







### Installation Guide, Part Number 150166

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# Connecting the future for over 35 years

**Amphenol Network Solutions** challenges the status quo and looks beyond what is possible in network connectivity and power management.

Founded in 1982, Amphenol Network Solutions, formerly Telect, is driven by the principles of innovation and customer service. Headquartered in Liberty Lake, WA, the privately held company supports a global network of customers with a comprehensive product portfolio and a values-driven corporate culture.

Our products and solutions are found across communications service-provider networks, data centers and utility networks around the globe.

At **Amphenol** Network Solutions, we pride ourselves on our ability to respond to customer challenges, building a reputation among communications service providers for delivering solutions uniquely tailored to their needs.

- Custom configured solutions
- Products integrate seamlessly into existing infrastructure
- Exceptional customer service
- Hassle-free warranty

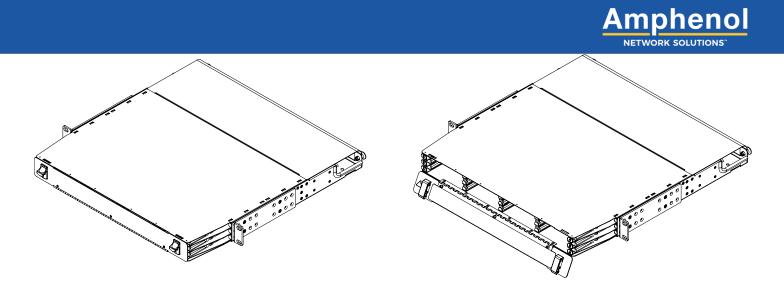
### **Technical Support**

Email: support@amphenol-ns.com Phone: 509-926-6000



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# 1 Introduction

- The C2E chassis provides a solution that is dense, modular and tray based
- There are base 8 (holds modules that accommodate up to 8 LC ports across) and base 12 (holds modules that accommodate up to 12 LC ports across) versions in 1RU, 2RU, and 4RU sizes
- This guide explains how to:
  - Install the C2E chassis in a rack
  - o Install modules into the chassis
  - Route and secure the fiber-optic cable within the chassis



Figure 1-1 C2E-01U8 (Base 8) with MPO Breakout Modules



Figure 1-2 C2E-01U (Base 12) with MPO Breakout Modules

### 1.1 About this Guide

This manual provides a comprehensive overview and installation guidelines for the C2E chassis. While care has been taken to define all necessary information, complete details may not be covered. If you have any questions, contact Amphenol Network Solutions Technical Support at <a href="mailto:support@amphenol-ns.com">support@amphenol-ns.com</a> or call 1.509.926.6000.

Throughout this guide, relevant and crucial information is displayed in the form of Notes, Alerts, Cautions and Warnings. These notifications are prominently displayed, and their importance is indicated as follows:





NOTE: General information the user should pay special attention to.

## () ALERT

Alert! Important information and/or instructions the user should adhere to.

# 🔨 CAUTION

CAUTION! Indicates a hazardous situation, which if not avoided could result in minor or moderate injury.

### 🔨 WARNING

# WARNING: Indicates a potentially hazardous situation which if not avoided could result in death or serious injury.

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### 1.2 Terminology

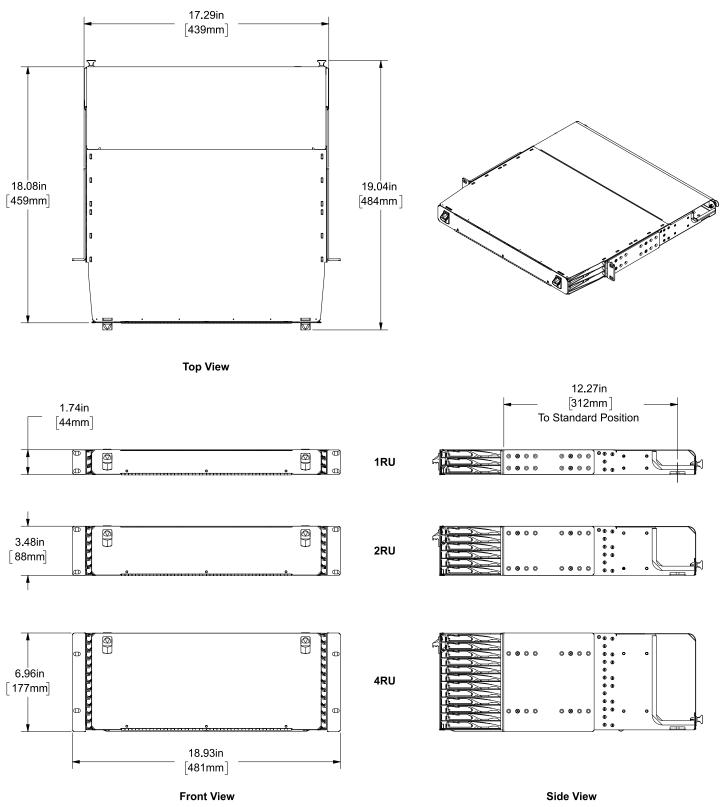
The following list of acronyms and abbreviations are used throughout this manual.

