



Cisco 1.25GHz Surge-Gap® Stretch Tap 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

Trademark Acknowledgments

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. A listing of Cisco's trademarks can be found at www.cisco.com/go/trademarks.

Third party trademarks mentioned are the property of their respective owners.

The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1009R)

Publication Disclaimer

Cisco Systems, Inc. assumes no responsibility for errors or omissions that may appear in this publication. We reserve the right to change this publication at any time without notice. This document is not to be construed as conferring by implication, estoppel, or otherwise any license or right under any copyright or patent, whether or not the use of any information in this document employs an invention claimed in any existing or later issued patent.

Copyright

© 2006, 2008, 2012, 2015 Cisco and/or its affiliates. All rights reserved. Printed in the United States of America.

Information in this publication is subject to change without notice. No part of this publication may be reproduced or transmitted in any form, by photocopy, microfilm, xerography, or any other means, or incorporated into any information retrieval system, electronic or mechanical, for any purpose, without the express permission of Cisco Systems, Inc.

Contents

Important Safety Instructions	v
Introducing the Surge-Gap Stretch Tap	1
Description of the Surge-Gap Stretch Tap.....	3
Features	3
Surge-Gap Stretch Tap Diagram.....	4
Housing with Pass-Through Cable Diagram.....	4
Optional Modules	5
Directional Coupler	5
Directional Coupler/Equalizer (DC/EQ)	5
Directional Coupler/Reverse Window (DC/RW).....	5
Positive Temperature Coefficient Resistor (PTC).....	5
Installing the Tap	7
Tools and Torque Specifications	8
Required Tools	8
Torque Specifications	8
Preparing for Installation.....	10
To Prepare the Connectors	10
Removing the Faceplate	11
To Remove the Faceplate	11
To Remove a Faceplate with Feeder Cables Connected	12
Installing the Stretch Tap on a Strand.....	14
To Install the Stretch Tap on a Strand	14
Installing the Stretch Tap in a Pedestal.....	16
Guidelines	16
To Remove the Pass-Through Cable	16
To Install the Stretch Tap in a Pedestal.....	18
Installing Optional Modules	20
About Pre-Configured Taps	20
To Install the Module	20
Enabling Drop Powering	23
To Enable Power Passing.....	23
Mounting the Faceplate	25
To Mount the Faceplate	25

Contents

Connecting Coax Drop Cables	29
Customer Support Information	31
Appendix A Technical Information	33
Specifications	34
Dimensions	34
Electrical Specifications	34
AC/RF Bypass Switch Performance	34
Standards Compliance	35
Tap Part Numbers.....	36
Surge-Gap 6kV Stretch Taps	36
Plug-in Directional Couplers.....	36
Plug-in Directional Couplers with Equalizer.....	36
Plug-in Directional Couplers with Reverse Window	37
Index	39

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.



廢電池請回收

- 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.

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 Surge-Gap Stretch Tap

Introduction

This guide introduces you to the Cisco 1.25GHz Surge Gap Stretch Tap. The tap is designed to provide signal from the feeder cable to the drop. It is available in 2-, 4-, and 8-port configurations and in a wide range of tap values. Interchangeable directional couplers (DCs) make it easy to change tap values and apply signal conditioning to tighten up the RF plant.

Reverse window DCs allow you to use higher forward tap values (32-29 dB) while maintaining 23 dB in reverse. Equalizing DCs add tilt in the forward signal and add attenuation in reverse to raise modem and set-top box (STB) levels.

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 document. Service engineers who help system operators manage their systems will also find the contents of this document 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.

Scope

This guide discusses the following topics.

- Installing the tap on a strand
- Installing the tap in a pedestal
- Installing optional modules in the tap
- Enabling drop powering
- Connecting coax drop cables

In This Chapter

- Description of the Surge-Gap Stretch Tap..... 3
- Surge-Gap Stretch Tap Diagram..... 4
- Optional Modules 5

Description of the Surge-Gap Stretch Tap

The Surge-Gap Stretch Tap consists of the following:

- 9-inch housing
- Faceplate
- Optional modules
 - Directional coupler (DC)
 - Directional coupler/equalizer (DC/EQ)
 - Directional coupler/reverse window (DC/RW)
 - Positive temperature coefficient resistor (PTC)

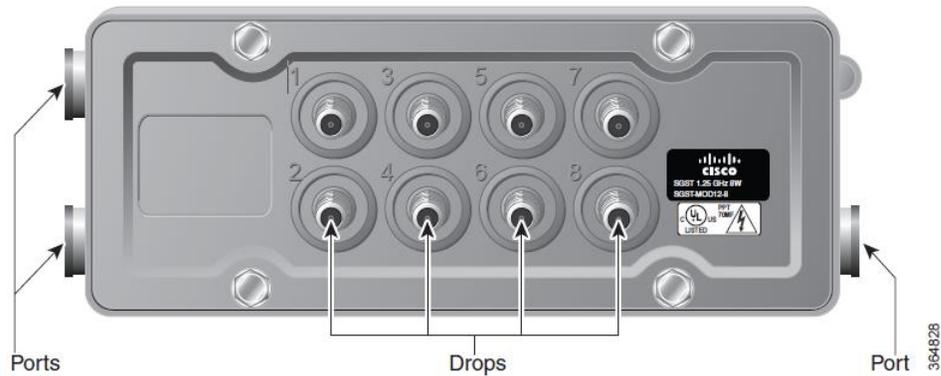
Features

The tap has the following important features:

- Patented Connection Beam AC/RF bypass allows for removal of the tap faceplate without interrupting downstream customer service.
- New cable provides a high current (12 A) through rating to allow for passing the additional power required for telephony services.
- Power passing is selectable on each drop, allowing AC power to flow to a subscriber's telephone interface unit where needed.
- 9-inch housing spans the typical gap left in the feeder cable after removing old taps. This allows for tap upgrades without adding splices or extension connectors to the feeder cable.
- A plug-in directional coupler sets the tap value.
- Room is available in the housing for additional functionality enhancements.
- The surge-gap stretch tap location can also be upgraded to an add tap by changing the faceplate. Add taps support remote activation and deactivation of tap ports, thereby reducing truck rolls and the related operating expense.

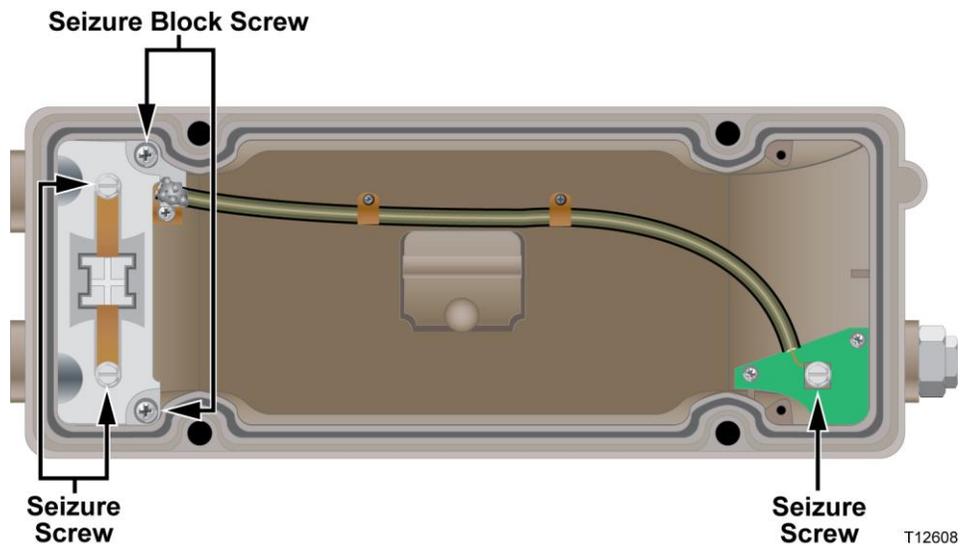
Surge-Gap Stretch Tap Diagram

The following diagram shows the tap.



