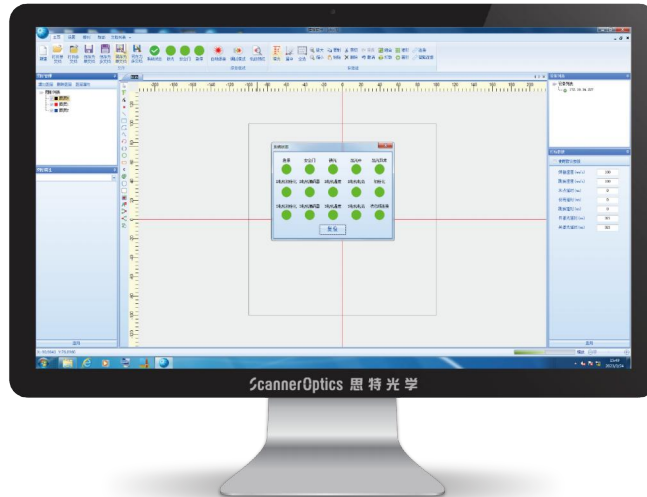


ScanWorld Software ScanWorld 软件



产品简介

PRODUCT INTRODUCTION

思特光学ScanWorld软件支持各种强大的功能可以协助客户完成各种富有挑战的工作, 包括20bit的ST2-100通讯协议、Skywriting轨迹优化功能、位置闭环功能、状态监测功能以及温度监测功能等。高精度校正算法保证大幅面加工时的定位精度;提供C#/C++/QT二次开发库, 兼容32位/64位的各种windows操作系统, 方便客户灵活开发上位机软件。

The ScanWorld software of ScannerOptics supports a variety of powerful functions that can assist customers in completing various challenging tasks, including the 20-bit ST2-100 communication protocol, Skywriting trajectory optimization function, position closed-loop function, condition monitoring function, and temperature monitoring function, etc. High-precision correction algorithms ensure positioning accuracy during large-format processing. We provide C#/C++/QT secondary development libraries, which are compatible with various 32-bit / 64-bit windows operating systems, facilitating customers to flexibly develop upper computer software.

行业应用

INDUSTRY APPLICATIONS

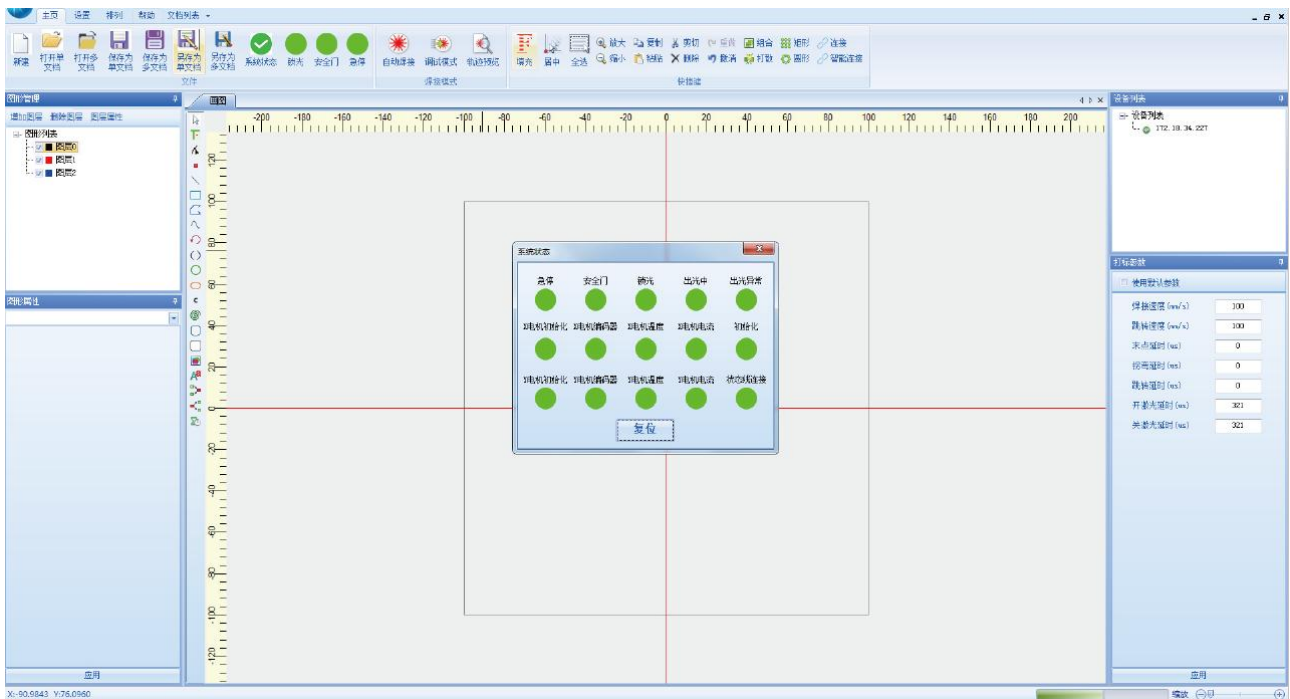
思特光学ScanWorld软件可应用于医疗、通用打标、大幅面打标、高功率焊接、清洗、视觉定位、光伏、3D打印、转镜扫描、飞切、四轴联动等激光加工领域。

