

Installation Guide

FDH-288 Series Fiber Distribution Hub (FDH)

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Figure 1

General

This installation guide provides instructions for placement, cable installation and operation of the Superior Essex FDH-288 Series Optical Fiber Distribution Hub (FDH). This guide is intended for installers who are familiar with optical fiber cable systems and their applications. All figures and examples show a typical pad mount installation including cabinet, cable, grounding, patch panel, splice tray and splitter module installation procedures.

1. Introduction

1.1 Product Description

The Superior Essex FDH-288 cabinet is designed to secure and store optical fiber components (splitter modules, connection panel, splice trays and optical fiber cables) for FTTx network distribution. The weather resistant cabinet is designed for a pedestal-mount application that offers a wide range of capacity for optical fiber signal distribution.

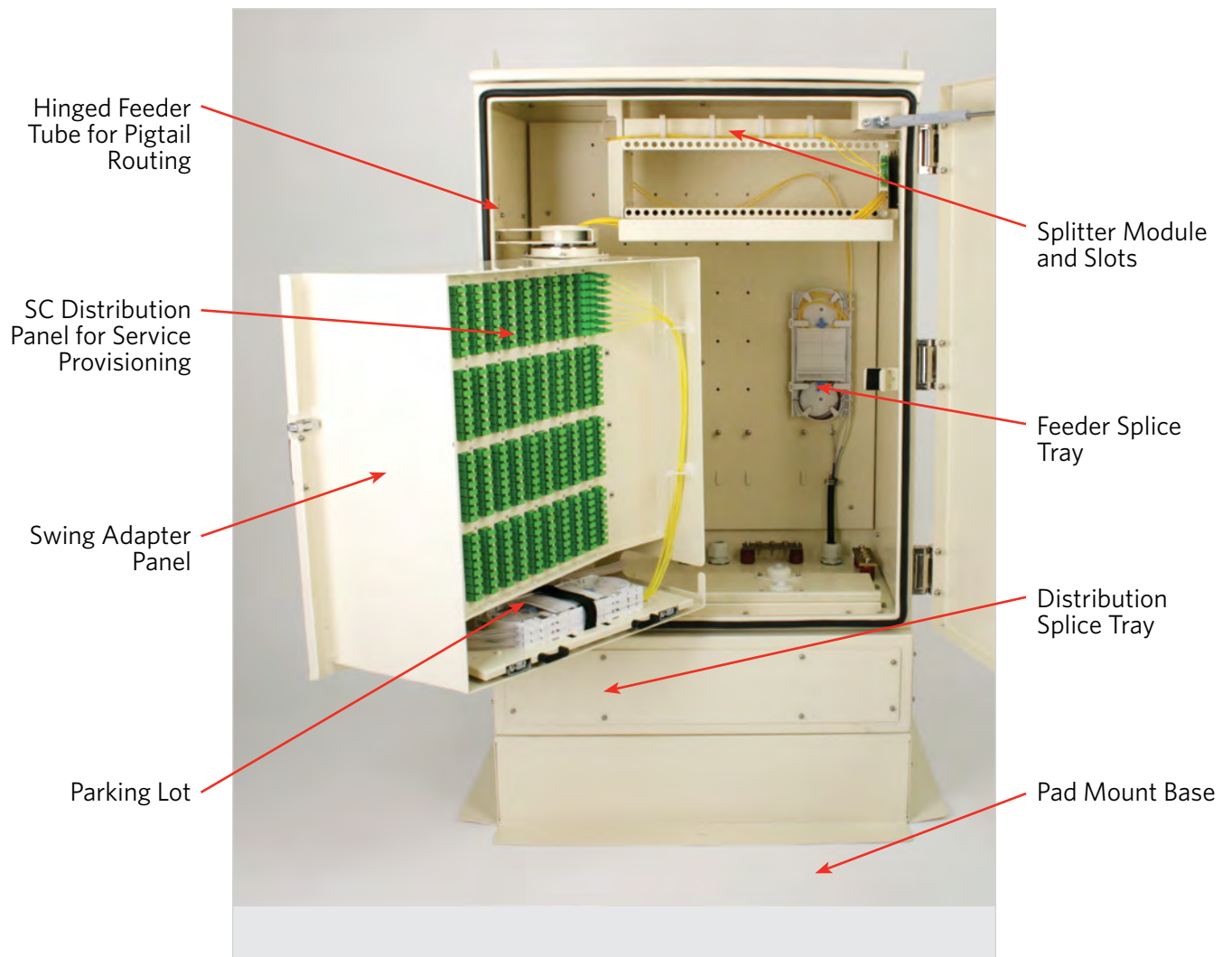


Figure 2

All cable entry/exit ports are sealed with grommets to prevent penetration of dirt, insects and water from outside the cabinet. The front door can be opened/locked using an industry standard 7/16 inch 216C tool. The latch assembly is padlock compatible for improved security.