Housing with Pass-Through Cable Diagram

The following diagram shows the 9-inch housing with the pass-through cable installed.



Optional Modules

The tap accepts four types of modules that define specific tap functions.

Directional Coupler

The plug-in directional coupler (DC) module sets the tap value. The orientation of the DC determines the RF flow through the tap. The DC is a plug-in module that is installed in the field. Refer to *Installing Optional Modules* (on page 20) for more information.

Directional Coupler/Equalizer (DC/EQ)

The DC/EQ functions like a DC, but includes a fixed equalizer on its tap port. The DC/EQ can equalize the tap port from 5 MHz to 1250 MHz in steps between 3 dB to 18 dB. The signal down the line is not affected. The DC/EQ is a plug-in module that can be installed in the field. Refer to *Installing Optional Modules* (on page 20) for more information.

Directional Coupler/Reverse Window (DC/RW)

A DC/RW functions like a DC, but has higher forward attenuation giving selectable forward signal tap values of 32, 29, and 26 dB, while having a lower fixed tap value of 23 dB in reverse. The DC/RW helps balance plant reverse levels, keeping them within a window of less than 10 dB in most applications. Refer to *Installing Optional Modules* (on page 20) for more information.

Positive Temperature Coefficient Resistor (PTC)

A positive temperature coefficient resistor (PTC) is required for each drop that requires power. During over-current conditions, the PTC goes "open circuit" (high resistance). When the problem is cleared, removing or replacing the drop connection returns the PTC to normal operation.

The PTC is a plug-in module that can be installed in the field. Refer to *Enabling Drop Powering* (on page 23) for information on installing power-passing on each drop.

2

Installing the Tap

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

In This Chapter

■ Tools and Torque Specifications	8
■ Preparing for Installation.....	10
■ Removing the Faceplate.....	11
■ Installing the Stretch Tap on a Strand.....	14
■ Installing the Stretch Tap in a Pedestal.....	16
■ Installing Optional Modules	20
■ Enabling Drop Powering	23
■ Mounting the Faceplate	25
■ Connecting Coax Drop Cables.....	29

Tools and Torque Specifications

Required Tools

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

Tools	Used to . . .
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 or 3/16-in. straight-blade screwdriver	Tighten seizure screws
#2 blunt-nose Phillips-head screwdriver	Remove pass-through cable mounting screws
Wire cutters or snips	Cut cable, trim center conductor length
Torque wrench in in-lb (0 in-lb to 250 in-lb minimum) (0 Nm to 28.2 Nm minimum)	Tighten seizure screws, connectors, and retainer bolts
7/16-in. wrench	Tighten house drop F-connector
Insulated pliers	Install or remove PTCs for power passing
Grounding wire assembly, part number 569533	Prevent electric shock and equipment damage. Certain components can deliver an electrical shock.

Torque Specifications

The following are recommended torque specifications for the tap.

Part	Torque Specification
Strand clamp bolt	30 in-lb to 40 in-lb (3.4 Nm to 4.5 Nm)
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	50 in-lb to 60 in-lb (5.6 Nm to 6.8 Nm)

Tools and Torque Specifications

Part	Torque Specification
Seizure screw A and C	15 in-lb to 20 in-lb (1.7 Nm to 2.3 Nm)
Seizure screw B: strand mount	12 in-lb to 15 in-lb (1.4 Nm to 1.7 Nm)
Seizure screw B: pedestal or lock box mount	15 in-lb to 20 in-lb (1.7 Nm to 2.3 Nm)
Seizure block screw	10 in-lb (1.13 Nm)
Housing closure bolt	50 in-lb to 60 in-lb (5.6 Nm to 6.8 Nm)
Drop cable	30 in-lb (3.4 Nm)

Preparing for Installation

Complete the following tasks before installing the tap housing.

- Prepare connectors
- Remove the faceplate

To Prepare the Connectors

The tap requires KS-connectors for input and output connections. The connectors, with pins extending 1.5 inches to 1.6 inches (38 mm to 41 mm) from the connector shoulder, require no trimming. You must trim longer pins before inserting them into the housing.

Complete the following steps to prepare the connector.

- 1 Cut the feeder cable to allow proper entry into the port while also allowing for expansion loops in strand installations.



WARNING:

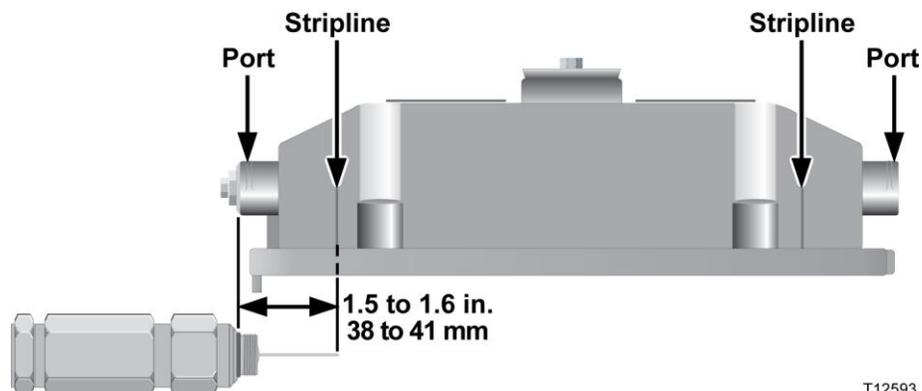
Avoid electrical shock and damage to this product. If AC is present on the cable, take care to avoid electrocution or short circuits when cutting the cable.

- 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 with the stripline. See the diagram below for a visual guide.



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.



T12593

Removing the Faceplate

The tap assembly consists of the housing and the faceplate. The faceplate must be removed from the housing so that the housing can be connected to the feeder cables.



WARNING:

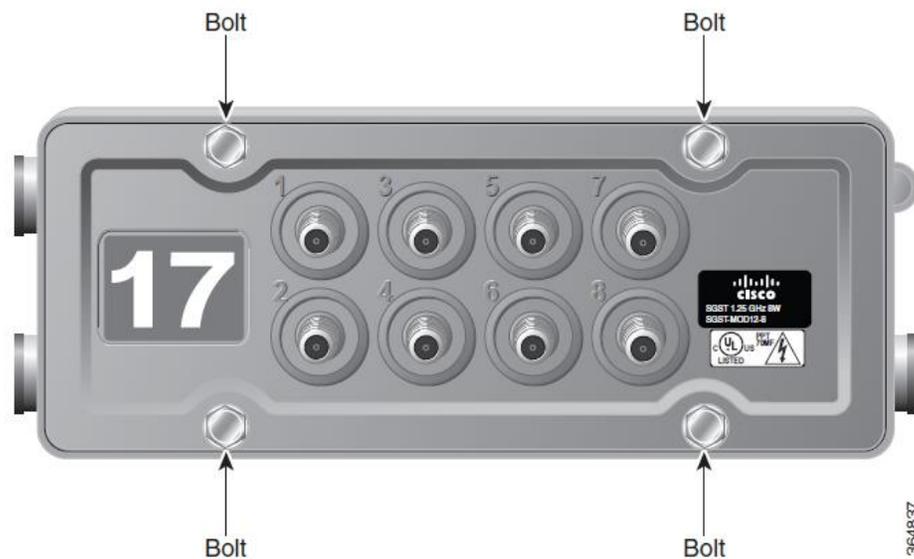
When removing the faceplate with the feeder cables attached, take care to protect yourself from electrical shock and your equipment from damage. Certain components can deliver an electrical shock.

