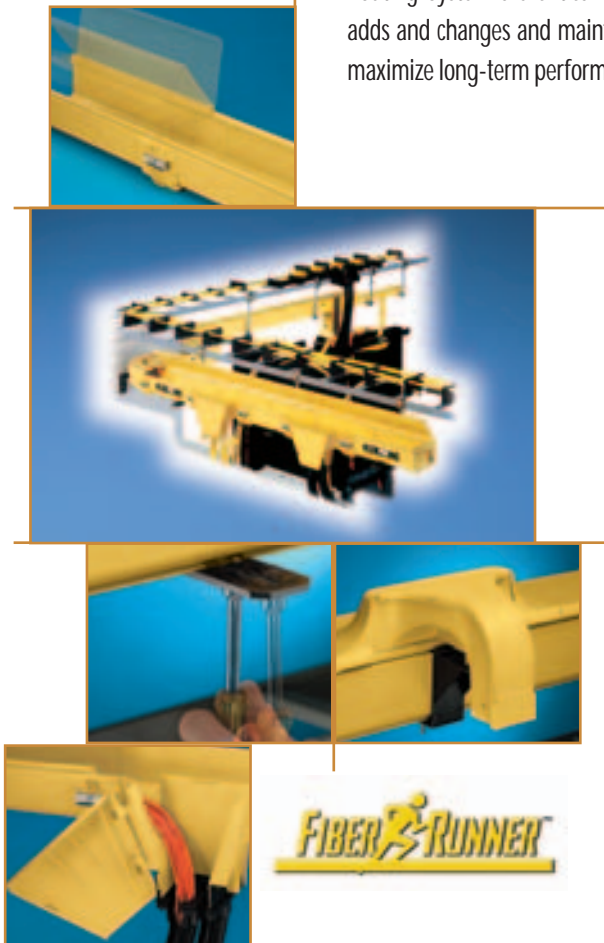


FIBERRUNNER™ ROUTING SYSTEMS

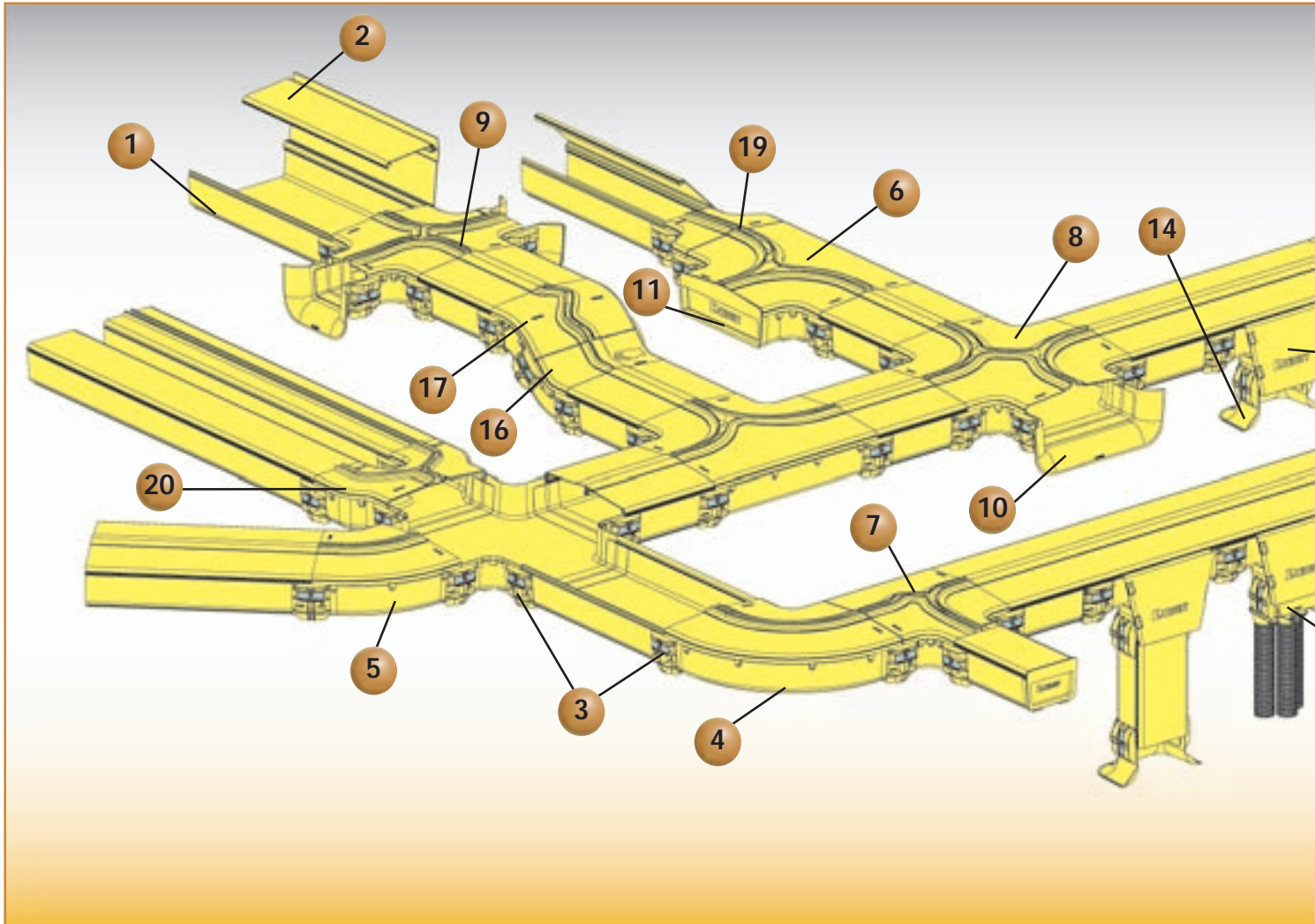
The *PANDUIT*® Network Connectivity Group provides innovative solutions for routing fiber optic and high performance copper cabling to and between equipment racks within a telecommunications room or service provider facility. Routing products such as the *FIBERRUNNER* Routing System are critical factors in your ability to quickly install, easily implement moves, adds and changes and maintain the integrity of your fiber and copper cabling plant in order to maximize long-term performance.



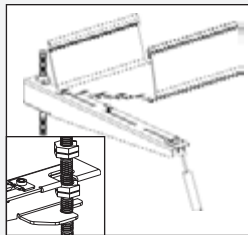
- Robust, large capacity 12x4 and 6x4 systems for use with large cable counts and 4x4 and 2x2 systems for use with smaller cable counts
- Hinged channel cover and split fitting covers protect cabling and provide access for future cabling revisions and additions
- No bolts need to be tightened and no tools are required when installing the *QUIKLOCK*™ coupler
- *QUIKLOCK* couplers and brackets take less than five seconds to make a mechanically secure connection
- *QUIKLOCK* brackets attach system components to ladder rack, strut, equipment racks, walls and raised floor pedestals
- Fittings provide minimum 2" bend radius to protect against signal loss due to excessive cable bends
- Multiple spillout options provide versatility to make transitions to various equipment and rack configurations
- Compatible with *PANDUIT FIBER-DUCT*™ 4x4 and 2x2 Routing Systems, cable management products and racks

The *FIBERRUNNER* 12x4, 6x4, 4x4 and 2x2 Routing Systems are comprised of channel, fittings and brackets designed to segregate, route and protect fiber optic and high performance copper cabling.

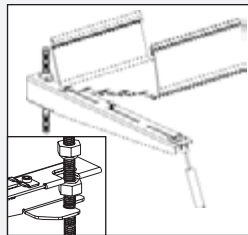
12x4 *FIBER RUNNER* Routing System Roadmap



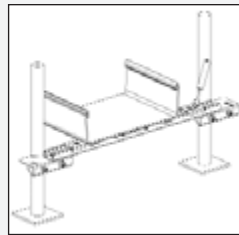
12x4 *FIBERRUNNER*™ Mounting Brackets



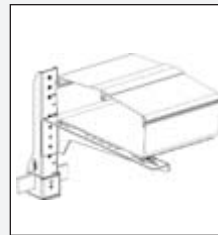
Existing Threaded Rod *QUIKLOCK*™ Bracket for 12x4 System



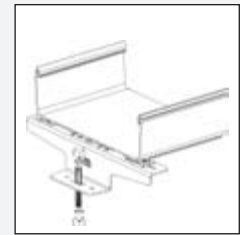
New Threaded Rod *QUIKLOCK* Bracket for 12x4 System



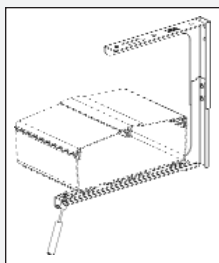
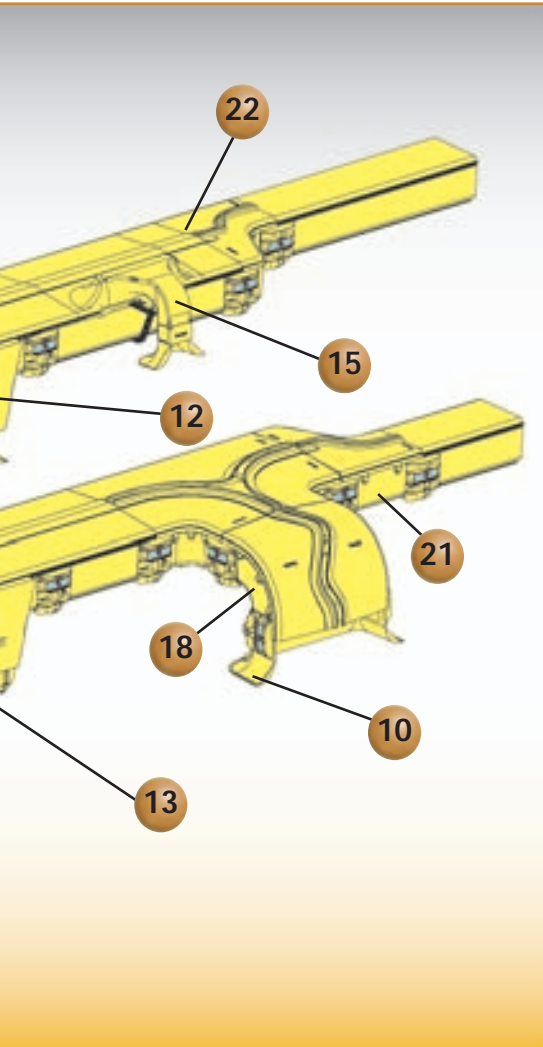
Under-Floor Pedestal *QUIKLOCK* Bracket for 12x4 System



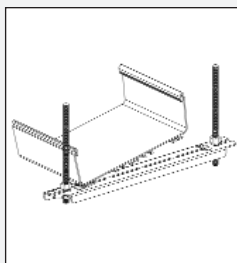
Adjustable Ladder *QUIKLOCK* Bracket for 12x4 System



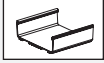








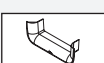
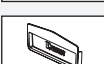
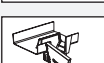
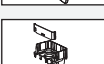







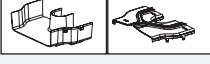

Center Support *QUIKLOCK* Bracket for 12x4 System



Top Support Adjustable 'C' QUIKLOCK Bracket for 12x4 System



Trapeze QUIKLOCK Bracket for 12x4 System

-  **1** 12x4 *FIBERRUNNER*™ Channel (see [page I4](#))
-  **2** 12x4 Snap-On Hinged Cover (see [page I4](#))
-  **3** 12x4 *QUIKLOCK*™ Coupler (see [page I5](#))
-  **4** 12x4 Horizontal Right Angle Fitting and Optional Split Cover (see [page I5](#))
-  **5** 12x4 Horizontal 45° Angle Fitting and Optional Split Cover (see [page I5](#))
-  **6** 12x4 Horizontal Tee Fitting and Optional Split Cover (see [page I5 and I6](#))
-  **7** 12x4 Horizontal Tee with 6x4 Exits and Optional Split Cover (see [page I6](#))
-  **8** 12x4 Four Way Cross Fitting and Optional Split Cover (see [page I6](#))
-  **9** 12x4 Four Way Cross Fitting with 6x4 Exits and Optional Split Cover (see [page I6](#))
-  **10** 3-Sided BRC Trumpet Spillover for 12x4 Exit (see [page I6](#))
-  **11** 12x4 End Cap Fitting (see [page I7](#))
-  **12** 12x4 Vertical Tee Fitting (see [page I7](#))
-  **13** 3 Port Spillover to 1.5" (38mm) Inside Diameter Corrugated Tubing (see [page I7](#))
-  **14** 3-Sided BRC Trumpet Spillover for 6x4 Exit (see [page I7](#))
-  **15** Spill-Over Junction and Optional Cover for 12x4 System (see [page I7](#))
-  **16** 12x4 Inside Vertical 45° Angle Fitting (see [page I8](#))
-  **17** 12x4 Outside Vertical 45° Angle Fitting and Optional Split Cover (see [page I8](#))
-  **18** 12x4 Outside Vertical Right Angle Fitting with Optional Split Cover (see [page I8](#))
-  **19** Reducer from 12x4 to 6x4 *FIBERRUNNER* Channel and Optional Split Cover (see [page I9](#))
-  **20** Y-Reducer from 12x4 to two 6x4 Exits with Optional Split Cover (see [page I9](#))
-  **21** 12x4 to 6x4 Transition Right Reducer Fitting and Optional Split Cover (see [page I9](#))
-  **22** 12x4 to 6x4 Transition Left Reducer Fitting and Optional Split Cover (see [page I9](#))

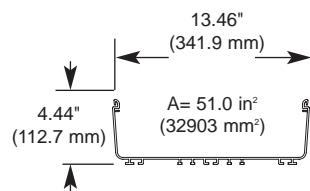
12x4 FIBERRUNNER™ Routing System

Cable Fills for FIBERRUNNER 12x4 Cable Routing System

The maximum amounts may vary according to the cable fill installation methods, straightness of cables, etc.

SPEC= 40% cablefill — the recommended design in cable capacity. Leaves room for future moves, adds and changes.

MAX= 60% cablefill — the maximum cable quantity based on cable interweaving and packing factors.

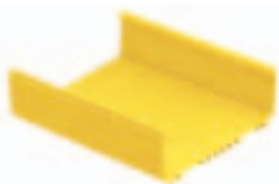


| System Type | Area in ² | Fiber Cable | | | | | | | | Data Grade Cables | |
|-------------------------|----------------------|-------------|------|----------|------|----------|------|----------|-----|--------------------------|-----|
| | | DIAMETER | | DIAMETER | | DIAMETER | | DIAMETER | | 24 AWG UTP/CM CAT5e 4 pr | |
| | | SPEC | MAX | SPEC | MAX | SPEC | MAX | SPEC | MAX | SPEC | MAX |
| FIBERRUNNER 12x4 System | 51.0 | 6544 | 9816 | 4162 | 6243 | 1865 | 2798 | 107 | 161 | 552 | 827 |

Channel cutting instructions: For optimum results, use a plastic cutting saw blade for clean, burr-free cuts. Recommend: Carbide 80T or 100T; .090" thickness, .125" kerf.

12x4 FIBERRUNNER Routing System — Channel and Cover

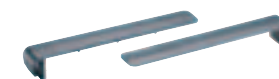
- Robust, large capacity 12x4 inch system ideal for use with large cable counts
- Multiple spillout options provide versatility to mate to various equipment and rack configurations
- QUIKLOCK™ couplers and brackets reduce system installation time dramatically
- Channel, covers, fittings and other non-metallic system components made from V-0 flame class rated material
- UL Listed
- Compatible with all sizes of PANDUIT® FIBERRUNNER and PANDUIT FIBER-DUCT™ routing systems, cable management products and racks
- Compliant with the applicable tests in Telcordia GR-63-CORE Network Equipment Building Systems (NEBS)



FR12X4



FRHC12



FRCR12BL-X

| Part Number | Part Description | Std. Pkg. Qty. | Std. Ctn. Qty. |
|---------------------------------------|---|----------------|----------------|
| 12x4 FIBERRUNNER Channel | | | |
| FR12X4YL6 | Used to carry the cables horizontally throughout the system. Accepts cable retainers FRCR12BL-X or hinged cover FRHC12YL6. Use QUIKLOCK coupler FRBC12X4YL to attach channel and/or fittings. | 6 | 12 |
| 12x4 Snap-On Hinged Cover | | | |
| FRHC12YL6 | Optional snap-on hinged cover for channel FR12X4YL6. Can be folded down for height restricted areas. | 6 | 12 |
| Cable Retainer for 12x4 System | | | |
| FRCR12BL-X | Cable retainer holds cable in the channel when cover is not used. Install anywhere on channel, near the coupler or every 18" (457mm). Black color only. | 10 | 100 |

For other color replace suffix YL (Yellow) with OR (Orange).
 Order number of feet required, in multiples of standard 6' length increments.
 Order number of cable retainers required, in multiples of Standard Package Quantity.

12x4 FIBERRUNNER™ QUIKLOCK™ Coupler

- Pre-assembled to provide fast mechanical assembly of components
- No tools required for installation, bolts loosen for component disassembly



FRBC12X4

| Part Number | Part Description | Std. Pkg. Qty. | Std. Ctn. Qty. |
|------------------------------|---|----------------|----------------|
| 12x4 QUIKLOCK Coupler | | | |
| FRBC12X4YL | Pre-assembled coupler quickly joins 2 sections of channel and/or fittings. Mechanically attaches without tightening bolts. Bolts release using 3/8" nut driver to allow coupler to be removed if necessary. | 1 | 5 |

For other color replace suffix YL (Yellow) with OR (Orange).

12x4 FIBERRUNNER System Fittings

- Minimum 2" bend radius control fittings
- Protects against signal loss and performance degradation
- Fittings assemble using FRBC couplers
- Optional split covers snap onto each fitting
- Covers feature 3/4" gap to allow cable to be laid in



FRRRA12X4

| Part Number | Part Description | Couplers Required | Std. Pkg. Qty. | Std. Ctn. Qty. |
|--|--|------------------------|----------------|----------------|
| 12x4 Horizontal Right Angle Fitting | | | | |
| FRRRA12X4YL | Attaches to 12x4 channel and/or fitting to create a 90° horizontal turn from a straight horizontal run. Accepts optional split cover FRRASC12YL. | (2 pcs.) FRBC12X4YL | 1 | — |



FRRASC12

| | | | | |
|--|---|---|---|---|
| Split Cover for 12x4 Horizontal Right Angle Fitting | | | | |
| FRRASC12YL | Optional split cover for the horizontal right angle fitting FRRRA12X4YL. Snap-on feature allows cover to be installed and removed with no tools required. Creates radiused 3/4" (19mm) opening for easy access to add or remove cables. | — | 1 | 5 |



FRH4512X4

| | | | | |
|--|---|------------------------|---|---|
| 12x4 Horizontal 45° Angle Fitting | | | | |
| FRH4512X4YL | Attaches to 12x4 channel and/or fitting to create a 45° horizontal turn from a straight horizontal run. Accepts optional split cover FRH45SC12YL. | (2 pcs.) FRBC12X4YL | 1 | — |



FRH45SC12

| | | | | |
|--|--|---|---|---|
| Split Cover for 12x4 Horizontal 45° Angle Fitting | | | | |
| FRH45SC12YL | Optional split cover for the horizontal 45° angle fitting FRH4512X4YL. Snap-on feature allows cover to be installed and removed with no tools required. Creates radiused 3/4" (19mm) opening for easy access to add or removes cables. | — | 1 | 5 |











FRT12X4

| | | | | |
|------------------------------------|---|------------------------|---|---|
| 12x4 Horizontal Tee Fitting | | | | |
| FRT12X4YL | Attaches to 12x4 channel and/or fittings to create a 90° horizontal branch with a 12x4 exit from straight horizontal run. Accepts optional split cover FRTSC12YL. | (3 pcs.) FRBC12X4YL | 1 | — |







For other color replace suffix YL (Yellow) with OR (Orange).

