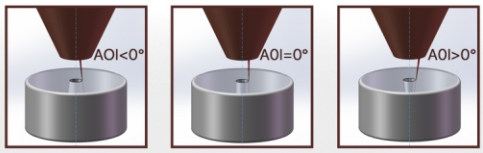
RAY-MOTION
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RM5D

5-axis Drilling System





5-axis Drilling System

The RM5D five-axis drilling system enables precise micro-machining of hole-shaped primitive sets, such as elliptical conical holes, square blind holes, and ideal through-holes. The system integrates the Neutron 2D galvo system, Proton dynamic focusing unit, α/β multi-axis galvo system, focusing lens, and RayDrilling controller software. With core performance advantages of high resolution, high linearity, and low jitter, it can achieve high-speed and precise positioning of small light spots. Through the coordinated control of the α/β multi-axis galvanometer system, dynamic adjustment of the beam incident angle at the focal point is realized to meet complex laser incidence requirements.

It can cover a working range of ø2.5 mm × 3 mm. The RayDrilling dedicated software is adapted to the five-axis drilling system, supporting visual planning of drilling tasks, intuitive parameter adjustment, and multiple filling modes.

五轴钻孔系统

RM5D五轴钻孔系统可实现孔状图元集合的精密微加工，如椭圆锥孔、方形盲孔、理想通孔等。系统集成Neutron二维扫描振镜、Proton动态聚焦单元，α／β多轴振镜系统、聚焦镜头及RayDrilling控制软件。凭借高分辨率、高线性度、低抖动的核心性能优势，可完成小光斑的高速精准定位。通过α／β多轴振镜系统的协同控制，可实现聚焦点光束入射角的动态调节，满足复杂的激光入射需求。

可满足⌀2. 5㎜×3㎜的工作范围。RayDrilling专用软件适配五轴钻孔系统，支持钻孔任务可视规划，支持直观的参数调节及多元填充方式。

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RM5D Specifications
五轴钻孔系统 规格参数

一般规格 /General specifications

孔径 Aperture	3mm
波长 Wavelength	1030-1080nm 515-532nm
激光脉冲功率 Laser Pulse Energy(μJ)	≤300μJ (1030/1064 nm) ≤100μJ (515nm/532nm)
平均功率 Average Power	≤50W
电源电压（要求）Supply Voltage(Requirements)	
振镜 Galvo Scanner	±15@150W
a&β振镜 a&β Axises GalvoScanner	±15@150W
DFU电动调节模组 DFU Electric adjustment module power supply interface	12-48V 6A
尺寸（长，宽，高）Dimensions(L×W×H mm)	570×200×427
接口协议 Interface	
振镜 Galvo Scanner	XY2-100
a&β振镜 a&β Axises GalvoScanner	XY2-100
水冷规格 Water cooling	2-4 L/min @2-3 bar
工艺气体 Precess gas	Any，Max. 4 bar
重量 Weight	approx. 28kg

