

激光光纤准直/耦合器

Laser Fiber Collimator And Coupler

2024
版

远讯光电竭诚为您服务



西安远讯光电科技有限公司
YSenser Co. Ltd.

地址: 陕西省西安市高新区锦业一路72号
No. 72, Jinye 1st Road, High-tech Development zone, Xi'an, Shaanxi
Website: www.ysenser.com
Tel: +86-(0) 29-8188-2518
Fax: +86-(0) 29-8188-1123
Email: sales@ysenser.com





企业简介

西安远讯光电科技有限公司成立于2013年，是一家专业致力于光纤传感，拥有自主知识产权的高新技术企业。

远讯光电致力成为光纤传感产业链中光纤敏感探头、光纤组件、光电模组的核心供应商，为智能工业设备、生命科学仪器、精密测量分析仪器领域客户提供高品质产品、优质的服务及专业的技术支持。

远讯光电凭借数十年在光纤光学系统设计、优化、实施积累的丰富经验持续研发投入，专注深耕产品质量、关注产品应用环境中的可靠性，为远讯产品带来了广泛的应用场景。

Ysenser was established in 2013 and is a high-tech enterprise specializing in fiber optic sensing with independent intellectual property rights.

Ysenser is committed to growing into the core supplier of fiber optic sensing probes, fiber optic components, and optoelectronic modules in the fiber optic sensing industry chain. We provide high-quality products, services and professional technical support to customers in the fields of intelligent industrial equipment, life sciences, precision measurement and analysis instruments.

With decades of accumulated experience in the design, optimization, and manufacture of fiber optic systems, we continues to invest in research and development, focusing on deepening product quality and paying attention to reliability in application environments. We are also actively looking for more application scenarios for Ysenser products.

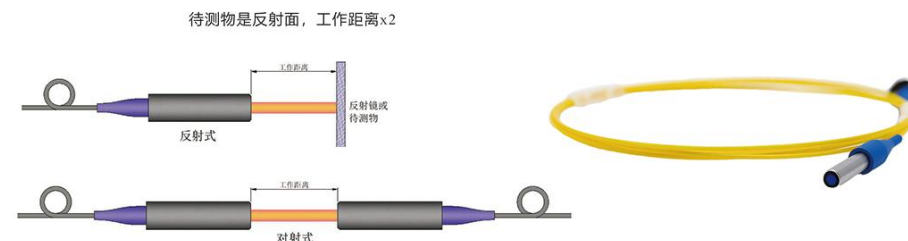
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单模光纤准直器 由光纤尾纤和聚焦透镜精确定位封装而成，可将光纤传输出射光变成平行光束（高斯光束），或将外界的平行光聚焦耦合进入光纤内。亦可以单只使用，按照既定发散角，在特定位置达到要求尺寸的光斑。

Single-mode fiber collimator is packaged by precise positioning of fiber pigtail and focusing lens, which can transform the output light of fiber into parallel light beam (Gaussian beam) or couple external parallel light into the fiber. It can also be used alone to achieve the required spot size at a specific position according to the predetermined divergence angle.



按照工作距离划分，可分为固定工作距离（定焦）准直器和工作距离范围可变（长景深）准直器，根据不同工作距离选用球面透镜或者渐变折射率透镜。我们建议准直器安装在光学精密调节架中进行对准和调试，保证耦合空间光束时达到最佳耦合效率。

According to the working distance, it can be divided into fixed working distance (fixed focus) collimator and variable collimator for working distance range. Conventional lenses or Grin lenses should be selected according to different working distances. We recommend installing the collimator in an optical precision adjustment frame for adjustment to ensure the best coupling efficiency.

区别 Difference	固定工作距离（定焦）准直器 Fixed Working Distance Collimator	工作距离可変准直器 Variable Collimator for Working Distance Range
工作距离 Working Distance	1M	0~1M Any Position
光束特点 Beam characteristics	准直/ 汇聚 Collimation / Focus	准直 Collimation
光斑 Beam Size	某一固定位置得到精准尺寸光斑，最小可到20um，前后移动光斑变化大 At a fixed position, a precise sized beam spot can be obtained, with a minimum size of 20um. The beam size rapid changes when moved forwards or backwards.	在可调距离范围内前后移动，光斑尺寸变化非常小 Move forward and backward within an adjustable range, and the spot size changes very little.
配对损耗 Insert Loss For A Pair	随距离变化配对损耗变化明显 Changes significantly with distance.	随距离变化配对损耗变化不敏感 Insensitive to changes with distance
出射损耗 Output Loss	无差别 No difference	
回损 Return Loss	无差别 No difference	

固定工作距离光纤准直器

SM Fiber Optic Collimator for Fixed Working Distance

Wavelength	Bandwidth	WD	Waist Beam	Divergence Angle	Package	Output Loss	Return Loss	Mode-Field Diameter	Fiber Type	Connector
405nm	±20nm	100mm	0.27mm	2.1mrad	Φ3.4mm	≤2.5dB	≥55dB	3.0±0.5um	405HP	
405nm	±20nm	300mm	0.70mm	0.78mrad	Φ3.4mm	≤2.5dB	≥55dB			
450nm	±20nm	100mm	0.26mm	2.3mrad	Φ3.4mm	≤2.0dB	≥55dB	3.5±0.5um		
450nm	±20nm	300mm	0.68mm	0.87mrad	Φ3.4mm	≤2.0dB	≥55dB		450HP	
525nm	±20nm	100mm	0.31mm	2.3mrad	Φ3.4mm	≤1.5dB	≥55dB	3.6±0.5um		
525nm	±20nm	300mm	0.8mm	0.87mrad	Φ3.4mm	≤1.5dB	≥55dB			
635nm	±20nm	100mm	0.39mm	2.6mrad	Φ3.4mm	≤0.7 dB	≥55dB	4.2±0.5um		
635nm	±20nm	300mm	0.85mm	1.0mrad	Φ3.4mm	≤0.8 dB	≥55dB		630HP	
635nm	±20nm	1000mm	1.32mm	0.7mrad	Φ3.4mm	≤1.0 dB	≥55dB			
780nm	±20nm	100mm	0.39mm	2.6mrad	Φ3.4mm	≤0.6 dB	≥55dB	4.5±0.5um		
780nm	±20nm	300mm	0.99mm	1.0mrad	Φ3.4mm	≤0.7 dB	≥55dB			
780nm	±20nm	1000mm	1.55mm	0.7mrad	Φ4.0mm	≤0.9 dB	≥55dB		780HP	
850nm	±20nm	100mm	0.37mm	3.0mrad	Φ3.4mm	≤0.6 dB	≥55dB	5.0±0.5um		
850nm	±20nm	300mm	0.97mm	1.1mrad	Φ3.4mm	≤0.7 dB	≥55dB			
850nm	±20nm	1000mm	1.51mm	0.75mrad	Φ4.0mm	≤0.9 dB	≥55dB			
980nm	±20nm	100mm	0.36mm	3.5mrad	Φ3.4mm	≤0.5 dB	≥55dB	5.9±0.3um		
980nm	±20nm	300mm	0.96mm	1.4mrad	Φ3.4mm	≤0.6 dB	≥55dB			
980nm	±20nm	1000mm	1.48mm	0.87mrad	Φ4.0mm	≤0.9 dB	≥55dB		Hi1060	
1064nm	±20nm	100mm	0.37mm	3.3mrad	Φ3.4mm	≤0.5 dB	≥55dB	6.2±0.3um		
1064nm	±20nm	300mm	0.99mm	1.4mrad	Φ3.4mm	≤0.6 dB	≥55dB			
1064nm	±20nm	1000mm	1.53mm	0.87mrad	Φ4.0mm	≤0.9 dB	≥55dB			
1310nm	±20nm	100mm	0.38mm	4.4mrad	Φ3.4mm	≤0.4 dB	≥55dB	9.6±0.4um		
1310nm	±20nm	300mm	0.73mm	2.3mrad	Φ3.4mm	≤0.5 dB	≥55dB			
1310nm	±20nm	1000mm	0.91mm	1.9mrad	Φ4.0mm	≤0.7 dB	≥55dB			
1550nm	±20nm	100mm	0.46mm	4.5mrad	Φ3.4mm	≤0.4 dB	≥55dB	10.4±0.5um		
1550nm	±20nm	300mm	0.85mm	2.4mrad	Φ3.4mm	≤0.5 dB	≥55dB			
1550nm	±20nm	1000mm	1.35mm	1.7mrad	Φ4.0mm	≤0.7 dB	≥55dB		Smf-28c G657A1 G657A2 ZBL	
1650nm	±5nm	100mm	0.47mm	4.5mrad	Φ3.4mm	≤0.4 dB	≥55dB	10.9±0.5um		
1650nm	±5nm	300mm	0.89mm	2.4mrad	Φ3.4mm	≤0.5 dB	≥55dB			
1650nm	±5nm	1000mm	1.22mm	1.7mrad	Φ4.0mm	≤0.7 dB	≥55dB			



工作距离可调光纤准直器

SM Fiber Optic Collimator for Variable Working Distance Range

Wavelength	Bandwidth	WD	Export beam Size	Divergence Angle	Package	IL for a Pair	Return Loss	Mode-Field Diameter	Fiber Type	Connector
780nm	±20nm	0-350mm	0.9mm	0.95mrad	Φ3.4mm	≤0.8 dB	≥55dB	4.5±0.5um	780HP	
850nm	±20nm	0-350mm	1.0mm	1.05mrad	Φ3.4mm	≤0.8 dB	≥55dB	5.0±0.5um		
980nm	±20nm	0-350mm	0.99mm	1.26mrad	Φ3.4mm	≤0.7 dB	≥55dB	5.9±0.3um		
980nm	±20nm	50-1000mm	1.54mm	0.81mrad	Φ4.0mm	≤0.9 dB	≥55dB		Hi1060	
1064nm	±20nm	0-350mm	1.0mm	1.35mrad	Φ3.4mm	≤0.7 dB	≥55dB	6.2±0.3um		
1064nm	±20nm	50-1000mm	1.6mm	0.85mrad	Φ4.0mm	≤0.9 dB	≥55dB			
1310nm	±20nm	0-350mm	0.81mm	2.06mrad	Φ3.4mm	≤0.7 dB	≥55dB	9.6±0.4um		
1310nm	±20nm	50-1000mm	1.3mm	1.31mrad	Φ4.0mm	≤0.9 dB	≥55dB			
1550nm	±20nm	0-350mm	0.9mm	2.15mrad	Φ3.4mm	≤0.7 dB	≥55dB	10.4±0.5um		
1550nm	±20nm	50-1000mm	1.45mm	1.36mrad	Φ4.0mm	≤0.9 dB	≥55dB		Smf-28c G657A1 G657A2 ZBL	
1650nm	±20nm	0-350mm	0.96mm	2.19mrad	Φ3.4mm	≤0.7 dB	≥55dB	10.9±0.5um		
1650nm	±20nm	50-1000mm	1.50mm	1.40mrad	Φ4.0mm	≤0.9 dB	≥55dB			

单模/多模高温光纤准直器

SM/MM High Temperature Fiber Optic Collimator

采用耐高温型光纤、耐高温材料以及制作工艺，可满足工作温度-40~220℃的应用环境，高温器件专用FC/APC耐高温接头，保证在高温环境下光纤对接信号的稳定，产品出厂前需经过48小时220℃高温可靠性测试，确保器件长期在高温环境下工作的可靠性



By using high-temperature optical fiber, materials, and production processes, this product can meet the application environments with a working temperature of -40~220℃. The high-temperature resistant FC/APC connector is specifically designed for high-temperature devices, ensuring stable optical signal transmission in high-temperature environments. The product undergoes a 48-hour 220℃ reliability test before delivery, ensuring long-term reliability of the device working under high-temperature conditions.