12x4 FIBERRUNNER™ System Fittings (continued)

| Part Number | Part Description | Couplers Required | Std. Pkg. Qty. | Std. Ctn. Qty. |
|---|--|---|----------------|----------------|
| Split Cover for 12x4 Horizontal Tee Fitting | | | | |
| FRTSC12YL | Optional split cover for the horizontal tee fitting FRT12X4YL. Snap-on feature allows cover to be installed and removed with no tools required. Creates radiused 3/4" (19mm) opening for easy access to add or remove cables. | — | 1 | 5 |
|  | FRTSC12 | | | |
| 12x4 Horizontal Tee with 6x4 Exit | | | | |
| FRT12X4W6YL | Attaches to 12x4 channel and/or fittings to create a 90° horizontal branch with a 6x4 exit from straight horizontal run. Accepts optional split cover FRTSC12W6YL. | (2 pcs.) FRBC12X4YL (1 pc.) FRBC6X4YL | 1 | — |
|  | FRT12X4W6 | | | |
| Split Cover for 12x4 Horizontal Tee with 6x4 Exit | | | | |
| FRTSC12W6YL | Optional split cover for the horizontal tee with 6x4 exit fitting FRT12X4W6YL. Snap-on feature allows cover to be installed and removed without tools. Creates radiused 3/4" (19mm) opening for easy access to add or remove cables. | — | 1 | 5 |
|  | FRTSC12W6 | | | |
| 12x4 Four Way Cross Fitting | | | | |
| FRFWC12X4YL | Attaches to 12x4 channel and/or fittings to create a horizontal four way cross intersection with two 12x4 exits. Accepts optional split cover FRFWCSC12YL. | (4 pcs.) FRBC12X4YL | 1 | — |
|  | FRFWC12X4 | | | |
| Split Cover for 12x4 Four Way Cross Fitting | | | | |
| FRFWCSC12YL | Optional split cover for the four way cross fitting FRFWC12X4YL. Snap-on feature allows cover to be installed and removed with no tools required. Creates radiused 3/4" (19mm) opening for easy access to add or remove cables. | — | 1 | 5 |
|  | FRFWCSC12 | | | |
| 12x4 Four Way Cross Fitting with 6x4 Exits | | | | |
| FRFWC12X4W6YL | Attaches to 12x4 channel and/or fittings to create a horizontal four way cross intersection with two 6x4 exits. Accepts optional split cover FRFWCSC12W6YL. | (2 pcs.) FRBC12X4YL (2 pcs.) FRBC6X4YL | 1 | — |
|  | FRFWC12X4W6 | | | |
| Split Cover for 12x4 Four Way Cross Fitting with 6x4 Exits | | | | |
| FRFWCSC12W6YL | Optional split cover for the four way cross fitting FRFWC12X4W6YL. Snap-on feature allows cover to be installed and removed with no tools required. Creates radiused 3/4" (19mm) opening for easy access to add or remove cables. | — | 1 | 5 |
|  | FRFWCSC12W6 | | | |
| 3-Sided BRC Trumpet Spillover for 12x4 Exit | | | | |
| FRTR12X4YL | Used to limit the bend radius of the cable to 2" (50.8mm) when exiting from the 12x4 channel or a 12x4 horizontal tee fitting. | (1 pc.) FRBC12X4YL | 1 | 5 |
|  | FRTR12X4 | | | |

For other color replace suffix YL (Yellow) with OR (Orange).

12x4 FIBERRUNNER™ System Fittings (continued)

| Part Number | Part Description | Couplers Required | Std. Pkg. Qty. | Std. Ctn. Qty. |
|---|--|--|----------------|----------------|
| 12x4 End Cap Fitting | | | | |
|  FREC12X4 | FREC12X4YL Used for closing off open ends of the channel or fittings. No coupler required, push-on installation. | — | 1 | 5 |
| 12x4 Vertical Tee Fitting | | | | |
|  FRVT12X4 | FRVT12X4YL Attaches to 12x4 channel and/or fittings to create a 90° vertical drop from a horizontal run. Hinged door included. Requires coupler to attach FRIDT6X4YL or FRTR6X4YL to vertical exit. Accepts optional snap-on cover FRHC12YL6 in conjunction with channel. | (2 pcs.) FRBC12X4YL (1 pc.) FRBC6X4YL | 1 | — |
| 1 Port Spillover Side Exit to 1.5" (38mm) Inside Diameter Corrugated Tubing | | | | |
|  FR1.5IDE | FR1.5IDEYL Used to route cable into 1.5" (38mm) diameter split corrugated tubing directly through a hole cut in the side wall of the 4x4, 6x4 and 12x4 FIBERRUNNER channel or 4x4 FIBER-DUCT™ channel. Provides 1" (25.4mm) bend radius control at the exit. Securely holds split corrugated tubing to ensure system integrity and easy access to add or remove cables. Includes drilling template. | — | 1 | 5 |
| 3 Port Spillover to 1.5" (38 mm) Inside Diameter Corrugated Tubing | | | | |
|  FRIDT6X4 | FRIDT6X4YL Used to route cable into 3 separate pieces of 1.5" (38mm) diameter split corrugated tubing. Used with FRVT12X4YL or any 6x4 fitting. Securely holds corrugated split tubing to ensure system integrity and easy access to add or remove cables. | (1 pc.) FRBC6X4YL | 1 | 5 |
| 3-Sided BRC Trumpet Spillover for 6x4 Exit | | | | |
|  FRTR6X4 | FRTR6X4YL Used to limit the bend radius of the cable to 2" (50.8mm) when exiting from 6x4 channel, 6x4 horizontal tee fitting, or 6x4 exit on 12x4 vertical tee. | (1 pc.) FRBC6X4YL | 1 | 5 |
| Spill-Over Junction with 2x2 Exit | | | | |
|  FRSP | FRSPYL Assembles onto 4x4, 6x4 or 12x4 FIBERRUNNER channel spilling over the side into a 2x2 vertical channel, fitting or corrugated tube. Mounts directly to existing installation with no alteration required. Mounting hardware provided for secure attachment. | — | 1 | — |
| Spill-Over Junction Cover for 12x4 System | | | | |
|  FRSP12C | FRSP12CYL Used to fully enclose 12x4 channel in conjunction with the spill-over junction FRSPYL. Cover snaps onto the channel base. Hinged feature allows easy access to add or remove cables. | — | 1 | 5 |
| Spill-Over Junction with 4x4 Exit | | | | |
|  FRSP4 | FRSP4YL Assembles onto 4x4, 6x4, or 12x4 FIBERRUNNER channel spilling over the side into a 4x4 vertical exit. Requires coupler to attach 4x4 FIBERRUNNER channel and fittings to the vertical exit. Mounts directly to existing installation with no alteration required. Mounting hardware provided for secure attachment. | (1) FRBC4X4YL | 1 | — |

For other color replace suffix YL (Yellow) with OR (Orange).

System Overview

Modules

Ultimate ID System & Work Area

Zone Cabling

Patch Panels Copper Patch Cords & Punchdowns

Fiber Connectors Enclosures & Patch Cords

Racks & Cable Management

Grounding & Bonding

Fiber Routing

Surface Raceway

Labeling & Administration

Cable Ties & Accessories

Supplementary Technical Information

Glossary & Index

12x4 FIBERRUNNER™ System Fittings (continued)



FRSP412C



FTR2X2



FIDT2X2



FRIV4512X4



FROV4512X4



FROV45SC12



FROVRA12X4



FROVRASC12

| Part Number | Part Description | Couplers Required | Std. Pkg. Qty. | Std. Ctn. Qty. |
|--|---|------------------------|----------------|----------------|
| Spill-Over Junction Cover for 12x4 System | | | | |
| FRSP412CYL | Used to fully enclose the 12x4 channel in conjunction with the spill-over junction FRSP4YL. Cover snaps onto the channel base. Hinged feature allows easy access to add or remove cables. | — | 1 | 5 |
| 3-Sided BRC Trumpet Spillover for 2x2 Exit | | | | |
| FTR2X2YL | Used to limit the bend radius of the cable to 2" (50.8mm) when exiting from a FIBERRUNNER spill-over fitting FRSPYL or from 2x2 FIBER-DUCT™ channel. | — | 1 | 5 |
| 1 Port Spillover to 1.5" (38mm) Inside Diameter Corrugated Tubing | | | | |
| FIDT2X2YL | Used to route cable into one piece of 1.5" (38mm) diameter split corrugated tubing. Used with FIBERRUNNER spill-over fitting FRSPYL, 2x2 FIBER-DUCT fittings and the 2x2 FiberRunner hinged channel. Securely holds split corrugated tubing to ensure system integrity and easy access to add or remove cables. | — | 1 | 5 |
| 12x4 Inside Vertical 45° Angle Fitting | | | | |
| FRIV4512X4YL | Attaches to 12x4 channel and/or fitting to create a 45° upward angle from a straight horizontal run. Used with outside vertical 45° angle fitting FROV4512X4YL to change level of a straight horizontal run. Includes split cover. | (2 pcs.) FRBC12X4YL | 1 | — |
| 12x4 Outside Vertical 45° Angle Fitting | | | | |
| FROV4512X4YL | Attaches to 12x4 channel and/or fitting to create a 45° downward angle from a straight horizontal run. Used with inside vertical 45° angle fitting FRIV4512X4YL to change level of a horizontal run. Accepts optional split cover FROV45SC12YL. | (2 pcs.) FRBC12X4YL | 1 | — |
| Split Cover for 12x4 Outside Vertical 45° Angle Fitting | | | | |
| FROV45SC12YL | Optional split cover for the outside vertical 45° angle fitting FROV4512X4YL. Snap-on feature allows cover to be installed and removed with no tools required. Creates radiused 3/4" (19mm) opening for easy access to add or remove cables. | — | 1 | 5 |
| 12x4 Outside Vertical Right Angle Fitting | | | | |
| FROVRA12X4YL | Attaches to 12x4 channel and/or fittings to create a 90° vertical turn down from a straight horizontal run. Accepts optional split cover FROVRASC12YL. | (2 pcs.) FRBC12X4YL | 1 | — |
| Split Cover for 12x4 Outside Vertical Right Angle Fitting | | | | |
| FROVRASC12YL | Optional split cover for the outside vertical right angle fitting FROVRA12X4YL. Snap-on feature allows cover to be installed and removed with no tools required. Creates radiused 3/4" (19mm) opening for easy access to add or remove cables. | — | 1 | 5 |

For other color replace suffix YL (Yellow) with OR (Orange).

12x4 FIBERRUNNER™ System Fittings (continued)



FRRF126



FRRF126SC



FRY126



FRY126SC



FRRF126R



FRRF126RSC



FRRF126L



FRRF126LSC

| Part Number | Part Description | Couplers Required | Std. Pkg. Qty. | Std. Ctn. Qty. |
|---|--|--|----------------|----------------|
| 12x4 to 6x4 FIBERRUNNER Reducer Fitting | | | | |
| FRRF126YL | Attaches any 12x4 FIBERRUNNER fitting or channel to any 6x4 FIBERRUNNER fitting or channel. Accepts split cover FRRF126SCYL. | (1 pc.) FRBC12X4YL (1 pc.) FRBC6X4YL | 1 | — |
| Split Cover for 12x4 to 6x4 FIBERRUNNER Reducer Fitting | | | | |
| FRRF126SCYL | Optional split cover for the reducer fitting FRRF126YL. Snap-on feature allows cover to be installed and removed with no tools required. Creates radiused 3/4" (19mm) opening for easy access to add or remove cables. | — | 1 | 5 |
| Y-Reducer from 12x4 to two 6x4 Exits | | | | |
| FRY126YL | Attaches any 12x4 FIBERRUNNER fitting or channel to two 6x4 FIBERRUNNER channels. Accepts split cover FRY126SCYL. | (1 pc.) FRBC12X4YL (2 pcs.) FRBC6X4YL | 1 | — |
| Split Cover for Y-Reducer from 12x4 to two 6x4 Exits | | | | |
| FRY126SCYL | Optional split cover for the Y-reducer fitting FRY126YL. Snap-on feature allows cover to be installed and removed with no tools required. Creates radiused 3/4" (19mm) opening for easy access to add or remove cables. | — | 1 | 5 |
| 12x4 to 6x4 Transition Right Reducer Fitting | | | | |
| FRRF126RYL | Attaches any 12x4 FIBERRUNNER fitting or channel to any 6x4 FIBERRUNNER fitting or channel while transitioning to the right. Accepts split cover FRRF126RSCYL. | (1 pc.) FRBC12X4YL (1 pc.) FRBC6X4YL | 1 | — |
| Split Cover for 12x4 to 6x4 Transition Right Reducer Fitting | | | | |
| FRRF126RSCYL | Optional split cover for the transition right reducer fitting FRRF126RYL. Snap-on feature allows cover to be installed and removed with no tools required. Creates radiused 3/4" (19mm) opening for easy access to add or remove cables. | — | 1 | 5 |
| 12x4 to 6x4 Transition Left Reducer Fitting | | | | |
| FRRF126LYL | Attaches any 12x4 FIBERRUNNER fitting or channel to any 6x4 FIBERRUNNER fitting or channel while transitioning to the left. Accepts split cover FRRF126LSCYL. | (1 pc.) FRBC12X4YL (1 pc.) FRBC6X4YL | 1 | — |
| Split Cover for 12x4 to 6x4 Transition Left Reducer Fitting | | | | |
| FRRF126LSCYL | Optional split cover for the transition left reducer fitting FRRF126LYL. Snap-on feature allows cover to be installed and removed with no tools required. Creates 3/4" (19mm) opening for easy access to add or remove cables. | — | 1 | 5 |

For other color replace YL (Yellow) with OR (Orange).

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| System Overview |
| Modules |
| Ultimate ID System & Work Area |
| Zone Cabling |
| Patch Panels Copper Patch Cords & Punchdowns |
| Fiber Connectors Enclosures & Patch Cords |
| Racks & Cable Management |
| Grounding & Bonding |
| Fiber Routing |
| Surface Raceway |
| Labeling & Administration |
| Cable Ties & Accessories |
| Supplementary Technical Information |
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12x4 FIBERRUNNER™ Mounting Brackets

| Part Number | Part Description | For Threaded Rod Size | Std. Pkg. Qty. | Std. Ctn. Qty. |
|--|---|-----------------------|----------------|----------------|
| Existing Threaded Rod QUIKLOCK™ Bracket for 12x4 System | | | | |
| FR12TRBE58 | Used to support the 12x4 system from existing threaded rod installations. Bracket is secured to threaded rod with two split nuts. The pre-assembled slide clamps enable fast assembly to channel. Use 7/16" nut driver on slide clamps. | 5/8" | 1 | — |
| FR12TRBE58M | | 16 mm | 1 | — |
| New Threaded Rod QUIKLOCK Bracket for 12x4 System | | | | |
| FR12TRBN58 | Used to support the 12x4 system from new threaded rod installations. Bracket is secured to threaded rod with two nuts. The pre-assembled slide clamps enable fast assembly to channel. Use 7/16" nut driver on slide clamps. | 5/8" | 1 | — |
| FR12TRBN58M | | 16 mm | 1 | — |
| Under-Floor Pedestal QUIKLOCK Bracket for 12x4 System | | | | |
| FR12USB | Used to support the 12x4 system by attaching to under-floor pedestals. (Contains all necessary hardware.) Use on pedestals up to 2" in diameter. The pre-assembled slide clamps enable fast assembly to channel. Use 7/16" nut driver on slide clamps. | — | 1 | — |
| Adjustable Ladder QUIKLOCK Bracket for 12x4 System | | | | |
| FR12ALB | Used to support the 12x4 system attaching to any 3/8" (9.5 mm) x 1 1/2" (38.1 mm) or 3/8" (9.5 mm) x 2" (50.8 mm) ladder rack rail. Adjustable to 9 incremental positions from 4" (101mm) to 12" (304mm) above or below the ladder rack. No threaded rod required. The pre-assembled slide clamps enable fast assembly to channel. Use 7/16" nut driver on slide clamps. | — | 1 | — |
| Center Support QUIKLOCK Bracket for 12x4 System | | | | |
| FR12CS12 | Used to support the 12x4 system from below with new threaded rod. Bracket is secured to threaded rod with two nuts. The pre-assembled slide clamps enable fast assembly to channel. Use 7/16" nut driver on slide clamps. Also can be secured directly to the top of cabinets. | 1/2" | 1 | — |
| FR12CS58 | | 5/8" | 1 | — |
| FR12CS12M | | 12 mm | 1 | — |
| FR12CS58M | | 16 mm | 1 | — |
| Top Support Adjustable "C" QUIKLOCK Bracket for 12x4 System | | | | |
| FR12ACB12 | Used to support the 12x4 system from any new threaded rod extending down directly from the ceiling, grid or ladder rack system. Two position height adjustments to accommodate system with or without hinged cover. Bracket is secured to threaded rod with two nuts. The pre-assembled slide clamps enable fast assembly to channel. Use 7/16" nut driver on slide clamps. | 1/2" | 1 | — |
| FR12ACB58 | | 5/8" | 1 | — |
| FR12ACB12M | | 12 mm | 1 | — |
| FR12ACB58M | | 16 mm | 1 | — |
| Trapeze QUIKLOCK Bracket for 12x4 System | | | | |
| FR12TB12 | Used to support the 12x4 system by spanning two threaded rod drops. Can be installed from above or below. Bracket is secured to each threaded rod with two nuts. The pre-assembled slide clamps enable fast assembly to channel. Use 7/16" nut driver on slide clamps. | 1/2" | 1 | — |
| FR12TB58 | | 5/8" | 1 | — |
| FR12TB12M | | 12 mm | 1 | — |
| FR12TB58M | | 16 mm | 1 | — |



**FR12TRBE58
FR12TRBE58M**



**FR12TRBN58
FR12TRBN58M**



FR12USB



FR12ALB



**FR12CS12
FR12CS58
FR12CS12M
FR12CS58M**



**FR12ACB12
FR12ACB58
FR12ACB12M
FR12ACB58M**



**FR12TB12
FR12TB58
FR12TB12M
FR12TB58M**

12x4 FIBERRUNNER™ Mounting Brackets (continued)



