LightStack™ PATENT PENDING

Ultra High Density Plug & Play System

WWW.SIEMON.COM

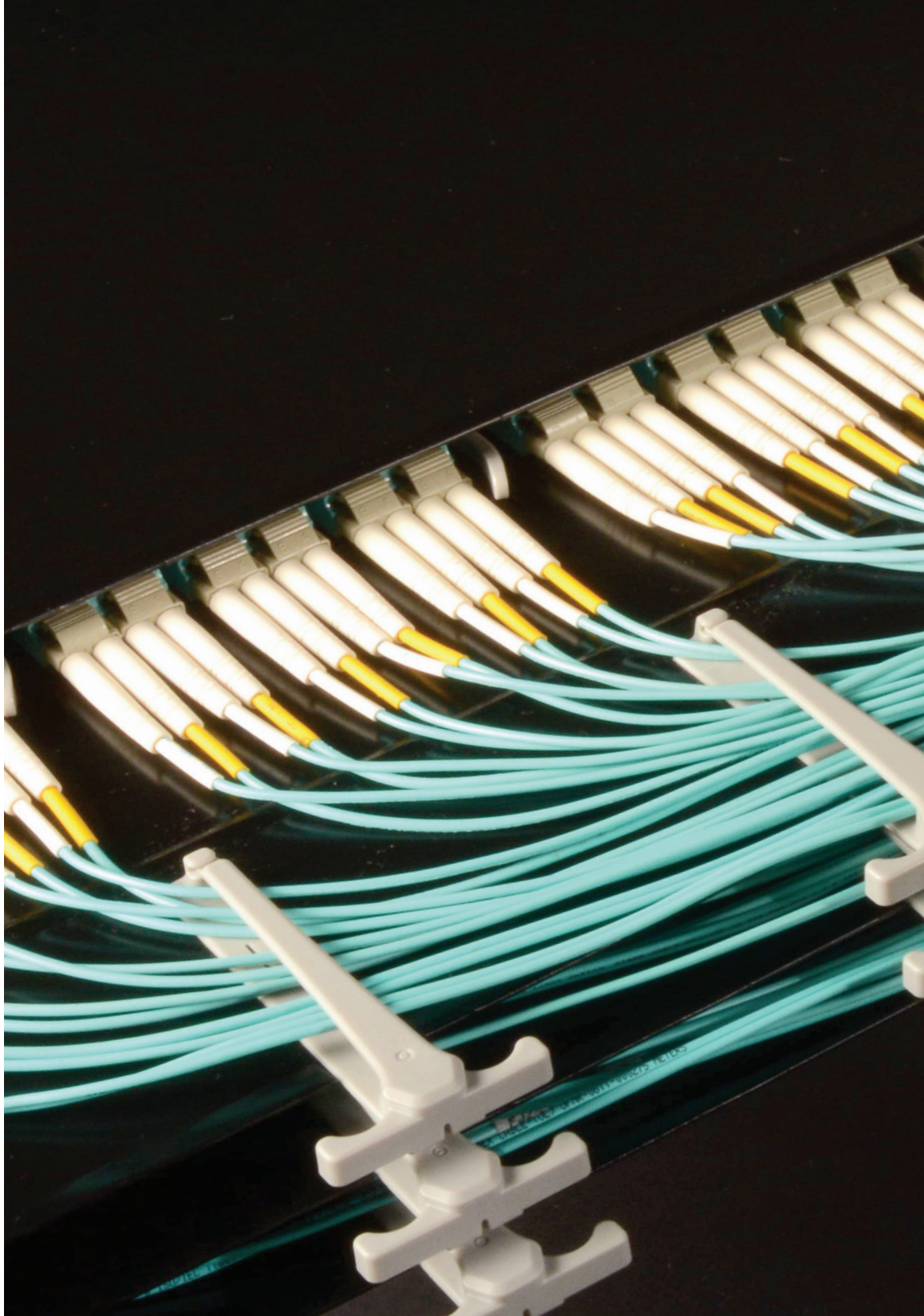
SIEMON™

About LightStack™

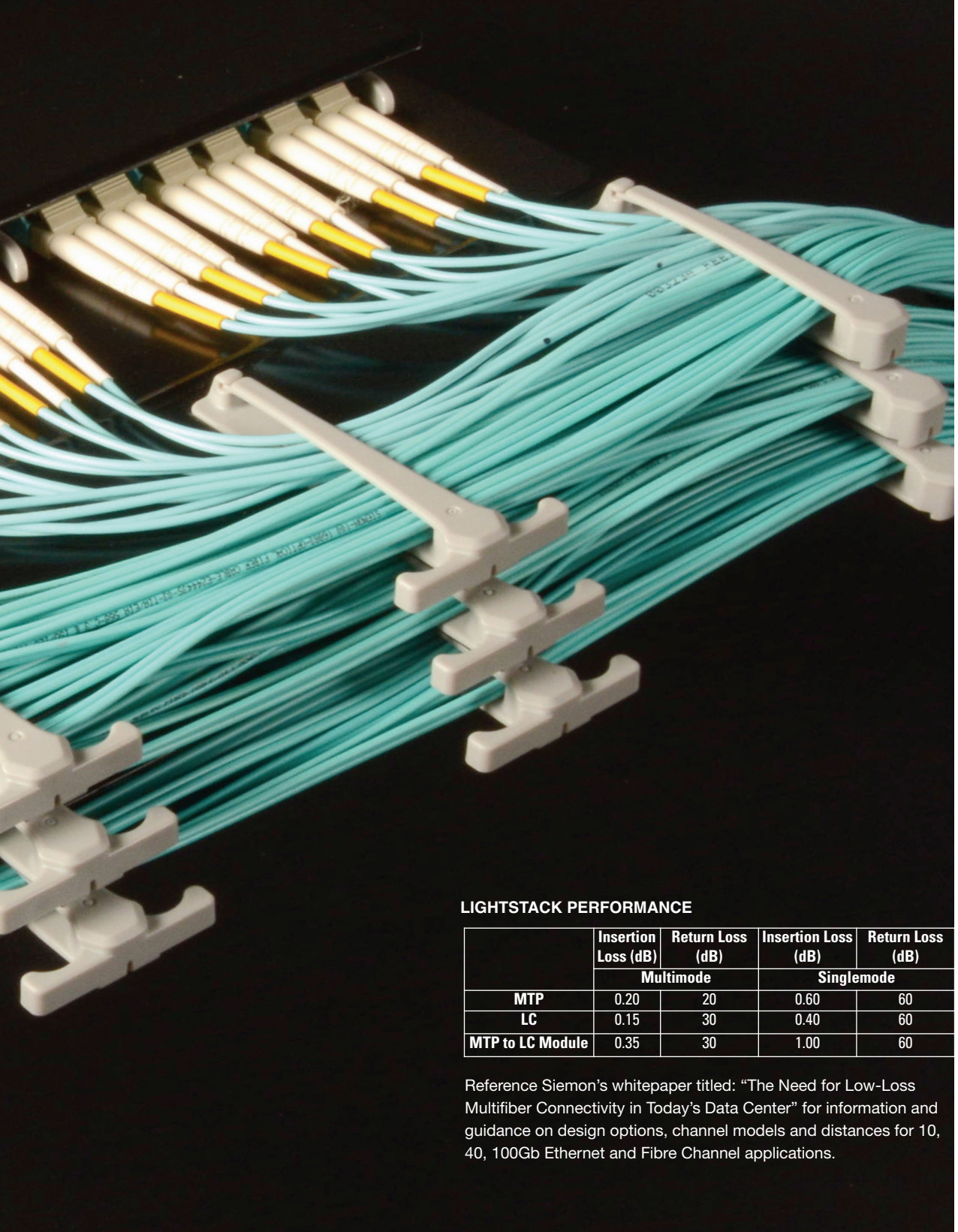
As today's high density Data Centers migrate from 10 to 40 and 100 gigabit speeds, they require low loss fiber connectivity to support multiple mated connections for flexible patching options over a wide range of distances and configurations while remaining within link loss budgets. At the same time,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

