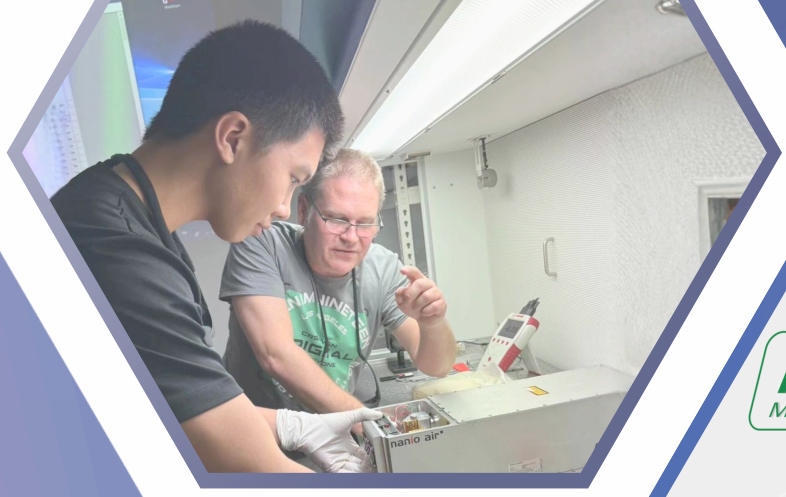
www.jd-union.com



We Provide
LASER OPTICS and SCANNER
to OEM Integrator

PRODUCT CATALOG
产品手册

JD Union Pte Ltd

新加坡捷迪激光

One-stop Laser Solution Promoter
一站式激光方案服务商

JD UNION
LASER PRECISION
Join the Journey, Drive to Distinction

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About Us 关于我们

JD Union Pte Ltd is a responsible distributor of photonic products specializing in laser material processing for over 20 years in Singapore. Our collaboration with major suppliers in R&D enables us to create tailor-made lasers for unique use cases, which are rigorously tested in our dedicated application lab. We take pride in offering one-stop solutions to system integrators across SMEs and MNCs, emphasizing professional service and long-term commitment.

自 2005 年起，捷迪激光专注于激光材料加工，致力于引进和分销欧美先进激光产品。
依托自主应用实验平台，携手全球优质供应商，共同推动技术创新与产业升级。
量身定制激光应用解决方案，配套完善的培训与技术服务，全面赋能客户高效发展。

Distributorships 品牌代理

JD Union holds authorised distributorship agreements with leading global laser and photonics manufacturers, representing their full product ranges across Asia-Pacific region.

捷迪激光持有全球领先激光及光子学制造商的授权经销商资质，代理其完整产品系列，覆盖亚太市场。

Milestones & Awards 发展历程与荣誉

Our Milestones 发展历程

Nov 2005	Registered in Singapore
Apr 2012	Start full business running
Nov 2013	Distribute agreement signed with Innolas Laser GmbH as first product
Mar 2014	First exhibition in Shanghai Laser World of Photonics
Dec 2015	First year revenue over 1m SGD after 3 years hardworking
Aug 2016	Scientific OPO EVO 200 laser sold to SINAPSE (Singapore Institute for Neurotechnology) in NUS
Nov 2017	Top performance award from Innolas Photonics (>1m Euro sales)
Jan 2018	IPG award for Outstanding Regional Partner in Field of Micro Processing
Nov 2019	15,000W IPG fiber laser YLS installed in A*star for AM (Additive Manufacturing)
Dec 2021	Top performance award for Innolas Photonics (>2m Euro sales)
Nov 2022	Authorized distributor for iRadion CO2 and reseller of LightWELD
Dec 2023	Sales for Scanlab over 5,000 scanners
May 2024	Authorized distributor for DMC
Jan 2025	Semi membership

Awards & Recognition 荣誉与认可

Innolas Photonics

Top Performance Award

IPG Photonics

Outstanding Regional Partner

Lasers 激光器

IPG 光纤激光器

IPG Photonics is the inventor and world's leading producer of industrial fiber lasers that continue to revolutionize manufacturing around the globe. IPG fiber lasers are widely used in automotive, aerospace, energy sector, heavy industry, microelectronics, biomedical, scientific, telecom, and many other fields.

IPG Photonics 是工业光纤激光器的发明者和卓越的生产商，这些激光器不断为全球制造业带来变革。IPG 光纤激光器广泛应用于汽车、航空航天、能源行业、重工业、微电子、生物医学、科学、电信和许多其他领域。

USP 超快激光器

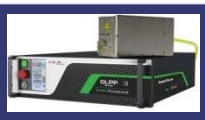
Ultra Short Pulse Lasers have become increasingly popular over the years in many areas of scientific research, medical technology and materials microprocessing. Today's growing industrial applications require USP lasers that are robust and well-suited for all standard processing methods such as cutting, drilling, ablation, and structuring for a wide range of materials. Unlike other lasers on the market, USP lasers from IPG are compact, low cost, truly industrial, and easy to integrate.

几年来，超快激光在科学研究、医疗技术和材料微加工等许多领域越来越受欢迎。与市场上的其他激光器不同，IPG 的超快激光器结构紧凑、成本低廉、真正实现了工业化，并且易于集成。

Infrared Ultrafast Fiber Lasers 红外超快激光器 (YLPP/YLPF-R 系列)

Parameter 参数	 **Ultrafast Lasers** *YLPP/YLPF-R Series*	 **High Energy Ultrafast Lasers** *YLPP/YLPF-R Series*	 **High Power Ultrafast Lasers** *YLPP/YLPF-R Series*
Wavelength 波长	1030 nm	1030 nm	1030 nm
Average Power 平均功率	up to 50 W	up to 100 W	up to 200 W
Pulse Energy 脉冲能量	up to 50 µJ	up to 200 µJ	Typ. 20 µJ (up to 200 µJ in burst mode)
Pulse Duration 脉宽	200 fs to 5 ps	600 fs to 5 ps	600 fs to 5 ps
Pulse Repetition Rate 重复频率	100 to 5500 kHz	100 to 5500 kHz	1000 to 5500 kHz (up to 44 MHz)
Beam Quality (Typ.) M^2 光束质量	< 1.3	< 1.3	< 1.3

Green Ultrafast Fiber Lasers 绿光超快激光器 (GLPP/GLPF-R 系列)

Parameter 参数	 **Green Ultrafast Lasers** *GLPP/GLPF-R Series*
Wavelength 波长	515 nm
Average Power 平均功率	up to 50 W
Pulse Energy 脉冲能量	up to 100 µJ
Pulse Duration 脉宽	600 fs to 5 ps
Pulse Repetition Rate 重复频率	50 to 5500 kHz
Beam Quality (Typ.) M^2 光束质量	< 1.3

Ultraviolet Ultrafast Fiber Lasers 紫外超快激光器 (ULPP/ULPF-R 系列)

Parameter 参数	 **Deep UV Ultrafast Lasers** *ULPP-257-R Series*	 **Ultraviolet Ultrafast Lasers** *ULPF/ULPP-R Series*
Wavelength 波长	257 nm	343 nm
Average Power 平均功率	up to 10 W	up to 50 W
Pulse Energy 脉冲能量	up to 10 µJ	up to 30 µJ
Pulse Duration 脉宽	1 ps	0.6 to 5 ps
Pulse Repetition Rate 重复频率	100 to 5500 kHz	100 to 5500 kHz
Beam Quality (Typ.) M^2 光束质量	< 1.4	< 1.3

Nanosecond 纳秒激光器

IPG Nanosecond Fiber Lasers are ideal for industrial applications from laser ablation, marking, trimming, scribing, foil cutting, micro-machining, diamond and silicon cutting, to microwelding and high speed hole drilling. They feature low divergence and can provide the high power density and fluence required for high speed processing of both plastics and metals, including highly reflective materials.

IPG 纳秒光纤激光器是激光烧蚀、打标、修边、划线、箔切割、微加工、金刚石和硅切割、微焊接和高速钻孔等工业应用的理想之选。它们具有低发散性的特点，能够提供高速加工塑料和金属（包括高反射材料）所需的高功率密度和高通量。

Infrared Nanosecond Fiber Lasers 红外纳秒激光器 (YLPN 系列)

Parameter 参数	 **Nanosecond Fiber Laser Cabinets** *YLPN-S Series*	 **High Pulse Energy Nanosecond Fiber Lasers** *YLPN-R Series*	 **High Brightness Nanosecond Fiber Lasers** *YLPN-R Series*	 **Nanosecond Fiber Laser Modules** *YLPN-M Series (500W)*	 **Nanosecond Fiber Laser Modules** *YLPN-M Series (100W)*
Wavelength 波长	1064 nm	1064 nm	1064 nm	1064 nm	1064 nm
Average Power 平均功率	up to 3 kW	up to 2 kW	up to 2 kW	up to 500 W	up to 100 W
Beam Quality (M^2) 光束质量	-	-	1.5 to 12	1.5 to <2	<2
Beam Quality (BPP) 光束质量	Round Core: 19 or 22 mm×mrad Square Core: 24 or 31 mm×mrad	9 to <24 mm×mrad	-	-	-
Pulse Energy 脉冲能量	up to 150 mJ	up to 100 mJ	up to 10 mJ	up to 2 mJ	up to 1 mJ
Pulse Duration 脉宽	25, 50, 70, 100 ns	Adjustable: 20 to 2000 ns	Adjustable: 30 to 2000 ns	Adjustable: 0.15 to 500 ns	Adjustable or Fixed: 1.5 to 350 ns
Pulse Repetition Rate 重复频率	2 to 300 kHz	2 to 8000 kHz	2 to 8000 kHz	2 to 10,000 kHz	2 to 500 kHz
Cooling 冷却	Water	Water	Water	Air	Air or Conductive

Green Nanosecond / Visible Fiber Lasers 绿光纳秒激光器 (GLPN 系列)

Parameter 参数	 **10-30 W Green Pulsed Fiber Lasers** *Burst Mode Option*	 **50-75 W Green Pulsed Fiber Lasers** *High Pulse Energy*	 **75-100 W Green Pulsed Fiber Lasers** *High Brightness*	 **Green Quasi-CW Fiber Lasers** *Ultra-High Power*	 **Visible Nanosecond Fiber Laser Modules** *From Green to Red*
Wavelength 波长	532 nm	517 nm	532 nm	532 nm	525 to 642 nm
Average Power 平均功率	up to 30 W	up to 75 W	up to 100 W	up to 1 kW	up to 50 W
Beam Quality (M^2) 光束质量	<1.2	<1.6	<1.2	<1.2	-
Beam Quality (BPP) 光束质量	-	-	-	-	<6 mm×mrad
Pulse Energy 脉冲能量	18 µJ Single Pulse up to 70 µJ in Burst Mode	50 to 700 µJ	100 to 500 µJ	up to 4 µJ	up to 5 µJ
Pulse Duration 脉宽	1.5 ns	1 to 200 ns	200 to 1000 ns	~1.2 ns	4.5 ns
Pulse Repetition Rate 重复频率	10 to 3500 kHz	10 to 3500 kHz	10 to 3500 kHz	25 to ~250 MHz	>10 MHz
Cooling 冷却	Air	Air or Water	Air or Water	Air or Water	Water

