SeeChange Terminal
Installation Manual

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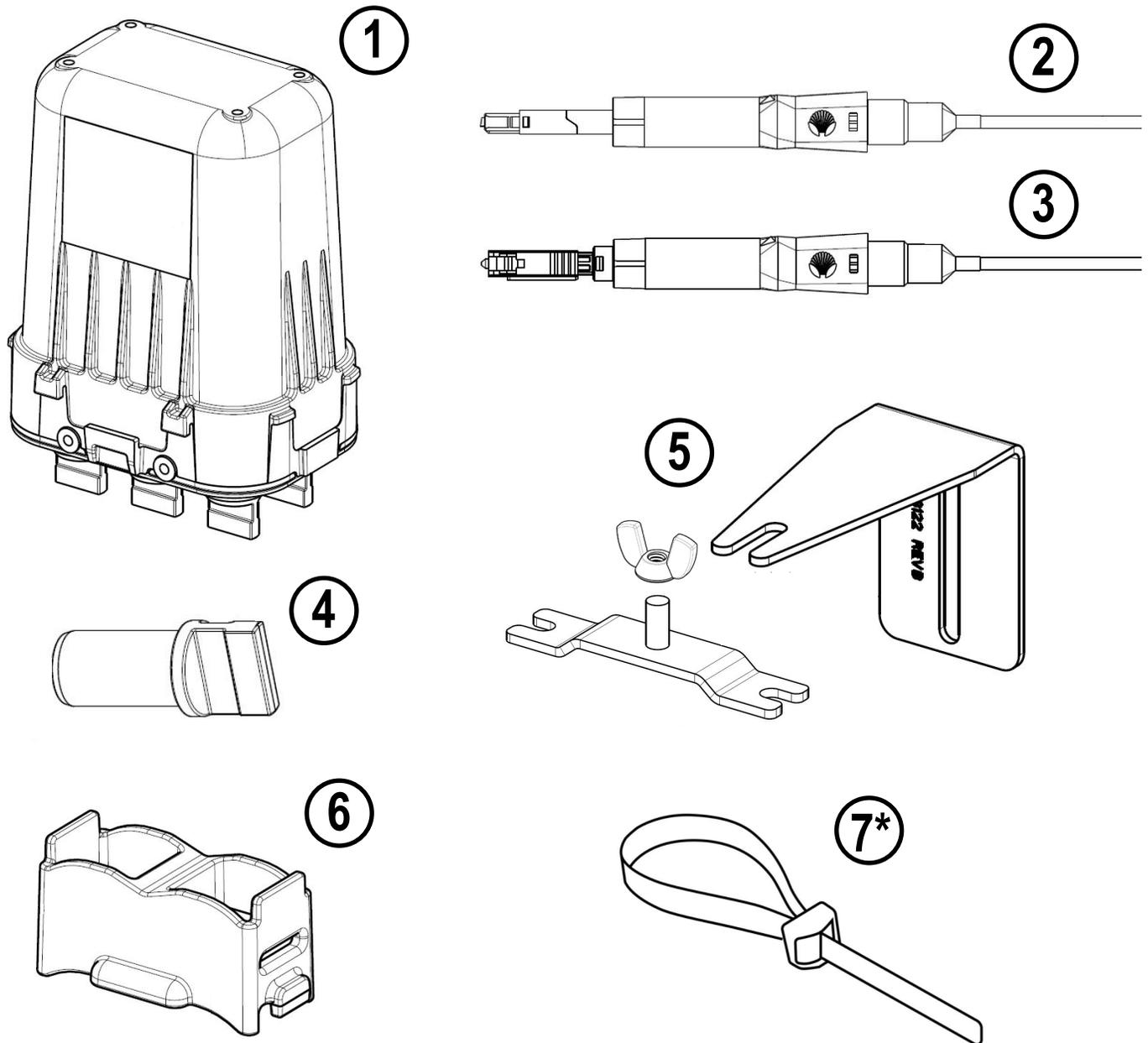
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Table of Contents

Parts List

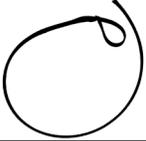1. SeeChange Terminal (Terminal is factory sealed - **DO NOT OPEN**)
2. SeeChange MPO Hardened Fiber Assembly
3. SeeChange SC/APC Hardened Fiber Assembly
4. FlexPort Plugs
5. Pole/Wall/Ped Mounting Bracket
6. SeeChange Aerial Spacer
7. Deltec Cable Strap and Clip (*customer supplied)

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Recommended Accessories

Accessory	Part Number	Image
Optical Scope	SCT-SCOPE	
Long Neck SC Inspection Tip	SCT-SCOPE-TIP-SCAPC	
Long Neck MPO Inspection Tip	SCT-SCOPE-TIP-MPO	
SC Cleaning Probe	SCT-SCAPC-CLEANER	
MPO Cleaning Probe	SCT-MPO-CLEANER	
Connector Wash Pen	SCT-WASH-PEN	
SC Cables Pull Sock	FS-PUL-5-9MM	
MPO Cables Pull Sock	SEE-PULLING-SOCK	
Protection Sleeve	SEE-CONN-PROTECT-10	
Plugs	022427	
FlexPort Release Tool	FS-FLEXPORT-REMOVAL-TOOL-10	

Accessory	Part Number	Description
SeeChange SC Test Cable	SEE-TEST-SCAPC-SEESCAPC-2F	Test Cable, SeeChange SC/APC to standard SC/APC, 2 feet long
SeeChange MPO Test Cable	SEE-TEST-MPO-SEEMPO-2F	Test Cable, SeeChange MPO female to standard MPO Female, 2 feet long
SeeChange MPO Breakout Test Cable	SEE-TEST-SCAPC-SEEMPO-2F	Test Cable, SeeChange MPO female to 12 standard SC APC connectors, 2 feet long

Packaging

The SeeChange Terminal ships in the packaging shown below. Carefully remove the terminal from the packaging. Preserve the SeeChange Terminal test records for later use if needed.

