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Fiber  
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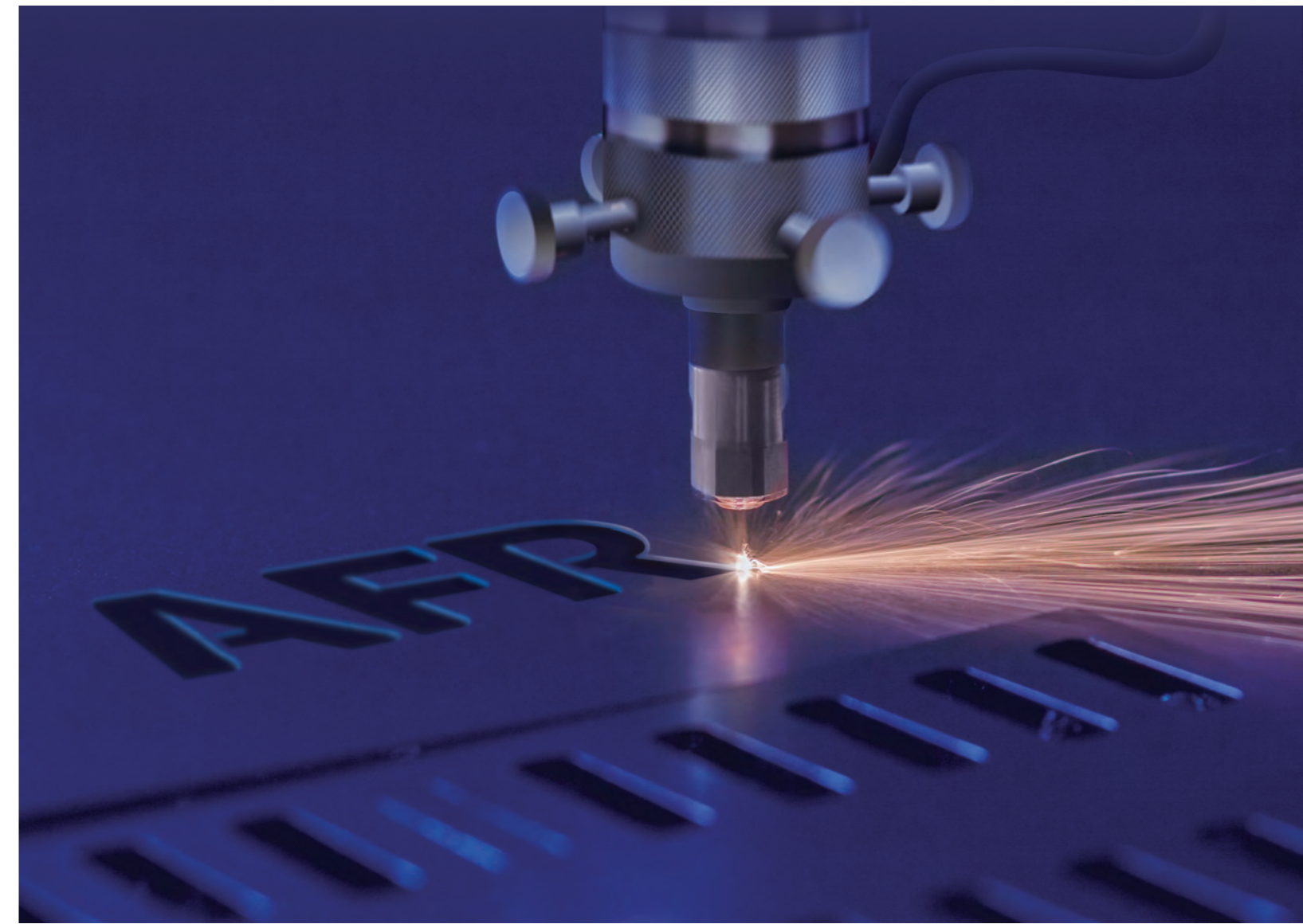
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# ONE-STOP SHOP FOR FIBER LASER COMPONENTS

2026



# NO.1 CHOICE OF 600 LASER COMPANIES AND INSTITUTES



## COMPANY INTRODUCTION

Founded in 2000 and publicly listed in China in 2017, Advanced Fiber Resources (AFR) has expanded to over 3,000 employees, including 500 engineers and technicians. AFR designs and manufactures fiber optic components and lithium niobate modulators across 136,000 m<sup>2</sup> of global facilities, including AFR Zhuhai, AFR Jinding, AFR Wuhan, and B&A in China, AFR Milan in Italy, and AFR Thailand. Our products are widely applied in telecommunications, data centers, fiber lasers, fiber sensing, autonomous driving, and biomedical equipment, and have been delivered to more than 600 customers in over 40 countries and regions worldwide.



**26**  
Years of History



**2017**  
IPO in China



**3,000**  
Employees



**136,000**  
m<sup>2</sup> Facility



**321**  
IP



**600**  
Customers

# QUALITY

At AFR, quality is our top priority and an integral part of everything we do. The product quality management covers the entire lifecycle, from product development, to supply chain management, manufacturing, and after-sales. AFR's quality management system fulfills the requirements of ISO 9001:2015, ISO 14001:2015 and IATF 16949, and all products are qualified with Telcordia GR-468 and GR-1221-CORE reliability test.

