



# Cisco 1.25GHz Surge-Gap® Taps and Passives

## Installation and Operation Guide



# For Your Safety

## Explanation of Warning and Caution Icons

Avoid personal injury and product damage! Do not proceed beyond any symbol until you fully understand the indicated conditions.

The following warning and caution icons alert you to important information about the safe operation of this product:

-  You may find this symbol in the document that accompanies this product. This symbol indicates important operating or maintenance instructions.
-  You may find this symbol affixed to the product. This symbol indicates a live terminal where a dangerous voltage may be present; the tip of the flash points to the terminal device.
-  You may find this symbol affixed to the product. This symbol indicates a protective ground terminal.
-  You may find this symbol affixed to the product. This symbol indicates a chassis terminal (normally used for equipotential bonding).
-  You may find this symbol affixed to the product. This symbol warns of a potentially hot surface.
-  You may find this symbol affixed to the product and in this document. This symbol indicates an infrared laser that transmits intensity-modulated light and emits invisible laser radiation or an LED that transmits intensity-modulated light.

## Important

Please read this entire guide. If this guide provides installation or operation instructions, give particular attention to all safety statements included in this guide.

# Notices

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# Important Safety Instructions

## Read and Retain Instructions

Carefully read all safety and operating instructions before operating this equipment, and retain them for future reference.

## Follow Instructions and Heed Warnings

Follow all operating and use instructions. Pay attention to all warnings and cautions in the operating instructions, as well as those that are affixed to this equipment.

## Terminology

The terms defined below are used in this document. The definitions given are based on those found in safety standards.

**Service Personnel** - The term *service personnel* applies to trained and qualified individuals who are allowed to install, replace, or service electrical equipment. The service personnel are expected to use their experience and technical skills to avoid possible injury to themselves and others due to hazards that exist in service and restricted access areas.

**User and Operator** - The terms *user* and *operator* apply to persons other than service personnel.

**Ground(ing) and Earth(ing)** - The terms *ground(ing)* and *earth(ing)* are synonymous. This document uses *ground(ing)* for clarity, but it can be interpreted as having the same meaning as *earth(ing)*.

## Electric Shock Hazard

This equipment meets applicable safety standards.



**WARNING:**

**To reduce risk of electric shock, perform only the instructions that are included in the operating instructions. Refer all servicing to qualified service personnel only.**

Electric shock can cause personal injury or even death. Avoid direct contact with dangerous voltages at all times.

Know the following safety warnings and guidelines:

- Only qualified service personnel are allowed to perform equipment installation or replacement.
- Only qualified service personnel are allowed to remove chassis covers and access

## Important Safety Instructions

any of the components inside the chassis.

## Equipment Placement



### WARNING:

**Avoid personal injury and damage to this equipment. An unstable mounting surface may cause this equipment to fall.**

To protect against equipment damage or injury to personnel, comply with the following:

- Install this equipment in a restricted access location (access restricted to service personnel).
- Make sure the mounting surface or rack is stable and can support the size and weight of this equipment.

## Strand (Aerial) Installation



### CAUTION:

**Be aware of the size and weight of strand-mounted equipment during the installation operation.**

**Ensure that the strand can safely support the equipment's weight.**

## Pedestal, Service Closet, Equipment Room or Underground Vault Installation



### WARNING:

**Avoid the possibility of personal injury. Ensure proper handling/lifting techniques are employed when working in confined spaces with heavy equipment.**

- Ensure this equipment is securely fastened to the mounting surface or rack where necessary to protect against damage due to any disturbance and subsequent fall.
- Ensure the mounting surface or rack is appropriately anchored according to manufacturer's specifications.
- Ensure the installation site meets the ventilation requirements given in the equipment's data sheet to avoid the possibility of equipment overheating.
- Ensure the installation site and operating environment is compatible with the equipment's International Protection (IP) rating specified in the equipment's data sheet.

## Connecting to Utility AC Power

**Important:** If this equipment is a Class I equipment, it must be grounded.

- If this equipment plugs into an outlet, the outlet must be near this equipment, and must be easily accessible.
- Connect this equipment only to the power sources that are identified on the equipment-rating label, which is normally located close to the power inlet connector(s).
- This equipment may have two power sources. Be sure to disconnect all power sources before working on this equipment.
- If this equipment **does not** have a main power switch, the power cord connector serves as the disconnect device.
- Always pull on the plug or the connector to disconnect a cable. Never pull on the cable itself.

## Connection to Network Power Sources

Refer to this equipment's specific installation instructions in this manual or in companion manuals in this series for connection to network ferro-resonant AC power sources.

## AC Power Shunts

AC power shunts may be provided with this equipment.

**Important:** The power shunts (where provided) must be removed before installing modules into a powered housing. With the shunts removed, power surge to the components and RF-connectors is reduced.



**CAUTION:**

**RF connectors and housing seizure assemblies can be damaged if shunts are not removed from the equipment before installing or removing modules from the housing.**

## Grounding (Utility AC Powered Equipment in Pedestals, Service Closets, etc.)

This section provides instructions for verifying that the equipment is properly grounded.

### Safety Plugs (USA Only)

This equipment is equipped with either a 3-terminal (grounding-type) safety plug or a 2-terminal (polarized) safety plug. The wide blade or the third terminal is provided for safety. Do not defeat the safety purpose of the grounding-type or polarized safety plug.

To properly ground this equipment, follow these safety guidelines:

- **Grounding-Type Plug** - For a 3-terminal plug (one terminal on this plug is a

## Important Safety Instructions

protective grounding pin), insert the plug into a grounded mains, 3-terminal outlet.

**Note:** This plug fits only one way. If this plug cannot be fully inserted into the outlet, contact an electrician to replace the obsolete 3-terminal outlet.

- **Polarized Plug** - For a 2-terminal plug (a polarized plug with one wide blade and one narrow blade), insert the plug into a polarized mains, 2-terminal outlet in which one socket is wider than the other.

**Note:** If this plug cannot be fully inserted into the outlet, try reversing the plug. If the plug still fails to fit, contact an electrician to replace the obsolete 2-terminal outlet.

## Grounding Terminal

If this equipment is equipped with an external grounding terminal, attach one end of an 18-gauge wire (or larger) to the grounding terminal; then, attach the other end of the wire to a ground, such as a grounded equipment rack.

## Safety Plugs (European Union)

- **Class I Mains Powered Equipment** - Provided with a 3-terminal AC inlet and requires connection to a 3-terminal mains supply outlet via a 3-terminal power cord for proper connection to the protective ground.

**Note:** The equipotential bonding terminal provided on some equipment is not designed to function as a protective ground connection.

- **Class II Mains Powered Equipment** - Provided with a 2-terminal AC inlet that may be connected by a 2-terminal power cord to the mains supply outlet. No connection to the protective ground is required as this class of equipment is provided with double or reinforced and/or supplementary insulation in addition to the basic insulation provided in Class I equipment.

**Note:** Class II equipment, which is subject to EN 50083-1, is provided with a chassis mounted equipotential bonding terminal. See the section titled **Equipotential Bonding** for connection instructions.

## Equipotential Bonding

If this equipment is equipped with an external chassis terminal marked with the IEC 60417-5020 chassis icon () , the installer should refer to CENELEC standard EN 50083-1 or IEC standard IEC 60728-11 for correct equipotential bonding connection instructions.

## General Servicing Precautions



### WARNING:

**Avoid electric shock! Opening or removing this equipment's cover may expose you to dangerous voltages.**

**CAUTION:**

These servicing precautions are for the guidance of qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

Be aware of the following general precautions and guidelines:

- **Servicing** - Servicing is required when this equipment has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into this equipment, this equipment has been exposed to rain or moisture, does not operate normally, or has been dropped.
- **Wristwatch and Jewelry** - For personal safety and to avoid damage of this equipment during service and repair, do not wear electrically conducting objects such as a wristwatch or jewelry.
- **Lightning** - Do not work on this equipment, or connect or disconnect cables, during periods of lightning.
- **Labels** - Do not remove any warning labels. Replace damaged or illegible warning labels with new ones.
- **Covers** - Do not open the cover of this equipment and attempt service unless instructed to do so in the instructions. Refer all servicing to qualified service personnel only.
- **Moisture** - Do not allow moisture to enter this equipment.
- **Cleaning** - Use a damp cloth for cleaning.
- **Safety Checks** - After service, assemble this equipment and perform safety checks to ensure it is safe to use before putting it back into operation.

## Electrostatic Discharge

Electrostatic discharge (ESD) results from the static electricity buildup on the human body and other objects. This static discharge can degrade components and cause failures.

Take the following precautions against electrostatic discharge:

- Use an anti-static bench mat and a wrist strap or ankle strap designed to safely ground ESD potentials through a resistive element.
- Keep components in their anti-static packaging until installed.
- Avoid touching electronic components when installing a module.