Note: When removing a faceplate when the feeder cables are already attached, follow the separate procedure below for faceplate removal with feeders connected.

To Remove the Faceplate

Complete the following steps to remove the faceplate.

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



- 2 To remove the faceplate, grasp the two bolts near drop ports 1 and 2 on the faceplate and pull it straight out from the housing. You may 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 Put the faceplate in a small box or on a block of foam to protect the tap circuitry. Set the faceplate in a secure place.
- 4 Proceed to *Installing the Stretch Tap on a Strand* (on page 14) or *Installing the Stretch Tap in a Pedestal* (on page 16).

To Remove a Faceplate with Feeder Cables Connected

Complete the following steps to remove a faceplate with feeder cables connected.

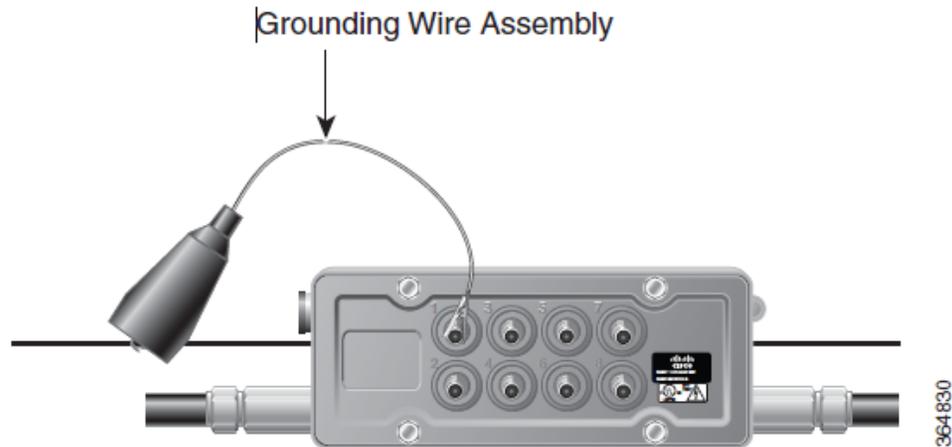
- 1 Remove all coax drop cables from the drop port F-connectors.
- 2 Using a 3/8-in. wrench, loosen the faceplate bolts.
- 3 If the housing is installed on a strand, proceed to step 4.
If the housing is installed in a pedestal, proceed to step 5.



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.

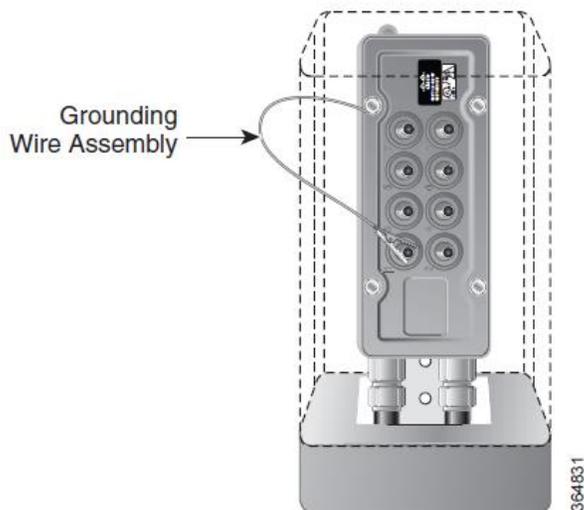
- 4 Attach a grounding wire assembly to the strand wire and a drop port F-connector.



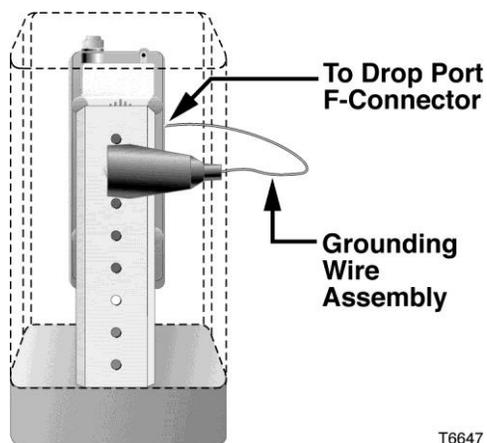
Proceed to step 6.

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

Front View:



Back View:



- 6 Grasp the two bolts near drop ports 1 and 2 on the faceplate and pull it straight out from the housing.

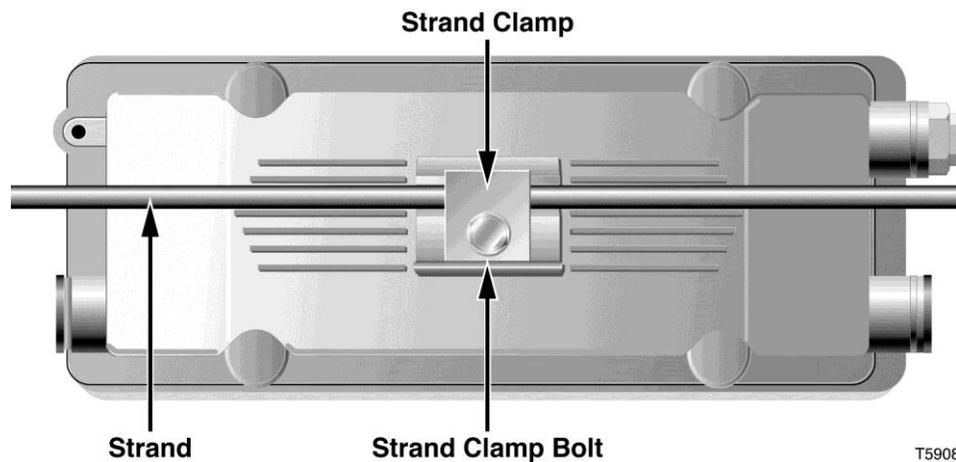
Installing the Stretch Tap on a Strand

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 bolt and uses a standard cable strand for mounting.

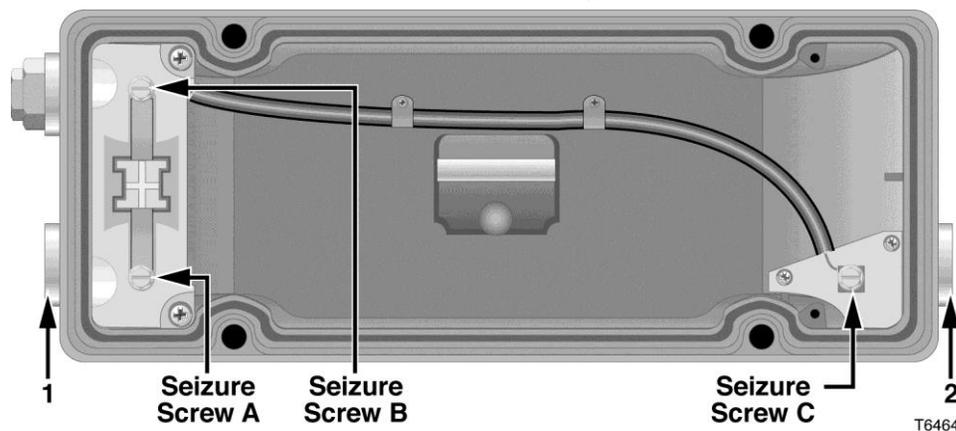
To Install the Stretch Tap on a Strand

Complete the following steps to install the stretch tap on a strand.