Wavelength	Bandwidth	WD	Export beam Size	Divergence Angle	Package	Output IL	Return Loss	Mode-Field Diameter	Fiber Type
1310nm	±20nm	≤300mm	0.81mm	2.3mrad	Φ3.4mm	≤0.6 dB	≥55dB	9.2±0.4um	
1310nm	±20nm	300-1000mm	1.27mm	1.7mrad	Φ4.0mm	≤0.9 dB	≥55dB		
1550nm	±20nm	≤300mm	0.92mm	2.4mrad	Φ3.4mm	≤0.6 dB	≥55dB	10.4±0.5um	9/125 Polyimide coating
1550nm	±20nm	300-1000mm	1.45mm	1.4mrad	Φ4.0mm	≤0.9 dB	≥55dB		
1650nm	±20nm	≤300mm	0.96mm	2.4mrad	Φ3.4mm	≤0.6 dB	≥55dB		
1650nm	±20nm	300-1000mm	1.5mm	1.4mrad	Φ4.0mm	≤0.9 dB	≥55dB		
1310nm	±20nm	10mm	0.6mm	20mrad	Φ3.4mm	≤0.5 dB	≥30dB	50±2.5um	50/125 Polyimide coating
1550nm	±20nm	10mm	0.6mm	20mrad	Φ3.4mm	≤0.5 dB	≥30dB		
1310nm	±20nm	10mm	0.75mm	24mrad	Φ3.4mm	≤0.6 dB	≥30dB	62.5±2.5um	62.5/125 Polyimide coating
1550nm	±20nm	10mm	0.75mm	24mrad	Φ3.4mm	≤0.6 dB	≥30dB		

抗辐射单模/多模光纤准直器

Anti-radiation SM/MM Fiber Collimator

在核电和航空航天领域，光纤承担着重要的角色，抗辐射光纤准直器作为一种光纤束接头和光纤滑环的关键组件，具有不可替代的重要作用。通过特殊的材料和结构设计，能够在高强度辐射环境下保持高度的稳定性和精准的准直性能。光纤作为一种传输介质，其轻巧、高速、抗干扰的特点使其成为航空航天应用的理想选择。而抗辐射光纤准直器的应用，可以有效提高光纤通信的稳定性和可靠性，保证信息的传输准确性和实时性。

In the nuclear power and aerospace industries, optical fibers play an important role. Anti-radiation fiber collimators, as a critical component of fiber beam expanders and fiber optic rotary joint, have an irreplaceable and significant role. Through special material and structural design, they can maintain high stability and precise collimation performance in high-intensity radiation environments. Optical fiber, as a transmission medium, is lightweight, high-speed, and resistant to interference, making it an ideal choice for aerospace applications. The application of anti-radiation fiber collimators can effectively enhance the stability and reliability of fiber communication, ensuring the accuracy and real-time transmission of information.

Wavelength	Bandwidth	WD	Export beam Size	Divergence Angle	Insert IL	Fiber Type	Radiation tolerance	Evacuation of Hot Vacuum	Operating temperature
1310nm	±20nm	0-10mm	0.38mm	4.3mrad	≤1.5dB	RD 1310-G2 (HT)	The radiation source uses a cobalt-60 γ-ray source with a uniform field, and the radiation dose is $\geq 1.8 \times 10^5$ Gy, with a dose rate of 0.5 Gy/s.	Non-metallic material 1 TML≤1%, CVCM≤0.1%	-40°C ~ 80°C
1310nm	±20nm	100-500mm	0.95mm	1.8mrad	≤1.5dB				
1550nm	±20nm	0-10mm	0.42mm	4.7mrad	≤1.5dB				
1550nm	±20nm	100-500mm	1.0mm	2.0mrad	≤1.5dB				
850nm	±20nm	0-10mm	0.75mm	20mrad	≤1.5dB	RDG 50/125			
1300nm	±20nm	0-10mm	0.60mm	20mrad	≤1.5dB				

* 束腰光斑直径：取高斯光束 $1/e^2$ 处，选用各波长单模光纤理论计算值。

* Waist Beam diameter: Calculate the theoretical value using single-mode fibers of various wavelengths at the $1/e^2$ point of the Gaussian beam.

* 封装材质和其它光纤接头类型可定制

* Packaging materials and other types of fiber optic connectors can be customized.

保偏光纤准直器 由保偏光纤尾纤和聚焦透镜精确定位封装而成，可将光纤传输出射光变成平行光束（高斯光束），或将外界的平行光聚焦耦合进入光纤内。它可以单只使用，在要求位置达到指定尺寸光斑；也可以配对使用，在一对准直器中间加入滤光片、隔离器等其它光学元件，达到客户使用目的。在光学干涉检测为基础的干涉型光纤传感器中，使用保偏光纤能够保证线偏振方向不变，提高相干信噪比，以实现物理量的高精度测量。

Polarization-Maintaining Fiber Collimator is assembled precisely by PM fiber pigtail and a focus lens, which can convert the divergent light into a parallel beam (Gaussian beam) from fiber export, or couple space parallel light into the fiber. It can be used singly to achieve a specified beam size at the required position, or paired with other optical components such as filters and isolators in between two collimators to meet specific customer needs. In fiber optic interferometric sensors based on optical coherence detection, the use of polarization-maintaining fibers can ensure the unchanged polarization direction, improve the coherence signal-to-noise ratio, and achieve high-precision measurement of physical quantities.

在制作保偏器件连接头时，猫眼的连接轴线方向和键槽纤芯连接线方向一致，也称为慢轴对准，两线垂直时，为快轴对准。

When making a polarization maintaining connector, the axis direction of the cat's eye connection is aligned with the connection line direction of the key slot fiber core, also known as slow axis alignment. When the two lines are perpendicular, it is fast axis alignment.



固定工作距离保偏光纤准直器

PM Fiber Optic Collimator for Fixed Working Distance

Wavelength	Bandwidth	WD	Waist Beam	Divergence Angle	Package Dia.	Extinction Ratio	Output Loss	Return Loss	Mode-Field Diameter	Fiber Type
635nm	±20nm	100mm	0.39mm	2.6mrad	Φ3.4mm	≥18dB	≤0.5dB	≥55dB	4.5±0.5um	PM630-HP
635nm	±20nm	300mm	0.85mm	1.0mrad	Φ3.4mm	≥18dB	≤0.5dB	≥55dB		
635nm	±20nm	1000mm	1.32mm	0.7mrad	Φ4.0mm	≥18dB	≤0.5dB	≥55dB		
780nm	±20nm	100mm	0.41mm	2.4mrad	Φ3.4mm	≥18dB	≤0.5dB	≥55dB	5.2±1.0um	PM780-HP
780nm	±20nm	300mm	0.75mm	1.3mrad	Φ3.4mm	≥18dB	≤0.5dB	≥55dB		
780nm	±20nm	1000mm	1.55mm	0.7mrad	Φ4.0mm	≥18dB	≤0.5dB	≥55dB		
850nm	±20nm	100mm	0.37mm	3.0mrad	Φ3.4mm	≥18dB	≤0.5dB	≥55dB		
850nm	±20nm	300mm	0.97mm	1.1mrad	Φ3.4mm	≥18dB	≤0.5dB	≥55dB		
850nm	±20nm	1000mm	1.51mm	0.75mrad	Φ4.0mm	≥18dB	≤0.5dB	≥55dB	6.6±0.5um	PM980-XP
980nm	±20nm	100mm	0.50mm	2.5mrad	Φ3.4mm	≥20dB	≤0.35dB	≥55dB		
980nm	±20nm	300mm	0.96mm	1.3mrad	Φ3.4mm	≥20dB	≤0.35dB	≥55dB		
980nm	±20nm	1000mm	1.48mm	0.87mrad	Φ4.0mm	≥20dB	≤0.35dB	≥55dB		
1064nm	±20nm	100mm	0.51mm	2.7mrad	Φ3.4mm	≥20dB	≤0.35dB	≥55dB		
1064nm	±20nm	300mm	0.9mm	1.5mrad	Φ3.4mm	≥20dB	≤0.35dB	≥55dB		
1064nm	±20nm	500mm	1.43mm	0.95mrad	Φ4.0mm	≥20dB	≤0.35dB	≥55dB		

Wavelength	Bandwidth	WD	Waist Beam	Divergence Angle	Package Dia.	Extinction Ratio	Output Loss	Return Loss	Mode-Field Diameter	Fiber Type
1310nm	±20nm	100mm	0.4mm	4.2mrad	Φ3.4mm	≥20dB	≤0.35dB	≥55dB	9.3±0.5um	PM1300-XP
1310nm	±20nm	300mm	0.8mm	2.1mrad	Φ3.4mm	≥20dB	≤0.35dB	≥55dB		
1310nm	±20nm	1000mm	1.2mm	1.4mrad	Φ4.0mm	≥20dB	≤0.35dB	≥55dB		
1550nm	±20nm	100mm	0.45mm	4.4mrad	Φ3.4mm	≥20dB	≤0.35dB	≥55dB	10.1±0.5um	PM1550-XP
1550nm	±20nm	300mm	0.86mm	2.3mrad	Φ3.4mm	≥20dB	≤0.35dB	≥55dB		
1550nm	±20nm	1000mm	1.3mm	1.5mrad	Φ4.0mm	≥20dB	≤0.35dB	≥55dB		

工作距离可调偏光纤准直器

PM Fiber Optic Collimator for Variable Working Distance Range

Wavelength	Bandwidth	WD	Waist Beam	Divergence Angle	Package Dia.	Extinction Ratio	Output Loss	Return Loss	Mode-Field Diameter	Fiber Type
633nm	±20nm	0-100mm	0.39mm	2.6mrad	Φ3.4mm	≥18dB	≤0.5dB	≥55dB	4.5±0.5um	PM630-HP
780nm	±20nm	0-100mm	0.39mm	2.6mrad	Φ3.4mm	≥18dB	≤0.5dB	≥55dB		5.2±1.0um
780nm	±20nm	0-350mm	1.05mm	0.95mrad	Φ3.4mm	≥18dB	≤0.5dB	≥55dB		
850nm	±20nm	0-100mm	0.37mm	3.0mrad	Φ3.4mm	≥18dB	≤0.5dB	≥55dB		
850nm	±20nm	0-350mm	1.02mm	1.05mrad	Φ3.4mm	≥18dB	≤0.5dB	≥55dB		
980nm	±20nm	0-350mm	0.99mm	1.26mrad	Φ3.4mm	≥20dB	≤0.35dB	≥55dB	6.6±0.5um	PM980-XP
980nm	±20nm	50-850mm	1.54mm	0.81mrad	Φ4.0mm	≥20dB	≤0.35dB	≥55dB		
1064nm	±20nm	0-350mm	1.0mm	1.35mrad	Φ3.4mm	≥20dB	≤0.35dB	≥55dB		
1064nm	±20nm	50-850mm	1.6mm	0.85mrad	Φ4.0mm	≥20dB	≤0.35dB	≥55dB	9.3±0.5um	PM1300-XP
1310nm	±20nm	0-350mm	0.81mm	2.06mrad	Φ3.4mm	≥20dB	≤0.35dB	≥55dB		
1310nm	±20nm	50-850mm	1.27mm	1.31mrad	Φ4.0mm	≥20dB	≤0.35dB	≥55dB	10.1±0.5um	PM1550-XP
1550nm	±20nm	0-350mm	0.92mm	2.15mrad	Φ3.4mm	≥20dB	≤0.35dB	≥55dB		
1550nm	±20nm	50-850mm	1.45mm	1.36mrad	Φ4.0mm	≥20dB	≤0.35dB	≥55dB		

* 消光比值未计算连接器，增加连接器后，消光比减小2dB；

The extinction ratio is not calculated with the connector included. After adding the connector, the extinction ratio decreases by 2dB.

