ULTRA R5000

Professional Laser Material Processing System

SPECIFICATIONS
FEATURES
and OPTIONS

UNIVERSAL®
LASER SYSTEMS

TECHNOLOGIES

Multi-Camera Vision & Registration OPTIONAL	A patent pending feature that provides an augmented reality user interface by superimposing design files on images of the material placed on the material support surface and captured by multiple cameras built into the laser system. The AR user interface facilitates precise alignment of design files using controls that allow the design file to be positioned, rotated and scaled with real time visual feedback made possible through advanced machine vision algorithms. This feature also supports traditional camera registration work flow using printed registration marks.
Precision Material Independent Autofocus INCLUDED	A motorized Z axis and high-resolution touch sensor with repeatability of +/- .005 in (125 µm).
SuperSpeed™ Technology OPTIONAL	A patented feature that produces two focal spots (one for each laser beam) to enable the system to deliver two independently controlled raster lines at a time. SuperSpeed requires a laser system equipped with two CO_2 lasers of the same wavelength and power.
Multi-Wave Hybrid™ Technology OPTIONAL	A patented technology that enables a combination of laser wavelengths (up to two wavelengths for ULTRA R5000 and three wavelengths for ULTRA X6000) to be focused to the same focal point within the same focal plane and used either sequentially or simultaneously.
Rapid Reconfiguration™ INCLUDED	A patented technology that enables users to install and reinstall any supported ULS CO_2 laser source onto any ULS laser system without tools or optical alignment to optimize laser processing for the widest variety of materials.
Intelligent Materials Database INCLUDED	A powerful and unique database that generates laser processing parameters for a wide variety of materials and laser system configurations. If the system configuration changes, the database automatically recalculates the parameter values.
21” Touch Screen Control Panel OPTIONAL	A fully integrated 21” (533 mm) touch panel command and control console used to control laser system operation.
Automation Interface OPTIONAL	An addressable device that can receive input signals and provide output signals. Enables the laser system to control external devices and allows external devices to initiate laser system functions.
Laser System Manager (LSM) INCLUDED	An advanced user interface with a high degree of functionality and control that allows users to efficiently manage design files and laser material processing parameters.
Industry Standard Interchange Format Support INCLUDED	A software feature that supports industry standard graphic interchange formats including DXF, PDF, and G-Code.

Design File Relocation and Duplication Controls INCLUDED	A set of user controls to reposition or duplicate design files anywhere within the material processing field.
Kerf Compensation INCLUDED	A user adjustable control that compensates for material width removed during laser cutting in order to achieve desired dimensions without changing the design file. It maintains true arc and circle geometry if present in the design.
Vector Acceleration Control INCLUDED	A user adjustable control to define acceleration of vector motion for each control file.
User Access Administration INCLUDED	A software administration feature for managing multiple user accounts and permissions.
Dynamic Energy Stabilization INCLUDED	A feature that maintains even laser energy delivery regardless of the speed of the motion system.
Intelligent Path Planner INCLUDED	A comprehensive path planning algorithm that minimizes laser processing completion time.
True Width Raster Processing INCLUDED	A feature that eliminates the need for motion system over-travel beyond the edges of the raster image.
Design File Geometry Preservation INCLUDED	A feature that maintains curves in a design file, i.e., circles, ellipses, b-splines, Beziers, and NURBS, and ensures curves are kept throughout the path planning process rather than using linear interpolation.
Line Segment Reduction INCLUDED	A user control to reduce excessive line segmentation contained in some design files.
Path Deviation Control INCLUDED	A user control to adjust the allowable deviation from the intended path to increase throughput.

OPTICS

Controllable Laser Power Density 4x INCLUDED **1x / 13x** OPTIONAL	A patent pending feature that provides the unique ability to control laser power densities while maintaining a high degree of alignment accuracy of the focal plane with the material surface as well as a Gaussian beam distribution. Power Densities: 1X (optional), 4X (included) or 13X (optional) for 10.6 µm and 9.3 µm wavelengths; 52X for 1.06 µm fiber wavelength (included). Normalized power density (watts/cm^2) = power density coefficient x 103 x average laser power (watts). Normalized power density is the power of the material processing laser(s) divided by the area of the focal spot measured at 1/e2.

