# COMMSCOPE<sup>®</sup>

DSX-3 Digital Signal Cross-Connect and Digital Signal Interconnect Products



COPPER CONNECTIVITY SOLUTIONS | 4TH EDITION

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## Introduction Cross-Connect System

Increased demand for optimal network performance has created a greater need for reliable connectivity equipment. CommScope's digital signal cross-connect (DSX) products provide a competitive advantage by managing digital equipment and maintaining superior cable management. DSX equipment is used as a centralized cross-connect interface between network elements (NE), enabling nonintrusive and intrusive access for testing, patching, and circuit reconfiguration without disturbing permanent equipment connections.

## Technology

The DSX interface enables patching, terminating and rearranging of circuits as traffic patterns change and demands on the network grow. At DS3 (44.736 Mbps) digital signal rates, DSX equipment connects NEs such as office repeaters, fiber optic terminals, digital loop carriers, multiplexers, and digital cross-connect systems.

Each NE is permanently cabled to a DSX-3 module. Any two NEs can be connected to each other in a nondedicated manner by means of a semi-permanent cross-connect jumper between

two DSX-3 modules or terminations. The cross-connect jumper allows flexibility for future network reconfiguration. Internal jack circuits provide input/output connections to each digital signal source.

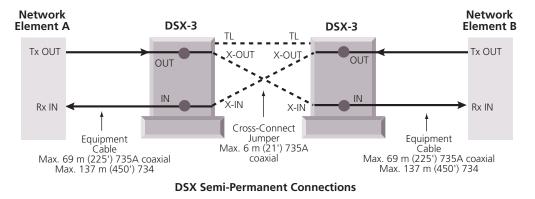
DSX equipment consists of four basic elements:

**IN/OUT Terminations:** Permanently connects the NE to the DSX interface.

**Cross-Connect Terminations:** Connects the two DSX locations carrying the signals from the NEs. The network diagram below shows the semi-permanent connections between DSX equipment.

**Jacks:** IN and OUT switching jacks allow access to the NE's input and output signals for test and patching operations. A MONITOR jack is connected to the OUT jack for nonintrusive access to the output signal. Dual monitor jacks provide bidirectional signal monitoring from one location.

**LEDs:** Flashing LEDs at each end of the DSX circuit quickly and easily identify the cross-connected circuit.



## Application

The DSX system should be placed in a centralized location as opposed to being scattered throughout an office. Whether in a central office, remote site, or wireless bay station or hub, DSX delivers a flexible centralized location to access and monitor network signals.

The management of equipment cables and cross-connect jumpers is addressed at the DSX-3 bay framework, ensuring an organized and expandable network. DSX-3 systems are designed for use with all types of coaxial cable; i.e., 734, 735A, or 0222. The use of smaller diameter coaxial cable (miniature-type coaxial) greatly reduces cable congestion within the DSX-3 system. Maximum cable limits are listed in the network diagram above.

## **Introduction** Connecting with Your Network

Cross-connection encourages seamless expansion, simple rerouting and quick restoration for today's evolving networks.

Reduce costs; increase revenues; satisfy customers —the tenets of service providers as they balance today's tenuous financial climate with the promise of next-generation products and services. And as networks migrate and expand to include more complex services, reliability and flexibility become even more vital to their success. That is why digital system cross-connect (DSX) solutions remain the best option for connecting network elements.

The deployment of DSX platforms eases network expansion; allows circuit access for nonintrusive testing, monitoring, and patching; and establishes a central termination point for efficient circuit rearrangements. It allows operators to add a migration of technological platforms and bring advanced services closer to customers while preserving integrity at the network's core.

### Make the Connection

Telecommunications networks must be designed to seamlessly absorb new growth, accommodate wiring changes, and restore failed circuits quickly. In its journey from source to destination, a signal travels through a gamut of telecommunications equipment that transforms, grooms, multiplexes, switches, demultiplexes, and routes the signal. Operators have three accepted methods of routing this signal: direct connect, interconnect, and cross-connect via a DSX. Direct connection and interconnection suffer from significant limitations, but the DSX remains fully capable of providing optimal flexibility, reliability, and access to the network.

DSX, coupled with a robust connectivity infrastructure, enhances several work operations:

- Faster service provisioning with greater capacity
- Increased service reliability and protection of electronic equipment and network elements
- Fundamental maintenance including physical layer access
- Quicker service recovery
- Simple, uncomplicated rollovers in future network migration planning
- Nonintrusive network element replacement and testing

Connectivity typically accounts for 1% to 10% of the upfront costs of network deployment. A small investment to simplify procedures, reduce errors, and minimize outages. Many network performance problems stem from restricted access for maintenance, cable congestion, rerouting or monitoring capabilities. And each problem is a high-maintenance proposition characterized by longer service interruptions, operational inefficiency, and frustrated customers that can be easily averted with a DSX solution.

But there is more to connecting a network than simply running cables between network elements.

Network design plays a crucial role in determining whether a network will generate revenue or lose profitability through excess labor costs and missed service opportunities.

Network design is evaluated against three criteria:

- Flexibility
- Central termination point
- Circuit access

### Flexibility

Change is inevitable. In today's dynamic, evolving networks, it isn't a matter of if things will change—it's a matter of how much. Today's communications networks demand a migration platform equipped with the cable management and physical rearrangement flexibility to accommodate new services and network elements. Today's networks demand the flexibility of DSX.

Unlike a direct connect solution, where network elements are directly connected to one another in a dedicated, pre-assigned method, a DSX solution serves as the demarcation point. This limits faults to individual circuits only, allowing changes to be performed with minimal recabling and labor costs.

Direct connection forces operators to locate cables and then pull them to new locations, resulting in an extensive, intrusive reengineering process that demands a great deal of time and money recabling each network element. In contrast, a DSX allows operators to simply remove and replace a small wire on its crossconnect field to reroute circuits. This quick resolution is critical for maintaining service even during massive redesigns.



## **Introduction** Connecting with Your Network

Easier reconfiguration allows operators to manage the subsequent traffic flow when access to the physical network layer is required. Technicians can simply patch into the corresponding circuits with a patch cord for reconfiguration or monitoring purposes.

### **Central Termination Point**

During network element rearrangements, a DSX can manage all rerouting, terminating, and maintenance functions from a centralized location. Without this centralized termination point, as in direct connection, cables must be pulled from each network element and subsequently rerouted to new destinations. Cables soon litter the central office; tracing becomes difficult: and labor costs soar. Mining for the physical facilities on the backplane of a network element is cramped and timeconsuming. This method of hardwiring jeopardizes reliability and often results in interrupted service because damage isn't limited to individual circuits but effects can quickly spread to all circuits within a shared component like a common electronic backplane. For instance, a dropped wrench could knock out an entire network element, inducing havoc throughout the network.

DSX and interconnect systems allow operators to do all maintenance and rerouting from one location. These robust devices protect other, more delicate equipment from inadvertent damage during the circuit rearrangement process. And with easy circuit identification centralized, wiring on network elements' backplanes remains undisturbed and unharmed.

#### **Circuit Access**

A network's success often depends on how quickly it adapts to change and the simplicity of its maintenance capabilities. Networks require physical access points on every circuit for monitoring, patching, and testing purposes. The ability to tap into and read the signal on any circuit—and not interrupt service to customers is invaluable in today's market. By incorporating jacks, DSX is the only solution that can localize a fault by allowing operators complete access to any circuit, anytime. Passing a signal through a jack creates a "window" into the circuit. Through this window the signal can be monitored or pulled out, or a new signal can be introduced, by placing a temporary patch cord into the corresponding ports. By inserting one end of the patch cord into a monitor port on the DSX, and the other end into a test unit or other device, operators can monitor a signal without interrupting service.

When intrusive testing is required, operators simply plug the patch cord into the IN/OUT port on the cross-connect field of the DSX. The signal flow to the cross-connect field is interrupted and a new connection between the jack and patch can be made. The signal can then be sent to a testing device to check for transmission errors or to another network element to temporarily reroute the signal.

The integration of a DSX into the network allows operators to patch around faulty circuits quickly and easily. And operators are given time to restore the primary circuit without fear of service outages for customers.

### Passing the Test of Time

Networks evolve over time as technology changes and advanced services are adopted. Equipment obsolescence and the necessary incorporation of new technologies present carriers with ongoing challenges. When the customers and the market are ready, the carrier must move quickly or risk missing revenue opportunity. A DSX crossconnect point allows deferment of property/plant and equipment expenses and allows upgrades to new technologies with the least disruption to current services. A physical plant with optimal cable management capabilities encourages quick reconfigurations, upgrades, and diverse alternate routing. And only through the cross-connection of network elements will service providers be able to meet the changing needs of their networks.

## Introduction

Module and Chassis Features

Traditional DSX products contain IN, OUT and MONITOR jacks. Each DSX position or module provides an IN and OUT switching jack for direct access to the NE's input and output signals. These jacks provide a means to temporarily break the connection between NEs that are cross-connected together and allow access to the signals for test and patching operations. A MONITOR jack with a high-impedance bridge network (21.5 dB below the active signal) is connected to the OUT jack for nonintrusive access to the output signal of each NE.

DSX-3 cross-connect modules are available with a variety of features. The basic versions consist of IN and OUT switching jacks that incorporate "make-before-break" contacts. The make-before-break contacts ensure that high-speed signals never go open or unterminated during in-service patching. Each DSX-3 module has a single MONITOR jack for monitoring the output of an NE.

#### **Rear Cross-Connect Module**

Rear cross-connect modules have jacks on the front, and equipment cable interface and cross-connect interface connections on the rear of the module.

#### Front Cross-Connect Module

Front cross-connect modules have jacks and cross-connect interface connections on the front, and equipment cable interface connections on the rear of the module.

The following module descriptions illustrate basic and operational features.

#### **Three-Port Single Monitor Module**

The basic three-port module provides IN and OUT switching jacks for direct access to the NE's input and output signals. A single MONITOR jack allows monitoring of an NE's output signal.

#### Four-Port Dual Monitor Module

The dual monitor option provides an additional monitor jack that allows monitoring both directions of transmission at a single module location. The dual monitor feature saves test setup time by allowing bidirectional signal testing at a single DSX location.

#### **Six-Port Dual Monitor Module**

The six-port module provides IN and OUT switching jacks for direct access to the NE's input and output signals. Dual monitor jacks allow monitoring both directions of transmission at a single module location. In addition to these four jacks, the six-port module provides auxiliary X-IN and X-OUT switching jacks that access toward the cross-connect. These additional access ports are especially helpful when the other end of the cross-connect is physically located at a great distance, such as another room or floor, or when access to the other end is restricted, such as the collocation of two different service providers.

#### Loaded Chassis

Chassis are available with modules preinstalled for fast and easy network setup. Fully loaded chassis include proper cable management and the necessary mounting brackets for installation in 19- or 23-inch-wide racks.

#### **Unloaded Chassis**

The empty chassis, which can be rack or wall mounted, provides the basic platform for any modular DSX system. Proper cable management and circuit identification is incorporated into each chassis.

#### **Preterminated Chassis**

The chassis, when populated with circuit frames containing BNC connectors, provides pretermination for routing equipment cables to quickly meet future service demand. The cost of the jack and installation can be deferred until revenue-generating service is turned up. Unlike any other preterminated DSX chassis, this fully modular design allows any single component to be replaced without interrupting adjacent in-service circuits.



### Introduction Skeleton Bay Lineup Features

A typical DSX system consists of two or more bays joined together to form a DSX bay lineup. Each bay is populated with DSX chassis or panels. Network elements (NEs) are cabled to the DSX equipment and are then connected to each other by means of a semi-permanent cross-connect jumper placed between two DSX equipment panels. The proper management of equipment cables and cross-connect jumpers within a DSX bay lineup is critical in maintaining network integrity and allowing unimpeded growth.

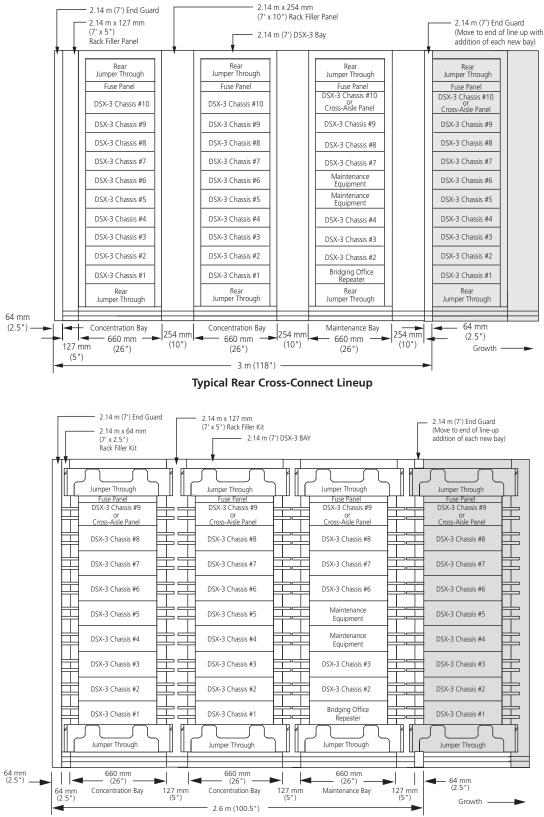
### Lineup Design and Requirements

The following illustrations show the hardware layout design for both rear cross-connect and front cross-connect bay lineups. A lineup may be provisioned with enough empty skeleton bays for a given engineering period to expand an office, or an entire lineup may be installed for fast-growing offices.

A complete DSX lineup consists of:

- Integrated cable management on each bay providing all the necessary hardware to safely and easily route equipment cables and cross-connect jumpers throughout a lineup. When additional bays are needed in a network, existing jumpers can remain intact while additional cabling is routed and reconfigured. Properly designed cable management is critical in maintaining network integrity and allowing unimpeded growth.
- Rack filler panels between bays provides additional cable duct capacity to allow routing of equipment cables into each bay. Spacing also provides room for jumper rings placed on the bay for control of vertical jumper routing. The spacer width between bays is determined by the number of DSX terminations per bay and the type of cabling used. Traditionally, DSX rear cross-connect bays are spaced 10 inches apart and front cross-connect bays are spaced 5 inches apart to allow for cable and jumper routing. Notice that a rack filler panel is provided at the growth end of the lineup and is ready for the next bay addition. When miniature coaxial cables and cross-connect jumpers are used exclusively, such as 735A or 0222, the spacing may be reduced between bays to maximize the use of floor space.
- End guard panels at the end of bay lineups protecting cables routed in the bay duct area and providing a location for bay alarm indicators and AC light switches.
- A maintenance bay is typically designated as every third or fourth bay within a DSX lineup. In addition to DSX chassis, auxiliary or maintenance equipment such a bridging office repeaters, interbay panels, communications panels, equipment shelves for portable test sets, and pencil and storage drawers are placed in this bay. These maintenance bays allow office technicians to maintain digital services efficiently.
- Cross aisle panels placed in the top position of each bay in multiple lineup systems extend cross-connections safely and efficiently to other lineups. A cross aisle panel is connected to an adjacent cross aisle panel in another lineup by permanent tie cables.

## **Introduction** Skeleton Bay Lineup Features



Typical Front Cross-Connect Lineup

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## **Introduction** Skeleton Bay Lineup Features

As the central part of the DSX lineup, each skeleton bay provides preassembled cable management and the basic framework to securely support valuable network equipment and allow efficient and organized cable routing. Panels and chassis are selected and installed separately for system customization and flexible growth. Bays are also available fully loaded with preinstalled DSX panels. Each skeleton bay is preconfigured for either front or rear cross-connect applications.