1.2 Specifications

Table 1. Dimension and Material Specifications

Distribution Fiber Capacities	72, 144, 216 or 288 fiber adapters	
Mounting Configurations	Pad	
Dimensions H x W x D in (mm)	Pad-mount: 49.2 x 26.4 x 15.8 (1,250 x 671 x 401)	
Weight lbs (kg)	80 (36.4)	
Adapter Type	SC/APC	
Fiber Type	Loose buffer tube or ribbon	
Number of Cable Ports	Feeder Port Inlet	1
	Distribution Port Outlet	4
	Grounding	1
Cable Diameter in (mm)	Feeder Port Inlet	0.39 ~ 0.51 (10 ~ 13)
	Distribution Port Outlet	0.47 ~ 0.91 (12 ~ 23)
	Grounding	0.16 ~ 0.39 (4 ~ 10)
Maximum Number of Splitter Input Fibers	12	
Splitter Module Capacity	12	
Parking Lot Capacity	72 adapters	
Color	Beige	
Standards Compliance	GR-3125-CORE, Issue 1	

1.3 Outdoor FDH-288 Series Dimensions

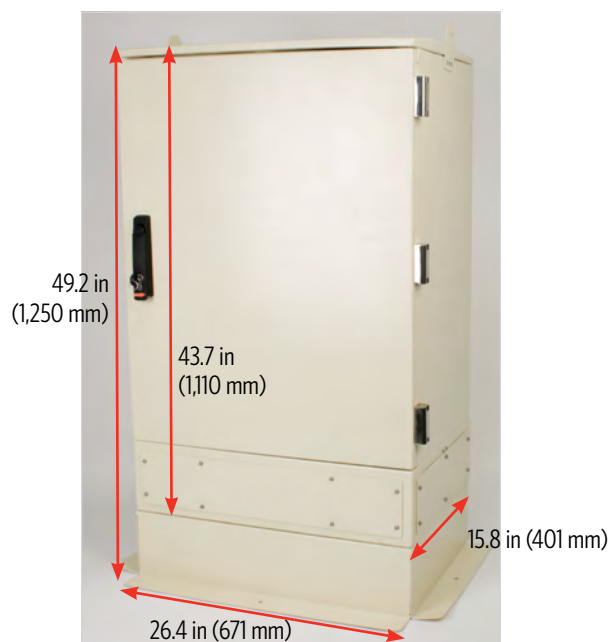


Figure 3

2. Preparations

This section provides the installation outline, unpacking, inspection and site selection procedure for the preparation of the FDH installation.

2.1 Installation Outline

The general procedure of FDH cabinet installation including cabling, splicing and connecting is as follows:

- Installing a support base (pad mount)
- Mounting the FDH cabinet on the support base
- Grounding the FDH cabinet
- Routing and splicing the feeder and distribution cables
- Splitter module installation
- Connections between the splitter output and distribution cables
- Securing the FDH-288 cabinet

2.2 Unpacking and Inspection

- Carefully remove the shipping carton and bubble wrap.
- Inspect the surfaces of the FDH cabinet for any damage.
- Open the front door with a 7/16 inch 216C tool and rotate the handle counterclockwise for interior inspection [Figure 4].
- Inspect the inside of FDH cabinet for any missing or damaged components.
- In the event of any damages, please contact your Superior Essex Sales Representative within 10 days of receipt.
- If you have any technical questions, please contact Technical Support at techsupport@spsx.com or 1.877.263.2818



Figure 4

2.3 Site Selection

Site selection consideration should include proper access to the FDH-288 cabinet site. Any required easements, permits or code accommodations need to be obtained prior to excavation and installation of the cabinet. Considerations for proximity to the optical fiber cable(s), trench, splice points, vehicle traffic and obstructions should all be taken into account.

The cabinet should be installed in locations that are environmentally friendly and where there is proper run off. The unit should be easily accessible and should not be installed in low lying areas or flood plains. For safety reasons, steep inclines should also be avoided.