- The LightStack System consists of:
  - **Enclosures**
  - **Plug & Play Modules**
  - **Adapter Plates**
  - **MTP Trunks**
  - **Hybrid MTP to LC Trunks**



SIEMON™



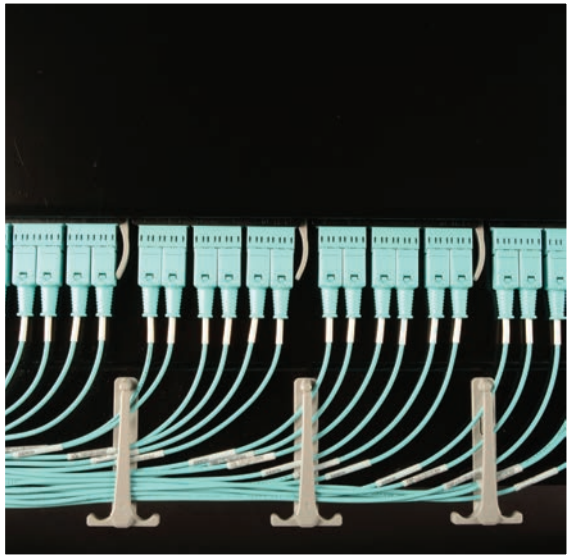
LIGHTSTACK PERFORMANCE

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

Reference Siemon's whitepaper titled: "The Need for Low-Loss Multifiber Connectivity in Today's Data Center" for information and guidance on design options, channel models and distances for 10, 40, 100Gb Ethernet and Fibre Channel applications.

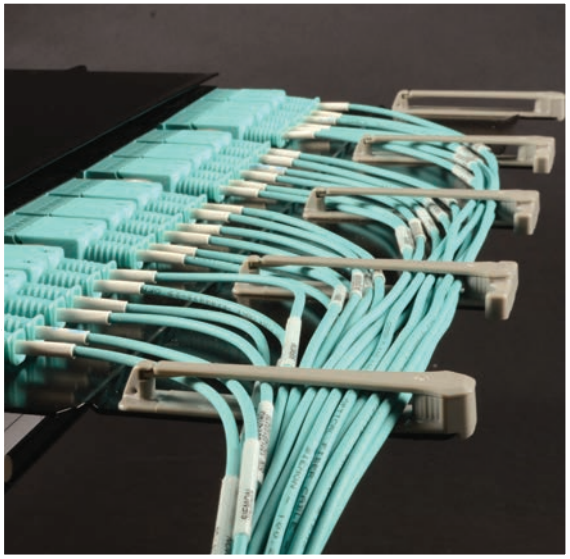

SIEMON
LightStack
SIEMON
LightStack
SIEMON
LightStack
SIEMON
LightStack
SIEMON
LightStack

LightStack™ Enclosures



ULTRA HIGH DENSITY
144 fibers per 1U (LC interface)
and 864 fibers 1U (MTP interface)

