



SANWA
TECHNOLOGIES

PM PRODUCTS

PASSIVE DEVICE

We Create, We Customize, We Connect





SANWA

TECHNOLOGIES

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 high-quality 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.





POLARIZATION MAINTAINING PATCHCORD



SC PM

FC PM

LC PM

MU PM

- 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		UNIT
SPECIFICATIONS	Connector Type	UPC	APC	
	Wavelength	*980, *1060, 1310, 1480 or 1550		nm
	Typ. Insertion Loss	0.30	0.40	dB
	Max. Insertion Loss	*0.5		dB
	Min. Return Loss	50	60	dB
	Min. Extinction Ratio	23		dB
	Max. Optical Power (Continuous Wave)	300		mW
	Fiber Length Tolerance	± 10 or specify		%
	Operating Temperature	-5 to +70		°C
	Storage Temperature	-40 to +85		°C

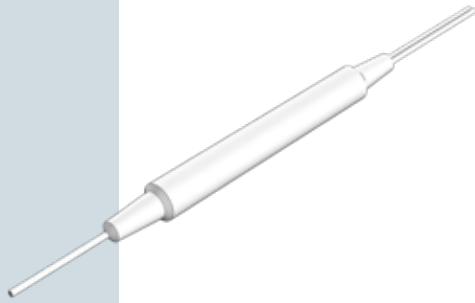
*Note: IL is 0.1 dB higher for 980 & 1060nm. Connector key is aligned to slow axis.

CODE	WAVELENGTH		KEY WIDTH (FOR FC TYPE)		CONNECTOR TYPE		BUFFER TYPE		FIBER LENGTH		FIBER TYPE	
	F4M -PMP	98	980 nm	R	2.02 mm	O	None	25	250µm Bare Fiber	05	0.5 m	PF
06		1060 nm			A	SC/UPC	9L	900µm Loose Tube	10	1m	S	Specify
31		1310 nm			B	SC/APC	9T	900µm Tight buffer	S	Specify		
48		1480 nm			C	FC/UPC	2M	2mm Cable				
55		1550 nm			D	FC/APC	3M	3mm Cable				
S		Specify			E	LC/UPC	S	Specify				
					Q	LC/APC						
					S	Specify						

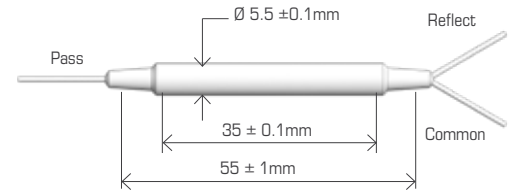
ORDER CODE EXAMPLE

F4M-PMP - S - R - 00 - S - 10 - S





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		
SPECIFICATIONS	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	
	Min. Channel Isolation @ Common Pass	25	25	dB	
	Typ. Channel Isolation @ Common Pass	30	30	dB	
	Reflection Band	Max. Insertion Loss @ Common Reflect	0.5	0.5	dB
	Typ. Insertion Loss @ Common Reflect	0.3	0.3	dB	
	Min. Channel Isolation @ Common Reflect	12	12	dB	
	Typ. Channel Isolation @ Common Reflect	15	15	dB	
	Typ. Extinction Ratio @ 23°C	22	22	dB	
	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.

CODE	CHANNEL SPACING		ITU GRID		CONNECTOR TYPE		FIBER JACKET		FIBER LENGTH	
	F4M-PMDWDM	10	100 GHz	S	Specify	A	SC/UPC	25	250µm Panda Fiber	05
20		200 GHz			B	SC/APC	9L	900µm Loose Tube	10	1m
					C	FC/UPC	S	Specify	S	Specify
					D	FC/APC				
					N	None				
					S	Specify				