- 1 Remove the faceplate. Refer to *Removing the Faceplate* (on page 11).
- 2 Using a 3/8-in. wrench, loosen the strand clamp bolt.
- 3 Attach the housing to the strand making sure the strand enters the strand clamp.



- 4 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 N-m to 4.5 N-m).
- 5 Using a 3/16-in. hex head driver or 3/16-in. straight blade screwdriver, loosen seizure screws A, B, and C inside the housing as shown below.



Installing the Stretch Tap on a Strand

- 6 Thread the prepared KS-connectors into the housing at the input and output port locations 1 and 2 as shown in the illustration above. Make sure to tighten the connector to the manufacturer's recommended torque specification (typically 15 ft-lb to 25 ft-lb or 20.3 N-m to 33.9 N-m), but not to exceed 60 ft-lb (81.3 N-m).
- 7 Using a 3/16-in. hex head driver or 3/16-in. straight blade screwdriver, tighten seizure screws A and C from 15 in-lb to 20 in-lb (1.7 N-m to 2.3 N-m) and seizure screw B from 12 in-lb to 15 in-lb (1.4 N-m to 1.7 N-m). See the diagram in step 5 for seizure screw locations.
- 8 Proceed to *Installing Optional Modules* (on page 20).

Important: Verify that the directional coupler (DC) on the faceplate is in the correct orientation. The orientation depends on which port is the input port.

Installing the Stretch Tap in a Pedestal

The pedestal-mounted configuration has the feeder cable entering and exiting the unit on the same side. The tap without traps or filters fits in a 6-in. round or square pedestal. A larger pedestal is needed if traps or filters are installed. Refer to the following diagram for the recommended pedestal mounting configuration.



Guidelines

The housing is configured for typical strand mount where the feeder cable enters one side of the housing and exits the other side. When installing the tap in a pedestal, the feeder cable enters and exits the housing on the same side. To avoid signal degradation in this case, it is necessary to completely remove the pass-through cable.

Proceed to *To Remove the Pass-Through Cable* (on page 16).

To Remove the Pass-Through Cable



WARNING:

Do not perform this procedure when cables are entering any of the ports. Certain components can deliver an electrical shock.

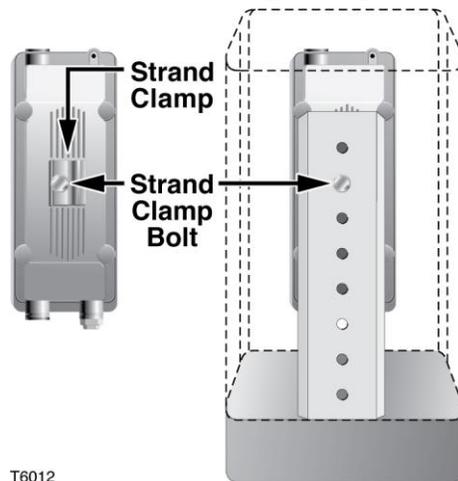
Tools Needed

- #2 blunt-nose Phillips-head screwdriver
- 3/8-in. or 1/2-in. wrench or nut driver
- 3/16-in. hex head driver or 3/16-in. straight-blade screwdriver

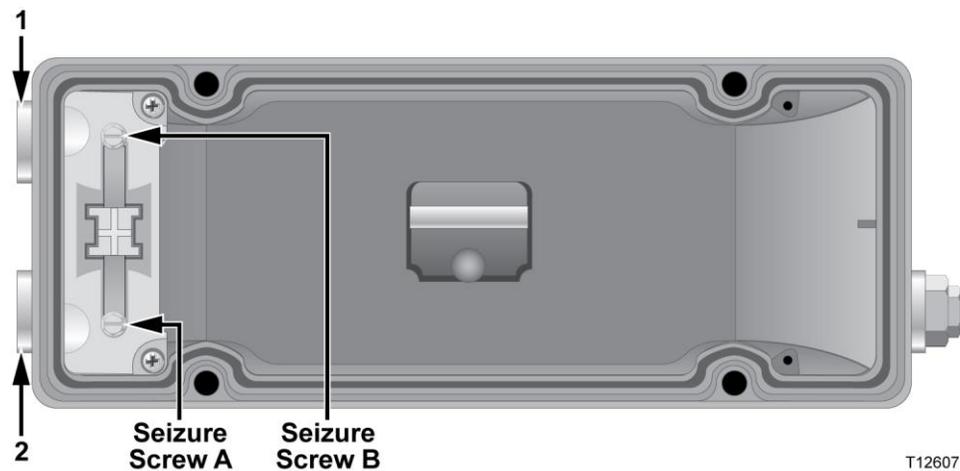
To Install the Stretch Tap in a Pedestal

Complete the following steps to install the stretch tap in a pedestal.

- 1 Remove the pass-through cable. Refer to *To Remove the Pass-Through Cable* (on page 16).
- 2 Remove the faceplate. Refer to *Removing the Faceplate* (on page 11).
- 3 Using a 3/8-in. wrench, remove the strand clamp bolt from the housing.
- 4 Mount the housing to the pedestal mounting bracket using the strand clamp bolt. Use the strand clamp as a spacer, if necessary.



- 5 Using a 3/8-in. wrench, tighten the strand clamp bolt from 30 in-lb to 40 in-lb (3.4 N-m to 4.5 N-m).
- 6 Using a 3/16-in. hex head driver or 3/16-in. straight blade screwdriver, loosen seizure screws A and B inside the housing as shown in the illustration below.



- 7 Thread the prepared KS-connectors into the housing at the input and output port locations 1 and 2 as shown above. Make sure to tighten the connector to the manufacturer's recommended torque specification (typically 15 ft-lb to 25 ft-lb or 20.3 N-m to 33.9 N-m), but not to exceed 60 ft-lb (81.3 N-m).

Notes:

- Make sure the pass-through cable has been removed as described in *To Remove the Pass-Through Cable* (on page 16) and as shown in the illustration above.
 - Always ensure that the length of the center conductor pin is accurate as explained in *To Prepare the Connectors* (on page 10).
- 8 Using a 3/16-in. hex head driver or 3/16-in. straight blade screwdriver, tighten seizure screws A and B from 15 in-lb to 20 in-lb (1.7 N-m to 2.3 N-m). See the diagram in step 6 for seizure screw locations.
 - 9 Proceed to *Installing Optional Modules* (on page 20).

Important: Verify that the directional coupler (DC) on the faceplate is in the correct orientation. The orientation depends on which port is the input port.

Installing Optional Modules

The tap uses a plug-in directional coupler (DC) module to set the tap value. The DC value is selected for each installation to provide the proper RF input level. The orientation of the DC module on the circuit board determines which port serves as the RF input and which is the RF output.

