AFBR-S10PS01xZ

Termination of POF Cables with AFBR-S10PS011Z Slim Connector and Mount Options of AFBR-S10PS010Z Point Sensor

Application Note

Introduction

This application note is intended to be used as a guide for terminating POF cables with the AFBR-S10TR011Z slim connector, which is a connector specifically designed for the AFBR-S10PS010Z Point Sensor. Also, the document describes how to mount the AFBR-S10PS010Z Point Sensor inside the switchgear to be monitored.

AFBR-S10PS010Z is an innovative device. It is the only point sensor currently available in the market that offers the capability of mounting the sensor in the switchgear prior to making the connection to the fiber. This useful feature is possible due to the fact that AFBR-S10PS010Z and AFBR-S10PS011Z are independent parts.

Figure 1 shows the AFBR-S10TR011Z slim connector.

Figure 1 AFBR-S10TR011Z Slim Connector

Figure 2 shows the AFBR-S10PS010Z point sensor.

Figure 2 AFBR-S10PS010Z Point Sensor

This document is divided into two sections:

1. Termination guide for the AFBR-S10PS011Z slim connector.
2. Mounting guide for the AFBR-S10PS010Z point sensor.

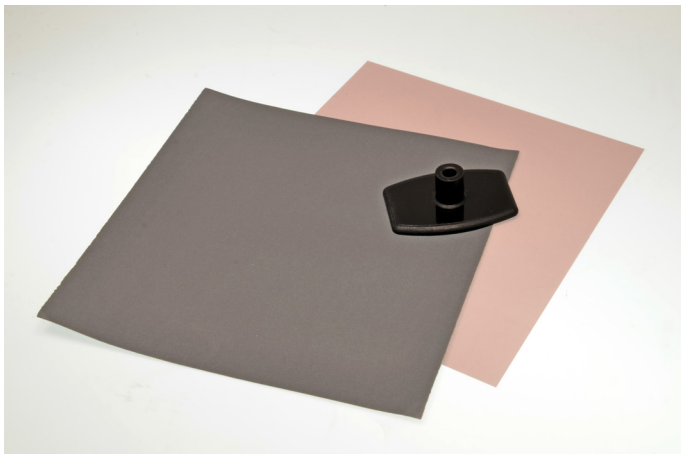
Termination Guide for the AFBR-S10PS011Z Slim Connector

The AFBR-S10PS011Z slim connector has been especially designed to enable the in-the-field terminations of POF cables, as such the connector can be easily installed on cable ends with tools, such as wire cutters and strippers.

The termination of the cables is accomplished by means of the Broadcom AFBR-S10PS012Z Field Installation Kit, which includes 50 slim connectors and three polishing kits. Each polishing kit consists of a polishing fixture, a 600-grit sandpaper and a 3-µm pink lapping film. The connector can be used immediately after polishing.

Figure 3 shows the contents of one of the three polishing kits included in the AFBR-S10PS012Z Field Installation Kit.

Figure 3 Contents of One of the Three Polishing Kits Included in the AFBR-S10PS012Z Field Installation Kit



For the termination of a POF cable, the following materials are needed:

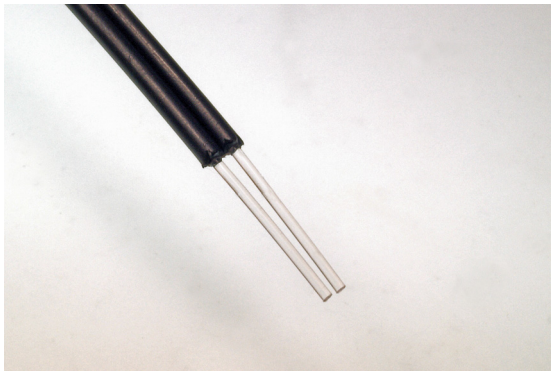
- Plastic optical fiber cable (example: AFBR-HUDxxxZ)
- Wire cutter and stripper (example: RENNSTEIG Tool Art. No. 8002 0006 3)
- Polishing kit
- Slim connectors AFBR-S10PS011Z

The following process describes how to perform the termination of the POF cable, step by step.

Step 1: Stripping the Fiber

After cutting the duplex cable to the desired length, strip off approximately 16 mm (0.6 i.n) of the outer jacket of the fiber by means of the wire stripper, as shown in Figure 4.

Figure 4 POF Cable with 16mm of Outer Stripped Off



A separation of the two channels of the duplex cable is not necessary.

