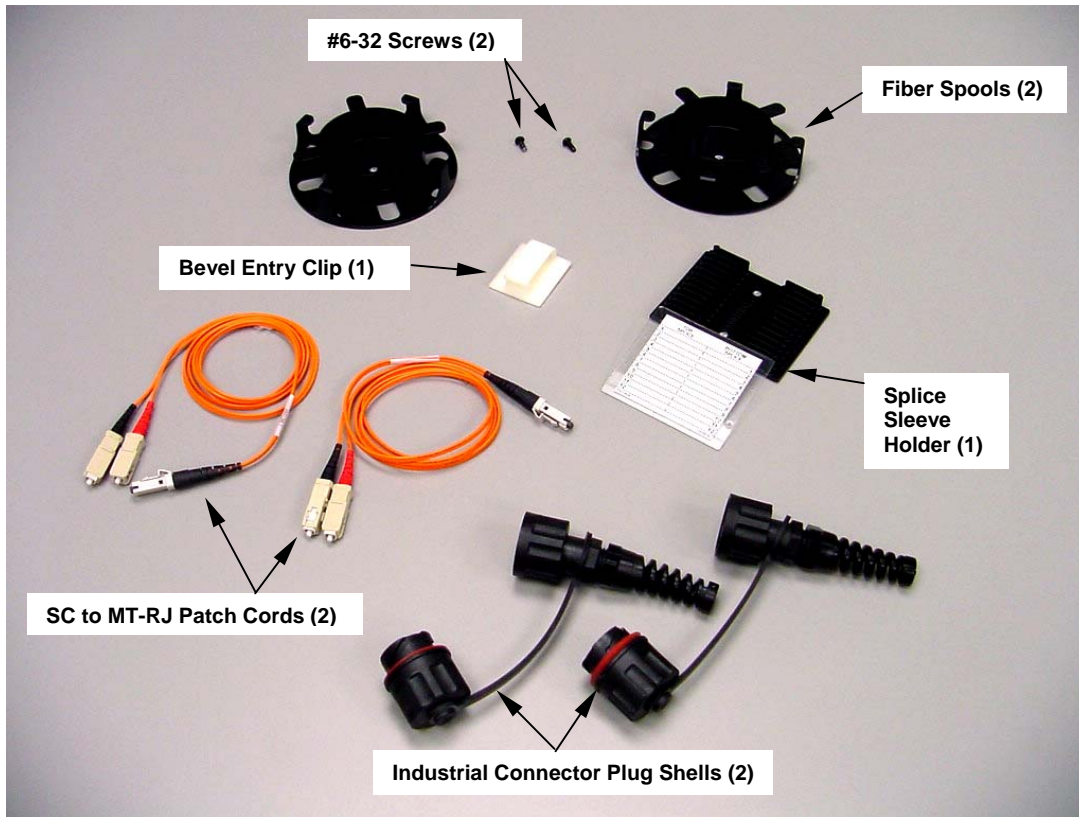


**INSTALLATION INSTRUCTIONS    PN414A**

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**READ ALL INSTRUCTIONS COMPLETELY BEFORE PROCEEDING**

## COMPONENT IDENTIFICATION



### ITEMS REQUIRED FOR ASSEMBLY

ITEM	PART NUMBER	DESCRIPTION	INCLUDED IN KITS	AVAILABLE SEPARATELY
1	BEC38-AT-L0	Bevel Entry Clip	•	
2	FMS1-HT	Fiber Spool Kit	•	
3	FSC24-HT	Splice Sleeve Holder	•	
4	F6Z3-12M1	SC to MT-RJ Patch Cord, 1 Meter Long	•	•
5	MPI588TNP	Industrial Connector Plug Shell	•	
6	CM307	Fiber Splice Sleeve Holder Installation Instructions	•	•
7	00534-31	Screw, #6-32 x 5/16 Phillips Head	•	
OPTIONAL	FKS	Fiber Kevlar Shears		•
OPTIONAL	FBFSP	Fiber Buffer Stripper		•
OPTIONAL	FWP-C	Lint-Free Wipes		•
OPTIONAL	CST115	Fiber Cable Jacket Stripper		•
OPTIONAL	FSCDVR	Screwdriver		•
OPTIONAL	FWBTL	Water Bottle		•
REQUIRED	-	Mechanical or Fusion Splices (not available from <i>PANDUIT</i> )		
-	-	Isopropyl Alcohol (Reagent Grade, 90% min. concentration; not available from <i>PANDUIT</i> )		
-	-	Duplex, Multimode, Fiber Cable with 0.19" (4.8mm) to 0.31" (7.9 mm) Round Outer Jacket (not available from <i>PANDUIT</i> )		

NOTE: For complete installation, this kit requires the *PANDUIT* Industrial Ethernet Enclosure (IAEIP66) and Industrial Ethernet Connector Gland Plate (IAECGP). If not available, the *PANDUIT* Industrial TX5e Jack (CJI5E88T) and Standard NEMA Knockout Tool (IEKPO30) are required to create a bulkhead feed-thru in the customer panel. Fiber mechanical splices or a fusion splice machine with fusion splices and fusion splice protection sleeves are required to terminate the bare fiber end faces in this kit – these components *must* be purchased separately (*PANDUIT* does not provide these parts).

