

Enhancing Optical Performance

In the dynamic realm of optical technology, passive devices play a role in ensuring high-quality signal transmission and stabilization. As the demand for faster communication systems increases, so does the need for effective polarization management products. Our range of Polarization Maintaining (PM) devices are meticulously designed to guarantee optimal performance under various conditions.

Applications

- Fiber laser systems requiring stable polarization.
- Sensor systems, especially in applications sensitive to signal variations.
- Interferometric sensors and applications.
- Long-haul telecommunication networks.
- Optical metro networks requiring dense channel spacing
- Optical signal distribution in network hubs.
- Balancing signal strengths in branch networks.
- Fiber laser combining or splitting for enhanced power.
- Biomedical imaging systems.
- Multiple input-output optical network configurations.
- Reflective sensor systems.
- Add-drop multiplexing in DWDM systems.

OVER THE WORLD

SANWA product selection offers a wide range of high-quality and reliable solutions for various applications. Fiber optic technology is known for its ability to transmit data at incredibly fast speeds over long distances, making it ideal for telecommunications, networking, and data center environments.

USA EUROPE TAIWAN THAILAND JAPAN



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We Create, We Customize, We Connect

ECHNOLOGIES

Providing engineering excellence, connecting you and beyond.

SANWA Technologies Co., Ltd. (formerly Sanwa Denki Kogyo Co., Ltd.) was established in 1947 and has since become a renowned manufacturer of communication and connectivity solutions, specializing in the global optical communications market. With over 75 years of innovation and engineering excellence, SANWA has developed and manufactured high-quality connectivity solutions and components to enhance the performance of optical networks both today and for the future.

Manufacturers designing products since 1947.

SANWA specializes in optical solutions that serve a broad range of international customers within the Telecom, Enterprise, Datacom, Premise wiring, CATV, OEM, Utility, Municipality, Security, and Aerospace/Military markets. With over 40 years of experience in fiber optic components and passive assembly manufacturing, we offer a variety of products and custom solutions tailored to your needs.

Our Vision

For over 75 years, SANWA has sought to establish relationships that are beyond transactional. Diligently collaborating on both custom and standard products with expeditious local support. Over time, we have transformed the traditional Japanese manufacturing philosophy, Monozukuri, exemplified in our everyday pursuit of manufacturing thoughtfulness, and equally focus on all aspects of product delivery: quality, time, and service.

ADVANCING TOGETHER, FORGING THE FUTURE

At SANWA Technologies, we take great pride in our world-class manufacturing facilities that empower us to deliver highquality products to our valued customers.

With two state-of-the-art factories, strategically located in Tokyo, Japan, and Ayutthaya, Thailand, we strive for excellence through cutting-edge technology, precision engineering, and a dedicated focus on quality. Each facility serves a unique purpose, allowing us to meet the diverse needs of our global clientele.

Japan Hachioji Factory: Leading Innovation and Research

Our Hachioji factory, nestled in the western part of Tokyo, is the epitome of innovation and research. Equipped with the latest advancements in manufacturing technology, this facility drives our relentless pursuit of excellence. Our team of seasoned experts leads research and product development, ensuring that SANWA Technologies remains at the forefront of industry advancements. The factory also houses a robust QA, QC, and General Qualification Lab, where every product undergoes stringent testing to meet the highest quality standards. With a focus on low-volume and BCP production, as well as automated MT production and active device production, our Hachioji factory is a hub of progress and ingenuity.

Thailand Ayutthaya Factory: Powering High-Volume Production

Nestled in Ayutthaya, Thailand, our second manufacturing facility is a powerhouse dedicated to high-volume production. With a sharp focus on efficiency and precision, this factory houses cutting-edge equipment for high-volume injection molding and precision assembly and testing. Quality is paramount, and our dedicated QA and QC Lab ensures that each product meets our stringent quality guidelines. We also prioritize tooling maintenance and repair, guaranteeing optimal performance and precision throughout the manufacturing process. For critical processes that demand a controlled environment, our Thailand factory boasts a semi-clean room, enabling us to deliver products with unparalleled purity and accuracy.







FC PM

LC PM

MU PM

A Dan Dan Dan Dan Dan



POLARIZATION MAINTAINING PATCHCORD



- High-speed quantum key distribution (QKD) systems.
- Fiber laser systems requiring stable polarization.
- Sensor systems, especially in applications sensitive to signal variations.
- Interferometric sensors and applications.

The PM Patchcord series has excellent environmental stability, high return loss, low insertion loss. It is ideal for PM amplifiers, fiber lasers and test instrumentation applications.