* 出射损耗未计算连接器，增加连接器后，出射损耗增加0.15dB（不考虑对接损耗）；

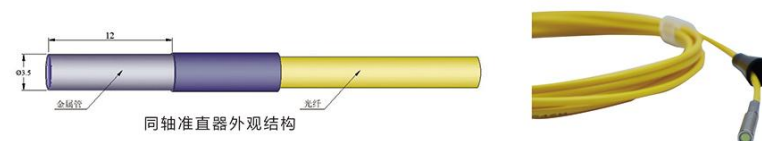
The output loss is not calculated for the connector. After adding the connector, the output loss increases by 0.15dB (Not considering Flange Insertion Loss.).

* 所有光斑、发散角的测试数据均由远讯标准跳线接入测试

All testing data for beam size and divergence angle are obtained by connecting the standard jumpers from Ysenser.

同轴光纤准直器 又称为无偏角光纤准直器，是准直器出光轴与机械轴基本重合。在准直器安装时无需精密调节光束出光偏角，同时在工作距离范围内保持良好的准直特性；特别是在配对安装时，可实现快速对准并获得较小的光路插入损耗，亦可实现随机装配，提高了安装效率，降低人工调节难度和调试技能要求。

Coaxial fiber collimator The collimator emits light along a light axis that is essentially aligned with the mechanical axis. It does not require precise adjustment of the beam's output angle during installation, and maintains good collimation characteristics within the working distance range. Particularly in pair matched installations, it can achieve quick alignment and achieve lower insertion loss, and can also be randomly assembled, improving installation efficiency and reducing the difficulty of manual adjustment and debugging skills.



应用场景：光纤束连接器、光电混合滑环、光纤旋转云台、智能机器人、光电流互感器等即插即用光准直链路

Application scenarios:

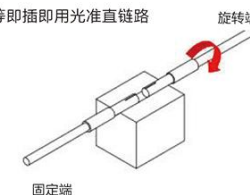
Fiber bundle connectors

Opto-electric rotary Jumper

Fiber rotation platforms

Intelligent robots

Opto-electric current transformers with plug-and-play optical axis alignment.



单模同轴光纤准直器

SM Coaxial fiber collimator

Wavelength	Working Distance	Waist Beam	Deflection Angle	Divergence Angle	Package Dia.	Connector	Fiber Type	IL for a Pair	Return Loss
1310nm	0-20mm	0.31mm	< 0.1°	< 5mrad	3.5mm	FC/APC	Smf-28e	≤0.8dB	≥50dB
	10-50mm	0.33mm	< 0.1°	< 5.5mrad	3.5mm	FC/APC	Smf-28e	≤1.0dB	≥50dB
	50-80mm	0.46mm	< 0.1°	< 4.5mrad	3.5mm	FC/APC	Smf-28e	≤1.0dB	≥50dB
1550nm	0-20mm	0.37mm	< 0.1°	< 5.5mrad	3.5mm	FC/APC	Smf-28e	≤0.8dB	≥50dB
	10-50mm	0.38mm	< 0.1°	< 6mrad	3.5mm	FC/APC	Smf-28e	≤1.0dB	≥50dB
	50-80mm	0.50mm	< 0.1°	< 4.5mrad	3.5mm	FC/APC	Smf-28e	≤1.0dB	≥50dB

多模同轴光纤准直器

MM Coaxial fiber collimator

Wavelength	Working Distance	Waist Beam	Deflection Angle	Divergence Angle	Package Dia.	Connector	Fiber Type	IL for a Pair	Return Loss
850nm	0-50mm	0.75mm	< 0.1°	< 9mrad	3.5mm	FC/PC	OM2	≤1.0dB	≥35dB
1310nm	0-50mm	0.7mm	< 0.1°	< 12mrad	3.5mm	FC/PC	OM2/OM3	≤1.0dB	≥35dB
1550nm	0-50mm	0.7mm	< 0.1°	< 12mrad	3.5mm	FC/PC	OM2/OM3	≤1.0dB	≥35dB

遥测光纤发射准直器 远讯光电自主设计研发、生产应用于气体遥测仪上的光纤发射准直器是应用可调谐半导体激光吸收光谱技术 (TDLAS)，作为气体遥测仪的信号发射器，它好比传感器的触觉、视觉，具有光斑能量集中、传输速度快、透过率高等特点，加之体积小小巧的显著优势，越来越多地被用于便携式遥测或测距仪器上。

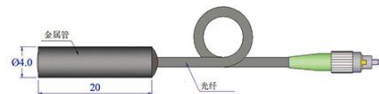
Telemetry Fiber Collimator The fiber collimator developed and produced by Ysensor for use in gas telemetry instruments is a fiber optic transmitter that utilizes tunable diode laser absorption spectroscopy (TDLAS) technology. Serving as a signal transmitter for gas telemetry instruments, it can be likened to the sense of touch and vision for sensors, featuring characteristics such as concentrated spot energy, fast transmission speed, and high transmittance. In addition, its small and compact size provides a significant advantage, leading to its increasing use in portable telemetry or ranging instruments.



Wavelength	AR Coating	Beam Size @0mm	Divergence Angle	Working Distance	Beam Size@100M	Transmittance	Package Size	Connector	Fiber Type
1653nm	1250~1700nm	0.86mm±0.1mm	0.09+0.05°	100M	220mm±10mm	≥95%	Φ3.2×15mm	FC/APC	G657A2 ZBL
1653nm	1250~1700nm	1.3mm±0.1mm	0.05+0.05°	100M	170mm±10mm	≥95%	Φ4.0×20mm	FC/APC	

遥测光纤发射共聚焦准直器 通过消色差透镜组设计，使同一只准直器适用于可见光和近红外两个波长，并且在相同工作距离位置两种波长光斑大小、出光偏角基本一致。激光遥测光学模块，可通过双波长合波器，将可见光与近红外光耦合进一根光纤，工作时指示光信号光可同时点亮，并且指示光精准指向信号光位置，便于精准探测，为便携式遥测设备小型化、轻量化进一步提供优化方案。

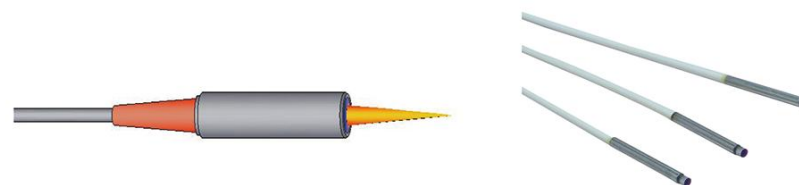
Telemetry Confocal Fiber Collimator Designed with a chromatic aberration correcting lens group, the same collimator is applicable to both visible light and near-infrared wavelengths, with similar beam size and light divergence angles at the same working distance. The laser telemetry optical module can couple visible light and near-infrared light into a single fiber through a dual-wavelength coupler. During operation, the indicator light and the signal can simultaneously illuminate, and the indicator light accurately points to the position of the signal light, facilitating precise detection. This provides an optimized solution for further miniaturization and lightweight of portable telemetry devices.



Wavelength	AR Coating	Beam Size @0mm	Divergence Angle	Beam Size@100M	Transmittance	Package Size	Connector	Fiber Type
520 / 1653	520±30nm & 1650±30nm	1.5mm@520nm 1.5mm@1653nm	< 2.5mrad@520nm < 2.4mrad@1653nm	< 250mm@520nm < 230mm@1653nm	≥ 90%	Φ4.0*20mm	FC/APC	G657A2 ZBL

光纤聚焦镜 可以将从光纤发射的光在指定位置聚焦为极小的光斑，也可以作为光束经过待测物体反射后原路返回光的汇聚功能，然后通过发射光和返回光束进行相位、能量、光谱、波长等对比来达到测量不同特性的目的。可以实现物体表面精密探测，干涉成像、距离检测等；可用于工业自动化，医学OCT，光学测试仪器等。

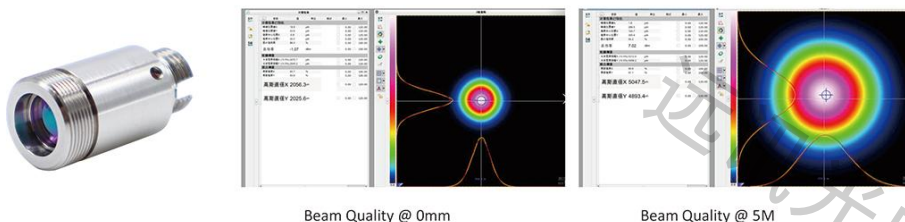
Fiber Focusing Lens The light output from the optical fiber can be focused on a specific position to form an extremely small spot. It can also act as a converging function for the returning light beam after being reflected by the test object, and then measure different characteristics by comparing the emitted and returning light beams in terms of phase, energy, spectrum, and wavelength. It can be used for precision surface detection, interferometric imaging, distance detection, etc. It also can be used in industrial automation, medical OCT, optical testing instruments, etc.



Wavelength	AR Coating	Beam Size @ Focus Point	Gathering location	Fiber Type	Package Size	Connector	Transmittance			
405nm	400~700nm	6um	5mm	405HP	Min Φ1.1mm×14mm Max Φ3.4mm×20mm	FC/PC FC/APC LC/APC Sma905	>92%			
	400~700nm	15um	10mm							
	400~700nm	24um	20mm							
525nm	400~700nm	6um	5mm	460HP						
	400~700nm	16um	10mm							
	400~700nm	26um	20mm							
650nm	400~700nm	7um	5mm	630HP						
	400~700nm	18um	10mm							
	400~700nm	29um	20mm							
780nm	600~1050nm	9um	5mm	780HP						
	600~1050nm	21um	10mm							
	600~1050nm	34um	20mm							
850nm	600~1050nm	9um	5mm							
	600~1050nm	23um	10mm							
	600~1050nm	37um	20mm							
1064nm	600~1050nm	10um	5mm	Hi1060						
	600~1050nm	26um	10mm							
	600~1050nm	42um	20mm							
1310nm	1250~1650nm	15um	5mm	Smf-28e						
	1250~1650nm	40um	10mm							
	1250~1650nm	64um	20mm							
1550nm	1250~1650nm	16um	5mm							
	1250~1650nm	43mm	10mm							
	1250~1650nm	69mm	20mm							

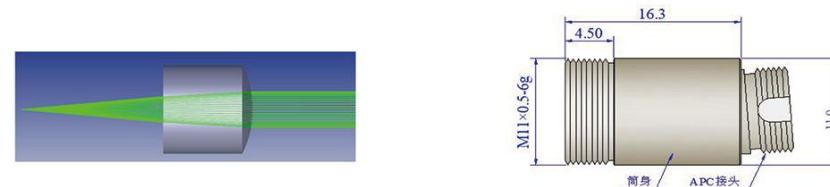
非球面准直器 使用固定焦距的非球面透镜，因为非球面透镜有消色差设计，对光束有良好的准直性，故出光光束能量呈高斯分布；透镜双面镀增透膜，最大限度减少表面反射；但非球面透镜有色差，其有效焦距(EFL)与波长密切相关。透镜和光纤的相对位置经过精密调试，确保出光偏角在0.5°范围以内，同时标准化的制作工艺，确保产品稳定的一致性和良好的互配性能。

Aspheric Lenses Collimators With a fixed focal length is used because non-spherical lenses have a design that corrects for chromatic aberration and have good collimation of the light beam, resulting in a Gaussian distribution of energy in the output optical beam. The lens is double-sided coated with anti-reflection films to minimize surface reflection. However, the effective focal length (EFL) of aspheric lenses is closely related to wavelength, resulting in chromatic aberration. The relative position of the lens and optical fiber is precisely adjusted to ensure that the angle of the output light is within 0.5°, and standard manufacturing processes are used to ensure product stability, consistency, and good compatibility.



