

# 2+1x1 Multimode Power Combiner with Active PM Signal Feedthrough

## Fused Fiber Tapered Fiber Bundle

Gooch & Housego proprietary manufacturing techniques allow the precise fusion of multimode pump fibers to a PM signal feed-through fiber with a passive input and an active PM dual clad output fiber.

This provides high coupling efficiency over a wide pump wavelength range.

Inclusion of the splice between the passive and active signal fiber within the combiner housing removes the need for an external splice reducing potential back-scatter to the pump sources.

Available in a standard (2+1)x1 configuration, the combiner can be fabricated from a range of industry standard fibers for ease of splicing to commercially available laser diodes, signal and gain fibers

Custom variants using non-standard fibers are available on request.

Please contact the sales team for further information.



### Key Features

- 1.5  $\mu\text{m}$  & 1.0  $\mu\text{m}$  PM signal fibers available
- All fiber construction
- High power design
- High coupling efficiency
- PM axis maintained
- Custom configurations available

### Applications

- Cladding pumped fiber lasers
- Cladding pumped fiber amplifiers
- Telecoms
- Medical
- Industrial
- Defense

## Optical Specifications<sup>1</sup>

Parameter	Specification
Pump Input fiber NA	0.15 or 0.22
Pump Input wavelength	780 - 1000 nm
Signal input wavelength	1530 - 1565 nm (1550 nm) or 1030 - 1090 nm (1064 nm)
Pump (MM) transmission efficiency <sup>2</sup>	≥ 80% (typ. >90%)
Signal transmission efficiency <sup>3</sup>	≥ 90% (typ. >95%)
Signal PER (polarisation extinction ratio) <sup>3</sup>	≥17 dB (typ. >20 dB)
Return loss	≥40 dB
Operating temperature	0 - +65°C
Storage temperature	-40 - +85°C

<sup>1</sup> All specifications are for operation at room temperature.

<sup>2</sup> MM Transmission efficiencies based on typical system mode fill conditions and 0.5 m pigtails. Measurements performed outside of active fiber absorption band, typically reported at 1120 nm.

<sup>3</sup> Signal (feed-through) transmission efficiency and PER measured outside of active fiber absorption band, typically reported at 1310 nm.

## Order code

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

**Sample:** TFB-P50212X71 (2+1x1 TFB, PM 1550nm signal feedthrough, 2 pump 105/125  $\mu\text{m}$  0.22 NA fiber inputs, 1550 nm core active DCF output, high power housing, 1 m pigtails).

Order code				①	②	③	④	⑤	⑥	⑦	⑧	⑨
T	F	B	-	P			2	1		X		
② ③	Signal wave length <sup>1</sup>			1064 nm				1550 nm				
	Code			64				50				
④	Configuration (No. of pump inputs)			2 pump inputs								
	Code			2								
⑤	Pump input fiber			105/125 $\mu\text{m}$								
	Code			1								
⑥	Pump input fiber NA			0.15				0.22				
	Code			1				2				
⑦	Active DCF output fiber <sup>2</sup>			Customer Specific								
	Code			X								
⑧	Housing <sup>3,4</sup>			Regular high power $\varnothing 3$ mm x 65 mm (max)				Level 1 high power 5 mm <sup>2</sup> x 65 mm max				
	Code			3				7				
⑨	Pigtail length <sup>5</sup>			0.5 m				1 m				
	Code			0				1				

1 Signal wavelengths of 1064 nm or 1550 nm assume using passive single-clad input fiber equivalent to customer specified active DCF.

2 Active DCF specified by customer

3 Maximum housing lengths shown.

4 The 3 mm cylindrical package is recommended for pump powers up to 10 W per port. The high power L1 housing is suitable for pump powers up to 50 W per port. Adequate heat-sinking is required for high power operation. For more information please contact the G&H sales team.

5 Minimum pigtail lengths.

### Ordering Information:



800 Village Walk #316  
Guilford, CT 06437  
Ph: 203-401-8093

Email orders to: [sales@xsoptix.com](mailto:sales@xsoptix.com)  
Fax orders to: 800-878-7282

## For further information

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2+1X1 MULTIMODE POWER COMBINER WITH ACTIVE PM SIGNAL FEED-THROUGH