ExactMark 230 USP

Versatile Class 1 System for Scanner-Based Laser Marking and Micromachining

The ExactMark 230 USP is a highly integrated system that combines higher power, short- or ultrashort pulsed laser processing with axes motion, all integrated in a user-friendly software environment. The ideal laser system for highly demanding marking and micro processing applications on metals, plastics, ceramics or glass. All ExactMark 230 USP machines are supplied with a vertical linear motion axis (Z) for focal height adjustment, and can be configured with multiple additional axes for positioning. Control is provided via an easy-to-use GUI with a 24" (610 mm) touch screen monitor.

FEATURES

- Highest ergonomical and safety standards
- Integration of state-of-the-art UV-nanosecond, IR-picosecond or IR/VIS femtosecond laser sub-systems
- Up to five servo axes for positioning and focal height adjustments
- Easy-to-use Laser FrameWork software
- Various accessories available
- High-contrast, permanent and corrosion-resistant marking of medical devices
- Vision-supported, UDI-compatible process workflow in Laser FrameWork
- Applicable on fragile parts due to minimal heat input

MARKETS

- Medical Devices
- Electronics
- Automotive
- R&D

APPLICATIONS

- High-contrast marking
- Permanent, corrosion-resistant marking
- UDI marking
- Micromachining
- Surface engraving, cutting, drilling

COHERENT

Size & Weight	ExactMark 230 USP
Width without monitor arm max. with monitor arm	 1000 mm (39.37 in.) 2218 mm (87.3 in.)
Depth with rear side housing extension (400 mm)	2100 mm (82.67 in.)
Height	2100 mm + 300 mm (82.68 in. + 11.81 in.) signal pillar
Weight	~1200 kg (2645 lbs.)
Area Necessary	
Depth	3064 mm (120.63 in.)
Width	2400 mm (94.49 in.)
Height	approx. 2500 mm (98.43 in.)
Area (m^2)	7.4
Positioning Linear Axis Travel Length	
Z-Axis	300 mm (11.81 in.)
X-Axis	300 mm (11.81 in.)
Y-Axis	280 mm (11.02 in.)
Maximum Weight of Work Piece	
Max. Weight of Work Piece (incl. clamping)	40 kg (88.18 lbs.)
Electricity	
Input Fuse	3 x 16 A
Nominal Voltage	400 V (±10%); 3-phases; N; PE
Nominal Frequency	50/60 Hz; neutral conductor loaded
Power Input	4 kVA (at 50 Hz)
Supply Line	5-pin CEE circular plug with 5 cables, 5g 4.0 mm^2
Pneumatic Provision	
Media	Filtered compressed air, not oily
Working Pressure	6 bar, 10 bar max
Temperature Range	-10°C to +60°C (14 °F to 140°F)
Connection Diameter	6 mm (0.24 in.)
Laser Safety Class	
Laser Safety Class 1 according to EN (IEC) 60825-1:2014	

Integrated Laser Subsystems
The ExactMark 230 USP system can accomodate higher-power short and ultra-short pulsed laser subsystems of different wavelengths.

In a basic configuration a subsystem consists of the laser source, a dual-loop laser safety shutter, a beam expander, a galvanometer scanner with F-Theta flat field objective and Laser Framework software to allow for easy laser control and programming of application workflows.

Various additional options can be added to a subsystem in order to perfectly tailor it to a specific laser task. For example, a fast-focusing module that provides a highly dynamic way to process at different part height levels or uneven surfaces without moving the z-axis and laser head. To precisely align the to- be-lasered layout to the actual position of the processing parts, various camera vision and automatic pattern recognition configurations are available. The optional process monitoring solution SmartSense+ offers a great way to evaluate and track the consistency of a laser process by capturing optical and/or acoustic signals during the execution.

