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激光光纤准直/耦合器

Laser Fiber Collimator And Coupler

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• 专业全光谱光纤准直系统制造商 •

全光谱、全光纤品类，为客户提供最优解决方案

西安远讯光电科技有限公司成立于2013年，是一家专注于精密光纤光学准直系统解决方案的高新技术企业。公司凭借自主知识产权的核心技术和25年以上的专业研发经验，已成为光纤准直领域有明显优势和极具竞争力企业。作为高精度光纤准直技术的创新者与践行者，远讯光电为智能制造、精密测量与分析、精准医疗、航空航天等高科技领域提供专业的光学解决方案和系列化产品，在业内建立了卓越的技术声誉和品牌影响力。

远讯光电始终坚持以技术创新为驱动，以客户需求为导向，致力于光纤准直技术的深度研发与产品迭代。产品在准直精度、系统稳定性和产品可靠性等方面均达到国际先进水平。

作为光纤准直系统解决方案的首选合作伙伴，远讯光电不仅为客户提供高品质、高性能的产品，更注重建立长期共赢的合作关系。公司秉持"专业、创新、精益、共赢"的理念，通过定制化解决方案和全方位技术服务，助力客户提升产品性能和市场竞争优势，创造更大价值。

Ysenser Co., Ltd., founded in 2013, is a high-tech enterprise specializing in providing solutions for precision fiber optic collimator systems. Leveraging its core technologies with independent intellectual property rights and over 25 years of extensive professional R&D experience, the company has firmly established itself as an entity with distinct advantages and remarkable competitiveness in the field of fiber optic collimators.

As an innovator and practitioner of high-precision fiber optic collimation technology, Ysenser offers professional optical solutions and a comprehensive range of products to high-tech sectors including intelligent manufacturing, precision measurement and analysis, precision medicine, and aerospace. Consequently, it has earned an outstanding technical reputation and strong brand influence within the industry.

Ysenser has always been driven by technological innovation and oriented towards meeting customer needs. It is wholeheartedly dedicated to the in-depth research and development of fiber optic collimation technology and the continuous iteration of its products. In terms of collimation accuracy, system stability, and product reliability, its products have reached the international advanced standard.

专注全光谱光纤准直系统制造

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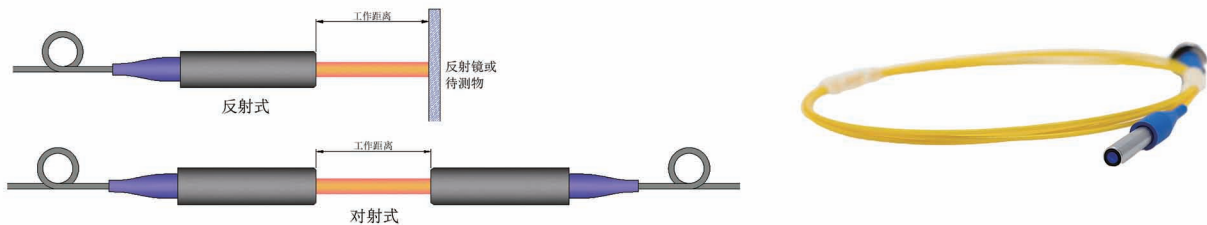
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单模光纤准直器

Single-mode fiber collimator

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。

It 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。

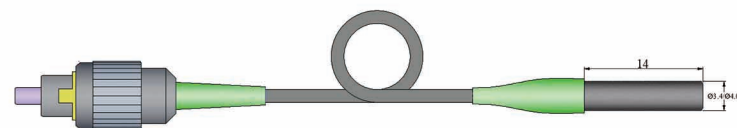
According to the working distance, it can be divided into fixed working distance (fixed focus) collimator and variable collimator for working distance range. Conventional lenses or Grin lenses should be selected according to different working distances. We recommend installing the collimator in an optical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

区别	固定工作距离（定焦）准直器	工作距离可变准直器
Difference	Fixed Working Distance Collimator	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	Insert Loss	Return Loss	Mode-Field Diameter	Fiber Type	Connector	
405nm	±20nm	100mm	0.27mm	2.1mrad	Φ3.4mm	≤2.0dB	≥55dB	3.0±0.5um	405HP	FC/PC FC/APC LC/PC Or Customer specified	
	±20nm	300mm	0.70mm	0.78mrad	Φ3.4mm	≤2.0dB	≥55dB				
450nm	±20nm	100mm	0.26mm	2.3mrad	Φ3.4mm	≤2.0dB	≥55dB	3.5±0.5um	460HP		
	±20nm	300mm	0.68mm	0.87mrad	Φ3.4mm	≤2.0dB	≥55dB				
520nm	±20nm	100mm	0.31mm	2.3mrad	Φ3.4mm	≤1.5dB	≥55dB	3.6±0.5um			
	±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	630HP		
	±20nm	300mm	0.85mm	1.0mrad	Φ3.4mm	≤0.8 dB	≥55dB				
	±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	780HP		
	±20nm	300mm	0.99mm	1.0mrad	Φ3.4mm	≤0.7 dB	≥55dB				
	±20nm	1000mm	1.55mm	0.7mrad	Φ4.0mm	≤0.9 dB	≥55dB				
850nm	±20nm	100mm	0.37mm	3.0mrad	Φ3.4mm	≤0.6 dB	≥55dB	5.0±0.5um			
	±20nm	300mm	0.97mm	1.1mrad	Φ3.4mm	≤0.7 dB	≥55dB				
	±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	Hi1060		
	±20nm	300mm	0.96mm	1.4mrad	Φ3.4mm	≤0.6 dB	≥55dB				
	±20nm	1000mm	1.48mm	0.87mrad	Φ4.0mm	≤0.9 dB	≥55dB				
1064nm	±20nm	100mm	0.37mm	3.3mrad	Φ3.4mm	≤0.5 dB	≥55dB	6.2±0.3um			
	±20nm	300mm	0.99mm	1.4mrad	Φ3.4mm	≤0.6 dB	≥55dB				
	±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	Smf-28e/ G657A1/ G657A2 ZBL		
	±20nm	300mm	0.73mm	2.3mrad	Φ3.4mm	≤0.5 dB	≥55dB				
	±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			
	±20nm	300mm	0.85mm	2.4mrad	Φ3.4mm	≤0.5 dB	≥55dB				
	±20nm	1000mm	1.35mm	1.7mrad	Φ4.0mm	≤0.7 dB	≥55dB				
1650nm	±5nm	100mm	0.47mm	4.5mrad	Φ3.4mm	≤0.4 dB	≥55dB	10.9±0.5um			
	±5nm	300mm	0.89mm	2.4mrad	Φ3.4mm	≤0.5 dB	≥55dB				
	±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	Insert Loss	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	FC/PC FC/APC LC/PC Or Customer specified
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	Hi1060	
980nm	±20nm	50-1000mm	1.54mm	0.81mrad	Φ4.0mm	≤0.9 dB	≥55dB			
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	Smf-28e/ G657A1/ G657A2 ZBL	
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			
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°C. 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°C 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 Loss	Return Loss	Mode-Field Diameter	Fiber Type
1310nm	±20nm	≤300mm	0.81mm	2.3mrad	Φ3.4mm	≤0.6 dB	≥55dB	9.2±0.4um	9/125 Polyimide coating
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	
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		

▶

抗辐照单模光纤准直器
Anti-radiation SM Fiber Collimator

在核电和航空航天领域，光纤承担着重要的角色，抗辐照光纤准直器作为一种光纤扩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。而抗辐照光纤准直器的应用，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 fotary 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 Loss	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 ≥1.8 × 10^5 Gy, with a dose rate of 0.5 Gy/s.	Non-metallic materia 1 TML≤1% CVCM≤0.1%	-40℃ ~80℃
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				

- * 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: Calculate the theoretical value using single-mode fibers of various wavelengths at the 1/e² 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

Polarization-Maintaining Fiber Collimator

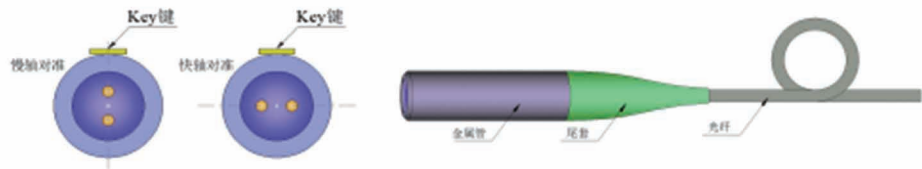
由保偏光纤尾纤和自聚焦透镜或C透镜精确定位封装而成，可将光纤传输出射光变成平行光束（高斯光束），或将外界的平行光聚焦耦合进入光纤内。它可以单只使用，在要求位置达到指定尺寸光斑；也可以配对使用，在一对准直器中间加入滤波片、隔离器等其它光学元件，达到客户使用目的。在以光学相干检测为基础的干涉型光纤传感器中，使用保偏光纤能够保证线偏振方向不变，提高相干信噪比，以实现物理量的高精度测量。

It is assembled precisely by PM fiber pigtail and a Grin lens or C-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		
980nm	±20nm	100mm	0.50mm	2.5mrad	Φ3.4mm	≥20dB	≤0.35dB	≥55dB	6.6±0.5um	PM980-XP
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		
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		

工作距离可调保偏光纤准直器 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		PM780-HP
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	5.2±1.0um	PM780-HP
980nm	±20nm	0-350mm	0.99mm	1.26mrad	Φ3.4mm	≥20dB	≤0.35dB	≥55dB		
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	6.6±0.5um	PM980-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		
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	9.3±0.5um	PM1300-XP
									10.1±0.5um	PM1550-XP

* 消光比值未计算连接头，增加连接头后，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头，增加连接头后，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.).

