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先导激光设备手册

Pilot laser equipment manual

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CO₂激光打标机

CO₂ LASER MARKING MACHINE

适用于各类非金属材料的标记、切割、打孔，如塑料、橡胶、树脂、陶瓷、镀膜、石材、皮革、亚克力、木材、纸张、布料等等。广泛应用于服装服饰、皮革制品、电子元器件、药品/食品包装、工艺品等领域。

It is suitable for marking, cutting and punching all kinds of non-metallic materials, such as plastic, rubber, resin, ceramics, coating, stone, leather, acrylic, wood, paper, cloth and so on. Widely used in clothing, leather products, electronic components, medicine/food packaging, crafts and other fields.



VLS-CO2LM-10.6 Power
(10W/30W/50W/100W)

先导激光事业部介绍

Introduction of Laser Division

先导致力于各类激光器及激光元器件的生产、研发和销售。包括各类半导体激光器、各种固体激光器和光纤激光器，如各种微型化激光模组、光纤耦合激光器、脉冲激光器、皮秒激光器、飞秒激光器等。光智的激光器主要应用于工业激光精细加工、激光雷达、各类检测仪器、生物医疗检测仪器、机器视觉、科研激光、量子光通信等，可为各类客户提供大批量标准化产品以及各类定制化产品和全方位整体化技术解决方案。先导激光全方位具备了从激光元器件到各类型激光器及激光设备、各类非标激光精密加工设备的自主研发、制造和生产能力。

VLS is committed to the production including all kinds of laser components, laser and laser equipment. It covers four categories that contain semiconductor laser, solid-state laser, fiber laser and gas laser. It is involved in various laser modules, fiber coupled lasers, pulse lasers, picosecond lasers, femtosecond lasers, RF CO2 lasers and so on. The products of VOT are mainly used in industrial laser fine processing LiDAR, all kinds of testing instruments, biomedical testing instruments, machine vision scientific research, quantum optical communication etc. The products of VOT can provide various customers with large quantities of standardized products and various customized products and all-round integrated technical solutions.

核心产品与技术

Core Products And Technologies

先导致已经掌握了精密激光切割机技术，此设备具备高精度扫描振镜、三轴运动平台及视觉定位系统，可实现大范围材料的精密加工，包括精细打孔、精细切割、微细加工等。

VLS has mastered the technology of precision laser cutting machine. This equipment with high-precision scanning galvanometer three-axis movement platform and visual positioning system can achieve a wide range of materials precision machining including fine drilling, fine cutting, micro-machining.

产品参数

Product parameters

项目 Parameter	规格 Value
激光波长 Wavelength	10.6μm
激光功率 Power	30W
脉冲频率 Repetition Rate	0-25kHz
扫描速度 Scan Speed	≤7000mm/s
标刻范围 Marking Range	50x50mm-175x175mm (可选 Choosability)
冷却方式 Cooling Mode	风冷 Air cooling
系统供电 Power Supply	220V 50HZ
整机重量 Weight	200±20Kg

应用案例

Application Case



紫外打标机

UV-MARKING MACHINE

采用355nm波长激光器, 适用包括塑料(ABS、PC、PVC、HIPS等)、皮革、金属、玻璃、液晶屏、薄片陶瓷、单晶硅片、IC晶粒、蓝宝石等材料的精密标记。

应用主要分布在3C、汽车、电气仪表、白色家电、集成电路、医疗器械、五金工具、食品、药品等标记, 金属或非金属镀层去除, 各类材料的划线, 盲槽处理, 新兴超薄金属箔片微孔制作等。

355nm laser can mark many materials, such as plastic (ABS, PC, PVC, HIPS, etc.), leather, metal, glass, LCD screen, thin ceramic, monocrystal silicon, IC grains, sapphire. Applications are mainly distributed in 3C, automobiles, electrical instruments, white goods, integrated circuits, medical devices, hardware tools, food, drugs and other marking, metal or non-metal coating removal, all kinds of materials marking, blind slot treatment, emerging ultra-thin metal foil microhole production.



