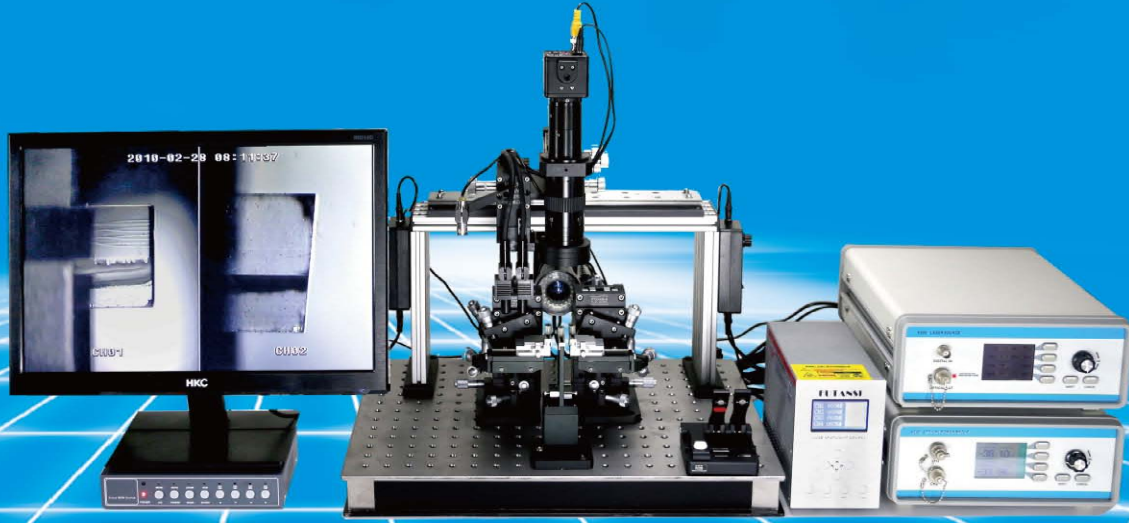




光纤调芯耦合系统机器

OPTICAL FIBER ALIGNMENT SYSTEM MACHINE



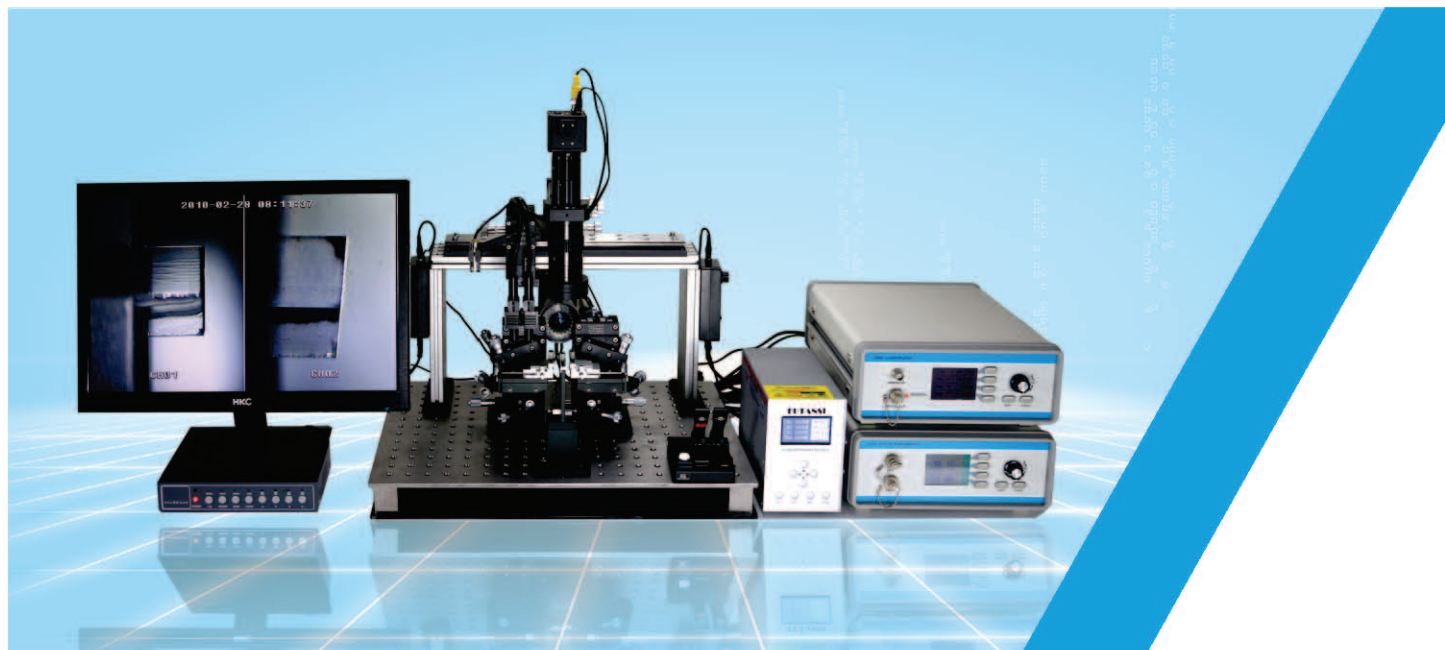
复坦希(上海)
电子科技有限公司

FUTANSI (SHANGHAI) Electronic Technology Co., Ltd

 www.futansi.com

光纤 调芯耦合 系统机器

