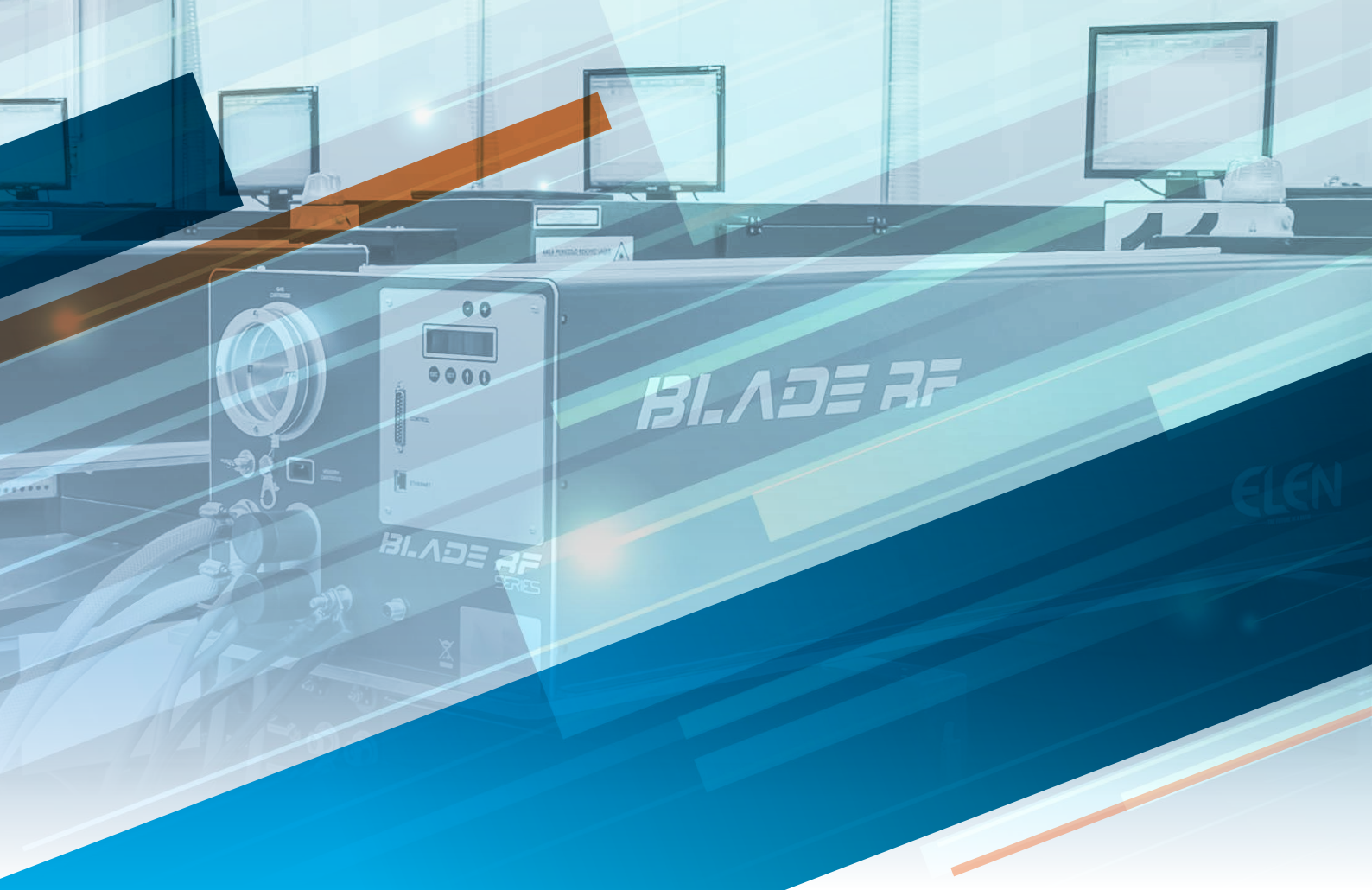


ELEN™
THE FUTURE IN A BEAM

BLADE RF

RF 88 / RF 177 / RF 303
RF 404 / RF 505 / RF 606

Sealed Series

High Peak Power **RF CO_2 Lasers**
80W to **600W** Power

Experience Rooted in Passion

BLADE RF Sealed Laser sources are designed, developed, and manufactured in El.En.'s Italian facility.
For over 40 years, El.En. has passionately committed itself to achieving the highest levels of engineering and reliability, creating devices with advanced technological capabilities. In addition to laser sources, El.En. also develops scan heads and galvanometric components for a perfect integration. With more than 4000 industrial installations, El.En. has been chosen to achieve exceptional performance in a wide range of industries.
Embrace the precision, innovation, and expertise of El.En.'s laser solutions, empowering your industrial applications with cutting-edge technology.

Introducing the Sealed Series

The Blade RF Sealed series guarantees excellent performance with its high-peak power capabilities. This technology, combined with RF excitement, ensures reliable operation and optimal stability throughout work processes. Its compact size allows seamless integration into various setups, making it ideal for powers ranging from 80W to 600W. With three different wavelengths available (10.6µm, 10.2µm, and 9.3µm), it caters to diverse customer needs. With Blade RF Sealed series, performance meets versatility and compact integration.

Key features

- High Peak Power Sealed technology
- Radio Frequency excited
- Extremely compact & easy to integrate
- Wide Range of Wavelengths
- High reliability & high beam quality
- High electrical/optical conversion efficiency
- Integrated RF power supply
- TCP/IP connection for remote diagnostics and control
- On board HMI panel on RF 505 & RF 606

Seamless integration

