

# DSX 48-Position (BCS-HD)

## User Manual

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# DSX 48-Position (BCS-HD)

User Manual, part number 139255

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1730 N Madson St., Liberty Lake, Washington

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## About Telect

Telect offers complete solutions for physical layer connectivity, power, equipment housing and other network infrastructure equipment. From outside plant and central office to inside the home, Telect draws on more than 25 years of experience to deliver leading edge product and service solutions. Telect is committed to providing superior customer service and is capable of meeting the dynamic demands of customer and industry requirements. This commitment to customer and industry excellence has positioned Telect as a leading connectivity and power solution provider for the global communications industry.

## Technical Support

E-mail: [getinfo@telect.com](mailto:getinfo@telect.com)

Phone: 888-821-4856 or 509-921-6161

# DSX 48-Position (BCS-HD) User Manual

## Table of Contents and Figures

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### Contents

<b>Chapter 1: Description .....</b>	<b>1</b>
1.1 Broadband DSX .....	1
1.1.1 Capabilities .....	1
1.1.2 Features .....	1
1.1.3 Part Numbers .....	2
1.2 Main Assemblies .....	2
1.2.1 24-Position Chassis .....	3
1.2.2 48-Position Chassis .....	3
1.2.3 Backplane .....	4
1.2.4 DSX Module .....	4
1.3 Specifications .....	5
1.3.1 Electrical .....	5
1.3.2 Environmental .....	5
1.3.3 Agency Approvals .....	5
1.3.4 Physical - 24-Position Chassis, Fully Loaded .....	6
1.3.5 Physical - 48-Position Chassis, Fully Loaded .....	7
<b>Chapter 2: Installation .....</b>	<b>9</b>
2.1 Installation Considerations .....	9
2.1.1 Location and Space .....	9
2.1.2 Tools and Equipment .....	9
2.1.3 Technical Support .....	9
2.1.4 Inspection .....	9
2.2 Installation Procedure for 010-0000-2448 .....	10
2.3 Installation Procedure for 010-0000-4848 .....	11
<b>Chapter 3: Electrical Operation .....</b>	<b>13</b>
3.1 Power .....	13
3.1.1 Tracer Lamp .....	14
3.1.2 Signal Flow .....	15
<b>Chapter 4: Service .....</b>	<b>17</b>
4.1 Owner Maintenance .....	17
4.2 In-Warranty Service .....	17
4.3 Out-Of-Warranty Service .....	17
4.4 Repacking For Shipment .....	17
4.5 Troubleshooting .....	17
4.5.1 Cross-Connected Signals .....	17

# DSX 48-Position (BCS-HD) User Manual

## Table of Contents and Figures

### Figures

Figure 1 - DSX 48-Position (010-4801-4848, Fully Loaded).....	1
Figure 2 - 24-Position, Part 010-0000-2448 .....	2
Figure 3 - 48-Position, Part 010-0000-4848 .....	3
Figure 4 - Part 010-0000-4848, Rear View .....	4
Figure 5 - 6-Port Module, Part 010-4801-0410 .....	4
Figure 6 - 24-Position Chassis: All views .....	6
Figure 7 - 48-Position Chassis: Front Isometric and Side Views .....	7
Figure 8 - 48-Position Chassis: Rear, Top, and Front Views .....	8
Figure 9 - Connecting the Network Element on the 010-0000-2448.....	10
Figure 10 - Connecting Messenger Wire .....	10
Figure 11 - Connecting Ground Wire .....	11
Figure 12 - Connecting the Network Element on the 010-0000-4848.....	11
Figure 13 - Connecting the Messenger Wire .....	11
Figure 14 - Connecting the Ground Wire .....	12
Figure 15 - Closeup of Rear View of the Chassis .....	15
Figure 16 - Tracer Lamp .....	16
Figure 17 - Signal Flow .....	17

# Chapter 1: Description

## DSX 48-Position (BCS-HD) User Manual

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### 1.1 Broadband DSX

Telect's Broadband Digital Signal Cross-Connect (DSX) is a high-density device for cross-connecting DS3, STS-1, and STS-3 signal types from broadband equipment, such as digital radio, fiber-optic multiplexers, and 3:3 or 3:1 DCS.



**Figure 1 - DSX 48-Position (010-4801-4848, Fully Loaded)**

#### 1.1.1 Capabilities

- Virtually "hitless" patching with terminate-before-break TwistLok™ (TLJ™) jacks
- Backplane that can be pre-terminated and cross-connect assignments pre-wired
- Bidirectional monitoring

#### 1.1.2 Features

- Plug-in DSX cards to turn up circuit
- Up to 48 modules (010-0000-4848 is 6" x 23" chassis)
- Industry-standard patch cords
- Mini-WECO jacks on modules and BNC on the rear of the chassis
- Cable tie-down bars

### 1.1.3 Part Numbers

The information in this manual applies to the following part numbers:

Chassis #	Height	Width	Positions	Connectors	Tracer Lamp Terminations
010-0000-2448	3.5"	19"	24	BNC	PJ
010-0000-4848	6"	23"	48	BNC	PJ

Module #	Jacks	# of Ports
010-4801-0407	Mini-WECO	3
010-4801-0401	Mini-WECO	4
010-8401-0410	Mini-WECO	6