VLS-UVLM-355-Power
(3W/5W/8W/10W/15W)

产品参数

Product parameters

项目 Parameter	规格 Value		
激光波长 Wavelength	355nm		
激光功率 Power	3W@30kHz	5W@30kHz	15W@50kHz
脉冲频率 Repetition Rate	30-150kHz		50-300kHz
扫描速度 Scan Speed	≤7000mm/s		
标刻范围 Marking Range	50x50mm-175x175mm (可选 Choosability)		
冷却方式 Cooling Mode	水冷 Water cooling		
系统供电 Power Supply	220V 50HZ		
整机重量 Weight	200Kg±20Kg		

应用案例

Application Case



光纤激光打标机

FIBER LASER MARKING MACHINE

适用于铁、铜、铝、金、银等各类金属材质, 及PC、ABS、PVC、PC+ABS等部分非金属材质。

广泛应用于3C、汽车零部件、电子元器件、集成电路(IC)、电工电器、精密器械、五金制品、建材、眼镜钟表、首饰饰品、工艺礼品等行业。

Suitable for iron, copper, aluminum, gold, silver and other metal materials, and PC, ABS, PVC, PC+ABS and other non-metallic materials. Widely used in 3C, automotive parts, electronic components, integrated circuits (IC), electrical appliances, precision instruments, hardware products, building materials, glasses, watches, jewelry, craft gifts and other industries.



VLS-FLM-1064-Power
(20W/30W/50W/100W/200W)

产品参数

Product parameters

项目 Parameter	规格 Value	
激光波长 Wavelength	1064nm	
激光功率 Power	20W@30kHz	100W@50kHz
扫描速度 Scan Speed	≤7000mm/s	
标刻范围 Marking Range	50x50mm-175x175mm(可选 Choosability)	
冷却方式 Cooling Mode	风冷 Air cooling	
系统供电 Power Supply	1.0KW/AC220V/50Hz 1.5KW/AC220V/50Hz	
整机重量 Weight	≈145Kg	

应用案例

Application Case



MOPA光纤激光打标机

MOPA FIBER LASER MARKING MACHINE

精细光纤标记系列产品适用于铁、铜、铝、金、银等各类金属材质，及PC、ABS、PVCPC+ABS等部分非金属材质。

广泛应用于3C、汽车零配件、电子元器件、集成电路(IC)、仪器仪表、电工电器、医疗器械、五金制品、建材、眼镜钟表、首饰饰品、工艺礼品等行业。

Fine fiber marking series products are suitable for iron, copper, aluminum, gold, silver and other metal materials, as well as PC, ABS, PVCPC+ABS and other non-metallic materials. Widely used in 3C, auto parts, electronic components, integrated circuit (IC), instrumentation, electrical appliances, medical equipment, hardware products, building materials, glasses, watches, jewelry, craft gifts and other industries.



VLS-FLMN-1064-Power (20W)

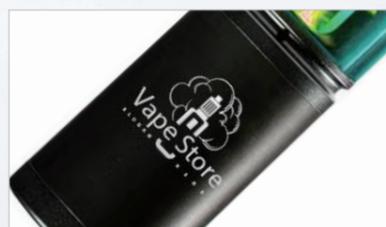
产品参数

Product parameters

项目 Parameter	规格 Value
激光波长 Wavelength	1064nm
激光功率 Power	20W@30kHz
脉冲重复频率 Pulse Repetition Rate	10-1000kHz脉宽可调 Pulse width adjustable 2-4000kHz进口脉宽可调 Abroad, Pulse width adjustable
扫描速度 Scan Speed	≤7000mm/s
标刻范围 Marking Range	50x50mm-175x175mm(可选 Choosability)
冷却方式 Cooling Mode	风冷 Air cooling
系统供电 Power Supply	1.0KW/AC220V/50Hz
整机重量 Weight	≈180Kg

应用案例

Application Case



封闭式打标机

ENCLOSED MARKING MACHINE

洁净室、食品行业等对环境要求高的环境。

Clean room, food industry and other environments with high environmental requirements.



