

Using Singlemode Pigtailed with OneMode™

OneMode™ brings new life to your existing multimode fiber infrastructure. It allows you to deploy and take advantage of new devices, applications and services, without removing and replacing your existing multimode backbone. OneMode™ enables using singlemode optical modules over your existing multimode deployment. This means you can deploy the bandwidth you need: 10G, 40G, and beyond.



OneMode™ is installed in a multimode fiber link between a main distribution frame (MDF) and an intermediate distribution frame (IDF).

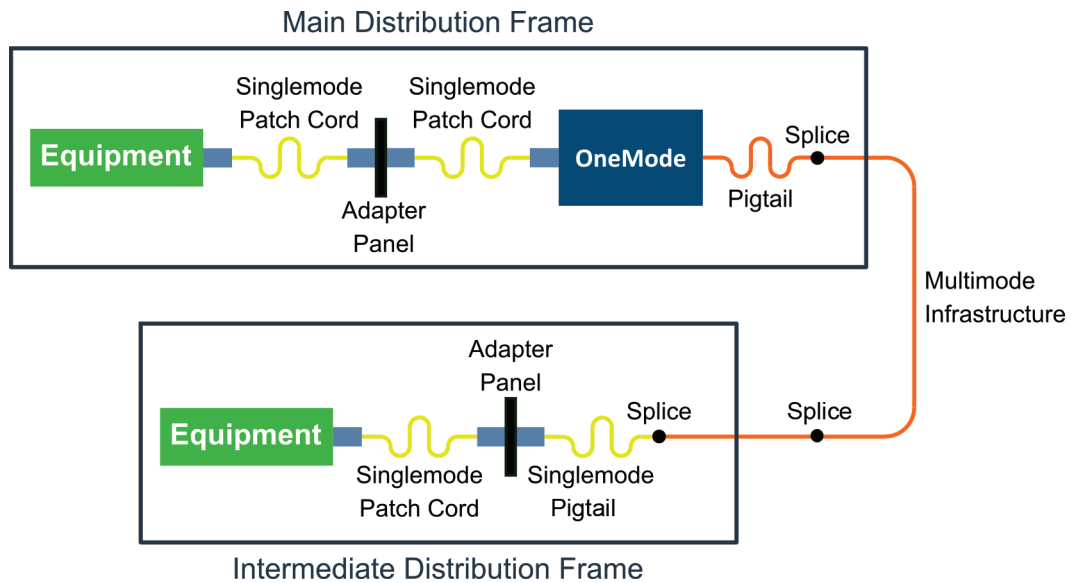


Figure 1: Typical OneMode™ Deployment

At the MDF, OneMode™ is connected to the equipment containing the singlemode optical modules via singlemode patch cords. At the IDF, a singlemode pigtail is fusion spliced onto the multimode fiber infrastructure. Thus singlemode patch cords are connected to the equipment at the far end.

One question that may arise is: fusion splicing a singlemode pigtail onto a multimode fiber does not work. The losses are too high. In most typical applications, this is correct, but OneMode™ is not a typical installation.

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In typical multimode applications, the laser source is either a LED or a VCSEL. Both of those light sources completely fill the core of the fiber, in this case the 62.5µm core of an OM1 fiber, as shown in Figure 2. If one spliced onto a singlemode pigtail, one would lose about 99% of the laser energy into the cladding of the single mode pigtail.

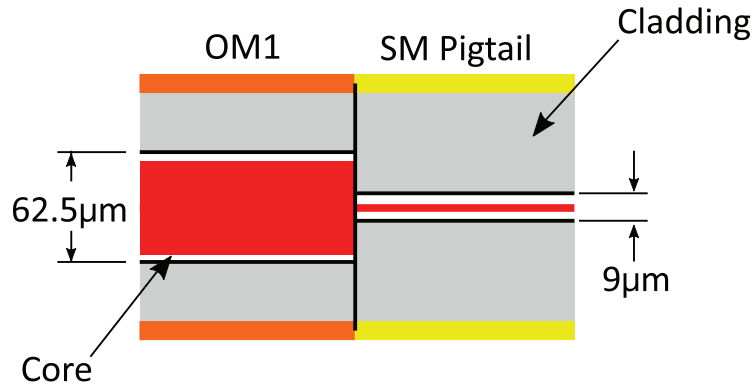


Figure 2: Typical Multimode Application with Singlemode Pigtail.

OneMode™ is different. It shapes the singlemode laser light so that it excites only one mode of the multimode fiber. In this case, virtually all of the laser energy is coupled into the singlemode pigtail. This is illustrated in Figure 3.

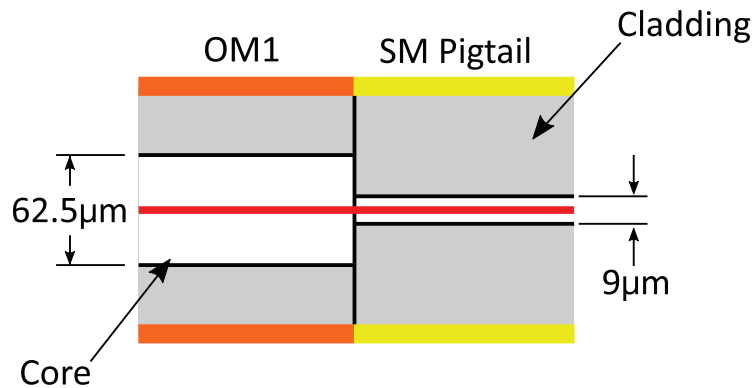


Figure 3: Laser Light in OM1 Fiber using OneMode™

The reason a singlemode pigtail is fusion spliced onto the multimode fiber rather than splicing a LC on the end of the multimode fiber, is to minimize losses and insure the performance of OneMode™. If a LC connector was spliced onto the multimode fiber and then the connection to the singlemode patch cord is through a LC fiber adapter panel, there is a chance there is enough misalignment to cause performance issues.

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