单模光纤 Single-Mode Fiber

Wavelength	Bandwidth	Export beam Size	Divergence Angle	EFL	NA	Package Dia.	Fiber Type	Connector	Transmittance	
405nm	±5nm	0.86mm	0.06°+0.01°	4.45mm	0.25	Φ11mm	405HP	FC/PC FC/APC Sma905	>95%	
	±5nm	2.4mm	0.02°+0.01°	10.67mm	0.25	Φ11mm				
	±5nm	3.1mm	0.015°+0.01°	17.71mm	0.15	Φ11mm				
450nm	±5nm	0.82mm	0.05°+0.01°	4.50mm	0.25	Φ11mm	460HP			
	±5nm	2.2mm	0.02°+0.01°	10.77mm	0.24	Φ11mm				
	±5nm	3.0mm	0.015°+0.01°	17.88mm	0.15	Φ11mm				
520nm	±5nm	0.84mm	0.05°+0.01°	4.55mm	0.25	Φ11mm	460HP			
	±5nm	2.2mm	0.02°+0.01°	10.87mm	0.24	Φ11mm				
	±5nm	3.2mm	0.015°+0.01°	18.02mm	0.15	Φ11mm				
633nm	±5nm	0.86mm	0.05°+0.01°	4.59mm	0.24	Φ11mm	630HP			
	±5nm	2.2mm	0.02°+0.01°	10.96mm	0.24	Φ11mm				
	±5nm	3.5mm	0.015°+0.01°	18.14mm	0.15	Φ11mm				
780nm	±5nm	1.0mm	0.06°+0.01°	4.63mm	0.24	Φ11mm	780HP			
	±5nm	2.25mm	0.026°+0.01°	11.06mm	0.24	Φ11mm				
	±5nm	4.0mm	0.01°+0.01°	18.33mm	0.15	Φ11mm				
850nm	±5nm	1.0mm	0.06°+0.01°	4.64mm	0.24	Φ11mm	780HP			
	±5nm	2.3mm	0.03°+0.01°	11.10mm	0.24	Φ11mm				
	±5nm	3.99mm	0.02°+0.01°	18.45mm	0.15	Φ11mm				
980nm	±5nm	1.0mm	0.07°+0.01°	4.66mm	0.24	Φ11mm	Hi1060			
	±5nm	2.3mm	0.03°+0.01°	11.16mm	0.24	Φ11mm				
	±5nm	4.0mm	0.02°+0.01°	18.52mm	0.15	Φ11mm				



Wavelength	Bandwidth	Export beam Size	Divergence Angle	EFL	NA	Package Dia.	Fiber Type	Connector	Transmittance		
1064nm	±5nm	1.0mm	0.08°+0.01°	4.67mm	0.24	Φ11mm	Hi1060	FC/PC FC/APC Sma905	>95%		
	±5nm	2.3mm	0.032°+0.01°	11.18mm	0.24	Φ11mm					
	±5nm	4.05mm	0.02°+0.01°	18.58mm	0.15	Φ11mm					
1310nm	±5nm	0.84mm	0.11°+0.01°	4.70mm	0.24	Φ11mm	Smf-28c		FC/PC FC/APC Sma905	>95%	
	±5nm	2.05mm	0.047°+0.01°	11.25mm	0.23	Φ11mm					
	±5nm	3.35mm	0.029°+0.01°	18.67mm	0.15	Φ11mm					
1550nm	±5nm	0.87mm	0.11°+0.01°	4.74mm	0.24	Φ11mm					
	±5nm	2.10mm	0.053°+0.01°	11.31mm	0.23	Φ11mm					
	±5nm	3.5mm	0.032°+0.01°	18.75mm	0.15	Φ11mm					
1650nm	±5nm	0.90mm	0.11°+0.01°	4.74mm	0.24	Φ11mm					
	±5nm	2.15mm	0.058°+0.01°	11.36mm	0.23	Φ11mm					
	±5nm	3.64mm	0.035°+0.01°	18.81mm	0.15	Φ11mm					

多模光纤 Multimode Fiber

Wavelength	Bandwidth	Export beam Size	Divergence Angle	EFL	NA(Lens)	Package Dia.	Fiber Type	Connector	Transmittance
450nm	±5nm	5.7mm	5.9mrad	10.77mm	0.31	Φ11mm	62.5/125	FC/PC Sma905	>95%
	±5nm	4.7mm	18.8mrad	10.77mm	0.31	Φ11mm	200/220		
485nm	±5nm	4.7mm	9.9mrad	10.84mm	0.31	Φ11mm	62.5/125		
	±5nm	4.8mm	18.7mrad	10.84mm	0.31	Φ11mm	200/220		
	±5nm	4.8mm	37.6mrad	10.84mm	0.31	Φ11mm	400/440		
525nm	±5nm	5.8mm	6.0mrad	10.89mm	0.31	Φ11mm	62.5/125		
	±5nm	4.8mm	9.8mrad	10.89mm	0.31	Φ11mm	105/125		
	±5nm	4.8mm	18.7mrad	10.89mm	0.31	Φ11mm	200/220		
	±5nm	4.8mm	37.5mrad	10.89mm	0.31	Φ11mm	400/440		
635nm	±5nm	5.9mm	5.9mrad	11.0mm	0.31	Φ11mm	62.5/125		
	±5nm	4.8mm	9.7mrad	11.0mm	0.31	Φ11mm	105/125		
	±5nm	4.8mm	18.5mrad	11.0mm	0.31	Φ11mm	200/220		
	±5nm	4.9mm	37.2mrad	11.0mm	0.31	Φ11mm	400/440		
780nm	±5nm	5.9mm	5.8mrad	11.09mm	0.3	Φ11mm	62.5/125		
	±5nm	4.9mm	9.7mrad	11.09mm	0.3	Φ11mm	105/125		
	±5nm	4.9mm	18.4mrad	11.09mm	0.3	Φ11mm	200/220		
	±5nm	4.9mm	37.0mrad	11.09mm	0.3	Φ11mm	400/440		

Wavelength	Bandwidth	Export beam Size	Divergence Angle	EFL	NA(Lens)	Package Dia.	Fiber Type	Connector	Transmittance
850nm	±5nm	6.0mm	6.0mrad	11.12mm	0.3	Φ11mm	62.5/125	FC/PC Sma905	>95%
	±5nm	4.8mm	9.6mrad	11.12mm	0.3	Φ11mm	105/125		
	±5nm	4.8mm	18.4mrad	11.12mm	0.3	Φ11mm	200/220		
	±5nm	4.8mm	36.9mrad	11.12mm	0.3	Φ11mm	400/440		
905nm	±5nm	4.8mm	9.6mrad	11.14mm	0.3	Φ11mm	105/125		
	±5nm	4.8mm	18.4mrad	11.14mm	0.3	Φ11mm	200/220		
1064nm	±5nm	6.0mm	5.8mrad	11.19mm	0.3	Φ11mm	62.5/125		
	±5nm	4.9mm	9.6mrad	11.19mm	0.3	Φ11mm	105/125		
	±5nm	4.9mm	18.3mrad	11.19mm	0.3	Φ11mm	200/220		
	±5nm	4.9mm	36.6mrad	11.19mm	0.3	Φ11mm	400/440		
1310nm	±5nm	6.0mm	5.7mrad	11.26mm	0.3	Φ11mm	62.5/125		
	±5nm	4.9mm	9.5mrad	11.26mm	0.3	Φ11mm	105/125		
	±5nm	4.9mm	18.2mrad	11.26mm	0.3	Φ11mm	200/220		
	±5nm	4.9mm	36.5mrad	11.26mm	0.3	Φ11mm	400/440		
1550nm	±5nm	6.0mm	5.7mrad	11.32mm	0.3	Φ11mm	62.5/125		
	±5nm	4.9mm	9.5mrad	11.32mm	0.3	Φ11mm	105/125		
	±5nm	4.9mm	18.1mrad	11.32mm	0.3	Φ11mm	200/220		
	±5nm	5.0mm	36.3mrad	11.32mm	0.3	Φ11mm	400/440		

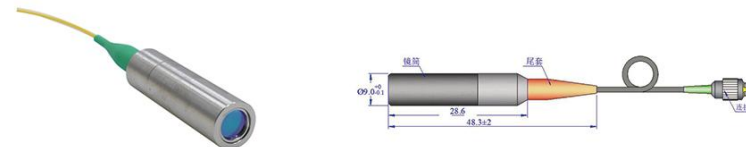
* 所有光斑、发散角的测试数据均由远讯标准跳线接入测试
All testing data for beam size and divergence angle are obtained by connecting the standard jumpers from Ysenser.

* 也适用于相应波长的保偏单模光纤接入
Also applicable for polarization maintaining fiber with corresponding wavelength.

* 无磁材料外壳 (NJSSPEEK-1000) 可定制
Non-magnetic material housing (NJSSPEEK-1000) can be customized.

非球面带纤准直器 采用紧凑结构设计，带倾斜尾纤和非球面透镜经过精密调节，保证出光高斯光束质量和优秀的准直特性。透镜和光纤表面均镀有增透膜，大大减少了出光端面的回光，降低光学链路光噪声。长焦型准直器使用弯折型外壳，以修正倾斜尾纤带来的出光偏角；短焦型准直器，倾斜尾纤输出光引起的偏角可以忽略不计，外壳使用直通型的。

Aspheric Lenses Collimators with Fiber Using a compact structural design with tilted end fibers and aspheric lenses that have been accurately adjusted, the output Gaussian beam quality and excellent collimation characteristics are ensured. The lenses and fiber surfaces are coated with anti-reflection films, greatly reducing the back reflection of the output end face and lowering optical link noise. The long-focus collimator uses a bending housing to correct the output angle caused by the tilted end fibers, while the short-focus collimator uses a straight-through housing where the angle of the output light caused by the tilted end fibers can be ignored.