Step 2: Putting on the Connector

Place the connector on the end of the cable, and slide the connector down until it is stopped by the cable jacket. The core (and cladding) of the cable should protrude no less than 1 mm (0.04 in.) from the end of the connector.

Manually fold the connector until it is closed. The connectors are secured when top halves latch into the ferrule halves.

Figure 5 shows how the POF cable and the connector look before the connector has been closed.

Figure 5 POF Cable with Open AFBR-S10PS011Z Connector

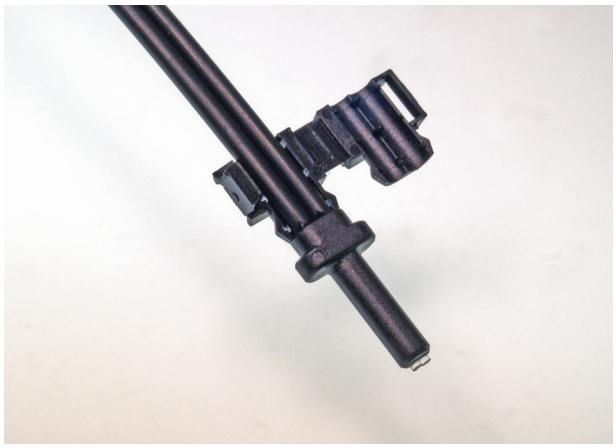
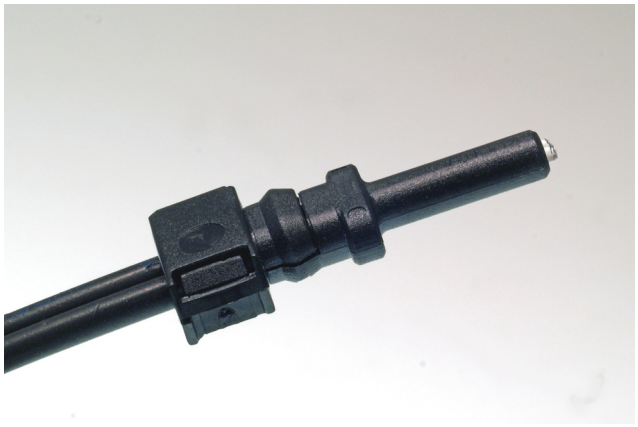


Figure 6 shows how the POF cable and the connector look after the connector has been closed.

Figure 6 POF Cable with Closed AFBR-S10PS011Z Connector



NOTE To avoid mechanical changes in the connectorized fiber along its lifetime caused by temperature cycles, accidental pulling forces, or any other source, the attachment between the fiber and the AFBR-S10PS011Z connector may be improved by applying adhesive on the outer surface of the fiber

cladding prior to the insertion of the fiber in the connector. Valid adhesives are RTV-128, from GE, or 3145 RTV, from Dow Corning. Other similar adhesives may be used as well.

Step 3: Trimming and Polishing

Any fiber in excess of 1 mm (0.04 in.) protruding from the connector end should be cut off with a suitable sharp cutter.

After cutting the exceeding fiber, the connector must be fully inserted into the polishing fixture with the trimmed fiber protruding from the bottom of the fixture, as shown in Figure 7.

NOTE The four dots on the bottom of the polishing fixture are wear indicators. The polishing fixture *must be replaced* when any dot is no longer visible.

Press the polishing tool down on the 600-grit sandpaper. Polish the fiber following the shape of an eight (see Figure 8) until the connector is flush with the bottom of the polishing fixture. Wipe the connector and fixture with a clean cloth or tissue.

Figure 7 AFBR-S10TR011Z Connector Inserted into one of the Polishing Fixtures Included in the AFBR-S10PS012Z Field Installation Kit