## 1.2 Main Assemblies

### 1.2.1 24-Position Chassis

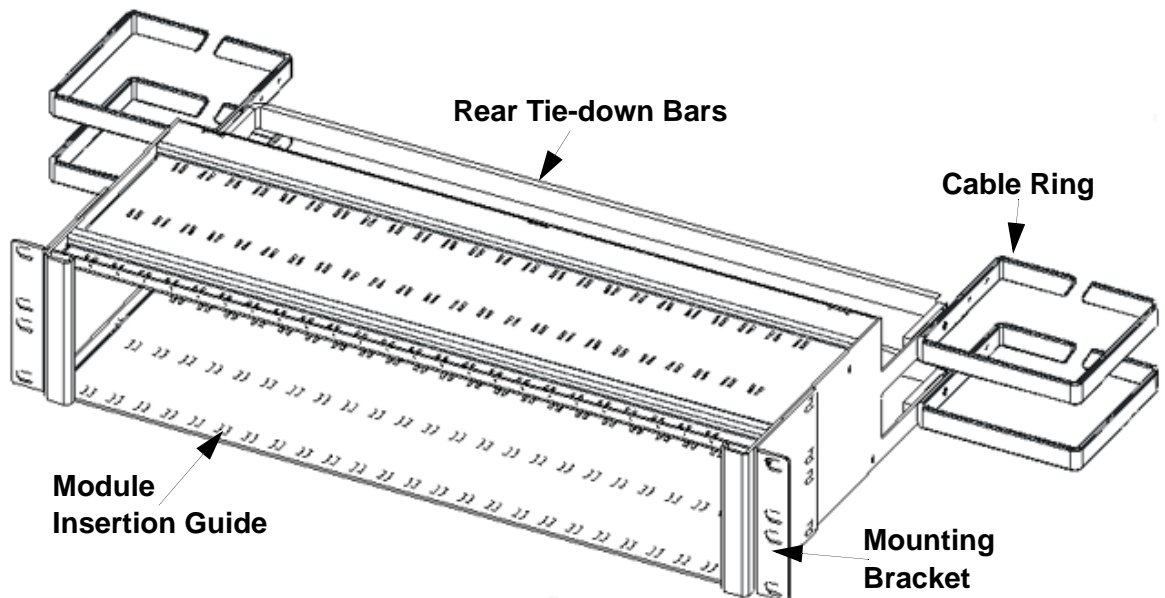
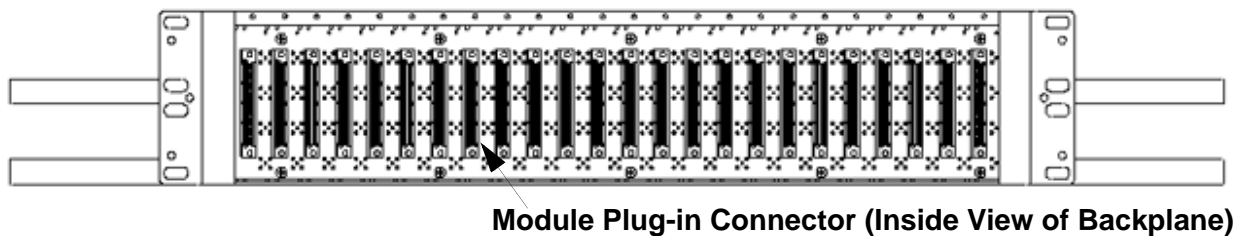