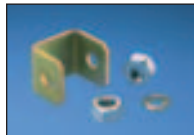
FEIAB58



**F2PCLB12
F2PCLB58
F2PCLB12M
F2PCLB58M**



FR12BS-L



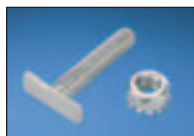
**FLB12X15
FLB58X15
FLB12X20
FLB58X20**



FRSTRCLIP



**FRSLNKT12
FRSLNKT58
FRSLNKT12M
FRSLNKT58M**

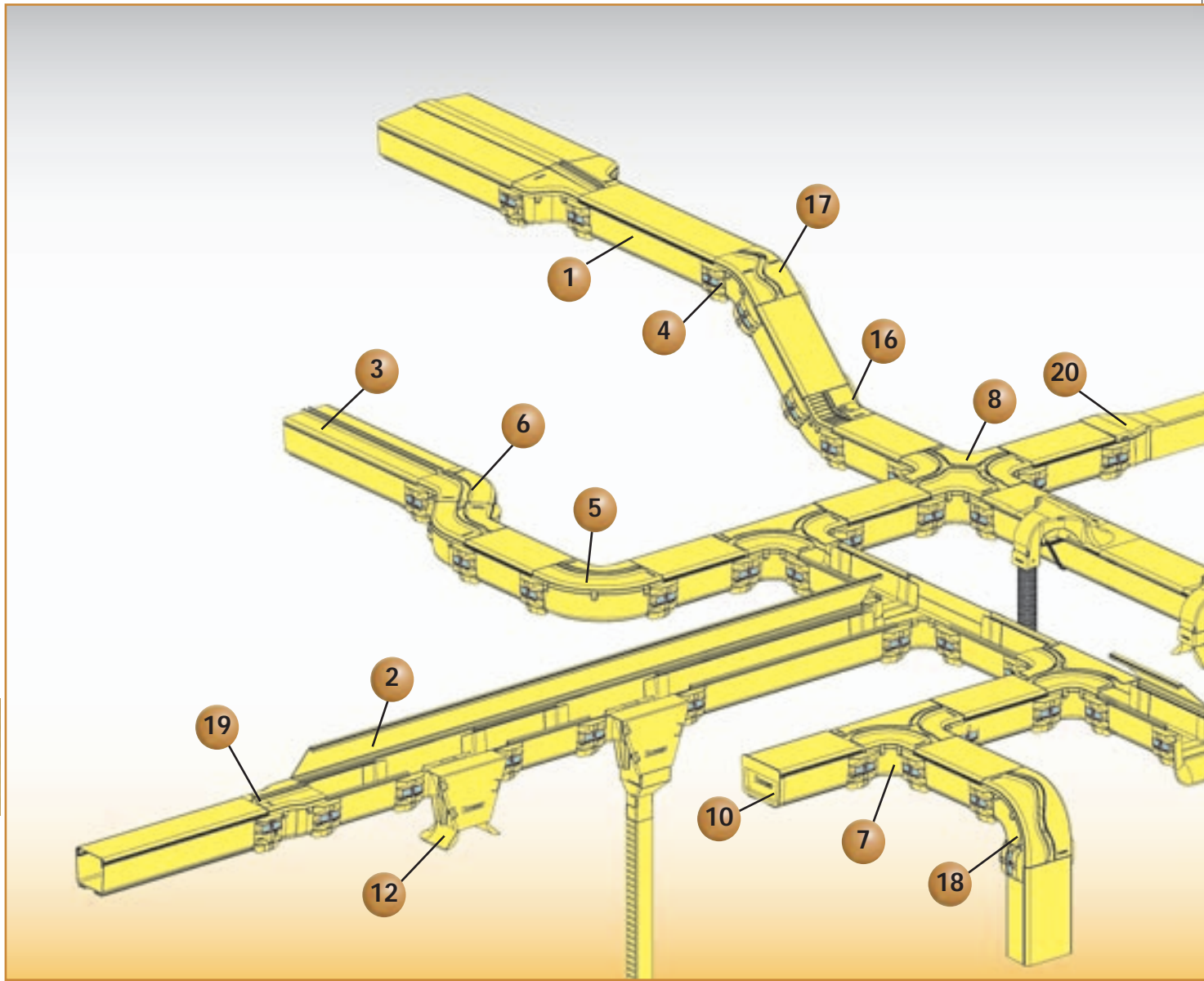


FRTBKT-X

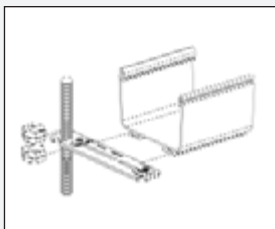
| Part Number | Part Description | For Threaded Rod Size | Std. Pkg. Qty. | Std. Ctn. Qty. |
|--|---|-----------------------|----------------|----------------|
| EIA/TIA Threaded Rod Mounting Bracket | | | | |
| FEIAB58 | Bracket consists of two identical components that clamp onto the crossmembers of standard EIA/TIA racks and are secured with standard hex nuts and split lockwashers (included) tightened onto a length of 5/8" diameter threaded rod (not included). The threaded rod is positioned in the center of the brackets providing a vertical threaded rod stud to mount <i>FIBERRUNNER</i> and <i>FIBER-DUCT™</i> threaded rod mounting brackets onto. | 5/8" | 1 | 10 |
| Two Piece Ladder Rack Bracket for Attaching Threaded Rod to 1 1/2" - 2" Ladder Rack | | | | |
| F2PCLB12 | Two piece bracket attaches to 3/8" (9.5mm) wide x 1 1/2" (38.1mm) or 3/8" (9.5mm) wide by 2" (50.8mm) ladder rack rail. Bracket halves slide into position and clamp together on the ladder rack rail, which allows for a one-handed assembly of the threaded rod (not included). Contains bracket and hardware for attaching bracket to ladder rack. | 1/2" | 1 | 10 |
| F2PCLB58 | | 5/8" | 1 | 10 |
| F2PCLB12M | | 12 mm | 1 | 10 |
| F2PCLB58M | | 16 mm | 1 | 10 |
| Self Tapping Screws for 12x4 Brackets | | | | |
| FR12BS-L | Self tapping screws allow selected 12x4 fittings to be fastened directly to mounting brackets for additional support. Screws tap directly into those 12x4 fittings that have plastic bosses. Those part numbers are FRRA12X4YL, FRH4512X4YL, FRT12X4YL, FRT12X4W6YL, FRFWC12X4YL, FRFWC12X4W6YL, FRVT12X4YL, FRRF126RYL and FRF126LYL. | — | 50 | 500 |
| Bracket for Attaching Threaded Rod to 1 1/2" Ladder Rack | | | | |
| FLB12X15 | Bracket attaches to 3/8" (9.5mm) wide x 1 1/2" (38.1mm) ladder rack rail. Bracket accepts threaded rod (not included). Contains bracket and hardware for attaching bracket to ladder rack. | 1/2" | 1 | 10 |
| FLB58X15 | | 5/8" | 1 | 10 |
| Bracket for Attaching Threaded Rod to 2" Ladder Rack | | | | |
| FLB12X20 | Bracket attaches to 3/8" (9.5mm) wide x 2" (50.8mm) ladder rack rail. Bracket accepts threaded rod (not included). Contains bracket and hardware for attaching bracket to ladder rack. | 1/2" | 1 | 10 |
| FLB58X20 | | 5/8" | 1 | 10 |
| Strut Clip Kit | | | | |
| FRSTRCLIP | Strut mounting clip assembly allows <i>FIBERRUNNER</i> channel to be attached directly to standard 1 5/8" wide strut structures. Contains all hardware for assembly. Bolts release with 7/16" nut driver. | — | 1 | 10 |
| Split Locking Nut Kit | | | | |
| FRSLNKT12 | Used to secure <i>FIBERRUNNER</i> mounting brackets anywhere along pre-installed threaded rod. Split nuts are opened, placed in desired position, closed and tightened. | 1/2" | 1 | 10 |
| FRSLNKT58 | | 5/8" | 1 | 10 |
| FRSLNKT12M | | 12 mm | 1 | 10 |
| FRSLNKT58M | | 16 mm | 1 | 10 |
| 1/4" T-Bolt Kit | | | | |
| FRTBKT-X | T-bolts can be used for additional attachment when securing <i>FIBERRUNNER</i> channel to mounting brackets. For example, a T-bolt can be inserted thru a 12x4 mounting bracket and positioned within the center rib structure on the underside of 12x4 channel. By tightening the nut, the 12x4 channel is more securely fastened to the mounting bracket. | — | 10 | 100 |

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| Grounding & Bonding |
| Fiber Routing |
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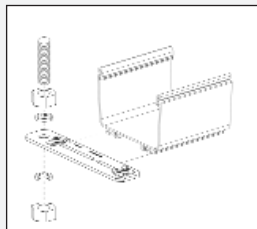
6x4 **FIBER RUNNER** Routing System Roadmap



4x4 and 6x4 **FIBERRUNNER** Mounting Brackets



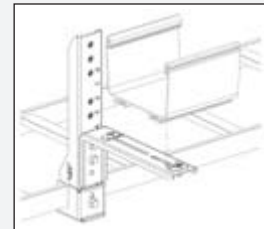
Existing Threaded Rod **QUIKLOCK**™ Bracket for 6x4 and 4x4 Systems



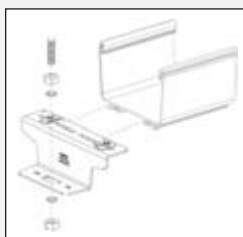
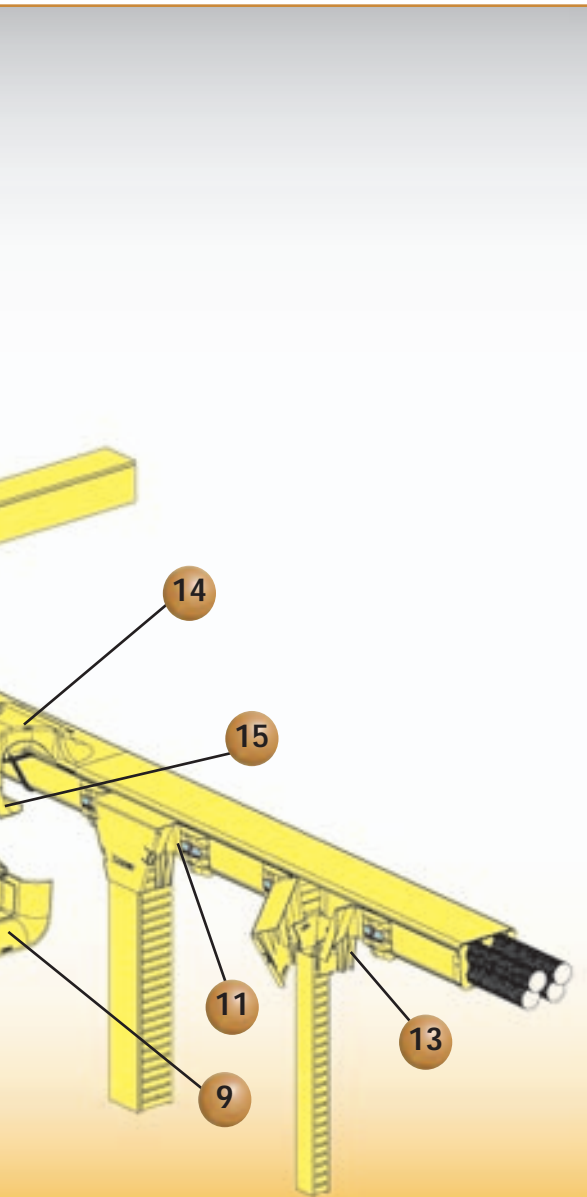
New Threaded Rod **QUIKLOCK** Bracket for 6x4 and 4x4 Systems



Under-Floor Pedestal **QUIKLOCK** Bracket for 6x4 and 4x4 Systems







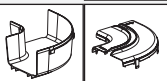
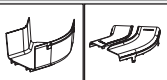
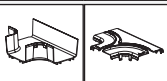
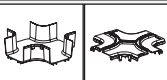





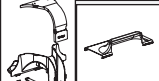


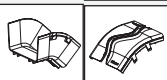

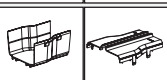

Adjustable Ladder **QUIKLOCK** Bracket for 6x4 and 4x4 Systems



Center Support
QUIKLOCK Bracket for
6x4 and 4x4 Systems



Top Support
Adjustable 'C'
QUIKLOCK Bracket
for 6x4 and
4x4 Systems

-  **1** 6x4 *FIBERRUNNER*™ Channel (see [page I14](#))
-  **2** 6x4 Snap-On Hinged Cover (see [page I14](#))
-  **3** 6x4 Split Hinged Cover (see [page I14](#))
-  **4** 6x4 *QUIKLOCK*™ Coupler (see [page I15](#))
-  **5** 6x4 Horizontal Right Angle Fitting and Optional Split Cover (see [page I15](#))
-  **6** 6x4 Horizontal 45° Angle Fitting and Optional Split Cover (see [page I15](#))
-  **7** 6x4 Horizontal Tee Fitting and Optional Split Cover (see [page I15](#))
-  **8** 6x4 Four Way Cross Fitting and Optional Split Cover (see [page I16](#))
-  **9** 3-Sided BRC Trumpet Spillout for 6x4 Exit (see [page I16](#))
-  **10** 6x4 End Cap Fitting (see [page I16](#))
-  **11** 6x4 *QUIKLOCK* Vertical Tee Fitting (see [page I16](#))
-  **12** 3-Sided Vertical Tee Trumpet Spillout (see [page I16](#))
-  **13** Low Profile Reducer 4x4 to 2x2 for Vertical Tee (see [page I16](#))
-  **14** Spill-Over Junction and Optional Cover for 6x4 System (see [page I17](#))
-  **15** 3-Sided BRC Trumpet Spillout for 2x2 Exit (see [page I17](#))
-  **16** 6x4 Inside Vertical 45° Angle Fitting (see [page I17](#))
-  **17** 6x4 Outside Vertical 45° Angle Fitting and Optional Split Cover (see [page I18](#))
-  **18** 6x4 Outside Vertical Right Angle Fitting and Optional Split Cover (see [page I18](#))
-  **19** 6x4 to 4x4 *FIBERRUNNER* Reducer Fitting and Optional Split Cover (see [page I18](#))
-  **20** 6x4 *FIBERRUNNER* Fitting to 4x4 *FIBER-DUCT*™ Channel Reducer Fitting (see [page I18](#))

NOTE: Additional 6x4 and 4x4 bracket applications, see [pages I24-I25](#)

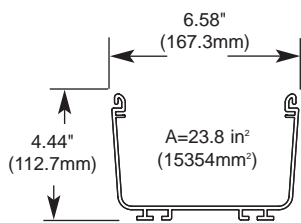
6x4 FIBERRUNNER™ Routing System

Cable Fills for FIBERRUNNER 6x4 Cable Routing System



The maximum amounts may vary according to the cable fill installation methods, straightness of cables, etc.

SPEC= 40% cablefill — the recommended design in cable capacity. Leaves room for future moves, adds and changes. **MAX= 60% cablefill** — the maximum cable quantity based on cable interweaving and packing factors.

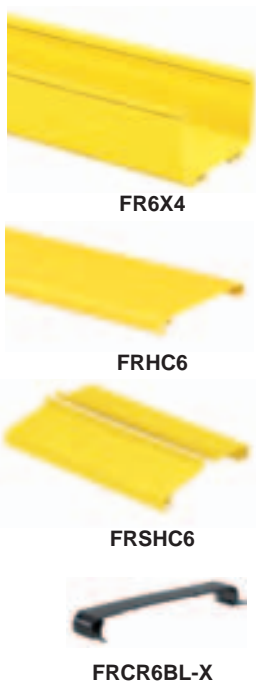


| System Type | Area in² | Fiber Cable | | | | | | | | Data Grade Cables | |
|------------------------|----------|-------------|------|----------|------|----------|------|----------|-----|--------------------------|-----|
| | | DIAMETER | | DIAMETER | | DIAMETER | | DIAMETER | | 24 AWG UTP/CM CAT5e 4 pr | |
| | | SPEC | MAX | SPEC | MAX | SPEC | MAX | SPEC | MAX | SPEC | MAX |
| FIBERRUNNER 6x4 System | 23.8 | 3054 | 4581 | 1942 | 2913 | 871 | 1306 | 50 | 75 | 257 | 386 |

Channel cutting instructions: For optimum results, use FRCUT Miter box and saw. For larger quantities use a plastic cutting saw blade for clean, burr-free cuts. Recommend: Carbide 80T or 100T; .090" thickness, .125" kerf.

6x4 FIBERRUNNER Routing System — Channel and Covers

- Robust, large capacity 6x4 system ideal for use with large cable counts
- Multiple spillover options provide versatility to mate to various equipment and rack configurations
- **QUIKLOCK™** couplers and brackets reduce system installation time dramatically
- Channel, covers, fittings and other non-metallic system components made from V-0 flame class rated material
- UL Listed
- Compatible with all sizes of **PANDUIT® FIBERRUNNER** and **PANDUIT FIBER-DUCT™** routing systems, cable management products and racks
- Compliant with the applicable tests in Telcordia GR-63-CORE Network Equipment Building Systems (NEBS)



| Part Number | Part Description | Std. Pkg. Qty. | Std. Ctn. Qty. |
|--------------------------------------|--|----------------|----------------|
| 6x4 FIBERRUNNER Channel | | | |
| FR6X4YL6 | Used to carry the cables horizontally throughout the system. Accepts hinged cable retainers FRCR6BL-X, hinged cover FRHC6YL6 or split hinged cover FRSHC6YL6. Use QUIKLOCK coupler FRBC6X4YL to attach channel and/or fittings. | 6 | 36 |
| 6x4 Snap-On Hinged Cover | | | |
| FRHC6YL6 | Optional snap-on hinged cover for channel FR6X4YL6. Hinge feature enables positioning of cover at angles between 30° and 90°. | 6 | 36 |
| 6x4 Split Hinged Cover | | | |
| FRSHC6YL6 | Optional split hinged cover for the channel FR6X4YL6. Creates radiused 3/4" (19mm) opening for easy access to add or remove cables. Snap-on hinge feature enables positioning of cover at angles between 30° and 90°. | 6 | 36 |
| Cable Retainer for 6x4 System | | | |
| FRCR6BL-X | Cable retainer holds cable in the channel when cover is not used. Install anywhere on channel, near the coupler or every 18" (457mm). Black color only. | 10 | 100 |

For other color replace YL (Yellow) with OR (Orange).
 Order number of feet required, in multiples of standard 6' length increments.
 Order number of cable retainers required, in multiples of Standard Package Quantity.

6x4 FIBERRUNNER™ QUIKLOCK™ Coupler

- Pre-assembled to provide fast mechanical assembly of components
- No tools required for installation, bolts loosen for component disassembly



| Part Number | Part Description | Std. Pkg. Qty. | Std. Ctn. Qty. |
|-------------|---|----------------|----------------|
| FRBC6X4YL | Pre-assembled coupler quickly joins 2 sections of channel and/or fittings. Mechanically attaches without tightening bolts. Bolts release using 3/8" nut driver to allow coupler to be removed if necessary. | 1 | 5 |

For other color replace suffix YL (Yellow) with OR (Orange).

6x4 FIBERRUNNER System Fittings

- Minimum 2" bend radius control fittings
- Protects against signal loss and performance degradation
- Fittings assemble using FRBC couplers
- Optional split covers snap onto each fitting
- Covers feature 3/4" gap to allow cable to be laid in



| Part Number | Part Description | Couplers Required | Std. Pkg. Qty. | Std. Ctn. Qty. |
|---|---|-----------------------|----------------|----------------|
| 6x4 Horizontal Right Angle Fitting | | | | |
| FRR6X4YL | Attaches to 6x4 channel and/or fittings to create a 90° horizontal turn from a straight horizontal run. Accepts optional split cover FRRASC6YL. | (2 pcs.) FRBC6X4YL | 1 | 5 |



| | | | | |
|---|--|---|---|---|
| Split Cover for 6x4 Horizontal Right Angle Fitting | | | | |
| FRRASC6YL | Optional split cover for the horizontal right angle fitting FRR6X4YL. Snap-on feature allows cover to be installed and removed with no tools required. Creates radiused 3/4" (19mm) opening for easy access to add or remove cables. | — | 1 | 5 |



| | | | | |
|---|--|-----------------------|---|---|
| 6x4 Horizontal 45° Angle Fitting | | | | |
| FRH456X4YL | Attaches to 6x4 channel and/or fittings to create a 45° horizontal turn from a straight horizontal run. Accepts optional split cover FRH45SC6YL. | (2 pcs.) FRBC6X4YL | 1 | 5 |



| | | | | |
|---|--|---|---|---|
| Split Cover for 6x4 Horizontal 45° Angle Fitting | | | | |
| FRH45SC6YL | Optional split cover for the horizontal 45° angle fitting FRH456X4YL. Snap-on feature allows cover to be installed and removed with no tools required. Creates radiused 3/4" (19mm) opening for easy access to add or remove cables. | — | 1 | 5 |




| | | | | |
|-----------------------------------|--|-----------------------|---|---|
| 6x4 Horizontal Tee Fitting | | | | |
| FRT6X4YL | Attaches to 6x4 channel and/or fittings to create a 90° horizontal branch from a straight horizontal run. Accepts optional split cover FRTSC6YL. | (3 pcs.) FRBC6X4YL | 1 | 5 |



| | | | | |
|---|--|---|---|---|
| Split Cover for 6x4 Horizontal Tee Fitting | | | | |
| FRTSC6YL | Optional split cover for the horizontal tee fitting FRT6X4YL. Snap-on feature allows cover to be installed and removed with no tools required. Creates radiused 3/4" (19mm) opening for easy access to add or remove cables. | — | 1 | 5 |

For other color replace suffix YL (Yellow) with OR (Orange).

6x4 FIBERRUNNER™ System Fittings (continued)

| Part Number | Part Description | Couplers Required | Std. Pkg. Qty. | Std. Ctn. Qty. |
|--|---|-----------------------|----------------|----------------|
| 6x4 Four Way Cross Fitting | | | | |
|  FRFWC6X4 | FRFWC6X4YL Attaches to 6x4 channel and/or fittings to create a horizontal four way cross intersection. Accepts optional split cover FRFWCSC6YL. | (4 pcs.) FRBC6X4YL | 1 | 5 |
| Split Cover for 6x4 Four Way Cross Fitting | | | | |
|  FRFWCSC6 | FRFWCSC6YL Optional split cover for the four way cross fitting FRFWC6X4YL. Snap-on feature allows cover to be installed and removed with no tools required. Creates radiused 3/4" (19mm) opening for easy access to add or remove cables. | — | 1 | 5 |
| 3-Sided BRC Trumpet Spillover for 6x4 Exit | | | | |
|  FRTR6X4 | FRTR6X4YL Used to limit the bend radius of the cable to 2" (50.8mm) when exiting from 6x4 channel, 6x4 horizontal tee fitting, or 6x4 exit on 12x4 vertical tee. | (1 pc.) FRBC6X4YL | 1 | 5 |
| 6x4 End Cap Fitting | | | | |
|  FREC6X4 | FREC6X4YL Used for closing off open ends of the channel or fittings. No coupler required, push-on installation. | — | 1 | 5 |
| 6x4 QUIKLOCK™ Vertical Tee Fitting | | | | |
|  FRVT6X4 | FRVT6X4YL Attaches to 6x4 channel and/or fittings to create 90° vertical drop from a straight horizontal run. Hinged door included. Accepts FIDT4X4BL, FTR4X4YL, S4X4YL6, or E4X4YL6 directly. Accepts optional snap-on cover FRHC6YL6 in conjunction with channel. | (2 pcs.) FRBC6X4YL | 1 | 5 |
| 1 Port Spillover Side Exit to 1.5" (38mm) Inside Diameter Corrugated Tubing | | | | |
|  FR1.5IDE | FR1.5IDEYL Used to route cable into 1.5" (38mm) diameter split corrugated tubing directly through a hole cut in the side wall of the 4x4, 6x4 and 12x4 FIBERRUNNER channel or 4x4 FIBER-DUCT™ channel. Provides 1" (25.4mm) bend radius control at the exit. Securely holds split corrugated tubing to ensure system integrity and easy access to add or remove cables. Includes drilling template. | — | 1 | 5 |
| 2-Port Spillover to 1.5" (38mm) Inside Diameter Corrugated Tubing | | | | |
|  FIDT4X4BL | FIDT4X4BL Used to route cable into one or two pieces of 1.5" (38mm) diameter split corrugated tubing. Used with FRVT6X4YL, FRVT4X4YL or FVT4X4YL. Securely holds corrugated split tubing to ensure system integrity and easy access to add or remove cables. Black color only. | — | 1 | 5 |
| 3-Sided Vertical Tee Trumpet Spillover | | | | |
|  FTR4X4 | FTR4X4YL Used to limit the bend radius of the cable to 2" (50.8mm) when exiting from a 4x4 or 6x4 FIBERRUNNER vertical tee fitting and 4x4 FIBER-DUCT fittings. | — | 1 | 5 |
| Low Profile Reducer 4x4 to 2x2 for Vertical Tee | | | | |
|  FRLPR42BL | FRLPR42BL Assembled into the 6x4 vertical tee FRVT6X4YL or 4x4 vertical tee FRVT4X4YL with an audible snap, the FRLPR42BL allows for the transition to 2x2 FIBER-DUCT channel with minimal space required. No tools required for assembly. Black color only. | — | 1 | 5 |

For other color replace suffix YL (Yellow) with OR (Orange).