The BLADE RF Sealed series offers six different power solutions (80W, 150W, 300W, 400W, 500W and 600W) in compact sizes. This versatility enables seamless integration into a wide range of systems, providing flexibility to adapt to different power requirements and diverse operational scenarios.
The BLADE RF Sealed series enables a comprehensive integration of El.En.'s cutting-edge technologies within the same system: laser sources, scan heads and dedicated software control are designed to operate together synergistically. This versatile and harmonized integrability empowers endusers or integrators with enhanced efficiency, productivity and performance across various applications and industries.
Moreover, the BLADE RF Sealed series ensures compatibility with components other than those from El.En., offering added convenience for integration into existing setups. Each model within the Sealed series has been accurately engineered to deliver exceptional performance and reliability. Whether it's precision cutting, engraving, or marking, these lasers provide the versatility for a wide range of applications.

Applications

The Blade RF Sealed laser sources are versatile and can be utilized in various applications, including high-performance remote processing, digital converting for the packaging industry, cutting and engraving of plastics, wood, leather, fabrics and many other materials. They excel in cutting of paper and cardboard for Packaging, offering exceptional stability, precision and performance.
With its three distinct wavelengths, this laser series excels in specific materials processing such as glass or polypropylene, and in challenging applications like LCD processing, labels kiss-cutting , and food industry solutions.
With its adaptability and capabilities, the Blade RF Sealed series proves to be a reliable choice for a wide range of industries, enhancing productivity and offering excellent laser processing in diverse applications.