Example test record

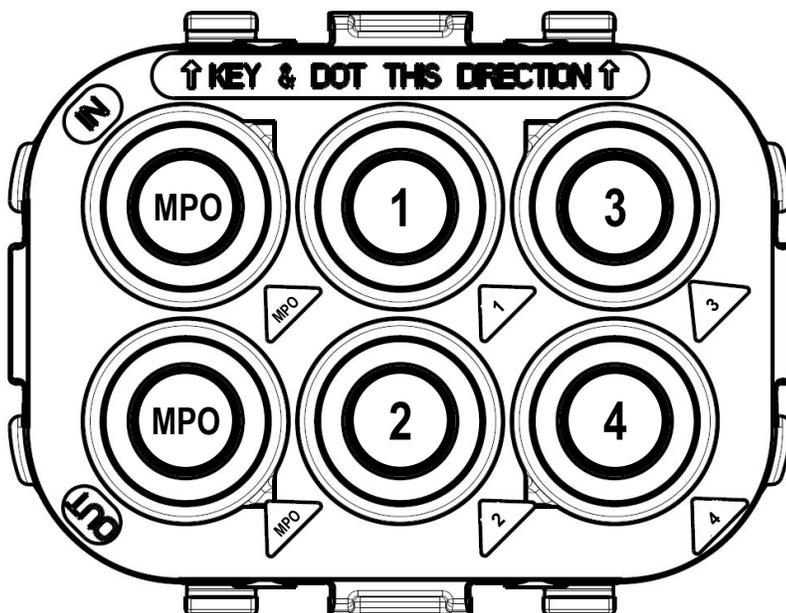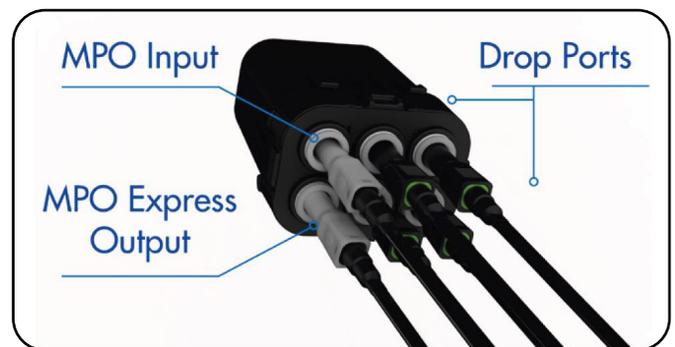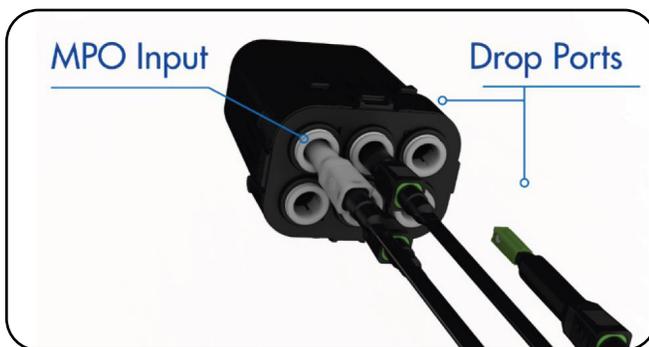# SeeChange Terminal
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SeeChange FlexPorts

The SeeChange Terminal features an MPO Input, an MPO Express Output (in some configurations), and up to four (4) Drop Ports. MPO ports will feature a grey plug, while SC/APC drop ports will feature a black plug.

Note: In configurations featuring only two drop ports, plugs will only be present in the two live ports, while the two unused ports will remain sealed with no plug present.

Terminal is factory sealed - DO NOT OPEN

MPO Input

MPO Input   Drop Ports

MPO Input   Drop Ports

MPO Express Output

⇧ KEY & DOT THIS DIRECTION ⇧

IN

MPO   1   3

MPO   1   3

MPO   2   4

MPO   2   4

OUT

Clearfield, Inc.
SeeChange
www.SeeClearfield.com
DEMO-SCT-M5-04C-085
PO # 104070
34225661101

SeeChange Terminal Configurations

SeeChange Terminal - Centralized Split Applications

SeeChange Terminals can be configured to support centralized split Fiber to the Home (FTTH) architectures. To simplify engineering, the same 4 port SeeChange Terminal can be deployed in a daisy chain configuration where three terminals are combined in series to feed up to 12 homes. This simple to follow daisy chain practice can be repeated for all homes in a serving area.