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

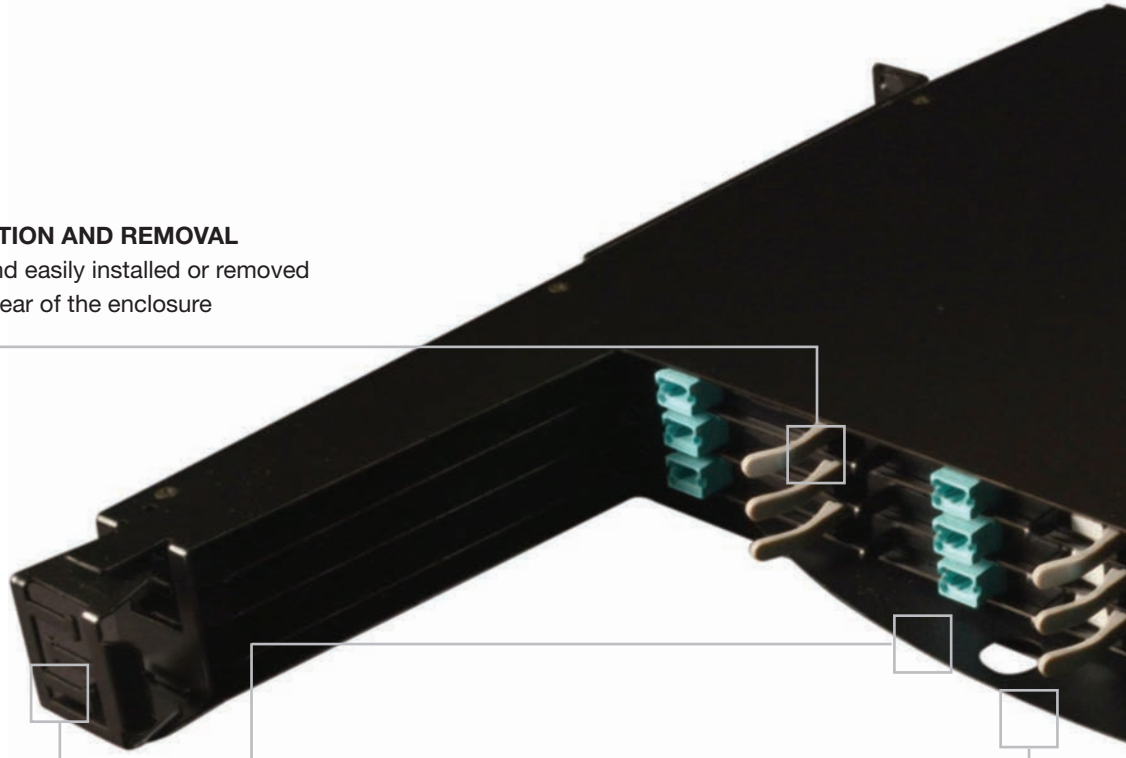


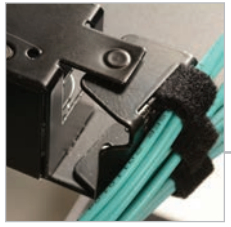
HIGH CAPACITY DESIGN
Handles both traditional 2mm zipcord
and 2 fiber, interconnect tight-buffered
jumper types

SIEMON

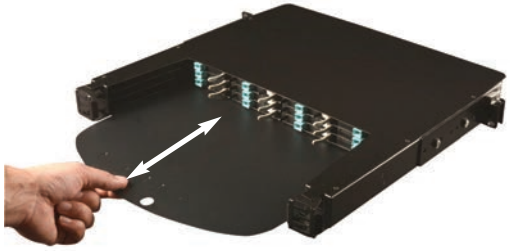
LightStack™ Enclosures

MODULE INSERTION AND REMOVAL
Can be quickly and easily installed or removed from the front or rear of the enclosure

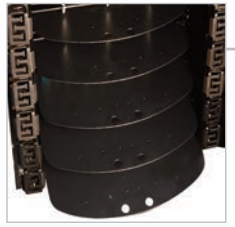




SWIVEL TRUNK TIE DOWN POINTS
Protect cable from bend radius violations and eliminates pinch points



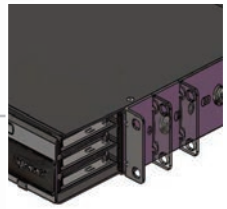
SLIDING BOTTOM REAR DIVIDER
For industry leading connector access in the rear of the enclosure when enclosures are stacked



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

SIEMON™

FRONT REMOVAL
Easy and convenient module removal



MOUNTING OPTIONS
Rack mounting brackets can be attached at any of 3 horizontal positions

EASY ACCESS
Divider is there when you need it and gone when you don't. Pushes inward to provide easy access to connectivity

).