产品参数

Product parameters

项目 Parameter	规格 Value
激光波长 Wavelength	可选 Choosability (355nm、1064nm、10.6μm)
激光功率 Power	可选 Choosability (3/5/15W、20/100W、30W)
扫描速度 Scan Speed	≤7000mm/s
标刻范围 Marking Range	50×50mm-175×175mm
冷却方式 Cooling Mode	风冷 Air cooling / 水冷 Water cooling (根据激光器类型 By laser type)
系统供电 Power Supply	220v 50Hz
整机重量 Weight	200Kg

紫外激光切割机

UV LASER CUTTING MACHINE

精密激光切割机具备高精度扫描振镜、三轴运动平台及视觉定位系统，可实现大范围材料的精密加工，包括精细打孔、精细切割、微细加工。主要用于柔性电路板（FPC）、PCB板、陶瓷软膜片、有机膜、硅片、硬脆性材料等的加工。

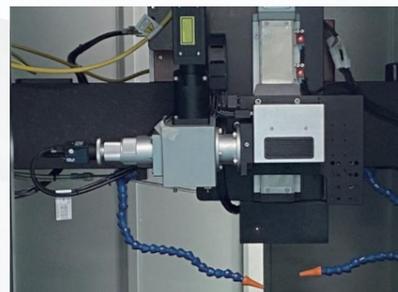
Precision laser cutting machine with high-precision scanning galvanometer, three-axis movement platform and visual positioning system, can achieve a wide range of materials precision processing, including fine drilling, fine cutting, micro-machining. It is mainly used for the processing of flexible circuit board (FPC), PCB board, ceramic soft film, organic film, silicon wafer, hard brittle materials, etc.



VLS-UVLC-355

高精度振镜+同轴视觉模组

High precision galvanometer+coaxial vision module



产品参数

Product parameters

项目 Parameter	规格 Value
激光源 Laser Source	355nm15W
X/Y/Z轴行程(mm) X/Y/Z Axis Travel	400×400×200mm
X/Y轴最大运行速度 X/Y max. Operating Speed	800mm/s
Z轴最大运行速度 Z max. Operating Speed	100mm/s
X、Y平台定位精度 X、Y Positioning Accuracy	2μm
X、Y平台重复定位精度 X、Y Repeated Accuracy	1μm
Z轴定位精度 Z Positioning Accuracy	20μm
CCD定位精度 CCD Positioning Accuracy	±3μm
系统加工精度 Machining Accuracy	±30μm
振镜扫描范围 Scan Range	50×50mm
切割最小线宽 Cutting Min. line-width	10μm
电源及功率 Power Supply/Dissipation	AC220V 50Hz/5KW

应用案例

Application Case



金刚石切割设备

DIAMOND CUTTING MACHINE

金刚石切割系统是针对硬脆与复合材料加工开发出的工业化解决方案, 适合于CVD和HPHT以及复合材料的切割加工。其自主研发的激光器与软件系统稳定可靠。具有加工速度快,设备体积小,模块化设计, 可拓展性强;以及操作系统简单易懂,使用便捷,并可为用户提供专业的定制化服务。

Diamond cutting system is an industrial solution developed for hard and brittle and composite material processing, suitable for CVD and HPHT and composite material cutting. Its self-developed laser and software systems are stable and reliable. With fast processing speed, small equipment size, modular design, strong scalability; And the operating system is simple to understand, convenient to use, and can provide users with professional customized services.