3. Cabinet and Pad Mount Installation

3.1 Material and Tools Required for Cabinet Installation

- Screwdriver - #2 flat blade
- Marker/pen
- 216C hand tool (can wrench)
- Wire cutter
- Tape measure
- Utility knife
- Equipment to hoist cabinet
- Padlock (optional)
- 6" adjustable wrench
- Silicone tape
- Cable ties
- Screwdriver - #2 Phillips head
- Nut driver set
- 13m socket wrench
- 5/32 pin and hex security wrench
- Electrician's tape for securing gasket
- #6 ground wire/clamp for 5/8 ground rod
- Fiber splicing equipment, as required
- Label maker
- Wire stripper
- Hook and loop fasteners (for cable management)

3.2 Material and Tools Required for Pad Mount Base - Concrete Installation

- Pad mount base (attached to FDH 288)
- Square
- Circular or hand saw
- Nails/screws
- Wood stakes
- Sand or gravel
- Excavation equipment
- 2 x 4 lumber for leveling base, as required
- Reinforcement rods (optional)
- Hammer
- Level
- Drill
- 2 x 6 lumber for framing, as required
- Concrete, as required
- Tamping machine
- Concrete finishing tools
- Site restoration equipment

3.3 Pad Mount Base (PMB) Installation

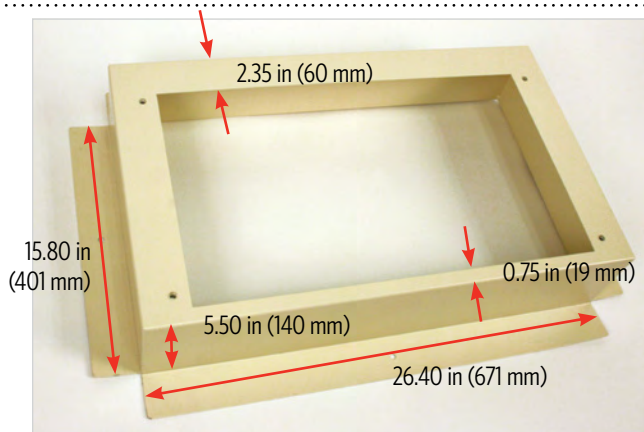


Figure 5

△ SAFETY PRECAUTION: When working with lumber, nails, concrete and associated tools, please wear protective gloves and goggles.

1. Remove the side panels from the FDH- 288 with a pin and hex tool for cable installation, grounding and pad mounting.

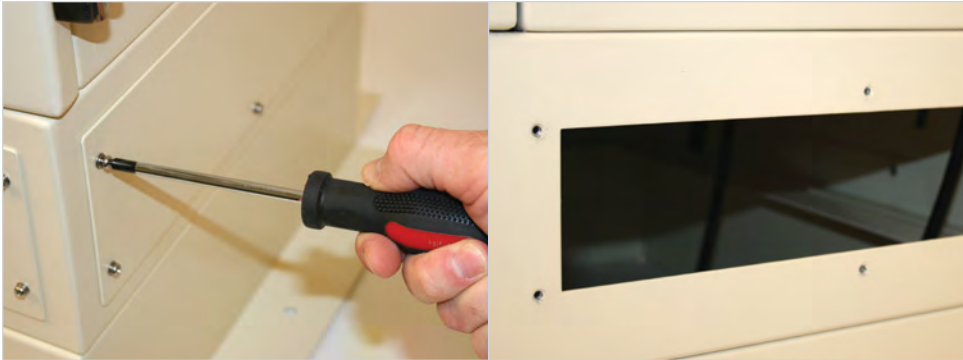


Figure 6

2. Remove the Pad Mount Base (PMB) off of the FDH-288 by removing the 4 bolts and washers with a 13 mm socket wrench. Save these parts for reinstallation of the cabinet to the PMB after it is placed in the concrete pad. It is recommended that bolts are reinstalled into the PMB to keep all threads free of concrete and dirt during installation.
3. Build a wood form with 2 x 6 lumber as indicated in [Figure 7] and lay into place. Temporarily place the PMB within the wood framing to mark the conduit placement location. Mark the soil with paint and remove the PMB.
4. Install conduits to the site location in accordance with measurements indicated on the next page [Figure 7]. The sub base should consist of compacted soil and a base of 4 to 6 inches of sand or gravel above. Conduits must have a 90° bend that accommodates the applicable fiber cable bend radius and needs to be 1 to 2 inches below the PMB surface level. If pad placement is in a low area, raise and slope accordingly to help keep water away from the FDH cabinet site.
5. Secure the wood frame with wood stakes and level for concrete installation. Reinstall the PMB into position within the wood frame. Install the ground rod as indicated in [Figure 7] and according to local codes. Make sure the ground rod is 1 to 2 inches below the PMB height.
6. To ensure the PMB stays in place during concrete installation, place two, 2 x 4 boards across the top of the PMB. Toe nail to the 2 x 6 frame to prevent movement or floating. Optional reinforcement rods can be installed for durability and strength. Pour concrete on the outside of the PMB. Allow a small amount of concrete to flow under the PMB flanges, but very little into the open PMB cavity. This will allow proper adhesion of the PMB to the concrete. **Do not pour concrete into the PMB opening.** Level the PMB with the concrete. Once the concrete pad has hardened and framing has been removed, cable installation and FDH mounting can begin.
7. Attach the #6 ground wire to the ground rod with a clamp for routing into the FDH closure. Pull any non-connectorized feed or distribution cables through the conduits and route into the FDH. Clean the PMB surface of any concrete particles and dirt. Remove the bolts and washers from the PMB and install the isolation gasket. Use tape to hold it in place as needed. If raising the FDH into place by hoisting, use the preinstalled cable retaining rings that are attached to the sides of the FDH (see Feeder Cable Installation Step 1). **△ Use extreme caution if hoisting or raising the cabinet with mechanical equipment.** Reinstall the 4 washers and bolts through the side panels to secure the FDH to the PMB and tighten with a socket or wrench.

