FIK01 FTTR Fiber Installation Kit and Invisible Optical Cable

Construction Guide

Issue 10

Date 2026-02-04

HUAWEI TECHNOLOGIES CO., LTD.

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Preface

General Safety Precautions

To ensure human and equipment safety, observe all the safety precautions marked on the equipment and provided in this document. The WARNING, CAUTION, and NOTE marks in this document do not cover all the safety precautions that must be followed; they only supplement general safety precautions as a whole. Huawei is not liable for any consequence that results from customers' violation of universal operation requirements or equipment design, manufacturing, and usage safety standards.

Local Laws and Regulations

When operating a device, obey local laws and regulations.

Personnel Requirements

Engineers that are responsible for installing and maintaining Huawei equipment must be trained, and have a thorough understanding of the proper operation methods and safety precautions.

Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol Conventions

Symbol	Description
DANGER	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
NOTICE	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss,

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Symbol	Description
	performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury.
NOTE	Calls attention to important information, best practices and tips. NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.

Human Safety

Do not look into the optical port without eye protection.

When drilling holes, take proper protection measures to avoid inhaling dust and prevent dust from hurting your eyes.

When working at heights, take proper measures to prevent objects from falling down.

Change History

Issue	Date	Description
10	2026-02-04	Adjusted the architecture, and optimized the procedure and figures.
09	2024-05-14	Updated FAQs.
08	2024-02-07	Added the procedures for installing cable supporter, and added the scenario of routing cables through a wall.
07	2023-06-01	Added precautions for invisible optical cables.
06	2023-05-29	Added the scenario where wall construction is not supported and optimized the construction specifications.
05	2023-05-16	Optimized construction specifications.
04	2023-04-20	Optimized the construction specifications and added the FAQ section.
03	2023-04-12	Add 5 other risks or precautions in construction.
02	2023-03-01	Modified the auxiliary tool for the internal and external corners to adhesive scrapper.

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Issue	Date	Description
01	2022-12-30	This issue is the first official release.

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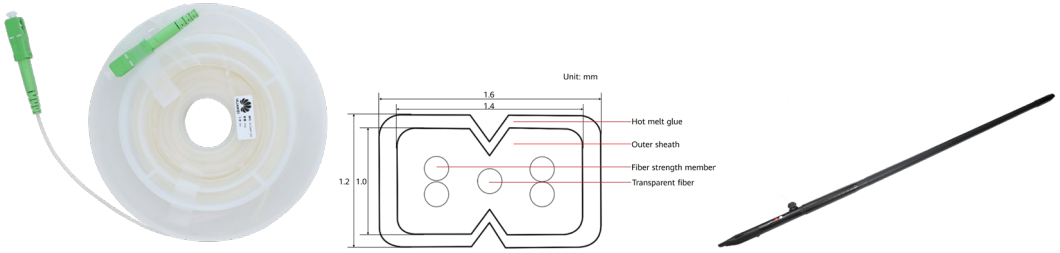
1 Invisible Optical Cable and Fiber Installation Kit

1.1 Introduction to Invisible Optical Cable and Fiber Installation Kit



- The invisible optical cable is attached with hot melt adhesive, and can be easily pre-routed on a suitable wall surface with the fiber installation kit (FIK) and according to the construction guide. After pre-routing, use cable supporters or hot melt adhesive for protection and reinforcement.
- The invisible optical cable is applicable to indoor corridors and rooms. It can be used in a fiber to the home (FTTH) or fiber to the room (FTTR) network.
- The fiber installation kit (FIK) is used to route invisible indoor optical cables. This tool is used with a 1.2 mm x 1.6 mm flat invisible optical cable. It heats the hot melt adhesive on the surface of an optical cable, passes the optical cable through a guiding trough, and then sticks the optical cable on a wall, baseboard, or top of side walls. The tool has a battery that lasts for a long time, and enables rapid and neat cable routing.

1.2 Invisible Optical Cable Installation Process

- Invisible optical cable is a new optical cable product. It is recommended that professional installation and maintenance personnel install the invisible optical cable to avoid misuse, improper installation, or other accidents.
- Before unpacking, the invisible optical cable must be stored in a cool, dry, and well-ventilated environment. The storage period must not exceed 24 months from the date of production. If the invisible optical cable is stored at a high temperature or for a

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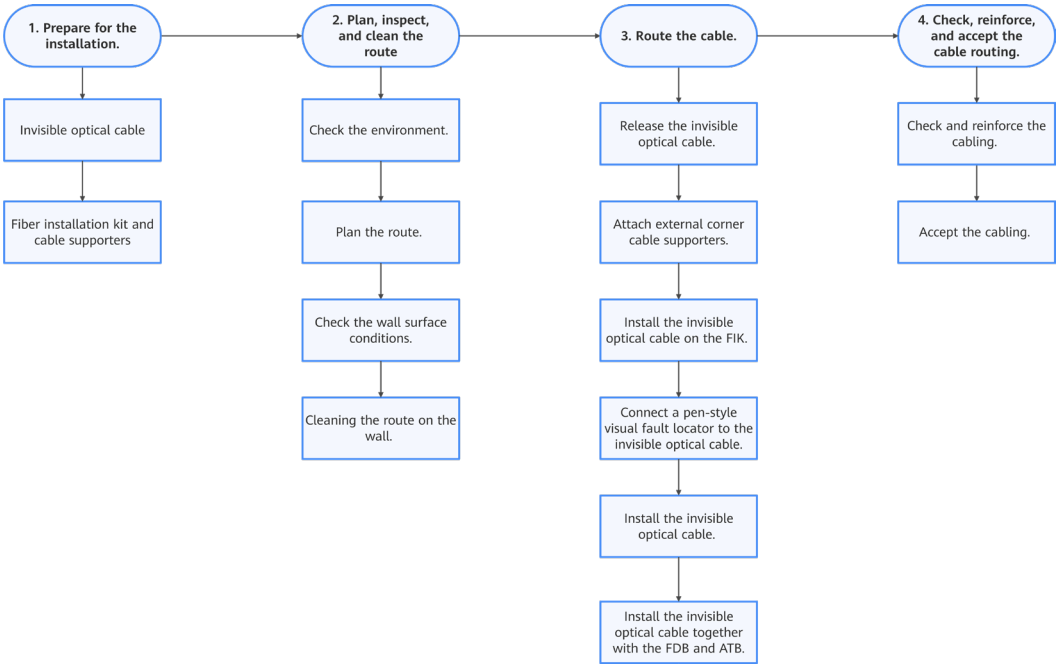
long time, the optical cable may be bonded and cannot be released for cabling. It is normal that there is talcum powder on the surface of the invisible optical cable, which does not affect the cable usage. You can use a wet cloth to clean the surface before cabling.

The following figure shows the installation process of the invisible optical cable.



Checklist for each installation phase:

Installation and deployment	**Check**
1. Preparing for Installation	
1. Check the materials and tools, and ensure that sufficient invisible optical cables and cable supporters are available, and necessary tools such as the pen-style visual fault locator and optical power meter are available.	
2. Planning, Inspecting, and Cleaning the Route	
1. Check that the environment temperature ranges from 5°C to 40°C, and materials such as optical cables, tools, and cable supporters are ready.	
2. Check that the wall along the optical cable route must be stable, clean, and free of dust.	
3. Estimate the optical cable length in advance and determine the position of the connectors.	
4. 4. Calculate the route length. After determining the cabling route, measure the planned routing length with a measuring tape and reserve an appropriate redundancy of 3–5 meters.	
5. The top of side walls, straight sections, and wall penetration routes are preferred.	
6. Plan the route according to the route selection principles in the construction guide to avoid water, heat sources, and other unfavorable	

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conditions.	
7. Use a dry cloth, kitchen paper, or vacuum cleaner to clean the indoor cabling route. Ensure that there is no dust, water stains, oil stains, rust, or dirt.	
3. Routing the Cable	
1. During the cabling process, keep the pen-style visual fault locator on to monitor whether light leakage occurs in real time.	
2. If the optical cable needs to be routed through a wall, release the entire optical cable in advance. If the optical cable does not need to be routed through a wall, you can install the optical cable while releasing it.	
3. Pay attention to the requirements for cable routing at internal corners, external corners, plane corners, door gaps, door frames, top of side walls, and other positions.	
4. While routing the optical cable, attach supporters at external corners, internal corners, and plane corner supporters at wall penetration points. The bending radius of the optical cable must be greater than or equal to 8 mm.	
5. During the construction, do not remove the optical cable from the wall surface and then attach it again. Otherwise, the appearance of the wall surface and the adhesion strength of the optical cable will be affected. Overlapped cabling of invisible optical cables is not allowed.	
6. During the construction, use a FIK to press the optical cable with a force of about 10 N. In a place where the tool is inconvenient, press the optical cable use your hand to ensure that the optical cable is securely attached.	
7. When routing cables at an internal corner, do not apply excessive pressure to the optical cable using the tool head to avoid breaking the optical cable. After the deployment, the bending radius of the optical cable must be greater than or equal to 8 mm.	
8. Do not install cables in places where water may splash or near heat sources (such as heating devices, steam pipes, and stoves). Water and heat will reduce the bonding reliability.	
4. Inspection, Reinforcement, and Acceptance	
1. Check the entire routing path and use a supporter or dispense glue to secure the optical cable at the positions where the optical cable is not securely attached, such as the external corner, internal corner, and the first and last sections of the optical cable.	
2. After the optical cable is installed, check whether the optical cable is securely attached along the entire route and whether there is interference or squeezing on the optical cable at moving parts such as door frames.	

