



Mergenthaler LSS-B Blue laser soldering system

Wavelength 450nm
Variable beamshape
Closed-loop temperature control

MERGENTHALER
ultimate laser processing

Why blue laser?

Blue diode lasers significantly improve the welding efficiency of highly reflective materials like copper, gold, silver, and aluminium in various ways.

Firstly, the heat absorption at the 450 nm wavelength range is many times higher than at the infrared laser 1000 nm range. This improves process efficiency reducing welding time while decreasing the total power consumption.

Secondly, the laser's energy deposition can be controlled more precisely, enabling the metal to be melted without evaporation, leading to a more stable melt pool. This can allow for new applications such as heat conduction welding of thin copper foils.

Thirdly, the higher absorption delivers components with higher mechanical strength and better design targets match important in additive manufacturing.

Metal	Absorption		
	450 nm	1000 nm	Multiplier
Copper	50%	4%	12.5
Gold	35%	4%	8.8
Silver	8%	4%	2.0
Aluminium	11%	8%	1.4

This table shows different reflective metals' absorption across blue light (450 nm) and infrared light (1000 nm). It highlights why blue lasers are particularly effective at heating up reflective metals.

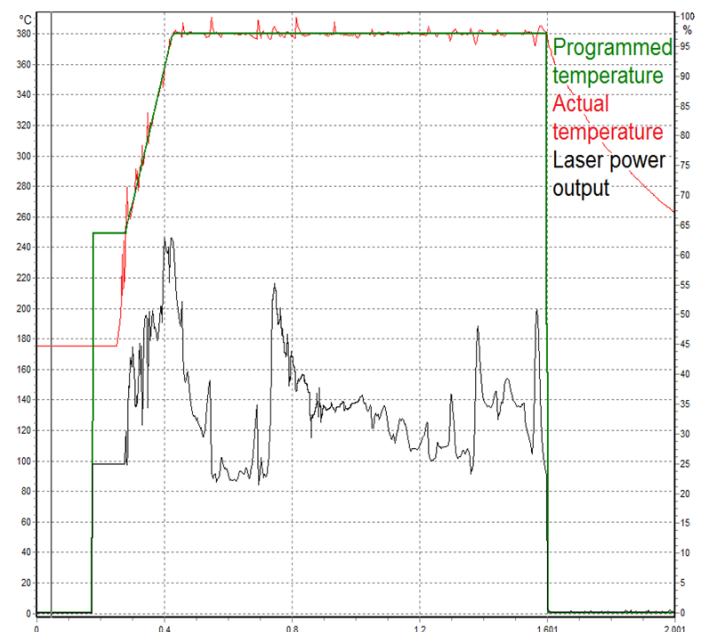
Why Mergenthaler blue laser?

Our blue laser offers 3 distinct advantages.

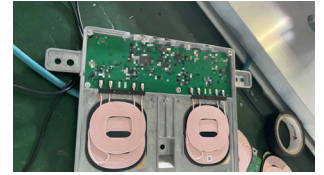
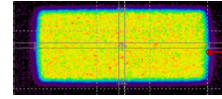
1. Temperature control

Lascon® controller is connected to the laser. It allows for fast, precise, and accurate material surface temperature control.

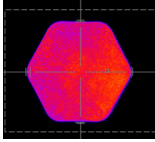
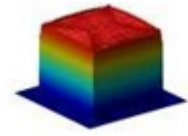
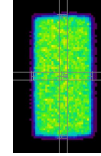
The image shows how our laser varies its power output in order to reach its pre-programmed temperature profile. In this case, a stable 300 °C during 1.2s.



2. Uniform and shaped laser spot



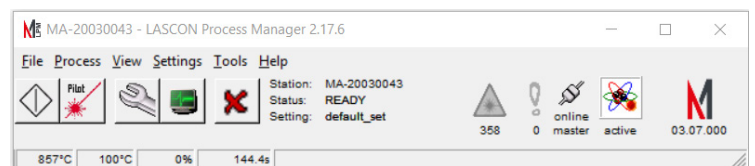
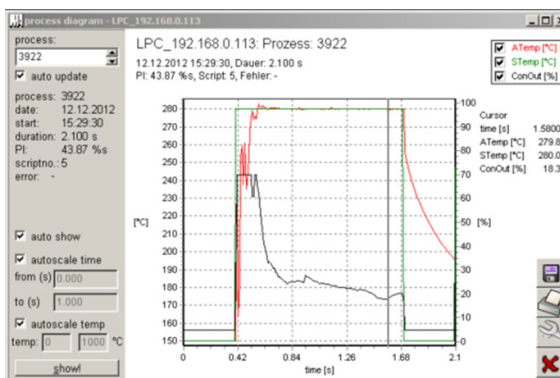
Our top hat beam profile has high beam uniformity. Sharp contours prevent damage to surrounding areas.