OPTICAL FIBER ALIGNMENT SYSTEM MACHINE



性能 对准速度快，在同类设备中精度更高，重复性更好，稳定性极高。

操作 操作简单，所有工作步骤可在同一平台上完成。

保养 系统模块化构造，易于保养。

效率 使用进口UV光源大功率芯片，使照射时间大幅度缩短。

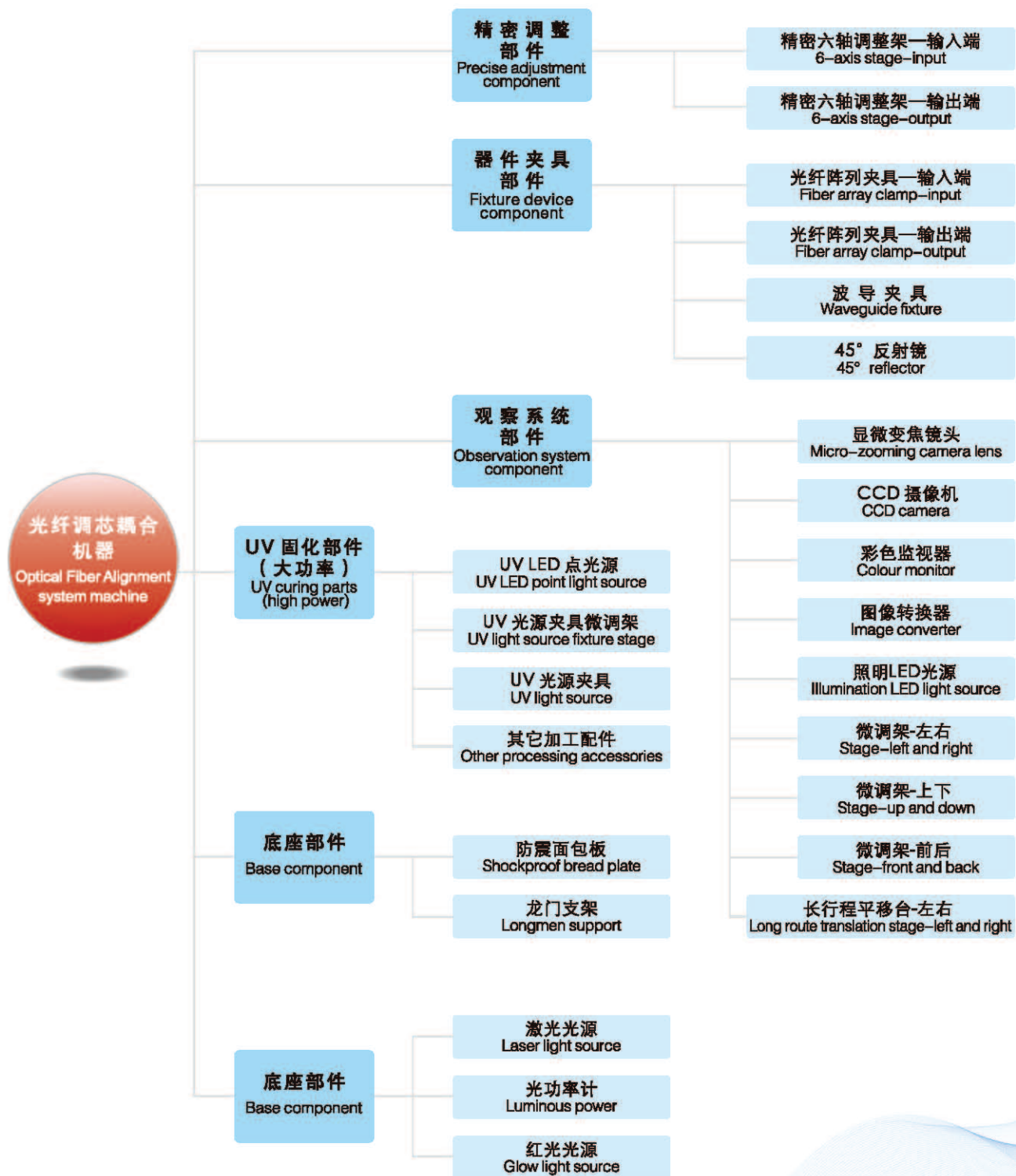
多样 具备硅光波导耦合、AWG、WDM、分光器、准直器、特殊光纤等相关光路耦合。