Figure 2 - 24-Position, Part 010-0000-2448

## 1.2.2 48-Position Chassis

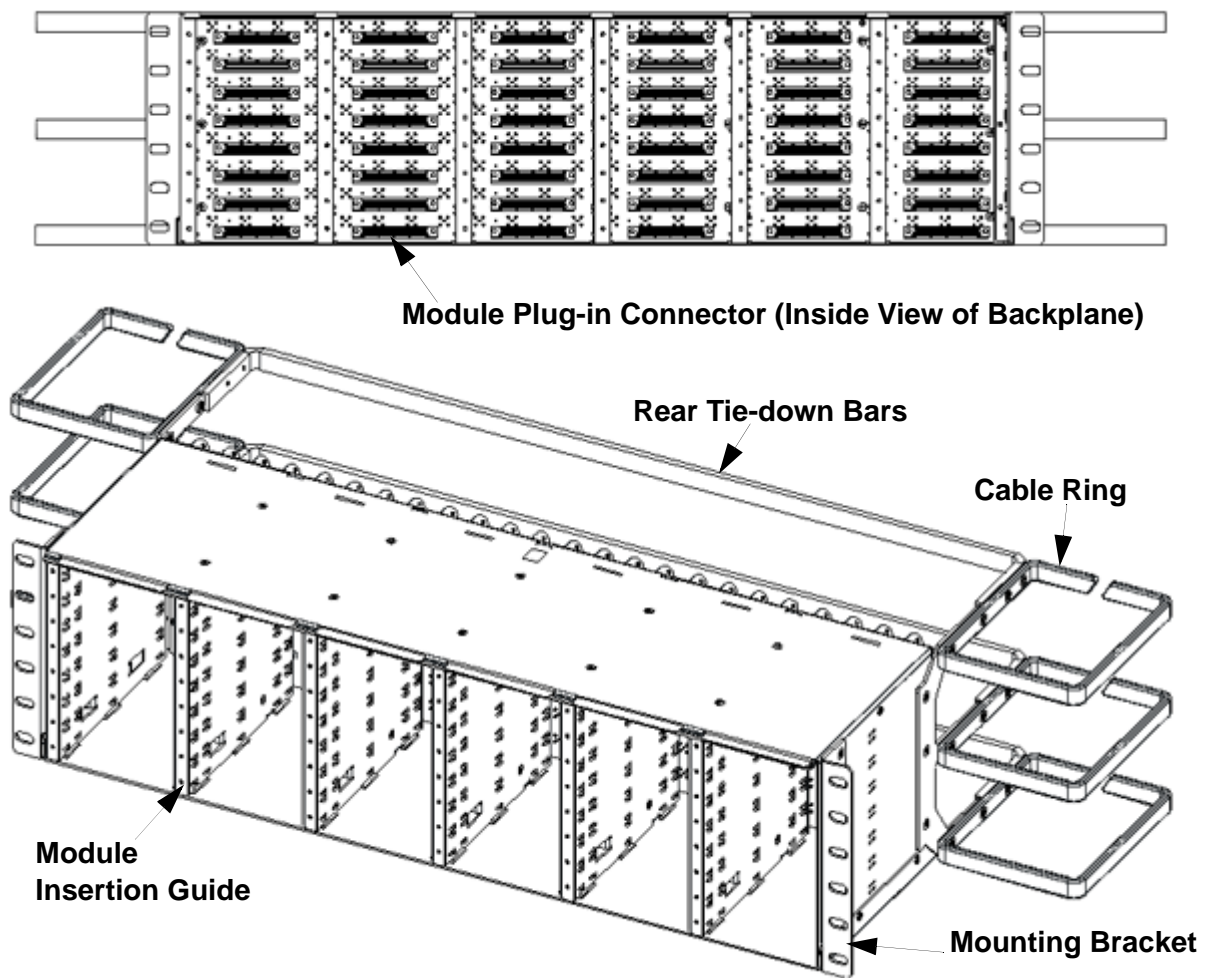


Figure 3 - 48-Position, Part 010-0000-4848



### 1.2.3 Backplane

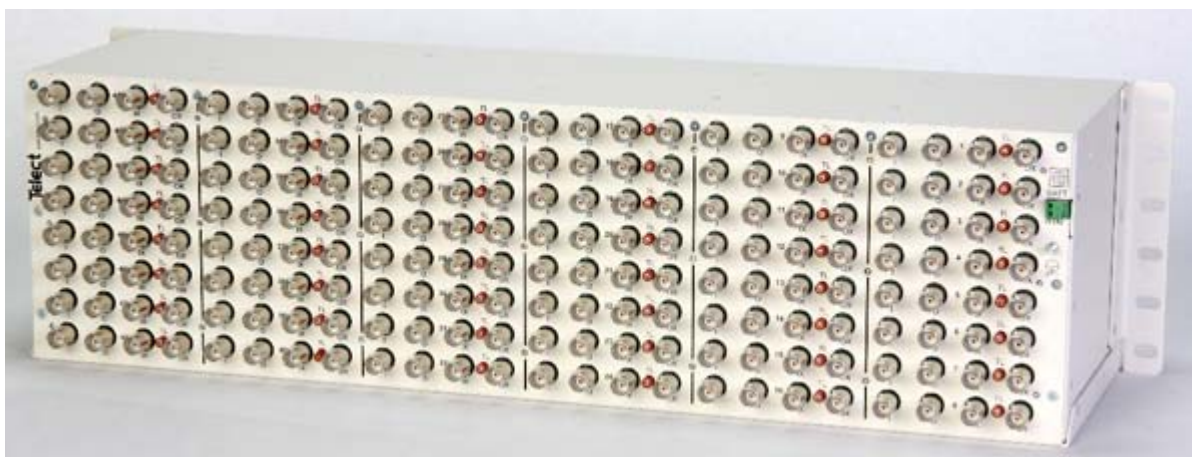


Figure 4 - Part 010-0000-4848, Rear View

### 1.2.4 DSX Module

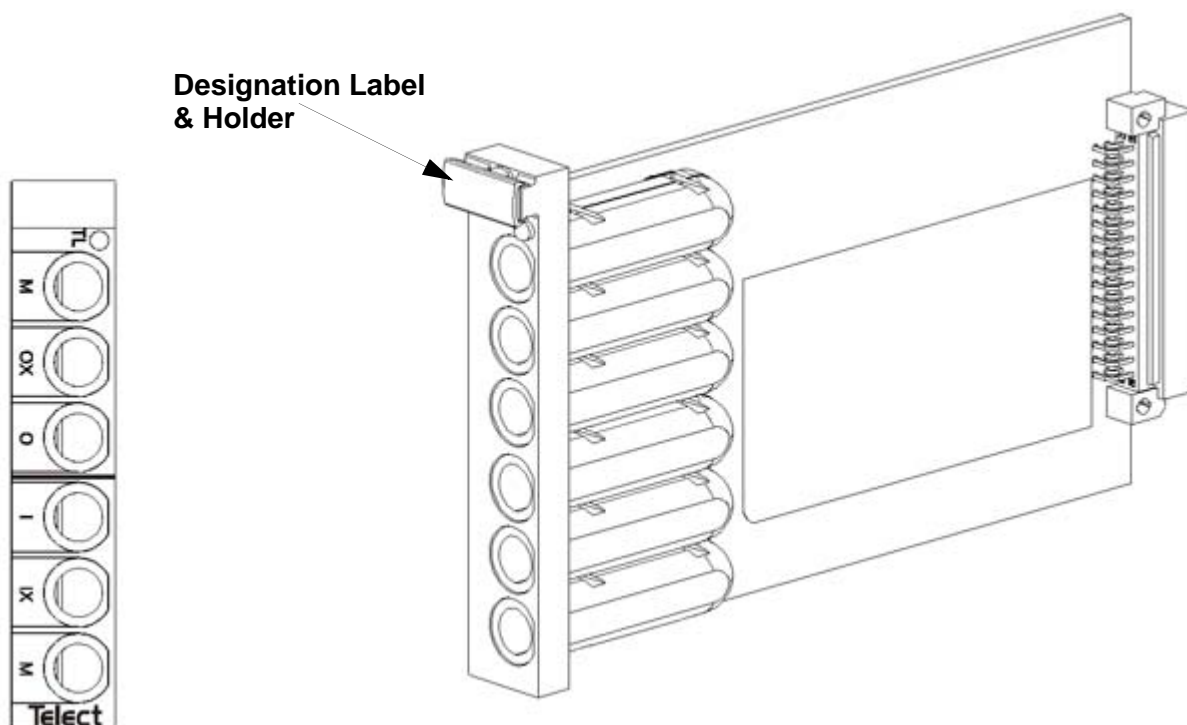


Figure 5 - 6-Port Module, Part 010-4801-0410



## 1.3 Specifications

### 1.3.1 Electrical

**Digital Signal:** E3 (34.368 Mbps), T3 (44.736 Mbps), STS-1 (51.84 Mbps), or STS-3 (155 Mbps)

**Insertion Loss:** 0.6 dB  $\pm$ 0.55, 