## Important Safety Instructions

### Fuse Replacement

To replace a fuse, comply with the following:

- Disconnect the power before changing fuses.
- Identify and clear the condition that caused the original fuse failure.
- Always use a fuse of the correct type and rating. The correct type and rating are indicated on this equipment.

### Batteries

This product may contain batteries. Special instructions apply regarding the safe use and disposal of batteries:

#### Safety

- Insert batteries correctly. There may be a risk of explosion if the batteries are incorrectly inserted.
- Do not attempt to recharge 'disposable' or 'non-reusable' batteries.
- Please follow instructions provided for charging 'rechargeable' batteries.
- Replace batteries with the same or equivalent type recommended by manufacturer.
- Do not expose batteries to temperatures above 100°C (212°F).

#### Disposal

- The batteries may contain substances that could be harmful to the environment
- Recycle or dispose of batteries in accordance with the battery manufacturer's instructions and local/national disposal and recycling regulations.



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- The batteries may contain perchlorate, a known hazardous substance, so special handling and disposal of this product might be necessary. For more information about perchlorate and best management practices for perchlorate-containing substance, see [www.dtsc.ca.gov/hazardouswaste/perchlorate](http://www.dtsc.ca.gov/hazardouswaste/perchlorate).

### Modifications

This equipment has been designed and tested to comply with applicable safety, laser safety, and EMC regulations, codes, and standards to ensure safe operation in its intended environment. Refer to this equipment's data sheet for details about regulatory compliance approvals.

Do not make modifications to this equipment. Any changes or modifications could void the user's authority to operate this equipment.

Modifications have the potential to degrade the level of protection built into this equipment, putting people and property at risk of injury or damage. Those persons making any modifications expose themselves to the penalties arising from proven non-compliance with regulatory requirements and to civil litigation for compensation in respect of consequential damages or injury.

## Accessories

Use only attachments or accessories specified by the manufacturer.

## Electromagnetic Compatibility Regulatory Requirements

This equipment meets applicable electromagnetic compatibility (EMC) regulatory requirements. Refer to this equipment's data sheet for details about regulatory compliance approvals. EMC performance is dependent upon the use of correctly shielded cables of good quality for all external connections, except the power source, when installing this equipment.

- Ensure compliance with cable/connector specifications and associated installation instructions where given elsewhere in this manual.

## EMC Compliance Statements

Where this equipment is subject to USA FCC and/or Industry Canada rules, the following statements apply:

### FCC Statement for Class A Equipment

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when this equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case users will be required to correct the interference at their own expense.

### Industry Canada - Industrie Canadienne Statement

This apparatus complies with Canadian ICES-003.  
Cet appareil est conforme à la norme NMB-003 du Canada.

## Important Safety Instructions

### CENELEC/CISPR Statement with Respect to Class A Information Technology Equipment

This is a Class A equipment. In a domestic environment this equipment may cause radio interference in which case the user may be required to take adequate measures.

# 1

## Introducing the Taps and Passives

### Introduction

This guide cover the following types of taps and passives installation:

- Strand - (overhead) cable applications
- Pedestal - (underground) cable applications

### Who Should Use This Guide

This guide is intended for authorized personnel who have experience working with similar equipment. The personnel should have appropriate background and knowledge to complete the procedures described in this guide. Cisco service engineers who help system operators manage their systems will also find the contents of this guide useful.

### Qualified Personnel

Only appropriately qualified and skilled personnel should attempt to install, operate, maintain, and service this product.



**WARNING:**

**Allow only qualified and skilled personnel to install, operate, maintain, and service this product. Otherwise, personal injury or equipment damage may occur.**

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# Description of the Taps and Passives

## Taps

Taps are designed to provide signal from the feeder line to the drop. They are available in 2-, 4-, or 8-port configurations and in a wide range of tap values. For through-feeder applications, the taps have both input and output ports for feeder cable connections. For the end of a feeder line, the lowest value taps in a given port configuration are provided with no through path. The signal is terminated within the faceplate, eliminating the need for an external terminator. The self-terminating tap values are the 4 dB 2-port, 8 dB 4-port, and 11 dB 8-port. When higher tap values are used at the end of the feeder line, a 75  $\Omega$  external line terminator is required to properly terminate the feeder line.

All taps have interchangeable faceplates for ease of changing tap values. The 2- and 4-port taps have identical housing dimensions, thus port count can be increased faceplate change-out without disconnecting the feeder cable.

The seizure screw mechanism is specially designed to swivel between both strand and pedestal entry ports. This allows splicing in a strand or pedestal configuration without having to remove the seizure screw or faceplate.

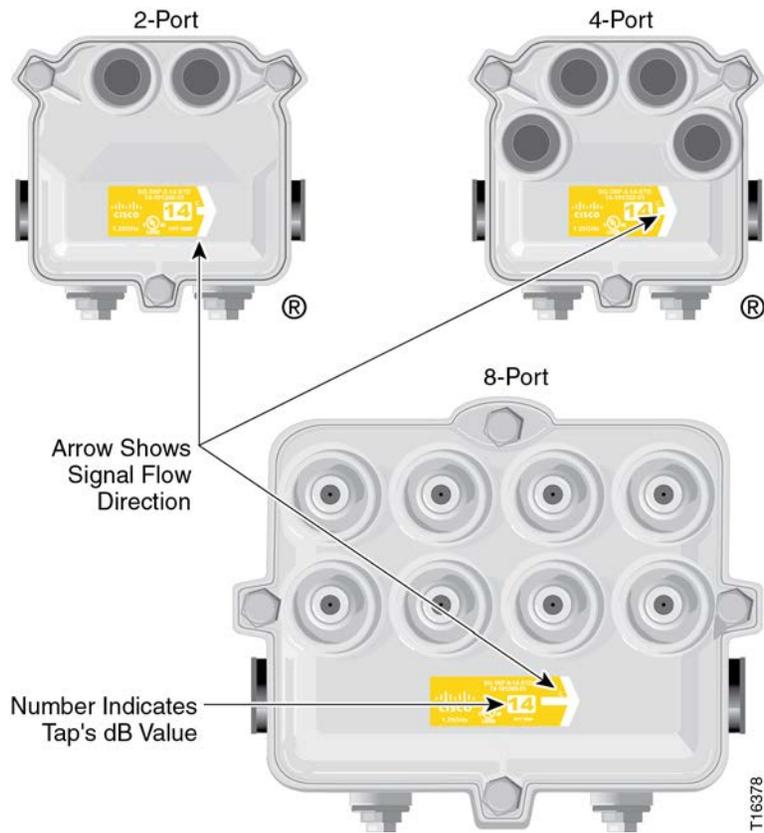
## Passives

Passives are designed to either provide the splitting of trunk and feeder lines or the coupling of AC voltage onto the feeder line from the AC power supply. Passives are available in three main types: splitters, directional couplers, and power inserters. A common housing is used by all passives enabling simple changes of configuration via interchangeable faceplates.

Splitters are used for splitting the trunk or feeder lines and are available with two outputs (2-way) or three outputs (3-way balanced and 3-way unbalanced splitters). Directional couplers are also used for splitting trunk or feeder lines where low insertion loss is desired on one output and a higher insertion loss on the other output. Directional couplers are available in a variety of values. The dB value of the directional coupler designates the insertion loss from input to tap port. Power inserters are used to couple AC voltage onto the trunk line from the AC power supply.

## Taps Diagram

The following diagram shows the 2-, 4-, and 8-port taps.



## Passive Diagram

The following diagram shows the passive housing that is used for the directional couplers, 2-way splitter, 3-way balanced splitter, 3-way unbalanced splitter, and power inserter.



The following table lists the function of each port for each type of passive.

| Passive                   | Function                            |   |
|---------------------------|-------------------------------------|---|
| Directional coupler       | Port 1 = In<br>Port 3 = Tap         | Port 2 = Out<br>Port 4 = not used       |
| 2-way splitter            | Port 1 = In<br>Port 3 = Out 2       | Port 2 = Out 1<br>Port 4 = not used     |
| 3-way balanced splitter   | Port 1 = In<br>Port 3 = Out 2       | Port 2 = Out 1<br>Port 4 = Out 3        |
| 3-way unbalanced splitter | Port 1 = In<br>Port 3 = Low Out 1   | Port 2 = High Out<br>Port 4 = Low Out 2 |
| Power inserter            | Port 1 = RF/AC<br>Port 3 = AC input | Port 2 = RF/AC<br>Port 4 = not used     |

## Required Installation Accessories

One coaxial cable-to-housing connector is required for each feeder port connection. A housing-to-housing connector may be required to connect the tap or passive directly to the input or output of another device. When taps that are not self-terminating are used for end-of-feeder line, one 75  $\Omega$  line terminator is required to terminate the feeder line at the output port.