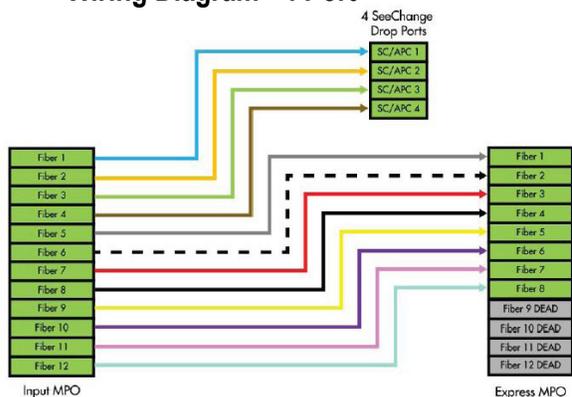### MPO Drop and Express Terminal Wiring Diagram - 2 Port
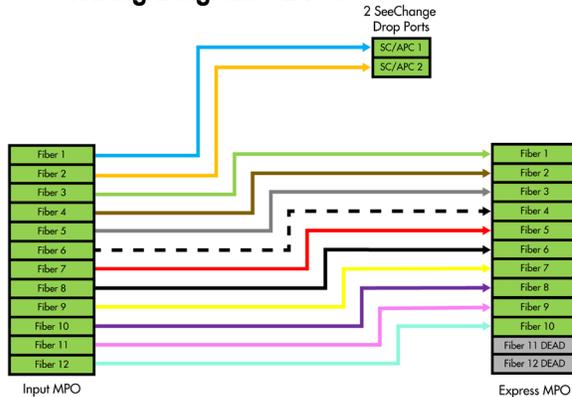
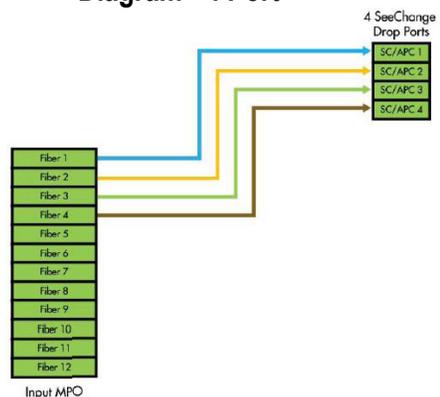### MPO Drop Terminal Wiring Diagram - 2 Port
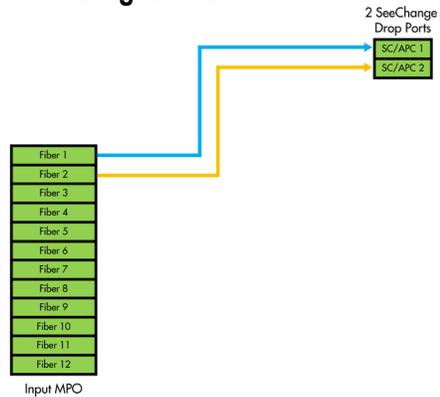
Part Number	Application	Description
SCT-M5-02C-105	MPO Drop and Express	SeeChange Terminal with (1) 12F SeeChange MPO input port, 2 SeeChange SC APC drop ports, (1) 12F SeeChange MPO express output port
SCT-M5-02C-ZZZ	MPO Drop*	SeeChange Terminal with (1) 12F SeeChange MPO input port, 2 SeeChange SC APC drop ports

* This configuration can be used as an end terminal in a daisy chain configuration or as a stand-alone drop terminal for Fiber to the Home, Business or 5G Smartpole applications.

MPO Drop and Express Terminal Wiring Diagram - 4 Port
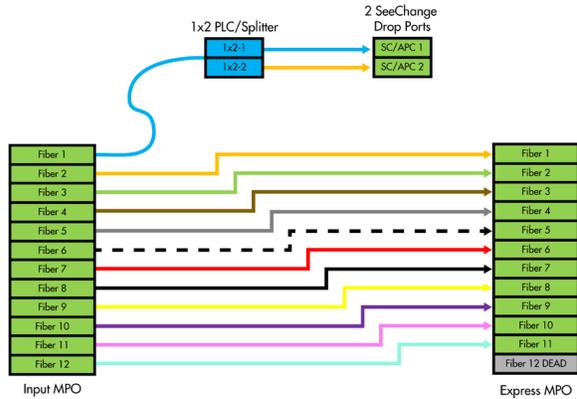
MPO Drop Terminal Wiring Diagram - 4 Port

Part Number	Application	Description
SCT-M5-04C-085	MPO Drop and Express	SeeChange Terminal with (1) 12F SeeChange MPO input port, 4 SeeChange SC APC drop ports, (1) 12F SeeChange MPO express output port
SCT-M5-04C-ZZZ	MPO Drop*	SeeChange Terminal with (1) 12F SeeChange MPO input port, 4 SeeChange SC APC drop ports

* This configuration can be used as an end terminal in a daisy chain configuration or as a stand-alone drop terminal for Fiber to the Home, Business or 5G Smartpole applications.

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SeeChange Terminal - Distributed Split Applications

SeeChange Terminals can be configured to support distributed split Fiber to the Home (FTTH) architectures. To simplify engineering, the same 4 port SeeChange terminal can be deployed in a daisy chain configuration where four terminals are combined in series to feed up to 16 homes. This simple to follow daisy chain practice can be repeated for all homes in a serving area.

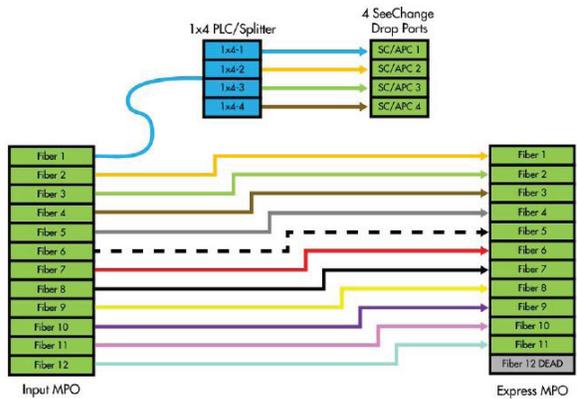### MPO Splitter Drop and Express Terminal Wiring Diagram - 2 Port