Leather

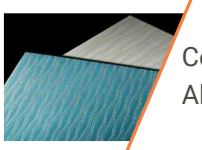

Paper / Label


Abrasive Materials


Cardboard & Corrugated


Food


Plastic Film


Ceramic & Alumina


Fabrics & Denim


Plastics


Marble & Stone

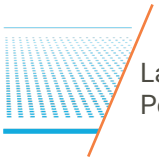

Glass & Quartz


Wood & Derivatives

Processing


Laser Cleaning


Laser Cutting


Laser Micro Perforation

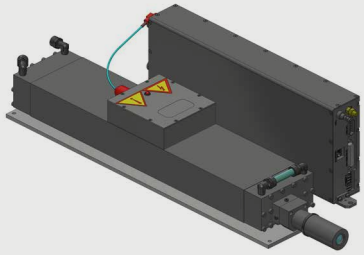

Laser Marking


Laser Drilling


Laser Kiss-Cutting


Laser Welding


Laser Ablation



RF 88

RF 177

Laser Specifications

Model	RF 88	RF 177
Rated Power (W)(1)	80 (1a)	150
Effective Peak Power (W)(2)	200	600
Power Stability (long term)(3)	±5%	±5%
Wavelength (µm)	10.6 ± 0.4	10.6 ± 0.4
Polarization	Linear (Parallel to Base)	Linear (Perpendicular to Base)
Beam Diameter (1/e^2 at the exit) (mm)	9.4 ± 0.5	6.0 ± 0.5
Beam Divergence (1/e^2 full angle) (mrad)	3.0 ± 0.3	3.0 ± 0.3
Maximum Pulse Frequency (kHz)	50	100
Pulse Width Range (µs)	2 ÷ 1000	2 ÷ 1000
Maximum Duty Cycle	60%	50%
Mode Quality (M^2)	< 1.2	< 1.15
Beam Ellipticity	1.2 : 1	1.15 : 1
Optical Pulse Rise/Fall Time (µs)	< 50	< 50
Typical Gas Mix Consumption (NL/year)	NA	NA
Operating Ambient Temperature Range (°C)	5 ÷ 35	5 ÷ 35
Storage Temperature Range (°C)	5 ÷ 50	5 ÷ 50
Maximum Humidity	Non Condensing at Inlet Water Temperature	Non Condensing at Inlet Water Temperature

Electrical Power Requirements

Input Voltage (V_{DC})	48 ± 1	48 ± 1
Max Current (A)	27	60
Peak Current (A)	32 for 3 ms Max	100 for 3 ms Max

Coolant

Heat Load (W)	1500	3000
Coolant Temperature (°C)	23 ± 1	23 ± 1
Water Cooling Input Pressure (bar)	4	4
Water Cooling Flow Rate (L/min)	5 ± 0.5	7 ± 0.5

Dimensions / Weight

Laser Dimensions (LxWxH) (mm)	662x110x117	1200 x 190 x 265
RF Power Supply Dimensions	457x57x164	Integrated
Safety Shutter	NA	Optional
Laser Weight (kg)	9	37.5
RF Power Supply Weight (kg)	3.8	

(1) Typical with a frequency of 25kHz and 50% duty cycle. Power reduction of 1% for °C with water cooling temperature above 25°C.
(2) Typical at 1kHz and 10% duty cycle. The effective power peak is defined as Average power /Duty Cycle.
(3) With constant frequency and duty cycle and constant water coooling temperature (23.0±0.5)°C after 1h from ignition and 10min of warm up. Stability is defined as 100*(Pmax-Pmin)/2*Pmax.
(1a) Typical with a pulse duration of 300µs and 60% duty cycle. Power reduction of 1% for °C with water cooling temperature above 20°C.

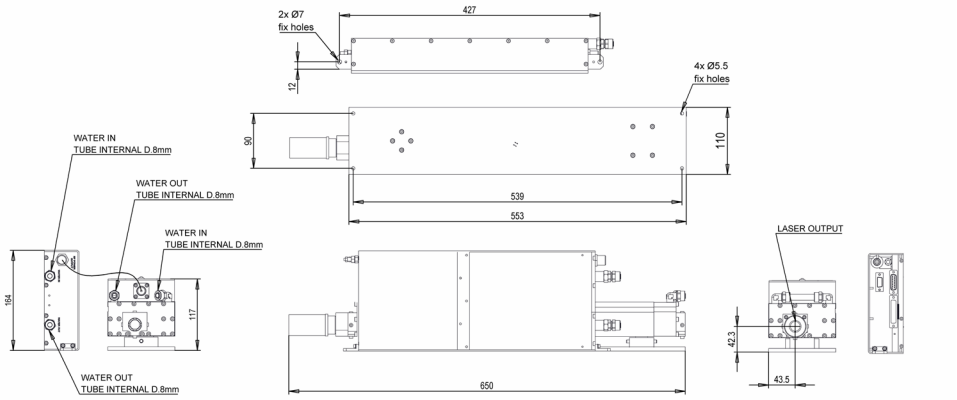
RF 303 / RF 303 P / RF 303 G / RF 404 / RF 404 G