**CAUTION:**

It is recommended that all unused F-ports be properly terminated with a 75 terminator

## Connector Protection

It is recommended that each feeder-line connector be properly protected against corrosion. This is accomplished by any sealing material such as heat-shrink, cold-shrink, or a suitable sealing tape.

For taps, each F-port for drop connection is shipped with a protective plastic cap. Remove these plastic caps after the tap is installed. All drop connections should be protected against corrosion. This is accomplished by the use of appropriate sealing material such as heat-shrink or connector boots. It is also recommended that silicon grease be lightly applied to the threading of the drop connection.

## Connection Beam

Our family of taps also consists of the Surge-Gap Stretch Tap. These taps include a connection beam AC/RF bypass switch that enables uninterrupted downstream signal flow when the tap faceplate is removed. These units are identifiable by a blue dot on the back of the housing. The end-of-line Surge-Gap Taps should be installed with power-blocking, 75  $\Omega$  terminators on the downstream output port.

## Taps and Passives Dimensions

The following table contains the physical dimensions for the tap and passive.

| Item              | Length               | Width               | Depth           |
|-------------------|----------------------|---------------------|-----------------|
| 2- and 4-port tap | 3.6 in. (91.44 mm)   | 3.6 in. (91.44 mm)  | 3 in. (76.2 mm) |
| 8-port tap        | 4.25 in. (107.95 mm) | 5.5 in. (139.75 mm) | 3 in. (76.2 mm) |
| Passive           | 4.5 in. (114.3 mm)   | 5.5 in. (139.75 mm) | 3 in. (76.2 mm) |

## Pedestal Size

The following table contains the recommended minimum pedestal size for various tap/passive configurations.

| Pedestal Size  | Splice Configuration   |
|----------------|--|
| 4-in. by 4-in. | <ul style="list-style-type: none"> <li>• 2-port tap</li> <li>• 4-port tap</li> </ul> |

|                |   |
|----------------|---|
| 6-in. by 6-in. | <ul style="list-style-type: none"><li>• 8-port tap</li><li>• In-line equalizer with 2- or 4-port tap</li><li>• Splitter or directional coupler</li><li>• 1-, 2-, or 4-port tap with splitter or directional coupler</li><li>• In-line equalizer with 8-port tap</li></ul> |
|----------------|---|



# 2

## Installing the Tap/Passive

This chapter gives step-by-step instructions for installing the tap/passive in your cable system.

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## Tools and Torque Specifications

### Tools Required

Before you start, make sure you have the following tools.

| <b>Tools</b>  | <b>Used to . . .</b>   |
|---|--|
| Appropriate coaxial cable coring tool   | Prepare feeder cable ends  |
| 3/8-in. hex wrench, or nut driver   | Tighten strand clamp bolts and retainer bolts  |
| 1/2-in. or 3/8-in. wrench, or nut driver  | Remove and replace cable end plugs   |
| 3/16-in. hex nut driver   | Tighten seizure screws   |
| Small flat-end screwdriver  | Rotate seizure mechanism   |
| Propane torch, or equivalent  | Apply heat shrink  |
| Wire cutters  | Cut cable/center conductor   |
| Sharp knife   | Trim   |
| Torque wrench in in-lb<br>(0 in-lb to 250 in-lb minimum)<br>(0 Nm to 28.2 Nm minimum) | Tighten seizure screws, connectors, and retainer bolts   |
| 7/16-in. wrench   | Tighten house drop F-connector   |
| 15/16-in., 1-in., and 1 1/8-in. wrenches  | Tighten connectors for feeder cable<br><br>Sizes may vary depending on manufacturer and connector style. |
| Grounding wire assembly, part number 569533 (hot install only)                        | Prevent electric shock and equipment damage. Certain components can deliver an electrical shock          |
| Room temperature vulcanizing (RTV) silicone   | Seal connections   |

### Torque Specifications

The following are recommended torque specifications for the tap and passive.

| <b>Part</b>       | <b>Torque Specification</b>             |
|-------------------|---|
| Strand clamp bolt | 30 in-lb to 40 in-lb (3.4 Nm to 4.5 Nm) |

| Part                                      | Torque Specification  |
|---|---|
| KS-connector                              | Tighten according to manufacturer's recommended torque specification, typically 15 ft-lb to 25 ft-lb (20.3 Nm to 33.9 Nm), but not to exceed 60 ft-lb (81.3 Nm) |
| Port end plug                             | 30 in-lb to 50 in-lb (3.4 Nm to 5.6 Nm)   |
| Seizure screw                             | 15 in-lb to 20 in-lb (1.7 Nm to 2.3 Nm)   |
| Faceplate bolt                            | 50 in-lb to 60 in-lb (5.6 Nm to 6.8 Nm)   |
| F-connector (drop cable)<br>RG-6 or RG-59 | Tighten to manufacturer's recommended torque specification  |

## Torque Sequence

The following diagrams show the proper torque sequence for closing the housing.

### 2/4-Way Tap



### 8-Way Tap/Passive



## Preparing for Installation

Complete the following tasks before installing the tap/passive housing.

- Prepare connectors

**Important:** The installer should review and install this product per EN 50083-1/A2:1998.

### To Prepare the Connectors

The tap/passive requires KS-connectors for input and output connections. You must trim pins to the correct length before inserting them into the housing. Follow these steps to prepare the connector.



**WARNING:**

**Avoid electrical shock and damage to this product. If AC is present on the cable, take care to avoid electrocution or short circuits when cutting the cable.**

1. Cut the cable to allow proper entry into the port while also allowing for expansion hoops in strand installations.
2. Prepare the cable ends per the cable manufacturer's recommended method.
3. Place the connector above the entry port so that it lines up with its installed position.
4. If the pin extends past the stripline on the housing, use wire cutters to trim the pin flush to the stripline. See the diagram below for a visual guide.



**WARNING:**

**Avoid electrical shock and damage to this product. If AC is present on the cable, take care to avoid electrocution or short circuits when cutting the cable.**

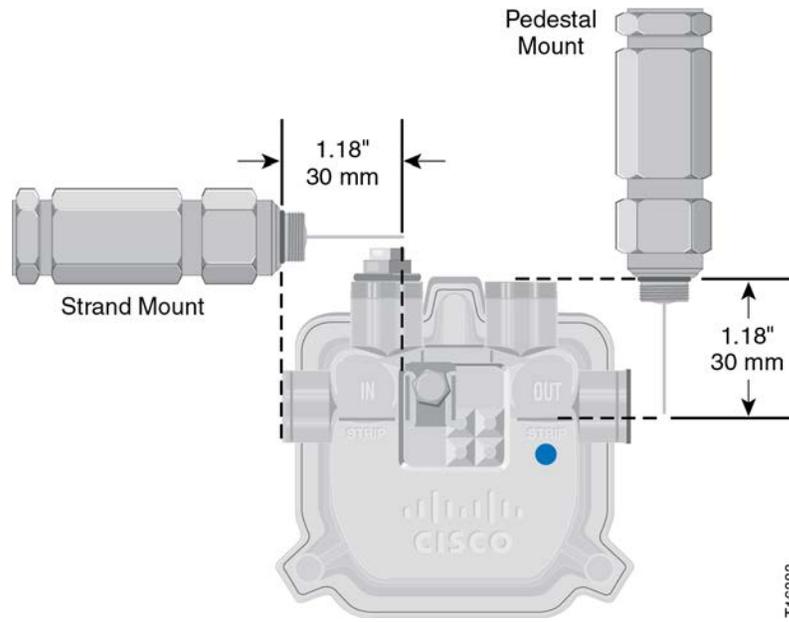
**Important:** If the pin does not reach the stripline on the housing, inadequate electrical connection to the tap/passive may occur, causing loss of signal to all downstream subscribers.



**CAUTION:**

**Always ensure that the length of the center conductor pin is accurate. Excessive length could damage the connection beam housing and cause performance problems in the unit.**

Preparing for Installation



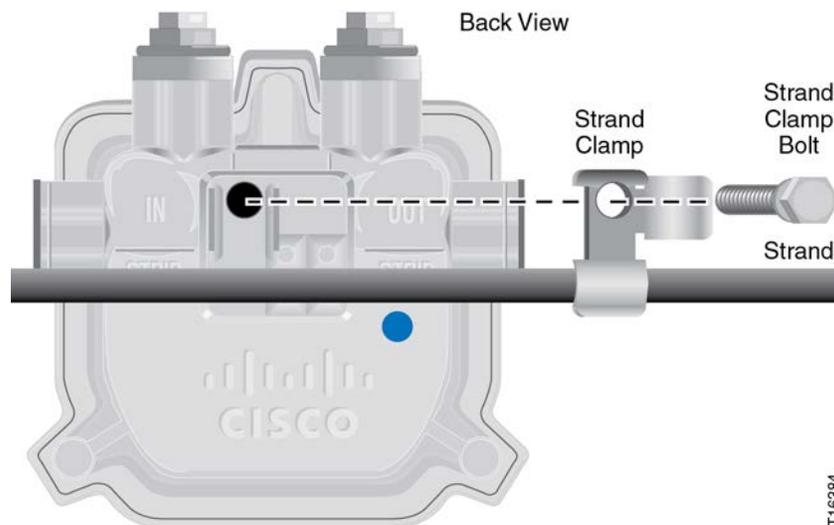
## Installing the Tap/Passive on a Strand

The strand-mounted configuration has the feeder cable entering one side of the unit and exiting the other side. The unit has one strand clamp with a strand clamp bolt and uses a standard cable strand for mounting.

