

Fiber Optic Cable Assemblies

Cable assemblies used in patch panels (fiber distribution units) are an essential interface between fiber outside plant cable and optical equipment.

Cable assemblies also provide interconnect capabilities between equipment and distribution panels and equipment to equipment.

3M offers pigtailed, jumpers, Accuribbon* fanouts, and pre-connectorized multi-fiber cable assemblies.

Standard Cable Assemblies

A single-mode or multimode optical fiber cable terminated on both ends with a connector. 3M factory mounting capabilities assure the highest transmission quality.

Hybrid Cable Assemblies

A combination of two different connector designs terminated on one fiber optic cable. These hybrids offer ease of connectivity between transmission and receiver equipment, as well as other components which incorporate different connector designs.

Duplex Cable Assemblies

A combination of four connectors mounted on duplex fiber optic cable. Duplex cable assemblies offer ease of connectivity between transmission and receiver equipment incorporating dual transmission paths.

Pigtails

3M can provide pigtailed (i.e., one connectorized end only) on jacketed and unjacketed fiber optic cable.

Fanouts

The 12-fiber Accuribbon* Fanout is pre-connectorized for easy termination in the fiber distribution frame by mechanical or fusion splicing.



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Pre-Connectorized Multi-Fiber Cable

3M offers a variety of cables terminated at one or both ends with the connector of your choice for easy installation in vault to frame applications.

Application Specific Assemblies


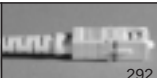

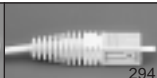














Our capabilities include termination of various styles of cables and connectors for those customers with unique requirements.



Product Referral Generator

Fibrlok™ II Optical Splicing	pg. 162
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Fiber Distribution Units	pg. 184
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ST* Duplex Clips	pg. 160
Customer Premise Units	pg. 192

Cable Assembly Specifications

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Connector	SC	SC Angled	ST*	ST* Push-Pull	FC/PC	FC Angled 2.0 mm & 2.15 mm key	Biconic
Market code							
Single-mode				N/A			
Multimode							
Attenuation 1300 (dB)							
Single-mode	Mean 0.20, sigma 0.1	Mean 0.20, sigma 0.1	Mean 0.20, sigma 0.1	—	Mean 0.20, sigma 0.1	Mean 0.20, sigma 0.1	Mean 0.35, sigma 0.15
Multimode	Mean 0.15, sigma 0.05	—	Mean 0.15, sigma 0.05	Mean 0.15, sigma 0.05	Mean 0.15, sigma 0.05	—	Mean 0.5, sigma 0.15
Reflection (dB)							
Single-mode	≤-55, Mean -58	≤-70, Mean -80	≤-55, Mean -58	—	≤-55, Mean -58	≤-70, Mean -80	-30 typical
Multimode	≤-25, Mean -27	—	≤-25, Mean -27	≤-25, Mean -27	≤-25, Mean -27	—	-14 typical
Connection durability (dB)							
Single-mode	<0.2 change	<0.2 change	<0.1 change	—	<0.2 change	<0.2 change	<0.2 change
Multimode	<0.2 change	—	<0.2 change	<0.2 change	<0.2 change	—	<0.2 change
Number of matings							
Single-mode	500	500	500	—	500	500	500
Multimode	500	—	500	500	500	—	1000
Operational temperature							
Connector only (cable dependent)							
Single-mode	-40° to 85°C	-40° to 85°C	-40° to 85°C	—	-40° to 85°C	-40° to 85°C	-40° to 80°C
Multimode	-40° to 85°C	—	-40° to 85°C	-10° to 40°C	-40° to 85°C	—	-40° to 80°C
Storage temperature							
Single-mode	-40° to 85°C	-40° to 85°C	-40° to 85°C	—	-40° to 85°C	-40° to 85°C	-40° to 85°C
Multimode	-40° to 85°C	—	-40° to 85°C	-40° to 85°C	-40° to 85°C	—	-40° to 85°C
Material							
Connector plug	—	—	—	—	—	—	70% Silica filled epoxy
Connector housing	Engineering Thermoplastic	Engineering Thermoplastic	Nickel plated zinc	Engineering Thermoplastic	Engineering Thermoplastic	Engineering Thermoplastic	Engineering Thermoplastic
Connector ferrule	Zirconia ceramic	8° angle Zirconia ceramic	Zirconia ceramic	Zirconia ceramic	Zirconia ceramic	8° angle Zirconia ceramic	—
Alignment sleeve							
Single-mode	Zirconia ceramic	Zirconia ceramic	Zirconia ceramic	—	Zirconia ceramic	Zirconia ceramic	70% Silica filled epoxy
Multimode	Zirconia ceramic	—	Metal	Metal	Zirconia ceramic	—	70% Silica filled epoxy
Boot	Polyester	Polyester	Estane®	Santoprene	Polyester	Polyester	Estane®
Backbone							
Single-mode	Aluminum	Aluminum	Zinc alloy	—	Aluminum	Aluminum	Aluminum
Multimode	Aluminum	—	Zinc alloy	Polymer	Aluminum	—	Aluminum
Flame retardant	UL-94 V-O	UL-94 V-O	UL-94 V-O	UL-94 V-O	UL-94 V-O	UL-94 V-O	UL-94 V-O