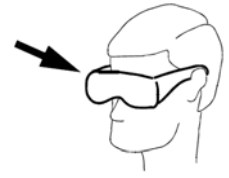
Product Operating Temperature: 0° - 60° C (32° - 140° F)

**For Technical Support: [www.panduit.com/resources/install\\_maintain.asp](http://www.panduit.com/resources/install_maintain.asp)**

# SAFETY PRECAUTIONS

## 1. SAFETY GLASSES

**WARNING:** IT IS STRONGLY RECOMMENDED THAT SAFETY GLASSES BE WORN WHEN HANDLING BARE OPTICAL FIBER. THE BARE FIBER IS VERY SHARP AND CAN EASILY DAMAGE THE EYE.



## 2. ISOPROPYL ALCOHOL

**WARNING:** ISOPROPYL ALCOHOL IS FLAMMABLE. CONTACT WITH THE ALCOHOL CAN CAUSE IRRITATION TO THE EYES. IN CASE OF CONTACT WITH THE EYES, FLUSH WITH WATER FOR AT LEAST 15 MINUTES. ALWAYS USE ISOPROPYL ALCOHOL WITH PROPER LEVELS OF VENTILATION. IN CASE OF INGESTION, CONSULT A PHYSICIAN IMMEDIATELY.



## 3. DISPOSAL OF BARE FIBERS

**WARNING:** PICK UP AND DISCARD ALL PIECES OF BARE FIBER WITH STICKY TABS. DO NOT LET CUT PIECES OF FIBER STICK TO CLOTHING OR DROP IN THE WORK AREA WHERE THEY ARE HARD TO SEE AND CAN CAUSE INJURY.

## 4. LASER LIGHT PROTECTION

LASER LIGHT IS INVISIBLE. THE INVISIBLE LIGHT IS POWERFUL ENOUGH TO DAMAGE YOUR EYES. NEVER LOOK INTO THE END OF A FIBER WHICH MAY HAVE ANY VISUAL FAULT LOCATOR, OR ANY OTHER LASER, COUPLED TO IT. SHOULD ACCIDENTAL EYE EXPOSURE TO LASER LIGHT BE SUSPECTED, ARRANGE FOR AN EYE EXAMINATION IMMEDIATELY.



