Fiber Phase Shifter – Piezoelectric

Up to 8π, 400nm to 2600nm

DATASHEET

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The Piezoelectric Fiber Phase Shifter (PIPS) employs a piezoelectric fiber stretcher to induce birefringence and achieve phase retardation. It features ultra-low insertion loss, compatibility with all fiber types, high power handling, and significant phase-shifting capability. Two configurations are available: the straight version, offering phase shifts up to 8π, and the coil version, achieving phase shifts up to 50π. Designed for fast response and continuous operation, the PIPS excels in large-scale fiber phase-shifting applications.

A dedicated driver with 0–5V input control and a frequency range of up to 100 kHz enables seamless system integration. Control signals are applied via an SMA connector, and the driver is powered by a 12V DC supply (included). Each unit is rigorously tested to ensure optimal performance. Significant phase shifts can be achieved at resonance frequencies, optimizing power consumption for applications demanding significant phase modulation. The PIPS offers a cost-effective, robust, high-performance solution for advanced fiber phase-shifting needs.

Features

- Large Phase Shift
- High Reliability
- Low Insertion Loss
- Compact Size
- High Optical Power Handling

Applications

- Fiber Sensor
- Fiber Interferometer
- Fiber Laser
- Instrumentation

Specifications

Parameter	Min	Typical	Max	Unit
Wavelength	400		2650	nm
Insertion Loss [1]	0.1	0.5	0.8	dB
Polarization Mode Dispersion			0.05	ps
Return Loss	65			dB
Response Time Rise/Fall	30			μs
Operating Optical Power		0.5	1	W
Operation Frequency	DC		1	kHz
Resonance Frequency		35		kHz
Residual Amplitude Modulation			0.02	dB
Phase Change [2]	0		8	π
Control Voltage [2]	0	20	150	V
Capacitance of Piezo	2	5	12	nF
Operating Temperature	0 ~ 60			°C
Storage Temperature	-40 ~ 85			°C

Notes:

[1]. Excluding connectors. Connectors ad 0.3dB.

[2]. @1550nm

Rev 05/14/25

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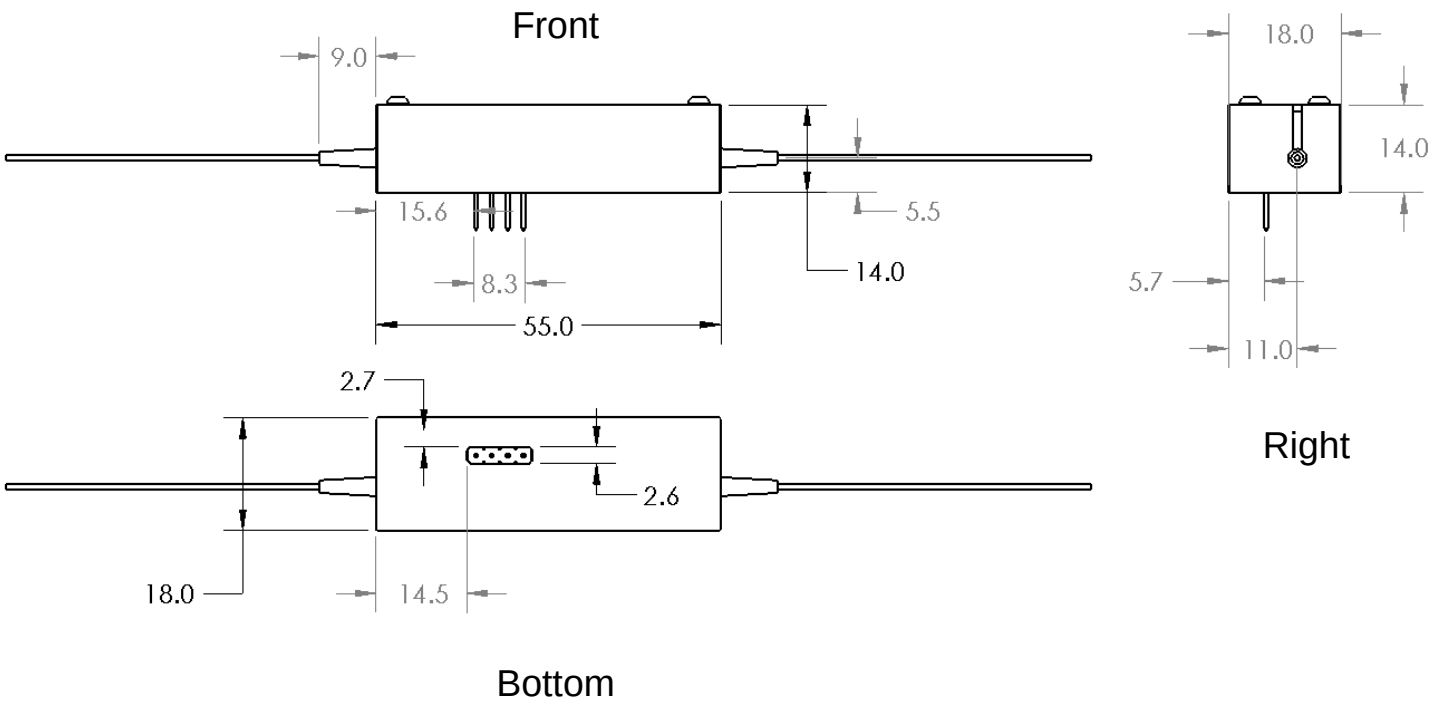
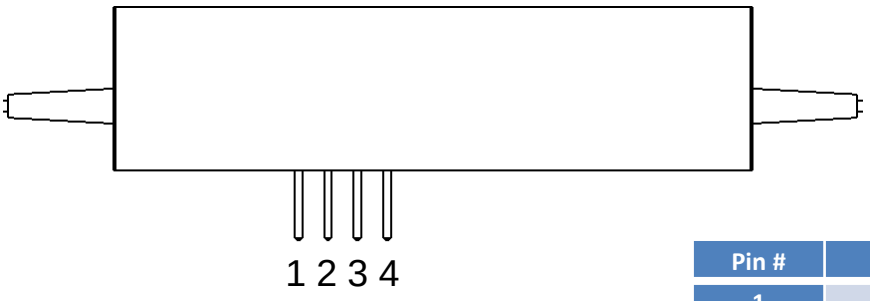
Mechanical Dimensions (mm)