	PARAMETERS	VALUE						
	Connector Type	UPC	APC					
UI Z	Wavelength	*980, *1060, 1310, 1480 or 1550						
ō	Typ. Insertion Loss	0.30	0.40	dB				
ATIC	Max. Insertion Loss	*0.5						
٩ II	Min. Return Loss	50	60	dB				
ĭ	Min. Extinction Ratio	2	23	dB				
Ū	Max. Optical Power (Continuous Wave)	3	00	mW				
М	Fiber Length Tolerance	± 10 o	r specify	%				
Ш	Operating Temperature	-5 to +70						
	Storage Temperature	-40 to +85						

*Note: IL is 0.1 dB higher for 980 & 1060nm. Connector key is aligned to slow axis.

CODE	W	AVELENGTH	KEY WIDTH (FOR FC TYPE)		CONNECTOR TYPE			BUFFER TYPE	FIBE	ER LENGTH	FI	BER TYPE
	98	980 nm	R	2.02 mm	0	None	25	250µm Bare Fiber	05	0.5 m	PF	Panda Fiber
	06	06 1060 nm			Α	SC/UPC	9L	900µm Loose Tube	10	1m	S	Specify
0	31 1310 nm		n		В	SC/APC	9T	900µm Tight buffer	S	Specify		
ž	48	1480 nm			С	FC/UPC	2M	2mm Cable				
1 1	55	1550 nm			D	FC/APC	3M	3mm Cable				
14N	S	Specify			Ε	LC/UPC	S	Specify				
					Q	LC/APC						
					S	Specify						



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PM SERIES

PM FILTER DWDM



PM Filter DWDM devices use environmentally stable thin film filter and advanced packaging technology to achieve wide passband, low insertion loss, high channel isolation, excellent environmental stability and high extinction ratio. They can be used individually to perform single channel add or drop function or can be used in DWDM systems and fiber sensor systems. PM Filter DWDM is designed and manufactured according to Telcordia standard and ITU standard.

	PARAMETERS		VALUE		UNIT
	Filter Type	200Ghz		100Ghz	
	Pass Band Center Wavelength				nm
	Min. Bandwidth @ 0.5 dB	0.5		0.16	nm
	Typ. Bandwidth @ 0.5 dB	0.7		0.4	nm
	Max. Insertion Loss @ Common Pass	1.0		1.2	dB
	Typ. Insertion Loss @ Common Pass	0.8		1.0	dB
ທ	Min. Channel Isolation @ Common Pass	25		25	dB
R	Typ. Channel Isolation @ Common Pass	30		30	dB
Ĕ	Reflection Band Max. Insertion Loss @ Common Reflect	0.5		0.5	dB
♦	Typ. Insertion Loss @ Common Reflect	0.3		0.3	dB
Ĕ	Min. Channel Isolation @ Common Reflect	12	ITU Grid	12	dB
Ū	Typ. Channel Isolation @ Common Reflect	15		15	dB
Ľ	Typ. Extinction Ratio @ 23°C	22		22	dB
ົທ	Min. Extinction Ratio @ 23°C	20		20	dB
	Directivity	50		50	dB
	Min. Return Loss	50		50	dB
	Center Wavelength Stability	0.002		0.002	nm/°C
	Thermal Stability	0.005		0.005	dB/°C
	Max. Optical Power	300		300	mW
	Operating Temperature	-5 to +70		-5 to +70	°C

*Note: IL is 0.3 dB higher, RL is 5 dB lower, and ER is 2 dB lower for each connector added. Connector key is aligned to slow axis.

4	CODE	CHANNEL SPACING			ITU GRID	CO	NNECTOR TYPE		FIBER JACKET	FIBI	er length
	M	10	100 GHz	S	Specify	Α	SC/UPC	25	250µm Panda Fiber	05	0.5 m
	MD	20	200 GHz			В	SC/APC	9L	900µm Loose Tube	10	1m
	D					С	FC/UPC	S	Specify	S	Specify
	Ē					D	FC/APC				
	Ę					Ν	None				
	ц					S	Specify				

ORDER CODE EXAMPLE

F4M-PMDWDM- 10 - S - S - S - 10



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PM FILTER COUPLER



The Polarization Maintaining Filter Coupler is manufactured by using advanced technology to allow the input signal to be splitted at various ratios with high extinction ratio. It supports both polarizations.