The ScanWorld software of ScannerOptics can be applied in laser processing fields such as medical, general marking, large-format marking, high-power welding, cleaning, visual positioning, photovoltaic, 3D printing, polygon scanning, flying cutting, and four-axis synchronizing motion.



功能介绍

FUNCTION INTRODUCTION



SkyWriting功能 SkyWriting Function

SkyWriting是专为提升激光加工质量而开发的智能轨迹优化技术，通过先进的算法实时调控激光开关时序与扫描速度，有效解决复杂图形加工中的拐角过烧问题，确保加工表面质量均匀一致。

SkyWriting is an intelligent trajectory optimization technology specifically developed to enhance the quality of laser processing. It uses advanced algorithms to control the timing of laser switches and scanning speed in real time, effectively solving the problem of corner overburning in complex graphic processing and ensuring uniform and consistent surface quality of the processed parts.

多文档打标 Multi-Document Marking

多文档循环打标功能是生产线、流水线作业或需要高频率切换打标内容的理想选择。它通过自动化任务切换与队列循环管理，最大化减少操作员干预，确保高效、流畅、无间断的连续打标作业，尤其适用于多型号产品混流生产，固定序列号/批号的循环标记，多种图案或标识的交替打标等需要高节奏、重复性打标任务的生产线。

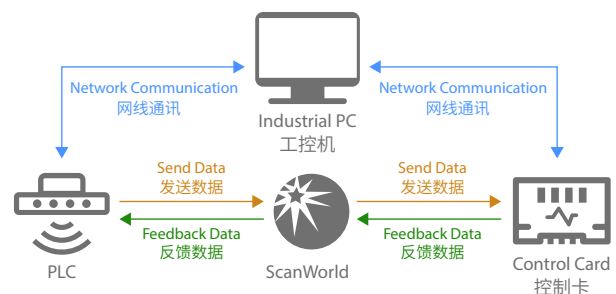
The multi-document loop marking function is an ideal choice for production lines, assembly line operations, or those that require frequent switching of marking content. It minimizes operator intervention through automated task switching and queue cycle management, ensuring efficient, smooth and uninterrupted continuous marking operations. It is particularly suitable for production lines that require high-rhythm and repetitive marking tasks, such as mixed-flow production of multiple product models, cyclic marking of fixed serial numbers/batch numbers, and alternating marking of various patterns or logos.

信号触发打标 Signal Trigger Marking

用户可将预设的打标文档预先绑定至设备特定的输入 (IO) 接口。当外部控制系统 (如PLC) 触发该指定IO接口的信号时，系统将自动调用并执行与之绑定的打标文档，精准、高效地在工件上进行激光标识。

Users can pre-bind the preset marking document to the device-specific input (IO) interface. When the external control system (such as PLC) triggers the signal of the specified IO interface, the system will automatically invoke and execute the marking document bound to it, precisely and efficiently performing laser marking on the workpiece.