Ultraviolet Nanosecond Fiber Lasers 紫外纳秒激光器 (ULPN 系列)

Parameter 参数	 **Ultraviolet Nanosecond Fiber Laser Modules** *ULPN-355-M Series*	 **High Power UV Quasi-CW Fiber Lasers** *ULPN-355-QCW Series*	 **Deep UV Nanosecond Fiber Lasers** *ULPN-266-M Series*
Wavelength 波长	355 nm	355 nm	266 nm
Average Power 平均功率	up to 10 W	up to 100 W	up to 10 W
Beam Quality 光束质量	M^2 <1.4	M^2 <1.5 Typical	M^2 <1.2
Max Pulse Energy 最大脉冲能量	up to 10 µJ (up to 30 µJ in burst mode)	up to 2.5 µJ	up to 2 µJ
Pulse Duration 脉宽	~1.5 ns	~1.5 ns	1.3 ns
Pulse Repetition Rate 重复频率	10 to 1000 kHz	20 to ~150 MHz	100 to 2700 kHz
Cooling 冷却	Air	Water	Air

Quasi-CW Fiber Lasers QCW 准连续激光器

Quasi-continuous wave (QCW) fiber lasers utilize relatively long pulses of high laser power to achieve processing results similar to that of continuous wave (CW) lasers with lower average power. Quasi-CW pulses provide peak power up to 10X average power and are able to offer up to hundreds of joules of pulse energy. Higher peak powers increase the capabilities of QCW fiber lasers to couple with metallic and non-metallic surfaces at a lower average power.

准连续（QCW）光纤激光器利用相对较长的高功率激光器脉冲，以实现与平均功率较低的连续（CW）激光器类似的处理效果。准连续脉冲可提供最高 10 倍平均功率的峰值功率，并能提供最高数百焦耳的脉冲能量。

QCW Fiber Lasers 准连续光纤激光器 (YLS/YLR/YLM/MCQL-QCW 系列)

Parameter 参数	 Multi-Mode QCW Fiber Laser Cabinets *YLS-QCW Series*	 Multi-Channel QCW Fiber Lasers *MCQL Series*	 Multi-Mode QCW Fiber Laser Racks *YLR-QCW Series*	 Multi-Mode QCW Fiber Laser Modules *YLM-QCW Series*	 Single-Mode QCW Fiber Lasers *YLR/YLM-QCW-SM Series*
Wavelength 波长	1070 nm	1070 nm	1070 nm	1070 nm	1070 nm
Output Channels 输出通道	1	2, 3, 4, 6	1	1	1
Average Power 平均功率	up to 2 kW	up to 500 W per channel	up to 450 W	up to 600 W	up to 300 W
10X Peak Power 峰值功率	up to 20 kW	up to 6 kW per channel	up to 4.5 kW	up to 6 kW	up to 3 kW
Pulse Energy 脉冲能量	up to 240 J	up to 60 J per channel	up to 45 J	up to 60 J	up to 30 J
Pulse Duration 脉宽	0.2 to 10 ms	0.05 to 50 ms	0.05 to 50 ms	0.05 to 50 ms	0.05 to 50 ms
Fiber Diameter 光纤直径	50, 100, 200, 300 µm	200, 300, 400, 600 µm	50, 100, 200 µm	50, 100, 200 µm	14 µm
Pulse Repetition Rate 重复频率	2 kHz	-	up to 50 kHz	up to 50 kHz	up to 50 kHz
Cooling 冷却	Air or Water	Water	Air or Water	Air or Water	Air

Quasi-CW Diode & Thulium Fiber Laser Modules 二极管和铥准连续激光器模块 (DLM/TLM-QCW 系列)

Parameter 参数	 Quasi-CW Diode Fiber Laser Modules *DLM-QCW Series*	 Quasi-CW Thulium Fiber Laser Modules *TLM-QCW Series*
Wavelength 波长	895 nm	1880 to 2100 nm
Output Power 输出功率	300 W	50 W
10X Peak Power 峰值功率	up to 6 kW	up to 500 W
Pulse Energy 脉冲能量	up to 30 J	up to 5 J
Fiber Diameter 光纤直径	600 µm	Single-mode, 50, 100, 200 µm
Pulse Repetition Rate 重复频率	up to 10 Hz	up to 2.5 kHz
Cooling 冷却	Air	Air

Industrial CW Fiber Lasers 工业级连续激光器

IPG industrial fiber lasers are synonymous with ease of use, simplicity of integration, zero maintenance, compactness, record energy efficiency and reliability enabling the highest productivity at the lowest operating costs. Whether for cutting, welding, cleaning, surface processing, cladding or 3D printing, IPG fiber lasers offer the fastest processing speeds and best processing quality for any industry or application.

IPG 工业光纤激光器具有使用方便、易于集成、零维护、结构紧凑、能效高、可靠性强等特点，能以更低的运营成本实现更高的生产率。无论是切割、焊接、清洗、表面处理、熔覆还是 3D 打印，IPG 光纤激光器都能为几乎任何行业或应用提供高效的加工速度和优质的加工质量。

High-Power CW Fiber Lasers 高功率连续光纤激光器 (YLS/YLR 系列)

Parameter 参数	 **High-Power Laser Cabinets** *YLS Series*	 **High-Power Fiber Laser Racks** *YLR Series*
Wavelength 波长	1070 nm	1007, 1010, 1030, 1070 nm
Single-Mode Power 单模功率	up to 10 kW	up to 3 kW
Multi-Mode Power 多模功率	1 to 125+ kW	up to 8 kW
Multi-Mode Fiber Diameter 多模光纤直径	50, 100, 150, 200 µm (Feed Fiber Output) up to 1000 µm (Process Fiber)	50, 100, 200 µm
Power Tunability 功率调节	10-100%	10-100%
Modulation Frequency 调制频率	up to 10 kHz	up to 50 kHz
Cooling 冷却	Water or Air	Air Cooling up to 1.5 kW

Dual-Beam AMB Fiber Lasers 双光束 AMB 激光器

Parameter 参数	 **SINGLE-MODE Dual-Beam Fiber Lasers** *YLS-SM-AMB Series*	 **MULTI-MODE Dual-Beam Fiber Lasers** *YLS-AMB Series*	 **HIGH PEAK POWER Dual-Beam Fiber Lasers** *YLS-QCW-AMB Series*
Wavelength 波长	1070 nm	1070 nm	1070 nm
Cooling 冷却	Water	Water	Air
Core Power 中心光束功率	SINGLE-MODE up to 3 kW	MULTI-MODE up to 30 kW	MULTI-MODE up to 1.2 kW PEAK POWER up to 12 kW
Core Fiber Diameter 中心芯径	14 µm	50, 100, or 200 µm	50, 100, or 200 µm
Multi-Mode Ring Power 环形光束功率	up to 5 kW	up to 20 kW	Average Power up to 800 W PEAK POWER up to 8 kW
Multi-Mode Ring Fiber Diameter 环形芯径	100 or 250 µm	150, 200, 300, 400, or 600 µm	150, 200, 300, 400, or 600 µm

Single-Mode CW Fiber Lasers 单模连续光纤激光器

Parameter 参数	 **Single-Mode Fiber Laser Cabinets** *YLS-SM Series*	 **Single-Mode Fiber Laser Racks** *YLR-SM Series*	 **Single-Mode Dual-Beam Lasers** *YLS-SM-AMB Series*
Beam Quality M^2 光束质量	M^2<1.1 (up to 2 kW) M^2<1.15 (up to 4 kW) M^2<1.2 (up to 5 kW) M^2<2 (up to 10 kW)	M^2<1.1	M^2<1.3
Wavelength 波长	1070, 1075 nm	1070 nm	1070 nm
Output Power 输出功率	up to 10 kW	up to 8 kW	Single-Mode Core: up to 3 kW Ring Beam: up to 5 kW
Modulation Frequency 调制频率	up to 10 kHz	up to 50 kHz	up to 10 kHz

Dual-Mode Fiber Lasers 双模式光纤激光器

Parameter 参数	 **Dual-Mode Fiber Lasers** *YLR-AM Series*
Wavelength 波长	1070 nm
Single-Mode Power 单模功率	up to 1 kW
Multi-Mode Power 多模功率	up to 5 kW
Single-Mode Beam Quality M^2 光束质量	1.3
Multi-Mode Beam Quality (BPP) 光束质量	mm x mrad < 2.4
Single-Mode Core Fiber Diameter 单模中心芯径	14 µm
Multi-Mode Core Fiber Diameter 多模中心芯径	40 µm
Modulation Frequency 调制频率	up to 50 kHz

LightWELD 手持激光焊接机

The LightWELD handheld laser welding and cleaning system from IPG Photonics delivers fast, easy-to-learn, and high-quality laser welding for a fraction of the cost of traditional methods. Combining a compact ergonomic design with advanced fiber laser technology, LightWELD is ideal for welding thin sheet metals, stainless steel, aluminum, copper, and other alloys in fabrication, automotive repair, HVAC, and general manufacturing environments.

LightWELD 是 IPG Photonics 推出的手持式激光焊接与清洗一体化系统，操作简便、学习曲线短，焊接质量高，成本仅为传统工艺的一小部分。广泛适用于不锈钢、铝、铜等薄板金属的焊接，覆盖钣金加工、汽车修复、暖通空调及通用制造等场景。

Parameter 参数	 **LightWELD 1000** *Cost-Effective Power*	 **LightWELD 1500 XR** *Extended Range Laser Welding & Cleaning*	 **LightWELD 2000 XR** *Maximized Power & Performance*
Laser Power 激光功率	up to 1000 W	up to 1500 W	up to 2000 W
Cooling 冷却	Air	Air	Air
Steels 钢材	up to 9 gauge (0.156")	up to 4 gauge (0.234")	up to 0 gauge (0.313")
Aluminum 3 & 5 系铝合金	up to 8 gauge (0.129")	up to 3 gauge (0.229")	up to 0 gauge (0.325")
Aluminum 6 系铝合金	up to 8 gauge (0.129")	up to 4 gauge (0.204")	up to 3 gauge (0.229")
Nickel Alloy 镍合金	-	up to 6 gauge (0.203")	up to 1 gauge (0.281")
Titanium 钛	-	up to 6 gauge (0.203")	up to 4 gauge (0.234")
Copper 铜	-	up to 12 gauge (0.081")	up to 8 gauge (0.129")
Wobble Welding 摆动焊接	up to 0.200"	up to 0.200"	up to 0.200"
Wire Welding 填丝焊接	Yes	Yes	Yes
Cleaning Width 清洗宽度	up to 0.600" (optional)	up to 0.600"	up to 0.600"

IRADION
CORE LASER TECHNOLOGY

Iradion is a world-leading manufacturer of laser sources based on differentiated and cutting-edge laser technologies. We design laser systems tailored to your requirements. Explore our portfolio including NANOCORE®, FEMTOCORE®, and our patented CERAMICORE® CO2 lasers. Whether you are a small business or a global enterprise, our experts help you find an easy-to-integrate solution for your individual applications.