6x4 FIBERRUNNER™ System Fittings (continued)



FRDDS6X4



FRDDSHC6



FRSP



FRSP6C



FRSP4



FRSP46C



FTR2X2



FIDT2X2



FRIV456X4

| Part Number | Part Description | Couplers Required | Std. Pkg. Qty. | Std. Ctn. Qty. |
|--|---|--------------------------------------|----------------|----------------|
| 6x4 Dual Downspout Fitting | | | | |
| FRDDS6X4YL | Attaches to 6x4 channel and/or fittings to create two 90° 4x4 downward transitions from a horizontal run. Downspouts are positioned 600mm apart to provide drops into cable entrances on multiple cabinet line-ups. The fitting maintains a 2" bend radius control throughout the transition to the vertical downspouts. Includes two snap-on throat covers for the dual downspouts. Accepts optional cover FRDDSHC6YL. | (2) FRBC6X4YL (2) FRBC4X4YL | 1 | — |
| Cover for 6x4 Dual Downspout Fitting | | | | |
| FRDDSHC6YL | Used to fully enclose the 6x4 dual downspout fitting FRDDS6X4YL. Cover is attached to the fitting base with three hinge clips. The hinge clips allow the hinged cover to rotate to a fully closed position and an open position greater than 90°. | — | 1 | 5 |
| Spill-Over Junction with 2x2 Exit | | | | |
| FRSPYL | Assembles onto 4x4, 6x4 or 12x4 FIBERRUNNER channel spilling over the side into a 2x2 vertical channel, fitting or corrugated tube. Mounts directly to existing installation with no alteration required. Mounting hardware provided for secure attachment. | — | 1 | — |
| Spill-Over Junction Cover for 6x4 System | | | | |
| FRSP6CYL | Used to fully enclose 6x4 channel in conjunction with the spill-over junction FRSPYL. Cover snaps onto the channel base. Hinged feature allows easy access to add or remove cables. | — | 1 | 5 |
| Spill-Over Junction with 4x4 Exit | | | | |
| FRSP4YL | Assembles onto 4x4, 6x4, or 12x4 FIBERRUNNER channel spilling over the side into a 4x4 vertical exit. Requires coupler to attach 4x4 FIBERRUNNER channel and fittings to the vertical exit. Mounts directly to existing installation with no alteration required. Mounting hardware provided for secure attachment. | (1) FRBC4X4YL | 1 | — |
| Spill-Over Junction Cover for 6x4 System | | | | |
| FRSP46CYL | Used to fully enclose the 6x4 channel in conjunction with the spill-over junction FRSP4YL. Cover snaps onto the channel base. Hinged feature allows easy access to add or remove cables. | — | 1 | 5 |
| 3-Sided BRC Trumpet Spillover for 2x2 Exit | | | | |
| FTR2X2YL | Used to limit the bend radius of the cable to 2" (50.8mm) when exiting from a FIBERRUNNER spill-over fitting FRSPYL or from 2x2 FIBER-DUCT™ channel. | — | 1 | 5 |
| 1 Port Spillover to 1.5" (38mm) Inside Diameter Corrugated Tubing | | | | |
| FIDT2X2YL | Used to route cable into one piece of 1.5" (38mm) diameter split corrugated tubing. Used with FIBERRUNNER spill-over fitting FRSPYL, 2x2 FIBER-DUCT fittings and the 2x2 FIBERRUNNER hinged channel. Securely holds split corrugated tubing to ensure system integrity and easy access to add or remove cables. | — | 1 | 5 |
| 6x4 Inside Vertical 45° Angle Fitting | | | | |
| FRIV456X4YL | Attaches to 6x4 channel and/or fittings to create a 45° upward angle from a straight horizontal run. Used with outside vertical 45° angle fitting FROV456X4YL to change level of a straight horizontal run. Includes split cover. | (2 pcs.) FRBC6X4YL | 1 | 5 |

For other color replace suffix YL (Yellow) with OR (Orange).

6x4 FIBERRUNNER™ System Fittings (continued)



FROV456X4



FROV45SC6



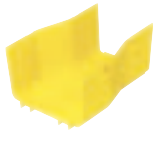
FROVRA6X4



FROVRASC6



FRUPS6X4



FRRF6FR4



FRRF6FR4SC



FRRF64



FITF6X4

| Part Number | Part Description | Couplers Required | Std. Pkg. Qty. | Std. Ctn. Qty. |
|--|---|--|----------------|----------------|
| 6x4 Outside Vertical 45° Angle Fitting | | | | |
| FROV456X4YL | Attaches to 6x4 channel and/or fittings to create a 45° downward angle from a straight horizontal run. Used with inside vertical 45° angle fitting FRIV456X4YL to change level of a straight horizontal run. Accepts optional split cover FROV45SC6YL. | (2 pcs.) FRBC6X4YL | 1 | 5 |
| Split Cover for 6x4 Outside Vertical 45° Angle Fitting | | | | |
| FROV45SC6YL | Optional split cover for the outside vertical 45° angle fitting FROV456X4YL. Snap-on feature allows cover to be installed and removed with no tools required. Creates radiused 3/4" (19mm) opening for easy access to add or remove cables. | — | 1 | 5 |
| 6x4 Outside Vertical Right Angle Fitting | | | | |
| FROVRA6X4YL | Attaches to 6x4 channel and/or fittings to create a 90° vertical turn down from a straight horizontal run. Accepts optional split cover FROVRASC6YL. | (2 pcs.) FRBC6X4YL | 1 | 5 |
| Split Cover for 6x4 Outside Vertical Right Angle Fitting | | | | |
| FROVRASC6YL | Optional split cover for the outside vertical right angle fitting FROVRA6X4YL. Snap-on feature allows cover to be installed and removed with no tools required. Creates radiused 3/4" (19mm) opening for easy access to add or remove cables. | — | 1 | 5 |
| 6x4 Up Spout Fitting | | | | |
| FRUPS6X4YL | Allows cable to be directed upward out of the channel deployed directly below racks and cabinets in underfloor installations. Snaps directly onto the channel and can be positioned to allow cables to be laid in. A 1" (25.4mm) top bezel is included. Other fittings can be installed for specific applications including FTR4X4YL and FIDT4X4BL. | — | 1 | 5 |
| 6x4 to 4x4 FIBERRUNNER Reducer Fitting | | | | |
| FRRF6FR4YL | Attaches any 6x4 FIBERRUNNER fitting or channel to any 4x4 FIBERRUNNER fitting or channel. Accepts split cover FRRF6FR4SCYL. | (1 pc.) FRBC6X4YL (1 pc.) FRBC4X4YL | 1 | 5 |
| Split Cover for 6x4 to 4x4 FIBERRUNNER Reducer Fitting | | | | |
| FRRF6FR4SCYL | Optional split cover for the 6x4 FIBERRUNNER to 4x4 FIBERRUNNER reducer fitting FRRF6FR4YL. Snap-on feature allows cover to be installed and removed with no tools required. Creates radiused 3/4" (19mm) opening for easy access to add or remove cables. | — | 1 | 5 |
| 6x4 FIBERRUNNER System to 4x4 FIBER-DUCT™ Reducer Fitting | | | | |
| FRRF64YL | Attaches any 6x4 FIBERRUNNER fitting or channel to the 4x4 FIBER-DUCT channel S4X4YL6 or E4X4YL6. Includes solid cover. | (1 pc.) FRBC6X4YL | 1 | 5 |
| Innerduct Transition Fitting | | | | |
| FITF6X4 | Metal fitting attaches to end of channel or fitting to transition up to four pieces of 1.5" (38mm) inside diameter inner duct. Hardware is included for installation. Black color only. | — | 1 | 10 |

For other color replace suffix YL (Yellow) with OR (Orange).

4x4 and 6x4 FIBERRUNNER™ Mounting Brackets



FR6TRBE12
FR6TRBE58
FR6TRBE12M
R6TRBE58M



FR6TRBN12
FR6TRBN58
FR6TRBN12M
FR6TRBN58M



FR6USB



FR6ALB



FR6CS12
FR6CS58
FR6CS12M
FR6CS58M



FR6ACB12
FR6ACB58
FR6ACB12M
FR6ACB58M

| Part Number | Part Description | For Threaded Rod Size | Std. Pkg. Qty. | Std. Ctn. Qty. |
|-------------|------------------|-----------------------|----------------|----------------|
|-------------|------------------|-----------------------|----------------|----------------|

Existing Threaded Rod QUIKLOCK™ Bracket for 6x4 and 4x4 Systems

| | | | | |
|------------|---|-------|---|----|
| FR6TRBE12 | Used to support the 6x4 and 4x4 systems from existing threaded rod installations. Bracket is secured to threaded rod with two split nuts. The pre-assembled slide clamps enable fast assembly to channel. Use 7/16" nut driver on slide clamps. | 1/2" | 1 | 10 |
| FR6TRBE58 | | 5/8" | 1 | 10 |
| FR6TRBE12M | | 12 mm | 1 | 10 |
| FR6TRBE58M | | 16 mm | 1 | 10 |

New Threaded Rod QUIKLOCK Bracket for 6x4 and 4x4 Systems

| | | | | |
|------------|--|-------|---|----|
| FR6TRBN12 | Used to support the 6x4 and 4x4 systems from any new threaded rod installations. Bracket is secured to threaded rod with two nuts. The pre-assembled slide clamps enable fast assembly to channel. Use 7/16" nut driver on slide clamps. | 1/2" | 1 | 10 |
| FR6TRBN58 | | 5/8" | 1 | 10 |
| FR6TRBN12M | | 12 mm | 1 | 10 |
| FR6TRBN58M | | 16 mm | 1 | 10 |

Under-Floor Pedestal QUIKLOCK Bracket for 6x4 and 4x4 Systems

| | | | | |
|--------|--|---|---|----|
| FR6USB | Used to support the 6x4 and 4x4 systems by attaching to under-floor pedestals. (Contains all necessary hardware.) Use on pedestals up to 1" in diameter. The pre-assembled slide clamps enable fast assembly to channel. Use 7/16" nut driver on slide clamps. | — | 1 | 10 |
|--------|--|---|---|----|

Adjustable Ladder QUIKLOCK Bracket for 6x4 and 4x4 Systems

| | | | | |
|--------|--|---|---|----|
| FR6ALB | Used to support the 6x4 and 4x4 systems attaching to any 3/8" (9.5 mm) x 1 1/2" (38.1 mm) or 3/8" (9.5 mm) x 2" (50.8 mm) ladder rack rail. Adjustable to 9 incremental positions from 4" (101 mm) to 12" (304 mm) above or below the ladder rack. No threaded rod required. The pre-assembled slide clamps enable fast assembly to channel. Use 7/16" nut driver on slide clamps. | — | 1 | 10 |
|--------|--|---|---|----|

Center Support QUIKLOCK Bracket for 6x4 and 4x4 Systems

| | | | | |
|----------|--|-------|---|----|
| FR6CS12 | Used to support the 6x4 and 4x4 systems from below with new threaded rod. Bracket is secured to threaded rod with two nuts. The pre-assembled slide clamps enable fast assembly to channel. Use 7/16" nut driver on slide clamps. Also can be secured directly to the top of cabinets. | 1/2" | 1 | 10 |
| FR6CS58 | | 5/8" | 1 | 10 |
| FR6CS12M | | 12 mm | 1 | 10 |
| FR6CS58M | | 16 mm | 1 | 10 |

Top Support Adjustable "C" QUIKLOCK Bracket for 6x4 and 4x4 Systems

| | | | | |
|-----------|---|-------|---|---|
| FR6ACB12 | Used to support the 6x4 and 4x4 systems from any new threaded rod extending down directly from the ceiling, grid or ladder rack system. Two position height adjustments to accommodate system with or without hinged cover. Bracket is secured to threaded rod with two nuts. The pre-assembled slide clamps enable fast assembly to channel. Use 7/16" nut driver on slide clamps. | 1/2" | 1 | — |
| FR6ACB58 | | 5/8" | 1 | — |
| FR6ACB12M | | 12 mm | 1 | — |
| FR6ACB58M | | 16 mm | 1 | — |

4x4 and 6x4 *FIBERRUNNER*™ Mounting Brackets (continued)



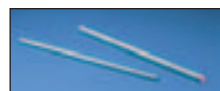
FR6TB38
FR6TB12
FR6TB38M
FR6TB12M



F2PCLB12
F2PCLB58
F2PCLB12M
F2PCLB58M



FLB12X15
FLB58X15
FLB12X20
FLB58X20



TR1-12-X
TR1-58-X



TRC18FR-X8



FR6LRB



FR6LB

| Part Number | Part Description | For Threaded Rod Size | Std. Pkg. Qty. | Std. Ctn. Qty. |
|--|--|-----------------------|----------------|----------------|
| Trapeze QUIKLOCK™ Bracket for 6x4 and 4x4 Systems | | | | |
| FR6TB38 | Used to support the 6x4 and 4x4 systems by spanning two threaded rod drops. Can be installed from above or below. Bracket is secured to each threaded rod with 2 nuts. The pre-assembled slide clamps enable fast assembly to channel. Use 7/16" nut driver on slide clamps. | 3/8" | 1 | 10 |
| FR6TB12 | | 1/2" | 1 | 10 |
| FR6TB38M | | 10 mm | 1 | 10 |
| FR6TB12M | | 12 mm | 1 | 10 |

| Two Piece Ladder Rack Bracket for Attaching Threaded Rod to 1 1/2" - 2" Ladder Rack | | | | |
|--|---|-------|---|----|
| F2PCLB12 | Two piece bracket attaches to 3/8" (9.5mm) wide x 1 1/2" (38.1mm) or 3/8" (9.5mm) wide by 2" (50.8mm) ladder rack rail. Bracket halves slide into position and clamp together on the ladder rack rail, which allows for a one-handed assembly of the threaded rod (not included). Contains bracket and hardware for attaching bracket to ladder rack. | 1/2" | 1 | 10 |
| F2PCLB58 | | 5/8" | 1 | 10 |
| F2PCLB12M | | 12 mm | 1 | 10 |
| F2PCLB58M | | 16 mm | 1 | 10 |

| Bracket for Attaching Threaded Rod to 1 1/2" Ladder Rack | | | | |
|---|--|------|---|----|
| FLB12X15 | Bracket attaches to 3/8" (9.5mm) wide x 1 1/2" (38.1mm) ladder rack rail. Bracket accepts threaded rod (not included). Contains bracket and hardware for attaching bracket to ladder rack. | 1/2" | 1 | 10 |
| FLB58X15 | | 5/8" | 1 | 10 |

| Bracket for Attaching Threaded Rod to 2" Ladder Rack | | | | |
|---|--|------|---|----|
| FLB12X20 | Bracket attaches to 3/8" (9.5mm) wide x 2" (50.8mm) ladder rack rail. Bracket accepts threaded rod (not included). Contains bracket and hardware for attaching bracket to ladder rack. | 1/2" | 1 | 10 |
| FLB58X20 | | 5/8" | 1 | 10 |

| Threaded Rod in One Foot Lengths | | | | |
|---|---|------|----|----|
| TR1-12-X | Threaded rod can be used with various mounting brackets. Length = 12" (305mm) | 1/2" | 10 | 50 |
| TR1-58-X | | 5/8" | 10 | 50 |

| Threaded Rod Cover | | | | |
|---------------------------|--|-------------|----|-----|
| TRC18FR-X8 | Used to protect cabling from threaded rod. Vertical slit allows easy installation. Material is a flame retardant polyethylene that meets UL94V-0 specifications. For indoor use only. Color is gray. Available in 18" (457.2mm) lengths. | 1/2" - 5/8" | 10 | 100 |

| Ladder Rack QUIKLOCK Bracket for 6x4 and 4x4 Systems | | | | |
|---|--|---|---|----|
| FR6LRB | Used to support the 6x4 and 4x4 systems attaching directly to any 3/8" x 1 1/2" or 3/8" x 2" ladder rack rail. No threaded rod required. The pre-assembled slide clamps enable fast assembly to channel. Use 7/16" nut driver on slide clamps. | — | 1 | 10 |

| "L" Wall Mount QUIKLOCK Bracket for 6x4 and 4x4 Systems | | | | |
|--|--|---|---|----|
| FR6LB | Used to support the 6x4 and 4x4 systems attaching to a wall or the front or back of an equipment rack. The pre-assembled slide clamps enable fast assembly to channel. Use 7/16" nut driver on slide clamps. | — | 1 | 10 |

4x4 and 6x4 *FIBERRUNNER*™ Mounting Brackets (continued)



FR6RMBEIA

| Part Number | Part Description | For Threaded Rod Size | Std. Pkg. Qty. | Std. Ctn. Qty. |
|--|--|-----------------------|----------------|----------------|
| EIA/TIA Rack Mount <i>QUIKLOCK</i>™ Bracket for 6x4 and 4x4 Systems | | | | |
| FR6RMBEIA | Used to support the 6x4 and 4x4 systems attaching to the top of an equipment rack. Contains hardware to mount to the top of EIA/TIA equipment racks. No threaded rod required. The pre-assembled slide clamps enable fast assembly to channel. Use 7/16" nut driver on slide clamps. | — | 1 | 10 |



FEIAB58

| | | | | |
|--|--|------|---|----|
| EIA/TIA Threaded Rod Mounting Bracket | | | | |
| FEIAB58 | Bracket consists of two identical components that clamp onto the crossmembers of standard EIA/TIA racks and are secured with standard hex nuts and split lockwashers (included) tightened onto a length of 5/8" diameter threaded rod (not included). The threaded rod is positioned in the center of the brackets providing a vertical threaded rod stud to mount <i>FIBERRUNNER</i> and <i>FIBER-DUCT</i> ™ threaded rod mounting brackets onto. | 5/8" | 1 | 10 |



FRRMBNF58

| | | | | |
|--|--|------|---|---|
| <i>NETFRAME</i>™ Rack Mount <i>QUIKLOCK</i> Bracket for 6x4 and 4x4 Systems | | | | |
| FRRMBNF58 | Used to support the 6x4 and 4x4 systems attaching to the top of <i>NETFRAME</i> rack. (Contains all necessary mounting hardware.) Bracket accepts 5/8" threaded rod. | 5/8" | 1 | — |



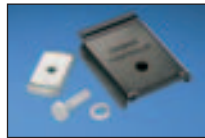
FR6ACAB

| | | | | |
|---|--|---|---|---|
| Adjustable Cabinet <i>QUIKLOCK</i> Bracket for 6x4 and 4x4 Systems | | | | |
| FR6ACAB | Used to support the 6x4 and 4x4 systems attaching to the top of cabinets. Adjustable from 4 1/4" (108mm) to 9 1/4" (235mm) allowing runs to be leveled over uneven cabinet heights. Also allows spillouts such as the vertical tee to be positioned directly over cable inlets on cabinet tops. Bracket is secured to the cabinet frame with through bolts (not included). The pre-assembled slide clamps enable fast assembly to channel. Use 7/16" nut driver on slide clamps. | — | 1 | — |



**FTRB12
FTRB58**

| | | | | |
|------------------------------------|---|------|---|----|
| Strut Metal Framing Bracket | | | | |
| FTRB12 | Bracket attaches to strut metal framing. Contains bracket and hardware for attaching threaded rod to metal framing. | 1/2" | 1 | 10 |
| FTRB58 | | 5/8" | 1 | 10 |



FRSTRCLIP

| | | | | |
|-----------------------|---|---|---|----|
| Strut Clip Kit | | | | |
| FRSTRCLIP | Strut mounting clip assembly allows <i>FIBERRUNNER</i> channel to be attached directly to standard 1 5/8" wide strut structures. Contains all hardware for assembly. Bolts release with 7/16" nut driver. | — | 1 | 10 |



FRBB6-X

| | | | | |
|--------------------------|---|---|----|-----|
| Snap Bracket Clip | | | | |
| FRBB6-X | Snap bracket enables the 6x4 <i>FIBERRUNNER</i> channel to be quickly and securely mounted. Contains all hardware for assembly to any <i>FIBERRUNNER</i> 6x4 and 4x4 bracket. | — | 10 | 100 |



**FRSLNKT12
FRSLNKT58
FRSLNKT12M
FRSLNKT58M**

| | | | | |
|------------------------------|---|-------|---|----|
| Split Locking Nut Kit | | | | |
| FRSLNKT12 | Used to secure <i>FIBERRUNNER</i> mounting brackets anywhere along pre-installed threaded rod. Split nuts are opened, placed in desired position, closed and tightened. | 1/2" | 1 | 10 |
| FRSLNKT58 | | 5/8" | 1 | 10 |
| FRSLNKT12M | | 12 mm | 1 | 10 |
| FRSLNKT58M | | 16 mm | 1 | 10 |

