



Offshore and
Marine Shipboard
Cables

June, 2009

Commodore Lite™ Fiber Optic Communication Cables



**Low-Smoke, Zero-Halogen
Breakout Cable**
Unarmored, Thermoplastic, 2-24 Fibers
ABS Type Approval (RQS)



Product Construction:

1. Central Strength Member:

- Epoxy glass rod

2. Optical Fiber Cable Component (OFCC):

Fiber:

- 2-24 fibers (see Fiber Selection Guide)
- Color Code: White-numbered "1-ONE," "2-TWO," "3-THREE," etc.
- Buffer: polyester elastomer 900µm ± 50µm

Strength Member:

- Aramid yarn longitudinally applied

Jacket:

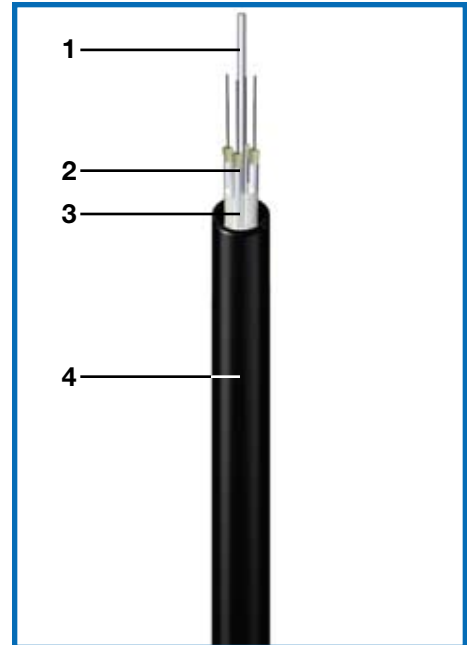
- Low-Smoke thermoplastic Polyolefin: .078" (2.0mm) nom. diameter

3. Binder Tape:

- Mylar tape

4. Outer Sheath:

- Low-Smoke, Zero-Halogen (LSZH), low-toxicity, thermoplastic Polyolefin – Black



Applications:

- Offshore platforms, ships, mobile oil rigs, FPSOs, land rigs, onshore drilling

Features:

- Breakout-style cable
- Temperature: -40°C to +70°C
- Gigabit Ethernet compliant
- LSZH, thermoplastic, UV-resistant sheath to insure overall maximum flexibility, oil and chemical resistance
- Standards-compliant, cost-effective solution

Compliances:

Fiber:

- ANSI/TIA/EIA 568 B.3
- GR-409
- Temp. Cycling...FOTP-3
- Low and High Temp. Bend...FOTP-31
- Cable External Freezing...FOTP-98
- Cyclic Flexing...FOTP-104
- Compressive Loading...FOTP-41
- Cable Twist...FOTP-85

Flame/Safety Test:

- Flame...OFNR, UL-1666
- Halogen Content...IEC-60754-1 & -2
- Smoke Density...IEC-61034-1 & -2
- Acidity...IEC-60754-2

Third-Party Testing:

- MET Labs has tested and confirmed that this product complies with the above specifications (report number F026746-GEN rev1)



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CATALOG NUMBER*	FIBER COUNT	NOM. OUTER SHEATH DIAMETER		NOM. OUTER SHEATH THICKNESS		MAXIMUM WEIGHT		MINIMUM BEND RADIUS		MAXIMUM TENSILE LOAD	
		INCHES	mm	INCHES	mm	LBS/1000 FT	kg/km	INSTALLATION INCHES/cm	IN-SERVICE INCHES/cm	INSTALLATION LBS/N	IN-SERVICE LBS/N
XX0021C1Z-TPL	2	0.284	7.20	0.045	1.14	36	54	4.3/10.8	2.8/7.2	200/600	50/225
XX0041C1Z-TPL	4	0.284	7.20	0.045	1.14	36	54	4.3/10.8	2.8/7.2	200/600	50/225
XX0061C1Z-TPL	6	0.330	8.30	0.045	1.14	61	91	5.0/12.5	3.3/8.3	200/600	50/225
XX0081C1Z-TPL	8	0.379	9.60	0.045	1.14	69	102	5.7/14.4	3.8/9.6	200/600	50/225
XX0101C1Z-TPL	10	0.428	10.90	0.045	1.14	90	134	6.4/16.4	4.3/10.9	600/2700	150/675
XX0121C1Z-TPL	12	0.478	12.10	0.045	1.14	105	156	7.2/18.2	4.8/12.1	600/2700	150/675
XX0181C1Z-TPL	18	0.501	12.70	0.050	1.27	120	178	7.5/19.1	5.0/12.7	600/2700	150/675
XX0241C1Z-TPL	24	0.571	14.50	0.050	1.27	138	205	8.6/21.8	5.7/14.5	600/2700	150/675

* XX denotes fiber type. See Fiber Selection Guide.