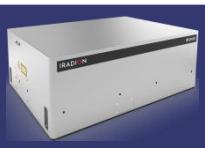
Iradion 是全球领先的激光光源制造商，基于差异化和尖端激光技术，专为客户量身定制激光系统。旗下产品涵盖 NANOCORE®、FEMTOCORE® 超快激光及获专利的 CERAMICORE® CO2 激光器。无论是中小企业还是全球大型企业，Iradion 专家团队都能为您找到易于集成、适合具体应用的最优解决方案。

USP 超快激光器 — Aionis Femtolaser

Aionis Femtolaser for High-Precision Manufacturing. The all fiber based Aionis ultrafast laser is engineered for demanding 24/7 applications that require outstanding performance. Laser head, power supply and control electronics are integrated in a rugged, compact all-in-one femtolaser head made of strengthened aluminum for highest stability. The new design significantly cuts down system costs without any trade-offs in quality or laser lifetime.

Aionis 飞秒激光器专为高精度制造而设计，全光纤结构满足 7×24 小时高要求工业应用。激光头、电源与控制电路高度集成于强化铝制一体化紧凑机身中，稳定性卓越。全新设计大幅降低系统成本，同时在质量与激光寿命上毫无妥协。

Aionis Femtolaser 飞秒激光器

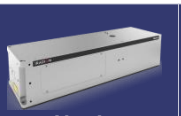
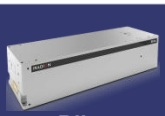
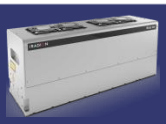
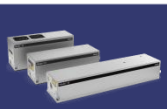
Parameter 参数	 Aionis
Wavelength 波长	515, 1030, 1950 nm
Laser Medium 激光介质	Ytterbium / Thulium
Nominal Power 额定功率	2.5 W to 90 W
Repetition Rate 重复频率	100 Hz to 2500 kHz (Internal Mode) Single shot to 750 kHz (Pulse-on-Demand Mode)
Pulse Width 脉宽	< 800 fs to 10 ps
Pulse Energy 脉冲能量	≥ 3 µJ to 120 µJ
Peak Power 峰值功率	> 5 MW to > 300 MW
Spatial Mode 空间模式	M^2 < 1.3 to ≤ 1.5
Pulse-to-Pulse Stability (RMS) 脉冲稳定性	< 2.5% to < 5.0%
Cooling 冷却	Water
Operating Voltage 工作电压	48 VDC
External Control 外部控制	RS232, USB, TTL, Analog Modulation

DPSS 固体纳秒激光器 — NANOCORE®

Our NANOCORE® nanosecond lasers offer a wide range of pulse energy, wavelength and pulse duration for your industrial applications. Our application and laser specialists help you find a tailor-made solution for your requirements. Reduce costs and speed up time-to-market of customer machines with the flexibility in control modes. Optimize your laser source for your individual application for a cost-efficient match between process speed and high-quality results. Improve process stability with our PULSECORE pulse-to-pulse stability. Choose the most energy-efficient wavelength and adapted pulse duration for your laser material processing.

我们的 NANOCORE® 纳秒激光器在脉冲能量、波长和脉宽方面覆盖宽泛范围，满足各类工业应用需求。应用与激光专家为您量身定制解决方案，通过灵活的控制模式帮助您降低成本、加速客户机器产品上市。针对个性化应用优化激光器，在加工速度与高质量结果之间实现高性价比匹配。借助 PULSECORE 脉冲间稳定性技术提升工艺稳定性，选择最节能的波长及适配的脉宽用于激光材料加工。

NANOCORE® DPSS Nanosecond Laser 固体纳秒激光器

Parameter 参数	 **Nanio** *(Water-cooled)*	 **Nanio Air** *(Air-cooled)*	 **Blizz** *(Water-cooled)*	 **Blizz Air** *(Air-cooled)*	 **Vivio** *(Water / Air)*	 **Mosquitoo** *(Contact-cooled)*
Wavelength 波长	355, 532, 1064, 1342 nm	355, 532, 1064, 1342 nm	532, 1064, 1342 nm	532, 1064 nm	355, 532, 1064 nm	355, 532, 1064 nm
Laser Medium 激光介质	$Nd:YVO_4$ / Nd:YAG	$Nd:YVO_4$ / Nd:YAG	$Nd:YVO_4$	$Nd:YVO_4$	$Nd:YVO_4$	$Nd:YVO_4$ / Nd:YAG
Nominal Power 额定功率	1 W to 23 W	3 W to 16 W	8 W to 40 W	25 W to 30 W	6 W to 55 W	0.3 W to 6 W
Repetition Rate 重复频率	Single Shot to 500 kHz	Single Shot to 300 kHz	Single Shot to 400 kHz	Single Shot to 300 kHz	Single Shot to 400 kHz	Single Shot to 200 kHz
Pulse Width 脉宽	<10 to <100 ns	<20 to <150 ns	<15 to <100 ns	<20 to <40 ns	<20 to <30 ns	<10 to <15 ns
Pulse Energy 脉冲能量	2.5 µJ to 1.8 mJ	100 µJ to 1 mJ	83 µJ to 1 mJ	300 to 625 µJ	150 to 916 µJ	6 to 200 µJ
Peak Power 峰值功率	>0.04 to >100 kW	>0.6 to >20 kW	0.83 to 66.6 kW	>7.5 to >31 kW	7.5 to 36.6 kW	>0.6 to >13.3 kW
Spatial Mode 空间模式	M^2 <1.2 to <1.4, $TEM_{0\ 0}$	M^2 <1.15 to <1.5, $TEM_{0\ 0}$	M^2 <1.2 to <1.4, $TEM_{0\ 0}$	M^2 <1.2 to <1.3, $TEM_{0\ 0}$	M^2 ≤1.2 to ≤1.3, $TEM_{0\ 0}$	M^2 <1.2 to <1.3, $TEM_{0\ 0}$
Cooling 冷却	Water-to-Water or Water-to-Air	Air, optional water	Water	Air	Water / Air optional	Contact cooling
Operating Voltage 工作电压 (OEM standard / 19" optional)	115-230 VAC ± 10%, 50-60 Hz (integrated P/S)	24 VDC (OEM standard) 115-230 VAC ± 10% (optional)	48 VDC (OEM standard) 115-230 VAC ± 10%, 50-60 Hz (optional)	48 VDC (OEM standard) 115-230 VAC ± 10%, 50-60 Hz (optional)	24 to 48 VDC (OEM standard) 115-230 VAC ± 10% (optional)	24 VDC (OEM standard) 115-230 VAC ± 10%, 50-60 Hz (optional)

CO2 二氧化碳激光器 — CERAMICORE®

Iradion CO2 lasers are designed with CERAMICORE® technology ensuring superior performance and longevity. The laser gas mixture is sealed within an inert ceramic chamber. This eliminates the possibility of laser gas degradation and loss of power. Beam quality remains stable securing a long laser life and excellent process results.

Iradion CO2 激光器采用专利 CERAMICORE® 技术，将激光气体密封于惰性陶瓷腔体内，从根本上消除了激光气体降解和功率衰减的可能性。光束质量长期稳定，确保激光器超长使用寿命和卓越的加工效果。

CERAMICORE® CO2 Laser 二氧化碳激光器

Parameter 参数	 **Eternity** *(E25 – E70)*	 **Infinity** *(i50 – i150)*	 **Infinity PLUS** *(i50 – i120)*	 **Destiny** *(D200 – D250)*
Nominal Power 额定功率	25 to 70 W	50 to 150 W	50 to 120 W	200 to 250 W
Beam Quality 光束质量	$M^2 \leq 1.2$	$M^2 \leq 1.2$	$M^2 \leq 1.2$	$M^2 \leq 1.2$
Beam Ellipticity 光束椭圆度	< 1.2:1	< 1.2:1	< 1.2:1	< 1.2:1
Beam Diameter (1/e² @ 0m) 光束直径	2.5 ± 0.5 mm	2.5 ± 0.5 mm	2.5 ± 0.5 mm	2.5 ± 0.5 mm
Beam Divergence (full angle) 光束发散角（全角）	8 ± 1 mrad	6 ± 1 mrad	6 ± 1 mrad	6 ± 1 mrad
Wavelength 波长	9.3, 10.2, 10.6, 11.2 µm	10.2, 10.6 µm	9.3, 10.2, 10.6 µm	10.2, 10.6 µm
Fall Time 下降时间	< 90 µs	< 75 µs	< 40 µs	< 75 µs
Power Stability 功率稳定性	< ±5% (Fan)	< ±5% (< ±3% Water)	< ±4% (< ±1.5% Water)	< ±4% (Water)
Polarization 偏振	Random	Random	Linear (Perpendicular to mounting plate)	Linear (Parallel to mounting plate)
Cooling 冷却	Fan / Water	Fan / Water	Fan / Water	Water
Input Power / Heat Load 输入功率	580 to 915 W	900 to 1800 W	900 to 1500 W	2340 to 2640 W
Input Voltage, Current 输入电压	48 V / 12–19 A	36–60 V / 25–30 A	36–50 V / 25–30 A	45–48 V / 52–55 A
Frequency Range 频率范围	0.1 – 140 kHz	0.1 – 140 kHz	0.1 – 140 kHz	0.1 – 140 kHz
Operating Temperature 工作温度	5°C – 40°C	5°C – 40°C	5°C – 40°C	5°C – 40°C
Weight 重量	5.5 to 9 kg	14.7 kg	14.7 kg	24.6 kg
Dimensions L×W×H 尺寸	324.8×199.2×138.4 mm	534.4×200.0×157.7 mm	534.4×200.0×157.7 mm	684×196×99 mm

Luxinar 二氧化碳激光器

LUXINAR
INGENUITY AMPLIFIED

Luxinar, under the name Rofin-Sinar UK Ltd, was established in UK in 1998. Luxinar develops, manufactures and sells industrial laser sources. The company has been at the forefront of laser technology for over 25 years. To date, Luxinar has an installed base of over 25,000 lasers worldwide in industrial applications environments.

