



# PM WDM

## Fused Fiber WDM

### DATASHEET

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The Gooch & Housego fused PM WDM, combines multiple wavelengths of light in PM fiber whilst maintaining polarization.

G&H proprietary PM manufacturing technology provides low loss, with high polarization extinction ratio. The all fiber construction offers excellent reliability and high power handling characteristics.

These high performance parts are available in many wavelength configurations, housing, fiber and connector options and can therefore be readily specified in a wide variety of applications, enabling rapid design cycles and new project builds.

In common with all PM components, it is necessary to launch into either the slow or the fast axis to maintain polarization. For the G&H PM WDM, specifications are based on slow axis launch, although fast axis versions are also available if requested.



#### Key Features

- Low loss
- High PER
- High power handling
- PM PANDA fiber on all ports
- Slow axis operation as standard
- Fast axis operation available on request

#### Applications

- Pump signal WDM for EDFA
- Fiber lasers
- Instrumentation



## Optical Specifications<sup>3,4,5</sup>

Wavelength <sup>5</sup>			CH1 Insertion Loss <sup>1</sup> (dB)	CH2 Insertion Loss <sup>1</sup> (dB)	CH1 PER <sup>6</sup>	CH2 PER <sup>6</sup>
CH1	CH2	Spacing	Max (Typ)	Max (Typ)		
780-1200 nm	780-1200 nm	50-100 nm	1.0 (0.5)	1.0 (0.5)	>15 dB	>15 dB
780-1200 nm	780-1200 nm	>100 nm	0.7 (0.3)	0.7 (0.3)	>17 dB	>17 dB
900-1100 nm <sup>2</sup>	1450 - 1600 nm	-	0.3 <sup>2</sup> (0.2)	0.5 (0.2)	>17 dB <sup>2</sup>	>20 dB
1300 - 1600 nm	1300 - 1600 nm	50-100 nm	1.0 (0.5)	1.0 (0.5)	>17 dB	>17 dB
1300 - 1600 nm	1300 - 1600 nm	>100 nm	0.7 (0.3)	0.7 (0.3)	>20 dB	>20 dB

1 Insertion loss specified at center wavelength and room temperature.

2 900-1100nm wavelength range may be below the 2<sup>nd</sup> order mode cut-off for the fiber used to manufacture this product type. Performance specified for single-mode incident on this path.

3 Custom specifications available on request.

4 For wavelength spacing < 50 nm, please contact the sales office.

5 For wavelengths < 780 nm contact sales.

6 Stated value may not be guaranteed for some wavelength combinations.

Parameter	Specification
Return loss/directivity <sup>1</sup>	55 dB
Pigtail tensile load	5 N
Optical power handling <sup>2,3</sup>	4 W
Operating/storage temperature range <sup>4</sup>	-5 - +75°C/-40 - +85°C
Fiber type	PM PANDA fiber

1 Measured reference port P3 input for signal wavelength, P2 input for pump wavelength and P1 input for signal and pump wavelengths.

2 For operation at powers of greater than 4 W the component housing and fiber must be adequately heat-sunk (for additional information contact G&H sales). Components intended for high power operation are only available in the 2x2 configuration. Component performance and reliability under high power must be determined within the customer system.

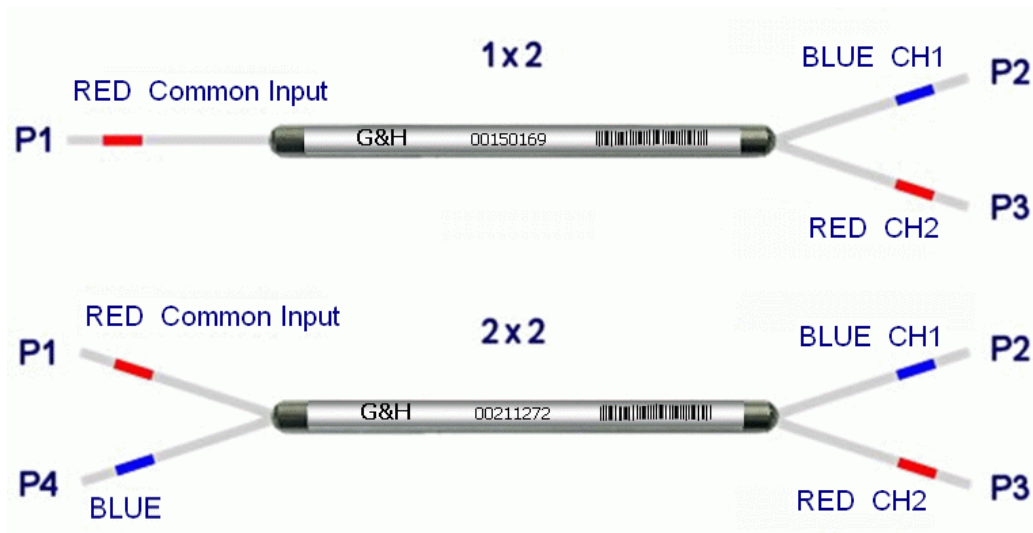
3 The performance and reliability of optical connectors is not guaranteed for optical powers of greater than 1 W.

