# LightStack™ Ultra High Density Fiber Enclosure

As today's high density Data Centers migrate from 10 to 40 and 100 gigabit speeds, they require low loss fiber connectivity to support multiple mated connections for flexible patching options over a wide range of distances and configurations while remaining within link loss budgets. At the same time, these connections need to be easily accessed and managed to quickly and effectively make changes.

With superior best-in-class features, Siemon's LightStack ultra high density fiber Plug and Play system offers superior density, port access and cable management in a sleek, modern enclosure that easily supports today's advanced Data Center and storage area network environments, while providing fast, seamless migration to advanced 40 and 100 gigabit applications.

LightStack 1U Front View
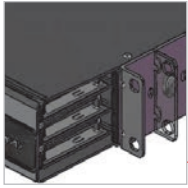
Mounting options
Rack mounting brackets can be attached at any of 3 horizontal positions

Innovative labeling solution and port ID
Drop-down label strip holder for high visibility

Module Insertion and Removal
Can be quickly and easily installed or removed from the front or rear of the enclosure

Visually appealing magnetic door
- Easy to open and close
- Eliminates potential pinch points
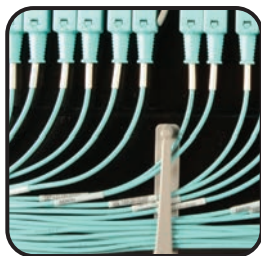
ULTRA HIGH DENSITY
144 fibers per 1U (LC interface) and 864 fibers per 1U (MTP interface)

576 fibers per 4U (LC interface) and 3456 fibers per 4U (MTP interface)

CABLE MANAGEMENT CLIPS
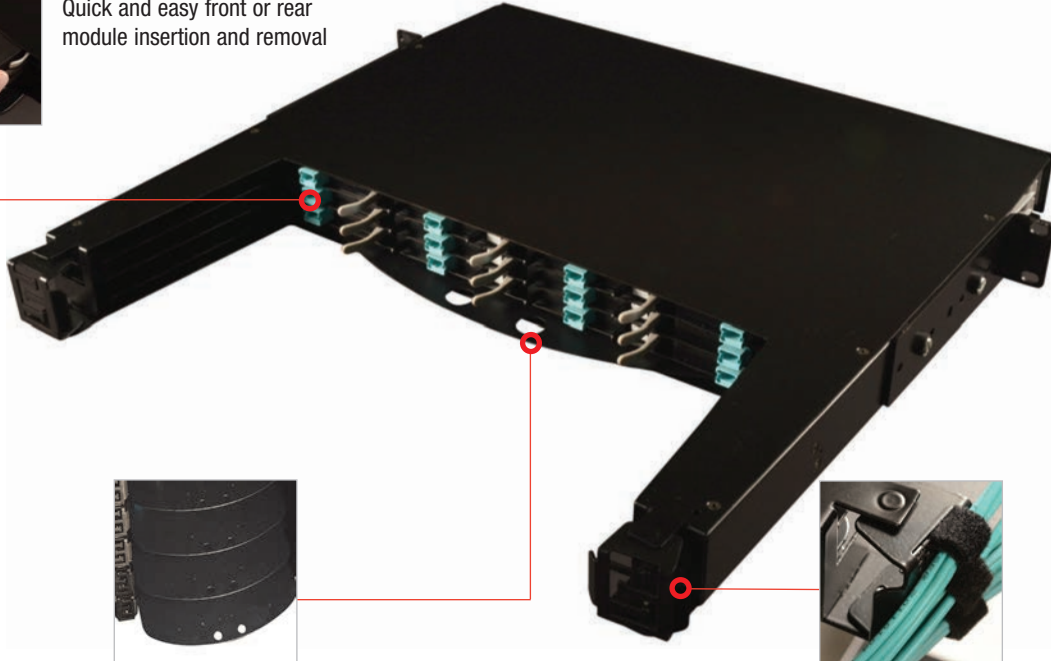Unlatch and swing open for full access to any jumper

HIGH CAPACITY DESIGN
Handles both traditional 2mm zipcord and 2 fiber, interconnect tight-buffered jumper types

LightStack™ Ultra High Density Fiber Enclosure

LightStack 1U Rear View

Module Insertion
Quick and easy front or rear module insertion and removal

Cable Divider
Acts as a rear cable divider between stacked enclosures (in the out position). Pushes inward to provide complete access to connectivity at the rear of stacked enclosures

