SeeChange®
Hardened Fiber Assemblies

CLEARFIELD

Application

SeeChange Hardened Fiber Assemblies are used to make connections to Clearfield's SeeChange Access Terminals in FTTx applications including Fiber to the Home and Fiber to the Business. The assemblies provide a means of connecting multi-fiber cables between terminals or single fiber drop cables from a SeeChange Terminal to a home or business.
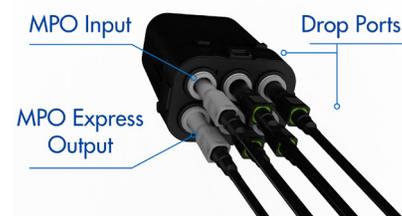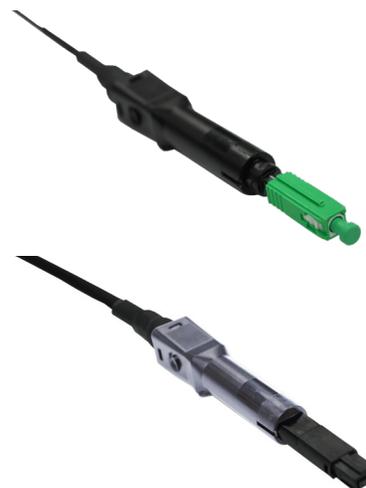
Description

SeeChange Hardened Fiber Assemblies are available with either a multi-fiber MPO connector or a single fiber SC APC connector. An integrated rear shell provides the feature that engages and fully seals a connection to a SeeChange Terminal FlexPort. The connection is ideal for harsh OSP environments and is rated for installations below grade or above grade including aerial installations on strands. Both connector styles are easily pushed into open terminal ports without any tools, making it a perfect for quick installations using entry level technicians. Single Fiber SeeChange Hardened Drop Cables are configured with a pushable SC APC connector on one end, allowing for placing and pushing through a conduit, in addition to the traditional deployments of direct bury or placing aerially.

SeeChange Hardened Fiber Assemblies meet Clearfield's FiberDeep performance levels for low insertion loss (0.2dB max IL for single fiber and 0.35 max IL for MPO assemblies). Rigorous carrier grade testing has been performed on both connector styles ensuring optimal system performance long into the future.

SeeChange hardened single fiber drop assemblies are available with FieldShield Small Form Factor (SFF) FLATdrop 900μm peelable subunit. SeeChange MPO Assemblies are manufactured using industry standard multifiber flat drop cable. All SeeChange cable assemblies are available with or without a tone wire.

FieldShield Small Form Factor FLATdrop 900μm Peelable is a uniquely smaller footprint flat drop solution for the access portion of a FTTH or FTTB network. The small format handles more easily than traditional flat drop, allowing for less coiled storage space in outdoor storage. When the jacket is snipped and easily peeled away, the exposed 900μm subunit stores neatly on the compact FieldShield slack reel.

MPO Input

MPO Input — Drop Ports

MPO Input — Drop Ports
MPO Express Output

Features and Benefits

Integrity
- SeeChange Connectors are GR-3120 and GR-3150 compliant
- SeeChange Cables are GR-20 compliant
- FiberDeep ensures low Insertion Loss (0.2 dB max SC APC, 0.35 max MPO)

Protection
- SeeChange Assemblies provide an air-tight, water-tight connections when plugged into SeeChange terminal FlexPorts
- Molded with UV resistant thermoplastic material
- Connectors rated for above grade, below grade and aerial mounting conditions

Access
- Connectors are keyed for easy push on installation
- 8" SFF cable coil diameter reduces space in handholes and pedestals
- Toneable cable options provide for traceability

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Investment
- Strategic configurations to reduce inventory
- Plug and Play connections speed installations
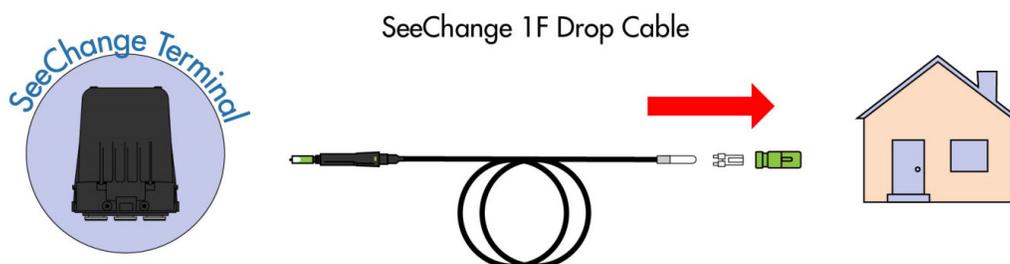- SeeChange Hardened Cable Assemblies are carrier grade