VLS-DLC-532

产品参数

Product parameters

项目 Parameter	规格 Value
激光波长 Wavelength	532nm
激光功率 Power	20W
光束质量 M ²	M ² < 1.3
聚焦方式 Focus Mode	单点聚焦镜 Single point focusing lens
控制方式 Control Mode	PC软件 PC software
切割方式 Cutting Mode	Z轴动态调焦自动补偿 Z-axis dynamic focus automatic compensation
XYZ轴行程 XYZ Axis Travel	100/200/100mm
定位精度 Positioning Accuracy	±0.01
切割缝宽 Cutting Seam Width	0.1-0.12mm
工装温湿度 Temperature & Humidity	15°C~35°C、10%~80% (non-condensing)
电力需求 Power Supply	AC220V/50Hz
总功率 Power Dissipation	< 1500W
设备尺寸外形 Size	1240/740/1400mm
设备总重量 Weight	< 500Kg

玻璃激光切割机

GLASS LASER CUTTING MACHINE

针对玻璃、蓝宝石、陶瓷等脆性材料, 采用红外皮秒激光器进行打孔、刻槽、倒角等精密加工工艺, 应用领域广泛。

For brittle materials such as glass, sapphire and ceramics, the infrared picosecond laser is used for precision machining, such as drilling, grooving and chamfering, and has a wide range of applications.



VLS-GLC-PS1064

产品参数

Product parameters

项目 Parameter	规格 Value
激光器1 (红外皮秒) Laser 1(Infrared Picosecond)	30W@50k
切割厚度 Cutting Thickness	<3mm
水冷机温控精度 Temperature Control Accuracy	±0.1°
平台精度 Platform Accuracy	±5μm
平台行程 Platform Travel	可定制 customizable
加工速度 Processing Speed	10-500mm/S
设备功率 Power Dissipation	6KW
电源电压 Power Supply	AC 220V, 50Hz
供气气压 Pressure	0.5~0.7MPa

应用案例

Application Case



双头异步全景摄像定位激光切割机

DOUBLE HEAD ASYNCHRONOUS PANORAMIC CAMERA POSITIONING LASER CUTTING MACHINE

大面积印花面料准确裁切, 异形及复杂图案的自动识别切割, 绣花、商标织唛等纺织工艺的精准切割; 广告喷绘、写真布等定位切割。

Precise cutting of large-area printed fabrics, automatic identification and cutting of special-shaped and complex patterns, precise cutting of embroidery, trademark weaving marks and other textile processes; Advertising spray painting, photo cloth and other positioning cutting.



VLS-CO2LC-1814

产品参数

Product parameters

项目 Parameter	规格 Value
工作特性 Feature	电脑操作与切割机同时进行, 快速完成数据传输, 可连续使用 Operation and cutting at the same time, quickly complete the data transmission, can be used continuously
激光类型 Laser Type	CO ₂ 封离式玻璃激光器 CO ₂ Glass laser
切割速度 Cutting Speed	0-40m/min
雕刻扫描速度 Engraving Scanning Speed	0-60m/min
控制系统 Control System	光智激光智能识别切割系统 Smart cutting system
视觉定位方式 Visual Positioning Mode	Canon高清单反相机自动定位 Automatic positioning of Canon HD cameras
有效切割尺寸: 长×宽 Cutting Size	1800x1400mm
激光功率 Laser Power	80-150W可选 Choosability
切割精度 Cutting Accuracy	±0.1mm
传输接口 Transmission Interface	网线及USB数据端口 RJ45 or USB
传动材料 Transmission Material	特制网状传输平台 Special mesh transmission platform
系统直接读取格式 Read Format	DST、PLT、BMP、DXG、AILAS等 etc.
冷却类型 Cooling Type	水冷系统 Water cooling
电源电压 Power Supply	AC220v±22v, 50HZ/60HZ
整机功率 Power Dissipation	<2000W
长×宽×高 Size	2800x2190x2100mm
整机重量 Weight	500Kg

切割成品展示

Finished product show



全自动晶圆打码机

AUTOMATIC WAFER CODING MACHINE

晶圆打码机是专业化的全自动晶圆激光打标专用设备,分别适用于8"-12"晶元的Wafer Marking作业; 适用于Si、Ge、SiC、GaN、InP、Sapphire、Quartz等; 适用于waferID打码及晶圆级封装打码。

It is a professional automatic wafer laser marking machine , respectively Suitable for 8"-12" Wafer Marking; Suitable for Si、Ge、SiC、GaN、InP、Sapphire; Suitable for wafer ID coding and wafer-level package coding.