4 For connectorized component, operating temperature range is -5 - +75°C.

## Housing Option

Housing Code	Description	Max Dimensions (mm)	Pigtail
3	Regular	3.0 (Ø) x 85 (L max)	Primary-coated fiber
7	High power	5 (W) x 5 (H) x 85 (L max)	Primary-coated fiber
C	Regular high power	3.0 (Ø) x 85 (L max)	Primary-coated fiber

## Configuration



## Order code

Order codes are comprised of a standard device prefix (e.g. FPW) followed by code letters or numbers which correspond to available options.

**Sample:** FPW-980060110 (Fused fiber WDM, 980/1060 nm, 1x2 port configuration, 1 m pigtailed, no connectors).

Order code				①	②	③	④	⑤	⑥	⑦	⑧	⑨	
F	P	W	-										
①	<b>Wavelength channel 1</b>			7XX	8XX	9XX	10XX	11XX	12xx	13XX	14XX	15XX	16XX
	Code			7	8	9	0	1	2	3	S	C	L
②	<b>Last two digits of channel 1</b>			e.g. XX20		e.g. XX50		e.g. XX70		e.g. XX80			
③	<b>center wavelength</b>			Code		20		50		70		80	
④	<b>Wavelength channel 2</b>			7XX	8XX	9XX	10XX	11XX	12xx	13XX	14XX	15XX	16XX
	Code			7	8	9	0	1	2	3	S	C	L
⑤	<b>Last two digits of channel 2</b>			e.g. XX20		e.g. XX50		e.g. XX70		e.g. XX80			
⑥	<b>center wavelength</b>			Code		20		50		70		80	
⑦	<b>Port configuration<sup>3</sup></b>			1x2				2x2					
	Code			1				2					
⑧	<b>Housing<sup>3</sup></b>			Regular housing			High Power			Regular high power			
	Code			3			7			C			
⑨	<b>Connector<sup>1,4</sup></b>			None			FC/APC-PM			FC/PC-PM			
	Code			0			P			R			

1 Insertion loss in specification table does not include connector losses.

2 Pigtail length 1 m (minimum). Further pigtail lengths available on request. Where connectorized, pigtail length is to the connector face.

3 7 & C not available in 1x2 Port Configuration. For more information contact G&H sales.

4 To request connectors please contact G&H sales.

PM Products are manufactured using 250 µm PANDA PM fiber. 400 µm PANDA PM fiber is available at wavelengths higher than 1400 nm.



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# PM WDM FOR 2 $\mu\text{m}$ OPERATION

## Fused Fiber WDM

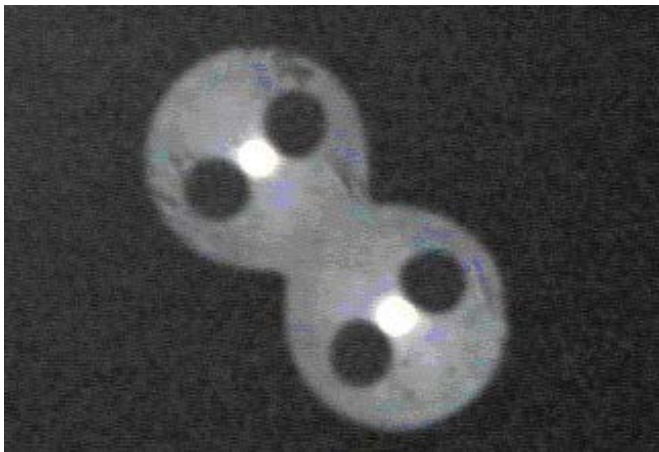
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### Key Features