Swivel Trunk Tie Down Points
Protect cable from bend radius violations and eliminates pinch points

LightStack 4U Front View

LightStack 4U Rear View

LIGHTSTACK ENCLOSURE ORDERING INFORMATION

Part #	Description
LS-1U-01	1U Enclosure, 144 LC fibers or 864 MTP fibers, mounts in 19 in. racks or cabinets
LS-4U-01	4U Enclosure, 576 LC fibers or 3456 MTP fibers, mounts in 19 in. racks or cabinets

LIGHTSTACK ENCLOSURE DIMENSIONS

|	1U	4U
Height	43.9 mm (1.73 in.)	176.8 mm (6.96 in.)
Width	482.3 mm (18.99 in.)	482.3 mm (18.99 in.)
Depth	530.6 mm (20.89 in.)	530.6 mm (20.89 in.)
Weight	9.53 kg (21 lb.)	23.58 kg (52 lb.)
Color	Black (RAL 9005)	Black (RAL 9005)
Label size	204.5mm (8.05 in.) L x 23.5mm (.925 in.) W	204.5mm (8.05 in.) L x 93mm (3.66 in.) W

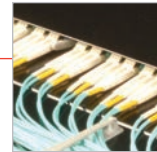SIEMON™

LightStack™ Modules

ULTRA SLIM DESIGN
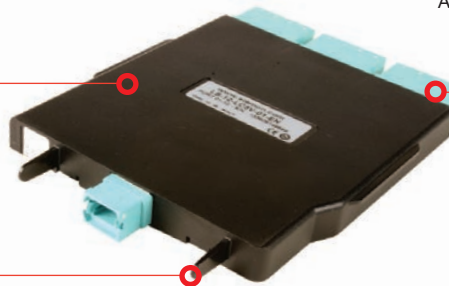LightStack modules have an ultra slim design to achieve maximum fiber density
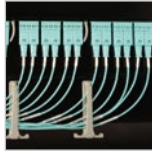
HIGH FIBER COUNT
Up to 12 fiber count per module
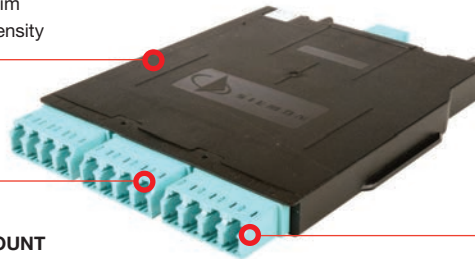
INTERFACE
LC to MTP interface. Available in OM4 and SM

LOW LOSS
Low loss performance (0.35dB per multimode module)

ADAPTERS
Aqua LC and MTP adapters for OM4; Blue LC adapters and black MTP adapters for SM

REAR MODULE HANDLES
Handles in the rear of module help facilitate removal from the back of the enclosure
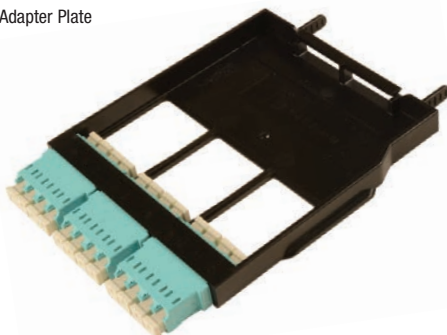
LIGHTSTACK MODULES ORDERING INFORMATION

Part #	Description
LS-12-LC5V-01	Module, 12 LC-to-MTP fibers, OM4, XGLO 550, Aqua LC and MTP adapters
LS-12-LCSM-01	Module, 12 LC-to-MTP fibers, Singlemode, Blue LC adapters, Black MTP adapters

LightStack™ Adapter Plates
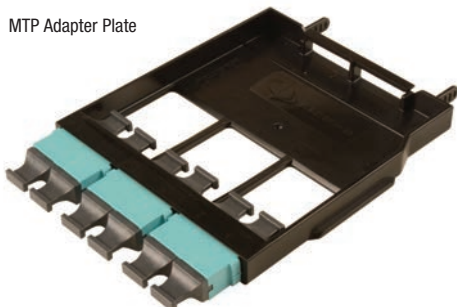
MTP Adapter Plate