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2 Installation Preparation

Material	Pictures	Overview
Invisible optical cable	 14130AAN series, Patch cord, SC/UPC-SC/UPC, single, 500 m, G.657A2, 0.25 mm, GJXFN, 1.2 mm*1.6 mm, transparent with adhesive. 52344444-Optical cable, Indoor drop, Bow-type, GJXFN - G.657A2, G.657A2, 1.2 mm*1.6 mm, invisible optical cable-length 50 m.	Pre-adhesive cable with hot-melt adhesive can be rapidly deployed on applicable surfaces listed in table Table 3-1. Before routing the optical cable at an external corner, you need to install an external corner / internal corner cable supporter. After routing the optical cable, use hot-melt adhesive or cable supporters for protection and reinforcement.
FIK01 fiber installation kit	 Main body of the FIK	The fiber installation kit (FIK) is used to route invisible indoor optical cables. This tool is used with a 1.2 mm x 1.6 mm invisible optical cable. It heats the hot-melt adhesive on the surface of an optical cable, passes the optical cable through a guiding trough, and then sticks the optical cable on a wall, baseboard,

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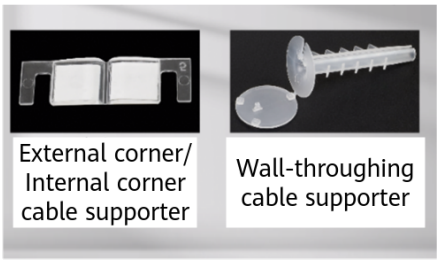
Material	Pictures	Overview
	 Battery compartment	or top of side walls. The tool has a battery that lasts for a long time, and enables rapid and neat cable routing.
	 Extension rod	
	 Adhesive scrapper	
Supporter		Used to protect optical cables when they are bent at external or plane corners on a wall, and reinforce the cables at internal corners of a wall.
Pen-style visual fault locator		Used to install and deploy the invisible optical cable and observe whether the fiber leaks light or is broken in real time.

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3 Installing the Invisible Optical Cable

3.1 Planning, Inspecting, and Cleaning the Route

3.1.1 Environment Check

Check the local temperature according to the weather information on your mobile phone. The optimal construction temperature range for invisible optical cable is 5°C to 40°C. Do not perform construction in an environment with a temperature lower than 5°C.

3.1.2 Planning Routes

Principles for selecting cable routes:

1. Based on the FDB in corridor and information box position, residence decoration, and user requirements, determine the cabling route.
2. Calculate the route length. After determining the cabling route, measure the planned routing length with a measuring tape and reserve an appropriate redundancy of 3–5 meters.
3. Preferentially select positions that are not easily accessible to humans and pets, such as the top of side walls.
4. Preferentially select straight-line routes and avoid scenarios where the angle of an external corner is less than 90°.
5. Avoid walls that are exposed to direct sunlight, damp, leaking, cracked, aged, or with peeling paint.
6. Avoid positions that are frequently cleaned.
7. Do not install the cable near heat sources (heating equipment, steam pipes, stoves, etc.).

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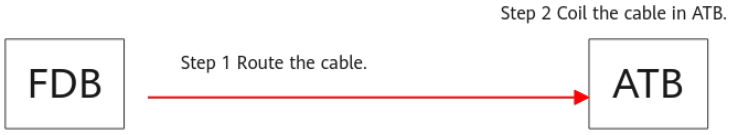
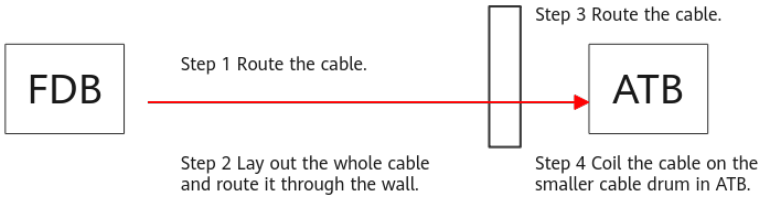
Route planning:

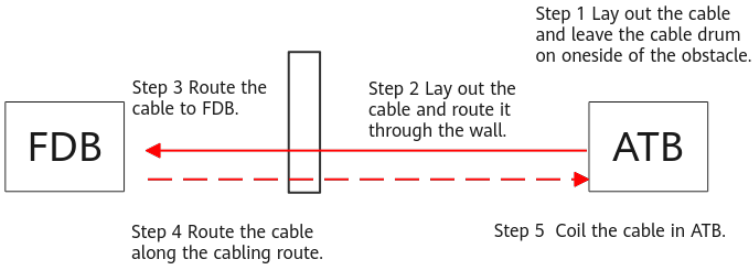
- **Common Cabling Routes**



- **Cabling Routes with Obstacles—Solution 1: The wall is close to the ATB**



- **Cabling Routes with Obstacles—Solution 2: The wall is close to the FDB**



3.1.3 Checking the Wall Surface Conditions

Table 3-1 Wall Surfaces Recommended for Construction

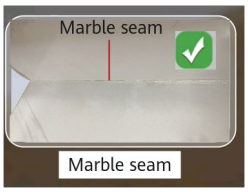
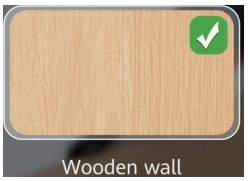
Scenario	Picture	Scenario	Picture
Latex paint		Marble seam	
Wooden wall		Diatom mud	
Wallpaper		Metal wall	

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Table 3-2 Not allowed construction

Scenario	Picture	Scenario	Picture
Stone wall surface (a stone wall surface which is uneven)		Concrete wall surface (a concrete wall which is course and flaky)	
Organic resin base material wall (Organic resin base material walls (also called imitation marble plates), including epoxy resin base material wall, epoxy floor paint, and unsaturated resin base material wall.)		Weak attaching scenario (smooth materials such as glass cement, glass, and glazed marble,)	
Passing through the upper side of a multi-layer door frame (there is no seam or space for routing the optical cable on the top of a door frame)		Aluminum alloy door frame (An aluminum alloy door frame with a sliding door will definitely break the optical cable.)	
Dusty and low-adhesion surface (For dirty walls that cannot be cleaned, coarse diatom mud walls, granular walls, and other walls with rough surfaces)		Flaky wall surface (a wall may become moist due to seasonal changes, the wall surface may flake off.)	
Rusty and corroded wall (A rusty metal surface is easy to flake off)		Moist wall surface (A moist wall surface has a weak adhesion)	
Loose porous and water-absorbing planks (the surfaces of loose porous and water-absorbing planks.)		Furry wallpaper (on furry wallpaper surfaces.)	

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Scenario	Picture	Scenario	Picture
Non-indoor scenario (invisible optical cannot be routed outdoors, Semi-outdoors, through pipes, or vertically.)		Dusty latex paint wall surface (a flaky and dusty latex paint wall surface.)	

NOTICE

Considering the diversity of wall materials and techniques in home decoration, the construction personnel can further determine whether a wall is suitable for cable attachment based on the actual wall status and attachment effect.

3.1.4 Cleaning the Cable Route

You are advised to use a mop or broom to clean the cabling route of invisible optical cables, and then use a dry cloth or kitchen paper to clean the wall. Ensure that there is no dust, oil stain, or rust on the cabling route.

After cleaning a wall, you can touch the wall with your hands. If there is no dust on your hands, the wall is clean.

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3.2 Routing the Cable

3.2.1 Releasing the Invisible Optical Cable

Scenario	Common cable routing (without wall penetration)	Cable route involving wall penetration
Procedure	Install an optical cable drum to the FIK. Release the cable while routing it.	Fully release the optical cable from the cable tray, and then route the cable.
Picture		
Precautions		1. Do not place the cable drum on the ground while pulling the optical cable; otherwise, the optical cable may be twisted. 2. Do not step on or press the released optical cable with heavy objects; otherwise, the optical cable may be broken.

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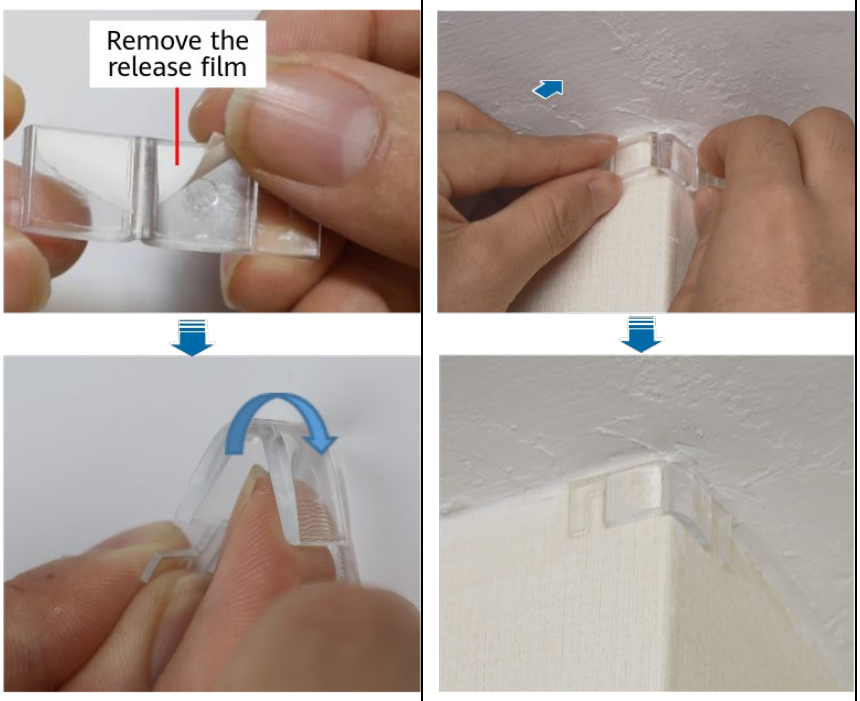
3.2.2 Attaching an External Corner Cable Supporter