The company currently has seven dedicated laboratories and is equipped with many high precision instruments, to ensure excellent reliability of our products. We have built an optical precision processing center and a machining center, manufacturing crystals, mirrors, PBS, other flat surface optics and mechanical components in-house, the key material production capability makes us more competitive.

We strive to continuously improve our products with proactive, data driven, quality first systems and processes.



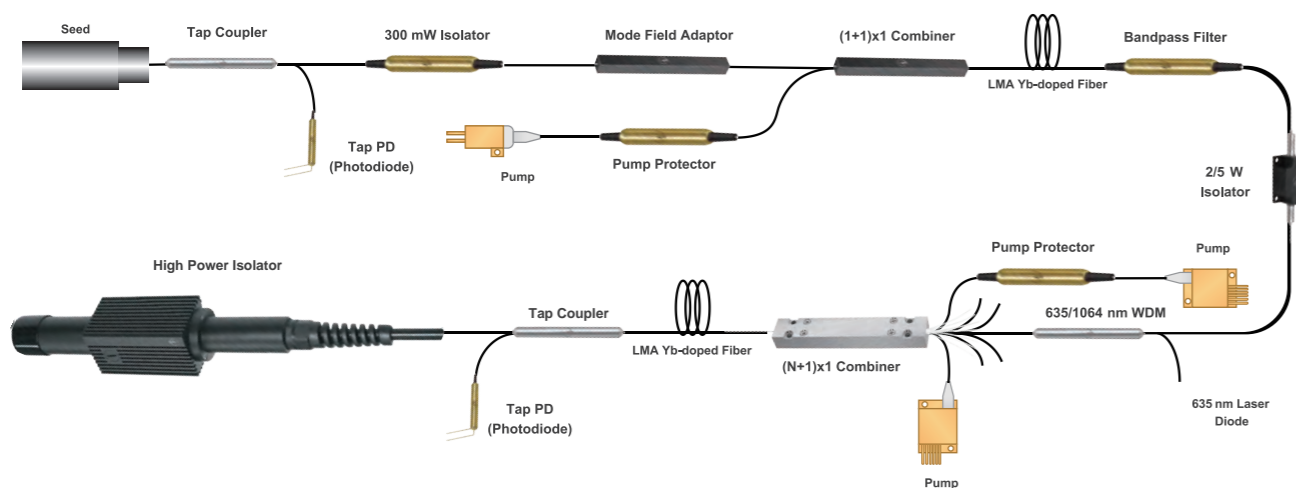
# ONE-STOP SHOP FOR FIBER LASER COMPONENTS

With an extensive range of products in its portfolio, AFR provides one-stop shop of passive optical components with superior performance at reasonable cost.

AFR has more than 20 years of product customization experience, resulting in around 20,000 subdivided products. With our customization and design experience, we can customize wavelength, power handling, fiber type, beam diameter, aperture, package size and any other parameters to suit your specific needs.



Isolator	Combiner	FBG	Laser Cable	Others
 In-Line Isolator	 Pump Combiner	 Fiber Bragg Grating	 D1 Laser Cable	 Coupler
 Fiber to Free Space Isolator	 Pump & Signal Combiner	 RSS-FBG	 D2/D3 Laser Cable	 WDM
 Free Space Isolator	 Laser Combiner Module	 UFCG	 D4 Laser Cable	 Bandpass Filter
		 PSCG		 Collimator
		 TC-PSCG		 Photodiode
				 MFA
				 CPS



AFR Components for Pulsed Lasers

Isolators

In-Line Isolator	Typ. Isolation	Typ. Insertion Loss
1030/1064 nm 300 mW - 1 kW *	30 dB	0.5 dB
2000 nm 300 mW - 50 W	25 dB	1.6 dB

Fiber to Free Space Isolator	Beam Diameter	Typ. Isolation	Typ. Insertion Loss
1030/1064 nm 20 W - 1 kW *	7 mm (Standard) Specified	35 dB	0.5 dB
2000 nm 20 - 100 W	7 mm (Standard) Specified	25 dB	1.0 dB

\*1 kW Only for Multi-Mode Fiber.

- (N+1)x1 Pump & Signal Combiner
- 635/1064 nm Fused WDM
- Photodiode
- Mode Field Adaptor
- Bandpass Filter

We can customize wavelength, power handling, fiber type, beam diameter, aperture, package size and any other parameters to suit your specific needs.