GAS ASSIST

Programmable Gas Assist INCLUDED	A feature that allows the user to program gas type and flow rate on a process-by-process basis within a control file.
Optics Protection INCLUDED	A barrier of clean air that protects optical components during processing.
Coaxial Gas Assist Attachment INCLUDED	A gas assist attachment that directs air (or gas) perpendicular to the material's surface.
Lateral Gas Assist Attachment OPTIONAL	An adjustable gas assist attachment that directs air (or gas) laterally or at an angle to the material's surface.
Air Compressor OPTIONAL	A compressed air source that delivers optimally conditioned, clean, dry, and oil-free air for Optics Protection and gas-assisted laser processing.

MATERIAL HANDLING

Multifunction Material Support Structure INCLUDED	A built-in aluminum honeycomb work surface designed to keep materials stationary and in focus during laser processing. Reduces back reflection and enables exhaust of laser processing byproducts from underneath materials. Includes a full-field masking material dispenser. Configurable using Machined Aluminum Tiles, Material Support Pins and Vacuum Booster.
Machined Aluminum Tiles OPTIONAL	An accessory that provides a rigid and smooth work surface for laser material processing. When used with cutting processes, the compatible Material Support Pins are recommended.
Material Support Pins OPTIONAL	A set of custom machined pins for laser cutting that can be inserted into either the Multifunction Material Support Structure or the Machined Aluminum Tiles. Pins add sufficient space between the target material and the work surface to eliminate back reflection.
Vacuum Booster OPTIONAL	An external accessory that dramatically increases the pressure differential between the surface of the Multifunction Material Support Structure and ambient/atmospheric pressure to keep materials stationary.
Class 4 Conversion Module for Pass-Through OPTIONAL	A patented technology that enables the laser system to facilitate material pass-through in compliance with CDRH and international safety regulations for operating Class 4 laser systems. This optional, add-on module converts a fully enclosed Class 1 system into an open Class 4 system.
Cylindrical Material Indexer OPTIONAL	An accessory that enables 360° rotation laser processing of cylinders, spherically-shaped, and tapered objects. The addressable resolution is 13 arc seconds.

AIR FILTRATION and HANDLING

Intelligent Air Filtration UAC 2000/4000
OPTIONAL

An external accessory that uses a patented dual carbon filter and sensor suite (for CO and VOCs) that filters out laser processing byproducts, monitors filtration performance at every stage, and alerts the operator when predefined contaminant thresholds have been reached. Connects directly to the laser system to turn filtration on and off with laser processing and communicates the status of all aspects of the UAC 2000/4000.

SAFETY and FACILITY

Overtemperature Detection
INCLUDED

A safety feature designed to disable all laser sources, home the motion system, and trigger an audible alarm in the event it detects an unusually high temperature in the laser processing area.

Safety Interlocks
INCLUDED

A safety feature that disables the laser source when access doors are open as required by all major international safety standards.

Laser Blocking Laminated Safety Glass
INCLUDED

A shatterproof multi-layer laminated safety glass with appropriate wavelength filter media. Meets laser safety requirements OD 5+ for 10.6 µm , 9.3 µm and 1.06 µm wavelength laser radiation.

Metal Enclosure with Labyrinth Seals
INCLUDED

A design feature consisting of overlapping flanges that all enclosure doors or access panels must have to prevent direct line of sight into the enclosure, as required by international safety regulations.

E-Stop
INCLUDED

A highly visible standards-compliant pushbutton. Once depressed, DC power to all laser sources, the motion system, and other control mechanisms are immediately shut off, while aborting all system operations.

Fire Suppression
OPTIONAL

A patented accessory that deploys fire suppressant into the laser material processing area if self-sustained combustion is detected.

