

## Connecting a Fiber Tap

This document explains the proper way to connect a Fiber Tap, and how to avoid common Tap connection problems.

### Fiber Splitters

A Fiber Tap is designed with fiber optic splitters. The most important thing to understand is that a fiber optic splitter is directional, and the installation requirements of the Tap are based upon the splitter's requirements.

Refer to diagram 1, which shows one strand of fiber. When connected properly, light will flow from A's TX port to the Splitter, which splits the light to B's RX port and C's RX port.

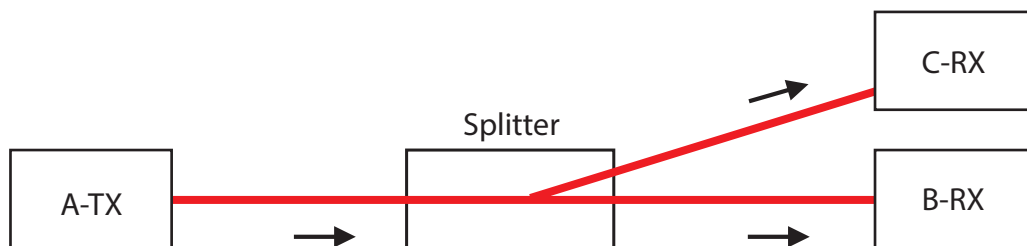


Diagram 1

*Note: Red lines in the diagrams signify the light that transverses the fiber; black lines indicate dark fiber (no light, no traffic).*

Refer to diagram 2, which also shows a single strand of fiber. When connected INCORRECTLY, light will flow from B's TX port to A's RX port but not to C's RX port. This is because light can only follow the fiber, even if it is curved or coiled, but cannot change directions. Therefore the light cannot flow from B's TX port to the splitter and then change direction to C's RX port, which will remain dark. Even though this connection is incorrect, the link between device A and B will be up and functioning, but the device connected to C will not receive any traffic.

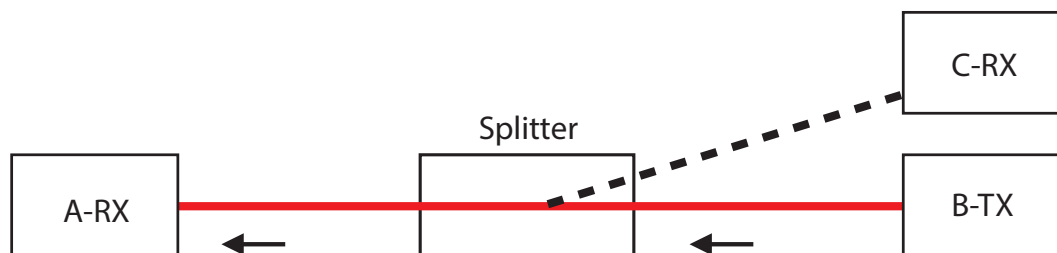


Diagram 2

These examples show that you must know which side of the fiber from a device is TX and has light, and which is RX and is dark. Most devices are labeled TX and RX, but patch panels are rarely labeled, requiring you to determine which side has the light.

**WARNING:** Do NOT look into the end of the fiber pair to see which is lit, because doing so may cause eye damage.

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The following diagrams are intended to show the many ways a Fiber Tap can be connected.

**Only the first one will work, but the others will lead you to believe the device is functioning correctly.**

*NOTE: Do not be concerned as to what the devices A and B are. They may be switches, routers, firewalls, servers, patch panels, and so on. No matter what the device may be, fiber is connected as a pair of strands. One strand is TX and carries the light. The other strand is RX, and it is dark until its other end is connected to a TX port on another device.*

### Correct Connections

Diagram 3 shows the CORRECT connectivity for a tap.

- Device A's TX is connected to the Tap's RX on Port A. The light passes through the tap to the splitter, where it is split to one TX of the Tap Monitor Port as well as the Tap's TX on Port B. The Tap's Port B TX is connected to Device B's RX.
- Device B's TX is connected to the Tap's RX on Port B. The light passes through the tap to the splitter, where it is split to the other TX of the Tap Monitor Port as well as the Tap's TX on Port A. The Tap's Port A TX is connected to Device A's RX.

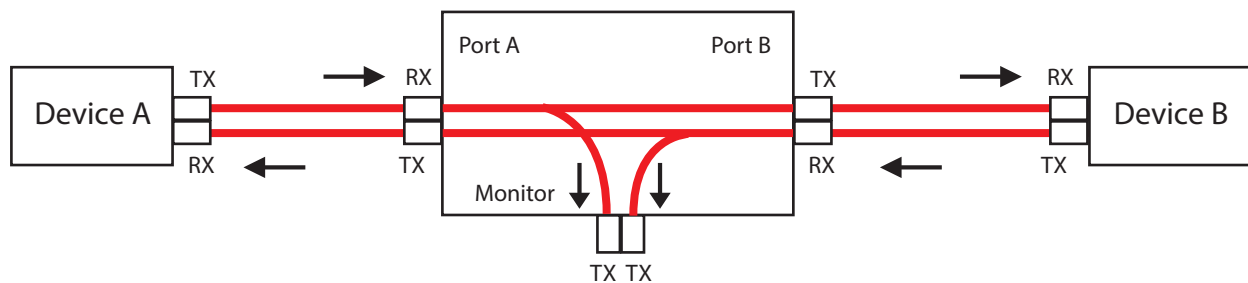


Diagram 3  
Correct connectivity

### Incorrect Connections

Now let's look at the INCORRECT ways a Tap can be connected.