TCP打标功能 TCP Marking Function



支持通过标准TCP/IP协议与PLC等工业控制器无缝通信。用户可通过网络直接向激光打标软件 (ScanWorld) 发送指令，实时触发预设打标任务，无需物理信号交互。

Supports seamless communication with industrial controllers such as PLCs via standard TCP/IP protocols. Users can directly send instructions to the laser marking software (ScanWorld) via the network to trigger preset marking tasks in real time without the need for physical signal interaction.

四轴联动 Four-Axis Synchronizing Motion

具有振镜(XY轴高速扫描)与伺服平台(XY轴精密移动)协同控制,通过四轴实时动态补偿与轨迹同步,实现超大幅面、高精度图形打标(如曲面工件、整版板材)。

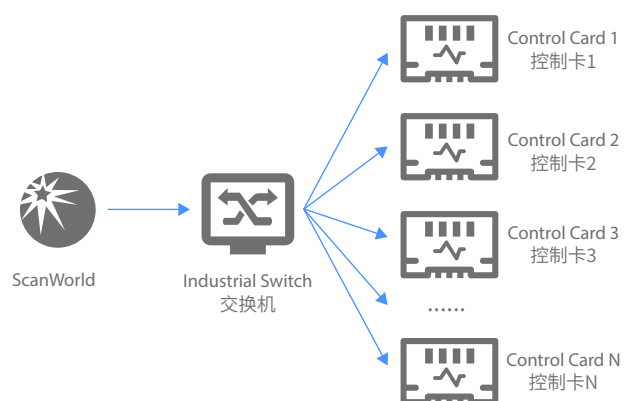
It is equipped with a galvanometer (high-speed scanning of XY axes) and a servo platform (precise movement of XY axes) for coordinated control. Through real-time dynamic compensation and trajectory synchronization of four axes, it achieves ultra-large format and high-precision graphic marking (such as curved surface workpieces and full-plate plates).

四轴飞行加工 Four-Axis Flying Machining

基于四轴协同控制技术,系统将大型切割图形智能分区,振镜完成当前区域切割后,伺服平台无缝移动至下一区域,通过实时轨迹补偿与动态拼接算法,实现 FPC (柔性电路板) 等材料的大幅面无痕切割。

Based on four-axis collaborative control technology, the system intelligently divides large-scale cutting patterns into zones. After the galvanometer completes the cutting in the current area, the servo platform seamlessly moves to the next area. Through real-time trajectory compensation and dynamic splicing algorithms, it realizes large-format traceless cutting of materials such as FPC (flexible circuit Board).

多卡打标功能 Multi-Card Marking Function



基于工业以太网网络架构,单台工控机可集中管理多达252张激光控制卡。系统具备强大的多任务并行处理能力,支持所有接入控制卡同时、独立运行,差异化执行包含不同图形(如序列号、二维码、图案)及独立工艺参数(功率、速度等)的打标任务。极大提升产线吞吐效率与柔性生产能力,满足多品种、大批量同步打标需求。

Based on the industrial Ethernet network architecture, a single industrial control computer can centrally manage up to 252 laser control cards. The system is equipped with a powerful multi-task parallel processing capability, supporting all connected control cards to operate simultaneously and independently, and differentiating the execution of marking tasks involving different graphics (such as serial numbers, QR codes, patterns) and independent process parameters (power, speed, etc.). Greatly enhance the throughput efficiency and flexible production capacity of the production line, meeting the demand for simultaneous marking of multiple varieties and large quantities.

RTC5/RTC6 控制卡兼容性

Compatibility of RTC5/RTC6 Control Card

全面兼容并支持业界领先的RTC5/RTC6系列激光控制卡,提供稳定可靠的控制信号输出,保障高品质激光加工效果。

Fully compatible and supportive of the industry-leading RTC5 series laser control cards, it provides stable and reliable control signal output to ensure high-quality laser processing results.

2.5D 振镜钻孔 2.5D Drilling

突破传统二维平面限制,支持利用振镜系统实现浅层三维(2.5D)特征的精密钻孔加工。提供非接触式、高效率的微孔加工解决方案。

Breaking through the limitations of traditional two-dimensional planes, it supports the precise drilling processing of shallow three-dimensional (2.5D) features by using galvanometer systems. Provide non-contact and highly efficient micro-hole processing solutions.