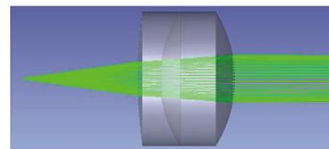


Wavelength	Bandwidth	Waist Beam Size	Divergence Angle	NA	EFL	Package Dia.	Fiber Type	Connector	Transmittance
405nm	±5nm	0.85mm	0.06°+0.01°	0.25	4.45mm	Φ9.0mm	405HP	FC/PC FC/APC Sma905	>90%
405nm	±5nm	2.01mm	0.02°+0.01°	0.25	10.67mm	Φ9.0mm			
405nm	±5nm	3.6mm	0.015°+0.01°	0.15	17.71mm	Φ9.0mm			
450nm	±5nm	0.82mm	0.05°+0.01°	0.25	4.50mm	Φ9.0mm	460HP		
450nm	±5nm	2.0mm	0.02°+0.01°	0.24	10.77mm	Φ9.0mm			
450nm	±5nm	3.0mm	0.015°+0.01°	0.15	17.88mm	Φ9.0mm			
525nm	±5nm	0.84mm	0.05°+0.01°	0.25	4.55mm	Φ9.0mm			
525nm	±5nm	2.1mm	0.02°+0.01°	0.24	10.87mm	Φ9.0mm			
525nm	±5nm	3.2mm	0.015°+0.01°	0.15	18.02mm	Φ9.0mm			
635nm	±5nm	0.86mm	0.05°+0.01°	0.24	4.59mm	Φ9.0mm	630HP		
635nm	±5nm	2.06mm	0.02°+0.01°	0.24	10.96mm	Φ9.0mm			
635nm	±5nm	3.5mm	0.015°+0.01°	0.15	18.14mm	Φ9.0mm			
780nm	±5nm	1.0mm	0.06°+0.01°	0.24	4.63mm	Φ9.0mm	780HP		
780nm	±5nm	2.4mm	0.026°+0.01°	0.24	11.06mm	Φ9.0mm			
780nm	±5nm	4.0mm	0.01°+0.01°	0.15	18.33mm	Φ9.0mm			
850nm	±5nm	1.0mm	0.06°+0.01°	0.24	4.64mm	Φ9.0mm	780HP		
850nm	±5nm	2.41mm	0.03°+0.01°	0.24	11.10mm	Φ9.0mm			
850nm	±5nm	3.9mm	0.02°+0.01°	0.15	18.45mm	Φ9.0mm			
980nm	±5nm	1.0mm	0.07°+0.01°	0.24	4.66mm	Φ9.0mm	Hi1060		
980nm	±5nm	2.4mm	0.03°+0.01°	0.24	11.16mm	Φ9.0mm			
980nm	±5nm	4.0mm	0.02°+0.01°	0.15	18.52mm	Φ9.0mm			
1064nm	±5nm	1.0mm	0.08°+0.01°	0.24	4.67mm	Φ9.0mm			
1064nm	±5nm	2.4mm	0.032°+0.01°	0.24	11.18mm	Φ9.0mm			
1064nm	±5nm	4.05mm	0.02°+0.01°	0.15	18.58mm	Φ9.0mm			
1310nm	±5nm	0.84mm	0.11°+0.01°	0.24	4.70mm	Φ9.0mm	Smf-28e		
1310nm	±5nm	2.04mm	0.047°+0.01°	0.23	11.25mm	Φ9.0mm			
1310nm	±5nm	3.35mm	0.029°+0.01°	0.15	18.67mm	Φ9.0mm			
1550nm	±5nm	0.87mm	0.11°+0.01°	0.24	4.74mm	Φ9.0mm	Smf-28e		>90%
1550nm	±5nm	2.10mm	0.053°+0.01°	0.23	11.31mm	Φ9.0mm			
1550nm	±5nm	3.5mm	0.032°+0.01°	0.15	18.75mm	Φ9.0mm			

* 束腰光斑直径：取高斯光束1/e²处，均用各波长单模光纤理论计算值。
Waist beam size: calculated using the theory of single-mode optical fiber for each wavelength, taken at the 1/e² intensity point of the Gaussian beam.

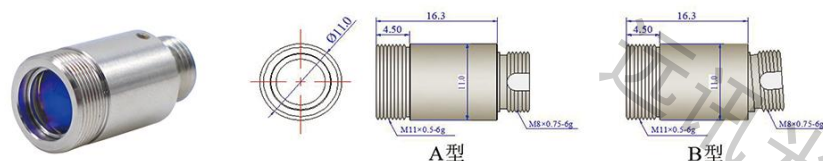
* 光束远场发散角：按高斯光束1/e²理论计算值。
Far-field divergence angle of the beam: calculated according to the Gaussian beam 1/e² theory.

单模光纤消色差准直器 由一组长焦准直光学系统构成，有消色差、消像差设计，故准直器焦距对波长带宽不敏感。它将光纤出射的发散光束进行整形处理，使光束在一定距离范围内具备良好的准直效果和光斑形状。透镜组各光学表面镀制增透膜，最大限度减少表面反射。透镜和光纤的相对位置经过精密调试，确保出光偏角在0.3°范围以内，同时标准化的制作工艺，确保产品稳定的一致性。



Single-mode Fiber Achromatic Lenses Collimators

It consists of a group of long focal length collimating optical systems with chromatic aberration and distortion compensation design, making the focal length of the collimator insensitive to wavelength bandwidth. The divergent light beam emitted from the optical fiber, providing a good collimating effect and beam shape within a certain distance range. The optical surfaces of the lens group are coated with anti-reflection film to minimize surface reflection. The relative position of the lens and fiber is precisely adjusted to ensure that the deviation angle of the emitted light is within 0.3°, and standardized manufacturing processes ensure stable consistency of the product.



Wavelength	Bandwidth	Waist Beam	Divergence Angle	EFL	NA	Package Dia.	Fiber Type	Connector	Transmittance
405nm	±30nm	0.97mm	0.062+0.01°	4.06mm	0.61	Φ11mm	405HP	FC/PC FC/APC Sma905	>95%
	±30nm	2.1mm	0.03+0.01°	10.05mm	0.37	Φ11mm			
	±30nm	3.7mm	0.021+0.01°	15.96mm	0.25	Φ11mm			
	±30nm	4.9mm	0.015+0.01°	19.95mm	0.2	Φ11mm			
450nm	±30nm	0.96mm	0.06+0.01°	4.10mm	0.6	Φ11mm	460HP		
	±30nm	2.1mm	0.028+0.01°	10.07mm	0.37	Φ11mm			
	±30nm	3.6mm	0.020+0.01°	15.98mm	0.25	Φ11mm			
	±30nm	4.7mm	0.014+0.01°	19.96mm	0.2	Φ11mm			
525nm	±30nm	0.92mm	0.059+0.01°	4.15mm	0.6	Φ11mm	630HP		
	±30nm	2.04mm	0.025+0.01°	10.09mm	0.37	Φ11mm			
	±30nm	3.2mm	0.019+0.01°	15.98mm	0.25	Φ11mm			
	±30nm	4.3mm	0.014+0.01°	19.97mm	0.2	Φ11mm			
635nm	±30nm	0.87mm	0.056+0.01°	4.20mm	0.58	Φ11mm	780HP		
	±30nm	2.0mm	0.024+0.01°	10.13mm	0.37	Φ11mm			
	±30nm	3.12mm	0.019+0.01°	16.01mm	0.25	Φ11mm			
	±30nm	3.95mm	0.014+0.01°	20mm	0.2	Φ11mm			
780nm	±30nm	1.95mm	0.031+0.01°	10.04mm	0.37	Φ11mm	850nm		
	±30nm	3.49mm	0.020+0.01°	16.0mm	0.24	Φ11mm			
	±30nm	4.4mm	0.015+0.01°	20.03mm	0.2	Φ11mm			
850nm	±30nm	2.0mm	0.030+0.01°	10.05mm	0.37	Φ11mm			
	±30nm	3.47mm	0.020+0.01°	16.01mm	0.24	Φ11mm			
	±30nm	4.33mm	0.016+0.01°	20.03mm	0.2	Φ11mm			

Wavelength	Bandwidth	Waist Beam	Divergence Angle	EFL	NA	Package Dia.	Fiber Type	Connector	Transmittan
980nm	±30nm	1.95mm	0.035+0.01 °	10.07mm	0.37	Φ11mm	Hi1060	FC/PC FC/APC Sma905	>95%
	±30nm	3.39mm	0.024+0.01 °	16.03mm	0.24	Φ11mm			
	±30nm	4.23mm	0.018+0.01 °	20.05mm	0.2	Φ11mm			
1064nm	±30nm	1.9mm	0.038+0.01 °	10.03mm	0.37	Φ11mm			
	±30nm	3.51mm	0.032+0.01 °	15.97mm	0.24	Φ11mm			
	±30nm	4.39mm	0.026+0.01 °	19.97mm	0.2	Φ11mm			
1310nm	±30nm	1.85mm	0.053+0.01 °	10.07mm	0.37	Φ11mm	Smf-28e		
	±30nm	2.91mm	0.036+0.01 °	16.01mm	0.24	Φ11mm			
	±30nm	3.62mm	0.028+0.01 °	20.0mm	0.2	Φ11mm			
1550nm	±30nm	1.85mm	0.06+0.01 °	10.11mm	0.37	Φ11mm			
	±30nm	3.14mm	0.039+0.01 °	16.08mm	0.24	Φ11mm			
	±30nm	3.92mm	0.031+0.01 °	20.07mm	0.2	Φ11mm			
1654nm	±30nm	2.05mm	0.06+0.01 °	10.14mm	0.37	Φ11mm			
	±30nm	3.2mm	0.036+0.01 °	16.15mm	0.24	Φ11mm			
	±30nm	3.98mm	0.029+0.01 °	20.12mm	0.2	Φ11mm			

无磁性消色差保偏单模光纤准直器

Non-magnetic Material Aspheric Lenses Polarization-Maintaining Collimators with Fiber

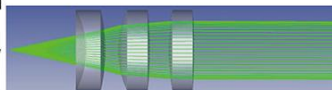
封装材质采用NJSSPEEK-1000树脂材料，密度为1.3g/cm³，弯曲强度165MPa，热变形温度152℃，适用于强电磁环境下光束准直、耦合接收光路。

The housing material uses NJSSPEEK-1000 pure resin material, with a density of 1.3g/cm³, a bending strength of 165MPa, and a thermal deformation temperature of 152°C. It is suitable for beam collimation and coupling optical paths in strong electromagnetic environments.

Wavelength	Bandwidth	Waist Beam Size	Divergence Angle	ER	EFL	Package Dia.	Fiber Type	Connector	Transmittance
633nm	±5nm	2.0mm	0.40mrad	18	10mm	5mm	PM630-HP	FC/APC	>90%
	±5nm	3.0mm	0.27mrad	18	14mm	5mm			
	±5nm	4.45mm	0.18mrad	18	22mm	10mm			
780nm	±5nm	2.0mm	0.50mrad	20	10mm	5mm	PM780-HP		
	±5nm	2.6mm	0.38mrad	20	14mm	5mm			
	±5nm	4.35mm	0.23mrad	20	22mm	10mm			
850nm	±5nm	2.1mm	0.50mrad	20	10mm	5mm			
	±5nm	2.8mm	0.39mrad	20	14mm	5mm			
	±5nm	4.6mm	0.24mrad	20	22mm	10mm			

多模光纤消色差准直器 多模光纤消色差准直器 由一组大数值孔径透镜组系统组成，适配多模光纤。可以将多模光纤出射的光束，进行整型准直，也可将空间平面光束高效耦合进多模光纤内。光学设计有消色差、消像差处理，因此准直器焦距对波长带宽不敏感。透镜组各光学表面镀制增透膜，最大限度减少表面反射。

Multimode Fiber Achromatic Lenses Collimators is composed of a kits of high numerical aperture lenses, suitable for multimode fibers. It can shape and collimate the light beam emitted from multimode fibers, as well as efficiently couple spatial light into multimode fibers. The optical design includes chromatic aberration and image aberration correction, making the collimator focal length insensitive to wavelength bandwidth. Each optical surface of the lens system is coated with anti-reflection film to minimize surface reflection.