SIEMON™

LightStack™ Enclosures

VISUALLY APPEALING MAGNETIC DOOR
- Easy to open and close
- Eliminates potential pinch points

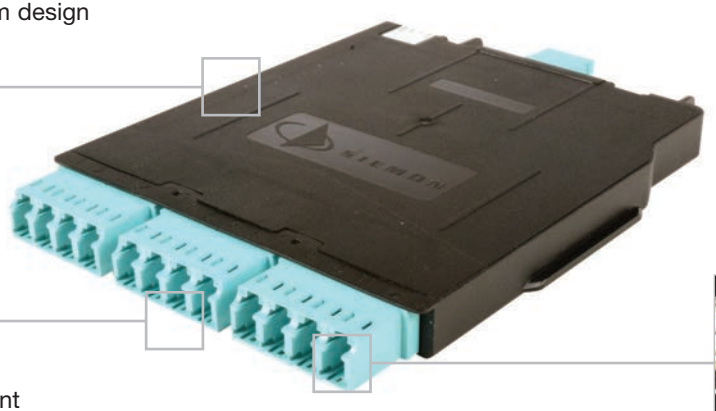
INNOVATIVE LABELING SOLUTION AND PORT ID
Drop-down label strip holder for high visibility

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™ Modules

ULTRA SLIM DESIGN
LightStack modules have an ultra slim design to achieve maximum fiber density



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 mm module only)

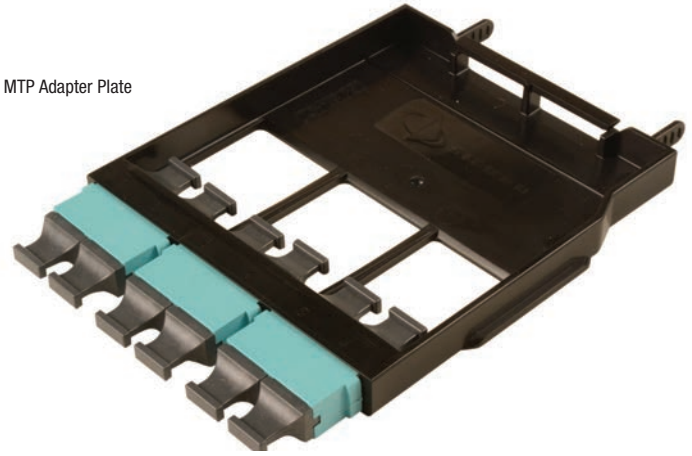
ADAPTERS
Aqua LC and MTP adapters for OM4; Blue LC adapters and black MTP adapters for SM

REAR MODULE HANDLES
Handles in the rear of module help facilitate removal from the back of the enclosure

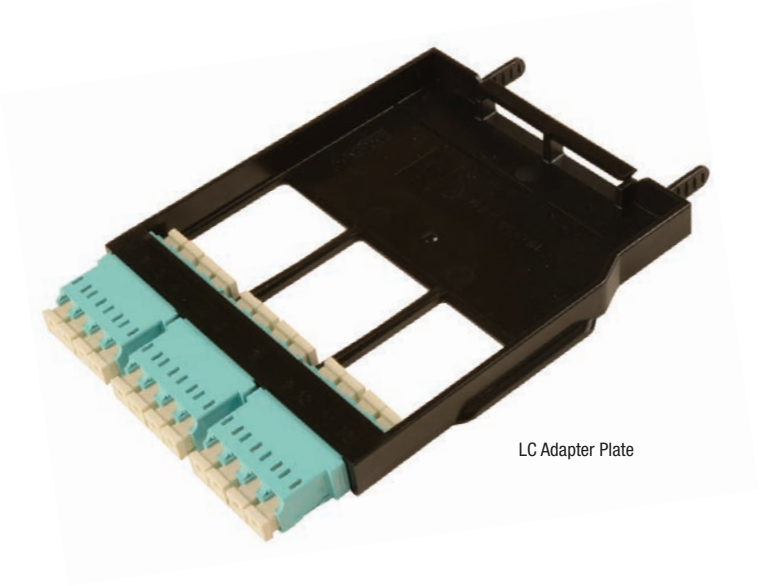
LIGHTSTACK MODULES ORDERING INFORMATION

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



LC 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)