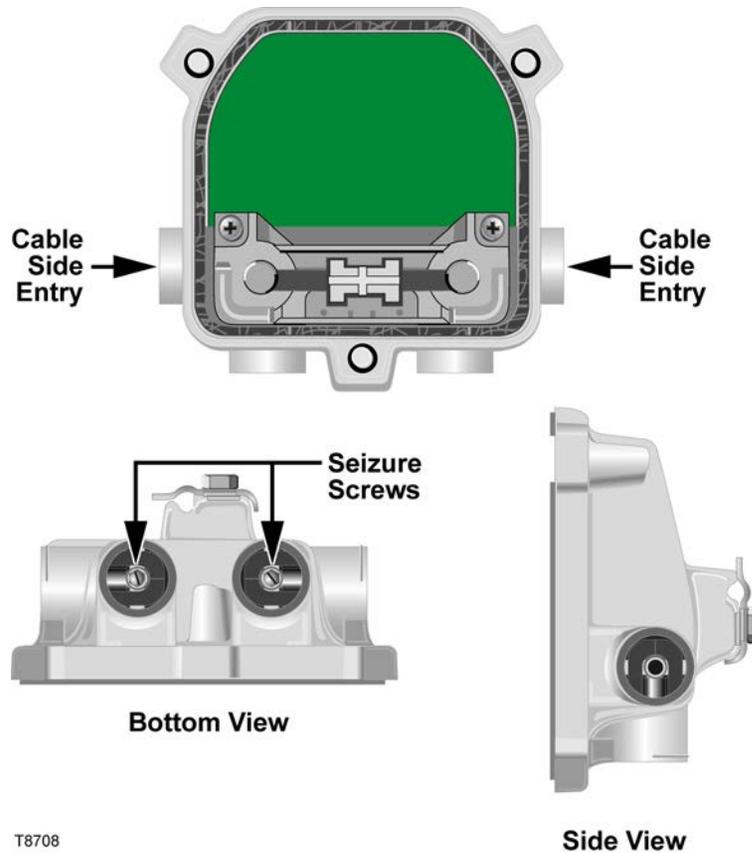
### To Install the Tap/Passive on a Strand

Follow these steps to install tap/passive on a strand.

1. Using a 3/8-in. wrench, loosen the strand clamp bolt.
2. Attach the tap/passive to the strand making sure that the strand enters the strand clamp.



3. Secure the strand clamp to the strand by tightening the strand clamp bolt with a 3/8-in. wrench from 30 in-lb to 40 in-lb (3.4 Nm to 4.5 Nm).
4. Using a 3/16-in. hex-head driver or 3/16-in. straight blade screwdriver, loosen the two seizure screws inside the housing.



T8708

5. Thread the prepared KS-connectors into the housing at the cable side entry port locations as shown in the figure above. Make sure to tighten the connector according to the manufacturer's recommended torque specification, typically 15 ft-lb to 25 ft-lb (20.3 Nm to 33.9 Nm), but not to exceed 60 ft-lb (81.3 Nm).
6. Using a 3/16-in. hex-head driver or 3/16-in. straight blade screwdriver, tighten the two seizure screws from 15 in-lb to 20 in-lb (1.7 Nm to 2.3 Nm). See the diagram in step 5 for the location of the two seizure screws.
7. Replace the end plugs on the unused entry ports and torque with a 3/8-in. hex wrench from 30 in-lb to 50 in-lb (3.4 Nm to 5.6 Nm).
8. Attach the drop cable (RG-6 or RG-59) to the tap faceplate.

**Important:** For any drop cables that will have AC power activated, be sure that power blocking device(s) are installed at the home to prevent AC from passing to subscriber televisions, set-top converters, or FM receivers. AC power must only be allowed to pass to the telephony equipment requiring it.

**Note:** Be sure to provide strain relief for the coax drop cable per manufacturer's recommendation, and terminate all unused F-ports with 75  $\Omega$  terminators.

## To Install the Tap/Passive on a Strand with an Extension Bracket

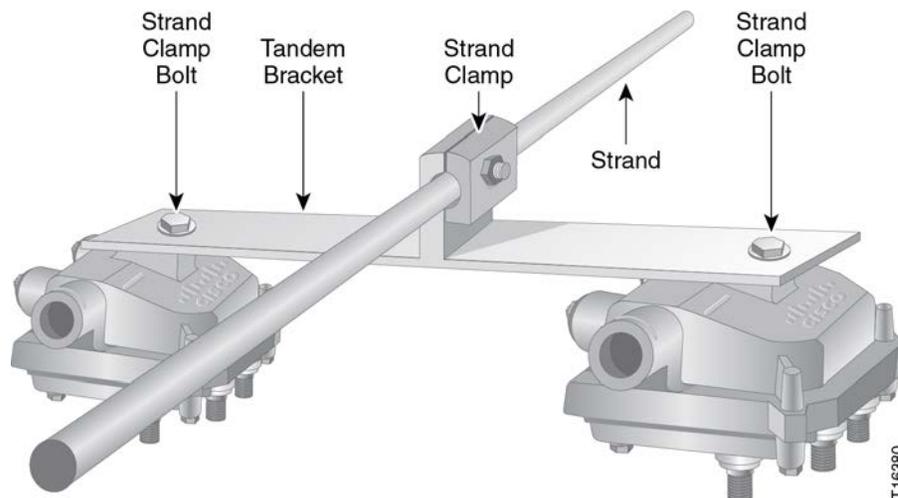
An extension bracket is used to offset the tap/passive below the strand and allow other trunk and/or feeder cable to pass. To install a tap/passive on an strand with an extension bracket, follow the steps below.

1. Completely remove the strand clamp bolt and strand clamp using a 3/8-in. wrench.
2. Mount the extension bracket to the tap/passive with the strand clamp bolt (usually 3/8-in. bolt).
3. Attach the other end of the extension bracket to the strand with the strand clamp and strand clamp bolt provided with extension bracket.

## To install Tandem Tap/Passives

To install tandem tap/passive, follow the steps below.

1. Remove the strand clamp bolt and strand clamp from the tap/passives' housings.
2. Loosely attach the tandem bracket to the housings using the strand clamp bolts.



3. Orient the tandem bracket to be perpendicular to the strand. Slide the loosened strand clamp over the strand and tighten securely.
4. Orient the tap/passive to face the desired direction. Securely tighten the tandem bracket to the housings with the strand clamp bolts.

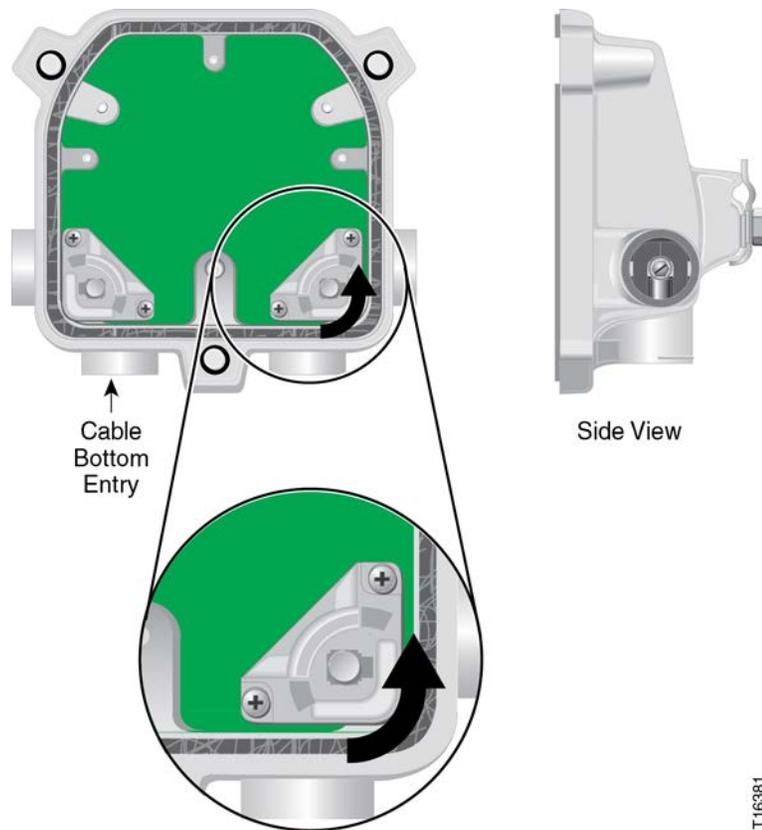
## Installing the Tap/Passive in a Pedestal

The pedestal-mounted configuration has the feeder cable entering and exiting the unit from the bottom. The tap/passive without traps or filters fits in a 6-in. round or square pedestal. A larger pedestal is needed if traps or filters are installed.