Wavelength	Bandwidth	Waist Beam	Divergence Angle	EFL	NA (Lens)	Package Dia.	Fiber Type	Connector	Transmittance
450nm	±30nm	5.4mm	7.5mrad	10.09mm	0.37	Φ11mm	62.5/125 NA0.27	FC/PC Sma905	>92%
		12.5mm	4.3mrad	25.0mm	0.25	Φ15mm	200/220 NA0.22		
		4.4mm	21.0mrad	10.09mm	0.37	Φ11mm	400/440 NA0.22		
		12.1mm	8.8mrad	25.0mm	0.25	Φ15mm	400/440 NA0.22		
		4.4mm	41.0mrad	10.09mm	0.37	Φ11mm	400/440 NA0.22		
		12.1mm	16.7mrad	25.0mm	0.25	Φ15mm	400/440 NA0.22		
485nm	±30nm	4.4mm	11.2mrad	10.1mm	0.37	Φ11mm	105/125 NA0.22		
		11.5mm	4.9mrad	25.0mm	0.25	Φ15mm	200/220 NA0.22		
		4.4mm	21.1mrad	10.1mm	0.37	Φ11mm	200/220 NA0.22		
		11.5mm	8.8mrad	25.0mm	0.25	Φ15mm	200/230 NA0.37		
525nm	400~700nm	7.5mm	28.4mrad	10.1mm	0.37	Φ11mm	200/230 NA0.37		
		5.4mm	8.0mrad	10.11mm	0.37	Φ11mm	62.5/125 NA0.27		
		12.5mm	3.9mrad	25.02mm	0.25	Φ15mm	NA0.27		
		4.4mm	11.2mrad	10.11mm	0.37	Φ11mm	105/125 NA0.22		
		11.4mm	4.8mrad	25.02mm	0.25	Φ15mm	200/220 NA0.22		
		4.4mm	21.2mrad	10.11mm	0.37	Φ11mm	200/220 NA0.22		
		11.3mm	8.6mrad	25.02mm	0.25	Φ15mm	400/440 NA0.22		
		4.4mm	41.2mrad	10.11mm	0.37	Φ11mm	400/440 NA0.22		
635nm	400~700nm	11.3mm	16.5mrad	25.02mm	0.25	Φ15mm	NA0.22		
		5.4mm	8.4mrad	10.14mm	0.37	Φ11mm	62.5/125 NA0.27		
		12.5mm	3.8mrad	25.07mm	0.25	Φ15mm	NA0.27		
		4.4mm	11.4mrad	10.14mm	0.37	Φ11mm	105/125 NA0.22		
		11.2mm	4.7mrad	25.07mm	0.25	Φ15mm	200/220 NA0.22		
		4.4mm	21.3mrad	10.14mm	0.37	Φ11mm	200/220 NA0.22		
		11.2mm	8.5mrad	25.07mm	0.25	Φ15mm	400/440 NA0.22		
		4.4mm	41.3mrad	10.14mm	0.37	Φ11mm	400/440 NA0.22		
780nm	600~1050nm	11.2mm	16.4mrad	25.07mm	0.25	Φ15mm	NA0.22		
		5.4mm	8.3mrad	10.04mm	0.37	Φ11mm	62.5/125 NA0.27		
		12.5mm	4.9mrad	24.97mm	0.25	Φ15mm	NA0.27		
		4.4mm	11.5mrad	10.04mm	0.37	Φ11mm	105/125 NA0.22		
		11.0mm	4.5mrad	24.97mm	0.25	Φ15mm	200/220 NA0.22		
		4.4mm	21.4mrad	10.04mm	0.37	Φ11mm	200/220 NA0.22		
		11.0mm	8.4mrad	24.97mm	0.25	Φ15mm	NA0.22		

Wavelength	Bandwidth	Waist Beam	Divergence Angle	EFL	NA (Lens)	Package Dia.	Fiber Type	Connector	Transmittance
850nm	600~1050nm	5.4mm	8.4mrad	10.05mm	0.37	Φ11mm	62.5/125 NA0.27	FC/PC Sma905	>92%
		12.5mm	4.8mrad	24.98mm	0.25	Φ15mm	NA0.27		
		4.4mm	11.5mrad	10.05mm	0.37	Φ11mm	105/125 NA0.22		
		10.9mm	4.5mrad	24.98mm	0.25	Φ15mm	200/220 NA0.22		
		4.4mm	21.5mrad	10.05mm	0.37	Φ11mm	200/220 NA0.22		
		10.9mm	8.4mrad	24.98mm	0.25	Φ15mm	400/440 NA0.22		
		4.4mm	41.5mrad	10.05mm	0.37	Φ11mm	400/440 NA0.22		
		10.9mm	16.5mrad	24.98mm	0.25	Φ15mm	NA0.22		
905nm	600~1050nm	4.4mmmm	11.5mrad	10.06mm	0.37	Φ11mm	105/125 NA0.22		
		4.4mmmm	21.5mrad	10.06mm	0.37	Φ11mm	200/220 NA0.22		
1064nm	1050~1700nm	5.4mm	7.7mrad	10.03mm	0.37	Φ11mm	62.5/125 NA0.27		
		12.5mm	4.9mrad	24.94mm	0.25	Φ15mm	NA0.27		
		5.4mm	11.3mrad	10.03mm	0.37	Φ11mm	105/125 NA0.22		
		10.7mm	5.0mrad	24.94mm	0.25	Φ15mm	200/220 NA0.22		
		4.4mm	21.3mrad	10.03mm	0.37	Φ11mm	200/220 NA0.22		
		10.7mm	9.2mrad	24.94mm	0.25	Φ15mm	400/440 NA0.22		
		4.4mm	41.3mrad	10.03mm	0.37	Φ11mm	400/440 NA0.22		
		10.7mm	17.8mrad	24.94mm	0.25	Φ15mm	NA0.22		
1310nm	1050~1700nm	5.4mm	7.8mrad	10.07mm	0.37	Φ11mm	62.5/125 NA0.27		
		12.5mm	5.3mrad	25.01mm	0.25	Φ15mm	NA0.27		
		4.4mm	11.2mrad	10.07mm	0.37	Φ11mm	105/125 NA0.22		
		10.6mm	5.12mrad	25.01mm	0.25	Φ15mm	200/220 NA0.22		
		4.4mm	21.2mrad	10.07mm	0.37	Φ11mm	200/220 NA0.22		
		10.7mm	9.2mrad	25.01mm	0.25	Φ15mm	400/440 NA0.22		
		4.4mm	41.2mrad	10.07mm	0.37	Φ11mm	400/440 NA0.22		
		10.7mm	17.8mrad	25.01mm	0.25	Φ15mm	NA0.22		
1550nm	1050~1700nm	5.4mm	7.8mrad	10.11mm	0.37	Φ11mm	62.5/125 NA0.27		
		12.5mm	5.8mrad	25.1mm	0.25	Φ15mm	NA0.27		
		4.4mm	11.7mrad	10.11mm	0.37	Φ11mm	105/125 NA0.22		
		10.7mm	5.0mrad	25.1mm	0.25	Φ15mm	200/220 NA0.22		
		4.4mm	21.2mrad	10.11mm	0.37	Φ11mm	200/220 NA0.22		
		10.7mm	9.1mrad	25.1mm	0.25	Φ15mm	400/440 NA0.22		
		4.4mm	41.1mrad	10.11mm	0.37	Φ11mm	400/440 NA0.22		
		10.7mm	17.6mrad	25.1mm	0.25	Φ15mm	NA0.22		

* 所有光斑、发散角的测试数据均由远讯标准跳线接入测试
All testing data for beam size and divergence angle are obtained by connecting the standard jumpers from Ysenser.

定焦大光束准直器 采用空气隙胶合透镜，能提供比非球面透镜和消色差透镜准直性能更优异的光束质量，低相差的透镜组设计可获得更接近高斯光束、更小的发散角和更小的波前误差。

Large Beam Collimators By using an air gap bonded lens, it can provide better beam quality than aspherical lenses and achromatic lenses in terms of collimation performance. The design of a low aberration lens group can achieve a beam closer to a Gaussian beam, with smaller divergence angles and smaller wavefront errors.



单模定焦大光束准直器 SM Large Beam Collimators

Wavelength	Bandwidth	Waist Beam	Divergence Angle	EFL	NA (Lens)	Package Dia.	Fiber Type	Connector	Transmittance
405nm	±30nm	5.3 mm	0.16mrad	33.2 mm	0.27	Φ24mm	405HP	FC/PC FC/APC Sma905	>92%
450nm	±30nm	5.8 mm	0.12mrad	33.5 mm	0.26	Φ24mm	460HP		
525nm	±30nm	6.3 mm	0.10mrad	34.3 mm	0.26	Φ24mm	630HP		
635nm	±30nm	7.0 mm	0.12mrad	35.3 mm	0.25	Φ24mm			
780nm	±30nm	7.4 mm	0.14mrad	36.0 mm	0.25	Φ24mm			
850nm	±30nm	7.8 mm	0.14mrad	36.2 mm	0.25	Φ24mm	780HP		
905nm	±30nm	7.5 mm	0.15mrad	36.3 mm	0.25	Φ24mm			
980nm	±30nm	8.5 mm	0.16mrad	36.4 mm	0.25	Φ24mm			
1064nm	±30nm	7.9 mm	0.17mrad	36.6 mm	0.25	Φ24mm	Hi1060		
1310nm	±30nm	6.6 mm	0.24mrad	36.7 mm	0.24	Φ24mm			
1550nm	±30nm	6.9 mm	0.28mrad	37.1 mm	0.24	Φ24mm	Smf-28e		
1654nm	±10nm	6.9 mm	0.30mrad	37.2mm	0.24	Φ24mm			

单模定焦大光束准直器 SM Large Beam Collimators

Wavelength	Bandwidth	Waist Beam	Divergence Angle	EFL	NA (Lens)	Package Dia.	Fiber Type	Connector	Transmittance
450nm	±30nm	18.0mm	2.3mrad	33.5 mm	0.27	Φ24mm	62.5/125	FC/PC Sma905	>92%
	±30nm	14.6mm	6.5mrad	33.5 mm	0.27	Φ24mm	200/220		
	±30nm	14.6mm	12.5mrad	33.5 mm	0.27	Φ24mm	400/440		
485nm	±30nm	15.0mm	4.0mrad	34.1mm	0.27	Φ24mm	105/125		
	±30nm	15.0mm	7.0mrad	34.1mm	0.27	Φ24mm	200/220		
	±30nm	15.4mm	12.8mrad	34.1mm	0.27	Φ24mm	400/440		
525nm	±30nm	18.2mm	2.2mrad	34.3 mm	0.27	Φ24mm	62.5/125		
	±30nm	14.9mm	3.5mrad	34.3 mm	0.27	Φ24mm	105/125		
	±30nm	14.9mm	6.2mrad	34.3 mm	0.27	Φ24mm	200/220		
	±30nm	15.2mm	12.6mrad	34.3 mm	0.27	Φ24mm	400/440		
635nm	±30nm	18.8mm	2.8mrad	35.3 mm	0.26	Φ24mm	62.5/125		
	±30nm	15.2mrad	4.0mrad	35.3 mm	0.26	Φ24mm	105/125		
	±30nm	15.3mm	6.1mrad	35.3 mm	0.26	Φ24mm	200/220		
	±30nm	15.4mm	11.8mrad	35.3 mm	0.26	Φ24mm	400/440		