Each skeleton bay includes:

- Integrated cable management providing all the necessary hardware to safely route equipment cables and cross-connect jumpers throughout the bay. When a panel needs to be added, existing jumpers can remain intact while additional cabling is routed and reconfigured. Vertical jumper rings ensure routing is never restricted and support high volumes of cross-connect jumpers. Jumper troughs placed at the top and bottom of each bay route jumpers horizontally between bays. This continuous horizontal wireway assures a nonblocking system where any two circuits may be cross-connected. Whereas permanent equipment cabling is tied into place, the semi-permanent cross-connect jumpers are not, but rather float in the vertical and horizontal wireways and may be rerouted as the network changes over time. Cable tie brackets attached to the side of the rack provide a means to secure NE cabling and keep them neatly separated from jumpers.
- Network unequal flange-type racks providing efficient vertical cable ducts for equipment cabling. The typical rack height is 7-feet to allow technicians access to circuits and jacks without the need for ladders. Configurations over 7-feet are available upon request.
- Fuse panels are preinstalled in the uppermost part of the bay, below horizontal wireways.
- Guard boxes providing a bumper at the base of the rack to prevent mobile equipment from hitting equipment installed in the rack.

Additional equipment recommended:

- Cross aisle panels placed in the top position of each bay in multiple lineups extend cross-connections safely to other lineups (see pages 61 and 62).
- AC raceways and outlets placed on the guard boxes, provide space for electrical wiring. They are recommended on every third or fourth bay and are ordered separately (see page 59).
- Rack installation kits providing hardware to anchor the rack to the floor and support the top of the rack to superstructure above. Kits for both concrete floor and raised floor environments are available and are ordered separately (see page 59).

## Introduction

Rear Cross-Connect Product Family Features

RZX-3 Modular System



DSX4R-32MB40-D32 (Front View)

Family	Front Jack Type	Rear Cross- Connect Interface	Rear Equipment Cable Interface	Maximum Chassis Capacity	Mounting (H x W)	Applications
RZX-3 (DSX-4R)	Midsize (mini-	BNC	BNC	36 Modules	102 mm x 584 mm (4" x 23")	The RZX-3 modular panel has the highest
	WECO)			32 Modules	102 mm x 483/584 mm (4" x 19"/23")	density midsize jack solution in a 4-inch-
				24 Modules	102 mm x 483/584 mm (4" x 19"/23")	high chassis. Jack options include three, four, and six ports.

## Mini DSX-3 Modular System



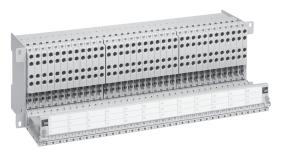
DSX4L-R01C4801 (Front View)

Family	Front Jack Type	Rear Cross- Connect Interface	Rear Equipment Cable Interface	Maximum Chassis Capacity	Mounting (H x W)	Applications
Mini DSX-3 (DSX-4L)	LCJ	LCC	LCC	48 Modules	152 mm x 584 mm (6" x 23")	The highest density soluti- on available in the market. Designed to match highest density SONET fiber optic transmission systems and digital cross-connect systems. Uses CommScope's patented LCJ technology.

## Introduction

Front Cross-Connect Product Family Features

DSX-4K Modular System



DSX4K-36MBT-E01C (Front View)

Family	Front Jack Type	Front Cross- Connect Interface	Rear Equipment Cable Interface	Maximum Chassis Capacity	Mounting (H x W)	Applications
DSX-4K	Midsize (mini- WECO)	Midsize with CommScope compatible locking retainer clip	BNC	36 Modules	178 mm x 584 mm (7" x 23")	High-density, modular 36-termination front cross-connect panel. Patented adjustable rear BNC backplane for increased density.

## Mini DSX-3 Modular System



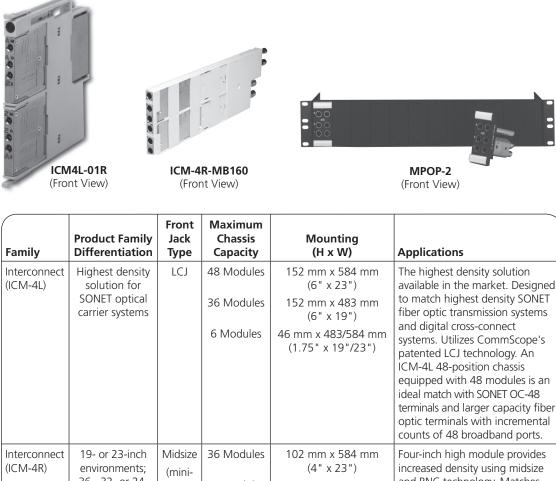
DSX4L-F02C4811 (Front View)

Family	Front Jack Type	Front Cross- Connect Interface	Rear Equipment Cable Interface	Maximum Chassis Capacity	Mounting (H x W)	Applications
Mini DSX-3 (DSX-4L)	LCJ	LCC	LCC	48 Modules	222 mm x 584 mm (8.75" x 23")	The highest density soluti- on available in the market. Designed to match highest density SONET fiber optic transmission systems and digital cross-connect systems. Uses CommScope's patented LCJ technology.

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## **Introduction** Interconnect Product Family Features

CommScope DS3 interconnect products are designed for customer premises, cabinet or CEV applications for interconnection of any digital equipment operating at the DS3 (44.736 Mbps), DS4 (274.176 Mbps), STS-1 (51.84 Mbps) and STS-3 (155.52 Mbps) digital rates.





RZX-3 Family (DSX-4R)

### Introduction

The rear cross-connect modular product (DSX-4R) is a total system solution with increased density and complete modularity using midsize jacks also known as mini-WECO/440 jacks/coaxial jacks. The 4-inch-high chassis contains up to 32 circuit frames in a 19-inch width, or 36-circuit frame in a 23-inch width, offering greater density than any other midsize jack interface in the industry. The RZX-3 family is fully modular throughout the chassis, circuit frames, and jacks for simplified and cost-effective restoral capabilities.

This high-density DSX includes superior cable management with a rear-adjustable jumper tray to control cable routing and a hinged door to prevent cables from spilling outside the framework.



DSX4R-32MB40-D32 (Front View)

Permanent equipment cable connections at the bottom of the chassis are recessed back inward and out of the way for quick, easy access to cross-connections. Optional rear LEDs for positive identification of circuit rearrangements is also available.

#### **Features and Benefits**

#### **Highest Density**

Up to 36 terminations in a 23-inch-wide chassis, using midsize (mini-WECO) jacks

#### Flexibility

Totally modular system including individual pretermination cable interfaces

#### Durability

Unbreakable jack mounting tested over 10,000 cycles and closed-entry BNC contacts to protect against common test probes

#### Reliability

Sealed jack switching contacts eliminate environmental contaminants

#### Performance

Preloaded monitor network eliminates circuit level degradation during testing and patching functions

#### Cable Management

Unrestricted connector access, organized cable routing, and physical cable protection

#### Make-Before-Break Switching Contacts Guarantee signal termination

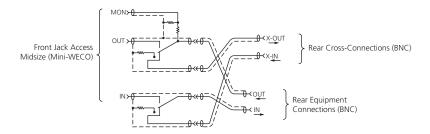
### Jack Access Options

Three-, four-, or six-port options for dual monitor and cross-connect access

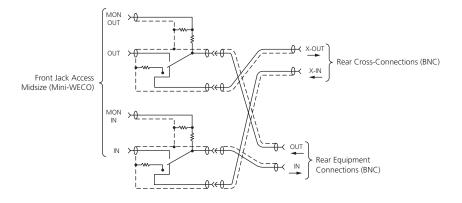
RZX-3 Family (DSX-4R)

### Jack Schematics

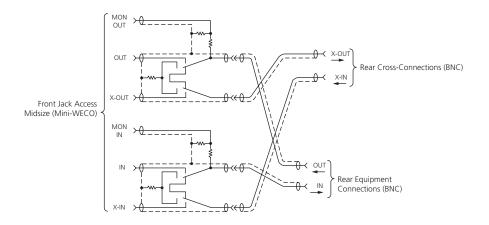
### **Three-Port DSX-4R Module**



#### Four-Port DSX-4R Module



#### Six-Port DSX-4R Module



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RZX-3 Family (DSX-4R)

### Modules

DSX-4R modules are designed to fit into DSX-4R rear cross-connect chassis. These DSX-4R modules have rear BNC connectors staggered in high and low positions across the chassis to obtain the ultimate in system density.



**Three-Port Module** 









**Rear View Module** 

Order	ina	Info	r m a t	ion

Description **Catalog Number** DSX-4R modules in odd chassis positions (BNC high) Three-port module DSX-4R-MB130 Four-port module (dual monitor) DSX-4R-MB140 Six-port module (dual monitor and cross-connect access) DSX-4R-MB160 DSX-4R modules in even chassis positions (BNC low) Three-port module DSX-4R-MB230 Four-port module (dual monitor) DSX-4R-MB240 Six-port module (dual monitor and cross-connect access) DSX-4R-MB260

Order individual modules for appropriate odd or even chassis positions. Odd chassis positions; i.e., 1, 3, 5 accept modules with high BNCs. Even chassis positions; i.e., 2, 4, 6 accept modules with low BNCs.

BNC insertion/withdrawal tool (BT2000-12 on page 81) is recommended to install and remove BNC connectors because of extremely high density.



RZX-3 Family (DSX-4R)

### 36-, 32- or 24-Termination Loaded Chassis



#### **Features**

- Chassis capacity: 32 or 24 DSX-4R rear cross-connect modules in 19-inch chassis; 36 modules in 23-inch chassis only
- 23-inch adapters included with each 19-inch chassis
- Flush and 2-inch recess mounting option
- WECO and EIA mounting compatible
- Red flashing LED on front of chassis (optional rear LED)
- Dimensions (HxWxD): 4 inches by 19/23 inches by 12/15 inches

### **Ordering Information**

Description	Chassis with Front LED Catalog Number	Chassis with Front and Rear LED Catalog Number	
36-termination	·		
Three-port module	DSX4R-36MB30-C36	DSX4R-36MB30-D36	
Four-port module	DSX4R-36MB40-C36	DSX4R-36MB40-D36	
Six-port module	DSX4R-36MB60-C36	DSX4R-36MB60-D36	
32-termination			
Three-port module	DSX4R-32MB30-C32	DSX4R-32MB30-D32	
Four-port module	DSX4R-32MB40-C32	DSX4R-32MB40-D32	
Six-port module	DSX4R-32MB60-C32	DSX4R-32MB60-D32	
24-termination			
Three-port module	DSX4R-24MB30-C24	DSX4R-24MB30-D24	
Four-port module	DSX4R-24MB40-C24	DSX4R-24MB40-D24	
Six-port module	DSX4R-24MB60-C24	DSX4R-24MB60-D24	

Jumper rings are sold separately. For jumper ring kit, see catalog number AUX-0X0439 on page 58.

BNC insertion/withdrawal tool (BT2000-12 on page 81) is recommended to install and remove BNC connectors. See DSX-3 skeleton bay solutions on page 17.

RZX-3 Family (DSX-4R)

### 36-, 32- or 24-Position Unloaded Chassis



(Rear View)

Module Type	Chassis with Front LED Catalog Number	Chassis with Front and Rear LED Catalog Number
Unloaded chassis		
36-position 584 mm (23")	DSX4R-C36	DSX4R-D36
32-position 483/584 mm (19"/23")	DSX4R-C32	DSX4R-D32
24-position 5483/584 mm (19"/23")	DSX4R-C24	DSX4R-D24
8-position 483 mm (19")	DSX4R-E08	-
Unloaded chassis with additional spa between modules (option reduces to	5	
32-position 584 mm (23")	-	DSX4R-WD32
24-position 584 mm (23")	_	DSX4R-WD24

Jumper rings are sold separately. For jumper ring kit, see catalog number AUX-0X0439 on page 58.

BNC insertion/withdrawal tool (BT2000-12 on page 81) is recommended to install and remove BNC connectors because of extremely high density.

RZX-3 Family (DSX-4R)

### 36-, 32- or 24-Position Preterminated Chassis

The DSX-4R preterminated chassis option allows NEs to be cabled to the DSX without deploying the DSX jacks. This feature allows the cost of jacks to be deferred until revenue is generated by service demand.

Each position of the pretermination chassis is equipped with a circuit frame containing rear BNC receptacles. NEs are cabled during initial installation. When service turnup is required, a jack kit is plugged into the circuit frame to complete the circuit and provide jack access for testing and patching.



DSX4R-32B0-D32 (Front View)



Ordering Information			
Description	Chassis with Front LED Catalog Number	Chassis with Front and Rear LED Catalog Number	
Preterminated chassis			
36-position 584 mm (23")	DSX4R-36B0-C36	DSX4R-36B0-D36	
32-position 483/584 mm (19"/23")	DSX4R-32B0-C32	DSX4R-32B0-D32	
24-position 483/584 mm (19"/23")	DSX4R-24B0-C24	DSX4R-24B0-D24	

Jumper rings are sold separately. For jumper ring kit, see catalog number AUX-0X0439 on page 58.

BNC insertion/withdrawal tool (BT2000-12 on page 81) is recommended to install and remove BNC connectors because of extreme high density.

### Jack Kits

Jack kits are used with the DSX-4R preterminated chassis. When service turnup is required, a jack kit is plugged into the circuit frame to complete the circuit and provide jack access for testing and patching. Each kit consists of an upper and lower jack.



Three-port jack kit



Four-port jack kit



Six-port jack kit

### **Ordering Information**

Description	Catalog Number
Jack kits	
Three-port jack kit	DSX-4R-M30
Four-port jack kit	DSX-4R-M40
Six-port jack kit	DSX-4R-M60

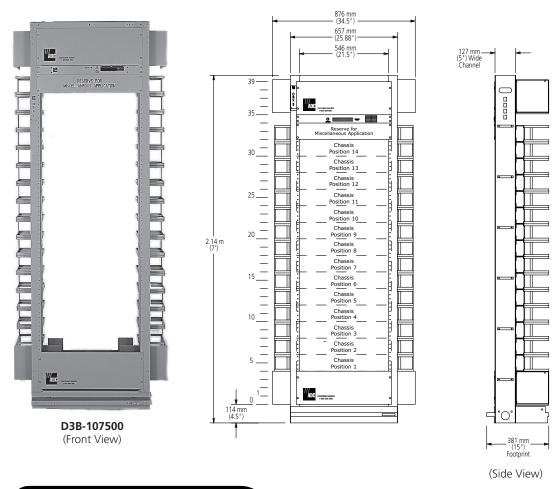
Order one jack kit per chassis position.



RZX-3 Family (DSX-4R)

### Skeleton Bay

Skeleton bays are pre-assembled and include the fuse panel, cable management rings, upper and lower troughs. They can be equipped with up to fourteen rear cross-connect chassis (not included) or chassis positions may be substituted with miscellaneous and maintenance type equipment (such as bridging office repeaters, a cross aisle panel, an interbay patch panel, an equipment shelf for portable test set, a communications panel, pencil stroage drawers, etc). Using 735 dual coaxial cable for cross-connecect cable is recommended.



	Dimensions	
Description	(HxWxD)	Catalog Number
23" bay, rear cross-connect, empty	2.14 m x 584 mm x 381 mm	D3B-107500
Accommodates up to fourteen 102 mm (4") – high (DSX-4R) chassis; maximum 504 terminations	(7' x 23" x 15")	
Includes fuse panel, upper and lower jumper troughs and rear jumper rings		
Requires 254 mm (10") spacing between bays		
Use with miniature coaxial cable, (735A, 0222 or equivalent) cross-connect jumpers only		

### Ordering Information

Mini DSX-3 Family

### Introduction

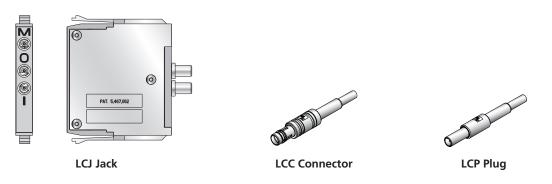
As demand for bandwidth increases, networks are required to be more versatile and powerful than ever before. To keep pace with what sometimes seems like daily changes in technology and complex customer demands, the network must be completely reliable and flexible.