Acronym/Abbreviation	Term
LC	Local Connector
MPO	Multi-fiber Push-On optical fiber module interface type



# 2 Specifications

# 2.1 Chassis Dimensions





### 2.2 Chassis Capacity and Weight

Part Number	Rack Units	Base 8 Module Capacity	Base 12 Module Capacity	Trays	Weight (w/o Modules)		
C2E-01U	1RU	-	12	2	12 6 lba		
C2E-01U8	IRU	18	-	3	13.6 lbs.		
C2E-02U		-	24	6			
C2E-02U8	2RU	36	-	6	21.6 lbs.		
C2E-04U	4011	-	48	12	24.0 lba		
C2E-04U8	4RU	72	-	IZ	34.9 lbs.		

# 3 Installation Considerations

# WARNING

WARNING! Fiber cables transmit invisible infrared light. To avoid eye damage or blindness, never look directly into fibers or connectors.



CAUTION! These instructions presume you have verified that the Amphenol Network Solutions 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.

# () ALERT

ALERT! This product must be installed and maintained only by qualified technicians.

ALERT! Install this system according to company requirements. It is recommended to install the system in a Restricted Access Location (RAL) where access is limited through use of tool, lock and key, or other means of security and be controlled by the authority responsible for the location.

ALERT! Prior to panel installation, ensure there is enough space in front and rear to access cabling.

ALERT! 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.

ALERT! Do not stand on fiber or fiber cables.

### 3.1 Inspection

When you receive the equipment, carefully unpack contents and compare it to the packaging list. Please report any defective or missing parts to **Amphenol** Network Solutions Quality at <u>quality@amphenol-ns.com</u> or call 1.509.926.6000. Keep all documentation that comes with your shipment.

Please read and understand all instructions before starting installation. If you have any questions, contact **Amphenol** Network Solutions Technical Support at <a href="mailto:support@amphenol-ns.com">support@amphenol-ns.com</a> or call 1.509.926.6000.

Exercise care when unpacking and setting the equipment in place. Amphenol Network Solutions is not liable for transit damage. If the product is damaged, please report it to the carrier and contact **Amphenol** Network Solutions Quality.

### 3.2 Unpacking

Upon receipt of your order, carefully unpack contents and compare it with the packing list and the order placed. While items described below are a comprehensive list that includes the C2E chassis, trays, brackets and doors, the contents of your order may vary.

### 3.2.1 Contents

- Chassis with doors and trays
- Mounting brackets installed





- Extension brackets for 23" mounting -not installed
- #12-24 Rack mounting screws
- Shipping bracket
- Rear cable support brackets (C2E-04U and C2E-04U8 only)
- Quick guide
- Hook and loops straps

### 3.3 Location and Space

The C2E chassis requires space in the front and rear for access to patching and cabling. Leave as much side clearance for tray and worker access as required by your application or local regulations. Plan the input/output, upward/downward (cable feed) of the chassis before installation.

Depending on the chassis, 1RU, 2RU or 4RU of rack space is required to mount the chassis. This can either be in a rack or a cabinet.

The chassis comes equipped with 19" mounting brackets and extension brackets for 23" mounting.

Space is required above the unit for unhindered access to the top tray rear connections.

### 3.4 Tools and Equipment

A Philips head screwdriver is required. No other special tools are required to assemble the C2E chassis and corresponding modules.

# 4 C2E Chassis Installation

Please read these instructions carefully before beginning installation. If you need assistance, call **Amphenol** Network Solutions at 509-926-6000 or email us at support@amphenol-ns.com.

Inspect equipment after unpacking and compare it to the packing list.

Immediately report any shipping damage, defects or missing parts to **Amphenol** Network Solutions at 509-926-6000. Keep all documentation that comes with your shipment.

**Amphenol** Network Solutions is not liable for shipping damage. If the product is damaged, notify the carrier and call **Amphenol** Network Solutions at 509-926-6000 for further recourse.

*NOTE:* For service or warranty information, please visit www.amphenol-ns.com and click on the "Support" tab, email us at support@amphenol-ns.com or phone us at 509-926-6000.

This section covers how to prepare and mount the C2E chassis and corresponding modules.