Fiber Selection Guide

FIBER TYPE	AP FIBER TYPE SINGLEMODE	CG FIBER TYPE MULTIMODE 62.5/125	BI FIBER TYPE MULTIMODE 50/125
FIBER CHARACTERISTICS			
Type	Matched Clad	Graded Index	Graded Index
Mode Field Diameter	9.2 ± .4 @ 1310nm	N/A	N/A
Core Diameter	8.3µm nominal	62.5 ± 3µm	50.0 ± 2.5µm
Cladding Diameter	125 ± .7µm	125 ± 2µm	125 ± 2µm
Coating Diameter	245 ± 5µm	245 ± 5µm	245 ± 5µm
Core Non-Circularity	N/A	≤5%	≤5%
Coating Cladding Conc.	<12µm	<12µm	<12µm
Cladding Non-Circularity	≤0.7%	≤1.0%	≤1.0%
Core-Clad Concentricity	≤0.5µm	≤1.5µm	≤1.5µm
ATTENUATION dB/km			
850nm	N/A	3.50	3.00
1300nm	N/A	1.00	1.00
1310nm	1.00	N/A	N/A
1550nm	1.00	N/A	N/A
BANDWIDTH MHz • km			
850nm	N/A	220	700
1300nm	N/A	500	500
Dispersion	≤18.0 ps/nm – km @ 1550	N/A	N/A
Proof Test	> or = 100 kpsi	> or = 100 kpsi	> or = 100 kpsi



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Commodore Lite™ Fiber Optic Communication Cables



Low-Smoke, Zero-Halogen Breakout Cable

Armored & Sheathed, Thermoplastic, 2-24 Fibers ABS Type Approval (RQS)



Product Construction:

1. Central Strength Member:

- Epoxy glass rod

2. Optical Fiber Cable Component (OFCC):

Fiber:

- 2-24 fibers (see Fiber Selection Guide)
- Color Code: White-numbered "1-ONE," "2-TWO," "3-THREE," etc.
- Buffer: polyester elastomer 900µm ± 50µm

Strength Member:

- Aramid yarn longitudinally applied

Jacket:

- Low-Smoke thermoplastic Polyolefin: .078" (2.0mm) nom. diameter

3. Binder Tape:

- Mylar tape

4. Inner Sheath:

- Low-Smoke, Zero-Halogen (LSZH), low-toxicity, thermoplastic Polyolefin –Black

5. Bronze Armor:

- Bronze braid, 88% minimum coverage

6. Outer Sheath:

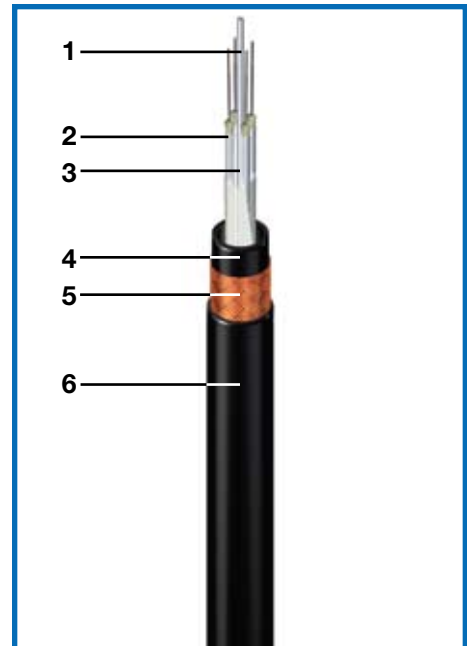
- Low-Smoke, Zero-Halogen (LSZH), low-toxicity, thermoplastic Polyolefin –Black

Applications:

- Offshore platforms, ships, mobile oil rigs, FPSOs, land rigs, onshore drilling

Features:

