


Quick Reference Guide to the FTTR Optical Cable Deployment






1 Tools and Materials

Toolkit for villas, duplex houses, and large apartments

Site survey toolkit

Line finder	Screwdriver, utility knife, scissors, and diagonal pliers	Optical power meter (with red light)	 Spring wire threader with an olive-shaped head	Pull tape	Mesh tape	
Cable lubricant	Gloves	Shoe covers	Measuring tape	(Optional) FTTR micro optical cable	(Optional) PVC transparent waterproof tape	Wire threading robot

Deployment toolkit

Line finder	Screwdriver, utility knife, scissors, and diagonal pliers	Optical power meter (with red light)	Spring wire threader with an olive-shaped head	Pull tape	Mash tape
Cable lubricant	Gloves	Shoe covers	 FTTR micro optical cable	SC white fiber patch cord (from an ATB to an ONT)	SC/UPC adapter (in an ATB or a home distribution box)
ATB (optical cable outlet in a room)	Indoor scalable optical splitter (for indoor optical splitting)	FTTH fiber splicing toolkit	 PVC transparent waterproof tape (exterior wiring)	 Wire threading robot	Wire threading robot app

Toolkit for common residences

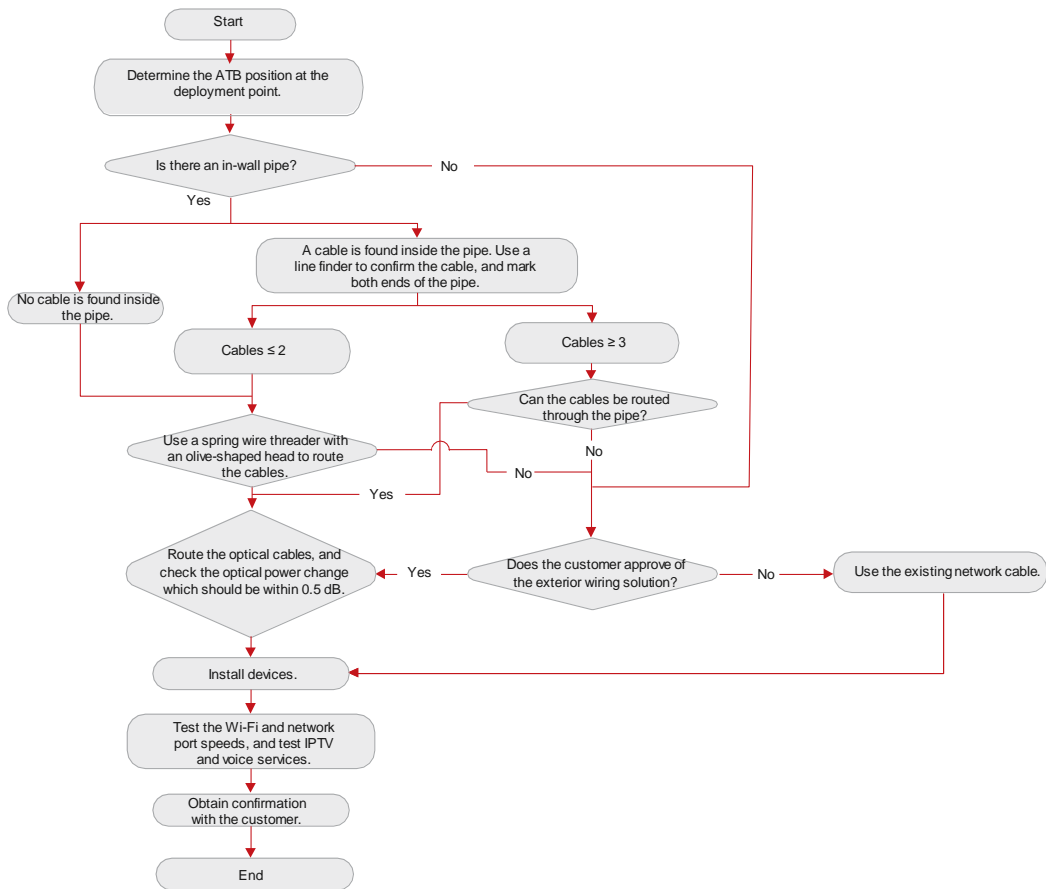
Deployment toolkit

Line finder	Screwdriver, utility knife, scissors, and diagonal pliers	Optical power meter (with red light)	Spring wire threader with an olive-shaped head	Pull tape	Mash tape
Cable lubricant	Gloves	Shoe covers	FTTR micro optical cable	SC white fiber patch cord (from an ATB to an ONT)	SC/UPC adapter (in an ATB or a home distribution box)
ATB (optical cable outlet in a room)	Indoor scalable optical splitter (for indoor optical splitting)	FTTH fiber splicing toolkit	PVC transparent waterproof tape (exterior wiring)	(Optional) Wire threading robot	(Optional) Wire threading robot app

2 Solution Selection

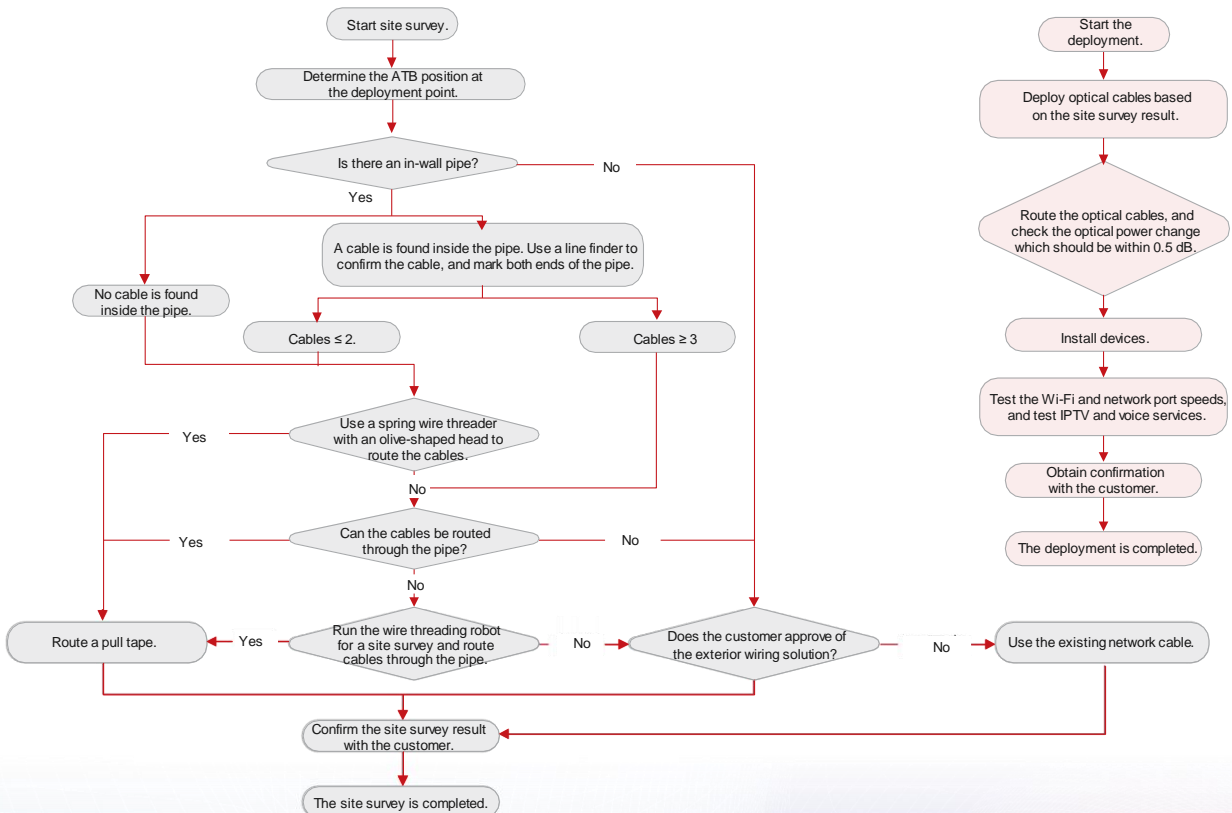
Principle: Place an ONT inside the home distribution box, and place one edge ONT in each room to ensure Wi-Fi for each room.

