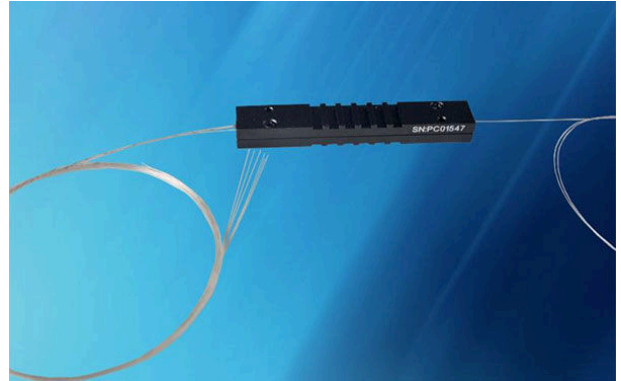


High power reverse pump combiners (also called counter pump combiners) are specifically designed for especially high power fiber lasers. These combiners are usually mated with the forward optical path to form a bi-directional pump structure to obtain higher amplification efficiency and higher output power.

### Features

- High Coupling Efficiency
- Stable and Reliable
- Custom Configurations Available



### Specifications

Parameter	Specification		
Port Configuration	(2+1)x1	(6+1)x1	(9+1)x1
Pump Wavelength	800 nm ~ 1000 nm		
Signal Wavelength	1030 nm ~ 1080 nm or 1450 nm ~ 1600nm		
Signal Input Fiber (Note 3)	x/125 or x/250 or x/400		x/250 or x/400
Pump Fiber	105/125 0.15NA/0.22NA or 200/220 0.22NA		105/125 0.15NA/0.22NA
Output Fiber (Note 3)	y/125 or y/250 or y/400		y/250 or y/400
Pump Efficiency (Note 4)	>90%		>93%
Signal Insertion Loss	<0.5 dB		<0.5dB
Total Power Handling	300W	1000W	1000W
Total Reverse Power Handling	300W	300W	300W
Return Loss	>45 dB		
Pigtail	Standard 1m or custom		
Operating Temperature	0~75°C		
Storage Temperature	-40~85°C		

Note 1: Values are referenced without connectors.

Note 2: Other package dimensions and optical performances available by request.

Note 3: x, y specifies core size.

Note 4: Fiber size and type dependent.

### Ordering Information

R	P	C	-	-	-	-	-	-	-	-	-	-	-	-
Port Configuration	Wavelength	Pump Fiber	Signal Fiber	Output Fiber	Package Size(mm)	Special Code								
2: (2+1)x1	A: 1060nm	18: MM-S105/125-15A	04: HI1060 NA:0.14	41: LMA-GDF-20/130-M NA:0.08/0.46	1: D4.0xL60 SST									
6: (6+1)x1	B: 1550nm	19: MM-S105/125-22A	29: DCF-UN-10/125DC	47: Passive-25/250DC NA:0.07/0.46	3: 75x12x8									
9: (9+1)x1		20: MM-S200/220-22A	30: 10/125DC NA:0.08/0.46	49: LMA-GDF-20/400-M NA:0.06/0.46	8: 105x15x8									
			72: DCF-UN-8/105/125-14	72: DCF-UN-8/105/125-14	G: 100x28x12.6									

Note: These are our most popular configurations. Contact Lightel Sales for custom port counts or alternative fibers.

Lightel's (N+1)×1 Polarization Maintaining (PM) pump combiners are designed to combine one or more pump laser beams using multimode fiber and one signal beam on PM fiber into one PM output optical fiber with dual cladding. The device features high Polarization Extinction Ratio (PER) and pump efficiency and is available in (1+1)×1, (2+1)×1, (6+1)×1 and custom configurations.

