

PowerLine[®] USP Sub-Systems

Configurable Ultrashort Pulse Laser Package to Enable Your Application

Coherent PowerLine USP sub-systems combine a picosecond or femtosecond laser, beam delivery, laser and scanner control, vision, powerful software, application support, and process expertise in a single package that is ready for integration into your system.

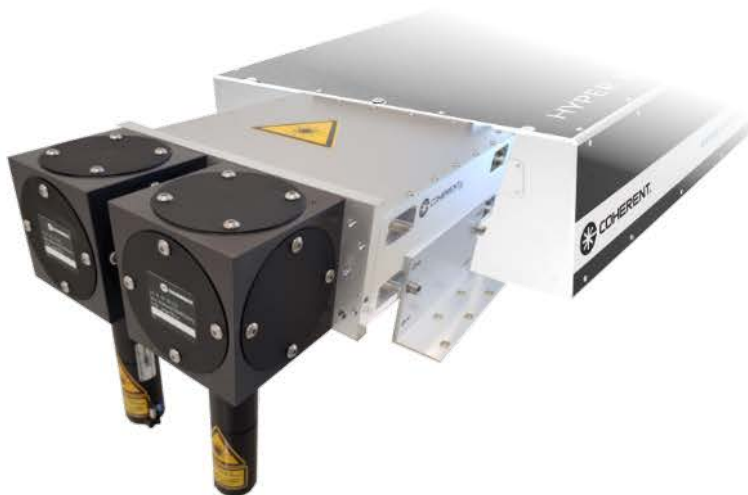
PowerLine sub-systems build on years of experience with scanning and/or SmartCleave™ applications, as well as thousands of customer trials and installations. PowerLine USP sub-systems save time and costs in machine R&D, application development, service, and technical support, freeing you to do the thing that you do best– take care of your customers.

FEATURES & BENEFITS

- One source for product, warranty, service, and application support
- Save time during machine assembly: sub-systems are tested and ready for integration
- Speed up time to market by using our developments in software, beam delivery, safety, and process knowledge

OPTIONS

- Scanner or SmartCleave
- Vision System
- Beam Delivery
- Intelligent Laser and Scanner Control



SmartCleave Configuration

Zero-Gap Brittle Material Cutting

Laser processing of glass, sapphire, and other transparent brittle materials provides unmatched advantages compared to conventional production methods. Laser processing is contact-free with no tooling to wear out over time.

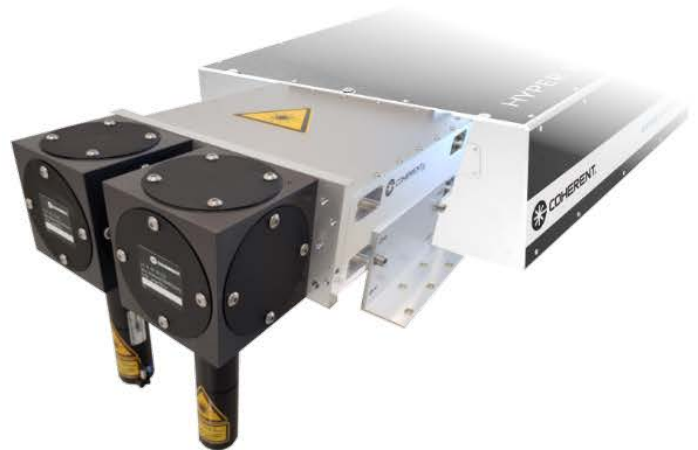
SmartCleave is a patented laser filamentation process that cuts brittle and transparent materials in a high-speed, nearly debris-free zero-gap manner, with little or no requirements for post-processing.

A SmartCleave sub-system gives you access to years of experience in glass cutting and optimized cutting optics.

In addition, Coherent offers custom beam path configurations, including time-sharing and energy-sharing solutions for multiple-station processing and double-head cutting in a production environment.

FEATURES & BENEFITS

- SmartCleave advanced optics that are tailored to your application
- Zephyr air purge to prevent contamination of optics
- Robust process window with high tolerance for focus position
- Speed up to 2 m/s, depending on glass type and thickness
- Single-pass cutting of several millimeter thick glass



APPLICATION EXAMPLES



Arbitrary Contours



Coated Glass



Multi-pass for
Thick Glass



Small Inner
Contours

Scanning Configuration

Fine Cutting, Structuring, or Ablation of Various Materials

Laser scanning can be utilized for a vast range of applications such as thin film ablation, silicon scribing, metal structuring, and more. PowerLine USP scanning sub-systems are based on Monaco and HyperRapid NX laser sources and years of application and process experience.

Choose from an array of galvo scanners, F-Theta lenses, beam expanders and other optical components to ensure success for your application. Combined with options such as TTL vision and pattern recognition, flying setups, energy share, and beam switches, the sub-systems can be configured precisely to your needs.

FEATURES & BENEFITS

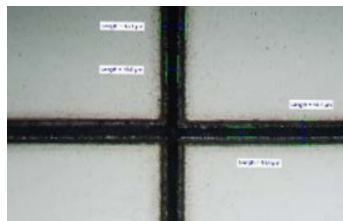
- Ready to integrate in your machine with vision, flying scanner, and advanced beam path options
- Integrated safety system ensures compliance with applicable safety standards
- Powerful VLM software (SECS/GEM compatible) for scanning applications



APPLICATION EXAMPLES



Surface Structuring



Silicon Scribing





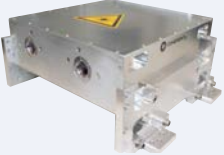

Thin Film Ablation



Fine Hole Drilling

SPECIFICATIONS	HyperRapid NX ¹ Sub-Systems		Monaco Sub-Systems	
Pulse Duration	<15 picoseconds		<350 femtoseconds	
Wavelength (nm)	1064	532	1035	517
SmartCleave Configuration	Yes	No	No	No
Scanning Sub-System	Yes	Yes	Yes	Yes

¹ All available versions of HyperRapid NX and Monaco are supported, see corresponding data sheets and contact us for details.

OPTIONS	NAME	CUSTOMER BENEFITS
	Laser Control Module (LCM)	Controller with power supply for laser head, laser power linearization, scanner power supply and scanner control. Comes with industrial user interfaces, such as emergency stop and interlock according to EN ISO 13849 and remote control through Ethernet, and upgradeable with vision TTL and pattern recognition.
	Time Share Module (2TS, scalable)	Coherent's ultrafast time share module enables beam switching within 100 milliseconds. It is fully integrated in the safety loop of the LCM and is designed for 24/7 operation. Beam switching allows for one laser source for multiple processing stations, or for a second laser source in a redundancy concept for in-line processing within your factory.
	Energy Share (2ES)	Energy share module for ultrafast lasers with minimal energy loss and minimal differences in beam qualities. Suitable for fixed optic cutting (like SmartCleave) and scanner applications.
	SmartCleave Advanced Optics (fixed or flying)	SmartCleave advanced optics are based on years of application expertise and with different optical configurations tailored to different processes. They come with a Zephyr Air Purge for optimal protection against contamination and are available for fixed and flying machine setups.



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Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice.

Coherent offers a limited warranty for all PowerLine USP Sub-Systems. For full details of this warranty coverage, please refer to the Service section at www.coherent.com or contact your local Sales or Service Representative. MC-005-19-0M0619 Copyright ©2019 Coherent, Inc.