Luxinar 罗悉激光，Rofin-Sinar UK Ltd，于 1998 年在英国成立。Luxinar 开发、制造和销售工业激光器。25 年来，公司一直拥有着最前沿的激光技术。迄今为止，罗悉激光在全球工业应用环境中安装了超过 25,000 台激光器。

Parameter 参数	 **OEM Series** *(45iX / 65iX / 100iX)*	 **SCX Series** *(SCX 35)*	 **SR Series** *(SR 08s – 25x)*	 **SR AOM Series** *(SR 10/25 AOM)*	 **LXR® Series** *(Ultrafast 1030 nm)*	 **MULTISCAN®** *(Marking Systems)*
Wavelength 波长	9.3, 10.25, 10.6 µm	9.3, 10.25, 10.6 µm	9.3, 10.25, 10.6 µm	9.3 µm	1030 nm (515, 343 nm opt.)	9.3, 10.25, 10.6 µm
Power Range 功率范围	25–1000 W	15–350 W	5–250 W	0–150 W (CW)	0–50 W / 0–120 W	Up to 250 W
Peak Output Power 峰值功率	>1010 to >2520 W	>670 to >880 W	>80 to >630 W	75 / 150 W	—	—
Pulse Width 脉宽	2–400 µs	2–400 µs	2–1000 µs	> 1 µs (AOM)	800 ± 100 fs	—
Pulse Frequency 脉冲频率	0–100 kHz	0–130 kHz	0–130 kHz	0–240 kHz	Single shot – 40 MHz	0–130 kHz
Rise / Fall Time 上升/下降时间	< 60 µs	< 60 µs	< 60 to <100 µs	< 1 µs	—	—
Beam Diameter 光束直径	11.5 ± 1 mm	7 ± 0.5 mm	6.0–6.8 ± 0.5 mm	5.6 to 7.7 ± 0.5 mm	3.0 ± 0.25 mm	—
Beam Quality 光束质量	$M^2 \leq 1.2$	—	—	—	$M^2 < 1.2$	—
Polarisation 偏振	Linear (parallel to base)	Linear (45° to base)	Linear (parallel to base)	Linear (perpendicular to base)	Linear (perpendicular to base)	—
Power Stability 功率稳定性	< ±3% typical	< ±5% typical	< ±3–4.5% typical	< ±2% typical	1% rms	—
Supply Voltage 供电电压	50 VDC	50 VDC	50 VDC	50 VDC ± 1%	230 VAC ± 10%	230 VAC ± 10%
Cooling 冷却	Water	Water	Water	Water	Water	Air or Water
Weight 重量	92 to 200 kg	63 kg	22 to 34 kg	47–50 kg	120 kg (head)	—
Application 应用	High-power cutting / marking	Mid-power cutting / marking	Marking / engraving	Fine marking (AOM modulated)	Ultrafast micromachining	Integrated marking system

Innolas Laser 科研激光器

InnoLas Laser develops and manufactures highest quality laser sources made in Germany. We guarantee excellent product finish, reliability and best beam parameters for science, metrology and research. InnoLas lasers combine innovative laser technology and precise construction, offering you powerful, reliable and stable-value tools for your application. The monolithic design of all InnoLas laser heads ensures highest thermal and mechanical stability. The alignment of the resonator, all other optical components as well as the power supply and regulation optimize the laser sources.

InnoLas Laser 在德国开发和制造最高质量的激光器。我们保证卓越的产品工艺、可靠性以及科学、计量学和研究领域中最优越的光束参数。InnoLas 激光器结合了创新的激光技术和精密的结构设计，为您的应用提供强大、可靠且保值的工具。所有 InnoLas 激光头的整体式设计确保了最高的热稳定性和机械稳定性，谐振腔、所有光学元件以及电源和调节器的精确对准进一步优化了激光光源性能。

OPO Tunable Systems OPO 可调谐激光器

Parameter 参数	 **SpitLight EVO S/I OPO** *(Broadband / Midband)*	 **SpitLight Compact** *200 & 400 OPO*	 **SpitLight** *600 & 1000 OPO*
Repetition Rate 重复频率	1–500 Hz	1–20 Hz	1–30 Hz
Pulse Energy @ 532 nm 脉冲能量	>80 mJ (EVO S) / >100 mJ (EVO I)	>140 mJ (C200) / >240 mJ (C400)	>400 mJ (SL600) / >600 mJ (SL1000)
Pulse Energy @ 355 nm 脉冲能量	>50 mJ / >65 mJ	>70 mJ / >120 mJ	>240 mJ / >320 mJ
Pulse Width 脉宽	4–7 ns	4–7 ns	4–7 ns
OPO Tuning (532 nm pumped) 调谐范围	680–980 nm (signal) 1180–2400 nm (idler)	680–980 nm (signal) 1160–2400 nm (idler)	680–980 nm (signal) 1180–2400 nm (idler)
OPO Tuning (355 nm pumped) 调谐范围	410–680 nm (signal) 740–2500 nm (idler)	410–690 nm (signal) 730–2500 nm (idler)	410–680 nm (signal) 740–2500 nm (idler)
Line Width 线宽	10–250 cm^{-1} (BB) / down to 5 cm^{-1} (MB)	10–250 cm^{-1} (BB) / down to 5 cm^{-1} (MB)	10–250 cm^{-1} (BB) / down to 5 cm^{-1} (MB)
Beam Diameter 光束直径	5 mm	5–6.5 mm	6.5–8 mm
Electrical Supply 电源	230 V ±10%, 1.5 kW	230 V ±10%, 2.5 kW	230 V ±10%/400 V ±10%, 2.5 kW
Cooling 冷却	Water (8 l/min)	Integrated	External water

Sub-ns Lasers 亚纳秒激光器

Parameter 参数	 **picolo Series** *(picolo 1 – YAG)*	 **picolo AOT MOPA** *(AOT 1 – YAG)*	 **MAGNA Series** *(S / I / II / III)*	 **MAGNA EVO** *(EVO I / II / III)*
Wavelength 波长	1064, 532, 355, 266 nm	1064, 532, 355, 266 nm	1064, 532, 355 nm	1064, 532, 355 nm
Pulse Energy @ 1064 nm 脉冲能量	15–150 µJ	25–300 µJ	>100 to >2000 mJ	>30 to >250 mJ
Max Rep Rate 最大重复频率	1–100 kHz	1–100 kHz	1–20 Hz	1–1000 Hz
Pulse Width 脉宽	<800 to <3000 ps	<800 to <3000 ps	< 600 ps	< 600 ps
Max Average Power 平均功率	400–1400 mW	800–3000 mW	—	—
Beam Diameter 光束直径	0.20 mm (waist)	0.20 mm (waist)	5–16 mm	5–8 mm
Divergence 发散角	7.0 mrad	7.0 mrad	< 0.5 mrad	< 0.5 mrad
Spatial Mode 空间模式	$TEM_{0\ 0}$	$TEM_{0\ 0}$	—	—
Electrical Supply 电源	110–250 VAC, <100 W	110–250 VAC, <100 W	230–380 VAC, 2.5–5 kW	230 VAC ±10%, 2.5 kW
Cooling 冷却	Air (passive)	Air (passive)	Water (8 l/min)	Water or Water/Air

Diode-Pumped Solid-State Lasers 二极管泵浦固体激光器

Parameter 参数	 **SpitLight Compact DPSS** *(3 / 10 / 100)*	 **SpitLight DPSS 250**	 **SpitLight EVO** *(EVO I – IV)*	 **SpitLight DPSS DRY** *(DRY I / II)*
Wavelength 波长	1064, 532, 355, 266, 213 nm	1064, 532, 355, 266, 213 nm	1064, 532, 355 nm	1064, 532, 355 nm
Pulse Energy @ 1064 nm 脉冲能量	>3 to >100 mJ	>250 mJ	>180 to >1000 mJ	>80 to >150 mJ
Repetition Rate 重复频率	1–200 Hz	1–1000 Hz	1–1000 Hz	1–10 Hz (@ 10 Hz spec)
Pulse Width 脉宽	8–25 ns	8–10 ns	5–12 ns	6–10 ns
Beam Diameter 光束直径	1.5–5 mm	5 mm	5.5–8 mm	4–5 mm
Divergence 发散角	< 0.5 mrad	< 0.5 mrad	< 0.5 mrad	< 0.5 mrad
Diode Lifetime 二极管寿命	2 yr / 2×10^9 shots	$>4\times10^9$ shots	$>4\times10^9$ shots	2 yr / 2×10^9 shots
Electrical Supply 电源	208–240 VAC, 1.5 kW	230 VAC ±10%, 2.5 kW	230 VAC ±10%, 2.5 kW	20–36 V / max 400 W (integrated)
Cooling 冷却	Water (8 l/min)	Water (8 l/min)	Water or Water/Air	Integrated peltier/air

Lamp-Pumped Nd:YAG Lasers 灯泵浦 Nd:YAG 激光器

Parameter 参数	 **SpitLight Compact** *(100 / 200 / 400)*	 **SpitLight Standard** *(400 / 600 / 1000.1)*	 **SpitLight High Power** *(1200 / 2000 / 2500)*	 **SpitLight 7000**	 **SpitLight SLM Hybrid** *(10/20/30 Hz)*	 **SpitLight PIV** *(Compact / Standard)*
Wavelength 波长	1064, 532, 355, 266, 213 nm	1064, 532, 355, 266, 213 nm	1064, 532, 355, 266, 213 nm	1064, 532, 355, 266 nm	1064, 532, 355, 266, 213 nm	532 nm (PIV)
Pulse Energy @ 1064 nm 脉冲能量	>100 to >400 mJ	>400 to >1000 mJ	>1250 to >2500 mJ	>7 J	>400 to >500 mJ	>2×60 to >2×500 mJ
Repetition Rate 重复频率	1–20 Hz	1–100 Hz	1–50 Hz	1–10 Hz	10–30 Hz	2×10 to 2×100 Hz
Pulse Width 脉宽	6–10 ns	6–10 ns	6–10 ns	6–10 ns	5 ns	4–10 ns
Beam Diameter 光束直径	4–6 mm	6–7 mm	9–12 mm	~16 mm	6 mm	4–7 mm
Divergence 发散角	< 0.5 mrad	< 0.5 mrad	< 0.5 mrad	< 5 mrad	< 0.5 mrad	< 0.5 mrad
Lamp Lifetime 灯寿命	>40,000,000 shots	>40,000,000 shots	>40,000,000 shots	—	>20,000,000 shots	>40,000,000 shots
Electrical Supply 电源	230 VAC, 1.5 kW	230–400 VAC, 2.5–5 kW	400 VAC (3 ph), 5 kW	—	208/400 VAC (3 ph), 5 kW	2×230 VAC, 1.5 kW
Cooling 冷却	Water-to-Air / Water-to-Water	Water (8 l/min)	Water (8 l/min)	Water (8 l/min)	Water (8 l/min)	Water-to-Air / Water

Hybrid Lasers 混合泵浦激光器

Parameter 参数	 SpitLight Hybrid I	 SpitLight Hybrid II	 SpitLight Hybrid III
Wavelength 波长	1064, 532, 355, 266, 213 nm	1064, 532, 355, 266, 213 nm	1064, 532, 355, 266, 213 nm
Pulse Energy @ 1064 nm 脉冲能量	> 250 mJ	> 450 mJ	> 800 mJ
Pulse Energy @ 532 nm 脉冲能量	> 125 mJ	> 250 mJ	> 350 mJ
Pulse Energy @ 355 nm 脉冲能量	> 70 mJ	> 125 mJ	> 250 mJ
Repetition Rate 重复频率	1–200 Hz	1–200 Hz	1–200 Hz
Pulse Width 脉宽	10–12 ns	10–12 ns	8–10 ns
Beam Diameter 光束直径	6 mm	6 mm	7 mm
Divergence 发散角	< 0.5 mrad	< 0.5 mrad	< 0.5 mrad
Lamp Lifetime 灯寿命	> 20,000,000 shots	> 20,000,000 shots	> 20,000,000 shots
Diode Lifetime 二极管寿命	2 yr / 2×10^9 shots	2 yr / 2×10^9 shots	2 yr / 2×10^9 shots
Electrical Supply 电源	208/400 VAC (3 ph), 5 kW	208/400 VAC (3 ph), 5 kW	208/400 VAC (3 ph), 5 kW
Cooling 冷却	Water (8 l/min, <15°C)	Water (8 l/min, <15°C)	Water (8 l/min, <15°C)
Laser Head Weight 重量	25 kg	25 kg	25 kg
Laser Head Dimensions 长宽高	665×250×125 mm	665×250×125 mm	665×250×125 mm

AdValue Photonics 光纤激光器

AdValue Photonics is a leading manufacturer of innovative fiber lasers for materials processing, scientific, LIDAR, and medical markets. Founded in 2007, the company has a reputation for delivering groundbreaking products based on its proprietary fiber laser technology. We develop and manufacture products by focusing on innovation, high quality, and cost-effectiveness. Fiber lasers, fiber amplifiers, broadband fiber sources, and fiber-based components are the main lines of products offered to the market.

