

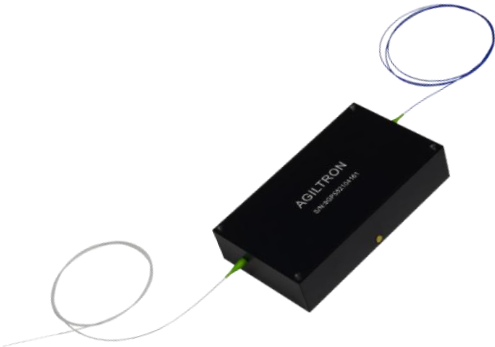
All Fiber Optic Polarization Scrambler/Depolarizer

SM, MM, 0.05 to 700kHz, 450 to 2600nm, <0.5dB optical loss, turn-key module



DATASHEET

[Return to the Webpage](#)



The AFPS series All-Fiber Optical Polarization Scramblers effectively randomize the polarization states of optical fibers while offering ultralow insertion loss, broad bandwidth, compatibility with all fiber types, and high power handling. This is achieved through precise, sequential stresses applied by four to six piezoelectric squeezing plates positioned at 45-degree angles, inducing birefringence phase retardation. The scrambler rapidly converts any input polarization into randomly distributed states across the entire Poincaré sphere and is bidirectional in operation. With squeezer frequencies up to 700 kHz and advanced digital circuitry, the device ensures uniform State of Polarization (SOP) distribution across a wide temperature range, making it ideal for demanding sensor applications. The self-contained module requires no manual adjustments or input controls, simplifying usage. Installation is straightforward: connect the input/output fibers, plug in the 12V DC power supply, and allow approximately 5 minutes for thermal stabilization.

Features

- Low Loss
- High Reliability
- Bidirectional

Applications

- Polarization Elimination
- Instruments

Specifications

Parameter	Min	Typical	Max	Unit
Center Wavelength	400		2600	nm
Operating Wavelength Range		100	150	nm
Insertion Loss ^[1]		0.2	0.3	dB
Return Loss (without connector)	65			dB
Output Degree of Polarization ^[2]	5			%
Residual Amplitude Modulation			0.02	dB
Residual Phase Modulation			0.1	°
Optical Power Handling ^[3]			800	mW
Intrinsic Polarization Dependent Loss		0.05	0.1	dB
Operating Temperature	0		60	°C
Storage Temperature	-40		85	°C
Power Supply (DC)		12		V
Power Consumption		12		W

Notes:

[1]. Without connectors. Each Connector adds 0.3dB.

[2]. Tested using Agilent Polarimeter N7781 series with data rate 1MHz

[3]. 800mW for fiber core >9 μm. Smaller core lower the power handling

Note: The specifications provided are for general applications with a cost-effective approach. If you need to narrow or expand the tolerance, coverage, limit, or qualifications, please [click this link](#):

Legal notices: All product information is believed to be accurate and is subject to change without notice. Information contained herein shall legally bind Agiltron only if it is specifically incorporated into the terms and conditions of a sales agreement. Some specific combinations of options may not be available. The user assumes all risks and liability whatsoever in connection with the use of a product or its application.