8 MHz to 240 MHz, at signal rate

**Return Loss:**  $\leq$  -15 dB, 8 MHz to 240 MHz, STS-3 signal rate,  
 $\leq$  -26 dB, T3/E3/STS-1 signal rates

**Crosstalk:**  $\leq$  -60 dB, 8 MHz to 240 MHz, at signal rate

**Monitor Level:** 21  $\pm$ 1.5 dB below signal level

**Contact Resistance:**  $\leq$  0.01 $\Omega$

**Characteristic Impedance:** 75 $\Omega$

**Tracer Lamp LED:** Draws 9 mA

### 1.3.2 Environmental

**Operating Temperature:** -41° to 104°F (5° to 40°C)

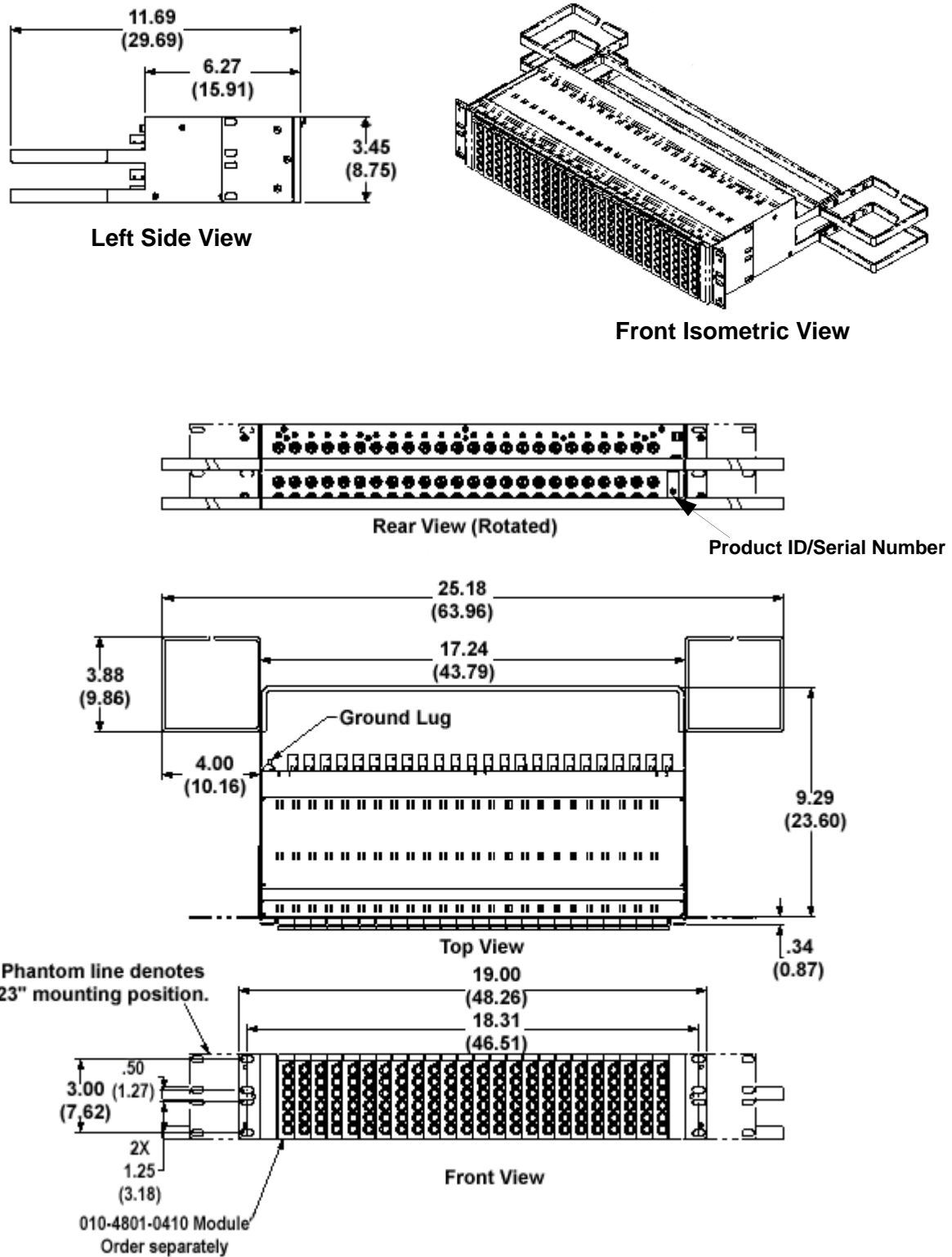
**Thermal Shock:** Per MIL-STD 202, method 107D