VLS-AUTO-WLM-532-Power (5W)

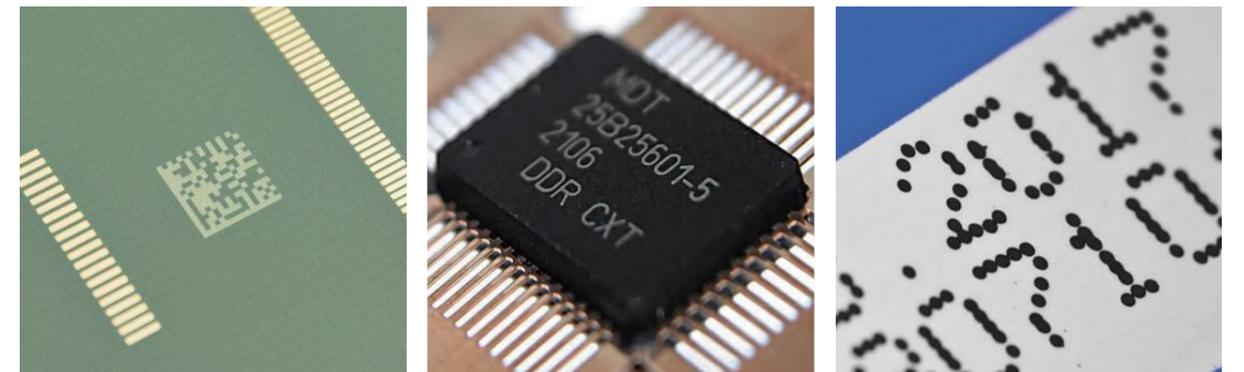
产品参数

Product parameters

项目 Parameter	规格 Value
适用晶圆尺寸类型 Wafer Size Type	2~8 inch
适用晶圆厚度 Wafer Thickness	200~2000 μm
料位 Material Level	总计3个料位, 兼容2-8英寸夹具 Total 3 material levels, compatible with 2-8 inch fixtures
芯片传送及抓持方式 Transport Mode	机械手臂搬运, 真空吸盘负压吸附抓持 Mechanical arm handling, vacuum suction cup negative pressure adsorption grasp
正片方式 Positive Film Mode	智能视觉图像识别定位边, 无需机械正片 Image recognition
"正片"识别定位精度 Positioning Accuracy	≤0.1°, ΔX = ±0.05mm, ΔY = ±0.05mm
字体 Typeface	常规字体及SEMI字体, 支持客户自设计字体 Regular fonts and SEMI fonts, support customer designed fonts
字型 Font	点阵字体或细线体 Dot font or thin line
温湿度 Temperature & Humidity	Temperature 10°C~40°C、Humidity 5%~95%
字符大小 Character Size	用户可选 User optional
字体可调节内容 Font Adjustable Content	字体高、宽、深度、字数、字体清晰度 Font height, width, depth, word count, font clarity
破片率 Fragment Rate	≤0.001%
打标位置重复性 Repeatability	< ±0.05mm
粉尘控制 Dust Control	配备FFU及HEEAP系统 FFU and HEEAP system
激光器类型 Laser Type	绿光纳秒激光器 Green nano-second lase
外形尺寸 Size	1300x1000x1600mm