LIGHTSTACK MTP ADAPTER PLATES
– Ultra slim design to achieve maximum fiber density
– Up to 72 fiber count
– Handles in the rear of module helps facilitate removal from the back of the enclosure

MTP ADAPTER PLATE ORDERING INFORMATION

LS-MP(X)-01(X)(XX)

MTP Port Count

2 = 2 MTP Ports
4 = 4 MTP Ports
6 = 6 MTP Ports

Key Orientation

B = Aligned (key up to key up)
C = Opposed (key up to key down)

Adapter Color

AQ = Aqua **
BK = Black**
GR = Gray*

* Key Orientation (B only)
** Key Orientation (C only)

LC Adapter Plate

LIGHTSTACK LC ADAPTER PLATES
– Used in conjunction with LC BladePatch® RazorCore™ trunks (for rear connections) only (see page 7.)
– Available in beige and aqua (MM) and blue (SM)
– 12 LC fibers

LC ADAPTER PLATE ORDERING INFORMATION

LS-LC12-01C-(XX)

Adapter Color

AQ = Aqua Multimode
BG = Biege Multimode
BL = Blue Singlemode
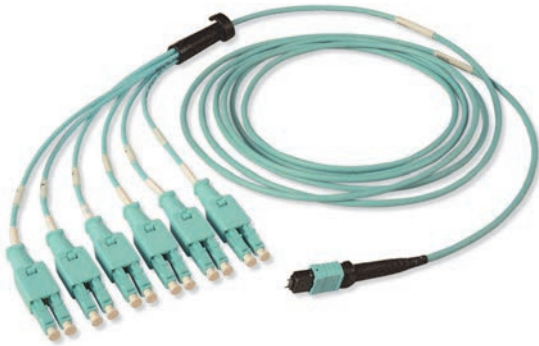
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Trunking Options

NEXT GENERATION MTP TRUNKS

Siemon's Next Generation MTP to MTP trunks are redesigned to achieve 100lb pull strength to handle more aggressive pathway environments. They come with a foamed zipper pulling eye for quick removal saving on installation time and are reusable if relocation of a trunk is required after the initial installation. *They are available in 12/24 fiber counts and Low Loss options only.*
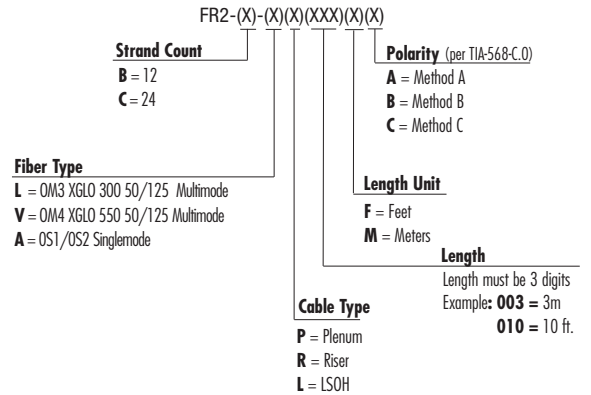
NEXT GENERATION TRUNKS

– OM3/OM4 Bend Insensitive Fiber (BIF)
– SM Non-Bend Insensitive Fiber
– 12 and 24 Fiber strand counts
– Polarity methods A, B and C options
– Low Loss performance (0.20 dB Multimode and 0.6 dB Singlemode MTP)
– Integrated breakout and zipper pulling eye work together to achieve 100 lb. tensile pull strength
– Zipper pulling eye allows for quicker installs
– Allows pulling eyes to be reused when relocating trunks during MAC work
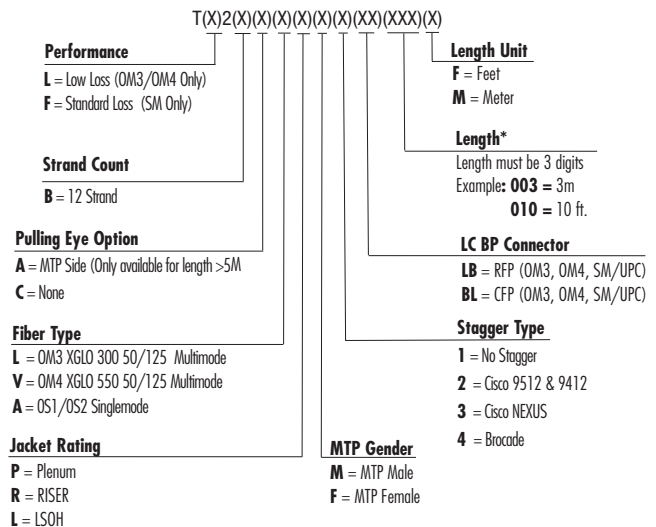
NEXT GENERATION MTP TO MTP TRUNK ORDERING INFORMATION