Rev 03/26/26

© Photonwares Corporation

P +1 781-935-1200

E sales@photonwares.com

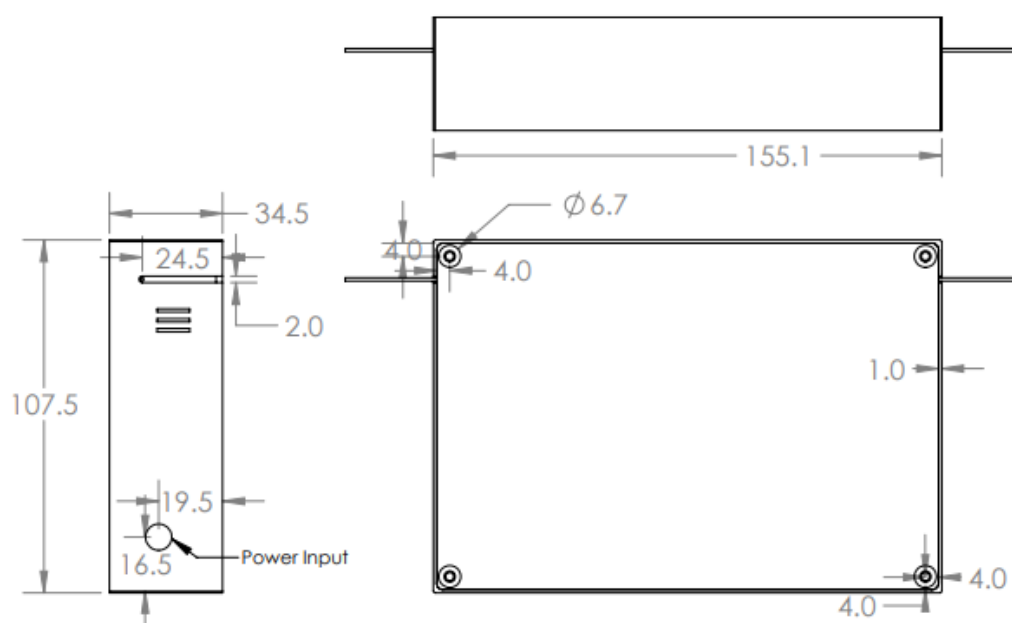
W www.agiltron.com

Information contained herein is deemed to be reliable and accurate as of the issue date. Photonwares reserves the right to change the design or specifications at any time without notice. Agiltron is a registered trademark of Photonwares Corporation in the U.S. and other countries.

DATASHEET

Orthographic projection of a mechanical part showing five views: Top, Front, Bottom, Left, and Right. The dimensions are as follows:

- Top View:** Overall width is 102.00. The distance from the left edge to the center of the hole is 34.00. The hole has a diameter of $\phi 2.50$. The distance from the right edge to the center of the hole is 3.00. The distance from the top edge to the center of the hole is 3.00. The distance from the bottom edge to the center of the hole is 3.00.
- Front View:** Overall height is 24.20. The distance from the top edge to the center of the hole is 24.00. The distance from the bottom edge to the center of the hole is 8.50.
- Bottom View:** Overall width is 102.00. The distance from the left edge to the center of the hole is 34.00. The distance from the right edge to the center of the hole is 3.00.
- Left View:** Overall height is 24.20. The distance from the top edge to the center of the hole is 24.00. The distance from the bottom edge to the center of the hole is 8.50.
- Right View:** Overall height is 24.20. The distance from the top edge to the center of the hole is 24.00. The distance from the bottom edge to the center of the hole is 8.50.



© Photonwares Corporation

E sales@photonwares.com

W www.agiltron.com

2

All Fiber Optic Polarization Scrambler/Depolarizer

SM, MM, 0.05 to 700kHz, 450 to 2600nm, <0.5dB optical loss, turn-key module



DATASHEET

Ordering Information (Part Number)

Prefix	Test Wavelength	Type	Input Fiber	Output Fiber	Fiber Cover	Fiber Length	Connector ^[1]
AFPS-	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	Standard = 11 Special = 00	Select From Below Special = 00	Select From Below Special = 00	0.9mm tube = 3 Special = 0	1m = 1 0.5m = 2 Special = 0	FC/APC = 3 FC/PC = 2 LC/PC = 7 LC/APC = 9 Non = 1 Special = 0

[1]. The default connector configuration uses fiber with 0.9 mm buffer protection. The connector cannot be installed directly onto bare fiber because the bare fiber is prone to damage during shipping. However, the connector can be assembled on bare fiber if a 3 cm protective loose tube is added for reinforcement. The customer may remove this protective tube after testing. The optical power handling of a standard connector is less than 0.5 W for SMF-28 fiber and decreases further for smaller-core fibers.

Fiber Type Selection Table:

01	SMF-28	34	PM1550
02	SMF-28e	35	PM1950
03	Corning XB	36	PM1310
04	SM450	37	PM400
05	SM1950	38	PM480
06	SM600	39	PM630
07	780HP	40	PM850
08	SM800	41	PM980
09	SM980	42	PM780
10	Hi1060	43	
11	SM400	44	PM405
12		45	PM460

Fiber Core Alignment

Note that the minimum attenuation for these devices depends on excellent core-to-core alignment when the connectors are mated. This is crucial for shorter wavelengths with smaller fiber core diameters that can increase the loss of many decibels above the specification if they are not perfectly aligned. Different vendors' connectors may not mate well with each other, especially for angled APC.

Fiber Cleanliness

Fibers with smaller core diameters (<5 μm) must be kept extremely clean, contamination at fiber-fiber interfaces, combined with the high optical power density, can lead to significant optical damage. This type of damage usually requires re-polishing or replacement of the connector.

Maximum Optical Input Power

Due to their small fiber core diameters for short wavelength and high photon energies, the damage thresholds for device is substantially reduced than the common 1550nm fiber. To avoid damage to the exposed fiber end faces and internal components, the optical input power should never exceed 20 mW for wavelengths shorter 650nm. We produce a special version to increase the how handling by expanding the core side at the fiber ends.