Technical Specifications

Cable Type	Single Fiber FieldShield Small Form Factor FLATdrop 900 µm Peelable	12 Fiber Conventional Flat Drop
Sheath Diameter	5.4 mm x 3 mm	8.3 mm x 4.7 mm
Coil Diameter	8"	12"
Sub-Unit Size	900 µm	N/A
Sub-Unit Slack Storage	Up to 100 Feet on Reel	N/A
Connector Styles	SeeChange SC/APC or Pushable SC/APC	SeeChange MPO or Stub/Pigtail
Aerial	Yes	Yes
Buried Environment	Yes	Yes
Conduit Size	¾" minimum for SC/APC Bullet	1 ¼" minimum for SeeChange MPO Conn.
Recommended P-Clamp	022751	021716
Operating Temperatures	-40°F to 176°F (-40°C to 80°C)	-40°F to 176°F (-40°C to 80°C)

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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. SeeChange Drop Assemblies are also available with a stub or blunt end at the house when a field installable connector is used or the drop is spliced to a pigtail.

SeeChange 1F Drop Cable

Configured Part Numbers

Cable Type	Connector at Terminal	Connector at House	Toneable Cable	Non-Toneable Cable
FieldShield Small Form Factor FLATdrop with 900 um Peelable Sub-unit	SeeChange SC/APC	Pushable SC/APC	SEE-41-001-C2ZZ-D3A xxxxF	SEE-31-001-C2ZZ-D3A xxxxF
FieldShield Small Form Factor FLATdrop with 900 um Peelable Sub-unit	SeeChange SC/APC	None/Blunt End	SEE-41-001-C2ZZ-ZZZ xxxxF	SEE-31-001-C2ZZ-ZZZ xxxxF

SeeChange Drop Cables are available in standard lengths of 100, 150, 200, 250, 300, 350, 400, 450 and 500 feet.
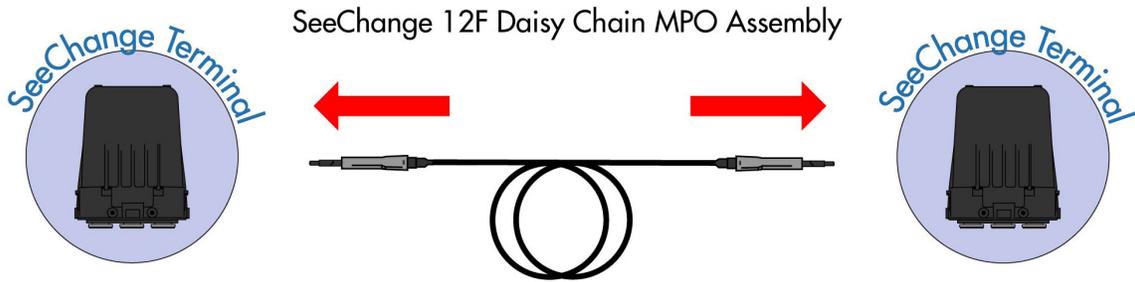
SFF Pushable SC Pulling Bullet

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. The minimum recommended conduit size for SeeChange Hybrid Drop Assemblies is ¾" diameter.

SFF Cable   Locking Ring   Bullet Case   Pull String

Scan for Pulling Bullet Video.