If needed, the tap faceplate can use a directional coupler/equalizer (DC/EQ) module in the directional coupler socket. The equalizer function controls the output tilt to the drop cables and does not affect the feeder cable signal. The DC/EQ can equalize the tap port across the RF passband in steps between 3 dB to 18 dB. The signal down the line is not affected.

The tap faceplate can also use a directional coupler/reverse window (DC/RW) module in the directional coupler socket. The reverse window module gives forward signal tap values of 32, 29, and 26 dB and a fixed reverse tap value of 23 dB. This helps to keep plant reverse levels balanced, usually within 10 dB.

About Pre-Configured Taps

All taps are pre-configured at the factory with a directional coupler module already installed. The faceplate decal indicates the configured tap loss.

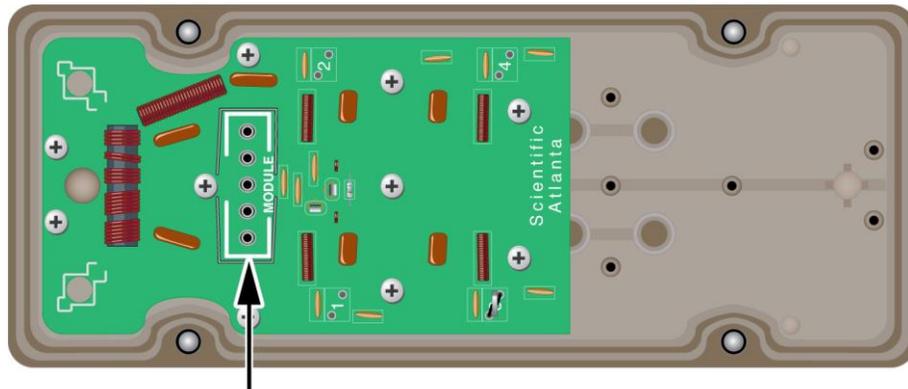
Follow the procedure *To Install the Module* (on page 20) if you need to change the tap loss or signal direction on a pre-configured tap or to replace the module with another type.

To Install the Module

Complete the following steps to install the module.

- 1 If the faceplate is mounted in the tap housing, follow the steps in *Removing the Faceplate* (on page 11) before proceeding.
- 2 Select the appropriate module as specified by the system design. Also select the appropriate decal shipped with the module. Refer to *Tap Part Numbers* (on page 36) for a list of available modules.

- 3 Locate the directional coupler socket on the tap circuit board. See the diagram below for location.



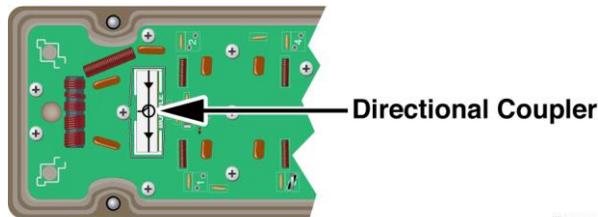
Directional Coupler Socket

T5913

- 4 Orient the module to correspond to the signal flow direction as shown in Option 1 and Option 2.

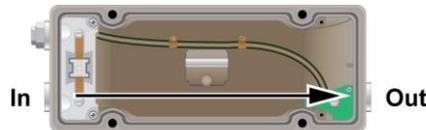
Option 1: (The tap is shipped from the factory in this configuration.)

If the module is oriented the following way,



T8845

the signal flow will be as follows:



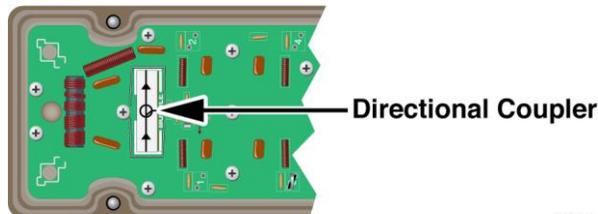
Strand (Aerial) Configuration



Pedestal Configuration

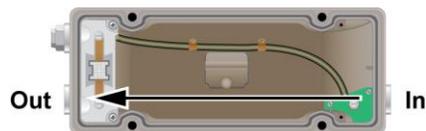
T12603

Option 2: If the module is oriented the following way,



T8846

the signal flow will be as follows:



Strand (Aerial) Configuration

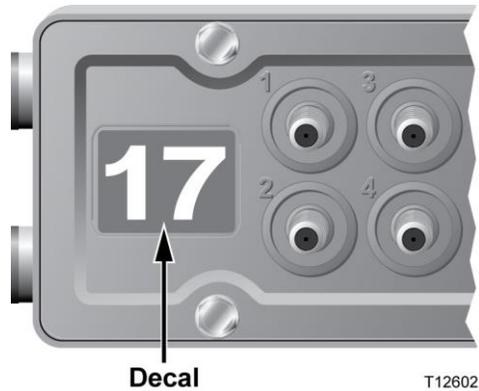


Pedestal Configuration

T12604

Chapter 2 Installing the Tap

- 5 Carefully plug the module into the socket. Be sure all the pins on the module align with the pins holes in the directional coupler socket.
- 6 Clean the decal area of any dirt or oil. Attach the appropriate decal shipped with the module.

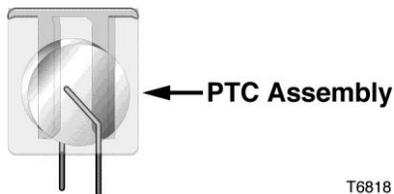


- 7 Do you need to set power passing on one or more drop ports?
If **yes**, refer to the procedure for enabling drop powering below.
If **no**, proceed to *Mounting the Faceplate* (on page 25).

Enabling Drop Powering

The tap may provide subscriber power through the coax drop cable. To enable power to a subscriber, you install a positive temperature coefficient resistor (PTC) assembly on the circuit board in the location corresponding to the port needing power.

The PTC assembly, part number 592049, consists of a PTC resistor (Raychem BBR 350 or equivalent) and a holder.

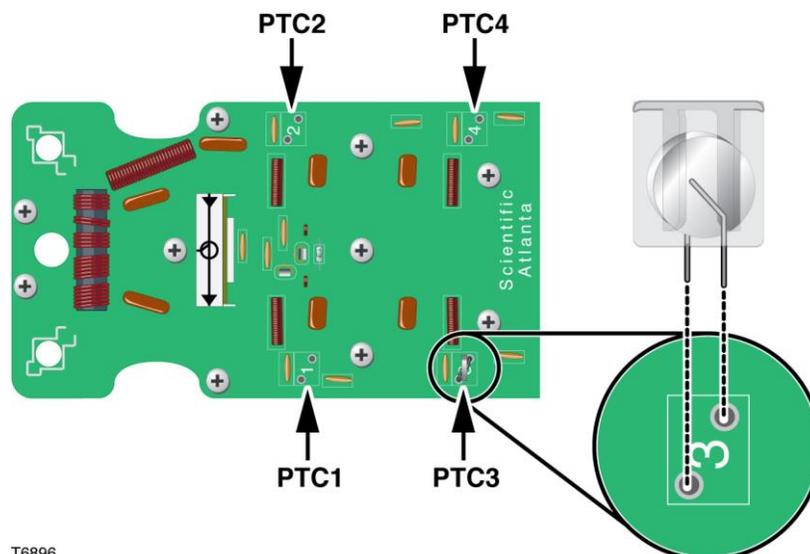


To Enable Power Passing

Complete the following steps to enable power passing.