▶

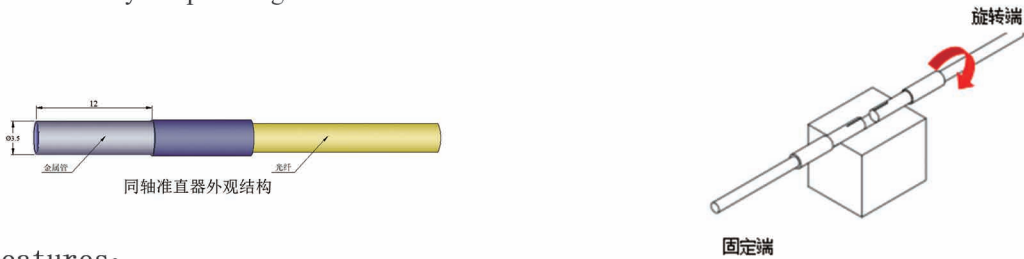
同轴光纤准直器

Coaxial fiber collimator

又名无偏角光纤准直器，其核心特性在于准直器的出光光轴与机械轴近乎完美重合。这种设计使得在安装过程中，无需对光束出光偏角进行精密调节，极大地简化了安装流程。在工作距离范围内，同轴光纤准直器能够始终保持优异的准直性能，确保光信号的稳定传输。特别是在配对安装场景下，该准直器可实现快速精准的对准，显著降低光路的插入损耗，有效提升光信号的传输效率。此外，同轴光纤准直器支持随机装配方式，大幅提高了安装效率，不仅减少了人工调节的复杂程度，还降低了对调试人员专业技能的要求，使安装过程更加便捷高效。



It also known as the non-deviation angle fiber optic collimator, its core characteristic lies in the nearly perfect coincidence between the output optical axis of the collimator and the mechanical axis. This design eliminates the need for precise adjustment of the output angle of the light beam during the installation process, greatly simplifying the installation procedure. Within the working distance range, the coaxial fiber collimator can always maintain excellent collimation performance, ensuring the stable transmission of optical signals. Especially in the paired installation, this collimator can achieve rapid and precise alignment, significantly reducing the insertion loss of the optical path and effectively improving the transmission efficiency of optical signals.



特征 Features:

- 单模、多模光纤均可制作
Both single-mode and multi-mode optical fibers can be fabricated
- 支持随机装配，无需复杂调试
It supports flexible configuration without the need for in-depth calibration
- 光纤滑环（旋转关节）的核心光学器件
The core optical components of the optical fiber rotary joint
- 抗辐照同轴准直器可定制
The radiation-resistant coaxial collimator can be customized.
- 光纤连接器可选
Connector Options: FC/APC、FC/PC、LC、ST、SMA905

应用场景Application:

光纤扩束连接器、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

Fiber bundle connectors ,Opto-electric rotary Jumper,Fiber rotation platforms,Intelligent robotsOpto-electric current transformers with plug-and-play optical axis alignment.

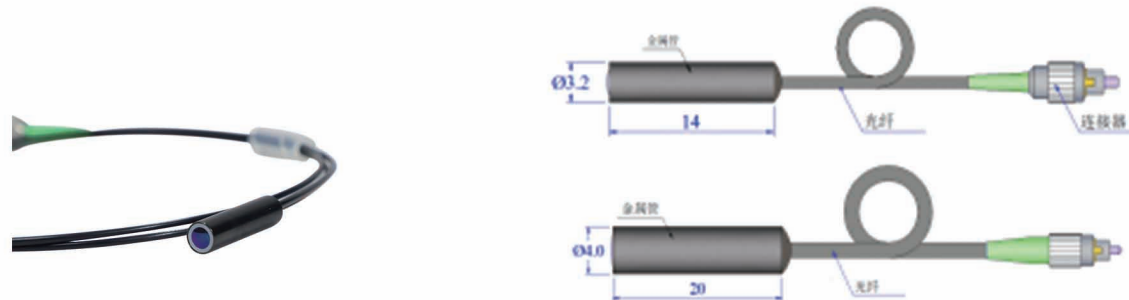
参数表 Parameter

Wavelength	Working Distance	Waist Beam	Deflection Angle	Divergence Angle	Package Dia.	Fiber Type	IL for a Pair	Return Loss
1310nm	0~20mm	0.36mm	< 0.1°	< 5mrad	3.5mm	G625D G657A1 G657A2	≤1.5dB	≥50dB
	10~50mm	0.38mm	< 0.1°	< 5.5mrad	3.5mm			
	50-80mm	0.43mm	< 0.1°	< 4.5mrad	3.5mm			
1550nm	0~20mm	0.36mm	< 0.1°	< 5.5mrad	3.5mm			
	10~50mm	0.38mm	< 0.1°	< 6mrad	3.5mm			
	50-80mm	0.43mm	< 0.1°	< 4.5mrad	3.5mm			
850nm	0-20mm	0.75mm	< 0.1°	< 9mrad	3.5mm	OM2-OM4	≤1.2dB	≥25dB
1300nm	0-20mm	0.7mm	< 0.1°	< 12mrad	3.5mm			

▶ 遥测光纤发射准直器 Telemetry Fiber Collimator

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。

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.



应用场景Application:

可应用于手持、无人机、车载、云台的激光气体遥测设备中

It can be applied to laser gas telemetry devices used in handheld devices, drones, vehicles, and pan-tilt systems.

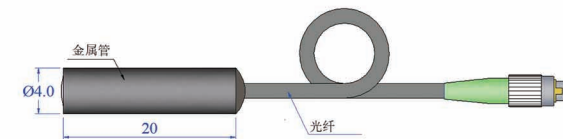
参数表 Parameter

Wavelength	AR Coating	Beam Size @0mm	Divergence Angle	Working	Beam Size@100M	Transmittance	Package Size	Connector	Fiber Type
1653nm	1250~1700nm	0.9mm±0.1mm	0.09+0.05°	100M	220mm±10mm	≥95%	Φ3.2×15mm	FC/APC	G657A2
1653nm	1250~1700nm	1.32mm±0.1mm	0.05+0.05°	100M	170mm±10mm	≥95%	Φ4.0×20mm	FC/APC	ZBL

▶ 遥测光纤发射共聚焦准直器 Telemetry Confocal Fiber Collimator

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。

It 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.



参数表 Parameter

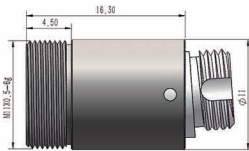
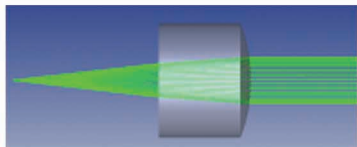
Wavelength	AR Coating	Beam Size @0mm	Divergence Angle	Beam Size@100M	Transmittance	Package Size	Connector	Fiber Type
520 / 1653	520±30nm & 1650±30nm	1.5mm@520nm 1.5mm@1653nm	< 2.5mrad@520nm < 2.4mrad@1653nm	< 250mm@520nm < 230mm@1653nm	≥ 90%	Φ4.0*20mm	FC/APC	G657A2 ZBL

▶ 非球面准直器
Aspheric Lenses Collimators

采用固定焦距的非球面透镜，非球面透镜的消像差设计使其能够对光束进行高效且精准的准直处理，从而使出射光束的能量呈现出理想的高斯分布状态。透镜的双面均镀有增透膜，这一工艺能够最大限度地降低表面反射损耗，有效提升光的透过率。然而，非球面透镜存在一定的固有特性，即存在色差现象，其有效焦距（EFL）与波长之间存在着紧密的关联关系。在制造过程中，透镜与光纤的相对位置经过了极为精密的调试，确保了出射光束的偏角控制在0.5° 的极小范围之内。同时，标准化且严格的制作工艺贯穿整个生产流程，不仅保证了产品在性能上具有高度的稳定性和一致性，还使其具备了良好的互配性能，能够更好地适配不同的应用场景和系统需求。

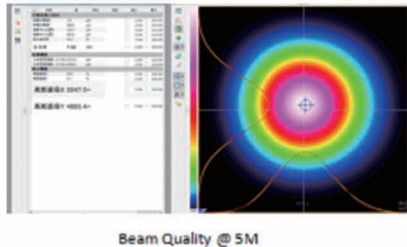
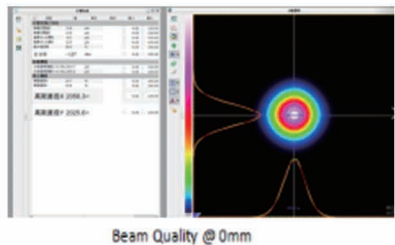


The aspherical lens's unique aberration-correction design empowers it to execute highly efficient and accurate collimation of light beams. As a result, the energy of the output light beam assumes a Gaussian distribution. Both surfaces of the lens are coated with anti-reflection films, that significantly decrease surface reflection losses and substantially improve the light transmittance. Nevertheless, the aspherical lens possesses certain inherent characteristics. Specifically, it exhibits a chromatic aberration phenomenon, with a strong correlation existing between its effective focal length (EFL) and the wavelength. During the manufacturing , the relative positioning of the lens and the optical fiber has undergone extremely precise adjustments. This ensures that the deflection angle of the emitted light beam is maintained within an exceedingly narrow range of 0.5°. Consequently, it is better equipped to adapt to diverse application scenarios and system requirements.