AdValue Photonics 是材料加工、科研、激光雷达及医疗市场领域创新光纤激光器的领先制造商，成立于 2007 年。公司以基于专有光纤激光技术的突破性产品著称，专注于创新、高品质与高性价比。主要产品线包括光纤激光器、光纤放大器、宽带光纤光源及光纤组件。

Femtosecond Laser 飞秒激光器 — EVERESTfemto AP-1030F

Parameter 参数	 AP-1030F
Wavelength 波长	1030 nm
Average Output Power 平均功率	30 W (10~80 W possible)
Pulse Repetition Rate 重复频率	500 kHz (1 Hz~2 MHz possible)
Pulse Duration 脉宽	< 500 fs
Pulse Energy 脉冲能量	60 µJ (Max. 100 µJ)
Pulse Format 脉冲模式	Burst Mode Option
Beam Quality M^2 光束质量	< 1.3
Beam Diameter 光束直径	1~3 mm
Beam Divergence 发散角	< 2 mrad full angle
Beam Circularity 圓度	> 90%
Polarization 偏振	Linear, Vertical
PER 偏振消光比	> 20 dB
Power Stability 功率稳定性	< 3%, RMS over 8 hours
Pulse-to-Pulse Stability 脉冲间稳定性	< 3%, RMS over 10 minutes
Beam Pointing Stability 光束指向稳定性	< 50 µrad/°C

Picosecond Lasers 皮秒激光器 — EVERESTpico

Parameter 参数	 **AP-355P** *(UV 355 nm)*	 **AP-515P** *(Green 515 nm)*	 **AP-1030P** *(1μm 1030 nm)*
Wavelength 波长	355 nm	515 nm	1030 nm
Avg Output Power 平均功率	30 W (10~80 W possible)	10/15/20/30 W	15/30/60/100 W
Pulse Repetition Rate 重复频率	600 kHz (1 Hz~2 MHz)	—	20 kHz to 3 MHz
Pulse Duration 脉宽	< 15 ps	50 ps	15 ps / 50 ps
Pulse Energy 脉冲能量	50 μJ (Max. 100 μJ)	—	10/20 μJ (15 ps); 10/20/30 μJ (50 ps)
Beam Quality M² 光束质量	< 1.3	< 1.3	< 1.3
Beam Diameter 光束直径	1~3 mm	—	—
Beam Divergence 发散角	< 2 mrad full angle	—	—
Polarization 偏振	Linear, Horizontal	—	—
PER 偏振消光比	> 20 dB	—	—
Power Stability 功率稳定性	< 3%, RMS 8 hrs	Within ±5%	Within ±5%
Output Delivery 输出方式	Free-space collimated	Collimated output beam	Collimated output beam

Nanosecond Pulsed Lasers 纳秒脉冲激光器 — EVERESTnano

Parameter 参数	 **AP-515** *(Green 515 nm)*	 **AP-1030** *(1μm 1030 nm)*	 **AP-1550** *(1.55μm)*	 **AP-1950** *(2μm)*
Wavelength 波长	515 nm (Green)	1030 nm	1.55 μm	1.90–2.02 μm
Avg Power 平均功率	10/20/30/50 W	100 W (@ 300 kHz)	0.5/1/2/5 W	Up to 30 W
Pulse Repetition Rate 脉冲重复频率	100/200/300/500 kHz	50 kHz to 500 kHz	10/20/40/100 kHz	5 kHz to 10 MHz
Pulse Width 脉宽	5 ns	5 ns	5 ns	5–500 ns
Pulse Energy 脉冲能量	100 μJ	—	50 μJ	Up to 1 mJ
Polarization 偏振	—	Random	Random	PM or Random
Beam Quality M² 光束质量	< 1.2	< 1.3	< 1.3	< 1.3
Power Stability 功率稳定性	Within ±5%	Within ±5%	Within ±5%	Within ±5%
Output Delivery 输出方式	Collimated output	Collimated output	Fiber pigtailed collimator	Collimated output

Pulsed Single-Frequency Fiber Lasers 脉冲单频光纤激光器

Parameter 参数	 AP-P-SF (VIS to NIR)	 AP-P-SF-1030	 AP-P-SF-1550	 AP-P-SF-1950
Wavelength 波长	308, 515, 778, 935 nm	1.03 μm	1.55 μm	1.95 μm
Spectral Linewidth 线宽	Single Frequency (single longitudinal mode)	Single Frequency (single longitudinal mode)	Single Frequency (single longitudinal mode)	Single Frequency (single longitudinal mode)
Pulse Energy 脉冲能量	Up to 0.5 mJ	Up to 1.2 mJ	Up to 1 mJ	Up to 1 mJ
Pulse Width 脉宽	2 ns–300 ns	2 ns–300 ns	2 ns–300 ns	2 ns–300 ns
Pulse Repetition Rate 脉冲重复频率	10 kHz–1 MHz	10 kHz–1 MHz	1 kHz–10 kHz	10 kHz–1 MHz
Max. Average Power 最大功率	Up to 40 W	Up to 100 W	Up to 10 W	Up to 20 W
Beam Quality M² 光束质量	< 1.3	< 1.2	< 1.2	< 1.2
Output Polarization 偏振	Linear	Linear	Linear	Linear
Output Delivery 输出方式	Free-space collimated beam	Free-space ~1 mm beam	Free-space ~1 mm beam	Free-space ~1 mm beam

2μm Mode-Locked Fiber Lasers 2 微米锁模光纤激光器

Parameter 参数	 **AP-ML** *(Sub-ps, low power)*	 **AP-ML1** *(ps, 1 W high power)*	 **AP-ML2** *(fs, high energy)*
Wavelength 波长	1.95±0.05 μm	1.95±0.05 μm (opt: 2.07±0.02 μm)	1.95±0.05 μm
Average Power 平均功率	5 mW nominal	1 W (higher/lower available)	3 W nominal
Pulse Width 脉宽	350–950 fs (options)	< 3 ps (fs available)	800 fs (with ext. compressor)
Pulse Repetition Rate 脉冲重复频率	20–50 MHz (factory set)	20–40 MHz (factory set)	100–500 kHz (factory selectable)
Pulse Energy 脉冲能量	—	—	10 μJ (higher/lower available)
Peak Power 峰值功率	—	10 kW	—
Beam Quality M² 光束质量	< 1.1	< 1.3	< 1.3
Output Polarization 偏振	Random (opt: linear)	Random (opt: linear)	Random
Output Delivery 输出方式	SMF-28 fiber, 1 m, no connector	Armored fiber w/ collimator	Free-space ~3 mm beam

Femtum 中红外激光器

FEMTUM

Femtum's mid-infrared laser technology addresses key bottlenecks in semiconductor manufacturing, enabling next-level precision and sustainability. The company's innovations align perfectly with industry megatrends, such as the rise of AI, 5G, and IoT, making it a game-changer in the multi-billion-dollar semiconductor market. With its precision-driven solutions, Femtum has become a trailblazer in mid-infrared fiber laser technology that is transforming semiconductor manufacturing. In addition to decades of expertise, Femtum's vision for the future is to revolutionize how semiconductors are processed, enabling faster, cleaner, and more efficient manufacturing.

Femtum 的中红外激光技术解决了半导体制造中的关键瓶颈，实现更高层次的精准度与可持续性。这家公司的创新与产业的重大趋势完全契合，例如人工智能、5G 和物联网的兴起，使其成为数十亿美元半导体市场的变革者。凭借其精密导向的解决方案，Femtum 已成为中红外光纤激光技术的先驱，正在改变半导体制造的方式。除了拥有数十年的专业知识，Femtum 的未来愿景是彻底革新半导体的加工方式，实现更快速、更洁净且更高效的制造流程。

Mid-IR Fiber Laser 中红外光纤激光器

Parameter 参数	 **Femtum Nano 2800** *(Pulsed ns)*	 **Femtum Amp 2800** *(Fiber Amplifier)*	 **Femtum Ultra 2800** *(Ultrafast fs)*	 **Femtum UltraTune 3400** *(Tunable fs)*
Central Wavelength 中心波长	2800 (±20) nm	2780 (±50) nm	2800 (±20) nm	3–3.4 µm
Bandwidth (FWHM) 带宽	—	—	10–30 nm	> 40 nm
Output Power 输出功率	<125 mW / <500 mW / <3 W	10 mW to > 1 W	35 mW (std) / >100 mW (custom)	> 100 mW (>500 mW @ 3400 nm)
Signal Gain 信号增益	—	10 to > 20 dB	—	—
Pulse Energy 脉冲能量	~25 / ~100 / ~100 µJ	—	1 nJ (std) / >3 nJ (custom)	> 3.5 nJ (>17 nJ @ 3400 nm)
Repetition Rate 重复频率	5 kHz / 5 kHz / 30 kHz	—	~35 MHz (std) / 40–100 MHz	~35 MHz (>50 MHz optional)
Pulse Duration 脉宽	< 200 ns	fs to CW	~500 fs (std) / 200–500 fs	< 500 fs
Peak Power 峰值功率	—	—	> 1 kW (std) / > 5 kW	~1 to >50 kW
Beam Diameter 光束直径	—	< 3 mm	< 3 mm	~3 or 9 mm
Beam Quality M^2 光束质量	< 1.3	< 1.3	< 1.3	< 1.3
Output Polarization 偏振	—	—	Linear	Random
Cooling 冷却	Air cooling	Passive cooling	Fan-cooled	Air-cooled
Voltage 电源	100/240 VAC, 50/60 Hz	100–240 V	100–240 V	100/240 VAC, 50/60 Hz
Beam Delivery 输出	Fiber / free space	Free space	Free space / fiber	Free space / fiber

Galvo Scanners 振镜扫描头

Galvo scanners (galvanometer scanners) are high-speed beam steering systems used to precisely direct laser beams across a workpiece for marking, engraving, cutting, welding, and 3D printing. JD Union offers solutions from two world-leading German manufacturers: Scanlab and Raylase, covering a broad range of wavelengths, apertures, and application requirements.