System Overview

Modules

Ultimate ID System & Work Area

Zone Cabling

Patch Panels Copper Patch Cords & Punchdowns

Fiber Connectors Enclosures & Patch Cords

Racks & Cable Management

Grounding & Bonding

Fiber Routing

Surface Raceway

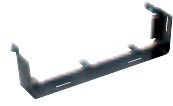
Labeling & Administration

Cable Ties & Accessories

Supplementary Technical Information

Glossary & Index

Adapters to Other Systems



FRADC12X4BL

| Part Number | Part Description | Couplers Required | Std. Pkg. Qty. | Std. Ctn. Qty. |
|---|--|-----------------------|----------------|----------------|
| Adapter from 12x4 <i>FIBERRUNNER</i>™ System to ADC 12x4 FiberGuide* | | | | |
| FRADC12X4BL | Fitting that transitions from ADC's 12x4 FiberGuide* System to 12x4 <i>FIBERRUNNER</i> System. Fitting has a black finish and is made from metal. Attachment hardware is included. | (1 pc.) FRBC12X4YL | 1 | 5 |



FRADC6X4

| | | | | |
|--|--|---|---|---|
| Adapter from 6x4 <i>FIBERRUNNER</i> System to ADC 6x4 FiberGuide* | | | | |
| FRADC6X4YL | Fitting that transitions from ADC's 6x4 FiberGuide* System to 6x4 <i>FIBERRUNNER</i> System. Bolts release using 3/8" nut driver to allow coupler to be removed, if necessary. | — | 1 | 5 |



FRADC4X4BL

| | | | | |
|--|--|----------------------|---|---|
| Adapter from 4x4 <i>FIBERRUNNER</i> System to ADC 4x4 FiberGuide* | | | | |
| FRADC4X4BL | Fitting that transitions from ADC's 4x4 FiberGuide* System to 4x4 <i>FIBERRUNNER</i> System. Fitting has a black finish and is made from metal. Attachment hardware is included. | (1 pc.) FRBC4X4YL | 1 | 5 |



FRTYT68

| | | | | |
|---|---|----------------------|---|---|
| Adapter from 6x4 <i>FIBERRUNNER</i> System to Tyton 8x4 Lightguide** | | | | |
| FRTYT68 | Fitting that transitions from Tyton 8x4 Lightguide** System to 6x4 <i>FIBERRUNNER</i> System. Fitting has a black finish and is made from metal. Attachment hardware is included. | (1 pc.) FRBC6X4YL | 1 | 5 |



FRWBS68

| | | | | |
|---|---|---------------------|---|---|
| Adapter from 6x4 <i>FIBERRUNNER</i> System to Warren & Brown 8x4 Lightpaths*** | | | | |
| FRWBS68 | Fitting that transitions from Warren & Brown 8x4 Lightpaths*** System to 6x4 <i>FIBERRUNNER</i> System. Fitting has a black finish and is made from metal. Attachment hardware is included. | (1pc.) FRBC6X4YL | 1 | 5 |



FADC4X4

| | | | | |
|--|---|---|---|----|
| Adapter from 4x4 <i>FIBER-DUCT</i>™ System to ADC 4x4 FiberGuide* | | | | |
| FADC4X4 | Fitting that transitions from ADC's 4x4 Fiber-Guide* Fiber Cable Management System to 4x4 <i>FIBER-DUCT</i> System. Fitting has a black finish and is made from metal. Attachment hardware is included. | — | 1 | 10 |



FTDNS4X4

| | | | | |
|---|---|---|---|---|
| Adapter from 4x4 <i>FIBER-DUCT</i> System to Various 4x4 Systems | | | | |
| FTDNS4X4YL | Fitting that transitions from various 4x4 systems to 4x4 <i>FIBER-DUCT</i> System. Attachment hardware is included. | — | 1 | 5 |

*FiberGuide is a registered trademark of ADC Telecommunications, Inc.

**Lightguide is a trademark of the Hellerman Tyton Corporation.

***Lightpaths is a registered trademark of Warren & Brown Technologies Pty Ltd.

NOTES

System
Overview

Modules

Ultimate ID
System &
Work Area

Zone
Cabling

Patch Panels
Copper Patch Cords
& Punchdowns

Fiber Connectors
Enclosures
& Patch Cords

Racks &
Cable
Management

Grounding
&
Bonding

Fiber
Routing

Surface
Raceway

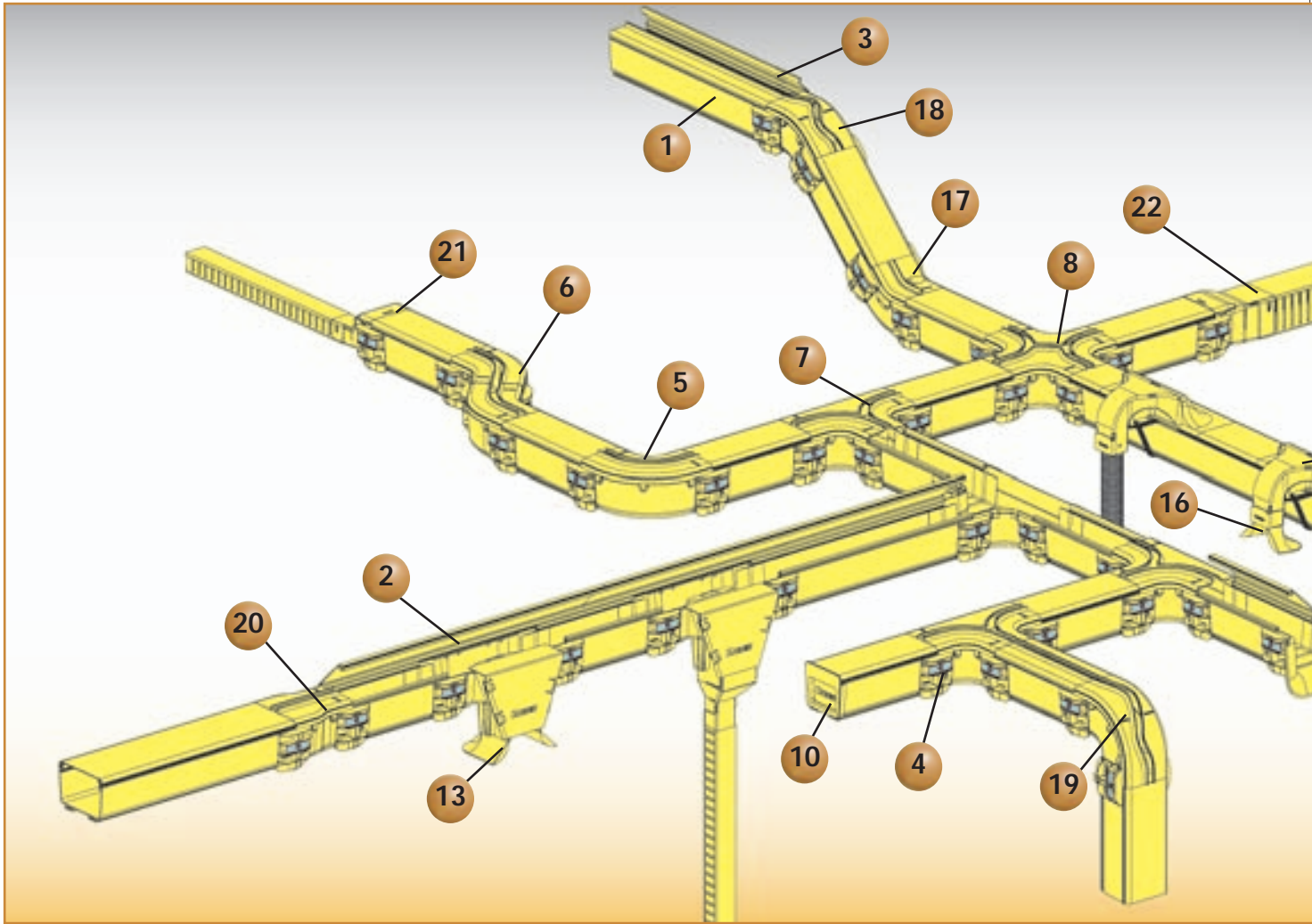
Labeling
&
Administration

Cable Ties
&
Accessories

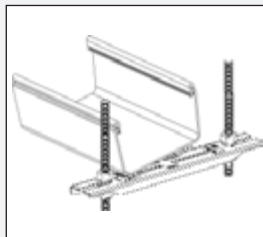
Supplementary
Technical
Information

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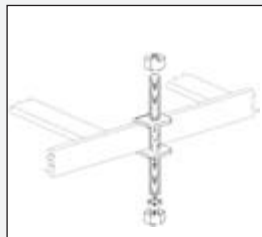
4x4 **FIBER***RUNNER* Routing System Roadmap



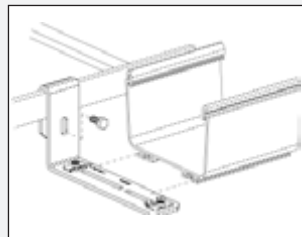
4x4 and 6x4 **FIBER***RUNNER*™ Mounting Brackets



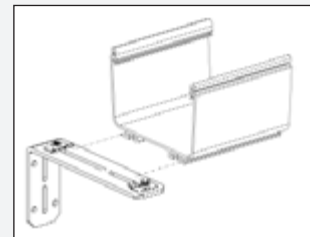
Trapeze **QUIKLOCK**™
Bracket for 6x4 and
4x4 Systems



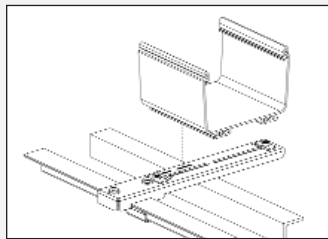
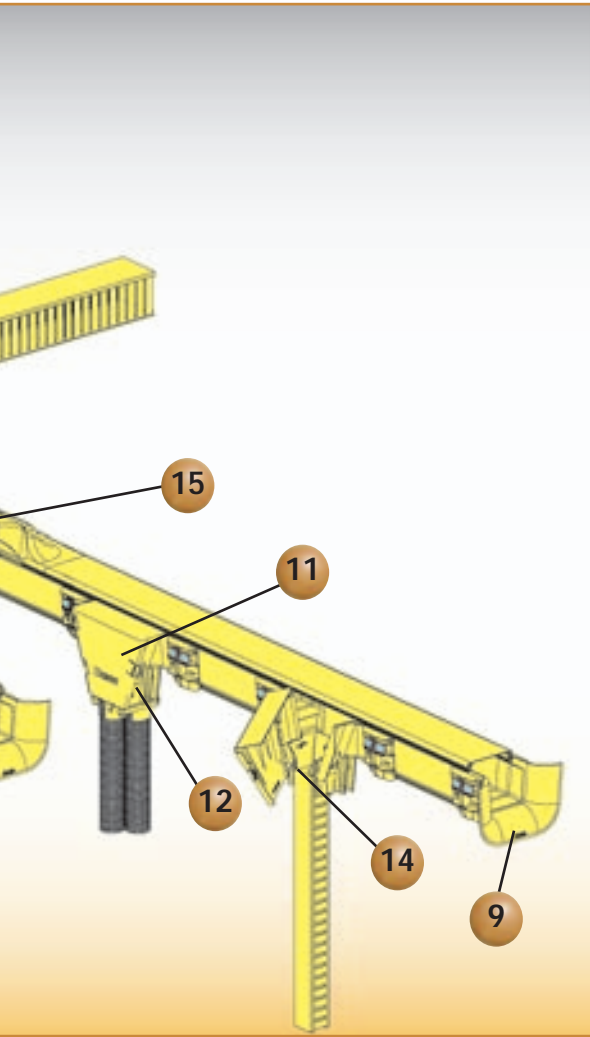
Bracket for attaching
Threaded Rod to
Ladder Rack

























Ladder Rack **QUIKLOCK**
Bracket for 6x4 and
4x4 Systems



"L" Wall Mount **QUIKLOCK**
Bracket for 6x4 and
4x4 Systems



**EIA Rack Mount QUIKLOCK
Bracket for 6x4 and
4x4 System**

-  **1** 4x4 *FIBERRUNNER*™ Channel (see [page I26](#))
-  **2** 4x4 Snap-On Hinged Cover (see [page I26](#))
-  **3** 4x4 Split Hinged Cover (see [page I26](#))
-  **4** 4x4 *QUIKLOCK*™ Coupler (see [page I27](#))
-  **5** 4x4 Horizontal Right Angle Fitting and Optional Split Cover (see [page I27](#))
-  **6** 4x4 Horizontal 45° Angle Fitting and Optional Split Cover (see [page I27](#))
-  **7** 4x4 Horizontal Tee Fitting and Optional Split Cover (see [page I27 and I28](#))
-  **8** 4x4 Four Way Cross Fitting and Optional Split cover (see [page I28](#))
-  **9** 3-Sided BRC Trumpet Spill-Out for 4x4 *FIBERRUNNER* Exit (see [page I28](#))
-  **10** 4x4 End Cap Fitting (see [page I28](#))
-  **11** 4x4 *QUIKLOCK* Vertical Tee Fitting (see [page I28](#))
-  **12** 2-Port Spillout to 1.5" (38mm) Inside Diameter Corrugated Tubing (see [page I29](#))
-  **13** 3-Sided Vertical Tee Trumpet Spillout (see [page I29](#))
-  **14** Low Profile Reducer 4x4 to 2x2 for Vertical Tee (see [page I29](#))
-  **15** Spill-Over Junction and Optional Cover for 4x4 System (see [page I29](#))
-  **16** 3-Sided BRC Trumpet Spillout for 2x2 Exit (see [page I30](#))
-  **17** 4x4 Inside Vertical 45° Angle Fitting (see [page I30](#))
-  **18** 4x4 Outside Vertical 45° Angle Fitting and Optional Split Cover (see [page I30 and I31](#))
-  **19** 4x4 Outside Vertical Right Angle Fitting and Optional Split Cover (see [page I31](#))
-  **20** 6x4 to 4x4 *FIBERRUNNER* Reducer Fitting and Optional Split Cover (see [page I31](#))
-  **21** 4x4 *FIBERRUNNER* System to 2x2 *FIBER-DUCT*™ Reducer Fitting with Cover (see [page I32](#))
-  **22** 4x4 *FIBERRUNNER* System to 4x4 *FIBER-DUCT* Reducer Fitting with Cover (see [page I32](#))

NOTE: Additional 6x4 and 4x4 bracket applications, see [pages I12-I13](#)

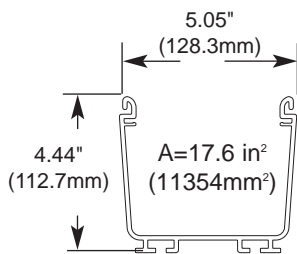
4x4 FIBERRUNNER™ Routing System

Cable Fills for FIBERRUNNER 4x4 Cable Routing System

The maximum amounts may vary according to the cable fill installation methods, straightness of cables, etc.

SPEC= 40% cablefill — the recommended design in cable capacity. Leaves room for future moves, adds and changes.

MAX= 60% cablefill — the maximum cable quantity based on cable interweaving and packing factors.



| System Type | Area in² | Fiber Cable | | | | | | | | Data Grade Cables | |
|------------------------|----------|--------------------------|------|------|------|----------|-----|------|-----|-------------------|-----|
| | | 24 AWG UTP/CM CAT5e 4 pr | | | | DIAMETER | | | | DIAMETER | |
| | | SPEC | MAX | SPEC | MAX | SPEC | MAX | SPEC | MAX | SPEC | MAX |
| FIBERRUNNER 4x4 System | 17.6 | 2258 | 3388 | 1436 | 2154 | 644 | 966 | 37 | 56 | 190 | 286 |

Channel cutting instructions: For optimum results, use FRCUT miter box and saw. For larger quantities use a plastic cutting saw blade for clean, burr-free cuts. Recommend: Carbide 80T or 100T; .090" thickness, .125" kerf.

4x4 FIBERRUNNER Routing System — Channel and Covers

- Robust 4x4 system ideal for use with smaller cable counts
- Multiple spillover options provide versatility to mate to various equipment and rack configurations
- QUIKLOCK™ couplers and brackets reduce system installation time dramatically
- Channel, covers, fittings and other non-metallic system components made from V-0 flame class rated material
- UL Listed
- Compatible with all sizes of PANDUIT® FIBERRUNNER and PANDUIT FIBER-DUCT™ routing systems, cable management products and racks
- Compliant with the applicable tests in Telcordia GR-63-CORE Network Equipment Building Systems (NEBS)



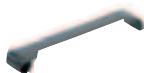
FR4X4



FRHC4



FRSHC4



FRCR4BL-X

| Part Number | Part Description | Std. Pkg. Qty. | Std. Ctn. Qty. |
|--------------------------------------|---|----------------|----------------|
| 4x4 FIBERRUNNER Channel | | | |
| FR4X4YL6 | Used to carry the cables horizontally throughout the system. Accepts hinged cable retainers FRCR4BL-X, hinged cover FRHC4YL6 or split hinged cover FRSHC4YL6. Use QUIKLOCK coupler FRBC4X4YL to attach channel and/or fittings. | 6 | 36 |
| 4x4 Snap-On Hinged Cover | | | |
| FRHC4YL6 | Optional snap-on hinged cover for channel FR4X4YL6. Hinge feature enables positioning of cover at angles between 30° to 90°. | 6 | 36 |
| 4x4 Split Hinged Cover | | | |
| FRSHC4YL6 | Optional split hinged cover for the channel FR4X4YL6. Creates radiused 3/4" (19mm) opening for easy access to add or remove cables. Snap-on hinge feature enables positioning of cover at angles between 30° and 90°. | 6 | 36 |
| Cable Retainer for 4x4 System | | | |
| FRCR4BL-X | Cable retainer holds cable in the channel when cover is not used. Install anywhere on channel, near the coupler or every 18" (457mm). Black color only. | 10 | 100 |

For other color replace suffix YL (Yellow) with OR (Orange).

Order number of feet required, in multiples of standard 6' length increments.

Order number of Cable Retainers required, in multiples of Standard Package Quantity.

4x4 FIBERRUNNER™ QUIKLOCK™ Coupler

- Pre-assembled to provide fast mechanical assembly of components
- No tools required for installation, bolts loosen for component disassembly



FRBC4X4

| Part Number | Part Description | Std. Pkg. Qty. | Std. Ctn. Qty. |
|-------------|---|----------------|----------------|
| FRBC4X4YL | Pre-assembled coupler quickly joins two sections of channel and/or fittings. Mechanically attaches without tightening bolts. Bolts release using 3/8" nut driver to allow coupler to be removed if necessary. | 1 | 5 |

For other color replace suffix YL (Yellow) with OR (Orange).

4x4 FIBERRUNNER System Fittings

- Minimum 2" bend radius control fittings
- Fittings assemble using FRBC couplers
- Protects against signal loss and performance degradation
- Optional split covers snap onto each fitting
- Covers feature 3/4" gap to allow cable to be laid in



FRRA4X4

| Part Number | Part Description | Couplers Required | Std. Pkg. Qty. | Std. Ctn. Qty. |
|---|--|--------------------|----------------|----------------|
| 4x4 Horizontal Right Angle Fitting | | | | |
| FRRA4X4YL | Attaches to 4x4 channel and/or fitting to create a 90° horizontal turn from a straight horizontal run. Accepts optional split cover FRRASC4YL. | (2 pcs.) FRBC4X4YL | 1 | 5 |



FRRASC4

| | | | | |
|---|---|---|---|---|
| Split Cover for 4x4 Horizontal Right Angle Fitting | | | | |
| FRRASC4YL | Optional split cover for the horizontal right angle fitting FRRA4X4YL. Snap-on feature allows cover to be installed and removed with no tools required. Creates radiused 3/4" (19mm) opening for easy access to add or remove cables. | — | 1 | 5 |



FRH454X4

| | | | | |
|---|--|--------------------|---|---|
| 4x4 Horizontal 45° Angle Fitting | | | | |
| FRH454X4YL | Attaches to 4x4 channel and/or fittings to create a 45° horizontal turn from a straight horizontal run. Accepts optional split cover FRH45SC4YL. | (2 pcs.) FRBC4X4YL | 1 | 5 |



FRH45SC4

| | | | | |
|---|--|---|---|---|
| Split Cover for 4x4 Horizontal 45° Angle Fitting | | | | |
| FRH45SC4YL | Optional split cover for the horizontal 45° angle fitting FRH454X4YL. Snap-on feature allows cover to be installed and removed with no tools required. Creates radiused 3/4" (19mm) opening for easy access to add or remove cables. | — | 1 | 5 |



FRT4X4

| | | | | |
|-----------------------------------|---|--------------------|---|---|
| 4x4 Horizontal Tee Fitting | | | | |
| FRT4X4YL | Attaches to 4x4 channel and/or fittings to create a 90° horizontal branch from straight horizontal runs. Accepts optional split cover FRTSC4YL. | (3 pcs.) FRBC4X4YL | 1 | 5 |

For other color replace suffix YL (Yellow) with OR (Orange).