The miniature coaxial technology, developed by CommScope, is ideal for voice, data or video networks and offers twice the density of traditional DS3 products. This high-density system maintains high quality standards while increasing system capacity and requiring far less floor space than conventional products. The miniature technology is deployed in large or rapidly growing offices, as well as for locations with limited room for expansion.

The innovative miniature coaxial technology includes three important inventions: a minicoaxial switching jack (LCJ), a minicoaxial mating plug (LCP) and a minicoaxial connector (LCC). The LCJ is the heart of the product and performs the switching jack function. The LCP is the interface to the LCJ and allows patching, monitoring or termination of the network signals. The LCC is field terminated to IN/OUT equipment cables and then connects to the LCJ's IN/OUT circuit ports.

The high-density miniature technology was designed with optimal cable management. Cable jumper rings and troughs ensure neat dressing of the jumpers, and rear cable management guides ensure that all cables are neatly secured. Despite the product's high-density, a technician can access all connectors and add cable when there is additional system growth without disrupting existing signal connections.

### Minicoaxial Products – Mini-DSX Jack Technology Overview



#### Compared to Traditional Midsize/Mini-WECO/440 Coaxial Jack Technology



Midsize (Mini-WECO/440) Jack



**75**Ω BNC Connector



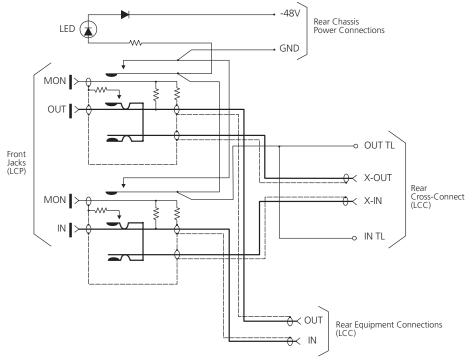
Midsize (Mini-WECO/440) Plug



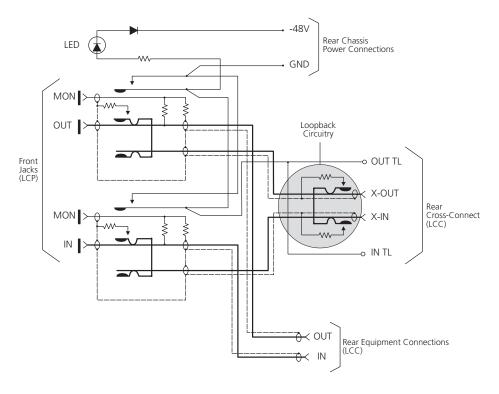
Mini DSX-3 Family (DSX-4L)

### Jack Schematics

### Four-Port DSX-4L Module



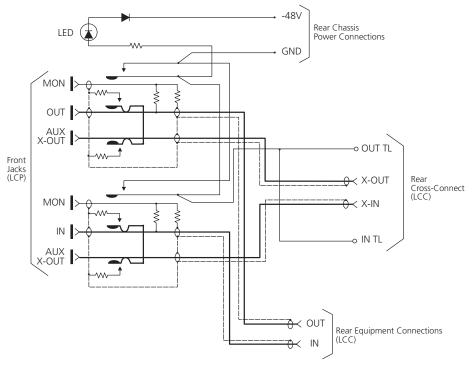
Four-Port DSX-4L Module with Loopback Option



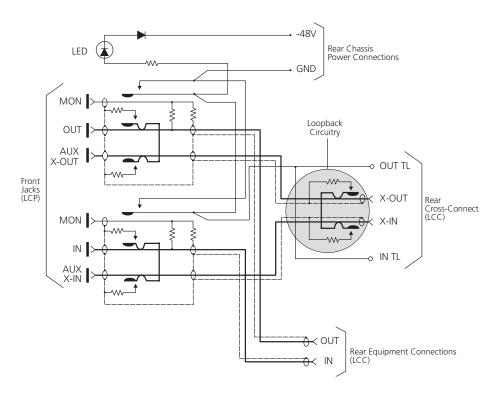
Mini DSX-3 Family (DSX-4L)

### Jack Schematics

### Six-Port DSX-4L Module



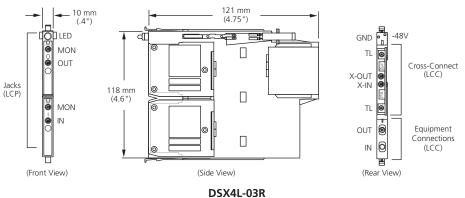
Six-Port DSX-4L Module with Loopback Option



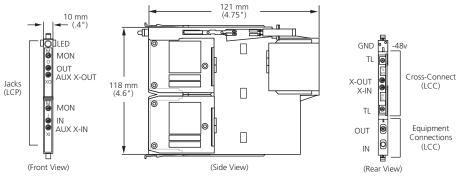
Mini DSX-3 Family (DSX-4L)

### Modules

### Four-Port



Six-Port



DSX4L-04R

### Ordering Information

Description	Dimensions (HxWxD)	Catalog Number
Module type		
Four-port module	117 mm x 10 mm x 121 mm (4.6" x .4" x 4.75")	DSX4L-03R
Four-port module with loopback option	117 mm x 10 mm x 121 mm (4.6" x .4" x 4.75")	DSX4L-02R
Six-port module	117 mm x 10 mm x 121 mm (4.6" x .4" x 4.75")	DSX4L-04R
Six-port module with loopback option	117 mm x 10 mm x 121 mm (4.6" x .4" x 4.75")	DSX4L-01R



Mini DSX-3 Family (DSX-4L)

# 48-Termination Loaded Chassis — For 15-Inch Deep Rack (recommended)

Loaded chassis is pre-loaded with 48 modules and mounts into WECO/EIA bays. The chassis can be wired with 734, 735A or 0222 cable. The chassis are easily installed into the skeleton bay containing cable management jumper rings and troughs. When ordering an individual chassis, the jumper ring kit, catalog number DSX4L-CBL-66R must be ordered separately. The ordering information is located on page 58.



### Ordering Information

Description	Dimensions (HxWxD)	Catalog Number
48-termination chassis loaded		
with 48 DSX4L-03R modules (Four-port module)	152 mm x 584 mm x 324 mm (6" x 23" x 12.75")	DSX4L-R05C4803
with 48 DSX4L-02R modules (Four-port module with loopback)	152 mm x 584 mm x 324 mm (6" x 23" x 12.75")	DSX4L-R05C4802
with 48 DSX4L-04R modules (Six-port module)	152 mm x 584 mm x 324 mm (6" x 23" x 12.75")	DSX4L-R05C4804
with 48 DSX4L-01R modules (Six-port module with loopback)	152 mm x 584 mm x 324 mm (6" x 23" x 12.75")	DSX4L-R05C4801

Note: Jumper ring kits ordered separately. See page 58.

LCC insertion/removal tool (LCA-400004 on page 82) is recommended to install and remove LCC connectors because of extremely high density.

Mini DSX-3 Family (DSX-4L)

### 48-Termination Loaded Chassis — For 12-Inch Deep Rack

Loaded chassis is pre-loaded with 48 modules and mounts into WECO/EIA bays. The 12-inch chassis can be wired with 735A or 0222 cable. Cabling with 734 cable is not recommended and may cause cable congestion. The chassis are easily installed into the skeleton bay containing cable management jumper rings and troughs. When ordering an individual chassis, the jumper ring kit, catalog number DSX4L-CBL-1R, must be ordered separately. The ordering information is located on page 58.



### **Ordering Information**

Description	Dimensions (HxWxD)	Catalog Number
48-termination chassis loaded	<u>`</u>	
with 48 DSX4L-03R modules (Four-port module)	152 mm x 584 mm x 254 mm (6" x 23" x 10")	DSX4L-R01C4803
with 48 DSX4L-02R modules (Four-port module with loopback)	152 mm x 584 mm x 254 mm (6" x 23" x 10")	DSX4L-R01C4802
with 48 DSX4L-04R modules (Six-port module)	152 mm x 584 mm x 254 mm (6" x 23" x 10")	DSX4L-R01C4804
with 48 DSX4L-01R modules (Six-port module with loopback)	152 mm x 584 mm x 254 mm (6" x 23" x 10")	DSX4L-R01C4801

Note: Jumper ring kits ordered separately. See page 58

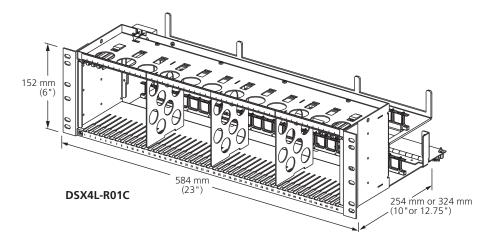
LCC insertion/removal tool (LCA-400004 on page 82) is recommended to install and remove LCC connectors because of extremely high density.

Mini DSX-3 Family (DSX-4L)

### 48-Position Unloaded Chassis

Unloaded chassis are available for 15- and 12-inch footprint racks. Cable management rings are provided with the skeleton bay. When ordering individual chassis, DSX modules and cable management jumper ring kit must be ordered separately.

For maximum network flexibility, the 15-inch deep chassis can be cabled with 734, 735A or 0222 cable. The 12-inch deep chassis can only be cabled with 735A or 0222 to prevent cable congestion.



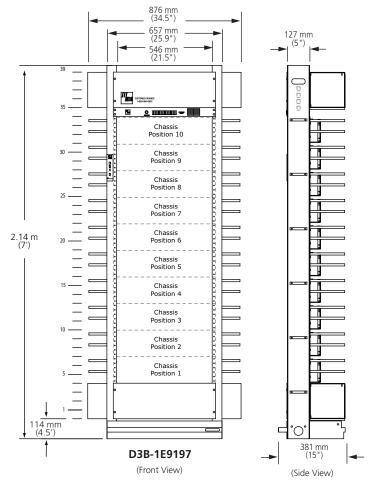
Ordering Information		
Description	Dimensions (HxWxD)	Catalog Number
48-position unloaded chassis		
For 381 mm (15") deep rack	152 mm x 584 mm x 324 mm (6" x 23" x 12.75")	DSX4L-R05C
For 305 mm (12") deep rack	152 mm x 584 mm x 254 mm (6" x 23" x 10")	DSX4L-R01C

Note: Jumper ring kits ordered separately. See page 58.

Mini DSX-3 Family (DSX-4L)

### Skeleton Bay

Skeleton bays are pre-assembled and include the fuse panel, cable management rings, upper and lower troughs. They can be equipped with up to ten rear cross-connect chassis (not included) or chassis positions may be substituted with miscellaneous and maintenance type equipment (such as bridging office repeaters, a cross aisle panel, an interbay patch panel, an equipment shelf for portable test set, a communications panel, pencil stroage drawers, etc). Using 735 dual coaxial cable for cross-connecect cable is recommended.



### Ordering Information

Description	Dimensions (HxWxD)	Catalog Number
<b>23" bay,</b> rear cross-connect, empty Accommodates ten 48-position chassis (not included)	2.14 m x 584 mm 381 mm (7' x 23" x 15")	D3B-1E9197
Includes fuse panel, upper and lower jumper troughs and jumper rings	() X 25 X 15 )	
Requires 254 mm (10") spacing between bays and 102 mm (5") at end of lineup for cable management Equipment cables and cross-connect jumpers ordered seperately		

Skeleton bays include all cable management hardware but no chassis. Add chassis and modules as needed.

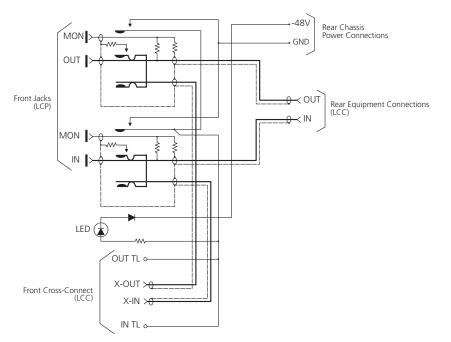


## **Front Cross-Connect**

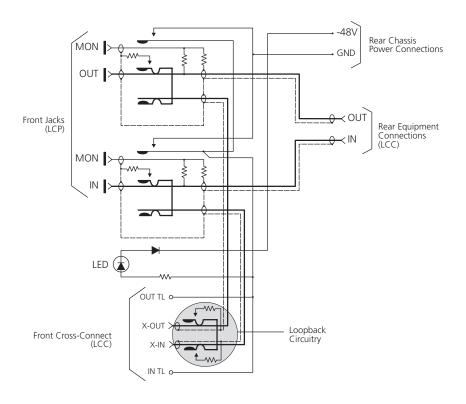
Mini DSX-3 Family (DSX-4L)

### Jack Schematics

### Four-Port DSX-4L Module



### Four-Port DSX-4L Module with Loopback Option

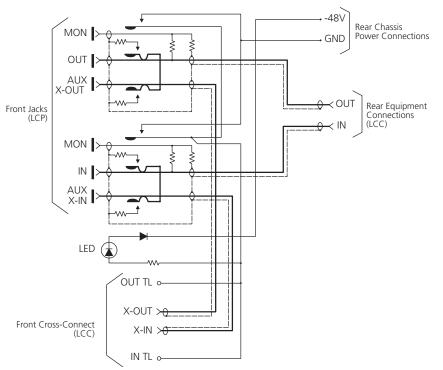


## **Front Cross-Connect**

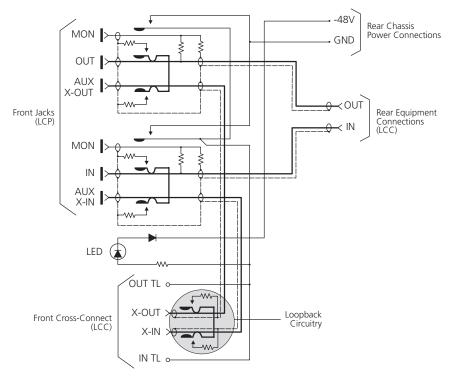
Mini DSX-3 Family (DSX-4L)

### Jack Schematics

### Six-Port DSX-4L Module



### Six-Port DSX-4L Module with Loopback Option



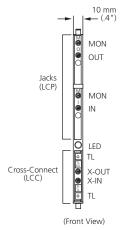


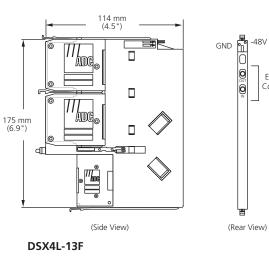
## Front Cross-Connect Modular System

Mini DSX-3 Family (DSX-4L)

### Modules

### **Four-Port**





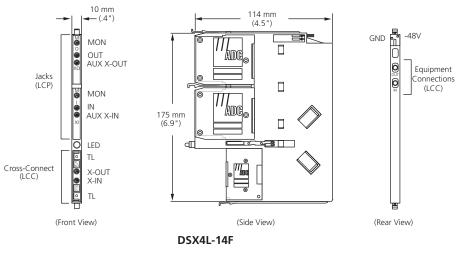
-48V

Equipment

Connections

(LCC)

Six-Port



Description	Dimensions (HxWxD)	Catalog Number
Module type	(	
Four-port module	178 mm x 10 mm x 114 mm (7" x .4" x 4.5")	DSX4L-13F
Four-port module with loopback option	178 mm x 10 mm x 114 mm (7" x .4" x 4.5")	DSX4L-12F
Six-port module	178 mm x 10 mm x 114 mm (7" x .4" x 4.5")	DSX4L-14F
Six-port module with loopback option	178 mm x 10 mm x 114 mm (7" x .4" x 4.5")	DSX4L-11F



## **Front Cross-Connect Modular System**

Mini DSX-3 Family (DSX-4L)

### 48-Termination Loaded Chassis

Loaded chassis is pre-loaded with 48 modules and mounts into WECO/EIA bays. The chassis can be wired with 735A or 0222 cable. Cabling with 734 cable is not recommended and may cause cable congestion. The chassis are easily installed into the skeleton bay containing cable management jumper rings and troughs. When ordering an individual chassis, the jumper ring kit, catalog number DSX4L-CBL-1F, must be ordered separately. The ordering information is located on page 58.