LIGHTSTACK™ LC ADAPTER PLATES

– Used in conjunction with LC TFU 2.0mm breakout trunks only (see page 14.)
– 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

SIEMON™

Next Generation MTP Trunks

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.

For additional trunk options see standard MTP to MTP trunks on page 11.

- **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)
V = OM4 (XGLO 550)
A = SM

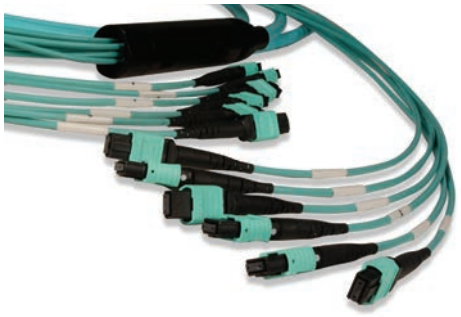
Cable Type
P = Plenum
R = Riser
L = LSOH

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

Length Unit
F = Feet
M = Meters

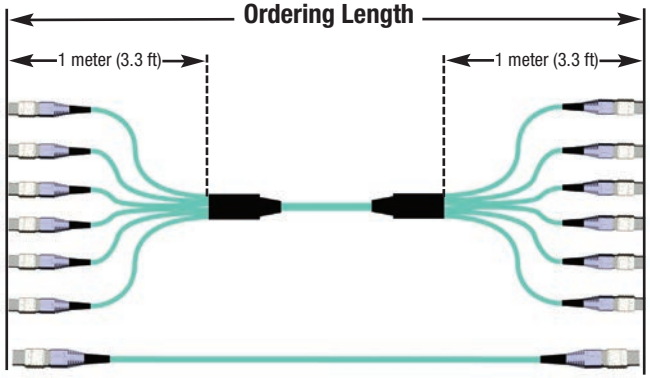
Polarity Method
A = Method A
B = Method B
C = Method C

Standard MTP Trunks



STANDARD 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



** Fiber Extenders ship with MTP Adapter for quick transition.*

*** Order length is measured connector tip to connector tip. Multi-leg versions offered with standard 1 meter (3.3 ft.) legs. Minimum order length is 1 meter (3 ft.) for 12 strand and 3 meters (9 ft.) for 24 strands or greater (See diagram above)*

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
5 = OM2 50/125 Multimode
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)

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
5 = OM2 50/125 Multimode
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

SIEMON

LC Bladepatch® to MTP Hybrid Trunks

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

STANDARD LC TO MTP HYBRID TRUNK

Utilizing high quality Siemon RazorCore cable, MTP to LC Trunks offer a connectivity transition from 12-fiber MTP connectors to 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.

BLADEPATCH LC TO MTP TRUNKS ORDERING INFORMATION

T(X)2(X)(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
A = OS2 Singlemode
L = OM3 10G (XGLO 300m) 50/125
V = OM4 10G (XGLO 550m) 50/125

Jacket Rating
P = Plenum = P
R = RISER = R
L = LSOH = L

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

Length Unit
F = Feet
M = Meter

STANDARD LC TO MTP HYBRID TRUNK ORDERING INFORMATION

T(X)(X)(X)(XX)(X)(XX)LC(XXX)(X)

Performance
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
5 = 50/125 Multimode
6 = 62.5/125 Multimode
5L = OM3 (XGLO 300) 50/125 Multimode
5V = OM4 (XGLO 550) 50/125 Multimode
SM = 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

