

# RIVO MULTITRADE OPTICAL SYSTEMS

## How to calculate the quantity of pigtail fiber



### Overview

In fiber optic cable installation, how cables are attached to the system is vital to the success of network.

### Key Takeaways

The amount of pigtail fiber needed is calculated by summing the required lengths for splicing, routing, slack, and any additional buffer for future maintenance. Step 1: Determine the Number of Splice Points

Each fiber connection in your network that requires a fusion splice will need one pigtail per fiber. Count the total number of fibers to be terminated at each Optical Distribution Frame (ODF), terminal box, or patch panel .

#### Step 2: Measure Routing Distance

Measure the physical distance from the splice point to the device or panel where the pigtail will be connected. Include any bends, vertical or horizontal routing, and obstacles that may require extra length to avoid tension or sharp bends .

#### Step 3: Add Slack

Add extra length for slack to allow for handling, future maintenance, and re-splicing if necessary. A common practice is to add 10-20% of the measured routing distance or a minimum of 0.5-1 meter per pigtail, depending on installation complexity .

#### Step 4: Consider Pigtail Type and Standard Lengths

Pigtails come in standard lengths, typically 0.5m to 5m. Choose a length that covers the routing distance plus slack. For example, if your routing distance is 2 meters and you add 0.5 meters for slack, a 2.5–3 meter pigtail is appropriate .

#### Step 5: Multiply by Fiber Count

For multi-fiber cables or duplex connections, multiply the required length by the number of fibers. For example, a 12-fiber cable terminating in a 12-port ODF will require 12 pigtails, each with the calculated length .

#### Step 6: Account for Special Applications

- Single-mode vs. multimode: Single-mode pigtails are used for long-distance links, while multimode is for short-distance connections. Ensure the fiber type matches the network requirements .
- Duplex or specialty fibers: Duplex pigtails (Tx/Rx) require two fibers per connection, and specialty fibers like polarization-maintaining or bend-insensitive may require additional slack for handling .

#### Example Calculation

If you have a 10-meter routing distance to a patch panel, add 1 meter for slack. Choose a 12-meter pigtail. For a 24-fiber cable, you will need 24 pigtails of 12 meters each. If using duplex pigtails, you may need 12 duplex pigtails instead of 24 single pigtails. By following these steps, you can accurately calculate the amount of pigtail fiber required for your installation, ensuring proper splicing, routing, and future maintenance .

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