### **Ordering Information**

Description	Dimensions (HxWxD)	Catalog Number
48-termination chassis loaded		
with 48 DSX4L-13F modules (Four-port module)	222 mm x 584 mm x 299 mm (8.75" x 23" x 10")	DSX4L-F02C4813
with 48 DSX4L-12F modules (Four-port module with loopback)	222 mm x 584 mm x 299 mm (8.75" x 23" x 10")	DSX4L-F02C4812
with 48 DSX4L-14F modules (Six-port module)	222 mm x 584 mm x 299 mm (8.75" x 23" x 10")	DSX4L-F02C4814
with 48 DSX4L-11F modules (Six-port module with loopback)	222 mm x 584 mm x 299 mm (8.75" x 23" x 10")	DSX4L-F02C4811

Note: Jumper ring kits ordered separately. See page 58.

LCC insertion/removal tool (LCA-400004 on page 82) is recommended to install and remove LCC connectors because of extremely high density.

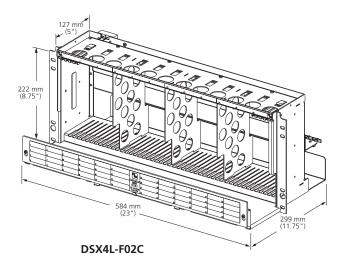
## Front Cross-Connect Modular System

Mini DSX-3 Family (DSX-4L)

### 48-Position Unloaded Chassis

Unloaded chassis are available for 15- and 12-inch footprint racks. Cable management rings are provided with the skeleton bay. When ordering individual chassis, DSX modules and cable management jumper ring kit must be ordered separately.

For maximum network flexibility, the chassis can be cabled with 734, 735A or 0222 cable. It is recommended that the chassis be cabled with 735A or 0222 to prevent cable congestion.



Ordering information		
	Dimensions	
Description	(HxWxD)	Catalog Number
48-position unloaded chassis	222 mm x 584 mm x 299 mm	DSX4L-F02C
	(8.75" x 23" x 11.75")	

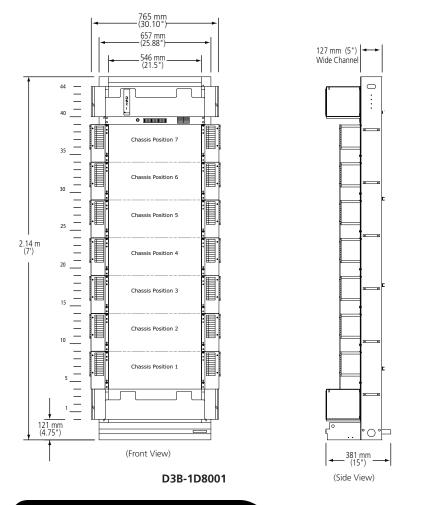
Note: Jumper ring kits ordered separately. See page 58.



Mini DSX-3 Family (DSX-4L)

#### Skeleton Bay

Skeleton bays are pre-assembled and include the fuse panel, cable management rings, upper and lower troughs. They can be equipped with up to seven front cross-connect chassis (not included) or chassis positions may be substituted with miscellaneous and maintenance type equipment (such as bridging office repeaters, a cross aisle panel, an interbay patch panel, an equipment shelf for portable test set, a communications panel, pencil storage drawers, etc). Using 735 dual coaxial cable for cross-connect cable is recommended.



#### Ordering Information

Description	Dimensions (HxWxD)	Catalog Number
23" bay, front cross-connect, empty	2.14 m x 584 x 381 mm	D3B-1D8001
Accommodates seven 48-position chassis (not included)	(7' x 23" x 15")	
Includes fuse panel, upper and lower jumper troughs and jumper rings		
Requires 127 mm (5") spacing between bays and 64 mm (2.5") at the end of lineup for cable management		

Skeleton bays include all cable management hardware but no chassis. Add chassis and modules as needed.

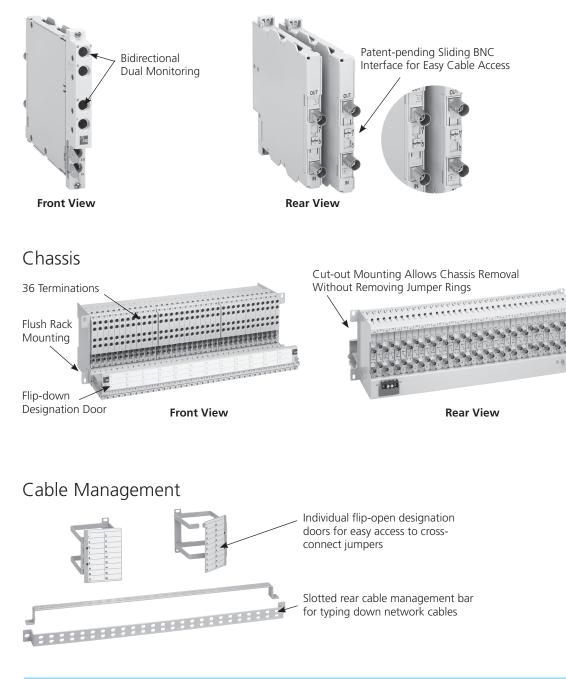


DSX-4K Family

#### Introduction

The DSX-4K was designed with increased density and functionality over the standard DSX front cross-connect products. The front interface includes dual, nonintrusive monitor ports which save technicians time by allowing bidirectional monitoring of a circuit from a single test access point. The adjustable BNC connector on the backplane allows the connections to be located closer together for higher density. This system slides and locks the BNC connector into position and maintains easy network cabling access. And with these close tolerances, the DSX-4K maintains signal isolation between adjacent modules. The front cross-connect panel provides the density and flexibility needed in networks requiring front-access solutions.

#### Modules

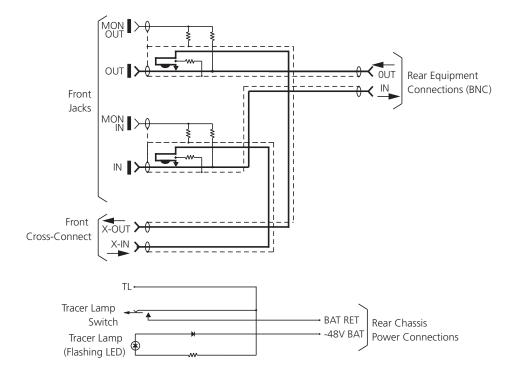


COMMSCOPE<sup>®</sup>

DSX-4K Family (DSX-4K)

#### Jack Schematics

#### Four-Port Module with Dual Monitor Feature



DSX-4K Family (DSX-4K)

#### Module

The DSX-4KT module provides one IN jack, one OUT jack and two MONITOR jacks for bidirectional monitoring and test access. Adjustable rear connectors provide the unrestricted cable access necessary for use in the 36-termination chassis.

#### Features

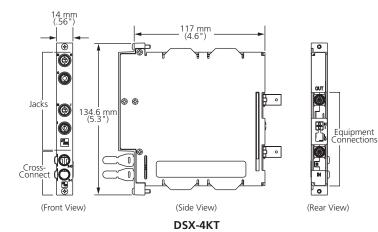
- Dual monitor ports provides bidirectional monitoring and testing access
- Front midsize (mini-WECO) coaxial jacks
- Rear BNC connectors slide and lock into upper or lower position, providing a staggered backplane for easy network cabling
- 75 Ohm auto termination on cross-connect interface
- Module color: putty
- CommScope compatible locking retainer clip on cross-connect jacks



**Front View** 



Rear View



Description	Catalog Number
Four-port module	DSX-4KT

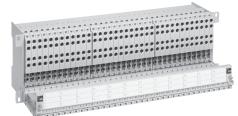


DSX-4K Family (DSX-4K)

#### 36- or 24-Termination/Position Loaded and Unloaded Chassis

#### Features

- Chassis capacity: 36 or 24 DSX-4KT front cross-connect modules in 23-inch chassis
- Flush mounting (jumper tray and rings extend 5 inches in front of rack)
- WECO and EIA mounting compatible
- Chassis and cable rings mount separately into skeleton bay
- 23-inch rack mounted rear tie-down bar with slotted holes for lacing network cables
- Front LED circuit positions clearly marked for easy circuit identification
- Chassis color: putty



Front View



**Rear View** 

Description	Dimensions (HxWxD)	Catalog Number
36-termination/position loaded and unloaded	chassis	
36-termination loaded chassis*	178 mm x 584 mm x 267 mm (7" x 23" x 10.5")	DSX4K-36MBT-E01C
36-position unloaded chassis*	178 mm x 584 mm x 267 mm (7" x 23" x 10.5")	DSX4K-E01C
36-termination loaded chassis** without jumper rings for use in skeleton bays	178 mm x 584 mm x 267 mm (7" x 23" x 10.5")	DSX4K-36MBT-E00C
36-position unloaded chassis** without jumper rings for use in skeleton bays	178 mm x 584 mm x 267 mm (7" x 23" x 10.5")	DSX4K-E00C
24-termination/position loaded and unloaded	chassis	
24-termination loaded chassis***	178 mm x 483 mm x 267 mm (7" x 19" x 10.5")	DSX4K-24MB-E41C
24-position unloaded chassis***	178 mm x 483 mm x 267 mm (7" x 19" x 10.5")	DSX4K-E41C
24-termination loaded chassis** without jumper rings for use in skeleton bays	178 mm x 483 mm x 267 mm (7" x 19" x 10.5")	DSX4K-24MB-E00C

#### Ordering Information

\*Includes one pair of jumper rings and two rear cable support bars.

\*\*Includes two rear cable support bars.

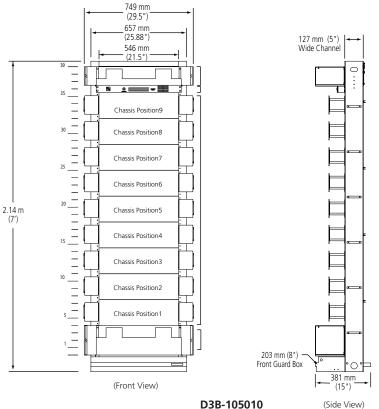
\*\*\*Includes 483/584 mm (19"/23") extender brackets to allow mounting in 584 mm (23") racks.



DSX-4K Family (DSX-4K)

#### **Skeleton Bay**

Skeleton bays are pre-assembled and include the fuse panel, cable management rings, upper and lower troughs. They can be equipped with up to nine rear cross-connect chassis (not included) or chassis positions may be substituted with miscellaneous and maintenance type equipment (such as bridging office repeaters, a cross aisle panel, an interbay patch panel, an equipment shelf for portable test set, a communications panel, pencil storage drawers, etc). Using 735 dual coaxial cable for cross-connect cable is recommended.



(Side View)

Description	Dimensions (HxWxD)	Catalog Number
<b>23" bay</b> for 36-termination chassis Accommodates up to nine DSX-4K chassis; 324-termination Includes cable management rings, bars, cable trough and fuse panel	2.14 m x 584 mm x 381 mm (7' x 23" x 15")	D3B-105010
Requires 127 mm (5") spacing between bays for management of equipment cables and jumper cables (ordered seperately) Use with all coaxial cable types (734A, 735A, 0222 or equivalent)	2.14 m x 584 mm x 305 mm (7' x 23" x 12")	D3B-105009
<b>19" bay</b> for 24-termination chassis Accommodates up to nine DSX-4K chassis; 216-termination Requires 127 mm (5") spacing between bays for management of	2.14 m x 483 mm x 381 mm (7' x 19" x 15")	D3B-139500
equipment cables and jumper cables (ordered seperately) Use with all coaxial cable types (734A, 735A, 0222 or equivalent)	2.14 m x 483 mm x 305 mm (7' x 19" x 12")	D3B-139501



# **Interconnect Modular Systems**

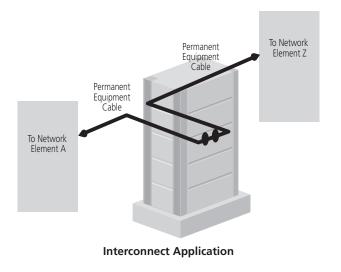
RZX-3, Mini DSX-3 and Minimum Point of Presence Product Families

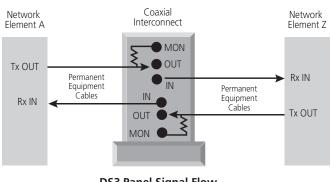
#### Introduction

The interconnect application typically applies to smaller circuit quantity sites where routine circuit reconfiguration is not required. The interconnect modules create a permanent, dedicated connection between two network elements. No cross-connect flexibility exists for circuit reconfiguration. Designed for customer premises, cabinet, hut, CEV or central office applications for interconnection of any digital equipment operating at the DS3 (44.736 Mbps), DS4 (274.176 Mbps), STS-1 (51.84 Mbps) and STS-3 (155.52 Mbps) digital rates.

#### Features

- Allows temporary access to active circuits for testing and monitoring.
- Requires only one interconnection module per circuit.
- Limited flexibility without cross-connect function.
- Ideal for small locations where reconfiguration is not generally required:
  - controlled environmental vaults
  - huts
  - outside plant cabinets
  - customer premises location





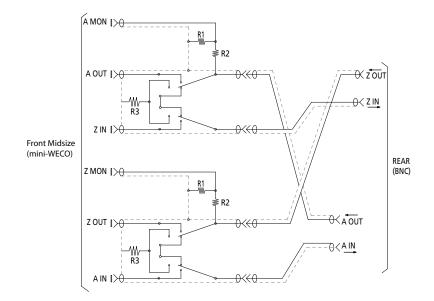
**DS3 Panel Signal Flow** 



RZX-3 Family (ICM-4R)

#### Jack Schematics

#### All Rear Cabling Six-Port ICM-4R Module



RZX-3 Family (ICM-4R)

#### Modules

The RZX-3 interconnect products are designed for customer premises minimum point of presence applications for interconnection of DS3 (44.736 Mbps), STS-1 (51.84 Mbps), DS4 (274.176 Mbps) or STS-3 (155.52 Mbps) service. The module is used when only a few high speed lines are terminated and no cross-connect field or tracer lamps are required. The module also provides a means to access the circuit for testing and monitoring.

ICM-4R interconnect modules are designed to fit into ICM-4R interconnect chassis. These modules have rear BNC connectors staggered in high and low positions across the chassis to obtain the ultimate in system density.