### 4.1 Install Mounting Brackets on the C2E Chassis

C2E chassis includes two mounting brackets and two extension brackets, one per side, to attach the C2E chassis to a 19" or 23" EIA rack.

The mounting brackets arrive pre-installed on the chassis in the standard position, but if the position of the brackets needs to be changed, a multi-hole pattern allows the chassis to be offset towards the front or back in accordance with the customers needs.

To change the position of the mounting bracket:

- 1. Remove mounting bracket using a Phillips screwdriver.
- 2. Align mounting bracket screw holes with the screw holes in the sidewall of the chassis. Insert screws through outside holes of the bracket into the panel sidewall.
- 3. Using a Phillips screwdriver, tighten screws to secure the bracket to the panel.
- 4. Repeat Steps 1 3 for the remaining bracket on the opposite side.



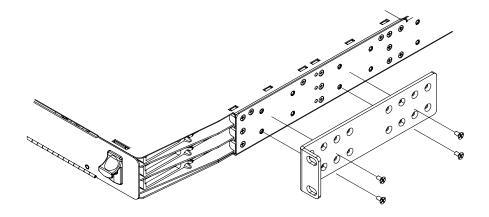
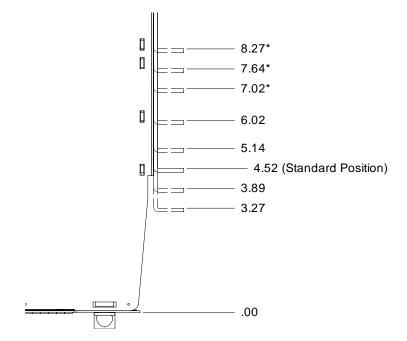


Figure 4-1 Mounting the Bracket to the Chassis (Standard Position Shown)





\*These positions cannot be used when using the cable support brackets on the 4RU chassis.

### 4.2 Installing the Chassis on a Rack

Using a Phillips head screwdriver and the provided screws, install the chassis on the rack by aligning the mounting holes in the bracket with the holes in the rack. It is recommended that 2 screws per side are used to attach the chassis to the rack.

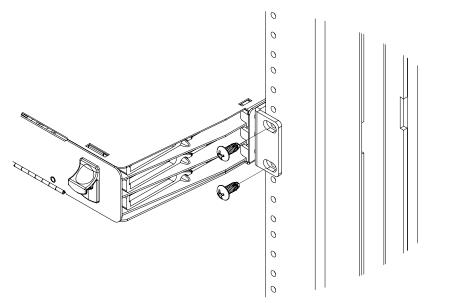


Figure 4-3 Mounting the Bracket to a Rack

### 4.3 C2E Doors

### 4.3.1 Front Door

Plastic latches are located on the end of each door. Sliding latches downward allows the door to swing open and close.

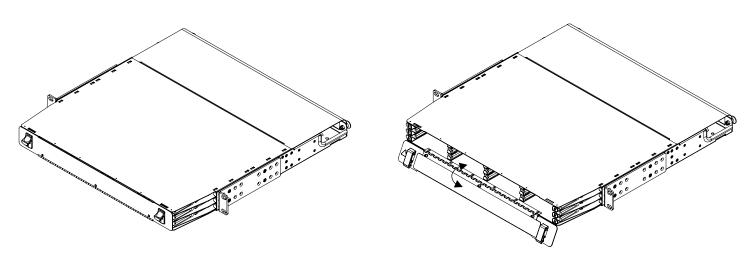


Figure 4-4 Opening and Closing the Front Door

#### 4.3.2 Rear Cover

The rear cover provides protection of the routed fiber at the rear of the panel. The rear cover is easily removed by pulling the plunger on both ends of the panel. Modules can be installed from the rear of the panel as well.



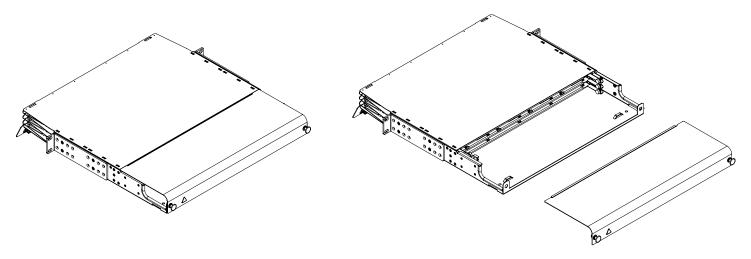


Figure 4-5 Removing Rear Cover

#### 4.3.3 Designation Card

A designation card is located on the C2E door. The designation card is used to identify adapter fiber jumper information at the front of the panel.

- 1. Install designation card by opening the door to the front of the C2E chassis.
- 2. Attach the magnetic designation card onto the inside of the door.