特征 Features:

- 接头类型可选
Three Connector Options: FC/PC、FC/APC、SMA905
- 兼容宽键和窄键的接头
Compatible with Narrow and Wide Key Connectors
- 结构紧凑，便于安装
Compact structure, Convenient for installation
- 接受定制波长
Custom Options including wavelengths



参数表 Parameter

Wavelength	Bandwidth	Export beam Size	Divergence Angle	EFL	NA	Pakage Dia.	SM Fiber Type	Transmittance
405nm	±5nm	0.8mm	0.06°+0.01°	4.45mm	0.25	Φ11mm	405HP	>95%
	±5nm	0.89mm	0.03° +0.01°	6.02mm	0.41	Φ11mm		
	±5nm	1.13mm	0.03° +0.01°	7.70mm	0.51	Φ12mm		
	±5nm	2.2mm	0.02° +0.01°	10.67mm	0.26	Φ11mm		
	±5nm	2.17mm	0.01° +0.01°	14.71mm	0.17	Φ11mm		
	±5nm	2.61mm	0.01° +0.01°	17.71mm	0.16	Φ11mm		
	±5nm	3.39mm	0.01° +0.01°	23.00mm	0.17	Φ12mm		
450nm	±5nm	0.82mm	0.05°+0.01°	4.50mm	0.25	Φ11mm	460HP	
	±5nm	0.94mm	0.04° +0.01°	6.07mm	0.41	Φ11mm		
	±5nm	1.2mm	0.03° +0.01°	7.77mm	0.51	Φ12mm		
	±5nm	2.3mm	0.02° +0.01°	10.77mm	0.26	Φ11mm		
	±5nm	2.30mm	0.01° +0.01°	14.86mm	0.17	Φ11mm		
	±5nm	2.77mm	0.01° +0.01°	17.88mm	0.16	Φ11mm		
	±5nm	3.60mm	0.01° +0.01°	23.24mm	0.17	Φ12mm		
520nm	±5nm	0.84mm	0.05°+0.01°	4.55mm	0.25	Φ11mm	460HP	
	±5nm	1.07mm	0.04°+0.01°	6.13mm	0.41	Φ11mm		
	±5nm	1.37mm	0.03°+0.01°	7.86mm	0.51	Φ12mm		
	±5nm	2.3mm	0.02° +0.01°	10.89mm	0.25	Φ11mm		
	±5nm	2.62mm	0.015° +0.01°	15.01mm	0.16	Φ11mm		
	±5nm	3.15mm	0.01° +0.01°	18.07mm	0.15	Φ11mm		
	±5nm	4.09mm	0.01° +0.01°	23.49mm	0.17	Φ12mm		
633nm	±5nm	0.86mm	0.05°+0.01°	4.59mm	0.24	Φ11mm	630HP	
	±5nm	1.25mm	0.04°+0.01°	6.19mm	0.4	Φ11mm		
	±5nm	1.60mm	0.03°+0.01°	7.94mm	0.5	Φ12mm		
	±5nm	2.3mm	0.02° +0.01°	10.99mm	0.25	Φ11mm		
	±5nm	3.06mm	0.015° +0.01°	15.17mm	0.16	Φ11mm		
	±5nm	3.68mm	0.01° +0.01°	18.26mm	0.15	Φ11mm		
	±5nm	4.78mm	0.01° +0.01°	23.74mm	0.16	Φ12mm		
780nm	±5nm	1.0mm	0.06°+0.01°	4.63mm	0.24	Φ11mm	780HP	
	±5nm	1.29mm	0.04°+0.01°	6.23mm	0.4	Φ11mm		
	±5nm	1.65mm	0.03°+0.01°	8.0mm	0.5	Φ12mm		
	±5nm	2.4mm	0.025° +0.01°	11.09mm	0.25	Φ11mm		
	±5nm	3.16mm	0.02° +0.01°	15.29mm	0.16	Φ11mm		
	±5nm	3.81mm	0.015° +0.01°	18.40mm	0.15	Φ11mm		
	±5nm	4.95mm	0.01° +0.01°	23.93mm	0.16	Φ12mm		

Wavelength	Bandwidth	Export beam Size	Divergence Angle	EFL	NA	Pakage Dia.	SM Fiber Type	Transmittance
850nm	±5nm	1.0mm	0.06°+0.01°	4.64mm	0.24	Φ11mm	780HP	>95%
	±5nm	1.35mm	0.05°+0.01°	6.25mm	0.4	Φ11mm		
	±5nm	1.74mm	0.04°+0.01°	8.02mm	0.5	Φ12mm		
	±5nm	2.4mm	0.03° +0.01°	11.12mm	0.25	Φ11mm		
	±5nm	3.32mm	0.02° +0.01°	15.33mm	0.16	Φ11mm		
	±5nm	3.99mm	0.015° +0.01°	18.45mm	0.15	Φ11mm		
	±5nm	5.19mm	0.01° +0.01°	24.00mm	0.16	Φ12mm		
980nm	±5nm	1.0mm	0.07°+0.01°	4.66mm	0.24	Φ11mm	HI1060	
	±5nm	1.45mm	0.05°+0.01°	6.27mm	0.4	Φ11mm		
	±5nm	1.86mm	0.04°+0.01°	8.05mm	0.5	Φ12mm		
	±5nm	2.3mm	0.03° +0.01°	11.16mm	0.25	Φ11mm		
	±5nm	3.56mm	0.02° +0.01°	15.39mm	0.16	Φ11mm		
	±5nm	4.28mm	0.02° +0.01°	18.53mm	0.15	Φ11mm		
	±5nm	5.57mm	0.01° +0.01°	24.10mm	0.16	Φ12mm		
1064nm	±5nm	1.0mm	0.08°+0.01°	4.67mm	0.24	Φ11mm	HI1060	
	±5nm	1.42mm	0.055°+0.01°	6.29mm	0.4	Φ11mm		
	±5nm	1.82mm	0.04°+0.01°	8.07mm	0.5	Φ12mm		
	±5nm	2.3mm	0.03° +0.01°	11.19mm	0.25	Φ11mm		
	±5nm	3.48mm	0.02° +0.01°	15.43mm	0.16	Φ11mm		
	±5nm	4.19mm	0.02° +0.01°	18.57mm	0.15	Φ11mm		
	±5nm	5.45mm	0.01° +0.01°	24.15mm	0.16	Φ12mm		
1310nm	±5nm	0.84mm	0.11°+0.01°	4.70mm	0.24	Φ11mm	Smf-28e	
	±5nm	1.10mm	0.09° +0.01°	6.32mm	0.4	Φ11mm		
	±5nm	1.41mm	0.07°+0.01°	8.12mm	0.49	Φ12mm		
	±5nm	2.1mm	0.05° +0.01°	11.26mm	0.25	Φ11mm		
	±5nm	2.70mm	0.035° +0.01°	15.52mm	0.16	Φ11mm		
	±5nm	3.25mm	0.03° +0.01°	18.68mm	0.15	Φ11mm		
	±5nm	4.22mm	0.02° +0.01°	24.29mm	0.16	Φ12mm		
1550nm	±5nm	0.87mm	0.11°+0.01°	4.74mm	0.24	Φ11mm	Smf-28e	
	±5nm	1.24mm	0.09°+0.01°	6.36mm	0.39	Φ11mm		
	±5nm	1.60mm	0.07°+0.01°	8.17mm	0.49	Φ12mm		
	±5nm	2.1mm	0.05° +0.01°	11.32mm	0.24	Φ11mm		
	±5nm	3.05mm	0.04° +0.01°	15.61mm	0.16	Φ11mm		
	±5nm	3.67mm	0.03° +0.01°	18.79mm	0.15	Φ11mm		
	±5nm	4.77mm	0.02° +0.01°	24.42mm	0.16	Φ12mm		

Wavelength	Bandwidth	Export beam Size	Divergence Angle	EFL	NA	Pakage Dia.	SM Fiber Type	Transmittance
1650nm	±5nm	0.90mm	0.11°+0.01°	4.74mm	0.24	Φ11mm	Smf-28e	>95%
	±5nm	1.26mm	0.10°+0.01°	6.37mm	0.39	Φ11mm		
	±5nm	1.62mm	0.07°+0.01°	8.19mm	0.49	Φ12mm		
	±5nm	2.15mm	0.05°+0.01°	11.35mm	0.24	Φ11mm		
	±5nm	3.10mm	0.04°+0.01°	15.65mm	0.16	Φ11mm		
	±5nm	3.73mm	0.03°+0.01°	18.84mm	0.15	Φ11mm		
	±5nm	4.85mm	0.025°+0.01°	24.47mm	0.16	Φ12mm		

* 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.
* 可定制应用于无磁、真空、高温环境的产品
Products suitable for non - magnetic , vacuum or high Temperature environments can be customized.



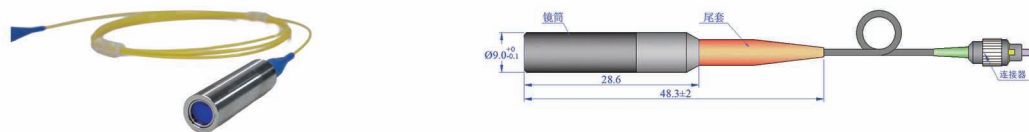
非球面带纤准直器

Aspheric Lenses Collimators with Fiber

采用紧凑结构设计，其中特定倾角的角尾纤和非球面透镜经过精密调节，从而保证出射光呈现出高质量的高斯光束形态，同时具备出众的准直特性。同时，在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，显著降低光学链路光噪声，使得光传输过程更加稳定。长焦型准直器采用弯折型外壳设计，可以有效修正倾因斜尾纤所导致的出光偏角，确保光束几乎无偏移准直出射；短焦型准直器，倾斜尾纤输出光引起的偏角极小，几乎可以忽略不计，所以采购外壳使用直通型的。在满足性能需求的同时，兼顾了结构的稳定性与可靠性。

It adopts a compact structural design. The pigtail fiber with an inclination angle and the aspherical lens are precisely adjusted, ensuring that the emitted light presents a high-quality Gaussian beam and has excellent collimation characteristics at the same time. Anti-reflection films are coated on both the surfaces of the lens and the optical fiber, which greatly reduces the reflected light at the light-emitting end face and significantly decreases the optical noise in the optical path, making the light transmission process more stable.

The long-focal-length collimator is designed with a bent-shaped housing, which can effectively correct the light-emitting deflection angle caused by the angled pigtail fiber, ensuring that the light beam is collimated and emitted with almost no deviation. For the short-focal-length collimator, the deflection angle caused by the light output of the angled pigtail fiber is extremely small and can be almost ignored. Therefore, a straight-through housing is used. In this way, while meeting the performance requirements, it also takes into account the structural stability and reliability.



特征 Features:

- 出光偏角、出光中心偏移量极小 The deflection angle of the emitted light and the deviation of the emitted light center are both minuscule.
- 多种光纤类型可选 Fiber Type Options:
405HP/460HP/630HP/780HP/Hi1060/G625D
- 多种连接器类型可选 Connector Options:
FC/PC、FC/APC、LC、SC、SMA905
- 多种护套类型可选 The Type of Cable Options:
PVC0.9mm/2.0mm/3mm, 3mm armored cable, 3mm Stainless steel, 0.9mmTeflon
- 封装材料304不锈钢，结构紧凑可靠The packaging material is 304 stainless steel, and the structure is compact and reliable.
- 可定制无磁、真空环境应用封装结构 It can be customized with a packaging structure for applications in a non-magnetic and vacuum environment.