FR2-(X)-(X)(X)(XXX)(X)(X)

Strand Count
B = 12
C = 24

Fiber Type
L = OM3 XGLO 300 50/125 Multimode
V = OM4 XGLO 550 50/125 Multimode
A = OS1/OS2 Singlemode

Cable Type
P = Plenum
R = Riser
L = LSOH

Polarity (per TIA-568-C.0)
A = Method A
B = Method B
C = Method C

Length Unit
F = Feet
M = Meters

Length
Length must be 3 digits
Example: 003 = 3m
010 = 10 ft.

LC BLADEPATCH® TO MTP HYBRID TRUNKS

– LC BladePatch with push pull latch further improves accessibility
– Designed to facilitate an interconnect or cross connect point between active equipment
– OM3/OM4 Bend Insensitive Fiber (BIF)
– SM Non-Bend Insensitive
– 12 Fiber strand count
– Specific staggered lengths to active equipment
    - Nexus, Cisco MDS, Brocade and No stagger
– Low Loss performance 0.15 dB for LC and 0.20 dB for Multimode MTP
– Standard Loss performance 0.25 dB for LC and 0.60 dB for Singlemode MTP
– Integrated cable manager on breakout

LC BLADEPATCH TO MTP HYBRID TRUNKS ORDERING INFORMATION

T(X)2(X)(X)(X)(X)(X)(XX)(XXX)(X)

Performance
L = Low Loss (OM3/OM4 Only)
F = Standard Loss (SM Only)

Strand Count
B = 12 Strand

Pulling Eye Option
A = MTP Side (Only available for length >5M)
C = None

Fiber Type
L = OM3 XGLO 300 50/125 Multimode
V = OM4 XGLO 550 50/125 Multimode
A = OS1/OS2 Singlemode

Jacket Rating
P = Plenum
R = RISER
L = LSOH

MTP Gender
M = MTP Male
F = MTP Female

Stagger Type
1 = No Stagger
2 = Cisco 9512 & 9412
3 = Cisco NEXUS
4 = Brocade

LC BP Connector
LB = RFP (OM3, OM4, SM/UPC)
BL = CFP (OM3, OM4, SM/UPC)

Length Unit
F = Feet
M = Meter

Length*
Length must be 3 digits
Example: 003 = 3m
010 = 10 ft.

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Trunking Options

Ordering Information: Non-Armored

F(X)(XX)-(XX)(X)(XXX)(X)-(X) ....Fiber Plug & Play Cable Reel Assembly, 12 Fiber MTP Female Connectors

Performance
R = Standard Loss
L = Low Loss (OM3/OM4 only)
*E = Standard Loss Extender
*B = Low Loss Extender (OM3/OM4 only)

Fiber Count
12 = 12
24 = 24
36 = 36
48 = 48
72 = 72
96 = 96
144 = 144

Fiber Type
6 = OM1 62.5/125 Multimode
5L = OM3 XGLO 300 50/125 Multimode
5V = OM4 XGLO 550 50/125 Multimode
SM = OS1/OS2 Singlemode

Jacket Rating
R = Riser
P = Plenum
L = LSOH

Length*
Length must be 3 digits
Example: 003 = 3m
010 = 10 ft.