RF 505 / RF 606

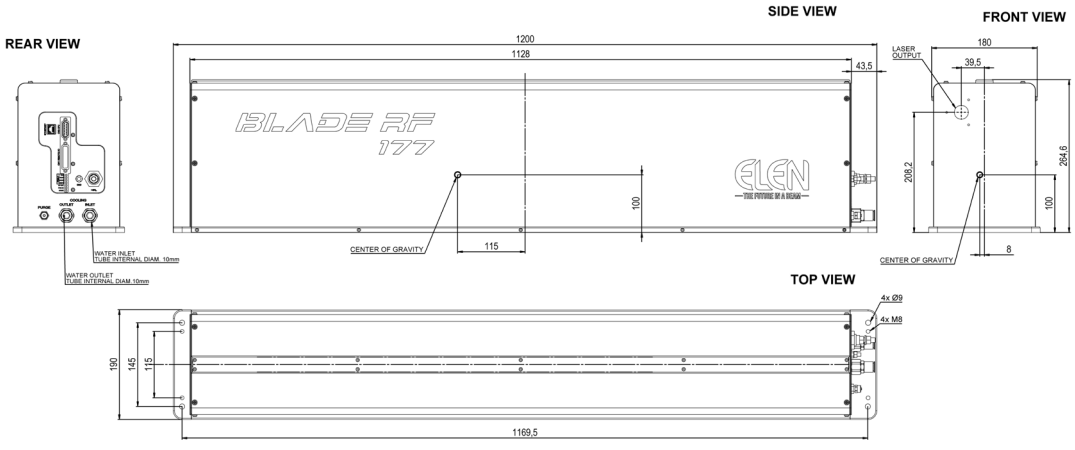
RF 303 / 303 P* / 303 G*	RF 404 / 404 G*	RF 505	RF 606
≥300	400	500	600
1100	>1200	1650	1650
±5%	±5%	±5%	±5%
10.6 ± 0.4 | 10.2 ± 0.2 | 9.3 ± 0.2	10.6 ± 0.4 | 9.3 ± 0.1	10.6 ± 0.4	10.6 ± 0.4
Linear (Perpendicular to Base)	Linear (Perpendicular to Base)	Linear (Perpendicular to Base)	Linear (Perpendicular to Base)
8.0 ± 0.5	8.0 ± 0.5	10 ± 1	10 ± 1
≤2.0	≤3.0	≤2	≤2
100	100	100	100
2 ÷ 150	2 ÷ 150	2 ÷ 150	2 ÷ 150
50%	60%	60%	60%
< 1.2	< 1.2	< 1.2	< 1.2
1.2 : 1	< 1.2 : 1	< 1.2 : 1	< 1.2 : 1
< 50	≤60 / ≤100 | ≤60 / ≤80	≤50	≤50
NA	NA	NA	NA
5 ÷ 35	5 ÷ 35	5 ÷ 35	5 ÷ 35
5 ÷ 50	5 ÷ 50	5 ÷ 50	5 ÷ 50
Non Condensing at Inlet Water Temperature	Non Condensing at Inlet Water Temperature	Non Condensing at Inlet Water Temperature	Non Condensing at Inlet Water Temperature
48 ± 1	48 ± 1	48 ± 1	48 ± 1
115	115	150	200
180 for 3 ms Max	200 for 3ms Max	200 for 3ms Max	250 for 3ms Max
5500	5500	7200	9600
23 ± 1	23 ± 0.5	23 ± 0.5	23 ± 0.5
≤ 4	4.5	≤4	≤4
10 ÷ 11	15	17 ÷ 18	17 ÷ 18
1210 x 320 x 305	1210 x 320 x 305	1317 x 355 x 320	1317 x 355 x 320
Integrated	Integrated	Integrated	Integrated
Optional	Optional	Integrated	Integrated
65	65	90	90