切割成品展示

Finished product show



框架式激光雕刻机

FRAME TYPE LASER ENGRAVING MACHINE

应用场景
Application

雕刻、切割
Engraving and cutting

主要特性
Feature

结构紧凑、大工作幅面
Compact structure and large working area



VLS-DK-450-KJ

产品参数

Product parameters

项目 Parameter	规格 Value
整机外形尺寸 Size	611x636x197mm
加工区域 Working Area	430x450mm
激光器功率 Laser Power	5/10W
激光波长 Wavelength	455nm
木板最大切割厚度 Maximum Cutting Thickness of Plywood	3/8mm
整机电功率 Power Dissipation	<48W(5W) / <60W (10W)
对焦方式 Focus Mode	手动对焦 Manual focus
操作软件及格式 Format	NC/BMP/JPG/PNG/DXF/JPEG/GIF等格式 etc.
安全防护 Safety Protection	护目镜 Goggles
雕刻材料 Carving Material	纸、木片、塑胶、布料、皮革、陶瓷、不锈钢涂层金属等大部分非透明材料 Paper, plywood, plastic, cloth, leather, ceramics, stainless steel Coating metal, most of the non-transparent materials

桌面式激光雕刻机

DESKTOP LASER ENGRAVING MACHINE

应用场景
Application

雕刻、切割
Engraving and cutting

主要特性
Feature

高安全性、高可靠性
High security and reliability



产品参数

Product parameters

项目 Parameter	规格 Value
整机外形尺寸 Size	750x617.5x249mm
加工区域 Working Area	430x350mm
激光器功率 Laser Power	10W
激光波长 Wavelength	455nm
木板最大切割厚度 Maximum Cutting Thickness of Plywood	8mm
木板(8mm)切割速度 Cutting Speed for 8mm Plywood	120mm/min
对焦方式 Focus Mode	手动对焦 Manual focus
操作软件及格式 Format	NC/BMP/JPG/PNG/DXF/JPEG/GIF等格式 etc.
安全防护 Safety Protection	护目镜 Goggles
雕刻材料 Carving Material	纸、木片、塑胶、布料、皮革、陶瓷、不锈钢涂层金属等大部分非透明材料 Paper, plywood, plastic, cloth, leather, ceramics, stainless steel Coating metal, most of the non-transparent materials

手持式激光雕刻机

HAND-HELD LASER ENGRAVING MACHINE

应用场景
Application

雕刻
Engraving

主要特性
Feature

体积小、运动快、高可靠性

Small size, fast movement and high reliability



VLS-DK-450-SC

产品参数

Product parameters

项目 Parameter	规格 Value
整机外形尺寸 Size	300x210x350mm
雕刻区域 Working Area	100x100mm
激光器功率 Laser Power	10W
激光波长 Wavelength	455nm
雕刻速度 Engraving speed	2000mm/s
对焦方式 Focus Mode	手动对焦 Manual focus
散热方式 Heat dissipation mode	风冷 Fan cooling
支持文件格式 Format	PNG、JPG、BMP、JPEG、DXF、PLT/ Text/QR code, etc
雕刻材料 Carving Material	纸、木片、塑胶、布料、皮革、陶瓷、不锈钢涂层金属等大部分非透明材料 Paper, plywood, plastic, cloth, leather, ceramics, stainless steel Coating metal, most of the non-transparent materials

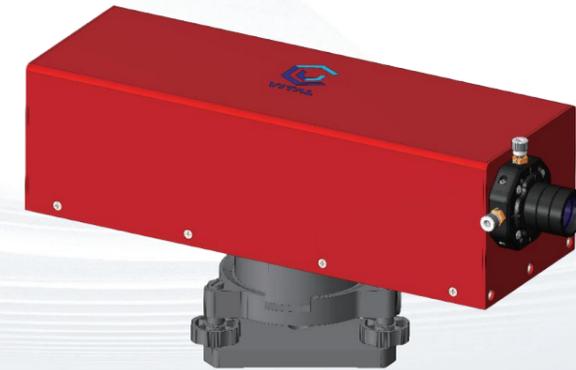
可选参数 Optional: 激光器功率20W Laser power 20W

光束质量分析仪

BEAM QUALITY ANALYZER

先导光束质量分析仪基于高精度高像素CMOS相机和自动化平移台控制系统设计，能够实时清晰捕捉光束的细节参数。系统集成了自主研发的软件，控制自动运动平台，操作简便，测量过程不超过1分钟，显著提升工作效率。同时，提供的夹具支持按需选配衰减片、透镜等组件，具备良好的灵活性，广泛适用于工业检测、科研实验和教学演示等多种场景。