<table>
<tr><td>Scenario</td><td colspan="2">Attach an external corner cable supporter</td></tr>
<tr><td>Procedure</td><td>1. Remove the release film from the rear of the external corner cable supporter.</td><td>2. Attach the external corner cable supporter at an external corner.</td></tr>
<tr><td>Picture</td><td colspan="2"> 
</td></tr>
<tr><td>Precautions</td><td colspan="2">In scenarios where the external corner cable supporters do not fit, attach the strong double-sided tape.
</td></tr>
</table>

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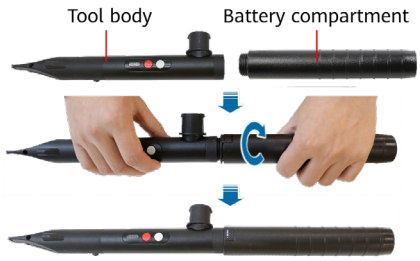
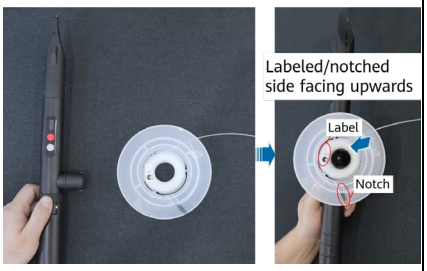
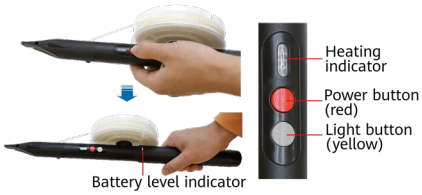
3.2.3 Installing an Invisible Optical Cable to the FIK

<table>
<tr><td>Scenario</td><td colspan="2">Install an invisible optical cable to the FIK</td></tr>
<tr><td>Picture</td><td colspan="2"> </td></tr>
<tr><td rowspan="4">Procedure</td><td>1. Remove the plugs from the battery compartment and tool body, remove the protective cover from the heating head, and assemble the battery compartment to FIK.</td><td>2. Press the invisible optical cable drum downwards and clamp it onto the cable drum shaft of the FIK. Ensure that the labeled/notched side of the optical cable drum faces upwards.</td></tr>
<tr><td> 
</td><td> 
</td></tr>
<tr><td>3. Press and hold down the red button for 3s. The tool starts heating, and the heating indicator blinks yellow. Wait until all four bars are steady green, and then starts cabling. It takes about 2 to 3 minutes for the heating indicator to turn from yellow to green. The heating process is as follows: one yellow bar, two yellow bars, three yellow bars, four yellow bars, and four green bars.</td><td>4. Pull the heating head assembly outwards to open the heating head. Lead the optical cable through the cable inlet and place it in the groove of the guiding trough. Push the gray button on the back of the FIK to close the heating head. Hold down the optical cable to ensure that the optical cable does not fall out and are not squeezed.</td></tr>
<tr><td> 

If the heating indicator is blinking yellow, the tool is heating. If the four heating bars are steady green, the tool has reached the rated temperature. If the battery level indicator blinks with one bar, the battery level is low.</td><td>

Press and hold the optical fiber to ensure that the optical fiber does not pop out of the slot.</td></tr>
<tr><td>Precautions</td><td colspan="2">1. When installing the cable drum on the fiber installation kit (FIK), ensure that the labeled/notched side of the optical cable drum faces upwards.</td></tr>
</table>

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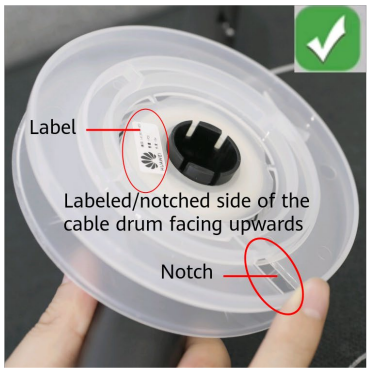
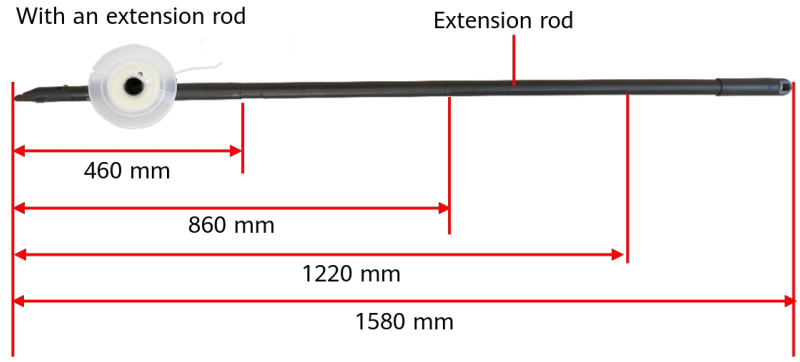


2. If you need to remove the invisible optical cable during cabling, hold the anti-skid area and directly open the FIK. Be careful to avoid burns.

3. In low-temperature environments, the product preheating and construction take a longer time. The construction speed is based on the melting of hot melt adhesive and the transparent state of optical cables.
4. The input power of the FIK is 5 V/3 A (battery power supply), and normal temperature recommended for construction is 15°C to 35°C. The maximum construction speed is 1.3 m/min.
5. The extension rod is used only in scenarios such as straight-line cabling on a top of side walls.



6. Hold down the optical cable to ensure that the optical cable does not fall out and are not squeezed when closing the heating head.

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7. The heating head can be opened to a maximum of 30°. Do not open it to a too large angle.
8. When closing the heating head, do not hurt your hands or break the optical cable.
9. If the heating head cannot be opened due to residual adhesive after construction in the cooling state, it is recommended that you open the heating head by hand after heating it for 20s. Note that you should pinch your hand in the anti-skid area to avoid scalding.

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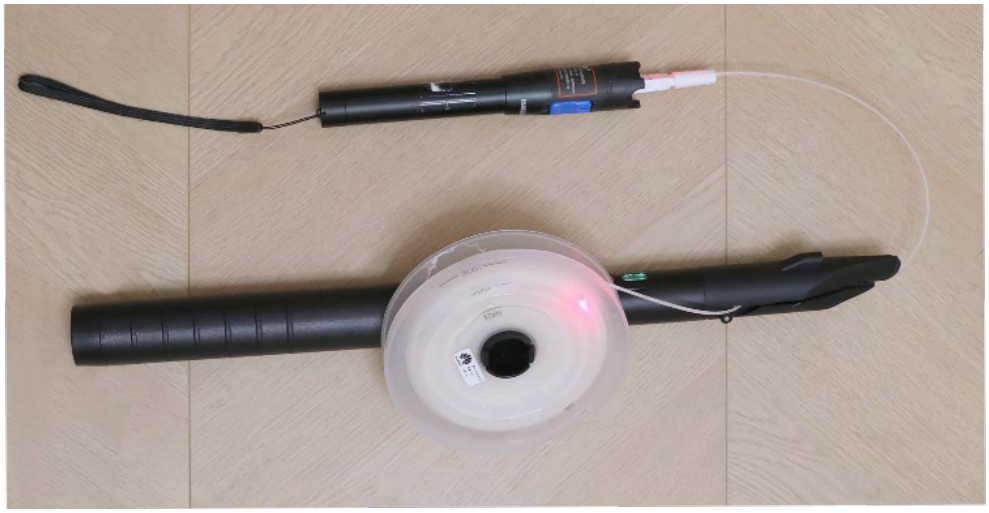
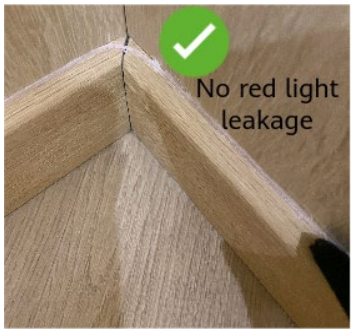
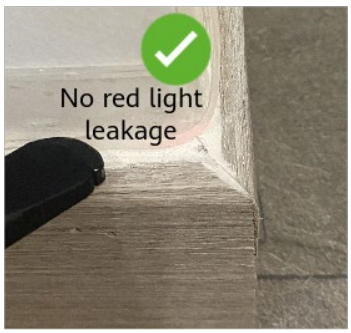
3.2.4 Connecting a Pen-style Visual Fault Locator to the Invisible Optical Cable

Before the cabling, connect the connector of the invisible optical cable to a pen-style visual fault locator. Keep the pen-style visual fault locator connector to the optical cable during the whole cabling process. Observe whether the invisible optical cable has light leakage or discontinuous light in real time. If this occurs, stop the cabling immediately. For details, see 6.7 Invisible Optical Cable Breaks During Cabling.



Typical Scenario	OK	Not OK
Internal corner		
External corner		

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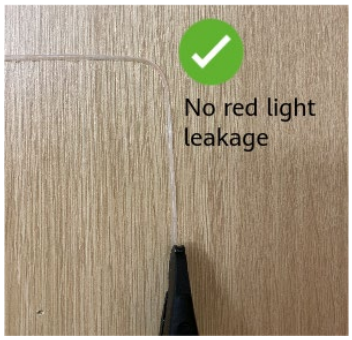
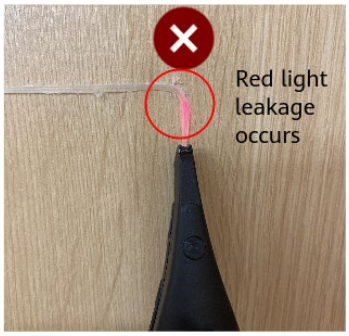
Plane corner		
Door gap		

NOTE

Make or splice a fiber connector at the initial routing point. If a fiber connector already exists, skip this step.