**Humidity:** To 95% non condensing (operating and non-operating)

### 1.3.3 Agency Approvals

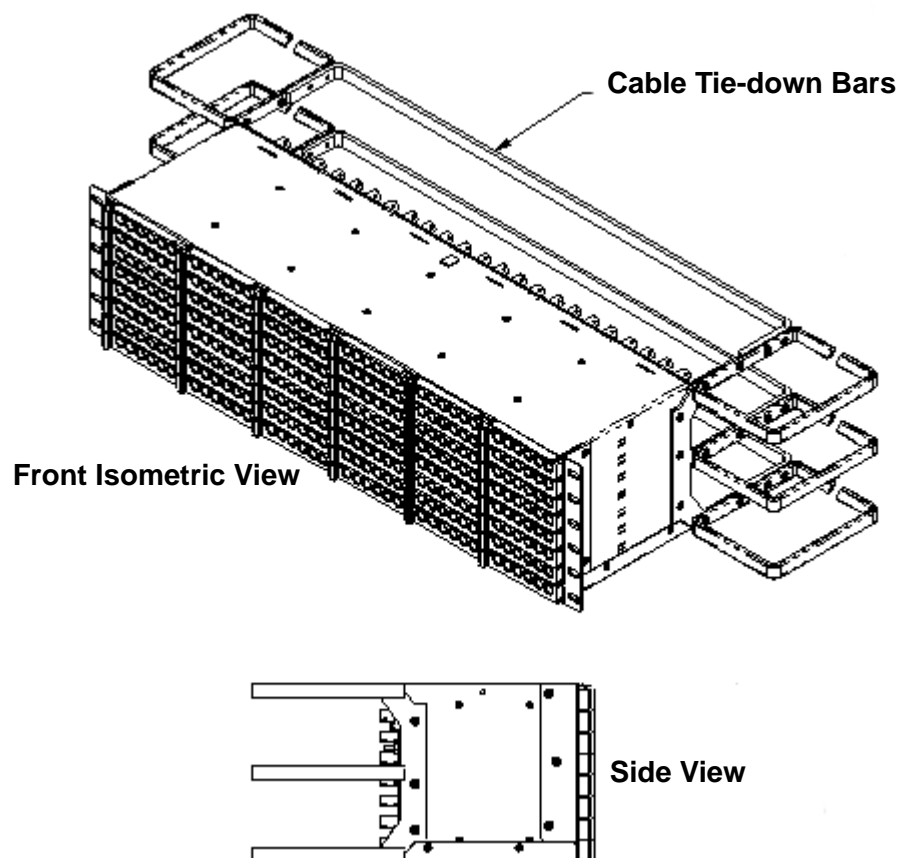
NEBS Level III Certification

### 1.3.4 Physical - 24-Position Chassis, Fully Loaded



**Figure 6 - 24-Position Chassis: All views**

### 1.3.5 Physical - 48-Position Chassis, Fully Loaded



**Figure 7 - 48-Position Chassis: Front Isometric and Side Views**

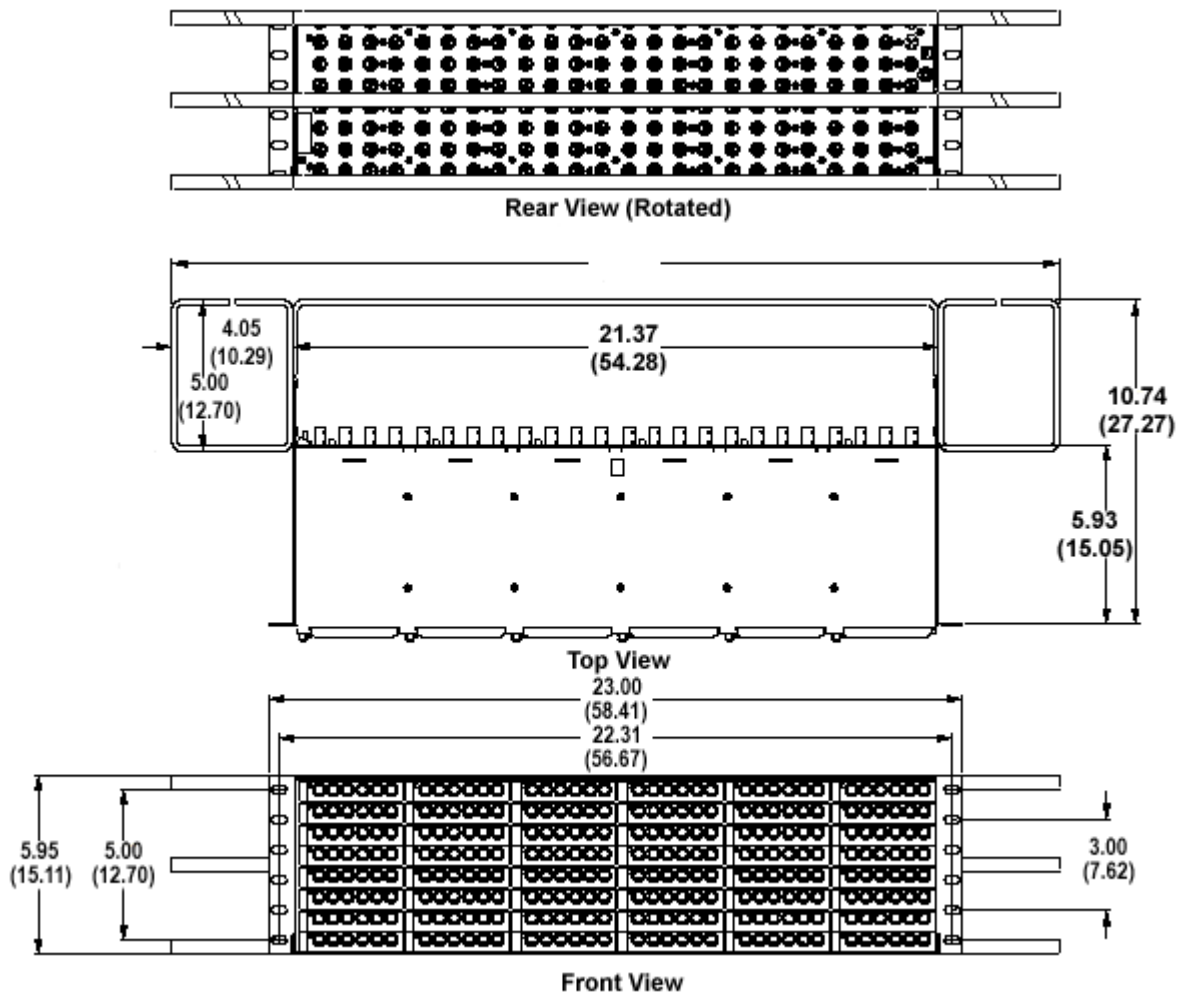


Figure 8 - 48-Position Chassis: Rear, Top, and Front Views

# Chapter 2: Installation

## DSX 48-Position (BCS-HD) User Manual

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### 2.1 Installation Considerations



#### CAUTION

**CAUTION!** Only qualified technicians may install and maintain this product.



#### CAUTION

**CAUTION!** Do not supply power until all connections are made in accordance with requirements specified in local electrical codes. Protect this equipment with an approved fuse or breaker sufficiently rated to interrupt power at -48 Vdc at 2 amps, or as specified on the device. Only use components and crimping tools approved by agencies or certifying bodies recognized in your country or region such as Underwriter's Laboratories (UL), TUV, etc.



#### CAUTION

**CAUTION!** This equipment is intended for installation in locations accessible only to qualified persons.

These instructions presume that you have verified that the Telect equipment being installed is compatible with the rest of the system including power, ground, circuit protection, signal characteristics, equipment from other vendors, and local codes or ordinances.

#### 2.1.1 Location and Space

Depending on chassis size, the Broadband DSX mounts in 19" or 23" WECCO-spaced racks (1-inch-on-center mounting holes) and uses 3.5" or 6" of vertical space.