### Features

- High PER
- High Coupling Efficiency
- Stable and Reliable
- Custom Configurations Available



### Specifications

Parameter	Specification						
Port Configuration	(1+1)×1 or (2+1)×1			(6+1)×1			
Pump Wavelength	800nm ~ 1000nm						
Signal Wavelength	1030nm ~1080nm or 1450nm ~ 1600nm						
Signal Input Fiber (Note 3)	x/125	x/250	20/400	x/125	x/125 or x/250 or 20/400		
Pump Fiber	105/125 0.15NA/0.22NA	105/125 0.15NA/0.22NA or 200/220 0.22NA		105/125 0.15NA/0.22NA		105/125 0.15NA/0.22NA or 200/220 0.22NA	
Output Fiber (Note 3)	y/125 or y/250	y/250	20/400	y/125	y/250	20/400	
Pump Efficiency (Note 4)	>90%	>93%	>95%	>90%	>93%	>95%	
Signal Insertion Loss	<0.5dB	<0.4dB	<0.4dB	<0.7dB			
Total Power Handling	50W	100W	200W	300W	600W	900W	
Polarization Extinction Ratio	≥18dB						
Return Loss	>45dB						
Pigtail	Standard 1m or custom						
Operating Temperature	0~75°C						
Storage Temperature	-40~85°C						

Note 1: Values are referenced without connectors.

Note 2: Other package dimensions and optical performances available by request.

Note 3: x, y specifies fiber core size.

Note 4: Fiber size and type dependent.

### Ordering Information

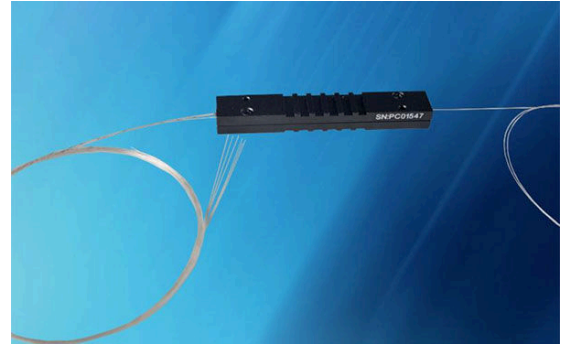
P	P	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Port Configuration	Wavelength	Pump Fiber	Signal Fiber	Output Fiber	Package Size(mm)	Special Code											
1: (1+1)×1	A: 1060nm	18: MM-S105/125-15A	04: HI1060 NA:0.14	47: Passive-25/250DC NA:0.07/0.46	3: 75x12x8												
2: (2+1)×1	B: 1550nm	19: MM-S105/125-22A	26: SCF10/125 NA:0.08	49: LMA-GDF-20/400-M NA:0.06/0.46	8: 105x15x8												
6: (6+1)×1		20: MM-S200/220-22A	29: DCF-UN-10/125DC	51: LMA-GDF-30/250-M NA:0.06/0.46	C: 80x14x10												

Note: These are our most popular configurations. Contact Lightel Sales for custom port counts or alternative fibers.

(N+1)×1 Multimode Pump and Signal Combiners can be used for high power fiber lasers and fiber amplifiers. These devices can be used to combine several pump lasers and couple that power with a seed signal. Manufactured using our proprietary methods, the product series includes (6+1)×1, (18+1)×1, (36+1)×1 and other reasonable configurations are available.

### Features

- High Coupling Efficiency
- Stable and Reliable
- Custom Configurations Available



### Specifications

Parameter	Specification					
Port Configuration	(6+1)×1		(18+1)×1		(36+1)×1	
Pump Wavelength	800 nm ~ 1000 nm					
Signal Wavelength	1030 nm ~1080 nm or 1450 nm ~ 1600 nm					
Signal Input Fiber (Note 3)	x/125		x/125 or x/250 or 20/400		x/125 x/125	
Pump Fiber	105/125 0.15NA/0.22NA		105/125 0.15NA/0.22NA or 200/220 0.22NA		105/125 0.15NA/0.22NA	
Output Fiber (Note 3)	y/125	y/250	20/400	y/250	20/400	y/400
Pump Efficiency (Note 4)	>90%	>93%	>95%	>93%	>95%	>93%
Signal Insertion Loss	<0.7 dB	<0.7 dB	<0.7 dB	<0.7 dB	<0.7 dB	
Total Power Handling	300W	600W	1800W	2500W	2500W	
Return Loss	>45 dB					
Pigtail	Standard 1m or custom					
Operating Temperature	0~75°C					
Storage Temperature	-40~85°C					

Note 1: Values are referenced without connectors.