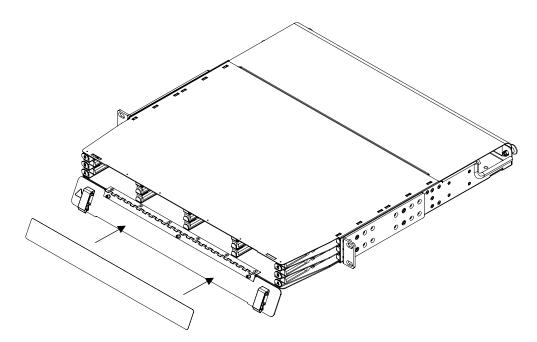
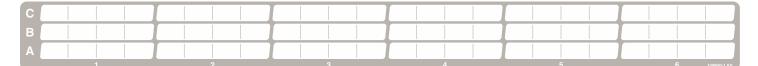


Figure 4-6 Installing the Designation Card





#### Figure 4-7 C2E-01U8 (Base 8) Designation Card

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в												
Α									Γ			
												149950 A 0

#### Figure 4-8 C2E-01U (Base 12) Designation Card

Extra designation cards may be ordered if needed. The cards are magnetic and will adhere to the front door, chassis, or rear cover. The cards may alternately be adhered to the outside front of the chassis to allow for port auditing without opening the door.

### 4.4 Removing the Shipping Bracket/Cable Support Brackets

#### 4.4.1 1RU and 2RU Chassis

With the rear cover removed, remove the two yellow thumbscrews that secure the aluminum shipping bracket. Discard the bracket and thumbscrews or save for future shipping if needed.

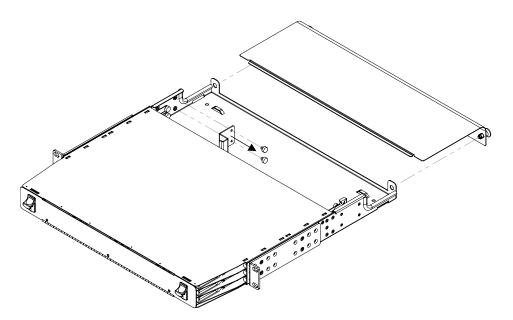


Figure 4-9 Shipping Bracket Removal on 1RU and 2RU Chassis

#### 4.4.2 4RU Chassis

With the rear cover removed, remove the eight Phillips screws that attach the aluminum shipping bracket and the 2 cable support brackets.



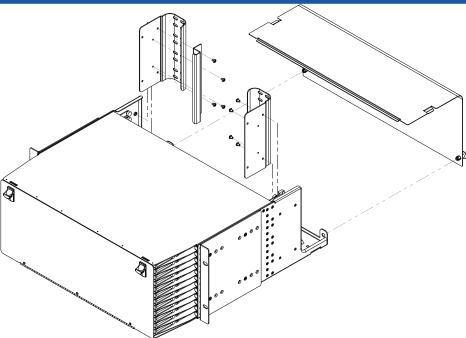


Figure 4-10 Shipping and Cable Support Bracket Removal on 4RU Chassis

### 4.5 Attaching the Cable Support Brackets on 4RU Chassis

Reusing the screws from step 4.4.2, attach the cable support brackets as needed to the side of the chassis.

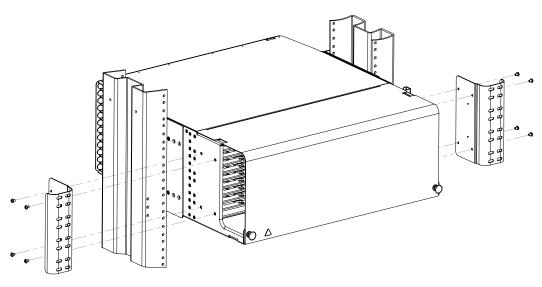


Figure 4-11 Attaching Cable Support Brackets on 4RU Chassis

## 5 Removing the Front Door

The front door may be removed if it interferes with equipment below and will not open sufficiently to pull trays out.

- 1. Lower the door by releasing the two latches on either side.
- 2. Remove the three black thumbnuts on door and slide the door out of the hinge.
- 3. Reinstall in reverse order.



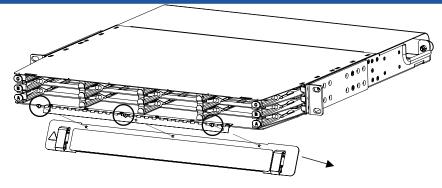


Figure 5-1 Removing Door

# 6 C2E Module Installation

### 6.1 Module Overview

C2E module type (breakout, patch, splice, etc.) are interchangeable within the C2E trays allowing for the ability to mix and match different modules and configurations. See C2 AOM Ordering Guide for available modules <u>www.amphenol-ns.com/C2AOM</u>.