3. Adaptive spot size

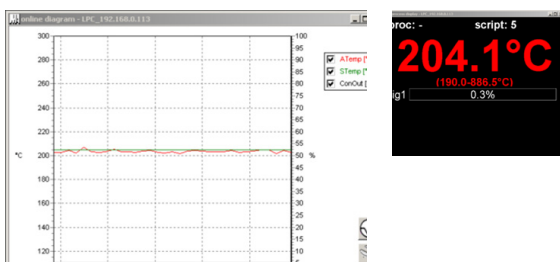
We offer square profile shapes with adjustable spot sizes. Spot sizes can be adjusted from 2mm to 30mm.

Software



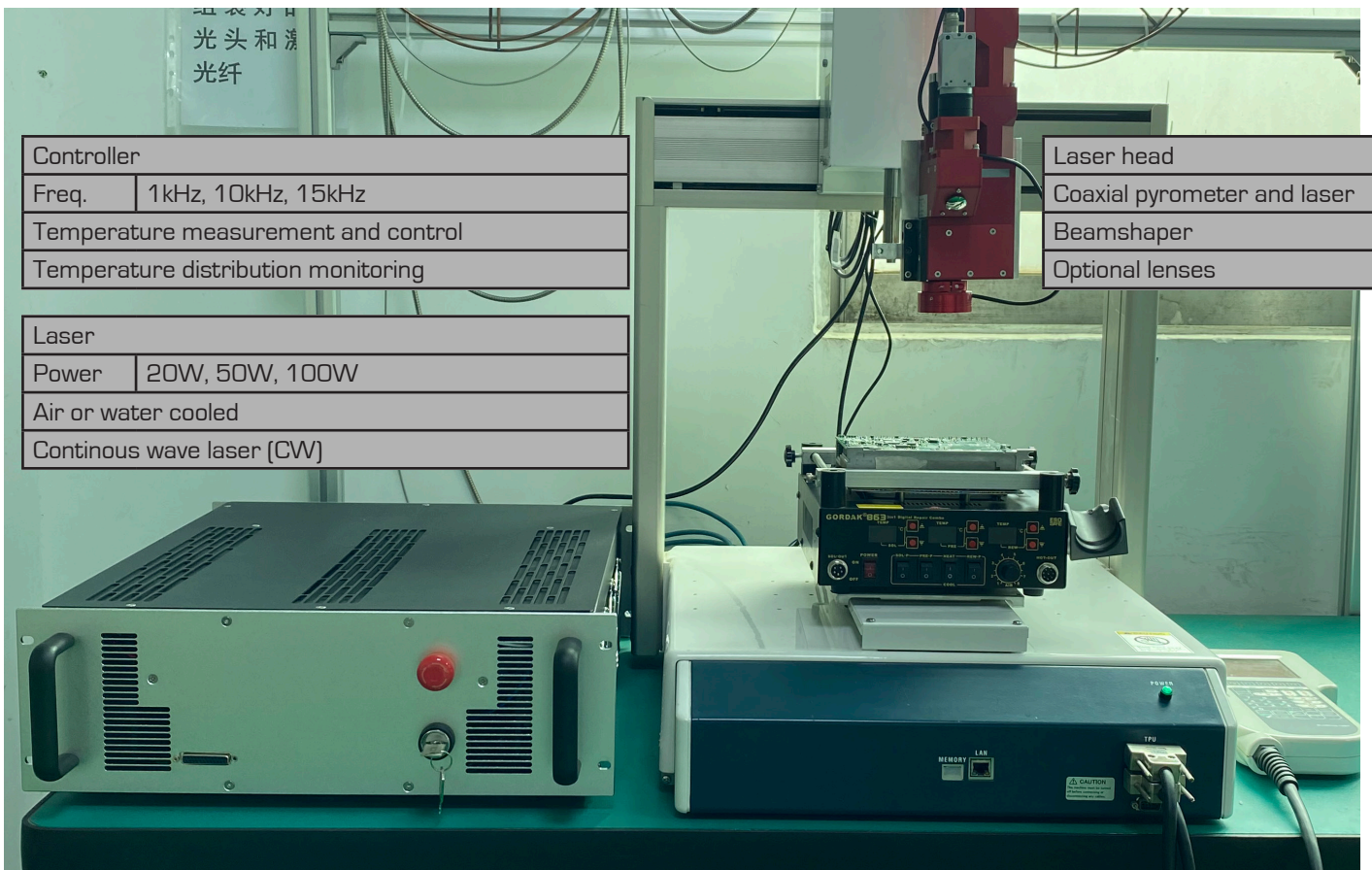
Process Manger Software (LPM)

