmanship within one (1) year after date of delivery, Buyer must discontinue use thereof and must properly notify Seller, so that the matter may be investigated and material inspected and examined by the Seller without inference or delay. Contact HCM for full warranty details.