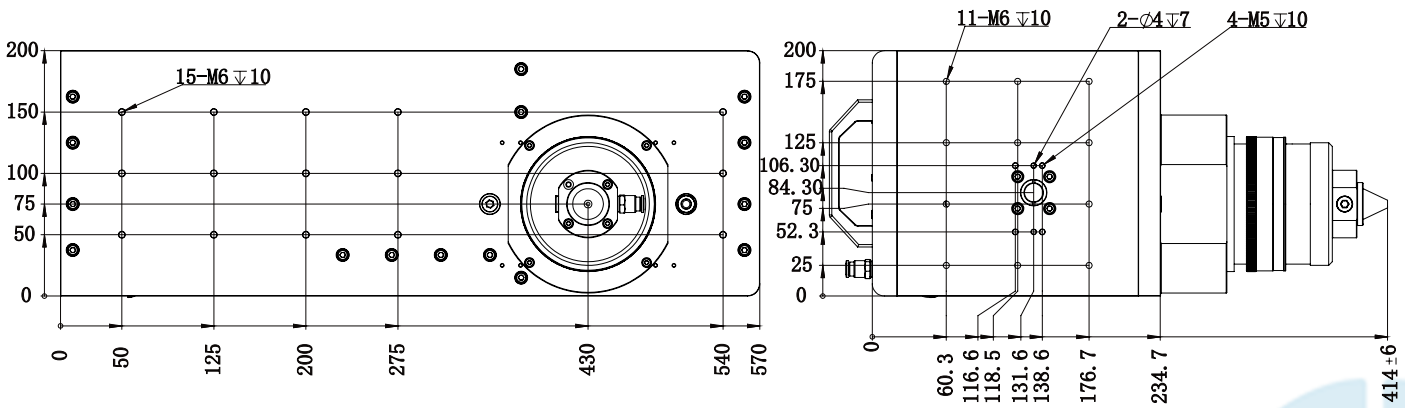
其它配置 /Other configurations

场镜焦距 Objective Focal Length	100mm
振镜工作距离 Working Distance From Galvo (1)	176.7mm（1030/1064 nm） 181.6mm（515/535 nm）
喷嘴工作距离 Working Distance From Nozzle (2)	3-5mm
光斑直径 Focal diameter	30μm （M^2 = 1, 1030/1064 nm） 15μm （M^2 = 1, 515/532 nm）
加工范围 Field size	≤ Ø2.5mm
Z轴定位 Z positioning	-3mm ~ 0mm
最大Z轴速度 Maximum mechanical Z velocity	100mm/s
最大入射角 Maximum angle of incidence（AOI）	±7°
进动频率 Precession frequency	≤ 200Hz
孔径精度 Hole diameter accuracy	≤1μm

注：①振镜下表面到最高工作平面的距离。

②喷嘴下表面到最高工作平面的距离。

上述资料如有更改，将不作另行通知 The above information is subject to change without notice 7/2025



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RayDrilling五轴钻孔软件用于实现不同条件的激光输出与运动控制，实现精细的钻孔加工支持不同层的图元参数设置，包括直径、旋转、椭圆度等。支持一次运行多个圆形孔的微加工。

RayDrilling five-axis drilling software is used to achieve laser output and motion control under different conditions. Achieve precise drilling processing.

软件支持二维模板图元的参数设置，每层图元的尺寸参数编辑，激光输出参数设置，层填充参数设置。加工图元参数将在图表和3D视图中同步显示。

The software supports parameter settings for 2D template primitives, editing of dimensional parameters for each layer of primitives, laser output parameter settings, and layer filling parameter settings. The processing primitive parameters will be synchronously displayed in the chart and 3D view.

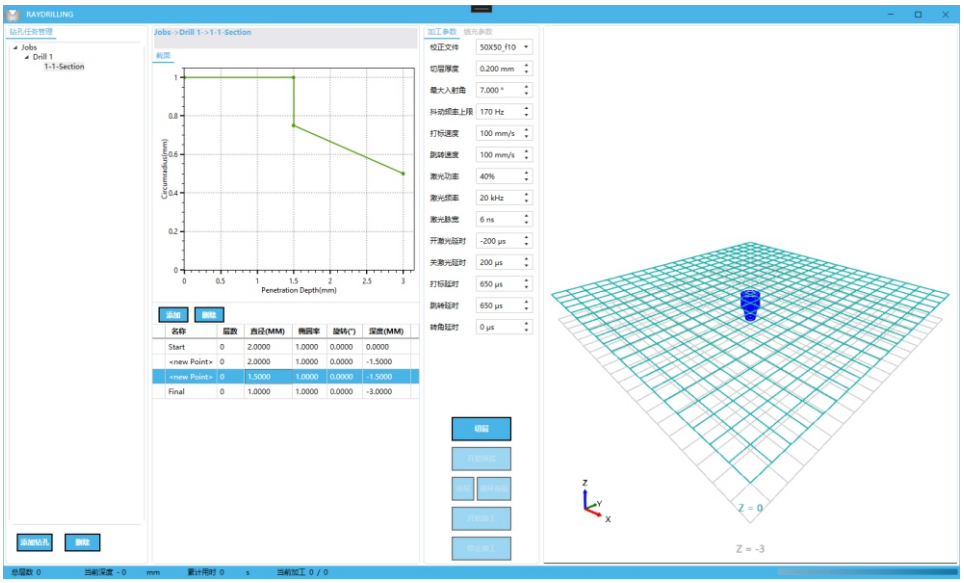


图1

支持提供激光最大入射角度的参数设置。激光入射角度的调整运动将由RMC2控制卡计算并输出于MultiAxis端口。

The software supports parameter settings for the maximum laser incident angle. The adjustment motion of the laser incident angle will be calculated by the RMC2 control card and output to the MultiAxis port.

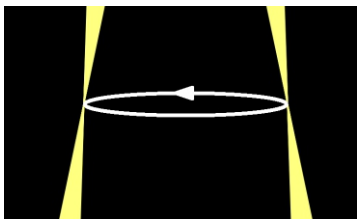


图2 设置最大入射角 > 0

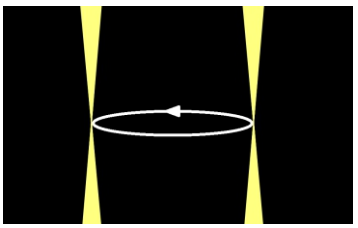


图3 设置最大入射角=0

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