	PARAMETERS	\ \	ALUE	UNIT			
	Operating Wavelength (λc)	131() or 1550	nm			
	Operating Wavelength Range	λ	c ± 40	nm			
10	Configuration	1x2	2x2	dB			
Ž	Max. Excess Loss	0.7	1.0	dB			
D	Max. Uniformity	0.6	0.8	dB			
Ā	Tap Ratio	1 ± 0.5%, 5 ±	1.0%, 10% and 50%	%			
Ū	Min. Return Loss		50	dB			
Ц	Min. Extinction Ratio	20	18	dB			
U	Max. Optical Power (Continuous Wave)		300	mW			
ũ	Max. Tensile Load		5	N			
UI	Operating Temperature	-5 to +70					
	Storage Temperature	-40 to +85					
	Fiber Type	SMF-28 or PM Panda fiber for tap port PM Panda fiber for input & output					

*Note: IL is 0.3 dB higher, RL is 5 dB lower, and ER is 2 dB lower for each connector added. Connector key is aligned to slow axis.

CODE	WA	WAVELENGTH CONFIGURATION			CO	oupling Ratio	COI	NECTOR TYPE		FIBER TYPE FOR TAP PORT	F	IBER JACKET	FIBE	er length
	31	1310 nm	1	1X2	01	1/99	0	None	М	SMF-28 (1x2 Only)	25	250µm Fiber	05	0.5 m
	55	1550 nm	2	2X2	05	5/95	Α	SC/UPC	PF	PF Panda Fiber		900µm Loose Tube	10	1m
С Ц				10	10/90	В	SC/APC	S	Specify	S	Specify	S	Specify	
Σ					50	50/50	С	FC/UPC						
÷					S	Specify	D	FC/APC						
F4I							E	LC/UPC						
							Q	LC/APC						
							S	Specify						
	OF	RDER CODE (EXA	MPLE	4M-	PMFC - 31	-1-	50 - 00 - 1	PF - (25 - S				





PM TAP COUPLER



The Polarization Maintaining Tap Coupler is manufactured by using advanced technology to allow the input signal to be splitted at various ratios with high extinction ratio.

	PARAMETERS		VALUE	UNIT			
	Operating Wavelength (λc)	1310 0	r 1550	nm			
	Operating Wavelength Range	λc ±	= 40	nm			
IN	Configuration	1x2	2x2				
Ž	Max. Excess Loss	0.7	1.1	dB			
<u> </u>	Max. Uniformity	0.6	0.8	dB			
Ā	Tap Ratio	$1 \pm 0.2\%$, $2 \pm 0.4\%$, $4 \pm 0.8\%$,	$5\pm$ 1.0%, 10%, 20% and 50%	%			
Ü	Min. Return Loss	50					
Ľ.	Min. Extinction Ratio	20	20	dB			
Ш.	Max. Optical Power (Continuous Wave)	30	00	mW			
ŭ	Max. Tensile Load	5	5	Ν			
UI	Operating Temperature	-5 to	+70	°C			
	Storage Temperature	-40 to +85					
	Fiber Type	SMF-28 or PM Panda fiber for tap port PM Panda fiber for input & output por					

*Note: IL is 0.3 dB higher, RL is 5 dB lower, and ER is 2 dB lower for each connector added. Connector key is aligned to slow axis.

CODE	WAVELENGTH N° OF PORTS COUPLING RATIO		CC	NNECTOR TYPE		FIBER JACKET	F	FIBER TYPE Or tap port	FIBI	ER LENGTH				
	31	1310 nm	12	1X2	01	1/99	0	None	25	250µm Bare Fiber	М	SMF-28	05	0.5 m
	55	1550 nm	22	2X2	02	2/98	А	SC/UPC	9L	900µm Loose Tube	PF	Panda Fiber	10	1m
Ê	S	Specify			04	4/96	В	SC/APC	S	Specify	S	Specify	S	Specify
P			-		05	5/95	С	FC/UPC						
ź					10	10/90	D	FC/APC						
F4					20	20/80	Ε	LC/UPC						
					50	50/50	Q	LC/APC						
					S	Specify	S	Specify						

ORDER CODE EXAMPLE

F4M-PMTC - 31 - 12 - 50 - S - S - PF - S



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PM BEAM COMBINER / SPLITTER



З

The Polarization Beam Combiner/Splitter is a compact high performance lightwave component that combines two orthogonal polarization signals into one output fiber. The most common application is to

combine the light of two pump lasers into one single fiber to double the pump power in EDFA or Raman Amplifier. The device can also be used as a beam splitter.