- Low loss
- High PER
- High power handling
- PM fiber on all ports
- Slow axis operation as standard
- Fast axis operation available on request

### Applications

- Telecoms
- Instrumentation
- IR Imaging
- Biomedical
- Industrial
- Defense
- IR counter measures

## Typical Optical Specifications<sup>3</sup>

Wavelength			Available Housing	CH1 Insertion Loss <sup>1</sup> (dB)	CH2 Insertion Loss <sup>1</sup> (dB)	CH1 PER <sup>5</sup>	CH2 PER <sup>5</sup>
CH1	CH2	Spacing <sup>4</sup>		Max (Typ)	Max (Typ)		
1900-2100 nm	1900-2100 nm	> 50 nm	3, 7,C	1.0 (0.5)	1.0 (0.5)	> 15 dB	> 15 dB
< 1900 nm <sup>2</sup>	1900-2100 nm	-	3, 7,C	1.0 (0.5)	1.0 (0.5)	> 15 dB	> 15 dB

<sup>1</sup> Insertion loss specified at center wavelength and room temperature.

<sup>2</sup> <1900 nm wavelength range may be below the 2<sup>nd</sup> order mode cut-off for the fiber used to manufacture this product type. Performance specified for single-mode incident on this path.

<sup>3</sup> Custom specifications available on request.

<sup>4</sup> For wavelength spacing < 50 nm, please contact the sales office.

<sup>5</sup> Stated value may not be guaranteed for some wavelength combinations.

Parameter	Specification
Return loss/directivity <sup>1</sup>	55 dB
Pigtail tensile load	5 N
Optical power handling <sup>2,3</sup>	4 W
Operating/storage temperature range	-5 – +75°C/-40 – +85°C
Fiber type <sup>4</sup>	PM PANDA fiber

<sup>1</sup> Measured reference port P3 input for signal wavelength, P2 input for pump wavelength and P1 input for signal and pump wavelengths.

<sup>2</sup> For operation at powers of greater than 4 W the component housing and fiber must be adequately heat-sunk (for additional information contact G&H sales). Components intended for high power operation are only available in the 2x2 configuration. Component performance and reliability under high power must be determined within the customer system.

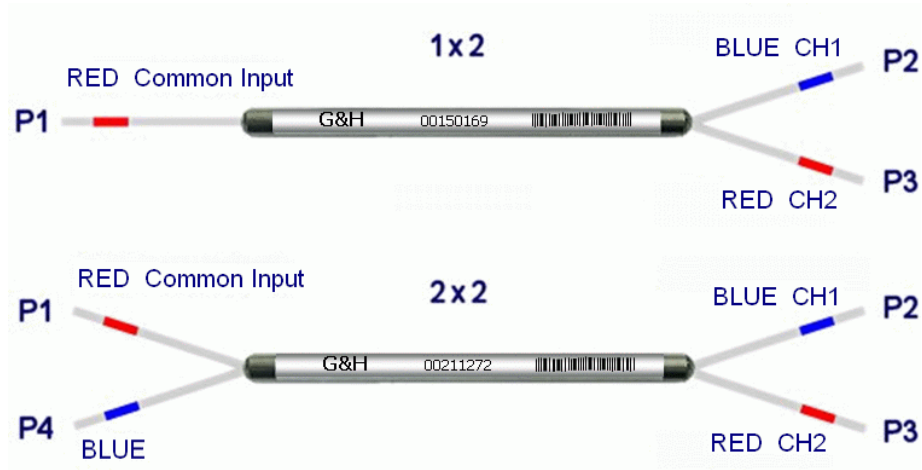
<sup>3</sup> The performance and reliability of optical connectors is not guaranteed for optical powers of greater than 1 W.

<sup>4</sup> Various fiber types available, please contact G&H sales for additional information.