For details about how to install a field-mountable optical connector (FMC) on a 1.2 mm x 1.6 mm invisible optical cable, see the *14130AUR FTK01 & 14130AVR 14130BHV FMC2105 FTTR Fiber Termination Kit & Field Mountable Connector Quick Installation Guide*.

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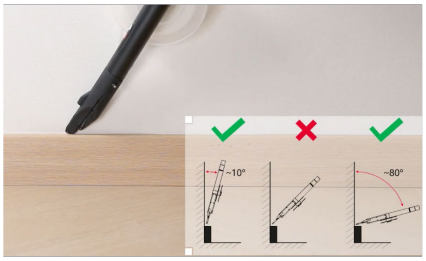
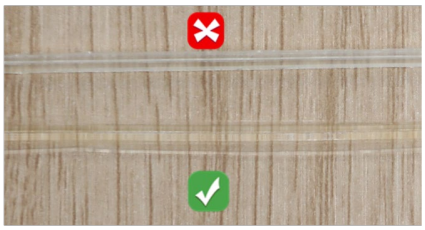
3.2.5 Installing the Invisible Optical Cable

CAUTION

1. The installation and maintenance personnel should fully practice in the training and be familiar with the processes before onsite installation and maintenance.
2. During construction, use adhesive spreader and wear rubber heat insulation finger cot to prevent burns caused by accidental contact with the heating head or optical cable.
3. The invisible optical cable cannot be wet or watered; otherwise, it may fall off.
4. Do not install the cable near heat sources (heating equipment, steam pipes, stoves, etc.).

Rubber heat insulation finger cot

Adhesive spreader

Straight Section Cabling	
Solution	During cable routing, it is recommended that the FIK be vertical to the attaching surface and the hot-melt adhesive of the optical cable be fully melted. The recommended cable routing speed is 1.3 m/min to ensure that the optical cable is closely attached to the baseboard or wall.
Picture	
Tools	FIK
Precautions	The hot-melt adhesive of the optical cable is fully melted. 

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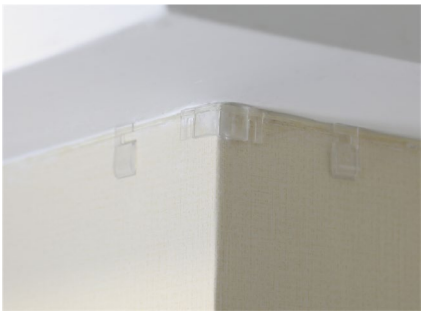
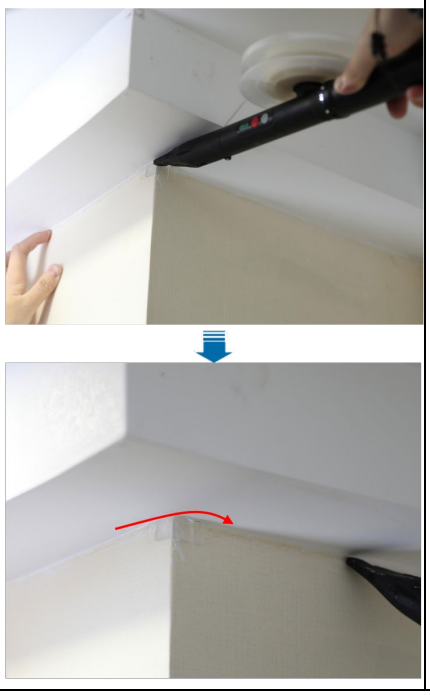
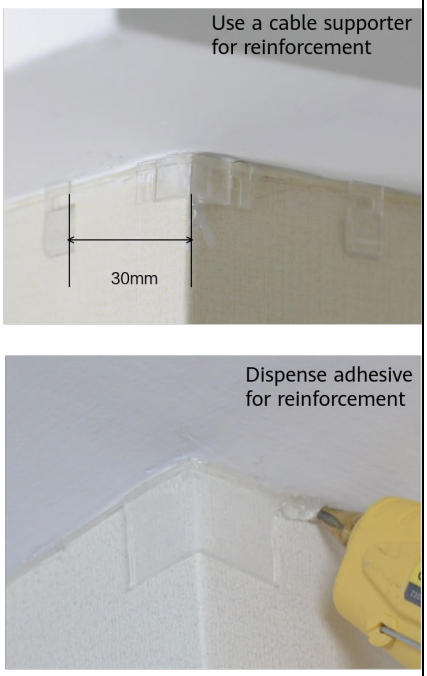
<table>
<tr><td colspan="3">External Corner Cabling</td></tr>
<tr><td>Solution</td><td colspan="2">When routing a cable at an external corner, install an external corner cable supporter before routing the cable.</td></tr>
<tr><td>Picture</td><td colspan="2">  </td></tr>
<tr><td rowspan="2">Construction method</td><td>1. When the optical cable passes through, the external corner cable supporter can ensure the bending radius of the optical cable meets the requirements.</td><td>2. Attach cable supporters 30 mm away from both sides of an external corner or use a hot-melt glue tool to reinforce the cabling at this section.</td></tr>
<tr><td>  </td><td> 
</td></tr>
<tr><td>Tools</td><td colspan="2">FIK, external corner/internal corner cable supporter, hot-melt glue tool and adhesive stick</td></tr>
</table>

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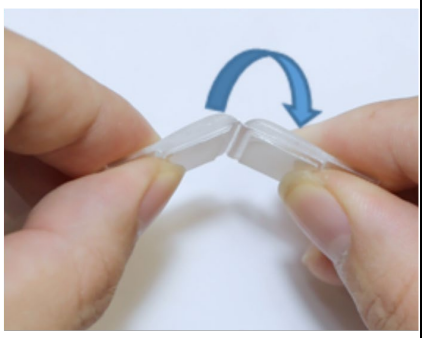
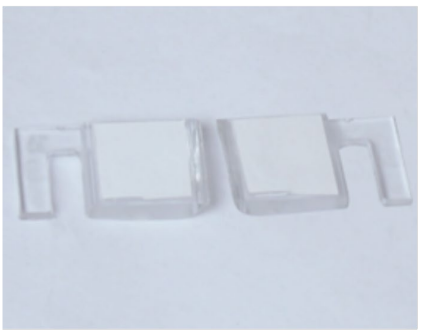
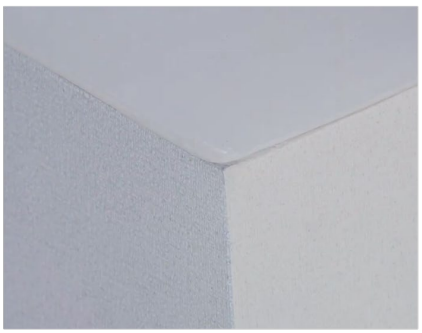
<table>
<tr><td colspan="3">Internal Corner Cabling</td></tr>
<tr><td>Solution</td><td colspan="2">When routing a cable at an internal corner, naturally bend the optical cable against the corner before attaching.</td></tr>
<tr><td>Picture</td><td colspan="2"> </td></tr>
<tr><td rowspan="3">Construction method</td><td>1. Folded and broken the cable supporter along the middle into two parts.</td><td>2. When the optical cable passes through an internal corner, use your hand to press the optical cable to form a natural bending radius greater than or equal to 8 mm. Do not press the optical cable with your fingertips, which may cause fiber cuts at the internal corner.</td></tr>
<tr><td> 
  </td><td>
  </td></tr>
<tr><td colspan="2">3. Attach cable supporters 30 mm away from both sides of an internal corner or use a hot-melt glue tool to reinforce the cabling at this section.</td></tr>
</table>

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	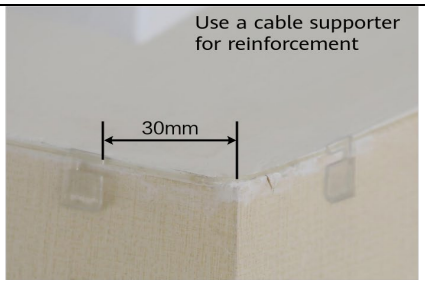
Tools	FIK, external corner/internal corner cable supporter, hot-melt glue tool and adhesive stick
Precautions	Ensures that the optical cable at the internal corner forms a natural bending radius of at least 8 mm. Do not press the optical cable with your fingertips, which may cause fiber cuts at the internal corner.