Technical Drawings*

RF 88



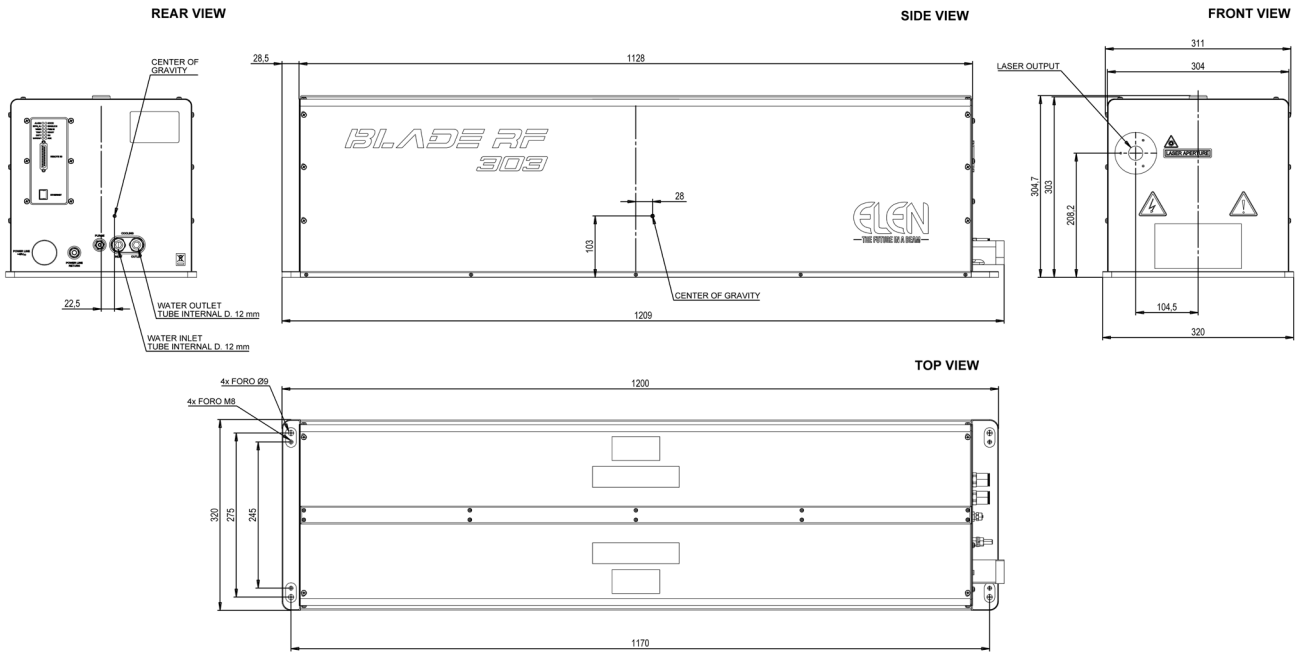
RF 177



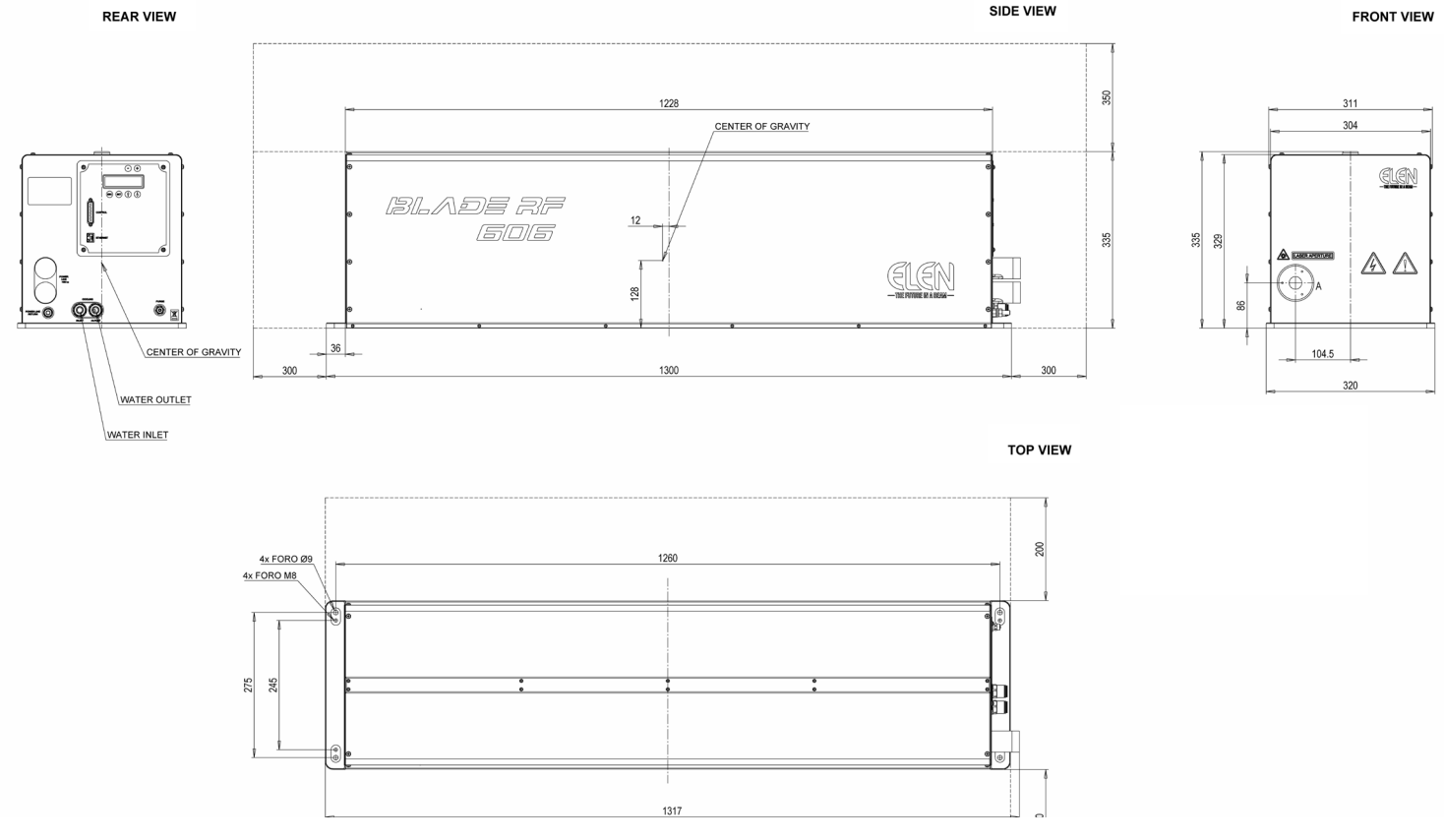
*Drowings not to scale

Technical Drawings*

RF 303 / RF 303 P / RF 303 G / RF 404 / RF 404 G



RF 505 / RF 606



*Drowings not to scale

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THE FUTURE IN A BEAM

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Discover more about
Blade RF Sealed Series

SCAN ME

CE

DANGER - INVISIBLE LASER RADIATION
AVOID SKIN AND EYES EXPOSURE
TO DIRECT OR SCATTERED RADIATION
CLASS 4 LASER PRODUCT

MAX CONTINUOUS POWER:	1700W
MAX PULSED POWER:	6000W
WAVELENGTH:	10.6µm
PULSE DURATION:	from 2ms to c.w.

VISIBLE LASER RADIATION - AVOID DIRECT EYE EXPOSURE
CLASS 3R LASER PRODUCT
LASER DIODE (aiming source): 4mW @ 635nm
Classified by IEC 60825-1:2014