

AN-105

OP930D Functionality

Overview

The OP930D is a dual channel insertion and return loss tester. The OP930D is similar to the OP930 except an additional source port and detector is added to streamline testing of duplex cables and to allow for simplified testing of cables with unlike connectors. The test system has two source ports and two power meters. While Port A and Port B are treated as two separate channels, they share the same source modules and are regulated by a 1x2 switch, activating on one channel at a time. The corresponding power meters are configured to expect readings from their respective source ports when that source is switched on.

Functionality

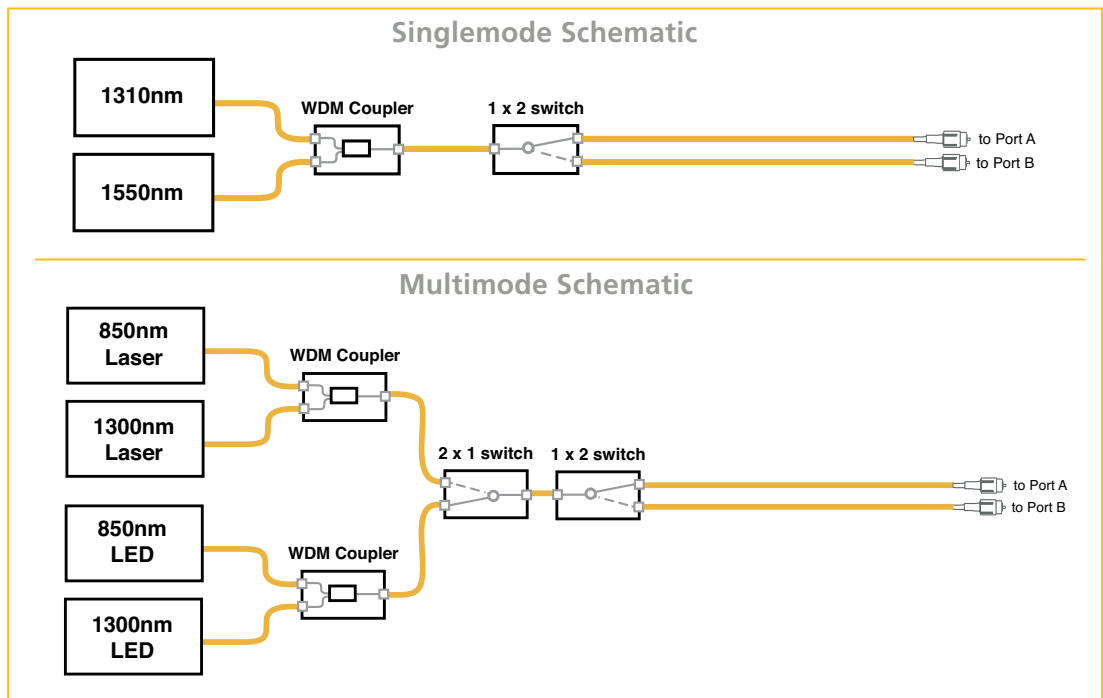


Figure 1: Singlemode and multimode schematics for inside of an OP930

The OP930D has one 1310nm and one 1550nm laser (850/1300 for multimode) that are both fed into a 1x2 switch. This switch sends the selected wavelength into either Port A or Port B; not simultaneously. This switching is seen in the front panel by the switching LEDs. When Port A is "on," the corresponding detector expects a measurement. At this time, Port B is "off" and Detector B is frozen and does not look for any measurements. The same procedure occurs when Port B is switched active.

OP930D Functionality

AN-105

Insertion Loss Reference

For duplex measurements using the OP930D, connect two reference cables to the corresponding source channel, and then connect the reference connectors to their corresponding OPM channel.

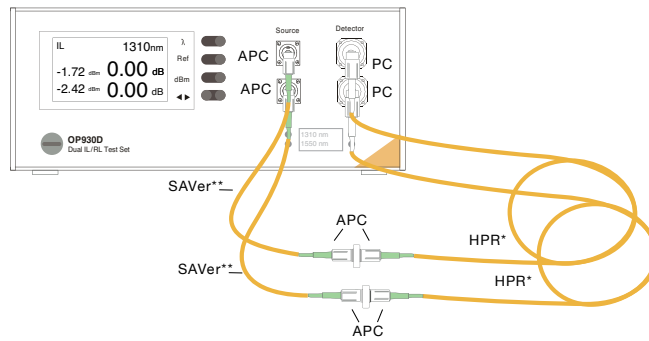


Figure 2: A reference setup for duplex cable measurement

Return Loss Reference

Cables terminated with a PC polished connector exhibit the inherent 4% reflection (~14dB). This is the ideal situation for taking the reference. A clean connector interface on both ends, the APC connection at the front panel of the instrument, and the PC interface of the reference cable are all necessary.