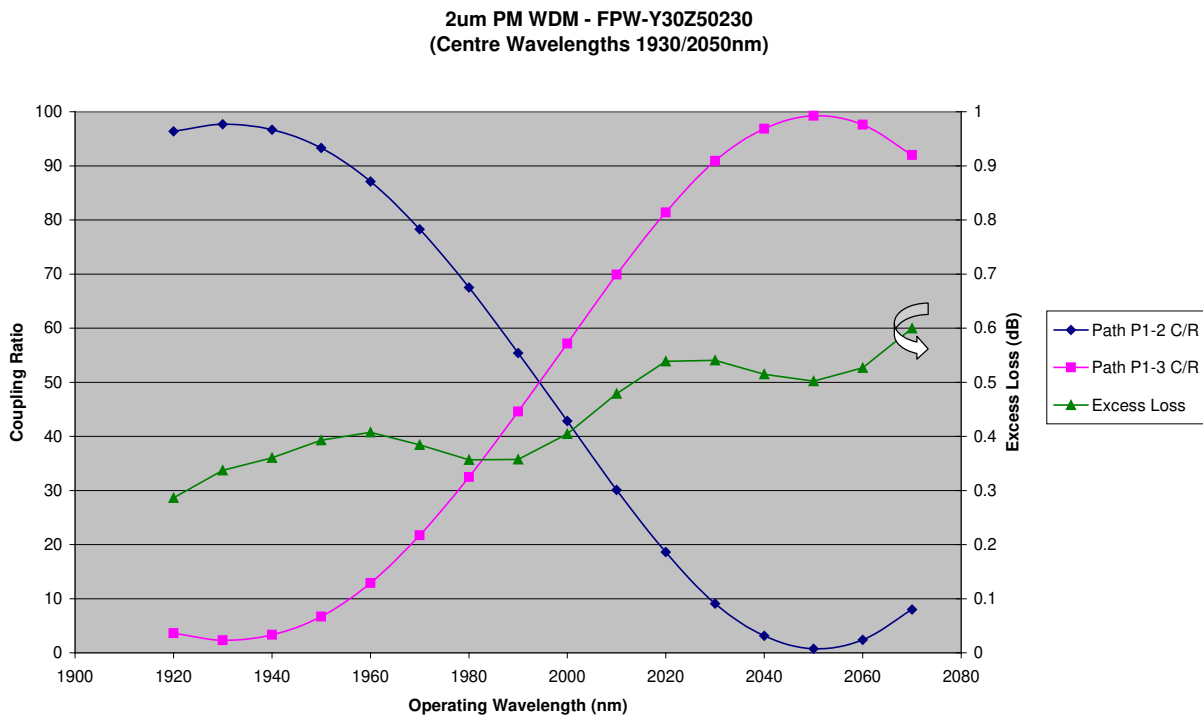
## Housing Option

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7	High power	5 (W) x 5 (H) x 85 (L max)	Primary-coated fiber
C	Regular high power	3.0 (Ø) x 85 (L max)	Primary-coated fiber

## Configuration



## Typical Optical Performance



## Order code

Order codes are comprised of a standard device prefix (e.g. FPW) followed by code letters or numbers which correspond to available options.

**Sample:** FPW-Y40Z50230 (PM fused fiber WDM, 1940/2050 nm wavelengths, 2x2 port configuration regular housing, no connectors).

### Order code

Order code				①	②	③	④	⑤	⑥	⑦	⑧	⑨					
F	P	W	-														
①	<b>Wavelength channel 1</b>			7X X	8X X	9X X	10 XX	11 XX	12x x	13 XX	14 XX	15 XX	16 XX	17 XX	18 XX	19 XX	20 XX
	Code			7	8	9	0	1	2	3	S	C	L	W	X	Y	Z
②	<b>Last two digits of channel 1 center wavelength</b>			e.g. XX20		e.g. XX50			e.g. XX70			e.g. XX80					
	Code			20		50			70			80					
④	<b>Wavelength channel 2</b>			19XX						20XX							
	Code			Y						Z							
⑤	<b>Last two digits of channel 2 center wavelength</b>			e.g. XX20		e.g. XX50			e.g. XX70			e.g. XX80					
	Code			20		50			70			80					
⑦	<b>Port configuration<sup>3</sup></b>			1x2						2x2							
	Code			1						2							
⑧	<b>Housing<sup>3</sup></b>			Regular housing				High Power				Regular high power					
	Code			3				7				C					
⑨	<b>Connector<sup>1,4</sup></b>			None				FC/APC-PM				FC/PC-PM					
	Code			0				P				R					

1 Insertion loss in specification table does not include connector losses.

2 Pigtail length 1 m (minimum). Further pigtail lengths available on request. Where connectorized, pigtail length is to the connector face.

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