*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

Electrical Driver Pin Definition



Pin #	Connection
1	+
2	No connection
3	No Connection
4	-

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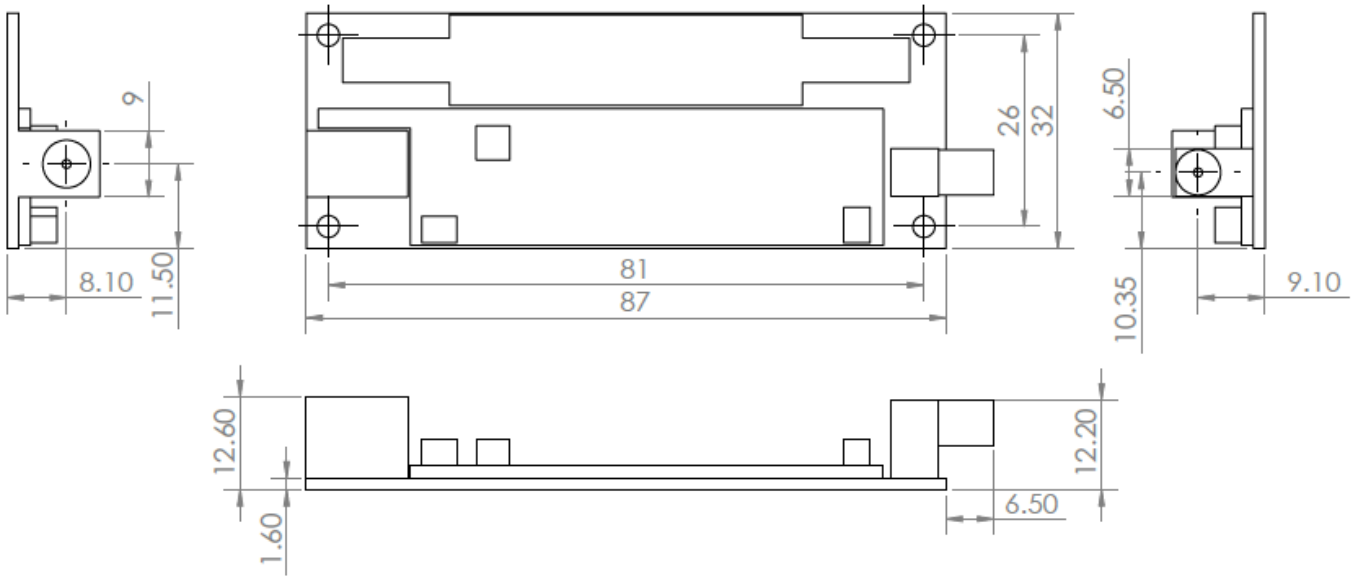
Module Dimensions (mm) with Driver PCB and Regular Power NSVS



20kHz Driver (87mm x 32mm)

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Ordering Information

	☐☐	☐	☐	☐☐	☐	☐	☐
Prefix	**Type**	**Test Wavelength**	**Driver**	**Fiber Type**	**Fiber Cover ***	**Fiber Length**	**Connector**
PIPS-	In Transmission = 11 Between Two Polarization Axes = 22	360 nm = A 430 nm = B 488 nm = 4 532 nm = 5 630 nm = 6 780 nm = 7 850 nm = 8 980 nm = 9 1060 nm = 1 1310 nm = 3 1550 nm = C 2000 nm = 2 2.3-4.1 µm = F	Non = 1 Yes = 2 Special = 0	*Select Below*	0.9mm Tube = 1 Bare Fiber = 2 Special = 0	0.25m = 1 0.5m = 2 1.0 m = 3 Special = 0	None = 1 FC/PC = 2 FC/APC = 3 LC/PC = L Special = 0

* Bare fiber can not put on connectors due to its fragility

Fiber Type Selection Table:

01	**SMF-28**	34	**PM1550**	71	**MM 50/125µm**
02	**SMF-28e**	35	**PM1950**	72	**MM 62.5µm**
03	**Corning XB**	36	**PM1310**	73	**105/125µm**
04	**SM450**	37	**PM400**	74	**FG105LCA**
05	**SM1950**	38	**PM480**	75	**FG50LGA**
06	**SM600**	39	**PM630**	76	**STP 50/125**
07	**780HP**	40	**PM850**	77	**IRZS23**
08	**SM800**	41	**PM980**	78	**IRZS32**
09	**SM980**	42	**PM780**		
10	**Hi1060**	43			
11	**SM400**	44	**PM405**		
12		45	**PM460**		
13		46			

Driver PCB

The Piezoelectric Driver is a PCB designed to mount the Fiber Phase Shifter (PIPS). It features an SMA analog control input capable of modulation speeds up to 1K Hz. The applied voltage is adjustable from 10 to 120 V via a resistance potentiometer on the PCB. A wall-pluggable 12V DC power supply is included. Enclosure is also available at extra.

Warning: do not touch the PCB at any time to void static damage and unpleasant electrical shock.

Driver is $640