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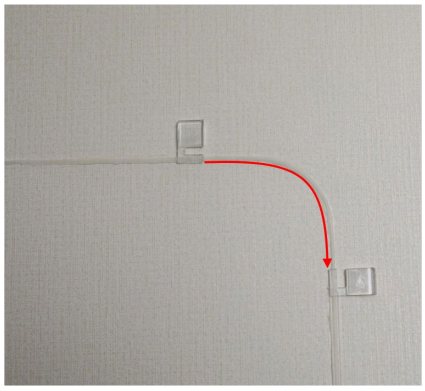
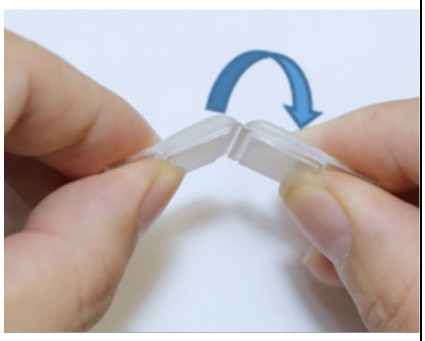
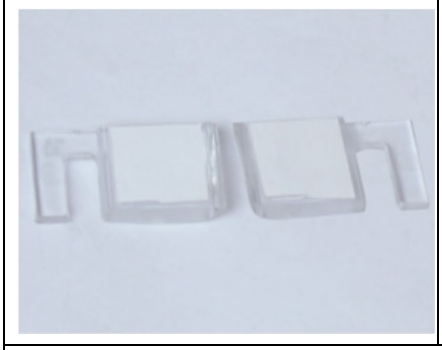
<table>
<tr><td colspan="3">Cable Bending on the Same Plane</td></tr>
<tr><td>Solution</td><td colspan="2">When routing a cable at a plane corner, use cable supporters 30 mm away from both sides of the corner, or use a hot-melt glue tool to reinforce the cabling at this section.</td></tr>
<tr><td>Picture</td><td colspan="2">  </td></tr>
<tr><td rowspan="3">Construction method</td><td>1. Folded and broken the supporter along the middle into two parts.</td><td>2. When bending a cable on the same plane, use the plane corner supporters to ensure that the natural bending radius of the optical cable is greater than or equal to 8 mm.</td></tr>
<tr><td> 
  </td><td>
 </td></tr>
<tr><td colspan="2">3. Attach cable supporters 30 mm away from both sides of a plane corner, or use a hot-melt glue tool to reinforce the cabling at this section.</td></tr>
</table>

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	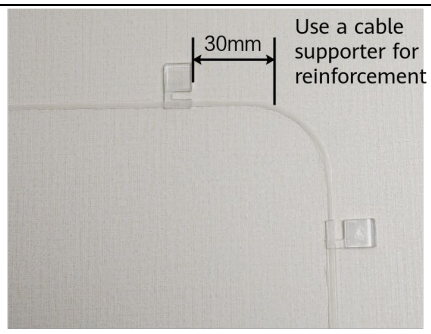
Tools	FIK, external corner/internal corner cable supporter, hot-melt glue tool and adhesive stick
Precautions	When bending a cable on the same plane, ensure that the natural bending radius of the optical cable is greater than or equal to 8 mm.

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<table>
<tr><td colspan="3">Cabling on the Top of side walls</td></tr>
<tr><td>Solution</td><td colspan="2">For details about routing a cable on a top of side walls, see the descriptions in external and internal cabling sections. It is recommended that you move the ladder to continue the construction each time after routing the cable by 1.2 m.</td></tr>
<tr><td rowspan="3">Construction method</td><td>1. Prepare a ladder before routing a cable on a top of side walls.</td><td>2. When routing a cable along a long straight section, you can use the extension rod to speed up the cabling.</td></tr>
<tr><td> </td><td> </td></tr>
<tr><td>3. Method for installing the extension rod: Install the extension rod on a ladder after cabling at an internal or external corner is complete on the top of side walls. Hold the upper part of the extension rod against the top of side walls and install the lower part to avoid pulling back the optical cable.</td><td>4. Method for removing the extension rod: If the optical cable can be routed without a ladder and extension rod, remove the extension rod on the floor.</td></tr>
</table>

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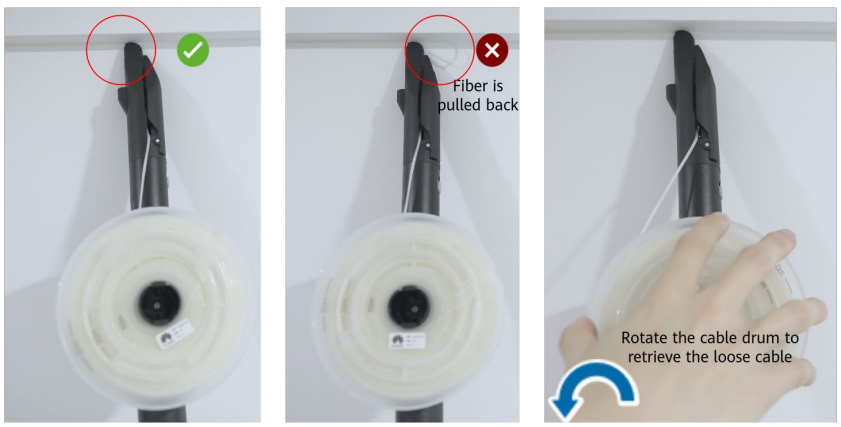
	 5. Two persons need to work together to route an optical cable on a top of side walls.
Tools	Ladder, FIK, external corner/internal corner cable supporter
Precautions	After installing the extension rod, check that the optical cable is not pulled back. If the optical cable is pulled back and becomes loose, wind it on the cable drum and route it again. 

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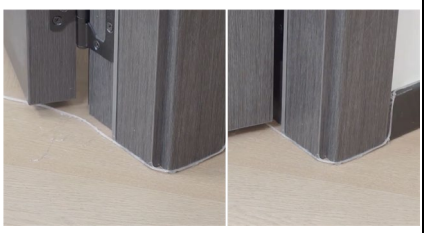
<table>
<tr><td colspan="3">Door Gap Cabling</td></tr>
<tr><td>Solution</td><td colspan="2">Route cables along a door gap and reinforce the cables using a hot-melt glue tool.</td></tr>
<tr><td>Picture</td><td colspan="2"> </td></tr>
<tr><td rowspan="5">Construction method</td><td>1. Remove the invisible optical cable from the FIK and remove the cable drum from the cable spool shaft at the door gap.</td><td>2. Route the invisible optical cable through the door gap.</td></tr>
<tr><td> </td><td>  </td></tr>
<tr><td>3. Reinstall the cable drum back to the cable spool shaft, secure the invisible optical cable to the heating head of the FIK, and continue to route the optical cable.</td><td>4. After the cable is routed, use a hot-melt glue tool to dispense adhesive along the routing path based on the actual situation.</td></tr>
<tr><td> </td><td> </td></tr>
<tr><td colspan="2">5. Check the route. Open and close the door to verify that the optical cable is not squeezed after cable routing. If the optical cable is squeezed, adjust the cable route.</td></tr>
<tr><td>Tools</td><td colspan="2">FIK, hot-melt glue tool and adhesive stick</td></tr>
<tr><td>Precautions</td><td colspan="2">1. The following conditions must be met for door gap cabling:
The gap between the lower edge of the door and the floor is greater than 3 mm, and the gap in the axial direction of the door is also greater than 3 mm.</td></tr>
</table>

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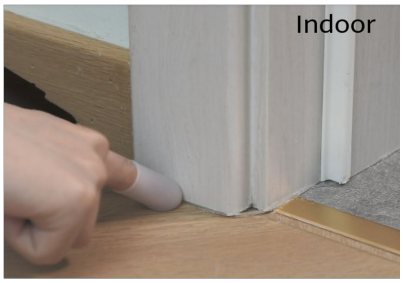
	• There is no door threshold. • The floor is level. • An optical cable cannot be routed into a room from the top of the door. • This routing mode does not apply to seamless sliding doors. 2. If there is a gap between the bottom of the door and the ground, the invisible optical cable can be hidden in the gap. Ensure that the optical cable is loose in the gap. If you do not route the cable through a door gap, the cabling operation is as follows:  3. If you do not route the cable through a door gap, the adhesive dispensing operation is as follows: 4. If the two sides of the door gap are right angles (non-continuous internal or external corners), route the cables in the same way as routing cables at external corners. 5. If possible, cover the cable with glass adhesive or single-sided waterproof tape to prevent the cable from being damaged by external forces during routine cleaning and sweeping.

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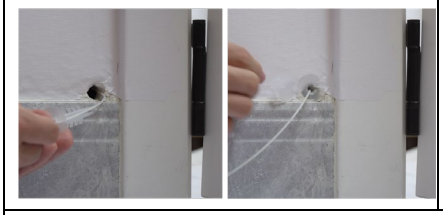
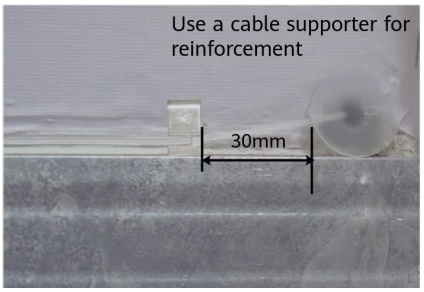
<table>
<tr><td colspan="3">Routing Optical Cables Through a Wall</td></tr>
<tr><td>Solution</td><td colspan="2">Use an electric drill to drill holes and then use the wall-throughing cable supporter to route cable.</td></tr>
<tr><td>Picture</td><td colspan="2"> </td></tr>
<tr><td rowspan="6">Construction method</td><td>1. Drill a hole with an inner diameter of 14 mm.</td><td>2. Release the entire invisible optical cable from the cable drum. Route an SC connector through the wall using a traction tool.</td></tr>
<tr><td> </td><td> </td></tr>
<tr><td>3. Put the wall-throughing cable supporter onto the invisible optical cable, and push the wall-troughing cable supporter into the hole.</td><td>4. Use the FIK to route the cable n both sides of the wall.</td></tr>
<tr><td>  </td><td> </td></tr>
<tr><td colspan="2">5. Attach a cable supporter 30 mm away from the hole or use a hot-melt glue tool to reinforce the cabling.</td></tr>
<tr><td colspan="2"> 

</td></tr>
<tr><td>Tools</td><td colspan="2">Electric drill, FIK, external corner/internal corner cable supporter, wall-throughing cable supporter, hot-melt glue tool and adhesive stick</td></tr>
</table>

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Cable Routing on a Door Frame	
Solution	Route a cable along a door frame in the same way as routing a cable at an internal or external corner. Use a ladder if necessary when routing the cable along the top of a door frame.
Picture	
Tools	FIK, external corner/internal corner cable supporter, ladder

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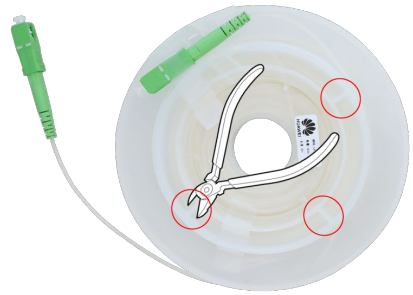
3.2.6 Installing the Invisible Optical Cable Together with the FDB and ATB

Optical Cable Coiling

Scenario	Optical Cable Coiling	
Procedure	1. Remove the invisible optical cable from the FIK. Cut off the outer ring of the cable tray.	2. Clamp the smaller cable drum with optical cable into a box, rotate the optical cable drum, and adjust the bending radius of the cable at the end of the connector to be greater than 8 mm.
Picture		
Precautions	The invisible optical cable is used with the ATB2120 series products. The maximum length of the cable that can be coiled is 7 m. The BOM number of the ATB is 14261490 and The BOM numbers of the FDB are 14261515, 14261516, 14261772 and 14261778.	