NOTE: Base 8 modules are not compatible to with base 12 trays, and Base 12 modules are not compatible with base 8 trays. Ensure the correct module size (base 8 or base 12) is chosen for the chassis type being used.

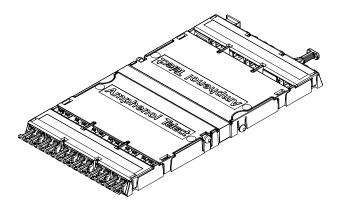


Figure 6-1 Base 8 MPO Breakout Module

### 6.2 Tray Positions

C2E trays have 3 positions: closed, front installation and rear installation. Move the tray forward to access front connectors. Move backward to attach cables or insert /remove modules.

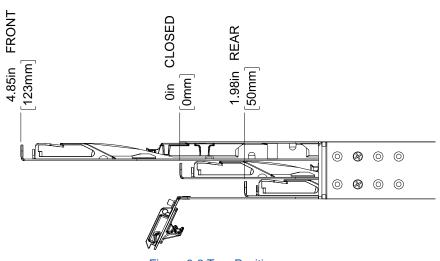


Figure 6-2 Tray Positions

### 6.3 Opening the Tray to Front Installation Position

C2E modules can be installed in any location, on any tray, in the chassis. They are installed by first opening the door using the latches. Then, pull the side tabs of each tray to the front installation position, as demonstrated below.

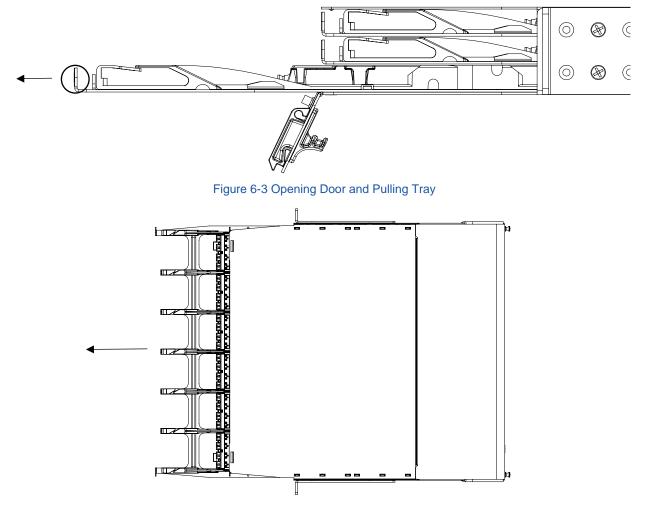


Figure 6-4 Opening and Sliding a Tray Out



### 6.4 Accessing Tray from Rear

Depress tray stop and pull back tray 2" until it stops, you are now in the rear position.

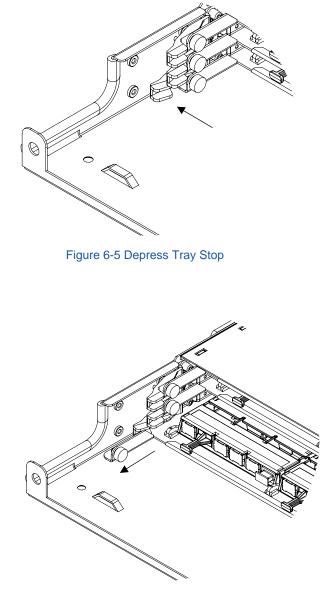


Figure 6-6 Pull Tray to Rear Position

### 6.5 Closing a Tray

Using the side tabs, push the tray back into the chassis to the closed position (flush with door).

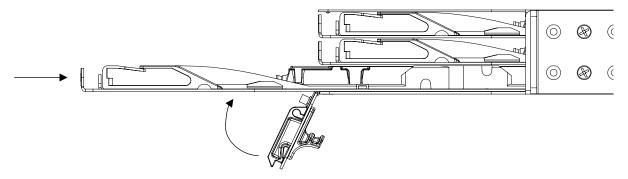


Figure 6-7 Sliding Tray in and Closing Door

### 6.6 Installing a Module

Insert the module into the desired space on the tray by slightly angling the module and sliding it back on the surface of the tray until you hear the module click into place on the tray. NOTE: Modules can be installed from the rear of the panel.