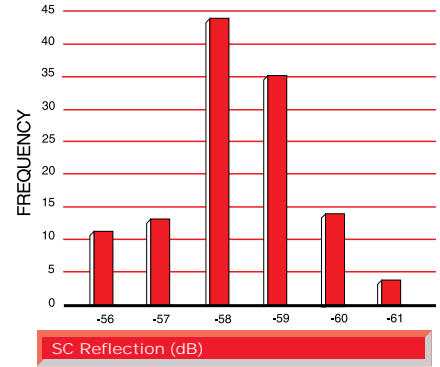
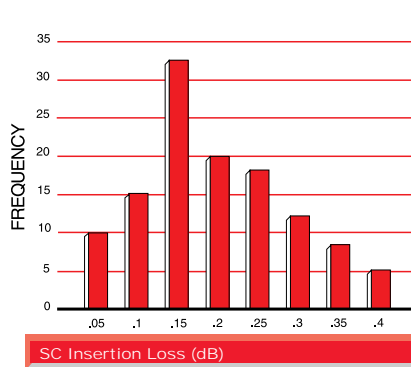


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SC Cable Assemblies



SC Cable Assemblies are designed for the most advanced fiber optic systems requiring exceptional stability, low reflections (single-mode) and high density. The cable assemblies can be converted from simplex to duplex quickly and easily in the field using the SC duplex clip with no additional tools.

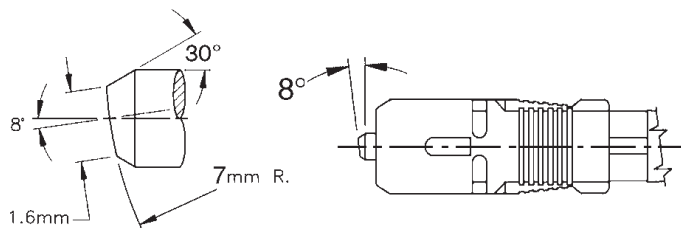


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SC 8° Angled PC Cable Assemblies, Single-mode

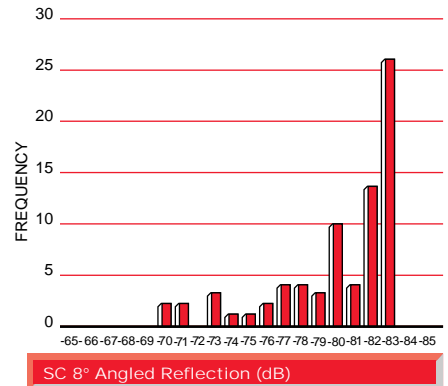
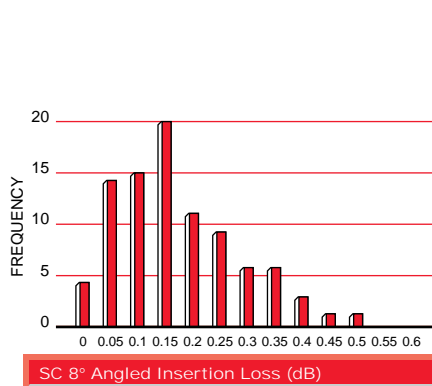


In order to meet the system requirements of the cable TV (CATV) industry and other high-speed digital systems, 3M has developed a single-mode SC 8° angle-polished connector to minimize reflections to a mean of -80 dB.