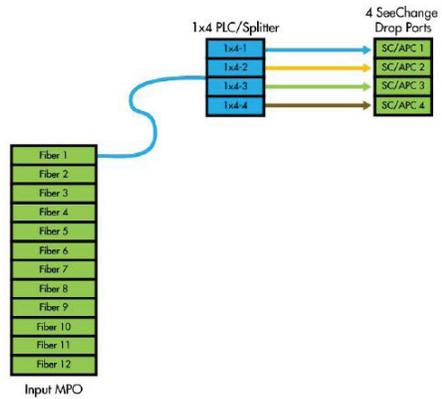### MPO Splitter Drop Terminal Wiring Diagram - 2 Port
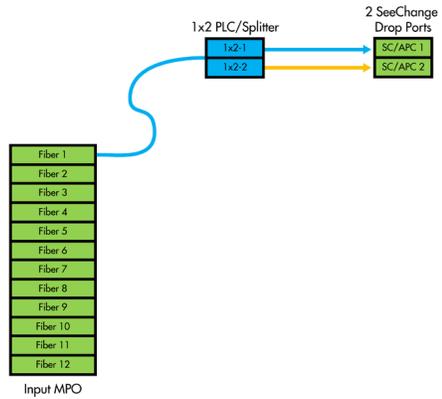
Part Number	Application	Description
SCT-M5-02C-EZZ-115	MPO Splitter Drop and Express	SeeChange Terminal with (1) 12F SeeChange MPO input port, 1x2 Splitter, 2 SeeChange SC APC drop ports, (1) 12F SeeChange MPO express output port
SCT-M5-02C-EZZ	MPO Splitter Drop*	SeeChange Terminal with (1) 12F SeeChange MPO input port, 1x4 Splitter, 4 SeeChange SC APC drop ports

* This configuration can be used as an end terminal in a daisy chain configuration or as a stand-alone drop terminal for Fiber to the Home, Business or 5G Smartpole applications.

MPO Splitter Drop and Express Terminal Wiring Diagram - 4 Port

MPO Splitter Drop Terminal Wiring Diagram - 4 Port

Part Number	Application	Description
SCT-M5-04C-8ZZ-115	MPO Splitter Drop and Express	SeeChange Terminal with (1) 12F SeeChange MPO input port, 1x4 Splitter, 4 SeeChange SC APC drop ports, (1) 12F SeeChange MPO express output port
SCT-M5-04C-8ZZ	MPO Splitter Drop*	SeeChange Terminal with (1) 12F SeeChange MPO input port, 1x4 Splitter, 4 SeeChange SC APC drop ports

* This configuration can be used as an end terminal in a daisy chain configuration or as a stand-alone drop terminal for Fiber to the Home, Business or 5G Smartpole applications.

Mounting the SeeChange Terminal

Pedestal/Pole/Wall Mounting

1. Install the top piece of the mounting bracket to the top of the SeeChange Terminal using the two provided screws.

2. Install the mounting bracket into the pedestal, or onto the pole or wall.

3. The bolt of the top mounted bracket can then be slid into the gap in the mounting bracket .

4. Secure the SeeChange terminal in place by tightening the wing nut on the bolt.

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Pedestal Mount

Pole Mount

Wall Mount

Below-Grade Installation

The SeeChange Terminal may be placed in below-grade applications, in a vault, handhole or flowerpot without the use of brackets. Coil the cables and rest the terminal in the base of the enclosure. In smaller enclosures, the terminal may need to be placed vertically to ensure proper bend radius protection.

Aerial Mounting

1. Feed half of approximately 3 feet of strap through the slots on each side of the SeeChange Terminal.

   Note: Strap and clip supplied by customer.

2. Insert each end of the strap through the holes on the outside of the spacer, directing the straps towards the center.

3. Pull the slack out of the strap until the spacer is in contact with the SeeChange Terminal.

4. Place the strap around the strand, and secure tightly using the clip. Trim away any excess strap.

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The SeeChange Terminal can be aerially mounted to a SeeChange Hardened Fiber Assembly cable. When attaching cables to the pole, follow local best practices. Secure a drip loop to the pole before routing cables to the SeeChange Terminal. Reference later sections on scoping, cleaning and connecting cables in this manual before installing SeeChange Hardened Fiber Assemblies into the terminal.

SeeChange Hardened Fiber Assembly Types

SeeChange Hybrid Drop Assemblies

Single Fiber SeeChange Hybrid Drop Assemblies are used between drop ports on the SeeChange Terminal and the NID (Network Interface Device) or TAP box at the home. One end of the assembly is terminated with the SeeChange SC APC connector. The opposite end is terminated with a FieldShield pushable SC APC connector which can be pulled inside a conduit direct buried or hung aerially. SeeChange Hybrid Drop Assemblies are available with FieldShield Small Form Factor (SFF) FLATdrop 900μm peelable cable. Standard lengths of 100, 150, 200, 250, 300, 350, 400, 450 and 500 feet long and can be ordered with or without a tone wire.
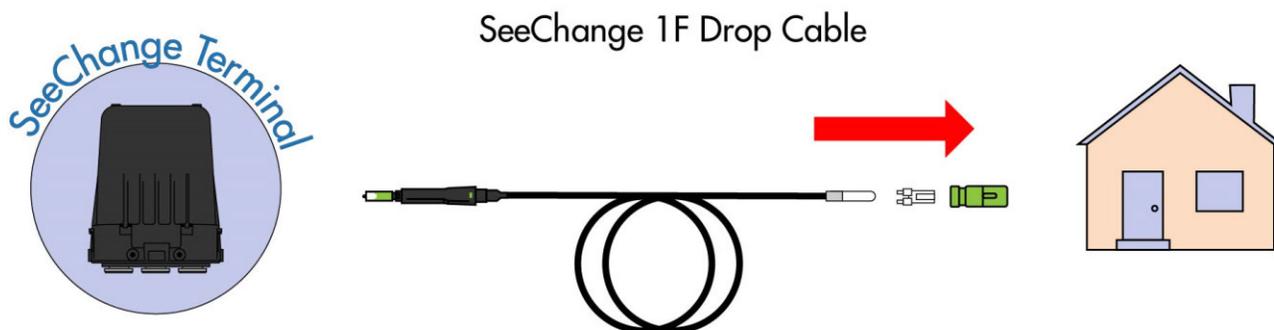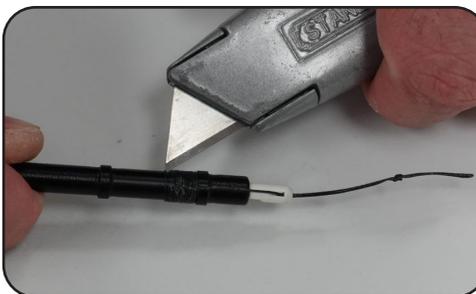

SFF Pushable SC Pulling Bullet

The SC/APC end of the drop cable is protected during installation with a bullet case and eye loop with string. The pull string eye loop is rated for 50 lbs. maximum pull force. When using the FS-PUL-5-9-MM pulling sock accessory, the rated maximum force is 100 lbs.