#### 2.1.2 Tools and Equipment

Installation requires no special tools or equipment.

#### 2.1.3 Technical Support

Please use the online request from at [www.telect.com](http://www.telect.com) under Support\Technical Support or call Telect directly at 888-821-4856 or 509-921-6161.

#### 2.1.4 Inspection

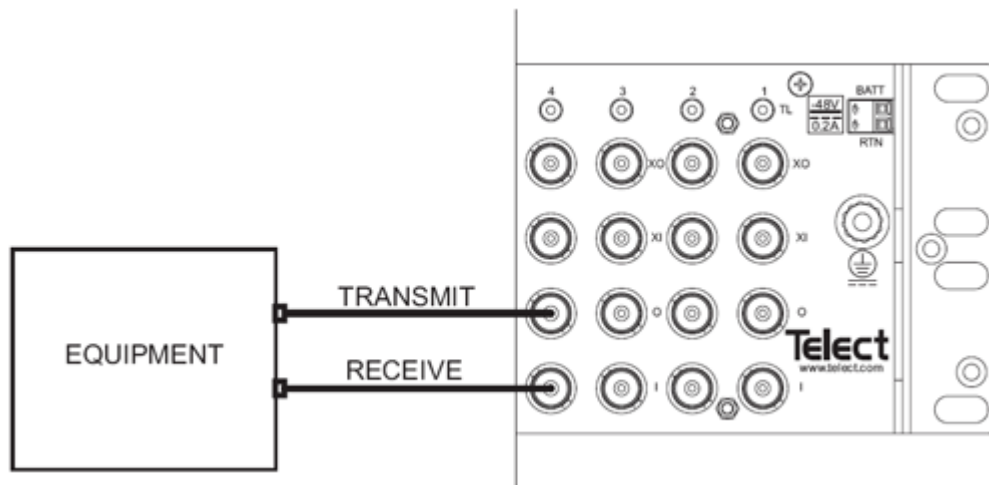
Compare the contents of the Broadband DSX shipping container with the packing list. Call Telect if you are missing anything.

**NOTE:** Telect is not liable for shipping damage. If the shipping container is damaged, keep it for carrier's inspection. Notify the carrier and call Telect's Customer Service Department at 1-800-551-4567 or 1-509-926-6000. Keep the container until you have checked equipment operation.

Contact Telect if there are any problems with the equipment. Use the original, undamaged container if instructed to return the DSX to Telect.

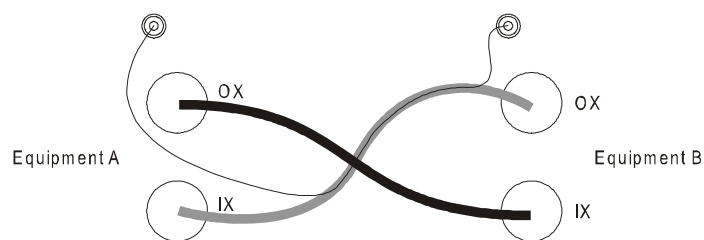
## 2.2 Installation Procedure for 010-0000-2448

1. Mount the Broadband DSX chassis to the rack with the four mounting screws that come with the equipment.
2. Attach tie-down bar mounting plate and tie-down bars and rings.
3. Starting with the lowest Broadband DSX in the chassis and working up, connect the network element (NE) equipment to the lower pairs of connectors.
4. Secure the cables as required.
5. Install the cross-connects at the upper pairs of connectors, connecting “IX” of one piece of equipment to “OX” of another. The equipment must have both cross-connects: “IX” of Equipment A to “OX” of Equipment B, and “IX” of B to “OX” of A.



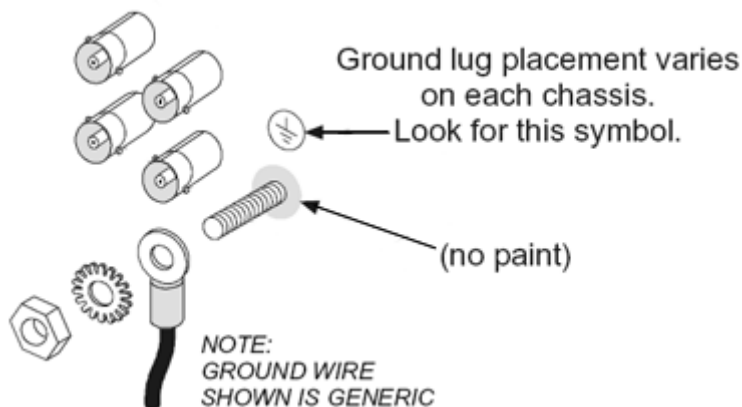
**Figure 9 - Connecting the Network Element on the 010-0000-2448**

6. Connect the messenger wire to one of the pin sockets or wire wrap pins that pertain to the IX and OX of a cross-connect pair.
7. Secure cross-connect cables from other Broadband DSXs to the upper tie-down bar.
8. Slide the plastic designation-label holders onto the DSX modules.



**Figure 10 - Connecting Messenger Wire**

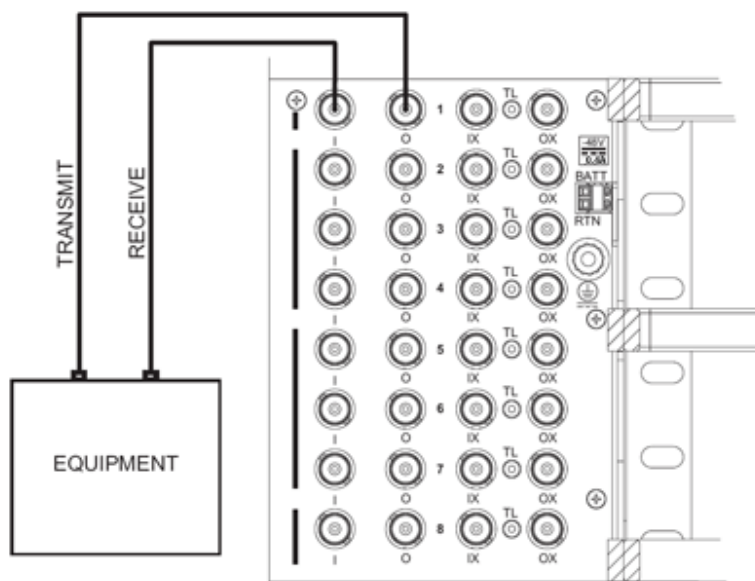
9. Connect a ground wire (14 AWG, minimum) with #8 screw ring terminal to the ground lug.
10. Connect the office battery to the Power/Terminal Screws.
11. Insert the appropriate DSX modules to turn up the circuits you want.
12. Fill out the designation labels and insert them into the plastic holders on the DSX modules.