Features — Benefits

SC 8° Angled PC Cable Assemblies	
8° Angle polish on ferrule (patents issued US 5,351,327, US 5,458,582, US 5,321,784)	Low reflections, mated or unmated; intermateable with other SC 8° angled connectors meeting industry standards
Contacting fibers	Low, stable insertion loss
Isolated ferrule design	Not affected by cable disturbance
Push-pull mating (SC)	High density, repeatable connections
Zirconia ceramic ferrule	Durable, compliant material
Thermoplastic shell	Corrosion resistant



ST* Connector Cable Assemblies, Bayonet

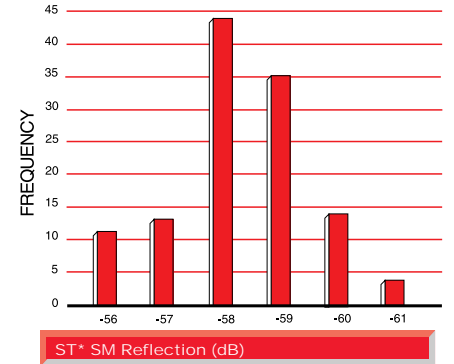
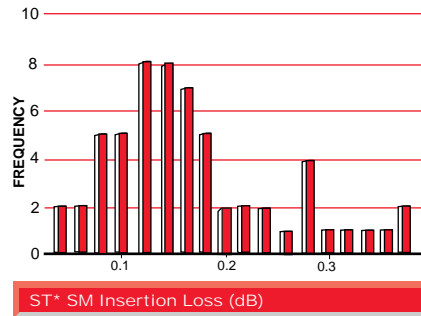
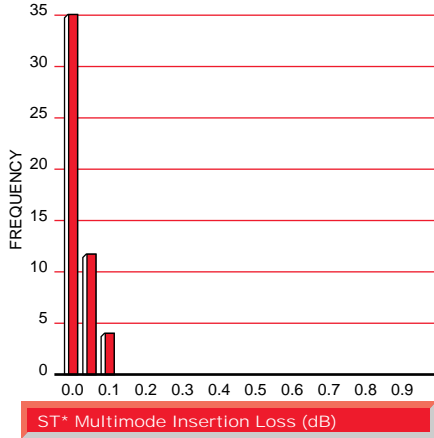


The Bayonet ST* cable assemblies, available in both multimode and single-mode, are supplied with a high quality PC finish on zirconia ceramic ferrules. A PC finish is a convex radius finish on the fiber and ferrule of the connector resulting in a positive contact of two mated fibers. The PC zirconia ferrule assures low attenuation and reflected power.

The ST* product line provides high repeatability and low light loss for premises, LAN and telco applications. The 3M connector design is compatible with the Systimax* components and other ST* connector products.



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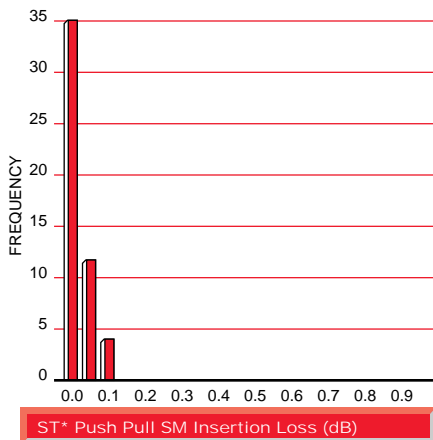
ST* Connector Multimode Cable Assemblies, Push-Pull



The Push-Pull ST* cable assemblies have been designed to incorporate a push-pull latching mechanism that allows the connectors to be inserted straight into the coupling using the housing or boot. The connector is also resistant to lateral and axial pull for increased reliability. The cable assemblies can be converted from simplex to duplex quickly and easily in the field using the Push-Pull Duplex Clip with no additional tools or training.



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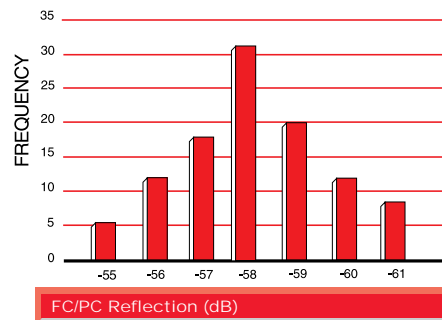
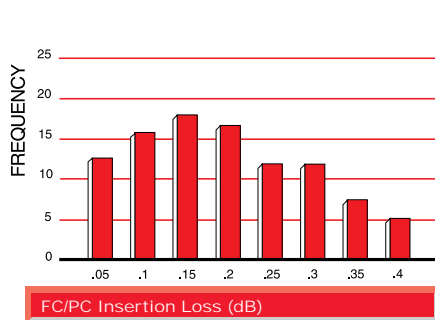


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FC/PC Cable Assemblies



The FC/PC factory polished cable assemblies incorporate 3M's pre-radiused PC zirconia ceramic technology to provide high optical performance and minimize reflected power to -55 dB.