1. Using a sidecutters or similar tool, snip the tabs on the retainer clip at the back of the SFF pulling bullet and remove the clip.


2. Cut the pull string wrapped around the front end of the bullet to separate the halves of the bullet from the SFF.

3. Expose the desired amount of fiber by separating the two strength members, then trim the strength members to length.

4. Proceed to storing slack as needed, and assembling connector outer housing per instruction card.

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## SeeChange Daisy Chain Assemblies

Twelve Fiber SeeChange Daisy Chain Assemblies are used between two SeeChange Terminals when expressing output fibers from one terminal to the input of the other terminal. Both ends of the assembly are terminated with SeeChange MPO connectors. SeeChange MPO Daisy Chain Assemblies are available with conventional 12 fiber flat drop cable. Standard lengths of 100, 150, 200, 250, 300, 400 and 500 feet long and can be ordered with or without a tone wire.

SeeChange 12F Daisy Chain MPO Assembly
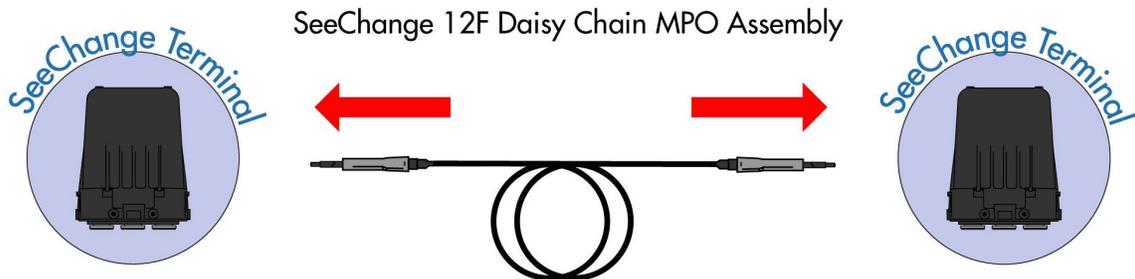
SeeChange Hybrid MPO Feeder Assemblies

12 Fiber SeeChange Hybrid MPO Feeder Assemblies are used between a YOURx Multi-Purpose Terminal (MPT) and a SeeChange Terminal. One end of the assembly is terminated with a SeeChange MPO connector. The opposite end is terminated with a 12 fiber pushable MPO, with integrated FlexConnector, to connect into the ports of the MPT terminal. SeeChange Hybrid MPO Feeder Assemblies are available with conventional 12 fiber flat drop cable. Standard lengths of 100, 150, 200, 250, 300, 400 and 500 feet long and can be ordered with or without a tone wire.

For some applications, the SeeChange Terminal feeder cable is spliced directly into the network in place of routing to an MPT terminal. In this situation, the SeeChange MPO feeder will be terminated with a SeeChange MPO connector on one end with no connector on the other end.
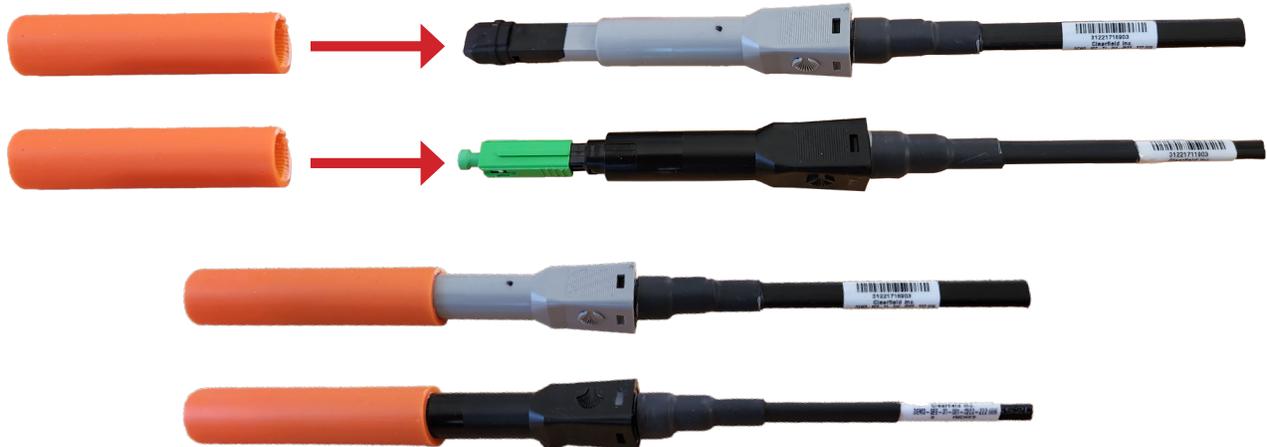