个性 根据客户需求，可定制设备不同解决方案。

- ◆ The alignment speed is fast, has the highest precision in the same kind of equipments, good repeatability and high stability.
- ◆ Easy to controlled, all the work steps could finished in the same platform.
- ◆ The modular system structure, easy to maintained.
- ◆ Use imported UV light source of high-power chip, could shorted the shining time.
- ◆ Has silicon optical wave coupling, AWG、WDM、optical splitter, alignment device, special fiber and so on related optical coupling.
- ◆ According to customer's requirement, could order different solutions

调芯机器 组成部件

OPTICAL FIBER ALIGNMENT SYSTEM MACHINE COMPONENTS



精密调整 部件 >> 六轴调整架 \ Six-axis adjustment stage

PRECISE ADJUSTMENT COMPONENT

FUTANSI精密六轴调整架的精度达到业内顶尖水平，采用世界一流导轨和更为出色的微分头，保证一旋到位，无须更多重复。最适合于光纤、光纤阵列和光波导等单芯或多芯器件的对准耦合，是由高精度、高稳定性的直线调整架（XYZ）和倾斜调整架（ $\Theta x \Theta y$ ），再增加弧线测角台（ Θz ）所组合的精密调芯装置。

FUTANSI Precise 6-axis stage has reached at top level in this field. It has the best lead rail and the perfect differential head, ensure one time rotate into place, and doesn't need repeat. It fit for fiber, fiber array and optical waveguide and so on single core or multicore device alignment. The machine consists of precise and high steady line stage(xyz), inclined stage and arc goniometer.

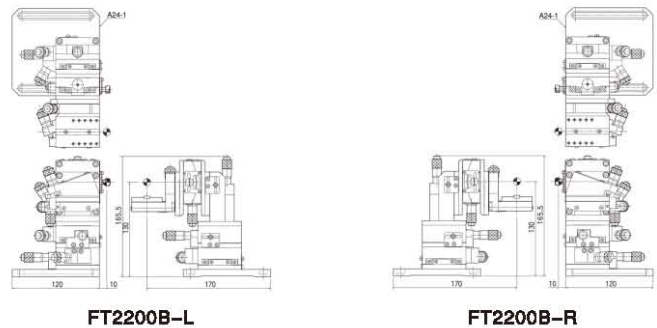
技术参数 TECHNICAL PARAMETER

精密调整架各组合部份特性 / The character of every part of precise stage					
名称 / Definition FT2200B-L FT2200B-R	方向 Direction	行程 / Route		最小读数 / The minimum numerical reading	
		粗调 / Rough adjustment	精调 / Fine adjustment	粗调 / Rough adjustment	精调 / Fine adjustment
直线调整架 Linear stage	X 轴	$\pm 6.5\text{mm}$	$\pm 0.3\text{mm}$	$10\mu\text{m}$	$0.5\mu\text{m}$
直线调整架 Linear stage	Y 轴	$\pm 6.5\text{mm}$	$\pm 0.3\text{mm}$	$10\mu\text{m}$	$0.5\mu\text{m}$
直线调整架 Linear stage	Z 轴	$\pm 6.5\text{mm}$	$\pm 0.3\text{mm}$	$10\mu\text{m}$	$0.5\mu\text{m}$
倾斜调整架 Inclined stage	Θx	$\pm 2.5^\circ$		$29''$	
倾斜调整架 Inclined stage	Θy	$\pm 2.5^\circ$		$29''$	
角度调整架 Angle stage	Θz	$\pm 4^\circ$		$29''$	