4x4 FIBERRUNNER™ System Fittings (continued)

System Overview
 Modules
 Ultimate ID System & Work Area
 Zone Cabling
 Patch Panels Copper Patch Cords & Punchdowns
 Fiber Connectors Enclosures & Patch Cords
 Racks & Cable Management
 Grounding & Bonding
 Fiber Routing
 Surface Raceway
 Labeling & Administration
 Cable Ties & Accessories
 Supplementary Technical Information
 Glossary & Index



FRTSC4

| Part Number | Part Description | Couplers Required | Std. Pkg. Qty. | Std. Ctn. Qty. |
|---|--|-------------------|----------------|----------------|
| Split Cover for 4x4 Horizontal Tee Fitting | | | | |
| FRTSC4YL | Optional split cover for the horizontal tee fitting FRT4X4YL. Snap-on feature allows cover to be installed and removed with no tools required. Creates radiused 3/4" (19mm) opening for easy access to add or remove cables. | — | 1 | 5 |



FRFWC4X4

| | | | | |
|-----------------------------------|--|-----------------------|---|---|
| 4x4 Four Way Cross Fitting | | | | |
| FRFWC4X4YL | Attaches to 4x4 channel and/or fittings to create a horizontal four way cross intersection. Accepts optional split cover FRFWCSC4YL. | (4 pcs.) FRBC4X4YL | 1 | 5 |



FRFWCSC4

| | | | | |
|---|--|---|---|---|
| Split Cover for 4x4 Four Way Cross Fitting | | | | |
| FRFWCSC4YL | Optional split cover for the four way cross fitting FRFWC4X4YL. Snap-on feature allows cover to be installed and removed with no tools required. Creates radiused 3/4" (19mm) opening for easy access to add or remove cables. | — | 1 | 5 |



FRTR4X4

| | | | | |
|---|--|----------------------|---|---|
| 3-Sided BRC Trumpet Spill-Out for 4x4 FiberRunner Exit | | | | |
| FRTR4X4YL | Used to limit the bend radius of the cable to 2" (50.8mm) when exiting from 4x4 FIBERRUNNER channel or a 4x4 FIBERRUNNER horizontal tee fitting. | (1 pc.) FRBC4X4YL | 1 | 5 |



FREC4X4

| | | | | |
|----------------------------|---|---|---|---|
| 4x4 End Cap Fitting | | | | |
| FREC4X4YL | Used for closing off open ends of the channel or fittings. No coupler required, push-on installation. | — | 1 | 5 |



FRVT4X4

| | | | | |
|--|---|-----------------------|---|---|
| 4x4 QUIKLOCK Vertical Tee Fitting | | | | |
| FRVT4X4YL | Attaches to 4x4 channel and/or fittings to create a 90° vertical drop from a horizontal run. Hinged door included. Accepts FIDT4X4BL, FTR4X4YL, S4X4YL6 or E4X4YL6 directly. Accepts optional snap-on cover FRHC4YL6 in conjunction with channel. | (2 pcs.) FRBC4X4YL | 1 | 5 |



FR1.5IDE

| | | | | |
|---|--|---|---|---|
| 1 Port Spillout Side Exit to 1.5" (38mm) Inside Diameter Corrugated Tubing | | | | |
| FR1.5IDEYL | Used to route cable into 1.5" (38mm) diameter split corrugated tubing directly through a hole cut in the side wall of the 4x4, 6x4 and 12x4 FIBERRUNNER channel or 4x4 FIBER-DUCT™ channel. Provides 1" (25.4mm) bend radius control at the exit. Securely holds split corrugated tubing to ensure system integrity and easy access to add or remove cables. Includes drilling template. | — | 1 | 5 |

For other color replace suffix YL (Yellow) with OR (Orange).

4x4 FIBERRUNNER™ System Fittings (continued)



FRIDT4X4

| Part Number | Part Description | Couplers Required | Std. Pkg. Qty. | Std. Ctn. Qty. |
|---|---|----------------------|----------------|----------------|
| 2 Port Spillover to 1.5" (38 mm) Inside Diameter Corrugated Tubing | | | | |
| FRIDT4X4YL | Used to route cable into one or two pieces of 1.5" (38mm) diameter split corrugated tubing. Requires coupler to be used with 4x4 FIBERRUNNER fitting. Used with any 4x4 FIBERRUNNER fitting. Securely holds corrugated split tubing to ensure system integrity and easy access to add or remove cables. | (1 pc.) FRBC4X4YL | 1 | 5 |



FIDT4X4BL

| | | | | |
|--|--|---|---|---|
| 2-Port Spillover to 1.5" (38mm) Inside Diameter Corrugated Tubing | | | | |
| FIDT4X4BL | Used to route cable into one or two pieces of 1.5" (38mm) diameter split corrugated tubing. Used with FRVT6X4YL, FRVT4X4YL or FVT4X4YL. Securely holds corrugated split tubing to ensure system integrity and easy access to add or remove cables. Black color only. | — | 1 | 5 |



FTR4X4

| | | | | |
|---|---|---|---|---|
| 3-Sided Vertical Tee Trumpet Spillover | | | | |
| FTR4X4YL | Used to limit the bend radius of the cable to 2" (50.8mm) when exiting from a 4x4 or 6x4 FIBERRUNNER vertical tee fitting and 4x4 FIBER-DUCT™ fittings. | — | 1 | 5 |



FRLPR42BL

| | | | | |
|--|--|---|---|---|
| Low Profile Reducer 4x4 to 2x2 for Vertical Tee | | | | |
| FRLPR42BL | Assembled into the 6x4 vertical tee FRVT6X4YL or 4x4 vertical tee FRVT4X4YL with an audible snap, the FRLPR42BL allows for the transition to 2x2 FIBER-DUCT channel with minimal space required. No tools required for assembly. Black color only. | — | 1 | 5 |



FRSP

| | | | | |
|--|---|---|---|---|
| Spill-Over Junction with 2x2 Exit | | | | |
| FRSPYL | Assembles onto 4x4, 6x4 or 12x4 FIBERRUNNER channel spilling over the side into a 2x2 vertical channel, fitting or corrugated tube. Mounts directly to existing installation with no alteration required. Mounting hardware provided for secure attachment. | — | 1 | — |



FRSP4C

| | | | | |
|---|---|---|---|---|
| Spill-Over Junction Cover for 4x4 System | | | | |
| FRSP4CYL | Used to fully enclose 4x4 channel in conjunction with the spill-over junction FRSPYL. Cover snaps onto the channel base. Hinged feature allows easy access to add or remove cables. | — | 1 | 5 |

For other color replace suffix YL (Yellow) with OR (Orange).

| |
|--|
| System Overview |
| Modules |
| Ultimate ID System & Work Area |
| Zone Cabling |
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| Fiber Connectors Enclosures & Patch Cords |
| Racks & Cable Management |
| Grounding & Bonding |
| Fiber Routing |
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| Labeling & Administration |
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4x4 FIBERRUNNER™ System Fittings (continued)



FRSP4



FRSP44C



FTR2X2



FIDT2X2



FRIV454X4



FROV454X4

| Part Number | Part Description | Couplers Required | Std. Pkg. Qty. | Std. Ctn. Qty. |
|--|--|-----------------------|----------------|----------------|
| Spill-Over Junction with 4x4 Exit | | | | |
| FRSP4YL | Assembles onto 4x4, 6x4, or 12x4 <i>FIBERRUNNER</i> channel spilling over the side into a 4x4 vertical exit. Requires coupler to attach 4x4 <i>FIBERRUNNER</i> channel and fittings to the vertical exit. Mounts directly to existing installation with no alteration required. Mounting hardware provided for secure attachment. | (1) FRBC4X4YL | 1 | — |
| Spill-Over Junction Cover for 4x4 System | | | | |
| FRSP44CYL | Used to fully enclose the 4x4 channel in conjunction with the spill-over junction FRSP4YL. Cover snaps onto the channel base. Hinged feature allows easy access to add or remove cables. | — | 1 | 5 |
| 3-Sided BRC Trumpet Spillover for 2x2 Exit | | | | |
| FTR2X2YL | Used to limit the bend radius of the cable to 2" (50.8mm) when exiting from a <i>FIBERRUNNER</i> spill-over fitting FRSPYL or from 2x2 <i>FIBER-DUCT™</i> channel. | — | 1 | 5 |
| 1-Port Spillover to 1.5" (38mm) Inside Diameter Corrugated Tubing | | | | |
| FIDT2X2YL | Used to route cable into one piece of 1.5" (38mm) diameter split corrugated tubing. Used with <i>FIBERRUNNER</i> spill-over fitting FRSPYL, 2x2 <i>FIBER-DUCT</i> fittings and the 2x2 <i>FIBERRUNNER</i> hinged channel. Securely holds split corrugated tubing to ensure system integrity and easy access to add or remove cables. | — | 1 | 5 |
| 4x4 Inside Vertical 45° Angle Fitting | | | | |
| FRIV454X4YL | Attaches to 4x4 channel and/or fittings to create a 45° upward angle from a horizontal run. Used with outside vertical 45° angle fitting FROV454X4YL to change level of a straight horizontal run. Includes split cover. | (2 pcs.) FRBC4X4YL | 1 | 5 |
| 4x4 Outside Vertical 45° Angle Fitting | | | | |
| FROV454X4YL | Attaches to 4x4 channel and/or fittings to create a 45° downward angle from a horizontal run. Used with inside vertical 45° angle fitting FRIV454X4YL to change level of a straight horizontal run. Accepts optional split cover FROV45SC4YL. | (2 pcs.) FRBC4X4YL | 1 | 5 |

For other color replace suffix YL (Yellow) with OR (Orange).

4x4 FIBERRUNNER™ System Fittings (continued)



FROV45SC4

| Part Number | Part Description | Couplers Required | Std. Pkg. Qty. | Std. Ctn. Qty. |
|---|---|-------------------|----------------|----------------|
| Split Cover for 4x4 Outside Vertical 45° Angle Fitting | | | | |
| FROV45SC4YL | Optional split cover for the outside vertical 45° angle fitting FROV454X4YL. Snap-on feature allows cover to be installed and removed with no tools required. Creates radiused 3/4" (19mm) opening for easy access to add or remove cables. | — | 1 | 5 |



FROVRA4X4

| | | | | |
|---|--|-----------------------|---|---|
| 4x4 Outside Vertical Right Angle Fitting | | | | |
| FROVRA4X4YL | Attaches to 4x4 channel and/or fittings to create a 90° vertical turn down from a straight horizontal run. Accepts optional split cover FROVRASC4YL. | (2 pcs.) FRBC4X4YL | 1 | 5 |



FROVRASC4

| | | | | |
|---|---|---|---|---|
| Split Cover for 4x4 Outside Vertical Right Angle Fitting | | | | |
| FROVRASC4YL | Optional split cover for the outside vertical right angle fitting FROVRA4X4YL. Snap-on feature allows cover to be installed and removed with no tools required. Creates radiused 3/4" (19mm) opening for easy access to add or remove cables. | — | 1 | 5 |



FRUPS4X4

| | | | | |
|-----------------------------|---|---|---|---|
| 4x4 Up Spout Fitting | | | | |
| FRUPS4X4YL | Allows cable to be directed upward out of the channel deployed directly below racks and cabinets in underfloor installations. Snaps directly onto the channel and can be positioned to allow cables to be laid in. A 1" (25.4mm) top bezel is included. Other fittings can be installed for specific applications including FTR4X4YL and FIDT4X4BL. | — | 1 | 5 |



FRRF6FR4

| | | | | |
|--|--|--|---|---|
| 6x4 to 4x4 FIBERRUNNERS Reducer Fitting | | | | |
| FRRF6FR4YL | Attaches any 6x4 FIBERRUNNER fitting or channel to any 4x4 FIBERRUNNER fitting or channel. Accepts split cover FRRF6FR4SCYL. | (1 pc.) FRBC6X4YL (1 pc.) FRBC4X4YL | 1 | 5 |

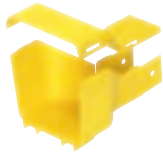


FRRF6FR4SC

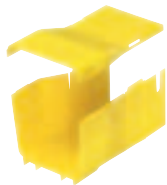
| | | | | |
|---|--|---|---|---|
| Split Cover for 6x4 to 4x4 FIBERRUNNER Reducer Fitting | | | | |
| FRRF6FR4SCYL | Optional split cover for the 6x4 FIBERRUNNER to 4x4 FIBERRUNNER reducer fitting FRRF6FR4YL. Snap-on feature allows cover to be installed and removed with no tools required. Creates radiused 3/4" (19mm) opening for easy access to add or remove cables. | — | 1 | 5 |

For other color replace suffix YL (Yellow) with OR (Orange).

4x4 FIBERRUNNER™ System Fittings (continued)



FRRF4FD2



FRRF4FD4

| Part Number | Part Description | Couplers Required | Std. Pkg. Qty. | Std. Ctn. Qty. |
|--|--|----------------------|----------------|----------------|
| 4x4 FIBERRUNNER to 2x2 FIBER-DUCT™ Reducer Fitting with Cover | | | | |
| FRRF4FD2YL | Attaches any 4x4 FIBERRUNNER fitting or channel to the 2x2 FIBER-DUCT channel, S2X2YL6 or E2X2YL6. Includes solid cover. | (1 pc.) FRBC4X4YL | 1 | 5 |
| 4x4 FIBERRUNNER to 4x4 FIBER-DUCT Reducer Fitting with Cover | | | | |
| FRRF4FD4YL | Attaches any 4x4 FIBERRUNNER fitting or channel to the 4x4 FIBER-DUCT channel, S4X4YL6 or E4X4YL6. Includes solid cover. | (1 pc.) FRBC4X4YL | 1 | 5 |

For other color replace suffix YL (Yellow) with OR (Orange).

FIBERRUNNER™ Accessories



FRCUT



FR38DR
FR716DR



FR516DR



FR38BIT
FR716BIT



FRUIB-X

| Part Number | Part Description | Std. Pkg. Qty. | Std. Ctn. Qty. |
|------------------------------------|---|----------------|----------------|
| Miter Box and Saw | | | |
| FRCUT | Used to cut 2x2, 4x4 and 6x4 <i>FIBERRUNNER</i> channel and hinged cover, 4x4 <i>FIBER-DUCT</i> ™ channel and cover and 2x2 <i>FIBER-DUCT</i> channel and cover. | 1 | 0 |
| 3/8" Nut Driver | | | |
| FR38DR | Used to disassemble 4x4, 6x4 and 12x4 <i>FIBERRUNNER</i> couplers when required. | 1 | 10 |
| 5/16" Nut Driver | | | |
| FR516DR | Used to disassemble 2x2 <i>FIBERRUNNER</i> couplers when required. | 1 | 10 |
| 7/16" Nut Driver | | | |
| FR716DR | Used to assemble <i>QUIKLOCK</i> ™ bracket slide clamps. | 1 | 10 |
| 3/8" Nut Driver Bit | | | |
| FR38BIT | Nonmagnetic nut driver bit for power tools. Shank is 1/4" hex. Used to disassemble 4x4, 6x4 and 12x4 <i>FIBERRUNNER</i> couplers when required. | 1 | 10 |
| 7/16" Nut Driver Bit | | | |
| FR716BIT | Nonmagnetic nut driver bit for power tools. Shank is 1/4" hex. Used to assemble <i>QUIKLOCK</i> bracket slide clamps. | 1 | 10 |
| Universal Innerduct Bracket | | | |
| FRUIB-X | Used to secure any size corrugated tubing or inner-duct to any surface including equipment racks and channel or fittings. Two 1/4" (6.3 mm) holes must be drilled through to secure brackets. | 10 | 100 |

Slit Corrugated Loom Tubing for Fiber Optic Applications

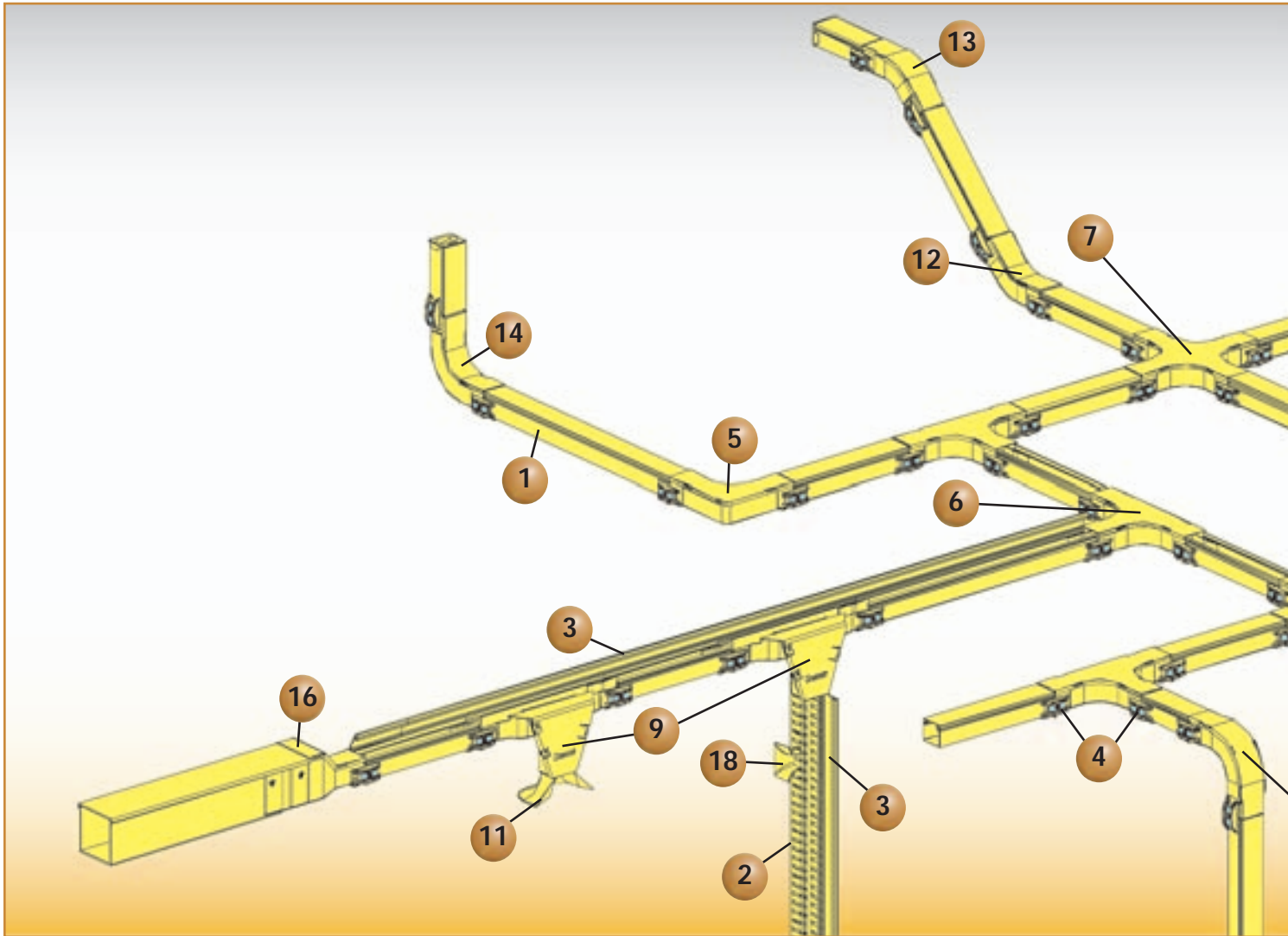


CLT150F

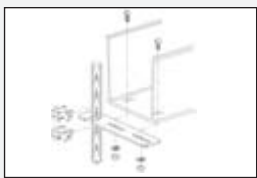
| Part Number | Part Description | Std. Pkg. Qty. | Std. Ctn. Qty. |
|-------------|--|----------------|----------------|
| CLT150F-X3 | <i>PANDUIT</i> ® Corrugated Loom Tubing is a flexible channel that can be utilized to transfer cable from the <i>FIBERRUNNER</i> Routing Systems to the rack. It contains a lengthwise slit that makes it easy to install cables into the tubing. Made from polyethylene material. Inside diameter is 1.5" (38.1mm) and outside diameter 1.7" (43.2mm). Sold in 10' rolls. | 1 | — |

For other colors replace suffix X3 (Orange) with X4 (Yellow) or X20 (Black).
Order number of rolls required, in multiples of Standard Package Quantity.