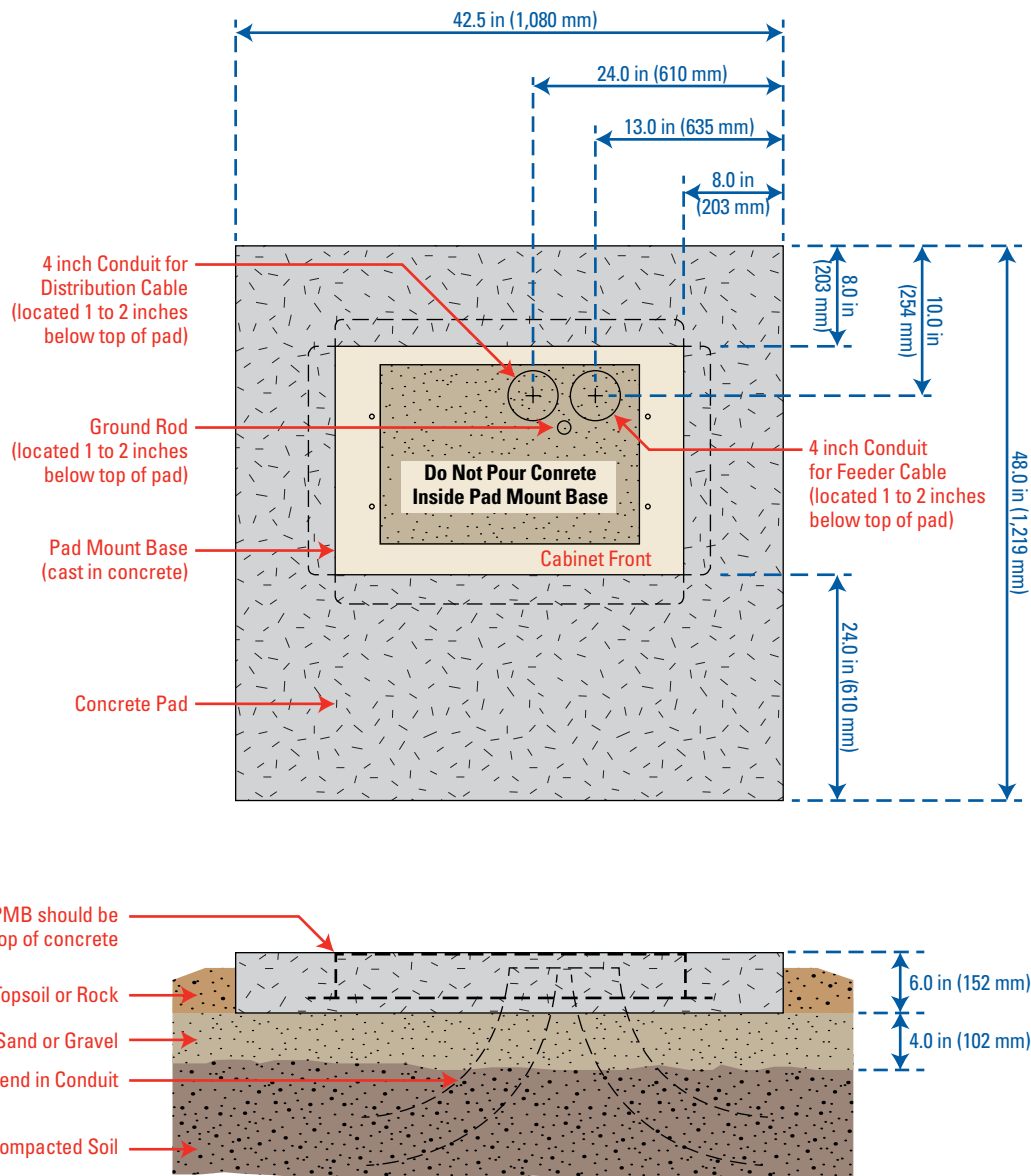


Figure 7: Constructing the concrete pad for the outdoor FDH-288 cabinet (suggested pad dimensions)