- Breakout-style cable
- Temperature: -40°C to +70°C
- Gigabit Ethernet compliant
- Braided bronze armor for increased mechanical protection
- LSZH, thermoplastic, UV-resistant sheath to insure overall maximum flexibility, oil and chemical resistance
- Mechanically enhanced construction renders the cable suitable for installation in cable tray as an interconnect cable
- Suitable for installation in vessels' quarters area
- Standards-compliant, cost-effective solution



Compliances:

Fiber:

- ANSI/TIA/EIA 568 B.3
- GR-409
- Temp. Cycling...FOTP-3
- Low and High Temp. Bend...FOTP-31
- Cable External Freezing...FOTP-98
- Cyclic Flexing...FOTP-104
- Compressive Loading...FOTP-41
- Cable Twist...FOTP-85

Flame/Safety Test:

- Flame...OFCR, UL-1666
- Halogen Content...IEC-60754-1 & -2
- Smoke Density...IEC-61034-1 & -2
- Acidity...IEC-60754-2

Third-Party Testing:

- MET Labs has tested and confirmed that this product complies with the above specifications (report number F026746-GEN rev1)



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**Low-Smoke, Zero-Halogen
Breakout Cable**



Armored & Sheathed, Thermoplastic, 2-24 Fibers

ABS Type Approval (RQS)



CATALOG NUMBER*	FIBER COUNT	NOM. OUTER SHEATH DIAMETER		NOM. OUTER SHEATH THICKNESS		MAXIMUM WEIGHT		MINIMUM BEND RADIUS		MAXIMUM TENSILE LOAD	
		INCHES	mm	INCHES	mm	LBS/1000 FT	kg/km	INSTALLATION INCHES/cm	IN-SERVICE INCHES/cm	INSTALLATION LBS/N	IN-SERVICE LBS/N
XX0021C1Z-ATPL	2	0.434	11.00	0.045	1.14	137	204	6.5/16.5	4.3/11.0	200/600	50/225
XX0041C1Z-ATPL	4	0.434	11.00	0.045	1.14	137	204	6.5/16.5	4.3/11.0	200/600	50/225
XX0061C1Z-ATPL	6	0.480	12.20	0.045	1.14	190	282	7.2/18.3	4.8/12.2	200/600	50/225
XX0081C1Z-ATPL	8	0.529	13.40	0.045	1.14	214	318	7.9/20.1	5.3/13.4	200/600	50/225
XX0101C1Z-ATPL	10	0.578	14.70	0.045	1.14	250	372	8.7/22.1	5.8/14.7	600/2700	150/675
XX0121C1Z-ATPL	12	0.628	15.90	0.045	1.14	279	416	9.4/23.9	6.3/15.9	600/2700	150/675
XX0181C1Z-ATPL	18	0.661	16.80	0.050	1.27	309	460	9.9/25.2	6.6/16.8	600/2700	150/675
XX0241C1Z-ATPL	24	0.731	18.60	0.050	1.27	341	507	11.0/27.9	7.3/18.6	600/2700	150/675

* XX denotes fiber type. See Fiber Selection Guide.

Fiber Selection Guide

FIBER TYPE	AP FIBER TYPE SINGLEMODE	CG FIBER TYPE MULTIMODE 62.5/125	BI FIBER TYPE MULTIMODE 50/125
FIBER CHARACTERISTICS			
Type	Matched Clad	Graded Index	Graded Index
Mode Field Diameter	9.2 ± .4 @ 1310nm	N/A	N/A
Core Diameter	8.3µm nominal	62.5 ± 3µm	50.0 ± 2.5µm
Cladding Diameter	125 ± .7µm	125 ± 2µm	125 ± 2µm
Coating Diameter	245 ± 5µm	245 ± 5µm	245 ± 5µm
Core Non-Circularity	N/A	≤5%	≤5%
Coating Cladding Conc.	<12µm	<12µm	<12µm
Cladding Non-Circularity	≤0.7%	≤1.0%	≤1.0%
Core-Clad Concentricity	≤0.5µm	≤1.5µm	≤1.5µm
ATTENUATION dB/km			
850nm	N/A	3.50	3.00
1300nm	N/A	1.00	1.00
1310nm	1.00	N/A	N/A
1550nm	1.00	N/A	N/A
BANDWIDTH MHz • km			
850nm	N/A	220	700
1300nm	N/A	500	500
Dispersion	≤18.0 ps/nm – km @ 1550	N/A	N/A
Proof Test	> or = 100 kpsi	> or = 100 kpsi	> or = 100 kpsi



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Offshore and
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Cables