- Windows® operating system
- Adjustment of all pyrometer and controller parameters
- Providing variety of control commands and functions for script
- Storage capacity up to 500.000 processes and 255 scripts
- Process visualization, automatical data export in csv format
- Free configuration of Multi I/O interface
- Pyrometer calibration inside the application
- Access rights management with password protection



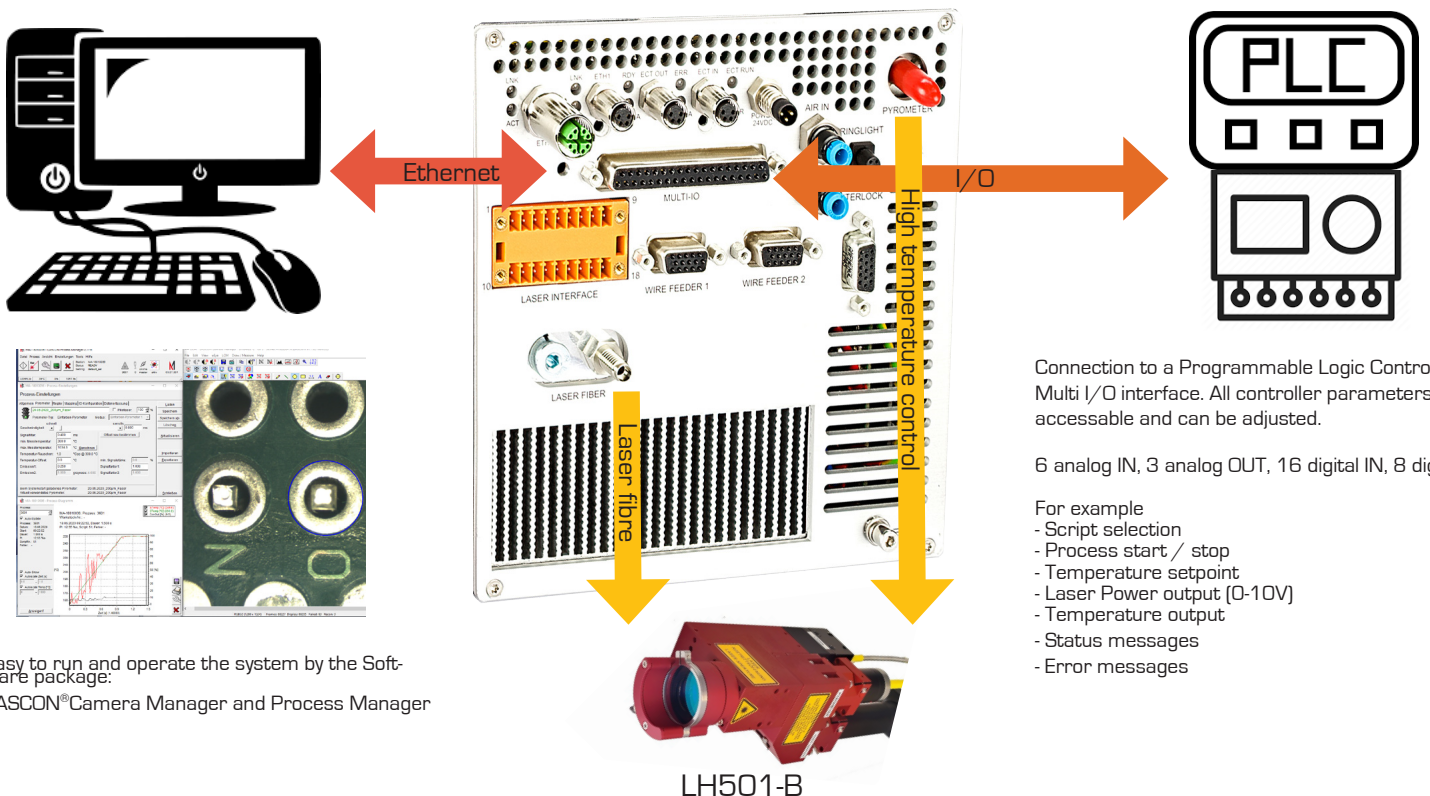
Temperature Bandwidth Control

Setup



Setup schematic

Connections can be done alternatively or simultaneously



Connection to a Programmable Logic Controller via Multi I/O interface. All controller parameters are accessible and can be adjusted.