- 1 If you have not already removed the faceplate from the housing, follow the steps in *Removing the Faceplate* (on page 11).
- 2 Locate the power-passing sockets (PTC1 through PTC8) on the tap circuit board. PTC1 through PTC 4 are shown in the 4-port tap illustration below.

⚠ WARNING:
 Avoid electrical shock and damage to this product. Do not touch live AC portions of the circuit.



Chapter 2 Installing the Tap

- 3 If the corresponding drop port has a 75 Ω terminator, remove the terminator.



CAUTION:

Avoid damage to this product. Remove any terminators from the drop port before applying AC to the drop port.

- 4 Using insulated pliers, plug a PTC assembly into the socket corresponding to the drop port on which you want to enable power. For example, installing a PTC assembly in PTC3 location activates drop port 3. Refer to the illustration in step 2.



WARNING:

Avoid electrical shock or damage to this product. Use insulated pliers to install or remove PTC assemblies.

- 5 Repeat steps 3 and 4 for each drop port on which you want to enable power.
- 6 Proceed to *Mounting the Faceplate* (on page 25).

Mounting the Faceplate

After mounting the housing, connecting the feeder cables, and plugging in optional modules as needed, you are ready to install the faceplate in the tap housing.

To Mount the Faceplate

Complete the following steps to mount the faceplate.

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

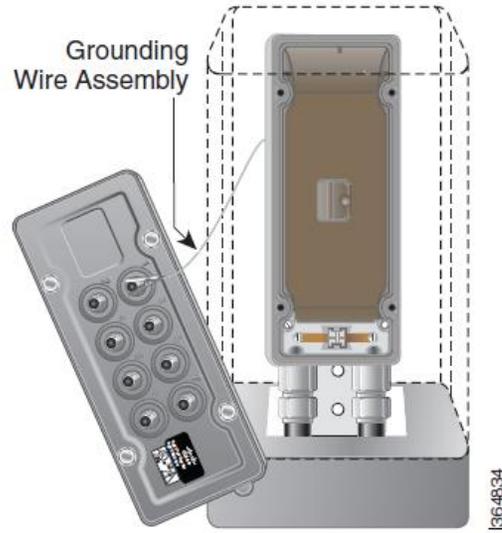


Proceed to step 4.

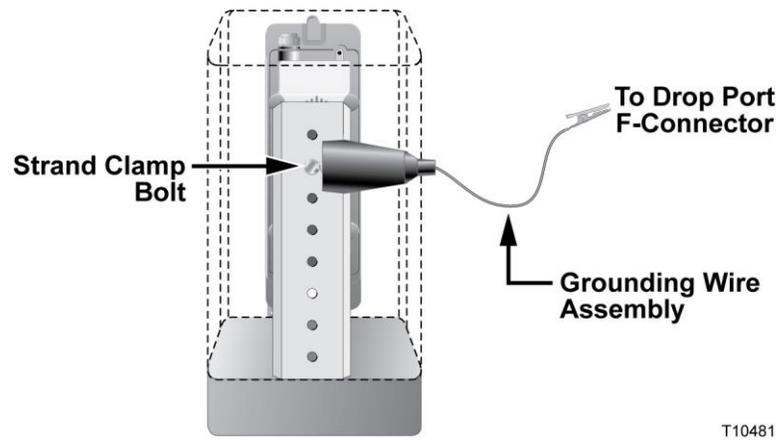
- 3 Attach a grounding wire assembly to the strand clamp bolt on the pedestal and a drop port F-connector.

Chapter 2 **Installing the Tap**

Front View:



Back View:



Proceed to step 4.

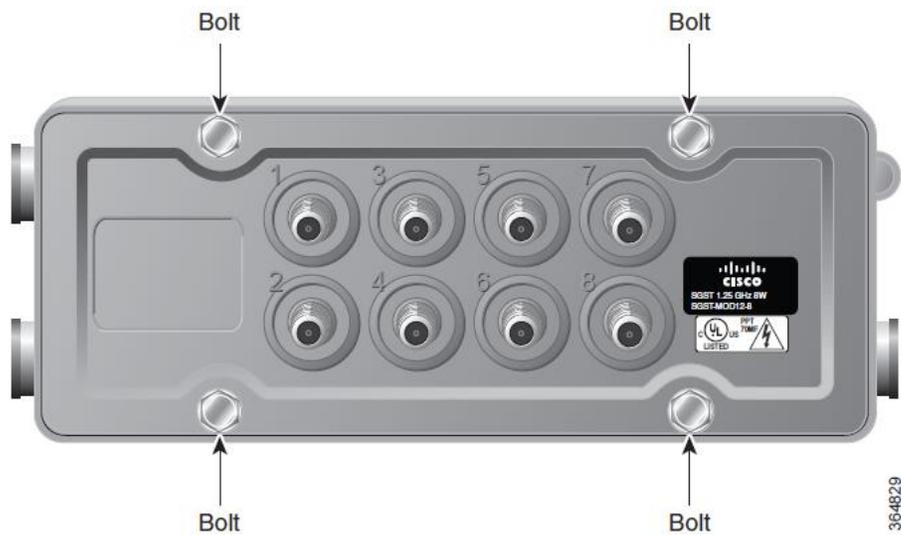
- 4** Inspect the housing gasket and all mating surfaces. Wipe off any dirt, moisture, or debris.

Mounting the Faceplate

- 5 Align the faceplate to line up the key with the notch on the housing. See the diagram below.



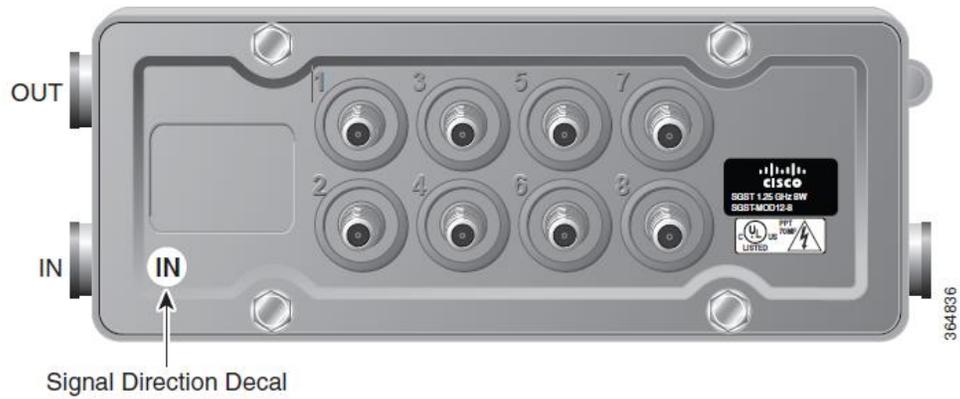
- 6 Place the faceplate on the tap housing. Push firmly on the faceplate to seat it in the housing.
- 7 Remove the grounding wire assembly.
- 8 Using a 3/8-in. wrench, tighten the four bolts from 50 in-lb to 60 in-lb (5.6 N-m to 6.8 N-m).



- 9 Optional: Affix the circular "IN" signal direction decal on the faceplate near the input port.

Chapter 2 Installing the Tap

Note: The input port can be any of the 3 ports, depending on the configuration of the plug-in DC or DC/EQ and whether the tap is mounted in a pedestal or on a strand. Refer to *Installing Optional Modules* (on page 20).