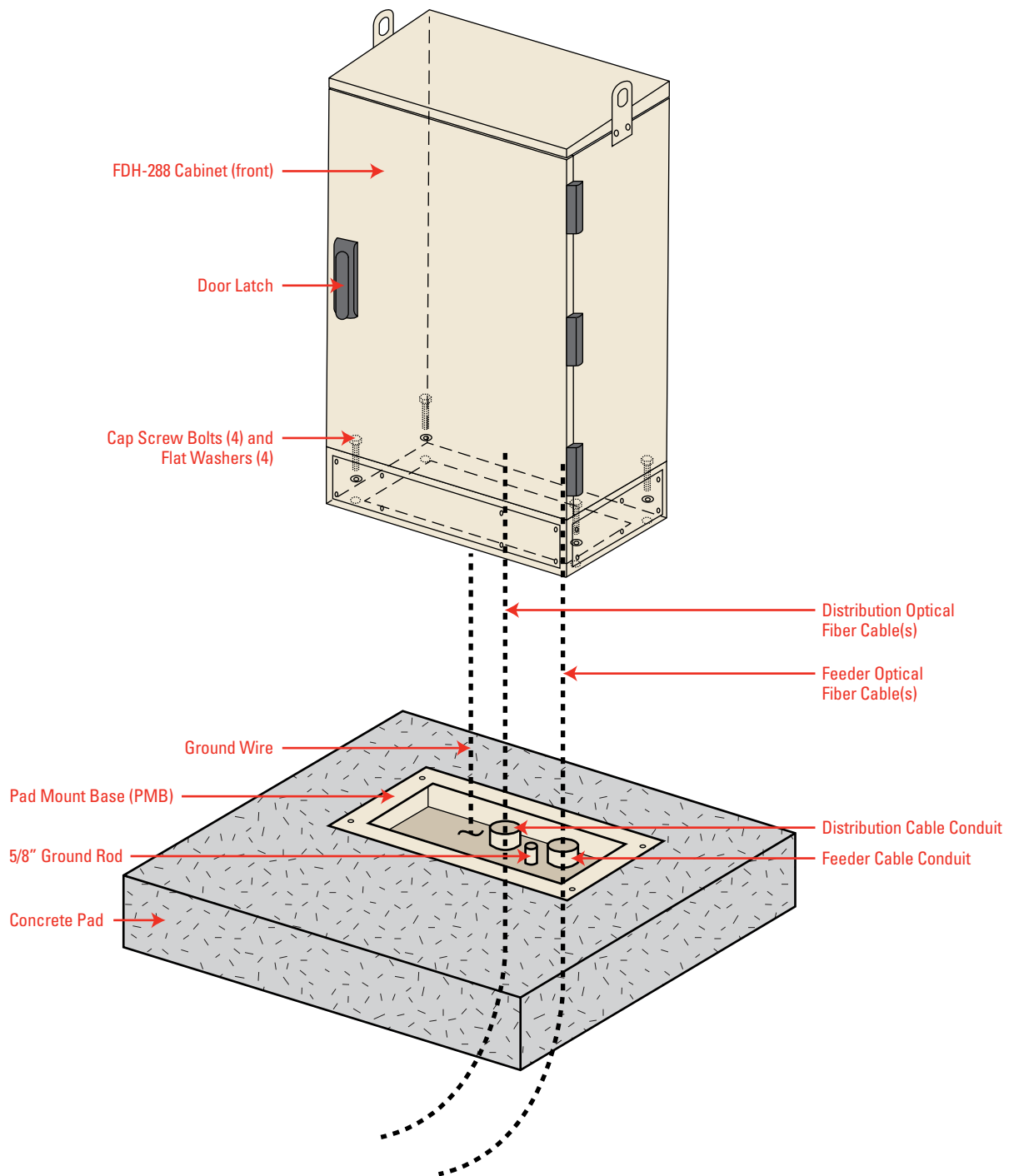


Figure 8: Mounting the outdoor FDH-288 cabinet on the concrete pad

4. Cabinet Ground Installation

For safety reasons, Superior Essex highly recommends installing the earth ground to the FDH-288 cabinet prior to installation of the Feeder and Distribution cables.

Complete the ground installation inside the FDH cabinet as indicated in the steps below.