参数表 Parameter

Wavelength	Bandwidth	Waist Beam Size	Divergence Angle	NA	EFL	Package Dia.	Fiber Type	Max. Power	Transmittance
405nm	±5nm	0.85mm	0.06°+0.01°	0.25	4.45mm	Φ9.0mm	405HP	1W	>90%
	±5nm	2.01mm	0.02° +0.01°	0.25	10.67mm	Φ9.0mm			
	±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		
	±5nm	2.0mm	0.02° +0.01°	0.24	10.77mm	Φ9.0mm			
	±5nm	3.0mm	0.015° +0.01°	0.15	17.88mm	Φ9.0mm			
520nm	±5nm	0.84mm	0.05°+0.01°	0.25	4.55mm	Φ9.0mm			
	±5nm	2.1mm	0.02° +0.01°	0.24	10.87mm	Φ9.0mm			
	±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		
	±5nm	2.06mm	0.02° +0.01°	0.24	10.96mm	Φ9.0mm			
	±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		
	±5nm	2.1mm	0.026° +0.01°	0.24	11.06mm	Φ9.0mm			
	±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			
	±5nm	2.41mm	0.03° +0.01°	0.24	11.10mm	Φ9.0mm			
	±5nm	3.8mm	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		
	±5nm	2.4mm	0.03° +0.01°	0.24	11.16mm	Φ9.0mm			
	±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			
	±5nm	2.4mm	0.032° +0.01°	0.24	11.18mm	Φ9.0mm			
	±5nm	3.8mm	0.02° +0.01°	0.15	18.58mm	Φ9.0mm			
1310nm	±5nm	0.84mm	0.11°+0.01°	0.24	4.70mm	Φ9.0mm	G652D G657A1 G657A2		
	±5nm	2.04mm	0.047° +0.01°	0.23	11.25mm	Φ9.0mm			
	±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			
	±5nm	2.10mm	0.053° +0.01°	0.23	11.31mm	Φ9.0mm			
	±5nm	3.4mm	0.032° +0.01°	0.15	18.75mm	Φ9.0mm			

Wavelength	Bandwidth	Waist Beam Size	Divergence Angle	NA	EFL	Pakage Dia.	Fiber Type	Max. Power	Transmittance
850nm	±5nm	1.0mm	0.06°+0.01°	0.24	4.64mm	Φ9.0mm	780HP	1W	>90%
850nm	±5nm	2.41mm	0.03° +0.01°	0.24	11.10mm	Φ9.0mm			
850nm	±5nm	3.8mm	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	3.8mm	0.02° +0.01°	0.15	18.58mm	Φ9.0mm			
1310nm	±5nm	0.84mm	0.11°+0.01°	0.24	4.70mm	Φ9.0mm	G652D G657A1 G657A2		
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			
1550nm	±5nm	2.10mm	0.053° +0.01°	0.23	11.31mm	Φ9.0mm			
1550nm	±5nm	3.4mm	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.

* 其它光斑或封装尺寸接收定制
Customization is accepted for other light beam sizes or packaging dimensions.

▶

非球面保偏光纤准直器

Aspheric Lenses Collimators with PM Fiber

采用紧凑精巧的结构设计，其中特定倾角的角尾纤和非球面透镜经过精密调节，从而保证出射光呈现出高质量的高斯光束形态，同时具备出众的准直特性。不仅如此，在内部光机精密结构上进行了深度优化，极大程度上降低了后端光纤活动时对出射光斑产生的不良影响，为精密测量或控制过程中信号的稳定传输提供了坚实可靠的保障。此外，凭借远讯精湛的精密光学调试技术以及完备的测试手段，能够将出射光光斑的中心偏移量以及出光偏角精准地控制在极小的范围之内，尽显产品在光学性能上的高精度与高可靠性。

It boasts a compact and ingeniously designed structure. The angled pigtail fiber with a inclination angle and the aspherical lens undergo meticulous and precise adjustments. This meticulous calibration ensures that the emitted light manifests as a high-quality Gaussian beam , and simultaneously endowing the collimator with exceptional collimation characteristics.

Furthermore, the internal precision opto-mechanical structure has undergone a thorough and in-depth optimization process. This optimization effectively minimizes the detrimental impact of the movement of the rear-end fiber on the emitted light spot, thereby providing a robust and dependable safeguard for the stable transmission of signals during intricate precision measurement or control operations.

Additionally, leveraging Ysenser's sophisticated precision optical debugging techniques and comprehensive testing methodologies, both the deviation of the center of the emitted beam and the light deflection angle can be accurately and precisely regulated within an extremely narrow margin. This exemplifies the product's remarkable high precision and reliability in optical performance, setting it apart in the field.



- 特征 Features:
- 出光偏角、出光中心偏移量极小 The deflection angle of the emitted light and the deviation of the emitted light center are both minuscule.
 - 多种光纤类型可选Fiber Type Options: PM460/PM630/PM780/PM980/PM1310/PM1550
 - 多种连接器类型可选 Connector Options: FC/PC、FC/APC、LC、SC、SMA905
 - 多种护套类型可选 The Type of Cable Options: PVC0.9mm/2.0mm/3mm, 3mm armored cable, 3mm Stainless steel, 0.9mmTeflon
 - 封装材料304不锈钢，结构紧凑可靠The packaging material is 304 stainless steel, and the structure is compact and reliable.
 - 可定制无磁、真空环境应用封装结构 It can be customized with a packaging structure for applications in a non-magnetic and vacuum environment.

参数表 Parameter

Wavelength	Bandwidth	Waist Beam Size	Divergence Angle	NA	EFL	Package Dia.	Fiber Type	Max. Power	Transmittance
532nm	±5nm	0.86mm	0.05°+0.01°	0.24	4.59mm	Φ9.0mm	PM460	1W	>90%
532nm	±5nm	2.06mm	0.02° +0.01°	0.24	10.96mm	Φ9.0mm			
532nm	±5nm	3.3mm	0.015° +0.01°	0.15	18.14mm	Φ9.0mm			
633nm	±5nm	0.86mm	0.05°+0.01°	0.24	4.59mm	Φ9.0mm	PM630		
633nm	±5nm	2.06mm	0.02° +0.01°	0.24	10.96mm	Φ9.0mm			
633nm	±5nm	3.3mm	0.015° +0.01°	0.15	18.14mm	Φ9.0mm			
780nm	±5nm	1.0mm	0.06°+0.01°	0.24	4.63mm	Φ9.0mm	PM780		
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			
980nm	±5nm	1.0mm	0.07°+0.01°	0.24	4.66mm	Φ9.0mm	PM980		
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			
1310nm	±5nm	0.84mm	0.11°+0.01°	0.24	4.70mm	Φ9.0mm	PM1310		
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	PM1550		
1550nm	±5nm	2.10mm	0.053° +0.01°	0.23	11.31mm	Φ9.0mm			
1550nm	±5nm	3.4mm	0.032° +0.01°	0.15	18.75mm	Φ9.0mm			

* 束腰光斑直径：取高斯光束 $1/e^2$ 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 $1/e^2$ intensity point of the Gaussian beam.

* 光束远场发散角：按高斯光束 $1/e^2$ 理论计算值。

Far-field divergence angle of the beam: calculated according to the Gaussian beam $1/e^2$ theory.

* 其它光斑或封装尺寸接收定制

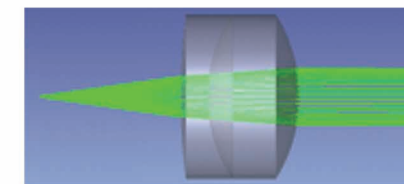
Customization is accepted for other light beam sizes or packaging dimensions.



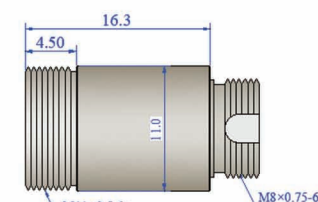
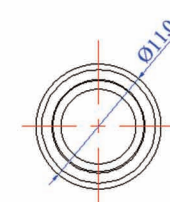
消色差准直器

Achromatic Lenses Collimators

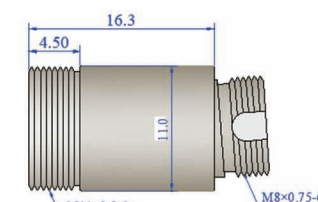
由一组长焦准直光学系统构成，有消色差、消像差设计，故准直器焦距对波长带宽不敏感。它将光纤出射的发散光束进行整形处理，使光束在一定距离范围内具备良好的准直效果和光斑形状。透镜组各光学表面镀制增透膜，最大限度减少表面反射。透镜和光纤的相对位置经过精密调试，确保出光偏角在 0.3° 范围以内，同时标准化的制作工艺，确保产品稳定的一致性。



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.



A型



B型

特征 Features:

- 接头类型可选Three Connector Options: FC/PC、FC/APC、SMA905
- 兼容宽键和窄键的接头 Compatible with Narrow and Wide Key Connectors
- 结构紧凑，便于安装 Compact structure, Convenient for installation
- 波长对于焦距不敏感，可兼顾相邻波长

The focal length has little influence on the wavelength, thus facilitating the handling of adjacent wavelengths.

- 建议配合远讯的标准跳线使用，获得更好的互换性和重复性

It is recommended to use it together with Ysenser's standard patch cords to achieve better interchangeability and repeatability.