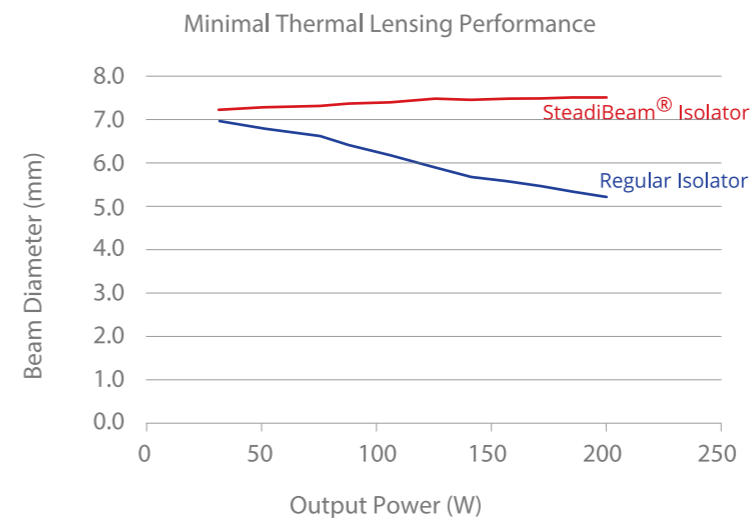


200 W SteadiBeam® Fiber Laser Isolator

Parameter	Unit	Value
Operating Wavelength ( $\lambda_c$ )	nm	1064
Operating Wavelength Range	nm	$\lambda_c \pm 15$
Max. Insertion Loss at 23 °C, $\lambda_c$	dB	0.45
Typ. Peak Isolation at 23 °C	dB	35
Min. Isolation at 23 °C	dB	28
Min. Return Loss	dB	50
Nominal Output Beam Diameter ( $1/e^2$ ) @ 200 W <sup>1</sup>	mm	$7.0 \pm 0.7$ @ M2=1.3
Beam Circularity @ Focal Spot <sup>1</sup>	%	> 90
M <sup>2</sup> Degradation <sup>1</sup>	%	< 10
640 nm Transmission	%	> 20
Focal Shift of Thermal Lens from 50 W to 200 W <sup>1</sup>	Z <sub>R</sub>	< 0.5
Typ. Focal Shift of Thermal Lens from 50 W to 200 W <sup>1</sup>	Z <sub>R</sub>	0.2
Max. Average Optical Power	W	200
Max. Peak Power for ns Pulse	kW	30
Beam Offset	mm	< 0.7
Pointing Error	mrad	< 2.0
Max. Tensile Load	N	5
Max. Average Optical Power from Cladding	W	5
Fiber Type	-	Specified by Ordering Info
Operating Temperature	°C	+ 10 to + 50
Storage Temperature	°C	- 10 to + 60



<sup>1</sup>The high power performances are tested by the Primes LQM.



### 1064 nm 20 W In-Line Isolator

Parameter	Unit	Value
Center Wavelength ( $\lambda_c$ )	nm	1064
Operating Wavelength Range	nm	$\lambda_c \pm 10$
Min. Isolation, $\lambda_c$ , 23 °C, All Polarization States	dB	25
Typ. Insertion Loss, 23 °C, $\lambda_c$	dB	0.7
Max. Insertion Loss, 23 °C, $\lambda_c$	dB	1.3
Max. Polarization Dependent Loss	dB	0.2
Min. Return Loss (Input/Output)	dB	50/50
Max. Optical Average Power	W	20
Max. Peak Power for ns Pluse	kW	20
Fiber Type	-	Specified by Ordering Info
Max. Tensile Load	N	5
Operating Temperature	°C	+ 10 to + 50
Storage Temperature	°C	0 to + 60



### 1064 nm 1000 W In-Line Isolator

Parameter	Unit	Value
Center Wavelength ( $\lambda_c$ )	nm	1064
Operating Wavelength Range	nm	$\lambda_c \pm 10$
Min. Isolation, $\lambda_c$ , 23 °C, All Polarization States	dB	30
Typ. Insertion Loss, 23 °C	dB	0.45
Max. Insertion Loss, 23 °C	dB	0.6
Max. Polarization Dependent Loss	dB	0.2
Min. Return Loss	dB	45
Max. Average Optical Power	W	1000
Max. Peak Power for ns Pulse	kW	200
Max. Tensile Load	N	5
Fiber Type	-	Specified by Ordering Info
Operating Temperature	°C	+ 10 to + 50
Storage Temperature	°C	0 to + 60



### (N+1)×1 Multimode Pump & Signal Combiner

Parameter	Unit	Value		
Product Type	-	(2+1)×1		
Pump Wavelength Range	nm	900 - 1000		
Signal Wavelength Range	nm	1060		
Fiber Type for Input (Pump Channel)	-	105/125 (0.15 NA or 0.22 NA)		
Fiber Type for Input (Signal Channel)	-	10/125 DCF	20/130 DCF	30/250 DCF
Fiber Type for Output	dB	10/125 DCF	20/130 DCF	30/250 DCF
Max. Signal Channel Insertion Loss	dB	0.5		
Typ. Pump Efficiency	%	94		
Min. Pump Efficiency	%	92		
Max. Input Pump Power	W	2 × 5	2 × 30	2 × 50
Package Dimensions	mm	P1: 50 (L) × 5 (W) × 5 (H)	P2: 70 (L) × 12 (W) × 8 (H)	
Operating Temperature	°C	0 to + 65		
Storage Temperature	°C	- 40 to + 85		