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Commodore Lite™ Fiber Optic Communication Cables



**Low-Smoke, Zero-Halogen
Loose Tube Cable
Unarmored, Thermoplastic, 2-48 Fibers
ABS Type Approval (RQS)**



Product Construction:

1. Central Strength Member:

- Epoxy glass rod

2. Loose Tube Dry Filled:

Fiber:

- 2-48 fibers (see Fiber Selection Guide)
- Color Code: TIA/EIA 598

Jacket:

- Low-Smoke thermoplastic Polymer

3. Binder Tape:

- Water-swellable tape

4. Outer Sheath:

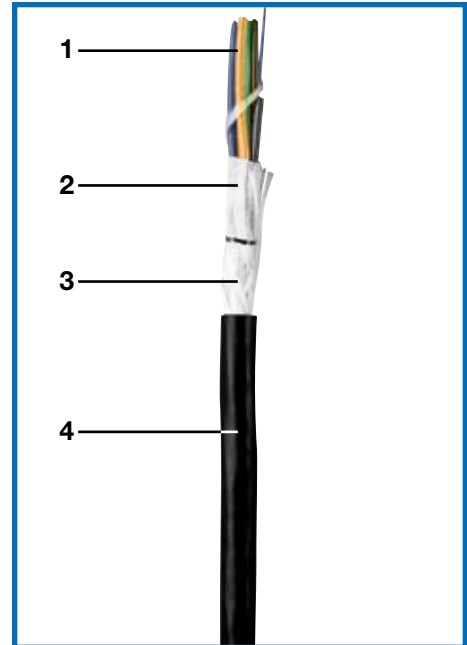
- Low-Smoke, Zero-Halogen (LSZH), low-toxicity, thermoplastic Polyolefin-Black

Applications:

- Offshore platforms, ships, mobile oil rigs, FPSOs, land rigs, onshore drilling

Features:

- Loose tube cable
- Temperature: -40°C to +70°C
- Gigabit Ethernet compliant
- LSZH, thermoplastic, UV-resistant sheath to insure overall maximum flexibility, oil and chemical resistance
- Standards-compliant, cost-effective solution



Compliances:

Fiber:

- ANSI/TIA/EIA 568 B.3
- ICEA S-104-691
- Temp. Cycling...FOTP-3
- Low and High Temp. Bend...FOTP-31
- Cable External Freezing...FOTP-98
- Cyclic Flexing...FOTP-104
- Compressive Loading...FOTP-41
- Cable Twist...FOTP-85

Flame/Safety Test:

- Flame...OFNR, UL-1666
- Halogen Content...IEC-60754-1 & -2
- Smoke Density...IEC-61034-1 & -2
- Acidity...IEC-60754-2

Third-Party Testing:

- MET Labs has tested and confirmed that this product complies with the above specifications (report number F026746-GEN rev1)



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June, 2009

**Low-Smoke, Zero-Halogen
Loose Tube Cable
Unarmored, Thermoplastic, 2-48 Fibers
ABS Type Approval (RQS)**



CATALOG NUMBER*	FIBER COUNT	NOM. OUTER SHEATH DIAMETER		NOM. OUTER SHEATH THICKNESS		MAXIMUM WEIGHT		MINIMUM BEND RADIUS		MAXIMUM TENSILE LOAD	
		INCHES	mm	INCHES	mm	LBS/1000 FT	kg/km	INSTALLATION INCHES/cm	IN-SERVICE INCHES/cm	INSTALLATION LBS/N	IN-SERVICE LBS/N
XX0024M1Z-TPL	2	0.360	9	0.060	1.52	59	89	7.2/18.2	3.6/9.4	600/2670	200/890
XX0044M1Z-TPL	4	0.360	9	0.060	1.52	59	89	7.2/18.2	3.6/9.4	600/2670	200/890
XX0064M1Z-TPL	6	0.360	9	0.060	1.52	59	89	7.2/18.2	3.6/9.4	600/2670	200/890
XX0084M1Z-TPL	8	0.360	9	0.060	1.52	59	89	7.2/18.2	3.6/9.4	600/2670	200/890
XX0104M1Z-TPL	10	0.360	9	0.060	1.52	59	89	7.2/18.2	3.6/9.4	600/2670	200/890
XX0124M1Z-TPL	12	0.360	9	0.060	1.52	59	89	7.2/18.2	3.6/9.4	600/2670	200/890
XX0184M1Z-TPL	18	0.360	9	0.060	1.52	59	89	7.2/18.2	3.6/9.4	600/2670	200/890
XX0244M1Z-TPL	24	0.360	9	0.060	1.52	59	89	7.2/18.2	3.6/9.4	600/2670	200/890
XX0364M1Z-TPL	36	0.380	10	0.060	1.52	66	98	7.6/19.3	3.8/9.7	600/2670	200/890
XX0484M1Z-TPL	48	0.410	10	0.060	1.52	74	110	8.2/20.8	4.1/10.4	600/2670	200/890

* XX denotes fiber type. See Fiber Selection Guide.