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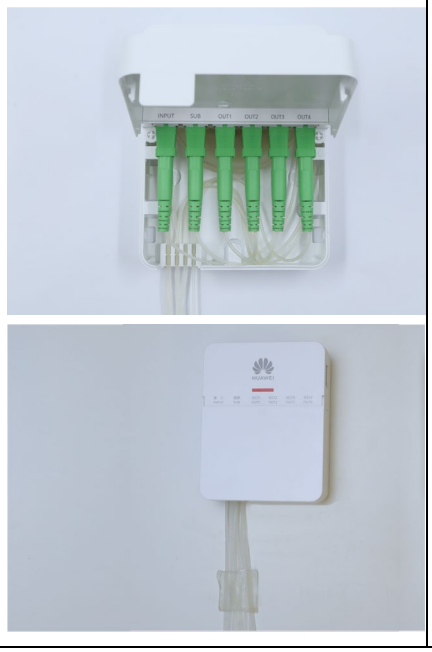
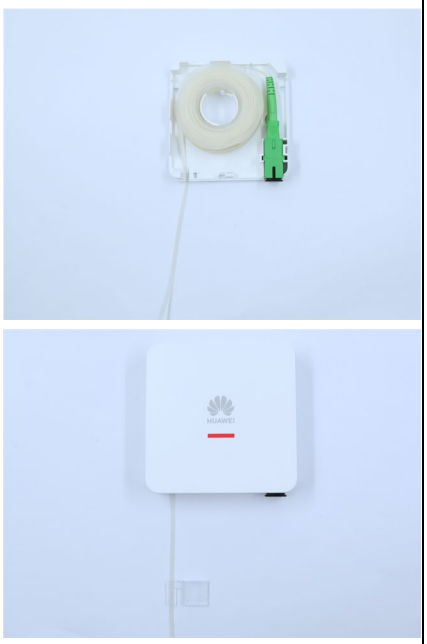
Installation at the OUT port of the FDB and ATB

Scenario	Operation at the OUT port of the FDB	Operation at the OUT port of the ATB
Procedure	1. Coil the invisible optical cable at output port in the box, as shown in the following figure. Pay attention to the bending radius of the invisible optical cable at the output port. 2. After confirming that the optical cables are in place, close the box and avoid cable clamping. 3. Use a cable supporter or transparent adhesive tape to secure the reserved optical cable 100 mm away from the OUT port.	1. Place the optical cables sideways into the slot. 2. After confirming that the optical cables are in place, close the box and avoid cable clamping. 3. Use a cable supporter or transparent adhesive tape to secure the reserved optical cable 100 mm away from the OUT port.
Picture		
Precautions	1. The optical cables at the IN port and cascading port are placed side by side in the two slots on the left, and the two optical cables at the OUT port are placed side by side in the two slots on the right. 2. The invisible optical cable is used with the ATB2120 series products. The maximum length of the cable that can be coiled is 7 m. The BOM number of the ATB is 14261490 and The BOM numbers of the FDB are 14261515, 14261516, 14261772 and 14261778.	

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3.3 Inspection, Reinforcement, and Acceptance

3.3.1 Inspection and Reinforcement

Check the entire cable route, and use the cable supporters or dispense adhesive to reinforce the cable at corners and other parts where the cable does not stick reliably.

3.3.2 Acceptance after Construction

SN	Item	Acceptance Requirement
1	Check whether the optical cable is securely attached.	Verify that optical cables are securely attached to walls after construction. Check the moving parts, such as door frames, for cable interference or clamping.
2	Check whether the red light leaks on the cabling path.	Check the entire optical cabling path, especially the red light leakage at corners. Verify that optical cables are not twisted or over bent after the construction.
3	Check whether the optical power on an optical cable is normal after construction.	Verify that the optical power is normal after construction and the optical power is less than 1 dB.

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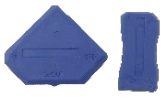
4 Supplementary Description for Special Scenarios

4.1 Other Accessories

Installation tools			
Duster	Ladder	Heat gun with battery	Electric drill (with a drill bit larger than 14 mm)
Measuring tape	Scissors	FMC	Rubber heat insulation finger cot
Reinforcement tools			
Single-sided waterproof tape	Adhesive spreader 	Hot-melt glue tool and hot melt adhesive stick	Double-sided adhesive (corner protector)
Splicing tools			
Splicing protection tube (60 mm length x 3 mm inner diameter)			Splicing tool kit
Acceptance tools			
Optical power meter + light source			Fiber connector cleaner

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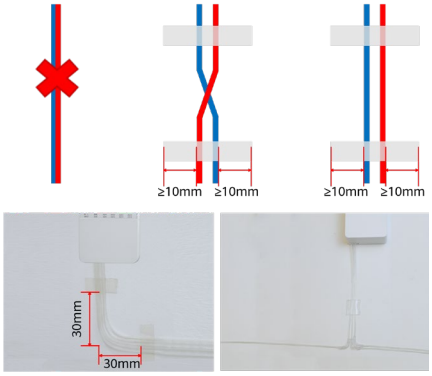
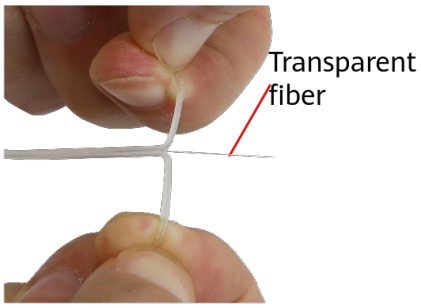
4.2 Routing Multiple Optical Cables in the Same Route

Straight section	Corner
Parallel cabling is recommended. One optical cable cannot cover another optical cable because they will not be transparent and may easily fall off.	When multiple optical cables are routed side by side along the same route at a corner, use single-sided transparent adhesive tapes secure the optical cables 30 mm away from both sides of the corner. The adhesive tape should be 10 mm long on both sides of the cables. Properly plan the routes for multiple optical cables at the OUT port of a FDB. Route cables from the middle to both sides to avoid cable crossing.
 	

4.3 Stripping and Splicing Optical Cables

To strip the invisible optical cable, perform the following steps:	
1. Use a tool such as diagonal pliers to cut the optical cable at the fiber cut point along the middle.	2. Strip the optical cable from the middle to expose the transparent fiber.
	
3. If you cannot find the fiber after stripping the optical cable, use a pen-style visual fault locator to locate the fiber.	4. Strip off the coating of the bare fibers, clean the stripped fibers, cut the fibers for a fixed-length, and splice the fibers.

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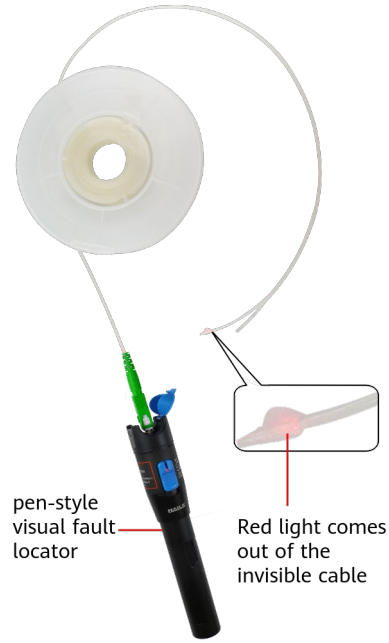
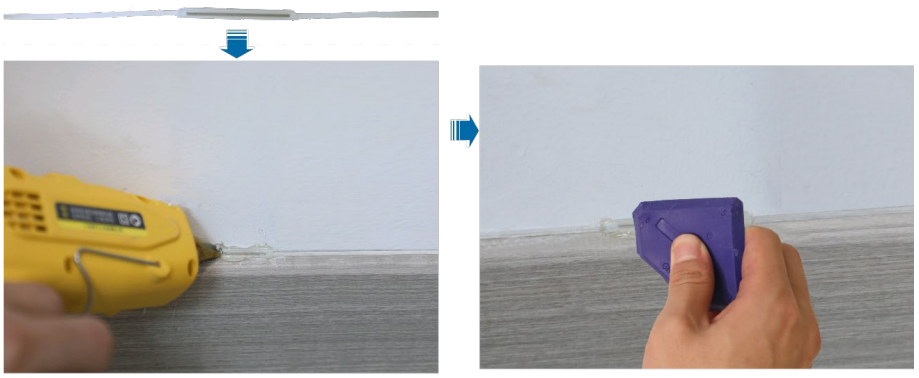
To strip the invisible optical cable, perform the following steps:

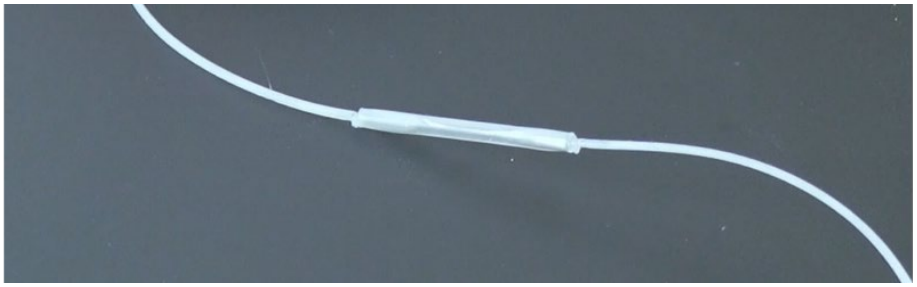


5. After splicing the fibers, attach the splice protection sleeve to the baseboard. Use a hot-melt glue tool to dispense adhesive to cover the splice protection sleeve, and use an adhesive spreader to make the adhesive evenly distributed.