Length Unit
F = Feet
M = Meters

Polarity (per TIA-568-C.0)
A = Method A
B = Method B
C = Method C
Blank = Fiber Extender (FE and FB)

MTP TRUNKS
– Provides the backbone link to the system
– OM3/OM4 and SM Fiber type
– 12, 24, 36, 48, 72, 96 and 144 Fiber strand counts
– Riser, plenum and LSOH Jacket ratings
– Polarity methods A, B and C
– Standard loss performance 0.35 dB Multimode and 0.60 dB Singlemode
– Low loss performance 0.20 dB Multimode

Ordering Information: Armored

F(X)(XX)-(XX)(XX)(XXX)(X)(X) ....Armored Fiber Plug & Play Cable Reel Assembly, 12 Fiber MTP Female Connectors

Performance
R = Standard Loss
L = Low Loss (OM3/OM4 only)

Fiber Count
12 = 12
24 = 24
36 = 36
48 = 48
72 = 72
96 = 96
144 = 144

Fiber Type
6 = OM1 62.5/125 Multimode
5L = OM3 XGLO 300 50/125 Multimode
5V = OM4 XGLO 550 50/125 Multimode
SM = OS1/OS2 Singlemode

Jacket Rating
AR = Armored Riser
AP = Armored Plenum

Length*
Length must be 3 digits
Example: 003 = 3m
010 = 10 ft.

Length Unit
F = Feet
M = Meters

Polarity (per TIA-568-C.0)
A = Method A
B = Method B
C = Method C

Ordering Length

1 meter (3.3 ft)   1 meter (3.3 ft)
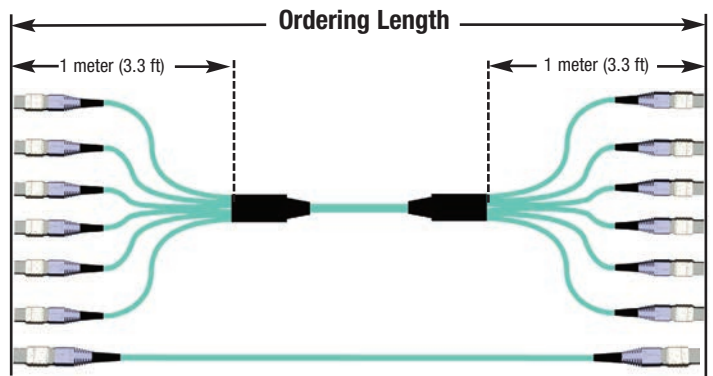
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Trunking Options

MTP® TO LC HYBRID TRUNK

Utilizing high quality Siemon RazorCore cable, MTP to LC Trunks offer a connectivity transition from 12-fiber MTP connectors t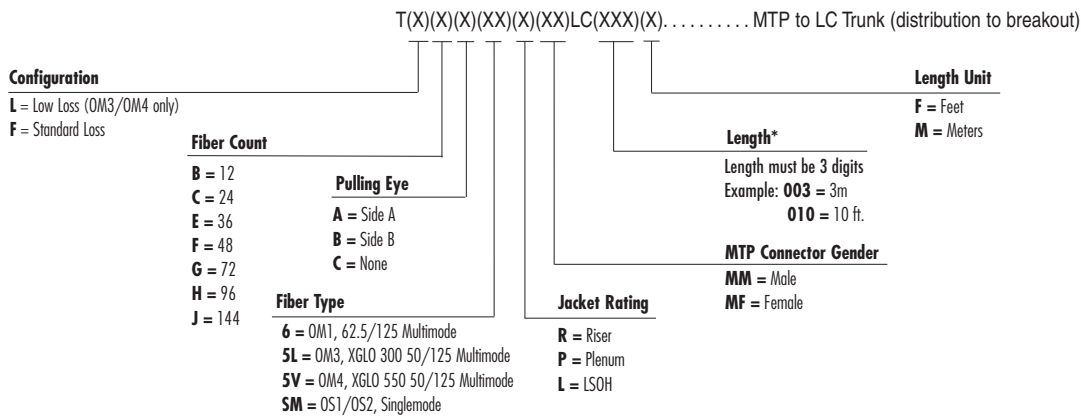o duplex LC connectors. These may be implemented with Siemon's MTP Adapter Plates to provide flexible direct MTP to LC patching options over a wide a range of distances and infrastructure configurations.

Ordering Information:

T(X)(X)(X)(XX)(X)(XX)LC(XXX)(X) . . . . MTP to LC Trunk (distribution to breakout)

Configuration
L = Low Loss (OM3/OM4 only)
F = Standard Loss

Fiber Count
B = 12
C = 24
E = 36
F = 48
G = 72
H = 96
J = 144

Pulling Eye
A = Side A
B = Side B
C = None

Fiber Type
6 = OM1, 62.5/125 Multimode
5L = OM3, XGLO 300 50/125 Multimode
5V = OM4, XGLO 550 50/125 Multimode
SM = OS1/OS2, Singlemode

Jacket Rating
R = Riser
P = Plenum
L = LSOH

MTP Connector Gender
MM = Male
MF = Female

Length*
Length must be 3 digits
Example: 003 = 3m
010 = 10 ft.