Fiber Selection Guide

FIBER TYPE	AQ FIBER TYPE SINGLEMODE	CG FIBER TYPE MULTIMODE 62.5/125	BI FIBER TYPE MULTIMODE 50/125
FIBER CHARACTERISTICS			
Type	Matched Clad	Graded Index	Graded Index
Mode Field Diameter	9.2 ± .4 @ 1310nm	N/A	N/A
Core Diameter	8.3µm nominal	62.5 ± 3µm	50.0 ± 2.5µm
Cladding Diameter	125 ± .7µm	125 ± 2µm	125 ± 2µm
Coating Diameter	245 ± 5µm	245 ± 5µm	245 ± 5µm
Core Non-Circularity	N/A	≤5%	≤5%
Coating Cladding Conc.	<12µm	<12µm	<12µm
Cladding Non-Circularity	≤0.7%	≤1.0%	≤1.0%
Core-Clad Concentricity	≤0.5µm	≤1.5µm	≤1.5µm
ATTENUATION dB/km			
850nm	N/A	3.50	3.00
1300nm	N/A	1.00	1.00
1310nm	0.40	N/A	N/A
1550nm	0.30	N/A	N/A
BANDWIDTH MHz • km			
850nm	N/A	220	700
1300nm	N/A	500	500
Dispersion	≤18.0 ps/nm – km @ 1550	N/A	N/A
Proof Test	> or = 100 kpsi	> or = 100 kpsi	> or = 100 kpsi



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Commodore Lite™ Fiber Optic Communication Cables



Low-Smoke, Zero-Halogen Loose Tube Cable

Armored & Sheathed, Thermoplastic, 2-48 Fibers ABS Type Approval (RQS)



Product Construction:

1. Central Strength Member:

- Epoxy glass rod

2. Loose Tube Dry Filled:

Fiber:

- 2-48 fibers (see Fiber Selection Guide)
- Color Code: TIA/EIA 598

Jacket:

- Low-Smoke thermoplastic Polymer

3. Binder Tape:

- Water-swellable tape

4. Steel Armor:

- 0.006" corrugated steel tape

5. Outer Sheath:

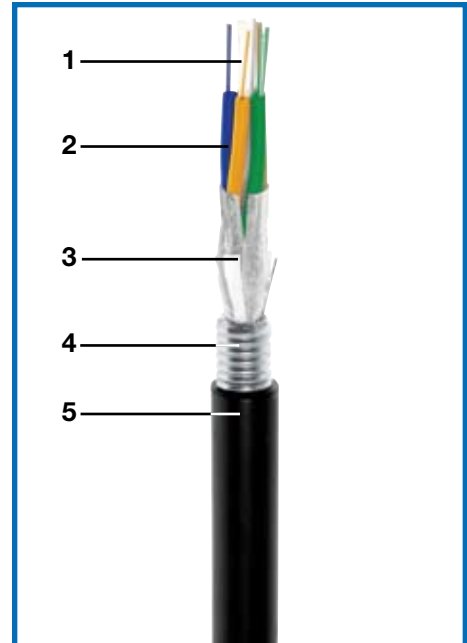
- Low-Smoke, Zero-Halogen (LSZH), low-toxicity, thermoplastic Polyolefin-Black

Applications:

- Offshore platforms, ships, mobile oil rigs, FPSOs, land rigs, onshore drilling

Features:

- Loose tube cable
- Temperature: -40°C to +70°C
- Gigabit Ethernet compliant
- Steel armor for increased mechanical protection
- LSZH, thermoplastic, UV-resistant sheath to insure overall maximum flexibility, oil and chemical resistance
- Mechanically enhanced construction renders the cable suitable for installation in cable tray as an interconnect cable
- Suitable for installation in vessels' quarters area
- Standards-compliant, cost-effective solution



Compliances:

Fiber:

- ANSI/TIA/EIA 568 B.3
- ICEA S-104-696
- Temp. Cycling...FOTP-3
- Low and High Temp. Bend...FOTP-31
- Cable External Freezing...FOTP-98
- Cyclic Flexing...FOTP-104
- Compressive Loading...FOTP-41
- Cable Twist...FOTP-85

Flame/Safety Test:

- Flame...OFCR, UL-1666
- Halogen Content...IEC-60754-1 & -2
- Smoke Density...IEC-61034-1 & -2
- Acidity...IEC-60754-2

Third-Party Testing:

- MET Labs has tested and confirmed that this product complies with the above specifications (report number F026746-GEN rev1)



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Low-Smoke, Zero-Halogen
Loose Tube Cable



Armored & Sheathed, Thermoplastic, 2-48 Fibers
ABS Type Approval (RQS)



CATALOG NUMBER*	FIBER COUNT	NOM. OUTER SHEATH DIAMETER		NOM. OUTER SHEATH THICKNESS		MAXIMUM WEIGHT		MINIMUM BEND RADIUS		MAXIMUM TENSILE LOAD	
		INCHES	mm	INCHES	mm	LBS/1000 FT	kg/km	INSTALLATION INCHES/cm	IN-SERVICE INCHES/cm	INSTALLATION LBS/N	IN-SERVICE LBS/N
XX0024M1Z-ATPL	2	0.450	11.00	0.060	1.52	102	152	9.0/22.0	4.5/11.0	600/2700	150/675
XX0044M1Z-ATPL	4	0.450	11.00	0.060	1.52	102	152	9.0/22.0	4.5/11.0	600/2700	150/675
XX0064M1Z-ATPL	6	0.450	11.00	0.060	1.52	102	152	9.0/22.0	4.5/11.0	600/2700	150/675
XX0084M1Z-ATPL	8	0.450	11.00	0.060	1.52	102	152	9.0/22.0	4.5/11.0	600/2700	150/675
XX0104M1Z-ATPL	10	0.450	11.00	0.060	1.52	102	152	9.0/22.0	4.5/11.0	600/2700	150/675
XX0124M1Z-ATPL	12	0.450	11.00	0.060	1.52	102	152	9.0/22.0	4.5/11.0	600/2700	150/675
XX0184M1Z-ATPL	18	0.450	11.00	0.060	1.52	102	152	9.0/22.0	4.5/11.0	600/2700	150/675
XX0244M1Z-ATPL	24	0.450	11.00	0.060	1.52	102	152	9.0/22.0	4.5/11.0	600/2700	150/675
XX0364M1Z-ATPL	36	0.470	12.00	0.060	1.52	115	171	9.0/24.0	4.7/12.0	600/2700	150/675
XX0484M1Z-ATPL	48	0.540	13.00	0.060	1.52	120	179	11.0/26.0	5.4/13.0	600/2700	150/675

* XX denotes fiber type. See Fiber Selection Guide.

Fiber Selection Guide

FIBER TYPE	AQ FIBER TYPE SINGLEMODE	CG FIBER TYPE MULTIMODE 62.5/125	BI FIBER TYPE MULTIMODE 50/125
FIBER CHARACTERISTICS			
Type	Matched Clad	Graded Index	Graded Index
Mode Field Diameter	9.2 ± .4 @ 1310nm	N/A	N/A
Core Diameter	8.3µm nominal	62.5 ± 3µm	50.0 ± 2.5µm
Cladding Diameter	125 ± .7µm	125 ± 2µm	125 ± 2µm
Coating Diameter	245 ± 5µm	245 ± 5µm	245 ± 5µm
Core Non-Circularity	N/A	≤5%	≤5%
Coating Cladding Conc.	<12µm	<12µm	<12µm
Cladding Non-Circularity	≤0.7%	≤1.0%	≤1.0%
Core-Clad Concentricity	≤0.5µm	≤1.5µm	≤1.5µm
ATTENUATION dB/km			
850nm	N/A	3.50	3.00
1300nm	N/A	1.00	1.00
1310nm	0.40	N/A	N/A
1550nm	0.30	N/A	N/A
BANDWIDTH MHz • km			
850nm	N/A	220	700
1300nm	N/A	500	500
Dispersion	≤18.0 ps/nm – km @ 1550	N/A	N/A
Proof Test	> or = 100 kpsi	> or = 100 kpsi	> or = 100 kpsi



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