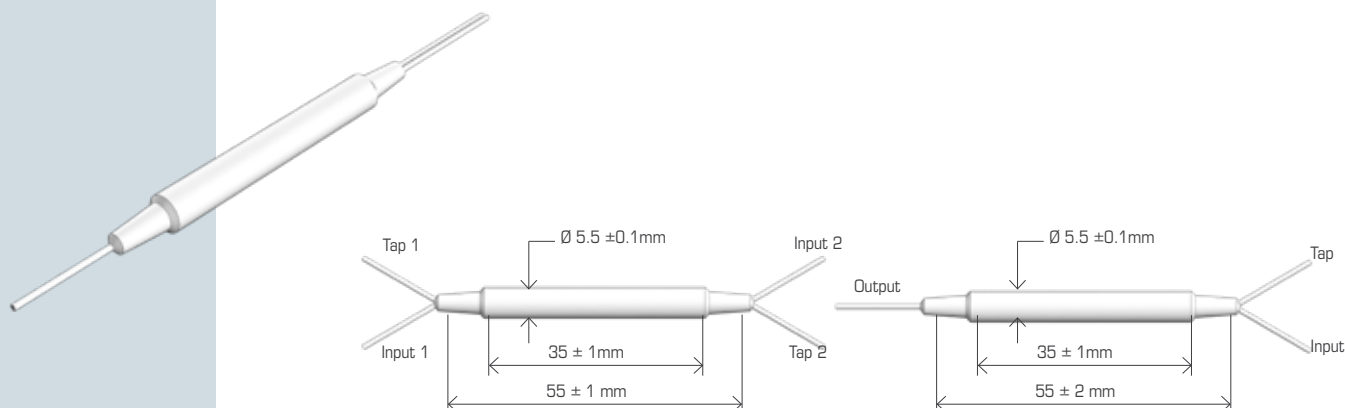
ORDER CODE EXAMPLE

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





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	VALUE	UNIT	
SPECIFICATIONS	Operating Wavelength (λ_c)	1310 or 1550	nm	
	Operating Wavelength Range	$\lambda_c \pm 40$	nm	
	Configuration	1x2	2x2	dB
	Max. Excess Loss	0.7	1.0	dB
	Max. Uniformity	0.6	0.8	dB
	Tap Ratio	1 ± 0.5%, 5 ± 1.0%, 10% and 50%		%
	Min. Return Loss	50		dB
	Min. Extinction Ratio	20	18	dB
	Max. Optical Power (Continuous Wave)	300		mW
	Max. Tensile Load	5		N
	Operating Temperature	-5 to +70		°C
	Storage Temperature	-40 to +85		°C
	Fiber Type	SMF-28 or PM Panda fiber for tap port PM Panda fiber for input & output ports		

*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		CONFIGURATION		COUPLING RATIO		CONNECTOR TYPE		FIBER TYPE FOR TAP PORT		FIBER JACKET		FIBER LENGTH	
	31	1550	1	2	01	05	0	A	M	PF	25	9L	05	10
F4M-PMFC	1310 nm	1550 nm	1	2	1X2	2X2	1/99	5/95	None	SC/UPC	SMF-28 (1x2 Only)	250µm Fiber	0.5 m	
							10/90	50/50	B	SC/APC	Specify	S	Specify	Specify
							50/50		C	FC/UPC				
							Specify		D	FC/APC				
									E	LC/UPC				
									Q	LC/APC				
									S	Specify				