参数表 Parameter

Wavelength	Bandwidth	Waist Beam	Divergence Angle	EFL	NA	Package Dia.	Fiber Type	Max.Power	Transmittance
405nm	±30nm	0.97mm	0.062+0.01°	4.06mm	0.61	Φ11mm	405HP	2W/mm ² @ Beam Size	>95%
	±30nm	2.0mm	0.03+0.01°	10.05mm	0.37	Φ11mm			
	±30nm	3.7mm	0.021+0.01°	15.96mm	0.25	Φ11mm			
	±30nm	3.95mm	0.015+0.01°	19.95mm	0.2	Φ11mm			
450nm	±30nm	0.96mm	0.06+0.01°	4.10mm	0.6	Φ11mm	460HP		
	±30nm	2.0mm	0.028+0.01°	10.07mm	0.37	Φ11mm			
	±30nm	3.6mm	0.020+0.01°	15.98mm	0.25	Φ11mm			
	±30nm	3.95mm	0.014+0.01°	19.96mm	0.2	Φ11mm			
520nm	±30nm	0.92mm	0.059+0.01°	4.15mm	0.6	Φ11mm	460HP		
	±30nm	2.0mm	0.025+0.01°	10.09mm	0.37	Φ11mm			
	±30nm	3.2mm	0.019+0.01°	15.98mm	0.25	Φ11mm			
	±30nm	3.95mm	0.014+0.01°	19.97mm	0.2	Φ11mm			
635nm	±30nm	0.87mm	0.056+0.01°	4.20mm	0.58	Φ11mm	630HP		
	±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	780HP		
	±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	3.95mm	0.016+0.01°	20.03mm	0.2	Φ11mm			

Wavelength	Bandwidth	Waist Beam	Divergence Angle	EFL	NA	Package Dia.	Fiber Type	Max.Power	Transmittance
980nm	600~1050nm	2.0mm	0.035+0.01 °	10.07mm	0.37	Φ11mm	980HP	2W/mm2@ Beam Size	>95%
	600~1050nm	3.39mm	0.024+0.01 °	16.03mm	0.24	Φ11mm			
	600~1050nm	4.23mm	0.018+0.01 °	20.05mm	0.2	Φ11mm			
1064nm	1050~1700nm	2.0mm	0.038+0.01 °	10.03mm	0.37	Φ11mm	HI1060		
	1050~1700nm	3.51mm	0.032+0.01 °	15.97mm	0.24	Φ11mm			
	1050~1700nm	3.9mm	0.026+0.01 °	19.97mm	0.2	Φ11mm			
1310nm	1050~1700nm	2.0mm	0.053+0.01°	10.07mm	0.37	Φ11mm	Smf-28e		
	1050~1700nm	2.91mm	0.036+0.01 °	16.01mm	0.24	Φ11mm			
	1050~1700nm	3.62mm	0.028+0.01 °	20.0mm	0.2	Φ11mm			
1550nm	1050~1700nm	2.0mm	0.06+0.01 °	10.11mm	0.37	Φ11mm			
	1050~1700nm	3.14mm	0.039+0.01 °	16.08mm	0.24	Φ11mm			
	1050~1700nm	3.55mm	0.031+0.01 °	20.07mm	0.2	Φ11mm			
1654nm	1050~1700nm	2.0mm	0.06+0.01 °	10.14mm	0.37	Φ11mm			
	1050~1700nm	3.2mm	0.036+0.01 °	16.15mm	0.24	Φ11mm			
	1050~1700nm	3.65mm	0.029+0.01 °	20.12mm	0.2	Φ11mm			

* 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.

* 可定制应用于无磁或真空环境的产品
Products suitable for non - magnetic or vacuum environments can be customized.

消色差准直器（应用于多模光纤）
Achromatic collimators (for multimode fibers)

多模光纤因数值孔径偏大，使边缘的光束经过镜头更容易产生杂光与像差等问题。因此多模光纤输出激光后需要接入的匹配型大数值孔径的镜头显得尤为必要。远讯自主研发的数值孔径0.5以上的镜头，专为多模光纤应用量身打造。这款准直器能够出色地对NA为0.5的光纤输出光进行准直处理，得益于透镜的消色差设计，它可以将波长在±20nm范围内的激光实现良好的进行准直输出，有效保证了激光输出的质量合稳定性。此外，该镜头较大的数值孔径使其具备显著优势，能够高效地将空间光耦合进数值孔径为 0.5 的光纤内，极大地提升了光信号的传输效率和质量，为多模光纤的应用提供了更为可靠和高效的解决方案。



Due to the relatively large numerical aperture (NA) of multimode fibers, the marginal light beams are more likely to generate problems such as stray light and aberrations when passing through the lens. Therefore, it is particularly necessary to connect a matching lens with a large NA after the multimode fiber outputs the laser.

Ysenser's self-developed lens, boasting a NA exceeding 0.5, is meticulously engineered for applications involving multimode fibers. This achromatic collimator demonstrates remarkable proficiency in collimating the output light from fibers with an NA of 0.5. Leveraging the sophisticated achromatic design of the lens, it is capable of delivering excellent collimation output for lasers within a wavelength range of ±20 nm. By virtue of this, it effectively guarantees the high quality and stability of the laser output, setting a new standard for performance in this domain.

In addition, the large NA of this lens gives it significant advantages. It can efficiently couple space light into a fiber with a NA of 0.5, greatly improving the transmission efficiency and quality of optical signals and providing a more reliable and efficient solution for multimode fiber applications.

特征 Features:

- 设计波长范围Designed Wavelength Range: 400nm~1700 nm
- 数值孔径大，用于多模光纤With a large numerical aperture, it is applied to multimode fibers.
- 有效焦距Effective Focal Length: 10mm
- 有效通光孔径Effective Aperture for Light Transmission: Ø11.0 mm
- 两款接头类型可选 Two Connector Options: FC/PC 2.2mm wide key connector,SMA905
- 可以用作耦合器或准直器:It can be used as a coupler or a collimator.
- 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

参数表 Parameter

Wavelength	Bandwidth	AR Coating	Exit Beam Diameter		EFL	Fiber Type	Pakage Dia.	NA
			Laser (光纤NA 0.22)	LED (光纤NA 0.5)				
405nm	±10nm	400-700 nm	4.5mm	10 mm	9.61 mm	50um 105um 200um 400um 600um	Φ15mm	0.54
450nm	±10nm	400-700 nm	4.5mm	10 mm	9.76 mm			
520nm	±10nm	400-700 nm	4.5mm	10 mm	9.91 mm			
633nm	±10nm	400-700 nm	4.5mm	10 mm	10.05 mm			
780nm	±10nm	600-1050 nm	4.5mm	10.5mm	10.22 mm			
850nm	±10nm	600-1050 nm	4.5mm	10.5mm	10.25 mm			
980nm	±10nm	600-1050 nm	4.5mm	10.5mm	10.30 mm			
1064nm	±10nm	1050-1700 nm	4.5mm	10.5mm	10.32 mm			
1310nm	±10nm	1050-1700 nm	4.5mm	10.5 mm	10.38 mm			
1550nm	±10nm	1050-1700 nm	4.5mm	10.5 mm	10.43 mm			
1650nm	±10nm	1050-1700 nm	4.5mm	10.5 mm	10.45 mm			

* 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.

* 可定制应用于无磁或真空环境的产品
Products suitable for non - magnetic or vacuum environments can be customized.

▶ RGB消色差准直器

PM Fiber Optic Collimator for Variable Working Distance Range

针对红绿蓝三色激光器的应用需求，设计并开发了一款高性能的消色差准直镜。该镜头专门用于处理从单根光纤出射的波长分别为450nm、488nm、520nm、635nm和670nm激光束。鉴于光纤出射光具有天然的发散特性，远讯镜头系统通过精密的透镜组结构设计，在450nm至670nm的宽光谱范围内实现了极为出色的消色差效果，有效保障了光束的高质量输出。



In strict accordance with the application requirements of red, green, and blue tricolor lasers, Ysenser has meticulously designed and successfully developed a high-performance achromatic collimating lens. This lens is exclusively engineered to manage the laser beams with wavelengths of 450nm, 488nm, 520nm, 635nm, and 670nm, which emanate from a single optical fiber. Considering the innate divergent properties of the light emitted from the optical fiber, the lens system of Ysenser, through the exquisitely precise structural design of its lens group, has accomplished remarkable achromatic performance within the extensive spectral range spanning from 450nm to 670nm. As a result, it effectively guarantees the high-quality output of the light beams, demonstrating outstanding technical superiority.

- 特征 Features:
- 宽波段消色差能力，将波长带宽范围在焦点位置的差异控制在±2微米以内，显著提升了多波长激光的共焦性能。
- It effectively restricts the discrepancy in focal positions within the wavelength bandwidth range to within ±2 micrometers. This outstanding performance significantly enhances the confocal properties of multi-wavelength lasers.
- 卓越的准直效果：经过准直后的激光束，在出口处的光束直径差异小于±2.5%，发散角差异控制在±3%以内，确保了三色激光的空间一致性。

Excellent collimation effect: After collimation, the difference in the beam diameter of the laser beam at the exit is less than ±2.5%, and the difference in the divergence angle is controlled within ±3%, ensuring the spatial consistency of the three-color laser.

- 卓越的光学性能：单波长波前误差： $< \lambda / 8 @ 632.8\text{nm}$ ，光束质量因子 M^2 ： < 1.2
- Excellent optical performance: Wavefront error for a single wavelength: $< \lambda / 8 @ 632.8\text{nm}$, Beam quality factor M^2 : < 1.2
- 温度稳定性：在10-35℃工作温度范围内，焦点漂移小于2 μm，适用于各种实验室和工业环境
- Temperature stability: Within the operating temperature range of 10-35℃, the focal point drift is less than 2μm, making it suitable for various laboratory and industrial environments.

应用 Application:
激光显示、光谱分析、生物医学成像
Laser display, spectral analysis, biomedical imaging

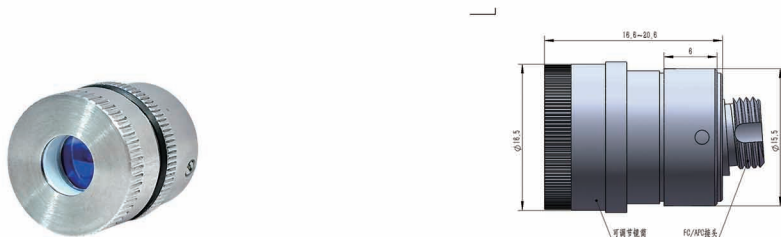
参数表 Parameter

Wavelength	EFL	Waist Diameter	Divergence Angle	AR Coating	NA	Pakage Dia.	Fiber Type	Connector
450nm	5.835mm	1.15 mm	0.50 m rad	400-700 nm	0.25	Φ9mm	460HP (芯径 3.0um)	FC/PC FC/APC Sma905
488nm	5.834mm	1.20mm	0.50 m rad					
520nm	5.834 mm	1.20mm	0.55 mrad					
633nm	5.836mm	1.25mm	0.60 mrad					
650nm	5.836mm	1.25mm	0.65 mrad					
670nm	5.837mm	1.25mm	0.65 mrad					
450nm	11.661mm	2.15mm	0.26 mrad					
488nm	11.661mm	2.25mm	0.27 mrad					
520nm	11.661mm	2.30mm	0.28 mrad					
633nm	11.665mm	2.40mm	0.30 mrad					
650nm	11.665mm	2.45mm	0.30 mrad	400-700 nm	0.25	Φ9mm	Smf-28e (芯径 9.0um)	FC/PC FC/APC Sma905
670nm	11.667mm	2.50mm	0.32 mrad					
450nm	5.835mm	1.25 mm	1.1 m rad					
488nm	5.834mm	1.25mm	1.1 m rad					
520nm	5.834 mm	1.25mm	1.1 mrad					
633nm	5.836mm	1.30mm	1.1 mrad					
650nm	5.836mm	1.30mm	1.2 mrad					
670nm	5.837mm	1.30mm	1.2 mrad					
450nm	11.661mm	4.8 mm	12 m rad	400-700 nm	0.25	Φ9mm	多模光纤 (芯径 105um)	FC/PC Sma905
488nm	11.661mm	4.8 mm	12 m rad					
520nm	11.661mm	4.8 mm	12 m rad					
633nm	11.665mm	4.8 mm	12 m rad					
650nm	11.665mm	4.8 mm	12 m rad					
670nm	11.666mm	4.8 mm	12 m rad					