- STEP 1:** To install the earth ground wire into the FDH-288, loosen the ground compression port and pull in the #6 ground wire. With a 2" minimum bend radius, bend wire at a 90° angle (do not kink the ground wire).
- STEP 2:** Loosen the set screw with a flat blade screwdriver and insert the ground wire into the ground bar lug.
- STEP 3:** Tighten the screw down with a flat blade screwdriver and tag per local practice.
- STEP 4:** Tighten down the compression nut at the port.



5. Incoming (Feeder) Cable Installation

The OSP feeder and distribution cables should be fed into the FDH-288 cabinet prior to mounting it to the PDM as noted previously. It is important to tag each cable for identification after it is routed into the FDH. The feeder cable needs to be installed through the cable port at the bottom, right side of cabinet. The optical fibers of the feeder cable will be spliced to the pigtail cable at the input splice tray. The following procedures describe how the cables are installed and configured for splicing.

5.1 Cable Preparation

1. Confirm the cable structure and the fiber type before starting the cable installation. Use only compatible fiber cables.
2. Take reasonable measures to minimize moisture and dust in the work area. Avoid excessive impact, bending or twisting of cables. Do not exceed manufacturer's limitations to prevent damage to the optical fibers.
3. Remove the access panels for ease of cable installation and for cabinet mounting

- Loosen the cable compression connector (at the cable port) and remove the blank gland. Feed approximately 9' of incoming cable through the cable port at the bottom of the FDH and secure (tighten nut).

5.2 Feeder Cable Installation

STEP 1: Pull slack feeder cable into the FDH and remove 8' 6" of cable sheath from the incoming feeder cable. When removing the sheath, use appropriate safety procedures and tools according to standard optical fiber splicing practices.



STEP 2: Push the cable into place and tighten the compression nut. Leave approximately 6" of sheath exposed inside the cabinet to secure to inside of the cabinet wall. Leave 8 feet of fiber with the buffer tube removed for slack storage within the splice tray for future usage.

Note: For a smaller diameter cable, it may be necessary to build up the cable sheath with silicon tape to ensure a weather tight seal in the compression connector.

STEP 3: Cut the strength member(s) leaving 3" to secure in cabinet. Unfasten the strength member clamp using the 216C tool. Insert the strength member(s) of the incoming cable. Hold firmly and tighten with the 216C tool. Trim strength member(s) flush with clamp.



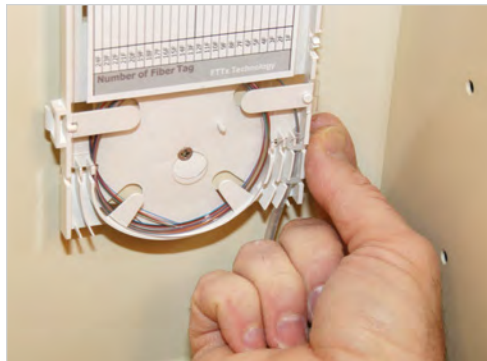
STEP 3: Secure the incoming cable with the provided steel band on the back wall of the FDH cabinet. Install the bond clamp, if required, and attach to the ground bar as illustrated in STEP 1 of the "Distribution Cable Installation."



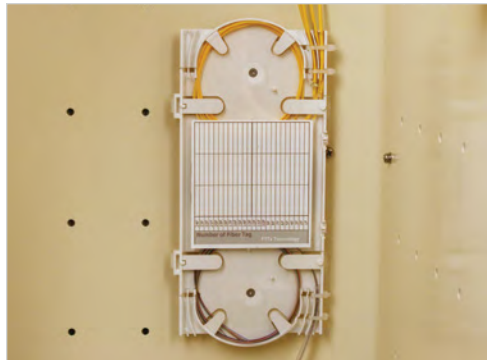
STEP 4: Smaller buffer tubes may be routed directly to the splice tray. Larger tubes must be trimmed shorter, using transportation tubes to protect the fiber in route to the tray. Measure and trim buffer tube(s) accordingly.



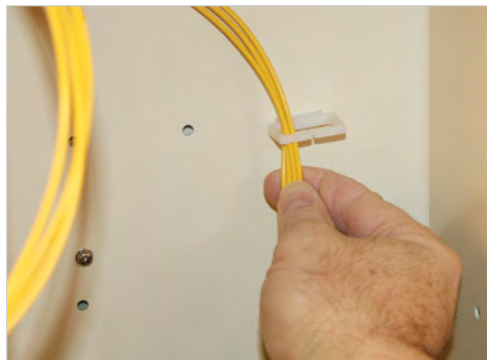
STEP 5: Route pigtails (which will be connected at the input port of the splitter module) into the splice tray and secure all the tubes with the provided cable ties, being careful not to cinch too tightly.