Precautions for splicing fibers

The two ends of the heat shrink tubing must cover the optical cable sheath, and no bare fibers are exposed.



Note: An optical cable may be burry. Only trained technicians are recommended to perform the operation. Wear protective gloves during the operation to protect your hand.

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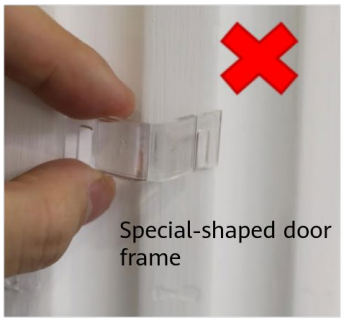
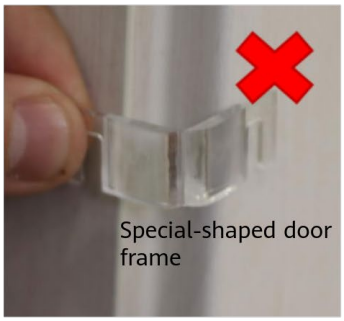
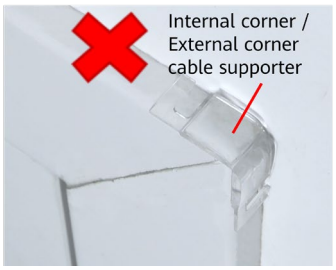
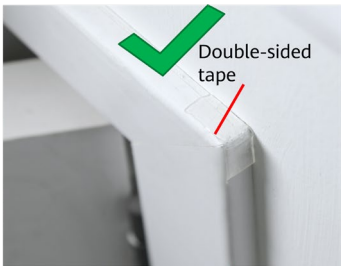
4.4 Cabling at Irregular External Corners

Scenarios where external corner cable supporters do not apply: the height of the door frame or external corner of the door frame is less than 13.5 mm. In this case, you can attach double-sided tape thicker than 2 mm to ensure the bending radius of the optical cable.









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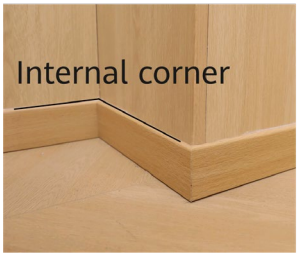
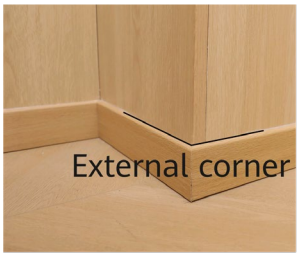
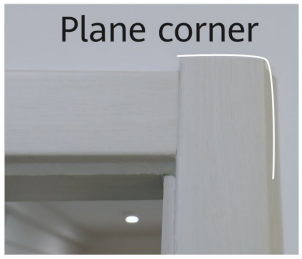
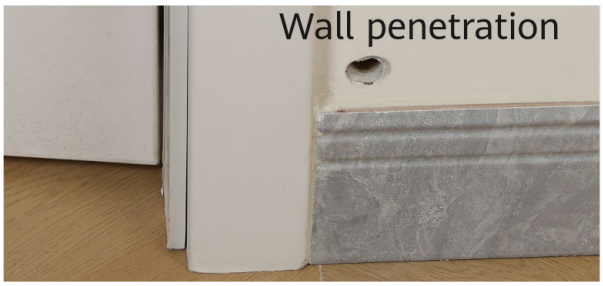
5 Definitions of Common Terms

Term	Description	Example Image
Internal corner	A concave corner of a wall	
External corner	A convex corner of a wall	
Plane corner	Right-angle turning in the same plane	
Wall penetration	Entering the indoor from the corridor	

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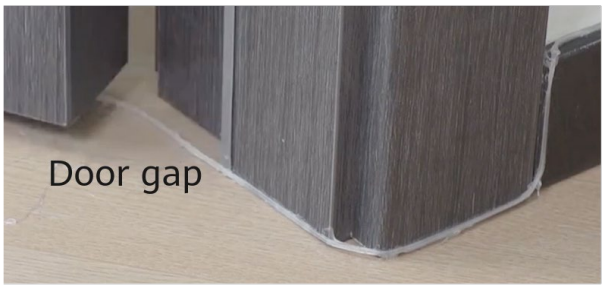
Term	Description	Example Image
Door gap	Gaps between door panels	
Door frame	A frame that fixed door panels on a wall	
Top of side walls	Liner on the top of the interior of a room and bottom of the upper floor	
Baseboard	It is a term used in decoration. As its name implies, a baseboard is the outline of a wall right above a floor.	

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6 FAQ

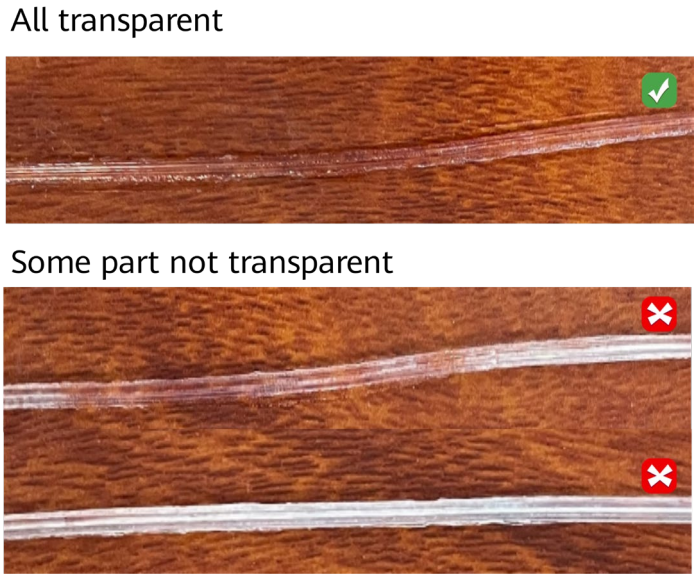
6.1 Invisible Optical Cable Falling Off

Answer: Use cable supporters or hot melt adhesive to reinforce the detached cable.

6.2 Checking the Construction Effect

Answer:

1. Ensure that the optical cable is transparent throughout the process.



2. Ensure that optical cables at internal and external corners (especially external corners) are properly attached, and are not suspended or detached.
3. Ensure that the optical power attenuation after cable routing does not exceed 1 dB.

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6.3 Routed Invisible Optical Cable Has White Lines or Poor Adhesion

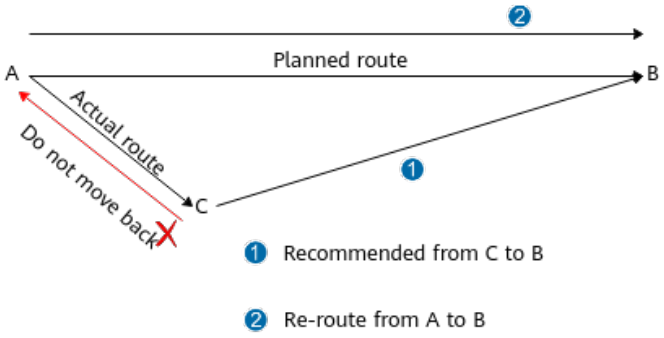
Answer:

1. Check whether the FIK LCD displays the correct temperature.
2. The cabling speed should not be too fast. Ensure that the glue is fully heated and melted and the optical cable is transparent after construction. The cabling speed should be about 1.3 m/min.
3. Ensure that the cabling path is clean and tidy. Do not route a cable on damp walls or walls where latex paint easily falls off. The cable routing will intensify the peeling of latex paint.

6.4 Incorrect Cabling Route

Answer:

1. Lay a new invisible optical cable from the beginning.
2. If only a small section of the cable is incorrectly routed, you are advised to use a heat gun to heat the wall at 70°C for 1 minute and then remove the cable while heating the wall. After the cable is removed, route the cable again and reinforce the removed section with hot melt adhesive or cable supporters.



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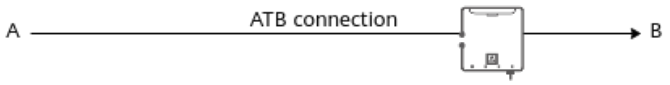
6.5 Invisible Optical Cable Too Short

Answer:

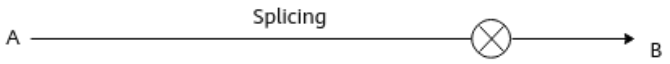
1. It is recommended the length of the optical cable be increased by 5 m based on the site survey.
2. Use ATBs or splicing for extension or lay a new invisible optical cable from the beginning.