可调焦非球面光纤准直器 Adjustable Aspheric Collimators

该设计在机械件内部用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。

is engineered with a spring - fitted optical lens housed within its mechanical structure. It serves to collimate the fiber - emitted light beam and can also be utilized for coupling spatial light into the fiber. By rotating the outer sleeve of the collimator, the internal optical lens can be precisely translated along the vertical axis direction. This translation enables the adjustment of the distance between the lens and the fiber endface, thereby achieving different light spot sizes. Once the optimal position is attained, the housing knurled locking ring can be employed to fix the regulator firmly.



特征 Features:

- 接入光纤准直出射或将自由空间准直光耦合进光纤

Connecting fiber collimated output or coupling free space collimated light into fiber

- 三款焦距可选Three Focal Length Options、4.5 mm、7.5 mm、11mm
- 调节时对准误差adjustment alignment error < 15 mrad
- 接头类型可选Three Connector Options：FC/PC、FC/APC、SMA905
- 非球面透镜镀三种增透膜可选 Threee AR-Coated Aspheric Lens Options、400-700nm、650-1050nm、1050-1650nm
- 与远讯的标准跳线配合使用可提高耦合效率和良好的重复性

When used in combination with Ysenser's standard jumpers, it can improve coupling efficiency and ensure good repeatability.v

参数表 Parameter

EFL	NA (Lens)	Waist Beam	AR Coating	Far-field divergence angle	Input Fiber MFD	Length Between Fiber and Lens	Transmittance
4.5mm	0.54	0.86mm	400~700nm R<0.5%	0.05°+0.01°	3.5um	2.4 - 4.9 mm	>90%
	0.54	0.98mm	600~1050nm R<0.5%	0.06°+0.01°	5um	2.4 - 4.9 mm	
	0.54	0.87mm	1050~1700nm R<0.5%	0.13°+0.01°	10.4um	2.4 - 4.9 mm	
7.5mm	0.3	1.35mm	400~700nm R<0.5%	0.03°+0.01°	3.5um	4.2- 6.8 mm	>90%
	0.3	1.6mm	600~1050nm R<0.5%	0.04°+0.01°	5um	4.2- 6.8 mm	
	0.3	1.44mm	1050~1700nm R<0.5%	0.08°+0.01°	10.4um	4.2- 6.8 mm	
11 mm	0.3	1.96mm	400~700nm R<0.5%	0.02°+0.01°	3.5um	8.6 - 10.9 mm	>90%
	0.3	2.35mm	600~1050nm R<0.5%	0.03°+0.01°	5um	8.6 - 10.9 mm	
	0.3	2.1mm	1050~1700nm R<0.5%	0.06°+0.01°	10.4um	8.6 - 10.9 mm	

*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/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°.

*理论计算匹配的波长和光纤

Theoretical Calculation of Wavelength - Fiber Matching、450 nm-460HP、850 nm-780HP、1550 -SMF-28e.

▶ 三合透镜光纤准直器

Triplet Fiber Optic Collimators

采用三片透镜结构，各透镜之间以精确设定的空气间隙间隔装配，能提供比非球面透镜准直器更优异的光束质量。其低像差三合透镜设计具备诸多优势，例如更接近于1的M2因子(高斯光束)、这表明光束质量更接近理想的高斯分布；同时还拥有更小的发散角和更小的波前误差。每片透镜双面都镀制增透膜，最大限度减少表面引起的反射损耗。为了充分发挥光束质量的优势，我们建议选用远讯的标准单模跳线和保偏跳线接入。



Is use a three-lens structure. The precisely air-spaced triplet lenses can provide better beam quality than aspherical lens collimators. Its low-aberration three-lens design has numerous advantages. For instance, the M2 factor (in the context of a Gaussian beam) is closer to 1, which indicates that the beam quality approaches the ideal Gaussian distribution more closely. Meanwhile, it also exhibits a smaller divergence angle and a smaller wavefront error. Each lens has both of its surfaces coated with antireflection films to minimize the reflection loss caused by the surfaces. To fully capitalize on the advantages of the beam quality, we recommend using Ysenser's standard single-mode patch cords and polarization-maintaining patch cords for the connection.

特征 Features:

- 两款焦距可选
- Three Focal Length Options
- 接头2.2mm宽键，类型可选
- Two Connector Options: FC/PC、FC/APC 2.2mm wide key connector
- 封装材料304不锈钢，结构紧凑可靠

The packaging material is 304 stainless steel, and the structure is compact and reliable.

参数表 Parameter

Wavelength	Bandwidth	AR Coating	Waist Diameter	Divergence Angle	EFL	NA	Pakage Dia.	Fiber Type
405nm	±5nm	400-700 nm	3.37 mm	0.009°	17.72mm	0.29	Φ14.9mm	405HP
450nm	±5nm	400-700 nm	3.36 mm	0.010°	17.80mm	0.29		405HP
520nm	±10nm	400-700 nm	3.34 mm	0.012°	17.89 mm	0.28		460HP
633nm	±15nm	400-700 nm	3.37 mm	0.014°	17.99 mm	0.28		630HP
780nm	±20nm	600-1050 nm	3.90 mm	0.015°	18.09 mm	0.28		780HP
850nm	±30nm	600-1050 nm	3.91 mm	0.016°	18.12 mm	0.28		780HP
980nm	±30nm	600-1050 nm	3.91 mm	0.019°	18.17 mm	0.28		980HP
1064nm	±30nm	1050-1700 nm	3.98 mm	0.020°	18.20 mm	0.28		HI1060
1310nm	±50nm	1050-1700 nm	3.31 mm	0.029°	18.28 mm	0.27		Smf-28e
1550nm	±50nm	1050-1700 nm	3.33 mm	0.034°	18.36 mm	0.27		Smf-28e
1650nm	±50nm	1050-1700 nm	3.38 mm	0.036°	18.40 mm	0.27		Smf-28e
405nm	±5nm	400-700 nm	4.70 mm	0.006°	24.77 mm	0.25	Φ16mm	405HP
450nm	±5nm	400-700 nm	4.66 mm	0.007°	24.81 mm	0.25		405HP
520nm	±10nm	400-700 nm	4.65 mm	0.008°	24.88 mm	0.25		460HP
633nm	±15nm	400-700 nm	4.67 mm	0.010°	24.98 mm	0.25		630HP
780nm	±20nm	600-1050 nm	5.42 mm	0.010°	25.08 mm	0.25		780HP
850nm	±30nm	600-1050 nm	5.44 mm	0.011°	25.12 mm	0.25		780HP
980nm	±30nm	600-1050 nm	5.40 mm	0.013°	25.19 mm	0.25		980HP
1064nm	±30nm	1050-1700 nm	5.49 mm	0.014°	25.23 mm	0.25		HI1060
1310nm	±50nm	1050-1700 nm	4.58 mm	0.021°	2.535 mm	0.25		Smf-28e
1550nm	±50nm	1050-1700 nm	4.65 mm	0.024°	25.49 mm	0.25		Smf-28e
1650nm	±50nm	1050-1700 nm	4.69 mm	0.026°	25.55 mm	0.25		Smf-28e

* 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.

* 钛合金（无磁）材料外壳或真空条件下使用的产品可定制
Titanium alloy (non-magnetic) material shell or products used in vacuum conditions can be customized

五维光纤准直/耦合镜
FiberPort Coupler/Collimators

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±0.7mm，Z方向行程范围为>2mm，俯仰偏摆调节范围±4°。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。

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 ±0.7 mm, the travel range in the Z direction is greater than 2 mm, and the pitch and yaw adjustment range is ±4°. 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.



特征 Features:

- 接入光纤准直出射或将自由空间准直光耦合进光纤

Connecting fiber collimated output or coupling free space collimated light into fiber.

- 五个自由度加旋转调节

Five Degrees of Freedom Plus Rotational Adjustment

- 可选择装配非球面透镜和消色差透镜

Optional combination of an aspherical lens and an achromatic lens

- 接头类型可选Three Connector Options: FC/PC、FC/APC、SMA905

- 透镜镀三种增透膜可选 Three AR-Coated Lens Options、

400-700nm、650-1050nm、1050-1650nm

- 与远讯的标准跳线配合使用可提高耦合效率和良好的重复性

When used in combination with Ysenser's standard jumpers, it can improve coupling efficiency and ensure good repeatability.