Note 2: Other package dimensions and optical performances available by request.

Note 3: x, y specifies fiber core size.

Note 4: Fiber size and type dependent.

### Ordering Information

P	C	T	T	T	T	T	T	T
Port Configuration	Wavelength	Pump Fiber	Signal Fiber	Output Fiber	Package Size(mm)	Special Code		
6: (6+1)×1	A: 1060nm	18: MM-S105/125-15A	04: HI1060 NA:0.14	47: Passive-25/250DC NA:0.07/0.46	3: 75x12x8			
C: (18+1)×1	B: 1550nm	19: MM-S105/125-22A	26: SCF10/125 NA:0.08	49: LMA-GDF-20/400-M NA:0.06/0.46	8: 105x15x8			
G: (36+1)×1		20: MM-S200/220-22A	29: DCF-UN-10/125DC	51: LMA-GDF-30/250-M NA:0.06/0.46	C: 80x14x10			

Note: These are our most popular configurations. Contact Lightel Sales for custom port counts or alternative fibers.

# Pump/Combiner

## N×1 High Power Pump Combiners

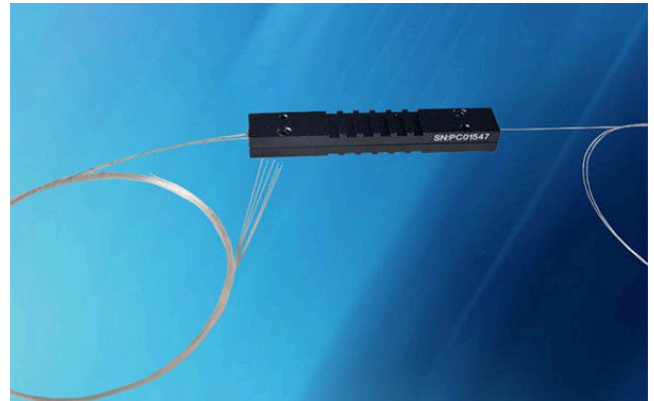
Lighttel's Multimode Pump Combiners can be used to combine several pump lasers. Our patented bundling technology significantly increases the combiner's reliability. Manufactured using our proprietary methods, Lighttel's Nx1 combiners are available up to N=37 and other custom configurations.

### Features

- High Coupling Efficiency
- Stable and Reliable
- Custom Configurations Available

### Applications

- High Power Fiber Lasers
- Fiber Amplifiers



### Specifications

Parameter	Specification				
Port Configuration	3x1	4x1	7x1	19x1	37x1
Pump Wavelength	800 nm ~ 1000 nm				
Pump Input Fiber	105/125 0.15NA/0.22NA or 200/220 0.22NA				105/125 0.15NA/0.22NA
Output Fiber (Note 3)	y/125 or 200/220	200/220 or y/250 or 20/400		y/400	
Pump Efficiency (Note 4)	>95%	>90%	>90%	>93%	
Total Power Handling	300W	350W	1800W	1800W	
Pigtail	Standard 1m or custom				
Operating Temperature	0~75°C				
Storage Temperature	-40~85°C				

Note1: Values are referenced without connectors.

Note2: Other package dimensions and optical performances available by request.

Note3: y specifies fiber core size.

Note4: Fiber size and type dependent.

### Ordering Information

P	C						
		Port Configuration	Pump Fiber	Output Fiber	Package Size(mm)	Special Code	
3:	3x1	18:	MM-S105/125-15A	20:	MM-S200/220-22A	1:	D4.0xL60 SST
4:	4x1	19:	MM-S105/125-22A	47:	Passive-25/250DC NA:0.07/0.46	3:	75x12x8
7:	7x1	20:	MM-S200/220-22A	49:	LMA-GDF-20/400-M NA:0.06/0.46	8:	105x15x8
9:	19x1						
A:	37x1						

Note: These are our most popular configurations. Contact Lighttel Sales for custom port counts or alternative fibers.