The VITAL beam quality analyzer is designed based on a high-precision, high-pixel CMOS camera and an automated translation stage control system, which can clearly capture the detailed parameters of the beam in real time. The system integrates self-developed software to control the automatic motion platform. It is easy to operate and the measurement process does not exceed 1 minute, which significantly improves work efficiency. At the same time, the fixture provided supports the optional selection of attenuation plates, lenses and other components on demand, has good flexibility, and is widely used in various scenarios such as industrial inspection, scientific research experiments and teaching demonstrations.



产品特点

Product Features

- **高精度测量**
High-precision measurement
- **自动化操作**
Automated operation
- **模块化与便携式设计**
Modular and portable design
- **宽兼容性**
Wide compatibility
- **智能软件功能**
Intelligent software functions
- **稳定可靠硬件**
Stable and reliable hardware

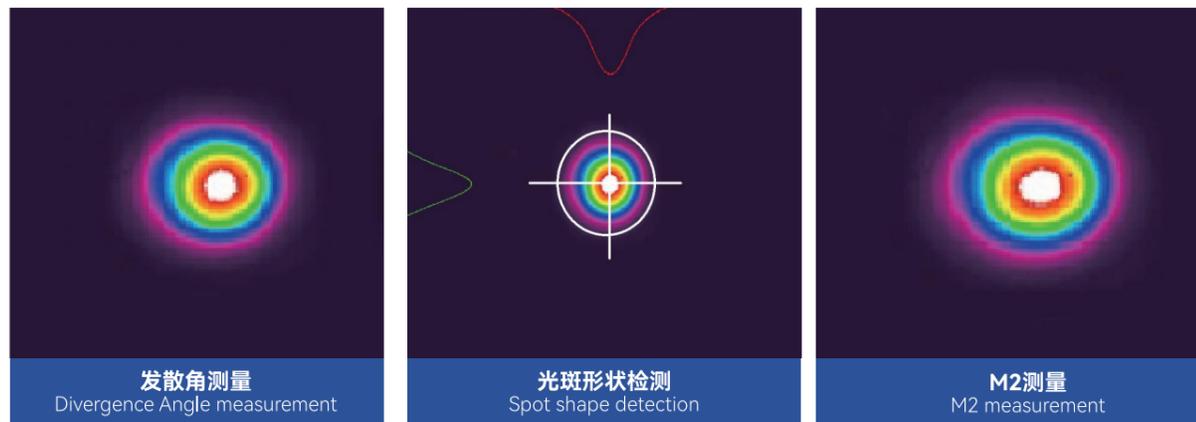
产品参数

Product parameters

项目 Parameter	VTL-BP345-C-VIS-NIR	VTL-BP320-C-VIS-NIR
传感器类型 Sensor Type	CMOS	
工作波长 Operating Wavelength	300nm~1100nm	
光束直径范围 Beam Diameter Range	34μm~7mm	32μm~9mm
测量光功率 Measuring Optical Power	10μW~1W	
光束质量因子测量精度 M ² Measurement Accuracy	±2%	
分辨率 Resolution	2048×2448	3072×4096
像素大小 Pixel Size	3.45μm	3.2μm
快门 Shutter	全局快门 Global shutter	
显示 Show	伪彩色 Pseudo color	
可测激光器类型 Measurable Laser Types	连续光和脉冲光 CW and pulsed	
数据接口 Data Interface	USB3.0	
外观尺寸 Dimensions	372mm×115mm×174mm	
重量 Weight	4Kg	
工作温度 Operating temperature	0~50°C	
存储温度 Storage temperature	-30~70°C	

