# Lightwave Polarization Controller

## PC4000 series

PC4000 is the multi channel version of PC1300 Motorized Polarization Controller. In addition to its basic function of adjusting polarization states in multi channels, it also provides convenient '**save and recall**' functions.

As a Scanning PC, it provides very powerful '**auto scan**' modes with variable scanning speeds.

Polarization states can be manipulated by either manual adjustment or remote control (GPIB, RS-232) using two quarter-wave plates in each channel of PC4000.

Auto scan mode of **FIBERPRO**'s Motorized Polarization Controller has been upgraded in LPC. It shows another auto scan mode of four quarter-waveplates with higher polarization extinction ratio when connecting two channels at an advanced speed.

PC4000 is an essential tool to complete fiber-optic, multi-channel measurement systems such as WDM/DWDM as well as R&D (such as PMD experiments), and manufacturing.

## Features

All Fiber Configuration
2 and 4 channel Option
Automatic Full Range Scan
Auto Self-Testing
Low Insertion Loss
GPIB & RS232 Remote Interface

Lightwave
Polarization Controller

# Applications

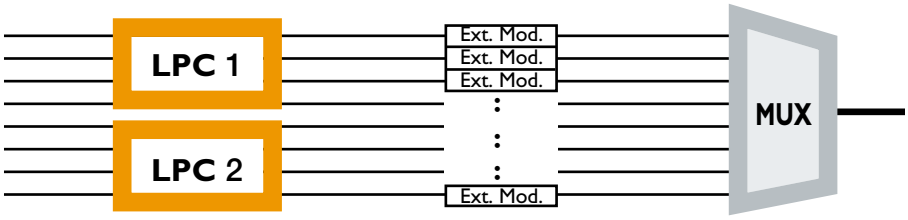
## 1. Polarization control for optical devices to match polarization states

PC4000 series can accurately create any polarization state with its low insertion loss and high polarization extinction ratio. This performance enables PC4000 series to be combined with other instruments to complete fiber optic measurement systems for many applications. For example, PDG/PMD compensation, fiber optic sensor, fiber laser, and so on.

## 2. Multi-channel polarization control

WDM systems need several polarization controllers to change the input states of polarization to external modulator or another device of each channel. One PC4000 series can control the polarization state of 4 channels simultaneously with simple and easy setup.

[Figure 1]




## 3. PMD Emulation

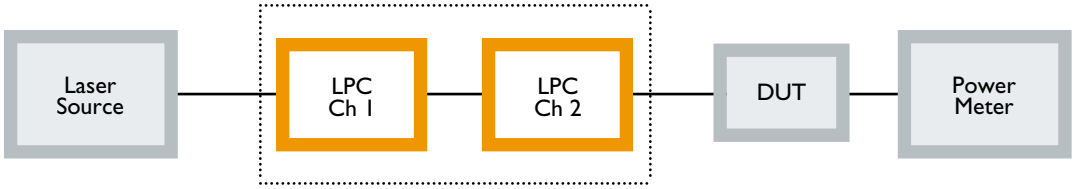
In testing a PMD compensator, the PMD emulator is used to produce the Maxwellian Distribution of PMD. It can be achieved by several cascaded birefringence elements with PC4000 series which was inserted between them, and PC4000 series will be measured randomly.

[Figure 2]


## 4. PDL measurements

PDL is defined as the difference between minimum and maximum transmission through DUT for all input states of polarization. (Polarization Scanning Technology for measuring PDL) In this method, it is important to generate all polarization states. PC4000 series provide the several Auto-scan modes using four-waveplates, which can generate all polarization states and cover the entire Poincare Sphere effectively. Four-waveplates is available by connecting two channels with the connector.

[Figure 3] Auto Scan Mode




# Specification

| | Single-Channel Mode | Two-Cascaded-Channels Mode [1] |
|---|---|---|
| | 2 Quarter-Wave Plates | 4 Quarter-Wave Plates [1] |
| Wavelength range | 1520 ~ 1620 nm | 1400 ~ 1650 nm |
| Insertion Loss | < 0.5 dB (< 0.3 dB typical) [2] | < 1.0 dB [2], [3] |
| Insertion Loss Variation | < ±0.02 dB [2] | < ±0.03 dB [2], [3] |
| Polarization Extinction Ratio | > 20 dB (> 25 dB typical) | > 50 dB |
| Back Reflection | < -60 dB [4] | < -60 dB [4] |
| Rotational Resolution | 0.225° / step or 0.225° / position | |
| Rotational Accuracy | ±0.225° | |
| Rotational Speed | < 6000 steps per sec. (1350°/sec) | |
| Power Input | 100 ~ 120 or 200 ~ 250 V, 50 / 60 Hz, Free Voltage | |
| Remote Interface | GPIB / RS232 | |
| Dimensions (W × H × D) | 212 × 86 × 370 mm | |

[1] By connecting two channels with FC/PC connectors
[2] With FC/PC connectors
[3] With the range 1520 ~ 1620 nm
[4] Pig-tail type



# Ordering Code

**PC4002-(1) 2 channel LPC**
**PC4004-(1) 4 channel LPC**
1. Connector type → FC/SPC (F/P), FC/APC (F/A)

***Example : PC4004-F/A***
→ 4 channel LPC with FC/APC connectors