外形结构图



尺寸示意图



Three-axis, five-axis adjustment stage / 三轴、五轴调整架 << 部件 精密调整

PRECISE ADJUSTMENT COMPONENT

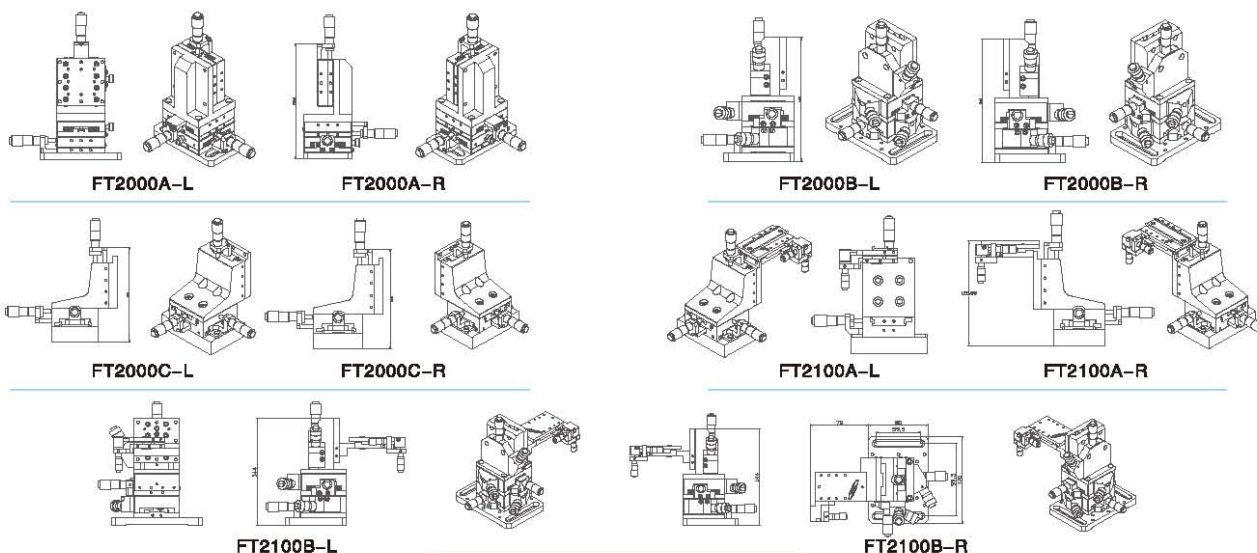
FUTANSI三轴、五轴调整架主要应用于WDM\CWDM等器件的对准耦合，具备非常好的稳定性和精度。
 FUTANSI three-axis, five-axis adjustment stage is mainly used in WDM \ CWDM and other devices of the alignment coupling, with very good stability and accuracy.

外形图及技术参数

CONTOUR DRAWING AND TECHNICAL PARAMETERS

三维调整架 / Three-axis adjustment stage			
型号model: FT2000A-L,-R		型号model: FT2000B-L,-R	
名称 / Definition	方向 / Direction	行程 / Route	最小读数 / The minimum numerical reading
直线调整架/Linear stage	X 轴	$\pm 6.5\text{mm}/\pm 0.3\text{mm}$	10 $\mu\text{m}/0.5\mu\text{m}$
直线调整架/Linear stage	Y 轴	$\pm 6.5\text{mm}/\pm 0.3\text{mm}$	10 $\mu\text{m}/0.5\mu\text{m}$
直线调整架/Linear stage	Z 轴	$\pm 6.5\text{mm}/\pm 0.3\text{mm}$	10 $\mu\text{m}/0.5\mu\text{m}$
五维调整架 / Five-axis adjustment stage			
型号model: FT2100A-L,-R		型号model: FT2100B-L,-R	
名称 / Definition	方向 / Direction	行程 / Route	最小读数 / The minimum numerical reading
直线调整架/Linear stage	X 轴	$\pm 6.5\text{mm}/\pm 0.3\text{mm}$	10 $\mu\text{m}/0.5\mu\text{m}$
直线调整架/Linear stage	Y 轴	$\pm 6.5\text{mm}/\pm 0.3\text{mm}$	10 $\mu\text{m}/0.5\mu\text{m}$
直线调整架/Linear stage	Z 轴	$\pm 6.5\text{mm}/\pm 0.3\text{mm}$	10 $\mu\text{m}/0.5\mu\text{m}$
倾斜调整架/Inclined stage	θ_x	$\pm 2.5^\circ$	29" /0.5mm
倾斜调整架/Inclined stage	θ_y	$\pm 2.5^\circ$	29"

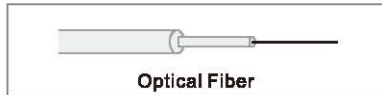
外形示意图



光纤及器件 夹具 \ FIBER AND DEVICE FIXTURE

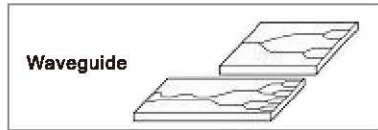
◆ **光纤夹具** 是固定单芯光纤用的夹具，对应于250μm和900μm外径的两种夹套。

Fiber fixture is the kind of clamp to fixed single core fiber, used in two kinds of jackets, 250 and 900 external diameter.



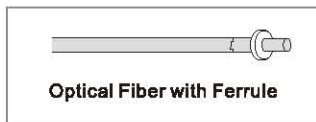
◆ **波导芯片夹具** 可以固定任何长度的波导，考虑到两侧光纤的突出，我们设计了带平板和不带平板的两种类型。

Fixture of waveguide chip could fixed any length waveguide, in consideration of extrusive two sides fibers, we design two kinds of fixture, attached surface plate and no surface plate.



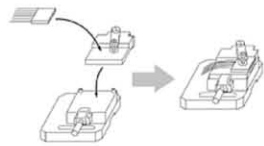
◆ **组装V槽夹具** 是组装V槽的夹具，用于固定圆筒形部件。

Assembled V groove of fixture is fixed cylinder component.