Length Unit
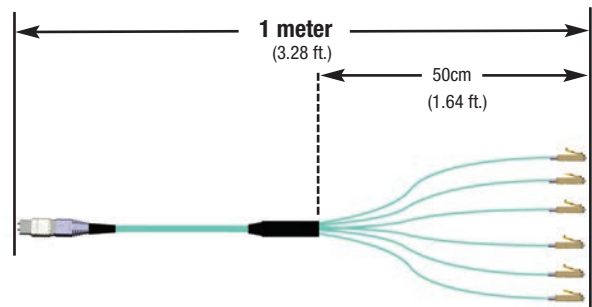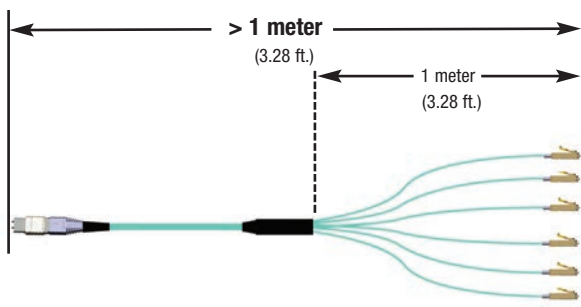F = Feet
M = Meters

See performance details on page 8.

* Minimum order length is 1 meter (3.28 ft.)
Order length is measured connector tip to connector tip.

Trunks greater than 1 meter (3.28 ft.) have breakout length of 1 meter (3.28 ft.)

1 meter (3.28 ft.) trunks have a 50cm (1.64 ft.) breakout length
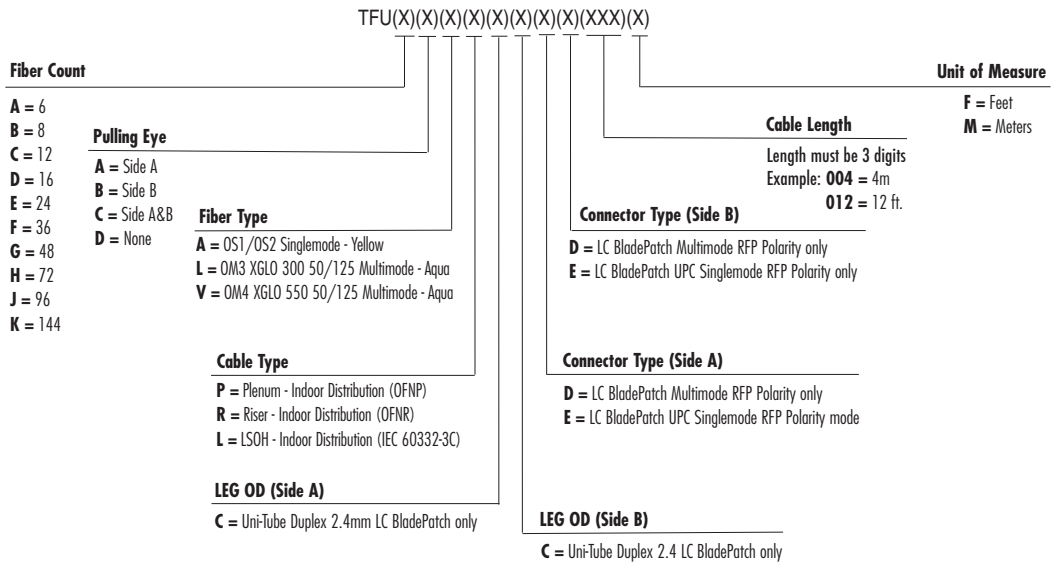
(See diagram below)

Trunking Options

2.4mm Unitube Duplex Breakout - LC BladePatch®

Ordering Information:

TFU(X)(X)(X)(X)(X)(X)(X)(XXX)(X)

Fiber Count

A = 6
B = 8
C = 12
D = 16
E = 24
F = 36
G = 48
H = 72
J = 96
K = 144

Pulling Eye

A = Side A
B = Side B
C = Side A&B
D = None

Fiber Type

A = OS1/OS2 Singlemode - Yellow
L = OM3 XGLO 300 50/125 Multimode - Aqua
V = OM4 XGLO 550 50/125 Multimode - Aqua