### 1064 nm 500 W Fiber to Free Space Isolator

Parameter	Unit	Value
Operating Wavelength ( $\lambda_c$ )	nm	1064 ± 15
Max. Insertion Loss at 23 °C, $\lambda_c$	dB	0.4
Typ. Peak Isolation	dB	40
Min. Isolation at 28 °C	dB	30
Min. Return Loss	dB	50
Nominal Output Beam Diameter (1/e <sup>2</sup> @ 500 W) <sup>1</sup>	mm	7.0 ± 0.75 @ M2=1.3
Beam Circularity @ Focal Spot <sup>1</sup>	%	> 90
M <sup>2</sup> Degradation	%	< 10
640 nm Transmission	%	> 20
Max. Focal Shift of Thermal Lens <sup>1</sup>	Z <sub>R</sub>	≤ 0.5
Typ. Focal Shift of Thermal Lens <sup>1</sup>	Z <sub>R</sub>	0.2
Beam Divergence <sup>1</sup>	mrad	≤ 0.5
Max. Average Optical Power	W	500
Max. Peak Power for ns Pulse	kW	50
Max. Average Optical Power from Cladding	W	5
Max. Tensile Load	N	5
Beam Offset	mm	< 0.7
Pointing Error	mrad	< 2.5



<sup>1</sup>Measured by Laser Quality Monitor (LQM) at full power.

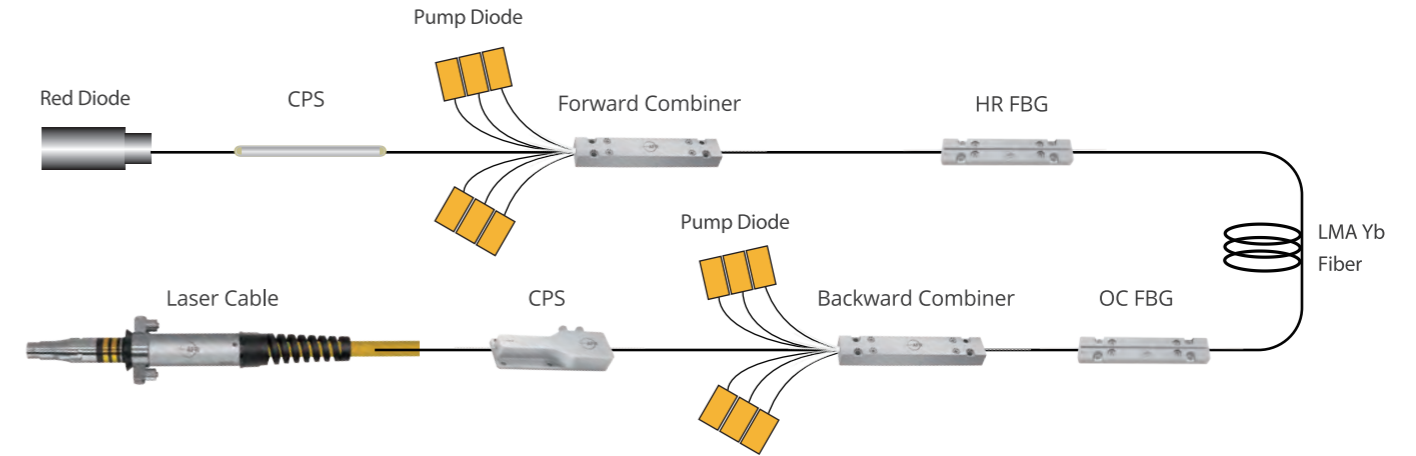
## 2 μm 50 W In-Line Isolator

Parameter	Unit	Value
Center Wavelength (λc)	nm	1910, 2050 or Specified
Operating Wavelength Range	nm	λc ± 10
Max. Polarization Dependent Loss, 23 °C	dB	0.2
Min. Isolation, λc, 23 °C, All Polarization States	dB	25
Max. Insertion Loss, λc, 23 °C, All Polarization States	dB	1.6
Min. Return Loss (Input/Output)	dB	45/45
Max. Average Optical Power	W	50
Max. Peak Power for ns Pulse	kW	10
Max. Tensile Load	N	5
Fiber Type	-	Specified by Ordering Info
Operating Temperature	°C	+ 10 to + 50
Storage Temperature	°C	0 to + 60



## 2 μm 100 W Fiber to Free Space Isolator

Parameter	Unit	Value
Center Wavelength (λc)	nm	2000 or Specified
Operating Wavelength Range	nm	λc ± 10
Max. Insertion Loss	dB	1
Min. Isolation, λc, 25 °C	dB	25
Beam Diameter (1/e <sup>2</sup> , Singlemode Only)	mm	0.8 ± 0.2
Beam Divergence (Far Field)	mrad	< 5
M <sup>2</sup> Degradation	%	< 10
Beam Roundness	%	> 90
Max. Average Optical Power	W	100
Max. Peak Power for ns Pulse	kW	20
Return Loss	dB	50
Max. Tensile Load	N	5
Fiber Type	-	Specified by Ordering Info
Operating Temperature	°C	+ 10 to + 50
Storage Temperature	°C	0 to + 60