### To Prepare for Feeder Cable in Pedestal Mount

The tap/passive housing comes from the factory with the seizure screw mechanism aligned for strand installation. If a tap/passive is to be used in pedestal installation, cable entry is normally from the bottom ports, as opposed to entry from the side ports for strand installation. To configure for pedestal installation, follow the steps below.

1. Remove both threaded end plugs from the bottom of the tap using a 3/8-in. wrench.
2. Using a flat-head screw driver, rotate the seizure mechanism(s) 90°, so access to the seizure screw is at the side entry port. This allows the coaxial cable to be directly inserted into the tap/passive via the bottom port(s), eliminating the need for 90° or 180° connectors.

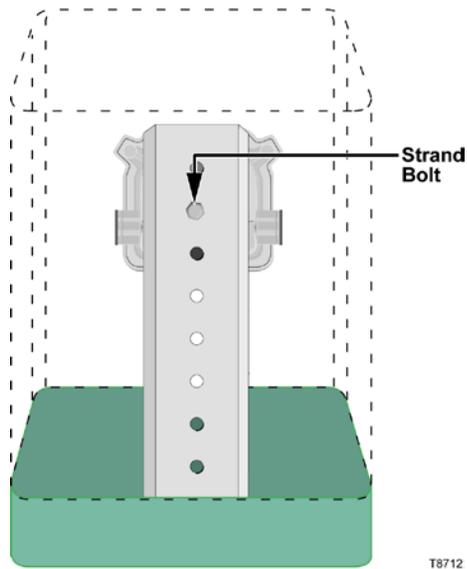


T16381

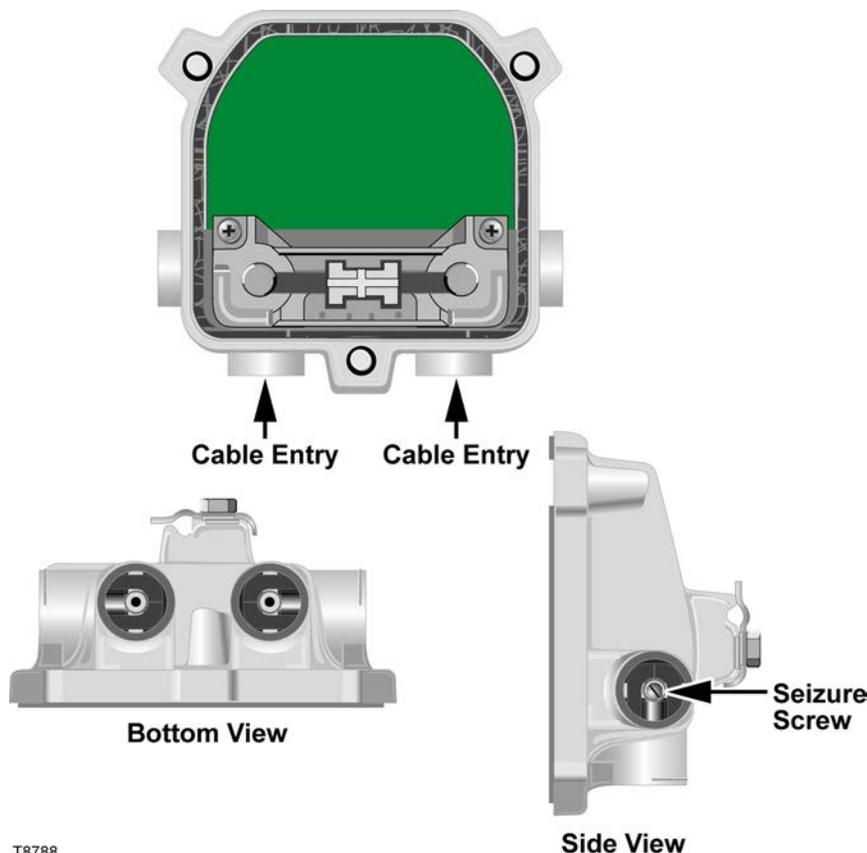
## To Install the Tap/Passive in a Pedestal

Follow these steps to install tap/passive in a pedestal.

1. Using a 3/8-in. wrench, remove the strand bolt and strand clamp from the housing.
2. Mount the housing to the pedestal-mounting bracket using the strand bolt. Use the strand clamp as a spacer, if necessary.



3. Using a 3/8-in. wrench, tighten the strand bolt from 30 in-lb to 40 in-lb (3.4 Nm to 4.5 Nm).
4. Using a 3/16-in. hex-head driver or 3/16-in. straight blade screwdriver, loosen the two seizure screws inside the housing.



T8788

5. Thread the prepared KS-connectors into the housing at the cable side entry port locations as shown in the figure above. Make sure to tighten the connector according to the manufacturer's recommended torque specification, typically 15 ft-lb to 25 ft-lb (20.3 Nm to 33.9 Nm), but not to exceed 60 ft-lb (81.3 Nm).
6. Using a 3/16-in. hex-head driver or 3/16-in. straight blade screwdriver, tighten the two seizure screws from 15 in-lb to 20 in-lb (1.7 Nm to 2.3 Nm). See the diagram in step 5 for the location of the two seizure screws.
7. Replace the end plugs on the unused entry ports and torque with a 3/8-in. hex wrench from 30 in-lb to 50 in-lb (3.4 Nm to 5.6 Nm).
8. Attach the drop cable (RG-6 or RG-59) to the tap faceplate.

**Important:** For any drop cables that will have AC power activated, be sure that power blocking device(s) are installed at the home to prevent AC from passing to subscriber televisions, set-top converters, or FM receivers. AC power must only be allowed to pass to the telephony equipment requiring it.

**Note:** Be sure to provide strain relief for the coax drop cable per manufacturer's recommendation, and terminate all unused F-ports with 75  $\Omega$  terminators.

## Removing the Faceplate

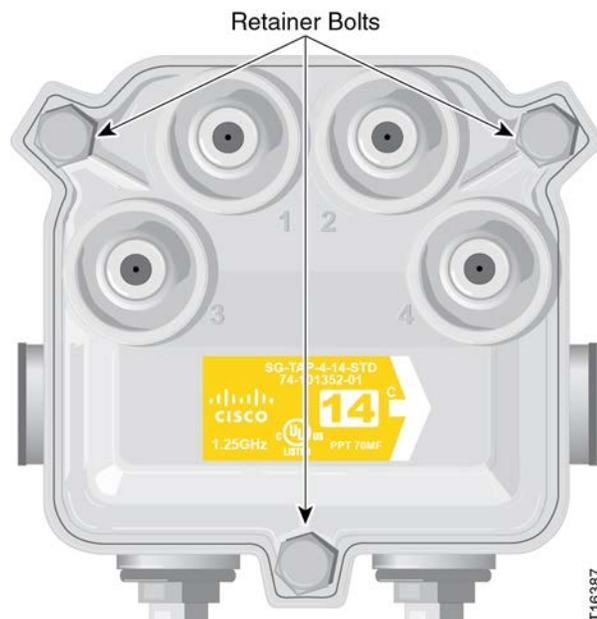
The complete Surge-Gap Tap/Passive assembly consists of a housing and a faceplate. On occasion a tap/passive faceplate may need to be lowered in value, raised in value, or changed to alter the port count from 2-port to 4-port, it is necessary to remove the faceplate and replaced with a new one.

If the faceplate needs to be removed with the feeder cables connected, refer to the procedure *To Remove a Faceplate with Feeder Cables Connected (Hot Install)* (on page **Error! Bookmark not defined.**).

### To Remove the Faceplate

Follow these steps to remove the tap/passive faceplate from the housing. A 4-way tap is used as an example.

1. Using a 3/8-in wrench, loosen all faceplate bolts as shown in the diagram below.



2. Pull the faceplate straight out from the housing. You need to use a small amount of force to pull the faceplate out.



**CAUTION:**

**Handle the faceplate with care to avoid damage to the circuitry mounted to the rear of the faceplate.**

3. Place the faceplate in a small box or on a block of foam to protect the tap circuitry. Set the faceplate in a secure place.