振镜扫描头是高速激光束控制系统，广泛用于打标、雕刻、切割、焊接和 3D 打印。捷迪激光提供来自德国 Scanlab 和 Raylase 两大全球领先品牌的振镜扫描方案。

Scanlab

SCANLAB has been developing and manufacturing galvanometer scanners and scan solutions since its founding in 1990. SCANLAB's products turn lasers into precise, highly dynamic and flexible tools that provide the basis for performing countless processing tasks.

SCANLAB GmbH 自 1990 年成立以来一直致力于开发和生产扫描振镜和扫描解决方案。SCANLAB 产品将激光转变为各种精确、高度动态和灵活的工具，为完成各类加工任务奠定了坚实的基础。

excelliSCAN Series 系列扫描头

Parameter 参数	 excelliSCAN 14	 excelliSCAN 20	 excelliSCAN 30
Aperture 孔径 [mm]	14	20	30
Tracking Error 跟踪误差 [ms]	0	0	0
Positioning, jump & shoot speed @f160 定位、跳转及打标速度 [m/s]	< 30	< 16	< 11.2
Line Scan Speed 线扫描速度 [m/s]	< 30	< 16	< 11.2
Good Writing Quality Speed 标准质量打标速度 [cps]	1000	690	590
High Writing Quality Speed 高质量打标速度 [cps]	850	560	460
Jump Width Time 跳转时间 [ms]	1 mm: 0.28 10 mm: 0.88 100 mm: 3.75	1 mm: 0.40 10 mm: 1.25 100 mm: 6.88	1 mm: 0.44 10 mm: 1.43 100 mm: 9.47
Acceleration 加速度 [m/s²]	51 200	25 600	20 800
Repeatability 重复精度 (RMS) [µrad]	< 0.4	< 0.4	< 0.4
Positioning Resolution 定位分辨率 [bit]	20	20	20
Nonlinearity 非线性误差 [mrad]	< 0.5	< 0.5	< 0.5
Typical Scan Angle 扫描角度 [rad]	±0.35	±0.35	±0.37
Power Requirements 电源要求	30 V DC, max. 3 A	48 V DC, max. 5 A	48 V DC, max. 5 A
Interface 接口	SL2-100	SL2-100	SL2-100
IP Code 防护等级	IP 66	IP 66	IP 66

Parameter 参数	 excelliSCAN 14	 excelliSCAN 20	 excelliSCAN 30
Operating Temp. 工作温度 [°C]	25 ± 10	25 ± 10	25 ± 10
Weight 重量 [kg]	approx. 7	approx. 10	approx. 10

intelliSCAN Series 系列扫描头

Parameter 参数	 intelliSCAN 10 *I III / se / IV*	 intelliSCAN 14 *I III / se / IV*	 intelliSCAN 20 *I III / se / IV*	 intelliSCAN 30 *I III / se / IV*
Aperture 孔径 [mm]	10	14	20	30
Marking Speed @f160 打标速度 [m/s]	3.5	2.0	1.0	0.7
Positioning Speed @f160 定位速度 [m/s]	12.0	5.0	11.0	9.0
Good Writing Quality Speed 标准质量打标速度 [cps]	1080, 1310 (IV)	680, 1110 (IV)	340, 730(IV)	220, 500(IV)
High Writing Quality Speed 高质量打标速度 [cps]	760, 1200 (IV)	480, 930 (IV)	230, 630 (IV)	150, 420 (IV)
Tracking Error 跟踪误差 [ms]	0.11, 0 (IV)	0.15, 0 (IV)	0.32, 0 (IV)	0.55, 0 (IV)
Repeatability 重复精度 (RMS) [µrad]	< 2 to 0.4	< 2 to 0.4	< 2 to 0.4	< 2 to 0.4
Nonlinearity 非线性误差 [mrad]	< 3.5 to < 0.5	< 3.5 to < 0.5	< 3.5 to < 0.5	< 3.5 to < 0.5
Positioning Resolution 定位分辨率 [bit]	18 / 18 / 20	18 / 18 / 20	18 / 18 / 20	18 / 18 / 20
Typical Scan Angle 扫描角度 [rad]	±0.35	±0.35	±0.35	±0.35
Power Requirements 电源要求	30 V DC, max. 3 A /// 48 V, 5 A	30 V DC, max. 3 A /// 48 V, 5 A	30 V DC, max. 3 A /// 48 V, 5 A	30 V DC, max. 3 A /// 48 V, 5 A
Interface 接口	SL2-100 / XY2-100	SL2-100 / XY2-100	SL2-100 / XY2-100.	SL2-100 / XY2-100
Operating Temp. 工作温度 [°C]	25 ± 10	25 ± 10	25 ± 10	25 ± 10

SCANcube Series 系列紧凑型扫描头

Parameter 参数	 SCANcube	 SCANcube III	 SCANcube IV
Aperture 孔径 [mm]	7 / 10	10 / 14	7 / 10 / 14 / 20 / 30
Tracking Error 跟踪误差 [ms]	0.14 / 0.16	0.12 / 0.15	0.02 to 0.37
Marking Speed @f160 打标速度 [m/s]	2.5 / 2.0	3.0 / 2.0	2.0 to 2.5
Positioning Speed @f160 定位速度 [m/s]	15.0 / 10.0	16.0 / 14.0	20.8 to 7.0

Parameter 参数	 SCANcube	 SCANcube III	 SCANcube IV
Good Writing Quality Speed 标准质量打标速度 [cps]	900 / 640	925 / 740	1840 to 250
High Writing Quality Speed 高质量打标速度 [cps]	600 / 400	500 / 500	1300 to 185
Repeatability 重复精度 (RMS) [µrad]	< 2	< 2	< 2
Nonlinearity 非线性误差 [mrad]	< 3.5	< 0.9	< 0.7
Power Requirements 电源要求	±15 V DC, 3 A each	±15 V DC, 3 A each	24/30 V DC, 3 A each
Interface (digital) 接口	SL2-100 or XY2-100	SL2-100 or XY2-100	SL2-100 or XY2-100
IP Protection 防护等级	IP 50 / IP 66	IP 50 / IP 66	IP 50 / IP 66
Operating Temp. 工作温度 [°C]	25 ± 10	25 ± 10	25 ± 10

RTC Control Cards RTC 激光控制卡

Parameter 参数	 RTC6	 RTC5	 RTC4
PC Interface 接口	PCI Express, Gigabit Ethernet	PCI, PCI Express	PCI Express, Ethernet
Standalone Operation 独立运行	Yes (Ethernet variant)	No	No
Data Streaming 数据流	Yes (Ethernet variant)	No	No
Scan Head Interface 扫描头接口	SL2-100	SL2-100	XY2-100
Galvanic Isolation 电气隔离	Yes	Yes	No
Channels 通道数	2 / 2	2 / 2	2 / 3
Positioning Resolution 定位分辨率	20 bit	20 bit	16 bit
SCANahead Support 支持	Yes	No	No
Correction File Format 校正文件格式	ct5	ct5	ctb
2D / 3D Correction Files 校正文件	8 / 8	4 / 4	2 / 1
List Memory 存储器	2^{23} (~8 million)	2^{20} (~1 million)	~8,000
Max Bitmap Pixel Frequency 最大位图像素频率	800 kHz (opt. 3.2 MHz)	308 kHz	50 kHz
Analog Outputs / Resolution 模拟输出 / 分辨率	2 / 12 bit	2 / 12 bit	2 / 10 bit
Laser Synchronization 激光同步	Yes (n × 100 kHz)	Yes	No
Master / Slave 主从模式	Yes	Yes	No
Sky Writing Mode 空写模式	Yes	Yes	No
Speed-Dependent Laser Control 速度相关激光控制	Yes	Limited	No
IO Ports 8/16 bit 端口	Yes	Yes	Yes

Raylase

RAYLASE develops advanced modular components and deflection units for the control of laser beams. Maintaining high product quality standards is a priority at RAYLASE. All products are shipped to customers only after extensive tests.

RAYLASE 致力于开发先进的模块化组件和子系统的激光束偏转和控制。保持产品的高质量标准是 RAYLASE 的首要目标。只有在经过严格的测试后我们的组件及子系统才会被送到客户手中。

2-Axis Scan Heads 二轴扫描头

Parameter 参数	 MINISCAN III	 SUPERSCAN IIE	 SUPERSCAN IV	 SUPERSCAN V
Input Aperture 孔径 [mm]	10 / 14 / 20	7 / 10 / 12 / 15 / 20 / 30	10 / 15 / 20 / 30	15 / 30
Wavelengths 波长	355 / 532 / 1064 / 1070 / 10600 nm	343–405 nm, 532 nm, 780–1080 nm, 10600 nm (model dep.)	UV / VIS / NIR / IR	UV / VIS / NIR / IR
Interface 接口	XY2-100 Enhanced (16-bit) SL2-100 (20-bit)	XY2-100	XY2-100 / SL2-100	XY2-100 / SL2-100
Typical Deflection (optical) 光偏角	±0.393 rad	±0.393 rad	±0.393 rad	±0.393 rad
Resolution (XY2-100) 分辨率	16-bit / 12 µrad	12 µrad (optical)	16/20-bit	20-bit
Resolution (SL2-100) 分辨率	20-bit / 0.76 µrad	—	0.76 µrad	0.76 µrad
Repeatability (RMS) 重复精度	< 2.0 µrad	2 µrad	< 2 µrad	< 2 µrad
Position Noise (RMS) 位置噪声	< 3.2 to 4.5 µrad	10 µrad	< 3.2 to 4.5 µrad	< 2.0 µrad
Tracking Error 跟踪误差 [ms]	0.13 to 0.34	0.19 to 0.90	0.10 to 0.48	0.14 to 0.25
Good / High Writing Quality Speed [cps] 标准/高质量打标速度	600 to 800 / 750 to 1000	350 to 900	~900 / 700	600, 800
Processing Speed [rad/s] 加工速度	30 to 70 @ 30 V / 30 to 100 @ 48 V	25 to 90	30 to 55 @ 30 V / 30 to 80 @ 48 V	25 to 30
Positioning Speed [rad/s] 定位速度	30 to 60 @ 30 V / 30 to 100 @ 48 V	25 to 90	30 to 55 @ 30 V / 30 to 100 @ 48 V	25 to 30
Step Response (1% full scale) [ms] 阶跃响应时间	0.30 to 1.01	—	0.33 to 1.2	0.45 to 0.66
Gain Drift 增益漂移	Max. 15 ppm/K	< 15 ppm/K	< 15 ppm/K	8 ppm/K
Offset Drift 偏移漂移	Max. 10 µrad/K	10 µrad/K	< 10 µrad/K	15 µrad/K
Long-term Drift 8h 长时漂移	< 80 µrad	150 µrad (100 µrad w/ water)	< 60 µrad	< 50 µrad
Power Supply 电源	+30 V or +48 V 2 A RMS, max. 5 A	+15 V to +18 V 3 A RMS, max. 10 A	+30 V / +48 V	+30 V / +48 V