** Minimum ordering length is 1 meter (3.3ft)*
** Order length is measured connector tip to connector tip.*
Jacketed duplex LC legs offered in standard 1 meter (3.3ft) for lengths greater than 1 meter (3.3ft)

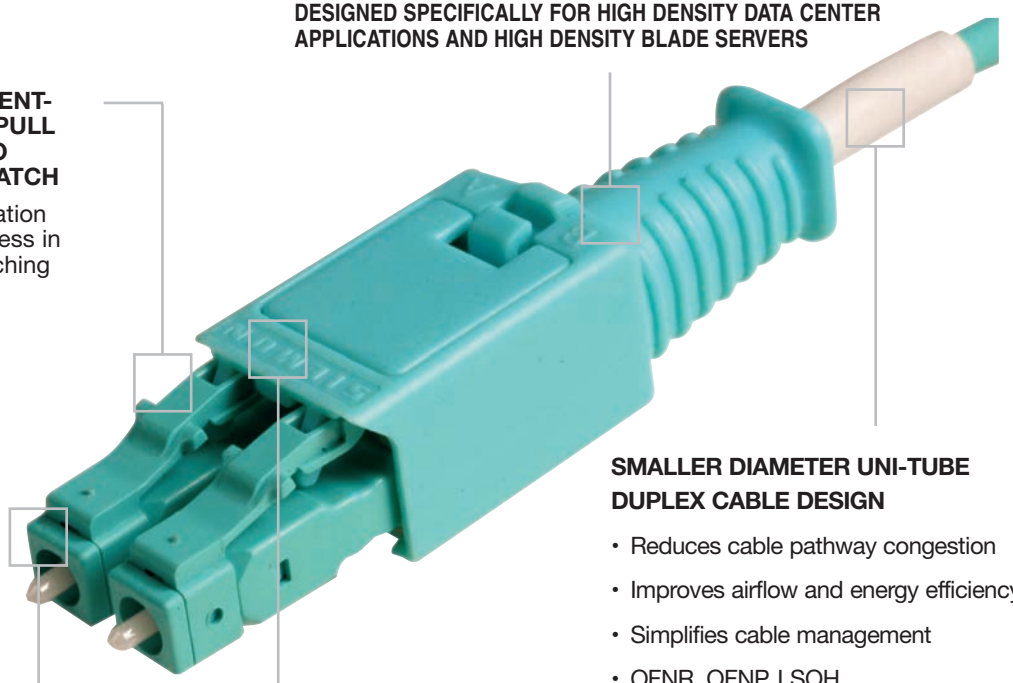
LC Bladepatch®

Siemon's LC BladePatch duplex jumper offers a unique solution for high-density fiber optic patching environments. It features a revolutionary and innovative push-pull boot design to control the latch, enabling easy access and removal in tight-fitting areas. The LC BladePatch utilizes a smaller diameter uni-tube cable design which reduces cable pathway congestion improving air flow and increasing energy efficiency while simplifying overall cable management. The LC BladePatch provides low-loss performance for Multimode and Singlemode supporting the precise optical performance requirements for high speed networks and improving network performance. The LC BladePatch is ideal for patching high density blade servers, network equipment and a perfect match for the LightStack system.

DESIGNED SPECIFICALLY FOR HIGH DENSITY DATA CENTER APPLICATIONS AND HIGH DENSITY BLADE SERVERS

INNOVATIVE, PATENT-PENDING PUSH-PULL BOOT DESIGN TO CONTROL THE LATCH

- Enhances installation and removal access in high density patching environments



SMALLER DIAMETER UNI-TUBE DUPLEX CABLE DESIGN

- Reduces cable pathway congestion
- Improves airflow and energy efficiency
- Simplifies cable management
- OFNR, OFNP, LSOH

LOW PROFILE BOOT DESIGN OPTIMIZES SIDE-STACKABILITY

PATENT-PENDING ROTATING LATCH DESIGN FOR EASY POLARITY CHANGE

- Latch-only rotation to eliminate potential connector and cable damage
- Clear identification if a polarity change has been made