## To Remove a Faceplate with Feeder Cables Connected (Hot Install)

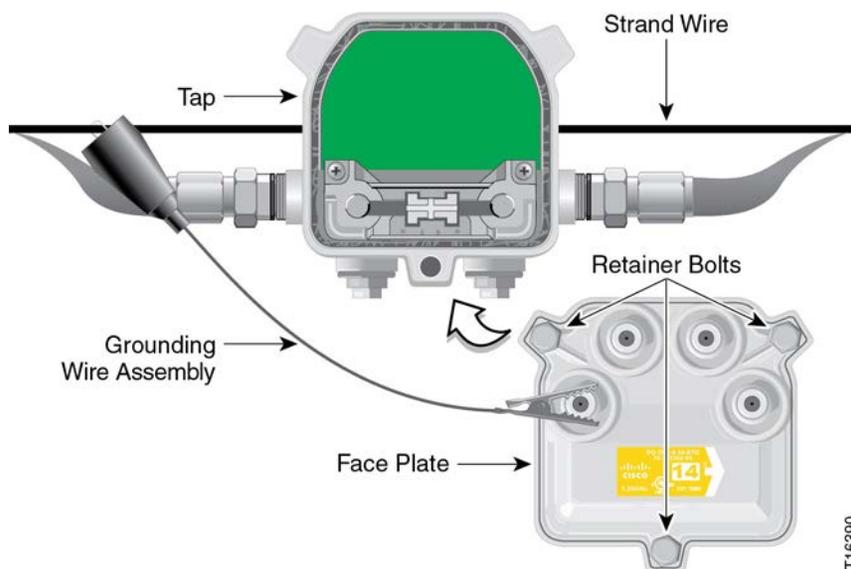
Follow these steps to remove a faceplate with feeder cables already connected to the housing.



**WARNING:**

When removing the faceplate with the feeder cables attached, take care to protect yourself from electrical shock and your equipment from damage. Certain components can deliver an electrical shock.

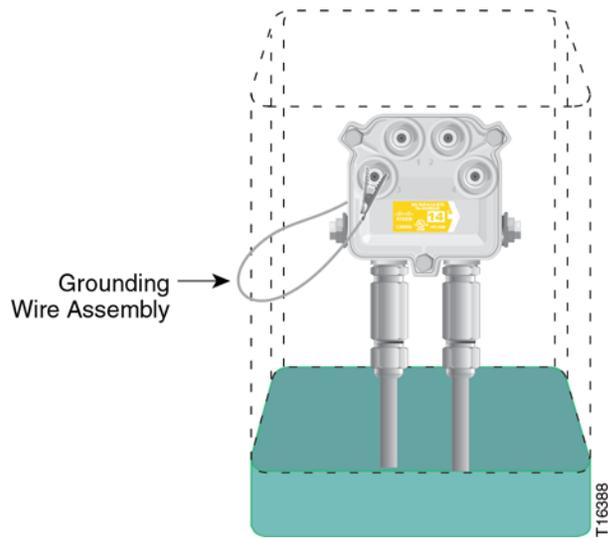
1. Remove all coax drop cables from the drop port F-connectors.
2. Using a 3/8-in. wrench, loosen all faceplate bolts.
3. If the housing is installed on a strand, go to step 4.  
If the housing is installed on a pedestal, go to step 5.
4. Attach a grounding wire assembly to the strand wire and a drop port F-connector.



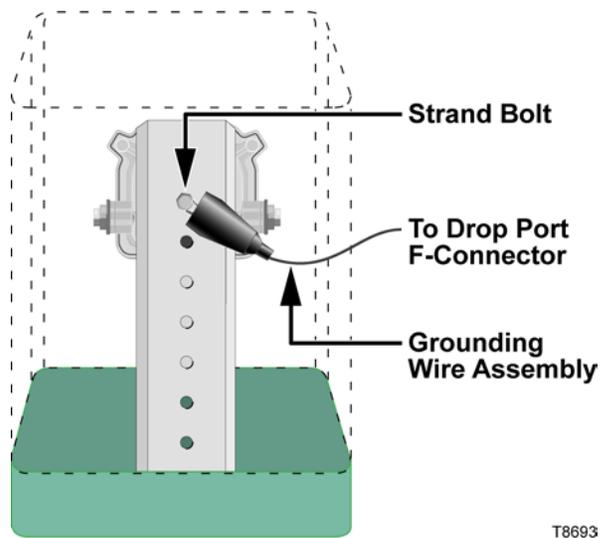
Proceed to step 6.

5. Attach a grounding wire assembly to the strand clamp bolt on the pedestal and a drop port F-connector.

Front View:



Back View:



Proceed to step 6.

6. Pull the faceplate straight out from the housing. You need to use a small amount of force to pull the faceplate out.



**CAUTION:**

Handle the faceplate with care to avoid damage to the circuitry mounted to the rear of the faceplate.

## Mounting the Faceplate

After **Removing the Faceplate**, you are ready to install the faceplate in the tap/passive housing.

### To Install the Faceplate

Follow these steps to attach the faceplate to the housing.

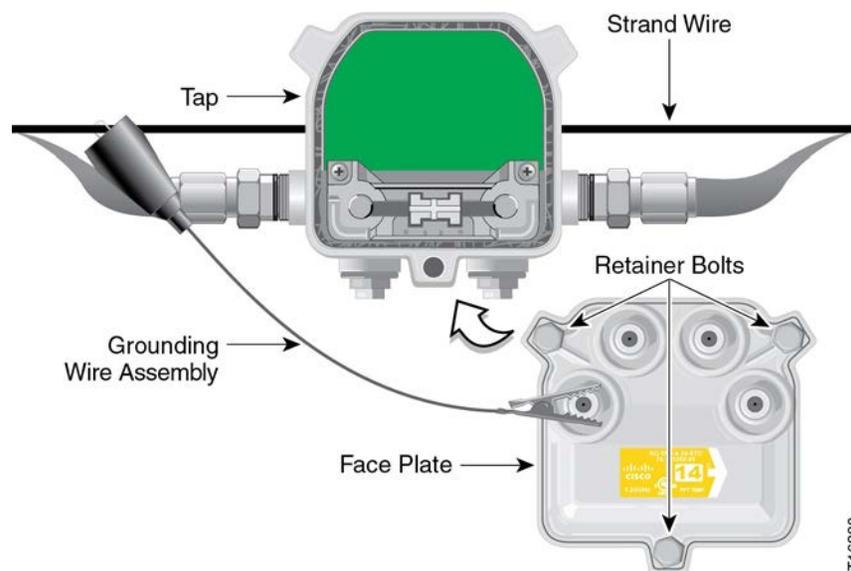
1. If the housing is installed on a strand, go to step 2.  
If the housing is installed in a pedestal, go to step 3.



#### WARNING:

Protect yourself from electric shock and your equipment from damage. Certain components can deliver an electrical shock.

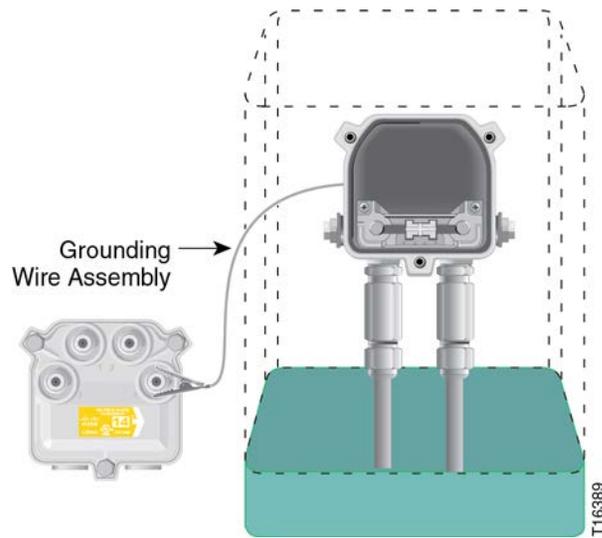
2. Attach a grounding wire assembly to the strand wire and a drop port F-connector.



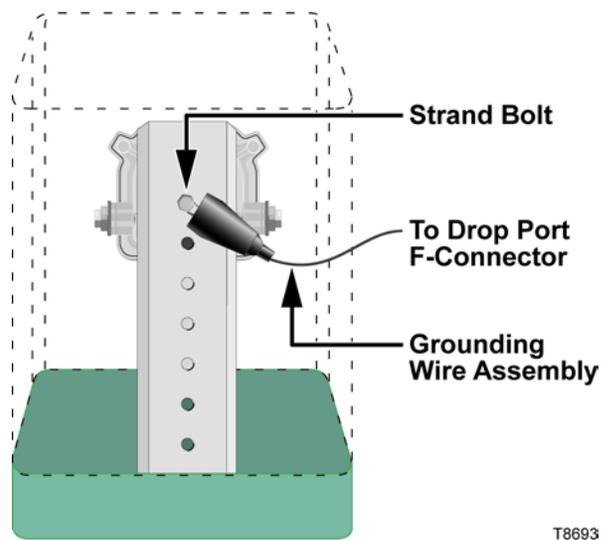
Proceed to step 4.