3-Axis Scan Heads 三轴扫描头

Parameter 参数	 AXIALSCAN-30 *DIGITAL II / HP*	 AXIALSCAN-50 *DIGITAL II*	 AXIALSCAN RD	 AXIALSCAN FIBER RD	 AM-MODULE III
Input Aperture 入射孔径	30 mm	50 mm	14 mm	30 / 50 mm	—
Wavelength 波长	UV / VIS / NIR / IR	NIR / IR	UV / NIR	NIR (fiber delivered)	NIR 1060–1090 nm
Z-Axis Control Z 轴控制	Linear Translator (LT-II)	Linear Translator (LT-II)	RAYVOLUTION DRIVE	RAYVOLUTION DRIVE	RAYVOLUTION DRIVE
Interface 接口	XY2-100 (16-bit) / SL2-100 (20-bit)	XY2-100 (16-bit) / SL2-100 / RL3-100 (20-bit)	XY2-100 Enhanced (16-bit) / SL2-100 (20-bit)	RL3-100 / SL2-100 (20-bit)	RL3-100 (20-bit)
Working Distance 工作距离	Field-size dependent	280 to 1394 mm	200 to 695 mm	256 to 937 mm (RD-30) 291 to 663 mm (RD-50)	318 to 1061 mm
Max Laser Power 最大激光功率	up to 4 kW	up to 5 kW (NIR) 2.5 kW (CO_2)	100 W (355 nm) to 300 W (1064 nm)	up to 6 kW	2 kW (single mode) 4 kW (multi mode)
Repeatability 重复精度	< 0.4 µrad (HP) to < 2.0 µrad (std)	< 2.0 µrad	< 2.0 µrad	< 0.4 µrad (HPS) to < 2.0 µrad (std)	< 0.4 µrad (HP) to < 2.0 µrad (std)
Water Cooling 水冷	Optional	Optional	—	Optional	Optional / Required >2 kW
Application 应用	Cutting, 3D Marking 切割/3D 打标	Large-field 3D 大幅面 3D	Additive Mfg; PCB cutting/marking	Thin materials such as battery foils or fuel cells' bipolar plates	Additive Mfg 增材制造

Welding Modules 激光焊接模块

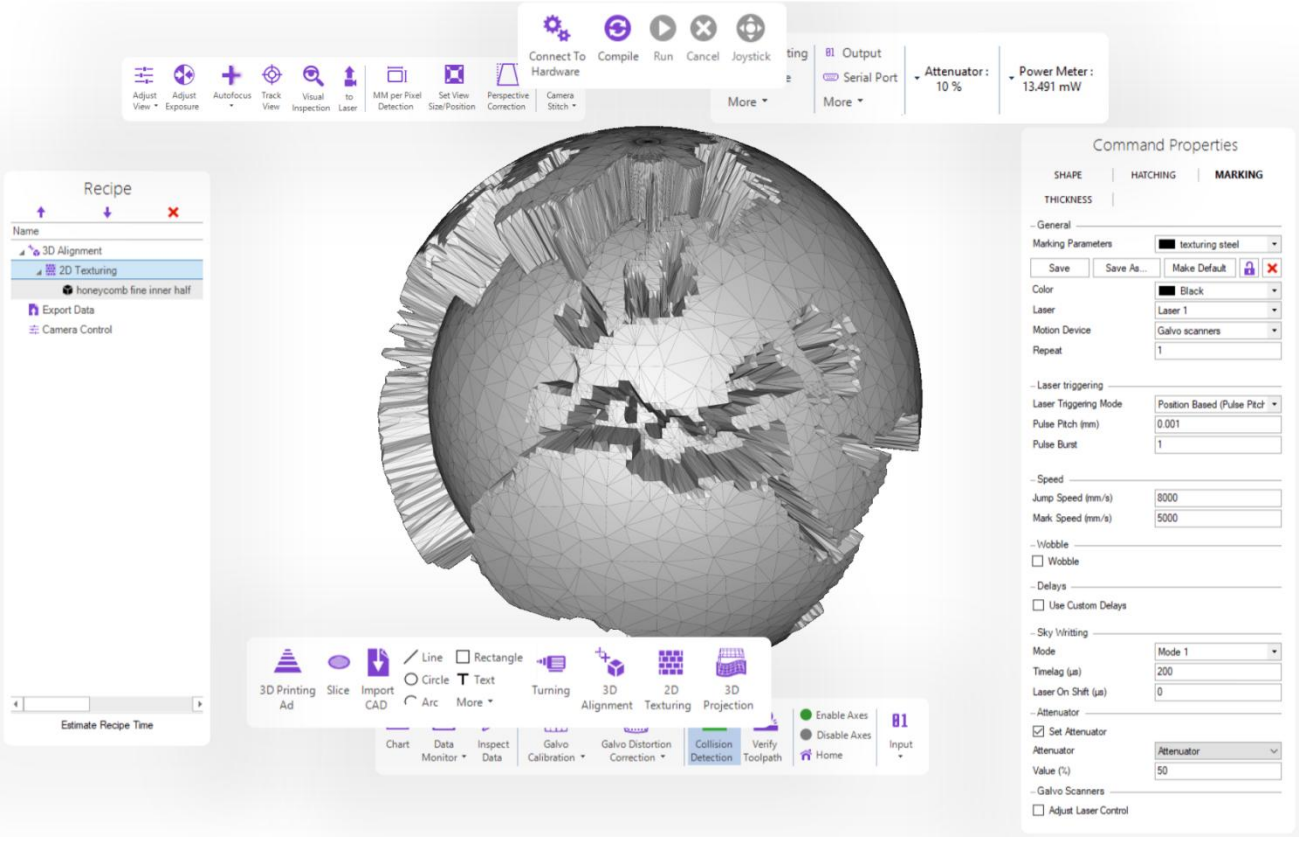
Parameter 参数	 HIGH POWER WELDING MODULE	 BUSBAR WELDING MODULE
Application 应用	High power laser welding 高功率激光焊接	Battery busbar welding 电池汇流排焊接
Wavelength 波长	NIR 1060–1080 nm (also green/blue variants available)	NIR 1060–1090 nm
Max Laser Power 最大激光功率	up to 6 kW cw (8 kW at 75% duty cycle)	Up to 6 kW
Aperture 孔径	30 mm (SUPERSCAN IV-30)	30 mm (AXIALSCAN FIBER RD-30)
Scan Axes 扫描轴	2-axis (XY)	2-axis (XY)
Z-Axis / Focus 焦距控制	Fixed focus via F-Theta lens (no motorized z-axis)	RAYVOLUTION DRIVE (dynamic pre-focusing)
Interface 接口	XY2-100 Enhanced (16-bit) / SL2-100 (20-bit)	RL3-100 / SL2-100 (20-bit)
Seam Tracking 焊缝跟踪	Optional: on-axis camera (RAYGUIDE MATCH) + OCT depth monitoring (Lessmüller OCT250)	RAYDIME METER (distance/height) + RAYGUIDE MATCH (camera-based position)
Water Cooling 水冷	Required	Optional
Key Feature 主要特点	Modular F-Theta platform; SUPERSCAN IV-30; field sizes 120×120 to 285×285 mm^2; optional OCT & camera	AXIALSCAN FIBER RD-30 + RAYDIME METER + RAYGUIDE MATCH; up to 500×500 mm^2 field; ±10 µm distance accuracy

Software 软件 — DMC 控制软件

DMC Direct Machining Control

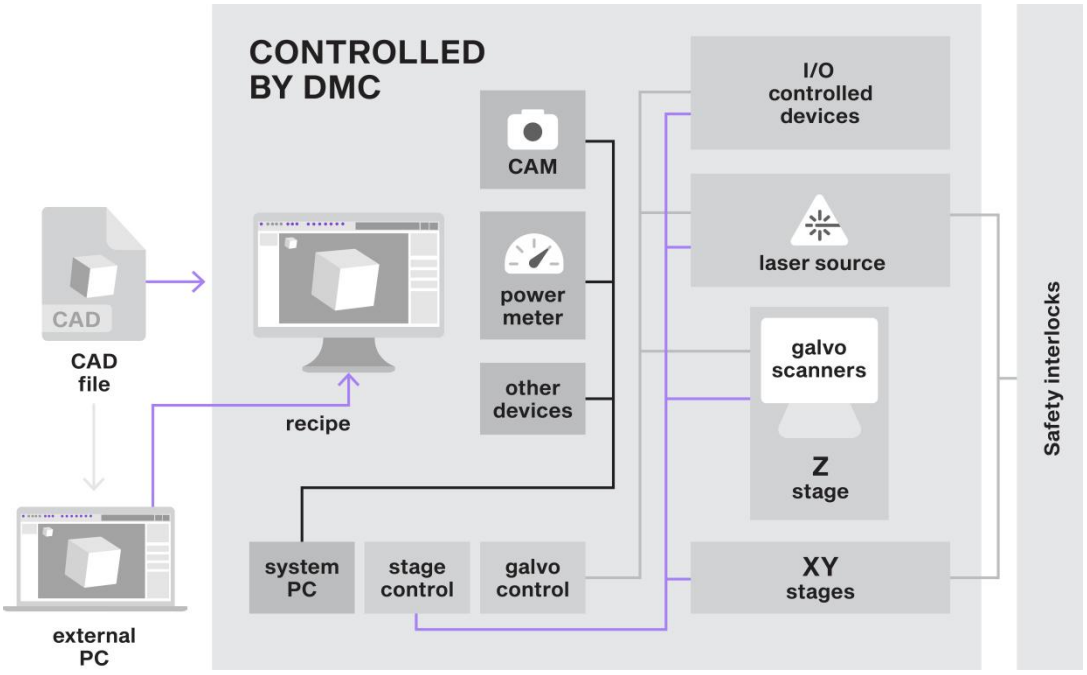
DMC is a control software for laser machines. It is an all-in-one solution where the user creates or imports CAD objects, sets process parameters, and clicks Run. DMC then takes care of all the hardware control according to the recipe. Typical applications range from laser marking or engraving to 3D printing and 5-axis texturing of freeform surfaces. DMC has integrated machine vision and supports a wide range of sensors. That and various built-in process-specific tools allow the users to fully automate the process for industrial OEM systems or high-volume research tasks.