Cable Type

P = Plenum - Indoor Distribution (OFNP)
R = Riser - Indoor Distribution (OFNR)
L = LSOH - Indoor Distribution (IEC 60332-3C)

LEG OD (Side A)

C = Uni-Tube Duplex 2.4mm LC BladePatch only

LEG OD (Side B)

C = Uni-Tube Duplex 2.4 LC BladePatch only

Connector Type (Side A)

D = LC BladePatch Multimode RFP Polarity only
E = LC BladePatch UPC Singlemode RFP Polarity mode

Connector Type (Side B)

D = LC BladePatch Multimode RFP Polarity only
E = LC BladePatch UPC Singlemode RFP Polarity only

Cable Length

Length must be 3 digits
Example: **004** = 4m
012 = 12 ft.

Unit of Measure

F = Feet
M = Meters

Ordering length is measured connector tip to connector tip.
2. 4 unitube duplex,
Minimum order length is 3 meters (9.8 ft).

(Side A)   **(Side B)**

Ordering Length

1 meter
(3.28 ft.)

1 meter
(3.28 ft.)

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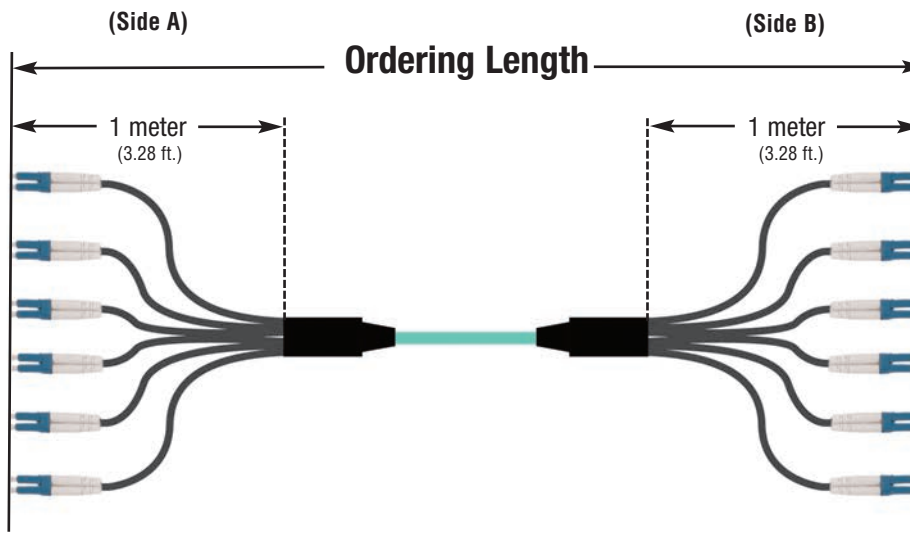
Fiber System Optical Performance

LIGHTSTACK MODULES

	Insertion Loss (dB)	Return Loss (dB)	Insertion Loss (dB)	Return Loss (dB)
	Multimode		Singlemode	
MTP	0.20	20	0.60	65
LC	0.15	30	0.40	60
MTP to LC Module	0.35	20	1.00	60

STANDARD LOSS ASSEMBLIES

Fiber Type		MAX Insertion (dB)		MAX Return Loss (dB)		Performance Class
		MTP	LC	MTP	LC	
5L-MM	50/125 (OM3)	0.50	0.25	20	30	XGLO® 300
5V-MM	50/125 (OM4)	0.50	0.25	20	30	XGLO 550
SM-LWP	SM (OS1/OS2)	0.60	0.40	65	55	XGLO

LOW LOSS ASSEMBLIES

Fiber Type		MAX Insertion (dB)		MAX Return Loss (dB)		Performance Class
		MTP	LC	MTP	LC	
5L-MM	50/125 (OM3)	0.20	0.15	20	30	XGLO 300
5V-MM	50/125 (OM4)	0.20	0.15	20	30	XGLO 550

Visit: http://www.siemon.com/us/plug-and-play/
to find out more about Siemon Plug & Play Trunking solutions

Visit: http://www.siemon.com/lightstack
to find out more about the Siemon LightStack solution

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