软件演示

Software demonstration



HRM-785手持拉曼光谱仪

HRM-785 HANDHELD RAMAN SPECTROMETER

手持拉曼光谱仪采用拉曼散射分析方法，集成了光路系统、激光器、检测器、数据库和算法等处理软件于一体，轻巧便携、灵敏度高，能够快速、准确且在不破坏被测样品获得其化学结构的详细信息，可以检测宝石中微小的杂质、显微夹杂物和人工掺杂物，在宝石鉴定中具有明显的优势，满足宝石无损、快速鉴定的要求。广泛应用于珠宝鉴定、食品安全、药物分析、公共安全、环境监测和科研教育等领域。

Handheld Raman spectrometer adopts Raman scattering analysis method, integrates optical path system, laser, detector, database and algorithm and other processing software in one, lightweight, portable, high sensitivity, can quickly, accurately and without destroying the test sample to obtain its chemical structure details, can detect small impurities, micro-inclusions and artificial doping in gemstones. It has obvious advantages in gemstone identification and meets the requirements of non-destructive and rapid gemstone identification. It is widely used in jewelry identification, food safety, drug analysis, public safety, environmental monitoring,



产品特点

Product Features

- **灵敏度一致性优于20%**
Sensitivity consistency better than 20%
- **无损检测、快速准确、灵敏度高、操作简单**
Non-destructive testing, fast and accurate, high sensitivity, simple operation
- **精密的算法，可对混合物进行检测**
Sophisticated algorithms to detect mixtures
- **支持自建谱图库，检测结果可以生成报告并导出**
Support self-built spectrum library, test results can generate reports and export
- **内置自校准功能，终身免维护**
Built-in self-calibration function, lifetime maintenance free

产品参数

Product parameters

项目 Parameter	规格 Value
工作波长 Operating Wavelength	785±0.1nm
输出功率 Output Power	500mW
光斑大小 Spot Size	~100µm
位置偏差 Position Deviation	优于10µm(RMS) Better than 10µm(RMS)
波段范围 Band Range	200~3200cm ⁻¹
分辨率 Resolution	6~8 cm ⁻¹ (typ) 标准差优于0.5cm ⁻¹ Standard deviation better than
典型特性 Typical characteristic	超低温漂±2cm ⁻¹ 以内, 光谱分辨率不变 ultra-low temperature bleach within ±2cm ⁻¹ , spectral resolution unchanged
人机接口 Man-machine interface	6.64寸电容触摸屏, 灵活操控 6.64 inch capacitive touch screen, flexible control
外观尺寸 Dimensions	182x88.5x34mm
重量 Weight	≤1.5Kg
宽工作温度 Wide Operating Temperature	-20 ~ 60°C

应用领域

Application Fields



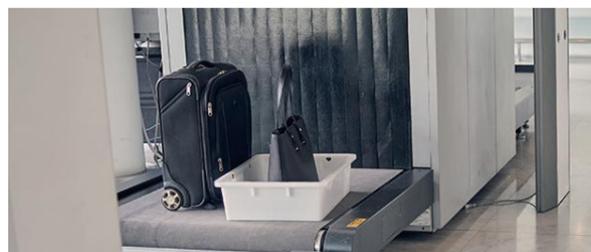
宝石学研究和珠宝鉴定
Gemological research and jewelry identification



食品安全和添加检测
Food safety and additive testing



制药业原辅料鉴别
Identification of raw materials for pharmaceutical industry



高铁、地铁入口的危化物检测
Dangerous compounds detection at the entrance of high-speed rail and subway



物质成分识别
Substance composition identification,



全领域激光解决方案领导者
Global Leader in laser solution across all fields