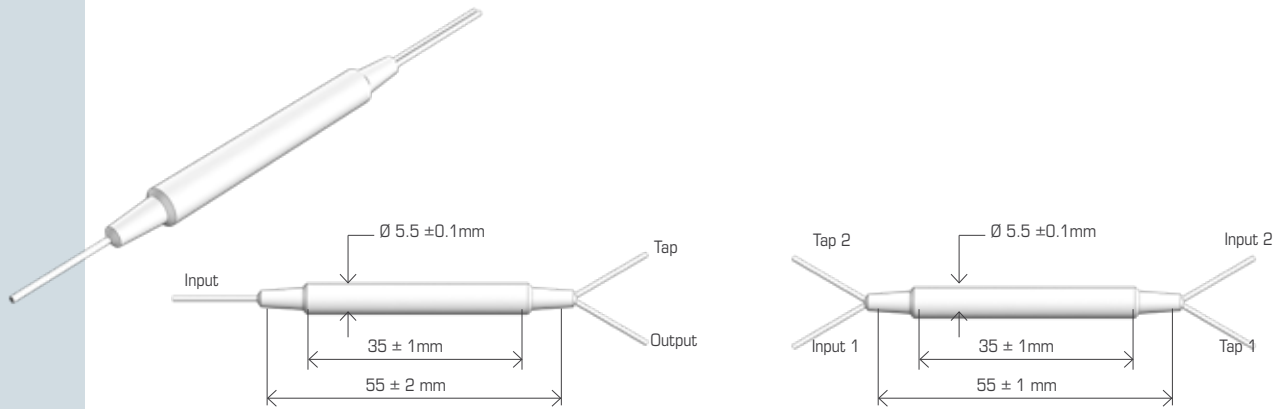
ORDER CODE EXAMPLE

F4M-PMFC - 31 - 1 - 50 - 00 - 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
SPECIFICATIONS	Operating Wavelength (λ_c)	1310 or 1550		nm
	Operating Wavelength Range	$\lambda_c \pm 40$		nm
	Configuration	1x2	2x2	
	Max. Excess Loss	0.7	1.1	dB
	Max. Uniformity	0.6	0.8	dB
	Tap Ratio	1 \pm 0.2%, 2 \pm 0.4%, 4 \pm 0.8%, 5 \pm 1.0%, 10%, 20% and 50%		%
	Min. Return Loss	50		dB
	Min. Extinction Ratio	20	20	dB
	Max. Optical Power (Continuous Wave)	300		mW
	Max. Tensile Load	5		N
	Operating Temperature	-5 to +70		°C
	Storage Temperature	-40 to +85		°C
	Fiber Type	SMF-28 or PM Panda fiber for tap port PM Panda fiber for input & output ports		

*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		CONNECTOR TYPE		FIBER JACKET		FIBER TYPE FOR TAP PORT		FIBER LENGTH	
	31	55	12	22	01	02	A	B	25	9L	M	PF	05	10
F4M-PMTC	1310 nm	1550 nm	1X2	2X2	1/99	2/98	None	SC/UPC	250µm Bare Fiber	900µm Loose Tube	SMF-28	Panda Fiber	0.5 m	1m
	S	Specify			4/96	5/95	SC/APC	FC/UPC	S	Specify	S	Specify	S	Specify
					10/90	20/80	FC/APC	LC/UPC						
					50/50	S	LC/APC	S	Specify					

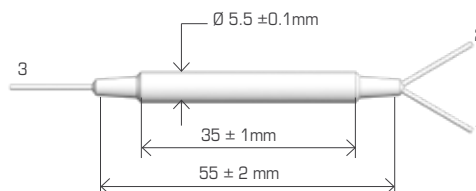
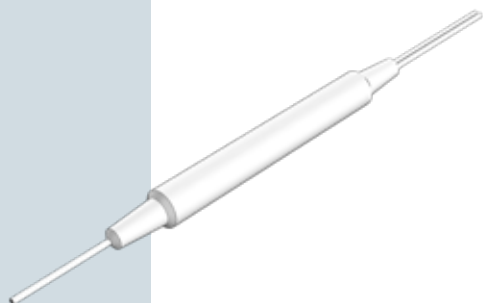
ORDER CODE EXAMPLE

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





PM BEAM COMBINER / SPLITTER



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.

	PARAMETERS	GRADE P	GRADE A	UNIT	
SPECIFICATIONS	Center Wavelength (λ_c)	1310, 1480 or 1550		nm	
	Operating Wavelength Range	$\lambda_c \pm 40$		nm	
	Typ. Insertion Loss	0.4	0.5	dB	
	Max. Insertion Loss	0.6	0.7	dB	
	Min. Extinction Ratio (for splitter only)	22	20	dB	
	Min. Return Loss	50		dB	
	Directivity	50		dB	
	Max. Optical Power (Continuous Wave)	500		mW	
	Fiber Type	PM Panda fiber for Ports 1 & 2, SMF-28 or PM Panda fiber for Port 3			
	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	WAVELENGTH		GRADE		CONNECTOR TYPE		FIBER JACKET		FIBER TYPE FOR PORT 3		FIBER LENGTH	
F4M-PBC /PBS	31	1310 nm	P	Premium	O	None	25	250 μ m Panda Fiber	1	SMF-28	05	0.5 m
	48	1480 nm	A	A Grade	A	SC/UPC	9L	900 μ m Loose Tube	2	Slow axis aligned 45° to Port 1	10	1m
	55	1550 nm			B	SC/APC	S	Specify	3	Slow axis aligned to Port 1	S	Specify
	S	Specify			C	FC/UPC			S	Specify		
					D	FC/APC						
					E	LC/UPC						
					Q	LC/APC						
				S	Specify							