**Figure 11 - Connecting Ground Wire**

## 2.3 Installation Procedure for 010-0000-4848

1. Mount the Broadband DSX to the rack with the four mounting screws that come with the equipment.
2. Attach the tie-down bar mounting plate and tie-down bars and rings.
3. Connect the network element (NE) equipment to the I and O BNC connectors.
4. Secure the cables as required.



**Figure 12 - Connecting the Network Element on the 010-0000-4848**

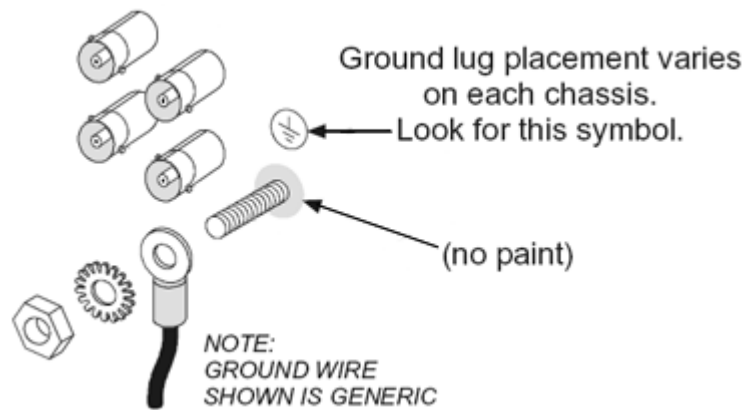
5. Install the cross-connects, connecting "IX" of one piece of equipment to the "OX" of another. The equipment must have both cross-connects: "IX" of Equipment A to "OX" of Equipment B, and "IX" of B to "OX" of A.



**Figure 13 - Connecting the Messenger Wire**



6. Connect the messenger wire to one of the pin sockets or wire wrap pins that pertain to the IX and OX of a cross-connect pair.
7. Secure cross-connect cables from other Broadband DSXs to the upper tie-down bar.
8. Slide the plastic designation-label holders onto the DSX modules.
9. Connect a ground wire (14 AWG, minimum) with a #8 screw ring terminal to the ground lug.
10. Connect the office battery to the Power/Terminal Screws.
11. Insert the appropriate DSX modules to turn up the circuits you want.
12. Fill out the designation labels and insert them into the plastic holders on the DSX modules.



**Figure 14 - Connecting the Ground Wire**

# Chapter 3: Electrical Operation

## DSX 48-Position (BCS-HD) User Manual

### 3.1 Power

The Broadband DSX is passive equipment. It accepts -48V office battery power to turn on the tracer lamp (TL) LED on the front of the DSX modules. This power connects to the power terminal at the back of the equipment. The strip terminates a bus on the chassis backplane; all DSX module connectors on the backplane tap into the signal lines of this bus.

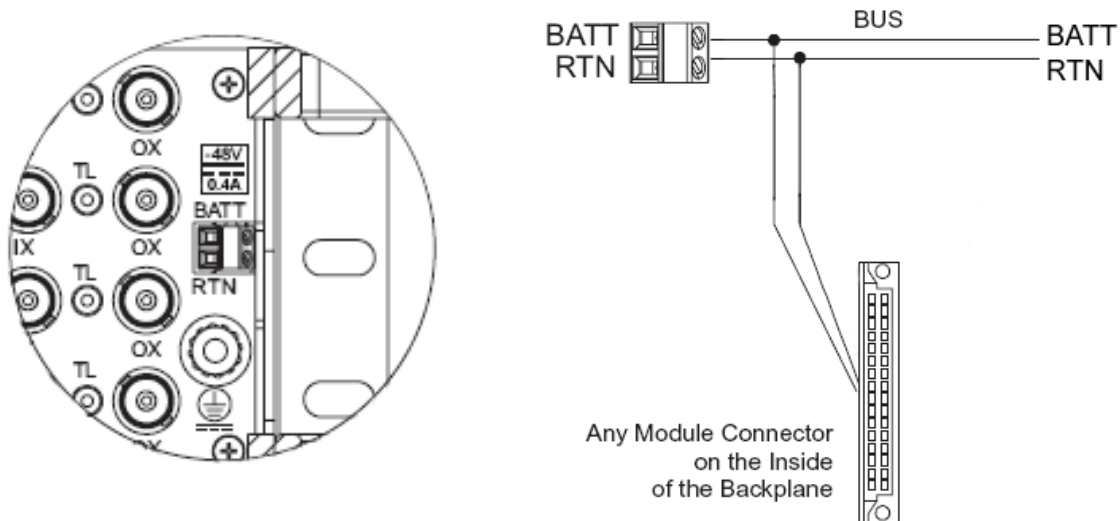
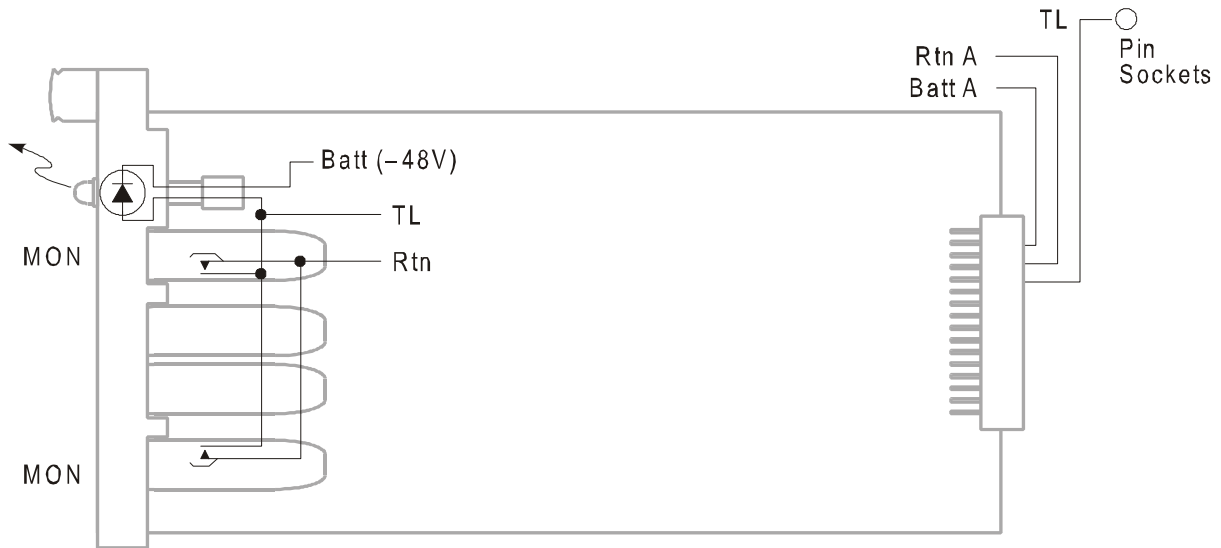