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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. The minimum recommended conduit size for SeeChange Daisy Chain Assemblies is 1 ¼" diameter.
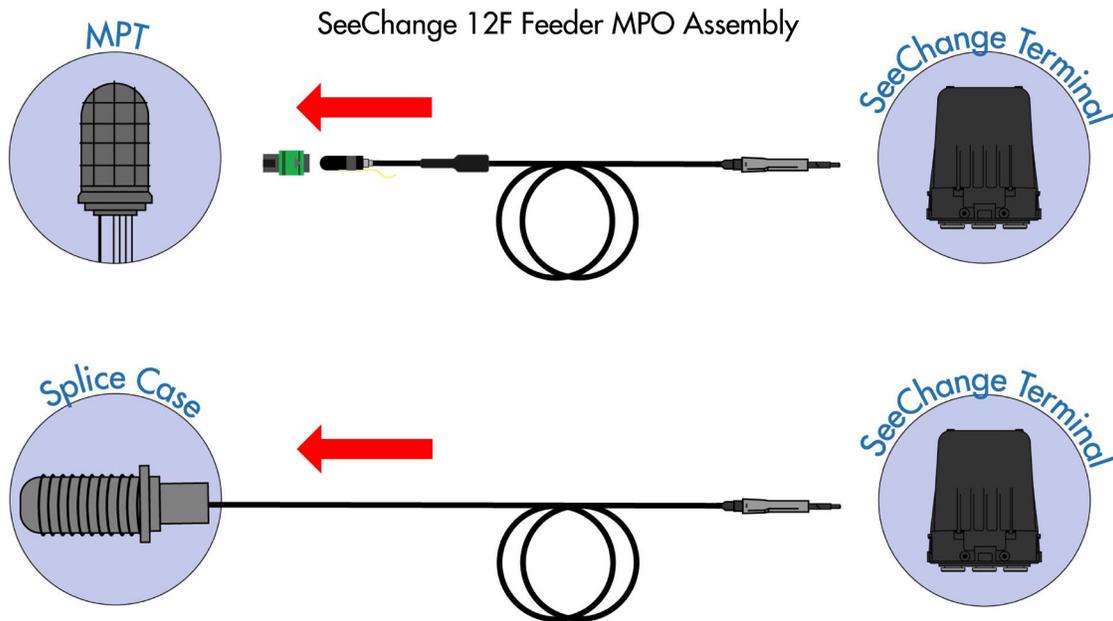
SeeChange 12F Daisy Chain MPO Assembly

SeeChange Terminal

SeeChange Terminal

Configured Part Numbers

Cable Type	Connector at Terminal 1	Connector at Terminal 2	Toneable Cable	Non-Toneable Cable
Conventional 12F Flat Drop	SeeChange MPO	SeeChange MPO	SEE-U1-012-62ZZ-62ZZ xxxxF	SEE-T1-012-62ZZ-62ZZ xxxxF

SeeChange MPO Daisy Chain Cable Assemblies are available in standard lengths of 10, 100, 150, 200, 250, 300, 400 and 500 feet.

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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 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 Assembly

Configured Part Numbers

Cable Type	Connector at MPT or Splice Case	Connector at SeeChange Terminal	Toneable Cable	Non-Toneable Cable
Conventional 12F Flat Drop	Pushable MPO	SeeChange MPO	SEE-U1-012-62ZZ-PQD xxxxF	SEE-T1-012-62ZZ-PQD xxxxF
Conventional 12F Flat Drop	None/Blunt End	SeeChange MPO	SEE-U1-012-62ZZ-ZZZ xxxxF	SEE-T1-012-62ZZ-ZZZ xxxxF

Pushable MPO to SeeChange MPO Cables are available in standard lengths of 100, 150, 200, 250, 300, 400 and 500 feet

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Accessory	Part Number	Description	Picture
SeeChange Connector Cleaning Kit	SCT-CLEANING-KIT	Includes click style SC and MPO cleaners and wash pen	See Kit Items Below:
SC Cleaner	SCT-SCAPC-CLEANER	Click style SC connector cleaner	
MPO Cleaner	SCT-MPO-CLEANER	Click style MPO connector cleaner	
Connector Wash Pen	SCT-WASH-PEN	Wash Pen	
SeeChange End-Face Inspection Kit	SCT-SCOPE-KIT	Includes LighTel scope, SC long neck tip and MPO long neck tip	See Kit Items Below:
Optical Scope	SCT-SCOPE	End Face Scope-LighTel	
Long Neck SC Inspection Tip	SCT-SCOPE-TIP-SCAPC	SC Long Neck end face inspection tip	
Long Neck MPO Inspection Tip	SCT-SCOPE-TIP-MPO	MPO Long Neck end face inspection tip	
Pull Sock Drop Cables	FS-PUL-5-9MM	Pulling Sock for Pushable SC SFF drop cables, 100 lb. max. pull force	
Pull Sock MPO Cables	SEE-PULLING-SOCK	Pulling Sock for SeeChange MPO connectors, 50 lb. max. pull force	
Protection Sleeve Kit	SEE-CONN-PROTECT-10	(10) reusable protective microduct sleeve to cover connector ends during installation	

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Hardened Fiber Assemblies - Accessories

Accessory	Part Number	Description	Picture
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	