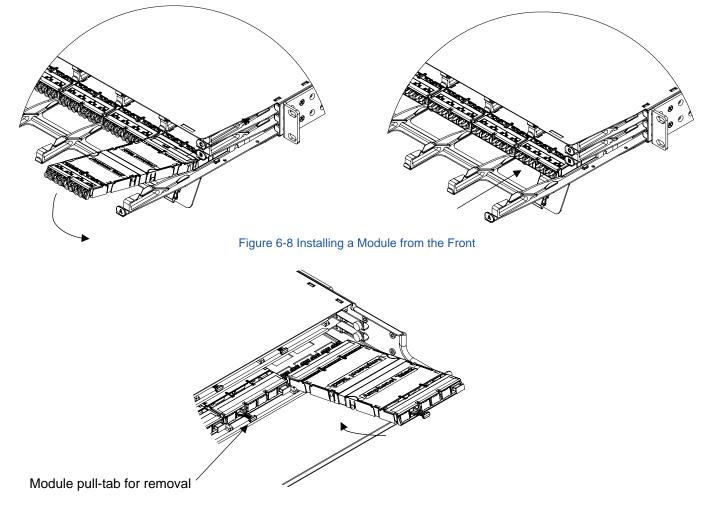


Figure 6-9 Installing a Module from the Rear

### 6.7 Removing a Module

The modules can be removed in front or rear position by first fully pulling out the tray. Then disconnect the fibers and replace their dust caps. Repeat the same procedure on the back of the module. Then, reaching underneath the module



and the tray, locate finger holes on the tray. Using one or two fingers, push up on the module. Then pull the module to remove it from the tray. Most modules have a yellow pull-tab in the back to aid in rear removal.

### 6.8 Routing Fiber Front

The C2E can fit up to 24, 3.0mm fibers or 48, 2.0mm fibers at full capacity per tray.

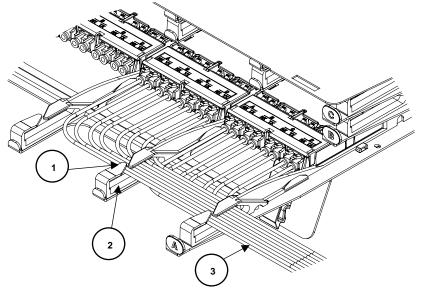


Figure 6-10 Fiber Routing

- 1. Lightly push down on small tab (#1) on fiber tray holders
- 2. Slide the fiber in the cable manager above the depressed tab
- 3. Cables can be routed fully or partially to the left/right side of the panel