SPECIFICATIONS

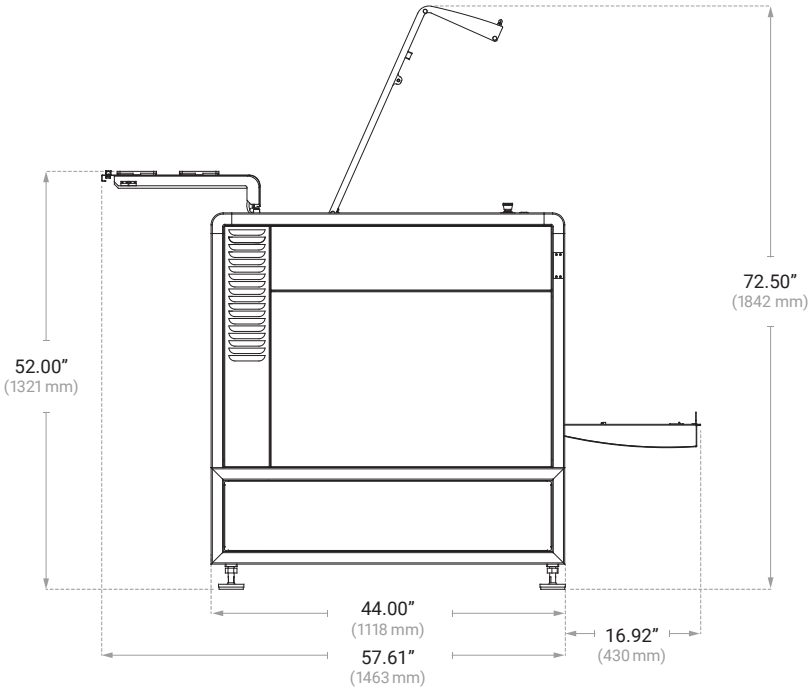
Material Processing Envelope (X,Y,Z)	32 x 24 x 12 in. *(813 x 610 x 305 mm)*
Maximum Effective Raster Material Processing Speed	>200 in./sec* *(5080 mm/sec)*
Multiple Laser Support	UP TO 2 LASER SOURCES CAN BE USED INDIVIDUALLY OR IN COMBINATION **LASER SOURCES AVAILABLE:** CO_2 10.6 µm 10, 30, 50, 60, 75 and 125** watt laser sources CO_2 9.3 µm 30, 50 and 75 watt laser sources Fiber 1.06 µm 20 and 50 watt laser sources **LASER SOURCE COMBINATIONS:** Up to (2) CO_2 laser sources (10-75 watts) or Up to (1) CO_2 laser source (10-125 watts) and Up to (1) permanently mounted fiber laser source. SUPPORTS RAPID RECONFIGURATION™ OF CO_2 LASERS.
Maximum Laser Power	CO_2 : 150W Fiber : 50W
System External Dimensions	Width: 55.0 in. *(1397 mm)* Depth: 44.0 in. *(1118 mm)* Height: 48.0 in. *(1219 mm)*
Weight	450 lbs *(204 Kg)*
Power Requirements	220V-240V/16A
Exhaust Requirements	Intelligent Air Filtration (UAC 2000/4000) or External Exhaust Blower Capable of >700 CFM at 6 in. WG Static Pressure (1190 m3/hr. at 1.5 kPa)
Computer Requirements	Computer with Windows 10 operating system connected by USB cable to laser system. Computer is not required if configured with optional 21” Touch Screen Control Panel.
Laser Safety Classification	Class 1 for material processing lasers Class 2 overall due to red laser pointer Can convert to Class 4 with optional Class 4 module

* Requires SuperSpeed™ operation

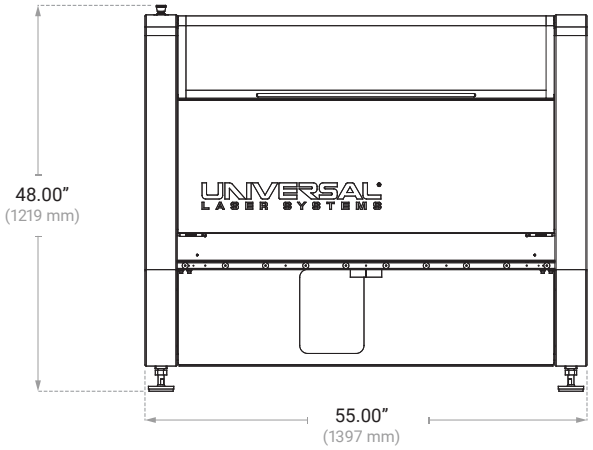
** 125 watt CO_2 laser available fourth quarter of 2020

Weight is approximate and varies with laser source selection.