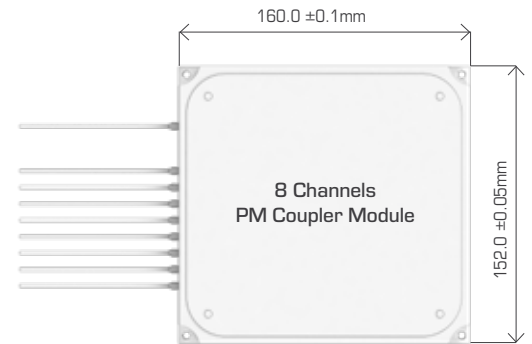
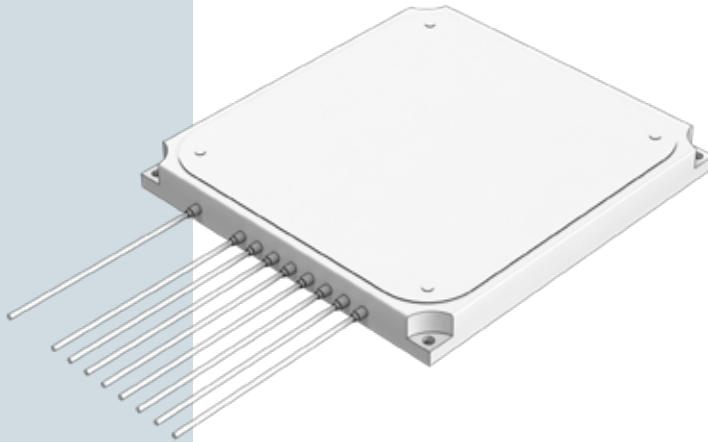
ORDER CODE EXAMPLE

F4M-PBC - 55 - P - 00 - S - S - S





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.

	PARAMETERS	VALUE		UNIT
		1X4	1X8	
SPECIFICATIONS	Center Wavelength (λ_c)	1310 or 1550		nm
	Operating Wavelength Range	$\lambda_c \pm 30$		nm
	Insertion Loss	≤ 7.5 , Typ. 7.0	≤ 11 , Typ. 10.5	dB
	Wavelength Dependent Loss	≤ 0.5 , Typ. 0.3		dB
	Max. IL Uniformity	0,8	1	dB
	Min. Return Loss	50		dB
	Directivity	50	45	dB
	Min. Extinction Ratio	20		dB
	Max. Temperature Dependent Loss	0,006	0,008	dB/°C
	Operating Temperature	-5 to +70		°C
	Storage Temperature	-40 to +85		°C
	Fiber Type	PM Panda 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		CONNECTOR TYPE		FIBER TYPE		FIBER LENGTH			
	31	55	14	18	EV	S	O	A	PF	9L	S	05	10	S
F4M-PMFCM	1310nm	1550nm	1x4	1x8	Evenly Split	Specify	None	SC/UPC	250µm Panda Fiber	900µm Loose Tube	Specify	0.5 m	1m	Specify
	Specify	Specify	Specify	Specify			B	SC/APC						
							C	FC/UPC						
							D	FC/APC						
							E	LC/UPC						
							Q	LC/APC						
							S	Specify						

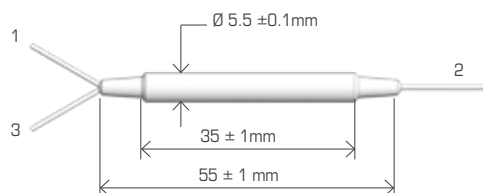
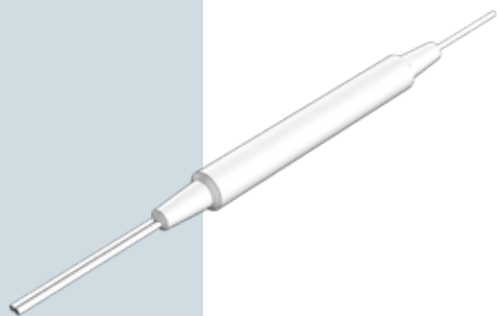
ORDER CODE EXAMPLE

F4M-PMFCM - 55 - S - S - S - S - S





PM MINI OPTICAL CIRCULATOR



The Mini Fiber Optic Circulator is a compact, high performance light-wave 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.