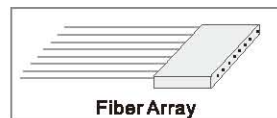
◆ **组装光纤阵列夹具底板** 是安装组装光纤夹具用的组装底板，安装在输入和输出六轴调整架上使用。

Assembled fiber array fixture base board is installed in input and output 6 axis stages.



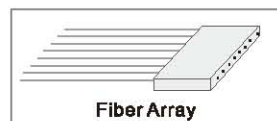
◆ **组装光纤阵列夹具** 是组装式光纤阵列夹具，通过螺丝旋钮进行固定，优点是可拆卸，进行预装。

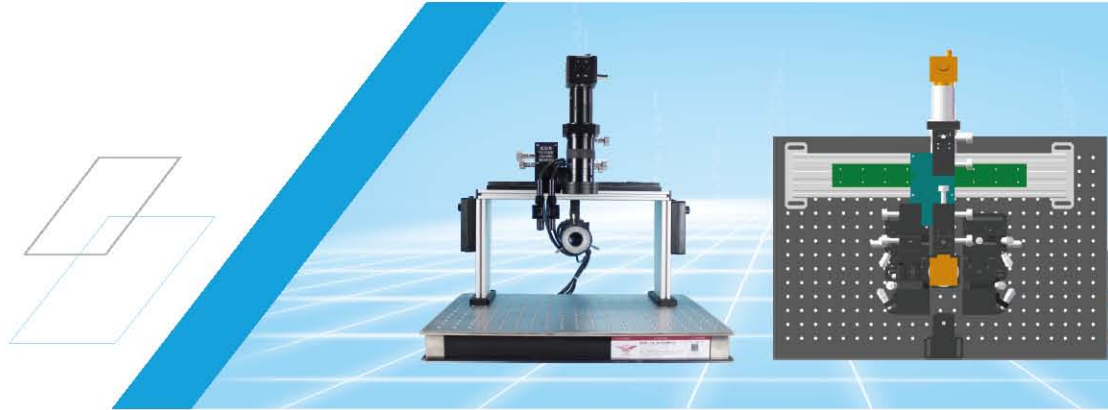
Assembled fiber array fixture is fixed by screw knob, its advantage is removable, could installation in advance.



◆ **另种组装光纤阵列夹具** 是组装式光纤阵列夹具，通过盖板侧面挤压进行固定，优点是易操作，速度快。

Assembled fiber array fixture is fixed by side of cover plate pressing, its advantage is easy to controlled and high speed.





观察系统 部件 \ FIBER AND DEVICE FIXTURE

由显微变焦镜头、CCD、监视器等组合而成的观察系统，担负着在对准耦合过程中初调呈像的作用，主要观察器件与器件间的接触部份以及输入端的可见光。我们的观察系统使用双CCD，可正面和侧面监视初调过程的每个动作，并通过燕尾调节架进行三向调整(XYZ)，能快速改变镜头焦距，并移动镜头找出最利于观察器件的位置，再通过监视器输出图像。相比传统的显微镜方式，一是在线监视效率提高，二是人员在操作过程中更为轻松。

Observation system component is consist of micro-zooming camera lens, CCD, monitor and so on, the function is to adjust image during alignment procedure, is used in observe the visible light between touched part of components and input end. Our observation system component uses double CCD, could monitor every actions from the obverse side and side face during adjustment in advance, and also adjustment by forked tail stages in three directions (xyz), changed focal distance of camera very fast, find the right position of observation, then output the image by monitor. Compare with the traditional way of microscope, has improved efficiency in online monitor, and also feeling relax in operation process.

【概算综合倍率】 (综合倍率) = (光学倍率) × (显示器倍率)

Estimate comprehensive ratio (Comprehensive ratio) = Optical ratio × Display ratio

2/3-inch 摄像管 · CCD相机 / CCD camera				1-inch 摄像管 · CCD相机 / CCD camera		
物镜 Objective lens	9-inch 显示器 Display	12-inch 显示器 Display	14-inch 显示器 Display	9-inch 显示器 Display	12-inch 显示器 Display	14-inch 显示器 Display
5X	104	138	161	69	92	107
10X	208	277	323	138	184	215
20X	415	554	656	277	369	431
40X	831	1108	1293	554	739	862

UV固化和底座部件 \ UV CURING AND BASE COMPONENT

◆ UVLED点光源 \ UVLED SPOT LIGHT SOURCE

由显微变焦镜头、CCD、监视器等组合而成的观察系统，担负着在对准耦合过程中初调呈像的作用，主要观察器件与器件间的接触部份以及输入端的可见光。我们的观察系统使用双CCD，可正面和侧面监视初调过程的每个动作，并通过燕尾调节架进行三向调整(XYZ)，能快速改变镜头焦距，并移动镜头找出最利于观察器件的位置，再通过监视器输出图像。相比传统的显微镜方式，一是在线监视效率提高，二是人员在操作过程中更为轻松。

During the processing of alignment, it takes the most time in UV curing processing after gluing, use the excellent light source can produce satisfactory results. We use imported level illuminant chip in our UV light source core component, coordinated by easily operation controller, for instance, step control, impulse shining, temperature monitored, any passive device and active device could work through by the different ways. And in process of alignment shining, we use three forked tail stages in different direction to assemble one UV curing adjustment holder, could adjust angle and distance, in order to get the best shining effect.