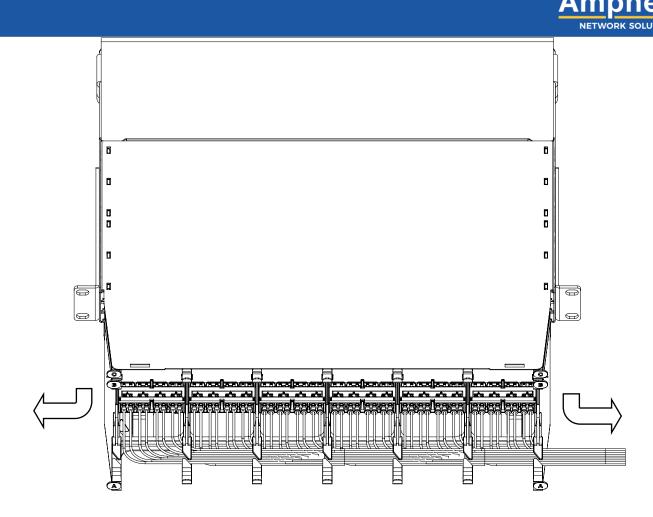


Figure 6-11 All Cables Shown Routed to the Right of the Panel

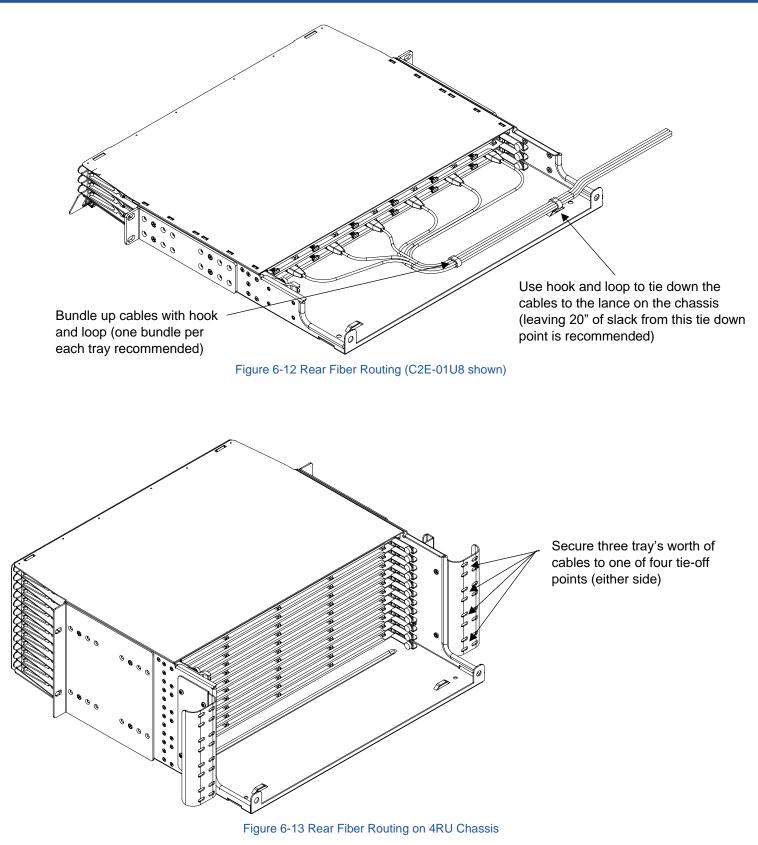
### 6.9 Routing Fiber Rear

When installing fiber in the rear of the panel, secure fiber to the lance feature on the side of the panel with the provided hook and loop with the recommended 20-inch slack between the lance feature where the fiber is secured and the adapters (as seen in Figure below). The included hook and loop straps should be trimmed to length as necessary to secure the fiber bundle and provide a clean installation.

# A CAUTION

CAUTION! Be careful not to push the tray to the rear installation position when the rear door is installed. Fiber should be secured in groupings from each tray to allow the fiber to freely slide to the forward position.







# CAUTION! Do not connect jumpers to splice cassettes until all pigtail fibers have been spliced and installed in the splice cassette.

# CAUTION! Wear safety glasses while working with exposed optic fiber. Do not touch eyes while working with optic fibers.

Fiber jumpers enter the C2E chassis and plug into the cassette adapters following the designation card number/letter scheme mounted on the front door.

- 1. Locate adapter designation number on the designation card located on the front door of the C2E chassis. Record designation information.
- 2. Remove the protective dust cap from the cassette adapter port for the jumper being installed.

NOTE: To protect fibers, work with one fiber jumper at a time. Only remove the dust cap for the fiber jumper being installed.

- 3. Clean adapter port with oil free "canned" compressed air to remove any dust that has accumulated there.
- 4. Remove the protective cover from the fiber jumper by pulling it straight out.
- 5. Inspect the end of the fiber jumper for any dust or debris. If needed, clean the fiber with lint wipes and a commercial solution formulated for cleaning fiber surfaces or a reagent-grade ethyl alcohol to remove particles.
- 6. Use a second dry wipe to dry the fiber.
- 7. Inspect again to ensure fiber end is clean; repeat Steps 5 6 if needed.

NOTE: After confirming the fiber jumper end is clean, do not wipe the fiber or allow it to touch anything before installing it in the adapter.

- 8. Insert the clean, dry fiber into the adapter port.
- 9. Repeat Steps 1 8 to install remaining fiber jumpers to adapters in the module.

## 7 Service

### 7.1 Owner Maintenance

The **Amphenol** Network Solutions C2E chassis does not require any preventative maintenance. If equipment is not working properly, contact technical support and be advised of the following warning/caution/alert.

# MARNING

WARNING! To avoid eye damage or blindness, never look directly into fibers or connections.

# 

CAUTION! Wear safety glasses while working with exposed fiber optic fiber. Do not touch eyes while working with fiber optic fibers.

### () ALERT

ALERT! This product must be installed and maintained by qualified technicians.

#### 7.1.1 6.1.1 High Insertion Loss and the Importance of Cleaning Connectors and Adapters

The major causes for poor performance (high insertion loss) are:

- Attenuation due to too sharp or too many close radius bends in the fiber cable
- Loose connections
- Dirty connectors or adapters

If you experience insertion loss greater than 2.5 dB, check for sharp bends and loose connections. Clean all polished ferrules on pigtails and both ends of the patch cord or jumper.

Though **Amphenol** Network Solutions includes dust caps with all adapters and connectors, it isn't always possible to ensure that fiber ferrules stay clean. If you need to clean connectors and adapters, **Amphenol** Network Solutions recommends a commercially available system or solution. Special formulation for cleaning fiber ferrules allows the commercial solvent to stay liquid long enough to dissolve impurities quickly and thoroughly yet evaporate quickly after wiping dry. Always allow the ferrules to air dry thoroughly before reconnecting. "Canned air" can be used to clean away debris initially, but do not use an aerosol after cleaning polished surfaces. Most aerosols contain contaminants.

If a commercial solution is not available, a reagent-grade ethyl alcohol, nominally USP > 99% can be used, available at pharmacies. Remove both connectors from the adapter.