## AFR Components for CW Lasers

### Combiner

Product	Handling Power	Pump Efficiency	Pump/Laser Number
(N+1)x1 Forward Pump Combiner	Up to 3 kW	> 97 %	≤ 36, Specified
(N+1)x1 Backward Pump Combiner	Up to 5 kW	> 97 %	≤ 18, Specified
N x 1 Laser Combiner	Up to 150 kW	> 97 %	≤ 19, Specified

### FBG

Product	Handling Power	Center Wavelength
High Power FBG	Up to 9 kW	1018, 1030, 1064, 1070, 1080, 1917, 1925, 1939 nm, Specified
RSS-FBG	Up to 3 kW	1080 nm, Specified

### Laser Cable

Product	Handling Power	Center Wavelength
D1 Laser Cable	Up to 10 kW	1080 nm, Specified
D2 Laser Cable	Up to 100 kW	1080 nm, Specified
D3 Laser Cable	Up to 100 kW	1080 nm, Specified
D4 Laser Cable	Up to 500 W	1080 nm, Specified

We can customize wavelength, power handling, fiber type, beam diameter, aperture, package size and any other parameters to suit your specific needs.

## High Power (18+1)×1 Backward Pump & Signal Combiner

Parameter	Unit	Value	
Product Type	-	Backward (18+1)×1	
Pump Wavelength Range	nm	800 - 1000	
Signal Wavelength Range	nm	1000 - 1100	
Fiber Type for Input (Pump Channel)	-	135/155, 0.22 NA	
Fiber Type for Input (Signal Channel)	-	20/400, 0.065/0.46 NA	25/400
Fiber Type for Output	-	20/400, 0.065/0.46 NA	25/400
Max. Input Pump Power	W	18 × 300	
Max. Input Signal Power	W	5000	
Max. Signal Channel Insertion Loss	dB	0.2	
Min. Pump Efficiency	%	97	
Package Dimensions	mm	150 (L) × 15 (W) × 11 (H)	
Operating Temperature	°C	- 5 to + 65	
Storage Temperature	°C	- 40 to + 85	



## High Power 7×1 Laser Combiner

Parameter	Unit	Value
Product Type	-	7×1
Laser Wavelength	nm	1080
Fiber Type for Input	-	34/130, 0.095 NA
Fiber Type for Output	-	100/120/360, 0.22 NA
Max. Combined Power per Port	W	7000
Max. Backward Power Handling	W	1000
Min. Power Transfer Efficiency	%	97
Max. Beam Parameter Product (BPP)	mm-mrad	4
Max. Output NA (99%)	-	0.13
Package Dimensions	mm	205 (L) × 60 (W) × 22 (H)
Operating Temperature	°C	- 5 to + 65
Storage Temperature	°C	- 40 to + 85

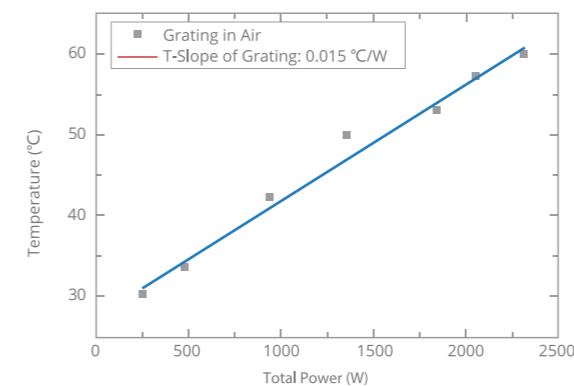


## ClearCut High Power FBG

Parameter	Unit	Value				
Center Wavelength	nm	1018, 1030, 1064, 1070, 1080				
Tolerance on Center Wavelength	nm	± 1				
Max. Wavelength Mismatch (OC Relative HR)	nm	0.2				
High Reflector (HR) / Output Coupler (OC)	-	HR	OC			
Peak Reflectivity	%	≥ 99.0	(5.0 - 30.0) ± 2.0			
Reflection Bandwidth at 95%	nm	1.5 - 4.0	-			
Reflection Bandwidth at 50%	nm	-	0.2 - 2.0			
Tolerance on Reflection Bandwidth	nm	0.1 - 0.4	0.1 - 0.2			
Min. Side Mode Suppression Ratio	dB	20	10			
Fiber Core/Cladding Dimension	μm	10/125	14/250	20/400	25/400	30/400
<sup>1</sup> Temperature Slope Suspended in Air	°C/W	≤ 0.1	≤ 0.03	≤ 0.02	≤ 0.02	≤ 0.02
<sup>2</sup> Max. Core Signal Power Handling	W	300	1000	3000	3000	6000
Max. Clad Pump Power Handling	W	450	1200	3000	3000	4500
Fiber Type	-	PM or Non-PM				
Package Dimensions	mm	Recoated only or 60 (L) × 12 (W) × 5 (H)				
Cooling Bottom Plate Temperature	°C	≤ 25				
Storage Temperature	°C	- 40 to + 85				



<sup>1</sup>For total power: the signal power in the core and the pump power in the cladding. (The slope efficiency is about 70%)  
<sup>2</sup>The grating area should be kept on active cooling plates. (The cooling temperature ≤ 25 °C)



Total power: the signal power in the core and the pump power in the cladding. The output slope efficiency is about 70%.