◆ UVLED线光源 \ UVLED LINE LIGHT SOURCE

UVLED线光源推向市场，极大的提高了生产效率，光纤阵列的胶水固化，PLC器件的二次固化，节能环保。在光器件固化领域已经完全取代汞灯。

UVLED line light source to the market, greatly improving the production efficiency, fiber array glue curing, PLC device secondary curing, energy saving. In the field of optical device curing has completely replaced mercury lamp.

◆ 底座部件 \ BASE COMPONENT

在对准耦合过程中，对精度和稳定性以及重复性要求极高，如果没有一个坚固的平台来支撑，将会对耦合造成不可想象的困难，所以我们采用简易型防震平台（400*600*50），有利于减小在操作过程中的震动，是性价比最好的一种方案。

During the processing of alignment, the accuracy, stability and repeatability is highly demanding, if no solid platform to brace, it is very difficult to alignment. So we use simply constructed shockproof platform (400*600*50), could diminish shake during the operation, it's the best way to choose. Also we could make different specifications goods by customer's different requirements.

◆ FT3102 PLC耦合专用激光光源 \ FT3102 PLC COUPLING DEDICATED LIGHT SOURCE

FT3102 PLC耦合专用光源采用最新集成电路设计，借鉴了国内外仪表的优点和国内客户的需要，研制开发出的一款针对PLC分路器的封装工艺的仪表。此款仪表可以在同一输出端切换650nm和1310nm光源，分别用于引导和精确对准。双通道的设计在耦合2*N芯片时可以避免频繁插拔，保证两通道的输入功率相等，从而提高产品的效率和性能。

FT3102 PLC coupling dedicated light source using the latest integrated circuit design, drawing on the advantages of domestic and foreign instruments and the needs of domestic customers, developed a PLC splitter for the packaging process of the instrument. This instrument can be switched at the same output 650nm and 1310nm light source, respectively, for guidance and precise alignment. Dual-channel design in the coupling 2 * N chip can avoid frequent plug, to ensure that the two channels of input power equal to improve product efficiency and performance.

型号 / model	FT3102 PLC
测试波长 / Test wavelength	1310 (±10nm)
1310nm输出功率 / output power	≥2mW
1310nm功率短期稳定性 / Power short term stability	±0.01 dB/15min
1310nm功率长期稳定性 / Long-term stability of power	±0.05dB/8hr
650nm输出光功率 / Output optical power (Pmax)	>100uW
650nm输出功率调节范围 / Output power adjustment range	0.01~Pmax uW
电源 / power supply	AC 90-260 V, 50~60HZ
预热稳定时间 / Preheat settling time	15分钟 / 15 minutes

技术指标
TECHNICAL INDICATORS



◆ FT8101光功率计 \ FT8101 OPTICAL POWER METER

FT8101光功率计是公司根据最新市场应用，结合多年光功率计研发设计经验开发的新一代台式光功率计。8101除了提供更优越的动态范围和线性度技术指标，还配置有丰富的菜单设计内容，涵盖阈值设置、告警配置、分光比、PDL、均匀性、附加损耗等功能，可拆卸式外置光功率计探头，可满足广大光器件制造厂商、科研单位、高校应用需求。

FT8101 optical power meter is Jiahui company based on the latest market applications, combined with years of optical power meter design experience in the development of a new generation of desktop optical power meter. 8101 In addition to providing superior dynamic range and linearity specifications, it is also equipped with a rich menu design content, covering threshold settings, alarm configuration, splitting ratio, PDL, uniformity, additional loss and other functions, removable external optical power Measuring probe, to meet the majority of optical device manufacturers, research institutes, colleges and universities application needs.