SeeChange 12F Feeder MPO Asssembly
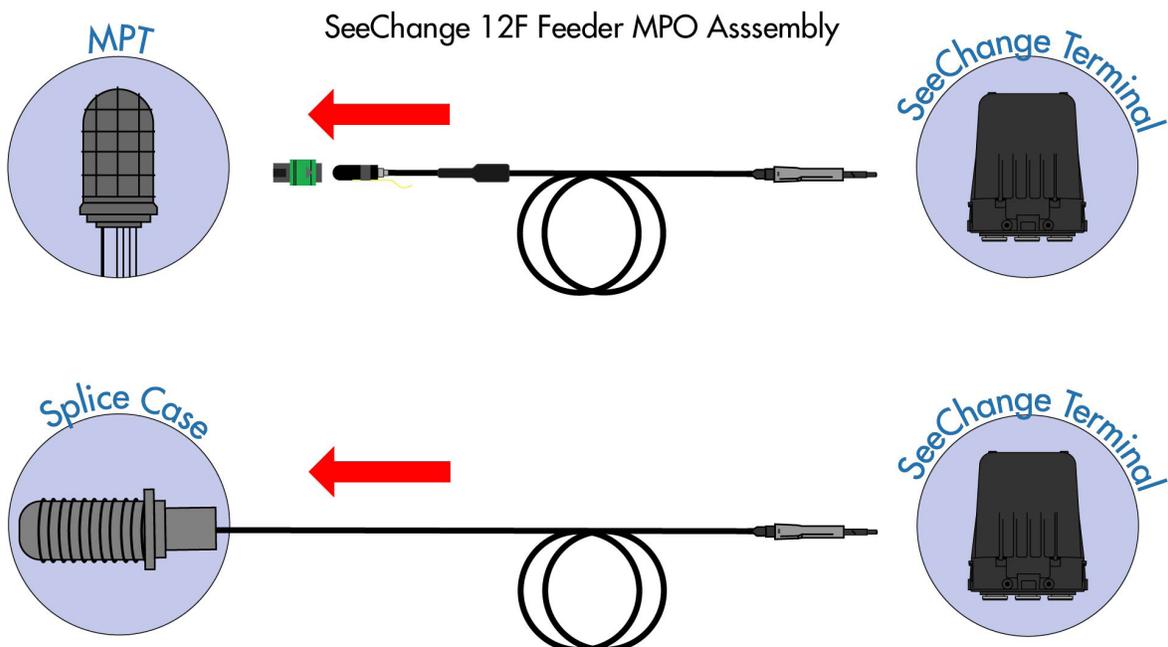
Pulling Socks

When deploying SeeChange Hardened Fiber Assemblies, Clearfield recommends the use of a pulling sock (P/N SEE-PULL-ING-SOCK). Fully insert the SeeChange connector into the sock until it reaches the end. Tie off your pulling string or mule tape to the loop present at the end of the sock and pull the assembly through your conduit/duct.

Note: The maximum rated pulling force of the SeeChange connector is 50lbs. SeeChange Hardened Fiber Assemblies can be pulled in ducts as small as 1 1/4" diameter, with no more than two 45 degree turns.

Protection Sleeve

The Protection Sleeve is a re-usable protective microduct sleeve which comes pre-installed on SeeChange connectors for the protection of the SeeChange assembly during shipping, after installation of the cable, and prior to connection into the terminal. **Do NOT use** while pulling the SeeChange Hardened Fiber Assembly in a pulling sock. Slide the sleeve over the connector and push until snug on the SeeChange connector, then pull to remove when your are ready to connect the SeeChange Hardened Fiber Assembly into the terminal.

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Connecting SeeChange Hardened Fiber Assemblies

Removing Plugs

To remove a plug from a FlexPort on the bottom of the SeeChange Terminal, first apply pressure to the collar of the port. While applying pressure to the collar, pull on the plug to release.
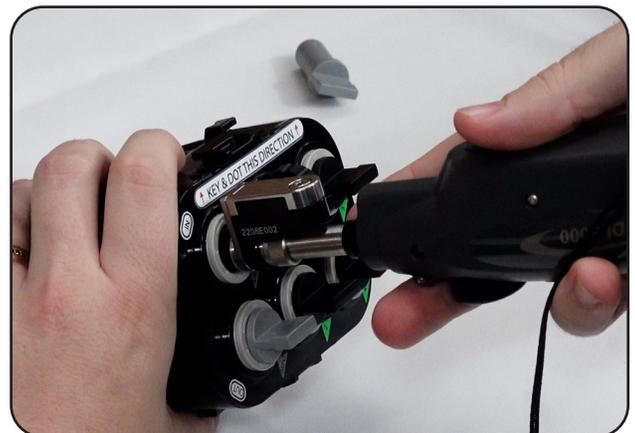
Scoping SeeChange Ports

After removing plugs and prior to connecting SeeChange Hardened Fiber Assemblies into the SeeChange Terminal, scope the ports you intend to connect to with your probe, equipped with a SeeChange MPO or SC/APC tip to ensure they are clean with no debris.

SeeChange MPO Port

1. Prior to inserting the probe, ensure the key on the probe tip is aligned in the correct direction, facing up towards the arrows on the label.

2. Scope the MPO port, and if necessary, proceed to cleaning.

SeeChange SC/APC Port

1. Prior to inserting the probe, ensure the key on the probe tip is aligned in the correct direction, facing up towards the arrows on the label.

2. Scope the SC/APC port, and if necessary, proceed to cleaning.

Cleaning SeeChange Ports

To clean the ports on the SeeChange Terminal, Clearfield recommends the use of an extended tip cleaning probe for an MPO port, and a traditional 2.5 cleaning probe for an SC/APC port. Apply cleaning solution for a combination cleaning process. Ensure that, in the case of an MPO port, the key is aligned in the correct direction, facing up towards the arrows on the label. Scope again, and if necessary repeat the cleaning process.
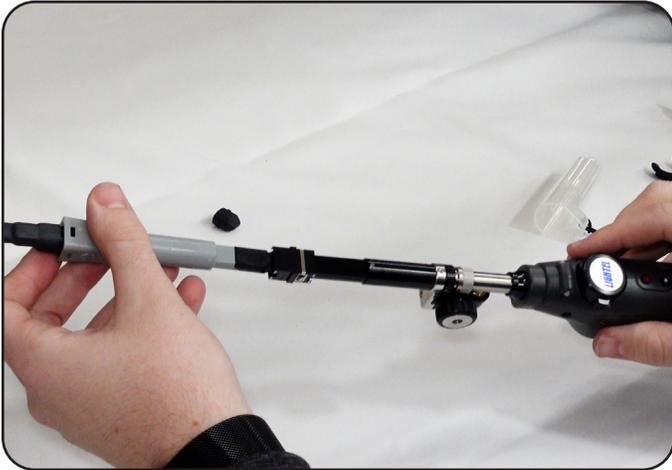