Reference return loss by leaving the PC endface of an APC-PC launch cable unmated. Navigate to the **RL** screen for the first channel by pressing the right arrow button twice from the **OPM** screen. With the launch cable connected to the front panel, press and hold **Ref** to begin a return loss reference. Repeat this process for the second set. For methods of testing APC-APC reference cables, please consult **AN-114 RL Testing for APC Cables**.

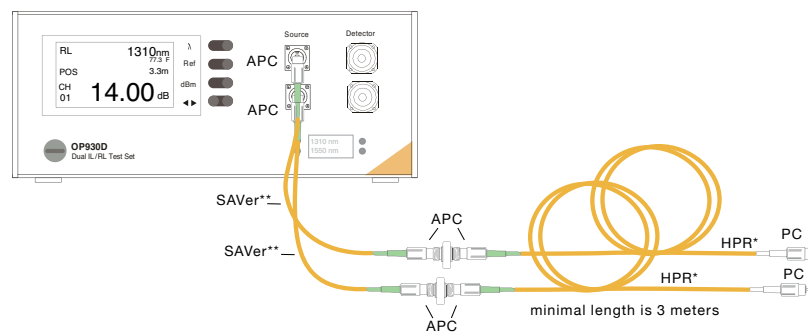


Figure 3: A duplex return loss reference setup

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AN-105

Testing

Connect the cable(s) to be measured to the reference end of the reference cable and the other end of the cable(s) under test into the optical port of the power meter.

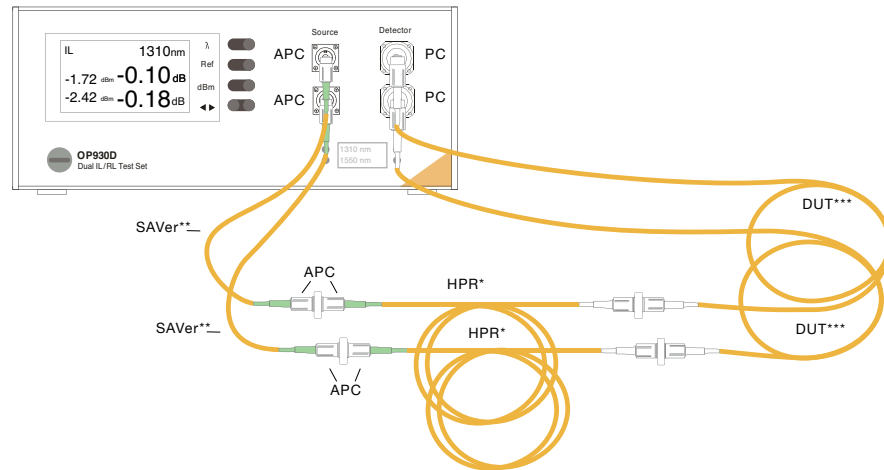


Figure 4: Testing the insertion loss and return loss of a duplex cable

Once a proper reference has been taken the instrument will continuously update the return loss value or insertion loss value depending on what mode it is in. The OPM and IL screens will show the optical power reading and insertion loss values, respectively, for both channels simultaneously. Each channel has its own return loss mode so that the distance and the value can be displayed simultaneously.

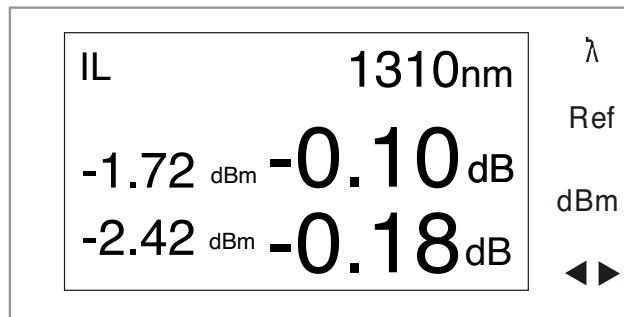


Figure 5: Front panel display for duplex cable

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