Measurement condition: the grating in the cavity is recoated only and suspended in the air without any active cooling. The environment temperature is 22-24 °C.

### 3 kW Laser Cavity Component

General Parameters	Unit	Value
Operating Wavelength	nm	1080 ± 1
Max. Handling Signal Power	W	3000
Max. Signal Channel Insertion Loss (Total)	dB	1.5
Storage Temperature	°C	-40 to +85
Operating Temperature	°C	0 to +50
Cooling Bottom Plate Temperature	°C	≤ 25

Parameters for Combiner	Unit	Value
Product Type	-	(6+1)×1
Pump Wavelength	nm	976
Fiber Type for Input (Pump Channel)	-	BrightCore MM200/220 DCF 0.22 NA
Fiber Type for Input (Signal Channel)	-	Customization
Fiber Type for Output (Signal Channel)	-	20/400 DCF 0.065 NA
Min. Pump Efficiency	%	97
Max. Input Pump Power	W	6 × 700
Package Dimensions	mm	150 (L) × 15 (W) × 11 (H)

Parameters for FBG (HR)	Unit	Value
Fiber Type	-	20/400 DCF 0.065 NA
Peak Reflectivity	%	≥ 99.0
Reflection Bandwidth at 95%	nm	1.5 - 4.0
Tolerance on Reflection Bandwidth	nm	0.1 - 0.4
Min. Side Mode Suppression Ratio	dB	20
Max. Wavelength Mismatch (OC Relative HR)	nm	0.3



### ClearCut Raman Scattering Suppression FBG

Parameter	Unit	Value
Passband Center Wavelength	nm	1080
RSS Wavelength	nm	1132 ± 10
Max. Insertion Loss (Passband Center Wavelength)	dB	0.2
Min. Attenuation (RSS Wavelength)	dB	20
Min. Return Loss (RSS Wavelength)	dB	25
Fiber Core Dimension	μm	10    14    20    25
Max. Core Signal Power Handling	W	300    2000    3000    4000
Max. Core RSS Power Handling	W	3    20    30    40
Fiber Clad Dimension	μm	125    250    400
Max. Clad Pump Power Handling	W	300    2000    3000
Package Dimensions	mm	80 (L) × 12 (W) × 5 (H)
Storage Temperature	°C	-40 to +85





## ClearCut 2 μm Series Fiber Bragg Grating

Parameter	Unit	Value		
Center Wavelength	nm	1900 - 2100		
Tolerance on Center Wavelength	nm	± 1		
Max. Wavelength Mismatch (OC Relative HR)	nm	0.2		
High Reflector (HR) / Output Coupler (OC)	-	HR	OC	
Peak Reflectivity	%	≥ 99.0	(5.0 - 30.0) ± 2.0	
Reflection Bandwidth at 95%	nm	1.5 - 3.0	-	
Reflection Bandwidth at 50%	nm	-	0.5 - 1.0	
Tolerance on Reflection Bandwidth	nm	0.1 - 0.3	0.1	
Min. Side Mode Suppression Ratio	dB	-	10	
Fiber Core/Cladding Dimension	μm	10/130	15/250	25/400
Max. Core Signal Power Handling	W	50	100	600
Max. Clad Pump Power Handling	W	150	300	1000
Package Dimensions	mm	60 (L) × 12 (W) × 5 (H)		
Cooling Bottom Plate Temperature	°C	≤ 25		
Storage Temperature	°C	-40 to + 85		



## D1 Laser Cable

Parameter	Unit	Value			
Operating Wavelength	nm	900 - 1100			
Fiber Core Diameter	μm	14	20 - 30	30 - 75	≥ 75
Max. Transmission Loss	%	2			
Max. Power Handling	W	1000	3000	6000	12000
Max. Stripping Cladding Power	W	500			
Backward Power Handling	W	500			
Max. Z-Position Tolerance	μm	± 50			
Max. Angular Deviation	mrad	20			



### Cooling Water Requirements

Flow Rate	L/min	1.5 - 3.0
Max. Water Pressure	MPa	0.8
Water Temperature	°C	10 - 25
Water pH Value	-	5.6 - 7.9
Water Hose Diameter	mm	ID/OD = 4/6

### Others

Mechanical Interface	-	Compatible with the Standard QBH Interface
Armoured Cable Diameter	mm	13.3
Storage Temperature	°C	-20 to + 70

D2/D3 Laser Cable

Parameter	Unit	Value		
Operating Wavelength	nm	1080		
Fiber Core Diameter	μm	75 - 100	150	200
Numerical Aperture (NA)	-	0.22		
Max. Transmission Loss	%	2		
Max. Power Handling	kW	20	60	100
Max. Stripping Cladding Power	W	500		
Backward Power Handling	kW	1		
Max. Z-Position Tolerance	μm	± 50		
Max. Angular Deviation	mrad	7	7	5