MPO Port

SC/APC Port

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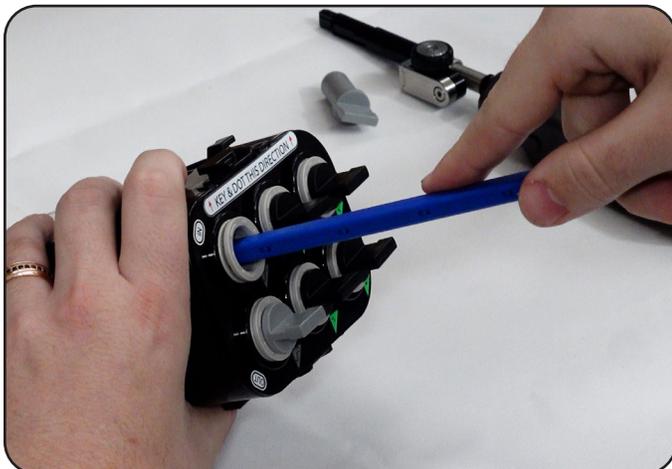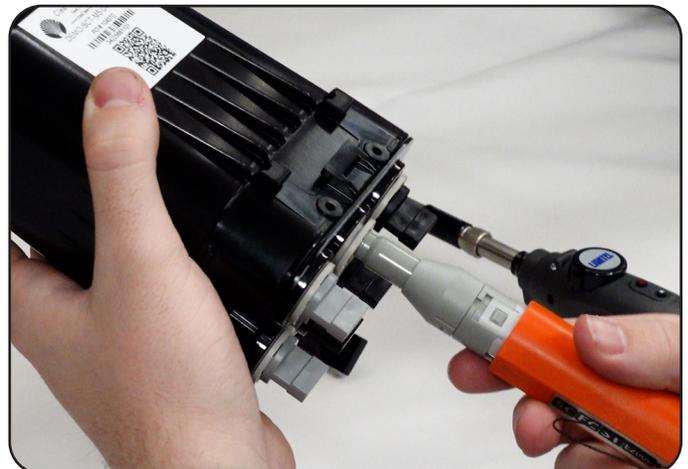
Inspecting SeeChange Hardened Fiber Assemblies

Inspect SeeChange MPO and SC/APC Hardened Fiber Assemblies with a standard MPO or SC/APC inspection tip, per local practice, to ensure end faces are clean of debris prior to making a connection.
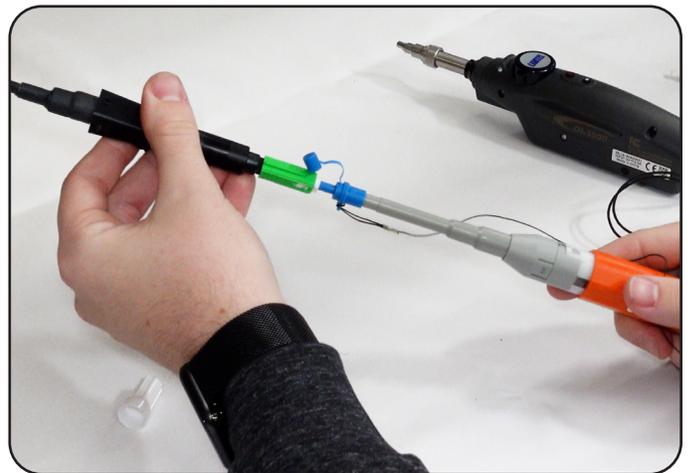

SeeChange MPO Connector

SeeChange SC/APC Connector

Cleaning SeeChange Hardened Fiber Assemblies

Connect the MPO or SC/APC adapter to your cleaning probe (traditional or extended tip), apply cleaning liquid for a combination cleaning process, and plug the SeeChange Hardened Fiber Assembly into the adapter. Clean and scope to ensure end faces are clean of debris prior to making a connection.
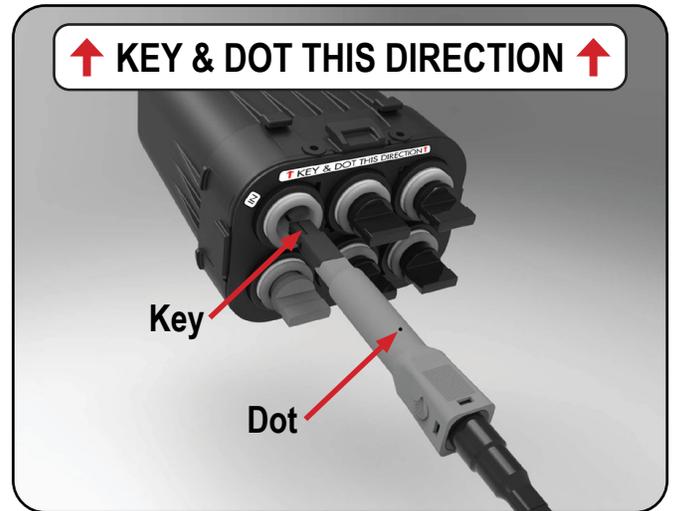

SeeChange MPO Connector
(Shown with traditional probe)