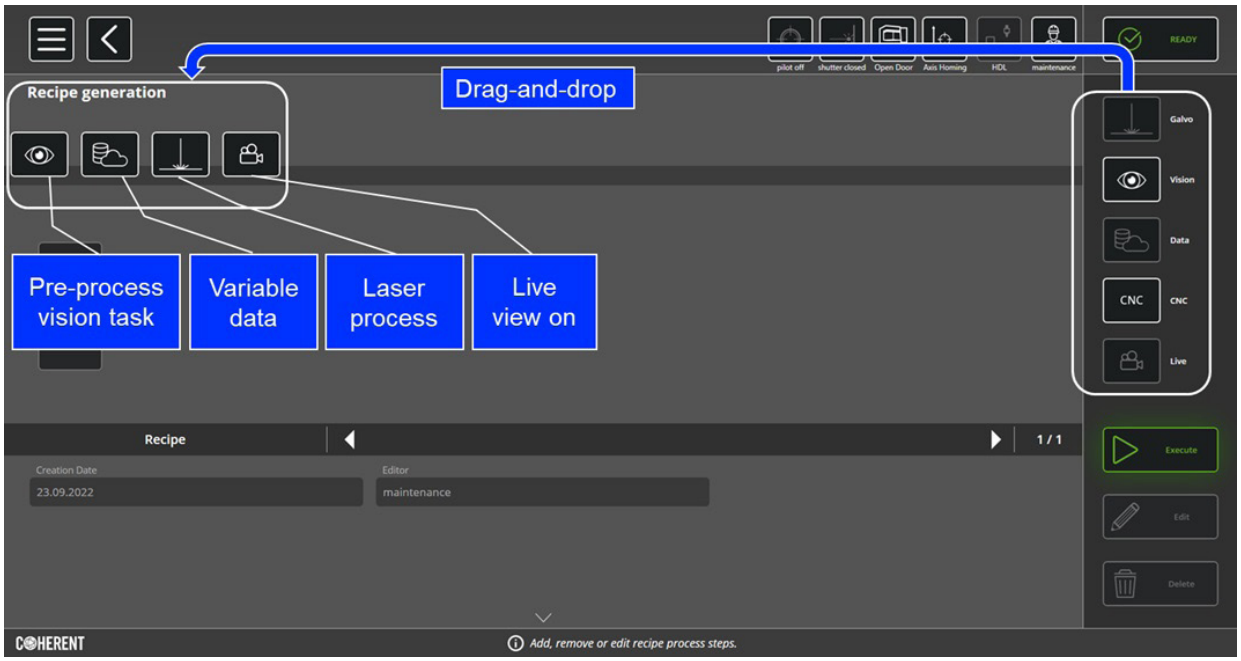
With the integration of the 30W picosecond laser subsystem PowerLine PS30 the ExactMark 230 USP constitutes the ideal system solution for permanent, corrosion resistant marking of metallic parts, for example in medical device manufacturing ("Black Marking"). Just using different optical configurations, the same laser source can be used for "cold ablation", surface engraving or scanner-based cutting and drilling processes.

If the quality achieved with picosecond laser pulses is still not sufficient for specific applications or materials, the Coherent Monaco femtosecond laser can also be integrated in ExactMark 230 USP systems. Femtosecond subsystems are available with different wavelengths (IR and green) and average power levels and can also be equipped with the optional accessories fast-focusing module as well as vision and pattern recognition packages (PartVision). Femtosecond lasers are the best option, when highest quality or selectivity together with lowest heat input into the processed parts are required.

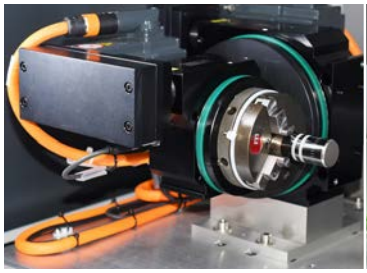
Another possible subsystem for integration in ExactMark 230 USP systems is providing short pulses of UV-wavelength. The PowerLine E30QT is a 30W-UV-nanosecond laser subsystem for marking, cutting, and drilling mainly of plastic materials. This subsystem can optionally come with a vision and pattern recognition package, too.