- 1. Blow compressed gas through the adapter.
- 2. Moisten a lint-free wipe with the ethyl alcohol.
- 3. Wipe completely around the ferrule of the connector twice. Repeat with a dry wipe.
- 4. Moisten the center area of a third wipe and pass the face of the ferrule from the moistened area outward toward the dry area.
- 5. Repeat Step 4.
- 6. Allow ferrule to air dry. After completing this step, do not wipe the ferrule or allow it to touch anything before inserting the ferrule into the adapter. Do not cover with a dust cap.
- 7. Insert the connector into the adapter.
- 8. Repeat Steps 1 7 for each connector.

# 8 Customer Service and Ordering Information

### 8.1 In-Warranty Service

Contact your **Amphenol** Network Solutions equipment distributor or call **Amphenol** Network Solutions Support to talk with a Customer Service Representative.

**Amphenol** Network Solutions will repair or replace defective products within the limits of the warranty. See "Repacking for Shipment" in

this section.

NOTE: Call a Customer Service Representative for a Return Material Authorization (RMA) before returning any equipment.

### 8.2 Out-of-Warranty Service

The procedure for out-of-warranty service is the same as for in-warranty service; however, **Amphenol** Network Solutions charges a processing fee. You must submit a Purchase Order along with a Return Material Authorization (RMA) before returning equipment. Call **Amphenol** Network Solutions for assistance in acquiring these forms.

The processing fee guarantees a repair estimate and is credited against actual material and labor costs.

### 8.3 Repackage for Shipment

Tag the equipment showing owner's name, address, and telephone number, together with a detailed description of the problem.

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. Insure the package.

NOTE: Amphenol Network Solutions is not liable for shipping damage.

### 8.4 Ordering Accessories

Contact your **Amphenol** Network Solutions Customer Service Representative at 509-926-6000 to order connectorized cables.

### 8.4.1 List of Accessories

Part Number	Description						
C2E-TRAY-B12	Base 12 tray (holds 4 modules)						
C2E-TRAY-B8	Base 8 tray (holds 6 modules)						
150259	A-F tray labels (contains 2 of each letter)						
150260	G-L tray labels (contains 2 of each letter)						
149950-1	1RU base 8 designation card						
149950	1RU base 12 designation card						
149959-1	2RU base 8 designation card						
149959	2RU base 12 designation card						
149960-1	4RU base 8 designation card						
149960	4RU base 12 designation card						

#### 8.4.2 Replacing a Tray

- 1. Rear cover needs to be removed.
- 2. Limiter screw should be loosened to allow tray to be moved past the front installation locking position.

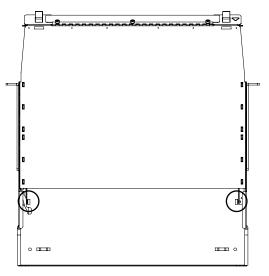


Figure 8-1 Loosen Side Limiter Screw



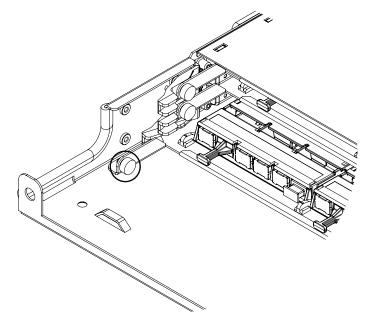


Figure 8-2 Limiter Screw Location

3. Move the tray into forward position, then continue to pull the tray out. Remove the tray slowly to avoid damage.



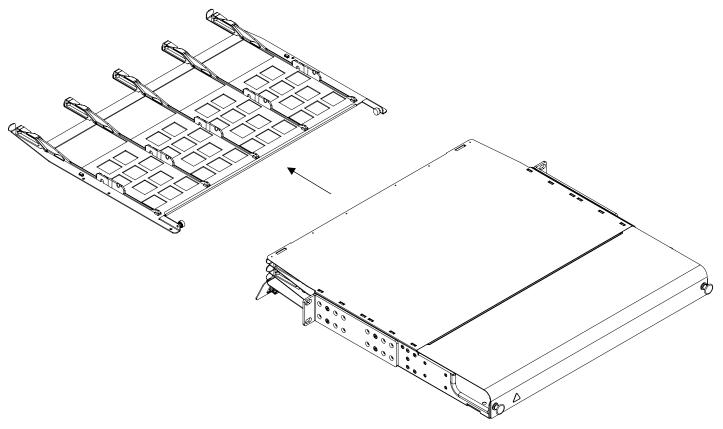


Figure 8-3 Tray Removal

A new tray can be inserted in the chassis by sliding it along the rails in the appropriate chassis position. Once tray is in the closed position, tighten the limiter screw until secure.