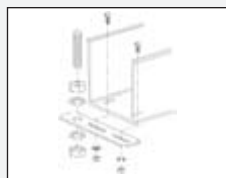
2x2 **FIBER-RUNNER** Routing System Roadmap



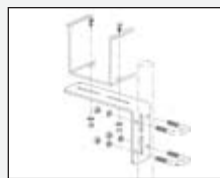
FIBER-DUCT™ Mounting Brackets



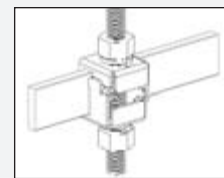
Existing Threaded Rod Bracket for *FIBER-DUCT* System



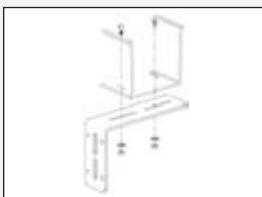
New Threaded Rod Bracket for *FIBER-DUCT* System



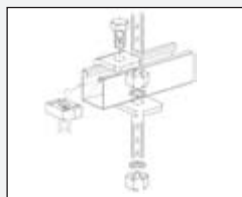
Under-Floor Pedestal Bracket for *FIBER-DUCT* System



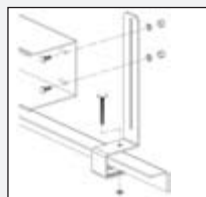
Two Piece Ladder Rack Bracket for Attaching Threaded Rod to 1 1/2"-2" Ladder Rack



"L" Wall Mount Bracket for *FIBER-DUCT* System



Strut Metal Framing Bracket



Top Rail of Rack Support Bracket



Bracket for Attaching Threaded Rod to 1 1/2" Ladder Rack

System Overview

Modules

Ultimate ID System & Work Area

Zone Cabling

Patch Panels Copper Patch Cords & Punchdowns

Fiber Connectors Enclosures & Patch Cords

Racks & Cable Management

Grounding & Bonding

Fiber Routing

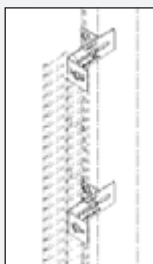
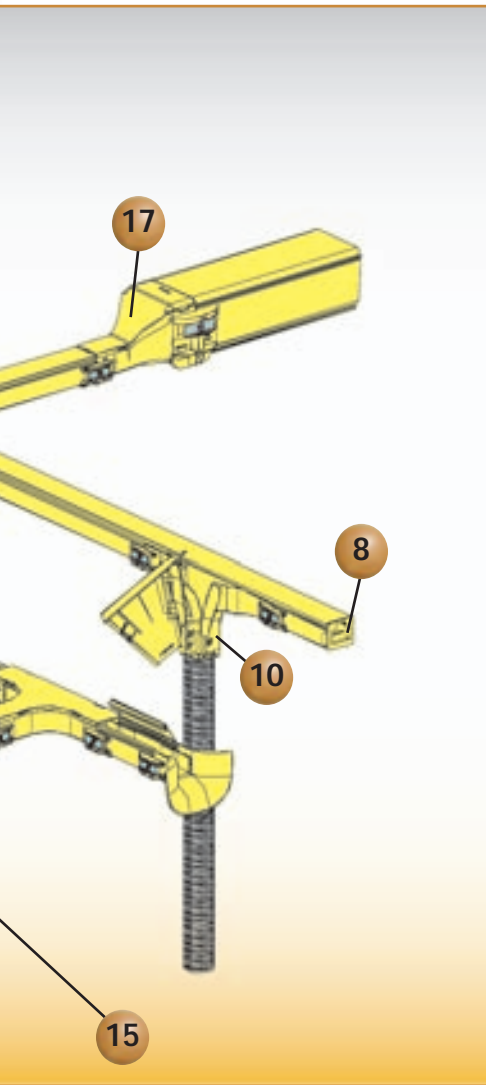
Surface Raceway

Labeling & Administration

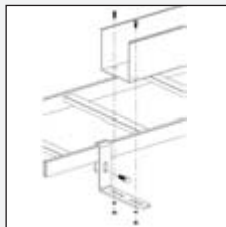
Cable Ties & Accessories

Supplementary Technical Information














Glossary & Index



Adjustable "Z" Bracket



Ladder Rack Bracket for FIBER-DUCT System

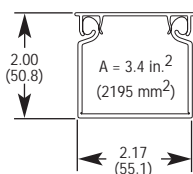
-  **1** 2x2 FIBERRUNNER™ Hinged Channel (see [page I36](#))
-  **2** 2x2 FIBERRUNNER Hinged Slotted Channel (see [page I36](#))
-  **3** 2x2 FIBERRUNNER Hinged Snap-On Cover (see [page I36](#))
-  **4** 2x2 QUIKLOCK™ Coupler (see [page I37](#))
-  **5** 2x2 Horizontal Right Angle Fitting (see [page I43](#))
-  **6** 2x2 Horizontal Tee Fitting (see [page I43](#))
-  **7** 2x2 Four Way Cross Fitting (see [page I43](#))
-  **8** 2x2 End Cap Fitting (see [page I37](#))
-  **9** 2x2 Vertical Tee Fitting (see [page I37 and I43](#))
-  **10** 1-Port Spillout to 1.5" (38mm) Inside Diameter Corrugated Tubing (see [page I43](#))
-  **11** 3-Sided BRC Trumpet Spillout for 2x2 Exit (see [page I44](#))
-  **12** 2x2 Inside Vertical 45° Angle Fitting (see [page I44](#))
-  **13** 2x2 Outside 45° Angle Fitting (see [page I44](#))
-  **14** 2x2 Inside Vertical Right Angle Fitting (see [page I44](#))
-  **15** 2x2 Outside Vertical Right Angle Fitting (see [page I44](#))
-  **16** 4x4 FIBER-DUCT™ to 2x2 FIBER-DUCT Reducer Fitting (see [page I44](#))
-  **17** 4x4 FIBERRUNNER to 2x2 FIBER-DUCT Reducer Fitting (see [page I32](#))
-  **18** 2x2 Hinged Channel 1" Bend Radius Control Fitting (see [page I45](#))

2x2 FIBERRUNNER™ Routing System

Cable Fills for FIBERRUNNER 2x2 Cable Routing System

The maximum amounts may vary according to the cable fill installation methods, straightness of cables, etc.

SPEC= 40% cablefill — the recommended design in cable capacity. Leaves room for future moves, adds and changes. **MAX= 60% cablefill** — the maximum cable quantity based on cable interweaving and packing factors.



| System Type | Area in² | Fiber Cable | | | | | | | | Data Grade Cables | |
|------------------------|----------|-------------|-----|----------|-----|----------|-----|----------|-----|--------------------------|-----|
| | | DIAMETER | | DIAMETER | | DIAMETER | | DIAMETER | | 24 AWG UTP/CM CAT5e 4 pr | |
| | | SPEC | MAX | SPEC | MAX | SPEC | MAX | SPEC | MAX | SPEC | MAX |
| FIBERRUNNER 2x2 System | 3.4 | 436 | 654 | 277 | 416 | 124 | 186 | 7 | 10 | 36 | 55 |

Channel cutting instructions: For optimum results, use FRCUT miter box and saw. For larger quantities use a plastic cutting saw blade for clean, burr-free cuts. Recommend: Carbide 80T or 100T; .090" thickness, .125" kerf.

2x2 FIBERRUNNER Routing System — Channels and Cover

- 2x2 system ideal for use with smaller cable counts
- Multiple spillout options provide versatility to mate to various equipment and rack configurations
- **QUIKLOCK™** couplers reduce system installation time dramatically
- Channel, covers, fittings and other non-metallic system components made from V-O flame class rated material
- UL Listed
- Compatible with all sizes of **PANDUIT® FIBERRUNNER** and **PANDUIT FIBER-DUCT™** routing systems, cable management products and racks
- 2x2 FIBERRUNNER Hinged and Slotted Channels can be used with 2x2 Fiber-Duct fittings (see pages I43, I44 and I45) and brackets (see pages I46 and I47).
- Compliant with the applicable tests in Telcordia GR-63-CORE Network Equipment Building Systems



HS2X2



H2X2



HC2

| Part Number | Part Description | Std. Pkg. Qty. | Std. Ctn. Qty. |
|---|---|----------------|----------------|
| 2x2 FIBERRUNNER Hinged Channel | | | |
| HS2X2YL6NM | Used to carry the cables throughout the system. Accepts hinged cover HC2YL6. Use QUIKLOCK coupler FBC2X2YL to attach channel and/or fittings. | 6 | 120 |
| 2x2 FIBERRUNNER Hinged Slotted Channel | | | |
| H2X2YL6 | Used to carry the cables vertically to the front or the back of equipment racks throughout the system. Accepts hinged cover HC2YL6. Extra supports required when used in horizontal applications. Use QUIKLOCK coupler FBC2X2YL to attach channel and/or fittings. | 6 | 120 |
| 2x2 Snap-On Hinged Cover | | | |
| HC2YL6 | Optional snap-on cover for hinged channel HS2X2YL6 or H2X2YL6. The innovative cover can hinge open to 90° from either side of the channel and be removed completely if desired. | 6 | 120 |

For other color replace suffix YL (Yellow) with OR (Orange).
Order number of feet required, in multiples of standard 6' length increments.

2x2 FIBERRUNNER™ QUIKLOCK™ Coupler

- Pre-assembled to provide fast mechanical assembly of components
- No tools required for installation, bolts loosen for component disassembly



FBC2X2

| Part Number | Part Description | Std. Pkg. Qty. | Std. Ctn. Qty. |
|-------------|---|----------------|----------------|
| FBC2X2YL | Pre-assembled coupler quickly joins two sections of hinged channel and/or fittings. Mechanically attaches without tightening bolts. Bolts release using 5/16" nut driver to allow coupler to be removed if necessary. | 1 | 5 |

For other color replace suffix YL (Yellow) with OR (Orange).

2x2 FIBERRUNNER System Fittings



FHDEC2X2



FVTHD2X2



FIDT2X2



TRC2HDBL

| Part Number | Part Description | Couplers Required | Std. Pkg. Qty. | Std. Ctn. Qty. |
|---|---|----------------------|----------------|----------------|
| 2x2 End Cap Fitting | | | | |
| FHDEC2X2YL | Used for closing off open ends of the hinged channel or fittings. No coupler required. Push-on installation. | — | 1 | 5 |
| 2x2 Vertical Tee Fitting | | | | |
| FVTHD2X2YL | Attaches to 2x2 channel to create a 90° vertical drop from a horizontal run. Hinged door included. Accepts channel cover in conjunction with channel. Use QUIKLOCK coupler FBC2X2YL with HS2X2YL6 or H2X2YL6 channels. Use snap rivets NR2WH-L or bolts F14PN-L with S2X2YL6 or E2X2YL6 channels. Also accepts FIDT2X2YL. | (2 pcs.) FBC2X2YL | 1 | 5 |
| 1 Port Spillout to 1.5" (38mm) Inside Diameter Corrugated Tubing | | | | |
| FIDT2X2YL | Used to route cable into one piece of 1.5" (38mm) diameter split corrugated tubing. Used with FIBERRUNNER spill-over fitting FRSPYL, 2x2 FIBER-DUCT™ fittings and the 2x2 FIBERRUNNER hinged channel. Securely holds split corrugated tubing to ensure system integrity and easy access to add or remove cables. | — | 1 | 5 |
| 2x2 FIBERRUNNER Bend Radius Control Trumpet | | | | |
| TRC2HDBL | Bend radius control trumpet for exiting at the sidewall of 2" wall heights of Type H Hinged Cover Wiring Duct channels. Black color only. | — | 1 | 10 |

For other color replace suffix YL (Yellow) with OR (Orange).

NOTES

| | | | | | | | | | | | | | |
|-----------------|---------|--------------------------------|--------------|--|---|--------------------------|---------------------|---------------|-----------------|---------------------------|--------------------------|-------------------------------------|------------------|
| System Overview | Modules | Ultimate ID System & Work Area | Zone Cabling | Patch Panels Copper Patch Cords & Punchdowns | Fiber Connectors Enclosures & Patch Cords | Racks & Cable Management | Grounding & Bonding | Fiber Routing | Surface Raceway | Labeling & Administration | Cable Ties & Accessories | Supplementary Technical Information | Glossary & Index |
|-----------------|---------|--------------------------------|--------------|--|---|--------------------------|---------------------|---------------|-----------------|---------------------------|--------------------------|-------------------------------------|------------------|

FIBER-DUCT™ ROUTING SYSTEM

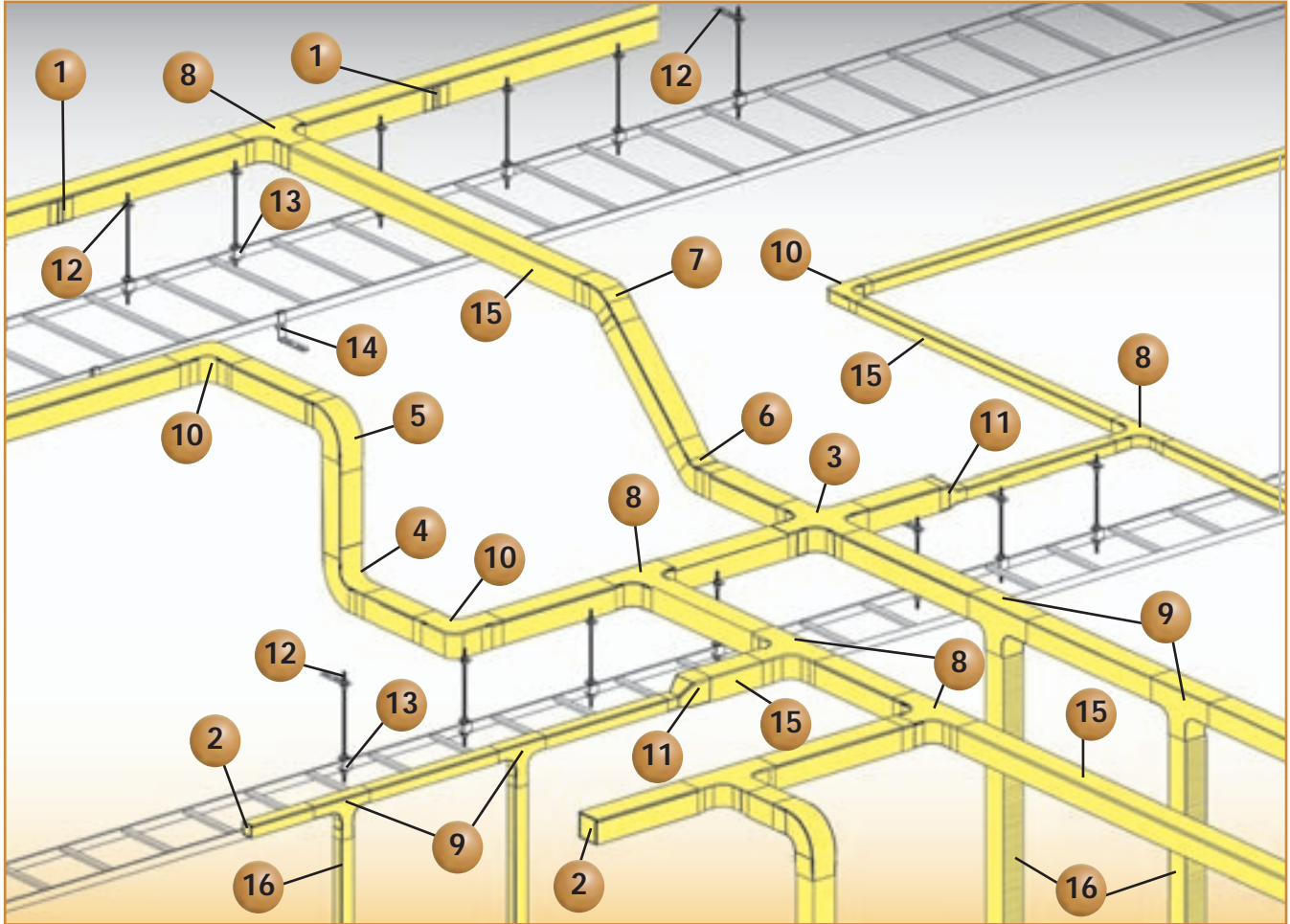
The *PANDUIT*® Network Connectivity Group provides leading solutions for cable routing. These routing products are compatible with our cable management solutions increasing your ability to maintain an orderly and clean work environment, implement quick and easy moves, adds and changes and maintain the integrity of your fiber and copper cabling plant in order to maximize long term performance.



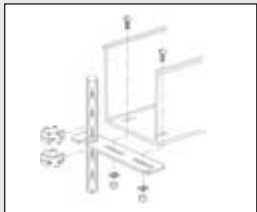
- Two system sizes available: 4x4 and 2x2
- Minimum 2" (50.8mm) bend radius fittings protect against signal loss due to excessive cable bends
- Optimized for use with *PAN-NET*® Network Connectivity System
- Snap-on non-slip covers
- Compatible with *PANDUIT FIBERRUNNER*® 12x4, 6x4, 4x4 and 2x2 Routing Systems

The 2x2 and 4x4 *FIBER-DUCT* Routing Systems are comprised of channel, fittings and brackets designed to segregate, route and protect fiber optic and copper cabling to and between racks within the telecommunications room.

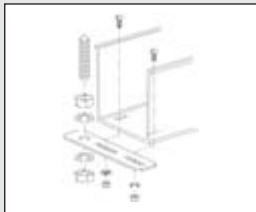
2x2 and 4x4 FIBER-DUCT™ Routing Systems Roadmap



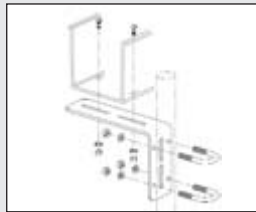
FIBER-DUCT Mounting Brackets



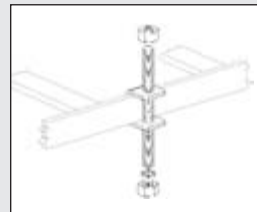
Existing Threaded Rod Bracket for FIBER-DUCT System



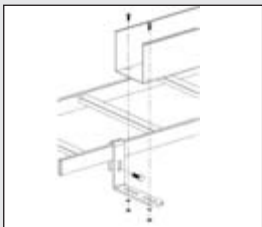
New Threaded Rod Bracket for FIBER-DUCT System



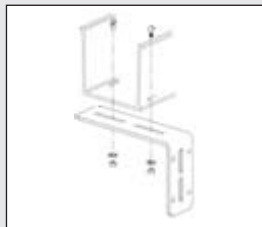
Under-Floor Pedestal Bracket for FIBER-DUCT System



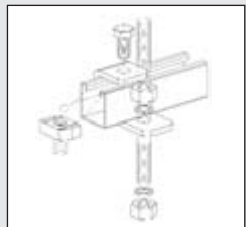
Bracket for Attaching Threaded Rod to 1 1/2" Ladder Rack



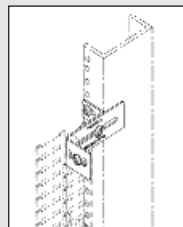
Ladder Rack Bracket for FIBER-DUCT System



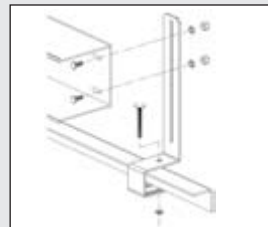
"L" Wall Mount Bracket for FIBER-DUCT System



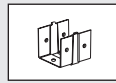
Strut Metal Framing Bracket



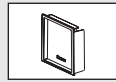
Adjustable "Z" Bracket



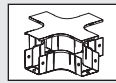
Top Rail of Rack Support Bracket



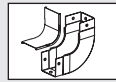
1 Coupler Fitting (see page I43)



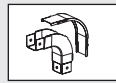
2 End Cap Fitting (see page I43)



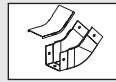
3 Four Way Cross Fitting (see page I43)



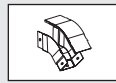
4 Inside Vertical Right Angle (see page I44)



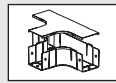
5 Outside Vertical Right Angle (see page I44)



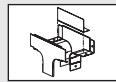
6 Inside Vertical 45° Angle (see page I44)



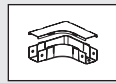
7 Outside Vertical 45° Angle (see page I44)



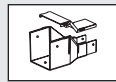
8 Horizontal Tee Fitting (see page I43)



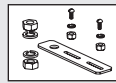
9 Vertical Tee Fitting (see page I43)



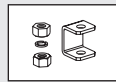
10 Right Angle Fitting (see page I43)



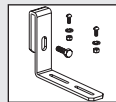
11 Reducer Fitting (see page I44)



12 Mounting Kit for New Thd. Rod Assembly (see page I46)



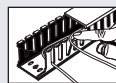
13 Bracket for Attaching Threaded Rod to Ladder Rack (see page I46)



14 Ladder Rack Bracket (see page I46)



15 *FIBER-DUCT*™ Channel (see page I42)

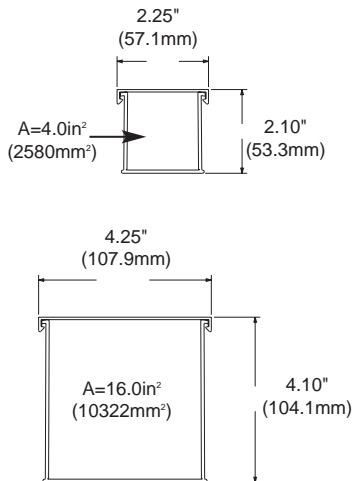


16 *FIBER-DUCT* Slotted Channel (see page I42)

Cable Fills for 2x2 and 4x4 *FIBER-DUCT*™ Routing System

The maximum amounts may vary according to the cable fill installation methods, straightness of cables, etc.

