The Polarization Controller replaces conventional looped fiber types, yet performs the same functions. It consists of the Fiber-to-Fiber Coupling System with appropriate Retarder Component Modules.

Control of polarization is achieved through the use of 1/4-Wave and 1/2-Wave Retarders whose parameters are not affected by environmental changes on the fiber. This accounts for the stability of the Polarization Controller.

A Linear Polarizer is the third Module in the PC-FFB. It precedes or follows the 1/4-Wave and 1/2-Wave Retarders (in that order) according to the application.

In contrast, looped fiber controllers are sensitive to environmental changes, and therefore must be frequently adjusted.

In all FiberBench Coupling Systems using PM Fiber-Cables, both the fast axis and the FC receptacle key-way are vertical. Both the plane of polarization and the fiber stress rods are horizontal.

A major feature of FiberBench Coupling Systems is stability. Transmittance remains constant after temperature change, shock and vibration far greater than experienced in typical laboratory use.
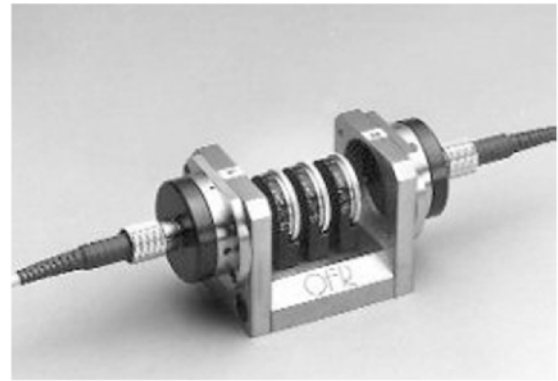
Question	Polarization Controller	Looped Fiber Polarization Controller
Is PM output fiber available as a standard?	Yes	No. PM fiber must be spliced to output SM fiber
What about time, temperature and motion stability.	Extremely stable, insensitive to physical disturbances	Sensitive to physical disturbances. Drifting is common.

Typical insertion loss is ≤1 dB (fiber-fiber) without optical components. Return loss < 50 dB input/output.

Catalog Number	Description	Application
PC-FFB-P/P-QHL- λ -X or -Y	PM in/out with 1/4, 1/2, linear polarizer	Use when input fiber has signal not launched correctly into the PM fiber axis. 1/4 wave plate removes ellipticity, resultant linear light is then rotated with 1/2 wave plate, linear polarizer then "cleans up" polarization entering PM fiber.
PC-FFB-P/P-HL- λ -X or -Y (Common)	PM in/out with 1/2, linear polarizer	Use when light is well aligned on the input fiber. 1/2 wave retarder rotates the plane of polarization to match that of the output fiber. Linear polarizer then "cleans up" the polarization entering the output PM fiber.
PC-FFB-S/P-QHL- λ -X or -Y (Common)	SM in/PM out with 1/4, 1/2, linear polarizer	Use when input SM signal needs to be converted to linear polarized light before entering output PM fiber.
PC-FFB-S/S-QHL- λ -X or -Y	SM in/out with 1/4, 1/2, linear polarizer	Use when input SM signal needs to be converted to linear polarized light before entering output SM fiber. Common when relatively short runs of SM fiber are used on the output so as not to introduce ellipticity into linear polarized output.
PC-FFB-S/S-QHQ- λ -X or -Y	SM in/out with 1/4, 1/2, 1/4	Use when elliptical and linear states of polarization are desired. Bench is reciprical in operation allowing any state to be produced forward or backward.
PC-FFB-S/S-QHQL- λ -X or -Y	SM in/out with 1/4, 1/2, 1/4, linear polarizer	Use when input SM signal needs to be converted to linear polarized light before entering output SM fiber. Common when relatively short runs of SM fiber are used on the output so as not to introduce ellipticity into linear polarized output.
PC-FFB-S/S-QH- λ -X or -Y	SM in/out with 1/4, 1/2,	Use when input SM signal needs to be converted to linear polarized light before entering output SM fiber. Common when relatively short runs of SM fiber are used on the output so as not to introduce ellipticity into linear polarized output.