

Technology for the most wide circle of applications

Integratable (OEM) CO₂ lasers

The most fundamental tool of laser processing is the laser itself. A whole series of applications is built on laser devices custom-made for certain tasks. UNIVERSAL OEM manufactures its laser sources for such custom-made machines between 10W and 150W performance limits.

CO₂ laser technology

The CO₂ laser technology offers touch-free processing for materials such as plastics, wood, leather, ceramics executing cutting, marking and engraving tasks. The wavelength characteristic of this laser type can be absorbed in these materials the best way which is a prerequisite of laser processing. The absorbed energy is transformed into heat which melts the material along the cutting line. If the laser energy is high enough, it will completely vaporize the material in its whole cross-section resulting in a clean and smooth cutting surface. At a lower laser performance the heat energy absorbed in the material generates a chemical or thermic reaction which creates a constant, distinctive marking. This marking burns into the material so it is a suitable method for applying identifying marks on different products.

CO₂ laser are typically available in two wavelengths for slightly different areas of applications.

Universal manufactures laser sources with one resonator until 75W, while offering two resonator laser sources in the 100, 120

and 150W performance category. The two resonator, cross-polarized laser source provides more options in material processing.

The applications of the 10.600nm (10.6 μm) laser

- Engraving, cutting and marking of plastics, wood, textiles, leather and laminated sheets
- Aluminium, ceramics, stone, glass marking

The applications of the 9.300nm (9.3 μm) wavelength laser

- Suitable for high contrast markings on PET bottles, photo-polymer materials and other light-sensitive plastics

General characteristics

- Water or air cooling version
- Built-in indicator laser
- TTL temperature feedback LED
- Fault signal LED
- High performance stability
- Low noise emission
- RoHS compatibility

Laser specifications

Performance	10 – 150W	Optical delay	38 ± 10 μs
Wave length	10.6 μm and 9.3 μm	Optical modulation	100%, 5kHz-ig
Performance stability	±5% after 5 min of CW operation	Weight	9.5 – 40.8 kg
M2	1.3 ± 0.2	Environment	
Beam diameter	4 ± 1 mm	Environmental temperature	10 – 40 oC
Beam opening angle	5 ± 1 mm	Relative humidity	<95% (non-condensing)
Polarization	Linear	DC input voltage	48 VDC
Modulation signal type	TTL compatible	Electrical input	20 – 50 A

OEM lasers

The OEM laser range includes both CO₂ and fibre technologies, they are designed to be easily integrated into a range of work flow solution and applications. This laser can be used in CW (continuous) or modulated (average performance) operation.

- The separated RF electrodes create a high quality laser beam with minimum beam expansion.
- Due to the covered resonator the performance is compact.
- The Universal lasers do not need recharging, providing a long life-span.

CO₂ gas laser is an important technology in processing non-metallic materials. This 10.600 nm wavelength laser is suitable for the marking, engraving, cutting and welding of plastics, ceramics, wood, glass, etc. Its use is widespread in the advertising industry, marketing and visual technological companies and in stamp production. Universal laser systems are designed and built for versatility.

Our systems are equipped with features that can help you in enhancing your business opportunities and conquering new markets.

Most widespread applications

- Architectural model making
- Food industry
- Plastic and textile cutting
- Gifts and souvenirs
- General production technology
- Packaging
- Paper industry
- Prototype production
- Marking technology
- Rubber stamp manufacturing
- Wood industry
- Advertising industry

Variations in structure

Air cooling: variation without external cooling unit that ensures the cooling and temperature stability required for the laser technology by cooling fans and ribs. In case of integration it is possible to use an already installed air cooling so the fan is not necessary.

Water cooling: if the environmental temperature fluctuation exceeds the required limits it is advisable to use a water cooling unit. The inner piping of the laser source provides the effective cooling with a standard 3/8" connection on the input and output. The cooling liquid is standard distilled water.



Products

Performance	Basic air cooling	Integrated air cooling	Basic water cooling	Integrated water cooling	4-s class air cooling	4-s class water cooling	9.3 μm
10W	•	•	•	•	•	•	
25W	•	•	•	•	•	•	•
30W	•	•	•	•	•	•	•
40W	•	•	•	•	•	•	
50W	•	•	•	•	•	•	•
60W		•		•	•	•	
75W		•		•	•	•	
100W		•		•	•	•	
120W		•		•	•	•	
150W		•		•	•	•	

Technical description	UL-25/30	UL-35/40	UL-45/50	UL-60	ULC-70/80	ULC-90/100
Nominal performance	25 vagy 30 watt	35 vagy 40 watt	45, 50 vagy 60watt	45, 50 vagy 60watt	70 vagy 80 watt	90 vagy 100 watt
Wavelength	10.6μ	10.6μ	10.6μ	10.6μ	10.6μ	10.6μ
Performance stability	+/-5% after 15 minutes CW operation	+/-5% after 15 minutes CW operation	+/-5% after 15 minutes CW operation	+/-5% after 15 minutes CW operation	+/-5% after 15 minutes CW operation	+/-5% after 15 minutes CW operation
Beam quality (M2)	1.2+/-0.2	1.2+/-0.2	1.4+/-0.2	1.4+/-0.2	1.2+/-0.2	1.2+/-0.2
Beam diameter	4+/-1mm	4+/-1mm	4+/-1mm	4+/-1mm	4+/-1mm	4+/-1mm
Beam angle (full angle)	5+/-1mR	5+/-1mR	5+/-1mR	5+/-1mR	5+/-1mR	5+/-1mR
Beam ellipticity	<1.4:1	<1.4:1	<1.4:1	<1.4:1	NA	NA
Polarization	Linear	Linear	Linear	Linear	Random	Random
Target stability	200μR	200μR	200μR	200μR	200μR	200μR
Ramp-up and shut down time	120+/-40μS	120+/-40μS	120+/-40μS	120+/-40μS	120+/-40μS	120+/-40μS
Optical modulation	100% up to 5KHz	100% up to 5KHz	100% up to 5KHz	100% up to 5KHz	100% up to 5KHz	100% up to 5KHz
Modulation signal	TTL Compatible	TTL Compatible	TTL Compatible	TTL Compatible	TTL Compatible	TTL Compatible
Excitation	On/Off, Adjustable with Dipswitch	On/Off, Adjustable with Dipswitch	On/Off, Adjustable with Dipswitch	On/Off, Adjustable with Dipswitch	On/Off, Adjustable with Dipswitch	On/Off, Adjustable with Dipswitch
Cooling	Air (built-in)	Air (built-in)	Air (built-in)	Air (built-in)	Air (built-in)	Air (built-in)
Weight	8kg	10kg	(built-in)	12kg		
Environment						
Environment temperature (operational)	10-35°C					
Relative humidity	< 90% (Non-condensing)					
Energy demand						
DC input voltage	48.0 VDC	48.0 VDC	48.0 VDC	48.0 VDC	48.0 VDC	48.0 VDC
Average current (continuous operation, including cooling fan)	10 A	14 A	18 A	18 A	28 A	36 A
Excitation current intensity	70 A, 150μS	70 A, 150μS	70 A, 150μS	70 A, 150μS	140 A, 150μS	140 A, 150μS

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