## 5. CABLE HANDLING

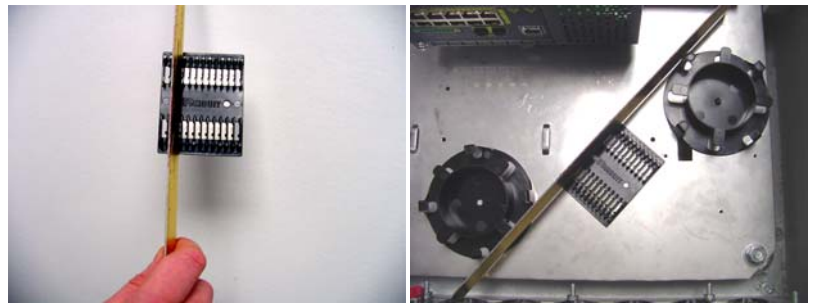
**WARNING:** FIBER OPTIC CABLE CAN BE DAMAGED BY EXCESSIVE PULLING, TWISTING, CRUSHING OR BENDING STRESSES. CONSULT THE APPROPRIATE SPECIFICATION SHEETS AS PROVIDED BY YOUR CABLE VENDOR. ANY DAMAGE MAY DECREASE OPTICAL PERFORMANCE.

# Assembly of Fiber Uplink Kit (IAEFKSP)

<p><b>1. Install Fiber Spools</b></p> <p>1.1 Turn off any internal or remote electronic devices which supply power inside the Industrial Ethernet Enclosure (IAEIP66).</p> <p>1.2 Remove the adhesive film from the bottom of the Fiber Spool. Punch hole at center of Fiber Spool.</p> <p>1.3 Position first Fiber Spool along the right side of the mounting plate from the Industrial Ethernet Enclosure, so that the central hole from the Fiber Spool lines up with the tapped hole on plate. Secure Fiber Spool to plate with a #6-32 screw at the location shown.</p> <p>1.4 Position second Fiber Spool in the location shown on the left after cleaning the mounting surface with alcohol and removing the adhesive film from the Fiber Spool. Note that a tapped hole may or may not be available to secure the second Fiber Spool to the plate with the second #6-32 screw.</p>	
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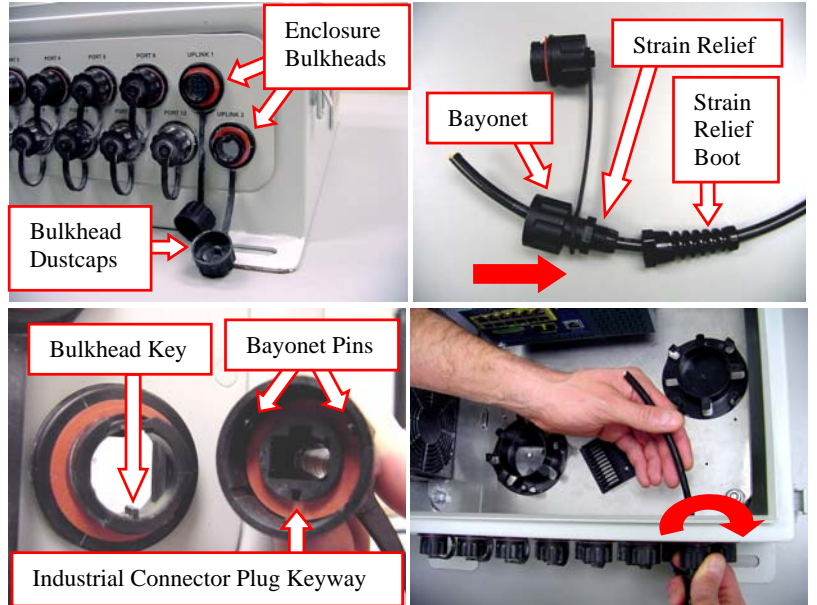
**2. Install Splice Sleeve Holder**

- 2.1 Position a ruler (or other linear device) into recess position number 2 of the Splice Sleeve Holder.
- 2.2 Align the ruler with the Splice Sleeve Holder at an angle tangent to the outer perimeters of the 2 Fiber Spools, as depicted. (This will ensure that the spliced fibers are routed properly in future steps.)
- 2.3 Clean the mounting surface with alcohol, remove the adhesive backing from the Splice Sleeve Holder and secure the Splice Sleeve Holder to the mounting plate.