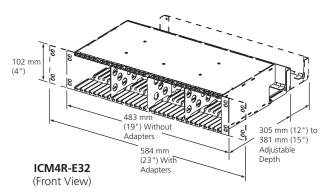
#### Features

- Each module interconnects two network elements (one DS3 circuit)
- Midsize (mini-WECO) switching coax jacks on front for testing, patching and monitoring (monitor ports off the IN and OUT jacks)
- BNC connectors on rear for IN/OUT equipment cabling

Ordering Information	
Description	Catalog Number
Six-port module (A, Z port stenciling)	
Odd chassis positions (BNC high)	ICM-4R-MB160
Even chassis positions (BNC low)	ICM-4R-MB260

RZX-3 Family (ICM-4R)

#### Unloaded Chassis

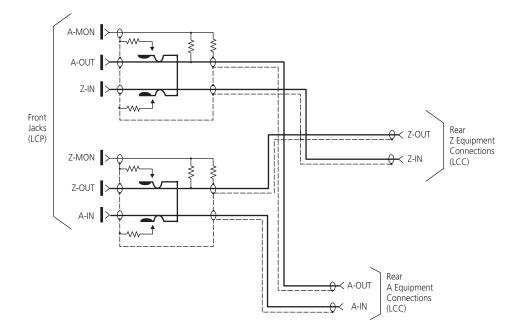


Description	Dimensions (HxWxD)	Catalog Number
Unloaded all rear cabling chass Rack mount; WECO/EIA mounting		1
36-position	102 mm x 584 mm x 305 mm (4" x 23" x 12")	ICM4R-E36
32-position	102 mm x 483/584 mm x 305 mm (4" x 19/23" x 12")	ICM4R-E32
24-position	102 mm x 483/584 mm x 305 mm (4" x 19/23" x 12")	ICM4R-E24
8-position	44 mm x 483/584 mm x 305 mm (1.75" x 19/23" x 12")	ICM4R-E08

Mini DSX-3 Family (ICM-4L)

#### Jack Schematics

#### All Rear Cabling Six-Port ICM-4L Module



Mini DSX-3 Family (ICM-4L)

#### Modules

The Mini DSX-3 interconnect products are designed for customer premises minimum point of presence applications for interconnection of DS3 (44.736 Mbps), STS-1 (51.84 Mbps), DS4 (274.176 Mbps) or STS-3 (155.52 Mbps) service. The module is used when only a few high speed lines are terminated and no cross-connect field or tracer lamps are required. The module also provides a means to access the circuit for testing and monitoring.

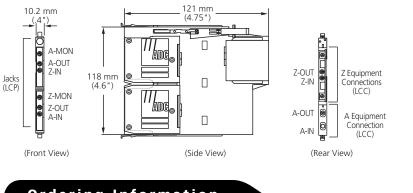
#### Features

- Each module interconnects two network elements (one DS3 circuit)
- LCJ switching coax jacks on front for testing, patching and monitoring
- LCC connectors on rear for IN/OUT equipment cabling



#### ICM4L-01R

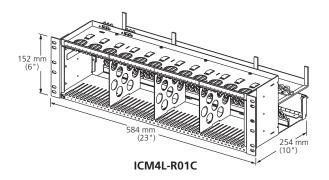
## All Rear Cabling Six-Port

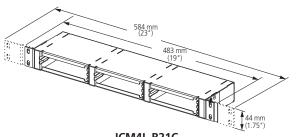


Description	Dimensions (HxWxD)	Catalog Number
All rear cabling six-port module (A, Z port stenciling)	117 mm x 10 mm x 121 mm (4.6" x .4" x 4.75")	ICM4L-01R

Mini DSX-3 Family (ICM-4L)

#### Unloaded Chassis



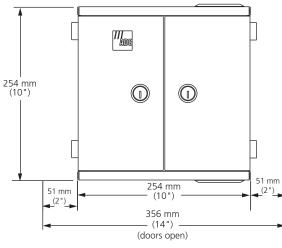


ICM4L-R21C

Ordering Information		
Description	Dimensions (HxWxD)	Catalog Number
Unloaded all rear cabling chassis Rack mount; WECO/EIA mounting		
48-position	152 mm x 584 mm x 254 mm (6" x 23" x 10")	ICM4L-R01C
36-position	152 mm x 483 mm x 254 mm (6" x 19" x 10")	ICM4L-R11C
6-position	46 mm x 483/584 mm x 108 mm (1.75" x 19/23" x 4.25")	ICM4L-R21C

Mini DSX-3 Family (ICM-4L)

#### Wall box



ICM4L-04RWM

#### **Ordering Information**

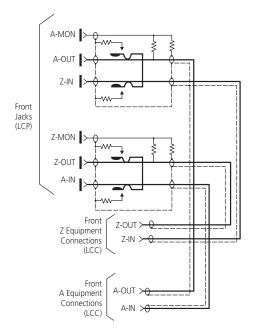
Description	Dimensions (HxWxD)	Catalog Number
Wall mount chassis with locking covers		
12-position	533 mm x 254 mm x 117 mm (21" x 10" x 4.6")	ICM4L-12RWM
4-position	254 mm x 254 mm x 117 mm (10" x 10" x 4.6")	ICM4L-04RWM

Note: Uses rear access modules found on page 42

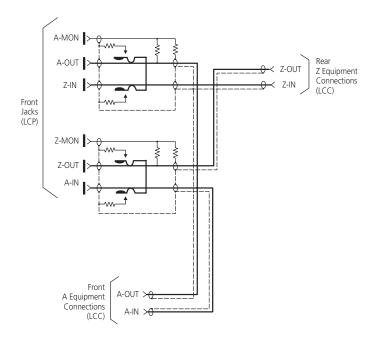
Mini DSX-3 Family (ICM-4L)

#### Jack Schematics

#### All Front Cabling Six-Port ICM-4L Module



#### Front/Rear Cabling Six-Port ICM-4L Module





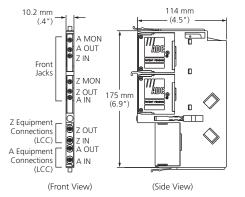
Mini DSX-3 Family (ICM-4L)

#### Modules

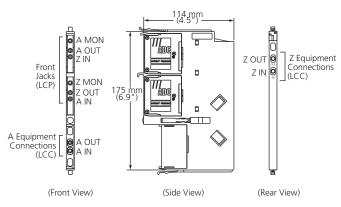
The Mini DSX-3 interconnect products are designed for customer premises minimum point of presence applications for interconnection of DS3 (45 Mbps), STS-1 (51.84 Mbps), DS4 (274.176 Mbps) or STS-3 (155.52 Mbps) service. The module is used when only a few high speed lines are terminated and no cross-connect field or tracer lamps are required. The module also provides a means to access the circuit for testing and monitoring.



#### All Front Cabling Module



#### Front/Rear Cabling Module



#### Ordering Information

Description	Dimensions (HxWxD)	Catalog Number
Six-port modules		
All front cabling six-port module	178 x 10 mm x 114 mm	ICM4L-01F
(A, Z port stenciling)	(7" x .4" x 4.5")	
Front/rear cabling six-port module	178 mm x 10 mm x 114 mm	ICM4L-02F
(A, Z port stenciling)	(7" x .4" x 4.5")	



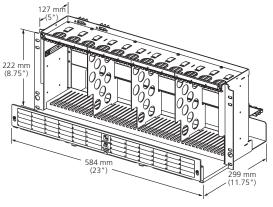
#### Features

- Each module interconnects two network elements (one DS3 circuit)
- LCJ switching coax jacks on front for testing, patching and monitoring
- LCC connectors on front and front/rear for IN/OUT equipment cabling

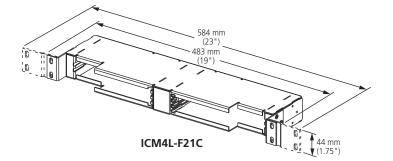
Mini DSX-3 Family (ICM-4L)

#### Front/Rear Cabling Unloaded Chassis

Unloaded chassis are available for 15" WECO/EIA mounting, and wall mount applications. Cable management rings are provided with the skeleton bay. When ordering individual chassis, ICM-4L modules and cable management jumper ring kit must be ordered separately.



ICM4L-F01C



#### Ordering Information

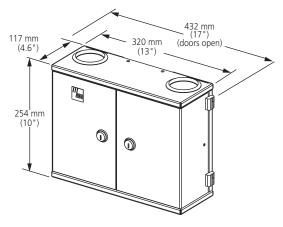
Description	Dimensions (HxWxD)	Catalog Number
Unloaded front/rear cabling chassis Rack mount; WECO/EIA mounting		
48-position	222 mm x 584 mm x 299 mm (8.75" x 23" x 11.75")	ICM4L-F01C
36-position	222 mm x 483 mm x 299 mm (8.75" x 19" x 11.75")	ICM4L-F11C
4-position	45 mm x 483/584 x 114 mm (1.75" x 19/23" x 4.5")	ICM4L-F21C

Note: Modules ordered separately on page 46



Mini DSX-3 Family (ICM-4L)

#### Wall box



ICM4L-04FWM

# Ordering InformationDescriptionDimensions<br/>(HxWxD)Catalog NumberWall mount chassis with locking covers12-position12-position660 mm x 330 mm x 117 mm<br/>(26" x 13" x 4.6")4-position254 mm x 330 mm x 117 mm<br/>(10" x 13" x 4.6")ICM4L-04FWM<br/>(10" x 13" x 4.6")

Note: Modules ordered separately on page 46



Minimum Point of Presence (MPOP)

MPOP-2 Series



The MPOP DSX products are designed for customer premises minimum point of presence applications for interconnection of DS3 (44.736 Mbps), DS4 (274.176 Mbps), STS-1 (51.84 Mbps) or STS-3 (155.52 Mbps) service. The module is used when only a few high speed lines are terminated and no cross-connect field or tracer lamps are required. The module also provides a means to access the circuit for testing and monitoring. Loopbacks can be performed by utilizing the front panel jacks.

#### Features

- Each module interconnects two network elements (one DS3 circuit)
- Standard or midsize (mini-WECO) switching coax jacks on front for testing, patching and monitoring (monitor ports off the OUT jacks)
- BNC connectors on rear for IN/OUT equipment cabling
- Twelve MPOP-2 series modules mount in one 19-inch rack mount chassis
- Chassis supports flush, two- or four-inch recess mounting

Description	Dimensions (HxWxD)	Catalog Number
Rear access DS3 module		
Standard size coax jacks, rear BNC connectors	88 mm x 36 mm x 84 mm (3.45" x 1.41" x 3.29")	MPOP-2
Midsize (mini-WECO) coax jacks, rear BNC connectors	88 mm x 36 mm x 84 mm (3.45" x 1.41" x 3.29")	MPOP-2M
MPOP-2 series chassis Accommodates a total of (12) MPOP-2 or MPOP-2M modules Reversible mounting ears for 483 mm (19") or 584 mm (23") rack mounting	89 mm x 483/584 mm x 116 mm (3.5" x 19/23" x 4.6")	MPOP-C



Minimum Point of Presence (MPOP)

DS3 MPOP-RAH Series



#### Features

- Each horizontally mounted two-circuit module interconnects four network elements (two DS3 circuits)
- Standard or midsize (mini-WECO) switching coax jacks on front for testing, patching and monitoring (monitor ports off the OUT jacks)
- BNC connectors on rear for IN/OUT equipment cabling
- Three DS3 MPOP-RAH series modules mount in one 19- or 23-inch rack mount chassis
- Chassis supports flush, two- or four-inch recess mounting

Description	Dimensions (HxWxD)	Catalog Number	
Rear access DS3 module			
Standard size coax jacks, rear BNC connectors	42 mm x 144 mm x 83 mm (1.65" x 5.67" x 3.28")	DS-3 MPOP-RAH	
Midsize (mini-WECO) coax jacks, rear BNC connectors	42 mm x 144 mm x 83 mm (1.65" x 5.67" x 3.28")	DS-3 MPOP-RAHM	
DS3 MPOP-RAH series			
Partially loaded chassis includes (1) DS3 MPOP- RAH module with standard size coax jack Accommodates (2) additional DS3 MPOP-RAH or DS3 MPOP-RAHM modules	45 mm x 483/584 mm x 191 mm (1.75" x 19/23" x 7.5")	ds-3 mpop-rah/ch	
Empty chassis includes (3) blank panels Accommodates (3) DS3 MPOP-RAH or DS3 MPOP-RAHM modules	45 mm x 483/584 mm x 191 mm (1.75" x 19/23" x 7.5")	DS-1/3 MPOP-CH	

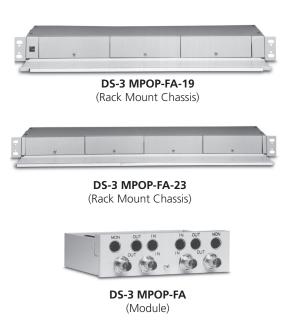
# **Total Front Access Interconnect Modular System**

Minimum Point of Presence (MPOP)

#### DS3 MPOP-FA Series



**DS-3 MPOP-WM** (Wall Mount Chassis)



#### Features

- Each module interconnects two network elements (one DS3 circuit)
- Total front access DSX-3 interconnect module
- Standard or midsize (mini-WECO) switching coax jacks on front for testing, patching and monitoring (monitor ports off the OUT jacks)
- BNC connectors on front for IN/OUT equipment cabling
- Modules mount in DS3 MPOP-FA-19, DS3 MPOP FA-23 and DS3 MPOP-WM chassis

Description	Dimensions (HxWxD)	Catalog Number			
Total front access DS3 interconnect module	Total front access DS3 interconnect module				
Standard size coax jacks, BNC connectors	38 mm x 131 mm x 107 mm (1.51" x 5.14" x 4.23")	DS-3 MPOP-FA			
Midsize (mini-WECO) coax jacks, BNC connectors	38 mm x 131 mm x 107 mm (1.51" x 5.14" x 4.23")	DS-3 MPOP-FAM			
Wall mount chassis Accommodates (4) DS3 MPOP-FA style modules	224 mm x 216 mm x 142 mm (8.8" x 8.5" x 5.6")	DS-3 MPOP-WM			
Rack mount chassis					
Accommodates (3) DS3 MPOP-FA style modules; reversible mounting ears for 483/584 mm (19" or 23") mounting; flush, 51 mm or 76 mm (2" or 3") recess mounting	45 mm x 483/584 mm x 191 mm (1.75" x 19" or 23" x 7.5") depth includes 76.2 mm (3") cable tray	DS-3 MPOP-FA-19			
Accommodates (4) DS3 MPOP-FA style modules; flush, 51 mm or 76 mm (2 " or 3 ") recess mounting	45 mm x 584 mm x 191 mm (1.75" x 23" x 7.5") depth includes 76 mm (3") cable tray	DS-3 MPOP-FA-23			



# **Total Front Access Interconnect Wall Box**

Minimum Point of Presence (MPOP)

### DS3 MPOP-WMSB Series — Secure Wall Mount Box





#### Features

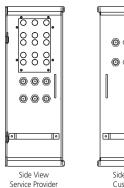
- Provides a secured DS3 demarcation point for up to three DS3 circuits
- Ability to lock both sides of the box provides security for both the service provider and the customer
- Connections on the service provider side consist of BNC connectors for IN/OUT equipment cabling, with jack access for monitoring and testing
- Customer side connections consist of BNC connectors for IN/OUT equipment cabling. The DS3 MPOP-WMSB2C also provides dual monitor ports
- Suitable for secured building riser applications



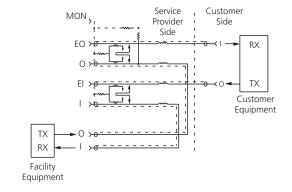
# **Total Front Access Interconnect Wall Box**

Minimum Point of Presence (MPOP)

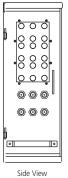
DS3 MPOP-WMSB Series — Secure Wall Mount Box



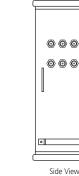




DS-3 MPOP-WMSB

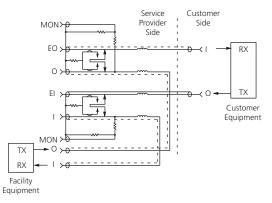


Service Provider

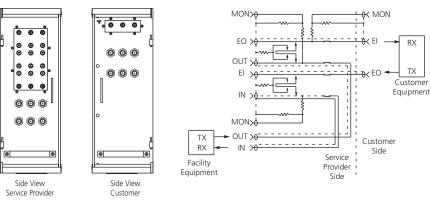


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Customer



#### DS-3 MPOP-WMSB2M and DS-3 MPOP-WMSB2



DS-3 MPOP-WMSB3M and DS-3 MPOP-WMSB3



# **Total Front Access Interconnect Wall Box**

Minimum Point of Presence (MPOP)

#### DS3 MPOP-WMSB Series — Secure Wall Mount Box

Description	Dimensions	Catalog Number
Secure wall mount box Two locking doors; secured DS3 demarcation point for upto 3 DS3 circuits	346 mm x 406 mm x 131 mm (13.6" x 16" x 5.1")	
Standard size coax jacks		
Single monitor on service provider side; mon	itors signal from the network	DS-3 MPOP-WMSB
Dual monitor on service provider side; monitors signal from the network and signal to the network		DS-3 MPOP-WMSB2
Dual monitor on service provider side monitors signal from the network and signal to the network; single monitor on customer side monitors signal from the network		DS-3 MPOP-WMSB3
Midsize coax jacks		·
Dual monitor on service provider side; monitors signal from the network and signal to the network		DS-3 MPOP-WMSB2M
Dual monitor on service provider side monitors signal from the network and signal to the network; single monitor on customer side monitors signal from the network		DS-3 MPOP-WMSB3M

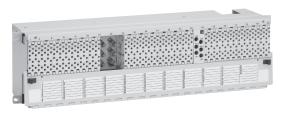
# **Specialty Panels** FlexDSX<sup>®</sup> Multifunction Panel

CommScope's FlexDSX<sup>®</sup> multifunction product solutions provide maximum flexibility while eliminating the need to support multiple DS1, DS3, fiber and Ethernet panels, particularly valuable in a small to medium size application.