参数表 Parameter

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<0.5%@350 - 700 nm	>95%
600 - 1050 nm	7.50 mm	5.0um	1.62 mm	0.67mrad	0.3	R<0.5%@600 - 1050 nm	
1050 - 1650 nm	7.50 mm	10.4um	1.42 mm	1.39mrad	0.3	R<0.5%@1050 - 1650 nm	
350 - 700 nm	10.0 mm	3.5um	1.64 mm	0.35mrad	0.23	R<0.5%@350 - 700 nm	
600 - 1050 nm	10.0 mm	5.0um	2.16 mm	0.50mrad	0.23	R<0.5%@600 - 1050 nm	
1050 - 1650 nm	10.0 mm	10.4um	1.99 mm	0.99mrad	0.23	R<0.5%@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	4.60 mm	3.5um	0.75mm	0.77 mrad	0.5	R<0.5%@350 - 700 nm	>95%
600 - 1050 nm	4.60 mm	5.0um	1.00 mm	1.09 mrad	0.5	R<0.5%@600 - 1050 nm	
1050 - 1650 nm	4.60 mm	10.4um	0.87 mm	2.27 mrad	0.5	R<0.5%@1050 - 1650 nm	
350 - 700 nm	7.50 mm	3.5um	1.23 mm	0.47 mrad	0.3	R<0.5%@350 - 700 nm	
600 - 1050 nm	7.50 mm	5.0um	1.62 mm	0.67 mrad	0.3	R<0.5%@600 - 1050 nm	
1050 - 1650 nm	7.50 mm	10.4um	1.42 mm	1.39 mrad	0.3	R<0.5%@1050 - 1650 nm	
350 - 700 nm	11.0 mm	3.5um	1.80 mm	0.32 mrad	0.2	R<0.5%@350 - 700 nm	
600 - 1050 nm	11.0 mm	5.0um	2.38 mm	0.46 mrad	0.2	R<0.5%@600 - 1050 nm	
1050 - 1650 nm	11.0 mm	10.4um	2.09 mm	0.95 mrad	0.2	R<0.5%@1050 - 1650 nm	
350 - 700 nm	4.60 mm	3.5um	0.75mm	0.77 mrad	0.5	R<0.5%@350 - 700 nm	
600 - 1050 nm	4.60 mm	5.0um	1.00 mm	1.09 mrad	0.5	R<0.5%@600 - 1050 nm	
1050 - 1650 nm	4.60 mm	10.4um	0.87 mm	2.27 mrad	0.5	R<0.5%@1050 - 1650 nm	

*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。

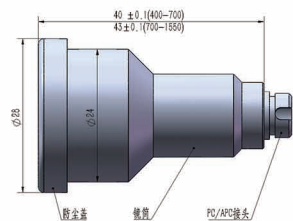
Waist beam diameter: Take the Gaussian beam at 1/e² and use the theoretical calculated values for each wavelength using single-mode fibers.

*理论计算匹配的波长和光纤Theoretical Calculation of Wavelength - Fiber Matching、450 nm-460HP、850 nm-780HP、1550 -SMF-28e.

定焦大光束准直器 Large Beam Collimators

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。

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.



特征 Features:

- 接头类型可选Three Connector Options: FC/PC、FC/APC、SMA905
- 兼容宽键和窄键的接头 Compatible with Narrow and Wide Key Connectors
- 结构紧凑，便于安装 Compact structure, Convenient for installation
- 接受定制波长 Custom Options including wavelengths
- 建议选配远讯的标准跳线，提高参数的重复性和一致性

It is recommended to select Ysenser's standard patch cords to improve the repeatability and consistency of the parameters.

参数表 Parameter

输入单模光纤 Put In SM Fiber

Wavelength	Bandwidth	Waist Beam	Divergence Angle	EFL	NA (Lens)	Package Dia.	Fiber Type	Connector	Transmittance
405nm	±30nm	5.0 mm	0.16mrad	33.2 mm	0.27	Φ24mm	405HP	FC/PC FC/APC Sma905	>92%
450nm	±30nm	5.4mm	0.12mrad	33.5 mm	0.26	Φ24mm	460HP		
520nm	±30nm	6.1mm	0.10mrad	34.3 mm	0.26	Φ24mm			
635nm	±30nm	6.7 mm	0.12mrad	35.3 mm	0.25	Φ24mm	630HP		
780nm	±30nm	7.4 mm	0.14mrad	36.0 mm	0.25	Φ24mm	780HP		
850nm	±30nm	7.8 mm	0.14mrad	36.2 mm	0.25	Φ24mm			
905nm	±30nm	7.5mm	0.15mrad	36.3mm	0.25	Φ24mm			
980nm	±30nm	8.6mm	0.16mrad	36.4 mm	0.25	Φ24mm	Hi1060		
1064nm	±30nm	7.8mm	0.17mrad	36.6 mm	0.25	Φ24mm			
1310nm	±30nm	6.6 mm	0.24mrad	36.7 mm	0.24	Φ24mm	Smf-28e		
1550nm	±30nm	6.9 mm	0.28mrad	37.1 mm	0.24	Φ24mm			
1654nm	±10nm	7.0 mm	0.30mrad	37.2mm	0.24	Φ24mm			

输入多模光纤 Put In MM Fiber

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		
488nm	±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		
520nm	±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		

Wavelength	Bandwidth	Waist Beam	Divergence Angle	EFL	NA (Lens)	Package Dia.	Fiber Type	connector	Transmittance
635nm	±30nm	18.8mm	2.8mrad	35.3 mm	0.26	Φ24mm	62.5/125	FC/PC Sma905	>92%
	±30nm	15.2mm	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		
780nm	±30nm	19.0mm	2.7mrad	36.0 mm	0.26	Φ24mm	62.5/125		
	±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°.

▶ 远距离准直器100M

Long Distance CollimatorFor100

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。设计时进行消像差处理，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。

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.

- 特征 Features:
- 接头类型可选Three Connector Options：FC/PC、FC/APC、SMA905
 - 在200M范围内保持良好的准直特性 Maintain good collimation characteristics within a range of 200 meters.
 - 结构紧凑，便于安装 Compact structure, Convenient for installation
 - 接受定制波长 Custom Options including wavelengths
 - 建议选配远讯的标准跳线，提高参数的重复性和一致性

It is recommended to select Ysenser's standard patch cords to improve the repeatability and consistency of the parameters.

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-28e		
1550nm	±30nm	14.2mm	0.14mrad	75.6mm	0.17			
1650nm	±30nm	14.5mm	0.14mrad	76.0mm	0.17			

▶ 远距离准直器300M

Long Distance CollimatorFor300m

针对长达300米距离的激光准直或耦合应用场景，我们特别将准直镜头的焦距精心设计为约150毫米。这一设计能够对从光纤出射的激光进行更为有效的准直整形，生成更大光斑的高质量激光束。

该准直镜头采用多片空气间隔透镜的先进设计架构，不仅能够输出极高的光束质量（光束质量因子M²接近1），还能实现极小的波前误差。这使其尤其适用于远距离激光传输以及脉冲型激光出射的应用。在有效工作距离范围内，它能够确保激光束保持极佳的准直效果，同时，其输出的光束能量分布近似高斯分布，光斑清晰锐利，无明显衍射现象，极大地提升了激光的传输性能和应用效果。在实际使用中，这款准直镜头具备高度的适配性，可与单模光纤、多模光纤以及大芯径光纤完美兼容，广泛应用于激光空间通信、激光雷达探测、激光遥测监控等前沿领域，为各类高精度激光应用提供可靠的技术支持。

For laser collimation or coupling at up to 300 meters, we've carefully designed the collimating lens with a focal length of around 150 mm. This effectively collimates and shapes the fiber-emitted laser beam, yielding a high-quality beam with a larger beam.The lens uses an advanced multi-air-spaced lens design. It outputs a beam of extremely high quality (M² approaching 1) with minimal wavefront error, making it perfect for long-distance laser transmission and pulsed laser emission. Within the effective range, it ensures excellent collimation, with an approximately Gaussian energy distribution, a clear and sharp spot, and no obvious diffraction, thus enhancing laser performance.



特征 Features:

适合光纤到自有空间的准直或耦合Suitable for the collimation or coupling from optical fiber to free space

- 在300M范围内保持良好的准直特性 Maintain good collimation characteristics within a range of 300 meters.
- 可耦合的最大输入光纤NA为0.24 The maximum input fiber numerical aperture (NA) that can be coupled is 0.24.

- 透镜镀三种增透膜可选 Threee AR-Coated Aspheric Lens Options: 400-700nm、650-1050nm、1050-1650nm
- 衍射极限波前误差Diffraction-limited wavefront error、 $\lambda/8$ @633 nm
- 建议选配远讯的标准跳线，提高参数的重复性和一致性

It is recommended to select Ysenser's standard patch cords to improve the repeatability and consistency of the parameters.

Wavelength	Bandwidth	Waist Beam	Divergence Angle	EFL	NA (Lens)	Package Dia.	Fiber Type	Connector	Transmittance
405nm	±30nm	23.36mm	0.057+0.03 mrad	136.0 mm	0.18	Φ58mm	405HP	FC/PC FC/APC	>92%
450nm	±30nm	22.89mm	0.048+0.03 mrad	139.9 mm	0.17	Φ58mm	460HP		
520nm	±30nm	27.2mm	0.045+0.03 mrad	143.8 mm	0.17	Φ58mm			
635nm	±30nm	29.8mm	0.043+0.03 mrad	147.5 mm	0.17	Φ58mm	630HP		
780nm	±30nm	29.79mm	0.045+0.03 mrad	150 .0mm	0.16	Φ58mm	780HP		
850nm	±30nm	32.62mm	0.046+0.03 mrad	150.8 mm	0.16	Φ58mm			
905nm	±30nm	34.8mm	0.048+0.03 mrad	151.2 mm	0.16	Φ58mm			
980nm	±30nm	31.56mm	0.049+0.03 mrad	151.8 mm	0.16	Φ58mm	Hi1060		
1064nm	±30nm	34.38mm	0.050+0.03 mrad	152.3 mm	0.16	Φ58mm			
1310nm	±30nm	27.8mm	0.065+0.03 mrad	153.3 mm	0.16	Φ58mm	Smf-28e		
1550nm	±30nm	29.2mm	0.072+0.03 mrad	154.0 mm	0.16	Φ58mm			
1654nm	±10nm	30.02mm	0.075+0.03 mrad	154.2mm	0.16	Φ58mm			

▶ 超远距离准直镜头

Ultra-Long-Range Collimator

针对超远距离应用的设计，其准直距离可突破1000米，确保激光束在超远距离的传输过程中依旧维持高度的准直状态，最大程度地降低能量发散现象，有效保障能量的高度集中，进而显著提升激光的传输效率与定位精度。产品设计焦距超过300毫米，这一参数使得它能够出色地实现空间激光的聚焦功能。通过精准聚焦，能够促使更多的激光能量高效耦合进入光纤内部，完美契合远距离漫反射测试等应用场景的严苛需求。产品配备 100 毫米的大口径设计，能够允许更多的激光能量顺利通过，大幅提高了系统的光通量。在增强激光功率与强度的同时，大口径设计还有助于优化光束的成像质量，有效降低波像差，为系统的整体性能提升提供了坚实保障。



Designed for ultra-long-distance applications, this collimator boasts an impressive collimation distance surpassing 1000 meters. It ensures the laser beam maintains high collimation throughout extended transmission, minimizing energy divergence and concentrating energy effectively. This significantly boosts laser transmission efficiency and positioning precision.