6 analog IN, 3 analog OUT, 16 digital IN, 8 digital OUT

- For example
- Script selection
 - Process start / stop
 - Temperature setpoint
 - Laser Power output (0-10V)
 - Temperature output
 - Status messages
 - Error messages

Easy to run and operate the system by the Software package:
LASCON® Camera Manager and Process Manager

LH501-B

Laser technical specifications

Laser power	W	100 ¹
Wavelength	nm	450
Pilot light		Yes
Numerical aperture		0.22
Fibre length	m	3, or 5 or customized
Connector		SMA905 or D80
Input voltage	V	200 - 240 (50 - 60 Hz)
Rated power	W	600
Operating mode		Continuous wave (CW)
Dimensions (L×W×H)	mm	482.6×518×166.05, 482.6×612×166.05 (adding floor mats, and handles)
Weight	kg	18
Cooling method		air cooling or water cooling
Working temperature	°C	15 - 30
Storage temperature	°C	5 - 50
Cooling requirements		10 cm open space around it
Laser safety class		DIN EN 60825-1, class 4
¹ 20W and 50W models also available		

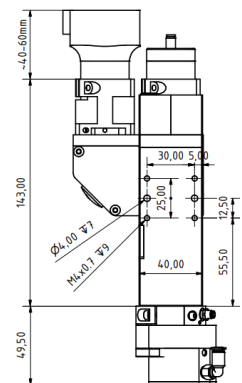
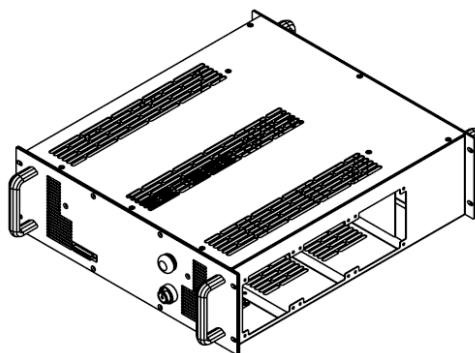
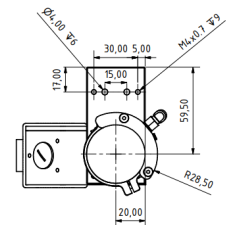
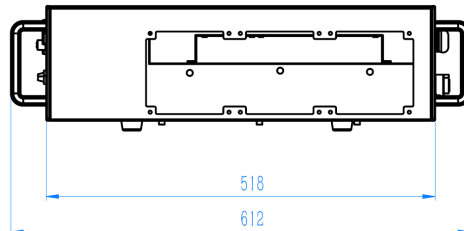
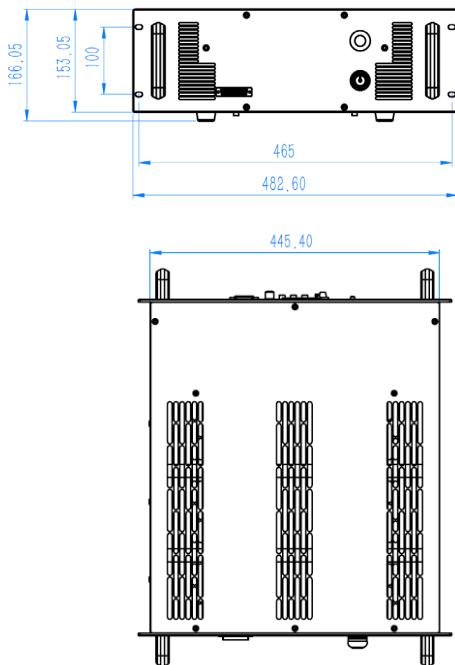
Laser head technical specifications

Power limit	W	500
Ambient temperature	°C	5-55 for operation, no condensation
Dimensions	mm	122 x 40 x 220
Weight	kg	1.4 ¹
Protection		IP50
CE Label		According to EU directives for electromagnetic immunity
Conformity		RoHS directive 2011/65/EU of 2011-06-08 with supplement from 2015-03-31 are fulfilled.
Camera		USB2.0 1280x1024, coaxial with pyrometer and laser
¹ 0.8kg without the camera		

Lascon ® controller technical specifications

Temperature range	°C	100 - 2200
Spectral range	µm	1.65 - 2 / 1.65 - 2.5
Accuracy [e = 1, t90 = 1s, T=25 °C]		< 1500°C 0.3% ± 2K
Repeatability		0.1% ± 1K
Resolution	°C	0.1
Response time	ms	1
Emissivity		0.01 - 1
Analog output	V	0 - 10 [16Bit configurable using software]
Power supply		24V DC, max. 2A
Data storage		internal, 500.000 processes, 255 process control scripts
Optical fibre length	m	3, 5, or customized
Ambient temperature	°C	max 40
CE Label		According to EU directives for electromagnetic immunity
Conformity		RoHS Directive 2011/65/EU of 2011-06-08 with supplement from 2015-03-31 are fulfilled
Software		Includes LASCON® software
Position		Coaxial

Dimensions



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