FC/PC Angled Cable Assembly

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FC/PC Angled Cable Assemblies



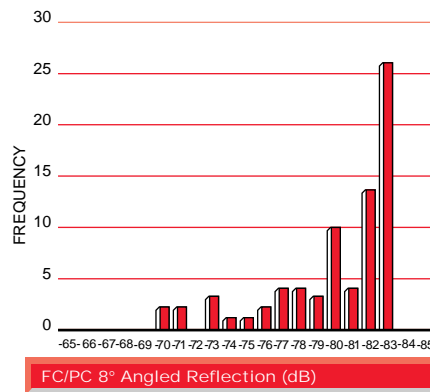
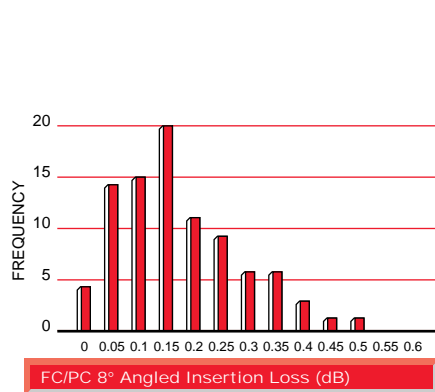
In order to meet the system requirements of the cable TV(CATV) industry and other high-speed digital systems, 3M has developed a single-mode FC 8° angle-polished connector to minimize reflections to a mean of -80 dB.

Worldwide, there are two defacto standards for FC/APC connectors; a 2.0 mm nominal connector key and a 2.15 mm connector key are in widespread use. Long term, it is expected that the 2.0 mm nominal connector key will dominate the marketplace.

Specially designed, tight key couplings are available for both the 2.0 mm and 2.15 mm connectors which offer premium optical performance. The angled end finishes of the connectors could also mate with the standard FC couplings with an additional 0.15 dB insertion loss.

Features — Benefits

FC/PC Angled Cable Assemblies	
8° angle polish on ferrule (patents issued US 5,351,327, US 5,458,582, US 5,321,784)	Low reflections, mated or unmated intermateable with other FC/PC 8° angled connectors meeting industry standards
Contacting fibers	Low, stable insertion loss
Zirconia ceramic ferrule	Durable, compliant material



Biconic Cable Assemblies



Biconic cable assemblies have been widely used throughout the telecommunications industry, featuring a conical design that minimizes connector wear and provides a dust-free, moisture-proof connection.



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Optical Cable Specifications for Cable Assemblies

Code	Vendor	Number of fibers	Cable OD nominal (mm)	Jacket color	Loss/max 1300/1550 nm (dB/km)	Band width 1300 nm (MHz-km)	Bend radius (cm)	Tensile load (Install N)	Cable weight (kg/km)
Single-mode									
Unjacketed									
AU	Siecor	1	0.9	White	1.0/.75	N/A	5.0	3	0.9
MQ	AT&T	1	0.9	Yellow	0.5/0.3	N/A	3.8	6	0.6
Jacketed									
AT	Siecor	1	2.9	Yellow	1.0/.75	N/A	5.0	500	7.8
MK	AT&T	1	2.9	Yellow	0.5/0.3	N/A	3.8	220	6.2
BW	Siecor	2	2.9 x 5.8	Yellow	1.0/.75	N/A	5.0	1000	14.7
Multi-fiber (900 μm sub-units)									
EA	Siecor	4	5.2	Yellow	1.0/.75	N/A	7.5	1000	23
EB	Siecor	6	5.2	Yellow	1.0/.75	N/A	7.5	1000	23
GY	Siecor	12	7.0	Yellow	1.0/.75	N/A	10.5	1800	53
EC	Siecor	24	10.6	Yellow	1.0/.75	N/A	15.9	2700	122
ED	Siecor	36	14.9	Yellow	1.0/.75	N/A	22.4	4000	191
EE	Siecor	72	21.5	Yellow	1.0/.75	N/A	32.3	5500	320
Multimode									
50/125 μm									
ZK	Siecor	1	0.9	Orange	4.0/NA	400	5.0	6	0.9
ZJ	Siecor	1	2.9	Orange	4.0/NA	400	5.0	500	7.8
AX	Siecor	2	2.9 x 5.8	Orange	4.0/NA	400	5.0	1000	15.6
62.5/125 μm									
AP	Siecor	1	0.9	Orange	2.0/NA	500	5.0	6	0.9
AF	Siecor	1	2.9	Orange	2.0/NA	500	5.0	500	7.8
AQ	Siecor	2	2.9 x 5.8	Orange	2.0/NA	500	5.0	1000	15.6

Notes:

- *1. Cables available in assemblies only.
2. All cables are Riser Rated (OFNR) and meet requirements of UL 1666.
3. All Jacketed Simplex and Duplex cable are 3M private labeled.