SPEC= 40% cablefill — the recommended design in cable **MAX= 60% cablefill** — the maximum cable quantity based on cable interweaving and packing factors. Leaves room for future moves, adds and changes.

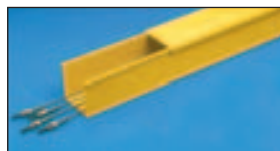


| System Type | Area in² | Fiber Cable | | | | | | | | Data Grade Cables | | | |
|------------------------------|----------|---------------|------|------|------|---------------|-----|---------------|-----|-------------------|-----|---------------|--|
| | | .063" (1.6mm) | | | | .079" (2.0mm) | | .118" (3.0mm) | | .492" (12.5mm) | | .217" (5.5mm) | |
| | | SPEC | MAX | SPEC | MAX | SPEC | MAX | SPEC | MAX | SPEC | MAX | | |
| <i>FIBER-DUCT</i> 2x2 System | 4.0 | 466 | 699 | 326 | 490 | 146 | 219 | 8 | 13 | 43 | 65 | | |
| <i>FIBER-DUCT</i> 4x4 System | 16.0 | 1903 | 2854 | 1306 | 1959 | 585 | 878 | 34 | 50 | 173 | 260 | | |

Channel cutting instructions: For optimum results, use FRCUT miter box and saw. For larger quantities use a plastic cutting saw blade for clean, burr-free cuts. Recommend: Carbide 80T or 100T; .090" thickness, .125" kerf.

2x2 and 4x4 *FIBER-DUCT* Routing Systems

- Channel, covers, fittings and other non-metallic system components made from V-0 flame class rated material
- Snap on non-slip covers
- UL Listed
- Compatible with *PANDUIT*® *FIBERRUNNER*™ 2x2, 4x4, 6x4 and 12x4 Routing Systems



**S2x2
S4x4**



**E2x2
E4x4**

| Part Number | Part Description | System Size | Std. Pkg. Qty. | Std. Ctn. Qty. |
|--|--|-------------|----------------|----------------|
| <i>FIBER-DUCT</i> Channel | | | | |
| S2X2YL6NM | Used to carry the cables throughout the <i>FIBER-DUCT</i> routing system. Accepts cover C2YL6. Cover sold separately. | 2x2 | 6 | 120 |
| S4X4YL6NM | Used to carry the cables throughout the <i>FIBER-DUCT</i> routing system. Accepts cover C4YL6. Cover sold separately. | 4x4 | 6 | 60 |
| <i>FIBER-DUCT</i> Slotted Channel | | | | |
| E2X2YL6 | Used to carry the cables vertically to the front or the back of equipment racks throughout the system. Accepts cover C2YL6. Extra supports required when used in horizontal applications. Cover sold separately. | 2x2 | 6 | 120 |
| E4X4YL6 | Used to carry the cables vertically to the front or the back of equipment racks throughout the system. Accepts cover C4YL6. Extra supports required when used in horizontal applications. Cover sold separately. | 4x4 | 6 | 60 |
| <i>FIBER-DUCT</i> Cover | | | | |
| C2YL6 | Cover for <i>FIBER-DUCT</i> channel and <i>FIBER-DUCT</i> slotted channel. Non-slip cover design incorporates integral high friction lining to inhibit cover movement. | 2x2 | 6 | 120 |
| C4YL6 | Cover for <i>FIBER-DUCT</i> channel and <i>FIBER-DUCT</i> slotted channel. Non-slip cover design incorporates integral high friction lining to inhibit cover movement. | 4x4 | 6 | 120 |

NOTE: Available with mounting holes. To order, delete NM from the part number. For fastest installation use NR2WH-L or NR4BL-L Snap Rivets. For other color replace suffix YL (Yellow) with OR (Orange). Order number of feet required, in multiples of standard 6' length increments.

FIBER-DUCT™ System Fittings



| Part Number | Part Description | System Size | Std. Pkg. Qty. | Std. Ctn. Qty. |
|---|---|-------------|----------------|----------------|
| Coupler Fitting | | | | |
| FCF2X2YL | Used to join two sections of duct together. <i>FIBER-DUCT</i> coupler is not required at each fitting connection. | 2x2 | 1 | 5 |
| FCF4X4YL | | 4x4 | 1 | 5 |
| Horizontal Right Angle Fitting | | | | |
| FRA2X2YL | Attaches to channel to create a 90° horizontal turn from a straight horizontal run. Cover included. | 2x2 | 1 | 5 |
| FRA4X4YL | | 4x4 | 1 | 5 |
| Horizontal Tee Fitting | | | | |
| FT2X2YL | Attaches to channel to create a 90° horizontal branch from a straight horizontal run. Cover included. | 2x2 | 1 | 5 |
| FT4X4YL | | 4x4 | 1 | 5 |
| Four Way Cross Fitting | | | | |
| FFWC2X2YL | Attaches to channel to create a horizontal four way cross intersection. Cover included. | 2x2 | 1 | 5 |
| FFWC4X4YL | | 4x4 | 1 | 5 |
| End Cap Fitting | | | | |
| FEC2X2YL | Used for closing off open ends of the channel. No coupler required, push-on installation. | 2x2 | 1 | 5 |
| FEC4X4YL | | 4x4 | 1 | 5 |
| 2x2 Vertical Tee Fitting | | | | |
| FVTHD2X2YL | Attaches to 2x2 channel to create a 90° vertical drop from a horizontal run. Hinged door included. Accepts channel cover in conjunction with channel. Use <i>QUIKLOCK™</i> coupler FBC2X2YL with HS2X2YL6 or H2X2YL6 channels. Use snap rivets NR2WH-L or bolts F14PN-L with S2X2YL6 or E2X2YL6 channels. Also accepts FIDT2X2YL. | 2x2 | 1 | 5 |
| Vertical Tee Fitting | | | | |
| FVT4X4YL | Attaches to channel to create a 90° vertical drop from a horizontal run. Accepts FIDT4X4BL, FTR4X4YL, S4X4YL6 or E4X4YL6 directly. | 4x4 | 1 | 5 |
| 1-Port Spillout to 1.5" (38mm) Inside Diameter Corrugated Tubing | | | | |
| FIDT2X2YL | Used to route cable into one piece of 1.5" (38mm) diameter split corrugated tubing. Used with <i>FIBERRUNNER™</i> spill-over fitting FRSPYL, 2x2 <i>FIBER-DUCT</i> fittings and the 2x2 <i>FIBERRUNNER</i> hinged channel. Securely holds split corrugated tubing to ensure system integrity and easy access to add or remove cables. | 2x2 | 1 | 5 |
| 2-Port Spillout to 1.5" (38mm) Inside Diameter Corrugated Tubing | | | | |
| FIDT4X4BL | Used to route cable into one or two pieces of 1.5" (38mm) diameter split corrugated tubing. Used with FRVT6X4YL, FRVT4X4YL or FVT4X4YL. Securely holds corrugated split tubing to ensure system integrity and easy access to add or remove cables. Black color only. | 4x4 | 1 | 5 |
| 3-Sided Vertical Tee Trumpet Spillout | | | | |
| FTR4X4YL | Used to limit the bend radius of the cable to 2" (50.8mm) when exiting from a 4x4 or 6x4 <i>FIBERRUNNER</i> vertical tee fitting and 4x4 <i>FIBER-DUCT</i> fittings. | 4x4 | 1 | 5 |

For other color replace suffix YL (Yellow) with OR (Orange).
Fittings include 5/16" assembly holes for fast mechanical fastening.

| |
|--|
| System Overview |
| Modules |
| Ultimate ID System & Work Area |
| Zone Cabling |
| Patch Panels Copper Patch Cords & Punchdowns |
| Fiber Connectors Enclosures & Patch Cords |
| Racks & Cable Management |
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| Fiber Routing |
| Surface Raceway |
| Labeling & Administration |
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FIBER-DUCT™ System Fittings (continued)



FTR2X2



**FIV452X2
FIV454X4**



**FOV452X2
FOV454X4**



**FIVRA2X2
FIVRA4X4**



**FOVRA2X2
FOVRA4X4**



FRF42



FRF4544BL

| Part Number | Part Description | System Size | Std. Pkg. Qty. | Std. Ctn. Qty. |
|-------------|------------------|-------------|----------------|----------------|
|-------------|------------------|-------------|----------------|----------------|

3-Sided BRC Trumpet Spillover for 2x2 Exit

| | | | | |
|----------|---|-----|---|---|
| FTR2X2YL | Used to limit the bend radius of the cable to 2" (50.8mm) when exiting from a <i>FIBERRUNNER</i> ™ spill-over fitting FRSPYL or from 2x2 <i>FIBER-DUCT</i> channel. | 2x2 | 1 | 5 |
|----------|---|-----|---|---|

Inside Vertical 45° Angle Fitting

| | | | | |
|------------|---|-----|---|---|
| FIV452X2YL | Attaches to channel to create a 45° upward angle from a straight horizontal run. Used with outside vertical 45° angle fitting FOV452X2YL or FOV454X4YL to change level of straight horizontal runs. Cover included. | 2x2 | 1 | 5 |
| FIV454X4YL | | 4x4 | 1 | 5 |

Outside Vertical 45° Angle Fitting

| | | | | |
|------------|--|-----|---|---|
| FOV452X2YL | Attaches to channel to create a 45° downward angle from a straight horizontal run. Used with inside vertical 45° angle fitting FIV452X2YL or FIV454X4YL to change level of straight horizontal runs. Cover included. | 2x2 | 1 | 5 |
| FOV454X4YL | | 4x4 | 1 | 5 |

Inside Vertical Right Angle Fitting

| | | | | |
|------------|---|-----|---|---|
| FIVRA2X2YL | Attaches to channel to create a 90° upward angle from a straight horizontal run. Used with outside vertical 90° angle fitting FOVRA2X2YL or FOVRA4X4YL to change level of straight horizontal runs. Cover included. | 2x2 | 1 | 5 |
| FIVRA4X4YL | | 4x4 | 1 | 5 |

Outside Vertical Right Angle Fitting

| | | | | |
|------------|--|-----|---|---|
| FOVRA2X2YL | Attaches to channel to create a 90° downward angle from a straight horizontal run. Used with inside vertical 90° angle fitting FIVRA2X2YL or FIVRA4X4YL to change level of straight horizontal runs. Cover included. | 2x2 | 1 | 5 |
| FOVRA4X4YL | | 4x4 | 1 | 5 |

4x4 to 2x2 FIBER-DUCT Reducer Fitting

| | | | | |
|---------|---|------------|---|---|
| FRF42YL | Joins any 4x4 <i>FIBER-DUCT</i> fitting to the 2x2 <i>FIBER-DUCT</i> channel, S2x2YL6 or E2X2YL6. Includes cover. | 2x2 4x4 | 1 | 5 |
|---------|---|------------|---|---|

4x4 FIBER-DUCT Channel to 4x5 Standard Vertical Slotted Duct Fitting

| | | | | |
|-----------|---|-----|---|---|
| FRF4544BL | Connects 4x4 <i>FIBER-DUCT</i> channel to 4x5 standard vertical slotted duct. Hardware for attaching is included. Black color only. | 4x4 | 1 | 5 |
|-----------|---|-----|---|---|

For other color replace suffix YL (Yellow) with OR (Orange).
Fittings include 5/16" assembly holes for fast mechanical fastening.

FIBER-DUCT™ Bend Radius Control Trumpet

- Provides method to transition cabling into rack system
- Maintains 1" (25.4mm) bend radius control



TRC2BL



TRC4BL

| Part Number | Part Description | System Size | Std. Pkg. Qty. | Std. Ctn. Qty. |
|-------------|--|-------------|----------------|----------------|
| TRC2BL | Bend radius control trumpet for exiting at the sidewall of 2" wall heights of Type G or Type FS Wiring Duct channels | 2x2 | 1 | 10 |
| TRC4BL | Bend radius control trumpet for exiting at the sidewall of 4" wall heights of Type G or Type FS Wiring Duct channels | 4x4 | 1 | 10 |

FIBER-DUCT Accessories



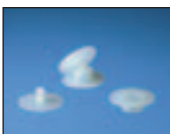
FITF2X2



FITF4X4A



FITF4X4B



NR2
NR4



F14PWN-L



F14PN-L



FBB

| Part Number | Part Description | System Size | Std. Pkg. Qty. | Std. Ctn. Qty. |
|--|---|-------------|----------------|----------------|
| Innerduct Transition Fitting - 2x2 Size | | | | |
| FITF2X2 | Provides transition from 2x2 FIBER-DUCT Routing System to 3/4" (19mm) or 1" (25.4mm) inner duct. | 2x2 | 1 | 10 |
| Innerduct Transition Fitting - 4x4 Size | | | | |
| FITF4X4A | Provides transition from 4x4 FIBER-DUCT Routing System to two pieces of 1" (25.4mm) inner duct. | 4x4 | 1 | 10 |
| Innerduct Transition Fitting - 4x4 Size | | | | |
| FITF4X4B | Provides transition from 4x4 FIBER-DUCT Routing System to two pieces of 1 1/4" (31.8mm) inner duct. | 4x4 | 1 | 10 |
| Snap Rivets | | | | |
| NR2WH-L | Snap rivet fastens channel and fittings together for added strength and rigidity. Snap rivet mounts flush to surfaces. | 2x2 | 50 | 500 |
| NR4BL-L | | 4x4 | 50 | 500 |
| Plastic Bolts and Nuts | | | | |
| F14PWN-L | 1/4" plastic bolts and wing nuts fastens channel and fittings together for added strength and rigidity. | 2x2 | 50 | 500 |
| F14PN-L | | 4x4 | 50 | 500 |
| F14PN-L | 1/4" plastic bolts and hex nuts fastens channel and fittings together for added strength and rigidity. | 2x2 | 50 | 500 |
| F14PN-L | | 4x4 | 50 | 500 |
| Snap Bracket Clip | | | | |
| FBB2-X | Snap bracket enables the FIBER-DUCT channel to be quickly and securely mounted. Contains all hardware for assembly to any FIBER-DUCT bracket. | 2x2 | 10 | 100 |
| FBB4-X | | 4x4 | 10 | 100 |

FIBER-DUCT™ Mounting Brackets

System Overview

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Zone Cabling

Patch Panels Copper Patch Cords & Punchdowns

Fiber Connectors Enclosures & Patch Cords

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Grounding & Bonding

Fiber Routing

Surface Raceway

Labeling & Administration

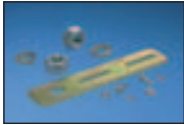
Cable Ties & Accessories

Supplementary Technical Information

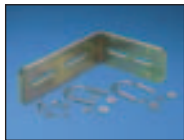
Glossary & Index



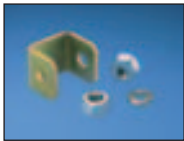
FTRBE12/FTRBE12M
FTRBE58



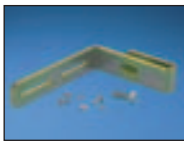
FTRBN12/FTRBN12M
FTRBN58



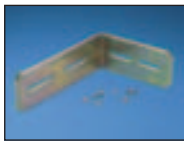
FUSB



FLB12X15
FLB58X15
FLB12X20
FLB58X20



FLRB



FLB



FTRB12
FTRB58



FZBA1.5X4

| Part Number | Part Description | For Threaded Rod Size | Std. Pkg. Qty. | Std. Ctn. Qty. |
|---|---|-----------------------|----------------|----------------|
| Existing Threaded Rod Bracket for FIBER-DUCT System | | | | |
| FTRBE12 | Used for supporting the 2x2 and 4x4 FIBER-DUCT Systems from existing threaded rod installations. Bracket is secured to threaded rod with two split nuts. Contains hardware for attaching to threaded rods and hardware for mounting channel to bracket. | 1/2" | 1 | 10 |
| FTRBE58 | | 5/8" | 1 | 10 |
| FTRBE12M | | 12mm | 1 | 10 |
| New Threaded Rod Bracket for FIBER-DUCT System | | | | |
| FTRBN12 | Used for supporting the 2x2 and 4x4 FIBER-DUCT Systems from new threaded rod installations. Bracket is secured to threaded rod with two nuts. Contains hardware for attaching to threaded rods and hardware for mounting channel to bracket. | 1/2" | 1 | 10 |
| FTRBN58 | | 5/8" | 1 | 10 |
| FTRBN12M | | 12mm | 1 | 10 |
| Under-Floor Pedestal for FIBER-DUCT System | | | | |
| FUSB | Used to support the 2x2 and 4x4 FIBER-DUCT Systems by attaching to under floor pedestal (not included). Use on pedestals up to 1" in diameter. Bracket contains hardware to attach to pedestal and hardware for mounting channel to bracket. | — | 1 | 10 |
| Bracket for Attaching Threaded Rod to 1 1/2" Ladder Rack | | | | |
| FLB12X15 | Bracket attaches to 3/8" (9.5mm) wide x 1 1/2" (38.1mm) ladder rack rail. Bracket accepts threaded rod (not included). Contains bracket and hardware for attaching bracket to ladder rack. | 1/2" | 1 | 10 |
| FLB58X15 | | 5/8" | 1 | 10 |
| Bracket for Attaching Threaded Rod to 2" Ladder Rack | | | | |
| FLB12X20 | Bracket attaches to 3/8" (9.5mm) wide x 2" (50.8mm) ladder rack rail. Bracket accepts threaded rod (not included). Contains bracket and hardware for attaching bracket to ladder rack. | 1/2" | 1 | 10 |
| FLB58X20 | | 5/8" | 1 | 10 |
| Ladder Rack Bracket for FIBER-DUCT System | | | | |
| FLRB | Used to support the 2x2 and 4x4 FIBER-DUCT Systems attaching directly to any 3/8" (9.5mm) x 1 1/2" (38.1mm) or 3/8" (9.5mm) x 2" (50.8mm) ladder rack rail. No threaded rod required. Contains hardware for mounting channel to bracket. | — | 1 | 10 |
| "L" Wall Mount Bracket for FIBER-DUCT System | | | | |
| FLB | Used to support 2x2 and 4x4 FIBER-DUCT Systems by attaching to a wall or the front or back of an equipment rack. Contains hardware for mounting channel to bracket. | — | 1 | 10 |
| Strut Metal Framing Bracket | | | | |
| FTRB12 | Bracket attaches to strut metal framing. Contains bracket and hardware for attaching threaded rod to metal framing. | 1/2" | 1 | 10 |
| FTRB58 | | 5/8" | 1 | 10 |
| Adjustable "Z" Bracket | | | | |
| FZBA1.5X4 | Bracket used to offset FIBER-DUCT System from mounting surface, adjustable from 1.5" (38mm) to 4" (101mm). Typically used on the front of an equipment rack. | — | 1 | 10 |

FIBER-DUCT™ Mounting Brackets (continued)



FMRB



FEIAB58



F2PCLB12
F2PCLB58
F2PCLB12M
F2PCLB58M



FRSLNKT12
FRSLNKT58
FRSLNKT12M
FRSLNKT58M

| Part Number | Part Description | For Threaded Rod Size | Std. Pkg. Qty. | Std. Ctn. Qty. |
|--|--|-----------------------|----------------|----------------|
| Top Rail of Rack Support Bracket | | | | |
| FMRB | Bracket attaches to top rail of equipment rack for added support in a vertical direction. Contains hardware for attaching bracket to an EIA/TIA rack and for mounting channel to bracket. | — | 1 | 10 |
| EIA/TIA Threaded Rod Mounting Bracket | | | | |
| FEIAB58 | Bracket consists of two identical components that clamp onto the crossmembers of standard EIA/TIA racks and are secured with standard hex nuts and split lockwashers (included) tightened onto a length of 5/8" diameter threaded rod (not included). The threaded rod is positioned in the center of the brackets providing a vertical threaded rod stud to mount <i>FIBERRUNNER</i> ™ and <i>FIBER-DUCT</i> threaded rod mounting brackets onto. | 5/8" | 1 | 10 |
| Two Piece Ladder Rack Bracket for Attaching Threaded Rod to 1 1/2" - 2" Ladder Rack | | | | |
| F2PCLB12 | Two piece bracket attaches to 3/8" (9.5mm) wide x 1 1/2" (38.1mm) or 3/8" (9.5mm) wide by 2" (50.8mm) ladder rack rail. Bracket halves slide into position and clamp together on the ladder rack rail, which allows for a one-handed assembly of the threaded rod (not included). Contains bracket and hardware for attaching bracket to ladder rack. | 1/2" | 1 | 10 |
| F2PCLB58 | | 5/8" | 1 | 10 |
| F2PCLB12M | | 12 mm | 1 | 10 |
| F2PCLB58M | | 16 mm | 1 | 10 |
| Split Locking Nut Kit | | | | |
| FRSLNKT12 | Used to secure <i>FIBERRUNNER</i> mounting brackets anywhere along pre-installed threaded rod. Split nuts are opened, placed in desired position, closed and tightened. | 1/2" | 1 | 10 |
| FRSLNKT58 | | 5/8" | 1 | 10 |
| FRSLNKT12M | | 12 mm | 1 | 10 |
| FRSLNKT58M | | 16 mm | 1 | 10 |