Solution 1: Lay out a new invisible cable

Solution 2: Use ATBs for extension



Solution 3: Use splicing for extension



6.6 Invisible Optical Cable Too Long to Be Stored in an ATB Box

Answer:

1. You can cut off the extra length, splice the fiber or make an FMC, and then store it in the ATB box.
2. You can also add another ATB box for storage.

6.7 Invisible Optical Cable Breaks During Cabling

Answer:

1. Lay a new invisible optical cable from the beginning, or use splicing for extension.
2. Perform construction according to the standard procedure and minimize cable pulling. In addition, do not keep the FIK heating the same position for more than 1 minute. If the construction is suspended for more than 1 minute, remove the invisible optical cable from the heating head or turn off the power supply of the FIK.
3. If the fiber cut occurs near the end of the construction or in a hidden position such as a corner of a wall, splicing is recommended. For details about the splicing procedure, see 4.3 Stripping and Splicing Optical Cables.

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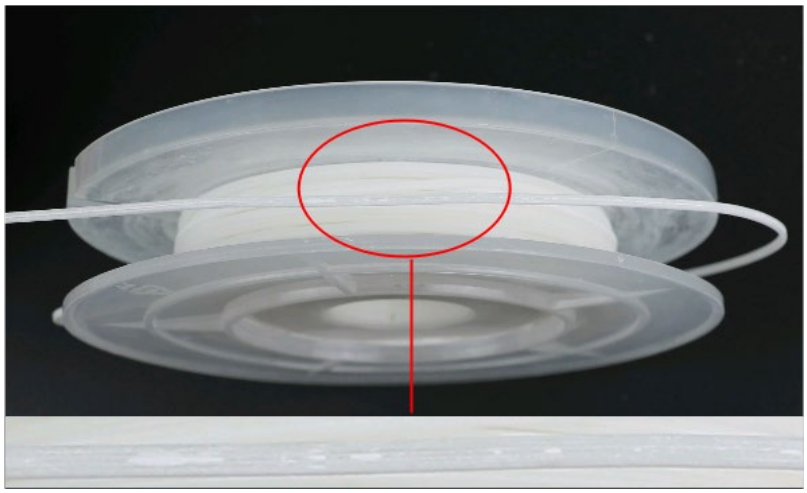
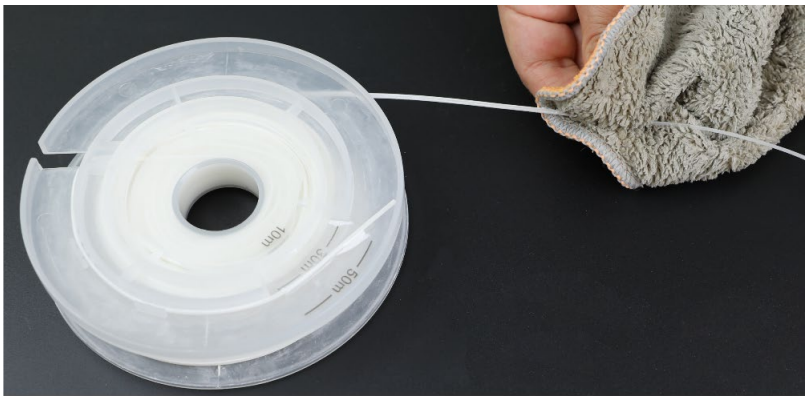
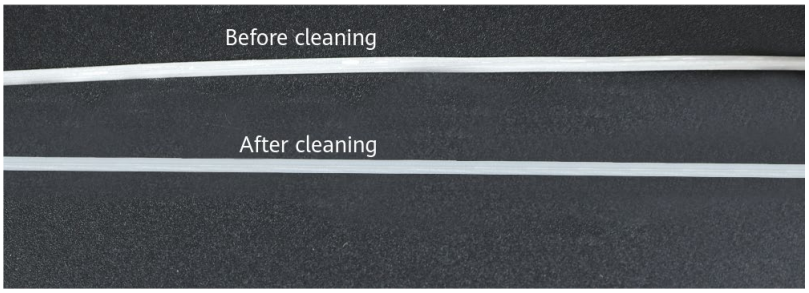
6.8 Too Much Talcum Powder on an Invisible Optical Cable



Answer:

1. During construction, use a wet cloth or wet tissue to clean an invisible optical cable. Wait until the optical cable is dry before cabling.





2. Place a sponge in the cable inlet slot of the FIK. After using the sponge, clean it periodically.

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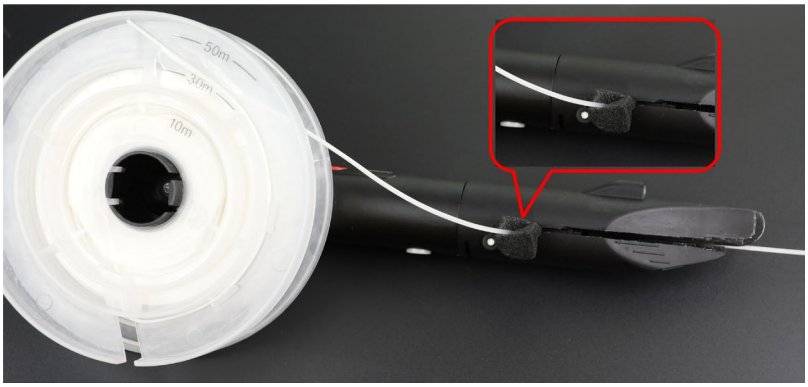
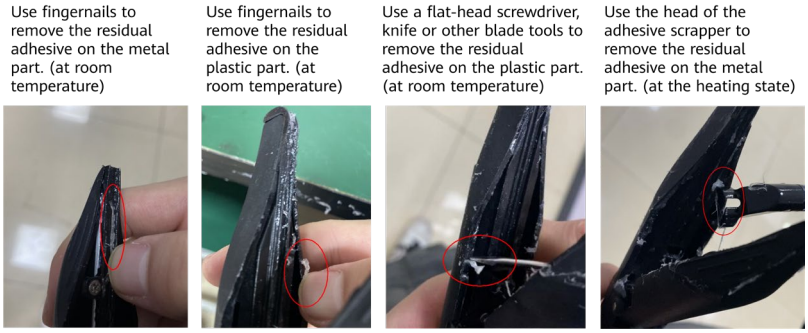


6.9 How to Clean Residual Adhesive

Answer:

After each use, check for residual adhesive at the heating head.

- If there is residual adhesive on the metal part, use fingernails to remove most of the residual adhesive at room temperature. If there is still some residual adhesive that cannot be cleaned by hand, heat the FIK and use the adhesive scrapper to remove the residual adhesive gently (Be careful not to scrape vigorously in the heating state, otherwise the ceramic coating on the metal part and the head of adhesive scrapper will be damaged). Clean the residual adhesive on the metal part after each construction and then close the heating head.
- If there is residual adhesive on a plastic part, use fingernails to remove the residual adhesive at room temperature, or use a flat-head screwdriver, knife or other blade tools to remove the residual adhesive.



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6.10 Requirements for Using the Battery Delivered with the FIK

Answer:

1. Requirements for battery usage: Charge the battery before using it for the first time. If the battery is not used for a long time (more than three months), the battery level may decrease, and you need to charge the battery before using it again. If the battery is not used for more than half a year, the battery may fail to be activated and cannot work properly.
2. When the battery is full, the FIK can work for about 3.5 hours and route invisible optical cable for 100 m.
3. To charge the battery using an adapter, it takes about 4–6 hours if the adapter output is 5 V 2 A, and 8–10 hours if the adapter output is 5 V 1 A.

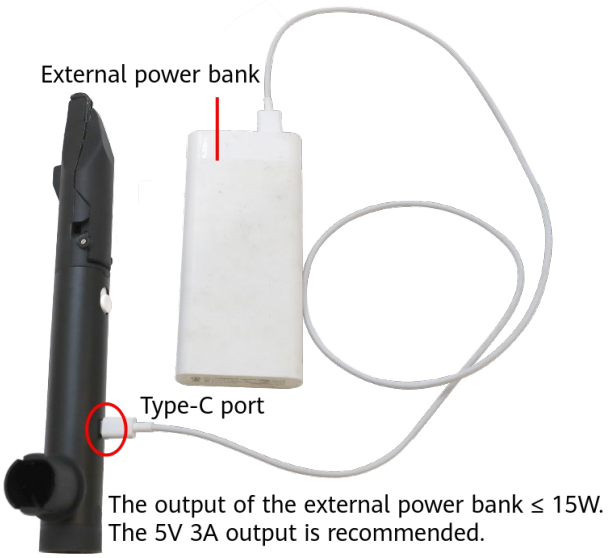
6.11 What Can I Do if the FIK Cannot Be Turned on After Being Turned Off

Answer: You can remove and reinstall the battery compartment. Then the FIK can be turned on.

6.12 Backup Powering

Answer:

The FIK supports a mobile power bank. A mobile power bank must use a standard 5 V/3 A charging cable and charging adapter that meet the certification requirements to obtain a qualified heating power (13–15 W). If an unqualified charging cable or charging adapter is used, the heating power may be insufficient to deliver the rated heating temperature, and the adhesive on the optical cable may not be fully melted.



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Input power	Maximum construction speed (m/min)
5 V/3 A (External power bank)	1.3
5 V/2 A (External power bank)	0.6

NOTICE

When the battery and external power bank supply power to the FIK at the same time, the battery input is used first.

6.13 Precautions for Using FIK

Answer:

1. The surface temperature of the FIK heating head is high. When the FIK is powered on for a long time, the hot melt adhesive may generate slight fog. This is a normal situation, and no action is required.
2. Do not heat the same position of the optical cable for a long time during cable routing. If you need to temporarily stop cabling for more than 1 minute, remove the optical cable from the heating head or power off the FIK.

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