视觉定位功能 Visual Positioning Function

视觉定位打标功能采用机器视觉与激光加工深度融合技术,通过高分辨率工业相机实时捕捉工件位置,智能补偿定位偏差,彻底解决因人工放置误差导致的打标偏移问题。

The visual positioning marking function adopts the deep integration technology of machine vision and laser processing. It captures the position of the workpiece in real time through a high-resolution industrial camera and intelligently compensates for positioning deviations, completely solving the problem of marking offset caused by manual placement errors.

超高速虚线加工 Ultra-High-Speed Dotted Line Processing

针对光伏行业硅片划线等特殊需求,优化开发超高速虚线加工算法。确保在极高速度下实现精准、均匀的虚线轨迹加工,满足行业严苛的工艺要求。

In response to the special demands of the photovoltaic industry such as silicon wafer scribbling, an ultra-high-speed dotted line processing algorithm has been optimized and developed. Ensure precise and uniform dotted line trajectory processing at extremely high speeds to meet the strict process requirements of the industry.

脱机打标 Offline Marking

配置专用SD卡存储扩展模块。支持预先将加工任务(最多支持16个文档)下载至SD卡。系统可通过外部I/O信号触发,在脱离上位机PC的状态下独立执行存储的加工任务,提升系统可靠性与产线灵活性。

Configure a dedicated SD card storage expansion module. Support pre-downloading processing tasks (up to 16 documents) to the SD card. The system can be triggered by external I/O signals and independently perform stored processing tasks without being connected to the upper computer PC, thereby enhancing system reliability and production line flexibility.

飞行打标 Flying Marking

- 支持两轴 (X/Y) 及三轴 (X/Y/Z) 飞行打标模式。
- 通过获取编码轮的速度变化, 对传送带上的物体进行动态打标。
- 能够在物体移动的过程中, 实现间隔地打字符和图案。
- 在工件连续运动的生产线上, 实现实时位置跟踪与动态激光加工, 保证标记位置精确无误。
- 极耳切割是从飞行打标功能基础上演变而来的一种特殊打标技术, 与飞行打标不同, 极耳切割只能打线, 不能打字符和图档。
- Supports two-axis (X/Y) and three-axis (X/Y/Z) flying marking modes.
- Dynamic marking of objects on the conveyor belt is carried out by obtaining the speed changes of the coding wheel.
- It is capable of intermittently typing characters and patterns while the object is moving.
- On the production line where workpieces move continuously, real-time position tracking and dynamic laser processing are achieved to ensure the accuracy of the marked positions.
- Tab cutting is a special marking technology evolved from the flying marking function. Unlike flying marking, tab cutting can only mark lines and not characters or graphic files.

分层加工 Layered Processing

通过智能分层算法将三维模型按高度离散化为多层, 在复杂曲面实现全深度均匀雕刻, 突破传统激光单层加工局限。

Through an intelligent layering algorithm, the three-dimensional model is discretized into multiple layers by height, achieving uniform full-depth engraving on complex curved surfaces and breaking through the limitations of traditional laser single-layer processing.

阴雕/阳雕功能 Concave Engraving/Convex Engraving Function

- 阴雕 (深雕): 精准蚀除目标区域, 形成深度凹陷结构 (如模具腔体、盲孔), 保留非目标材料。
- 阳雕 (浮雕): 切除外围冗余材料, 凸出目标结构 (如标识、立体纹理), 实现微米级三维凸起。
- Concave engraving (deep engraving): Precisely erodes the target area to form a deep recessed structure (such as mold cavities, blind holes), while retaining non-target materials.
- Convex engraving (bas-relief): By removing the redundant peripheral materials, the target structure (such as signs, three-dimensional textures) is highlighted to achieve a micron-level three-dimensional protrusion.