RFP (REVERSE FIBER POSITION)

XGLO® 300 50/125µm Multimode OM3	Jacket Rating
FBP-LCLC5L-(XX)AQ	OFNR
FBP-LCLC5L-(XX)AP	OFNP
FBP-LCLC5L-(XX)AH	LSOH
XGLO® 550 50/125µm Multimode OM4	
FBP-LCLC5V-(XX)AQ	OFNR
FBP-LCLC5V-(XX)AP	OFNP
FBP-LCLC5V-(XX)AH	LSOH
XGLO® Singlemode OS2 (UPC)	
FBP-LCULCUL-(XX)	OFNR
FBP-LCULCUL-(XX)P	OFNP
FBP-LCULCUL-(XX)H	LSOH

CFP (CONTINUOUS FIBER POSITION)

XGLO® 300 50/125µm Multimode OM3	Jacket Rating
FBPLCLC5L-(XX)AQC	OFNR
FBPLCLC5L-(XX)APC	OFNP
FBPLCLC5L-(XX)AHC	LSOH
XGLO® 550 50/125µm Multimode OM4	
FBPLCLC5V-(XX)AQC	OFNR
FBPLCLC5V-(XX)APC	OFNP
FBPLCLC5V-(XX)AHC	LSOH
XGLO® Singlemode OS2 (UPC)	
FBPLCULCUL-(XX)C	OFNR
FBPLCULCUL-(XX)PC	OFNP
FBPLCULCUL-(XX)HC	LSOH

Use (XX) to specify length:
01=1m (3.3 ft.), 02 = 2m (6.6ft), 03 = 3m (9.8 ft), 05 = 5m (16.4 ft.)

Custom lengths and jacket colors are available upon request.
Contact our Customer Service Department for more information.

Worldwide Headquarters
North America
Watertown, CT USA
Phone (1) 860 945 4200 US
Phone (1) 888 425 6165

Regional Headquarters
EMEA
Europe/Middle East/Africa
Surrey, England
Phone (44) 0 1932 571771

Regional Headquarters
Asia/Pacific
Shanghai, P.R. China
Phone (86) 21 5385 0303

Regional Headquarters
Latin America
Bogota, Colombia
Phone (571) 657 1950/51/52

WWW.SIEMON.COM

Ordering Information:

TFU(X)(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

Connector Type (Side B)
D = LC BladePatch Multimode RFP Polarity only
E = LC BladePatch UPC Singlemode RFP Polarity only

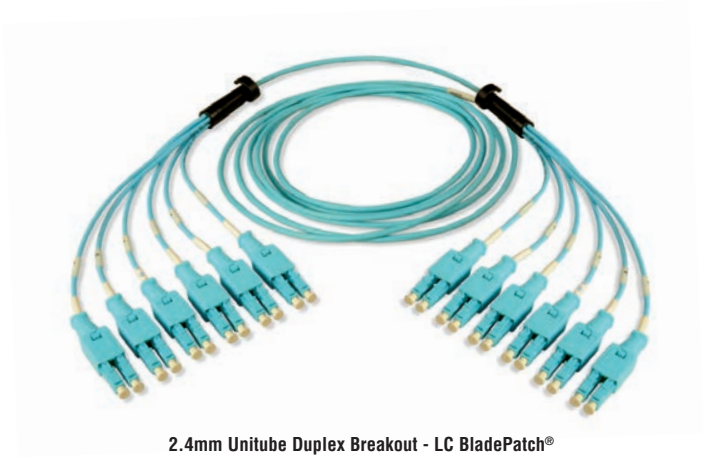
Connector Type (Side A)
D = LC BladePatch Multimode RFP Polarity only
E = LC BladePatch UPC Singlemode RFP Polarity mode

LEG OD (Side B)
C = Uni-Tube Duplex 2.4 LC BladePatch 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).



2.4mm Unitube Duplex Breakout - LC BladePatch®