DMC 是一款用于激光设备的控制软件。它是一体化解决方案，用户可以创建或导入 CAD 对象、设置工艺参数，然后点击“运行”。DMC 会根据设定的配方自动完成所有硬件控制。典型应用包括激光打标或雕刻、3D 打印，以及对自由曲面的五轴纹理加工。DMC 集成了机器视觉，并支持多种传感器。这些功能以及各种内置的工艺专用工具，使用户能够为工业 OEM 系统或高产量科研任务实现全流程自动化。



Key Features 主要功能

Category 类别	Features 功能
Motion Control 运动控制	Galvanometric scanner control · Positioning stages control · Unlimited number of axes · Galvo+Stages Stitching · Advanced marking on the fly · Virtual joystick 振镜控制 · 移动平台控制 · 支持无限数量轴 · 振镜 + 平台拼接（Stitching） · 高级飞行打标（Marking on the fly） · 虚拟摇杆
File Import 文件导入	DXF · DWG · STL · STP · IGES · Gerber · NC Drill/Excellon · TXT · CSV
Tools / Commands 工具 / 指令	Drawing tools · Hatching (lines, cross-hatching) · Advanced hatching (stripes, chess pattern, hybrid, etc.) · Measuring · Logical commands (Loop, If) · Variables and data import · Math functions · Logging and data export · Sample surface height mapping · 3D projection and wrapping · 3D Printing tool · Support generation for 3D models · 3D model fixing · Galvo scanner calibration tools · Stage calibration tools · Multiple scanner simultaneous control 绘图工具 · 填充（线填充、交叉填充） · 高级填充（条纹、棋盘格、混合等） · 测量工具 · 逻辑指令（Loop 循环、If 条件） · 变量与数据导入 · 数学函数 · 日志记录与数据导出 · 样品表面高度测绘 · 3D 投影与包覆（Wrapping） · 3D 打印工具 · 3D 模型支撑生成 · 3D 模型修复 · 振镜校准工具 · 平台校准工具 · 多振镜同步控制
Device Control 设备控制	IO · Serial port · Telnet · DB control · Wait for IO trigger · High speed data monitoring IO 控制 · 串口通信 · Telnet 通信 · 数据库控制 · 等待 IO 触发 · 高速数据监控
Security Features 安全功能	User access levels · Process parameter locking 用户权限等级管理 · 工艺参数锁定
Custom Features 定制化功能	Remote Control Module (API) for integration with third-party software · Adaptations of features, hardware support, and user interface 远程控制模块（API），用于与第三方软件集成 · 功能、硬件支持及用户界面定制
Training & Support 培训与支持	Personal online training session · Online assistance with configuration · Training for recipe creation for your application · Installation, configuration and testing on your machine at your site · Training on your machine at your site · Follow-up online training 在线培训 · 在线配置支持 · 针对应用的配方（Recipe）创建培训 · 现场设备安装、配置与测试 · 现场设备操作培训 · 后续在线培训支持
Cameras & Vision 相机与视觉系统	Webcam support · Industrial camera support · Camera view calibration with positioning system · Autofocus feature (to find laser focus position) · Perspective distortion correction · Manual feature recognition for alignment · Automatic feature recognition for alignment · Camera view stitching · Extracting contours from the image and image statistics · Original contour deformation based on camera detection 普通摄像头支持 · 工业相机支持 · 相机与定位系统标定 · 自动对焦功能（寻找激光焦点位置） · 透视畸变校正 · 手动特征识别对位 · 自动特征识别对位 · 相机视野拼接 · 从图像提取轮廓及图像统计 · 基于相机检测的原始轮廓形变



Supported Hardware List 支持的硬件

Category 类别	Hardware 硬件
Positioning stage controllers 运动平台控制器	● ACS Motion Control ● Aerotech A3200/ Automation1 ● Polaris Motion Control ● Newport XPS (accurate triggering only in XY) ● Delta TAU PMAC, Power PMAC ● Physik Instrumente via GCS (only point-to-point motion) ● Zaber X-MCB2/X-MCC ● Galil DMC-41×3 (only point-to-point motion) ● Googol GTS (only point-to-point motion) ● HALaser E1701M (only point-to-point motion) ● Standa 8SMC5-USB single axis (only point-to-point motion) ● SigmaKoki GSC-01/GSC-02 (only point-to-point motion) ● Elmo Motion Control (point-to-point and PVT motion for on-fly processing)
Galvanometric scanner controllers 振镜扫描头控制器	● RTC3/4/5/6 by SCANLAB GmbH ● XL SCAN by SCANLAB GmbH ● SCANmotionControl by SCANLAB GmbH ● Raylase SP-ICE3 ● Polaris Motion Control ● Aerotech A3200/ Automation1 ● Cambridge ScanMaster ● Canon GB-511/GB-501 ● SmartMove ● HALaser E1701/E1803 ● Newson CUA32 ● precSYS 5-Axis Scanner by SCANLAB GmbH ● EI.En. Scan Heads
Laser sources 激光器	● Light Conversion Carbide/Pharos ● Trumpf TruPulse nano (SPI R4/G4) ● Iradion nanosecond and femtosecond series ● Amplitude Tangerine/Satsuma ● Lumentum PicoBlade ● Luxinar SCX 30 (former Rofin) ● Luxinar LXR series ● Spectra-Physics Spirit ● Trumpf TruMicro (OPCUA) ● IPG YLM QCW Series ● Coherent Monaco ● Ekspla FemtoLux ● EI.En. CO2 Lasers
Cameras 相机	● Basler (Pylon 7.2 / 6 / 5.2 / 5) ● IDS imaging ● Cognex with inSight Vision (using In-Sight Explorer) ● Allied Vision ● PointGray and Flir (via Spinnaker SDK) ● Cameras with genTL up to 1.5 and GenICam up to 3.2 ● Cameras with DirectShow drivers
Power meters 功率计	● Gentec S-Link-2/M-Link/P-link/Integra ● Coherent PowerMax ● Ophir Nova II ● Analog Sensors
Sensors 传感器	● Keyence CL-3000 (serial and TCP/IP) and LK-G5000 (serial) ● Panasonic HL-G125 S-J ● Precitec CHRocodile ● Analog height sensors ● SCANLAB Open Interface Extension ● Micro-Epsilon IFD2421 and C-Box
Other hardware 其他硬件	● DLP/DMD projection generators ● SLM via HDMI ● Optogama expanders and attenuators ● Altechna PowerXP/MoTex (only certain device versions are supported) ● Thorlabs shutter ● Attenuator controlled by supported motion controllers

Beam Delivery Accessories 光束传输组件

JD Union offers a comprehensive range of beam delivery accessories from world-class manufacturers to complete laser processing system setups. Our portfolio includes precision optics, laser processing heads, fiber delivery modules, and beam shaping components — enabling optimal beam delivery for cutting, welding, and surface treatment applications.

捷迪激光提供来自世界一流制造商的全面光束传输配套组件，用于完善激光加工系统的整体配置。我们的产品组合包括精密光学元件、激光加工头、光纤传输模块以及光束整形组件——为打标、切割、焊接和表面处理等应用实现最佳的光束传输效果。

Jenoptik

Jenoptik offers high-precision laser beam expanders, F-Theta lenses and smart, ready-to-install plug-and-play solutions for use in demanding series production or scientific applications. Whether it is cutting, welding or engraving, photonics play an integral role in countless application areas of laser material processing. Thanks to our state-of-the-art laser technologies and optical solutions, a wide variety of materials can be processed with high productivity and precision. We are your reliable partner for machine-integrable optical components and systems that are designed for your precise requirements in material processing.

Jenoptik 提供高精度激光扩束镜、F-Theta 场镜以及即插即用的智能化整体解决方案，适用于严苛的批量生产或科学研究应用。无论是切割、焊接还是雕刻，光子学技术在激光材料加工的无数应用领域中都发挥着不可或缺的作用。凭借先进的激光技术与光学解决方案，各类材料均可实现高效、高精度加工。我们是您值得信赖的合作伙伴，为您的精密材料加工需求提供可机器集成的光学组件与系统。

F-Theta Lenses 场镜

Specification 说明	 JENar®	 JENar® Silverline™	 JENar® APTAline™
Description 描述	Low-power objective lenses	For applications that require high-power lasers and short-term pulses	Offer lenses that are optimally tailored to customers' requirements
Wavelengths 波长	355 to 1080 nm	266 to 1100 nm	355 to 1080 nm
Key Feature 主要特点	Suitable for uses in micromaterial processing, especially for microstructuring or for marking and labeling different materials.	Limit diffraction. Highly resistant to damage. High spot consistency over the entire scanning range.	Cost-optimized alternative for demanding applications where reliability, series stability and durability count
Field Size 加工范围	Up to 320 × 320 mm	Up to 328 × 328 mm	Up to 410 × 410 mm

BEX Beam Expanders 扩束器

Specification 说明	 Fix-BEX	 Variable BEX	 Motorized Variable BEX-M
Zoom Factor 放大倍数	1.5x to 8x	● 1x-4x ● 1x-4x steadfast ● 2x–10x ● 1x–8x	1x–8x
Wavelengths 波长	355 to 1080 nm	355 to 1080 nm	355 to 1080 nm
Key Feature 主要特点	Suitable for uses in high-power and ultrashort pulse systems	● Quartz glass system ● High beam stability ● High image quality	Optimizing and balancing the critical parameters of time, quality and ease of use

Laser Mech 激光加工头

Laser Mechanisms is the recognized world leader in the design and manufacture of laser beam delivery components and articulated arm systems. Laser Mechanisms' products are used in every type of industrial application including cutting, welding, drilling, scribing, surface treatment and other processes. The products are used with every type of laser, including CO2, Nd:YAG, Fiber Lasers and more.

Laser Mechanisms 是全球公认的激光光束传输组件和关节臂系统设计与制造领域的领导者。Laser Mechanisms 的产品广泛应用于各种工业加工领域，包括切割、焊接、钻孔、划线、表面处理以及其他加工工艺。这些产品可与多种类型的激光器配合使用，包括 CO_2 激光器、Nd:YAG 激光器、光纤激光器等。

Parameter 参数	 FiberCUT®	 FiberMINI®	 FiberWELD®	 Articulated Arms
Description 描述	Cutting Head	Cutting Head	Welding Head	Flexible beam delivery connecting laser source to process head
Models 型号	FiberCUT® ST/STa/RAa/RAc/2D/2Dx	FiberMINI® /AF/Weld	FiberWELD® /DH/DHc/DHμ/HR	-
Power Rating 额定功率	6 kW	Up to 4 kW	12 kW	Up to 8 kW
Clear Aperture 通光孔径	25 mm	25 mm	48 mm	15, 19, 35, 50 mm
Weight 重量	3.5 kg	~1.5 kg	~4 kg	-

JD UNION
LASER PRECISION

Join the Journey, Drive to Distinction

JD Union Pte Ltd

新加坡捷迪激光

One-stop Laser Solution Promoter
一站式激光方案服务商

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Rev 1.0, 12 Mar 2026