SeeChange SC/APC Connector

Connecting SeeChange Hardened Fiber Assemblies

1. Remove the dust cap, and locate the key and dot on the SeeChange Hardened Fiber Assembly connector.

2. Align the connector key and dot with the arrows on the terminal label.
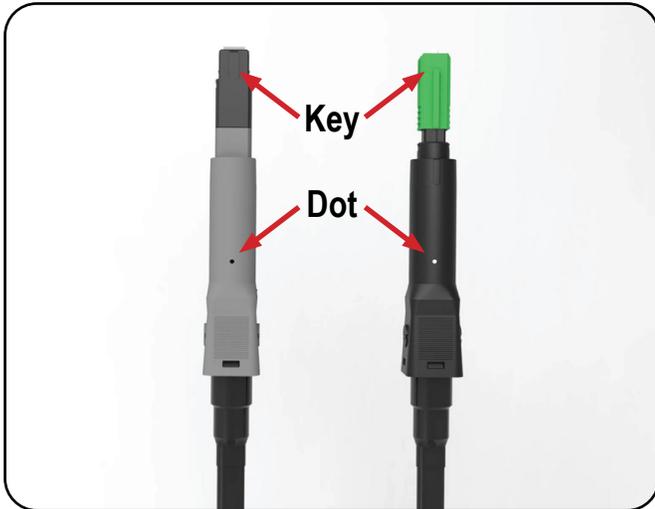
3. Push the connector *straight* into the terminal until the dot disappears.

4. Visually confirm that the dot is not visible.

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Removing SeeChange Hardened Fiber Assemblies

To remove SeeChange Hardened Fiber Assemblies from the SeeChange Terminal, apply pressure on the collar of the Flex-Port, then pull straight out on the SeeChange Hardened Fiber Assembly to release the cable. Optionally, use the FlexPort Release Tool to apply pressure evenly to the FlexPort's collar when removing a SeeChange Hardened Fiber Assembly.
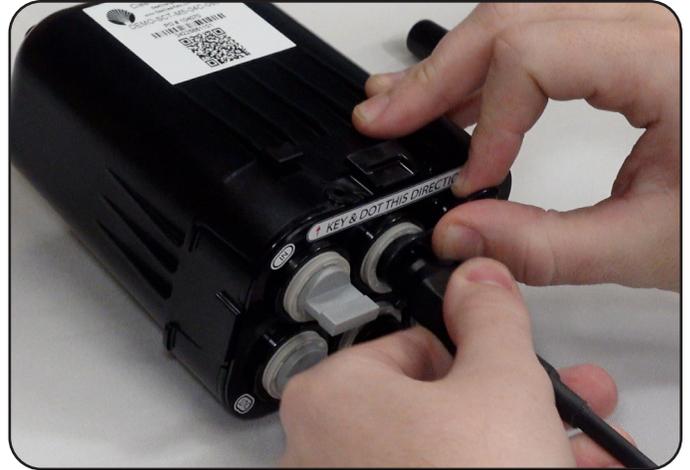
Standard Warranty

Clearfield warrants to the original purchaser of the Product sold hereunder is free from defects in material and workmanship under normal use and service, subject to exceptions stated herein. Product purchased is warranted as follows: Clearfield designed and branded Products are warranted for three (3) years: Products manufactured by Clearfield to customer prints and/or specifications are warranted for one (1) year; and any Product Clearfield acquires from or through a third-party manufacturer or distributor and resells to Customer as the original customer will carry the manufacturer's pass-through warranty, if any. In all cases, the warranty period commences on the date of shipment to the original purchaser.

Warranty Claim Procedure

If any Product purchased from Clearfield is found defective under the above warranty, the following basic procedure must be followed:

1. Customer must contact Clearfield and obtain a Return Materials Authorization
2. Following authorization, the Customer ships the product-freight collect-to Clearfield's manufacturing facility
3. Clearfield shall repair or replace the defective Product at its sole option and discretion, and return the repaired or replacement Product to Customer's site, freight prepaid

Note: If the Product is not found to be defective by Clearfield, the product will be returned to the Customer and the customer billed for freight in both directions.

View our warranty policy here: https://www.seeclearfield.com/warranty.html

Limitations of Warranty

Correction of defects by repair or replacement, at the option of Clearfield Inc, shall constitute the exclusive sole remedy for a breach of this limited warranty. Clearfield shall not be liable under any circumstances for any special, consequential, incidental, punitive, or exemplary damages arising out of or in any way connected with the product or with agreement to sell product to buyer, including, but not limited to damages for lost profits, loss of use, or for any damages or sums paid by buyer to third parties. The foregoing limitation of liability shall apply whether the claim is based upon principles of contract, warranty, negligence or other tort, breach of statutory duty, principles of indemnity or contribution, the failure of any limited or exclusive remedy to achieve its essential purpose, or otherwise.

Clearfield will not be responsible for any labor or materials costs associated with installation or incorporation of Clearfield products at customer sites, including any costs of alteration, replacement or defective product, or any field repairs.

Other Limitations

Clearfield assumes no warranty liability regarding defects caused by:

1. Customer's modification of Product, excepting installation activities described in Clearfield documentation
2. Customer re-packaging of Product for shipment to third parties or destinations other than those originally shipped to by Clearfield, or any defects suffered during shipping where the Product has been re-packaged
3. Customer's installation or maintenance, excepting activities described in and performed in accordance with Clearfield documentation
4. Customer's improper or negligent use or application of Product
5. Other causes external to the Product, including but not limited to accidents, catastrophe, acts of God, government action, war, riot, strikes, civil commotion, sovereign conduct, or the acts or conduct of any person or persons not party to or associated with Clearfield
6. Environmental factors and weathering resulting in aging and damage not necessary or applicable to the function of the product

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Its purpose is to provide the user with adequately detailed documentation to efficiently install the equipment supplied. Every effort has been made to keep the information contained in this document current and accurate as of the date of publication or revision.

However, no guarantee is given or implied that the document is error free or that it is accurate with regard to any specification.

Technical Support

Clearfield, Inc. can be contacted for any issues that arise with the supplied product.

If you need to return the supplied product, you must contact the Clearfield, Inc. Customer Service Department to request a Returned Materials Authorization (RMA) number.

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Minneapolis, MN 55428

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Technical Support: techsupport@seeclearfield.com