1 Common residences (not a villa or duplex house): Two technicians visit the home to perform both site survey and engineering.



Note Pipe pass-through using the wire threading robot is a value-added service. It can be reserved but is separately charged.

2 Villa or duplex house: One or two technicians visit the home for site survey, and later two technicians visit again for the deployment.



Note:

- The wire threader is made of metal. To avoid electric shocks, disconnect the general circuit breaker before the deployment. In addition, wear insulation slip-proof gloves throughout the deployment.
- Before the deployment, check whether the RX optical power of the drop cable meets the requirement.
- The blue rectangular shell must be removed from the SC connector that is routed through the pipe.

1 Reusing cables for installation**Note:**

- This mode is preferred when there are at least 3 cables inside the in-wall pipe.
- Confirm the cables that can be pulled out with the proprietor. It is recommended that the cables be pulled out in the following priority: telephone cable > network cable > CATV cable.

◆ **User notification**◆ **Label check:** labels attached to cables inside the pipe◆ **Tool identification:** line finder (if there are cables inside the pipe)**Procedure:**

1. Verify that the reusable cable or embedded rope is not used and can be pulled.
2. Wrap the cable head with the pull tape, and bind them using mesh tape as shown in figure 1.
3. Pull out the cable from the other end to deploy the pull tape in the pipe.
4. Select an FTTR micro optical cable of proper length (20 m or 50 m).
5. Warp the optical cable using pull tape (by about 0.5 m) as shown in figure 2.
6. Bind the remaining part evenly with mesh tape at 3 or 4 positions as shown in figure 3.
7. Pull out the pull tape at an even speed to route the optical cable out of the pipe.
8. Connect an ONT. Specifically, test the optical power, connect the optical cable to the optical port of the ONT, and power on and register the ONT.



Figure 1



Figure 2

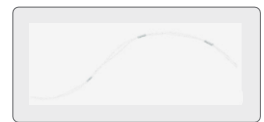


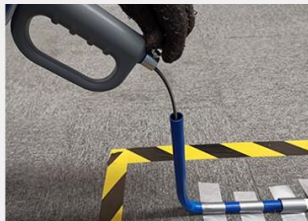
Figure 3

2 Using a spring wire threader with an olive-shaped head**Procedure:**

1. Pass a spring wire threader with an olive-shaped head through the pipe.



Step 1 Hold the handle, loosen the butterfly nut counterclockwise, and pull out part of the spring into the pipe.



Step 2 Tighten the butterfly nut about 10 cm away from the weak-current pipe opening.



Step 3 Hold the handle and press it down with force. Rotate the handle clockwise with the other hand until the spring wire threader passes through the right angle.








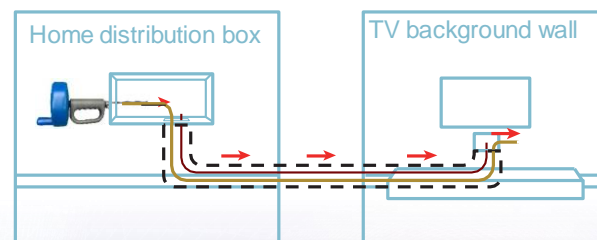
Step 4 After the spring wire threader passes through the right angle, loosen the butterfly nut. Then continue to pass the spring wire threader through the weak-current pipe.

Note

If obstacles (such as gravel and residual cables) exist, tighten the butterfly nut. If the spring cannot move forward anymore, pull it backwards to pull the obstacles out of the pipe.

If you encounter large resistance when pulling the spring backwards, tighten the butterfly nut. Then rotate the handle counterclockwise while pulling the spring backwards.