2

Ø 5.5 ±0.1mm

35 ± 1mm $55 \pm 2 \text{ mm}$

	PARAMETERS	GRADE P	GRADE A	UNIT				
	Center Wavelength (¿с)	1310, 148	0 or 1550	nm				
10	Operating Wavelength Range	λC =	= 40	dB				
Ž	Typ. Insertion Loss	0.4	0.5	dB				
ē	Max. Insertion Loss	0.6	0.7	dB				
Ł	Min. Extinction Ratio (for splitter only)	22	20	dB				
Ü	Min. Return Loss	50						
H	Directivity	5	0	dB				
Ш	Max. Optical Power (Continuous Wave)	50	00	mW				
	Fiber Type	PM Panda fiber for Ports 1 & 2, SN	/IF-28 or PM Panda fiber for Port 3					
01	Operating Temperature	-5 to	+70	°C				
	Storage Temperature	-40 to) +85	°C				

*Note: IL is 0.3 dB higher, RL is 5 dB lower, and ER is 2 dB lower for each connector added. Connector key is aligned to slow axis.

	CODE	WA	/ELENGTH	(GRADE	CON	INECTOR TYPE	ECTOR TYPE FIBER JACKET			FIBER TYPE FOR PORT 3	FIBE	ER LENGTH
		31	1310 nm	Р	Premium	0	None	25	250µm Panda Fiber	1	SMF-28	05	0.5 m
	S	48	1480 nm	А	A Grade	Α	SC/UPC	9L	900µm Loose Tube	2	Slow axis aligned 45° to Port 1		1m
	Ę	55	55 1550 nm		В	SC/APC	S	Specify	3	Slow axis aligned to Port 1	S	Specify	
	ő	S	Specify			С	FC/UPC			S	Specify		
	Ę					D	FC/APC						
	4M					Ε	LC/UPC						
	Ľ.					Q	LC/APC						
						S	Specify						
		⊐⊧ SA	rder code NWA Te	= =× chno	ample blogies, Ir	nc.	F4M-PBC - 55 -	<mark>Р-(</mark>	10 - S - S - S h.com sales	@snwl	ech.com		
ļ	Americas Sales-TX					Americas Sales-MA			Europe Sales			Asia Sales	



PM FILTER COUPLER MODULE



This Product series is manufactured by using advanced technology to allow the input signal to be splitted into multichannels at a given splitting ratio with high extinction ratio, low excess loss, low uniformity, low WDL and low TDL. It can be widely used in fiber sensors, amplifiers, lasers, etc.

		VALUE							
	PARAIMETERS	1X4	1X8						
	Center Wavelength (λc)	1310 or 1	550	nm					
	Operating Wavelength Range	λc ± 30)	nm					
10	Insertion Loss	≤7.5, Typ. 7.0	≤ 11, Typ. 10.5	dB					
Ž	Wavelength Dependent Loss	≤ 0.5, Typ.	0.3	dB					
<u> </u>	Max. IL Uniformity	0,8	1	dB					
₹ F	Min. Return Loss	50							
Ŭ	Directivity	50	45	dB					
Ľ.	Min. Extinction Ratio	20		dB					
LU III	Max. Temperature Dependent Loss	0,006	0,008	dB/°C					
ũ	Operating Temperature	-5 to +7	0	°C					
UI	Storage Temperature	-40 to +85							
	Fiber Type	PM Par	nda fiber						
	Package Dimensions	160 × 140 × 10mm	160 × 160 × 10mm						

*Note: IL is 0.3 dB higher, RL is 5 dB lower, and ER is 2 dB lower for each connector added. Connector key is aligned to slow axis.

CODE	WAVELENGTH		N° OF PORTS		SPLITTING RATIO		CO	INECTOR TYPE		FIBER TYPE	FIB	er length
	31	1310nm	14	1x4	EV	Evenly Splitted	0	None	PF	250µm Panda Fiber	05	0.5 m
5	55	1550nm	18	1x8	S	Specify	А	SC/UPC	9L	900µm Loose Tube	10	1m
Ö	S Specify S Specify		Specify			В	SC/APC	S	Specify	S	Specify	
ž						С	FC/UPC					
÷							D	FC/APC				
-4N							E	LC/UPC				
							Q	LC/APC				
							S	Specify				
ORDER CODE EXAMPLE						-PMFCM - 55 - S	5 - S -	- S - S - S				



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PM MINI OPTICAL CIRCULATOR



The Mini Fiber Optic Circulator is a compact, high performance lightwave component that routes incoming signals from Port 1 to Port 2, and incoming Port 2 signals to Port 3. The component provides high isolation, low insertion loss, low PDL, low PMD and excellent environmental stability. It is widely used in combination with fiber gratings

and other reflective components in DWDM systems, high speed systems and bi-direction communication systems.