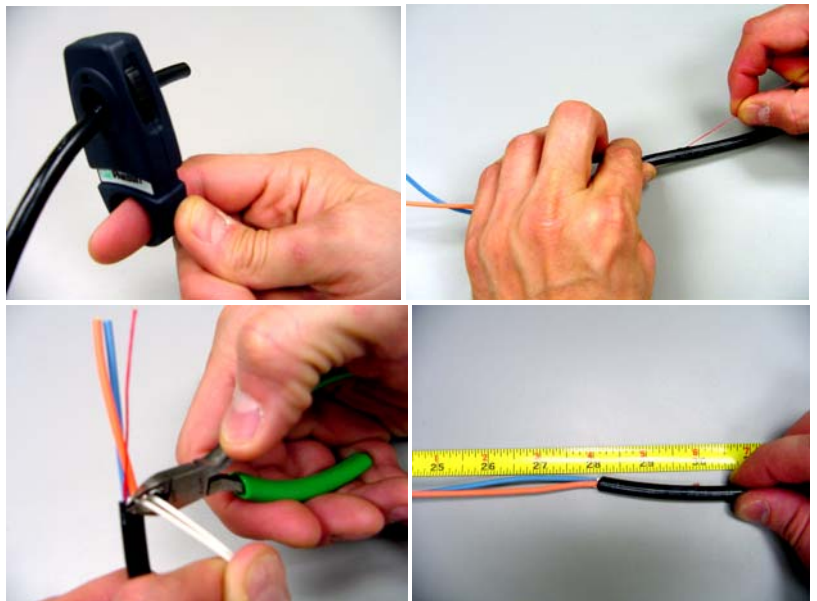
**3. Assemble the Bulkhead Connection**

- 3.1 Remove Dust Caps from Enclosure Bulkheads located at positions "Uplink 1" and "Uplink 2".
- 3.2 Slide the Strain Relief Boot over the fiber cable. Next, position Bayonet and attached Strain Relief over the fiber cable, as shown. Carefully guide the cable through the circular black rubber ring at the rear of the Strain Relief.
- 3.3 Feed cable completely through the bulkhead opening. Allow enough cable length inside the enclosure for connector termination. Slide the Bayonet and Strain Relief assembly along the cable to mate with the bulkhead. Position the Industrial Connector Plug Shell to the Bulkhead so that the Keyway is facing downward and aligns to the Bulkhead Key. Align the Bayonet Pins onto the raceway grooves of the bulkhead and rotate the bayonet clockwise until the bayonet is fully engaged onto the bulkhead.



**4. Strip Round Duplex Fiber Cable**

- 4.1 Strip the outer jacket of the cable 28" (71cm) back, making sure not to damage or cut the inner fiber jackets. (Optional Cable Jacket Adjustable Stripper Tool, CJUST, shown, can be purchased separately from PANDUIT.) Use the cable ripcord, if provided, to obtain the necessary strip length.
- 4.2 Carefully cut away any strength members, making sure not to damage the 2 fibers.
- 4.3 Repeat steps 4.1 and 4.2 for remaining fibers.



**5. Install Bevel Entry Clip and Route Cable**

- 5.1 Remove adhesive film from bottom of Bevel Entry Clip. The location shown is approximately 1.75" (44mm) up from the top of the mounting plate,
- 5.2 Separate arms of the clip so that the patch cord cable can be easily positioned into the clip and route the cable to maintain a 1" (25.4mm) minimum bend radius of the fiber.