Designed to meet your requirements, one FlexDSX<sup>®</sup> panel is capable of housing all forms of multimedia services, including fiber, coax, and twisted pair connectivity. Ultimate flexibility is provided with the mix and match modularity of FlexDSX modules.

Attain space savings through FlexDSX's compact, high-density design without compromising full test access functionality including the dual monitor feature of the DS1 and DS3 modules.

The FlexDSX multifunction panel offers the convenience of complete M13 mux termination in a single compact 19" W x 5.25" H panel.



#### FlexDSX Multifunction Panel

#### **Features**

- Increased modularity
- Increased efficiency and flexibility
- One panel meets DS1/3, fiber, and Ethernet termination requirements
- Interchangeable modules allow maximum flexibility
  - DS1
  - DS3
  - Fiber terminations
- Ethernet modules
- Compact size for standard mounting
  - 5.25" high EIA
  - 6" high WECO
- Supports bidirectional testing
- High-density
  - 16 modules in 19" width
  - 21 modules in 23" width

# **Specialty Panels** FlexDSX<sup>®</sup> Multifunction Panel

CommScope's FlexDSX<sup>®</sup> multifunction panel can support a variety of module combinations and DS1/3 or fiber handoffs. The DS1 cross-connect provides four jack cards per module with a dual monitor while two network element terminations with bidirectional circuit access are provided by each DS3 interconnect module. The fiber termination module is equipped with six SC-type adapters. The FlexDSX multifunction panel's modular design easily adapts to meet a variety of customer needs.

#### Applications

- Wireless cell sites
- OSP cabinets, CEV or hut
- POP
- Collocation
- CPE











DS1 Module

DS3 Module

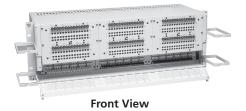
Fiber Module

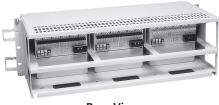
**RJ Module** 

Description	Dimensions (HxWxD)	Catalog Number
Panels		
19" empty panel; 16 module capacity	133 mm x 483 mm x 127 mm (5.25" x 19" x 5")	DFX-9T0003
23" empty panel; 21 module capacity	152 mm x 584 mm x 152 mm (6" x 23" x 6")	DFX-9T0001
Modules		
DS1 module; includes (4) jack cards with dual monitor	1 module width	DFX-9T1000
DS3 module MPOP interconnect; includes jacks for (2) network elements (IN/OUT)	1 module width	DFX-D3000
Fiber module; includes (6) SC adapters	2 module width	DFX-SC0002
RJ Category 5e Ethernet module; includes (3) Catagory 5e RJ45 coupler adapters	1 module width	DFX-9RJ002
RJ Category 6 Ethernet module; includes (3) Catagory 6 RJ45 coupler adapters	1 module width	DFX-9RJ006

# **Specialty Panels** Modular DS1/DS3 Combination Panel

The modular DSX-1/3 chassis accommodates three 28-termination DS1 modules, three non-modular 4-termination DS3 modules, a six-position modular DS3 mounting sleeve, or any combination. The chassis is designed for the outside plant environment and can be installed in a cabinet, CEV, or hut. The option to include one DS1 module is available or an empty chassis can be ordered with additional modules as needed.





**Rear View** 

Ordering Information

#### **Features**

- DS1 module features front wire-wrap cross-connects and rear wire-wrap equipment cable interface
- DS3 module features rear BNC cross-connect and equipment cable interfaces
- Tracer LEDs eliminate manual tracing of crossconnect wires for fast circuit identification
- Chassis and module color: putty



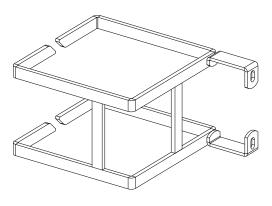
#### Chassis with DS1 Modules

ordering information		<b>F</b>	1
Description	Circuit Density	Dimensions (HxWxD)	Catalog Number
Chassis			
Chassis with one module; 51 mm, 76 mm, 102 mm (2", 3", 4") recess; 1-14, 15-28 designation	28	178 mm x 584 mm x 229 mm (7" x 23" x 9")	D1M-1X0012*
Empty chassis 3-position; 51 mm, 76 mm, 102 mm (2", 3", 4") recess	84 DS1 18 DS3	178 mm x 584 mm x 229 mm (7" x 23" x 9")	D1M-1X0027
Modules			
DS1 module; mounts into D1M-1X0012 chassis; 1-14, 15-28 designation	28	-	D1M-1A0042
DS3 module; mounts into D1M-1X0012 chassis; 1-4 designation	4 midsize jacks	-	D3M-XRMC11
DS3 module; mounts into D1M-1X0012 chassis; 1-4 designation	4 standard size jacks	-	D3M-XRSC11
6-port midsize (mini-WECO) module; mounts into DSX4H-6HDSL	1 DS3	-	DSX-4H-MBRC-BA
Mounting sleeve 6-position; mounts into DIM-1X0027; 1-6 designation	6 DS3	_	DSX4H-6HDSL
<b>DS1/DS3 combo panel;</b> non-modular; 1-28 ABC, 1-3 designation	84 DS1 3 DS3	178 mm x 584 mm x 203 mm (7" x 23" x 8")	D1M-1A0060

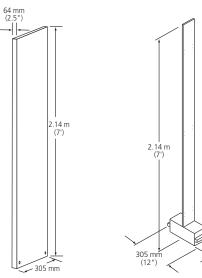
\* Chassis has three total module positions. One 28-termination module is included. The two additional modules are ordered separately.



# **Rack Hardware**



Jumper Ring Kit (AUX-OX0439)



Universal End Guard Panel (RAC-7B0162) Fixed Rack Filler Panel (RAC-7C0274)

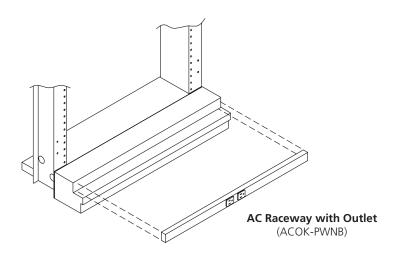
127 cm

Description	Dimensions (HxW/HxWxD)	305 mm (12") Deep System Catalog Number	381 mm (15") Deep System Catalog Number
Fixed rack filler panel			
Closed guard box for concrete floors-	2.14 m x 64 mm (7' x 2.5")	7RFP-25NPW	RAC-7C0274
equipment cables enter from overhead	2.14 m x 120 mm (7' x 5")	7RFP-5NPW	RAC-7C0161
	2.14 m x 254 mm (7' x 10")	7RFP-10NPW	RAC-7C0199
Open guard box for raised floors-	2.14 m x 64 mm (7' x 2.5")	RAC-7C0554	RAC-7C0553
equipment cables enter from below	2.14 m x 120 mm (7' x 5")	RAC-7C0353	RAC-7C0496
	2.14 m x 254 mm (7' x 10")	RAC-7C0563	RAC-7C0564
Hinged rack filler panel			
Closed guard box for concrete floors-	2.14 m x 120 mm (7' x 5")	RAC-7C0256	RAC-7C0381
equipment cables enter from overhead	2.14 m x 254 mm (7' x 10")	RAC-7C0370	RAC-7C0382
Open guard box for raised floors-	2.14 m x 120 mm (7' x 5")	RAC-7C0556	RAC-7C0555
equipment cables enter from below	2.14 m x 254 mm (7' x 10")	RAC-7C0565	RAC-7C0566
Universal end guard panel	2.14 m (7')	UEGP-7PW	RAC-7B0162
Jumper ring kit includes two jumper ring	g weldments		
Used with DSX-4R rear cross-connect 12" systems	102 mm x 152 mm x 108 mm (4" x 6" x 4.25")	DSX-4J-CBL-1	_
Used with DSX-4L rear cross-connect 12 " systems	152 mm x 165 mm x 127 mm (6" x 6.5" x 5")	DSX4L-CBL-1R	_
Used with DSX-4R rear cross-connect 15" systems	102 mm x 152 mm x 203 mm (4" x 6" x 8")	-	AUX-0X0439
Used with DSX-4L rear cross-connect 15" systems	152 mm x 152 mm x 203 mm (6" x 6" x 8")	-	DSX4L-CBL-66R
Used with DSX-4L front cross-connect 12" and 15" systems	225 mm x 102 mm x 89 mm (8.75" x 4"x3.5")	DSX4L-CBL-1F	

Note: color is putty.



# **Rack Hardware**



Description	Dimensions (HxW)	Catalog Number
AC raceway	· · · · · · · · · · · · · · · · · · ·	·
With outlet (2 per rack where outl	ets are required)	ACOK-PWNB
Without outlet (2 per rack where o	outlets are not required)	ACB-PWNB
AC raceway filler		
64 mm (2.5"); (2 per 2.5" filler pa	nel)	AC-PWNB-RS2.5
127 mm (5"); (2 per 5" filler pane	l)	AC-PWNB-RS5
254 mm (10"); (2 per 10" filler pa	nel)	AC-PWNB-RS10
Blank panels		
WECO	51 mm x 584 mm (2" x 23")	PWBP-2023
	102 mm x 584 mm (4" x 23")	PWBP-4023
	152 mm x 584 mm (6" x 23")	PWBP-6023
	203 mm x 584 mm (8" x 23")	PWBP-8023
EIA	45 mm x 584 mm (1.75" x 23")	PWBP-1723
	89 mm x 584 mm (3.5" x 23")	PWBP-3523
	133 mm x 584 mm (5.25" x 23")	PWBP-5223
	178 mm x 584 mm (7" x 23")	PWBP-7023
Rack installation kits		•
Concrete floor rack installation	kit;	
for use <b>with</b> overhead cable rackir 2.14 m (7') network rack kit includ (1) floor mounting kit (1) top attachment kit for 7' rac (12) rack tie bracket kits (1) rack grounding kit	es:	RINST-DSX7-PW
Raised floor rack installation ki for use <i>without</i> overhead cable ra 2.14 m (7') network rack kit incl (1) raised floor mounting kit (12) rack tie bracket kits (1) rack grounding kit	acking	RINST-DSXRFL-PW

Note: color is putty.

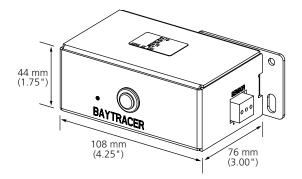


# **Auxiliary Equipment**

BayTracer<sup>®</sup> Illuminator

CommScope's BayTracer<sup>®</sup> Illuminator product speeds up circuit identification and troubleshooting in large serving offices, while saving both money and valuable technician time.



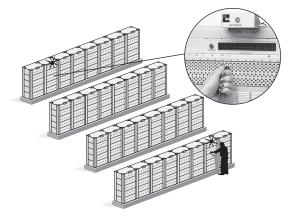


#### Application

The unit is automatically activated through the DSX fuse panel whenever an individual tracer LED is activated. After a 90-second flashing cycle, the BayTracer will turn off until the next tracer event. The DSX jack LED flashes for 30 seconds and then stays lit, as before, until a technician deactivates the LED.

#### Features

- Big savings for big lineups
- Expedites maintenance activities; focus valuable technician time on revenue generating activities
- Immediate savings
  - Saves money in first year of operation
- Easy to install
- Attaches to top of existing DSX-3 bays
- Easy to see
  - Aids in quick cross-connect identification; large, ultra-bright red flashing illuminator is easy to see in long bay lineups
- 90 second timer
  - Allows time to scan in even the longest lineups and largest offices
- Reset feature
  - Enables automatic operation; eliminates need to physically reactivate LEDs



Description	Catalog Number		
BayTracer Illuminator			
For LED style DSX panels	AUX-BT0001		
For LAMP style DSX panels	AUX-BTLF01		
Blank plate with knock-out hole for mounting BayTracer (used on rear cross-connect bays - optional)	PWBP-8023BT		
Stand-off brackets (used on front cross-connect bays - optional)			
127 mm (5") upper trough	AUX-0X6671		
203 mm (8") upper trough	AUX-0X6672		
254 mm (10") upper trough	AUX-0X6673		



# **Auxiliary Equipment**

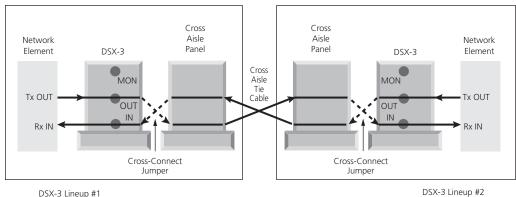
**Cross Aisle Panels** 

Cross aisle panels are placed in nonadjacent DSX-3 environments; i.e., multiple bay lineups, multiple floor locations, customer hand-off interface locations, etc. The cross aisle panels are connected to each other by permanent tie cables. When service is required between the two environments, a semipermanent cross-connect jumper is run between the DSX-3 module and the cross aisle panel in each environment to complete the circuit path.

#### **Features**

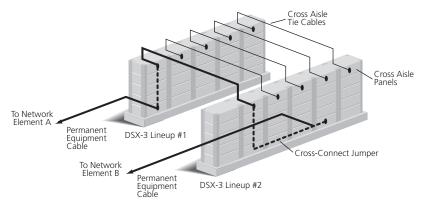
- Termination fields for extending tie cables between bay lineups
- · Provide cable termination and cross-connect functions, no jack access
- Eliminate need to run semi-permanent cross-connect jumpers between lineups in the overhead cable rack; prevent semi-permanent jumpers from becoming mixed with permanent equipment cabling
- Keep jumpers accessible for reconfiguration
- Circuits are connected by placing a jumper from each cross-aisle panel in each lineup to the appropriate DSX position
- Installs in same racks as DSX equipment
- Equipped with cable management hardware compatible with CommScope's full line of DSX-3 cross-connect panels
- Color: putty

## Application



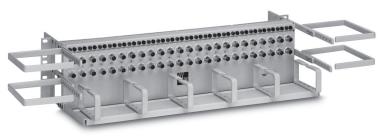
DSX-3 Lineup #1

**Cross Aisle Panel Signal Flow** 



**Cross Aisle Panel Application** 

# Auxiliary Equipment Cross Aisle Panels



DSX-XA-BB-24S

#### Ordering Information

0140111	g inite inte				
Circuit Density	Cross-Connect Interface	Tie Cable Interface	Dimensions (HxWxD)	Catalog Number	
24	BNC	BNC	102 mm x 584 mm x 127 mm (4" x 23" x 5")	DSX-XA-BB-24L	
24	BNC	BNC	133 mm x 584 mm x 260 mm (5.25" x 23" x 10")	DSX-XA-BB-24S	
24 with LEDs	BNC	BNC	102 mm x 584 mmx 305 mm (4" x 23"12")	DSX-XA-BB-24R	
16	BNC	BNC	89 mm x 483/584 x 127 mm (3.5" x 19"/23" x 5")	DSX-XA-BB-16-PW	
24**	Midsize jacks (mini-WECO)	BNC	152 mm x 343 mm x 254 mm (6" x 13.5" x 10")	DSX-XA-MB-24/13.5	
48**	Midsize jacks (mini-WECO)	BNC	178 mm x 483/584 mm x 203 mm (7" x 19/23" x 8")	DSX-XA-MB-48	
48 with LEDs**	Midsize jacks (mini-WECO)	BNC	178 mm x 483/584 mm x 203 mm (7" x 19/23" x 8")	DSX-XA-MB-48L	
48 with LEDs*	LCC	LCC	152 mm x 584 mm x 127 mm (6" x 23" x 5")	DSX4L-48XAL	
48*	LCC	LCC	152 mm x 584 mm x 127 mm (6" x 23" x 5")	DSX4L-48XA	

Note: Cross aisle panels include tracer pin jacks for cross-connect jumper messenger wire interface. Color is putty.