STEP 6: Splice the incoming fibers to the pigtails and arrange carefully in the splice tray.



STEP 7: Carefully route the pigtail slack into the cable guides for proper cable management. The position of the cable guides can be changed by the installer.



6. Splitter Module Mounting

The splitter modules are mounted in the slots located at the top of the FDH cabinet. When a splitter module is initially installed, output patch cords are routed to the storage spool at the left of the patch panel.

STEP 1: Mount the splitter module to the slot using 2 push pins. The 2 push pins are positioned at the top/bottom of the front side of the splitter module. Push the pins in to install and pull out to release from slot.



STEP 2: Route the output pigtails of the splitter module through the cable guides and through the hinged feeder tube, to the connection panel. Use hook and loop fasteners to manage the fiber cord runs.



STEP 3: Connect the splitter output pigtails on the front side adaptors of the connection panel in the correct order.



STEP 4: Arrange and store the output pigtails around the routing spool and use additional hook and loop fasteners for proper cable management.



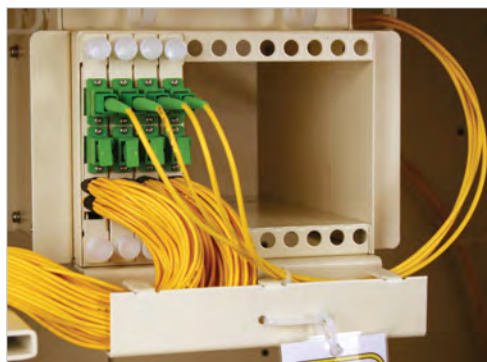
STEP 5: As needed, remove the adaptor caps at the input port of the splitter module cassette. Do not leave unused ports uncapped.



STEP 6: Connect the pigtails at the input port which were spliced with incoming fibers in the splice tray.



STEP 7: Route and secure the pigtail cables in the tray for proper cable management.



7. Outgoing (Distribution) Cable Installation

7.1 Cable Preparation

1. Confirm the cable structure and the fiber type before starting the cable installation. Use only compatible fiber cables.
2. Take reasonable measures to minimize moisture and dust in the work area. Avoid excessive impact, bending or twisting of cables. Do not exceed manufacturer's limitations to prevent damage to the optical fibers.
3. Distribution cables should be installed through cable ports on the bottom, left side of cabinet. Loosen the cable compression connector (at the cable port) and remove the blank gland. Feed approximately 12' of incoming cable through the cable port and secure (tighten nut). Strip the sheath and cut to the desired length for tray splicing and slack storage. Cut the strength member(s) leaving 3" to secure in cabinet. Follow Steps 2 and 3 of 5.2 Feeder Installation for securing strength members and cable to cabinet wall. When using stackable splice trays, use the area designated in the slide out tray compartment. Leave 8 feet of fiber with buffer tube(s) removed for slack storage within the splice tray for future use. Splice the fiber and secure the trays with a hook and loop fastener strap. It is important to leave enough slack so that the sliding splice tray holder moves freely and does not pull or damage fibers.
4. If using pre-connectorized feeder cable, feed the out end of the optical fiber cable through the inside of the FDH distribution port. Pull through the bottom of the cabinet and route into 4 inch conduit to the designated splice point. This operation is most easily performed prior to securing the FDH to the PMB, but it can also be done if it is already installed or if additional distribution cable is added at a later date. Depending on the type and size of pre-connectorized cable used, modifications for mounting, bonding and grounding will depend on the particular cable design. As applicable, secure the cable with clamps to inside of the cabinet. Tie down the strength member(s) and bond and ground any conductive cables per local practice. Route the pre-connectorized cable as indicated in illustrations below.

Note: For smaller diameter cable(s), it may be necessary to build up the cable sheath with silicon tape to ensure a weather tight seal in the compression connector.

7.2 Distribution Cable Installation

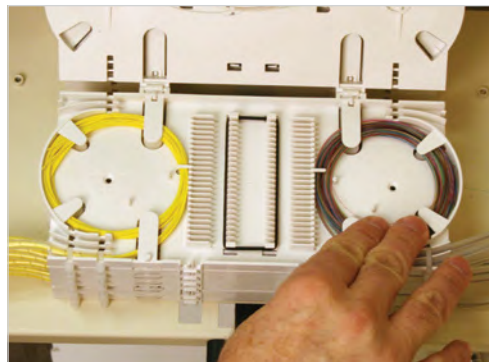
STEP 1: Insert the outgoing cable through the cable port at the bottom of the FDH cabinet. Unfasten the strength member bolt using a 216C tool. Insert the strength member(s) of the incoming cable. Hold firmly and tighten with a 216C tool. Bond conductive non-dielectric cables with an appropriate bond clamp and braid bond or stranded copper ground wire.