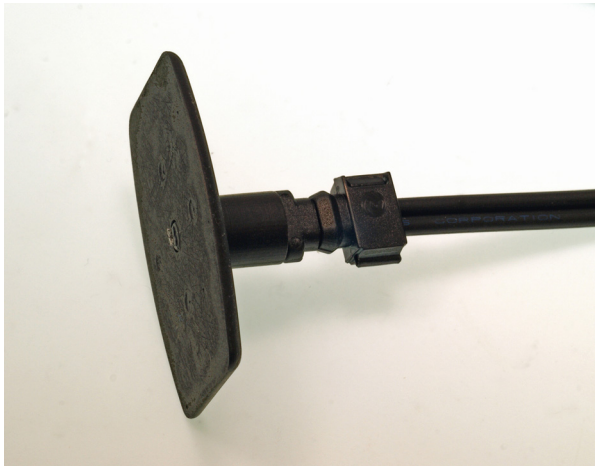
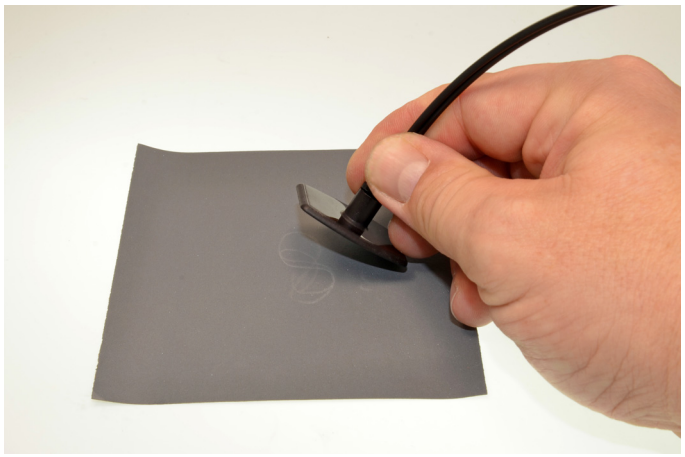


Figure 8 Polishing of the Protruding Fiber Following the Shape of an Eight

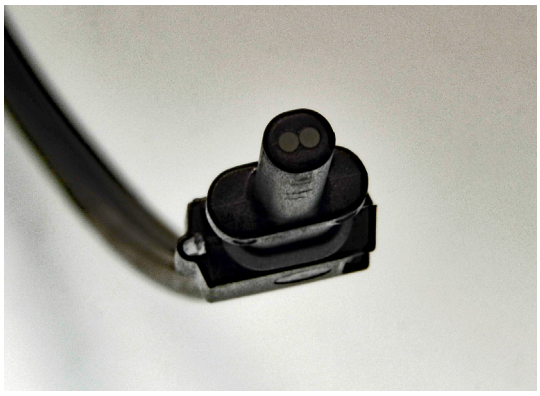


Step 4: Finishing

Place the connector and polishing fixture on the dull side of the 3-µm pink lapping film and polish the fiber following the same eight-shape as mentioned on the previous step (see Figure 8). Repeat the polishing cycle 25 times, approximately.

The fiber end should be flat, smooth and clean, as shown in Figure 9.

Figure 9 POF Cable Terminated with a AFBR-S10TR011Z Slim Connector



Mounting Guide for AFBR-S10PS010Z

The AFBR-S10PS010Z point sensor may be mounted in the monitored switchgear in two different ways: cable-tie mounting and through-hole mounting.

Case 1: Cable-tie Mounting

For this mounting option, a 2.5-mm-wide cable tie is required.

Figure 10 shows how the point sensor AFBR-S10PS010Z looks when it is mounted on a stick, or similar, by means of a cable tie.

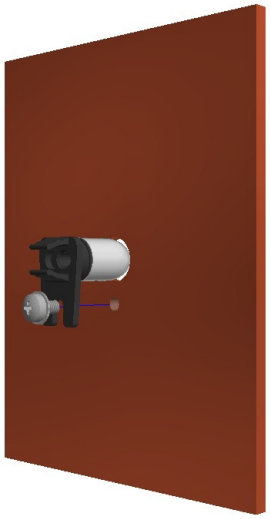
Figure 10 Point Sensor AFBR-S10PS010Z, Cable-Tie Mounting

Case 2: Through-hole Mounting

For this mounting option, either a standard M3 screw or a self-tapping M3 screw is recommended. Additionally, an M3 washer might be used between the screw and the point sensor.

Figure 11 shows how the point sensor AFBR-S10PS010Z must be mounted though a hole made on the surface of any mechanical structure inside the switchgear or on the surface of one side of the switchgear itself.

Figure 11 Point Sensor AFBR-S10PS010Z, Through-Hole Mounting



Notes on Dirt and Dust in or on the Point Sensor, AFBR-S10PS010Z

Make sure that no dirt or dust exists inside the point sensor or on its surface because it reduces the capturing efficiency of the device, increases its transmission loss, or both.

If the point sensor is covered with dust, dry-clean it by blowing or wiping the dust off the point sensor.

NOTE The material of the point sensor has good chemical resistivity and is not affected by water-based cleaning agents, dish soap, or organic solvents with an alcohol (ethanol) base. Do not use solvents or solvent mixtures that contain acids because they can attack or dissolve the optical plastic material.

For product information and a complete list of distributors, please go to our web site: www.broadcom.com.

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Lead (Pb) Free
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