\*Suitable for front or rear cross-connect applications.

For front cross-connect applications: order cable ring kit DSX4L-CBL-5FXA.

\*\*Typically used in front cross-connect bay applications.

LCC = Little Coax Connector

# **Auxiliary Equipment**

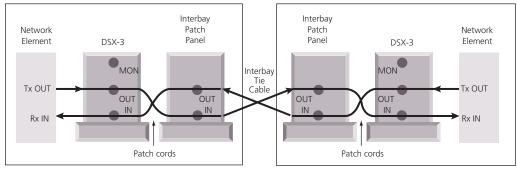
Interbay Patch Panels

In lengthy or multiple DSX bay lineups, the interbay patch panel provides a means of extending a standard length patch cord. The interbay patch panel eliminates the need to stretch patch cords long distances between bays and across aisles – a practice that can result in potential service outages. Patches are made from the DSX point-of-signal origin to the nearest interbay panel. The signal is then transmitted via tie cables to a second interbay patch panel mounted in a different bay. A second patch is then made from the second interbay patch panel to the terminating signal location.

#### Features

- Patch input and output jacks between DSX lineups
- Provides tie cable termination and jack access functions
- Placed in maintenance bays within the DSX-3 environment
- 19- or 23-inch widths available
- Equipped with circuit identification labels and rear cable bars

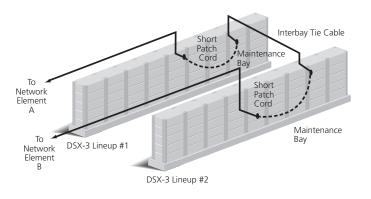
#### Application



DSX-3 Lineup #1

DSX-3 Lineup #2





**Interbay Patch Panel Application** 

# Auxiliary Equipment Interbay Patch Panels



DSX-IB-MB-24

#### Ordering Information

Patching Interface	Tie Cable Interface	Dimensions (HxWxD)	Catalog Number
24 midsize (mini-WECO) jacks	BNC	45 mm x 483/584 mm x 152 mm (1.75" x 19/23" x 6")	DSX-IB-MB-24-T
24 midsize (mini-WECO) jacks	BNC	51 mm x 584 mm x 152 mm (2" x 23" x 6")	DSX-IB-MB-24
24 midsize (mini-WECO) switching jacks with LEDs	BNC	152 mm x 584 mm x 254 mm (6" x 23" x 10")	DSX-IB-MB-24L
24 standard-size jacks	BNC	51 mm x 584 mm x 152 mm (2" x 23" x 6")	DSX-IB-SB-24
24 circuit LCJ patching jacks	LCC	89 mm x 483/584 mm x 211 mm (3.5" x 19"/23" x 8.3")	DSX4L-24IB

Note: Color is putty.

LCJ = Little Coax Jack

LCC = Little Coax Connector

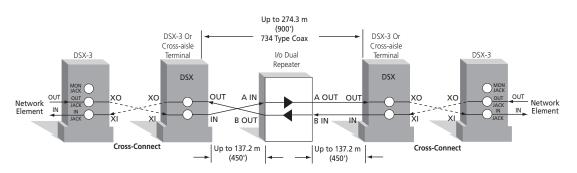
# **Auxiliary Equipment**

**DS3** Repeaters

Repeaters enhance network flexibility by allowing the extension of cable distance between DSX-3 bays or Network Elements (NEs). Repeaters regenerate the signal to ensure that NEs receive the proper signal levels. The intraoffice repeater (IOR) is typically used to extend the signal in long lineups and between multiple floors within a central office. Cross-connect cable distances are extended from 21 feet to 900 feet. The bridging office repeater (BOR) allows in-service patch-and-roll functions when in-service rerouting or patching is required.

#### Features

- Switch-selectable transmission rate - DS3 or STS-1
- Individual on-board power supply
- Tracer LEDs for easy circuit identification
- Modular system allows any module to fit into any chassis
- Repeater cards can be added as system requirements increase



#### Repeater Chassis

A variety of repeater chassis offer capacity, termination and mounting features to fit system requirements. The connectorized backplane supports precabling operations allowing cost deferral of repeater module plug-ins until needed for circuit turnup. The repeater chassis is powered from two separate 48 Vdc office battery power sources. An onboard DC-to-DC converter within each repeater module produces the voltage required for powering signal regeneration.

#### Features

• The 23-inch chassis holds 16 non-protected modules

#### Portable Bridging Office Repeater Chassis



The compact bridging office repeater portable unit with its lightweight design is easy to carry and allows use in multiple locations. Powered by 110/220 AC, the chassis holds up to four bridging office repeater modules. The chassis features a snap-off lid, soft-sided carrying case, and a storage area for miscellaneous accessories.

# Auxiliary Equipment DS3 Repeaters





**Dual Intraoffice Repeater Module** (RP3-A20000)

Dual Bridging office Repeater Module (RP3-B20000)

Ordering Information Description	Dimensions (HxWxD)	Catalog Number
<b>Dual intraoffice repeater</b> (IOR) with individuation for DS3 signal and STS-1 electrical signal	RP3-A20000	
<b>Dual bridging office repeater</b> (BOR) with ext for DS3 signal and STS-1 electrical signal	ended output range suitable	RP3-B20000
Repeater Chassis		
16-position rack mount chassis	152 mm x 584 mm x 305 mm (6" x 23" x 12")	RP3-2A0000
1-position wall mount chassis	191 mm x 44 mm x 222 mm (7.5" x 8.75" x 1.75)	RP3-4A0000
Heat baffle*	44 mm x 483/584 mm x 305 mm (1.75" x 19"/23" x 12")	HDW-100461
4-position portable bridging office repeater chassis**	196 mm x 310 mm x 360 mm (7.7" x 12.2" x 14")	RP3-3X0000

Note: Repeater modules can be used in any chassis listed above.

\*Heat baffle is recommended between every two 16-position rack mounted repeater chassis

\*\*Repeater modules ordered seperately.

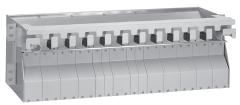
# Auxiliary Equipment

Extend<sup>™</sup> Optical/Electrical Line Extender

CommScope's Extend<sup>™</sup> Optical/Electrical Line Extender transports support DS3/STS-1 signals over extended distances and simplifies cabling in multi-floor and multi-building network infrastructures. The modular platform features modules that convert network element electrical signals to optical signals for simplified long distance signal transmissions.

#### Features

- Extends DS3 or STS-1 signal up to 15 kilometers (9.375 miles)
- NEBS Level 3 compliant
- Modular design in 24-position rack-mounted chassis or single/dual wall-mounted chassis
- Integrated passive heat baffle requires no active fan units
- Standard -48 Vdc powering via redundant A/B power feeds



**Rack-Mounted Chassis** 



**Wall-Mounted Chassis** 

with extension brackets

**Cable Rings** 



Wall-Mounted Chassis



Module

Ordering	Information

Description	Dimensions (HxWxD)	Catalog Number
<b>Rack-mounted chassis with integrated heat baffle</b> Supports 24 modules (includes vertical cable guides)	178 mm x 583 mm x 254 mm (7" x 23" x 10.2")	RP3-2X0000
Wall-mounted chassis Supports one module (Includes wall-mount expansion bracket, which allows for additional line extender to mount on existing wall mount chassis)	235 mm x 284 mm x 49 mm (9.3" x 15" x 1.9")	RP3-2XW001
<b>Module</b> Supports one bidirectional DS3 or STS-1 signal (Two modules are required to complete a circuit)	112 mm x 22 mm x 213 mm (4.4" x .85" x 8.4")	RP3-E10000
<b>Cable rings</b> Only required when additional cable management is needed on the rack. Shipped per set	178 mm x 114 mm x 127 mm (7" x 4.5" x 5")	RP3-2X-CBL-KIT
Single AC/DC power supply Supports one optical/electrical wall-mounted chassis; input voltage 120VAC, output voltage -48V, output current .40 Amps	97 mm x 56 mm x 33 mm (3.8" x 2.2" x 1.3")	RP3-2XWP01



# **Auxiliary Equipment**

Communications Panel

The communications panel offers telephone access during bay lineup maintenance originating and answering telephone calls between locations to coordinate maintenance activities. Microprocessor controlled and designed software creates a flexible, highly reliable unit that is easy to install and operate.



(Front View)

#### Features

- Touch key access to nine dial lines; lines 8 and/or 9 may be changed to signaling or intercom mode by switch setting
- Any four dial lines or two intercom lines may be conferenced
- Supports either Dual Tone Multifrequency (DTMF) or Dial Pulse (DP) signaling
- Hold, conference, and on-hook key features for use with a 1A2 key telephone system
- Jack access is provided for a 52-type headset or equivalent telephone set
- Yellow LED above each line key designates visual circuit status, a green LED lights when the key is pressed and is extinguished when the key is pressed a second time.

Ordering Information		
Description	Dimensions (HxWxD)	Catalog Number
<b>Communications panel</b> Touch key access to 9 dial lines (POTS or 1A2 key telephone) or 7 dial lines and any combination of 2 office intercom and signal lines along with hold, conferencing and on-hook features; access to dial and intercom lines is via jack connected to 52-type headset or equivalent telephone set; comes with reversible mounting ears for 19" or 23" (483 or 584 mm) racks.	89 mm x 483 or 584 mm x 127 mm (3.5" x 19 or 23" x 5")	COMP-21
<b>Communications panel</b> Includes all same features as COMP-21. Equipped with remote headset extension jack circuit. 9 touch keys that permit remote headset extension jacks to be connected to any telephone line key position while allowing the panel to be free for use on other telephone or intercom lines; comes with reversible mounting ears for 19" or 23" (483 mm or 584 mm) racks.	89 mm x 483 or 584 mm x 127 mm (3.5" x 19 or 23" x 5")	COMP-11
<b>Vertical mount communications panel</b> Touch key access to 9 dial lines (POTS or 1A2 key telephone) or 7 dial lines and any combination of 2 office intercom and signal lines along with hold; conferencing and on-hook features; access to dial and intercom lines is via jack connected to 52-type headset or equivalent telephone set.	89 mm x 450 mm x 127 mm (3.5" x 17.7" x 5")	COMP-31



# **Auxiliary Equipment** Communications Panel Accessories

#### Ordering Information

Description	Catalog Number	
Headsets and handsets		
Headset for communications panel with 3.66 m (12') coil cord	COMP-HDS	
Handset for communications panel with 2.75 m (9') coil cord	COMP-HNDSKIT	
Handset/headset holder mounts to equipment rack	COMP-HNR-P	
Remote headset jack box	HSE-100001	
Cable assembly		
Allows daisy chaining COMP-11, 21, 31 to older 660 style communications panels	COMP-CNVN CORD	
Allows daisy chaining COMP-11, 21, 31 to Porta type 925 communications panels	COMP-CNVN PORTA	

# **Auxiliary Equipment**

Fuse Panels

Primarily used to power LEDs in DSX modules, fuse panels are also used to power auxiliary equipment such as intraoffice and bridging repeaters and communication panels.

#### Features

- NEBS Level 3, UL, NEC 1999 and CSA compliant
- Mounting brackets for 19-inch or 23-inch mounting included
- Field-replaceable, high-brilliance red LEDs ensure panel uptime
- Enhanced fuse visibility with "upside down" installed GMT fuse holders
- Two-hole compression lug style power input terminals

## 20-Position Fuse Panel

Ordering Information			
Description	Dimensions (HxW)	Catalog Number	
Fuse panel; putty	45 mm x 483/584 mm (1.75" x 19"/23")	PDP-FPCS201PWWXX	

# Specifications

#### ELECTRICAL

Input power: Bus amperage: Remote alarm contact (resistive load): Local alarm indicator: GMT Fuses: -42 to -56 Vdc (no strapping required) 60 Amps maximum per bus 125V maximum LED 3 Amps maximum per fuse

# GMT Fuses

Ordering Information				
Description	Amperage	Fuse Color	Catalog Number	Catalog Number with Pin Identifier
GMT fuses	3	Blue	F-3	P-3
	2	Orange	F-2	P-2
	1 - 1/3	White	F-1 1/3	P-1 1/3
	1	Gray	F-1	P-1
	3/4	Brown	F-3/4	P-3/4
	1/2	Red	F-1/2	P-1/2
	1/4	Violet	F-1/4	P-1/4
	Dummy fuse	N/A	GMT-DUMMY	N/A



# Auxiliary Equipment Horizontal Cable Troughs

Cable troughs are used for horizontal cable management. Generally two cable troughs are required, one at the top and one at the bottom of each rack.



#### **Ordering Information**

Description	Dimensions (HxWxD)	Catalog Number
Horizontal cable trough Rounded bottom edges ensure proper coaxial cable bend radius (see figure 1)	203 mm x 584 mm x 203 mm (8" x 23" x 8")	AUX-2D0010
	127 mm x 584 mm x 203 mm (7" x 23" x 8")	AUX-2D5010
	152 mm x 584 mm x 203 mm (6" x 23" x 8")	AUX-2D0009
	203 mm x 584 mm x 127 mm (8" x 23" x 5")	AUX-2D0006
	178 mm x 584 mm x 127 mm (7" x 23" x 5")	AUX-2D0012
	152 mm x 584 mm x 127 mm (6" x 23" x 5")	DSX-CT-23H

#### Horizontal cable trough with rings

Rings extend into rack filler panel area and neatly transition jumpers from horizontal to vertical routing; rounded bottom edges ensure proper coaxial cable bend radius (see figure 2)

584 mm (23") mounting, use with 254 mm (10") spacing between bays	203 mm x 876 mm x 203 mm (8" x 34.5" x 8")	AUX-2D0026
	203 mm x 876 mm x 127 mm (8" x 34.5" x 5")	AUX-2D0025
584 mm (23") mounting, use with 127 mm (5") spacing between bays	203 mm x 749 mm x 203 mm (8" x 29.5" x 8")	AUX-2D0028
	178 mm x 749 mm x 203 mm (7" x 29.5" x 8")	AUX-2D0034
	152 mm x 749 mm x 203 mm (6"x 29.5" x 8")	AUX-2D0031
	203 mm x 749 mm x 127 mm (8" x 29.5" x 5")	AUX-2D0027
	178 mm x 749 mm x 127 mm (7" x 29.5" x 5")	AUX-2D0033
	152 mm x 749 mm x 127 mm (6" x 29.5" x 5")	AUX-2D0037

Note: color is putty

# Circuit Guard Plugs

Plastic plug to cover IN/OUT jacks from unwanted access to priority circuits – kits of 25 each.