-  In-wall pipe
-  Spring wire threader with an olive-shaped head
-  Other cables
-  Pull tape
-  Mesh tape

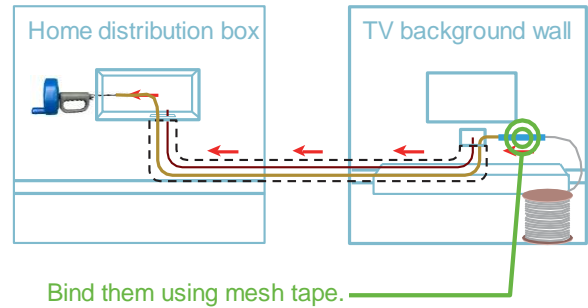


2. Wrap the head of the wire threader with the pull tape, and bind them using mesh tape.



3. Pull out the spring from the other end to deploy the pull tape in the pipe.

4. Perform steps 4 to 8 in the method by reusing cables for installation.



3 Using a wire threading robot

This solution applies to the following scenarios:

- ◆ The weak-current pipe has a tee and an assembled right-angled elbow.
- ◆ It is difficult to pass an olive-head spring through the pipe. Blocking points need to be checked and a wire threading robot needs to be used.

Note:

- When installing the wire threading robot, tighten the force-discharge apparatus. During the operation, pull out the cable with a little force and tighten the knob of the force-discharge apparatus.
- Before the operation, ensure that the joystick lock indicator is green. If the indicator turns red, a joystick command cannot be sent to the head end. (See figure 4.)



Figure 4

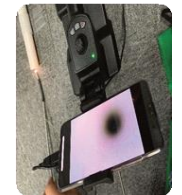


Figure 5

Procedure:

1. Straighten the wire threading robot, and manually push the line of the robot into the weak-current pipe as shown in figure 5.
2. When encountering a curved pipe or pipe tee, adjust the head end of the line to a proper position and ensure that the head end is at a specific distance from the pipe as shown in figure 6.
3. Operate the joystick to adjust the direction of the head end until the head end is aligned with the target pipe. Then manually push the line of the wire threading robot until the line passes the curved pipe or pipe tee. Then straighten the head end again to avoid damaging the lens during subsequent pipe routing.
4. After the robot cable passes through the pipe, bind the pull tape to the pull sling on the wire threading robot as shown in figure 7.
5. Pull out the line from the rear end of the wire threading robot to deploy the pull tape in the in-wall pipe.
6. Perform steps 4 to 8 in the method by reusing cables for installation.



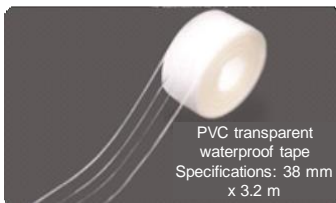
Figure 6



Figure 7

4

Exterior Wiring Operation Guidance (Using PVC Transparent Waterproof Tape)







If no pipe or duct is available, implement exterior wiring.

It is recommended that you use double-fold waterproof tape and an FTTR micro optical cable for neat exterior and good protection.


Procedure:

1. Measure and select an FTTR micro optical cable of proper length.
2. Plan the route, and mark the installation position and bending reference line.
3. Wipe the walls and baseboards to avoid water stain and dust.
4. Tear off the release paper from the waterproof tape, stick the optical cable to the waterproof tape, and attach the optical cable and waterproof tape to the walls or baseboards.

Layout effect pictures

<p>Cable routing around an exposed corner (turning of a flat surface)</p> 	<p>Cable routing around an internal corner (turning of a flat surface)</p> 
<p>Cable routing along a baseboard</p> 	<p>Cable routing through a gap between a door and the floor (to pass through obstacles, bumps, and other objects)</p> 

After the optical cable is secured, squeeze the air between the transparent waterproof tape and the wall or baseboard to ensure that they are securely attached.

<p>Note</p>	<p>Double-fold waterproof tape needs to be inspected and maintained regularly. Users can purchase and replace them as desired.</p>
	<p>A user can also tear the PVC transparent waterproof tape into 2 to 3 folds as desired.</p> 

5. Connect an ONT. Specifically, test the optical power, connect the optical cable to the optical port of the ONT, and power on and register the ONT.

<p>Post-deployment cautions</p>	<p>After the deployment is complete, take away the rubbish generated during the deployment.</p>
	<p>Notify users that optical fibers are made of glass, and therefore they cannot be folded for binding.</p>