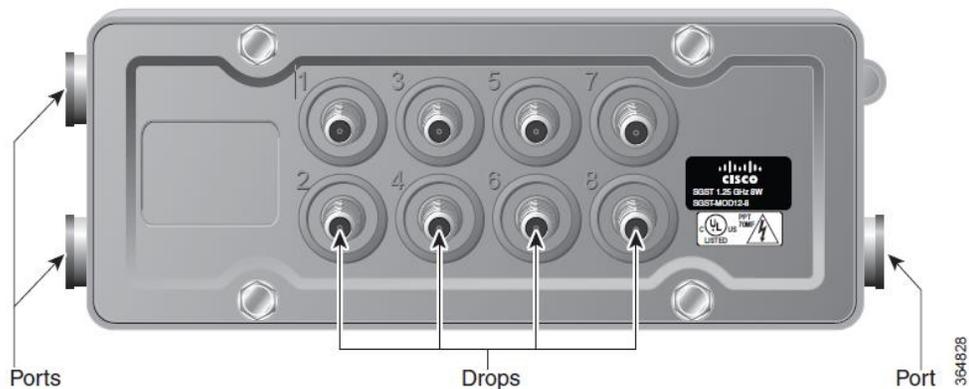


10 Proceed to *Connecting Coax Drop Cables* (on page 29).

Connecting Coax Drop Cables

Complete the following steps to attach the coax drop cables to the faceplate.

- 1 Attach the drop cable (RG-6 or RG-59) to the tap drop ports as desired. Make sure to tighten to the manufacturer's recommended torque specification, typically 30 in-lb (3.4 N-m).



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



CAUTION:

Avoid damage to this product. Before installing any terminators, make sure AC is not present on the drop ports.

- 2 On the last tap in the line, attach a 75 Ω power-blocking terminator to the open output port.

3

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

Technical Information

This appendix contains important technical information about the tap.

In This Appendix

- Specifications 34
- Tap Part Numbers 36

Specifications

The following are the specifications for the tap.

Note: Specifications are subject to change without notice.

Dimensions

Item	Specification
Height	3.5 in. (88.9 mm)
Width	9 in. (228.6 mm)
Depth	3.5 in. (88.9 mm)

Electrical Specifications

Item	Specification
Frequency bandpass	5 MHz to 1250 MHz
Power passing	12 A, 60 V AC to 90 V AC
Impedance	75 Ω
Interface	<ul style="list-style-type: none">■ ports: KS-connectors■ drop ports: F-connectors
Operating temperature	-40°F to +140°F (-40°C to +60°C)
Port current limiting	250 mA (at 60°C)
Surge resistance	<ul style="list-style-type: none">■ 6 kV combination wave on KS port■ 6 kV ring wave on F port

AC/RF Bypass Switch Performance

Item	Specification
System open circuit time	0 ms
Contact resistance	10 m Ω max
Current and voltage capacity	15 A, 60 V AC to 90 V AC
Frequency bandpass	5 MHz to 1250 MHz w/DC

Standards Compliance

Standard Committee	Standard
SCTE	F-port interface specification IPS-SP-400
FCC	Part 76
EU EMC	50083-2

Tap Part Numbers

The following tables list the parts and accessories available for the tap.

Surge-Gap 6kV Stretch Taps

Part Number	Description
SGST-MOD12-2	Surge-Gap 6kV Stretch Tap, Module, 1.25GHz, 2way (Mult=20)
SGST-MOD12-4	Surge-Gap 6kV Stretch Tap, Module, 1.25GHz, 4way (Mult=20)
SGST-MOD12-8	Surge-Gap 6kV Stretch Tap, Module, 1.25GHz, 8way (Mult=20)
SGST-MFP12-2	Surge-Gap 6kV Stretch Tap, Faceplate,1.25GHz, 2way (Mult=20)
SGST-MFP12-4	Surge-Gap 6kV Stretch Tap, Faceplate,1.25GHz, 4way (Mult=20)
SGST-MFP12-8	Surge-Gap 6kV Stretch Tap, Faceplate,1.25GHz, 8way (Mult=20)

Plug-in Directional Couplers

Part Number	Description
SGST-DC12-00	Surge-Gap 6kV Stretch Tap, DC, 1.25GHz, 0dB (Mult=10)
SGST-DC12-04	Surge-Gap 6kV Stretch Tap, DC, 1.25GHz, 4dB (Mult=10)
SGST-DC12-07	Surge-Gap 6kV Stretch Tap, DC, 1.25GHz, 7dB (Mult=10)
SGST-DC12-10	Surge-Gap 6kV Stretch Tap, DC, 1.25GHz, 10dB (Mult=10)
SGST-DC12-13	Surge-Gap 6kV Stretch Tap, DC, 1.25GHz, 13dB (Mult=10)
SGST-DC12-16	Surge-Gap 6kV Stretch Tap, DC, 1.25GHz, 16dB (Mult=10)
SGST-DC12-19	Surge-Gap 6kV Stretch Tap, DC, 1.25GHz, 19dB (Mult=10)
SGST-DC12-22	Surge-Gap 6kV Stretch Tap, DC, 1.25GHz, 22dB (Mult=10)

Plug-in Directional Couplers with Equalizer

Part Number	Description
SGST-DC12-00-EQ03	Surge-Gap 6kV Stretch Tap,DC/EQ,1.25GHz,0dBDC,3dB EQ(Mult=20)
SGST-DC12-04-EQ03	Surge-Gap 6kV Stretch Tap,DC/EQ,1.25GHz,4dBDC,3dB EQ(Mult=20)
SGST-DC12-07-EQ03	Surge-Gap 6kV Stretch Tap,DC/EQ,1.25GHz,7dBDC,3dB EQ(Mult=20)
SGST-DC12-10-EQ03	Surge-Gap 6kV Stretch Tap,DC/EQ,1.25GHz,10dBDC,3dB EQ(Mult=20)
SGST-DC12-13-EQ03	Surge-Gap 6kV Stretch Tap,DC/EQ,1.25GHz,13dBDC,3dB EQ(Mult=20)