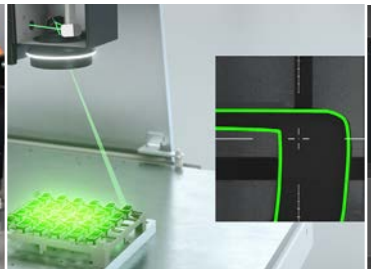
Software

The system is controlled by the intuitive Laser FrameWork software suite. It allows the user to program the desired workflow in an easy-to-use manner. Within the process recipe, all the necessary process steps can be arranged in a single software environment. That includes the galvo-scanner based laser process, optional camera-supported pre- and post-process vision tasks, handling of variable data input, necessary machine steps and logging of relevant process information.



Options





Up to 5 Positioning Axes

- X-Y-Z axes motion system
  - X: 300 mm
  - Y: 280 mm
  - Z: 300 mm
- Rotary axis with precision 3 jaw chuck
- Rotary swivel unit

Dedicated vision and pattern recognition packages (PartVision)

TTL (through-the-lens) and/or off-axis camera configurations for precise alignment, autofocus, and code verification

System and Process Monitoring

- Laser power validation
- SmartSense+ acoustic or optical process monitoring for OK/NOK labelling
- Data on Overall Equipment Efficiency (OEE) through OPC-UA

SmartMap 3D and SmartScan 3D

- Precise distance measurement
- Point cloud generation of object surface to accurately detect workpiece geometry for an automatic position adjustment of

Marking of Metals

Ultra-short pulsed laser black marking of stainless steel

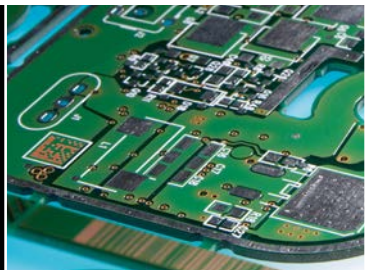
Ultra-short pulsed laser black marking of titanium

Marking of anodized aluminium tubes

Ultra-short pulsed laser black marking of stainless steel

Marking of Plastics

Marking of tubular parts and wire coatings with UV-lasers

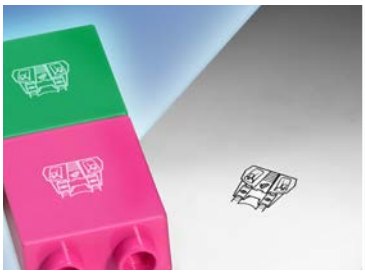


Marking, drilling, cutting and deflashing of printed circuit boards with UV- or SHG lasers

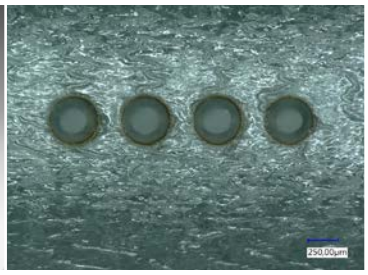
High-contrast marking of white plastic materials

High-contrast marking of PEEK, PPSU and other black polymer materials

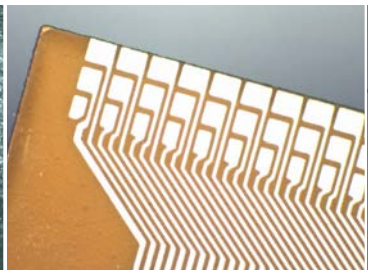
Micro Processing



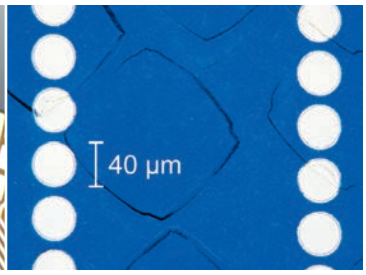
Deep Engraving



Drilling of Polymer Tubes



Cutting Polyimide Substrate



Ablating Thin Film

Mechanical Specifications

ExactMark 230 USP