旋转打标 Rotary Marking

旋转打标技术采用伺服电机控制与实时轨迹补偿算法, 实现圆柱体连续动态加工。突破传统"旋转-停止-打标"的间歇模式, 在工件匀速旋转过程中完成高精度标记, 生产效率提升300%, 彻底消除接缝误差。

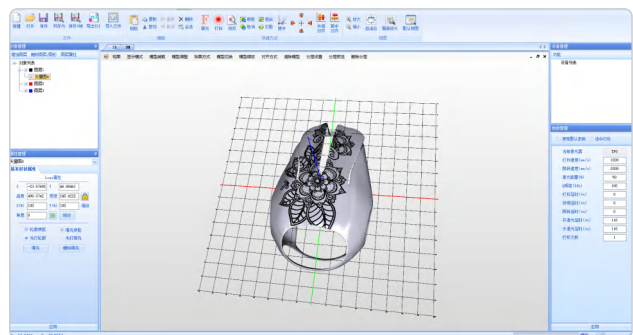
Rotary marking technology adopts servo motor control and real-time trajectory compensation algorithm to achieve continuous dynamic processing of cylinders. Breaking through the traditional intermittent mode of "rotation - stop - marking", high-precision marking is completed during the uniform rotation of the workpiece, increasing production efficiency by 300% and completely eliminating seam errors.

大数据打标 Big Data Marking

大数据打标功能是处理复杂图形且数据量庞大的应用场景的理想解决方案。它彻底解决了大型文件带来的性能瓶颈, 为用户提供高效、稳定、无忧的大数据激光加工体验, 是提升产能和保障连续生产的关键生产力工具。

The big data marking function is an ideal solution for handling complex graphics and application scenarios with huge amounts of data. It has completely resolved the performance bottleneck caused by large files, providing users with an efficient, stable and worry-free big data laser processing experience. It is a key productivity tool for enhancing production capacity and ensuring continuous production.

三维大幅面打标 3D Large-Format Marking



结合三维动态聚焦技术。支持在具有高度落差的复杂三维曲面或大尺寸平面上进行高精度、高一致性的激光打标与雕刻。

Combined with three-dimensional dynamic focusing technology. Supports high-precision and high-consistency laser marking and engraving on complex three-dimensional curved surfaces with height differences or large-sized planes.

矢量图打标 Vector Graphic Marking

矢量图打标功能提供专业工程级CAD/CAM数据处理能力,支持PLT、DXF等工业标准矢量格式的直接导入与高精度还原,实现微米级精度的轮廓标记与切割加工,满足精密制造领域对几何精度和重复定位的严苛要求。

The vector graphic marking function provides professional engineering-grade CAD/CAM data processing capabilities, supporting direct import and high-precision restoration of industrial standard vector formats such as PLT and DXF, achieving contour marking and cutting processing with micron-level accuracy, and meeting the strict requirements of the precision manufacturing field for geometric accuracy and repeat positioning.

位图打标 Bitmap Marking

位图打标功能提供专业级图像转激光加工解决方案,支持主流图像格式(JPG、PNG等)的直接导入与智能处理,通过先进的灰度映射算法将数字图像精准转化为激光加工指令,实现照片级视觉效果的表面标记。

The bitmap marking function offers a professional-level image-to-laser processing solution, supporting direct import and intelligent processing of mainstream image formats (such as JPG, PNG, etc.). Through advanced gray-scale mapping algorithms, it precisely converts digital images into laser processing instructions, achieving surface marking with photo-level visual effects.

支持服务

SUPPORT SERVICES

思特光学为Scan World提供响应迅速的客户支持,并定期在官网发布软件更新。

ScannerOptics provides prompt customer support for Scan World and regularly releases software updates on the official website.

硬件要求

HARDWARE REQUIREMENTS

本软件安装使用要求计算机最少应具备以下软硬件配置

The installation and use of this software require that the computer should have at least the following software and hardware configurations

操作系统 Operating System	Windows2000 / Windows XP / Windows 7(64 Bit) (.NET4.0以上) Windows2000 / Windows XP / Windows 7(64 Bit) (.NET4.0 and above)
CPU CPU	赛扬 2G 以上 Celeron 2G or above
内存 Memory	至少512内存,如果要处理大图形文件,推荐内存4G以上 At least 512 memory is required. If you need to handle large graphic files, it is recommended to have more than 4GB of memory
显卡 Graphics Card	如果使用 3D功能,需要性能强的独立显卡进行图形处理 If the 3D function is used, a powerful independent graphics card is required for graphic processing
硬盘 Hard Disk	至少 500M 可用空间,建议预留更多的可用空间 At least 500M of available space is required. It is recommended to reserve more available space

ScannerOptics 思特光学

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