Figure 15 - Closeup of Rear View of the Chassis

### 3.1.1 Tracer Lamp

The TL turns on only when a plug is inserted into one of the monitor jacks on the front of a DSX module.



**Figure 16 - Tracer Lamp**

Tracer Lamps of cross-connected modules can also be connected by attaching the messenger wire to the backplane pin sockets that correspond to each of the connected modules. When one TL turns on, the other flashes for about 30 seconds and then its light becomes steady.

### 3.1.2 Signal Flow

The Broadband DSX generates no signals of its own. Connectors on the outside of the backplane are tied to PCB connectors on the inside. The “in” (I) and “out” (O) circuits connect to their corresponding cross-connects (IX, OX) only when a DSX module is inserted in a connector—the “in” and “out” jacks on the module close the circuits, as long as the jacks have no patch cords inserted.

Cables attached to the cross-connects on the backplane (IX, OX) take the “out” signals of one piece of equipment to the “in” circuit of another and vice versa. Inserting a patch cord in a module jack breaks the circuit established by the cross-connect cables, diverting the signal through the cord to another location.

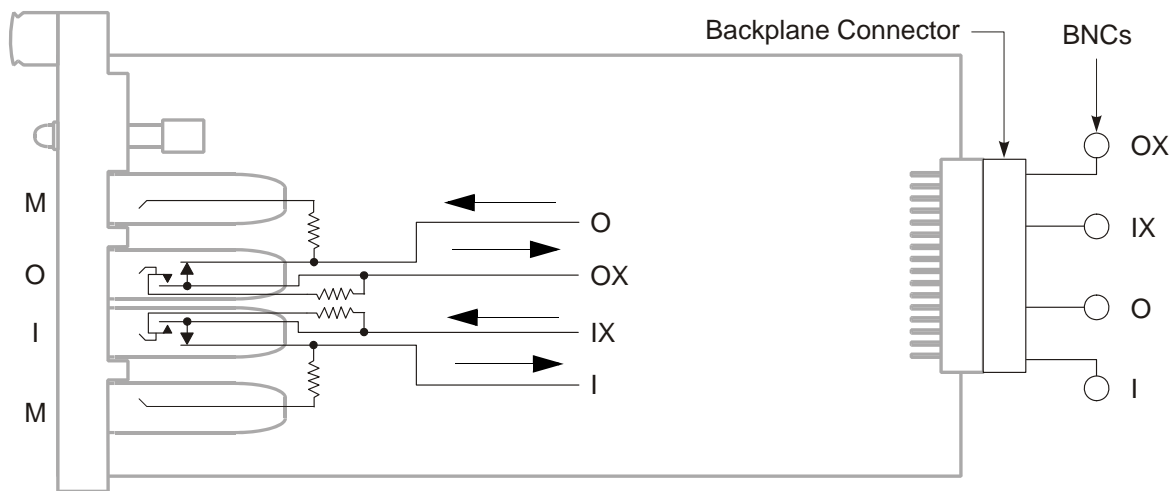


Figure 17 - Signal Flow

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# Chapter 4: Service

## DSX 48-Position (BCS-HD) User Manual

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**CAUTION!** Only qualified technicians may install and maintain this product.

### 4.1 Owner Maintenance

Telect's Broadband DSX does not require preventive maintenance.

If you encounter technical difficulties, please use the online request form at [www.telect.com](http://www.telect.com) under Support\Technical Support or call Telect directly at 888.821.4856.

### 4.2 In-Warranty Service

Contact Telect's quality call center at 877-471-7245 or e-mail us at [quality@telect.com](mailto:quality@telect.com). Telect will ship a new replacement product, along with a return shipping label and authorization information. When you receive your replacement product, pack up the defective product and return it to Telect using the return label, box and any additional information provided.

### 4.3 Out-Of-Warranty Service

Follow the In-Warranty directions above. Telect charges a processing fee for out-of-warranty service, and you must submit a Purchase Order along with a Return Material Authorization (RMA) before returning equipment. The processing fee guarantees a repair estimate and is credited against actual material and labor costs. Call Telect's quality call center at 877-471-7245 for more information.

### 4.4 Repacking for Shipment

1. Tag the equipment showing owner's name, address, and telephone number, together with a detailed description of the problem.
2. Use the original shipping container if possible. If you do not have it, package the equipment in a way to prevent shipping damage. Include the RMA inside the container and legibly print the RMA number on the outside of the package, near the shipping address.
3. Insure the package.

### 4.5 Troubleshooting

#### 4.5.1 Cross-Connected Signals

Check for correct and firm cable connections at the termination and cross-connect points of the BCS-HD.

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