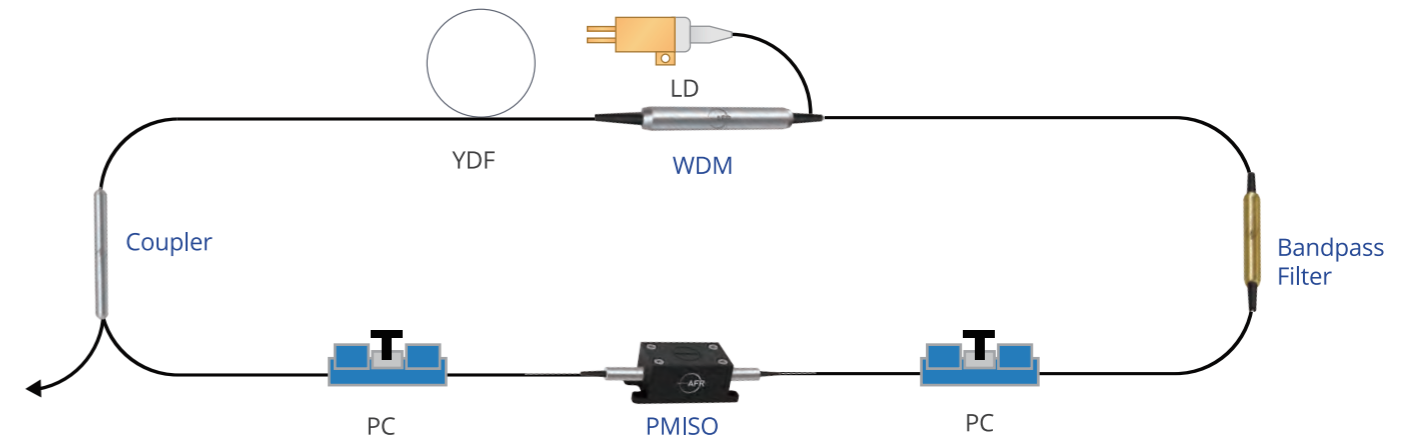


Cooling Water Requirements

Min. Flow Rate	L/min	3.0	8.0	8.0
Min. Water Pressure	MPa	0.8		
Water Temperature	°C	+ 10 to + 25		
Water pH Value	-	5.6 - 7.9		
Water Hose Diameter	mm	ID/OD = 6/8		

Others

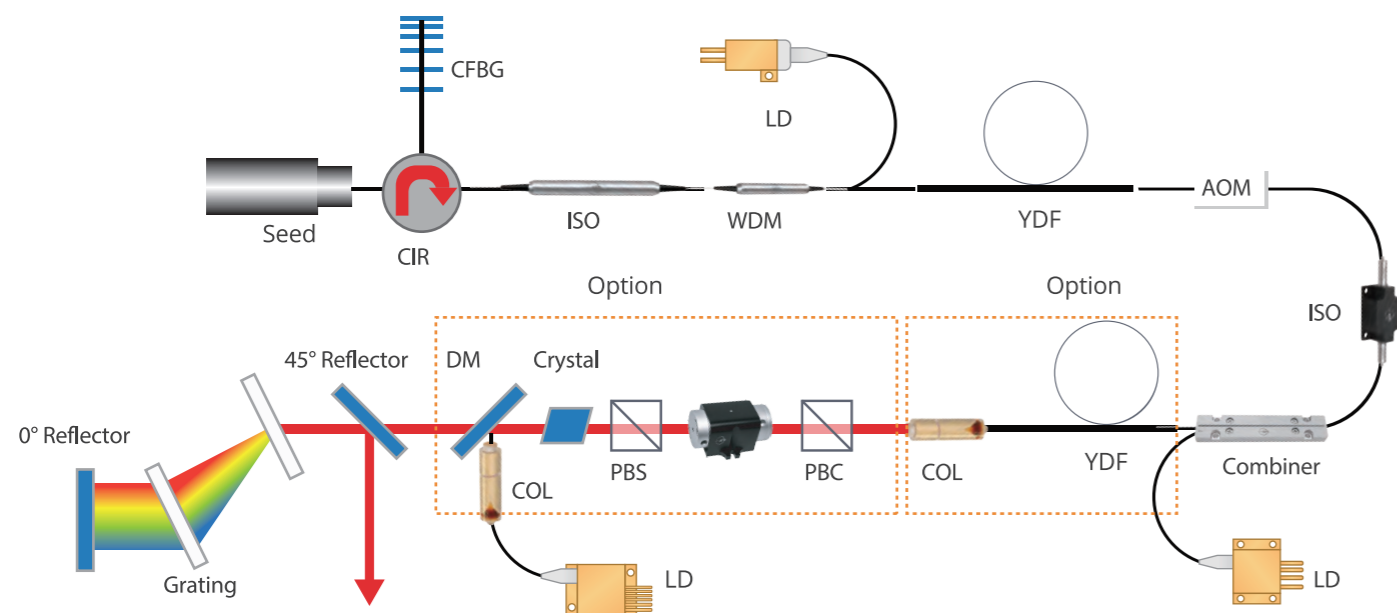
Mechanical Interface	-	Compatible with the Standard Q+/QD Interface		
Armoured Cable Diameter	mm	13.3		
Min. Cable Bend Radius	mm	200		
Storage Temperature	°C	- 20 to + 70		