Diagram 4 shows the most common error made in the connection of a Tap. Device A's TX is connected to the Tap's Port A TX. The light passes through the Tap to its Port B RX and onto Device B's RX, but since the light at the splitter is going the wrong direction, no light is split to the Monitor Port TX. The same problem occurs with the light being passed from Device B's TX port.

**Beware of this connection!** Since the link from Device A to B is up and functioning, it gives the misleading impression that the Tap is not functioning properly. To fix this problem, the fiber from Device A to the Tap must be flipped AND the fiber from Device B to the tap must be flipped. Doing so will make the connection look like Diagram 3.

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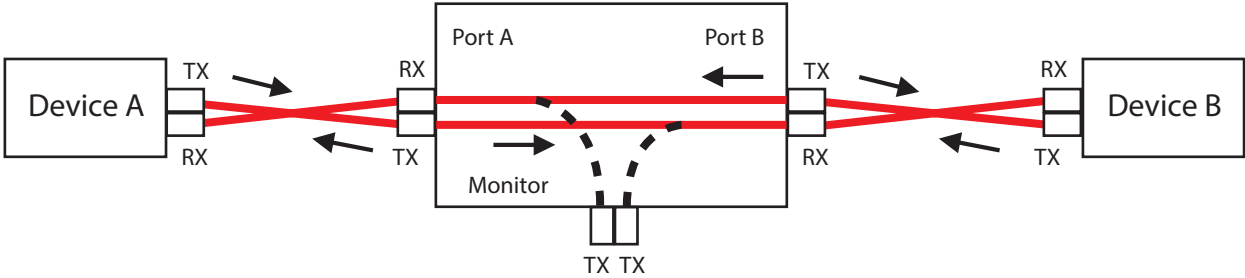


Diagram 4  
Incorrect connectivity

Diagram 5 and 6 are obviously bad connections Device A's TX is connected to Device B's TX. The light from each simply collides, with no RX to receive it. These connections will not work at all.

- To fix Diagram 5, you must flip the fiber from Device A to the Tap.
- To fix Diagram 6, you must flip the fiber from Device B to the Tap.

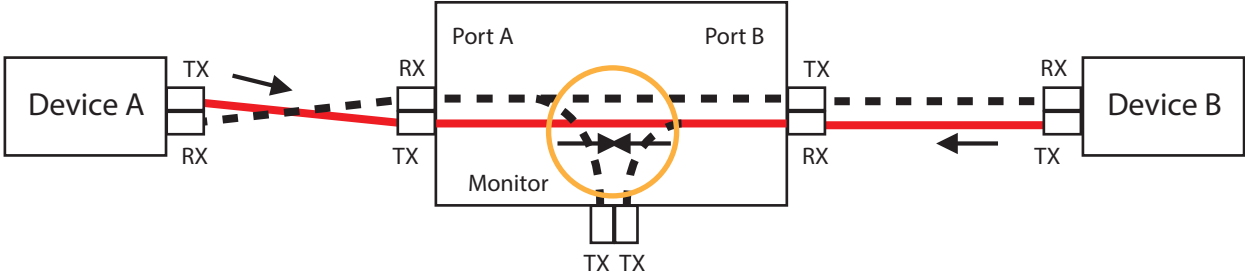


Diagram 5  
Incorrect connectivity

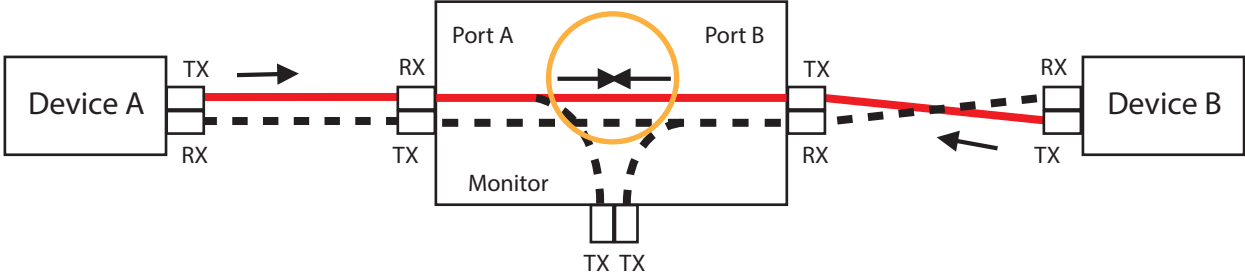


Diagram 6  
Incorrect connectivity