3. Attach a grounding wire assembly to the strand clamp bolt on the pedestal and a drop port F-connector.

Front View:



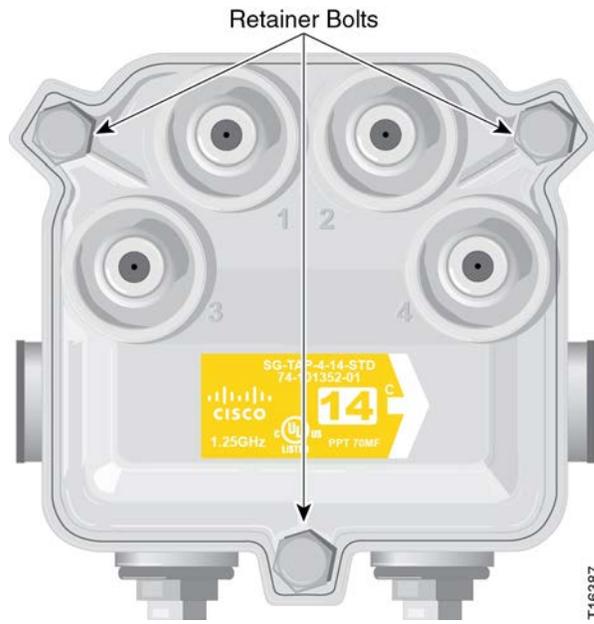
Back View:



Proceed to step 4.

4. Inspect the housing gasket and all mating surfaces. Wipe off any dirt, moisture, or debris.
5. Place the faceplate on the housing. Push firmly on the faceplate to seat it in the housing.
6. Remove the grounding wire assembly.
7. Using a 3/8 in. wrench, tighten the faceplate bolts from 50 in-lb to 60 in-lb (5.6 Nm to 6.8 Nm).

## Mounting the Faceplate



## Installing the Feeder Cable

To install feeder cable, follow the steps below.



**CAUTION:**

**Avoid electrical shock and damage to this product. If AC is present on the cable, care should be taken to avoid electrocution or short circuits when cutting the cable.**

1. Cut the coaxial feeder cable to allow proper entry into the tap/passive entry port while also allowing for expansion loops in strand installations.
2. Prepare the coaxial cable ends per the cable manufacturer's recommended method.
3. Cut a piece of weatherproofing material long enough to overlap the lip on the entry port and extend back beyond the cable connector. Slide this onto the cable for later use.
4. Remove the entry port threaded end plugs using a 1/2-in. or 3/8-in. wrench.
5. Remove the protective caps from where applicable.
6. Using a 3/16-in. nut driver or flat-head screw driver, back off the seizure screw to allow entry of the cable center conductor into the seizure mechanism.

**Note:** The seizure screw does not need to be removed from the tap/passive.



**CAUTION:**

**Always ensure that the length of the center conductor pin is accurate.**

7. Trim the pin flush to the stripline if you notice the center conductor pin extends past the stripline on the housing. See the diagram below for a visual guide.
8. Thread the body of the connector into the entry port and tighten from 30 in-lb to 50 in-lb (3.4 Nm to 5.6 Nm). For pin type connectors, make sure the center conductor properly passes through the seizure mechanism.
9. Slide the main and back nut portion of the connector over the prepared cable end.
10. Slide the cable end into the tap/passive housing so that the center conductor passes through the seizure mechanism.  
**Note:** For pin type connectors, the center conductor is already installed by step 8.
11. Tighten the main and back nut portion of the connector per connector manufacturer's recommended torque.
12. Using a 3/16-in. nut driver or flat-head screw driver, tighten the seizure screw from 15 in-lb to 20 in-lb (1.7 Nm to 2.3 Nm).

13. Replace the threaded end port plug in any unused ports and torque with a 1/2-in. or 3/8-in. wrench from 30 in-lb to 50 in-lb (3.4 Nm to 5.6 Nm).
14. Slide the pre-cut piece of weatherproofing material over the connector and the lip of the entry port.

**Note:** Follow the manufacturer's recommended procedure for sealing.

15. Repeat for the other cable connector(s).

## Installing the Drop Cable

To install the drop cable, follow the steps below.

1. Slide the weatherproofing material over the end of the drop cable for later use.
2. Attach the appropriate F-connector to the drop cable end per the manufacturer's recommended procedure.
3. Remove the factory installed protective plastic cap from the appropriate F-port where the connection is to be made.
4. Connect the house drop F-connector to the F-port.
5. Using a 7/16-in. wrench, tighten the connector to a maximum of 25 in-lbs (2.8 Nm).
6. Dress the drop cable and secure as applicable.

# 3

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## Customer Support Information

### If You Have Questions

If you have technical questions, call Cisco Services for assistance. Follow the menu options to speak with a service engineer.

Access your company's extranet site to view or order additional technical publications. For accessing instructions, contact the representative who handles your account. Check your extranet site often as the information is updated frequently.



# A

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## Technical Information

### Introduction

Knowledge of product specifications and cable connectors can assist you in configuring the Surge-Gap Tap and Passive in your HFC network.

### Scope

This appendix covers important technical aspects of the Surge-Gap Tap and Passive.

### In This Appendix

|                        |    |
|------------------------|----|
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## Specifications

The following are the specifications for the tap/passive system.

**Notes:**

- Specifications are subject to change without notice.
- Please refer to product data sheets for RF performance specifications.

## Electrical

The table below lists the electrical specifications for the 2-/4-way and 2-/4-/8-way Surge-Gap Tap Systems.

| Item                            | Specification                    |
|---------------------------------|----------------------------------|
| Operational frequency bandwidth | 5 MHz to 1250 MHz                |
| Thru current rating             | 12 A, 60/90 V AC                 |
| Impedance                       | 75 $\Omega$                      |
| Interface                       | F-ports                          |
| Operating temperatures          | -40°F to +140°F (-40°C to +60°C) |

The table below lists the electrical specifications for the Surge-Gap Passive Systems. Includes DC- 8dB, DC-12dB, DC-16dB, 2 Way Splitter, 3 Way Splitter, 3 Way Unbalanced Splitter, and Power Inserter

| Item                            | Specification   |
|---------------------------------|---|
| Operational frequency bandwidth | 5 MHz to 1250 MHz   |
| Thru current rating             | 15 Amps Max on RF ports, 20 A Max on Power Inserter AC port, 60/90 V AC |
| Impedance                       | 75 $\Omega$   |
| Interface                       | F-ports   |
| Operating temperatures          | -40°F to +140°F (-40°C to +60°C)  |

## Mechanical

The table below lists the mechanical specifications for all the Surge-Gap Taps and Passives.

| Item  | Specification   |
|---|---|
| Surge-Gap Tap:<br>2-/4-way and<br>2-/4-/8-way | <ul style="list-style-type: none"> <li>■ AL360 housing with powder coating for superior environmental protection</li> <li>■ Sealed and swaged extended F-ports for maximum resistance to moisture ingress</li> <li>■ Tin-plated brass F-ports to ensure a corrosion-resistant drop interface</li> <li>■ Component covers for additional protection of faceplate circuitry during maintenance</li> <li>■ Versatile housing design permits aerial, pedestal, or MDU mounting schemes</li> <li>■ Operating temperature from -40°F to +140°F (-40°C to +60°C)</li> <li>■ EMI shielding minimum -100 dB</li> <li>■ Pressure test at 10 psi for 60 seconds under water</li> </ul> |
| Surge-Gap Passive:                            | <ul style="list-style-type: none"> <li>■ AL360 housing with powder coating for superior environmental protection</li> <li>■ Sealed and swaged for maximum resistance to moisture ingress</li> <li>■ Versatile housing design permits aerial, pedestal, or MDU mounting schemes</li> <li>■ Operating temperature from -40°F to +140°F (-40°C to +60°C)</li> <li>■ EMI shielding minimum -100 dB</li> <li>■ Pressure test at 10 psi for 60 seconds under water</li> </ul>   |

## Part Numbers

### Surge-Gap Taps/Passive

The table below lists the part numbers, model numbers, and descriptions of the Surge-Gap Tap and Passive Systems.