型号 / model	FT8101
波长范围 (nm) / Wavelength range	850~1700
探头类型 / Probe type	InGaAs④
探测器大小 / Detector size	Φ2.0mm
测量范围 (dBm) / measuring range	+5~-70
线性度 / Linearity	±0.04dB (+5~-50dBm), ±0.08dB (-50~-60dBm)
不确定度 / Uncertainty	±3%
测量单位 / Measurement Unit	dBm/W
显示分辨率 / Display resolution	0.1/0.01/0.001 dB

技术指标
TECHNICAL INDICATORS



在线测试部件 \ ONLINE TEST PARTS

◆ FT3202台式稳定光源 \ FT3102 DESKTOP STABLE LIGHT SOURCE

FT3102采用最新集成电路设计，借鉴了国内外仪表的优点和国内客户的需要，研制开发出的一款仪表。广泛应用于光纤光缆等光无源器件检测，光有源器件及光纤通信系统。

FT3102 desktop stable light source using the latest integrated circuit design, drawing on the advantages of domestic and foreign instruments and the needs of domestic customers, developed a meter. Widely used in optical fiber optic cable and other optical passive device detection, optical active devices and optical fiber communication systems.

型号/ model	FT3202
工作波长 /Working wavelength (nm)	1310/1490/1550 (±10) (用户可选 User selectable)
输出功率/output power (dBm)	≥ 0 dBm (用户可选 User selectable)
30分钟输出光稳定性/30 minutes output light stability (dB)	±0.02
24小时输出光稳定性/24 hours output light stability (dB)	±0.05
输出接口类型/Output interface type	FC/APC(用户可选 User selectable)
光纤类型/Fibertype	SM (用户可选 User selectable)
电源/power supply	AC 90-260V, 50HZ
工作温度/Operating temperature	10-50℃
存储温度/storage temperature	-10 -60℃
外形尺寸/Dimensions (mm)	260*120*305
重量/weight (kg)	2.6



技术指标
TECHNICAL INDICATORS

◆ FT3327 插回损测试仪 \ FT3327 INSERTION LOSS&RETURN LOSS TEST STATION

图片FT3327插回损测试仪是集合自身多年的光纤无源器件和光通信检测仪表的生产和测试经验，充分借鉴了国内外仪表的优点和国内客户的需求，精心研制开发出来的一款精密光检测仪表。它广泛应用于光纤光缆、光无源器件和光纤通信系统的插损和回损测试，是广大生产厂商、科研机构和运营商用于生产检测、研究开发和工程施工维护基本的测试仪器。

FT3327 Insertion loss&return loss test station is a collection of its own years of optical fiber passive components and optical communication detection instrument production and testing experience, fully draw on the advantages of domestic and foreign instruments and domestic customer needs, carefully developed a precision optical detection instrument The It is widely used in fiber optic cable, optical passive devices and optical fiber communication system insertion loss and loss test, is the majority of manufacturers, research institutions and operators for the production of detection, research and development and construction of basic maintenance testing equipment.

型号/ model	FT3327-A	FT3327-B
测试波长 /Test wavelength (nm)	1310/1550 (±10nm) selectable)	850/1300 (±10nm)
光源输出功率/Light source output power (dBm)	≥-5	≥-10
输出稳定度/Output stability (dB)	±0.005{15 min @ 25℃}	±0.01 {15 min @ 25℃}
接口类型/Interface Type	FC/APC	
探测器类型/Detector type	Φ2.0mm InGaAs	
校准波长/Calibration wavelength (nm)	850/1300/1310/1490/1550/1625	
测量范围/Measuring range (dBm)	+3~-75	
连接器类型/Connector type	活动接口, FC/SC/ST/通用, Φ2.5mm/通用 Φ1.25mm等适配器 Active interface, FC / SC / ST / general, Φ 2.5mm / universal Φ 1.25mm adapter	



技术指标
TECHNICAL INDICATORS

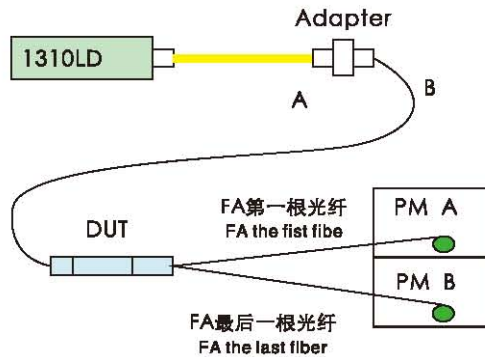
PLC splitter 平面光波导分路器工艺流程

PLC 分路器的封装是指将平面波导分路器上的各个导光通路（即波导通路）与光纤阵列中的光纤一一对准，然后用特定的胶（如环氧胶）将其粘合在一起的技术。其中PLC分路器与光纤阵列的对准精确度是该项技术的关键。

PLC package of multichannel device alignment by waveguide splitters and fiber in fiber array one by one, and use special glue (for instance epoxy glue) to adhere it. PLC splitter and alignment by array fiber is the point in this technology.