Wavelength	Bandwidth	Waist Beam	Divergence Angle	EFL	NA (Lens)	Package Dia.	Fiber Type	Connector	Transmittance
780nm	±30nm	19.0mm	2.7mrad	36.0 mm	0.26	Φ24mm	62.5/125	FC/PC Sma905	>92%
	±30nm	15.6mm	3.1mrad	36.0 mm	0.26	Φ24mm	105/220		
	±30nm	15.5mm	5.9mrad	36.0 mm	0.26	Φ24mm	200/220		
	±30nm	15.5mm	11.6mrad	36.0 mm	0.26	Φ24mm	400/440		
850nm	±30nm	19.1mm	2.7mrad	36.2 mm	0.26	Φ24mm	62.5/125		
	±30nm	15.6mm	3.2mrad	36.2 mm	0.26	Φ24mm	105/220		
	±30nm	15.6mm	5.8mrad	36.2 mm	0.26	Φ24mm	200/220		
	±30nm	15.6mm	11.4mrad	36.2 mm	0.26	Φ24mm	400/440		
905nm	±30nm	15.7mm	3.3mrad	36.3 mm	0.26	Φ24mm	105/220		
	±30nm	15.7mm	5.9mrad	36.3 mm	0.26	Φ24mm	200/220		
1064nm	±30nm	19.4mm	2.4mrad	36.6 mm	0.26	Φ24mm	62.5/125		
	±30nm	15.8mm	3.4mrad	36.6 mm	0.26	Φ24mm	105/125		
	±30nm	16.0mm	6.4mrad	36.6 mm	0.26	Φ24mm	200/220		
	±30nm	16.0mm	12.2mrad	36.6 mm	0.26	Φ24mm	400/440		
1310nm	±30nm	19.4mm	2.3mrad	36.7 mm	0.25	Φ24mm	62.5/125		
	±30nm	15.8mm	3.5mrad	36.7 mm	0.25	Φ24mm	105/125		
	±30nm	15.8mm	6.1mrad	36.7 mm	0.25	Φ24mm	200/220		
	±30nm	15.9mm	11.6mrad	36.7 mm	0.25	Φ24mm	400/440		
1550nm	±30nm	19.4mm	2.1mrad	37.1 mm	0.25	Φ24mm	62.5/125		
	±30nm	15.9mm	3.4mrad	37.1 mm	0.25	Φ24mm	105/125		
	±30nm	15.9mm	6.1mrad	37.1 mm	0.25	Φ24mm	200/220		
	±30nm	16.0mm	11.6mrad	37.1 mm	0.25	Φ24mm	400/440		

* 所有光斑、发散角的测试数据均由远讯标准跳线接入测试
All testing data for beam size and divergence angle are obtained by connecting the standard jumpers from Ysenser.

* 也适用于相应波长的保偏单模光纤接入
Also applicable for polarization maintaining fiber with corresponding wavelength.

* 束腰光斑直径：取高斯光束1/e²处，选用各波长单模光纤理论计算值。
Waist beam diameter: Take the Gaussian beam at 1/e² and use the theoretical calculated values for each wavelength using single-mode fibers.

* 光束远场发散角：输入选用各波长单模光纤，按高斯光束1/e²理论计算值。公差+0.003°/0.0°
Beam far-field divergence angle: The input uses single-mode optical fibers with various wavelengths, calculated according to the Gaussian beam 1/e² theory. Tolerance is +0.003°/0.0°.

调焦光纤准直器 该设计在机械件内部采用弹簧装配适用的光学透镜，用于光纤光束的准直器输出，也可用于空间光耦合进入光纤。通过旋转准直器外部的套管可以使内部的光学透镜延光轴方向进行前后平移，从而调节透镜与光纤端面之间的距离，得到不同光斑尺寸。一旦达到所需位置，就可以将外壳滚花锁紧环将调节器锁定。有三款焦距选项：4.5mm、7.5mm、11mm，调节时对准误差 < 15 mrad。

Adjustable Aspheric Collimators The design employs a spring-mounted optical lens within the mechanical component, which is used for the collimation of the optical fiber beam and can also be used for spatially coupling light into the fiber. By rotating the outer sleeve of the collimator, the internal optical lens can be translated along the optical axis to adjust the distance between the lens and the fiber end face, resulting in different beam sizes. Once the desired position is achieved, the adjustment can be secured by tightening the knurled lock ring on the casing. There are three focal length options: 4.5 mm, 7.5 mm, and 11 mm, with an alignment error of less than 15 mrad when adjusting.



EFL	NA (Lens)	Waist Beam	AR Coating	Far-field divergence angle	Input Fiber MFD	Length Between Fiber and Lens	Connector	Transmittance
4.5mm	0.54	0.86	400~700nm R<0.5%	0.78mrad	3.5um	2.4 - 4.9 mm	FC/PC	>90%
4.5mm	0.54	0.98	600~1050nm R<0.5%	1.1mrad	5um	2.4 - 4.9 mm	FC/APC	
4.5mm	0.54	0.87	1050~1700nm R<0.5%	2.3mrad	10.4um	2.4 - 4.9 mm	Sma905	
7.5mm	0.3	1.35	400~700nm R<0.5%	0.49mrad	3.5um	4.2- 6.8 mm	FC/PC	>90%
7.5mm	0.3	1.6	600~1050nm R<0.5%	0.66mrad	5um	4.2- 6.8 mm	FC/APC	
7.5mm	0.3	1.44	1050~1700nm R<0.5%	1.4mrad	10.4um	4.2- 6.8 mm	Sma905	
11 mm	0.3	1.96	400~700nm R<0.5%	0.32mrad	3.5um	8.6 - 10.9 mm	FC/PC	>90%
11 mm	0.3	2.35	600~1050nm R<0.5%	0.46mrad	5um	8.6 - 10.9 mm	FC/APC	
11 mm	0.3	2.1	1050~1700nm R<0.5%	1.0mrad	10.4um	8.6 - 10.9 mm	Sma905	

* 所有光斑、发散角的测试数据均由远讯标准跳线接入测试

All testing data for beam size and divergence angle are obtained by connecting the standard jumpers from Ysenser.

* 束腰光斑直径：取高斯光束 $1/e^2$ 处，选用各波长单模光纤理论计算值。

Waist beam diameter: Take the Gaussian beam at $1/e^2$ and use the theoretical calculated values for each wavelength using single-mode fibers.

* 光束远场发散角：输入选用各波长单模光纤，按高斯光束 $1/e^2$ 理论计算值，公差 $+0.003^\circ/0.0^\circ$

Beam far-field divergence angle: The input uses single-mode optical fibers with various wavelengths, calculated according to the Gaussian beam $1/e^2$ theory. Tolerance is $+0.003^\circ/0.0^\circ$.

* 也适用于相应波长的保偏单模光纤接入

Also applicable for polarization maintaining fiber with corresponding wavelength.

五维光纤准直/耦合镜 在接头和光纤保持不动时，内置的透镜具有五个对准自由度：X和Y方向的线性对准、俯仰和偏转角度对准、同时使用俯仰和偏转调节Z轴。其X和Y方向的行程范围为 $\pm 0.7\text{mm}$ ，Z方向行程范围为 $> 2\text{mm}$ ，俯仰偏摆调节范围 $\pm 4^\circ$ 。该款耦合镜具有很好的结构稳定性和较高的耦合效率，如果更换光源波长，使用时还需对耦合镜进行微调，以获得更高的耦合效率。

FiberPort Coupler/Collimators When the connector and the fiber remain stationary, the internal lens has five alignment degrees of freedom: linear alignment in the X and Y directions, pitch and yaw alignment angles, and adjustment of the Z-axis using both pitch and yaw. The travel range in the X and Y directions is $\pm 0.7\text{ mm}$, the travel range in the Z direction is greater than 2 mm , and the pitch and yaw adjustment range is $\pm 4^\circ$. It has good structural stability and high coupling efficiency. If the wavelength of the light source is changed, the collimator needs to be re-adjusted to achieve higher coupling efficiency.



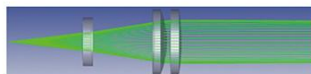
装配消色差透镜 Assemble Achromatic Lenses

Wavelength	EFL	Fiber MFD	Waist Beam	Divergence Angle	NA (Lens)	AR Coating	Transmittance
350 - 700 nm	7.50 mm	3.5um	1.23 mm	0.47mrad	0.3	R<1.0%@350 - 700 nm	>95%
600 - 1050 nm	7.50 mm	5.0um	1.62 mm	0.67mrad	0.3	R<1.0%@600 - 1050 nm	
1050 - 1650 nm	7.50 mm	10.4um	1.42 mm	1.39mrad	0.3	R<1.0%@1050 - 1650 nm	
350 - 700 nm	10.0 mm	3.5um	1.64 mm	0.35mrad	0.23	R<1.0%@350 - 700 nm	
600 - 1050 nm	10.0 mm	5.0um	2.16 mm	0.50mrad	0.23	R<1.0%@600 - 1050 nm	
1050 - 1650 nm	10.0 mm	10.4um	1.99 mm	0.99mrad	0.23	R<1.0%@1050 - 1650 nm	

装配非球面透镜 Assemble Aspheric Lenses

Wavelength	EFL	Fiber MFD	Waist Beam	Divergence Angle	NA (Lens)	AR Coating	Transmittance
350 - 700 nm	7.50 mm	3.5um	1.23 mm	0.47 mrad	0.3	R<1.0%@350 - 700 nm	>95%
600 - 1050 nm	7.50 mm	5.0um	1.62 mm	0.67 mrad	0.3	R<1.0%@600 - 1050 nm	
1050 - 1650 nm	7.50 mm	10.4um	1.42 mm	1.39 mrad	0.3	R<1.0%@1050 - 1650 nm	
350 - 700 nm	11.0 mm	3.5um	1.80 mm	0.32 mrad	0.2	R<1.0%@350 - 700 nm	
600 - 1050 nm	11.0 mm	5.0um	2.38 mm	0.46 mrad	0.2	R<1.0%@600 - 1050 nm	
1050 - 1650 nm	11.0 mm	10.4um	2.09 mm	0.95 mrad	0.2	R<1.0%@1050 - 1650 nm	

远距离准直镜 可将光纤出光进行准直整形，用于不同光纤连接出射的激光，在设计波长下提供衍射极限性能，准直距离可达200米。此系列准直镜的结构紧凑，不受错位影响。设计时进行消色差处理，选用空气间隔的双透镜系列，具有极好的准直效果和耦合空间光的能力，双透镜的有效焦距与波长有关。因此，此系列准直镜头需在设计波长下使用，性能最佳。



Long Distance Collimator The fiber optic beam can be collimated and shaped for different lasers output through fiber optic connections, providing diffraction-limited performance at the design wavelength, with a collimation distance of up to 200 meters. The structure of this series of collimators is compact. Aberration correction is performed during design by selecting an air-spaced doublet lens series, which has excellent collimation effect and ability to couple space light. The effective focal length of the doublet lens depends on the wavelength. Therefore, this series of collimators should be used at the design wavelength for optimal performance.