		VALUE						
	FANAIVIETENS	TYPE A	TYPE B	UNIT				
	Center Wavelength (\lambda c)	1310 or 1550 or 1064						
	Operating Wavelength Range	$\lambda c \pm 30$	$\lambda c \pm 20$	nm				
	Typ. Insertion Loss, λc, 23°C	0.7	0.6	dB				
ທ	Max Insertion Loss	0.9	0.8	dB				
ĥ	Peak Isolation	52	40	dB				
Ē	Typ. Isolation, λc, 23°C	46	30	dB				
 ⊲	Min. Isolation, 23°C	40	20	dB				
ĭ	Min. Extinction Ratio	22	20	dB				
Ū	Crosstalk	50 (Min.)	dB				
M M	Return loss	50 (dB					
ហ៊	Max. Optical Power (Continuous Wave)	300						
	Max. Tensile Load	Ę	Ν					
	Operating Temperature Range	-5 to	+70	°C				
	Storage Temperature Range	-40 to +85						

*Note: IL is 0.3 dB higher, RL is 5 dB lower, and ER is 2 dB lower for each connector added. Connector key is aligned to slow axis.

CODE		TYPE N° OF PORTS		WAVELENGTH			FIBER TYPE	COI	NECTOR TYPE	FIBER LENGTH		
	Α	Туре А	13	3 ports	31	1310nm	25	25 250µm Panda Fiber		None	05	0.5 m
<u>e</u>	В	Туре В	14	4 ports	55	1550nm	9L	900µm Loose Tube	А	SC/UPC	10	1m
U H					64	1064nm	S	Specify	В	SC/APC	S	Specify
Ę					S	Specify			С	FC/UPC		
Ľ									D	FC/APC		
									Е	LC/UPC		
										LC/APC		
									S	Specify		
	OF	RDER CODE	EXA	MPLE	F	-4M-CIRP - A - 13 - 5	55 - S	S - S - S				





PM SERIES

PM ISOLATOR

Ø 5.5 ±0.1mm

 $55 \pm 1 \text{ mm}$

The Polarization Maintaining Isolator is characterized with low insertion loss, high isolation, high return loss, high extinction ratio and excellent environmental stability and reliability. It is ideal for polarization maintaining fiber amplifers, fiber lasers, high speed communication systems and instrumentation applications.

	DADAMETEDO	SINGLE	STAGE	DUAL								
	PARAIVIETERS	GRADE P	GRADE A	GRADE P	GRADE A							
	Center Wavelength (λc)	1310, 1480 or 1550										
	Min. Extinction Ratio for F version	25	23	25	23	dB						
	Min. Extinction Ratio for B version	20	18	20	18	dB						
ហ	Typ. Peak Isolation	42	40 58			dB						
R	Min. Isolation, λc \pm 10 nm, 23 °C, all polarization states	30	30 28 46			dB						
SPECIFICATIO	Typ. Insertion Loss, λc \pm 20 nm, 23 °C, all polarization states	0.4	0.5	0.5	0.7	dB						
	Max. Insertion Loss, $\lambda c \pm 20$ nm, all temperature	0.6	0.7	0.7	0.9	dB						
	POLARIZATION STATES											
	Min. Return Loss (Input/Output)	55/50	55/50	55/50	55/50	dB						
	Max. Optical Power (Continuous Wave)	300										
	Max. Tensile Load	5										
	Fiber type	PM Panda fiber										
	Operating Temp.	-5 ~ +70										
	Storage Temperature	-40 to +85										

*Note: IL is 0.3 dB higher, RL is 5 dB lower, and ER is 2 dB lower for each connector added. Connector key is aligned to slow axis.

	CODE	STAGE WAVELENGTH		GRADE FIBER JACKET			CONNECTOR TYPE		FIBER LENGTH		WORKING AXIS				
		1	Single Stage	31	1310 nm	Р	Premium	25	250µm Panda Fiber	0	None	05	0.5 m	F	Fast axis blocked
	S	2	Dual Stage	48	1480 nm	Α	A Grade	9L	900µm Loose Tube	Α	SC/UPC	10	1m	В	Both axes working
				55	1550 nm			S	Specify	В	SC/APC	S	Specify		
	Z			S	Specify					С	FC/UPC				
	Ч-Р									D	FC/APC				
	F4N									Ε	LC/UPC]			
	_									Q	LC/APC				
										S	Specify				
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