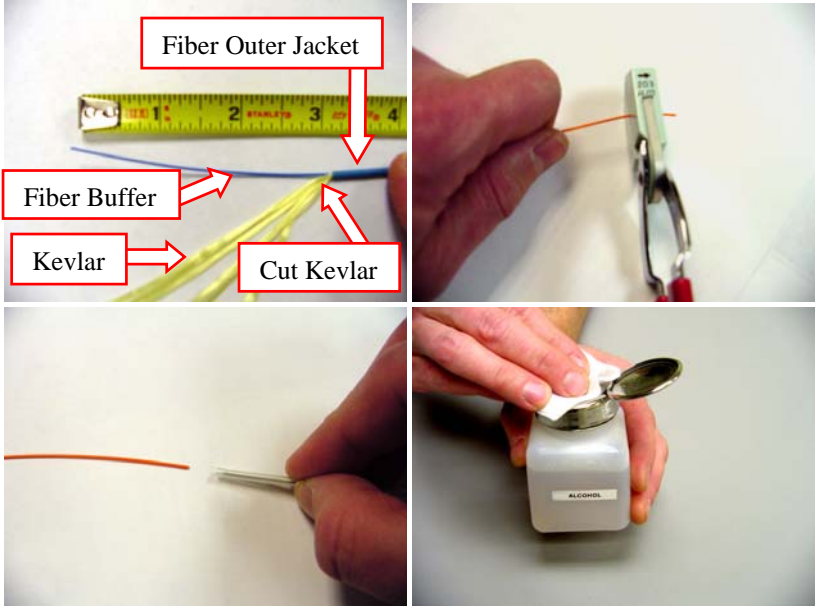
**6. Cut Unused Connectors from SC to MT-RJ Patch Cord**

Determine which connector will be installed into the electronics panel. Cut off the connectors at the end of the patch cord that will be spliced and discard cut connectors. Depicted are two SC connectors being removed from the SC to MT-RJ patch cord which will create an MT-RJ to pigtail cable.



**7. Prepare Fibers for Mechanical or Fusion Splicing**

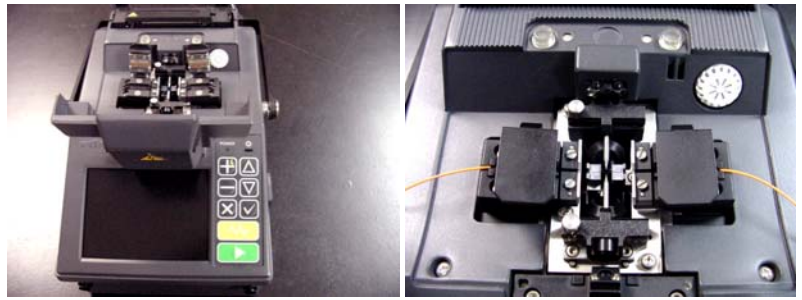
- 7.1 Remove 3" (76mm) of outer jacket from the fiber cable and 5" (127mm) of outer jacket from the uplink pigtail cable fiber with the optional *PANDUIT* Fiber Cable Jacket Stripper Tool (CST115). Cut the Kevlar where it meets the fiber outer jacket with the optional *PANDUIT* Kevlar Shears (FKS).
- 7.2 Remove buffer length recommended per cable manufacturer's and splice manufacturer's buffer stripping guidelines. *PANDUIT* recommends that you remove no more than 1/4" (6.4mm) of buffer at a time to avoid breaking the fiber. Optional Fiber Buffer Stripper Tool (FBFSP) shown can be purchased separately from *PANDUIT*.
- 7.3 Slide splice protection sleeves (not provided by *PANDUIT*) over uplink pigtail fiber cable.
- 7.4 Cleave fiber per splice manufacturer's instructions.
- 7.5 Clean the fiber using a lint-free wipe soaked with isopropyl alcohol (90% minimum concentration recommended).