ULTRA R5000
Dimensional Drawing



SIDE



FRONT

Universal Laser Systems® reserves the right to change these specifications at any time, and without notification.

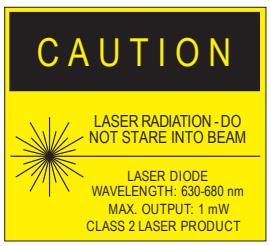
Warning: All laser processing requires constant supervision while the laser system is in use; exposure to the laser beam may cause combustible materials to ignite, which may lead to a fire hazard.

WARNING: UNIVERSAL LASER SYSTEMS PRODUCTS ARE NOT DESIGNED, TESTED, INTENDED OR AUTHORIZED FOR USE IN ANY MEDICAL APPLICATIONS, SURGICAL APPLICATIONS, MEDICAL DEVICE MANUFACTURING, OR ANY SIMILAR PROCEDURE OR PROCESS REQUIRING APPROVAL, TESTING, OR CERTIFICATION BY THE UNITED STATES FOOD AND DRUG ADMINISTRATION OR OTHER SIMILAR GOVERNMENTAL ENTITIES. FOR FURTHER INFORMATION REGARDING THIS WARNING CONTACT UNIVERSAL LASER SYSTEMS OR VISIT WWW.ULSINC.COM.

ULS laser systems are protected under one or more of U.S. Patents:
6,313,433, 6,423,925, 6,424,670, D517474, 9,346,122, 9,737,958, 10,391,345, 6,983,001; 7,060,934; 7,415,051; 7,469,000; 7,715,454; 7,723,638, 7,947,919; 8,101,883; 8,294,062; 8,599,898; 8,603,217; 9,155,988; 9,263,844; 9,263,845; 9,281,649; 9,346,122; 9,354,630, 9,694,448; 9,737,958; 10,456,875; 10,391,345.

Other U.S. and international patents pending.

CE



ULTRA Series

The ULTRA series is a suite of laser material processing systems that offer the most advanced technology, redefining performance expectations and delivering impeccable quality.

ULTRA R5000

The R5000 is the newest addition to the ULTRA family. It is a professional, high quality, mid-range ULTRA solution designed to meet demanding requirements of today's manufacturing, product development and materials research.

The ULTRA R5000 is ideal for laser processing a wide range of advanced natural, polymer and composite materials with its patented dual wavelength hybrid laser technology, and built-in laser power optimization capabilities. It allows accurate matching of the available laser energy with a material's absorption characteristics to achieve optimal results.

It supports numerous productivity enhancement options, including a sophisticated, patent pending multi-camera based augmented reality user interface.

Additionally, a built-in and ever expanding database of material laser processing parameters dramatically simplifies set up and use of the system. Operations that can be performed by the R5000 laser system include high speed cutting, marking, surface profiling, engraving, surface modification and many others.

The system has modular design and can be configured for laser processing of a specific material or a broad range of diverse applications.

The ULTRA R5000 system from Universal Laser Systems, offers short term return on investment, improvement in productivity and expansion in capabilities beyond other systems currently available.

About Universal Laser Systems, Inc.

Universal Laser Systems, Inc. (ULS) is a global manufacturer of laser material processing solutions, committed to advancing applied CO_2 and fiber laser technology. Through the development of laser sources, software and beam delivery systems, as well as extensive research in laser material-processing, ULS provides its customers with innovative, cost-effective and flexible laser solutions for present and future needs. For more information, visit www.ulsinc.com.

USA

CORPORATE HEADQUARTERS
7845 E. Paradise Lane
Scottsdale, AZ 85260

+1 800-859-7033
+1 480-483-1214
moreinfo@ulsinc.com

JAPAN

The Yokohama Landmark Tower
21st Fl. 2-2-1-1 Minato Mirai
Nishi-ku Yokohama-shi
Kanagawa-ken 220-8115 Japan

+81 45-224-2270
japansales@ulsinc.com

EUROPE

Lerchenfelder Gürtel 43
1160 Vienna, Austria

+43 1 402-22-50
eurosales@ulsinc.com