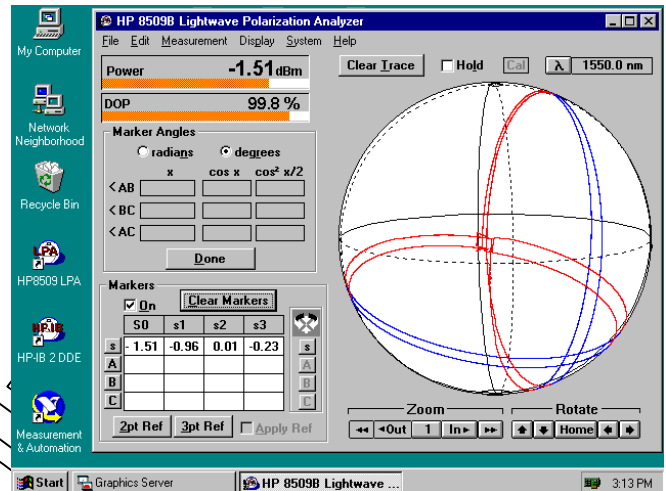
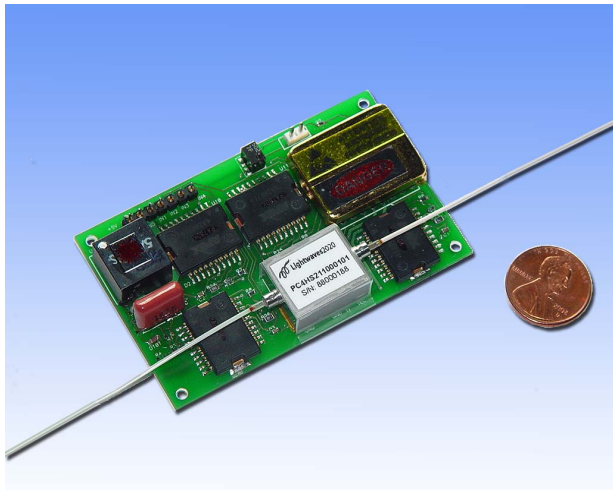


Product Specifications

High-Speed Polarization Controller



1. PRODUCT DESCRIPTION:

The Lightwaves2020's high-speed polarization controller (PC) is based on novel optical material offering fast response in μs , in contrast with conventional polarization controllers with speed in ms . The dramatic increase in response speed enables the new polarization controller suitable for demanding 40Gbs PMDC application as well as polarization Mux/DeMux application. In addition, the new high-speed polarization controller is ideal for fiber sensing in optical security, spectroscopy and polarization dependent imaging in biomedical applications.

An optional driver-PCB, on which the polarization controller is fixed, is provided. The device is driven by 0-5 VDC voltages to produce 0 - 2π phase retardation of polarization state.

The high-speed polarization controller (PC) has options of three or four cell design. The fourth cell is added for faster searching and controlling.

Product Specifications

2. FEATURES:

- High Speed (μ s).
- Broadband wavelength ranges.
- No moving parts.
- Low insertion loss.
- Low PDL over wavelength range.
- Solid state technology

3. APPLICATIONS:

- PMD Compensation
- Polarization Generator
- Polarization Scrambler
- Polarization Multiplexing/Demultiplexing
- Polarization Instrumentations
- Fiber Sensing
- Polarization Dependent Imaging
- Polarization Coded Optical Security

4. SPECIFICATIONS

4.1 OPTICAL PROPERTIES

Parameters	Performance
Operational Wavelength Range	1528nm to 1610nm
Response Speed	< 10 μ s
Maximum Insertion Loss	<1.2 dB
PDL	<0.05dB
PMD	<0.05ps
Maximum Back-reflection	< -50dB
Driving Voltage (with driver)	0-5VDC
Driving Voltage (w/o driver)	0-180VDC

*Note: 1. All specification referred without connectors.
2. Measured at wavelength 1550nm.*