**8. Splice Fiber Ends per Fusion Splice or Mechanical Splice Manufacturer's Recommended Installation Instructions**

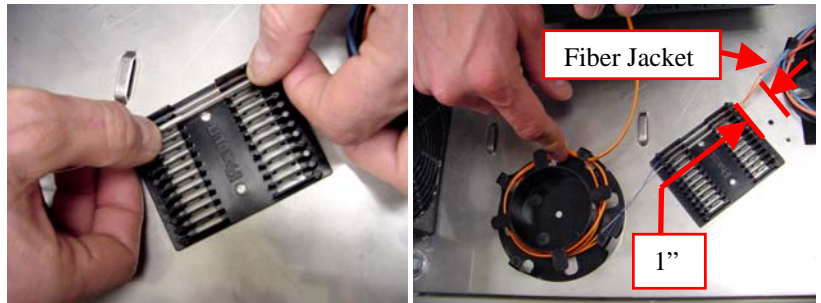
Note that the next three (3) steps assume that an automated fiber splice machine is used. The following three (3) steps are only a guideline – you must refer to the splice machine manufacturer's instructions for proper fusion splicing. Mechanical splice installation not shown.

- 8.1 Carefully place fibers into fusion splice machine and perform fusion splicing. After splicing, verify that the fiber insertion loss is less than .10 dB.
- 8.2 Remove fiber and splice from fusion splice machine. Pull splice protection sleeve over spliced region.
- 8.3 Place splice protection sleeve into heating unit on fusion splice machine (or set heat gun to manufacturer's recommended temperature setting) and shrink splice protection sleeve around fusion splice, making sure that the sleeves fully encapsulate the splice.
- 8.4 Splice a total of 4 fibers, 2 from each duplex cable per steps 8.1 to 8.3.



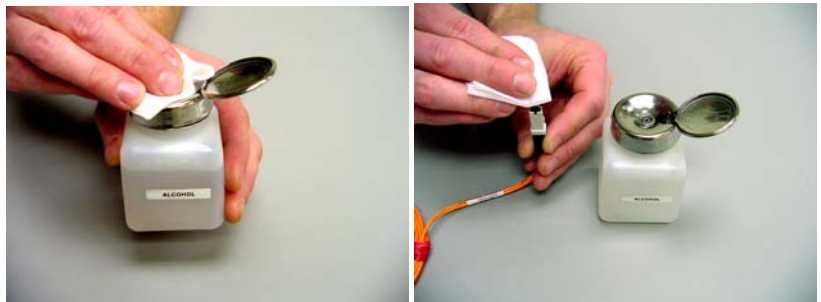
**9. Splice Installation and Cable Routing**

- 9.1 Carefully route the fiber cable twice around the Fiber Spool on the right side. While pushing down on the ends of the fiber protection sleeve, not the fiber, install the protection sleeve into the first recess on the Splice Tray Holder. Keep fibers as straight as possible when exiting the Fiber Spool and entering the Splice Tray Holder. Also, allow approximately 1" (25.4mm) of space between the edge of the Splice Tray Holder and the fiber jacket (1.6mm, 2mm or 3mm typical) to reduce stress concentrations on the fiber, as shown. Please refer to Installation Instructions CM307 for additional information.
- 9.2 Route and install the second fusion-spliced fiber from the duplex cable in the same fashion into the other recesses in the Splice Tray Holder.
- 9.3 Carefully route the uplink connector side of the patch cord through the second Fiber Spool on the left side. Maintain a proper 1" (25.4mm) minimum bend radius of the fiber during this installation.
- 9.4 Perform steps 9.1 to 9.3 for the two fibers from the second fusion-spliced patch cord.