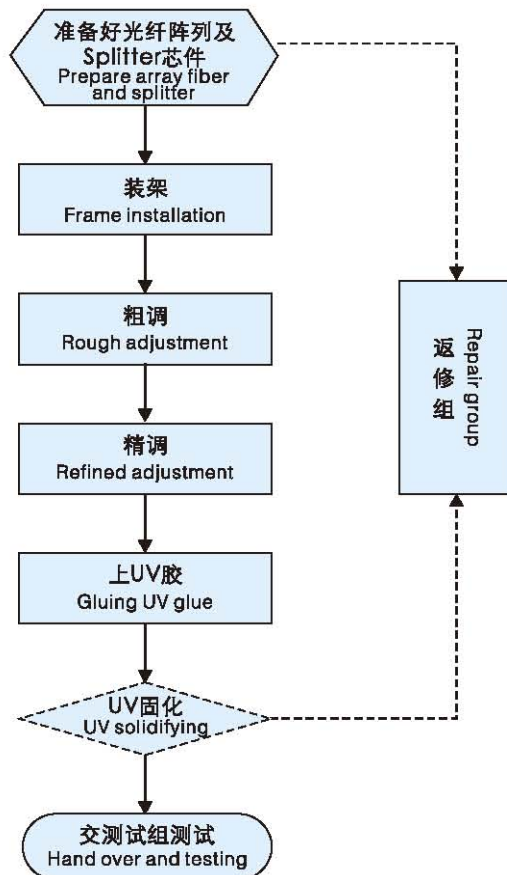
对准耦合光路图

The optical picture of alignment coupling



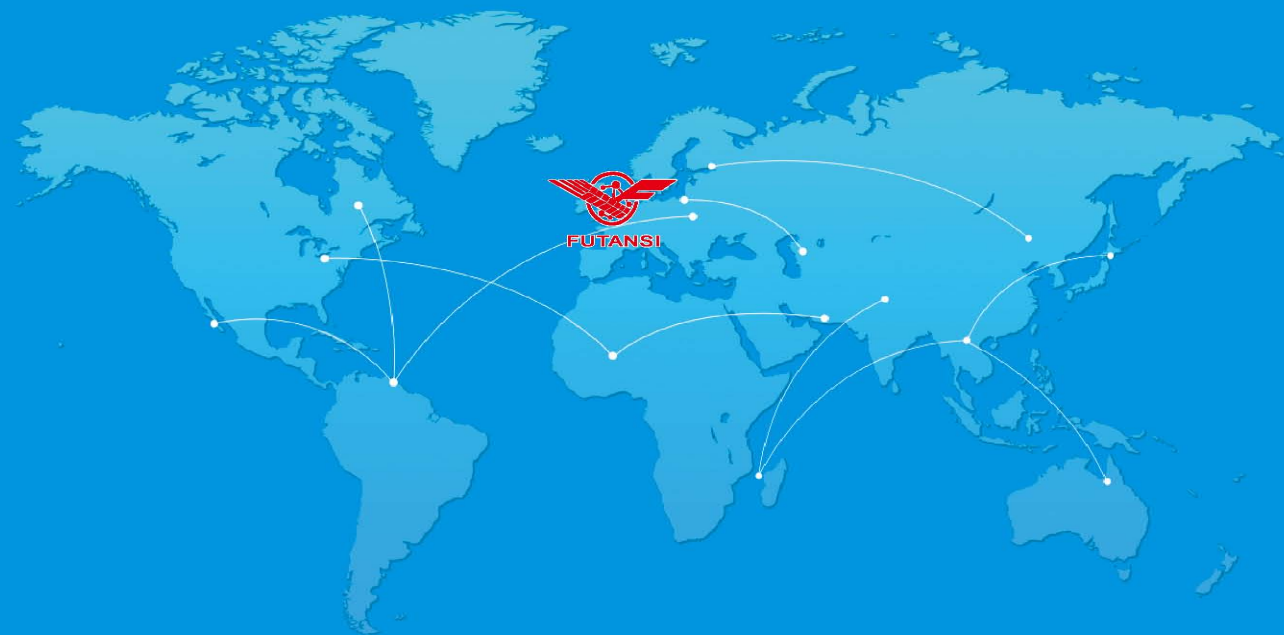
耦合调试工艺流程图

The process flow picture of adjustment coupling



注：实线箭头表示工序合格后正常流传，虚线表示工序不合格进行返工或返修。

Remark: Full lines arrow show every procedure is qualified, and run smoothly, dotted lines show the procedure is unqualified, need to repaired and do it again.



复坦希(上海)电子科技有限公司

地址：上海市青浦区华徐公路3029弄86-88号（民兴大道）
电话：+86-21-69790531
传真：+86-21-60911032
网站：www.futans.com.cn
邮箱：futansi@futansi.com

FUTANSI (SHANGHAI) ELECTRONIC TECHNOLOGY CO., LTD

Add: Qingpu District, Shanghai, Xu Highway 3029,
Lane No. 86-88 (Man Hing Road)
Tel: +86-21-69790531
Fax: +86-21-60911032
Web: www.futansi.com
E-mail: futansi@futansi.com