Part Number	Description
SGST-DC12-16-EQ03	Surge-Gap 6kV Stretch Tap,DC/EQ,1.25GHz,16dBDC,3dBEBQ(Mult=20)
SGST-DC12-19-EQ03	Surge-Gap 6kV Stretch Tap,DC/EQ,1.25GHz,19dBDC,3dBEBQ(Mult=20)
SGST-DC12-22-EQ03	Surge-Gap 6kV Stretch Tap,DC/EQ,1.25GHz,22dBDC,3dBEBQ(Mult=20)
SGST-DC12-00-EQ06	Surge-Gap 6kV Stretch Tap,DC/EQ,1.25GHz,0dBDC,6dBEBQ(Mult=20)
SGST-DC12-04-EQ06	Surge-Gap 6kV Stretch Tap,DC/EQ,1.25GHz,4dBDC,6dBEBQ(Mult=20)
SGST-DC12-07-EQ06	Surge-Gap 6kV Stretch Tap,DC/EQ,1.25GHz,7dBDC,6dBEBQ(Mult=20)
SGST-DC12-10-EQ06	Surge-Gap 6kV Stretch Tap,DC/EQ,1.25GHz,10dBDC,6dBEBQ(Mult=20)
SGST-DC12-13-EQ06	Surge-Gap 6kV Stretch Tap,DC/EQ,1.25GHz,13dBDC,6dBEBQ(Mult=20)
SGST-DC12-16-EQ06	Surge-Gap 6kV Stretch Tap,DC/EQ,1.25GHz,16dBDC,6dBEBQ(Mult=20)
SGST-DC12-19-EQ06	Surge-Gap 6kV Stretch Tap,DC/EQ,1.25GHz,19dBDC,6dBEBQ(Mult=20)
SGST-DC12-00-EQ09	Surge-Gap 6kV Stretch Tap,DC/EQ,1.25GHz,0dBDC,9dBEBQ(Mult=20)
SGST-DC12-04-EQ09	Surge-Gap 6kV Stretch Tap,DC/EQ,1.25GHz,4dBDC,9dBEBQ(Mult=20)
SGST-DC12-07-EQ09	Surge-Gap 6kV Stretch Tap,DC/EQ,1.25GHz,7dBDC,9dBEBQ(Mult=20)
SGST-DC12-10-EQ09	Surge-Gap 6kV Stretch Tap,DC/EQ,1.25GHz,10dBDC,9dBEBQ(Mult=20)
SGST-DC12-13-EQ09	Surge-Gap 6kV Stretch Tap,DC/EQ,1.25GHz,13dBDC,9dBEBQ(Mult=20)
SGST-DC12-16-EQ09	Surge-Gap 6kV Stretch Tap,DC/EQ,1.25GHz,16dBDC,9dBEBQ(Mult=20)
SGST-DC12-00-EQ12	Surge-Gap 6kV Stretch Tap,DC/EQ,1.25GHz,0dBDC,12dBEBQ(Mult=20)
SGST-DC12-04-EQ12	Surge-Gap 6kV Stretch Tap,DC/EQ,1.25GHz,4dBDC,12dBEBQ(Mult=20)
SGST-DC12-07-EQ12	Surge-Gap 6kV Stretch Tap,DC/EQ,1.25GHz,7dBDC,12dBEBQ(Mult=20)
SGST-DC12-10-EQ12	Surge-Gap 6kV Stretch Tap,DC/EQ,1.25GHz,10dBDC,12dBEBQ(Mult=20)
SGST-DC12-13-EQ12	Surge-Gap 6kV Stretch Tap,DC/EQ,1.25GHz,13dBDC,12dBEBQ(Mult=20)
SGST-DC12-00-EQ15	Surge-Gap 6kV Stretch Tap,DC/EQ,1.25GHz,0dBDC,15dBEBQ(Mult=20)
SGST-DC12-04-EQ15	Surge-Gap 6kV Stretch Tap,DC/EQ,1.25GHz,4dBDC,15dBEBQ(Mult=20)
SGST-DC12-07-EQ15	Surge-Gap 6kV Stretch Tap,DC/EQ,1.25GHz,7dBDC,15dBEBQ(Mult=20)
SGST-DC12-10-EQ15	Surge-Gap 6kV Stretch Tap,DC/EQ,1.25GHz,10dBDC,15dBEBQ(Mult=20)

Plug-in Directional Couplers with Reverse Window

Part Number	Description
SGST-RW8w2017-EQ03	SGST Rev Wndw DC,1.25G,8w-F20dB/R17dB (Mult=20)
SGST-RW8w2317-EQ06	SGST Rev Wndw DC,1.25G,8w-F23dB/R17dB (Mult=20)
SGST-RW4w2017-EQ03	SGST Rev Wndw DC,1.25G,4w-F20dB/R17dB, 8w-F23/R20 (Mult=20)

Appendix A
Technical Information

Part Number	Description
SGST-RW4w2317-EQ06	SGST Rev Wndw DC,1.25G,4w-F23dB/R17dB, 8w-F26/R20 (Mult=20)
SGST-RW8w2920-EQ09	SGST Rev Wndw DC,1.25G, 8w-F29dB/R20dB (Mult=20)
SGST-RW8w3220-EQ12	SGST Rev Wndw DC,1.25G, 8w-F32dB/R20dB (Mult=20)
SGST-RW8w3520-EQ15	SGST Rev Wndw DC,1.25G, 8w-F35dB/R20dB (Mult=20)
SGST-RW2w2017-EQ03	SGST Rev Wndw DC,1.25,2w-F20/R17,4w-F23/R20, (Mult=20)
SGST-RW2w2317-EQ06	SGST Rev Wndw DC,1.25,2w-F23/R17,4w-F26/R20, (Mult=20)
SGST-RW4w2920-EQ09	SGST Rev Wndw DC,1.25, 4w-F29dB/R20dB (Mult=20)
SGST-RW4w3220-EQ12	SGST Rev Wndw DC,1.25, 4w-F32dB/R20dB (Mult=20)
SGST-RW4w3520-EQ15	SGST Rev Wndw DC,1.25, 4w-F35dB/R20dB (Mult=20)
SGST-RW2w2320-EQ03	SGST Rev Wndw DC,1.25G, 2w-F23dB/R20dB (Mult=20)
SGST-RW2w2620-EQ06	SGST Rev Wndw DC,1.25G, 2w-F26dB/R20dB (Mult=20)
SGST-RW2w2920-EQ09	SGST Rev Wndw DC,1.25G, 2w-F29dB/R20dB (Mult=20)
SGST-RW2w3220-EQ12	SGST Rev Wndw DC,1.25G, 2w-F32dB/R20dB (Mult=20)
SGST-RW2w3520-EQ15	SGST Rev Wndw DC,1.25G, 2w-F35dB/R20dB (Mult=20)

Index

A

About Pre-Configured Taps • 20
AC/RF Bypass Switch Performance • 34

C

Connecting Coax Drop Cables • 29
Customer Support Information • 31

D

Description of the Surge-Gap Stretch Tap • 3
Dimensions • 34
Directional Coupler Modules • 36

E

Electrical Specifications • 34
Enabling Drop Powering • 23

G

Guidelines • 16

I

Installing Optional Modules • 20
Installing the Stretch Tap in a Pedestal • 16
Installing the Stretch Tap on a Strand • 14
Installing the Tap • 7
Introducing the Surge-Gap Stretch Tap • 1

M

Mounting the Faceplate • 25

N

Non-Configured Surge-Gap Tap Assemblies • 36

O

Optional Modules • 5
Other Accessories • 37

P

Preparing for Installation • 10

R

Removing the Faceplate • 11
Required Tools • 8

S

Specifications • 34
Standards Compliance • 35
Surge-Gap Faceplate Assemblies • 36
Surge-Gap Stretch Tap Diagram • 4

T

Tap Part Numbers • 36
To Enable Power Passing • 23
To Install the Module • 20
To Install the Stretch Tap in a Pedestal • 18
To Install the Stretch Tap on a Strand • 14
To Mount the Faceplate • 25
To Prepare the Connectors • 10
To Remove a Faceplate with Feeder Cables
Connected • 12
To Remove the Faceplate • 11
To Remove the Pass-Through Cable • 16
Tools and Torque Specifications • 8
Torque Specifications • 8



Americas Headquarters

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA

<http://www.cisco.com>

Tel: 408 526-4000

800 553-6387

Fax: 408 527-0883

This document includes various trademarks of Cisco Systems, Inc. Please see the Notices section of this document for a list of Cisco Systems, Inc., trademarks used in this document. Product and service availability are subject to change without notice.

© 2006, 2008, 2012, 2015 Cisco Systems, Inc. All rights reserved.

Printed in United States of America

First Published: August 2015