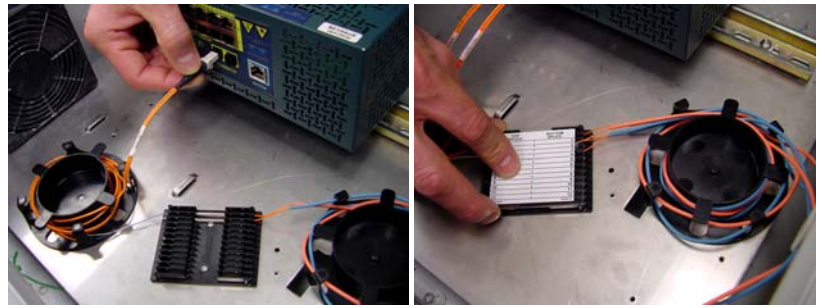
**10. Clean Fiber Connector Ferrule End Faces**

Remove dust caps from uplink connectors. Clean connector ferrule end faces of the patch cord using a lint-free wipe soaked with isopropyl alcohol (90% minimum concentration). The ferrules should be free of all contaminants and residue. To prevent contamination, do not allow the ferrule to touch anything after cleaning.



**11. Install Uplink Patch Cord Connectors and Fiber Splice Holder Cover**

- 11.1 Insert the fiber uplink connectors into the ports on the switch, so that the connector latches are fully engaged. Be sure to maintain proper fiber polarity. Fully populate the switch with any copper connectors that may have been disconnected during this installation.
- 11.2 Install the Fiber Splice Holder cover as depicted here and in Installation Instructions CM307. Make sure not to pinch the fibers during cover installation.



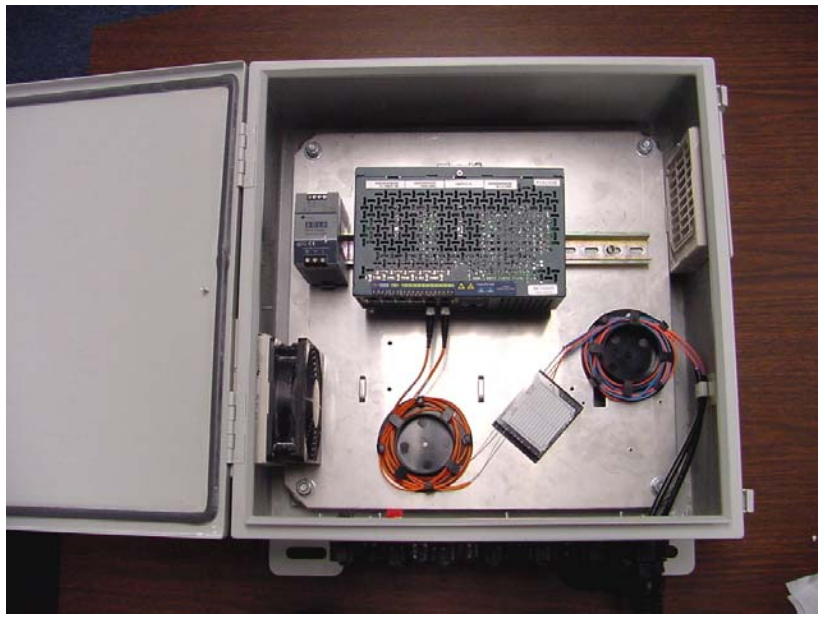
**12. Tighten Cable Strain Relief Boot**

Carefully secure the cable strain relief boot to the fiber cable with 5in-lbf to 10in-lbf of torque (i.e. light hand tightening). Do NOT use a wrench or other tightening tool. Do NOT tighten the strain relief beyond 10in-lbf, as excess torque may damage the fiber cable.



**13. Verify Operational Connections and Close Hinged Industrial Enclosure Cover**

Fully assemble any remaining electronic components, turn on the power and verify that the fiber connections operate. If there are any optical performance issues, disconnect the uplink connectors and clean ferrules per step 10. Verify that no sharp bends are created in the fiber and that a 1" (25.4mm) minimum bend radius of the fiber is maintained. If this is not successful, then re-splice any questionable fibers per step 8.



For Instructions in Local Languages and Technical Support:

[www.panduit.com/resources/install\\_maintain.asp](http://www.panduit.com/resources/install_maintain.asp)



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