#### Surge-Gap Taps Standard

| Description                        | Part Number     |
|------------------------------------|-----------------|
| Surge-Gap Tap, 1.25GHz, 2way, 4dB  | SG-TAP-2-04-STD |
| Surge-Gap Tap, 1.25GHz, 2way, 8dB  | SG-TAP-2-08-STD |
| Surge-Gap Tap, 1.25GHz, 2way, 11dB | SG-TAP-2-11-STD |
| Surge-Gap Tap, 1.25GHz, 2way, 14dB | SG-TAP-2-14-STD |
| Surge-Gap Tap, 1.25GHz, 2way, 17dB | SG-TAP-2-17-STD |
| Surge-Gap Tap, 1.25GHz, 2way, 20dB | SG-TAP-2-20-STD |
| Surge-Gap Tap, 1.25GHz, 2way, 23dB | SG-TAP-2-23-STD |
| Surge-Gap Tap, 1.25GHz, 4way, 8dB  | SG-TAP-4-08-STD |
| Surge-Gap Tap, 1.25GHz, 4way, 11dB | SG-TAP-4-11-STD |
| Surge-Gap Tap, 1.25GHz, 4way, 14dB | SG-TAP-4-14-STD |
| Surge-Gap Tap, 1.25GHz, 4way, 17dB | SG-TAP-4-17-STD |
| Surge-Gap Tap, 1.25GHz, 4way, 20dB | SG-TAP-4-20-STD |
| Surge-Gap Tap, 1.25GHz, 4way, 23dB | SG-TAP-4-23-STD |

#### Surge-Gap Tap Faceplates Standard

| Description                                   | Part Number     |
|---|-----------------|
| Surge-Gap Tap, Faceplate, 1.25GHz, 2way, 4dB  | SG-TAP-2-04-SFP |
| Surge-Gap Tap, Faceplate, 1.25GHz, 2way, 8dB  | SG-TAP-2-08-SFP |
| Surge-Gap Tap, Faceplate, 1.25GHz, 2way, 11dB | SG-TAP-2-11-SFP |
| Surge-Gap Tap, Faceplate, 1.25GHz, 2way, 14dB | SG-TAP-2-14-SFP |
| Surge-Gap Tap, Faceplate, 1.25GHz, 2way, 17dB | SG-TAP-2-17-SFP |
| Surge-Gap Tap, Faceplate, 1.25GHz, 2way, 20dB | SG-TAP-2-20-SFP |
| Surge-Gap Tap, Faceplate, 1.25GHz, 2way, 23dB | SG-TAP-2-23-SFP |

| <b>Description</b>                            | <b>Part Number</b> |
|---|--------------------|
| Surge-Gap Tap, Faceplate, 1.25GHz, 4way, 8dB  | SG-TAP-4-08-SFP    |
| Surge-Gap Tap, Faceplate, 1.25GHz, 4way, 11dB | SG-TAP-4-11-SFP    |
| Surge-Gap Tap, Faceplate, 1.25GHz, 4way, 14dB | SG-TAP-4-14-SFP    |
| Surge-Gap Tap, Faceplate, 1.25GHz, 4way, 17dB | SG-TAP-4-17-SFP    |
| Surge-Gap Tap, Faceplate, 1.25GHz, 4way, 20dB | SG-TAP-4-20-SFP    |
| Surge-Gap Tap, Faceplate, 1.25GHz, 4way, 23dB | SG-TAP-4-23-SFP    |

### Surge-Gap Full Profile Taps

| <b>Description</b>                              | <b>Part Number</b> |
|---|--------------------|
| Surge-Gap Full Profile Tap, 1.25GHz, 2way, 4dB  | SG-TAP-2-04-FP     |
| Surge-Gap Full Profile Tap, 1.25GHz, 2way, 8dB  | SG-TAP-2-08-FP     |
| Surge-Gap Full Profile Tap, 1.25GHz, 2way, 11dB | SG-TAP-2-11-FP     |
| Surge-Gap Full Profile Tap, 1.25GHz, 2way, 14dB | SG-TAP-2-14-FP     |
| Surge-Gap Full Profile Tap, 1.25GHz, 2way, 17dB | SG-TAP-2-17-FP     |
| Surge-Gap Full Profile Tap, 1.25GHz, 2way, 20dB | SG-TAP-2-20-FP     |
| Surge-Gap Full Profile Tap, 1.25GHz, 2way, 23dB | SG-TAP-2-23-FP     |
| Surge-Gap Full Profile Tap, 1.25GHz, 4way, 8dB  | SG-TAP-4-08-FP     |
| Surge-Gap Full Profile Tap, 1.25GHz, 4way, 11dB | SG-TAP-4-11-FP     |
| Surge-Gap Full Profile Tap, 1.25GHz, 4way, 14dB | SG-TAP-4-14-FP     |
| Surge-Gap Full Profile Tap, 1.25GHz, 4way, 17dB | SG-TAP-4-17-FP     |
| Surge-Gap Full Profile Tap, 1.25GHz, 4way, 20dB | SG-TAP-4-20-FP     |
| Surge-Gap Full Profile Tap, 1.25GHz, 4way, 23dB | SG-TAP-4-23-FP     |
| Surge-Gap Full Profile Tap, 1.25GHz, 8way, 11dB | SG-TAP-8-11-FP     |
| Surge-Gap Full Profile Tap, 1.25GHz, 8way, 14dB | SG-TAP-8-14-FP     |
| Surge-Gap Full Profile Tap, 1.25GHz, 8way, 17dB | SG-TAP-8-17-FP     |
| Surge-Gap Full Profile Tap, 1.25GHz, 8way, 20dB | SG-TAP-8-20-FP     |
| Surge-Gap Full Profile Tap, 1.25GHz, 8way, 23dB | SG-TAP-8-23-FP     |

### Surge-Gap Full Profile Faceplates

| <b>Description</b>  | <b>Part Number</b> |
|---|--------------------|
| Surge-Gap Full Profile Tap, Faceplate, 1.25GHz, 2way, 4dB | SG-TAP-2-04-FFP    |
| Surge-Gap Full Profile Tap, Faceplate, 1.25GHz, 2way, 8dB | SG-TAP-2-08-FFP    |

| <b>Description</b>   | <b>Part Number</b> |
|--|--------------------|
| Surge-Gap Full Profile Tap, Faceplate, 1.25GHz, 2way, 11dB | SG-TAP-2-11-FFP    |
| Surge-Gap Full Profile Tap, Faceplate, 1.25GHz, 2way, 14dB | SG-TAP-2-14-FFP    |
| Surge-Gap Full Profile Tap, Faceplate, 1.25GHz, 2way, 17dB | SG-TAP-2-17-FFP    |
| Surge-Gap Full Profile Tap, Faceplate, 1.25GHz, 2way, 20dB | SG-TAP-2-20-FFP    |
| Surge-Gap Full Profile Tap, Faceplate, 1.25GHz, 2way, 23dB | SG-TAP-2-23-FFP    |
| Surge-Gap Full Profile Tap, Faceplate, 1.25GHz, 4way, 8dB  | SG-TAP-4-08-FFP    |
| Surge-Gap Full Profile Tap, Faceplate, 1.25GHz, 4way, 11dB | SG-TAP-4-11-FFP    |
| Surge-Gap Full Profile Tap, Faceplate, 1.25GHz, 4way, 14dB | SG-TAP-4-14-FFP    |
| Surge-Gap Full Profile Tap, Faceplate, 1.25GHz, 4way, 17dB | SG-TAP-4-17-FFP    |
| Surge-Gap Full Profile Tap, Faceplate, 1.25GHz, 4way, 20dB | SG-TAP-4-20-FFP    |
| Surge-Gap Full Profile Tap, Faceplate, 1.25GHz, 4way, 23dB | SG-TAP-4-23-FFP    |
| Surge-Gap Full Profile Tap, Faceplate, 1.25GHz, 8way, 11dB | SG-TAP-8-11-FFP    |
| Surge-Gap Full Profile Tap, Faceplate, 1.25GHz, 8way, 14dB | SG-TAP-8-14-FFP    |
| Surge-Gap Full Profile Tap, Faceplate, 1.25GHz, 8way, 17dB | SG-TAP-8-17-FFP    |
| Surge-Gap Full Profile Tap, Faceplate, 1.25GHz, 8way, 20dB | SG-TAP-8-20-FFP    |
| Surge-Gap Full Profile Tap, Faceplate, 1.25GHz, 8way, 23dB | SG-TAP-8-23-FFP    |

### Surge-Gap Passives

| <b>Description</b>                         | <b>Part Number</b> |
|--|--------------------|
| Surge-Gap DC, 1.25GHz, 8dB                 | SG-PASSIVES-DC-08  |
| Surge-Gap DC, 1.25GHz, 12dB                | SG-PASSIVES-DC-12  |
| Surge-Gap DC, 1.25GHz, 16dB                | SG-PASSIVES-DC-16  |
| Surge-Gap Spltr, 1.25GHz, 2way             | SG-PASSIVES-S2     |
| Surge-Gap Spltr, 1.25GHz, 3way, Balanced   | SG-PASSIVES-S3     |
| Surge-Gap Spltr, 1.25GHz, 3way, Unbalanced | SG-PASSIVES-S3U    |
| Surge-Gap Pwr Inserter, 1.25GHz            | SG-PASSIVES-PI     |

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