With a focal length exceeding 300 mm, the collimator excels at focusing spatial lasers. Its precise focusing mechanism enables efficient coupling of more laser energy into optical fibers, perfectly suiting demanding scenarios like long-distance diffuse reflection testing.

Featuring a 100-mm large aperture, the collimator facilitates smooth passage of increased laser energy, substantially enhancing the system's luminous flux. Besides augmenting laser power and intensity, the large aperture optimizes beam imaging quality and reduces wave aberration, providing robust support for overall system performance enhancement.

应用 Application:

- 远距离激光通信，减少信号衰减和干扰，实现高速、大容量的数据传输

Long-distance laser communication reduces signal attenuation and interference, enabling high-speed and large-capacity data transmission.

- 激光测绘，用于地形测绘、建筑测量等，利用激光的高准直性和精确测距能力，获取高精度的三维地形数据和建筑物信息

In laser surveying and mapping for terrain and architecture, lasers' high collimation and precise ranging yield high-precision 3D terrain and building data.

- 配合高能激光作为发射镜头或测距镜头

It can be paired with high-energy lasers, functioning as a transmitting or ranging lens

参数表 Parameter

Wavelength	Bandwidth	Waist Beam	Divergence Angle	EFL	NA (Lens)	Package Dia.	Fiber Type	Transmittance
450nm	±30nm	58.1mm	0.015(+0.03/-0) mrad	300 mm	0.16	Φ110mm	460HP	>90%
520nm	±30nm	58 mm	0.015(+0.03/-0) mrad	306.8 mm	0.16	Φ110mm		
635nm	±30nm	62.6 mm	0.016(+0.03/-0) mrad	309.6 mm	0.16	Φ110mm	630HP	
780nm	±30nm	67.3 mm	0.018(+0.03/-0) mrad	310.6 mm	0.16	Φ110mm	780HP	
850nm	±30nm	67.6 mm	0.019(+0.03/-0) mrad	312.4 mm	0.16	Φ110mm		
980nm	±30nm	65.2 mm	0.02(+0.03/-0) mrad	315.2 mm	0.15	Φ110mm	Hi1060	
1064nm	±30nm	68.6 mm	0.023(+0.03/-0) mrad	314.2 mm	0.15	Φ110mm		
1310nm	±30nm	57.5 mm	0.03(+0.03/-0) mrad	315.89 mm	0.15	Φ110mm		
1550nm	±30nm	60.5 mm	0.034(+0.03/-0) mrad	317.54 mm	0.15	Φ110mm	Smf-28e	

* 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.

变焦激光准直器

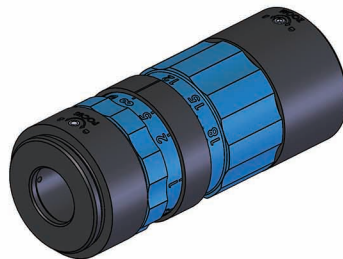
Zoom Fiber Collimators

其焦距调节范围为6mm至18mm，调节过程中能维持光束的高度准直，确保改变光束尺寸时准直度不受影响。该准直器具备精准的变焦功能，还可对发出的准直光发散角进行高精度调节，实现光束在最大束腰距离至0.3m最近聚焦距离间的任意位置聚焦，保障自由空间激光光束以高耦合效率耦合至光纤。作为通用型器件，它适用于多种应用场景，有效减少用户筛选适配定焦光纤准直器的时间成本。基于空气隙透镜的设计，使其较非球面透镜准直器，具备更低像差，M2因子更趋近于1，波前误差更小，光束输出优质稳定。

Its focal length adjustment range is from 6mm to 18mm. During the adjustment process, it can maintain a high level of collimation of the light beam, ensuring that the collimation accuracy is not affected when the beam size is changed. This collimator has a precise zoom function and can also perform high-precision adjustment of the divergence angle of the emitted collimated light, enabling the light beam to be focused at any position between the maximum waist distance and the closest focusing distance of 0.3m, ensuring that the free-space laser beam is coupled into the optical fiber with a high coupling efficiency. As a universal device, it is applicable to a variety of application scenarios, effectively reducing the time cost for users to screen for suitable fixed-focus fiber collimators. The design based on the air-gap lens makes it have lower aberrations compared with aspheric lens collimators, with the M2 factor closer to 1, smaller wavefront errors, and high-quality and stable light beam output.

特征 Features:

- 变焦焦距范围Zoom focal length range、6mm-18mm
- 低波前误差Low Wavefront Error、 $\lambda/10$ Typical (P-V at 633 nm for Fiber NA = 0.14)
- 变焦时的指向稳定性Pointing Stability During Zooming、FC/PC、FC/APC、< 1 mrad; SMA905、< 4 mrad
- 三种增透膜可选 Three AR-Coated Lens Options400nm-700nm、650nm-1050nm、1050nm-1650nm



参数表 Parameter

Focal Length	Wavelength	NA	Closest Focusing Distance	Fiber Type	Package Size	Transmittance
6mm~18mm	400~700nm	0.25	0.3m	SM Fiber	Φ30.5×71.4mm	85%
6mm~18mm	700~1050nm	0.25	0.3m			
6mm~18mm	1050~1700nm	0.25	0.3m			

高功率多模光纤准直器

High-power multimode fiber collimator

专为高能量激光系统精心打造，其具备强大的光功率承载能力，能够稳定处理百瓦量级的激光功率，从容应对高能量输入。在光束处理方面，该准直器支持多模激光束，且输出的光束质量上乘，能量分布均匀，透镜组经过了严格的优化处理，可有效抑制光束发散现象，即使在远距离传输的情况下，也能确保光束稳定，为高能量激光系统的可靠运行提供了坚实保障，在激光加工、科研实验等领域有着广阔的应用前景。



It is meticulously designed for high-energy laser systems. It has a powerful power-bearing capacity and can stably handle laser power in the order of hundreds of watts, calmly dealing with high-energy inputs. In terms of beam processing, this collimator supports multimode laser beams, and the output beam quality is excellent with a uniform energy distribution. The lens group has undergone strict optimization processing, which can effectively suppress the beam divergence phenomenon. Even in the case of long-distance transmission, it can ensure the stability of the beam, providing a solid guarantee for the reliable operation of high-energy laser systems. It has broad application prospects in fields such as laser processing and scientific research experiments.

应用 Application

- 激光加工: 用于精密零件加工、表面处理、复核材料加工、标记与打标
- Laser processing: It is used for precision parts processing, surface treatment, composite material processing, marking and labeling.
- 医疗领域: 用于高功率激光手术和治疗，如激光消融和肿瘤治疗
- In the medical field: It is used for high-power laser surgeries and treatments, such as laser ablation and tumor treatment.
- 科研实验: 用于高能物理、激光光谱学等需要高功率激光的实验
- Scientific research experiments: It is used in experiments that require high-power lasers, such as high-energy physics and laser spectroscopy.
- 国防与航空航天: 用于激光武器、目标指示及材料加工
- National defense and aerospace: Used for laser weapons, target indication, and material processing

参数表 Parameter

Wavelength	Bandwidth	AR Coating	Beam Diameter (Fiber NA0.22)	EFL	Max. Power	Fiber Type	Pakage Dia.	NA	Connector
405nm	±2nm	R<0.1%@λ	9.5mm	19.4 mm	300W/cm ²	105um ~1000um	Φ24mm	0.35	FC/PC Sma905 D80
450nm	±2nm	R<0.1%@λ	9.5mm	19.7 mm					
520nm	±2nm	R<0.1%@λ	9.5mm	19.9 mm					
532nm	±2nm	R<0.1%@λ	9.5mm	20.0mm					
660nm	±2nm	R<0.1%@λ	9.5mm	20.3 mm					
795nm	±2nm	R<0.1%@λ	9.5mm	20.4mm					
808nm	±2nm	R<0.1%@λ	9.5mm	20.4mm					
905nm	±2nm	R<0.1%@λ	9.5mm	20.5mm					
976nm	±2nm	R<0.1%@λ	9.5mm	20.5mm					
1064nm	±2nm	R<0.1%@λ	9.5mm	20.6mm					
1310nm	±2nm	R<0.1%@λ	9.5mm	20.7mm					
1550nm	±2nm	R<0.1%@λ	9.5mm	20.7mm					
405nm	±2nm	R<0.1%@λ	48mm	97.0mm	300W/cm ²	105um ~1000um	Φ24mm	0.24	FC/PC Sma905 D80
450nm	±2nm	R<0.1%@λ	48mm	98.2 mm					
520nm	±2nm	R<0.1%@λ	48mm	99.4 mm					
532nm	±2nm	R<0.1%@λ	48mm	99.6 mm					
660nm	±2nm	R<0.1%@λ	48mm	100.8 mm					
795nm	±2nm	R<0.1%@λ	48mm	101.5mm					
808nm	±2nm	R<0.1%@λ	48mm	101.5mm					
905nm	±2nm	R<0.1%@λ	48mm	101.9mm					
976nm	±2nm	R<0.1%@λ	48mm	102.1mm					
1064nm	±2nm	R<0.1%@λ	48mm	102.2mm					
1310nm	±2nm	R<0.1%@λ	48mm	102.6mm					
1550nm	±2nm	R<0.1%@λ	48mm	102.9mm					

▶ 宽光谱准直器

Broadband Fiber Collimator

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，成为准直多色光源准直或耦合的最佳选择。在透镜表面镀制450nm到20um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。

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 wide spectral 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 um. 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	> 97.5 % (450 nm - 2 μm)
	> 96 % (2 μm - 20 μm)
	> 90 % (250 nm - 450 nm)
Export beam diameter	2mm、4mm、8.5mm、12mm
	(Fiber NA=0.13)
Numerical aperture	0.4、0.36、0.167、0.216
Aperture	Φ7.6mm、φ11mm、φ16.5、Φ23.5mm
Connector	FC/PC、FC/APC、Sma905
Working temperature	-10~70℃