Standard Jumpers and Pigtails Cable Assemblies Ordering Chart (Simplex and Duplex)

In five easy steps, you can accurately specify your cable assembly.
Establish 3M part numbers by using the following codes.



Step 1

Cable Assembly Information
 A Single-mode 3M supplied connector and cable
 B Multimode 3M supplied connector and cable

Step 2

Connector End #1 Information

Single-mode
 AA Biconic
 AM ST* (Bayonet)
 DA SC, Standard Density
 DG SC, High Density
 EP SC 8° Angle, Standard Density
 EN FC/PC
 EU FC 8° Angle (2.15 mm Key)
 EX FC 8° Angle (2.0 mm Key)

Multimode
 AB Biconic
 AN ST (Bayonet)
 DB SC, Standard Density
 EK Push/Pull ST*
 EM FC/PC

NOTE: All ST*, SC and FC connectors have PC finish.

Step 3

Connector End #2 Information
 — Use same codes as End #1
 00 Pigtail

Step 5

Cable Lengths

0001	1 meter
02.5	2.5 meters
0003	3 meters
0005	5 meters
0010	10 meters

Step 4

Cable Information

Siecor Single-mode Cable/Corning Fiber
 AT Jacketed
 AU Unjacketed
 BW Jacketed duplex

AT&T Single-mode Fiber and Cable
 MK Jacketed
 MQ Unjacketed

Siecor Multimode Cable/Corning Fiber
 ZK 50/125 Unjacketed
 ZJ 50/125 Jacketed
 AX 50/125 Jacketed duplex
 AP 62.5/125 Unjacketed
 AF 62.5/125 Jacketed
 AQ 62.5/125 Jacketed duplex

For additional cables, including duplex, multi-fiber or plenum jacket, please call 800/426 8688. Push #1 for ordering department or push #3 for literature.

NOTE: Jacketed cables are 3 mm OD unless otherwise stated. Pigtails must be ordered in multiples of two.

Example: Single-mode
 FC 8° angle (2.15 mm key) to FC 8° angle (2.15 mm key)
 AT&T jacketed cable, 10 meters

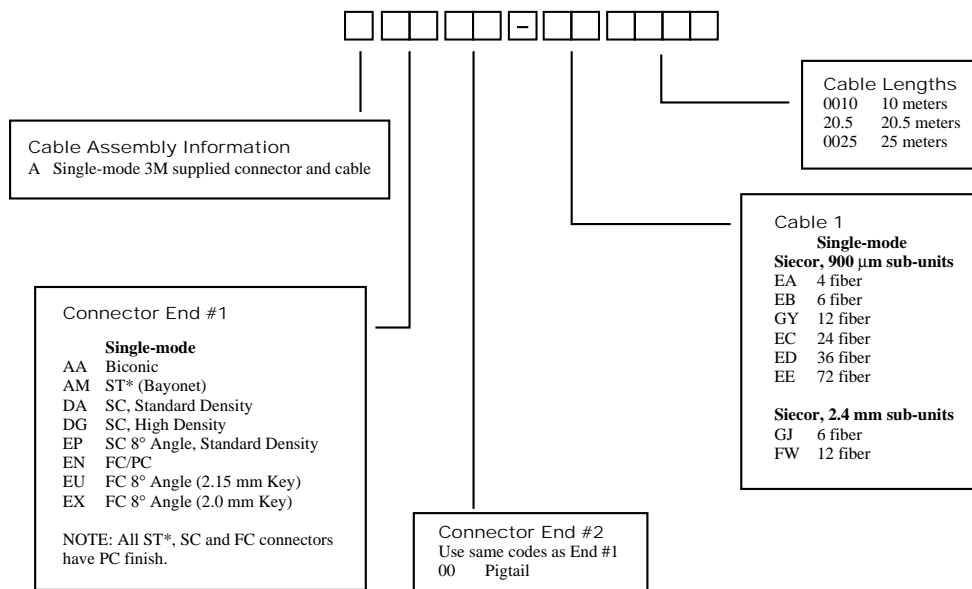
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(AEUEU-MK 0010)

Pre-Connectorized Multi-Fiber Cable

As a leader in the fiber optic cable assembly market, 3M continues to fulfill the changing needs of the industry with the provision of pre-terminated multi-fiber cables. Pre-connectorized cable assemblies are used in applications such as intra-building networks and military field applications.