	PARAMETERS	VALUE		UNIT
		TYPE A	TYPE B	
SPECIFICATIONS	Center Wavelength (λ_c)	1310 or 1550 or 1064		nm
	Operating Wavelength Range	$\lambda_c \pm 30$	$\lambda_c \pm 20$	nm
	Typ. Insertion Loss, λ_c , 23°C	0.7	0.6	dB
	Max Insertion Loss	0.9	0.8	dB
	Peak Isolation	52	40	dB
	Typ. Isolation, λ_c , 23°C	46	30	dB
	Min. Isolation, 23°C	40	20	dB
	Min. Extinction Ratio	22	20	dB
	Crosstalk	50 (Min.)		dB
	Return loss	50 (Min.)		dB
	Max. Optical Power (Continuous Wave)	300		mW
	Max. Tensile Load	5		N
	Operating Temperature Range	-5 to +70		°C
	Storage Temperature Range	-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	TYPE		N° OF PORTS		WAVELENGTH		FIBER TYPE		CONNECTOR TYPE		FIBER LENGTH	
	A	Type A	13	3 ports	31	1310nm	25	250 μ m Panda Fiber	0	None	05	0.5 m
F4M-CIRP	B	Type B	14	4 ports	55	1550nm	9L	900 μ m Loose Tube	A	SC/UPC	10	1m
					64	1064nm	S	Specify	B	SC/APC	S	Specify
					S	Specify			C	FC/UPC		
									D	FC/APC		
									E	LC/UPC		
									Q	LC/APC		
								S	Specify			

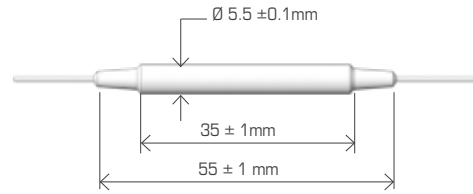
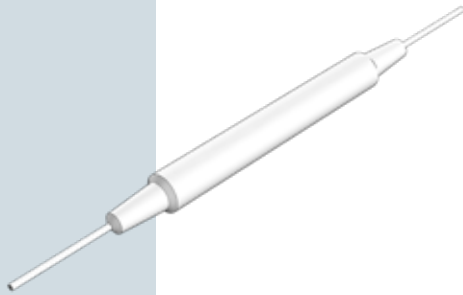
ORDER CODE EXAMPLE

F4M-CIRP - A - 13 - 55 - S - S - S





PM ISOLATOR



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 amplifiers, fiber lasers, high speed communication systems and instrumentation applications.

PARAMETERS	SINGLE STAGE		DUAL STAGE		UNIT
	GRADE P	GRADE A	GRADE P	GRADE A	
Center Wavelength (λ_c)	1310, 1480 or 1550				nm
Min. Extinction Ratio for F version	25	23	25	23	dB
Min. Extinction Ratio for B version	20	18	20	18	dB
Typ. Peak Isolation	42	40	58	55	dB
Min. Isolation, $\lambda_c \pm 10$ nm, 23 °C, all polarization states	30	28	46	45	dB
Typ. Insertion Loss, $\lambda_c \pm 20$ 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				mW
Max. Tensile Load	5				N
Fiber type	PM Panda fiber				
Operating Temp.	-5 ~ +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	STAGE	WAVELENGTH		GRADE		FIBER JACKET		CONNECTOR TYPE		FIBER LENGTH		WORKING AXIS		
		31	1310 nm	P	Premium	25	250 μ m Panda Fiber	0	None	05	0.5 m	F	Fast axis blocked	
F4M-PMISO	2	Dual Stage	48	1480 nm	A	A Grade	9L	900 μ m Loose Tube	A	SC/UPC	10	1m	B	Both axes working
			55	1550 nm			S	Specify	B	SC/APC	S	Specify		
			S	Specify					C	FC/UPC				
									D	FC/APC				
									E	LC/UPC				
									Q	LC/APC				
									S	Specify				

ORDER CODE EXAMPLE

F4M-PMISO - 1 - 55 - P - S - 00 - S - F



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.



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