STEP 2: If using ribbon fiber cable, protect fibers with protection tubes or route buffer tubes in the provided routing guides. The position of the routing guides can be changed by the installer.



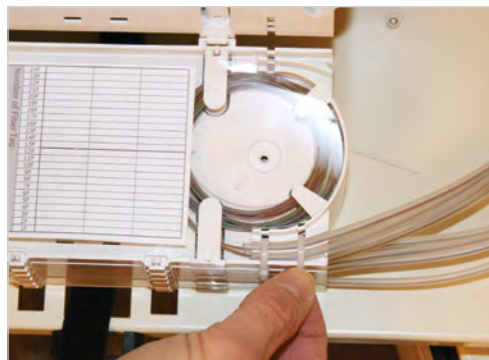
STEP 3: Open the swing door and lock it into place by pushing the chrome pin at the bottom of the door into the locked position. Pull the splice tray slide drawer out to install the splice trays. Install the fibers on the right side of the splice tray, in the correct order, and coil the slack fiber in the tray.



STEP 4: Insert the pigtail connectors at the adaptor on the rear side of the connection panel which are linked with splitter outputs. Route the pigtails to the splice tray through the guides.



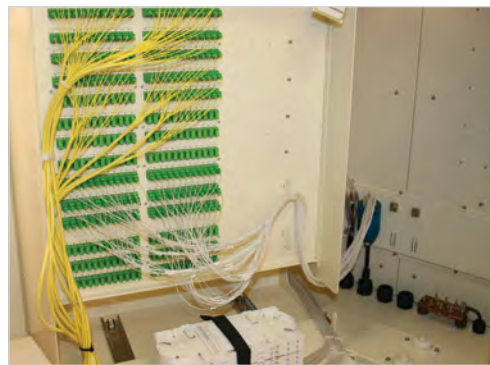
STEP 5: Splice the fibers of the distribution cable and the pigtails connected to the panel in the splice trays in accordance with standard optical fiber procedures. Secure buffer/transport tubes and pigtails with cable ties, being careful not to cinch too tightly.



STEP 6: Secure the splice trays with the provided hook and loop fastener strap and slide the splice tray drawer back into position. Make sure all the fibers are properly routed through the cable guides to prevent them from being pulled or stretched. To close the swing door, unlock it by pushing the red button on side of locking mechanism. Any documents or splicing records can be stored in the document holder located inside the cabinet door.



STEP 7: If you use pre-connectorized distribution cable(s), fix and secure the housing or sheath of the pre-connectorized cable on the back wall of the FDH cabinet per 7.2 Step 1. Bond and ground the cable if required. Route the pre-connectorized cords into the rear side of the connection panel to link with the splitter outputs.



8. Securing

STEP 1: Close the exterior door tightly for dust and water protection. Turn the door handle about 90° in a clock-wise direction and push into the closed position to fix the handle. A 216C tool should be used to reopen the door handle. An optional padlock can be installed through the handle, using the provided locking hole.



9. Maintenance and Repair Procedures

The Superior Essex FDH-288 requires no regular maintenance to insure continuous and satisfactory operation. Maintenance is limited to repair or replacement of any cabinet components that may be damaged or broken in the course of normal operation. The following section provides the procedures for repairing or replacing common cabinet components.

9.1 Painting

Brush-in-cap type bottles of paint can be used for touching-up nicks and scratches on the factory coated surfaces of FDH. Lightly sand and smooth the area to be painted and then clean it up to remove any dirt, dust, or foreign matter. Shake the paint bottle until thoroughly mixed and then apply a light coat of paint to the damaged area using the small brush attached to the cap. Wait until the paint is dry and then apply a second coat if necessary.

9.2 Adaptor Panel Replacement

An adaptor panel (with 24 SC adaptors) can be added, removed and replaced by the installer in the field. Use the following procedure to add/remove and replace a damaged adaptor:

1. Disconnect the splitter output connectors from the front side of adaptor panel.
2. Disconnect the distribution cable connector from the rear side of adaptor panel.
3. Remove two Phillips screws and discard the adaptor panel containing damaged adaptors.
4. Install the new adaptor panel on the connection panel by fastening 2 screws.
5. Re-install (match) the splitter output connectors and distribution cable connectors in order after cleaning the ferrule surfaces of the connectors to prevent added signal loss.

10. Warranty Information

6. The Terms and Conditions of Sale for the Superior Essex FDH-288 is available on our website here: SuperiorEssex.com/Comm/Warranties. Please contact your Superior Essex Sales Representative for additional parts or for warranty related issues.