Ordering Information			
Description	Midsize	Standard	LCJ
Red	CJP-M-RED	CJP-S-RED	LCA-300001
Black	CJP-M-BLACK	CJP-S-BLACK	LCA-300002
Yellow	CJP-M-YELLOW	CJP-S-YELLOW	LCA-300003
Green	CJP-M-GREEN	CJP-S-GREEN	LCA-300004
Blue	CJP-M-BLUE	CJP-S-BLUE	LCA-300005



CJP-M-BLACK

# Termination Plugs

Used in many patching applications to maintain signal termination at 75 Ohm.

Ordering Information		
Description	Midsize	LCP
75 Ohm plug	CP1501N	LCA-210001

# Termination Connector - BNC

Used to terminate cross-connect interface at 75 Ohm.

Ordering Information	

Description	Catalog Number
75 Ohm BNC connector	BNC-TP2

# Looping Cords

Provides a short patch between equipment transmit (OUT) and receive (IN) during initial installation and routine testing.

Ordering Information			
Description	Midsize	LCP	
229 mm ( 9") looping cord	PCH-MMXB-009D	PCH-DDXC-006D	

Note: Midsize Plug Diameter = 7.6 mm (.298")



CP1501N



BNC-TP2



PCH-MMXB-009D









MBNC-3

CP1051MN

### Ordering Information

Description	Catalog Number
Specialty adapters	
Midsize (mini-WECO) receptacle/standard-size plug; converts a midsize (mini-WECO) plug into a standard-size plug	CAXADPT-3
Standard-size receptacle/midsize (mini-WECO) plug; converts a standard-size plug into a midsize (mini-WECO) plug	CAXADPT-2
Standard-size receptacle/midsize (mini-WECO) receptacle; accepts a standard-size plug into one end and a midsize (mini-WECO) plug into the other	CAXADPT-1
BNC receptacle/midsize (mini-WECO) plug; converts a BNC connector into a midsize (mini-WECO) plug	MBNC-3
BNC receptacle/standard monitor plug; converts a BNC connector into a standard monitor plug (plug does not activate switching jack)	CP1051MN
BNC receptacle/standard-size receptacle; converts a BNC into a standard-size plug	CP1051N

Note: Midsize (mini-WECO) Plug Diameter = 7.6 mm (.298") Standard-Size Plug Diameter = 9.2 mm (.375")

Replacement LEDs



FLED-A-RED

#### Ordering Information

Description	Catalog Number
Replacement LEDs	
For use in Mini DSX-3 modules (straight leads - 48V	)
Red	FLEDR
Green	FLEDG
Yellow	FLEDY
Orange	FLEDO
For use in DSX-4R and DSX-4K chassis	
Red	FLED-A-RED
Green	FLED-A-GREEN
Yellow	FLED-A-YEL
Orange	FLED-A-ORANGE

Patch Cords

Patch Cords (with RG59 Type Cable)

Used to patch between DSX-3 Jacks



**Patch Cords** 

PCH	_ XB

Catalog Number

Patch	Cord	Leng	gth

	i lug iype		
	MM	Midsize plugs	
SS Standard-size plugs		Standard-size plugs	
BB BNC co		BNC connector	
	DD	LCP Plug	

	Patch Cord Length		
001-010		Lengths in 0.31 m (1') increments	
		Lengths in 0.61 m (2') increments	
	035-050	Lengths in 1.52 m (5') increments	

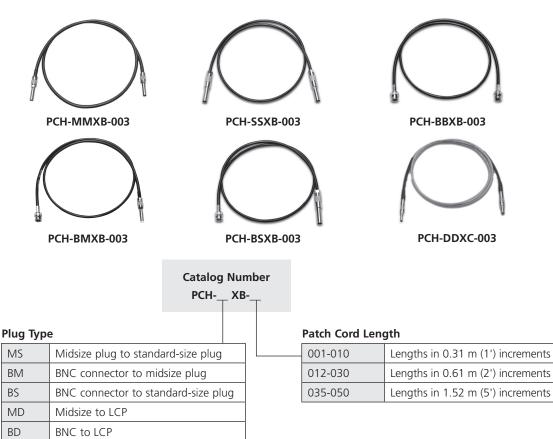
#### Ordering Example:

Plug Type

Catalog number PCH-MMXB-012. 3.7 m (12') patch cord with midsize (mini-WECO) plugs on both ends.

## Conversion Patch Cords (with RG59 Type Cable)

Used to patch between different jacks such as DSX-3 jacks to test set jacks



#### Ordering Example:

Catalog number PCH-MSXB-012.

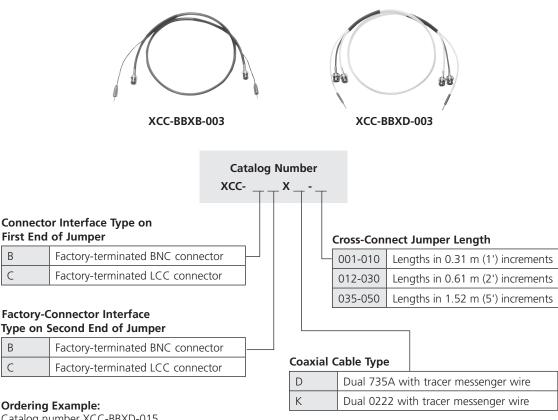
3.7 m (12') patch cord with midsize (mini-WECO) plugs on one end and standard-size plug on the other end.



**Rear Cross-Connect Jumpers** 

# Factory-Terminated

Factory-terminated jumpers have factory-terminated connectors and tracer pins on both ends.



#### Ordering Example:

Catalog number XCC-BBXD-015.

4.6 m (15') patch cord dual cross-connect jumper using 735A type coaxial cable with tracer messenger wire. (2) BNC connectors and tracer pin factory terminated on both ends of cable.

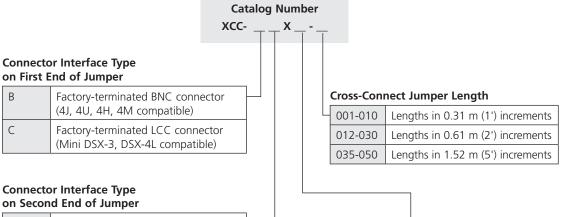
Rear Cross-Connect Jumpers

# Field-Terminated

Connector(s) and tracer pin(s) factory terminated on one end; connector(s) and tracer pin(s) for other end shipped unattached for customer termination.



XCC-B1XD-003



1	Field-terminated BNC connector (4J, 4U, 4H, 4M compatible)
7	Field-terminated LCC connector
	(Mini DSX-3, DSX-4L compatible)

#### **Ordering Example:**

Catalog number XCC-B1XD-010. 3.05 m (10') dual cross-connect jumper using 735A type coaxial cable with tracer messenger wire. (2) BNC connectors and tracer pin factory terminated on one end of cable. (2) BNC connectors and tracer pin shipped unattached for field termination by customer on other end of cable.

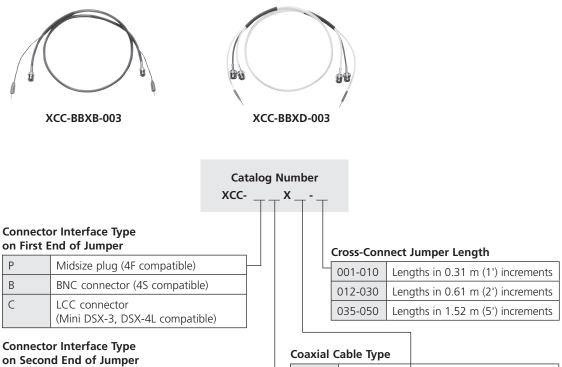
#### Coaxial Cable Type

В	<ul> <li>Single RG59 with tracer messenger wire (4M compatible)</li> <li>Single 735A with tracer messenger wire (4J, 4U, 4H, 4M compatible)</li> <li>Dual 735A with tracer messenger wire (4J, 4U, 4H, 4M compatible)</li> <li>Dual 0222 with tracer messenger wire (4J, 4U, 4H, 4M compatible)</li> </ul>	
С		
D		
К		

Front Cross-Connected Jumpers

# Factory-Terminated

Connectors and tracer pins are factory-terminated on both ends.



Р	Midsize plug (4F compatible)	
В	BNC connector (4S compatible)	
	LCC connector (Mini DSX-3, DSX-4L compatible)	

#### Ordering Example:

Catalog number XCC-MMXD-015. 4.6 m (15') long dual cross-connect jumper using

735A type coaxial cable with tracer messenger wire. (2) midsize plugs and tracer pin factory terminated on both ends of cable.

D	Dual 735A with tracer messenger wire	
	(4S compatible)	
К	Dual 0222 with tracer messenger wire	
	(4F, 4S compatible)	

# Preterminated Equipment Cable

Preterminated equipment cable is available with connectors on one or both ends of the cable. Cable types include single 734 and 735A coaxial cables. In addition, the miniture 735A-type cable is available in bundleed cable with an outer overall jacket enclosing 2, 6, or 12 individually numbered coaxial conductors.



Catalog Number				
PCH	Γ-	_ <b>x</b> _	- <b>-</b> _	_ 
	J			C
				$\square$

#### Connector Interface Type on Second End of Jumper

Connector Interface Type on First End of Jumper

BNC connector

LCC connector

В

С

В	Factory-terminated BNC connector
Х	No connector (customer provided)

#### Ordering Example:

Catalog number PCH-BXXT-150. 45.6 m (150') 6-pack cable using 735A type cable with BNC connectors on one end only.

ber 		PCH-BXXX-025	
	Cable Le	enath	
	XXX	Lengths in 7.6 m (25') feet increments	

#### Coaxial Cable Type

D	Dual 735A (2 coaxial conductors)
Т	6-pack 735A (6 coaxial conductors)
Х	12-pack 735A (12 coaxial conductors)

# Bulk Equipment Cable

Ordering Information	
Description	Catalog Number
Bulk Equipment Cable	
Single 734	DSX-3-CMP
Single 735A	3AC-BB
Dual 735A (2 coaxial conductor)	3AC-2BB
6-pack single 735A (6 coaxial conductor)	3AC-6BB
12-pack single 735A (12 coaxial conductor)	3AC-12BB



Order in .3048 m (1') increments.

# Bulk 735A Cross-Connect Cable with Messenger Wire

#### Ordering Information

Description	Catalog Number
DS3 dual cross-connect cable with tracer lead; 304.8 m (1000 ft)	3AC-BDW-1000



## **Coaxial Connectors**





BNC-3

BNC-RA-3

#### Ordering Information

		matron			
	Cable Dimensions		Connector Crimp		Quantity: 1
Cable Type	Outer Jack Diameter	Center Conductor	Sleeve	Center Pin*	Catalog Number
Straight	BNC Connectors				
735A	3.2 mm (0.127")	26 gauge	4.5 mm (0.178")	1.10 mm (0.042")	BNC-3
0222	3.9 mm (0.155")	24 gauge	5 mm (0.197")	1.10 mm (0.042")	BNC-7
RG59	6.1 mm (0.241")	23 gauge	6.5 mm (0.255")	1.10 mm (0.042")	BNC-2
734	6 mm (0.236")	20 gauge	6.5 mm (0.255")	1.10 mm (0.042")	BNC-1
728	7.7 mm (0.305")	20 gauge	8.2 mm (0.324")	1.10 mm (0.042")	BNC-4
HEC-2	6.9 mm (.270")	20 guage	8.2 mm (.324")	1.10 mm (0.042")	BNC-5
Right A	ngle BNC Connecto	rs			
735A	3.2 mm (0.127")	26 gauge	4.5 mm (0.178")	1.10 mm (0.042")	BNC-RA-3
0222	3.9 mm (0.155")	24 gauge	5 mm (0.197")	1.10 mm (0.042")	BNC-RA-7
RG59	6.1 mm (0.241")	23 gauge	6.5 mm (0.255")	1.10 mm (0.042")	BNC-RA-2
734	6 mm (0.236")	20 gauge	6.5 mm (0.255")	1.10 mm (0.042")	BNC-RA-1
728	7.7 mm (0.305")	20 gauge	8.2 mm (0.324")	1.10 mm (0.042")	BNC-RA-4

\*In addition to 1.10 mm (.042") square pin crimp, all connectors listed are compatible with a 12 point method crimp. Tools for connector termination are available on page 81.

Bulk packaging of 100 is available. (Package inludes 100 connector bodies, 100 center pins and 100 crimp sleeves bagged seperately.

For bulk packaging add "B" to the, end of the catalog number. Example BNC-1B Quantity per pack=100

## Tracer Pins

#### Ordering Information

Description	Catalog Number
Tracer pins	
Tracer pin and sleeve - 1 each	PGS-110005
Tracer pin and sleeve - 100 piece kit	PGS-110006



# Tool Kit for Rear Cross-Connect DSX-3

# Ordering InformationDescriptionCatalog NumberComplete manual coaxial tool kit for BNC<br/>Includes crimp tool (WT-2), BNC crimp die set for 735, RG59 and 734 cables (WD-2),<br/>stripping tool with cassette for 735/0222 cables (STC-13B), stripping tool with cassette<br/>for RG59/734 cables (STC-12B), cable termination tray (LCA-000009), insertion/with-<br/>drawal tool for BNC connector (BT2000-12), carrying caseBNC-TOOL-1Complete manual coaxial tool kit for LCC<br/>Includes crimp tool, replacement die sets, stripper, insertion removal tool, screwdriver<br/>and replacement tips. Includes space for resealable plactic connector kitLCA-600001

# Individual Tools for BNC Connector Installation





BT2000-12

WT-2





DSX-3 CCUT

Description	Catalog Number
Insertion/withdrawal tool for BNC connector	
305 mm (12") handle	BT2000-12
610 mm (24") handle	BT2000-24
Coaxial cable cutter	DSX-3 CCUT
Crimp tool	WT-2
Crimp die set for WT-2 tool	
735, RG59 and 734 cables	WD-2
0222 cable	WD-3
RG59, 734, 728 and HEC-2 cables	WD-1
Stripping tool with black cassette for BNC or TNC connecto	r
735A/0222 cables	STC-13B
RG59/734 cables	STC-12B
728 and HEC-2 cables	STC-11B
Replacement cassette (black) for BNC or TNC connector	
735A/0222/RG59/734/728/HEC-2 cables	CCS-BLK

COMMSCOPE°

Individual Tools for LCC Connector Installation



LCA-400005-12







Ordoring	Information
Urdering	iniormation

Description	Catalog Number		
-	734 Cable Type	735 Cable Type	
LCC connectors Resealable plactic connector kit	LCC-1	LCC-3	
Bulk kits 100 piece kit	LCC-1B	LCC-3B	
Crimp tool Features ergonomic handle for CommScope die sets	W	/T-2	
Crimp tool Features long ergonomic handle for CommScope die sets	W	/T-3	
Crimp die sets	W	D-2	
Coaxial cable cutter	DSX-3	3 CCUT	
Coaxial cable separator (used for separating cables in cross-connect jumpers)	-	STD-10B	
LCC tester	LCA-414001		
Manual stripper tool Includes one stripper replacement cassette	STC-12B	STC-13B	
Manual stripper replacement cassette	CCS-BLK		
Automatic cable stripper tool	BNC-S1		
Cutter head for automatic cable stripper tool	BNC-H2	BNC-H5	
Insertion/withdrawal tool	LCA-400004		
Replacement tips for insertion/withdrawal tool (12-pack)	LCA-400005-12		
<b>Complete manual coaxial tool kit</b> Includes crimp tool, replacement die sets, stripper, insertion removal tool, screwdriver and replacement tips. Includes space for resealable plastic connector kit.	_	LCA-600001	
<b>Complete automatic coaxial tool kit</b> Includes crimp tool, replacement die sets, manual stripper, automatic stripper, automatic cutting head, insertion removal tool, screwdriver, replacement tips, coaxial cable cutter and coaxial cable separator. Includes space for resealable plastic connector kit.	-	LCA-600001-BS	



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