

# HI REL POLARIZATION BEAM COMBINER

## Fused Fiber PM Combiner

### DATASHEET

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High reliability (HI REL) components are deployed in environments such as undersea and space, where the costs of component replacement are prohibitive.

G&H is established as a supplier of these components to major undersea equipment manufacturers.

G&H's HI REL capability is built upon the foundation of a long established manufacturing history of very reliable terrestrial components. Full facilities are available to perform customer-specific HI REL qualification programs, which can consist of accelerated ageing and Weibull analysis.

Manufacturing is carried out on specially-developed workstations. Advanced fiber management, in-process screening and customer-specific validation tests are implemented, to further enhance component reliability.

The G&H HI REL polarization beam combiner (PBC) enables the efficient combination of two orthogonally polarized sources of light into a common output fiber.

In optical amplifiers this provides a doubling of pump power whilst ensuring pump redundancy should a pump failure occur.

Applications include high power optical amplifiers and undersea systems. All ports consist of polarization maintaining fiber.



### Key Features

- Established HI REL supplier
- High performance
- Full qualification facilities available
- Advanced in-process testing
- Low loss fused components
- Design standard 0.1FITs (failure in one billion field hours) – confirmed for 975 nm version only
- High power handling

### Applications

- Undersea equipment
- Terminal equipment
- Space
- Defense and avionic
- Erbium doped fiber amplifiers (EDFAs)
- Raman amplifiers
- Coherent optical communications

### Compliance

- Customer specific

## Optical Specifications<sup>5</sup>

Parameter	Specification	
Operating wavelengths <sup>1,2</sup>	975 nm	1550 nm <sup>7</sup>
Insertion loss (fast axis) <sup>3</sup>		
Grade H	0.70 dB Max	0.70 dB typ
Insertion loss (slow axis) <sup>3</sup>		
Grade H	0.55 dB Max	0.70 dB typ
Return loss/directivity <sup>4</sup>	50 dB Min	50 dB Min
TDL (fast axis) <sup>4</sup>	0.20 dB (0.10 dB) Max(Typ)	TBD
TDL (slow axis) <sup>4</sup>	0.10 dB (0.05 dB) Max(Typ)	TBD
Pigtail tensile load	5 N Max	5 N Max
Optical power handling <sup>5,6</sup>	4 W Max	4 W Max
Fiber type	All ports PM fiber	All ports PM fiber
Pigtail	Primary coated fiber	Primary coated fiber
Operating temperature range	-5- 45°C	-5- 45°C
Storage temperature range	-40- 85°C	-40- 85°C

<sup>1</sup> The optical specification is typically met at center wavelength  $\pm 3$  nm

<sup>2</sup> Other wavelengths are available. Please contact the G&H sales office.

<sup>3</sup> Insertion loss at center wavelength (not including TDL or connector losses).

<sup>4</sup> Limits guaranteed by design.

<sup>5</sup> Where operation powers  $>4$  W are required the component housing and fiber must be adequately heat-sunk (contact G&H sales to discuss high power options).

<sup>6</sup> Component performance and reliability under high power must be determined within the customer system.

<sup>7</sup> Optical specifications to be confirmed pending manufacturing test data.

## Housing Options<sup>1</sup>

Housing Code	Description	Dimensions (mm)	Pigtail
3	Regular	3.0 (Ø) x 71 (L)	Primary-coated fiber

<sup>1</sup> For alternative housing options please contact G&H sales

## Configuration



## Order code

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

**Sample:** PBC-5H3275G10 (PBC, HI REL grade, regular housing, 2x2, channel center = 975 nm, 980 nm PM fiber 250 µm buffer, 1 m pigtail, no connector).

Order code				①	②	③	④	⑤	⑥	⑦	⑧	⑨
P	B	C	-		H							
①	Passband			9XX				15XX				
	Code			5				C				
②	Device type			PBC HI REL								
	Code			H								
③	Housing			Regular ø3x71 mm								
	Code			3								
④	Port configuration <sup>3</sup>			2x2 Terminated				2x2				
	Code			1				2				
⑤	Last two digits of center wavelength(nm) <sup>1</sup>			e.g. XX20		e.g. XX50		e.g. XX75		e.g. XX90		
				Code			20		50		75	
⑦	Fiber type			980 nm PM fiber 250 µm buffer				PM 1550 fiber 250 µm buffer				
	Code			G				F				
⑧	Pigtail length <sup>2</sup>			0.5 m		1 m		2 m				
	Code			0		1		2				
⑨	Connector			None								
	Code			0								

<sup>1</sup> For other center wavelengths please contact the G&H sales office.

<sup>2</sup> Minimum pigtail length. Other pigtail lengths are available on request.

<sup>3</sup> Where 3-port operation is required the 4th port (P3) is terminated externally using coreless fiber and recoated splice.

**Ordering Information:**



800 Village Walk #316  
 Guilford, CT 06437  
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Email orders to: [sales@xsoptix.com](mailto:sales@xsoptix.com)  
 Fax orders to: 800-878-7282