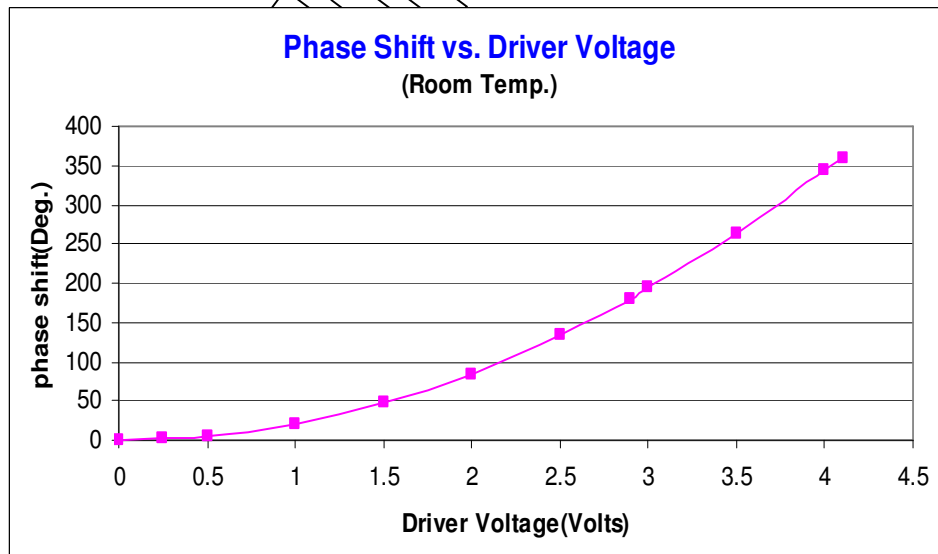
Product Specifications

4.2 ELECTRICAL, MECHANICAL AND PACKAGE SPECIFICATIONS

Parameters	Unit	Specifications
PC Dimensions (LxWxH)	mm	38x15x9
Driver-PCB (LxW)	mm	74x.10x44
Fiber Type	-	9/125 corning SMF-28
Fiber Pigtail	-	0.9mm tight buffer, 1.0m
Optical Connector	-	FC/APC, FC/APC , SC/UPC
Operating Temperature	°C	0 to 70
Storage Temperature	°C	-40-85
Relative humidity	%	0-95

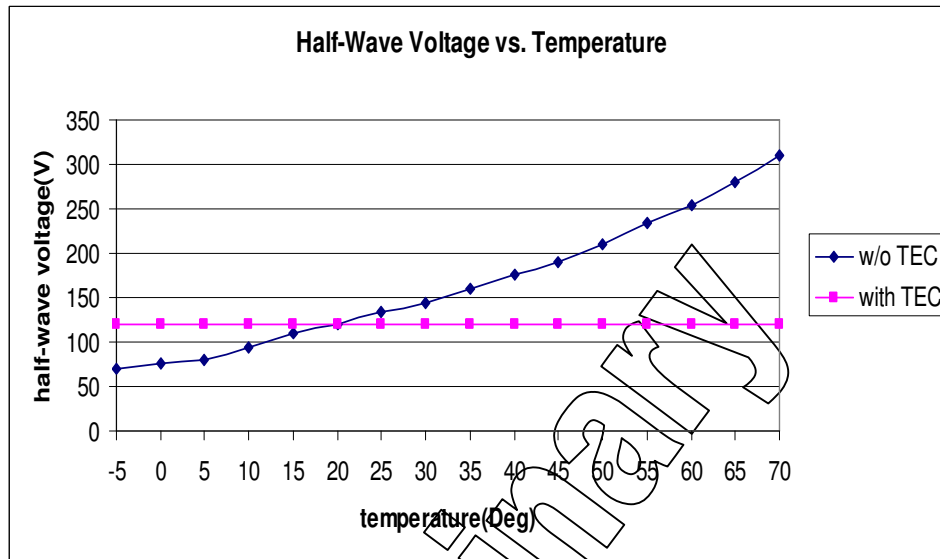
5. PERFORMANCE:

5.1 Phase Retardation vs. Drive Voltage:



Product Specifications

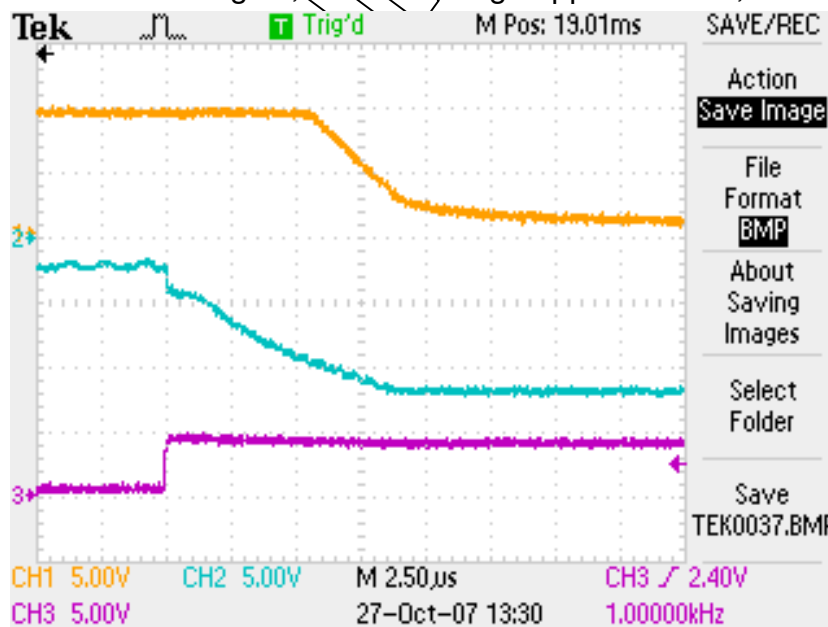
5.2 Half-wave Voltage vs. Temperature:



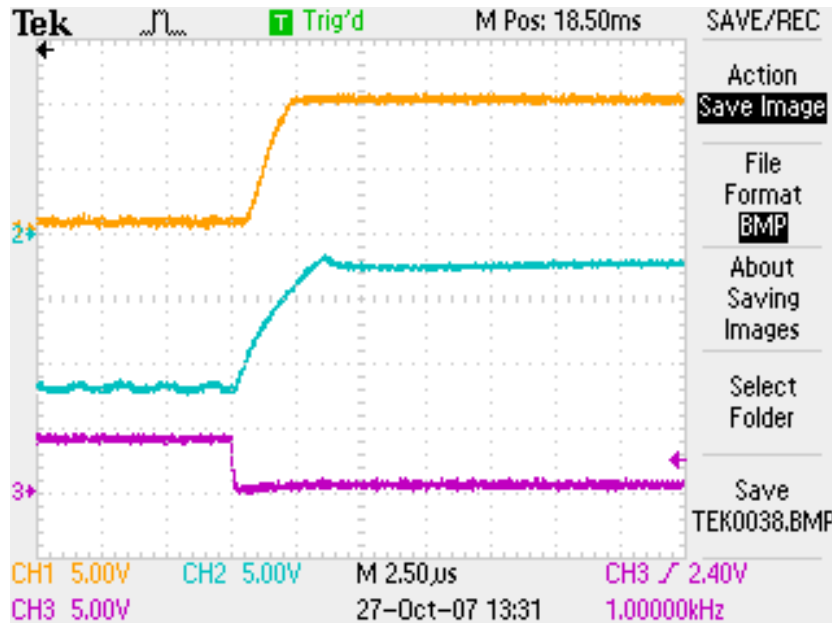
5.3 Raising and Falling Time:

Raising time: < 2.5 μ s, Falling time: < 8 μ s

(Red trace: Control Signal, Green: Voltage applied on PC, Yellow: Light Intensity)