单模光纤 Single-Mode Fiber

Wavelength	Bandwidth	Waist Beam	Divergence Angle	EFL	NA (Lens)	Fiber Type	Connector	Transmittance
405nm	±30nm	10.2mm	0.09mrad	66.5mm	0.19	405HP	FC/PC FC/APC Sma905	>92%
450nm	±30nm	13.7mm	0.07mrad	68.4mm	0.18	460HP		
520nm	±30nm	14.2mm	0.06mrad	70.3mm	0.18			
635nm	±30nm	14.5mm	0.07mrad	72.1mm	0.17	630HP		
780nm	±30nm	14.2mm	0.07mrad	73.3mm	0.17	780HP		
850nm	±30nm	14.9mm	0.07mrad	73.7mm	0.17			
905nm	±30nm	14.9mm	0.07mrad	73.9mm	0.17			
980nm	±30nm	15.0mm	0.09mrad	74.2mm	0.17	980HP		
1064nm	±30nm	15.2mm	0.09mrad	74.5mm	0.17			
1310nm	±30nm	12.9mm	0.12mrad	75.1mm	0.17	Smf-28c		
1550nm	±30nm	14.2mm	0.14mrad	75.6mm	0.17			
1650nm	±30nm	14.5mm	0.14mrad	76.0mm	0.17			

多模光纤 MultiMode Fiber

Wavelength	Bandwidth	Waist Beam	Divergence Angle	EFL	NA (Lens)	Fiber Type	Connector	Transmittance
450nm	±30nm	25.0mm	2.0mrad	50.11mm	0.25	62.5/125	FC/PC FC/APC Sma905	>92%
	±30nm	22.0mm	4.9mrad	50.11mm	0.25	200/220		
	±30nm	22.0mm	8.93mrad	50.11mm	0.25	400/440		
485nm	±30nm	22.0mm	2.75mrad	50.1mm	0.25	105/125		
	±30nm	22.0mm	4.6mrad	50.1mm	0.25	200/220		
525nm	±30nm	25.0mm	2.4mrad	50.12mm	0.25	62.5/125		
	±30nm	22.0mm	2.5mrad	50.12mm	0.25	105/125		
	±30nm	22.0mm	4.5mrad	50.12mm	0.25	200/220		
	±30nm	22.0mm	8.5mrad	50.12mm	0.25	400/440		

Wavelength	Bandwidth	Waist Beam	Divergence Angle	EFL	NA (Lens)	Fiber Type	Connector	Transmittance
635nm	±30nm	25.0mm	2.0mrad	50.2mm	0.25	62.5/125	FC/PC FC/APC Sma905	>92%
	±30nm	22.0mm	2.3mrad	50.2mm	0.25	105/125		
	±30nm	22.0mm	4.6mrad	50.2mm	0.25	200/220		
	±30nm	22.0mm	8.2mrad	50.2mm	0.25	400/440		
780nm	±30nm	25.0mm	4.1mrad	49.17mm	0.25	62.5/125		
	±30nm	22.0mm	2.5mrad	49.17mm	0.25	105/125		
	±30nm	22.0mm	4.4mrad	49.17mm	0.25	200/220		
850nm	±30nm	22.0mm	4.1mrad	50.05mm	0.25	62.5/125		
	±30nm	22.0mm	2.4mrad	50.05mm	0.25	105/125		
	±30nm	22.0mm	4.3mrad	50.05mm	0.25	200/220		
	±30nm	22.0mm	8.4mrad	50.05mm	0.25	400/440		
905nm	±30nm	10.9mm	4.5mrad	24.99mm	0.25	105/125		
	±30nm	10.9mm	8.3mrad	24.99mm	0.25	200/220		
1064nm	±30nm	25.0mm	4.5mrad	49.84mm	0.25	62.5/125		
	±30nm	21.2mm	2.8mrad	49.84mm	0.25	105/125		
	±30nm	21.2mm	4.9mrad	49.84mm	0.25	200/220		
	±30nm	21.2mm	9.3mrad	49.84mm	0.25	400/440		
1310nm	±30nm	25.0mm	4.5mrad	49.97mm	0.25	62.5/125		
	±30nm	21.2mm	2.7mrad	49.97mm	0.25	105/125		
	±30nm	21.2mm	4.8mrad	49.97mm	0.25	200/220		
	±30nm	21.2mm	9.2mrad	49.97mm	0.25	400/440		
1550nm	±30nm	25.0mm	4.5mrad	50.16mm	0.25	62.5/125		
	±30nm	21.2mm	2.7mrad	50.16mm	0.25	105/125		
	±30nm	21.2mm	4.8mrad	50.16mm	0.25	200/220		
	±30nm	21.2mm	9.1mrad	50.16mm	0.25	400/440		

超远距离准直镜头 将光纤发射的光进行大光斑准直整形，用于高功率、远距离传输、脉冲型出射的激光，在使用距离内光束有良好的准直效果，且光束有能量均匀、边缘分明、清晰的特点。设计时选用空气间隔型的多组透镜系列，适配单多模光纤和大芯径光纤，实现激光遥测、照明、干扰等功能。

Long-Range Collimator The fiber optic transmission beam is subjected to large-beam collimation and shaping, and is used for high-power, long-distance transmission, and pulse-type laser output. Within the operating distance, the beam has good collimating effect, with uniform energy distribution, distinct and clear edges. During the design, an air-spaced lens series is selected to accommodate single-mode and multimode fibers, as well as large core fibers, to achieve laser telemetry sensing, illumination, interference and other functions.

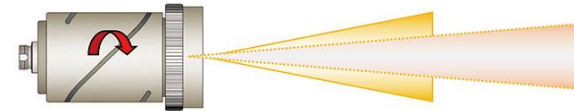


- 标准光纤接口输入FC、Sma905
- 准直空间光束输出
- 可用于405 nm到1.55 μm的波长范围
- 准直距离适用≥2Km
- 光束能量集中
- 多组透镜设计，透镜双面镀制增透膜，提高传输效率

Wavelength	Beam Size	Divergence Angle	EFL	transmission distance	Fiber Type	Connector	Transmittance
525±20nm	110 mm	0.60 mrad	250mm	2Km	60/125um NA 0.22	FC/PC FC/APC Sma905	>90%
	140 mm	0.49 mrad	320mm	3Km			
	175 mm	0.32 mrad	400mm	5Km			
	110 mm	0.80 mrad	250mm	2Km	105/125um NA 0.22		
	140 mm	0.69 mrad	320mm	3Km			
	175 mm	0.43 mrad	400mm	5Km			
	48mm	< 0.05mrad	250mm	2Km	460HP		
61mm	< 0.04mrad	320mm	3Km				
76mm	< 0.025mrad	400mm	5Km				
905±20nm	110 mm	0.55 mrad	250mm	2Km	60/125um NA 0.22		
	140 mm	0.40 mrad	320mm	3Km			
	175 mm	0.31 mrad	400mm	5Km			
	110 mm	0.72mrad	250mm	2Km	105/125um NA 0.22		
	140 mm	0.58 mrad	320mm	3Km			
	175 mm	0.42 mrad	400mm	5Km			
	55mm	< 0.06mrad	250mm	2Km	780HP		
	70mm	< 0.05mrad	320mm	3Km			
92mm	< 0.03mrad	400mm	5Km				
1550±20nm	110 mm	0.44 mrad	250mm	2Km	60/125um NA 0.22		
	140 mm	0.43 mrad	320mm	3Km			
	175 mm	0.32 mrad	400mm	5Km			
	110 mm	0.61 mrad	250mm	2Km	105/125um NA 0.22		
	140 mm	0.58 mrad	320mm	3Km			
	175 mm	0.43 mrad	400mm	5Km			
	49mm	< 0.06mrad	250mm	2Km	Smf-28e		
	63mm	< 0.05mrad	320mm	3Km			
	78mm	< 0.03mrad	400mm	5Km			

变焦激光准直镜头 变焦倍率要求光束变化较大，结构设计采用曲线槽形式，多组透镜联动，以达到焦距连续变化且光束质量不变的效果。通过不同光纤输入，均可达到良好的变焦效果，输出光束均匀，边界清晰完整。主要应用于激光照明、激光眩目、激光目标锁定、激光遥测等领域。

Zoom Laser Collimator The zoom ratio requires a significant change in the beam, and the structural design adopts a curved groove form with multiple groups of lenses in linkage to achieve continuous focal length change while maintaining consistent beam quality. With different fiber inputs, excellent zoom effects can be achieved, with uniform output beams and clear and complete boundaries. It is primarily used in fields such as laser illumination, laser dazzling, laser target locking, and laser telemetry.



- 标准光纤接口输入
- 准直空间光束输出
- 主要三种波长选项：
525 nm
450 nm
638 nm
- 与兼容接头一起使用可以达到衍射极限性能
- 金属氧化外壳
- 预留电机安装接口，实现自动调焦

- Standard fiber optic interface input
- Collimated spatial beam output
- Three main wavelength options: o 525 nm o 450 nm o 638 nm
- Can achieve diffraction-limited performance when used with compatible connectors
- Metal oxide outer shell
- Reserved motor installation interface for autofocus capability

单波长变焦激光准直镜头 Single-wavelength Zoom laser collimator

Zoom Ratio	Working Distance	Range of divergence angle changes	Power Capacity	Fiber Type	Package Size	Connector	Transmittance
20×	30~600m	0.05~1.0°	30W	60 / 125 105 / 125 200 / 220	Φ50×150mm	FC/PC	85%
50×	20~1000m	0.05~2.5°	50W		Φ50×220mm		

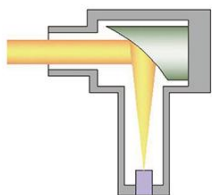
三波长变焦激光准直镜头 Tri-wavelength Zoom laser collimator

Zoom Ratio	Working Distance	Range of divergence angle changes	Power Capacity	Fiber Type	Package Size	Connector	Transmittance
50×	20~1000m	0.05~2.5°	20W	60 / 125 400 / 440	Φ55×260mm	FC/PC	80%

宽光谱准直器 采用90°离轴抛物面反射镜，这种反射镜的焦距在宽波长范围内保持恒定，所以在焦点调节准确的条件下就能准直宽光谱波长的光，成为多色光源准直或耦合的最佳选择。在透镜表面镀制450 nm到20 μm波长范围的银膜，增加出射效率。该款准直器都可选配FC/PC、FC/APC或者Sma905接头。



Broadband Fiber Collimator Using a 90° off-axis parabolic mirror, the focal length of this mirror remains constant over a wide wavelength range. Therefore, it is the ideal choice for collimating broadband wavelength light when precise focal adjustment is required, serving as a collimated multi-color light source or coupling device. A silver coating is applied to the lens surface to enhance the output efficiency within the wavelength range of 450 nm to 20 μm. This collimator can be equipped with FC/PC, FC/APC, or Sma905 connectors.



- 表面镀制银膜(450 nm - 20 μm)、金膜(450 nm - 20 μm)或铝膜(250 - 450 nm)，反射率高
- 反射膜上镀有保护膜，增加环境适用性
- 反射式工作方式，整个反射带宽谱消色差设计
- 适合多色光准直出射或耦合到光纤中
- 标准接口设计，方便安装使用
- 可应用于光谱分析、荧光分析、气体遥测、水质成分分析、食品安全、医疗分析仪器

- Surface coated with silver film (450 nm - 20 μm), gold film (450 nm - 20 μm), or aluminum film (250 - 450 nm) with high reflectivity
- Protective film coated on the reflective film to increase environmental suitability
- Reflective working mode with a wide bandwidth spectrally dispersive design
- Suitable for multi-color light collimation or coupling into optical fibers
- Standard interface design for easy installation and use
- Applicable in spectral analysis, fluorescence analysis, gas telemetry, water quality analysis, food safety, and medical analysis instruments

Wavelength	450nm - 20um
AR Coating	Silver film / Aluminum film
Reflectance	≥96%
Export beam diameter	2mm、4mm、8.5mm、12mm (Fiber NA=0.13)
Numerical aperture	0.4、0.36、0.167、0.216
Aperture	Φ7.5mm、Φ11mm、Φ22mm
Connector	FC/PC、FC/APC、Sma905
Working temperature	-10~70℃