Pre-connectorized multi-fiber cables are factory terminated at one or both ends with the customer's choice of connectors. These single-mode assemblies are tested to meet specific fiber connector requirements.

Pre-connectorized, Multi-Fiber Cable Assembly Ordering Chart
The part number for the pre-connectorized multi-fiber cable is determined using a system similar to the system used for other 3M cable assemblies.



All cables listed are OFNR riser-rated. For plenum cable, please call Customer Service at 800/426 8688. Pre-connectorized multi-fiber pigtail assemblies must be ordered in multiples of two for the same cable code.

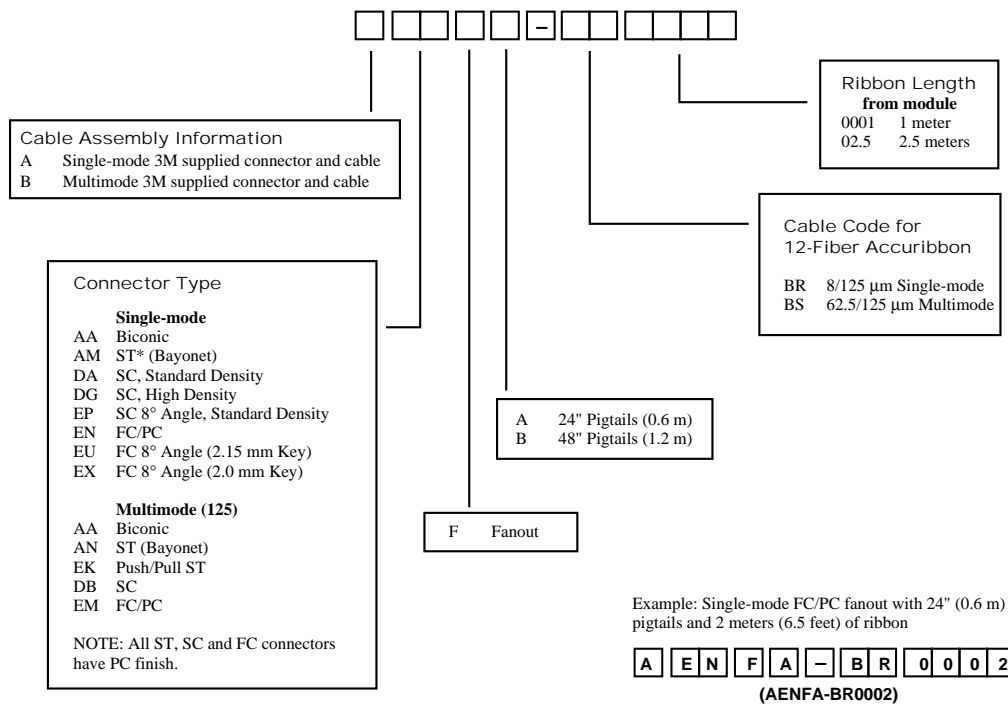
Accuribbon* Fanout

The Accuribbon* Fanout is a pre-connectorized assembly which can be mechanically or fusion spliced to 12-fiber ribbon for termination in the fiber distribution frame. The 12-fiber Accuribbon* fanout is separated into individual fibers which are protected with 1.7 mm PVC tubing and terminated with connectors.

The Accuribbon fiber is transitioned through a small plastic module. The terminated ends of the fibers are spaced 24 or 48 inches from the fanout module. The length of Accuribbon fiber extending from the module is specified by the customer.

The Fibrlok™ 2612 Multi-Fiber Optical Splice is available for fast mechanical splicing of ribbon or ribbonized fiber. This splicing system is ideal for Accuribbon fanout installations with a minimum investment in time and tooling.

Accuribbon Fanout Ordering Chart
The product number for the Accuribbon Fanout is determined using a system similar to the system used for other 3M cable assemblies.



NOTE: Accuribbon fanouts must be ordered in multiples of two for the same cable code.