AFR 1030/1064 nm Low Power Polarization Maintaining Components for Ultra-Fast Lasers

- WDM
- Bandpass Filter
- In-Line Isolator
- Collimator
- Splitter
- Fiber Bragg Grating Reflector
- Package Ability for SESAM





AFR 1030/1064 nm Polarization Maintaining Components for Ultra-Fast Lasers

- 300 mW - 30 W In-Line Isolator
- 200 W Free Space Isolator
- 300 mW - 30 W Circulator
- 200 W Collimator
- 5 - 10 W WDM
- 200 W Pump Combiner
- Chirped Fiber Bragg Gratings
- Components with Active Fiber

We can customize wavelength, power handling, fiber type, beam diameter, aperture, package size and any other parameters to suit your specific needs.

## ClearCut Dispersion Management Reflector for Ultrafast Laser

Parameter	Unit	Value
Center Wavelength <sup>1</sup>	nm	1030
Tolerance on Center Wavelength	nm	3
Dispersion Parameter ( $D_c$ ) <sup>2</sup>	ps/nm	0.2   0.22   0.42
Peak Reflectivity	%	5 - 15   5 - 20
Reflection Bandwidth (FWHM)	nm	≥ 20
Tolerance on Reflection Bandwidth	nm	2
Spectral Shape	-	Gauss
Fiber Type	-	PM 980
Package Dimensions	mm	Recoated
Storage Temperature	°C	-40 to +85

<sup>1</sup>Center wavelength could range from 1020 nm to 1040 nm.

<sup>2</sup>The dispersion parameter and fiber type could be customized.



## ClearCut Fiber Bragg Gratings Reflector

Parameter	Unit	Value
Center Wavelength	nm	1030.0, 1064.3
Tolerance on Center Wavelength	nm	0.1
Peak Reflectivity	%	5 - 99
<sup>1</sup> Reflection Bandwidth (FWHM)	nm	0.2 - 0.7
Tolerance on Reflection Bandwidth	nm	0.1
Min. Core Signal Power Handling	mW	500
Fiber Type <sup>2</sup>	-	PM 980, PM 1060, PM 10/125
Package Dimensions	mm	Recoated
Storage Temperature	°C	-40 to +85

<sup>1</sup>The FWHM depends on the peak reflectivity.

<sup>2</sup>The fiber type could be customized.



# FEATURED PRODUCTS FOR ULTRA-FAST LASERS

## ClearCut Chirped Fiber Bragg Gratings

Parameter	Unit	Value	
<sup>1</sup> Center Wavelength	nm	1030	
Tolerance on Center Wavelength	nm	1	
Dispersion Parameter ( $D_2$ ) <sup>1</sup>	ps/nm	> 100	10.3
Peak Reflectivity	%	≥ 40	≥ 40
Reflection Bandwidth (FWHM)	nm	1 – 10	1 – 15
Tolerance on Reflection Bandwidth	nm	1	1
Dispersion Tunable	-	YES	NO
Tolerance on $D_2$ Parameter	ps/nm	5	/
$\beta_3$ Parameter <sup>1</sup>	ps <sup>3</sup>	-0.069	/
Fiber Type <sup>2</sup>	-	PM 980	
Operating Temperature <sup>3</sup>	°C	+ 25 to + 40	
Storage Temperature	°C	- 40 to + 85	
Package Dimensions for Dispersion Tunable Production	mm <sup>3</sup>	182 × 30 × 18 (CFBG Module)	
		130 × 56 × 155 (Adapter)	



<sup>1</sup>Parameter will deviate if temperature changed.

<sup>2</sup>Fiber type could be customized.

<sup>3</sup>The range of temperature could be modified in practical.

## LaseGuard Free Space Isolator Series

Parameter	Unit	Value
Center Wavelength ( $\lambda_c$ )	nm	1060 or Specified
Peak Transmission, $\lambda_c$ , 23 °C	%	> 95
Peak Isolation, $\lambda_c$ , 23 °C	dB	> 35
Input Polarization	-	Specified
Output Polarization	-	Specified
Clear Aperture	mm	5 or Specified
Optical Average Power	W	100 or Specified
Damage Threshold	-	10 J/cm <sup>2</sup> @ 10 ns 1 J/cm <sup>2</sup> @ 8 ps
Operating Temperature	°C	+ 10 to + 30
Storage Temperature	°C	0 to + 60



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Every effort has been made to ensure the accuracy of the information contained in this catalog at the time of publication. As part of our policy of continuous product improvement, we reserve the right to change specifications at any time. For the most up-to-date information, please refer to our website.

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