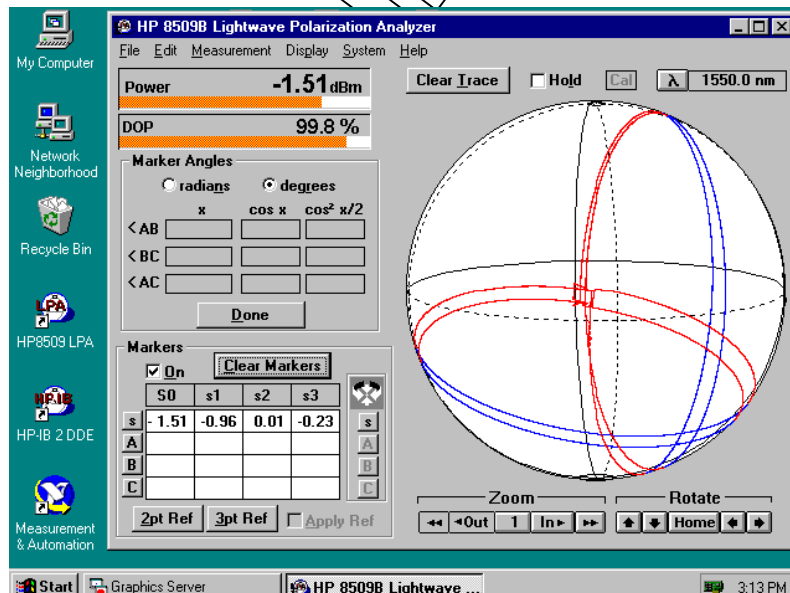


Product Specifications



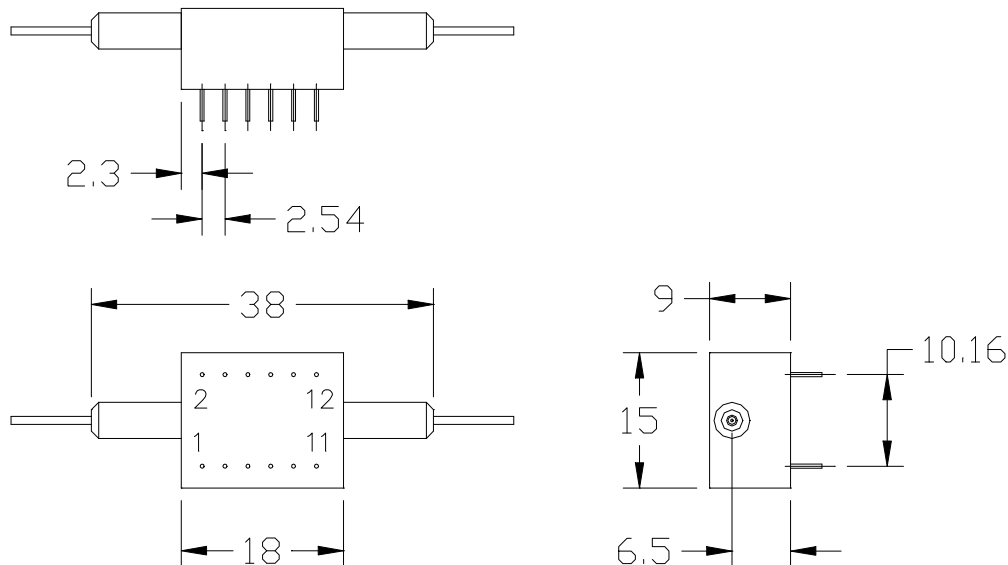
5.4. Measured Phase Retardation

- IL=1.51dB
- $V_{\pi}=120V$, $V_{2\pi}=165V$ @ RT
- Phase Change trace perpendicular for 0° cell and 45° cell



Product Specifications

6. MECHANICAL DIMENSION:



Pin Layout

1	Cell-1(+)	2	Cell-1 (GND)
3	Cell-2(+)	4	Cell-2(GND)
5	Cell-3(+)	6	Cell-3(GND)
7	Cell-4 (+)	8	Cell-4 (GND)
9	Thermister	10	Thermister
11	TEC(+)	12	TEC(-)

7. DRIVER LAYOUT:

- Output Voltage: 180VDC
- Response Time: <10 μ s
- Input setting voltage: 0-5VDC
- Power Consumption: <6W @ 70°C
- Operating Temperature: 0°C - 70°C

Product Specifications

Driver Pin Description:

Input Power supply voltage:

+5VDC

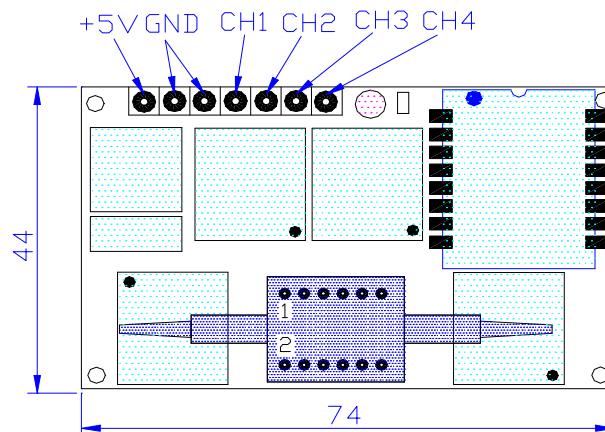
GND

Input Control Voltage:

GND

CH1: Input setting voltage for Channel 1

CH2: Input setting voltage for Channel 2



CH3: Input setting voltage for Channel 3

CH4: Input setting voltage for Channel 4

All input setting voltage 0V-4.5V corresponding to 0-360° phase shift.

8. LABELING AND MARKING

The module will be labeled with the following information.

1. Manufacturer's name and Logo
2. Model Number
3. Serial Number.